Basic Gypsum Resource Calculation and Geotechnical Report for Moose River Crossing Property

Carrol and Canfield Townships
Porcupine Mining Division
Ontario

Submitted To:
James Bay Lowlands Development Group
January 12, 1995

Kevin Cool
Table of Contents

Introduction ........................................... 1
Property .............................................. 2
Location and Access ................................. 2
Topography and Vegetation ......................... 2
Exploration History .................................. 4
Regional Geology ..................................... 5
1995 Work ............................................. 7
General Notes on Establishing Camp and the Topographic Survey ................. 10
Recommendations and Conclusion .................. 10
References ........................................... 11
Appendix I: Moose River Gypsum Exploration Expenses ......................... 12

List of Illustrations:

Fig 1. Location of Claim Property with Reference to Moose River and O.N.R. Cochrane-Moosonee Line ......................... 3
Fig 2. Regional Geology ................................ 6
Fig 3. Basic Gypsum resource Plan, Contour Map, and Section Locations ....... 8
Introduction

In 1994 two diamond drill holes were drilled on the Moose River Crossing Gypsum property. The conclusions of this work, based mainly on the thicknesses intercepted supported by geochemical analysis, were as follows:

"The Moose River Crossing property contains a substantial, near surface deposit of high purity gypsum".

These two holes however, are not the only evidence of this vast deposit.

In 1993, our development group utilized a CAT EL200 excavator to dig test pits on the Moose River property. Four test pits up to 220m apart and 850m inland from the river outcrops, exposed the massive high purity gypsum deposit.

In 1955, a geological survey, reported by R.E. Parkes in assessment file T-634, found white and brown gypsum up to 15 ft. thick and up to 1600 ft. inland from the Moose River outcrops.

In 1925 Geo. E. Cole quotes an earlier description by J. Mackintosh Bell as follows:

"There are two beds, the upper extending along one side of the river for 2 1/2 miles and along the other side for 2 3/4 miles."

These outcrops provide an excellent cross section of the gypsum where the Moose River has cut through the deposit. The 10 metre high outcrops of massive gypsum found here further demonstrate the thicknesses that are found 850m inland. These outcrops undoubtedly provide information naturally on a large scale that cannot be outdone by the most intensive drill program. The relatively low number of inland drill holes and test pit exposures are made more relevant thanks to the presence of these outcrops.

Armed with test pit, drill hole, and some topographic data, we felt that we were close to having an estimate of available gypsum resource. Obtaining more topographic information and tying existing pit, drill hole, and topographic data into a common survey, as well as tying the river outcrops into this system has enabled us to finally calculate basic gypsum resource quantities as well as approximate overburden quantities. The survey also met our desire to be sensitive to local concerns by carrying out assessment work with a minimum of additional disturbance to the area. This report outlines the above survey work and includes the basic gypsum resource estimate that the survey made possible.
Property

The Moose River Crossing Gypsum property consists of 11 contiguous claims containing 21 units, all within Carroll and Canfield Townships, Porcupine Mining Division. The property is owned wholly by the James Bay Lowlands Gypsum Development Group. The 11 claims are divided as follows;

P 1131388 1 unit
P 1170589 1 unit
P 1170590 1 unit
P 1188875 1 unit
P 1188877 1 unit
P 1188876 2 units
P 1190293 1 unit
P 1190294 1 unit
P 1190295 4 units
P 1190296 2 units
P 1190297 6 units

Location and Access

The property is located in Carroll and Canfield Townships, Porcupine Mining Division, Cochrane District.

The U.T.M. for the property is approximately E480 000 N 5 631 800.

The Latitude/Longitude is approximately N50-50-20.48 and W 81-16-58.22

Figure 1 shows the property location with reference to the Moose River and the Ontario Northland Railway Cochrane - Moosonee Line.

Access was obtained along the O.N.R. line by snowmachine from Moosonee. A small trail was used to gain access to a cleared, semi-permanent camp site near railway milepost 144. The camp site was used for the duration of the survey work.

Topography and Vegetation

In general, the property is flat and low lying except for local topography, including old clay river levees up to 20 metres thick and 50 to over 200 metres wide. The old
levees trend approximately North-East, parallel to the modern Moose River (about 850 metres away)

For the most part, the property is covered with scrubby black spruce and jackpine but the ridges are dominated by large poplar and pine.

**Exploration History**

1923 James Bay Basin Oil Co. Ltd.

Regional drilling included 3 holes in Canfield Township. (Grey Goose Island)*

1926 Ontario Department of Mines (O.D.M)

Detailed geological study (includes map No. 1946.3)

1930 O.D.M.

Onakawana "A" lignite drillhole

1943 Moose River Oils Ltd.

Regional oil exploration included diamond drilling in Kilmer, Rapley and Hecla Townships.

1953 James Bay Basin Oil Company Ltd.

DDH 67 hit Moose River Formation (gypsum) for 80.7m, DDH 68 intersected 19.6m of massive gypsum.*

1955 A geological survey, reported by R.E. Parkes in assessment file T-634, found white and brown gypsum up to 15 ft. thick and up to 1600 ft. inland from the Moose River outcrops.

1990 James Bay Lowland Gypsum Development Group

Overburden depth survey and digital base map production.

1993 J.B.L.G.D.G.

Mechanical test pit digging.
Regional Geology

Regional geology consists of a Precambrian basement complex covered by proterozoic-Mesozoic, basinal carbonate rocks. The Moose River Formation represents a middle Devonian sequence of bedded, basinal carbonates and evaporites, including significant gypsum. The Moose River Formation is underlain by the fossiliferous limestones of the Kwatabahegan formation, and overlain by fossiliferous dolostones and argillaceous carbonates of the Murray Island Formation. The Moose River Formation Itself Displays a distinct scarcity of fossils.

The gypsum of the Moose River Formation is best developed along the North-West trending Moose River Arch. Gypsum outcrops over an elliptical area 70km by 17km., trending North-West. Three main surface exposures include the Moose River site, and the Gypsum Mountain site. (Fig. 2)
FIG. 2 REGIONAL GEOLOGY

LEGEND
WIFm WILLIAMS ISLAND Fm.
MIFm MURRAY ISLAND Fm.
MRFm MOOSE RIVER Fm.
KIFm KIWILOBANHEGAN Fm.
* HIGHLIGHTED

SCALE
0 5 km.

MODIFIED AFTER FIG.2; INDUSTRIAL MINERAL BACKGROUND PAPER 12,
GYPSUM IN NORTHERN ONTARIO, MNDM 1990 PG. 6
1995 Work

A topographic survey was carried out from January 3, 1996 to January 9, 1996 at the Moose River Gypsum property. The intent of this work was both to include, in one survey, all of the locations of the 1993 and 1994 test pits and drill holes, and to tie these sites into one common elevation datum (metres above Mean Sea Level). Once completed, this survey was tied to new topographic data (also obtained during this project) and tied to the Moose River outcrop locations with newly obtained outcrop elevations.

The completed survey was utilized to further calculate the basic gypsum resource available. Overburden volumes were also obtained by using this survey data. Diagram 3 shows the Basic Gypsum Resource Plan, Contour Map, and Section Locations.

A specific area was chosen for the gypsum resource model. (see dia #3) The choice of location and area of this gypsum block was guided by the following:

The North boundary of the gypsum block is formed by a clay ridge. This old clay river levee would make it difficult to continue removing gypsum northward because it is a thick cover. It may also be desirable to leave this ridge undisturbed for the purpose of building a spur line for railway access.

The West boundary is formed by drawing a line of shortest possible distance from test pit #9, to the gypsum outcrops along the Moose River. Test pit #9 was the Westernmost pit that produced high purity gypsum.

The East boundary is formed by drawing a line of shortest possible distance from drill hole MRC94-02, to the gypsum outcrops along the Moose River. This drill hole intercepted about 13m of gypsum, but ended there without ever leaving the gypsum.

The South boundary is formed by our property or claim boundary. It is not practical to include the ground outside of the property.

As can be seen on Fig. 3, the area of this resource block is 274, 278 sq. m. To our surprise, in every exposure the top of the gypsum deposit elevation was similar. Over the distances involved, they are basically the same. These elevations (above sea level) are as follows:

<table>
<thead>
<tr>
<th>Pit</th>
<th>Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>#8</td>
<td>32.61m</td>
</tr>
<tr>
<td>#9</td>
<td>31.95m</td>
</tr>
<tr>
<td>#11</td>
<td>29.85m</td>
</tr>
<tr>
<td>#12</td>
<td>31.86m</td>
</tr>
</tbody>
</table>
Basic Gypsum Resource

Gypsum Block
274278 sq. m.
MRC 94-01 31.86m
MRC 94-02 31.90m
Moose River Outcrop Exposures 32.11m

The top of the gypsum deposit within our resource block can therefore basically be called 31.75m. The elevation of the Moose River, at section line B, is approximately 26.75m. This leaves 5m of gypsum above the elevation of the Moose River over the area of the resource block. This represents 1,371,390 cubic metres of gypsum. If mining were to proceed below the Moose River water elevation, to 15 m total thickness, as found in drill hole MRC 94-01, over the total area of the resource block, this would represent 4,114,170 cubic metres of gypsum.

Using Quicksurf surface modelling software, the volume of overburden over the area of the resource block was obtained down to elevation 31.75. (top of gypsum) The contoured surface shown in diagram #3 was used for this purpose.

The volume obtained was 334,993 cubic metres. This equals almost exactly 1/4 of the volume of gypsum resource as calculated down to the Moose River elevation.

Maps were created using Autocad 12 with Quicksurf surface modelling software. Results are also summarized at the end of the report.
General Notes on Establishing Camp and the Topographic Survey

Camp was established at a semi-permanent campsite cleared during October of 1994, and accessed using snowmobiles from Moosonee. As a result of the cold, the unusually large snow accumulation, and the limited hours of daylight, travelling to the site and setting up camp required over one and a half days.

Because of a desire to minimize the ongoing impact of our assessment work, the survey was carried out without establishing cut lines on the property. This necessitated the use of snowshoes for the January field work, as snowmobiles were incapable of navigating the bush.

A two-person crew carried elevation along lines perpendicular to the railway, heading South-East to the Moose River. The lines followed a pre-planned azimuth, but skirted natural obstacles such as sinkholes.

The work was slowed only by the obstacles inherent to winter surveying and camping: cold weather during the field work, working hours limited by short winter days, and the fact that a significant portion of available daylight hours were spent on maintaining the camp.

Recommendations and Conclusions

A basic gypsum resource calculation, and overburden volume has been obtained for an area of land within the Moose River Crossing Gypsum Property. The ratio of overburden to gypsum is about 1 part overburden to four parts gypsum. This ratio becomes more favourable if gypsum is extracted below the Moose River elevation. This resource block represents only a portion of the property, the remainder of which is known to be similar geologically and topographically.

Future work could include a resource calculation for the remaining area within the property. This calculation would require similar groundwork such as diamond drilling, test pit digging and topographic survey. An engineering study could also be carried out to determine the feasibility of mining below the Moose River elevation.

[Signature]  
Kanu Cool
References

Cole, E., Geo. "Gypsum in Ontario"
Thirty Fourth Annual Report of the Ontario Dept. of Mines
Vol. XXXIV, Part II, 1925 pp. 1-34.

Gypsum in Northern Ontario; Resources and Market Potential
Industrial Minerals Background Paper 12, 1990 M.N.D.M.
Appendix I

Moose River Gypsum Exploration Expense

Direct Cost:

Wages: Consultants
  Mapping (by GeograFix, P): 2 person crew including survey instruments
    - 2 days travel (Jan. 3 & Jan. 9) @ $650/day $1300
    - 5 days field work (Jan. 4-8) @$800/day $4000
Ore Reserve Calculation/Map Production
  - 55 hrs @ $40.00/hr $2200
Report Writing
  - 15 hrs @ $20.00/hr $300

Equipment Rental
  - 2 snowmobiles @ $50 ea/day for 5 days $500
  - tent, heater, camp equipment - flat rate from GeograFix $150

Total Direct Cost $8450

Indirect Cost:

Transportation
  - rail (2 people, Cochrane to Moosonee, return) $154.08
  - snowmobile supplies (fuel, oil, maintenance supplies) $300.00

Mob./Demob
  - equipment freight (rail) $113.70
  - transport equipment/people in Moosonee $125.00

Food
  - 2 people @ $30/day ea for 7 days $210.00

Lodging
  - 2 people, 2 nights in Moosonee @$40.00/night $80.00

Total Indirect Cost $982.78
Ministry of Northern Development and Mines

Report of Work Conducted
After Recording Claim

Mining Act

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used for correspondence. Questions about this collection should be directed to the Provincial Manager, Mining Lands, Ministry of Northern Development and Mines, Fourth Floor, 159 Cedar Street, Sudbury, Ontario, P3E 6A5, telephone (705) 670-7284.

Instructions:
- Please type or print and submit in duplicate.
- Refer to the Mining Act and Regulations for Recorder.
- A separate copy of this form must be complete.
- Technical reports and maps must accompany.
- A sketch, showing the claims the work is ass.

Recorded Holder(s)
Kevin Cool
Mark Keal

Address
190 Queen Ave., Timmins, ON P4N 4L7

Telephone No.
(705) 264-6718

Mineral Division
Porcupine

Township/Area
Canfield Carrol

Date Work Performed
From: Dec 28, 1995
To: Jan 12, 1996

Work Performed (Check One Work Group Only)
- Geotechnical Survey
- Physical Work, Including Drilling
- Rehabilitation
- Other Authorized Work
- Assays
- Assignment from Reserve

Total Assessment Work Claimed on the Attached Statement of Costs $ 9432.50

Note: The Minister may reject for assessment work credit all or part of the assessment work submitted if the recorded holder cannot verify expenditures claimed in the statement of costs within 30 days of a request for verification.

Persons and Survey Company Who Performed the Work (Give Name and Address of Author of Report)

Name
T. Roll, Passmore & Co.

Address
Box 1726, 5th Main, Timmins, ON P4N 7W9

Certification of Beneficial Interest
I certify that at the time the work was performed, the claims covered in this work report were recorded in the holder's name or held under a beneficial interest by the current recorded holder.

Recorded Holder or Agent (Signature)

Certification of Work Report
I certify that I have a personal knowledge of the facts set forth in this Work report, having performed the work or witnessed same during and/or after its completion and annexed report is true.

Name and Address of Person Certifying
K. Cool
190 Queen Ave., Timmins, ON P4N 4L7

or Office Use Only

Total Value Cr. Recorded
2432

Date Recorded
April 11, 1996

Data Notice for Amendments Sent

Data Approved

RECEIVED
FEB 20 1996
MINING LANDS BRANCH
Credits you are claiming in this report may be cut back. In order to minimize the adverse effects of such deletions, please indicate from which claims you wish to prioritize the deletion of credits. Please mark (x) one of the following:

1. Credits are to be cut back starting with the claim listed last, working backwards.
2. Credits are to be cut back equally over all claims contained in this report of work.
3. Credits are to be cut back as prioritized on the attached appendix.

In the event that you have not specified your choice of priority, option one will be implemented.

Note 1: Examples of beneficial Interest are unrecorded transfers, option agreements, memorandum of agreements, etc., with respect to the mining claims.

Note 2: If work has been performed on patented or leased land, please complete the following:

I certify that the recorded holder had a beneficial interest in the patented or leased land at the time the work was performed.

<table>
<thead>
<tr>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jan 12 1996</td>
</tr>
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</table>
Statement of Costs for Assessment Credit

État des coûts aux fins du crédit d'évaluation

Ministry of Northern Development and Mines
Ministère du Développement du Nord et des mines

Personal information collected on this form is obtained under the authority of the Mining Act. This information will be used to maintain a record and ongoing status of the mining claim(s). Questions about this collection should be directed to the Provincial Manager, Mining Lands, Ministry of Northern Development and Mines, 4th Floor, 159 Cedar Street, Sudbury, Ontario P3E 6A5, telephone (705) 670-7264.

Les renseignements personnels contenus dans la présente formule sont recueillis en vertu de la Loi sur les mines et serviront à tenir à jour un registre des concessions minières. Adressez toute question sur la collecte de ces renseignements au chef provincial des terrains minières, ministère du Développement du Nord et des mines, 159, rue Cedar, 4e étage, Sudbury (Ontario) P3E 6A5, téléphone (705) 670-7264.

1. Direct Costs/Coûts directs

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<th>Type</th>
<th>Description</th>
<th>Amount</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
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<td>Labour</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Main-d'œuvre</td>
<td>$2200</td>
<td>$7200</td>
</tr>
<tr>
<td>Contractor's Fees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Royalty and Consulting Fee</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Equipment Rental</td>
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<td>$1800</td>
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<tr>
<td>Supplies Used</td>
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<tr>
<td>Location de matériel</td>
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<tr>
<td>Total Direct Costs</td>
<td></td>
<td>$8450</td>
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</tbody>
</table>

Note: The recorded holder will be required to verify expenditures claimed in this statement of costs within 30 days of a request for verification. If verification is not made, the Minister may reject for assessment work all or part of the assessment work submitted.

Filing Discounts

1. Work filed within two years of completion is claimed at 100% of the above Total Value of Assessment Credit.

2. Work filed three, four or five years after completion is claimed at 50% of the above Total Value of Assessment Credit. See calculations below:

<table>
<thead>
<tr>
<th>Total Value of Assessment Credit</th>
<th>Total Assessment Claimed</th>
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</thead>
<tbody>
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<td>$1000</td>
<td>$500.00</td>
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</table>

Certification Verifying Statement of Costs

I hereby certify:
that the amounts shown are as accurate as possible and these costs were incurred while conducting assessment work on the lands shown on the accompanying Report of Work form.
that as (Recorded Holder, Agent, Position in Company) I am authorized to make this certification.

J’atteste par la présente :
que les montants indiqués sont les coûts réels qui ont été engagés pour effectuer les travaux d'évaluation sur les terrains indiqués dans la formule de rapport de travail ci-joint.

Et qu’a titre de (Titulaire enregistré, représentant, poste occupé dans la compagnie) je suis autorisé à faire cette attestation.

Signature ___________ Date ___________

Note: Dans cette formule, lorsque désigne des personnes, le masculin est utilisé au sens neutre.
Ministry of Northern Development and Mines  
Ministère du Développement du Nord et des Mines

Geoscience Approvals Office  
933 Ramsey Lake Road  
6th Floor  
Sudbury, Ontario  
P3E 6B5

Telephone: (705) 670-5853  
Fax: (705) 670-5863

April 09, 1996

Dear Sir:

Subject: APPROVAL OF ASSESSMENT WORK CREDITS ON MINING CLAIM P.1190295 IN CARROL & CANFIELD TOWNSHIPS

Assessment work credits have been approved as outlined on the original submission. The credits have been approved under Section 18 (9) Data, Mining Act Regulations.

The approval date is April 04, 1996.

If you have any questions regarding this correspondence, please contact Lucille Jerome at (705) 670-5858.

Yours Sincerely,

Ron C. Gashinski  
Senior Manager, Mining Lands Section  
Mining and Land Management Branch  
Mines and Minerals Division

LJ/jl

Enclosure:

cc: Resident Geologist  
Timmins, Ontario  
Assessment Files Library  
Sudbury, Ontario