MAR 20150008: COLISEUM

Coliseum Group - A Report on carbonate rock exploration near Brazeau County, West Central Alberta.

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GRAYMONT WESTERN CANADA INC.
877384 ALBERTA LTD.

2015 EXPLORATION AND FIELDWORK WITHIN THE COLISEUM GROUP METALLIC AND INDUSTRIAL MINERALS PERMITS, WEST-CENTRAL ALBERTA

PART B

Metallic and Industrial Minerals Permits
9308050833, 9312120361 & 9311090602

Geographic Coordinates

52°28' N to 52°32' N
115°58' W to 116°08' W

NTS Sheets 83 B/05, B/12, C/08 and C/09

Owner:	MAIM Permits 9312120361 & 9311090602 877384 Alberta Ltd. 18, 10509 - 81 Avenue Edmonton, Alberta T6E 1X7
Owner:	MAIM Permit 9308050833 Graymont Western Canada Inc. 260, 4311 - 12 Street N.E. Calgary, Alberta T2E 4P9
Operator	MAIM Permits 9308050833, 9312120361 & 9311090602 Graymont Western Canada Inc. 260, 4311 - 12 Street N.E. Calgary, Alberta T2E 4P9
Consultant:	Dahrouge Geological Consulting Ltd. 18, 10509 - 81 Avenue Edmonton, Alberta T6E 1X7
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Date Submitted:	October 27, 2015

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PART C

1. SUMMARY

During August 2015, the northern part of Brazeau Range, north of Nordegg and within Metallic and Industrial Minerals (MAIM) Permits 9308050833, 9312120361 and 9311090602, were explored for high-quality carbonate rocks. Exploration conducted in 2015 was a follow-up to previous exploration conducted in the area.

Access routes and outcrops were mapped, and a total of 36 rock samples were collected, representing approximately 91.25 m of stratigraphy. Samples were sent to a laboratory for whole-rock analysis.

Throughout this report, attitudes of bedding and other planar features are given as A°/B° SW, where A° is the azimuth of the strike and B° is the amount of dip in the direction indicated (right-hand rule). A magnetic declination of 16°17' east was used. Where bedding was not evident, stratigraphic thicknesses were calculated using orientations from adjacent units. Where more than one bedding orientation was measured, the mean orientation is used.

2. INTRODUCTION

The 2015 exploration within the Coliseum Group permits was conducted by Dahrouge Geological Consulting Ltd. (Dahrouge) on behalf of Graymont Western Canada Inc. (Graymont) and 877384 Alberta Ltd. (877384). This assessment report describes the exploration conducted within MAIM Permits 9308050833 (Shunda Mountain), 9312120361 (Nordegg East) and 9311090602 (Alexo), which encompass northern parts of Brazeau Range of the Alberta Foothills. Bob Robison, exploration manager for Graymont Western U.S. Inc., authorized this work.

The objectives of the 2015 exploration were to expand on previously explored areas and to locate and better define carbonate units throughout the Property. This report includes information on the geology and quality of carbonates encountered while mapping and sampling outcrops within the permit area.

3. GEOGRAPHIC SETTING AND ACCESS

3.1 LOCATION AND ACCESS

MAIM Permits 9308050833, 9312120361 and 9311090602 encompass northern parts of Brazeau Range, surrounding and including Shunda Mountain and the western part of Coliseum Mountain, within west-central Alberta (Fig.'s 3.1 & 3.2).

The Shunda Mountain Permit is accessed by traveling north from Highway 11 along Upper Shunda Road, past the Nordegg North subdivision. Upper Shunda Road continues north through the Property, within the valley between Shunda and Coliseum mountains. It leads around and up Shunda Mountain to the Baldy Fire Lookout. A gate at the base of Shunda Mountain blocks truck access but ATV's provide excellent access to the top of the mountain. ATV's may also be utilized to explore cut lines that cross-cut and spur off the lower sections of Upper Shunda Road.

The Alexo Permit can be accessed via Upper Shunda Road and then by extensive hiking, or via ATV and hiking trails heading north from Highway 11.

The Nordegg East Permit can be accessed via a road southeast of Nordegg and then via well-maintained ATV trails.

3.2 INFRASTRUCTURE

Accommodations, food, fuel and other necessary services are available in Rocky Mountain House and Nordegg. The local economies are primarily based on agriculture, forestry, and energy-based industries.

Rocky Mountain House, with a population of about 7,000, is accessed by traveling 67 km west of Red Deer along the David Thompson Highway (Highway 11), and then 12 km north along Highway 22.

The hamlet of Nordegg has a population of about 200 and is accessed from Highway 11, approximately 75 km west of Rocky Mountain House.

3.3 TOPOGRAPHY, VEGETATION AND CLIMATE

The Coliseum Group permit area is included in the Eastern-Slope Montane Forest Ecological Region, and lies within the Rocky-Clearwater District of the Alberta Forest Reserve. In the sub-alpine zone, vegetation consists of stunted sub-alpine fir and Englemann spruce. Above the tree line and along rocky slopes, vegetation is restricted to alpine foliage and grasses. Vegetation in areas of rugged limestone outcroppings is generally sparse, and commonly consists of junipers, other low brush, and grasses. Below tree line, vegetation consists of dense stands of Aspen, Lodgepole pine, White spruce, and less frequent stands of Douglas fir.

The Property is comprised of northwest-trending ridges cut by north- and northeast-trending valleys and drainages. Elevations range from approximately 1,570 m in the valley between Shunda and Coliseum mountains to about 2,050 m atop Shunda

Mountain. The Property is cut by a number of drainages, including spurs of Shunda Creek, and Dog Creek, which trends north and parallels Upper Shunda Road.

Climate is sub-alpine with average summer temperatures of 20° to 25°C and winter temperatures of -15° to -20°C, with extremes of 35°C and -40°C. Rainfall averages about 35 cm per year; snowfall averages 35 to 45 cm with the majority falling in December and January.

3.4 FIELD OPERATIONS

Field operations were conducted by a four-person geological crew from Dahrouge, based in a hotel in Rocky Mountain House.

Transportation to and from the Property was by four-wheel-drive truck. Access throughout the Property was by truck and ATV's where possible, and by extensive hiking. Several roads and trails of interest were reclaimed and are no longer accessible.

Garmin GPSmap 64S instruments were used to mark outcrop locations and record access information. Compasses were set at a magnetic declination of 16°17' east.

4. PROPERTY, EXPLORATION AND EXPENDITURES

4.1 PROPERTY SUMMARY

Graymont Western Canada Inc. acquired MAIM Permit 9308050833 (Shunda Mountain) in the spring of 2008 to cover Paleozoic limestones in the northern part of Brazeau Range, north of Nordegg (Fig.'s 3.2 and 4.1). The Shunda Mountain Permit encompasses 1,232 hectares and is contiguous with the Alexo (9311090602) and Nordegg East (9312120361) permits, which were acquired by 8773784 Alberta Ltd. in late 2011 and 2012, respectively.

The Alexo permit, which encompasses 1,280 hectares, covers Paleozoic limestones east of Coliseum Mountain. The Nordegg East permit, which encompasses 160 hectares, was acquired to cover Paleozoic limestones northeast of Nordegg.

4.2 2015 EXPLORATION SUMMARY

From August 5 to 11, 2015, Dahrouge Geological Consulting Ltd., on behalf of Graymont, conducted exploration for carbonate lithotypes within west-central Alberta. The work was undertaken to determine the location and extent of carbonate units in the permit area.

Carbonate outcrops were examined and a total of 36 samples were collected (Fig. 4.2). Geological observations were recorded, including lithologic information, measurements of structural elements, and other pertinent details (Appendix 2). A solution of 10% HCl was used to assess carbonate quality in the field, and rock samples were shipped to Central Lab of Graymont Western U.S. Inc. in Utah for analyses (Appendix 3). In some instances, interval thicknesses were determined by measuring outcrops perpendicular to bedding, where it could be identified. Field maps were completed on 1:10,000 scale map sheets and concentrated on areas surrounding and including Shunda and Coliseum mountains, along the northern part of Brazeau Range.

4.3 EXPLORATION EXPENDITURES

Expenditures for 2015 totaled $34,686.90. The entirety of the Coliseum Group permits (MAIM Permits 9308050833, 9312120361 and 9311090602) will be retained. Excess expenditures in the amount of $2,851.01 are to be assigned to MAIM Permit 9308050833.

Expenditures are allocated to the MAIM permits as follows:

MAIM Permit	Permit Area (ha)	Required Expenditures	Assigned Expenditures	New Expiry Date
9308050833	1,232	$16,635.89*	$19,486.90	May 22, 2018
9311090602	1,280	$12,800.00	$12,800.00	September 12, 2017
9312120361	160	$2,400.00	$2,400	December 14, 2022

* calculated from previous credit of $1,844.11

5. REGIONAL GEOLOGY

5.1 STRATIGRAPHY

At Brazeau Range, carbonate lithologies are known to occur within both Paleozoic and Mesozoic sequences (Table 5.1, Fig. 4.2). Paleozoic limestones encountered within the Shunda, Alexo and Nordegg East permits were from the Upper Devonian Palliser Formation, Upper Devonian to Lower Carboniferous Banff Assemblage, and the Turner Valley, Shunda and Pekisko formations of the Lower Carboniferous Rundle Assemblage. Mesozoic rocks of the Fernie Group were also noted within the permit area.

Brief stratigraphic descriptions of the various units are provided herein (Pana and

Dahrouge, 1998). A detailed review of the regional stratigraphy is provided by Stott and Aitken (1993), Mossop and Shetsen (1994), Halbertsma (1994), and Richards et al. (1994).

5.1.1 Palliser Formation

In west-central Alberta, the Lower to Middle Famennian Palliser Formation consists mainly of outer shelf and basinal carbonates of the Sassenach Basin (Halbertsma, 1994). The Palliser Formation is divisible into the Morro and overlying Costigan members, separated by an unconformity. The Morro Member comprises a lithologic suite dominated by carbonates with significant lateral facies variations. The Costigan Member consists of open-marine fossiliferous limestones and shales, with local evaporitic sedimentation. Within the Foothills and Front Ranges of Alberta, limestones of the Palliser Formation vary from less than 180 m to more than 270 m in thickness (Holter, 1976).

The Palliser Formation is overlain by shales of the Exshaw Formation, and siliciclastics and carbonates of the Banff Formation.

5.1.2 Banff Assemblage

In west-central Alberta, the Exshaw, Banff and Yohin formations comprise the Banff Assemblage (Richards et al. 1994). Only exposures of the Banff Formation appear within the Coliseum Group permits. The Banff Formation is a heterogeneous association of carbonates and fine-grained siliciclastics deposited on poorly differentiated carbonate platforms. Westward, the uppermost Banff Formation grades laterally into the Rundle Assemblage.

5.1.3 Rundle Assemblage

The Lower Carboniferous Rundle Assemblage extends from MacKenzie Mountains in the Arctic, south through the Peace River Embayment to southeastern British Columbia. In west-central Alberta, it comprises shallow-marine platform and ramp carbonates, which prograded westward over deeper water shales and carbonates of the Banff Assemblage. The lower Rundle Assemblage is subdivided into the transgressive carbonate Pekisko Formation, and two regressive successions of restricted-marine carbonates and subordinate anhydrite assigned to the Shunda and Turner Valley formations (Richards et al. 1994). The Turner Valley Formation extends from east-

TABLE 5.1 GENERALIZED PALEOZOIC STRATIGRAPHY OF FOOTHILLS AND FRONT RANGES, WEST-CENTRAL ALBERTA*

System or Subsystem	Stratigraphic Unit		
	Assemblage / Group	Formation	
		S	N
Lower Carboniferous	Rundle Assemblage	Mount Head	
		[1] Livingstone	Turner Valley
			Shunda
			Pekisko
	Banff Assemblage	Banff	
		Exshaw	
		[1] Palliser	
Upper Devonian	Fairholme Group°	Alexo	
		Southesk	Mount Hawk
		Cairn	
Cambrian		Pika	
		Eldon	
		Stephen	
		Cathedral	

*Compiled from MacKenzie (1969), Richards et al. (1994), Switzer et al. (1994), and Holter (1994).
° Fairholme Group of MacKenzie (1969) is partly equivalent to the Woodbend Group (Switzer et al., 1994).
[1] Current limestone production (*from* Holter, 1994)

central British Columbia to southwestern Alberta. According to Richards et al. (1994), the Turner Valley Formation thickens to the southwest and for most of its length is 50 m to 120 m thick. The type section near Turner Valley is 152 m thick and divisible into four beds. Earlier work by Douglas (1958), and MacQueen and Bamber (1968) indicate that the eastern peritidal sequences of the uppermost Pekisko, Shunda and lower Turner Valley grade south and southwestward into the more open-marine sequence of the Livingstone Formation (Table 5.1).

The upper Rundle Assemblage includes the transgressive Mount Head Formation.

5.1.4 Fernie Group

The Fernie Group includes all but the uppermost Jurassic strata of western Alberta and eastern British Columbia. Although treated as a Group, the Fernie is divided into a number of members and informal units with uncertain relations and continuity. The Fernie Group thickens gently and irregularly west and southwest.

Outcrops of the Fernie Group consist of large thicknesses of shale and calcareous sandstones with minor conglomerate.

5.2 STRUCTURE

In the Front Ranges and Foothills of west-central Alberta, Paleozoic and Mesozoic strata are repeated along several major thrust faults. Displacements along these faults are interpreted to be tens of kilometres. Within individual thrust sheets, regional-scale folds exhibit a spatial relation to their leading edges. Near Nordegg, the main structural discontinuity is the northwest- to southeast-trending Brazeau Thrust. The leading edge of the thrust sheet is folded into the asymmetrical to recumbent Brazeau Anticline (Fig. 4.2).

As previously indicated by Pana and Dahrouge (1998; p. 11),

> "North of Nordegg the main structural elements within Brazeau Range include Brazeau Anticline, and Coliseum Fault, which is a splay from the Brazeau Thrust... North of Highway 11 the asymmetrical Brazeau Anticline trends northwesterly; one limb dips gently-moderately to the southwest and the other steeply northeast to overturned. Local faults and folds are present on both limbs."

6. RESULTS

Seven and a half days were spent checking Property access and mapping carbonate outcrops in detail. The 2015 exploration concentrated on defining stratigraphic unit locations and contacts within previously under-explored areas of the properties.

Carbonate lithologies of the Pekisko and Banff formations were examined and sampled within the Coliseum Group permits, near Shunda and Coliseum mountains (Fig. 4.2). A total of 36 samples were collected, representing approximately 91.25 m of stratigraphy (Appendix 2). Where bedding could not be identified, stratigraphic measurements were taken based on the previously determined regional trend or deduced from surrounding measurements where possible.

The majority of the outcrops sampled in 2015 were identified as Pekisko Formation. Analytical results were variable, presumably due to the fact that different members within the formation were sampled. The highest-quality section was Section 2015-01, which was collected from the summit of Coliseum Mountain (Fig. 4.2). The interval consisted of medium-grey fresh, micritic to fine-grained, lime mudstone to wackestone and returned values of 97.72% $CaCO_3$, 1.76% $MgCO_3$ and 0.24% SiO_2 over a 22.25 m interval (Fig. 4.2).

The Pekisko was also examined approximately 2 km southeast of Coliseum Mountain summit in Section 2015-02. This section was slightly more dolomitic and returned values of 95.26% $CaCO_3$ and 4.42% $MgCO_3$ over 16 m (Fig. 4.2).

Several intervals of Banff Formation were examined during the 2015 exploration. Results from these intervals were poor, with the best section (2015-04) returning values of 72.11% $CaCO_3$, 27.35% $MgCO_3$ and 0.83% SiO_2 over 22.75 m. The interval consisted of medium-grey to medium-brown, cryptocrystalline to micritic mudstones with occasional chert lenses. The Banff Formation is not a high quality carbonate unit of interest due to its low $CaCO_3$ values and high $MgCO_3$ content.

7. CONCLUSIONS

Carbonate units of the Pekisko and Banff formations were examined and measured along the northern part of Brazeau Range near Coliseum and Shunda mountains. A total of 36 samples were collected and described in detail. The 91.25 m of stratigraphy sampled consisted of 64.75 m of Pekisko Formation, and 26.5 m from the Banff Formation. Roads and trails on/near the Property were noted, which provide excellent access within the central parts of the Property. Based upon the results of the 2015 exploration, the entirety of the Coliseum Group will be retained.

Future exploration will expand on work already conducted in the area, confirming or redefining past geological interpretations and determining the potential for high-calcium limestone and/or high-quality dolomite within the permit area. Future drill-testing of the Palliser and Pekisko formations is also recommended.

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9. STATEMENT OF QUALIFICATIONS

I, Patrick Kluczny, residing at [redacted] do hereby certify that:

- I am a geologist of Dahrouge Geological Consulting Ltd., Suite 18, 10509 - 81 Ave., Edmonton, Alberta, T6E 1X7.
- I am a 2006 graduate of the University of Alberta, Edmonton, Alberta with a B.Sc. in Geology.
- I have practiced my profession as a geologist continuously since 2006.
- I am a registered Professional Geologist with the Association of Professional Engineers and Geoscientists of Alberta, member M81985.
- I hereby consent to the copying or reproduction of this Assessment Report following the one-year confidentiality period.
- I am a co-author of the report entitled "2015 Exploration and Fieldwork within the Coliseum Group Metallic and Industrial Minerals Permits, West-Central Alberta" and accept responsibility for the veracity of technical data and results.

Dated this 27th day of October, 2015.

PROFESSIONAL GEOLOGIST ALBERTA PATRICK KLUCZNY

Patrick Kluczny, B.Sc., P.Geol.
APEGA M81985

I, Kelly Krueger, residing at [redacted] do hereby certify that:

- I am a geologist of Dahrouge Geological Consulting Ltd., Suite 18, 10509 - 81 Ave., Edmonton, Alberta, T6E 1X7.
- I am a 2012 graduate of the University of Alberta, Edmonton, Alberta with a B.Sc. in Geology.
- I have practiced my profession as a geologist continuously since 2012.
- I am a registered Geologist-in-Training with the Association of Professional Engineers and Geoscientists of Alberta, member M96506.
- I hereby consent to the copying or reproduction of this Assessment Report following the one-year confidentiality period.
- I am a co-author of the report entitled "2015 Exploration and Fieldwork within the Coliseum Group Metallic and Industrial Minerals Permits, West-Central Alberta" and accept responsibility for the veracity of technical data and results.

Dated this 27th day of October, 2015.

Kelly Krueger, B.Sc., Geo.I.T.

APEGA M96506

APPENDIX 1: ITEMIZED COST STATEMENT FOR THE 2015 EXPLORATION WITHIN THE COLISEUM GROUP METALLIC AND INDUSTRIAL MINERALS PERMITS

a) Personnel

[redacted]							
0.20	days			office	Project supervision		
0.20	days	@	$ 990.00			$ 200.87	
[redacted]							
1.42	days			office	Project supervision		
1.42	days	@	$ 795.00			$ 1,129.14	
[redacted]							
7.50	days			field	Field management, geological mapping and rock sampling (Aug 5-11)		
4.95	days			office	Field preparations, budgeting, bookings		
12.45	days	@	$ 520.00			$ 6,472.29	
[redacted]							
7.50	days			field	Geological mapping and rock sampling (Aug 5-11)		
5.03	days			office	Field preparations, data entry, GIS compilation		
12.53	days	@	$ 475.00			$ 5,950.73	
[redacted]							
7.50	days			field	Geological mapping and rock sampling (Aug 5-11)		
0.86	days			office	Field preparations, data entry, GIS compilation		
8.36	days	@	$ 350.00			$ 2,927.52	
[redacted]							
7.50	days			field	Geological mapping and rock sampling (Aug 5-11)		
7.50	days	@	$ 350.00			$ 2,625.00	
[redacted]							
0.20	hours			office	Logistics, shipping		
0.20	hours	@	$ 42.00			$ 8.40	
							$ 19,113.08

b) Food and Accommodation

21	man-days	@	$ 150.42	accommodations	$ 3,158.79	
30	man-days	@	$ 60.50	meals	$ 1,815.00	
						$ 4,973.79

c) Transportation

4x4 Truck Rental	$ 1,263.38	
ATV (1) & Trailer - Pioneer Rentals	$ 2,003.69	
ATV (3)	$ 2,191.32	
Taxi	$ 26.30	
Fuel	$ 513.14	
		$ 5,997.83

d) Instrument Rental

Radio (2)	$ 41.74	
SPOT Locators (2)	$ 52.17	
GPS (2)	$ 52.17	
		$ 146.09

e) Drilling n/a

f) Analyses

Central Lab of Graymont Western U.S. Inc.
(36 rock chip samples)

36	samples	@	$ 4.50	preparation fee	$ 162.00	
36	samples	@	$ 25.00	sample analysis	$ 900.00	
						$ 1,062.00

g) Other

Prints, photocopies, logistics	$ 15.98	
Misc. Supplies	$ 124.42	
Courier	$ 100.36	
		$ 240.76

Total	$ 31,533.55
Administration (10%)	$ 3,153.35
Total + Administration	**$ 34,686.90**

[redacted]

P. Kluczny, B.Sc., P.Geol. [redacted]

Edmonton, Alberta
October 27, 2015

APPENDIX 2: SAMPLE DESCRIPTIONS AND ASSAY RESULTS FROM THE COLISEUM GROUP PERMITS

Notes: Stratigraphic thicknesses are based on measured attitudes of bedding listed below, with appropriate interpolations. Attitudes are strike and dip (right-hand rule). Sections are listed in numerical order of samples, which does not necessarily represent stratigraphic order. Most samples consist of chips at 30 cm intervals. UTM coordinates are NAD83, Zone 11N. Section locations are shown in Figure 4.2.
Stratigraphy Abbreviations: Dpa - Devonian Palliser Formation; Mbf - Mississippian Banff Formation; Mpk - Mississippian Pekisko Formation; Msh - Mississippian Shunda Formation; Mtv - Mississippian Turner Valley Formation

Sample	Strat Unit	Strat Tkns (m)	Description	$CaCO_3$ (%)	$MgCO_3$ (%)	SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)	SrO (ppm)	MnO (ppm)	P_2O_5 (ppm)
Isolated Samples											
126952 UTM 564097E, 5819075N	Mpk	2	**Dolomitic Lime Mudstone,** light grey to tan weathered, medium brown-grey to dark brown-grey fresh, micritic, massive, slightly resistant, nodular, alteration: oxide, localized, moderate intensity, moderate HCl reaction	90.84	6.19	1.71	0.300	0.140	265	77	50
126953 UTM 564046E, 5819028N	Mpk	3	**Lime Mudstone to Lime Wackestone,** light grey to tan weathered, tan to dark grey fresh, micritic to coarse-grained, fossils: crinoid ossicle, rare, laminated, resistant, argillaceous, vuggy (calcite-filled), moderate HCl reaction, structure(s): contact (sharp), undetermined-scale, strong, 290/83 NE	95.49	1.28	1.74	0.350	0.160	379	142	153
126954 UTM 563845E, 5818384N	Mpk	2.5	**Lime Mudstone,** medium grey to tan-grey weathered, dark grey fresh, cryptocrystalline to micritic, thinly-bedded, resistant, argillaceous, vuggy (calcite-filled), moderate HCl reaction, structure(s): bedding (definite), outcrop-scale, strong, 290/83 NE	97.09	1.46	0.61	0.090	0.160	268	30	50
126982 UTM 564024E, 5818400N	Mpk	0.5	**Argillaceous Dolomitic Mudstone,** light grey to very-light grey weathered, dark grey fresh, micritic, laminated to thinly-bedded, slightly resistant, hard, vuggy (calcite-filled), strong HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak; bedding (definite), outcrop-scale, moderate, 265/19 N	80.14	7.76	12.63	0.090	0.080	217	29	50
126983 UTM 563919E, 5818124N	Mpk	2.5	**Lime Grainstone to Lime Packstone,** light grey weathered, medium grey fresh, micritic to very coarse-grained, fossils: crinoid stem, very abundant; crinoid ossicle, very abundant, thinly-bedded to moderately-bedded, slightly resistant, soft, sucrosic, alteration: oxide, localized, weak intensity, strong fetid odour, strong HCl reaction, structure(s): fracture, outcrop-scale, moderate	96.38	2.03	0.79	0.060	0.080	287	26	50
126984 UTM 563891E, 5818110N	Mpk	2	**Strongly Dolomitic Lime Wackestone to Strongly Dolomitic Lime Packstone,** light grey weathered, medium grey to dark grey fresh, cryptocrystalline to coarse-grained, fossils: crinoid stem, abundant; crinoid ossicle, abundant, moderately-bedded, slightly resistant, hard, vuggy (calcite-filled), moderate HCl reaction, structure(s): fracture, outcrop-scale, moderate; calcite veinlet, outcrop-scale, weak	78.53	20.73	0.48	0.090	0.090	201	31	50
126995 UTM 559743E, 5821045N	Mpk	grab	**Slightly Dolomitic Lime Grainstone to Slightly Dolomitic Lime Packstone,** light grey weathered, medium grey fresh, micritic to coarse-grained, fossils: crinoid stem, common; crinoid ossicle, abundant; brachiopod, common, recessive, soft, alteration: oxide, localized, very weak intensity, weak fetid odour, strong HCl reaction, structure(s): calcite vein, outcrop-scale, weak	95.66	2.70	0.70	0.080	0.130	362	34	50
126996 UTM 559744E, 5821059N	Mpk	grab	**Dolomitic Lime Mudstone,** light grey to medium grey weathered, medium grey to light grey fresh, micritic, recessive, moderate, weak fetid odour, strong HCl reaction	93.16	6.76	0.24	0.060	0.060	281	23	50
126997 UTM 559766E, 5821040N	Mpk	grab	**Lime Wackestone to Lime Packstone,** light grey weathered, medium brown-grey to dark brown-grey fresh, micritic to coarse-grained, fossils: crinoid stem, common; crinoid ossicle, common; brachiopod, common, recessive, hard, alteration: oxide, localized, weak intensity, strong fetid odour, strong HCl reaction	97.09	1.34	0.58	0.080	0.140	337	31	50

Sample	Strat Unit	Strat Tkns (m)	Description	$CaCO_3$ (%)	$MgCO_3$ (%)	SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)	SrO (ppm)	MnO (ppm)	P_2O_5 (ppm)
126998 UTM 559783E, 5821053N	Mpk	2	**Slightly Dolomitic Lime Grainstone to Slightly Dolomitic Lime Packstone,** light grey to tan weathered, medium grey to dark grey fresh, micritic to coarse-grained, fossils: fragment (indeterminate), rare; crinoid stem, very abundant; crinoid ossicle, very abundant, recessive, moderate, weak fetid odour, strong HCl reaction	95.49	3.24	0.58	0.080	0.100	304	28	50
126999 UTM 559792E, 5821020N	Mpk	0.25	**Lime Grainstone to Lime Packstone,** light grey weathered, medium grey to dark grey fresh, micritic to coarse-grained, fossils: fragment (indeterminate), rare; crinoid stem, very abundant; crinoid ossicle, very abundant, slightly resistant, hard, strong HCl reaction, structure(s): bedding (definite), outcrop-scale, moderate, 315/19 NE	98.16	0.98	0.18	0.070	0.160	369	28	50
127000 UTM 559813E, 5821014N	Mpk	1.5	**Lime Grainstone,** light grey weathered, medium grey to dark grey fresh, micritic to very coarse-grained, fossils: fragment (indeterminate), rare; crinoid stem, very abundant; crinoid ossicle, very abundant, recessive, hard, strong HCl reaction, structure(s): bedding (definite), outcrop-scale, 267/23 N	98.34	0.98	0.23	0.060	0.100	342	33	50
127001 UTM 559837E, 5821020N	Mpk	2	**Lime Packstone to Lime Grainstone,** light grey to very-light grey weathered, medium grey fresh, micritic to very coarse-grained, fossils: fragment (indeterminate), rare; crinoid stem, abundant; crinoid ossicle, very abundant; brachiopod, rare, moderately-bedded, recessive, moderate, strong fetid odour, strong HCl reaction	96.91	1.86	0.40	0.080	0.160	313	29	50
127002 UTM 559810E, 5821043N	Mpk	1.75	**Lime Grainstone to Lime Packstone,** light grey to very-light grey weathered, medium grey fresh, micritic to coarse-grained, fossils: fragment (indeterminate), rare; crinoid stem, very abundant; crinoid ossicle, very abundant; brachiopod, rare, moderately-bedded, recessive, moderate, strong fetid odour, strong HCl reaction	98.34	1.28	0.21	0.060	0.120	318	33	50
Section 2015-01 (UTM 562131E, 5819326N)											
126955	Mpk	8	**Lime Grainstone,** light grey to tan weathered, medium grey fresh, medium-grained to very coarse-grained, fossils: solitary rugose coral, rare; fragment (indeterminate), rare; crinoid stem, abundant; crinoid ossicle, abundant; brachiopod, rare, resistant, soft, homogeneous, sucrosic, strong fetid odour, moderate HCl reaction, structure(s): joint, outcrop-scale, moderate; fracture, outcrop-scale, moderate	99.23	0.88	0.09	0.050	0.070	306	31	50
126956	Mpk	3.25	**Lime Grainstone,** light grey weathered, medium grey fresh, medium-grained to very coarse-grained, fossils: solitary rugose coral, rare; peloid, rare; crinoid stem, abundant; crinoid ossicle, abundant; brachiopod, rare, massive, resistant, soft, sucrosic, strong fetid odour, moderate HCl reaction, structure(s): joint, outcrop-scale, weak; fracture, outcrop-scale, moderate; calcite veinlet, outcrop-scale, weak	98.70	0.88	0.35	0.050	0.090	320	34	50
126957	Mpk	2.75	**Lime Grainstone,** light grey weathered, medium grey fresh, medium-grained to very coarse-grained, fossils: solitary rugose coral, rare; peloid, rare; crinoid stem, abundant; crinoid ossicle, abundant; brachiopod, rare, massive, resistant, sucrosic, strong fetid odour, moderate HCl reaction, structure(s): joint, outcrop-scale, weak; fracture, outcrop-scale, moderate; calcite veinlet, outcrop-scale, weak	97.98	1.59	0.20	0.050	0.100	303	35	50
126958	Mpk	3.75	**Lime Grainstone,** light grey to very-light grey weathered, medium grey fresh, coarse-grained to very coarse-grained, fossils: solitary rugose coral, rare; crinoid stem, very abundant; crinoid ossicle, very abundant; brachiopod, rare; bivalve, rare, massive, resistant, soft, sucrosic, strong HCl reaction, structure(s): joint, outcrop-scale, strong; fracture, outcrop-scale, strong; calcite veinlet, outcrop-scale, weak	97.63	1.00	0.21	0.060	0.050	300	23	50
126959	Mpk	2.25	**Lime Grainstone,** light grey to very-light grey weathered, medium grey fresh, medium-grained to very coarse-grained, fossils: fragment (indeterminate), rare; crinoid stem, very abundant; crinoid ossicle, very abundant; brachiopod, rare; bivalve, rare, massive, slightly resistant, soft, sucrosic, strong HCl reaction, structure(s): joint, outcrop-scale, strong; fracture, outcrop-scale, strong; calcite veinlet, outcrop-scale, weak	97.09	1.92	0.31	0.080	0.140	277	41	50

Sample	Strat Unit	Strat Tkns (m)	Description	$CaCO_3$ (%)	$MgCO_3$ (%)	SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)	SrO (ppm)	MnO (ppm)	P_2O_5 (ppm)
126960	Mpk	2.25	**Dolomitic Lime Grainstone**, light grey to very-light grey weathered, medium grey fresh, medium-grained to very coarse-grained, fossils: fragment (indeterminate), rare; crinoid stem, very abundant; crinoid ossicle, very abundant; brachiopod, rare; bivalve, rare, massive, slightly resistant, soft, sucrosic, moderate HCl reaction, structure(s): joint, outcrop-scale, moderate; fracture, outcrop-scale, moderate; calcite veinlet, outcrop-scale, weak	91.38	7.45	0.60	0.120	0.120	254	37	50
Section 2015-02 (UTM 563726E, 5818068N)											
126985	Mpk	7.75	**Slightly Dolomitic Lime Grainstone to Slightly Dolomitic Lime Mudstone**, light grey weathered, medium grey fresh, medium-grained to coarse-grained, fossils: ooid, abundant; crinoid stem, very abundant; crinoid ossicle, very abundant, thinly-bedded to moderately-bedded, resistant, soft, cherty, vuggy (calcite-filled), sucrosic, strong HCl reaction, structure(s): joint, outcrop-scale, strong; fracture, outcrop-scale, strong; calcite veinlet, outcrop-scale, weak; bedding (undulatory), outcrop-scale, 136/22 SW; bedding (undulatory), outcrop-scale, 130/17 SW	95.13	4.33	0.51	0.100	0.080	350	36	50
126986	Mpk	4	**Lime Grainstone**, light grey weathered, medium grey fresh, medium-grained to very coarse-grained, fossils: ooid, rare; fragment (indeterminate), rare; crinoid stem, very abundant; crinoid ossicle, very abundant; brachiopod, rare, thinly-bedded to moderately-bedded, resistant, soft, sucrosic, strong HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak	98.88	1.05	0.19	0.080	0.090	282	26	50
126987	Mpk	4.25	**Dolomitic Lime Packstone to Dolomitic Lime Grainstone**, light grey weathered, medium grey fresh, micritic to coarse-grained, fossils: fragment (indeterminate), rare; crinoid stem, abundant; crinoid ossicle, abundant, moderately-bedded to thickly-bedded, resistant, moderate, sucrosic, strong HCl reaction, structure(s): joint, outcrop-scale, strong; fracture, outcrop-scale, strong	92.09	7.76	0.25	0.090	0.100	221	33	50
Section 2015-03 (UTM 559873E, 5821075N)											
127003	Mpk	2.5	**Dolomitic Lime Wackestone to Dolomitic Lime Packstone**, light grey to light tan-grey weathered, light grey to medium grey fresh, micritic to coarse-grained, fossils: crinoid stem, common; crinoid ossicle, common; brachiopod, rare, thinly-bedded, slightly resistant, moderate, alteration: oxide, localized, weak intensity, moderate HCl reaction, structure(s): fracture, outcrop-scale, moderate	90.84	8.10	0.89	0.090	0.070	258	30	50
127004	Mpk	4	**Dolomitic Lime Packstone**, light grey to light tan-grey weathered, light grey to medium grey fresh, micritic to coarse-grained, fossils: crinoid stem, rare; crinoid ossicle, common; brachiopod, rare, thinly-bedded, slightly resistant, moderate, alteration: oxide, localized, weak intensity, strong HCl reaction, structure(s): fracture, outcrop-scale, moderate	91.02	8.62	0.52	0.080	0.080	301	47	50
Section 2015-04 (UTM 563718E, 5818065N)											
126988	Mbf	3.75	**Strongly Dolomitic Lime Packstone**, light grey weathered, medium grey fresh, micritic to very coarse-grained, fossils: ooid, rare; fragment (indeterminate), rare; crinoid stem, very abundant; crinoid ossicle, very abundant; brachiopod, rare, moderately-bedded, resistant, hard, vuggy (calcite-filled), vuggy (open), strong HCl reaction	86.38	13.78	0.44	0.090	0.100	200	37	50
126989	Mbf	2.25	**Calcareous Dolomitic Packstone**, light grey weathered, medium grey fresh, cryptocrystalline to very coarse-grained, fossils: ooid, rare; crinoid stem, abundant; crinoid ossicle, abundant; brachiopod, rare, moderately-bedded to thickly-bedded, slightly resistant, vuggy (open), vuggy (calcite-filled), moderate HCl reaction	67.11	32.78	0.69	0.140	0.100	134	44	50
126990	Mbf	4	**Calcareous Dolomitic Packstone to Calcareous Dolomitic Grainstone**, light grey weathered, medium grey fresh, micritic to very coarse-grained, fossils: crinoid stem, abundant; crinoid ossicle, abundant; brachiopod, rare, moderately-bedded, slightly resistant, pockety, vuggy (open), moderate HCl reaction	69.07	30.71	0.82	0.160	0.140	145	38	50

Sample	Strat Unit	Strat Tkns (m)	Description	$CaCO_3$ (%)	$MgCO_3$ (%)	SiO_2 (%)	Al_2O_3 (%)	Fe_2O_3 (%)	SrO (ppm)	MnO (ppm)	P_2O_5 (ppm)
126991	Mbf	3.75	**Calcareous Dolomitic Packstone to Calcareous Dolomitic Grainstone,** light grey weathered, medium grey fresh, micritic to coarse-grained, fossils: crinoid stem, abundant; crinoid ossicle, abundant; brachiopod, rare, moderately-bedded, slightly resistant, vuggy (open), vuggy (calcite-filled), pockety, moderate HCl reaction	62.82	36.29	1.15	0.200	0.090	135	45	117
126992	Mbf	4.25	**Calcareous Dolomitic Packstone to Calcareous Dolomitic Grainstone,** light grey weathered, medium grey fresh, micritic to very coarse-grained, fossils: crinoid stem, abundant; crinoid ossicle, abundant; brachiopod, rare, moderately-bedded, slightly resistant, pockety, vuggy (open), vuggy (calcite-filled), moderate HCl reaction	75.85	23.36	0.72	0.150	0.120	191	43	50
126993	Mbf	3.75	**Calcareous Dolomitic Packstone to Calcareous Dolomitic Wackestone,** light grey weathered, medium grey fresh, cryptocrystalline to coarse-grained, fossils: solitary rugose coral, rare; crinoid stem, common; crinoid ossicle, common, moderately-bedded, slightly resistant, hard, vuggy (open), vuggy (calcite-filled), pockety, moderate HCl reaction	69.78	29.28	1.01	0.180	0.090	161	39	50
126994	Mbf	1	**Calcareous Dolomitic Wackestone to Calcareous Dolomitic Packstone,** light grey weathered, light grey to medium grey fresh, micritic to coarse-grained, fossils: solitary rugose coral, common, slightly resistant, vuggy (open), vuggy (calcite-filled), alteration: oxide, localized, moderate intensity, weak fetid odour, moderate HCl reaction, structure(s): fracture, outcrop-scale, moderate; calcite veinlet, outcrop-scale, weak; bedding (definite), outcrop-scale, 95/20 S	69.78	28.85	1.30	0.300	0.170	203	51	50
Section 2015-05 (UTM 562143E, 5819331N)											
126961	Mbf	1.25	**Strongly Dolomitic Lime Grainstone,** light grey weathered, medium grey to dark grey fresh, medium-grained to very coarse-grained, fossils: peloid, very rare; fragment (indeterminate), rare; crinoid stem, very abundant; crinoid ossicle, very abundant; brachiopod, rare, moderately-bedded to thickly-bedded, slightly resistant, soft, sucrosic, moderate HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak; bedding (undulatory), outcrop-scale, moderate, 212/3 NW	78.89	20.69	0.55	0.110	0.130	207	48	194
126962	Mbf	0.75	**Calcareous Dolomitic Mudstone to Calcareous Dolomitic Wackestone,** light grey weathered, medium grey to dark grey fresh, micritic to coarse-grained, fossils: solitary rugose coral, rare, thickly-bedded, slightly resistant, hard, strong HCl reaction	71.57	26.77	1.10	0.240	0.120	205	44	50
126963	Mbf	1	**Strongly Dolomitic Lime Mudstone to Strongly Dolomitic Lime Packstone,** light grey weathered, medium grey fresh, micritic to coarse-grained, fossils: solitary rugose coral, rare; crinoid stem, common; crinoid ossicle, common, thinly-bedded, recessive, hard, moderate HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak; bedding (definite), outcrop-scale, 49/5 SE	81.03	17.65	0.88	0.110	0.090	198	30	50
126964	Mbf	0.75	**Dolomitic Lime Packstone,** light grey weathered, medium grey to dark grey fresh, micritic to coarse-grained, fossils: crinoid stem, abundant; crinoid ossicle, abundant, thinly-bedded, recessive, vuggy (calcite-filled), weak HCl reaction, structure(s): calcite veinlet, outcrop-scale, weak	87.81	8.58	3.08	0.100	0.100	269	30	50

APPENDIX 3: ANALYTICAL LABORATORY INFORMATION AND TECHNIQUES

Name and Address of the Lab:

Graymont Western US Inc., Central Laboratory.
670 East 3900 South, Suite 200
Salt Lake City, Utah, 84107

Statement of Qualifications:

Jared Leikam obtained a B.S. in Chemistry from the University of Utah in the class of 2003. Jared started working for Graymont in February of 2004 and has been working with the ICP Spectrometer for two and a half years, under the direct supervision of Carl Paystrup (Lab Supervisor).

Vonda Stuart obtained a B.S. in Chemistry from Weber State University in 2004. Vonda started with Graymont in August of 2007 and started working in the ICP Lab the following September.

Sample Preparation, Procedures, Reagents, Equipment, etc.:

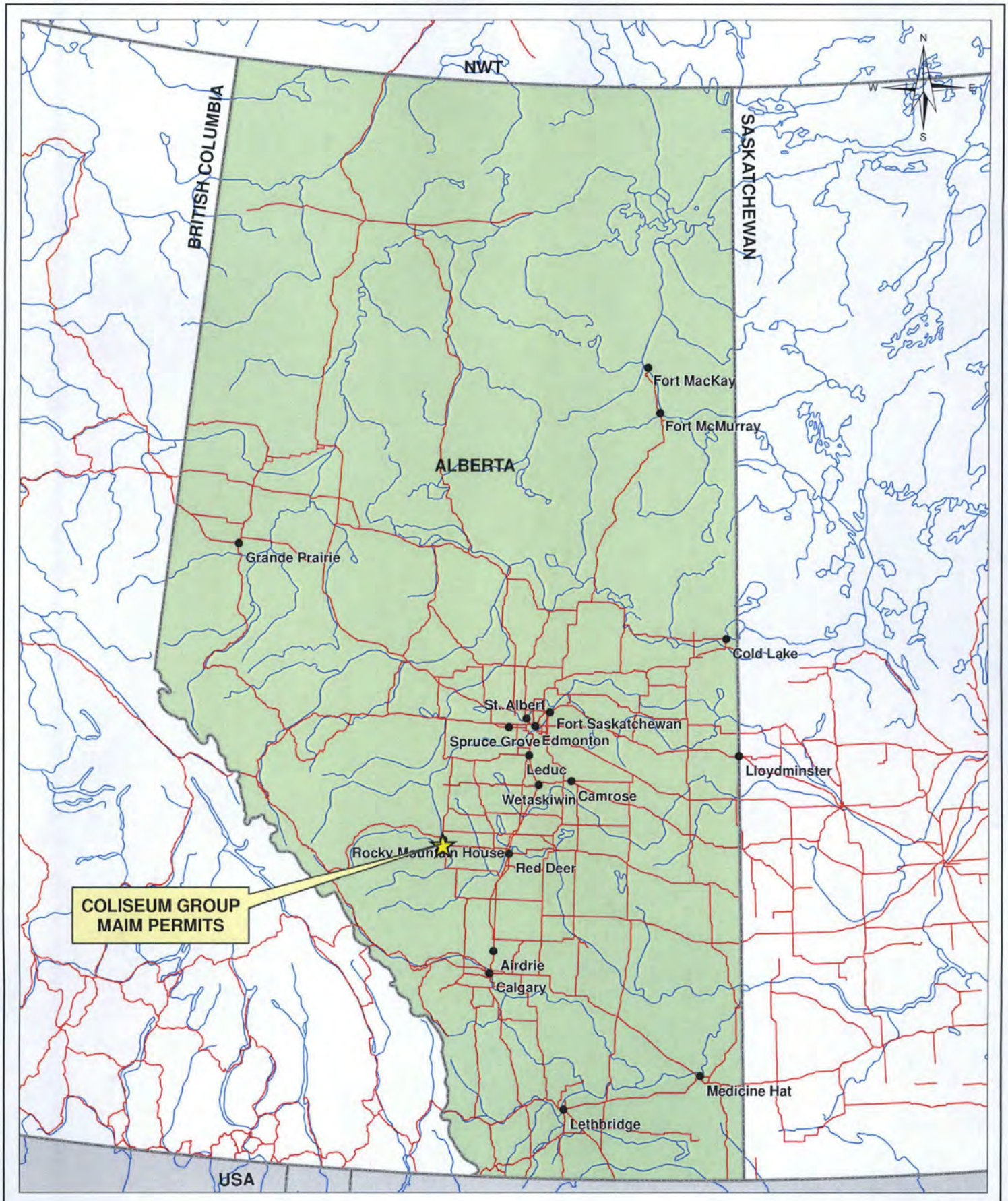
For the ICP sample preparation, 0.5 grams of the sample is mixed with 3 g of lithium carbonate. The sample and the lithium carbonate are then fused together in a muffle furnace at 850°C. Following the fusion process, the samples are dissolved in 1:1 HCl; a total of 40 mL 1:1 HCl is used in the dissolving process. The samples are then diluted to 200 mL and spiked with 10 ppm Co. Cobalt is used as an internal standard. At this point the samples are ready for analysis on the Perkin Elmer, Optima 7300V.

Mesh Size Fraction, Split and Weight of Sample:

Upon receiving the samples, the prep room technician riffles and then splits the stone down to a manageable size (roughly 200 g). The stone is then dried in an oven at 120°C. Once the samples have been dried they get pulverized to a -200 mesh size. A split of this pulverized material is then sent for testing in the main part of the lab.

Quality Control Procedures:

The ICP spectrometer is calibrated with two certified reference materials prior to analyzing a batch of samples. A batch typically contains 96 samples. Every 12^{th} sample in a batch is a certified limestone reference sample. In addition to the 8 reference samples imbedded in the batch, there are 2 limestone reference samples analyzed at the beginning and at the end of the batch to ensure the accuracy of our Na and P numbers. Every element being analyzed in a sample is backed up by data from the certified reference materials. We also use an internal standard (10 ppm Co) to further ensure the quality and accuracy of the analysis.



Legend

- Towns/Cities
- Major roads
- Rivers

Kilometres

0 100 200 300 400 500

1:5,500,000

Coordinate System: UTM NAD83, Zone 11N

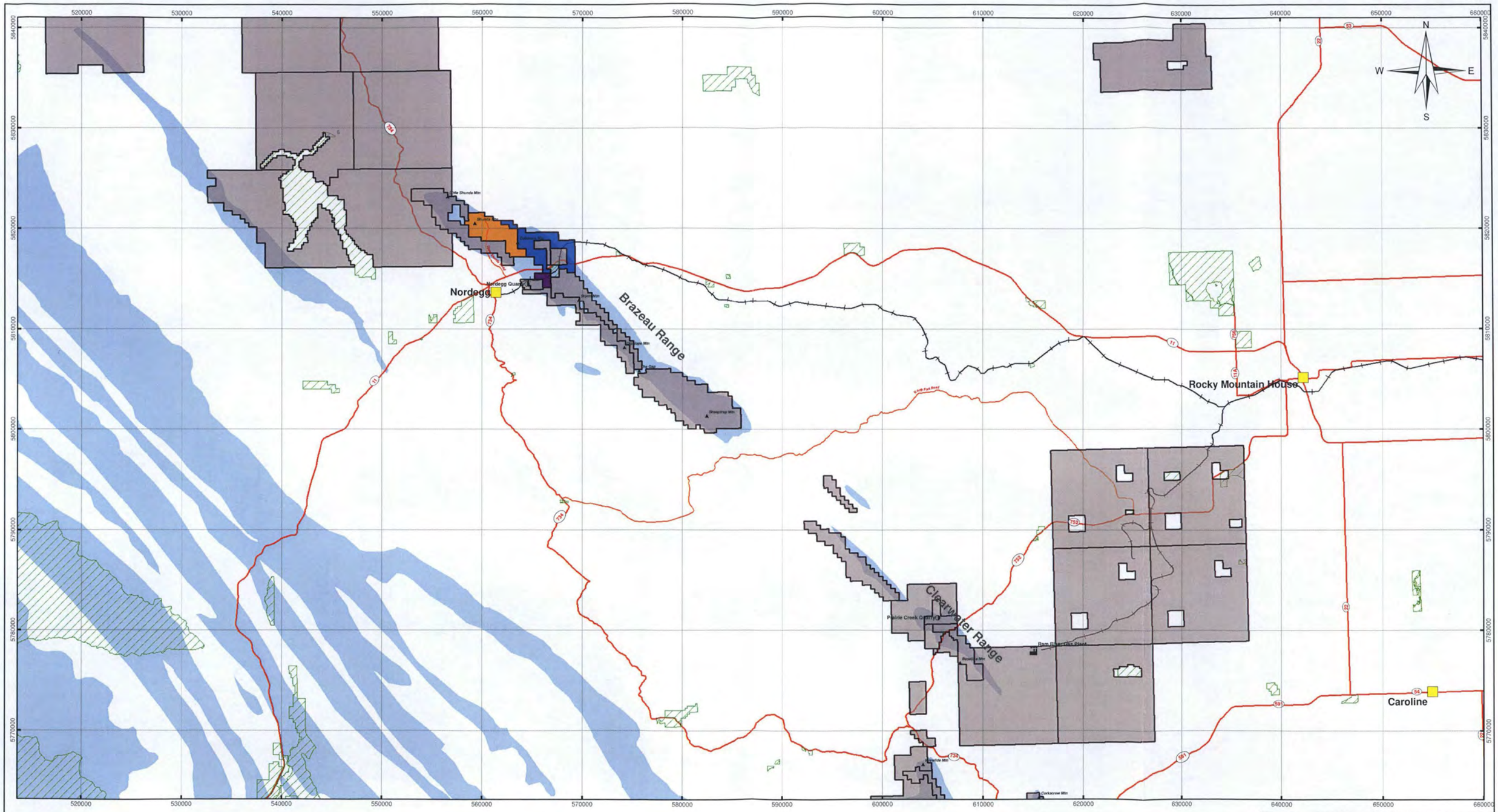
GRAYMONT WESTERN CANADA INC.

Dahrouge Geological Consulting Ltd.
Edmonton, Alberta

COLISEUM GROUP PROPERTY
WEST-CENTRAL ALBERTA

Fig. 3.1
Location Map

KK 2015.05



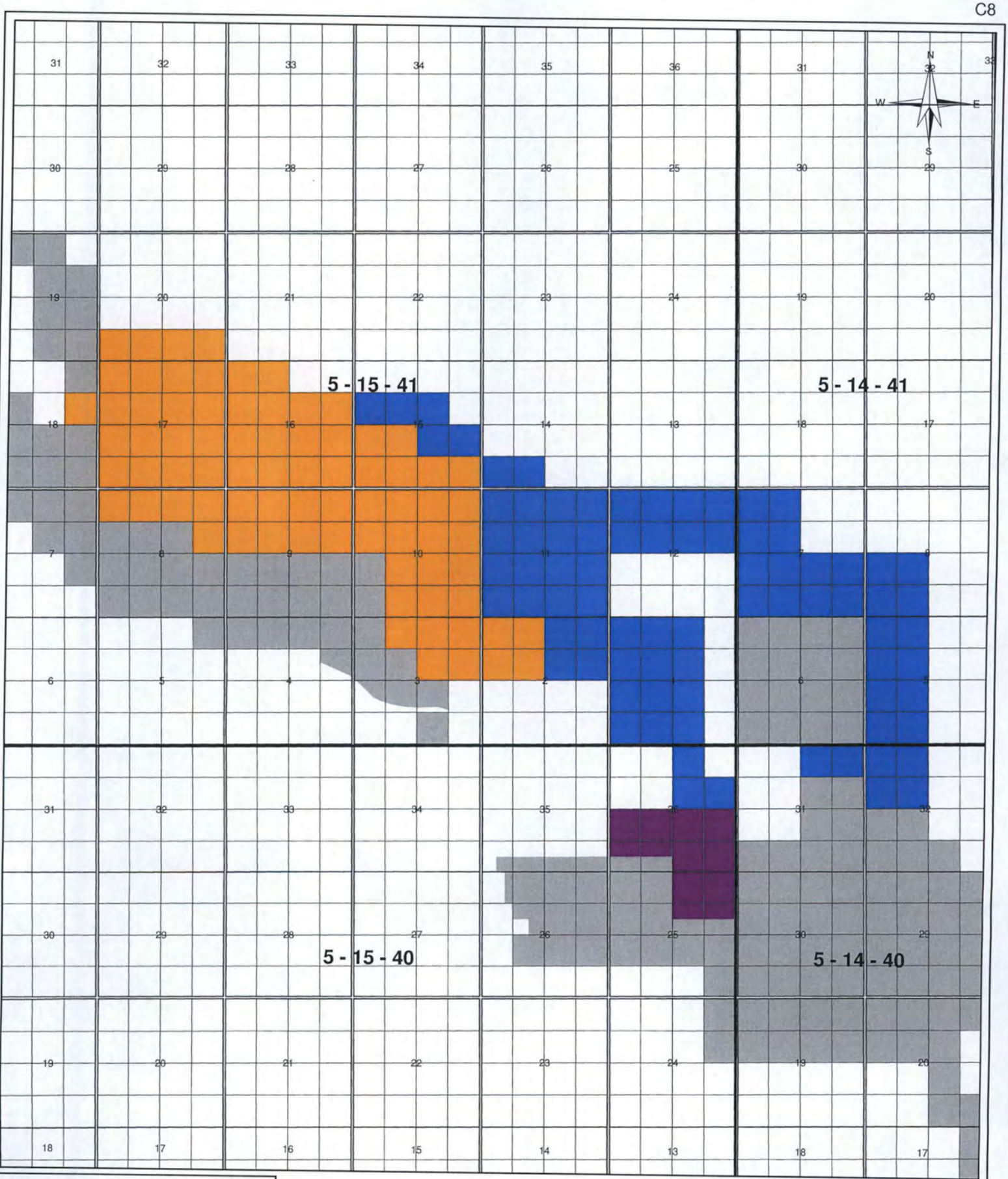
GRAYMONT WESTERN CANADA INC.

Dahrouge Geological Consulting Ltd.
Edmonton, Alberta

WEST-CENTRAL ALBERTA

Fig. 3.2
Access Map

PK 2015.05



Legend

MAIM Permits

- Alexo Permit #9311090602 (1,280 ha)
- Shunda Mountain Permit #9308050833 (1,232 ha)
- Nordegg East Permit #9312120361 (160 ha)
- Others

Kilometres

0 1 2 3

1:60,000

Coordinate System: UTM NAD83, Zone 11N

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Edmonton, Alberta

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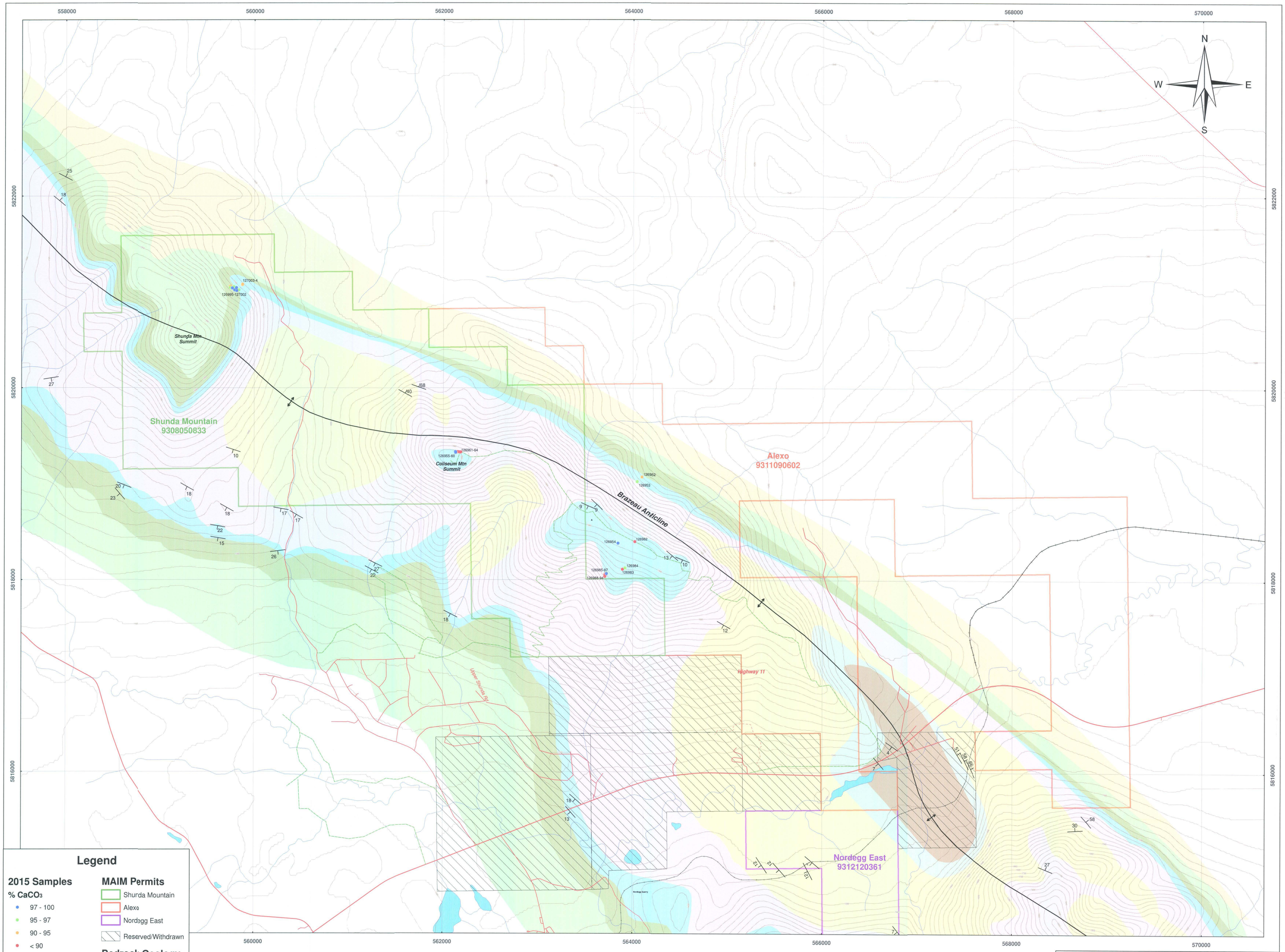
WEST-CENTRAL ALBERTA

Fig. 4.1
Permit Map

KK 2015.05



Legend

2015 Samples

% $CaCO_3$

- 97 - 100
- 95 - 97
- 90 - 95
- < 90

Roads

- Highway
- Secondary Road
- Minor road/trail
- Hiking trail
- Topography (20m)
- Creek/Stream
- River/Lake

MAIM Permits

- Shurda Mountain
- Alexo
- Nordegg East
- Reserved/Withdrawn

Bedrock Geology

- Fernie
- Turner Valley
- Shunda
- Pekisko
- Banff
- Palliser
- Alexo
- Mt Hawk

Kilometres

0 1 2 3 4

1:15,000

Coordinate System: UTM NAD83, Zone 11N

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Edmonton, Alberta

WEST-CENTRAL ALBERTA

Fig. 4.2
Geology and Sample Locations

KK 2015.10