

MAR 20040024: PIERRE RIVER

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PERMIT TO PRACTICE Dahrouge Geological Consulting Ltd. Signature _____ Date <u>Dec 22/04</u> PERMIT NUMBER: P 8793 The Association of Professional Engineers, Geologists and Geophysicists of Alberta

GRAYMONT WESTERN CANADA INC.

**2004 EXPLORATION AND FIELDWORK
FOR HIGH-QUALITY CARBONATES AT THE
PIERRE RIVER PERMIT, NEAR
FORT MCKAY, NORTHEAST ALBERTA**

Metallic and Industrial Minerals Permit:
9302100859

Geographic Coordinates

57°27'13"N
111°37'31" W

NTS Sheet 74E/05

2004 12 20

by

J.R. Dahrouge, B.Sc., P.Geol.
R. Wolbaum, B.Sc., Geol.I.T.

Dahrouge Geological Consulting Ltd.
18, 10509 - 81 Avenue
Edmonton, AB T6E 1X7

MINING GEOLOGY
MINERAL EXPLORATION
INDUSTRIAL MINERALS
COAL

dahrouge geological consulting ltd.
consulting geologists

December 21, 2004

Attention: Hazel Hensen
Senior Administrator

Coal and Mineral Development Unit
Alberta Department of Energy
7th Floor, North Petroleum Plaza
9945 - 108 Street
Edmonton, AB T5K 2G6

Dear Hazel:

Re: Metallic & Industrial Minerals Permit No. 9302100859

In connection with the above noted metallic and industrial minerals (MAIM) permit, we are enclosing herewith one bound copy and one unbound copy of an assessment report entitled "2004 Exploration and Fieldwork for High-Quality Carbonates at the Pierre River Permit, Near Fort McKay, Northeast Alberta." Dahrouge Geological Consulting Ltd. is filing the aforementioned assessment on behalf of Graymont Western Canada Inc.

The entirety of Permit 9302100859 will be kept in good standing, it will not be amended. Excess expenditures, as discussed in Section 4.3 of the attached report, are to be assigned to permit 9302100859.

Also attached are the following:

- a) a letter of authorization for the reproduction or copying of the attached report; and
- b) a letter of authorization from Graymont Western Canada Inc. authorizing Dahrouge Geological Consulting Ltd. to act on their behalf.

Please advise if you require any additional information.

Yours very truly,
DAHROUGE GEOLOGICAL

Jody Dahrouge, B.Sc., P.Geol.

Encl.

cc. Mr. Marc Gidluck
Graymont Western Canada Inc.
Mr. Peter Darbyshire
Graymont Western Canada Inc.

MINING GEOLOGY
MINERAL EXPLORATION
INDUSTRIAL MINERALS
COAL

dahrouge geological consulting ltd.
consulting geologists


December 21, 2004

Coal and Mineral Development Unit
Alberta Department of Energy
7th Floor, North Petroleum Plaza
9945 - 108 Street
Edmonton, AB T5K 2G6

Re: Reproductions

Dahrouge Geological Consulting Ltd. hereby authorizes the Government of Alberta to reproduce or copy the attached Assessment Report, entitled "2004 Exploration and Fieldwork for High-Quality Carbonates at the Pierre River Permit, Near Fort McKay, Northeast Alberta" at the end of the one year confidentiality period.

Yours very truly,
DAHROUGE GEOLOGICAL



Jody Dahrouge, B.Sc., P.Geol.

GRAYMONT WESTERN CANADA INC.

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Calgary, Alberta
T2E 7J2

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GRAYMONT

December 22, 2004

Coal and Mineral Development Unit
Alberta Department of Energy
North Petroleum Plaza
9945 - 108 Street
Edmonton, Alberta T5K 2G6

To Whom It May Concern

Re: **LETTER OF AUTHORIZATION**

This letter authorizes Mr. Jody Dahrouge with Dahrouge Geological Consulting Ltd. to file assessment work on behalf of Graymont Western Canada Inc.

Yours truly,



Marcus J. Gidluck, P. Geol.
Division Geologist
Graymont Western Canada Inc.

cc. Jody Dahrouge, B.Sc., P.Geol.

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1.

SUMMARY

In July, 2004, an area north of Fort McKay, Alberta, where Pierre River converges with Athabasca River, was explored for high-quality carbonate rocks. Within Metallic and Industrial Minerals (MAIM) Permit 9302100859, a carbonate unit of the Devonian Waterways Formation was examined and its stratigraphic thickness measured. Approximately 4½ metres of the Calumet Member of the Waterways Formation was examined along the west bank of Athabasca River.

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. A magnetic declination of $17\frac{1}{2}^\circ$ east was used.

2.

INTRODUCTION

During the summer of 2004, Dahrouge Geological Consulting Ltd. conducted exploration, on behalf of Graymont Western Canada Inc., for high-quality carbonate lithotypes within north-east Alberta. This assessment report describes the exploration conducted within MAIM Permit 9302100859. It includes information on the geology and structure of the one location examined in 2004; as well as, a brief interpretation of the results. Peter Darbyshire, Vice President and General Manager for Graymont Western Canada Inc. authorized this work.

3.

GEOGRAPHIC SETTING

MAIM Permit 9302100859 encompasses an area to the west of Athabasca River, approximately 30 km north of Fort McKay and 90 km north of Fort McMurray in northeastern Alberta (Figs. 3.1 and 3.2). Fort McMurray is a community of more than 55,000 and is the supply and services centre for the Alberta tar sands. It is located at the confluence of Athabasca and Clearwater rivers in Northeastern Alberta, about 437 km by paved highway from Edmonton.

In northeastern Alberta, Athabasca River has cut a steep-sided valley of up to 130 m into generally flat-lying topography. The valley bottom has gentle relief and is typically covered in a veneer of unconsolidated, fluvial silts, sands and gravels. Devonian outcrops are generally restricted to the edges of Athabasca River.

Near Fort McKay, the dominant vegetation is a mix of deciduous and coniferous trees. Occasionally with dense accumulations of alder and willows. Above the river-valleys the vegetation is typified by boreal forest cover and muskeg.

At Fort McMurray, mean annual snowfall is 47.2 inches, and mean annual precipitation is 16.32 inches. River breakup generally occurs in the third week of April. On rare occasions ice-jam floods can occur; since 1985 there have been 10 recorded floods.

4. PROPERTY, EXPLORATION AND EXPENDITURES

4.1 METALLIC AND INDUSTRIAL MINERALS PERMIT

In 2002, Graymont Western Canada Inc. acquired MAIM Permit 9302100859, which is located about 30 km due north of Fort McKay, Alberta, where Pierre River converges with Athabasca River (Fig. 3.2). MAIM Permit 9302100859 is located on the west bank of Athabasca River, and is within the Fort McMurray - Athabasca Oil Sands Integrated Resource Plan. Based on the 2004 expenditures of \$4,300.01, the entirety of MAIM Permit 9302100859 will be maintained.

TABLE 4.1 DESCRIPTION OF MAIM PERMIT 9302100859

Comm. Date	Expiry Date	Land Description (Tp-RW4)	Original Size (Ha)	Current Size (Ha)
October 10, 2002	October 10, 2004	97-10W4 (Sections 30NWP; 31SEP,SW)*	141.84	141.84

* Portions lying to the north and west of the left bank of the Athabasca River

4.2 2004 EXPLORATION

On July 25, an area north of Fort McKay was examined by Dahrouge Geological Consulting Ltd. on behalf of Graymont Western Canada Inc. for high-quality carbonate rocks. One carbonate outcrop was examined along the bank of Athabasca River (Appendix 2; Fig.6.1). Two intervals representing about 4½ metres of strata were examined.

TABLE 4.2 LOCATION EXAMINED AND MEASURED IN 2004

Section Number	Location	Intervals	Measured Thick. (m)
<u>Pierre River Permit</u>			
2004-1	Along Athabasca River	<u>2</u>	<u>4½</u>
TOTALS:		2	4½

4.3 EXPLORATION EXPENDITURES

During 2004, exploration expenditures for MAIM Permit 9302100859 totalled \$4,300.01, resulting in excess credit of \$3,590.81 which fulfilled expenditure requirements for assessment period 'Years 3 and 4,' 'Years 5 and 6,' and partially for 'Years 7 and 8.' These expenditures are allocated to MAIM Permit 9302100859 as follows:

<u>Assessment Period</u>	<u>Expiry Date</u>	<u>Required Expenditures</u>	<u>Assigned Expenditures</u>
Years 1 and 2	October 10, 2004	\$ 709.20	\$ 709.20
Years 3 and 4	October 10, 2006	\$ 1,418.40	\$ 1,418.40
Years 5 and 6	October 10, 2008	\$ 1,418.40	\$ 1,418.40
Years 7 and 8	October 10, 2010	\$ 2,127.60	\$ 754.01
		Total:	\$ 4,300.01

5. REGIONAL GEOLOGY

The geology and stratigraphy of northeastern Alberta has previously been described by Carrigy (1959), Norris (1963), Holter (1976) and Cotterill and Hamilton (1995).

In north-east Alberta, the sedimentary strata is comprised of Paleozoic carbonates, evaporites and clastics, overlain unconformably by Mesozoic siliciclastics (Table 5.1, Fig.5.1). Near Fort McMurray, the Precambrian basement is at depths of 250 to 300 m and has a southwesterly regional slope of about 5.5 m per km (Halferdahl, 1985). The Precambrian basement is overlain by the middle Devonian strata of the Elk Point Group, followed by the Beaverhill Lake Group, and further west, the Woodbend Group. In turn, the Devonian is unconformably overlain by Cretaceous sediments of the Mannville, La Biche and Smoky groups. The oil-sands of the McMurray Formation are within the lowest part of the Mannville Group.

Above the Cretaceous siliciclastics are a variety of unconsolidated Quaternary sediments. Near Fort McMurray there is a basal diamicton derived from the Laurentide Ice Sheet, overlain by gravel, sand and clay from glacial Lake McMurray (Fisher and Smith, 1993). The valleys of the Clearwater and Athabasca rivers contain a complex mixture of spillway deposits. The spillway deposits consist of poorly sorted boulder-gravel-sand; with blocks of oil-sands and glacio-lacustrine sediments. Smith and Fisher (1993) interpret the spillway deposits as a result of a high-velocity flood, sourced from Glacial Lake Agassiz in northern Saskatchewan.

5.1 STRATIGRAPHY

The sedimentary succession of northeastern Alberta comprises a lithologically diverse suite of Devonian carbonates, clastics and evaporites, which are unconformably overlain by Cretaceous siliciclastics. Of the stratigraphic units in Table 5.1, carbonates are present within the Methy Formation, the Waterways Formation, and the Woodbend Group.

5.1.1 Methy Formation

The Methy Formation is within the upper Elk Point Group of the Middle Devonian. The formation is described as a reefal to non-reefal unit containing massive to bedded dolostone, dolomitic limestone and minor anhydrite and gypsum (Cotterill and Hamilton, 1995). The Methy outcrops along Clearwater River valley, and sparsely along Firebag and Marguerite rivers. It is generally a dolomitic unit with interbedded anhydrite that has been described as calcareous or strongly calcareous (Norris, 1963).

5.1.2 Slave Point Formation

The age of the Slave Point Formation has been debated in the past, placed within the Middle (Norris, 1963; Halferdahl, 1985) and Upper Devonian (Carrigy, 1973; Cotterill and Hamilton, 1995). Upper and lower contacts of the unit are defined by paraconformities. The Slave Point generally consists of limestone, siltstone and dolomitic limestone. It is characterized by brownish-grey, skeletal wackestones and argillaceous lime mudstones with interbedded dark brown shale laminations (Cotterill and Hamilton, 1995). The Slave Point Formation is generally less than several metres thick near Fort McMurray.

5.1.3 Waterways Formation

Members within the Waterways Formation include the Firebag, Calumet, Christina, Moberly, and Mildred. The carbonates of the Waterways Formation reach a thickness of over 250 m in western Alberta, and thin toward the Precambrian exposure. The Firebag Member is at the base of the Waterways Formation, and consists of an olive-green calcareous shale. Sequences of interbedded olive-green limestone, argillaceous limestone and shale are also present; Norris (1963) notes several thin brachiopod-rich beds throughout. The Firebag maintains a relatively uniform thickness of about 50 m in the Fort McMurray area.

The Calumet Member conformably overlies the Firebag Member, and consists dominantly of limestone. Other units within the member include variable amounts of argillaceous, skeletal

nodular lime mudstones and wackestones interbedded with grey-green calcareous shale (Cotterill and Hamilton, 1995). Norris (1963) notes significant brachiopod-rich beds in the Calumet Member. In the Fort McMurray area, the Calumet Member maintains a thickness of about 30 m.

TABLE 5.1 GENERALIZED PALEOZOIC STRATIGRAPHY OF THE FORT MCMURRAY AREA, NORTHEASTERN ALBERTA*

System or Subsystem	Group	Formation	Member	
Quaternary				
Upper Cretaceous	Smoky			
	La Biche	La Biche		
		Shaftesbury		
Lower Cretaceous	Mannville	Grand Rapids		
		Clearwater	Wabiskaw	
		McMurray		
Upper Devonian	Woodbend	Grosmont		
		Ireton		
		Cooking Lake		
	Beaverhill Lake	Waterways		Mildred
				Moberly
				Christina
			Calumet	
			Firebag	
Middle Devonian		Slave Point/ Fort Vermillion		
	Upper Elk Point	Watt Mountain		
		Prairie Evaporite		
		Methy/Winnipegosis		
	Lower Elk Point	Meadow Lake/ McLean River/Contact Rapids		
Lower Paleozoic		La Loche/ Granite Wash		
Precambrian				

* Modified after Halferdahl (1985); Cotterill and Hamilton (1995)

~~~~~ Erosional Unconformity

--- Paraconformity

----- Paraconformity?

The Christina Member consists dominantly of green-grey calcareous shale and conformably overlies the Calumet Member. Other lithologies within the upper section of the Christina Member include minor interbeds of argillaceous lime mudstone and occasional thin, skeletal wackestone

and packstone beds. In the Fort McMurray area, the Christina Member attains a thickness of approximately 25 m.

Conformably overlying the Christina is the Moberly Member. The lower third, labelled units 28 to 37 by Norris (1963), of the Moberly Member consists of an alternating sequence of light olive-green, rubbly, thinly-interbedded, variably argillaceous limestones and shales, and hard beds of pale brown, cryptograined limestones. The upper two-thirds, units 38 to 57, consists of thicker units of light to dark olive-green, variably calcareous shale, and thinner units of rubbly, variably argillaceous fragmental limestone. The Moberly Member attains a thickness of about 60 m in the Fort McMurray area.

The uppermost member of the Waterways Formation is the Mildred Member. This unit is characterized by variably argillaceous, nodular lime mudstone and calcareous shales. A thickness of 40 to 45 m is maintained by the Mildred Member.

#### **5.1.4 Woodbend Group**

The Woodbend Group consists of limestones from the Grosmont, Ireton, and Cooking Lake formations. The majority of examined Grosmont Formation limestones in the Fort McMurray area are dolomitic with minor anhydrite (Halferdahl, 1985). The underlying Ireton Formation has been described as an argillaceous, medium to coarse-grained limestone accompanied by limey shale. Some limestones of the Cooking Lake Formation have been noted as dolomitic and argillaceous (Halferdahl, 1985).

## **5.2 STRUCTURE**

Within northeastern Alberta, the Devonian and Cretaceous sedimentary sequences onlap onto the Precambrian cratonic platform, forming two eastwardly converging sedimentary wedges. The southwest regional dip of the Devonian strata follows the contour of the underlying Precambrian basement, which has an apparent northwest strike and southwest dip. Near Fort McMurray the Precambrian basement is at depths of between 250 to 300 m and has a southwesterly regional slope of about 5½ m per km (Halferdahl, 1985).

The westward dipping wedge of Devonian and underlying sediments rest unconformably on the Precambrian basement. The Devonian sediments are younger to the west. The top of the wedge is marked by an erosional surface that is overlain by Lower Cretaceous strata (Section 5.1). Structural complexities within the sedimentary succession are thought to be due to salt dissolution of the Lower Devonian evaporites. The result is a set of small scale domes, basins and folds, with

amplitudes of between 15 and 30 m. Topographic structures of the sub-Cretaceous unconformity are due to differential erosion of the underlying Devonian sediments. The result is a generally northward trending set of ridges and valleys.

## **6. PERMIT GEOLOGY**

### **6.1 MEASURED SECTIONS**

The Calumet Member of the Waterways Formation was investigated along the Athabasca River on July 25, 2004. Two discrete intervals at one location were examined (Table 4.2) by chipping outcrops perpendicular to bedding. Where bedding could not be identified, chips were taken in directions appropriate to topography (Appendix 2). A solution of 5% HCl was used to assess the quality of the limestone from the measured sections in the field. The two intervals represent a stratigraphic thickness of about 4½ metres.

### **6.2 STRUCTURE AND STRATIGRAPHY**

Within the Pierre River Permit, samples of the Calumet Member collected were composed of light-grey to buff, flat-lying, fossiliferous limestone. The poor quality, overlying recessive units had a significant clay component and were not sampled.

## **7. CONCLUSIONS**

In 2004, an exposure of the Calumet Member of the Devonian Waterways Formation, within MAIM Permit 9302100859, was examined along Athabasca River. Two discrete intervals representing 4½ metres of stratigraphy were measured and described in detail.

Carbonate intervals comprised of fossiliferous limestone were examined and their stratigraphic thickness recorded. The overlying, poor-quality, clay-rich units were not examined.

[REDACTED]  
R. Wolbaum, B.Sc., Geol.I.T.

[REDACTED]  
J.R. Dahrouge, B.Sc., P.Geol.

## 8.

## REFERENCES

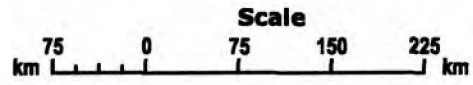
- Carrigy, M.A. (1959) Geology of the McMurray Formation: Part III General Geology of the McMurray Area: Research Council of Alberta, Geological Division, Memoir 1, 130p.
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Location of  
MAM Permit



- LEGEND**
- ◊ Provincial capital
  - | Other populated places
  - \*— Trans-Canada Highway
  - Major road
  - - - - - International boundary
  - · - · - Provincial boundary



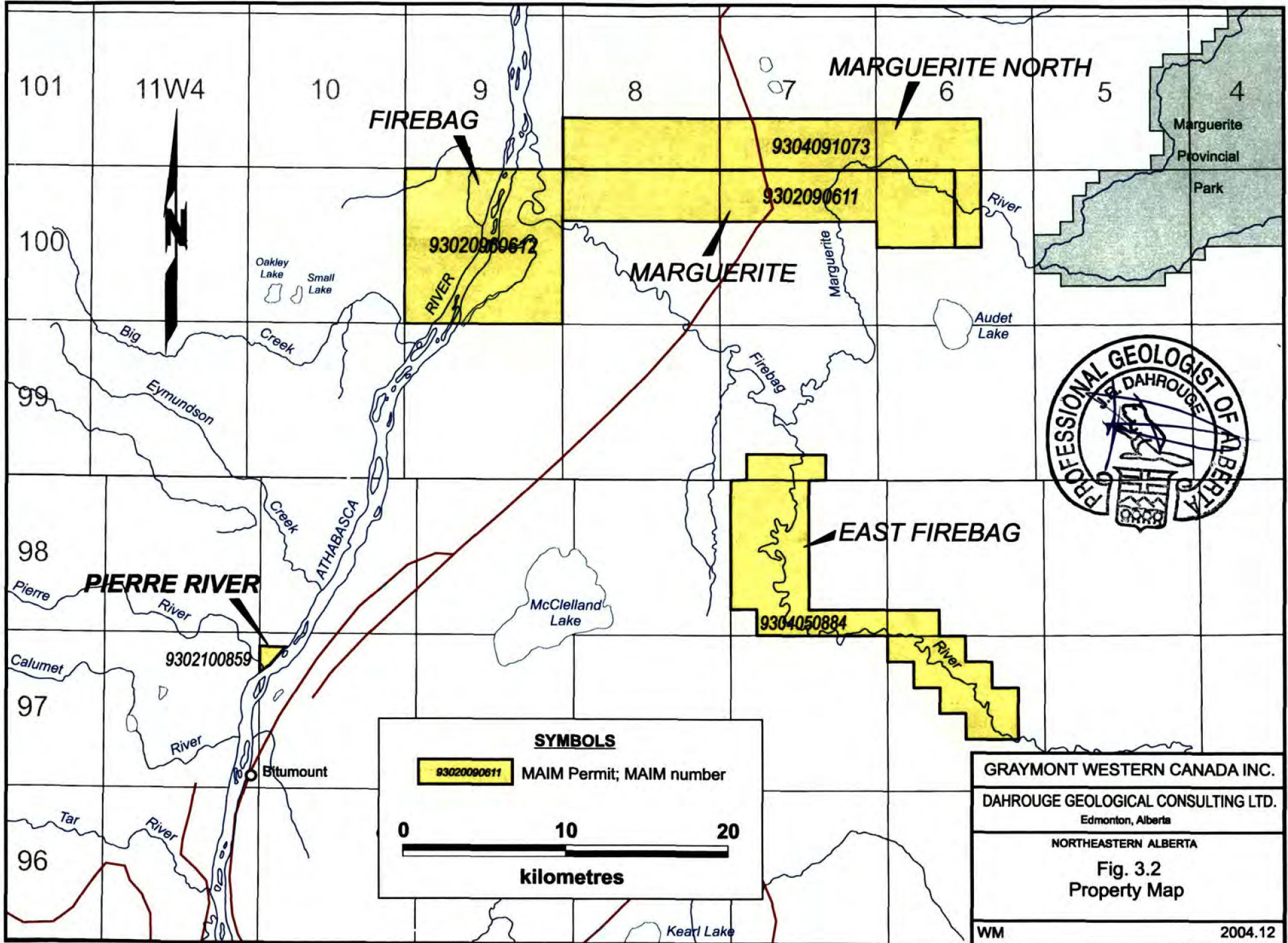
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GRAYMONT WESTERN CANADA INC.  
DAHROUGE GEOLOGICAL CONSULTING LTD.  
Edmonton, Alberta

Pierre River Permit,  
Fort McMurray, ALBERTA

Fig. 3.1 Location Map





**SYMBOLS**

9302090611 MAIM Permit; MAIM number

0                      10                      20

kilometres

GRAYMONT WESTERN CANADA INC.

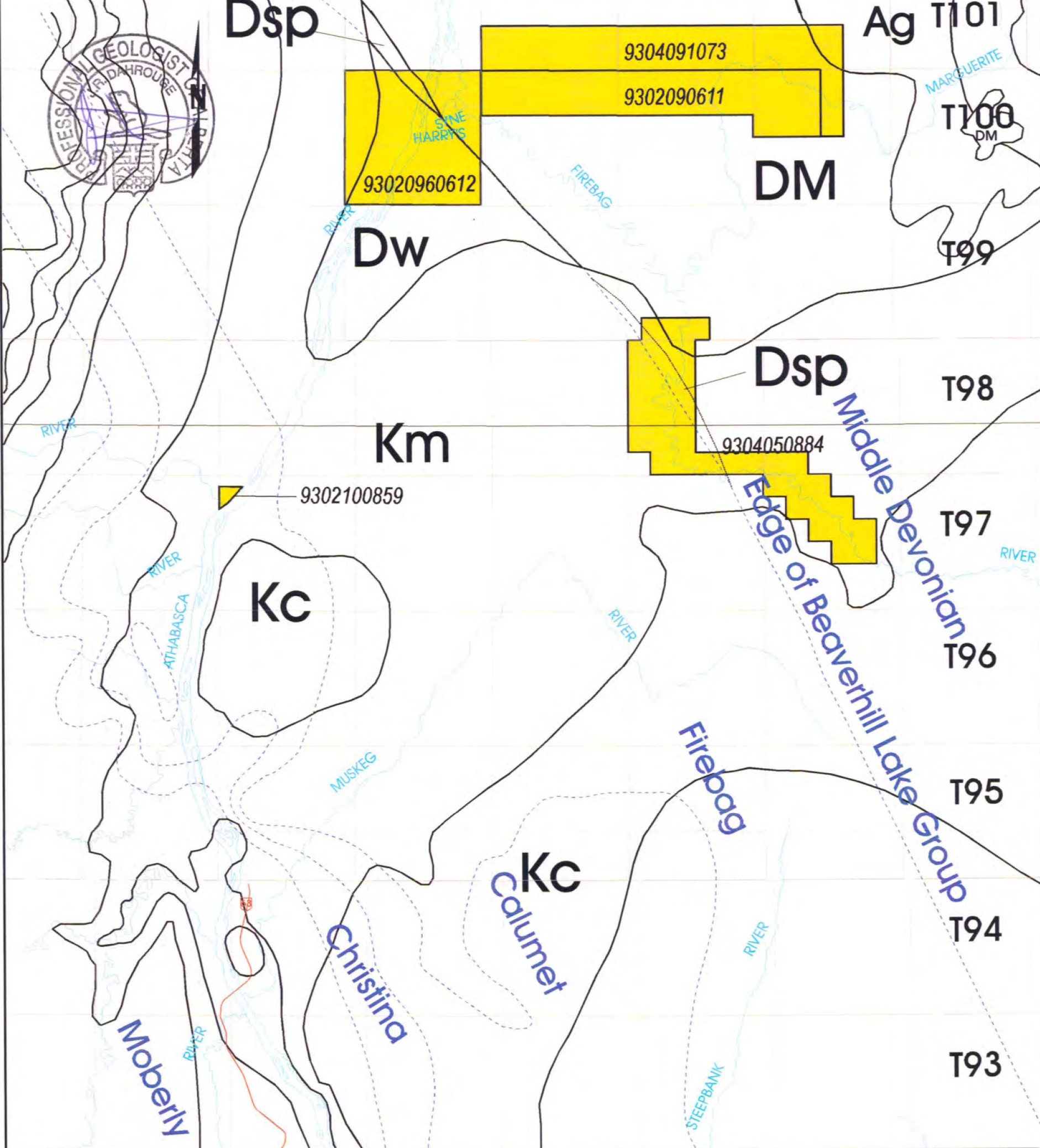
DAHROUGE GEOLOGICAL CONSULTING LTD.  
Edmonton, Alberta

NORTHEASTERN ALBERTA


Fig. 3.2  
Property Map

WM                      2004.12





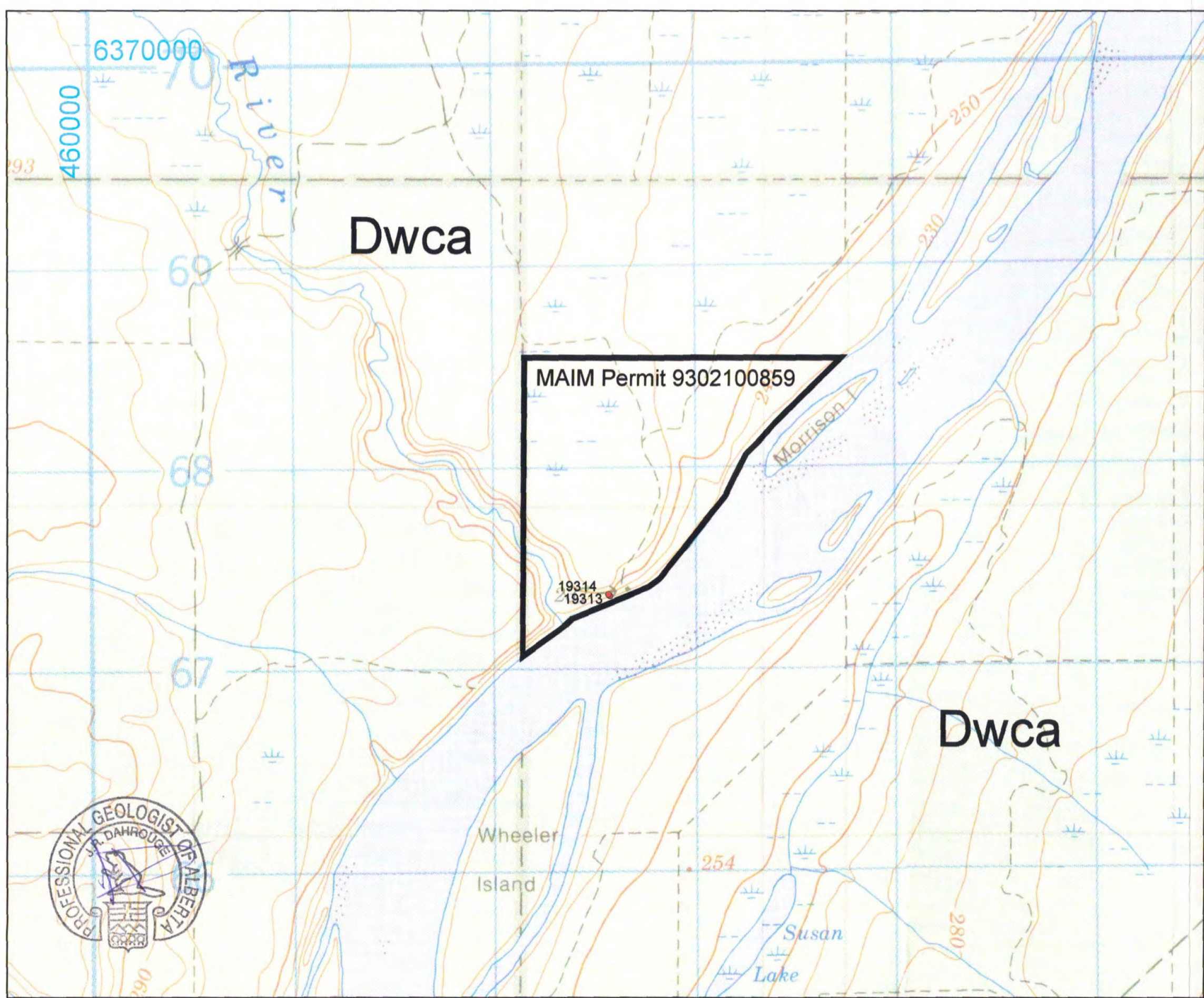
- Legend**
- CRETACEOUS**  
 Klb - LaBiche Formation  
 Kj - Joli Fou Formation  
 Kac - Alice Creek Tongue, Grand Rapids Formation  
 Kg - Grand Rapids Formation  
 Kc - Clearwater Formation  
 Km - McMurray Formation  
 Ksh - Shaftesbury Formation
- DEVONIAN**  
 Dm - Middle Devonian  
 Dw - Waterways Formation
- PRECAMBRIAN**  
 Hmf - Manitou Falls Formation  
 Ag - Granitoids  
 Ax - Mylonitic Rocks

- Symbols**
- Geological boundary ..... ~~~~~
  - Geological boundary (subcrop) ..... - - - - -
  - Major Highway ..... —●—●—●—
  - Rivers ..... ~~~~~
  - Graymont Permit/Lease location ..... 



**Notes**  
 1) Geology after Cotterill and Hamilton (1995)

|                                                          |         |
|----------------------------------------------------------|---------|
| GRAYMONT WESTERN CANADA INC.                             |         |
| DAHROUGE GEOLOGICAL CONSULTING LTD.<br>Edmonton, Alberta |         |
| FT. McMURRAY AREA, ALBERTA                               |         |
| Figure 5.1<br>Regional Geology                           |         |
| NM                                                       | 2004.12 |





Symbols

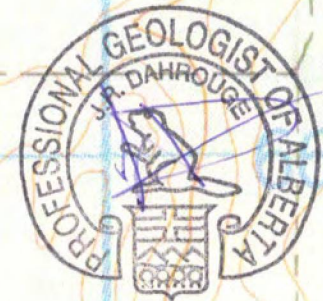
-  Graymont MAIM Permit
-  19314. Section location, number

Legend

- CRETACEOUS**
- Klb - LaBiche Formation
  - Kj - Joli Fou Formation
  - Kac - Alice Creek Tongue, Grand Rapids Formation
  - Kg - Grand Rapids Formation
  - Kc - Clearwater Formation
  - Km - McMurray Formation
  - Ksh - Shaftesbury Formation
- DEVONIAN**
- Dm - Middle Devonian
  - Dw - Waterways Formation
  - ca - Calumet Member
- PRECAMBRIAN**
- Hmf - Manitou Falls Formation
  - Ag - Granitoids
  - Ax - Mylonitic Rocks



Scale: 1:20 000  
NTS 74E/05 NAD 27



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DAHROUGE GEOLOGICAL CONSULTING LTD.  
Edmonton, Alberta  
Pierre River Permit,  
Fort McMurray, Alberta

Fig. 6.1  
Geology and Section Locations



**APPENDIX 1: STATEMENT OF EXPENDITURES  
FOR METALLIC AND INDUSTRIAL MINERALS PERMIT 9302100859**

**a) Personnel**

J. Dahrouge, B.Sc., P.Geol. (Geologist)

0.2 days field work and travel between July 26 and 29, Aug. 15-17,  
Sept. 4-13, 2004

2.0 days preparing report

\$ [REDACTED]

W. McGuire (Draftsman, Field Assistant)

2.0 days compile field data; drafting; prepare base maps,  
figures and other

\$ [REDACTED]

R. Wolbaum, B.Sc. (Geologist)

0.2 days field work and travel July 26 and 29, 2004

2.0 days preparing report

\$ [REDACTED]

N. McCallum, B.Sc. (Geologist)

0.2 days field work and travel July 26 and 29, 2004

\$ [REDACTED]

J. Wolbaum (Field Assistant)

0.2 days field work and travel July 26 and 29, 2004

\$ [REDACTED]

\$ 2,723.15

**b) Food and Accommodation** n/a**c) Transportation**

Helicopter: Helicopter Charter (July 29, 2004)

\$ 1,521.86

\$ 1,521.86

**d) Instrument Rental** n/a**e) Drilling** n/a**f) Analyses** n/a**g) Report** Reproduction and assembly

\$ 55.00

\$ 55.00

**h) Other** n/a**Total**

\$ 4,300.01

I, Jody R. Dahrouge, hereby certify that the costs outlined above were expended for the assessment of metallic and industrial minerals permit 9302100859.

[REDACTED]  
Jody R. Dahrouge, B.Sc., Sp.C., P.Geol.

[REDACTED]  
Commissioner for Oaths

JACK LAMOUREUX  
COMMISSIONER FOR OATHS  
COMMISSION EXPIRES  
MAY 21, 2005

**APPENDIX 2: DESCRIPTIONS OF THE 2004 SECTIONS WITHIN  
MAIM PERMIT 9302100859, NEAR PIERRE RIVER**

Note: Stratigraphic thicknesses are based on measured attitudes of bedding, as listed below, with appropriate interpolations. Attitudes are strike and dip. UTM coordinates are NAD83. Samples are listed in order from stratigraphic top to bottom. Most samples consist of chips at 30-cm intervals.

\* Denotes a grab sample.

Abbreviations: WW - Waterways Formation, Cal - Calumet Member

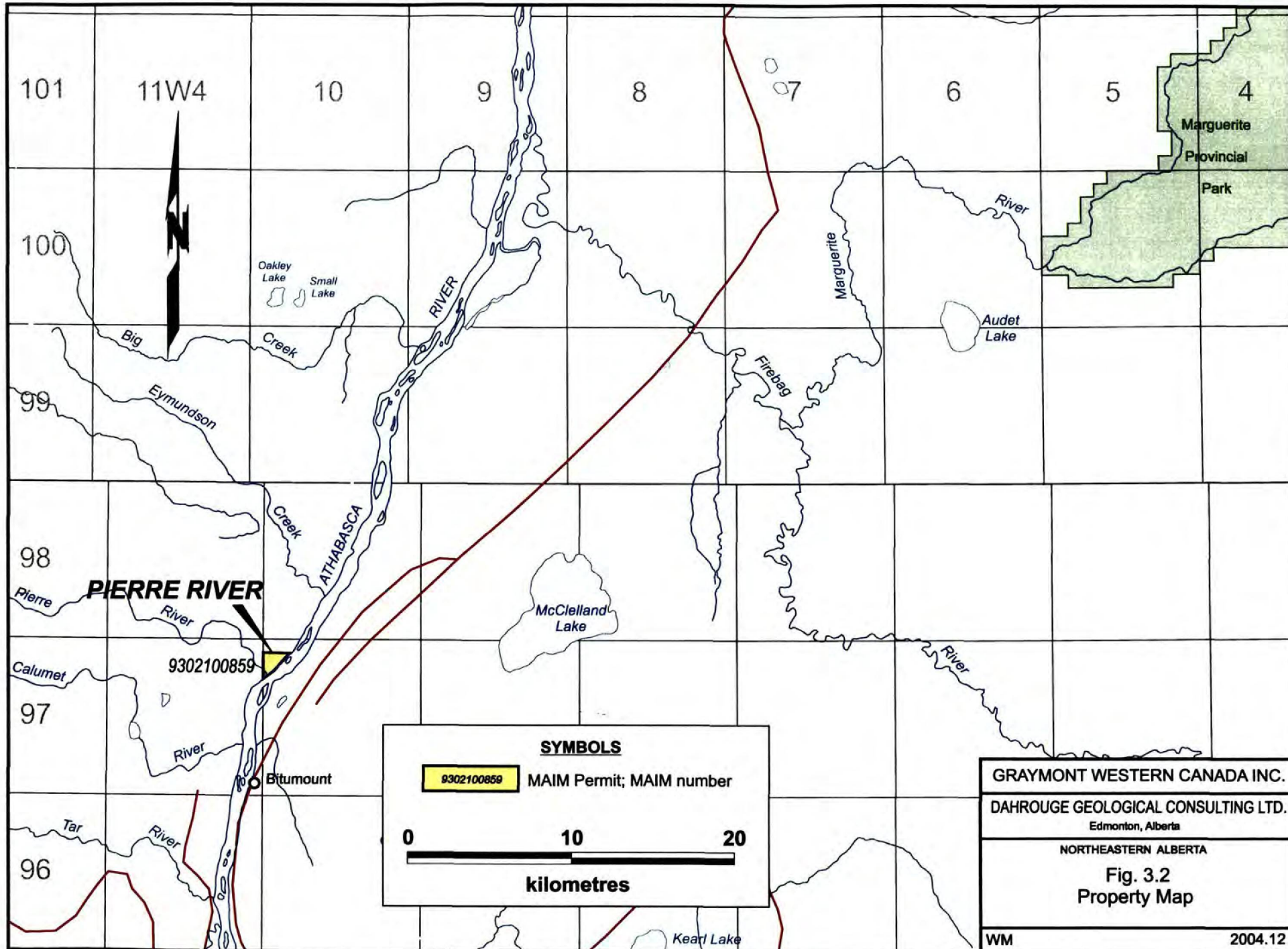
| Interval                                         | Formation | Strat.<br>Member | Thick. (m) | Description                                                                                                                                                    |
|--------------------------------------------------|-----------|------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Section PR2004-01 (UTM 462533E, 6367556N)</b> |           |                  |            |                                                                                                                                                                |
| 19314                                            | WW-Cal    | 4*               |            | <u>Clay - Shale</u> , recessive, very poor outcrop                                                                                                             |
| 19313                                            | WW-Cal    | 0.5              |            | <u>Fossiliferous Limestone</u> , light-grey-buff weathered, micritic matrix, coarse-grained, abundant bivalves, massive, good reaction to HCl, flat lying beds |

### **APPENDIX 3: STATEMENT OF QUALIFICATIONS**

The field work described in this report was supervised by Jody Dahrouge.

J.R. Dahrouge is a geological consultant with Dahrouge Geological Consulting Ltd. based in Edmonton, Alberta. He obtained degrees in geology and computing science from the University of Alberta, Edmonton in 1988 and 1994, respectively. He has more than 10 years of experience in mineral exploration. He is a member of the Canadian Institute of Mining and Metallurgy and is registered as P. Geol. with the Association of Professional Engineers, Geologists, and Geophysicists of Alberta.

R. Wolbaum is a geological consultant with Dahrouge Geological Consulting Ltd. based in Edmonton, Alberta. She obtained a degree in geology from the University of Alberta, Edmonton in 2003 and has been employed in the mineral exploration industry since. She is registered as a Geol. I.T. with the Association of Professional Engineers, Geologists, and Geophysicists of Alberta.



**SYMBOLS**

MAIM Permit; MAIM number

9302100859
 MAIM Permit; MAIM number

0                      10                      20  
 ────────────────────  
 kilometres

**GRAYMONT WESTERN CANADA INC.**  
**DAHROUGE GEOLOGICAL CONSULTING LTD.**  
 Edmonton, Alberta  
 NORTHEASTERN ALBERTA  
**Fig. 3.2**  
**Property Map**

