Technical Report
White Rabbit Property
Alberta, Canada

Submitted to:
Athabasca Minerals Inc.

Report Date:	Effective Date:
October 30, 2019	August 7, 2019

Stantec Consulting Ltd.
200, 325 – 25 Street SE
Calgary, Alberta T2P 7H8
Tel: (403) 716-8000

Author(s):
A.C. (Chris) Hunter, P. Geol.
William A Turner, P. Geol.

Project No. 129500207

Important Notice

This notice is an integral component of the White Rabbit Property Technical Report (Technical Report or Report) and should be read in its entirety and must accompany every copy made of the Technical Report. The Technical Report has been prepared in accordance with the requirements of National Instrument 43-101 Standards of Disclosure for Mineral Projects.

The Technical Report has been prepared for Athabasca Minerals Inc. and a private corporation (Privco) by Stantec Consulting Ltd (Stantec). The Technical Report is based on information and data supplied to Stantec by Privco. The quality of information, conclusions, and estimates contained herein are consistent with the level of effort involved in the services of Stantec, based on: i) information available at the time of preparation of the Report, and ii) the assumptions, conditions, and qualifications set forth in this Report.

Each portion of the Technical Report is intended for use by Athabasca Minerals Inc. and Privco and subject to the terms and conditions of its contract (April 29, 2019) with Stantec. Except for the purposes legislated under Canadian provincial and territorial securities law, any other uses of the Technical Report, by any third party, is at that party's sole risk.

The results of the Technical Report represent forward-looking information. The forward-looking information may include pricing assumptions, sales forecasts, projected capital and operating costs, mine life and production rates, and other assumptions. Readers are cautioned that actual results may vary from those presented. The factors and assumptions used to develop the forward-looking information, and the risks that could cause the actual results to differ materially are presented in the body of this Report.

Stantec has used their experience and industry expertise to produce the estimates in the Technical Report. Where Stantec has made these estimates, they are subject to qualifications and assumptions, and it should also be noted that all estimates contained in the Technical Report may be prone to fluctuations with time and changing industry circumstances.

CERTIFICATE OF QUALIFICATIONS

I, William A. Turner, P. Geol., do hereby certify that:

1. I am currently employed as Manager, Geology by Stantec Consulting Ltd., 200-325 25 Street S.E., Calgary, Alberta, Canada T2A 7H8.
2. I graduated with a Bachelor of Science degree from the University of Alberta in 1995, and a Master of Science degree from the University of Alberta in 2000.
3. I am a member in-good-standing of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (Member 58136) and a member in-good-standing of the Association of Professional Engineers, Geologists and Geophysicists of Saskatchewan (Member 15364), and a member in-good-standing of the Northwest Territories and Nunavut Association of Professional Engineers and Geoscientists (Member L3656).
4. I have 24 years as a Geologist since graduating from my undergraduate degree in Geology. I have 13 years of project experience identifying and evaluating the physical properties and quantities of surficial materials that include aggregate (sand and gravel) assessment. I have completed several exploration and property assessment projects for sand that involved sample collection by test pit excavation and drilling, and the coordination and interpretation of laboratory analyses that conformed to International Organization for Standardization (ISO) 13503-2 standards. I have acted as the Qualified Person for several proppant Technical Reports.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101), and past relevant work experience, I meet the requirements to be a "Qualified Person" for the purposes of NI 43-101.
6. I am responsible for the preparation of portions of Sections 1 to 4, Sections 5 through 9, portions of Section 10 to 12, Section 13 and portions of Sections 25, 26, and 27 of the report titled "Technical Report White Rabbit Property, Alberta, Canada" dated October 30, 2019, Effective Date August 7, 2019.
7. I have not conducted an inspection of the Property.
8. As at the effective date of the Technical Report, to the best of my knowledge, information and belief, the portions of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the parts of the Technical Report for which I am responsible not misleading.
9. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
10. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Report, the omission to disclose which makes the Report misleading.
11. I am independent of the issuer applying all of the tests in Section 1.5 of NI 43-101.

Dated this 30th day of October 2019.

"Original Signed and Sealed by Author"

____

William A. Turner, P.Geol.
Manager, Geology

CERTIFICATE OF QUALIFICATIONS

I, Andrew Christopher Hunter (Chris), P. Geol., do hereby certify that:

1. I am currently employed as Senior Resource Geologist by Stantec Consulting Limited (Stantec) 200-325 25 Street SE Calgary, Alberta, Canada T2A 7H8.
2. I graduated with a Bachelor of Science degree from Lakehead University Thunder Bay, Ontario in 1994.
3. I am a member in-good-standing of the Association of Professional Engineers and Geoscientists of Alberta, (Member 88635) and a member in-good-standing of the Association of Professional Geoscientists of Ontario (Member 2871).
4. I have 23 years of experience in mine geology and resource modelling for since my graduation from university. I have produced computer-based geological models for several different commodities, work which includes the estimation of resources. I have explored for and delineated multiple glacial sand deposits for use in aggregate and frac sand applications in Alberta and Saskatchewan. I have carried out sieve analysis and reviewed results of third-party laboratories analysis work.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101), and past relevant work experience, I meet the requirements to be a "Qualified Person" for the purposes of NI 43-101.
6. I am responsible for the preparation of portion of Sections 1 to 4 and portions of Sections 10 to 12, Section 14, and portions of Sections 25, 26, and 27 of the report titled "Technical Report White Rabbit Property, Alberta, Canada" dated October 30, 2019, Effective Date August 7, 2019.
7. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.
8. I personally inspected the Property and witnessed the auger drilling and sample collection activities on March 14 and 15, 2019.
9. At the effective date of the Technical Report, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
10. I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Report, the omission to disclose which makes the Report misleading.
11. I am independent of the issuer applying all of the tests in Section 1.5 of NI 43-101.

Dated this 30th day of October 2019.

"Original Signed and Sealed by Author"

____

A.C. (Chris) Hunter, P.Geol.
Senior Resource Geologist

Table of Contents

List of Tables

List of Figures

Abbreviations

%	percent
~	approximate
°C	Degrees Celsius
AGAT	AGAT Laboratories Ltd.
AMI	Athabasca Minerals Inc.
ASTM	American Society for Testing and Materials
AWW	Alberta Water Well
bof	Base of feed
C$	Canadian dollars
CDEM	Canadian Digital Elevation Model
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
g/cm^3	grams per cubic centimetre
g	gram
gps	Global Positioning System
ha	hectares
ISO	International Organization for Standardization
k	thousand
kg	kilogram(s)
km	kilometre(s)
Loring	Loring Laboratories Ltd.
m	Metre(s)
Mobile Augers	Mobile Augers and Research Ltd.
mm	Millimetre(s)
Mt	Million tonnes
NI	National Instrument
NI 43-101	National Instrument 43-101
NTU	Nephelometric Turbidity Unit
Property	White Rabbit Property
psi	pounds per square inch
Stantec	Stantec Consulting Ltd.
Stim-Lab	Stim-Lab, Inc.
TPS	Turnkey Processing Solutions Sand Laboratory

1 SUMMARY

On April 29, 2019, a private corporation (Privco) contracted Stantec Consulting Ltd. (Stantec) to prepare a Technical Report in accordance with the requirements of National Instrument (NI) 43-101 Standards of Disclosure for Mineral Projects. The purpose of this Technical Report is to constrain the physical characteristics, thickness, depth and continuity of the unconsolidated Quaternary sand on the White Rabbit Property (Property) to assess its suitability as a natural proppant. As part of this evaluation, the quality and volumes of the natural proppant and the reasonable prospects for eventual economic extraction were assessed.

On January 29, 2019, Athabasca Minerals Inc. (AMI) entered into an agreement to acquire an ownership position in Privco. The terms of the agreement are progressing through three stages. On May 7, 2019, AMI increased its ownership in Privco to 49.6%.

Figure 1-1 shows the general location of the Property. The centre of the Property is located approximately 8 kilometres (km) southeast of the town of Athabasca and is within the Rural Municipality of Athabasca County, Alberta. The Property encompasses 356 hectares (ha) (878 acres) and consists of seven privately owned contiguous quarter sections. Surface and subsurface infrastructure is well developed near the Property, where AltaGas and TransCanada have established services.

The Property consists of Quaternary sediments that include diamicton, sand, silts, and clay units. Historic water well data from the area identified sand proximal to surface on the Property.

Stantec Qualified Person(s) inspected the Property on March 14 and 15, 2019. During this property visit, the Qualified Person(s) observed drill hole locations, sample retrieval methods from the auger rig, and the sample quality control and assurance practices. In addition, during the Property review, the Qualified Person(s) completed independent field descriptive geological logs of two drill holes to characterize the visual physical properties of the sand and to independently observe sand interval thicknesses on the Property.

In March and April 2019, 49 auger holes were drilled on the Property by Mobile Augers and Research Ltd. using an M10 rig. This field program identified sand that was further tested to assess its suitability to be used as a hydraulic fracturing proppant. Following the drilling, samples were sent to four laboratories for analyses; AGAT Laboratories Ltd. (AGAT), Loring Laboratories Ltd. (Loring), Stim-Lab, Inc. (Stim-Lab), and Turnkey Processing Solutions Sand Laboratory (TPS).

Stim-Lab and TPS completed a total of 219 crush resistant tests. All samples underwent attrition prior to analyses. The breakdown by fraction is: 26 tests from the 20/40 fraction that averaged a 5K crush, 54 tests from the 30/50 fraction that averaged a 6K crush, 70 tests from the 40/70 fraction that averaged a 7K crush, and 67 tests from the 70/140 fraction that averaged a 9K crush.

In addition, Stim-Lab performed two crush resistant tests on the 50/140 fractions that both had a 9K crush. The TPS crush results align with those obtained by Stim-Lab for each fraction spread.

Legend

★ White Rabbit Property

Stantec Athabasca Minerals Inc.

TECHNICAL REPORT WHITE RABBIT PROPERTY

General Location Map

Figure 1-1

DRAWN BY: M.B.
CHK'D BY: A.T.
DATE: 19 06 06

FILE: Fig4_1_General_Location_1_1

V:\1295\active\129500130\Reports\Final\Figures\Bru\Mxd_dwg

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Background Sources: National Geographic, Esri - ArcGIS Online basemap.

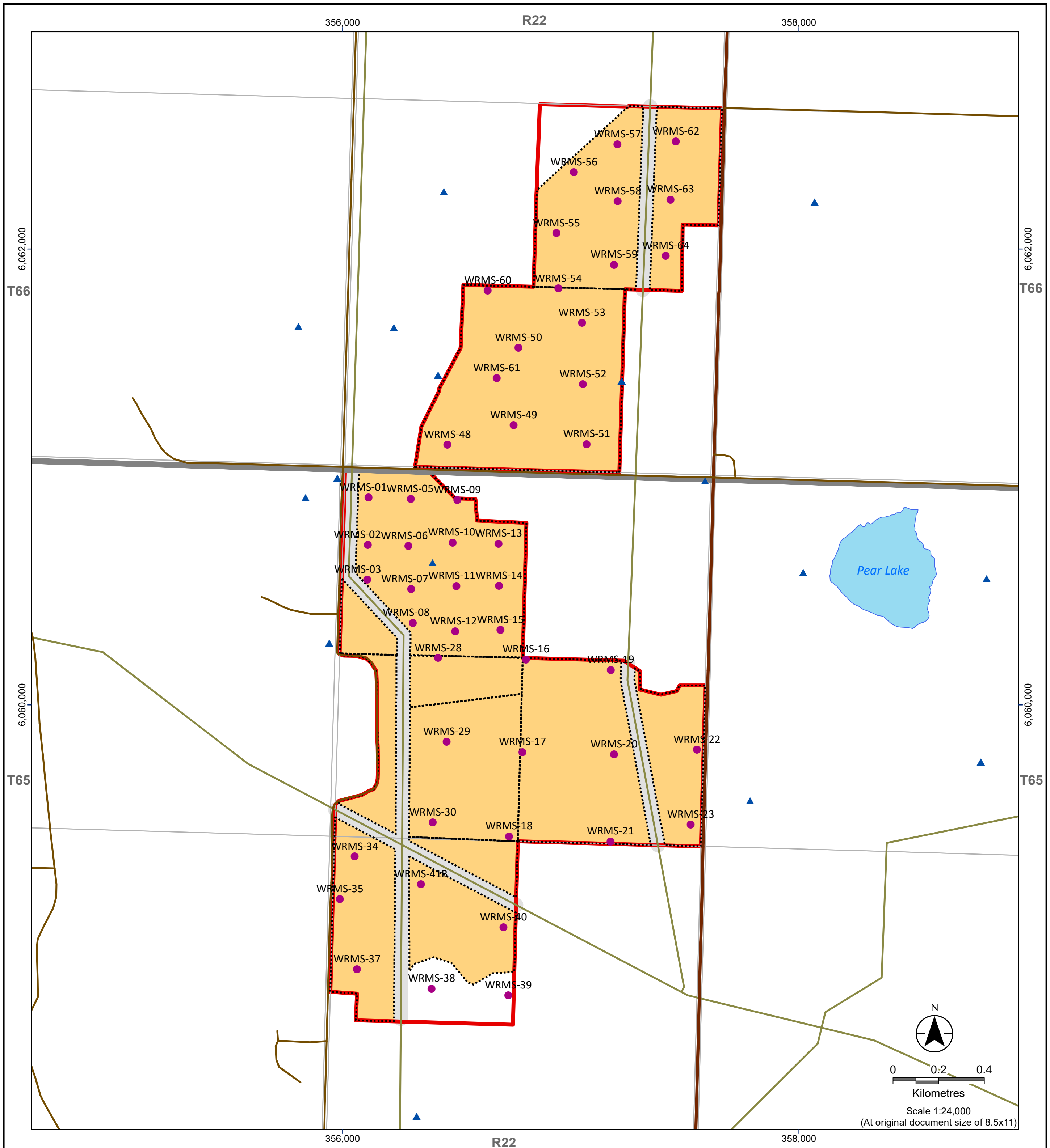
Following development of the mineral resource model, an in-place mineral resource was calculated. In-place bulk densities of 1.5 g/cm^3 for sand, 1.25 g/cm^3 for interburden clays and 1.4 g/cm^3 applied to silts of 1.5 g/cm^3 was used to calculate tonnages. This resource estimation only includes those resources found within the Property boundaries as illustrated on Figure 1-2. Figure 1-3 shows the resource classification map. The In-Place Mineral Resource is shown in Table 1-1

Table 1-1
In-Place Mineral Resource Summary, Effective Date August 7, 2019

Category	Mineral Resources (Mt)				
	20/40 Mesh Fraction	40/70 Mesh Fraction	70/140 Mesh Fraction	140/170 Mesh Fraction	Total
MEASURED	3.4	11.2	9.0	1.1	24.7
INDICATED	0.6	2.5	2.2	0.3	5.6
MEASURED and INDICATED	**4.0**	**13.7**	**11.2**	**1.4**	**30.3**
INFERRED	0.5	2.1	2.0	0.3	4.9

Mt = Million Tonnes

The 20/40, 40/70, 70/140, 140/170 and 50/140 fractions were assessed during the preparation of this report, as each fraction has different application during the hydraulic fracturing process. To avoid reporting overlapping volumes between fractions, Table 1-1 does not report the tonnage of the sand from the 50/140 fraction. The calculated tonnages for 50/140 fraction are approximately 15.0 Mt Measured, 3.6 Mt Indicated and approximately 3.2 Mt Inferred resources.



Legend

- 2019 Drill Hole
- Alberta Water Well
- Property Boundary
- Resource Boundary
- Resource Distribution
- Pipeline
- Pipeline Right of Way
- Paved Road
- Gravel Road
- Water Body

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government

Stantec Athabasca Minerals Inc.

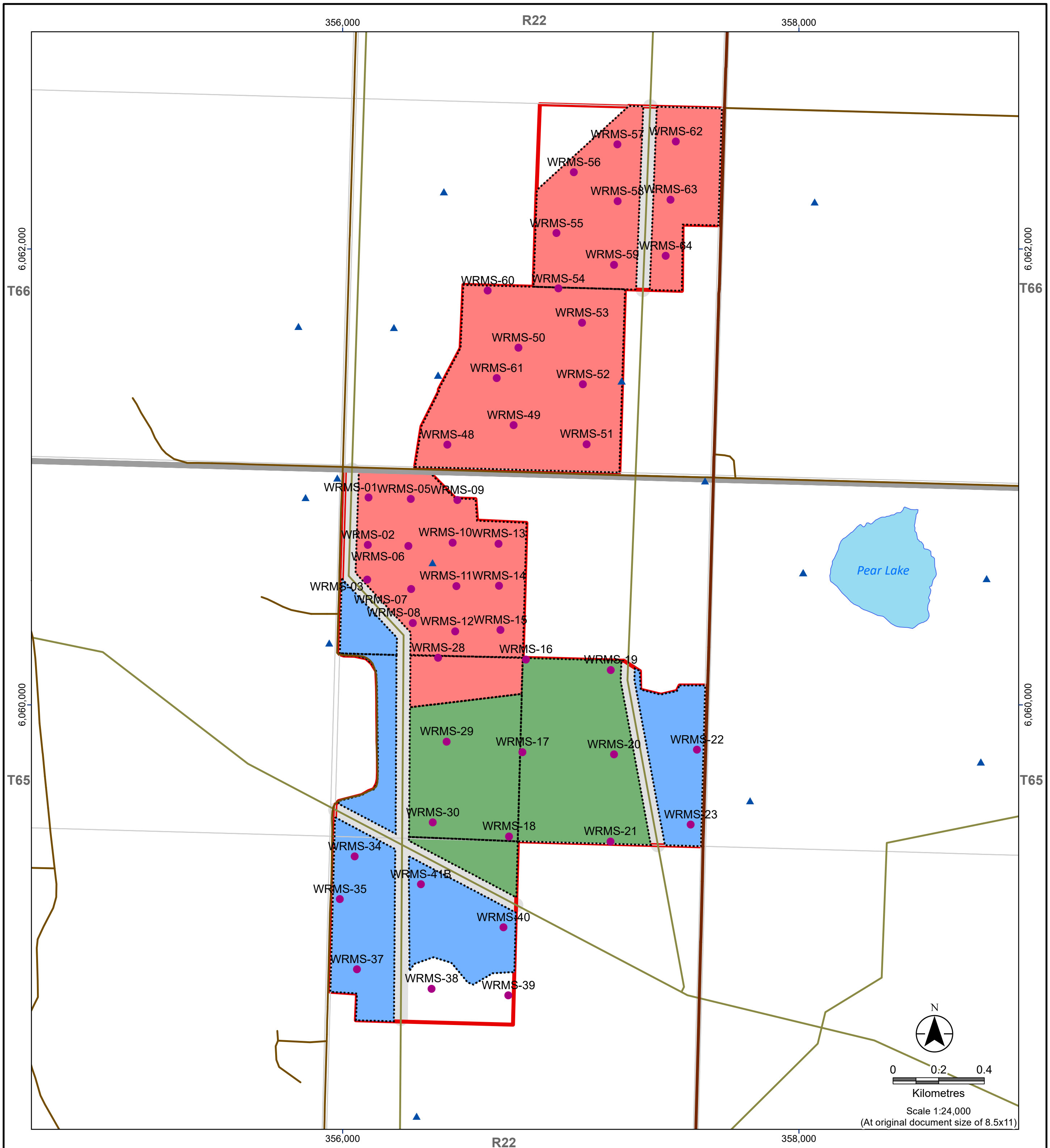
TECHNICAL REPORT WHITE RABBIT PROPERTY

Resource Distribution Map

Figure 1-2

DRAWN BY: M.B.
CHK'D BY: C.H.
DATE: 19 08 26

FILE: Fig14_5_Resource_Distribution
V:\1295\active\129500207\Reports\Draft\Figures\MXD



Legend

- 2019 Drill Hole
- Alberta Water Well
- Property Boundary
- Resource Boundary
- Water Body
- Pipeline
- Pipeline Right of Way
- Paved Road
- Gravel Road

Resource Classification:

- Measured
- Indicated
- Inferred

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government

Stantec Athabasca Minerals Inc.

TECHNICAL REPORT WHITE RABBIT PROPERTY

Resource Classification Map

Figure 1-3

DRAWN BY: M.B.
CHK'D BY: C.H.
DATE: 19 08 26

FILE: Fig14_6_Resource_D_Classif
V:\1295\active\129500207\Reports\Draft\Figures\MXD

It is recommended that Privco focus on the areas with high potential for the first stage of extraction. There are two phases of work that are recommended.

Phase 1: Preliminary and detailed property assessments to constrain the potential impact of the sand quarry operation in the Project area as shown on Table 1-2.

Table 1-2
Phase 1: Property Assessment Study

Task	Estimated Cost (C$)
Phase 1 Preliminary Property Assessment (desktop study, property visit)	30,000
Phase 2 Detailed Property Assessment (sampling, species at risk, watershed issues etc.)	100,000
Work phases may identify potential additional areas to be addressed, such as noise, air, Transportation Impact Assessment, Water Act application, historic resource clearance, First Nation Consultation, clay lined ponds potential requirements.	30,000
Estimate Total	**160,000**

Phase 2: It is recommended that a selected area, corresponding to a preliminary first cut area, be drilled at a higher density utilizing a sonic core drill with capabilities to penetrate greater depths as shown on Table 1-3.

Table 1-3
Phase 2: Sonic Exploration Program

Task	Estimated Cost (C$)
Personnel (Office, Field, Travel Expenses)	11,000
Six-Hole Drill Program (Rig Costs)	14,000
Laboratory Expenses (Shipment and Analyses)	60,000
Estimate Total	**85,000**

2 INTRODUCTION

On April 29, 2019, a private corporation (Privco) contracted Stantec Consulting Ltd. (Stantec) to prepare a Technical Report in accordance with the requirements of National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101). The purpose of this Technical Report is to constrain the physical characteristics, thickness, depth and continuity of the unconsolidated Quaternary sand on the White Rabbit Property (Property) to assess its suitability as a natural proppant. As part of this evaluation, the quality and volumes of the natural proppant and the reasonable prospects for eventual economic extraction were assessed.

The Winter 2019 Drilling Campaign completed 49 auger holes. Testing of the natural proppant was completed by AGAT, Stim-Lab, Loring, and TPS.

Stantec Qualified Person(s) inspected the Property on March 14 and 15, 2019. During this property visit, the Qualified Person(s) observed drill hole locations, sample retrieval methods from the auger rig, and the sample quality control and assurance practices. In addition, during the Property review, the Qualified Person(s) completed independent field descriptive geological logs of two drill holes to characterize the visual physical properties of the sand and to independently observe sand interval thicknesses on the Property.

The “Effective Date” means, with reference to a Technical Report, the date of the most recent scientific or technical information included in the Technical Report.

The accuracy of resource estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time this report was prepared, the estimates presented herein are considered reasonable. However, they should be accepted with the understanding that additional data and analysis available subsequent to the date of the estimates may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources will be recoverable.

3 RELIANCE ON OTHER EXPERTS

The Qualified Person(s) did not rely on a report, opinion or statement of another expert who is not a Qualified Person, or on information provided by the issuer, concerning legal, political, environmental, or tax matters.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Description and Location

The centre of the Property is located approximately 8 km south east of the town of Athabasca and is within the Rural Municipality of Athabasca County, Alberta as shown on Figure 4-1. The town of Athabasca is located 145 km north of Edmonton at the intersection of Highway 2 and Highway 55 and in 2016 had a population of 2,965. The northern end of the Property is accessed from Athabasca via Highway 55.

The Property encompasses 356 ha (878 acres) and is shown on the Tawatinaw Map Sheet 83I. The Property is bounded approximately from 6,058,625N to 606,2600N, and 355,940E to 357,650 E. The center of the Property is approximately at 6,060,575 N and 356,430 E as shown on Figure 4-2.

4.2 Drilling Permits

The Province of Alberta's **Law of Property Act** (2014) states:

> **58(1)** The owner of the surface of land is and is to be deemed at all times to have been the owner of and entitled to sand and gravel on the surface of that land, and all sand and gravel obtained by stripping off the overburden or excavating from the surface, or otherwise recovered by surface operations.
>
> **58(2)** The sand and gravel referred to in subsection (1) is deemed not to be a mine, mineral or valuable stone but is deemed to be and to have been a part of the surface of land and to belong to the owner of the surface. (p. 36)

As the entire Property is on privately owned land, no drilling permits were required to complete the drilling campaigns.

4.3 Mining Claims

The Property consists of seven privately owned contiguous quarter sections, which are shown in Table 4-1 and illustrated on Figure 4-3. The Author(s) have not had a third-party legal opinion as to the validity of the agreements referenced in this section.

Legend

★ White Rabbit Property

Stantec Athabasca Minerals Inc.

TECHNICAL REPORT WHITE RABBIT PROPERTY

General Location Map

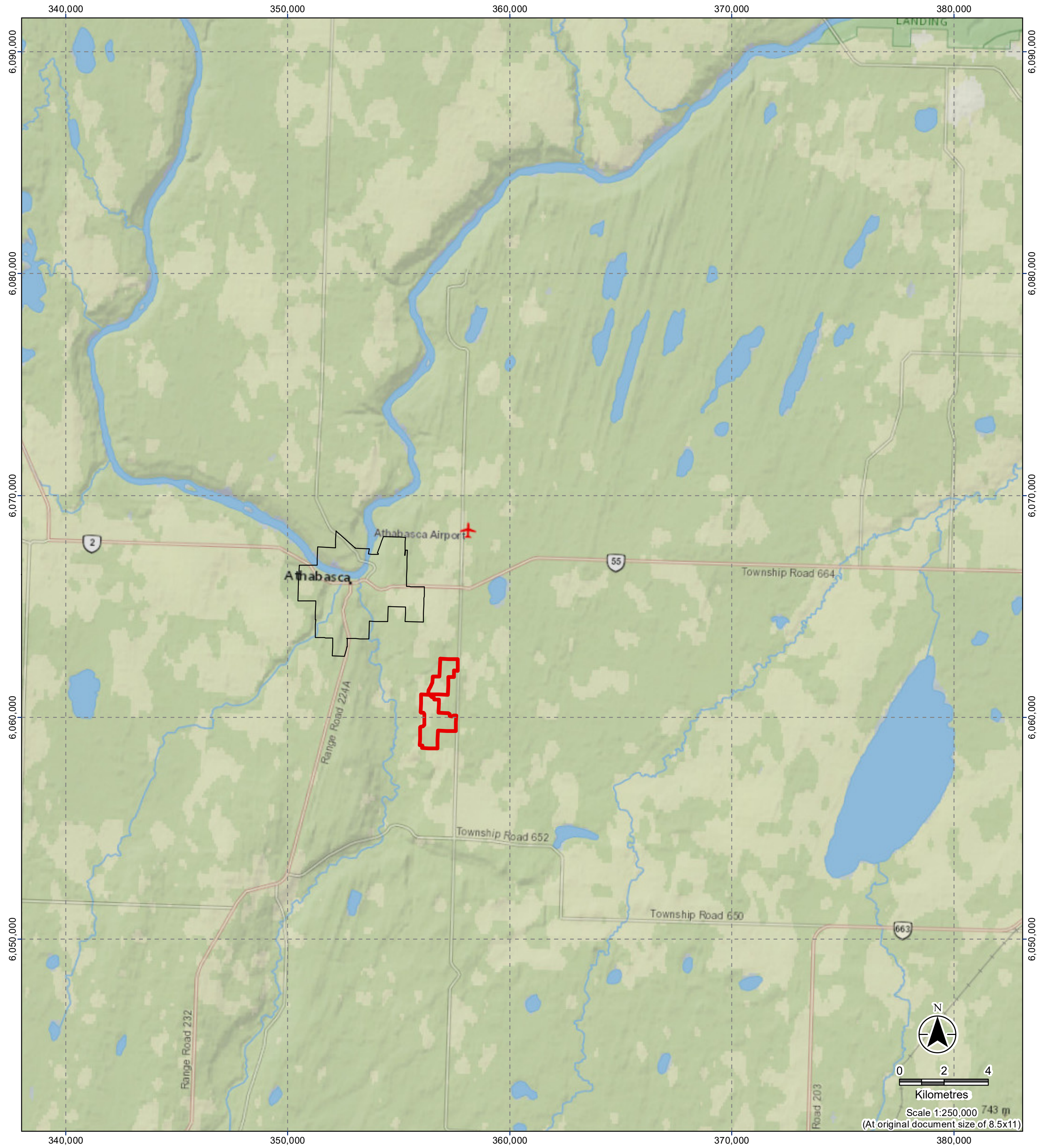
Figure 4-1

DRAWN BY: M.B.
CHK'D BY: A.T.
DATE: 19 06 06

FILE: Fig4_1_General_Location_1_1

V:\1295\active\129500207\Reports\Draft\Figures\MXD

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Background Sources: National Geographic, Esri - ArcGIS Online basemap.



Legend

- White Rabbit Property
- Town / City
- Airport

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Background Sources: National Geographic, Esri - ArcGIS Online basemap.
Data Sources: ATS grid: Government of Alberta.

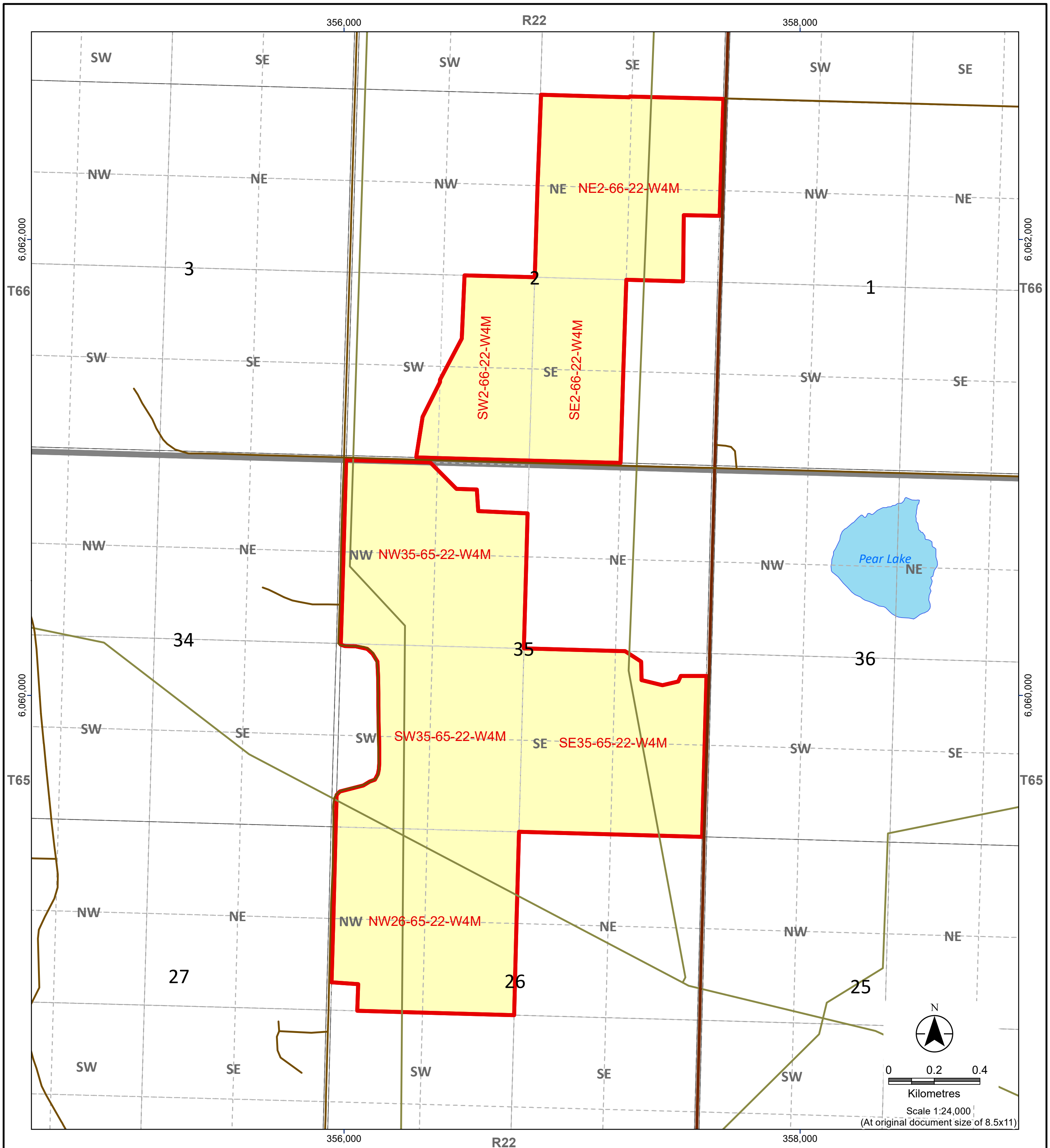
Stantec Athabasca Minerals Inc.

TECHNICAL REPORT WHITE RABBIT PROPERTY

Regional Location Map

Figure 4-2

DRAWN BY: M.B. CHK'D BY: A.T. DATE: 19 06 18	FILE: Fig4_2_Project_Location_1_2 V:\1295\active\129500207\Reports\Draft\Figures\MXD



Legend

- Property Boundary
- Pipeline
- Water Body
- Paved Road
- Gravel Road

Notes

Coordinate System: NAD 1983 UTM Zone 12N

Data Sources: ATS grid: Altalis 20K Base Features http://www.altalis.com/products/property/ats.html

Stantec Athabasca Minerals Inc.

TECHNICAL REPORT WHITE RABBIT PROPERTY

Property Location Map

Figure 4-3

DRAWN BY: M.B.
CHK'D BY: A.T.
DATE: 19 06 18

FILE: Fig4_3_MineralClaims_Lease_1_3

V:\1295\active\129500207\Reports\Draft\Figures\MXD

Table 4-1
Landowner Agreements

Legal Description	Option to Lease or Purchase Agreement Date	Acreage	Option Exercise Period
NW26-65-22-W4M	March 19, 2019	158.0	19-Sep-2021
NW35-65-22-W4M	February 20, 2019	143.4	30-Aug-2021
SW35-65-22-W4M	March 19, 2019	130.6	19-Sep-2021
SE35-65-22-W4M	March 19, 2019	145.0	19-Sep-2021
NE02-66-22-W4M	May 30, 2019	145.0	30-Nov-2022
SW02-66-22-W4M	May 31, 2019	75.9	31-May-2023
SE02-66-22-W4M	May 31, 2019	80.4	31-May-2023

4.4 Underlying Agreements, Royalties and Encumbrances

The potential for extensions to the option exercise period are included in all Option to Lease and Purchase agreements subject to additional payments.

On January 29, 2019, AMI entered into an agreement to acquire an ownership position in Privco. The terms of the agreement are progressing through three stages, which are outlined below (Athabasca Minerals Inc., 2019, January 29). As part of the conditions associated with the January 29 agreement, AMI completed Stage One of the agreement terms.

- Stage One: 16.2% interest in Privco for C$280,000 and 420,000 AMI shares.
- Stage Two: 33.4% interest in Privco for C$742,000 and 1,680,000 AMI shares.
- Stage Three: Purchase of the remaining 50.4% interest of Privco within one year of the initial transaction.

On May 7, 2019, AMI increased its ownership in Privco to 49.6% through completion of Stage Two of the agreement terms (Athabasca Minerals Inc., May 7, 2019).

The Author(s) have relied on the press releases referenced in this section and do not have third-party legal opinion as to the validity of these agreement.

4.5 Environmental Liabilities

Development of resources on private lands must adhere to the Code of Practice for Pits and the Provincial Water Act. To the best of Stantec’s knowledge, there are no known environmental liabilities that will affect access, title or the right or ability to perform work on the Property.

4.6 Other Significant Factors and Risks

The Author(s) is not aware of any other significant factors and risks that may affect access, title or the right or ability to perform work on the Property.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 Topography, Elevation and Vegetation

The area is within the Boreal Plains Ecozone. The topography of the area is undulating and level to gently rolling plains. The area is in proximity to the Athabasca river and is within the Arctic Ocean drainage system (Roed, 1975).

5.2 Property Access and Proximity to Population Centers

The centre of the Property is approximately eight km south east of the town of Athabasca and is within the Rural Municipality of Athabasca County. The northern end of the Property is accessed from Athabasca via Highway 55.

The town of Athabasca is close to the Property and can provide basic supplies, services, and work force. Most of the supplies, services, and workforce would be sourced from Edmonton, which is approximately 140 km south of the Property. Small centres proximal to the Property that can provide limited services include the villages of Colinton and Pear Lake.

5.3 Climate

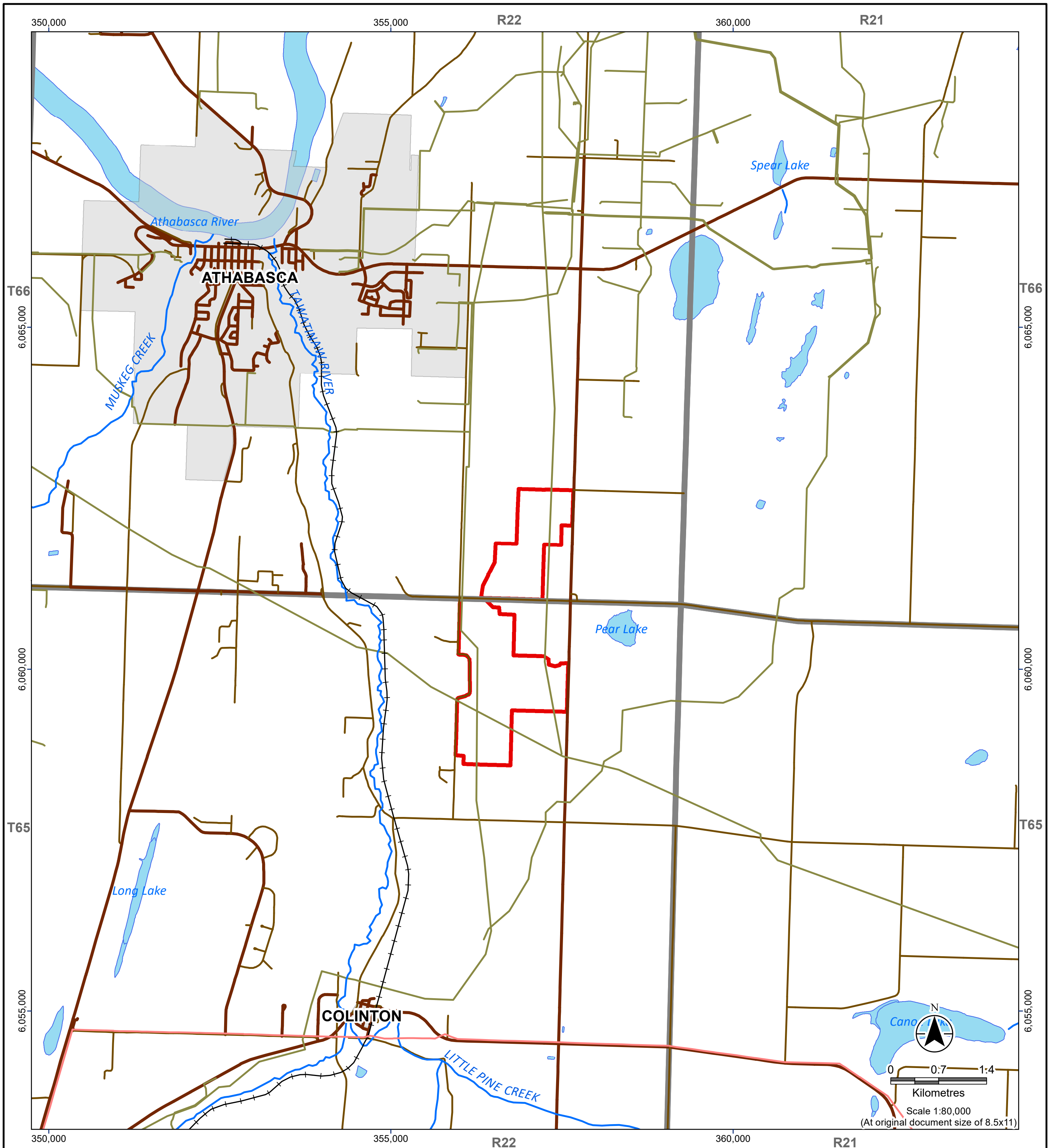
Temperatures in the area have average monthly highs of 23°C in July and August, and monthly lows of -18°C in January. Precipitation is typically highest in July, with averages of approximately 102 millimetres (mm), and average lows of 20 mm in November and March.

5.4 Infrastructure

Surface and subsurface infrastructure is well developed near the Property, where AltaGas and TransCanada have established services. Several natural gas pipelines were identified throughout the Property as shown on Figure 5-1.

A NovaGas Transmission pipeline intersects multiple quarter sections along the east side of the Property traversing North-South through SE35-65-22W4M and NE2-65-22-W4M. It branches and crosses north-west direction through NW26-65-22-W4M and SW35-65-22-W4M.

On the west side, an AltaGas pipeline, which is aligned parallel to a municipal north-south water pipeline, runs through NW26-65-22-W4M, SW35-65-22-W4M and NW35-65-22-W4M. Proximity of the Property to the town of Athabasca facilitates access to high voltage transmission lines and able workforce.



Legend

- Property Boundary
- City / Town
- Pipeline
- River
- Water Body
- Paved Road
- Gravel Road
- Rail Line
- Power Line

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government

Stantec Athabasca Minerals Inc.

TECHNICAL REPORT WHITE RABBIT PROPERTY

Infrastructure Map

Figure 5-1

DRAWN BY: M.B. CHK'D BY: C.H. DATE: 19 06 06	FILE: Fig5_1_Infrastructure_80k V:\1295\active\129500207\Reports\Draft\Figures\MXD

6 HISTORY

6.1 Alberta Water Well Information Data

Historically, water wells were drilled in the vicinity of the Property. Information from these water wells in publicly available online from the Alberta Water Well Information Database (AWW, 2019). The Alberta Water Well Information Database only includes basic descriptions of the material that was described by the drillers at the time of the wells being drilled, and the general locations of the drill holes relative to the centres of the nearest quarter sections. With exception of one well (219215), all water wells are located outside of the Property boundary. The water wells listed in Table 6-1 were used in the study to control edge effects on the surface modelling along the outermost Property boundaries.

Table 6-1
Alberta Water Well Summary

Water Well Name	Easting	Northing	Elevation (m)	Hole Depth (m)	Drill Year
158821	355941	6060272	605	31	1991
158823	355976	6060997	606	26	1991
165406	356444	6062253	604	30	1992
168191	357223	6061423	609	31	1992
218098	358069	6062208	610	49	1970
218105	356224	6061656	606	16	1982
218107	356419	6061448	606	25	1987
218110	355806	6061662	600	19	1981
219210	357173	6059794	608	40	1987
219215	356394	6060624	605	23	1988
219220	357588	6060984	609	65	1954
219225	357786	6059580	600	10	1980
219230	358019	6060580	598	25	1988
235064	358798	6059750	600	17	1970
244805	358823	6060554	598	82	1994
1888885	355837	6060911	607	38	2009
1912331	356324	6058196	608	49	2015

7 GEOLOGIC SETTING AND MINERALIZATION

7.1 Regional Geology

Government surficial studies of the Quaternary sediments show that the Athabasca area has undergone several complex events, which include glacial retreat, as indicated by the diamicton, moraine deposits, fluvial deposits, and deposition of lacustrine sediments.

The Quaternary diamicton was deposited during the Laurentide glaciation creating large scale, drumlins, irregular mounds and ridges parallel to ice flow. These regional landforms spanned Northern Alberta in a South-Southwest direction. (Gravenor and Meneley, 1958). Periods of stagnation and sub glacial deformation formed multifaced erosional features such as lodgement, fluting, meltwater outflow and deposition (Shaw et al., 2000). The Quaternary deposits consist of upper and lower diamicton and in some places within a complex and variable stratigraphic sequence. (May and Thomson, 1978). The lower is composed of fine-grained silt and pebbles and the upper diamicton has been reworked into a fine-grained diamicton.

7.2 Structural Geology

The Cretaceous strata in Central Alberta generally trends west - east. Multiple glaciation events altered the underlying bedrock through thrust faults and folding (May and Thomson, 1978).

7.3 Property Geology

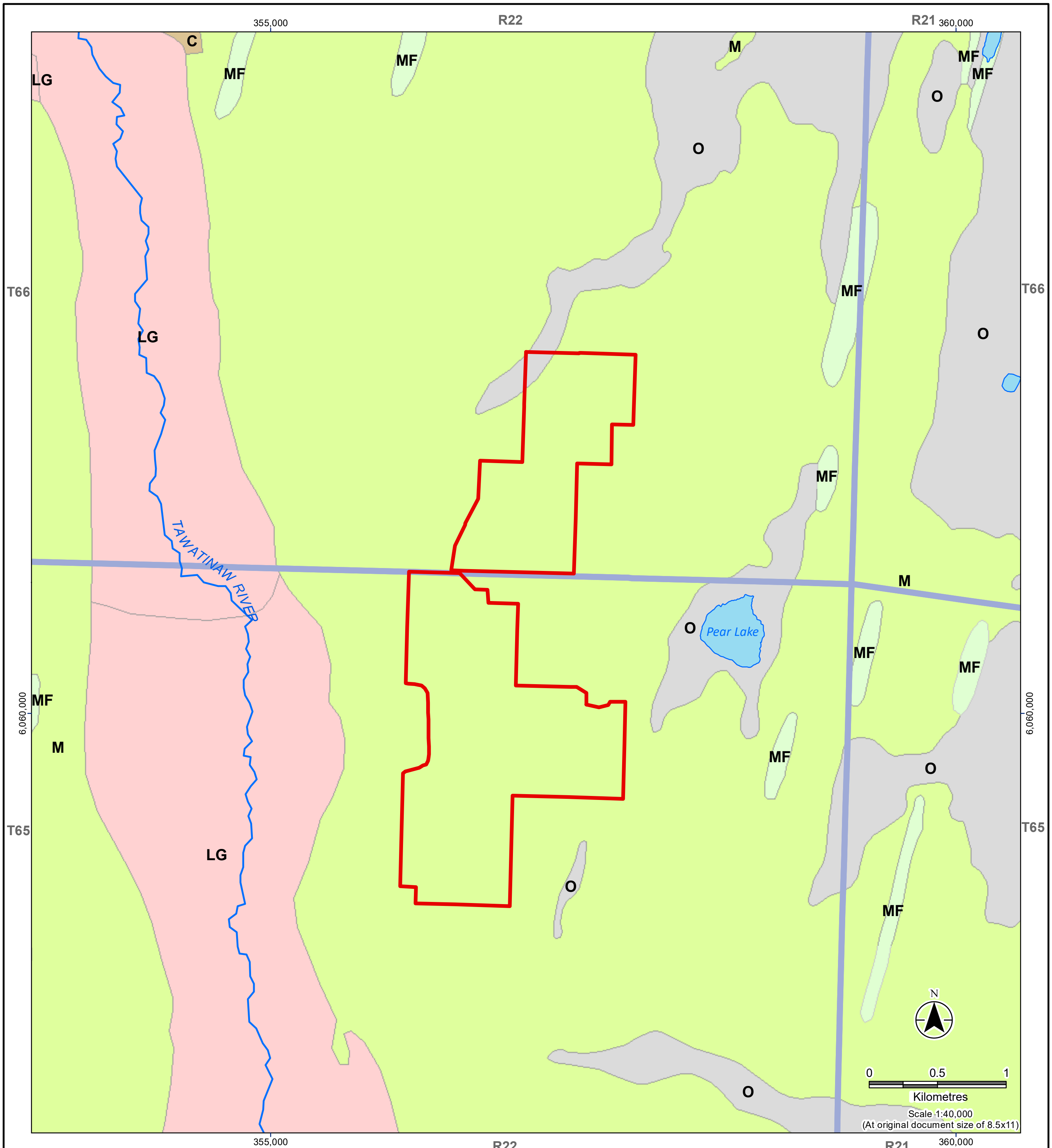
The Property consists of Quaternary sediments that are characterized as diamicton, sand, silts, and clay units. Historic water well data from the area identified sand proximal to surface on the Property. Surficial Geology of the Property and surrounding area is shown on Figure 7-1. Systematic drilling during March and April 2019 identified the following units:

Overburden: The overburden is typically composed of diamicton, which is heterolithic, varies from silty to rocky, and typically has a calcareous component. The overburden spans from 0.6 metres (m) to 13.6 m as shown on Figure 7-2.

Sand: The sand commonly ranges from fine to coarse-grained; granular sands that are associated with gravel-sized material also occur in areas. The sand varies from 0.4 m to 21.6 m in thickness as shown on Figure 7-3.

Interburden: The interburden is typically composed of mud and or clay and occurs within the sand unit. The interburden varies in thickness from 0.1 m to 4.5m as shown on Figure 7-4.

Silt: The silt interval, where encountered, commonly occurs directly beneath or as an interburden unit within the sand unit. The texture of the silt is massive to laminated, and at times contains clay stringers. The silt interval ranges from 0.1 m to 2.1 m in thickness as shown on Figure 7-5.



Legend

- Property Boundary
- River
- Water Body

Quaternary Units:

O	Organic Deposits
C	Colluvial Deposits
LG	Glaciolacustrine Deposits
M	Moraine
MF	Fluted moraine

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: Alberta Energy Regulator, Surficial geology of Alberta (modified by Stantec).

Stantec Athabasca Minerals Inc.

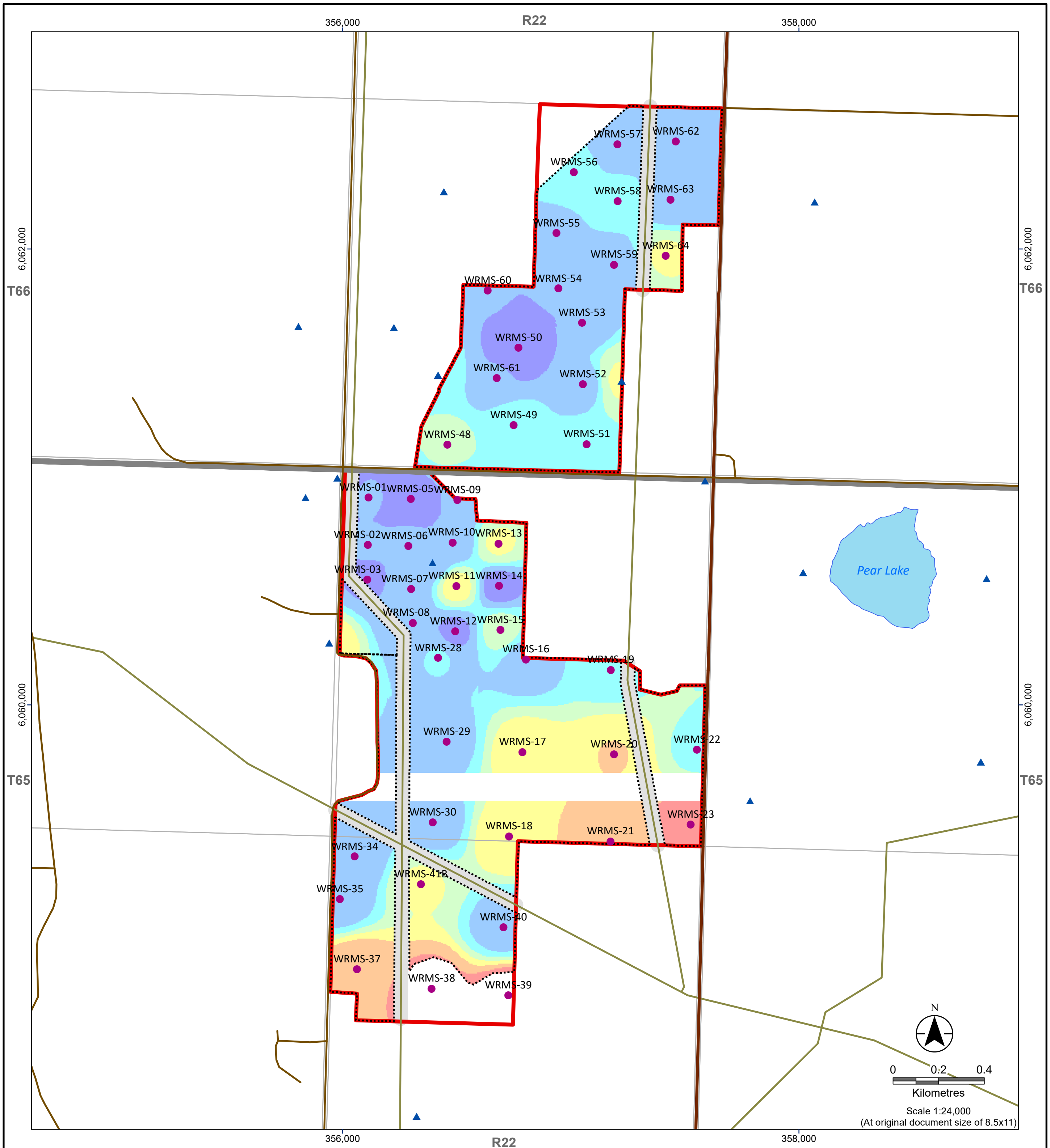
TECHNICAL REPORT WHITE RABBIT PROPERTY

Surficial Geology Map

Figure 7-1

DRAWN BY: M.B.
CHK'D BY: A.T.
DATE: 19 06 06

FILE: Fig7_1_Surficial_Geology
V:\1295\active\129500207\Reports\Draft\Figures\MXD



Legend

- ● 2019 Drill Hole
- ▲ Alberta Water Well
- Property Boundary
- Resource Boundary
- Water Body
- Pipeline
- Pipeline Right of Way
- Paved Road
- Gravel Road

Overburden Thickness (m)

- 0- 2
- 2 - 4
- 4 - 6
- 6 - 8
- 8 - 10
- 10 - 12
- 12 - 14

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government

Stantec **Athabasca Minerals Inc.**

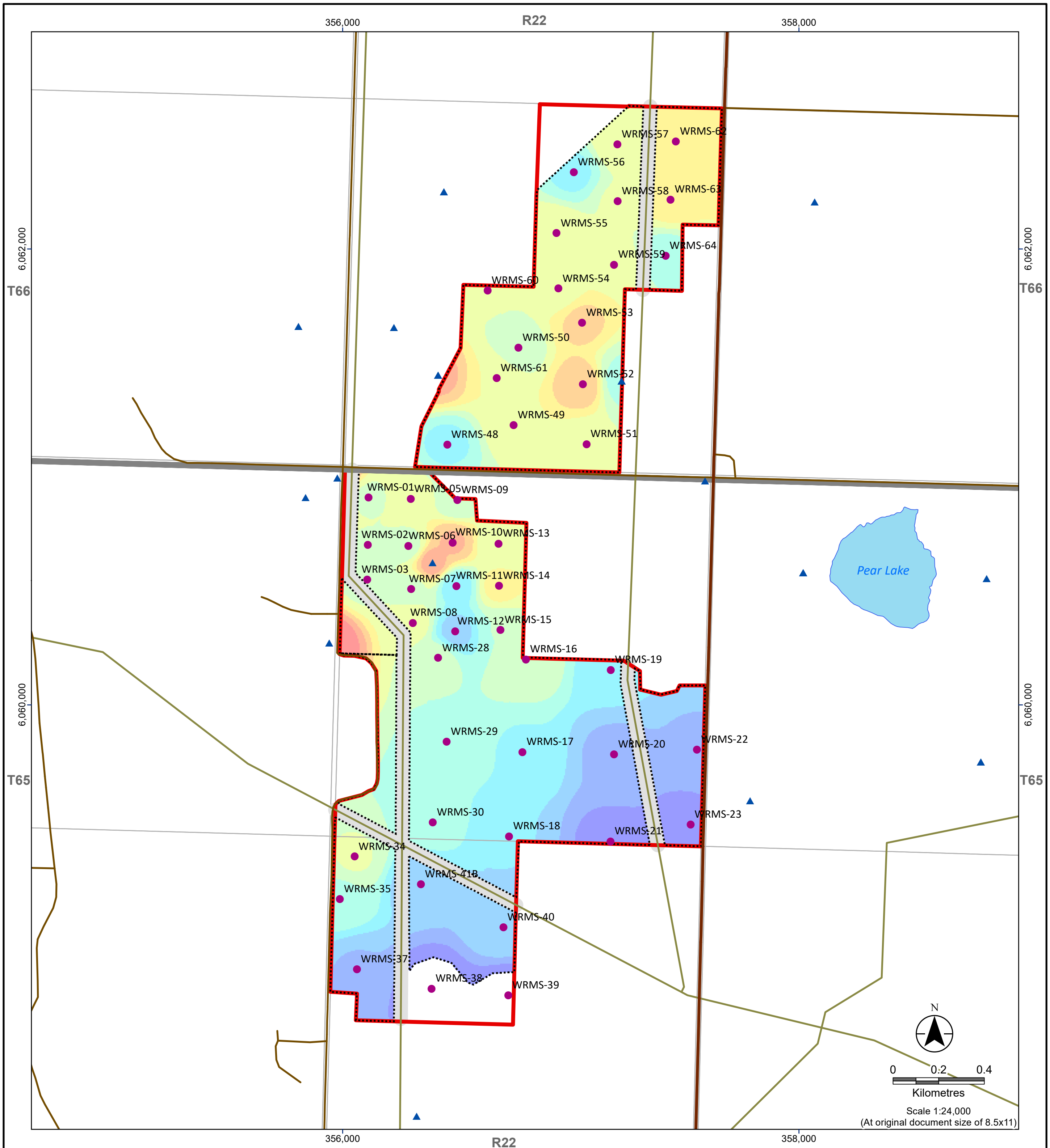
TECHNICAL REPORT WHITE RABBIT PROPERTY

Overburden Thickness Map

Figure 7-2

DRAWN BY: M.B.
CHK'D BY: C.H.
DATE: 19 08 26

FILE: Fig7_2_Ovb_Thickness
V:\1295\active\129500207\Reports\Draft\Figures\MXD



Legend

- 2019 Drill Hole
- Alberta Water Well
- Property Boundary
- Resource Boundary
- Water Body
- Pipeline
- Pipeline Right of Way
- Paved Road
- Gravel Road

Sand Thickness (m)

- 0 - 2
- 2 - 4
- 4 - 6
- 6 - 8
- 8 - 10
- 10 - 12
- 12 - 14
- 14 - 16
- 16 - 18
- 18 - 20
- 20 - 22

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government

Stantec Athabasca Minerals Inc.

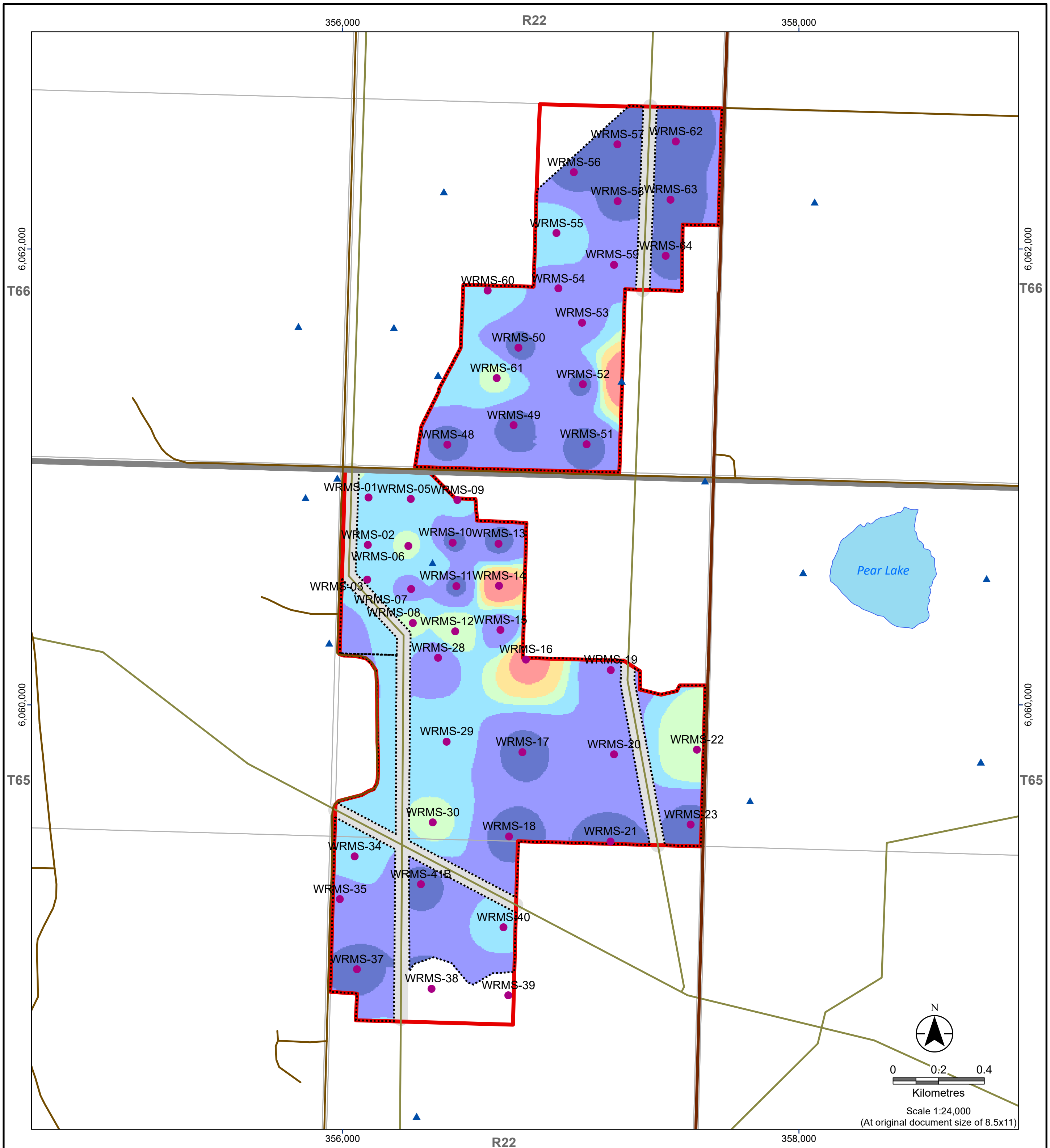
TECHNICAL REPORT WHITE RABBIT PROPERTY

Sand Thickness Map

Figure 7-3

DRAWN BY: M.B.
CHK'D BY: C.H.
DATE: 19 08 26

FILE: Fig7_3_Sand_Thickness2
V:\1295\active\129500207\Reports\Draft\Figures\MXD



Legend

- 2019 Drill Hole
- Alberta Water Well
- Property Boundary
- Resource Boundary
- Water Body
- Pipeline
- Pipeline Right of Way
- Paved Road
- Gravel Road

Interburden Thickness (m)

- 0
- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government

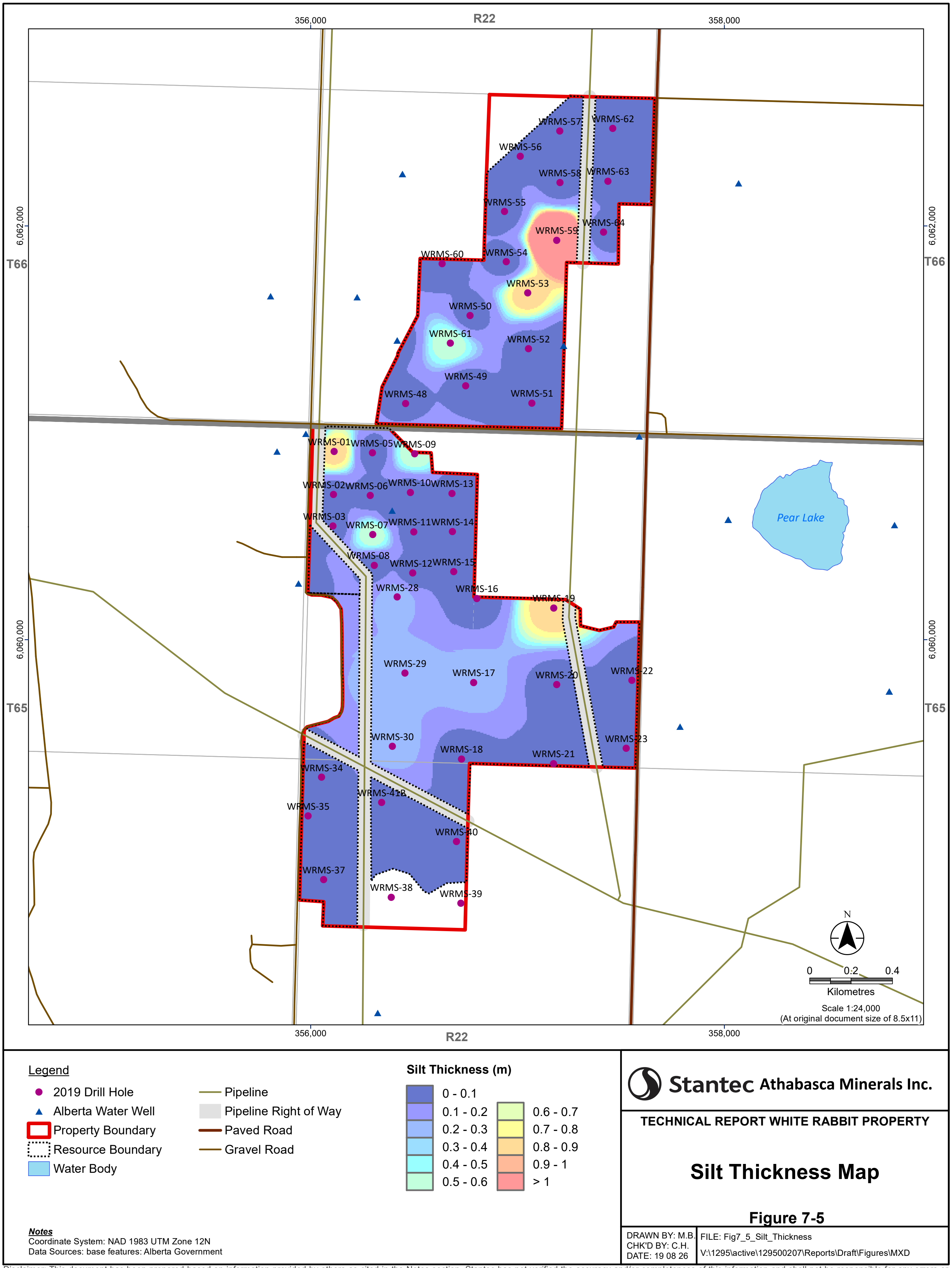
Stantec Athabasca Minerals Inc.

TECHNICAL REPORT WHITE RABBIT PROPERTY

Interburden Thickness Map

Figure 7-4

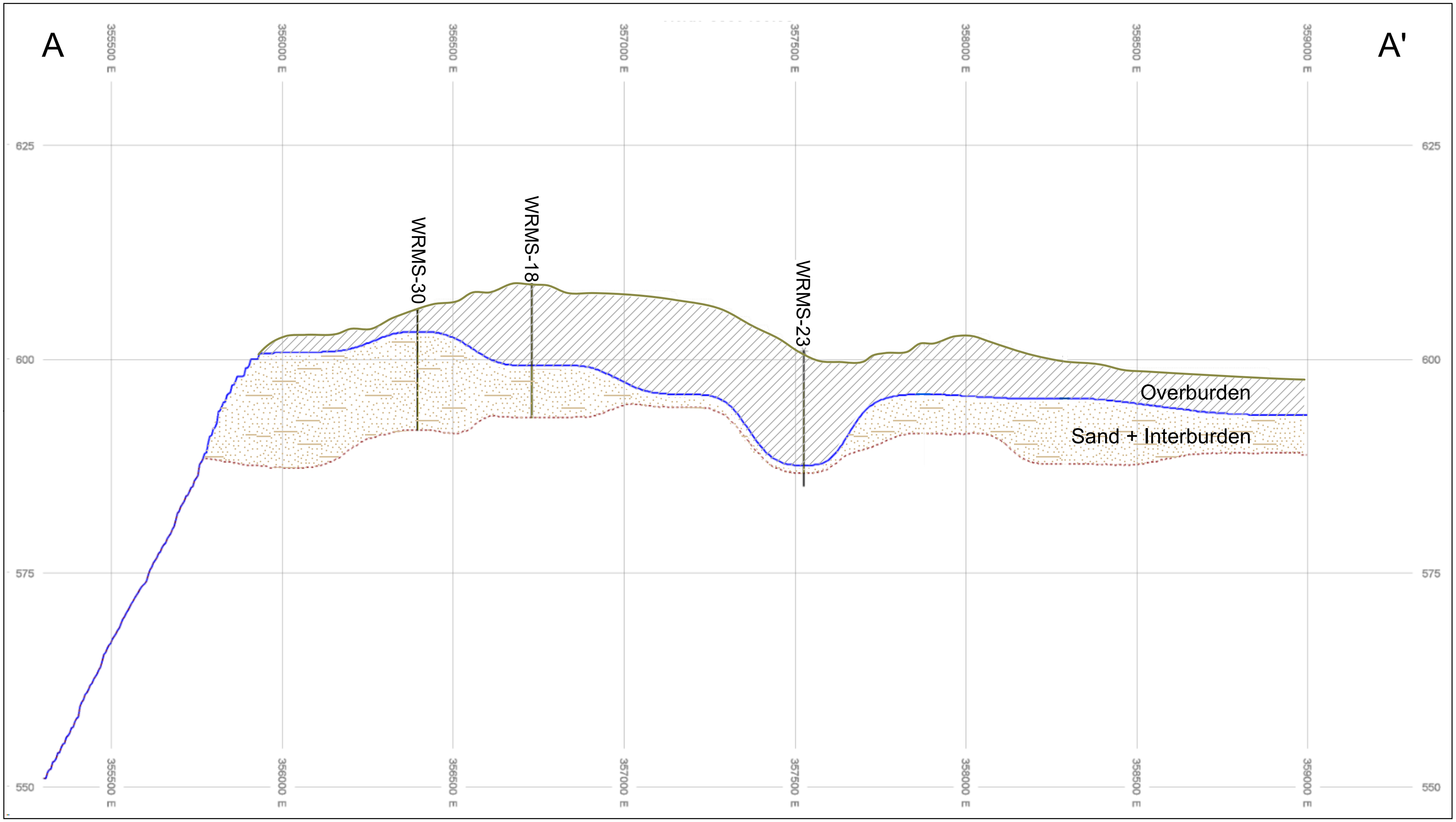
DRAWN BY: M.B. CHK'D BY: C.H. DATE: 19 08 26	FILE: Fig7_4_InterBurden_Thickness V:\1295\active\129500207\Reports\Draft\Figures\MXD

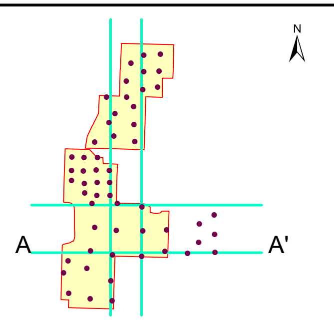


356,000
R22
358,000
6,062,000
T66
6,060,000
T65
WRMS-57
WRMS-62
WRMS-56
WRMS-58
WRMS-63
WRMS-55
WRMS-64
WRMS-59
WRMS-60
WRMS-54
WRMS-53
WRMS-50
WRMS-61
WRMS-52
WRMS-49
WRMS-48
WRMS-51
WRMS-01
WRMS-05
WRMS-09
WRMS-02
WRMS-06
WRMS-10
WRMS-13
WRMS-03
WRMS-07
WRMS-11
WRMS-14
WRMS-08
WRMS-12
WRMS-15
WRMS-28
WRMS-16
WRMS-19
WRMS-29
WRMS-17
WRMS-20
WRMS-22
WRMS-30
WRMS-18
WRMS-21
WRMS-23
WRMS-34
WRMS-41B
WRMS-35
WRMS-40
WRMS-37
WRMS-38
WRMS-39
Pear Lake
N
0
0.2
0.4
Kilometres
Scale 1:24,000
(At original document size of 8.5x11)
Legend
2019 Drill Hole
Alberta Water Well
Property Boundary
Resource Boundary
Water Body
Pipeline
Pipeline Right of Way
Paved Road
Gravel Road
Silt Thickness (m)
0 - 0.1
0.1 - 0.2
0.2 - 0.3
0.3 - 0.4
0.4 - 0.5
0.5 - 0.6
0.6 - 0.7
0.7 - 0.8
0.8 - 0.9
0.9 - 1
> 1
Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government
Stantec
Athabasca Minerals Inc.
TECHNICAL REPORT WHITE RABBIT PROPERTY
Silt Thickness Map
Figure 7-5
DRAWN BY: M.B.
CHK'D BY: C.H.
DATE: 19 08 26
FILE: Fig7_5_Silt_Thickness
V:\1295\active\129500207\Reports\Draft\Figures\MXD

7.4 Mineralization

The target unit on the Property is unconsolidated sand. The primary objective of the program was to delineate the quality and quantity of the unconsolidated sand, to assess if the quality of the sand is viable to perform as a natural proppant for hydraulic fracturing. The drill tested sand thickness is modelled to 21.6 m in areas. Figures 7-6 to 7-9 show cross section views of the sand deposit.





Legend

Topography

Top of Sand

Base of Feed

Overburden

Sand + Interburden

Vertical exaggeration 1: 25

Section View: +/- 50m

Stantec Athabasca Minerals Inc.

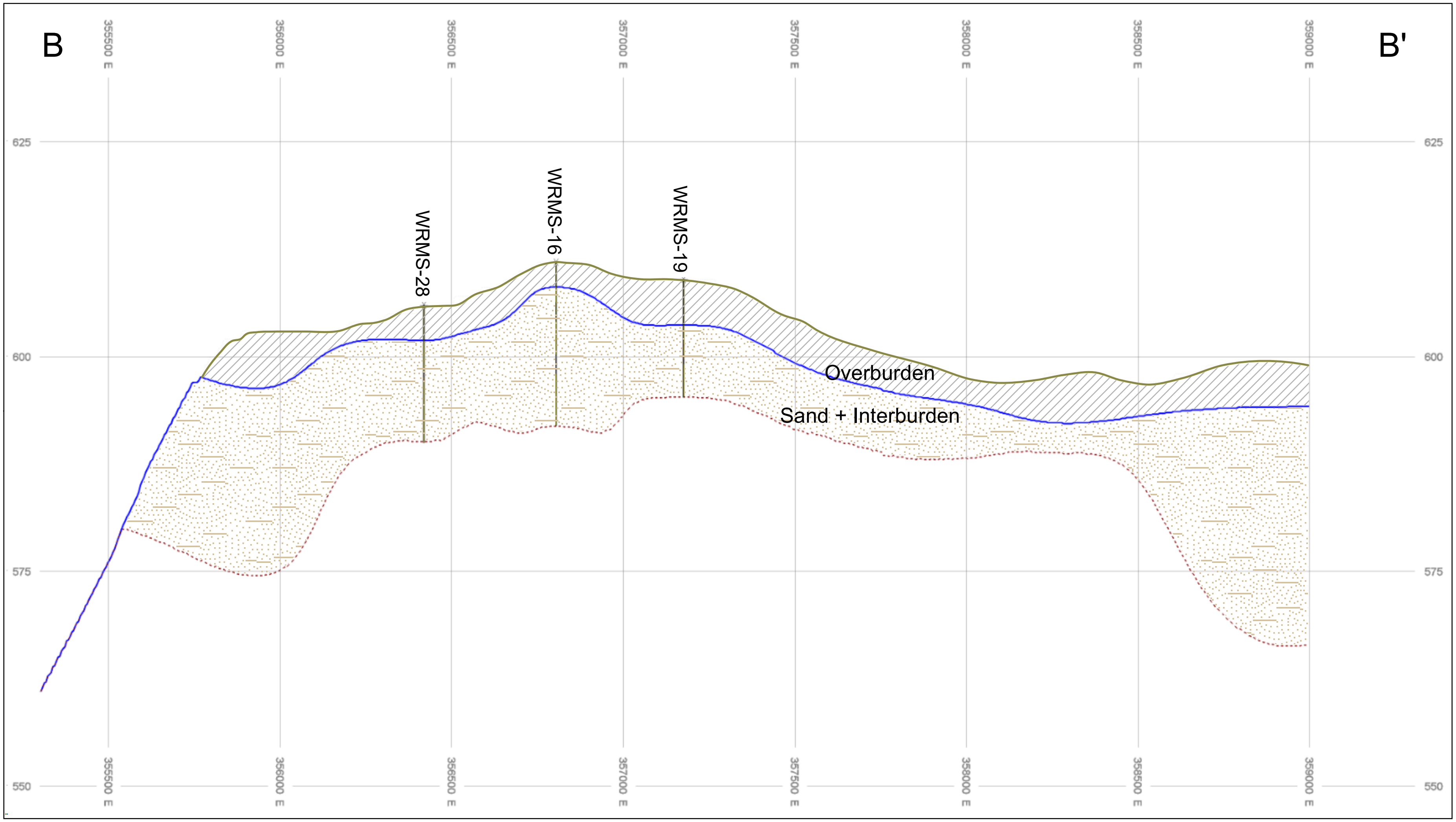
TECHNICAL REPORT WHITE RABBIT PROPERTY

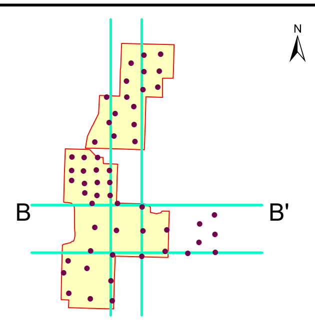
Structural Cross Section
N 6,059,455m
Looking North

Figure 7-6

DRAWN BY: M.B.
CHK'D BY: C.H.
DATE: 19 08 26

FILE: Fig7_6_xSection6059455N
V:\1295\active\129500207\Reports\Draft\Figures





Legend

Topography

Top of Sand

Base of Feed

Overburden

Sand + Interburden

Vertical exaggeration 1: 25

Section View: +/- 50m

Stantec Athabasca Minerals Inc.

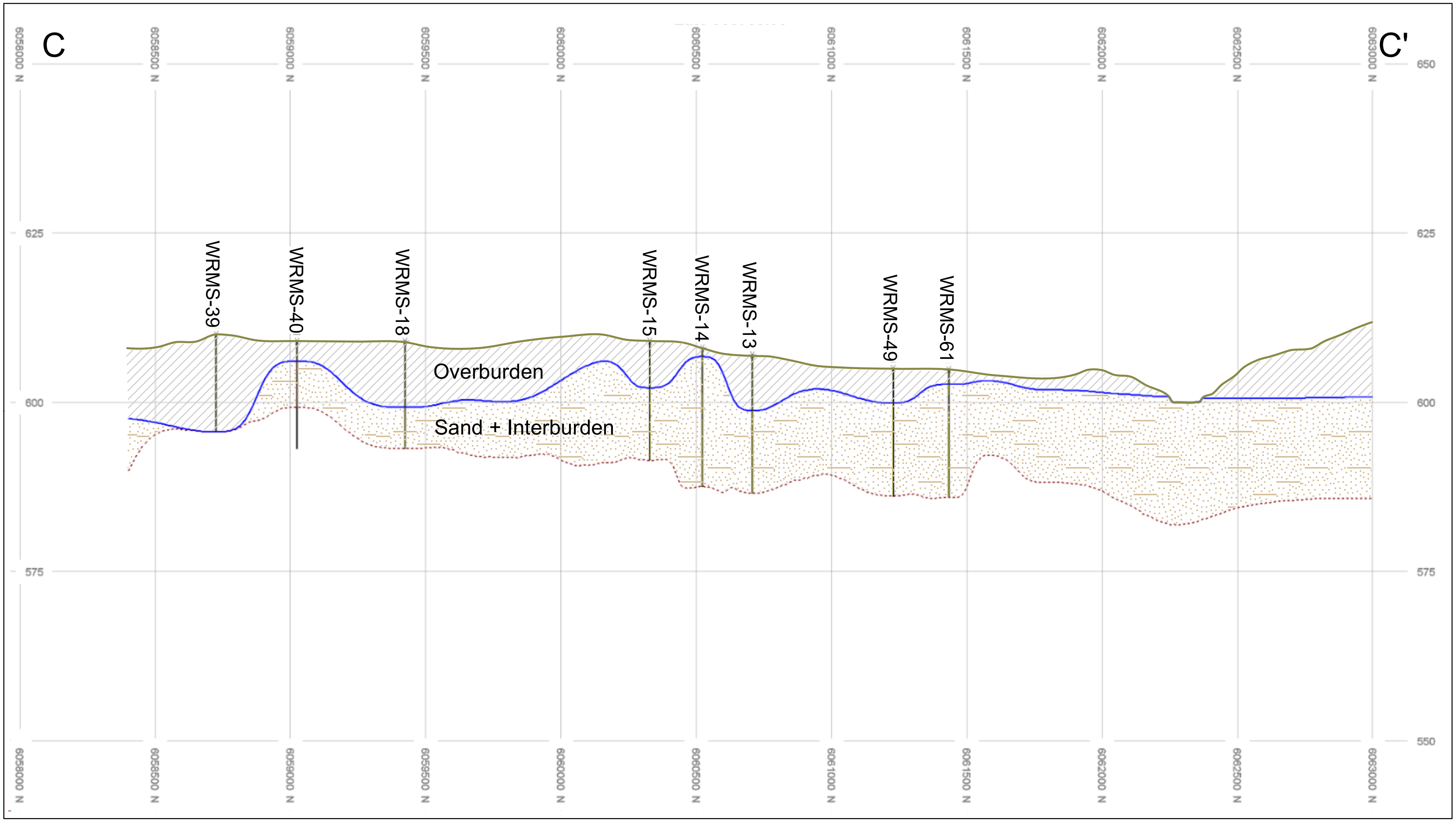
TECHNICAL REPORT WHITE RABBIT PROPERTY

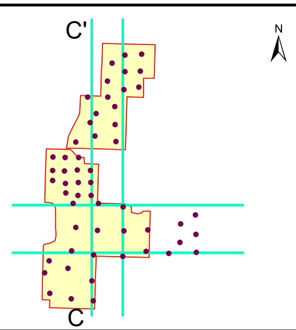
Structural Cross Section
N 6,060,175m
Looking North

Figure 7-7

DRAWN BY: M.B.
CHK'D BY: C.H.
DATE: 19 06 18

FILE: Fig7_7_xSection6060175N
V:\1295\active\129500207\Reports\Draft\Figures





Legend

- Topography
- Top of Sand
- Base of Feed
- Overburden
- Sand + Interburden

Vertical exaggeration 1: 25

Section View: +/- 50m

Stantec Athabasca Minerals inc.

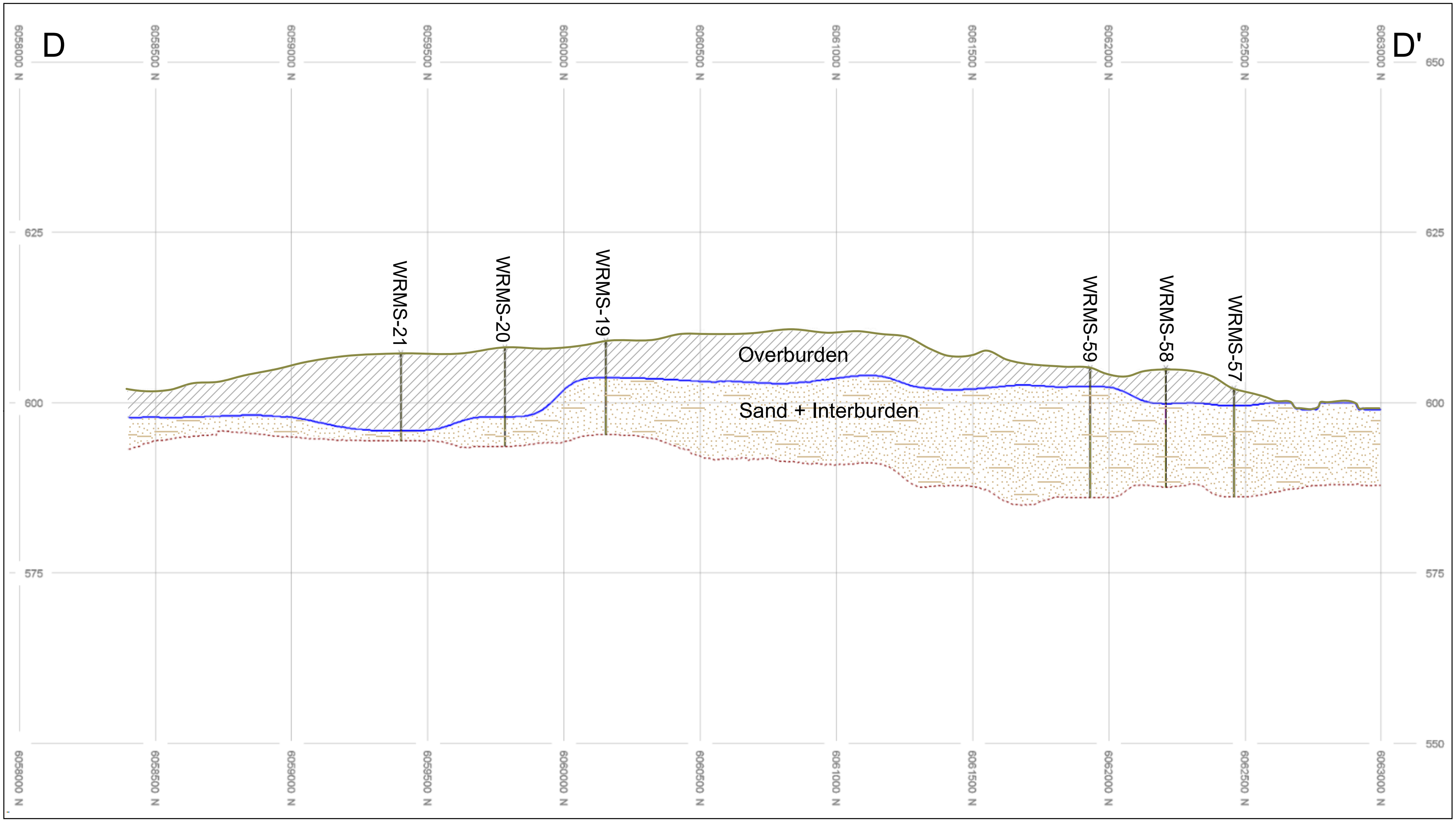
TECHNICAL REPORT WHITE RABBIT PROPERTY

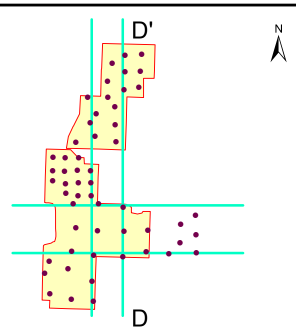
Structural Cross Section
E 356,700m
Looking West

Figure 7-8

DRAWN BY: M.B.
CHK'D BY: C.H.
DATE: 19 06 18

FILE: Fig7_8_xSection356700E
V:\1295\active\129500207\Reports\Draft\Figures





Legend

- Topography
- Top of Sand
- Base of Feed
- Overburden
- Sand + Interburden

Vertical exaggeration 1: 25

Section View: +/- 50m

Stantec Athabasca Minerals Inc.

TECHNICAL REPORT WHITE RABBIT PROPERTY

Structural Cross Section
E 357,170m
Looking West

Figure 7-9

DRAWN BY: M.B. CHK'D BY: C.H. DATE: 19 06 18	FILE: Fig7_9_xSection357170E V:\1295\active\129500207\Reports\Draft\Figures

8 DEPOSIT TYPES

The Property contains an accumulation of sand deposited by glacial processes. Glacially derived sedimentation is common in Alberta. This style of deposit is complex, as several events were responsible for the deposition of the surficial materials, commonly including several events of glacial advancement and retreat, which develop moraines (terminal and lateral) and glacial outwash sand deposits. In periods of quiescence, fine sediments accumulate in depressions forming fines-dominant lacustrine sediments. Sand accumulations in this style of deposit require systematic drilling, sampling, and comprehensive analyses to asses vertical and lateral variation in particle size abundance and suitability to meet API STD19C:2018 to qualify as a hydraulic fracturing natural proppant.

9 EXPLORATION

The only exploration work conducted on the Property is drilling, which is summarized in Section 10.

10 DRILLING

During the March and April 2019 Drilling Campaign, 49 auger holes were completed on the Property by Mobile Augers and Research Ltd. (Mobile Augers) using an M10 rig. The Property boundaries that were drilled during this program were from 6,058,625N to 606,2600N, and 355,940E to 357,650E.

10.1 Drill Program Planning and Drill Hole Location Verification

Prior to finalizing the proposed drill hole locations on the Property, formal notifications were provided via Alberta One-Call to all buried facility owners about the proposed drilling activities in the area. The locations of all proposed drill hole locations and access corridors were then modified to ensure that subsurface infrastructure corridors were not crossed, and to ensure that all proposed drill holes were allocated an appropriate buffer corridor around buried infrastructure.

Once the rig was brought to each proposed drill location, a hand-held Global Positioning System (GPS) unit was used to verify the accuracy of the hole location prior to breaking ground with the drill.

10.2 Drilling Depth Control and Material Description

Depth control was critical during auger drilling for accurate geological logs and sample collection. The following criteria were used:

- Auger logs were completed in imperial measurements, as each stem is five feet in length.
- On the first stem, the top of soil (surface) is assigned zero depth and subsequent stems are added to the total in five-foot increments.
- The water table depth was recorded on the geological descriptive sheet.
- Material characterization aligned with the Unified Soil Classification System specified by ASTM2487, and descriptions of the material grain size, colour, presence of water and total sand recovery was documented. In addition, the depths of changes in material types were also recorded on the material descriptions sheet.
- During drilling, the auger drill string was extracted after each five-foot stem so that the geoscientist that was describing the material type by depth during drilling could record the results.
- Changes in material types encountered during drilling were measured by the geoscientist during drilling, and the changes were recorded on the geological descriptive sheet for that hole.
- Communication between the geoscientist and driller about the drilling conditions was ongoing during drilling to avoid material spin-up on the auger flights, as material spin-up would affect the integrity of the samples and obscure the geological contacts between the material types.

- Where sand was encountered, the sand was collected from a composite interval taken along each five-foot auger stem if the sand was continuous, or in thinner continuous intervals if non-sand material was encountered along the drill stem.

10.3 Drill Hole Completion

Once the auger drill hole was completed, the following steps were carried out:

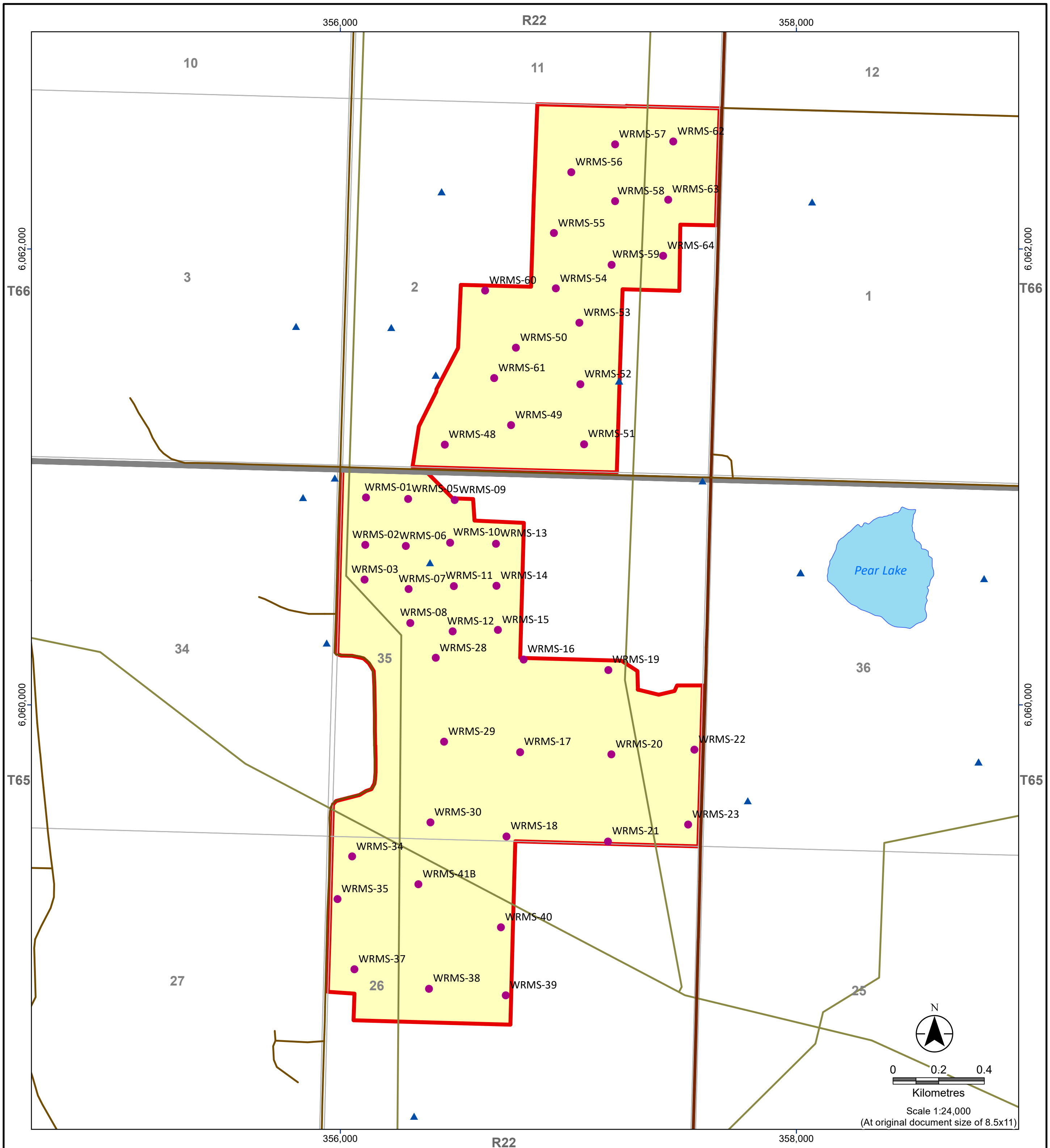
- Enter TD date and time on log sheet.
- Put all the collected samples together from the hole into a large sample tote(s) container for transport to the laboratory.
- Record the Hole ID and sample number and tote number on the Chain of Custody form. The form was signed by the rig monitor in charge of sealing the samples.
- Make sure the log sheets are completely filled in.
- Recorded the end of drilling time.
- Complete the post-lease inspection to verify that the lease was garbage free and that the auger hole was backfilled appropriate so that no depression was left on surface.

10.4 Drilling, Sampling, and Recovery Factors

No drilling, sampling or recovery factors are interpreted to have materially impacted the accuracy and reliability of the results.

10.5 Drill Program Summary and Significant Results

Table 10-1 shows a summary and interpretation of the results for all holes drilled during this campaign, which includes the sand thickness and sampled intervals encountered in each hole. Figure 10-1 shows the drill hole locations.



Legend

- 2019 Drill Hole
- Alberta Water Well
- Property Boundary
- Water Body
- Pipeline
- Paved Road
- Gravel Road

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government

Stantec Athabasca Minerals Inc.

TECHNICAL REPORT WHITE RABBIT PROPERTY

Drill Hole Location Map

Figure 10-1

DRAWN BY: M.B.
CHK'D BY: C.H.
Date: 19 08 26

FILE: Fig10_1_Drill_Hole_Location
V:\1295\active\129500207\Reports\Draft\Figures\MXD

Table 10-1
March and April Drilling Summary

Drill Hole Name	Date Drilled	Quarter Section Location	Datum	Zone	Easting	Northing	Elevation (MASL)	Hole Depth (m)	Samples	Sample Interval (m)
WRMS-01	17-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356114	6060910	605	15.8	44049 - 44056	2.1 - 15.8
WRMS-02	16-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356111	6060701	606	15.8	44023 - 44030	2.1 - 15.8
WRMS-03	17-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356108	6060550	604	14.3	4088 - 44095	1.8 - 14.3
WRMS-05	17-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356299	6060904	609	15.8	44075 - 44087	0.7 - 15.8
WRMS-06	16-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356288	6060697	606	15.8	44015 - 44022	2.4 - 15.8
WRMS-07	17-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356300	6060507	605	15.8	44066 - 44074	2.7 - 15.8
WRMS-08	16-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356307	6060360	605	17.4	44033 - 44040	2.1 - 17.4
WRMS-09	16-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356502	6060899	611	15.8	44041 - 44047	2.1 - 14.3
WRMS-10	16-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356482	6060713	593	20.4	44003 - 44014	2.1 - 20.4
WRMS-11	17-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356498	6060521	608	15.8	44061 - 44065	8.8 - 15.8
WRMS-12	17-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356493	6060322	608	9.8	44057 - 44060	1.7 - 9.1
WRMS-13	15-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356684	6060707	612	20.4	42894 - 44002	8.2 - 20.4
WRMS-14	15-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356685	6060522	604	20.4	42884 - 42893	2.1 - 20.4
WRMS-15	15-Mar-19	NW35 TWP65 RGE 22 W4	NAD 83	11	356692	6060329	612	17.5	42876 - 42883	6.9 - 17.5
WRMS-16	1-Apr-19	SE35 TWP65 RGE22 W4	NAD 83	11	356804	6060199	616	19.1	6811 - 6819	2.8 - 19.1
WRMS-17	2-Apr-19	SE35 TWP65 RGE22 W4	NAD 83	11	356789	6059793	608	17.4	6820 - 6823	9.1 - 14.3
WRMS-18	2-Apr-19	SW35 TWP65 RGE22 W4	NAD 83	11	356729	6059423	613	15.8	6839 - 6842	9.7 - 15.8
WRMS-19	1-Apr-19	SE35 TWP65 RGE22 W4	NAD 83	11	357176	6060154	607	13.7	6800 - 6806	5.3 - 13.7
WRMS-20	1-Apr-19	SE35 TWP65 RGE22 W4	NAD 83	11	357189	6059783	608	14.3	6807 - 6809	10.1 - 14.3
WRMS-21	1-Apr-19	SE35 TWP65 RGE22 W4	NAD 83	11	357174	6059401	614	12.8	6810	11.2 - 12.8
WRMS-22	4-Apr-19	SE35 TWP65 RGE22 W4	NAD 83	11	357553	6059804	591	14.3	6877 - 6879	5.8 - 14.3
WRMS-23	4-Apr-19	SE35 TWP65 RGE22 W4	NAD 83	11	357525	6059475	598	15.8	6880	13.4 - 14.3
WRMS-28	2-Apr-19	SW35 TWP65 RGE22 W4	NAD 83	11	356419	6060206	605	16.0	6824 - 6831	4.1 - 16.0

Drill Hole Name	Date Drilled	Quarter Section Location	Datum	Zone	Easting	Northing	Elevation (MASL)	Hole Depth (m)	Samples	Sample Interval (m)
WRMS-29	2-Apr-19	SW35 TWP65 RGE22 W4	NAD 83	11	356456	6059839	607	14.3	6832 - 6838	3.4 – 14.3
WRMS-30	3-Apr-19	SW35 TWP65 RGE22 W4	NAD 83	11	356395	6059484	612	14.3	6843 - 6849	2.7 – 14.3
WRMS-34	4-Apr-19	NW26 TWP65 RGE22 W4	NAD 83	11	356052	6059334	603	15.8	6866 - 6874	2.1 - 15.8
WRMS-35	4-Apr-19	NW26 TWP65 RGE22 W4	NAD 83	11	355988	6059148	603	12.8	6859 - 6864	2.7 - 12.8
WRMS-37	4-Apr-19	NW26 TWP65 RGE22 W4	NAD 83	11	356062	6058840	607	15.8	6875 - 6876	11.9 - 14.3
WRMS-38	3-Apr-19	NW26 TWP65 RGE22 W4	NAD 83	11	356390	6058755	620	12.8	NA	NA
WRMS-39	3-Apr-19	NW26 TWP65 RGE22 W4	NAD 83	11	356726	6058725	616	14.3	NA	NA
WRMS-40	3-Apr-19	NW26 TWP65 RGE22 W4	NAD 83	11	356704	6059024	610	15.8	6850 - 6853	2.9 - 9.8
WRMS-41B	3-Apr-19	NW26 TWP65 RGE22 W4	NAD 83	11	356343	6059213	606	17.4	6854 - 6858	8.2 - 14.9
WRMS-48	16-Apr-19	SW2 TWP66 RGE22 W4	NAD 83	11	356458	6061141	582	14.3	47122- 47126	6.7 - 14.3
WRMS-49	16-Apr-19	SW2 TWP66 RGE22 W4	NAD 83	11	356750	6061228	592	18.9	47127- 47135	5.2 - 18.9
WRMS-50	16-Apr-19	SW2 TWP66 RGE22 W4	NAD 83	11	356770	6061567	608	11.3	47136- 47142	0.6 - 11.3
WRMS-51	16-Apr-19	SE2 TWP66 RGE22 W4	NAD 83	11	357069	6061144	610	17.4	47143- 47150	4.6 - 17.4
WRMS-52	16-Apr-19	SE2 TWP66 RGE22 W4	NAD 83	11	357054	6061407	610	20.4	47201- 47212	2.7 - 20.42
WRMS-53	16-Apr-19	SE2 TWP66 RGE22 W4	NAD 83	11	357049	6061677	608	20.4	47213-47223	2.1 - 20.4
WRMS-54	17-Apr-19	SE2 TWP66 RGE22 W4	NAD 83	11	356946	6061826	608	15.8	47224-47231	2.1 - 15.9
WRMS-55	17-Apr-19	NE2 TWP66 RGE22 W4	NAD 83	11	356937	6062069	608	18.9	47232-47240	3.7 - 18.9
WRMS-56	17-Apr-19	NE2 TWP66 RGE22 W4	NAD 83	11	357013	6062337	606	12.8	47241-47245	5.2 - 12.8
WRMS-57	17-Apr-19	NE2 TWP66 RGE22 W4	NAD 83	11	357205	6062459	608	15.8	47151-47154, 47246-47250	2.4 - 15.9
WRMS-58	17-Apr-19	NE2 TWP66 RGE22 W4	NAD 83	11	357206	6062209	602	17.4	47155-47160	5.2 - 17.4
WRMS-59	17-Apr-19	NE2 TWP66 RGE22 W4	NAD 83	11	357190	6061932	607	18.9	47163-47171	2.6 - 18.9
WRMS-60	18-Apr-19	SW2 TWP66 RGE22 W4	NAD 83	11	356636	6061817	606	15.8	47172-47179	2.1 - 15.84
WRMS-61	18-Apr-19	SW2 TWP66 RGE22 W4	NAD 83	11	356675	6061433	612	18.9	47180-47188	2.1 - 18.9
WRMS-62	18-Apr-19	NE2 TWP66 RGE22 W4	NAD 83	11	357461	6062472	609	17.4	47189-47198	2.1 - 17.4

Drill Hole Name	Date Drilled	Quarter Section Location	Datum	Zone	Easting	Northing	Elevation (MASL)	Hole Depth (m)	Samples	Sample Interval (m)
WRMS-63	18-Apr-19	NE2 TWP66 RGE22 W4	NAD 83	11	357438	6062217	613	17.4	47199-47200, 47251-47258	2.1 - 17.4
WRMS-64	18-Apr-19	NE2 TWP66 RGE22 W4	NAD 83	11	357416	6061970	617	17.4	47259-47265	8.2 - 17.4

Note: WRMS-41A* hole was drilled but terminated at 5m due to auger refusal, WRMS-38 and WRMS-39 did not encounter sand; "MASL" = Metres Above Sea Level

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 Field Sample Preparation Methods and Quality Control Measures

The following steps were completed to ensure consistency and accuracy in sample collection.

- Composite samples were collected over five-foot intervals, or at changes in material type. The description of each sample and the depth from where it was taken was recorded on a geological descriptive sheet for that hole.
- Sample identification tags were also put in a small, clear, sealable plastic bag and place it in the larger sample bag so that the sample and sample identification number was clearly visible and protected from moisture.
- Sample sizes varied with the sample interval and recovery. Sand samples were placed in plastic sample bags. The outside of the bags and a label tag will both be labelled with the drill hole name, sample number, and date. The label tag will then be put inside the bags, which were sealed by zip-tie and were placed in larger tote containers for transport to the laboratory. All samples were recorded on a chain-of-custody document, which was sent along with the sample shipment to AGAT Laboratories.
- At specified times during the field program, sample shipments were transported directly from the Project area to AGAT Laboratories in Calgary, Alberta by the field crews. A Stantec Professional Geologist was present for the sample delivery to AGAT to complete a review of the sample shipment for completeness. and witnessed AGAT sign-off for the chain-of-custody documentation.

11.2 Laboratory Analyses

Samples collected during the March and April drilling campaigns were sent to four laboratories for analyses; these include AGAT, Loring, Stim-Lab, and TPS. Laboratory testing assessed the size distribution and proppant qualities of the sand. Table 11-1 summarizes the number and type of analyses completed by each laboratory; details about the completed work are summarized in the following subsections.

Table 11-1
Laboratory Analyses Testing Summary

Laboratory	No. Samples	Analyses Type
AGAT	342	Sieve
Loring	10	Major Oxide Analyses
Stim-Lab	10	Sieve
	10	Proppant Test Suite
TPS	207	Sieve
	207	Proppant Test Suite

11.3 AGAT

11.3.1 Certification

AGAT started the sieve analyses testing on March 21, 2019. AGAT is an independent laboratory with ISO 9001:2015 (Certificate No. 0100019).

11.3.2 AGAT Sieve Analyses Testing Methodology and Results

A Stantec Professional Geologist inspected the AGAT laboratory in Calgary, Alberta on April 5, 2019, to observe the laboratory procedure for sieve analysis. It was confirmed that AGAT follows API STD19C:2018 for sieve analysis testing. A summary of the analytical procedures included sample drying and weighing, pre-screening the coarse fraction via the 10-mesh sieve, sample splitting, washing of the sample through the 200-mesh sieve to separate the fines, riffle splitting the sample to an ~100-gram (g) sample, and completion of a RO-TAP® sieve analyses to obtain weights for each size fraction. AGAT completed sieve analyses on 342 samples.

11.3.3 Adequacy of Laboratory Procedures and Sample Security

It is the opinion of the Author(s) that the sample preparation, security, and analytical procedures are adequate.

11.4 Loring

11.4.1 Certification

Loring is an independent laboratory with ISO 9001:2008 accreditation (Certificate No. CERT-0088592).

11.4.2 Major Oxide Testing Program and Results

Loring, which is based in Calgary, Alberta, completed major oxide analyses on 10 samples on June 13, 2019. These samples were analysed for major oxide abundance. Silica content for these 10 samples varied from 91.9% to 96.1%, with an average of 94.2%. The SiO_2 content does not directly correlate to total quartz content as silica is also present in other minerals. The average Al_2O_3 was 2.8%, which supports that the sand contains a minor component of feldspar and other aluminum-bearing minerals. The results of the whole rock geochemical study are shown in Table 11-2.

11.4.3 Adequacy of Laboratory Procedures and Sample Security

It is the opinion of the Author(s) that the sample preparation, security, and analytical procedures are adequate.

Table 11-2

Major Oxide Analyses by Fraction

Sample ID	Sample # Range	Depth Intervals (m)	Fraction	SiO_2	Al_2O_3	Ba	CaO	Cr	Fe_2O_3	K_2O	MgO	MnO	Na_2O	Ni	P_2O_5	SO_3	Sr	TiO_2	V	LOI	SUM
				wt %	wt %	ppm	wt %	ppm	wt %	wt %	wt %	wt %	wt %	ppm	wt %	wt %	ppm	wt %	ppm	wt %	wt %
5600	44023 - 44030	6.86-17.53	40/70	94.8	2.5	278	0.3	6	0.3	0.8	0.1	0.0	0.5	2	0.0	0.0	63	0.0	6	0.6	100.0
5601	44023 - 44030	6.86-17.53	70/140	92.2	3.9	449	0.6	9	0.6	1.0	0.2	0.0	0.9	5	0.0	0.0	103	0.1	13	0.8	100.3
5602	6839 - 6842	9.76-15.85	40/70	95.8	2.1	338	0.3	4	0.2	0.7	0.0	0.0	0.5	2	0.0	0.0	58	0.0	5	0.3	99.8
5603	6839 - 6842	9.76-15.85	70/140	93.6	3.2	539	0.5	7	0.3	0.9	0.1	0.0	0.8	2	0.0	0.0	94	0.0	7	0.5	100.0
5604	6832 - 6838	3.36-14.33	40/70	96.1	2.1	226	0.2	2	0.2	0.7	0.0	0.0	0.5	3	0.0	0.0	58	0.0	3	0.2	100.1
5605	6832 - 6838	3.36-14.33	70/140	93.4	3.5	330	0.5	6	0.4	0.9	0.1	0.0	0.8	1	0.0	0.0	102	0.1	7	0.4	100.0
5606	6866 - 6874	2.13-15.84	40/70	95.4	2.3	356	0.3	3	0.2	0.7	0.1	0.0	0.5	2	0.0	0.0	63	0.0	5	0.4	99.9
5607	6866 - 6874	2.13-15.84	70/140	92.0	4.0	402	0.7	9	0.4	1.0	0.1	0.0	1.0	3	0.0	0.0	119	0.1	10	0.6	99.9
5608	47127 - 47135	5.18-18.9	40/70	95.7	2.0	218	0.2	3	0.2	0.7	0.0	0.0	0.5	1	0.0	0.0	55	0.0	3	0.3	99.5
5609	47127 - 47135	5.18-18.9	70/140	93.1	3.3	323	0.5	4	0.3	0.9	0.1	0.0	0.8	2	0.0	0.0	103	0.1	7	0.5	99.5
5610	47214 - 47223	5.49-20.42	40/70	96.1	2.0	209	0.3	5	0.2	0.7	0.0	0.0	0.5	1	0.0	0.0	57	0.0	4	0.4	100.2
5611	47214 - 47223	5.49-20.42	70/140	91.9	3.6	338	0.5	6	0.4	0.9	0.1	0.0	0.8	2	0.0	0.0	97	0.0	7	0.4	98.7
5612	47233 - 47240	6.71-18.90	40/70	95.4	1.9	202	0.2	4	0.2	0.6	0.0	0.0	0.4	2	0.0	0.0	52	0.0	3	0.2	99.0
5613	47233 - 47240	6.71-18.90	70/140	93.8	3.2	303	0.4	6	0.3	0.9	0.1	0.0	0.8	2	0.0	0.0	90	0.1	6	0.3	99.8

Note: 0.5 gm sample digested with multi-acids and ICP finished, SiO_2 is finished by gravimetric (high silica method)

11.5 Stim-Lab

11.5.1 Certification

Stim-Lab is an independent laboratory but does not have external accreditation. Stim-Lab is, however, recognized as an industry leader and does comply with API STD19C:2018.

11.5.2 Stim-Lab Testing Programs and Methodology

Testing was conducted in three phases. In the first phase, which commenced on March 27, 2019, Stim-Lab only conducted sieve analyses. As part of this analyses, Stim-Lab inventoried and dried the sand. The samples were weighed and washed through a 200-mesh sieve to separate the fines. The sample retained on the sieve was dried and reweighed. The percent loss was calculated from the material that washed through the sieve.

In the second phase of the testing program, which commenced on April 29, 2019, the samples were washed and sieved at the Sierra Geological Corp Facility in Strathmore, Alberta. All work in this Facility was completed under the supervision of a Stantec Professional Geologist. Following the completion of sieve analyses, the sieved material from each drill hole was batched into select fraction size bins. The composite samples were sent to Stim-Lab for proppant specific testing, which included such tests as Krumbein Shape Factor assessment, acid solubility, turbidity, bulk density, crush resistance and K-Value assessment. The proppant testing completed by Stim-Lab adhered to specifications outlined in API STD19C:2018 (American Petroleum Institute, 2018).

11.5.3 Stim-Lab Analytical Results

The seven composite samples that were selected for proppant analyses during the phase two testing program are summarized in Table 11-3. The composite samples shown in Table 11-3 are weight averaged.

Samples 6547266 and 6547275 were not analysed as weight averaged composites. Rather, these two samples were further mixed with additional material from their drill holes, resulting in the creation of two new composite samples. The first new sample is named “Composite A” and is composed of sample 6547266 (75%), sample 44025 (12%), and sample 44028 (13%). The second new sample is named “Composite B” and is composed of sample 6547275 (66%), sample 42880 (17%), and sample 41883 (17%). Composite A and B are not weight averaged. The results from the proppant analyses are shown in Table 11-4 and reviewed in the following subsections.

Table 11-3
Stim-Lab Composite Samples

Composite Sample ID	Drill Hole Name	Sample Numbers
6547266	WRMS-02	44023 – 44030
6547267	WRMS-49	47127 – 47135
6547269	WRMS-63	47199 – 47258
6547270	WRMS-18	6839 – 6842
6547273	WRMS-55	47233 – 47230
6547274	WRMS-53	47214 – 47223
6547275	WRMS-15	42876 – 42883

Note: composite samples are weight averaged

Bulk Density

Bulk density was determined for all selected samples. The bulk density was consistent, ranging from 1.44 to 1.53 g/cm^3.

Shape Factor Assessment

Sphericity and roundness were evaluated microscopically for 20 grains in each sample and the mean value calculated. Sphericity for all samples ranged from 0.7 to 0.8. Roundness was determined for the selected samples and ranged between 0.6 and 0.7. All the samples meet or exceed the recommended 0.6 for roundness and sphericity.

Acid Solubility Test

The recommended maximum acid solubility for proppants is 3.0%. Of the 12 samples tested, the average acid solubility was 4.5%, and the minimum and maximum values were 3.0% and 6.0%. The elevated acid solubility values may be due to a minor amount of carbonate minerals in the samples.

Turbidity

Turbidity in the tested samples reached 12 NTU; well below the limit of 250 NTU as outlined in API STD19C:2018.

Clusters Test

A test to identify clustered sand grains (composite particles of cemented smaller grains) was not conducted.

Crush Resistance (K-Value) Test

Crush resistance tests were completed through a range of stresses to determine a K-Value for each sample. The K-Value is given as the highest stress level at which the sand sample generates no more than 10% crushed material (fines), rounded down to the nearest 1,000 (psi) stress. The highest K-Values of 9 occurred for the 50/140 fraction and the 70/140 fraction.

Table 11-4

Stim-Lab Proppant Analyses Results

Sample ID	Drill Hole Name	Fraction	Stress Tested (4,000 psi)	Stress Tested (5,000 psi)	Stress Tested (6,000 psi)	Stress Tested (7,000 psi)	Stress Tested (8,000 psi)	Stress Tested (9,000 psi)	Stress Tested (10,000 psi)	K-Value	Roundness	Sphericity	Acid Solubility %	Bulk Density (g/cm^3)	Turbidity (NTU)
Comp A*	WRMS-02	40/70		3.3%		7.1%	10.5%			7	0.6	0.7	3.3	1.50	5
6547267	WRMS-49	30/50	3.7%		9.1%	12.5%				6	0.7	0.8	3.0	1.51	7
6547269	WRMS-63	30/50	4.0%		8.7%	10.9%				6	0.7	0.8	4.1	1.52	7
6547269	WRMS-63	50/140		2.4%				8.4%	10.9%	9	0.6	0.8	5.5	1.48	5
6547270	WRMS-18	40/70		3.3%		7.9%	11.7%			7	0.6	0.7	4.8	1.50	8
6547270	WRMS-18	70/140		3.2%			8.4%	11.4%		8	0.6	0.7	6.0	1.45	9
6547273	WRMS-55	40/70		2.9%			9.3	12.2%		8	0.6	0.7	4.4	1.50	8
6547273	WRMS-55	70/140		3.0%				8.6%	11.6%	9	0.6	0.7	6.6	1.46	12
6547274	WRMS-53	50/140		3.0%				9.8%	12.2%	9	0.6	0.7	4.1	1.49	4
Comp B**	WRMS-15	20/40	6.9%	11.1%						4	0.7	0.8	3.0	1.53	11
Comp B**	WRMS-15	40/70		5.9%	8.1%	11.0%				6	0.6	0.8	3.2	1.49	5
Comp B**	WRMS-15	70/140		2.9%			8.5%	11.0%		8	0.6	0.7	5.5	1.44	6

* Comp A: Composite A includes samples 6547266 (75%), 44025 (12%), and 44028 (13%)

** Comp B: Composite B includes samples 6547275 (66%), 42880 (17%), and 41883 (17%)

Conductivity and Permeability at varying Closure Stresses

Conductivity and permeability tests were not conducted.

11.5.4 Adequacy of Laboratory Procedures and Sample Security

It is the opinion of the Author(s) that the sample preparation, security, and analytical procedures are adequate.

11.6 Turnkey Processing Solutions Sand Laboratory

Following the initial round of Stim-Lab analyses, additional crush and acid solubility testing was initiated with TPS. TPS is in Ottawa, Illinois, USA. TPS is a fabricator, constructor and operator of bulk material handling plants including Frac Sand facilities.

11.6.1 Certification

TPS is an independent laboratory but does not have external accreditation.

11.6.2 TPS Test Methodology

The TPS laboratory completed sample preparation, sieve analyses, roundness / sphericity assessment, acid solubility, and crush tests on the 11 post-attrition processing sand samples in order to streamline the processing methodology.

The sampling methodology outlined below shows the high-level stages that TPS used to prepare the sand samples and to complete the testing and sand attrition.

11.6.3 Sample Preparation

Collection of a representative sand sample, which is approximately 25% of the provided sample. The sample is dried and split down to roughly 2 kilograms (kg). The sample is then washed for 10 minutes, which simulates the wash cycle in the plant. The sample is then rinsed through a 200-micron sieve to remove the fine-grained material. After drying the sample is split to between 25 and 50 g for particle size determination.

Particle Size and Shape Determination

TPS uses the Camsizer P4, which is a particle analyser that measures particle shape (roundness and sphericity) and size to 325 microns, to characterize the sand samples.

Sample Attrition

TPS uses a RO-TAP® shaker with sieves to separate out a 900 g sample of a fraction size between 20/140. An approximately 900 g sample is poured into the Attrition cell and water is added in the appropriate ratio (i.e., 70% to 80% solids). The sample is run in the attrition cell for the appropriate amount time, which can range from 2 minutes to over 8 minutes. The sample is then rinsed over a 140 sieve to remove any additional fines or broken clusters and dry then dried in an oven.

Crush Resistance Testing

TPS combined the material into specified sand fraction ranges, the assessed when 10% of the material was crushed.

11.6.4 Stim-Lab vs. TPS Laboratory Test Comparison

To establish reliability in the TPS laboratory results, three samples that were previously tested by Stim-Lab were sent as blind samples to TPS for testing. Table 11-5 shows the comparison of the test results between the two laboratories.

Table 11-5
TPS – Stim-Lab Test Results Comparison

	TPS	Stim-Lab	TPS	Stim-Lab	TPS	Stim-Lab
Sample ID	**6547267**	**6547267**	**6547270**	**6547270**	**6547273**	**6547273**
Fraction	**30/50**	**30/50**	**40/70**	**40/70**	**70/140**	**70/140**
Acid Solubility	3.2%	3.0%	3.5%	4.8%	3.3%	6.6%
Stress Tested (4,000 psi)	-	3.7%	-	-	-	
Stress Tested (5,000 psi)	-	-	-	3.3%	-	3.0%
Stress Tested (6,000 psi)	6.8%	9.1%	-	-	-	-
Stress Tested (7,000 psi)	13.3%	12.5%	9.5%	7.9%	-	-
Stress Tested (8,000 psi)	-	-	-	11.7%		-
Stress Tested (9,000 psi)	-	-	-	-	9.8%	8.6%
Stress Tested (10,000 psi)	-	-	-	-	-	11.6%
K-Value	**6**	**6**	**7**	**7**	**9**	**9**

The reproducibility of the TPS acid solubility results are not consistent with the Stim-Lab results and further assessment is necessary to determine the source of the difference. The crush test results between the two laboratories showed the same K-values for each fraction tested. As such, the TPS crush tests are deemed to be valid.

11.6.5 TPS Analytical Results

TPS completed 207 crush tests from 11 drill holes. All samples underwent attrition prior to analyses. The breakdown by fraction is: 25 tests from the 20/40 fraction that averaged a 5K crush, 52 tests from the 30/50 fraction that averaged a 6K crush, 66 tests from the 40/70 fraction that averaged a 7K crush, and 64 tests from the 70/140 fraction that averaged a 9K crush. Table 11-6 are the test results completed by drill hole and interval. The TPS crush results align with those obtained by Stim-Lab for each fraction spread.

Table 11-6

TPS Test Results

<table>
<tr><th rowspan="2">Drill Hole Name</th><th colspan="2">Depth (ft)</th><th rowspan="2">Sand Lithology</th><th rowspan="2">Roundness</th><th rowspan="2">Sphericity</th><th colspan="4">K-Value</th></tr>
<tr><th>From</th><th>To</th><th>20/40</th><th>30/50</th><th>40/70</th><th>70/140</th></tr>
<tr><td>WRMS-05</td><td>2</td><td>7</td><td>Silty</td><td rowspan="10">0.6</td><td rowspan="10">0.6</td><td rowspan="10">5</td><td rowspan="2">6</td><td rowspan="3">6</td><td rowspan="4">8</td></tr>
<tr><td>WRMS-05</td><td>7</td><td>12</td><td>Medium - Coarse</td></tr>
<tr><td>WRMS-05</td><td>12</td><td>14</td><td>Sand</td><td rowspan="4">5</td></tr>
<tr><td>WRMS-05</td><td>16</td><td>22</td><td>Coarse - Very Coarse</td><td rowspan="2">7</td></tr>
<tr><td>WRMS-05</td><td>22</td><td>27</td><td>Fine - Medium</td><td rowspan="6">9</td></tr>
<tr><td>WRMS-05</td><td>27</td><td>32</td><td>Medium - Coarse</td><td>6</td></tr>
<tr><td>WRMS-05</td><td>32</td><td>37</td><td>Medium - Coarse</td><td rowspan="3">6</td><td>7</td></tr>
<tr><td>WRMS-05</td><td>37</td><td>42</td><td>Medium - Coarse</td><td rowspan="3">6</td></tr>
<tr><td>WRMS-05</td><td>42</td><td>47</td><td>Fine - Medium</td></tr>
<tr><td>WRMS-05</td><td>47</td><td>52</td><td>Fine - Medium</td><td>NA</td></tr>
<tr><td>WRMS-07</td><td>9</td><td>12</td><td>Medium - Coarse</td><td rowspan="6">0.7</td><td rowspan="6">0.7</td><td rowspan="6">5</td><td rowspan="6">6</td><td>7</td><td rowspan="4">8</td></tr>
<tr><td>WRMS-07</td><td>12</td><td>19</td><td>Silty</td><td>8</td></tr>
<tr><td>WRMS-07</td><td>22</td><td>27</td><td>Medium - Coarse</td><td rowspan="2">7</td></tr>
<tr><td>WRMS-07</td><td>27</td><td>32</td><td>Fine - Medium</td></tr>
<tr><td>WRMS-07</td><td>32</td><td>37</td><td>Medium - Coarse</td><td>8</td><td>9</td></tr>
<tr><td>WRMS-07 Composite</td><td>9</td><td>37</td><td>Silty - Coarse</td><td>7</td><td>8</td></tr>
<tr><td>WRMS-09</td><td>7</td><td>12</td><td>Fine - Medium</td><td rowspan="7">0.6</td><td rowspan="7">0.7</td><td rowspan="7">5</td><td rowspan="7">6</td><td rowspan="3">6</td><td rowspan="3">8</td></tr>
<tr><td>WRMS-09</td><td>12</td><td>19</td><td>Silty</td></tr>
<tr><td>WRMS-09</td><td>17</td><td>20</td><td>Fine - Medium</td></tr>
<tr><td>WRMS-09</td><td>26</td><td>32</td><td>Fine - Medium</td><td rowspan="2">7</td><td rowspan="4">9</td></tr>
<tr><td>WRMS-09</td><td>32</td><td>37</td><td>Fine - Medium</td></tr>
<tr><td>WRMS-09</td><td>37</td><td>42</td><td>Medium - Coarse</td><td rowspan="2">6</td></tr>
<tr><td>WRMS-09 Composite</td><td>7</td><td>42</td><td>Silty - Coarse</td></tr>
<tr><td>WRMS-10</td><td>7</td><td>12</td><td>Fine - Medium</td><td rowspan="10">0.6</td><td rowspan="10">0.7</td><td rowspan="2">4</td><td>4</td><td rowspan="2">6</td><td rowspan="3">8</td></tr>
<tr><td>WRMS-10</td><td>12</td><td>17</td><td>Medium - Coarse</td><td>5</td></tr>
<tr><td>WRMS-10</td><td>18</td><td>22</td><td>Medium - Coarse</td><td rowspan="5">5</td><td rowspan="6">6</td><td rowspan="5">7</td></tr>
<tr><td>WRMS-10</td><td>22</td><td>27</td><td>Fine - Medium</td><td rowspan="4">9</td></tr>
<tr><td>WRMS-10</td><td>27</td><td>32</td><td>Fine - Medium</td></tr>
<tr><td>WRMS-10</td><td>32</td><td>37</td><td>Medium - Coarse</td></tr>
<tr><td>WRMS-10</td><td>42</td><td>42</td><td>Fine - Medium</td></tr>
<tr><td>WRMS-10 Composite</td><td>7</td><td>42</td><td>Fine - Coarse</td><td>4</td><td rowspan="2">6</td><td>8</td></tr>
<tr><td>WRMS-10 Composite</td><td>12</td><td>42</td><td>Fine - Coarse</td><td>NA</td><td>NA</td><td>9</td></tr>
<tr><td>WRMS-10 Composite</td><td>18</td><td>42</td><td>Fine - Coarse</td><td>NA</td><td>NA</td><td>7</td><td>NA</td></tr>
</table>

<table>
<tr><th rowspan="2">Drill Hole Name</th><th colspan="2">Depth (ft)</th><th rowspan="2">Sand Lithology</th><th rowspan="2">Roundness</th><th rowspan="2">Sphericity</th><th colspan="4">K-Value</th></tr>
<tr><th>From</th><th>To</th><th>20/40</th><th>30/50</th><th>40/70</th><th>70/140</th></tr>
<tr><td>WRMS-13</td><td>27</td><td>32</td><td>Fine - Medium</td><td rowspan="5">0.6</td><td rowspan="5">0.7</td><td rowspan="5">5</td><td rowspan="5">6</td><td>7</td><td>9</td></tr>
<tr><td>WRMS-13</td><td>32</td><td>37</td><td>Fine - Medium</td><td>6</td><td>8</td></tr>
<tr><td>WRMS-13</td><td>37</td><td>42</td><td>Medium - Coarse</td><td rowspan="3">7</td><td rowspan="3">9</td></tr>
<tr><td>WRMS-13</td><td>42</td><td>47</td><td>Fine - Medium</td></tr>
<tr><td>WRMS-13</td><td>47</td><td>52</td><td>Medium - Coarse</td></tr>
<tr><td>WRMS-13</td><td>52</td><td>57</td><td>Fine - Medium</td><td rowspan="3">0.6</td><td rowspan="3">0.7</td><td rowspan="3">5</td><td rowspan="3">6</td><td rowspan="3">7</td><td rowspan="3">9</td></tr>
<tr><td>WRMS-13</td><td>57</td><td>62</td><td>Fine - Medium</td></tr>
<tr><td>WRMS-13</td><td>62</td><td>67</td><td>Medium - Coarse</td></tr>
<tr><td>WRMS-16</td><td>4.5</td><td>15.5</td><td>Medium - Coarse</td><td rowspan="4">0.6</td><td rowspan="4">0.6</td><td rowspan="2">4</td><td rowspan="4">5</td><td>6</td><td rowspan="2">8</td></tr>
<tr><td>WRMS-16</td><td>22.5</td><td>35.5</td><td>Fine - Medium</td><td rowspan="3">7</td></tr>
<tr><td>WRMS-16</td><td>42.5</td><td>52.5</td><td>Fine - Medium</td><td rowspan="2">6</td><td rowspan="2">9</td></tr>
<tr><td>WRMS-16</td><td>52.5</td><td>62.5</td><td>Medium - Coarse</td></tr>
<tr><td>WRMS-19</td><td>17</td><td>24.5</td><td>Fine - Medium</td><td rowspan="3">0.6</td><td rowspan="3">0.7</td><td rowspan="3">5</td><td rowspan="3">6</td><td rowspan="2">7</td><td>9</td></tr>
<tr><td>WRMS-19</td><td>25.5</td><td>37.5</td><td>Fine - Medium</td><td>8</td></tr>
<tr><td>WRMS-19</td><td>37.5</td><td>45</td><td>Fine - Medium</td><td>6</td><td>9</td></tr>
<tr><td>WRMS-49</td><td>17</td><td>27</td><td>Fine - Medium</td><td rowspan="4">0.6</td><td rowspan="4">0.6</td><td rowspan="4">5</td><td rowspan="4">6</td><td>6</td><td rowspan="2">9</td></tr>
<tr><td>WRMS-49</td><td>27</td><td>37</td><td>Medium - Coarse</td><td rowspan="3">7</td></tr>
<tr><td>WRMS-49</td><td>37</td><td>52</td><td>Fine - Medium</td><td rowspan="2">8</td></tr>
<tr><td>WRMS-49</td><td>57</td><td>62</td><td>Coarse - Very Coarse</td></tr>
<tr><td>WRMS-50</td><td>2</td><td>12</td><td>Fine - Medium</td><td rowspan="6">0.6</td><td rowspan="6">0.7</td><td rowspan="4">6</td><td>5</td><td rowspan="2">7</td><td>8</td></tr>
<tr><td>WRMS-50</td><td>12</td><td>17</td><td>Fine - Medium</td><td rowspan="5">6</td><td rowspan="2">9</td></tr>
<tr><td>WRMS-50</td><td>17</td><td>22</td><td>Fine - Medium</td><td>6</td></tr>
<tr><td>WRMS-50</td><td>22</td><td>27</td><td>Fine - Medium</td><td rowspan="3">7</td><td rowspan="2">8</td></tr>
<tr><td>WRMS-50</td><td>27</td><td>32</td><td>Fine - Medium</td><td>NA</td></tr>
<tr><td>WRMS-50</td><td>32</td><td>37</td><td>Medium - Coarse</td><td>NA</td><td>9</td></tr>
<tr><td>WRMS-51</td><td>15</td><td>24</td><td>Fine - Medium</td><td rowspan="4">0.6</td><td rowspan="4">0.7</td><td rowspan="4">5</td><td rowspan="4">6</td><td rowspan="2">6</td><td rowspan="2">8</td></tr>
<tr><td>WRMS-51</td><td>27</td><td>37</td><td>Fine - Medium</td></tr>
<tr><td>WRMS-51</td><td>37</td><td>47</td><td>Medium - Coarse</td><td rowspan="2">7</td><td rowspan="2">9</td></tr>
<tr><td>WRMS-51</td><td>47</td><td>57</td><td>Fine - Medium</td></tr>
<tr><td>WRMS-52</td><td>9</td><td>22</td><td>Fine - Medium</td><td rowspan="7">0.6</td><td rowspan="7">0.6</td><td rowspan="7">5</td><td>5</td><td>6</td><td>8</td></tr>
<tr><td>WRMS-52</td><td>22</td><td>32</td><td>Fine - Medium</td><td rowspan="6">6</td><td rowspan="5">7</td><td rowspan="4">9</td></tr>
<tr><td>WRMS-52</td><td>32</td><td>37</td><td>Medium - Coarse</td></tr>
<tr><td>WRMS-52</td><td>37</td><td>42</td><td>Medium - Coarse</td></tr>
<tr><td>WRMS-52</td><td>42</td><td>52</td><td>Fine - Medium</td></tr>
<tr><td>WRMS-52</td><td>52</td><td>62</td><td>Fine - Medium</td><td rowspan="2">8</td></tr>
<tr><td>WRMS-52</td><td>62</td><td>67</td><td>Medium - Coarse</td><td>6</td></tr>
<tr><td colspan="6">Average (rounded to nearest K-Value)</td><td>5</td><td>6</td><td>7</td><td>9</td></tr>
</table>

Note: 16 Acid solubility tests completed on composite samples from WRMS 7 and 10 for four fractions, with results ranging from 2.2% to 3.4%, averaging 2.9%; "NA" = No Analyses; 207 separate crush tests completed results shown summarize those tests.

11.6.6 Adequacy of Laboratory Procedures and Sample Security

It is the opinion of the Author(s) that the sample preparation, security, and analytical procedures are adequate.

12 DATA VERIFICATION

Independent Stantec Qualified Person(s) inspected the Property on March 14 and 15, 2019. During this property visit, the Qualified Person(s) observed the drill hole locations, sample retrieval methods from the auger rig, and the sample quality control and assurance practices. Specific methods used to validate the field data, and to ensure that transparent sample shipment documentation was being followed through chain-of-custody documentation, are provided in the following subsections.

12.1 Scrutiny of Field Procedures and Data Collection

12.1.1 Drill Hole Locations

The proposed locations of drill holes WRMS-14 and -15 were checked independently by the Qualified Person(s) During this property visit, to check the proximity of the planned hole locations relative to the actual hole locations. To validate the drill hole locations, the Qualified Person(s) observed the setup of the auger drill relative to the planned hole location and recorded the actual drill collar location with a hand-held GPS unit. The actual hole location was documented on the auger log description sheet.

12.1.2 Material Validation

During the property visit, the Qualified Person(s) completed the geological logs for WRMS-14 and -15, which involved describing the changes in the material types by depth and the collection of samples. Eighteen samples were collected by the Qualified Person(s) for laboratory testing from these two holes. Each sample was separately bagged, weighed and labelled with hole number, sample number, and the depth interval. This information was included on the commercial sample tags that were included in the sample bag, on the outside of the sample bag, as well as on the on the auger log description sheet. Following completion of the required documentation, each sample was closed with a zip-tie and placed in a larger tote container for transport from the field to AGAT Laboratories. Once the laboratory results from these samples were completed, the Qualified Person(s) reviewed these results relative to the field descriptions to assess consistency.

12.2 Sample Shipment Chain-of-Custody

12.2.1 Field Samples to AGAT Chain-of-Custody

Sample shipments were transported in batches directly from the Project area to AGAT Laboratories in Calgary, Alberta by the field crews. A Stantec Professional Geologist was present for the sample delivery to AGAT to complete a review of the sample shipment for completeness. and witnessed AGAT sign-off for the chain-of-custody documentation. Table 12-1 summarizes the dates that the samples were transported from the field and received by AGAT.

Table 12-1
AGAT Sample Chain-of-Custody

Drill Hole Name	Samples	Sample Shipment Date	Date Samples Received
WRMS-01	44048-44056	21-Mar-19	21-Mar-19
WRMS-02	44023-44030	21-Mar-19	21-Mar-19
WRMS-03	44088-44095	21-Mar-19	21-Mar-19
WRMS-05	44075, 44078-44087	21-Mar-19	21-Mar-19
WRMS-06	44015-44022	21-Mar-19	21-Mar-19
WRMS-07	44066-44074	21-Mar-19	21-Mar-19
WRMS-08	44031-44040	21-Mar-19	21-Mar-19
WRMS-09	44041-44047	21-Mar-19	21-Mar-19
WRMS-10	44003-44014	21-Mar-19	21-Mar-19
WRMS-11	44061-44065	21-Mar-19	21-Mar-19
WRMS-12	44057-44060	21-Mar-19	21-Mar-19
WRMS-13	42894-44002	21-Mar-19	21-Mar-19
WRMS-14	42884-42893	21-Mar-19	21-Mar-19
WRMS-15	42876-42883	21-Mar-19	21-Mar-19
WRMS-16	6811-6819	10-Apr-19	10-Apr-19
WRMS-17	6820-6823	10-Apr-19	10-Apr-19
WRMS-18	6839-6842	10-Apr-19	10-Apr-19
WRMS-19	6800-6806	10-Apr-19	10-Apr-19
WRMS-20	6807-6809	10-Apr-19	10-Apr-19
WRMS-21	6810	10-Apr-19	10-Apr-19
WRMS-22	6877-6879	10-Apr-19	10-Apr-19
WRMS-23	6880	10-Apr-19	10-Apr-19
WRMS-28	6824-6831	10-Apr-19	10-Apr-19
WRMS-29	6832-6838	10-Apr-19	10-Apr-19
WRMS-30	6843-6849	10-Apr-19	10-Apr-19
WRMS-34	6866-6874	10-Apr-19	10-Apr-19
WRMS-35	6859-6865	10-Apr-19	10-Apr-19
WRMS-37	6875-6876	10-Apr-19	10-Apr-19
WRMS-40	6850-6853	10-Apr-19	10-Apr-19
WRMS 41B	6854-6858	10-Apr-19	10-Apr-19
WRMS-48	47122-47126	22-Apr-19	23-Apr-19

Drill Hole Name	Samples	Sample Shipment Date	Date Samples Received
WRMS-49	47127-47135	22-Apr-19	23-Apr-19
WRMS-50	47136-47142	22-Apr-19	23-Apr-19
WRMS-51	47143-47150	22-Apr-19	23-Apr-19
WRMS-52	47201-47212	22-Apr-19	23-Apr-19
WRMS-53	47213-47223	22-Apr-19	23-Apr-19
WRMS-54	47224-47231	22-Apr-19	23-Apr-19
WRMS-55	47232-47240	22-Apr-19	23-Apr-19
WRMS-56	47241-47245	22-Apr-19	23-Apr-19
WRMS-57	47151-47154, 47246-47250	22-Apr-19	23-Apr-19
WRMS-58	47155-47160	22-Apr-19	23-Apr-19
WRMS-59	47163-47171	22-Apr-19	23-Apr-19
WRMS-60	47172-47179	22-Apr-19	23-Apr-19
WRMS-61	47180-47188	22-Apr-19	23-Apr-19
WRMS-62	47189-47198	22-Apr-19	23-Apr-19
WRMS-63	47199-47200, 47251-47258	22-Apr-19	23-Apr-19
WRMS-64	47259-47265	22-Apr-19	23-Apr-19

12.2.2 Loring Sample Chain-of-Custody

A Stantec Professional Geologist oversaw the sample selection and hand delivered the samples to Loring in Calgary on May 24, 2019. Table 12-2 summarizes the date that the samples were delivered to Loring.

Table 12-2
2019 Loring Sample Chain-of-Custody

Sample ID	Drill Hole Name	Date Delivered to Loring Labs
5600-5601	WRMS-15	24-May-19
5602-5603	WRMS-18	24-May-19
5604-5605	WRMS-29	24-May-19
5606-5607	WRMS-34	24-May-19
5608-5609	WRMS-49	24-May-19
5610-5611	WRMS-53	24-May-19
5612-5613	WRMS-55	24-May-19

12.2.3 Stim Lab Sample Chain-of-Custody

Samples shipped to Stim-Lab (a subsidiary of Core Laboratories in Calgary) were sent from Calgary, Alberta to Duncan, Oklahoma by FedEx. The first shipment was prepared and sent by Privco personnel, who delivered the samples directly to Core Laboratories in Calgary. The delivery of the samples to Stim-Lab was confirmed by the date the samples were entered into Stim-Lab's system.

The second sample shipment was prepared in the Sierra Geological Corp Facility in Strathmore, Alberta under the direct supervision of a Stantec Professional Geologist. The samples were transported from Calgary to Stim-Lab by Federal Express; the courier receipts were reviewed by Stantec to verify the shipment dates. Table 12-3 summarizes the date the samples were sent and received by Stim-Lab.

Table 12-3
2019 Stim-Lab Sample Chain-of-Custody

Drill Hole Name	Sample	Hole Spud Date	Date Shipped	Date Received
WRMS-02	E6547266	15-Mar-19	26-Apr-19	29-Apr-19
WRMS-15	E6547275	15-Mar-19	26-Apr-19	29-Apr-19
WRMS-18	E6547270	02-Apr-19	26-Apr-19	29-Apr-19
WRMS-22	E6547268	04-Apr-19	26-Apr-19	29-Apr-19
WRMS-29	E6547271	02-Apr-19	26-Apr-19	29-Apr-19
WRMS-34	E6547272	04-Apr-19	26-Apr-19	29-Apr-19
WRMS-49	E6547267	16-Apr-19	26-Apr-19	29-Apr-19
WRMS-53	E6547274	16-Apr-19	26-Apr-19	29-Apr-19
WRMS-55	E6547273	17-Apr-19	26-Apr-19	29-Apr-19
WRMS-63	E6547269	18-Apr-19	26-Apr-19	29-Apr-19
WRMS-15	042880	15-Mar-19	21-Mar-19	27-Mar-19
WRMS-15	042883	15-Mar-19	21-Mar-19	27-Mar-19
WRMS-13	042895	15-Mar-19	21-Mar-19	27-Mar-19
WRMS-13	042900	15-Mar-19	21-Mar-19	27-Mar-19
WRMS-02	044025	16-Mar-19	21-Mar-19	27-Mar-19
WRMS-02	044028	16-Mar-19	21-Mar-19	27-Mar-19
WRMS-08	044034	16-Mar-19	21-Mar-19	27-Mar-19
WRMS-08	044038	16-Mar-19	21-Mar-19	27-Mar-19
WRMS-05	044078	17-Mar-19	21-Mar-19	27-Mar-19
WRMS-05	044086	17-Mar-19	21-Mar-19	27-Mar-19

12.3 Accuracy of AGAT and Stim-Lab Sieve Results

The Qualified Person(s) have concluded that the sieve results from AGAT are acceptable based on:

- Adherence to the protocol of API STD19C:2018 by rerunning samples that were greater than 0.5% variation in weight of the original sample weight before and after completing the sieve stack testing.
- Alignment of spot checks of the sample field descriptions relative to the analytical results completed by AGAT and Stim-Lab.
- Consistency in fraction percentages between sieve fractions between the blind sample and the original samples as shown on Table 12-4.
- Relative consistency between the weight percentages of nine samples that were sent to Stim-Lab to assess the repeatability of the AGAT sieve results; most sample bins repeat within 2% as shown on Table 12-5.

Table 12-4
Reproducibility of Blind Sample Sieve Results

Sample ID	Sample Type	≥20	20/40	40/70	70/170	PAN
42888	Original	0.78	8.15	36.20	42.27	6.61
Blind A	Blind	0.75	8.35	35.54	42.68	5.81
44007	Original	0.79	10.56	47.76	33.49	4.02
Blind B	Blind	1.01	11.79	49.07	31.35	4.37
44050	Original	0.52	9.07	32.59	33.13	14.96
Blind C	Blind	0.57	10.54	34.40	33.54	14.04
44091	Original	0.25	6.64	34.29	37.62	12.25
Blind D	Blind	0.29	7.21	34.91	37.73	14.37
6808	Original	0.64	4.95	43.05	42.82	6.19
Blind E	Blind	0.56	5.50	44.34	42.07	5.12
6822	Original	0.89	10.92	37.47	36.86	8.66
Blind F	Blind	0.81	9.70	34.97	37.85	11.05
6856	Original	0.44	2.57	32.91	46.52	10.20
Blind G	Blind	0.62	2.87	33.59	44.56	11.76
47158	Original	70.82	2.69	13.81	9.85	1.70
Blind H	Blind	70.74	2.83	12.00	11.10	2.38
47140	Original	0.70	9.43	43.95	39.68	1.87
Blind J	Blind	1.48	25.25	58.81	11.81	2.32

Table 12-5
Reproducibility of AGAT vs. Stim-Lab Sieve Results

Sample ID	Laboratory	≥20	20/40	40/70	70/170	PAN
42880	AGAT	0.56	7.79	36.03	41.81	13.81
42880	Stim-Lab	0.37	9.21	36.09	40.41	14.02
42883	AGAT	1.00	4.07	35.59	47.79	11.54
42883	Stim-Lab	0.55	8.48	35.49	43.24	12.24
42895	AGAT	0.86	6.44	30.52	46.57	15.61
42895	Stim-Lab	1.00	6.34	28.71	47.18	16.87
42900	AGAT	0.53	3.52	18.02	42.81	35.13
42900	Stim-Lab	0.50	3.91	18.20	41.98	35.42
44025	AGAT	1.51	10.25	34.74	33.85	19.65
44025	Stim-Lab	1.00	9.60	33.64	34.39	21.37
44028	AGAT	1.29	17.52	41.10	28.88	11.21
44028	Stim-Lab	1.12	19.15	41.74	27.52	10.38
44034	AGAT	0.33	7.11	33.15	42.40	17.02
44034	Stim-Lab	0.26	7.67	32.53	41.70	17.83
44039	AGAT	0.73	4.11	24.39	47.44	23.32
44039	Stim-Lab	0.35	4.06	25.54	46.95	23.02
44078	AGAT	2.17	13.73	34.19	33.70	16.20
44078	Stim-Lab	1.40	13.55	28.74	32.84	23.39
44086	AGAT	0.24	4.70	40.16	46.69	8.20
44086	Stim-Lab	0.29	5.52	40.26	45.69	8.15

12.4 Limitation to Data Validation by Qualified Person

The Stantec Qualified Person was not on the property during the entire field program and did not directly transport the samples from the field to AGAT Laboratory. As such, although Stantec is comfortable that acceptable practices were followed, the Stantec Qualified Person did not directly observe all aspects of the operation. In addition, a Stantec Qualified Person only inspected the AGAT Laboratory during testing, and therefore did not observed the testing procedures that were completed by Loring, TPS, or Stim-Lab.

12.5 Qualified Person's Opinion

It is the Stantec Qualified Person's opinion that the field procedures and sampling protocols, quality of the laboratory data, and the chain-of-custody security are defendable. The Stantec Qualified Person is confident that the samples and associated laboratory data presented are adequate for the purposes used in this Technical Report.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

TPS completed attrition tests on sand samples. Beyond this sample attrition and testing, no additional mineral processing was completed.

14 MINERAL RESOURCE ESTIMATES

In accordance with the requirements of NI 43-101 and the Canadian Institute of Mining, Metallurgy and Petroleum Definition Standards, Qualified Persons employed at Stantec validated the drill hole and sample dataset and created geologic models for the purposes of generating resource estimates within the Property.

The geologic model construction, resource estimation approach, criteria and assumptions used during this resource estimation are outlined in the following sections.

14.1 Computer Model Construction

The geologic resource model was developed using Hexagon Mining's geological modelling and mine planning software, MineSight® version 13.0-2. MineSight® is widely used throughout the mining industry for digital resource model development. Hexagon Mining's suite of interpretive and modelling tools is well-suited to meet the modelling requirements for the Property.

A gridded-surface modelling approach was used to evaluate and calculate resource estimates for the glacial-fluvial sands located within the Property. The 2D gridded-surface model consists of laterally contiguous cells (commonly called *grids*). The selected grid size of 5 m x 5 m (x, y) was determined by the density of the drill hole data, required resolution on the surfaces and extent of the Property boundaries. Each grid has a fixed position of easting and northing within the model limits and contains a list of variables or numeric identifiers, such as the lithology thickness, percent of each sand fraction (product), and other pertinent information.

14.1.1 Topographic and Lithology Horizons

Topography data was downloaded from the Natural Resources Canada website in Canadian Digital Elevation Model (CDEM) format, spatial resolution is 0.75 arc seconds. These datasets were converted into a gridded-surface file within MineSight®. All drill hole collar elevations were rationalized to the gridded topography.

The thickness of each unit was calculated based on the drill hole data within a Microsoft-Access database. These calculated combined vertical thicknesses were used to create isopach gridded surfaces for overburden, sand, interburden, and silt utilizing the Inverse Distance Weighting interpolation tools in MineSight®. This method increases the understanding of the variability across the Property due to the discontinuous and thin nature of the interburden muds and clays. Inverse Distance Weighted algorithm with power of (IDW4) was used for all estimations.

The bottom of the overburden / top sand elevation data was extracted from the database and interpolated, using the same methodology as for the isopach grids, to create a structural elevation surface for the contact and was verified through review of multiple cross sections.

From this surface, a base of feed (BOF) surface was extrapolated by subtracting the sand, silt and interburden isopach thickness at each grid node from the bottom overburden / top sand surface. The BOF surface is not considered a geology unit contact. As most of the drill holes from the 2019 campaign ended in sand, due in part to drilling limitations, the BOF surface is a representation of the limit of the current subsurface understanding on the Property.

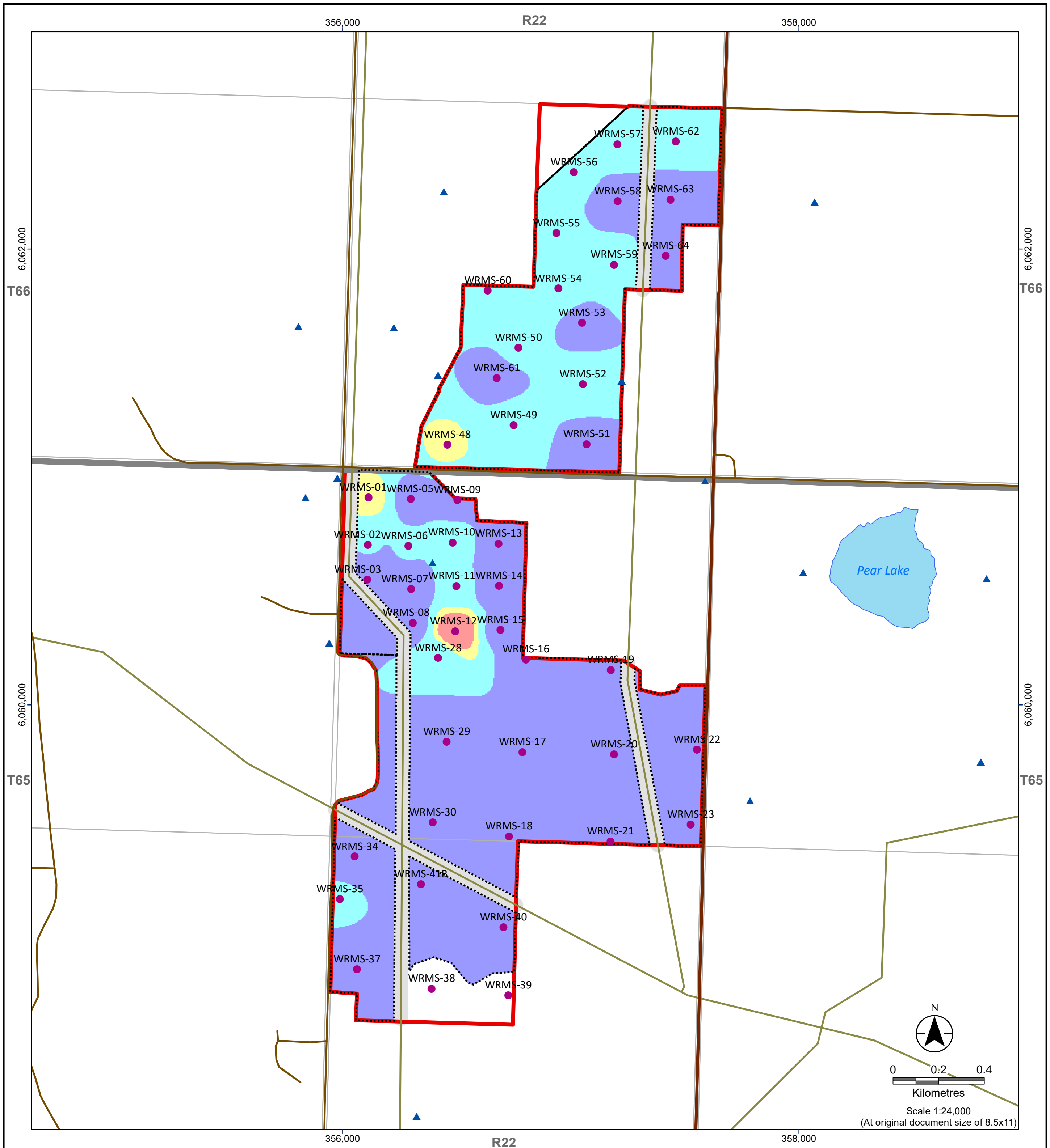
Surface gridding of the bottom of overburden / top sand elevation surface as well as the sand-zone thicknesses utilized all drill holes described Section 6.1 and Section 10. Only drill holes described in Section 6.1 that filled gaps and reduced gridding edge effects were added to support the understanding of the subsurface and did not contain grain size information. Several of theses drill holes identified from the AWW database search was found to be located at the same X-Y coordinates, in all cases, the drill holes with the more detailed information were selected.

14.1.2 Assay Data Compositing and Interpolation

Sieve-derived laboratory grain size data from the sand samples, as described in detail in Section 11, was composited into length weighted sand-zone composites from base of overburden to base of sand, encompassing all intervals. Intervals in the sand-zone which were not sent for sieve analysis such as interburden and silt, were averaged into the composite as zero values on all sieves and 100% to the pan.

The composited values for each sieve mesh described in Section 11 were modelled using IDW4 interpolation to calculate weight percent for each sieve size at every grid node. The individual model sieve results were combined to create five sand size fractions (product) weight percent values: 20/40, 40/70, 70/140, 140/170 as well as the 50/140. Figure 14-1 through Figure 14-4 show the fraction distribution maps.

The tonnage of the sand zone, which includes interburden and silt was calculated from the combined volume, multiplied by a bulk density value of 1.5 g/cm^3 for sands, 1.25 g/cm^3 for interburden clays and 1.4 g/cm^3 for silts. Each grid tonnage was then factored by the percentage of sand only, to calculate the tonnages for each sand fraction (product).



Legend

- 2019 Drill Hole
- Alberta Water Well
- Property Boundary
- Resource Boundary
- Water Body
- Pipeline
- Pipeline Right of Way
- Paved Road
- Gravel Road

20 / 40 Fraction (%)

- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government

Stantec Athabasca Minerals Inc.

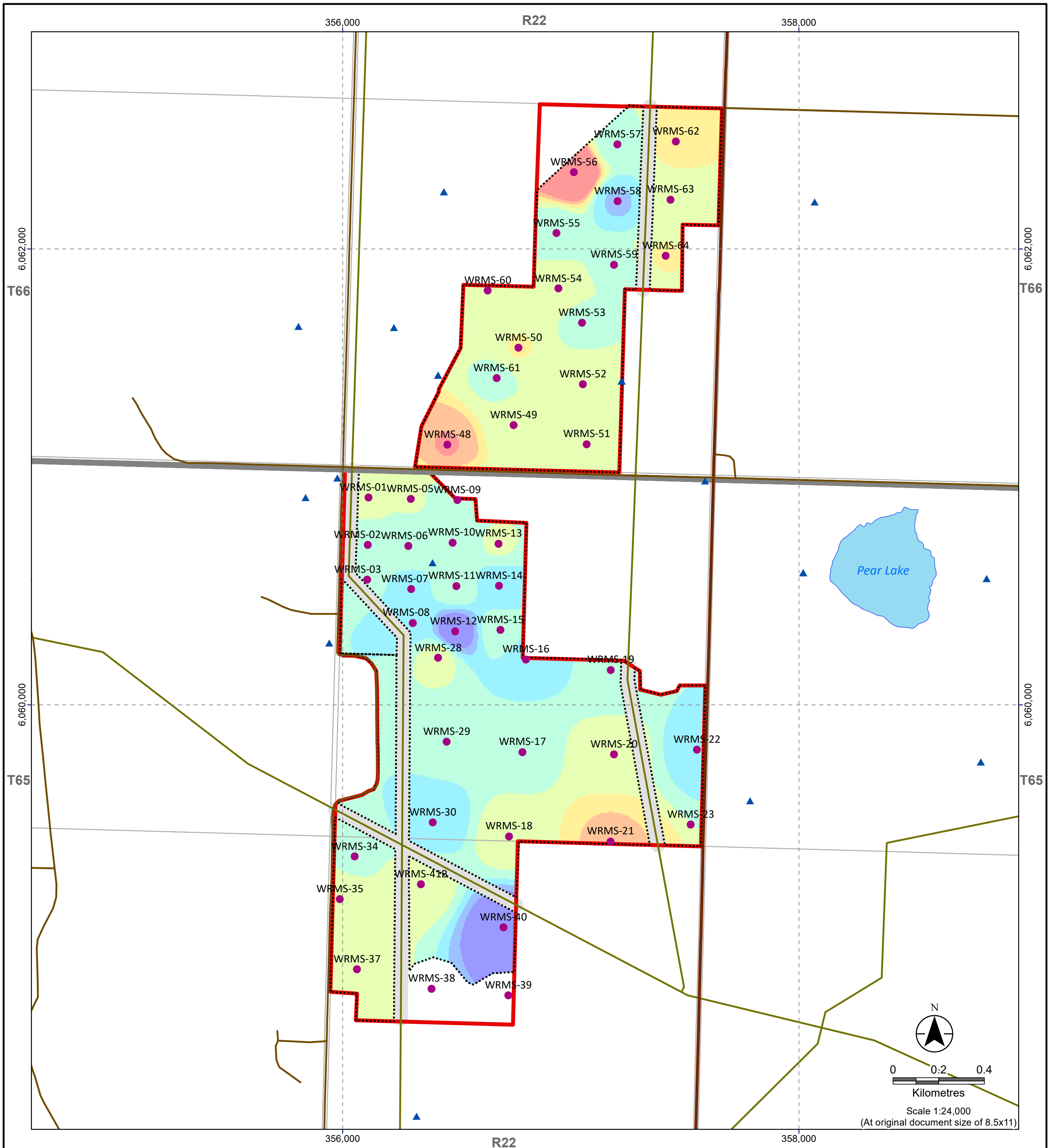
TECHNICAL REPORT WHITE RABBIT PROPERTY

20 / 40 Fraction Distribution Map

Figure 14-1

DRAWN BY: M.B.
CHK'D BY: C.H.
DATE: 19 08 26

FILE: Fig14_1_PSD_20_40
V:\1295\active\129500207\Reports\Draft\Figures\MXD



Legend

- 2019 Drill Hole
- Alberta Water Well
- Property Boundary
- Resource Boundary
- Water Body
- Pipeline
- Pipeline Right of Way
- Paved Road
- Gravel Road

40 / 70 Fraction (%)

- 15 - 20
- 20 - 25
- 25 - 30
- 30 - 35
- 35 - 40
- 40 - 45
- 45 - 50
- > 50

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government

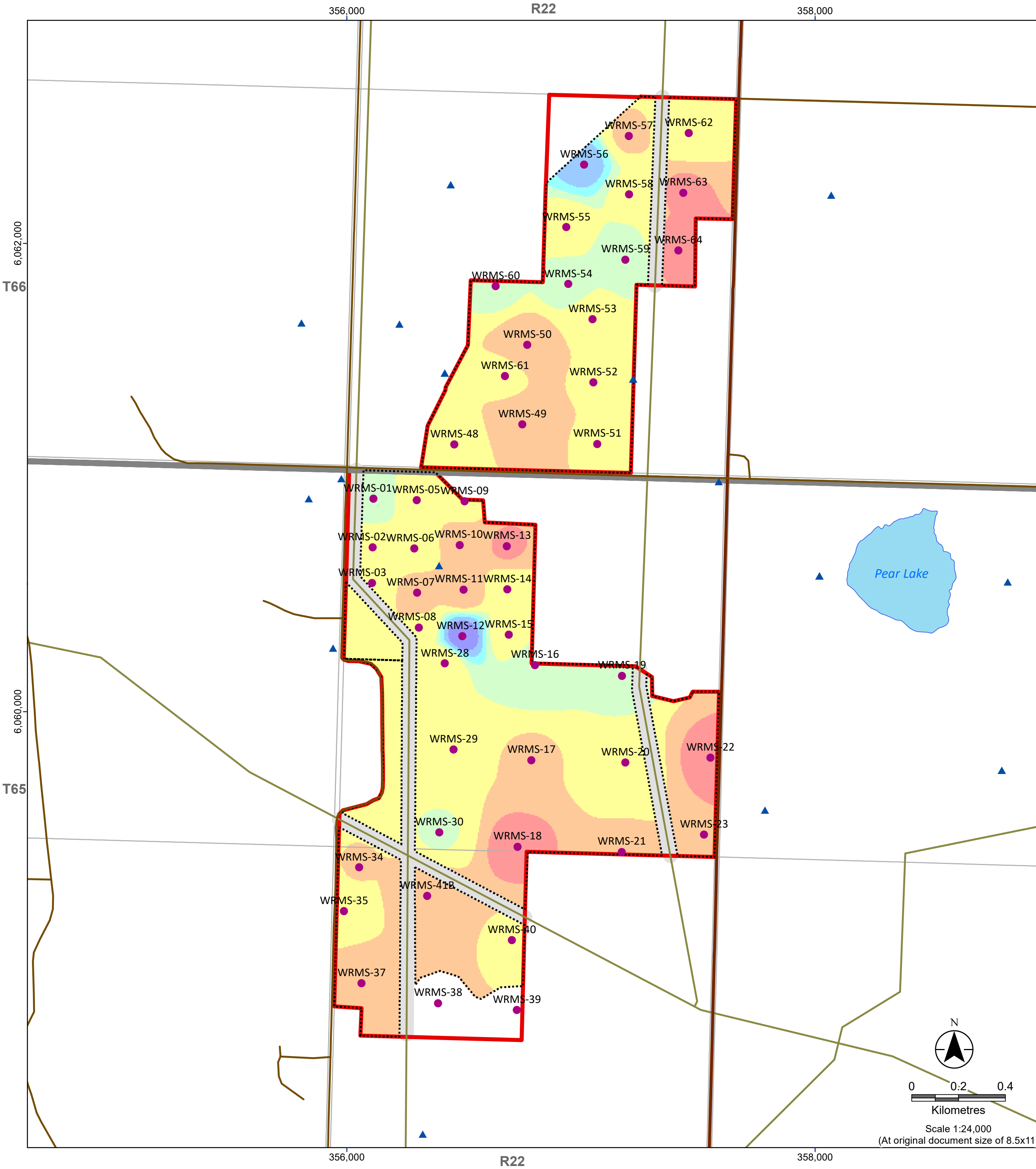
Stantec Athabasca Minerals Inc.

TECHNICAL REPORT WHITE RABBIT PROPERTY

40 / 70 Fraction Distribution Map

Figure 14-2

DRAWN BY: M.B. CHK'D BY: C.H. DATE: 19 08 26	FILE: Fig14_2_PSD_40_70 V:\1295\active\129500207\Reports\Draft\Figures\MXD



Legend
- 2019 Drill Hole
- Alberta Water Well
- Property Boundary
- Resource Boundary
- Water Body
- Pipeline
- Pipeline Right of Way
- Paved Road
- Gravel Road

70 / 140 Fraction (%)
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25
- 25 - 30
- 30 - 35
- 35 - 40

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government

Stantec Athabasca Minerals Inc.

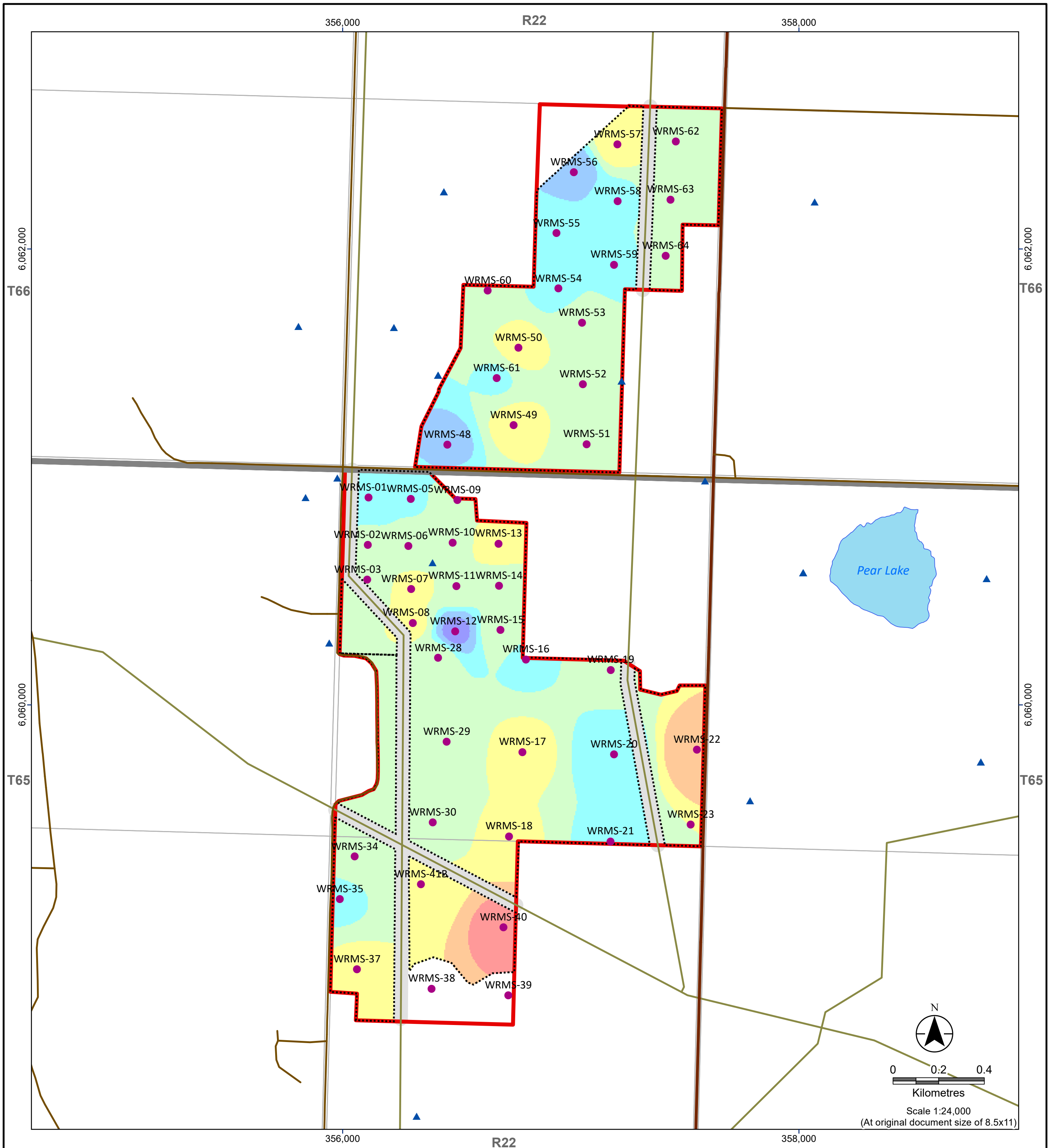
TECHNICAL REPORT WHITE RABBIT PROPERTY

70 / 140 Fraction Distribution Map

Figure 14-3

DRAWN BY: M.B.
CHK'D BY: C.H.
DATE: 19 08 26

FILE: Fig14_3_PSD_70_140
V:\1295\active\129500207\Reports\Draft\Figures\MXD



Legend

- 2019 Drill Hole
- Alberta Water Well
- Property Boundary
- Resource Boundary
- Water Body
- Pipeline
- Pipeline Right of Way
- Paved Road
- Gravel Road

140 / 170 Fraction (%)

- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- 5 - 6
- 6 - 7

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government

Stantec Athabasca Minerals Inc.

TECHNICAL REPORT WHITE RABBIT PROPERTY

140 / 170 Fraction Distribution Map

Figure 14-4

DRAWN BY: M.B.
CHK'D BY: C.H.
DATE: 19 08 26

FILE: Fig14_4_PSD_140_170
V:\1295\active\129500207\Reports\Draft\Figures\MXD

14.2 Resource Estimation Approach

Stantec used the following approach to facilitate the estimation of resources:

- Sand, interburden and silt unit thicknesses were calculated from auger holes completed by Privco during the March through April 2019 Drilling Campaigns (Section 11), and public water well hole information from the Alberta Water Wells, (AWW, 2019).
- Percentages of the different fractions were used as provided from the laboratory.
- MineSight® Software was used to construct a 3D geological computer model of the Property, to estimate in-place resource volumes by gridding isopach thickness for overburden, sand, interburden and silt.
- Volumes were converted to tonnage by the application of representative average bulk density values.
- The geological interpretations and their relationship to the raw data were confirmed through the model building process.
- This resource estimation only includes those resources found within the Property boundaries as shown on Figure 14-5.
- Review of the drill hole spacing, the available assay data, and resource distribution to classify the resources.

14.3 Basis for Mineral Resource Determination

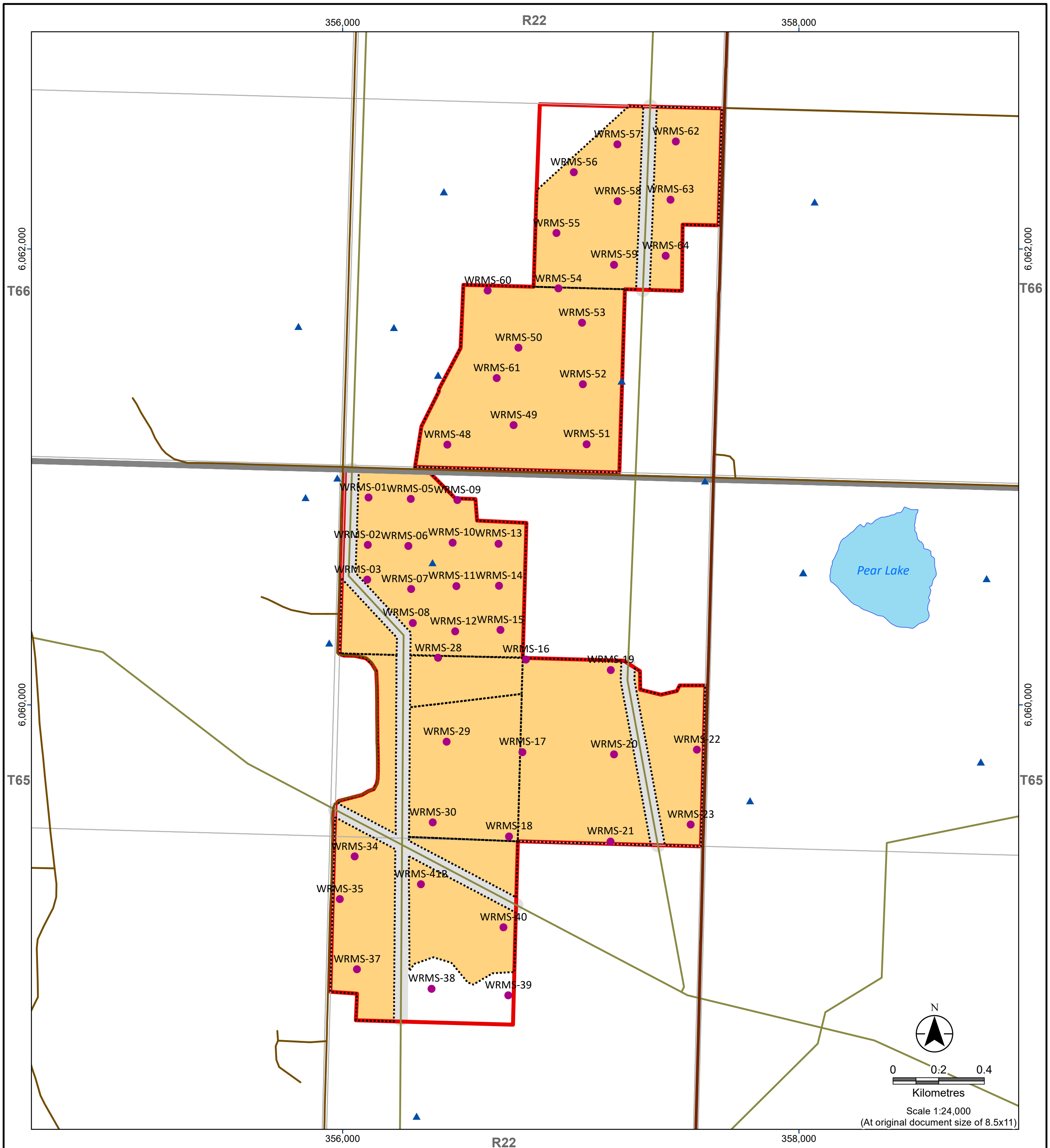
NI 43-101 specifies that the definitions of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Guidelines be used for the identification of resources. The CIM Resource and Reserve Definition Committee have produced the following statements which are restated here in the format originally provided in the CIM Reserve Resource Definition document:

"Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories. An Inferred Mineral Resource has a lower level of confidence than that applied to an Indicated Mineral Resource. An Indicated Mineral Resource has a higher level of confidence than an Inferred Mineral Resource but has a lower level of confidence than a Measured Mineral Resource."

The Definition of Resources is as follows:

"A Mineral Resource is a concentration or occurrence of material of economic interest in or on the Earth's crust in such form, quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling."

"Material of economic interest refers to diamonds, natural inorganic material, or natural fossilized organic material including base and precious metals, coal, and industrial minerals."



Legend

- 2019 Drill Hole
- Alberta Water Well
- Property Boundary
- Resource Boundary
- Resource Distribution
- Pipeline
- Pipeline Right of Way
- Paved Road
- Gravel Road
- Water Body

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government

Stantec Athabasca Minerals Inc.

TECHNICAL REPORT WHITE RABBIT PROPERTY

Resource Distribution Map

Figure 14-5

DRAWN BY: M.B.
CHK'D BY: C.H.
DATE: 19 08 26

FILE: Fig14_5_Resource_Distribution
V:\1295\active\129500207\Reports\Draft\Figures\MXD

The committee went on to state that:

"The term Mineral Resource covers mineralization and natural material of intrinsic economic interest which has been identified and estimated through exploration and sampling and within which Mineral Reserves may subsequently be defined by the consideration and application of technical, economic, legal, environmental, socio-economic and governmental factors. The phrase 'reasonable prospects for eventual economic extraction' implies a judgment by the Qualified Person in respect of the technical and economic factors likely to influence the prospect of economic extraction. Interpretation of the word 'eventual' in this context may vary depending on the commodity or mineral involved. For example, for some coal, iron, potash deposits and other bulk minerals or commodities, it may be reasonable to

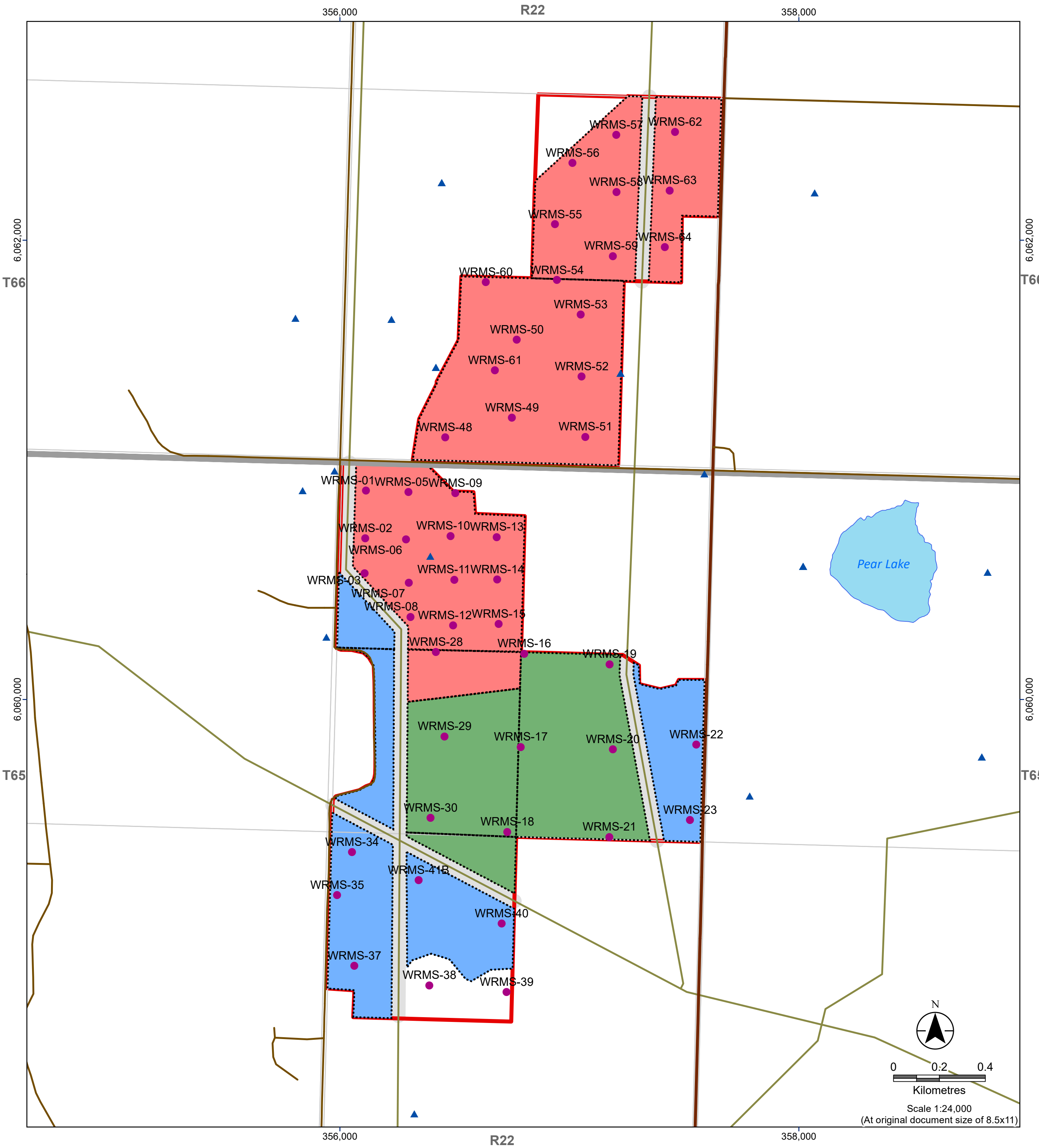
envisage 'eventual economic extraction' as covering time periods in excess of 50 years. However, for many gold deposits, application of the concept would normally be restricted to perhaps 10 to 15 years, and frequently to much shorter periods of time."

These definitions and statements clearly show that natural material is considered a resource if there is clear identification of the economic potential of the deposit. For sand deposits this means that the nature of the deposit, technology for mining and mine planning, some degree of practical recovery constraints and the economic potential in current markets must be considered in order to identify a sand resource.

Resources are classified according to the confidence level that can be placed in each estimate. The classification template used in this study is based on the two-dimensional distance to the nearest drill hole that penetrates the top and the bottom of the known sand, complexity of the geology as well as the distance to the nearest sample that contains sieve-derived laboratory data.

The sand zone in the Property was classed as Measured using a 200 m radial distance from the nearest drill hole intersection with available sieve-derived laboratory data and uniform geology; classed as Indicated using a 400 m radial distance from the nearest drill hole intersection with available sieve-derived laboratory data or less uniform geology and classed as Inferred using a 600 m radial distance or more complex / discontinuous geology and sieve-derived laboratory data. In all cases pipelines have been excluded from the resource with a 30 m buffer to each side. Areas which are considered isolated due to pipeline access have been categorized as Inferred.

Only drill holes listed in Section 10 were used for resource classification. Due to the reduced reliability and lack of sieve-derived laboratory data, of the drill holes described in Section 6.2, this data was only used to aid in creation of surfaces outside of the Property boundary. Figure 14-6 shows the resource classification map. The resource estimate, excluding pipeline right of ways, road allowances and homesteads covers an area of approximately 305 ha (755 acres).



Legend

- 2019 Drill Hole
- Alberta Water Well
- Property Boundary
- Resource Boundary
- Water Body
- Pipeline
- Pipeline Right of Way
- Paved Road
- Gravel Road

Resource Classification:

- Measured
- Indicated
- Inferred

Stantec Athabasca Minerals Inc.

TECHNICAL REPORT WHITE RABBIT PROPERTY

Resource Classification Map

Figure 14-6

DRAWN BY: M.B. CHK'D BY: C.H. DATE: 19 08 26	FILE: Fig14_6_Resource_D_Classif V:\1295\active\129500207\Reports\Draft\Figures\MXD

Notes
Coordinate System: NAD 1983 UTM Zone 12N
Data Sources: base features: Alberta Government

14.4 Assessment of Reasonable Prospect for Eventual Economic Extraction

In coming to a determination regarding the assessment of reasonable prospects for the eventual economic extraction of the Property sand deposit, the Author(s) considered the following:

- The proximity of the unconsolidated sand resource at or near surface.
- The consistency and predictability of the sand units.
- The topographic features of the area, which consist of flat to gently rolling open hills.
- The proximity of the sand deposit relative to infrastructure such as roads and power.
- The proximity of Edmonton to the Property. This city is the location for many suppliers of mining equipment, materials handling equipment, process equipment, and other infrastructure suppliers.
- The technology for the processing and benefaction of sand deposits to support the oil and gas industry with natural proppant is well established. The use of natural sand proppant in the Western Canadian oil and gas industry and product pricing is highly dependent on the specific properties of the resource, the location of the resource in relation to the oil and gas producing basins, the specific properties and requirements of individual oil and gas wells, and the current oil and gas market.
- Initial estimates indicate that the White Rabbit Property sand deposit could potentially be developed and operated for an average unit product cost (includes both unit operating costs and unit capital costs) in the range of $40 to $50 per tonne of product. This estimate utilizes Stantec's knowledge of development, mining, and processing costs of projects with similar scale and complexity.
- The use of natural sand proppant in the Western Canadian oil and gas industry and the product pricing is highly dependent on the specific properties of the resource, the location of the resource in relation to the oil and gas producing basins, the specific properties and requirements of individual oil and gas wells, and the current oil and gas market. Upon review of the information available to Stantec regarding product pricing, it appears reasonable to conclude that the White Rabbit Property sand deposit could attract pricing in the range of $55 to $80 per tonne of product at the minegate.

These factors lead the Author(s) to conclude that the White Rabbit Property sand deposit is amenable to a surface mining and process methodology that could be competitive in the Western Canada natural proppant market. Furthermore, the Author(s) believes that the sand deposit on the Property is a reasonable prospect for eventual economic extraction.

14.5 Mineral Resource Estimation

Table 14-1 shows the estimate of the mineral resource for the Property as of August 7, 2019.

The mineral resource shown in Table 14-1 is reported as in-place tonnages. The volumes calculated from the component thickness were converted to tonnage by the application of representative average in-place bulk densities of 1.5 g/cm^3 for sand, 1.25 g/cm^3 for interburden clays and 1.4 g/cm^3 applied to silts.

Table 14-1
In-Place Mineral Resource Summary, Effective Date August 7, 2019

Category	Mineral Resources (Mt)				
	20/40 Mesh Fraction	40/70 Mesh Fraction	70/140 Mesh Fraction	140/170 Mesh Fraction	Total
MEASURED	3.4	11.2	9.0	1.1	24.7
INDICATED	0.6	2.5	2.2	0.3	5.6
MEASURED and INDICATED	**4.0**	**13.7**	**11.2**	**1.4**	**30.3**
INFERRED	0.5	2.1	2.0	0.3	4.9

Mt = million tonnes

The 20/40, 40/70, 70/140, 140/170 and 50/140 fractions were assessed during the preparation of this report, as each fraction has different application during the hydraulic fracturing process. To avoid reporting overlapping volumes between fractions, Table 14-1 does not report the tonnage of the sand from the 50/140 fraction. The calculated tonnages for 50/140 fraction are approximately 15.0 Mt Measured, 3.6 Mt Indicated and approximately 3.2 Mt Inferred resources.

The accuracy of resource estimates is, in part, a function of the quality and quantity of available data and of engineering and geological interpretation and judgment. Given the data available at the time that this Technical Report was prepared, the estimates presented herein are considered reasonable. However, this estimate should be accepted with the understanding that additional data and analysis available after the date of the estimates, may necessitate revision. These revisions may be material. There is no guarantee that all or any part of the estimated resources will be recoverable.

15 MINERAL RESERVE ESTIMATES

This Technical Report does not include an estimate of reserves.

16 MINING METHODS

This Technical Report does not include a full discussion of the mining methods.

17 RECOVERY METHODS

There is no additional information for this section of the Technical Report as the Property is not presently producing and is not yet under development.

18 PROJECT INFRASTRUCTURE

There is no additional information for this section of the Technical Report as the Property is not presently producing and is not yet under development.

19 MARKETS AND CONTRACTS

There is no additional information for this section of the Technical Report as the Property is not presently producing and is not yet under development.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

Environmental studies, permitting and social or community impact was not included in this Technical Report.

21 CAPITAL AND OPERATING COSTS

There is no additional information for this section of the Technical Report as the Property is not presently producing and is not yet under development.

22 ECONOMIC ANALYSIS

There is no additional information for this section of the Technical Report as the Property is not presently producing and is not yet under development.

23 ADJACENT PROPERTIES

There are no adjacent properties exploiting natural proppant adjacent to the drilled portion of the Property.

24 OTHER RELEVANT DATA AND INFORMATION

All relevant information is included in this Technical Report.

25 INTERPRETATION AND CONCLUSIONS

Forty-nine drill holes were completed on the Property in March and April 2019 by solid stem auger drilling. All drill holes encountered sand except for WRMS-38, WRMS-39, and WRMS41A.

During this program 342 samples were analysed for particle size distribution by AGAT and 10 samples were tested by Loring to assess the sand composition. Stim-Lab and TPS completed a total of 219 crush resistant tests. All samples underwent attrition prior to analyses. The breakdown by fraction is: 26 tests from the 20/40 fraction that averaged a 5K crush, 54 tests from the 30/50 fraction that averaged a 6K crush, 70 tests from the 40/70 fraction that averaged a 7K crush, and 67 tests from the 70/140 fraction that averaged a 9K crush. In addition, Stim-Lab performed two crush resistant tests on the 50/140 fractions that both had a 9K crush. The TPS crush results align with those obtained by Stim-Lab for each fraction spread.

Following development of the mineral resource model, an in-place mineral resource was calculated. In-place bulk densities of 1.5 g/cm^3 for sand, 1.25 g/cm^3 for interburden clays and 1.4 g/cm^3 applied to silts of 1.5 g/cm^3 was used to calculate tonnages.

Table 25-1
In-Place Mineral Resource Summary, Effective Date August 7, 2019

Category	Mineral Resources (Mt)				
	20/40 Mesh Fraction	40/70 Mesh Fraction	70/140 Mesh Fraction	140/170 Mesh Fraction	Total
MEASURED	3.4	11.2	9.0	1.1	24.7
INDICATED	0.6	2.5	2.2	0.3	5.6
MEASURED and INDICATED	**4.0**	**13.7**	**11.2**	**1.4**	**30.3**
INFERRED	0.5	2.1	2.0	0.3	4.9

Mt = million tonnes

The 20/40, 40/70, 70/140, 140/170 and 50/140 fractions were assessed during the preparation of this report, as each fraction has different application during the hydraulic fracturing process. To avoid reporting overlapping volumes between fractions, Table 25-1 does not report the tonnage of the sand from the 50/140 fraction. The calculated tonnages for 50/140 fraction are approximately 15.0 Mt Measured, 3.6 Mt Indicated and approximately 3.2 Mt Inferred resources.

More assessment is required to determine potential limitations on the volume of extractable natural proppant based on potential extraction methods, potential limitations on the extractable volumes that may arise due to potential ground stability issues, groundwater issues, permitting, and potential market fluctuations that may occur in the demand of natural proppant required for hydrocarbon exploitation operations.

No significant risks or uncertainties are expected to affect the reliability or confidence in the exploration information or mineral resource. This report does not address mineral reserve estimates or projected economic outcomes.

It is the Author(s) opinion that the distribution, density, and associated laboratory analyses, from the Property is sufficient to indicate reasonable potential for economic extraction. Based on all available data, the mineral resource is classified as Measured, Indicated and Inferred.

26 RECOMMENDATIONS

It is recommended that Privco focus on the areas with high potential for the first stage of extraction. There are two phases of work that are recommended, as detailed below.

26.1 Phase One: Environmental Baseline Study (C$160K)

Preliminary and detailed property assessments to constrain the potential impact of the sand quarry operation in the Project area.

Table 26-1
Phase 1: Property Assessment Study

Task	Estimated Cost (C$)
Phase 1 Preliminary Property Assessment (desktop study, property visit)	30,000
Phase 2 Detailed Property Assessment (sampling, species at risk, watershed issues etc.)	100,000
Work phases may identify potential additional areas to be addressed, such as noise, air, Transportation Impact Assessment, Water Act application, historic resource clearance, First Nation Consultation, clay lined ponds potential requirements.	30,000
Estimate Total	**160,000**

26.2 Phase Two: Sonic Exploration Program (C$85K)

The surrounding Alberta Water Well data suggest that the Property may have addition sand below the 2019 auger tested intervals (AWW, 2019). It is recommended that a selected area, corresponding to a preliminary first cut area, be drilled at a higher density utilizing a sonic core drill with capabilities to penetrate greater depths (>35 m).

Table 26-2
Phase 2: Sonic Exploration Program

Task	Estimated Cost (C$)
Personnel (Office, Field, Travel Expenses)	11,000
Six-Hole Drill Program (Rig Costs)	14,000
Laboratory Expenses (Shipment and Analyses)	60,000
Estimate Total	**85,000**

27 REFERENCES

Alberta Water Well (AWW) Information Database – Overview, 2019. https://www.alberta.ca/alberta-water-well-information-database-overview.aspx

American Petroleum Institute, 2018. API STD19C:2018. Measurement of and Specifications for Proppants Used in Hydraulic Fracturing and Gravel-packing Operations. API Standard 19C. Second Edition, August 2018.

Athabasca Minerals Inc. (2019, January 29). *Athabasca Minerals Inc. acquires interest in Duvernay Frac Sand Project* [Press release]. Retrieved from: https://www.athabascaminerals.com/news/2019/athabasca-minerals-inc-acquires-interest-in-duvernay-frac-sand-project/

Athabasca Minerals Inc. (2019, May 7). *Athabasca Minerals increases ownership in Duvernay Frac Sand Project* [Press release]. Retrieved from: https://www.athabascaminerals.com/news/2019/athabasca-minerals-increases-ownership-in-duvernay-frac-sand-project/

Canadian Securities Administrators, 2011. National Instrument 43-101 Standards of Disclosure for Mineral Projects, Form 43-101F1, Technical Report, and Companion Policy 43-101.

CIM Standing Committee on Reserve Definitions. 2010. CIM Definition Standards - For Mineral Resources and Mineral Reserves.

Gravenor, C.P. and Meneley, W.A., 1958. Glacial Fluting in central and northern Alberta. American Journal of Science, Vol. 256, p. 715-728.

International Organization for Standardization (ISO), 2006. ISO 13503-2 Petroleum and natural gas industries – Completion fluids and materials – Part 2: Measurement of properties of proppants used in hydraulic fracturing and gravel-packing operations. Switzerland.

Krumbein, W.C. and Sloss, L.L., 1963. Stratigraphy and Sedimentation, 2nd ed., W.H. Freeman, San Francisco.

May, R.W. and Thomson, S., 1978. The geology and geotechnical properties of till and related deposits in the Edmonton, Alberta, area. Canadian Geotechnical Journal, Vol. 15, p. 362-370.

Province of Alberta. **Law of Property Act**. (2014). Edmonton, AB: Alberta Queen's Printer.

Roed, M.A., 1975. Cordilleran and Laurentide Multiple Glaciation West-Central Alberta, Canada. Canadian Journal of Earth Sciences. Vol 12, 1493-1515.

Shaw, J., Faragini, D.M., Kvill, D.R., Rains, R.B., 2000. The Athabasca fluting field, Alberta, Canada: implications for the formation of large-scale fluting (erosional lineations). Quaternary Science Reviews, Vol 19, p. 959 - 980