

# Technical Report McWatters Nickel Project Ontario, Canada

Report Prepared for

***Liberty Mines Inc***

8925 – 51st Avenue  
Suite 311A  
Edmonton  
AB, T6E 5J3



Report Prepared by



SRK CONSULTING (CANADA) INC.  
Suite 2100, 25 Adelaide Street East  
Toronto, ON M5C 3A1  
Tel: (416) 601-1445  
Fax: (416) 601-9046  
Web Address: [www.srk.com](http://www.srk.com)  
E-mail: [toronto@srk.com](mailto:toronto@srk.com)

Project Reference Number:  
3CL008.006

December 18, 2009



# Technical Report McWatters Nickel Project, Ontario, Canada

## Liberty Mines Inc

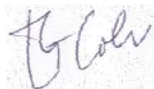
8925 – 51st Avenue, Suite 311A  
Edmonton AB, T6E 5J3  
Tel: (780) 485-2299 • Fax: (780) 485-2253  
E-mail: [gnash@libertymines.com](mailto:gnash@libertymines.com)  
Web site: [www.libertymines.com](http://www.libertymines.com)

## SRK Project Number 3CL008.006

SRK CONSULTING (CANADA) INC.  
Suite 2100, 25 Adelaide Street East  
Toronto, ON M5C 3A1  
Tel: (416) 601-1445 • Fax: (416) 601-9046  
E-mail: [toronto@srk.com](mailto:toronto@srk.com)  
Web Address: [www.srk.com](http://www.srk.com)

**December 18, 2009**

Compiled by:



Glen Cole, P. Geo  
Principal Resource Geologist



Andrew MacKenzie, P. Eng.  
Principal Engineer

With contributions by:

Philip Bridson, P. Eng, Sr. Mining Engineer and  
Will Randall, P. Geo, VP Exploration, Liberty Mines Inc.

Reviewed by:



Ken Reipas, P. Eng.  
Principal Engineer

## **Executive Summary**

---

### **Introduction**

The assets of Liberty Mines Inc. (“Liberty”) include a 100% interest in the McWatters Nickel Project (“McWatters”), which is located approximately 25km south east of Timmins, Ontario, Canada. All permitting for the project has been completed and the project has advanced to the underground development stage.

During May 2009, Liberty commissioned SRK Consulting (Canada) Inc. (“SRK”) to prepare a fully updated National Instrument 43-101 Technical Report including resource and reserve estimates for the McWatters project. Liberty is currently advancing underground development at the McWatters mine in preparation for bringing the mine into production. This current Independent Technical Report describes the current status of all aspects of the project and presents the Life-of Mine Plan.

### **Property Description**

The property is within the boundaries of the city of Timmins and is centered at approximately UTM (NAD83 Z17) coordinates 5,350,860 mN and 497,570 mE. The property is in Langmuir Township, within the Porcupine Mining Division, and is accessed from the city of Timmins/South Porcupine by a series of all-weather gravel roads.

The McWatters Property consists of two patented mining claims held by Liberty. These claims total 295.6 hectares, and have been legally surveyed. Liberty owns 100% of the McWatters property with no subsidiary involved.

The McWatters site is large enough to accommodate all the required construction of mining facilities. Completed infrastructure on site consists of a mechanical maintenance shop, trailer office complex mine dry, compressor house, security gate, and settling and treatment ponds. The underground mine is accessed by a portal, completed in early 2008, from which the underground access ramp extends down to the 105m level.

Ore from underground development at McWatters is being processed at Liberty’s fully owned Redstone nickel concentrator located 9km to the west of the McWatters site.

### **Geology and Mineralization**

The McWatters deposit is hosted by ultramafic rocks that form part of, or intrude, the Tisdale assemblage that flank the Shaw Dome and form part of the Abitibi greenstone belt (AGB). The Abitibi greenstone belt is one of the youngest parts of the Archean Superior Province forming what is considered one of the largest and best-preserved belts of its kind in the world. To date five Ni-Cu-(PGE) deposits have been discovered in the Shaw Dome (Redstone, Hart, McWatters, Langmuir #1, Langmuir #2), and numerous showings have been identified.

The McWatters deposit differs markedly from the rest of the known deposits in the Shaw Dome. The ultramafic body hosting the McWatters deposit is discordant, evidently cutting up through the iron formation that sits immediately on its north flank,

as indicated by recent, more detailed magnetic surveys conducted by Liberty. The discordant nature of this ultramafic unit suggests that it is intrusive.

The McWatters mineralized zone can be readily subdivided in two distinct zones: an upper zone of altered dunitic rocks containing disseminated sulphides, and a basal, lower zone consisting of massive sulphides. The upper zone directly overlies the lower zone, which is principally in contact with wedges of andesitic, footwall volcanic rocks. The combined two zones measure approximately 150 meters in strike length by 30 to 40 meters in width extending down to a depth of approximately 160 meters. The sulphide assemblage consists almost exclusively of pyrite and heazlewoodite. Heazlewoodite ( $\text{Ni}_3\text{S}_2$ ) is one of the most nickel rich sulphide minerals, and is generally thought to be of hydrothermal origin, most often found in dunites and lherzolites.

## Mineral Resources

The July 27, 2009 SRK Mineral Resource Statement for the McWatters Nickel Deposit is summarized in Table i.

**Table i. Mineral Resource Statement, McWatters Nickel Project, Ontario, SRK Consulting, July 27, 2009**

Classification	Zone	Mining Type	Quantity Tonnage	Grade Ni (%)	Contained Metal (tonnes)	Contained Metal (000'lbs)
<b>Open Pit Mining</b>						
Indicated	Disseminated Zone	Open Pit*	368,400	0.45	1,646	3,629
<b>Underground Mining</b>						
Indicated	Disseminated Zone	SLC / BH**	382,200	0.86	3,287	7,246
	Massive Zone	Cut and Fill***	41,900	3.57	1,497	3,297
<b>Combined Mining Indicated</b>	<b>Total</b>	<b>Combined</b>	<b>792,500</b>	<b>0.81</b>	<b>6,430</b>	<b>14,172</b>

*Mineral resources are not mineral reserves and do not have demonstrated economic viability. Numbers have been rounded to reflect the accuracy of the estimate.*

*\* Open Pit Resources reported within a designed pit at a cut off grade of 0.27% Ni.*

*\*\*Sub-level caving (SLC) and longhole stope (BH) resources are reported within designed stopes at a cut off grade of 0.55% Ni.*

*\*\*\* Cut and fill stope resources are reported within designed stopes at a cut off grade of 0.65% Ni.*

*Cut-off grades are based on a nickel price of US\$7.00/lb and on a mill recovery of eighty-seven percent.*

The independent mineral resource estimate prepared by SRK is reported in accordance with Canadian Securities Administrators' National Instrument 43-101 and conforms to generally accepted Canadian Institute of Mining ("CIM") "Estimation of Mineral Resources and Mineral Reserves Best Practices" guidelines.

Nickel mineralization is broadly confined to a higher grade lower massive zone and to lower grade overlaying disseminated zone. The resource estimate is based on a domainal three dimensional (3-D) geological interpretation of the mineralization that integrated information from a total of one hundred and fifty three diamond drill holes largely drilled on twenty five metre centres. Drill data was appropriately composited and capped prior to grade estimation.

The Mc Watters block model was created using Datamine with 2.5 x 2.5 x 2.5m blocks. Block grades were estimated using ordinary kriging ("OK") methodology. Resource blocks situated within the primary ranges defined by variography are assigned to the Indicated classification; all other resource blocks within four times the primary variography ranges are assigned an Inferred classification. All resources are

assigned to the Indicated classification. Resources have been depleted for mining to date.

The resource model was completed by Mr Glen Cole, P. Geo., Principal Resource Geologist, of SRK Consulting (Canada) Inc., Toronto. By virtue of his background and professional experience, Mr Cole is an independent “Qualified Person” as defined by National Instrument 43-101.

## Mine Plan

The McWatters nickel deposit is relatively shallow and extends at a 75 degree dip from surface to a depth of 160 meters. It is a mid to low-grade deposit that will benefit from bulk, low cost mining methods. Nickel grades near surface are approximately 0.41% Ni and increase to 1.91% Ni on average at the 150m level.

SRK determined geotechnical domains based on geotechnical mapping and re-logging of all drill holes in the area of the existing underground development. Rock mass characterization indicated that the McWatters ore zone is of fair to poor rock mass quality and that an open stoping method was likely not the best mining method. Even with reduced stope sizes and the use of cemented backfill there would remain a significant risk of ground instability.

SRK’s geotechnical evaluation initiated a re-assessment of the initial mining concepts for McWatters, resulting in the final mining methods selection which included elimination of a crown pillar by open pit mining and a sublevel caving method for the body of the deposit immediately below the open pit, taking advantage of the caveability of the rock mass.

The planned open pit for the upper portion of the deposit will extend down to 45m level (a pit depth of 45m). The upper 11m of the designed pit is in wet overburden comprised of organics, silty clays and sand. Overburden slope design is based on November 2009 drill sampling and characterization work.

Waste rock stripping and ore mining will be done on 15m benches using conventional open pit equipment. A total of 245kt of ore will be mined on three benches, with an overall strip ratio of 3.6 to 1, including the overburden. Dewatering plans are based on an October 2009 hydrogeology study.

Based on a program of geotechnical and structural assessment of drillhole data and geotechnical mapping of underground development within the deposit, SRK selected sublevel caving for the main body of the deposit. Along with a very small amount of blasthole stoping, this method is planned to recover 546kt of ore. Four sublevels are planned at a nominal vertical spacing of 25m with draw points spaced at 15m on the sublevels.

Production up holes will be drilled at 76mm diameter and the use of an emulsion explosive is planned. No waste material will be introduced from surface into the cave. The wall cave angle has been estimated using standard industry tables to assess any surface impacts.

For the deeper, higher grade portion of the McWatters deposit (81kt), SRK selected an overhand cut and fill method in 5m cuts. Backfilling will utilize mine development waste pushed tight to the back using an LHD equipped with a “jammer” plate. In certain areas wider than 8m, non-recoverable post pillars have been specified.

A 3-D model was constructed to plan the underground mine and estimate life-of-mine development requirements which total 3,390m for combined ore and waste lateral development as of August 1, 2009 (since reduced by ongoing development). The McWatters mine is accessed by a 5 x 5m ramp. An Alimak fresh air raise, partially completed, is planned from surface to the bottom of the designed mine, with exhaust exiting through the main access ramp.

All underground ore will be mucked by LHDs and hauled to remuck bays located along the main access ramp. Ore from the remuck bays will be loaded by LHD into 26 and 30 tonne trucks and hauled to the surface stockpile next to the mine portal. Surface ore trucks will dump open pit ore on the same pad. Development waste rock not used as backfill will be trucked to surface for permanent storage at the existing waste pad.

Stockpiled ore next to the portal will be rehandled by wheel loader into 33 tonne tri-axle highway trucks for transport 9km to the Redstone mill where primary crushing will take place.

It is planned that mining contractors will perform the following functions at McWatters; open pit drilling and blasting, Alimak raising, and underground production drilling.

SRK prepared a combined open pit and underground production schedule with an average ore production rate of 1,700tpd over a mine life of 2 years. LoM plant feed totals 872kt at an average grade of 0.70% Ni.

Open pit overburden stripping of 583kt is scheduled to start in November 2009, followed by 230kt waste rock stripping. First open pit ore production is scheduled for May 2010. Underground production from sublevel cave is scheduled to start in October 2010. 28% of the production will come from open pit and 72% from underground.

## **Mineral Processing**

McWatters development ore is now being processed, as available, at the existing Liberty owned Redstone nickel concentrator, which is located 9 km west of the McWatters site. The Redstone plant, designed to process up to 2,000 tonnes per day of high MgO Ni-Cu-PGE mineralization, was commissioned in July 2007. The plant was on care and maintenance from November 2008 until June 2009 when nickel prices rebounded and has since resumed processing nickel ore from Liberty's Redstone and McWatters mines.

The plant processed 15,705 wet tonnes of McWatters development ore from late September 2008 through to October 31, 2008 until the plant was put on care and maintenance. An average head grade of 0.51 percent nickel was measured at the mill, and an average nickel recovery of 83 percent was achieved. Nickel recovery fluctuated between 64 and 95 with head grades ranging from 0.33 to 1.15 percent nickel.

Future predicted nickel recoveries for McWatters mine ore are based on previous plant performance, future plant upgrades, and metallurgical testing performed on drill core from the McWatters deposit.

## **Environmental**

Liberty has conducted environmental studies and obtained the necessary permits to be able to conduct mining operations at the McWatters project site.

Mine dewatering effects are not expected to adversely impact any other water users, surface water features, or sensitive areas. Laboratory testing and analysis of the four main rock types at the McWatters site show that, on aggregate, these rocks are unlikely to be acid generating.

Liberty has prepared a Spill Prevention and Contingency Plan, an Emergency Response Plan, and has developed and implemented environmental monitoring programs to address its regulatory obligations.

Liberty has prepared a closure plan in compliance with Mine Development and Closure under Part VII of the Mining Act and Ontario Regulation 240/00. The McWatters closure plan is being amended to include the planned open pit.

## Mineral Reserves

The December 15, 2009 SRK Mineral Reserve Statement for the McWatters Nickel Deposit is summarized in Table ii.

**Table ii. Mineral Reserve Statement, McWatters Nickel Project, Ontario, SRK Consulting, December 15, 2009**

Classification	Zone	Quantity Tonnage	Grade Ni (%)	Contained Metal (tonnes)	(lbs)
Probable	Pit	245,000	0.33	810	1,790,000
Probable	SLC/BH	546,000	0.68	3,710	8,180,000
Probable	CF	81,000	1.91	1,540	3,400,000
<b>Probable</b>	<b>Total</b>	<b>872,000</b>	<b>0.70</b>	<b>6,060</b>	<b>13,370,000</b>

The independent mineral reserve estimate prepared by SRK is reported in accordance with Canadian Securities Administrator's National Instrument 43-101 and conforms to generally accepted Canadian Institute of Mining ("CIM") "Estimation of Mineral Resources and Mineral Reserves Best Practices" guidelines.

Cut and fill mining was determined to be the optimal mining method for the higher grade massive zone in the lower part of the mine. Sublevel caving was determined to be the optimal mining method for the disseminated zone located in the central portion of the orebody while the upper portion from surface to the 45m level was best suited for open pit.

Economics were applied to each stope based on an NSR calculation, appropriate mine operating costs for each mining method, a Ni price of \$7.00 US and an exchange rate of \$1.00 Cdn = \$0.90 US.

The mineral reserve estimate was completed by Mr. Philip Bridson, P. Eng., Sr. Associate Mining Engineer, of SRK Consulting (Canada) Inc. By virtue of his background and professional experience, Mr. Bridson is an independent "Qualified Person" as defined by National Instrument 43-101.

## Project Economics

The combined open pit and underground mine plan was incorporated into a financial model to determine the Life of Mine (LoM) economics at the study nickel price of US\$7.00 per pound.

LoM net NSR revenue based on plant feed of 872kt at 0.70% Ni is estimated at \$ 62 million. LoM costs are estimated at \$45 million for operating and \$3.5 million for capital. Undiscounted pre-tax LoM cash flow is estimated at \$13.2 million, yielding an IRR of 460% and an NPV of \$10.7 million at an 8% discount rate. NPV is improved to 11.54 million when (only 2 weeks remain in 2009) the year 2009 is excluded from the NPV calculation.

The project economics are most sensitive to exchange rate changes between the Canadian and US dollars.

## Risks and Opportunities

Uncertainty in the exchange rate between Canada and the United States is the largest economic risk faced by McWatters Project. Current economics are based on an exchange rate of \$1.00 Cdn = \$0.90 US. The \$US smelter contract is the specific instrument that ties this project to the exchange rate and potentially returns a variable revenue based on the fluctuation in the dollar. In the unlikely event that the Canadian dollar rose over \$1.10 the project economics could be significantly reduced depending on the prevailing nickel price.

The planned open pit is subject to an operational risk during the spring thaw period. The expected average water inflow is estimated at 1,000 m<sup>3</sup> per AMEC's hydrological report. If that thaw occurs rapidly or an extensive amount of precipitation compounds the inflows during the thaw period then the project may be delayed for a period of days. Opportunity exists to prepare in advance with rented standby pumping capacity as spring 2010 approaches.

SRK economic models have recently identified a significant opportunity to improve cash flow. Optimisation of the open pit – sub level cave interface indicates potential improvements in the range of two to four million pre-tax dollars. The potential cash flow improvement reflects reduction in overburden and waste strip tonnes. The authors recommended that future time and engineering be allocated for completion of this optimisation. This report does not include the optimized potential due to time constraints.

## Conclusions and Recommendations

McWatters Nickel Project shows an economic mineral reserve and a positive cash flow. SRK recommends continuing planned development of the orebody so that its ore reserves can be extracted.

During the development and extraction phase, the following activities should be considered:

- Potential to expand reserves at depth suggests that an exploration program be planned from the bottom levels of the mine;
- Optimization of the mining recovery by instituting a draw control program for the sub level cave areas;
- Completion of detailed engineering plans and schedules as required for effective implementation, cost control and project management;
- Potential positive effect on operating cost and project schedule if the bottom bench is completely recovering from 65m Level via sublevel cave of the open pit.



## Table of Contents

---

<b>Executive Summary</b>	<b>ii</b>
Introduction	ii
Property Description	ii
Geology and Mineralization	ii
Mineral Resources	iii
Mine Plan	iv
Mineral Processing	v
Environmental	v
Mineral Reserves	vi
Project Economics	vi
Risks and Opportunities	vii
Conclusions and Recommendations	vii
<b>Table of Contents</b>	<b>viii</b>
<b>List of Tables</b>	<b>xii</b>
<b>List of Figures</b>	<b>xiii</b>
<b>1 Introduction</b>	<b>1</b>
1.1 Background of the Project	1
1.2 Qualification of SRK	1
1.3 Project Team	2
1.4 Basis of the Technical Report	3
1.5 Site Visit	3
<b>2 Declaration and Reliance on other Experts</b>	<b>5</b>
<b>3 Property Description and Location</b>	<b>6</b>
3.1 Land Tenure	7
3.2 Underlying Agreements	8
<b>4 Accessibility, Climate, Local Resources, Infrastructure and Physiography</b>	<b>9</b>
4.1 Accessibility, Local Resources and Physiography	9
4.2 Infrastructure	10
<b>5 History</b>	<b>12</b>
5.1 Historical Work	12
5.1.1 Dominion Gulf Company (1947)	12
5.1.2 McWatters Gold Mines Limited (1961)	12
5.1.3 Urban Quebec Mines Ltd. (1965)	13
5.1.4 National Explorations Limited (1965)	14
5.1.5 Silverplace Mines Limited (1966)	14
5.1.6 Ontario Geological Survey (1967)	14
5.1.7 E. Galata (1967)	14
5.1.8 Falconbridge Nickel Mines Ltd (1969, 1970)	14
5.1.9 Tontine Mining Limited, 1970	15
5.1.10 Canadian Jamieson Mines Limited, 1970, 1971	15
5.1.11 Cantri Mines Limited (1971)	15
5.1.12 Seaway Copper Mines Limited (1971)	15
5.1.13 International Nickel Company (1971)	15

5.1.14 Pamour Porcupine Mines Ltd. (1975) .....	15
5.1.15 Noranda Exploration Co. Ltd. (1977) .....	16
5.1.16 Canadian Nickel Co. Ltd. 1987 .....	16
5.1.17 Ontario Geological Survey (1988).....	16
5.1.18 Timmins Nickel Inc. (1991) .....	16
5.1.19 Outokumpu Mines Ltd. (1994, 1995) .....	16
5.2 Exploration Work by Liberty.....	16
5.2.1 Liberty Mineral Exploration Inc. (2001 - 2004) .....	16
5.2.2 Liberty Mines Inc. (2005 – present) .....	17
<b>6 Geological Setting .....</b>	<b>18</b>
6.1 Regional Geology .....	18
6.2 Property Geology.....	21
<b>7 Deposit Types .....</b>	<b>24</b>
<b>8 Mineralization .....</b>	<b>28</b>
<b>9 Exploration.....</b>	<b>31</b>
9.1 Historical .....	31
9.2 Future.....	31
<b>10 Drilling .....</b>	<b>32</b>
10.1 Introduction .....	32
10.2 Drilling by Liberty (post 2004) .....	32
10.3 Drilling Pattern and Density .....	33
<b>11 Sampling Approach and Methodology .....</b>	<b>36</b>
11.1 Introduction .....	36
11.2 Sampling Protocols.....	36
<b>12 Sample Preparation, Analyses and Security .....</b>	<b>39</b>
12.1 Sample Preparation and Analyses .....	39
12.2 Quality Assurance and Quality Control Programs .....	39
12.3 Specific Gravity Data .....	42
<b>13 Data Verification .....</b>	<b>44</b>
13.1 Historical Data Verifications.....	44
13.2 Control Sampling Assay Protocols .....	44
13.3 SRK Independent Verifications.....	44
<b>14 Adjacent Properties.....</b>	<b>47</b>
<b>15 Mineral Processing, Mineralogy and Metallurgical Testing.....</b>	<b>48</b>
15.1 Introduction .....	48
15.2 Processing .....	48
15.2.1 Mineralization Type .....	48
15.2.2 Predicted Metallurgical Recoveries.....	48
15.2.3 Previous Plant Performance .....	49
15.2.4 Plant Flow Sheet Description .....	49
15.3 Laboratory.....	51
15.4 Plant Personnel .....	51
15.5 Plant Operating Costs.....	51
15.6 Future Prospects and Upgrades.....	52
<b>16 Mineral Resource and Mineral Reserve Estimates .....</b>	<b>53</b>

16.1	Introduction .....	53
16.2	Database Validation.....	54
16.3	Resource Estimation.....	55
16.3.1	Database .....	55
16.3.2	Solid Body Modelling.....	55
16.3.3	Compositing .....	56
16.3.4	Statistics .....	58
16.3.5	Grade Capping .....	60
16.3.6	Variography .....	61
16.3.7	Block Model and Grade Estimation.....	62
16.4	Model Validation .....	63
16.5	Mineral Resource Classification .....	64
16.6	Mineral Resource Statement .....	65
16.7	Mineral Reserve Statement .....	66
<b>17</b>	<b>Additional Requirements for Technical Reports on Development Properties and Production Properties .....</b>	<b>67</b>
17.1	Mine Development History and Current Status .....	67
17.1.1	McWatters Mine Current Status .....	67
17.1.2	McWatters Existing Mine Infrastructure .....	68
17.2	Mine Geotechnical .....	69
17.2.1	Information Available.....	69
17.2.2	Rockmass Characterization .....	70
17.2.3	Implications for Mining .....	71
17.2.4	Subsidence Assessment.....	72
17.2.5	Hydrogeology .....	73
17.3	Planned Mining Methods .....	74
17.3.1	Mining Context .....	74
17.3.2	Selected Mining Methods.....	74
17.3.3	Ore and Waste Handling.....	79
17.4	Mineral Reserve Estimate.....	79
17.4.1	Methodology.....	79
17.4.2	Net Smelter Return .....	81
17.4.3	Cut Off Grade.....	81
17.4.4	Practical Mining Shapes (Stope Design) .....	83
17.4.5	Estimated Dilution .....	83
17.4.6	Mining Losses .....	84
17.4.7	Economic Parameters.....	84
17.4.8	Mineral Reserve Estimate .....	84
17.4.9	Production Rate .....	86
17.5	Underground Mine Model .....	87
17.5.1	General Description .....	88
17.5.2	Mine Access .....	88
17.5.3	Stoping Access .....	88
17.5.4	Ventilation Raises .....	94
17.5.5	Life of Mine Development Requirements.....	94
17.6	Development and Production Schedule .....	96
17.6.1	Introduction .....	96
17.6.2	Contractor Involvement .....	98
17.7	Manpower, Equipment and Services .....	98
17.7.1	Mine Manpower.....	98
17.7.2	Mining Equipment .....	100
17.7.3	Surface Ore Haulage .....	101
17.7.4	Grade Control.....	101
17.7.5	Ventilation .....	102

17.7.6 Dewatering .....	102
17.7.7 Electrical Power Distribution .....	102
17.7.8 Equipment Maintenance .....	103
17.7.9 Materials and Supplies Handling .....	103
17.8 McWatters Mine Site Infrastructure .....	103
17.9 Recoverability .....	104
17.10 Environmental Considerations .....	104
17.10.1 Environmental Studies .....	104
17.10.2 Environmental Liabilities.....	107
17.10.3 Emergency Response Plan.....	109
17.10.4 Acid Rock Drainage.....	110
17.10.5 Environmental Permits .....	110
17.10.6 Environmental Monitoring.....	115
17.10.7 Redstone Nickel Concentrator and Tailings Ponds.....	116
17.10.8 Closure Plan.....	116
17.11 Life of Mine Plan .....	117
17.11.1 Concentrator Feed Schedule .....	117
17.11.2 Operating Costs.....	119
17.11.3 Capital Costs .....	121
17.11.4 LOM Plan Economic Results.....	122
17.11.5 Sensitivity Analyses.....	124
17.12 Project Risks and Opportunities.....	128
17.12.1 Project Risks.....	128
17.12.2 Opportunities .....	128
<b>18 Other Relevant Information .....</b>	<b>130</b>
<b>19 Conclusions .....</b>	<b>131</b>
<b>20 Recommendations .....</b>	<b>134</b>
<b>21 References .....</b>	<b>135</b>

## List of Tables

Table i. Mineral Resource Statement, McWatters Nickel Project, Ontario, SRK Consulting, July 27, 2009.....	iii
Table ii. Mineral Reserve Statement, McWatters Nickel Project, Ontario, SRK Consulting, December 15, 2009 .....	vi
Table 1. McWatters Property Mineral Tenure Status .....	8
Table 2. Summary of Previous Work on the McWatters Property .....	12
Table 3. Select Drill Results Urban Quebec Mines Ltd .....	14
Table 4. Classification of Mineralization Types in Komatiite-Associated Magmatic Ni-Cu-PGE Deposits (from Leshner & Keays, 2002).....	26
Table 5. A Tabulation of Diamond Drilling Activities Conducted at the McWatters Mine.....	32
Table 6. Standard Samples for Quality Control.....	40
Table 7. Summarized Weighted Averages per Rock Type of the Specific Gravity Database.....	42
Table 8. Comparative Analyses for SRK Check Assay Verification.....	45
Table 9. Predicted Plant Metallurgical Performance for McWatters .....	48
Table 10. Redstone Plant Metallurgical Performance.....	49
Table 11. Redstone Plant Operating Cost Estimate .....	52
Table 12. Mineral Resource Estimate for the McWatters Nickel Property (RPA, 2005) .....	53
Table 13. Mineral Resource Estimate for the McWatters Nickel Property (SRK, 2008).....	54
Table 14. A Tabulation of Summary Statistics of Composited Drill Data with both Modelled Mineralized Types .....	58
Table 15. Variography Analyses Ranges for Nickel for all Modelled Directions and for both the Two Mineralization Zones .....	61
Table 16. Parameters of the McWatters Block Model Constructed by SRK ..	63
Table 17. The Classification Scheme for McWatters Highlighting Search Distances in Each Direction Modelled for Nickel in both Modelled Mineralized Domains .....	65
Table 18. Mineral Resource Statement, McWatters Nickel Project, Ontario, SRK Consulting, July 27, 2009.....	65
Table 19. McWatters Mineral Reserve Statement – SRK Consulting, December 15, 2009 .....	66
Table 20. Geotechnical Parameters per Domain .....	71
Table 21. Liberty NSR Terms and Mill Factors .....	81
Table 22. McWatters Cut Off Grade Calculations .....	82
Table 23. McWatters Mineral Reserve Statement – SRK Consulting, December 15, 2009 .....	85

Table 24. McWatters Mineral Reserve Details .....	86
Table 25. Production Rates by Mining Method .....	87
Table 26. Capital Waste Development Meters.....	94
Table 27. Operating Waste Development Meters .....	95
Table 28. Operating Ore Development Meters .....	95
Table 29. LoM Mine Production Schedule .....	97
Table 30. McWatters Mine Manpower Requirements .....	98
Table 31. McWatters Mine Equipment List .....	100
Table 32. Production Drilling Productivity.....	101
Table 33. Reporting Thresholds .....	108
Table 34. MISA/MMER Monthly Average Thresholds.....	110
Table 35. Effluent Limits .....	111
Table 36. Effluent Monitoring .....	112
Table 37. Receiver Monitoring .....	113
Table 38. Permit to Take Water .....	114
Table 39. Processing Schedule for McWatters Ore .....	118
Table 40. Estimated Total Operating Costs .....	119
Table 41. Key Unit Costs used in LoM Estimate .....	120
Table 42. Redstone Plant Operating Cost Estimate .....	120
Table 43. General and Administration Cost Estimate .....	121
Table 44. McWatters Sunk Capital Costs.....	122
Table 45. Mine Capital Cost Requirements.....	122
Table 46. McWatters Economic Model Results – page 1 .....	123
Table 47. McWatters Economic Model Results - page 2 .....	123

## List of Figures

Figure 1. Map of Ontario Showing McWatters Mine Location.....	6
Figure 2. Detailed Location Map Showing the McWatters Mine Property in Relation to the City of Timmins .....	7
Figure 3. McWatters Property Mining Claims Plan .....	8
Figure 4. McWatters Mine Site Infrastructure Overlain on an Aerial Photograph .....	10
Figure 5. McWatters Mine – Existing and Planned Surface Infrastructure ....	11
Figure 6. Photograph of McWatters Mine portal (Winter 2008) .....	11
Figure 7. Simplified Regional Geological Setting of the Abitibi Greenstone Belt.....	19

Figure 8. Location of the McWatters Mine shown on an Extract from Map P2455 produced by the Ontario Geological Survey .....	20
Figure 9. Simplified Surface Geological Map of the McWatters Deposit .....	23
Figure 10. Map Showing the Distribution of Magmatic Ni-Cu-PGE Sulphide Deposits in Canada, with Resources Greater than 100,000 Tonnes (after Wheeler et al, 1996).....	25
Figure 11. Thin Section Microphotograph of Mineralized Core from the McWatters Deposit Showing the Predominant Sulphide Assemblage: Heazlewoodite (ha) and Pyrite (py) .....	28
Figure 12. Microphotograph of a Thin Section Showing the Mineral Assemblage of the Disseminated Zone at McWatters . Magnetite (mt), Chlorite (cl), Heazlewoodite (ha), Magnesite (ms), Chalcopyrite (cp) .....	29
Figure 13. Microphotograph of a Thin Section Showing Mineralogy of the Massive Sulphide Dominated Basal Layer at McWatters . Pyrite (py), Pyrrhotite (py), Chlorite (cl), Heazlewoodite (ha).....	30
Figure 14. Plan of Diamond Drill Hole Collars by Liberty Shown on the McWatters Grid.....	34
Figure 15. Geological Long-Section of the McWatters Deposit Showing Geology, Assay Data, and Drill Hole Traces .....	35
Figure 16. Extract from Liberty drill log for MCW -07-65 in DH Logger Format .....	37
Figure 17. Extract from Liberty Drill Log MCW-07-65 Showing Sampling Procedures and Logging Details .....	38
Figure 18. Plot for the control Nickel and Copper Samples Used by Liberty (top=blank, middle=copper and bottom=nickel) .....	41
Figure 19. Histogram of Specific Gravity Data (gcm <sup>3</sup> ) for the Total McWatters Database .....	43
Figure 20. Scatter Plot Showing the Relationship between SG and Ni% from the McWatters Dataset.....	43
Figure 21. Graph Showing Comparative Ni% Assays for SGS (ICP90Q) and ALS Chemex (AA46) .....	45
Figure 22. Simplistic Oblique Sectional View looking NNW of the result of the Geological Modeling Process Applied at McWatters .....	56
Figure 23. Histogram of Original Sampled Widths Within Modelled Massive and Disseminated Sulphide Mineralized Zones.....	57
Figure 24. Histogram for Composited Nickel Within the Two Modelled Mineralized Zones .....	59
Figure 25. Probability Plots for Composited Nickel for Data Within the Massive Sulphide and Disseminated Sulphide Zone .....	60
Figure 26. Illustrative Experimental Variograms for the Three Modelled Directions within the Disseminated Sulphide Domain Derived from Composite Data.....	62
Figure 27. West to East Section (looking north) Showing Nickel Grade Distribution in Relation to Zone Outlines .....	64
Figure 28. Geotechnical Domains on 65m Level .....	71

Figure 29. Terminology used in Describing Subsidence.....	72
Figure 30. Variation of Break Angle Evaluated in Large Number of Case Studies is Significant (Karzulovic 2002) .....	73
Figure 31. Plan of Open Pit .....	76
Figure 32. Vertical Projection Showing Subsidence Limit of Sublevel Cave looking North .....	77
Figure 33. McWatters Vertical Projection Showing Mining Methods, looking North .....	78
Figure 34. Mineral Reserve Estimation Methodology Flowchart.....	80
Figure 35. 3D View of Deposit and 2008 Development .....	87
Figure 36. McWatters 65m Level Development Plan.....	89
Figure 37. McWatters 90m Level Development Plan.....	90
Figure 38. McWatters 120m Level Development Plan.....	91
Figure 39. McWatters 140m Level Development Plan.....	92
Figure 40. McWatters 150m Level Development Plan.....	93
Figure 41. McWatters Mine – Existing and Planned Surface Infrastructure	104
Figure 42. Map of Study Area showing Monitoring Stations .....	105
Figure 43. Cash Flow Sensitivity .....	125
Figure 44. McWatters NPV Sensitivity .....	126
Figure 45. McWatters Nickel Price Sensitivity.....	127



# 1 Introduction

## 1.1 Background of the Project

Liberty Mines Inc (“Liberty”) has worked with SRK Consulting (Canada) Inc. (“SRK”) in the past regarding the preparation of Technical Reports for its Timmins Ontario nickel deposits, including the McWatters deposit.

In late 2007, Liberty commissioned SRK to prepare National Instrument 43-101 compliant mineral resource and reserve estimates for McWatters. SRK executed a work program during 2008 and contributed towards the report, “Technical Report for the McWatters Nickel Project, Ontario, Canada”, dated May 16, 2008.

Subsequently during late 2008, Liberty requested that SRK update the May 16, 2008 Technical Report to reflect the status of the project. At that time Liberty had initiated an economic analysis, geotechnical studies, and an environmental review, but the studies had not advanced to a stage at which material changes about mineral reserve estimates, mining and environmental considerations, financial analysis, and other components required by National Instrument 43-101 for development and production properties could be reported. As a result, SRK prepared an amended report, “Interim Technical Report for the McWatters Nickel Project, Ontario, Canada”, amended as of December 16, 2008.

During May 2009, Liberty commissioned SRK to prepare a fully updated National Instrument 43-101 Technical Report including resource and reserve estimates for the McWatters project. Liberty is currently advancing underground development at the McWatters mine in preparation for bringing the mine into production. This current Independent Technical Report describes the current status of all aspects of the project and presents the Life-of Mine Plan.

## 1.2 Qualification of SRK

SRK is an independent, international consulting company providing focused advice and problem solving. SRK provides specialist services to mining and exploration companies for the entire life cycle of a mining project, from exploration through to mine closure. Among SRK's 1500 clients are most of the world's major and medium-sized metal and industrial mineral mining houses, exploration companies, banks, petroleum exploration companies, agribusiness companies, construction firms and government departments.

Formed in Johannesburg, South Africa, in 1974 as Steffen, Robertson and Kirsten, SRK now employs more than 750 professionals internationally in 30 permanent offices on six continents. A broad range of internationally recognized associate consultants complements the core staff.

SRK employs leading specialists in each field of science and engineering related to the minerals sector. Its seamless integration of services and global base have both made the company the world's leading practice in due diligence, feasibility studies and confidential internal reviews.

The SRK Group's independence is ensured by the fact that it holds no equity in any project and that its ownership rests solely with its staff. This permits the SRK Group to provide its clients with conflict-free and objective recommendations on crucial judgement issues.

### 1.3 Project Team

This independent Technical Report was compiled by Mr. Glen Cole, P. Geo. (APGO) and Mr. Andrew MacKenzie, P. Eng. (APEO) with assistance from:

- Mr. William Randall, P. Geo. on geology modelling and resource estimation;
- Mr. Cam Scott, P. Eng. on pit overburden slope design for closure planning;
- Mr. Bruce Murphy, FSAIMM for the hard rock geotechnical assessment;
- Mr. Eugene Puritch, P. Eng. on open pit design;
- Mr. Phil Bridson, P. Eng. on underground mine planning;
- Mr. Carlo Cattarello, P. Eng. on mineral processing;
- Ms. Jill O'Hara on environmental aspects;
- Mr. Rod Doran, P. Eng. on closure planning.

Mr. Cole and Mr. MacKenzie are the principal authors of this report.

Mr. Cole, P. Geo is a Principal Resource Geologist with SRK. He has been practicing his profession continuously since 1986 and has extensive experience in estimating mineral resources for base and precious metals projects in North America as well as in Southern and West Africa. Mr. Cole visited the project on January 14, 2008. By virtue of his education, relevant work experience and affiliation to a recognized professional association Mr. Cole is an independent qualified person as this term is defined by National Instrument 43-101.

Mr. MacKenzie, P. Eng is a Principal Mining Engineer with SRK. He has been practising his profession continuously since 1994 and has extensive experience in mine design, planning and economic modelling. By virtue of his education, relevant work experience and affiliation to a recognized professional association Mr. MacKenzie is an independent qualified person as this term is defined by National Instrument 43-101.

Mr. William Randall, P. Geo is a former employee of Liberty. Mr. Randall was previously the Vice-President of Exploration for Liberty Mines Inc. and assisted SRK during the early stage of SRK's commission.

Mr. Cam Scott, P. Eng is an SRK Principal Geotechnical Engineer. Mr. Scott is an independent qualified person.

Mr. Bruce Murphy, FSAIMM is an SRK Principal Consultant, Rock Mechanics. Mr. Murphy is an independent qualified person.

Mr. Eugene Puritch, P. Eng is President of P&E Mining Consultants Inc. Mr. Puritch has been involved with the McWatters project periodically since October 2006, and was retained by Liberty to assist with the open pit planning. Mr. Puritch is an independent qualified person.

Mr. Bridson, P. Eng is an Associate Mining Engineer with SRK. Mr. Bridson is an independent qualified person.

Mr. Cattarello, P.Eng is a Metallurgical Engineer with over fifty years of experience as a processing engineer in Canada and Mexico. He was commissioned by Liberty to assist with the project. Mr. Cattarello is an independent qualified person.

Ms. Jill O'Hara is an employee of Liberty. Ms. O'Hara is the Environmental Coordinator for Liberty.

Rod Doran P. Eng was retained directly by Liberty to assist with closure planning.

This report benefited from the review of Mr. Ken Reipas, P. Eng. SRK Principal Mining Engineer.

## **1.4 Basis of the Technical Report**

This technical report is based on the following sources of information:

- SRK's previous 2008 technical report;
- Exploration data from a Liberty drilling program at the McWatters site;
- A resource block model prepared by SRK;
- A geotechnical assessment undertaken by SRK;
- A hydrogeology assessment undertaken by AMEC;
- A soils assessment undertaken by SRK and AMEC
- A net smelter return model prepared by SRK based on input parameters provided by Liberty;
- Site visits including inspection of the underground mine;
- Discussions with Liberty technical and management staff;
- Mining, mineral processing, and environmental project information provided by Liberty.

SRK conducted certain verifications of exploration data from the Liberty drilling program from drill core, files and records maintained by Liberty Mineral Exploration staff. Limited data verifications were possible for pre-Liberty data.

## **1.5 Site Visit**

In compliance with NI 43-101 guidelines, each of the acting qualified persons responsible for this report visited the McWatters mine site.

Mr. Glen Cole visited the McWatters site on January 14, 2008. The main purpose of this visit was to conduct geological investigations and inspections of available diamond drill core from the Liberty drilling program. Validation samples of split core were taken by SRK.

Mr. Andrew MacKenzie visited the McWatters mine and the Redstone mill on several occasions since July 2009. The most recent site visit was completed on October 8, 2009.

Mr. Carlo Cattarello visited the Redstone mill on numerous occasions since March 2006. The most recent site visit was completed on October 30, 2009.

Mr. Philip Bridson visited the McWatters mine site and the Redstone mill site on June 10 -11, 2009.

Mr. Ken Reipas visited the McWatters mine site and the Redstone mill site on June 10 -11, 2009.

Mr. Bruce Murphy visited the McWatters mine site on June 24 -25, 2009.

## 2 Declaration and Reliance on other Experts

The technical work referenced in this report is the combined result of technical inputs from Liberty as well as SRK technical staff. SRK's opinion contained herein and effective December 18, 2009, is based on information provided to SRK by Liberty throughout the course of SRK's investigations, which in turn reflect various technical and economic conditions at the time of writing. Given the nature of the mining business environment, these conditions can change significantly over relatively short periods of time. Consequently actual results may be significantly more or less favourable.

This report includes technical information, which requires subsequent calculations to derive sub-totals, totals and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, SRK does not consider them to be material.

SRK is not an insider, associate or an affiliate of Liberty, and neither SRK nor any affiliate has acted as advisor to Liberty or its affiliates in connection with this project. The results of the technical review by SRK are not dependent on any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings.

SRK has not performed an independent verification of land title and tenure as summarized in Section 3 of this report. SRK did not verify the legality of any underlying agreement(s) that may exist concerning the licenses or other agreement(s) between third parties but have relied on the client's solicitor(s) to have conducted the proper legal due diligence. SRK verified the tenure information on the Ministry of Northern Development and Mines Mining Claims Information System as of the effective date of this technical report.

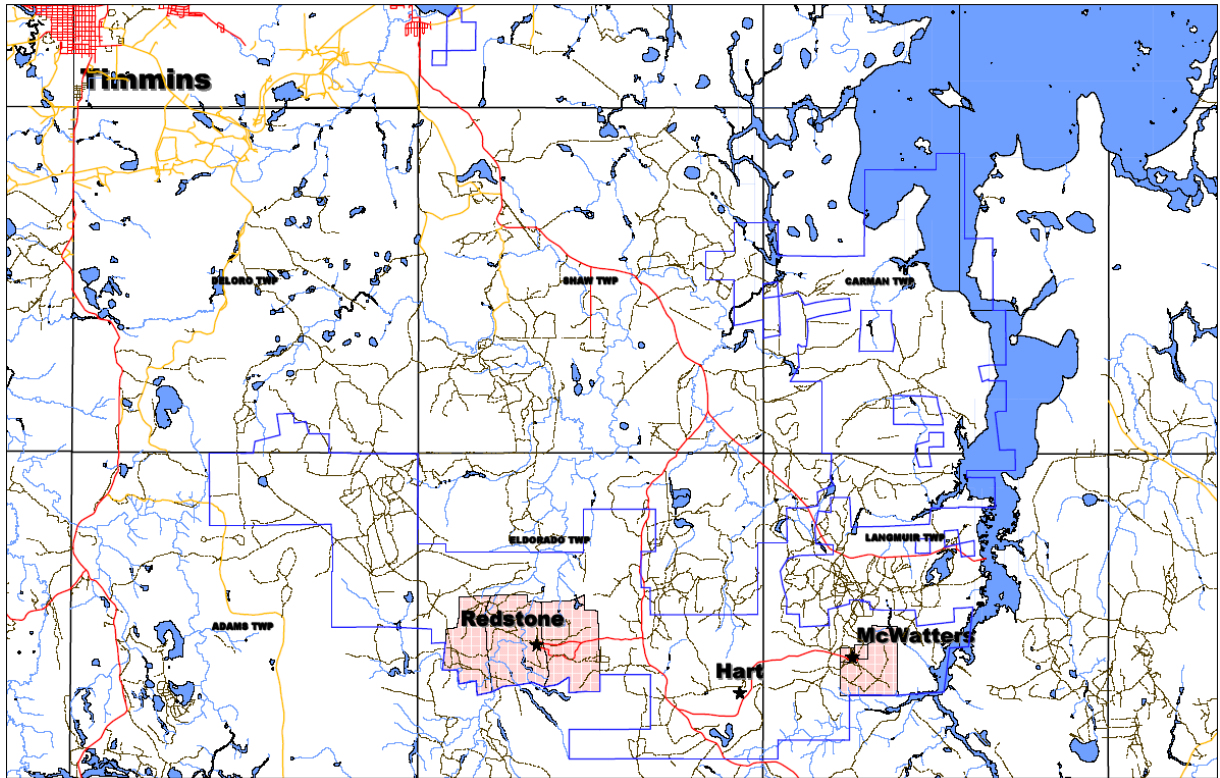
A portion of the project database originates from historically derived exploration programs and sampling activities. This data cannot always be adequately verified and a reliance on the integrity of such data received from Liberty exists.

### 3 Property Description and Location

The general location of the McWatters Mine is shown in Figure 1. The McWatters property is located approximately 25 kilometers southeast of the city of Timmins, Ontario. The property is within the boundaries of the city of Timmins and is centered at approximately UTM (NAD83 Z17) coordinates 5,350,860 mN and 497,570 mE. The property is in Langmuir Township, within the Porcupine Mining Division, and is accessed from the city of Timmins/South Porcupine by a series of all-weather gravel roads. A detailed location map of the McWatters Mine in relation to the City of Timmins is shown in Figure 2.



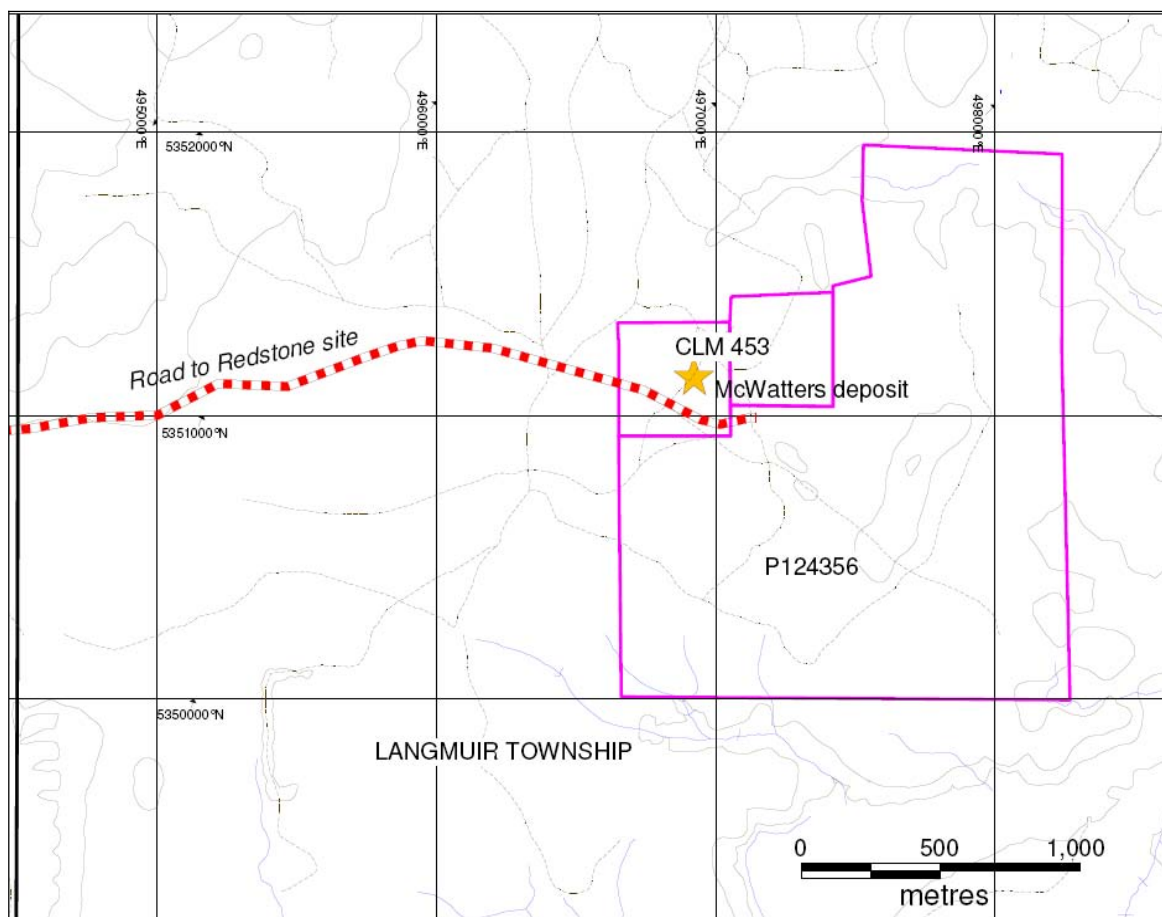
Figure 1. Map of Ontario Showing McWatters Mine Location



**Figure 2. Detailed Location Map Showing the McWatters Mine Property in Relation to the City of Timmins**

### **3.1 Land Tenure**

The McWatters Property consists of two patented mining leases held by Liberty (295.6 hectares). They have been legally surveyed (Figure 3 and Table 1).



**Figure 3. McWatters Property Mining Claims Plan**

**Table 1. McWatters Property Mineral Tenure Status**

Licence Number	Description	Area (Ha)	Title	Start Date	Expiry Date
108068	CLM 453	31.9	Liberty Mines Inc	2007-Sep-01	2028-Aug-31
	P 1243153	263.7	Liberty Mines Inc	2007-Sep-01	2028-Aug-31
<b>Total:</b>		<b>295.9</b>			

### 3.2 Underlying Agreements

The company 2004428 Ontario Inc, whom among other properties owned the McWatters property, was vended into Liberty Mineral Exploration Inc. on November 15th, 2001 in exchange for 3,000,000 shares of the company and \$450,000. The name 'Liberty Mineral Exploration Inc' was then changed to Liberty Mines Inc. on June 30th, 2005, so that now Liberty Mines Inc. owns 100 percent of the McWatters property with no subsidiary involved.

The property is subject to a 3 percent Net Smelter Royalty retained by some of the original shareholders of 2004428 Ontario Inc. One half, or 50 percent, of this Net Smelter Royalty may be purchased by Liberty for the sum of \$1,000,000.



## **4 Accessibility, Climate, Local Resources, Infrastructure and Physiography**

### **4.1 Accessibility, Local Resources and Physiography**

The McWatters Property is proximal to the city of Timmins, Ontario, which has a population of 48,000. The population consists of a skilled workforce with considerable experience and history in mining and mineral processing. Infrastructure is adequate to supply potential power and services for developing local resources.

The property is accessed from the city of Timmins by a series of gravel roads. Approximately twenty-five kilometers southeast of Timmins, a road branches east to the McWatters Mine site. Approximately six kilometers east along this road, the western part of the property is reached, where a security gate has been installed by Liberty. The access roads are used in all seasons, and are winter safe.

The McWatters deposit is located in an area that is relatively flat with poor drainage. The deposit location is generally low-lying with a few local rock outcrops and ranges in elevation from the low 290's to a high of approximately 300 meters above sea level. The topography in the general area slopes gently from north to south. Higher relief is shown in a north/south trending outcrop that is located approximately one kilometre southeast of the deposit.

No waters flow through the site. The site naturally drains to the south into the Forks River at a location that is less than 2 kilometers upstream of the confluence with the Night Hawk River. The property lies entirely within the Night Hawk Lake sub-watershed. The Forks River drains north-easterly into the Night Hawk River which flows north-easterly into Night Hawk Lake. Night Hawk Lake in turn drains to the Frederickhouse River. The Frederickhouse River drains to the Abitibi River (north of Cochrane) then to Moose River, which ultimately discharges into James Bay.

The terrestrial vegetation (as described in the Liberty Mines Inc. – McWatters Mine Background Environmental Report – 2006 by B. Z. Environmental Consulting) was assessed at two sampling stations to best represent the dominant soil and vegetation types of the area. The vegetation type was identical at both stations, and was classified as V 28, typical of black spruce-lowland areas. This vegetation type tends to represent a forest to wetland transition zone, and is characterized by black spruce, bog rosemary, pale laurel, and sphagnum.

Wildlife communities around the McWatters Project are typical of other poorly drained northern boreal forest areas. The majority of the several species

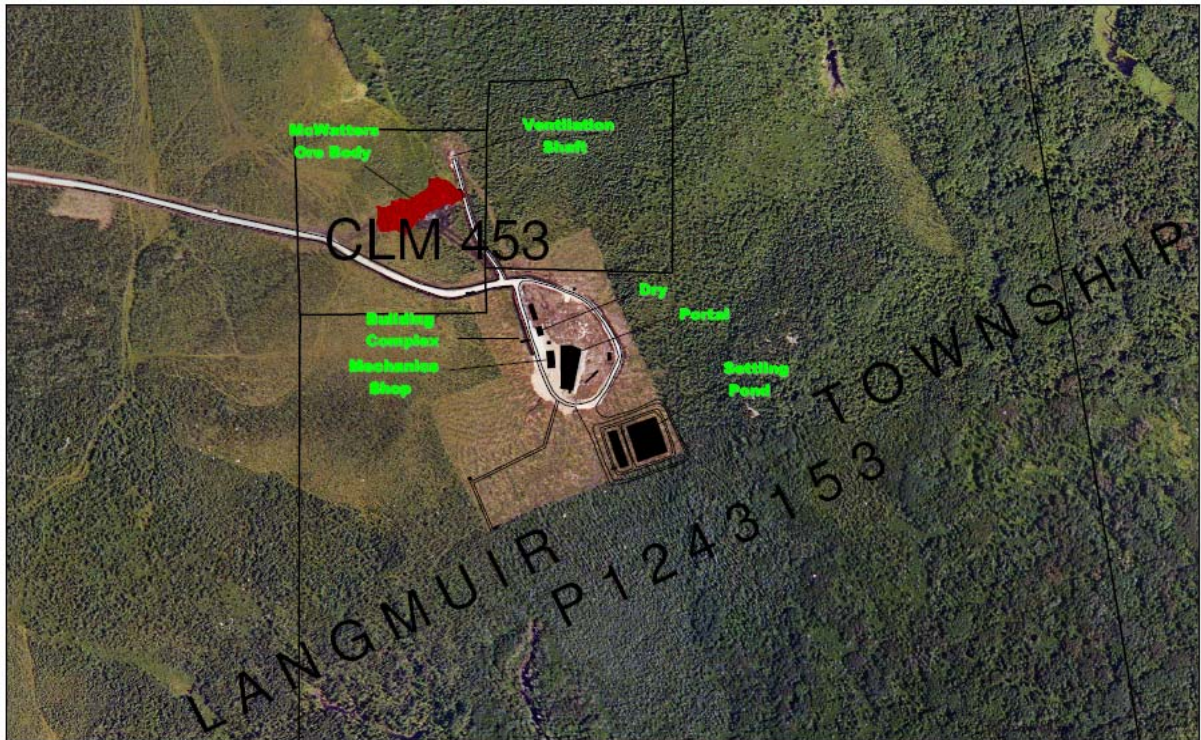
present are small mammals and songbirds that are common and widely distributed. Other species include ungulates, furbearers and raptors. Moose populations in the area are low to moderate. Furbearers in the vicinity include beaver, marten, mink, muskrat, fox, lynx and black bear. Other animal types include the snowshoe hare, fisher and wolf.

## 4.2 Infrastructure

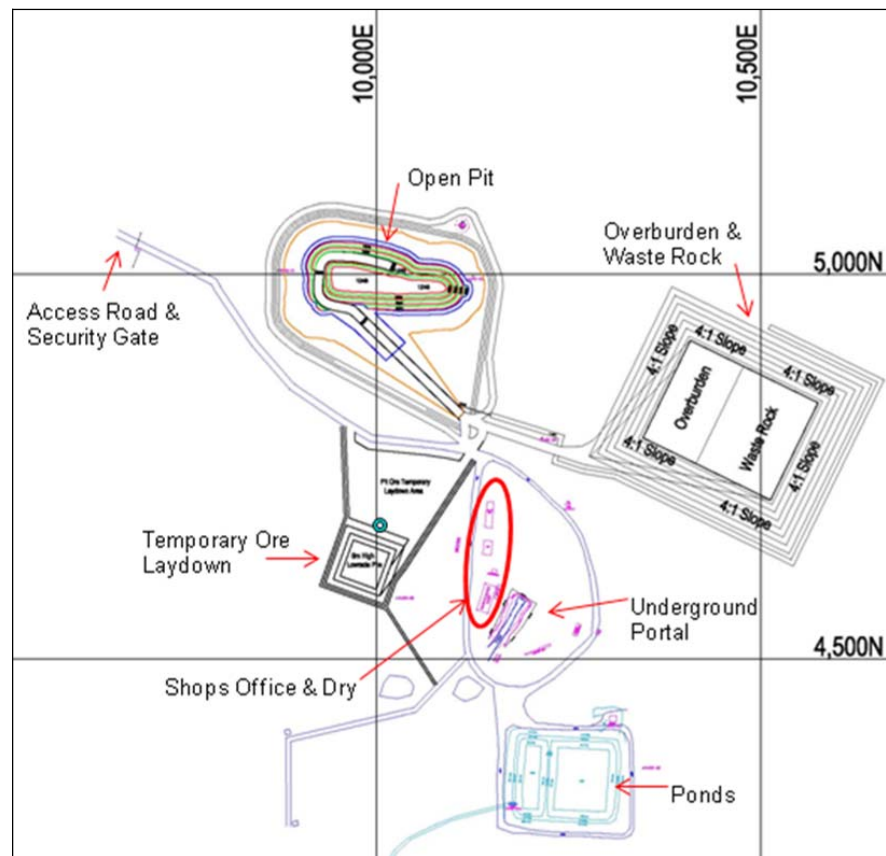
The McWatters site is large enough to accommodate all the required construction of mining facilities. Completed infrastructure on site consists of a mechanical maintenance shop, office complex, mine dry, compressor house, security gate, and settling and treatment ponds. The mine is accessed via a portal, completed in early 2008, from which the ramp initiates.

Figure 4 shows the vegetation of the McWatters property, as well as a layout of the surface infrastructure, in relation to the mining leases.

Figure 5 shows a more detailed sketch of McWatters layout including the planned open pit, waste rock spoil and temporary ore laydown areas.



**Figure 4. McWatters Mine Site Infrastructure Overlain on an Aerial Photograph**



**Figure 5. McWatters Mine – Existing and Planned Surface Infrastructure**

Figure 6 is a photograph of the portal collared during the winter months of 2008 and currently in use for mine development.



**Figure 6. Photograph of McWatters Mine portal (Winter 2008)**

## 5 History

A diligent summary of the exploration activities on the property has been prepared by Todd Keast. The following has been extracted from his report (Keast, 2002).

Exploration on the McWatters Property dates back to 1947, and has included prospecting, trenching, airborne geophysical surveys, ground geophysical surveys, and diamond drilling. Government sponsored work in the area has included a 1967 mapping program of Langmuir and Blackstock Townships by the Ontario Department of Mines (O.D.M.), and a 1988 airborne electromagnetic (EM) and Magnetometer (magnetic) survey over the Timmins Area, which included Langmuir Township, by the Ontario Geological Survey (O.G.S.). A summary of all documented government surveys and exploration activities by companies covering the McWatters Property is listed below in Table 2.

**Table 2. Summary of Previous Work on the McWatters Property**

Year	Company	Type of Work
1947	Dominion Gulf Company	Airborne Magnetics
1961-67	McWatters Gold Mines Ltd	Magnetics, EM, Geological mapping and Drilling for 25,735 ft
1965	Urban Quebec Mines Limited	Diamond drilling (2,476 ft)
1965	National Explorations Limited	Ground geophysics and drilling (3,786 ft)
1966	Silverplace Mines Ltd	Drilling (1,004 ft)
1967	Ontario Department of Mines	Mapping Langmuir and Blackstock Townships (Geological Report 86)
1967	E Galata	Drilling (2,000 ft)
1969-70	Falconbridge Nickel Mines	Drilling (3,031.5 ft)
1970	Tontine Mines	Acquires assets of McWatters
1970	Canadian Jamieson Mines	Geophysics, drilling and metallurgical testing
1971	Cantri Mines limited	Drilling (1,769 ft)
1971	Seaway Copper Mines	Prospectus
1971	International Nickel Company	Ground Magnetics
1975	Pamour Porcupine Mines	Drilling (404 ft)
1977	Noranda Exploration Company	Ground geophysics
1987	Canadian Nickel Company	Airborne geophysics and RC drilling
1988	Ontario Geological survey	Airborne surveys
1991	Timmins Nickel	Ground Magnetics and HLEM
1994-95	Outokumpo Mines Limited	Ground Geophysics, trenching and drilling for 7,011 ft.
2002	Liberty Mineral Exploration	Diamond drilling

### 5.1 Historical Work

#### 5.1.1 Dominion Gulf Company (1947)

In 1947, Dominion Gulf Company conducted an airborne magnetometer survey. The company did not report any follow up work.

#### 5.1.2 McWatters Gold Mines Limited (1961)

In 1961, McWatters Gold Mines Limited, in partnership with Quebec Manitou Mines Limited, staked a group of 54 unpatented mining claims. During the same year the companies completed ground magnetic, electromagnetic and

geological surveys on the property. In 1962 the company drilled 13 diamond drill holes totalling 1,067 meters (3,502 ft). Ten of these holes tested magnetic anomalies with coincident electromagnetic anomalies, which turned out to be sulphide bearing iron formation with no base metal concentrations (Ontario Department of Mines Geological Report 86). The other three holes investigated magnetic anomalies. The final drill hole of the program tested a magnetic feature 1,036 meters (3400 ft) long and 61-91 meters (200-300 ft) wide, and was found to host Ni sulphide mineralization. The mineralization, hosted within a serpentinized dunite, returned an average of 0.428 percent Ni for 61 meters (199 ft) of core length, with a value of 0.65 percent Ni for 15.8 meters (51.8 ft) of core length (Ontario Department of Mines Geological Report 86). Later in the year an additional 11 diamond drill holes (1,583 m), were completed along the mineralized magnetic anomaly. One of these holes was reported to have 0.63 percent Ni for an 11 metre (36 ft) core length and 0.74 percent Ni for a 13.7 metre (45ft) core length (Ontario Department of Mines Geological Report 86). This drilling outlined a small sub-economic Ni sulphide deposit.

In 1964 and 1965, drilling resumed with 24 vertical holes with 4,581 meters (15,028 ft) completed on the mineralized zone. Some of the drill holes returned encouraging results, with some values greater than 1 percent Ni for lengths of 61-91 meters (100-300 ft). (ODM Report 86). One 3 metre (10ft) section returned more than 5 percent Ni (Northern Miner 1964, p.1113), and another 9.71 percent Ni (Northern Miner 1965 p.297). In addition one inclined hole was drilled to test a magnetic anomaly. This drilling delineated an upper and lower zone to the deposit, but significant mineralization was not located beneath or along strike to the deposit. The complete set of drill logs for the 1964-1965 drilling is not on file at the Ministry of Northern Development and Mines.

In 1967 three diamond drill holes totalling 396 meters (1,298 ft) were completed, fulfilling sufficient assessment work to bring the claims to lease. These holes were not drilled on the main mineralized ultramafic body. This work failed to indicate any economic mineralization

### **5.1.3 Urban Quebec Mines Ltd. (1965)**

In 1965, Urban Quebec Mines Ltd. completed 10 diamond drill holes totalling 755 meters (2,476 ft) on a small group of claims in the northwest corner of what is now the McWatters Property. The drill holes intersected mafic volcanics, rhyolite, rhyolite porphyry and serpentinized peridotite. Mineralization within the peridotite consisted of 1-3 percent, locally 3-5 percent disseminated pyrite and pyrrhotite. Assay results from the Urban Quebec drill program indicate anomalous Ni results in five holes (Table 3). Urban Quebec did not report any follow up work.



**Table 3. Select Drill Results Urban Quebec Mines Ltd**

Hole #	Results
Q-1	0.33% Ni / 6.1 m
Q-2	0.17% Ni / 4.6 m
Q-3	0.35% Ni / 2.1 m
Q-4	0.13% Ni / 5.0 ft and 0.17% Ni / 1.5 m
Q-5	0.29%Ni / 9.6 m

#### **5.1.4 National Explorations Limited (1965)**

In 1965, National Explorations Limited conducted ground geophysical surveys, and completed 10 diamond drill holes totalling 1,154 meters (3,786 ft) on a group of claims which is now the central part of the McWatters Property. Drill holes intersected felsite, andesite, monzonite, altered syenite, and peridotite. Up to 5 percent disseminated pyrite was intersected within the andesite, but did not return anomalous Ni assays. Follow Up work was not reported.

#### **5.1.5 Silverplace Mines Limited (1966)**

In 1966, Silverplace Mines Limited completed 2 diamond drill holes (215 m) on a claim which is now situated on the east end of the McWatters property. The holes intersected granite, greenstone breccia, and serpentinite. Core was assayed for gold and silver only. Follow up work was not reported.

#### **5.1.6 Ontario Geological Survey (1967)**

In 1967 the Ontario Department of Mines completed a mapping program which covered Langmuir Townships (Pyke 1970). The geology was mapped as a northeast-southwest series of peridotite intrusions in contact with a sequence of felsic volcanic rocks, sediments and narrow iron formations.

#### **5.1.7 E. Galata (1967)**

In 1967, E Galata completed 4 diamond drill holes totalling 610 meters (2,000 ft) on small block of claims which is now the northwest corner of the McWatters property. The drill holes intersected diorite, rhyolite, granite porphyry and peridotite. Hollinger Mines completed a property visit and documented a Ni- Cu showing which contained 1.5 percent Ni, 0.14 percent Cu from trench grabs. The mineralization was located at the contact of the peridotite with the rhyolite. Follow up work was not reported.

#### **5.1.8 Falconbridge Nickel Mines Ltd (1969, 1970)**

In 1969, Falconbridge Nickel Mines Ltd. conducted ground geophysical surveys and completed seven diamond drill holes totalling 924 meters (3,031.5 ft) on a group of claims, which are now the northwest portion of the McWatters property. The drill holes intersected a variety of volcanics rocks types including peridotite. Traces of pyrite and chalcopyrite were noted on the logs, however assays were not reported. Follow up work was not reported

### **5.1.9 Tontine Mining Limited, 1970**

Under the terms of an agreement dated February 23, 1970, Tontine Mining Limited purchased the assets of McWatters Gold Mines.

### **5.1.10 Canadian Jamieson Mines Limited, 1970, 1971**

In 1970 Canadian Jamieson Mines Limited reached an agreement with Tontine Mining Limited whereby Canadian Jamieson would evaluate previous work on the property and if warranted, bring the property into production. In 1971 Canadian Jamieson Mines Limited conducted geophysical surveys, metallurgical testing and diamond drilling on the property. Results of the work were inconclusive. The reports pertaining to the Canadian Jamieson evaluation are not on file at the Ministry of Northern Development and Mines. The work is referenced from (OGS Study 20).

### **5.1.11 Cantri Mines Limited (1971)**

In 1971, Cantri Mines completed 4 diamond drill holes totalling 539 meters (1,769 ft), on a small group of claims situated on what is now the eastern edge of the McWatters property. Drill holes were planned to test geophysical responses obtained from surveys of previous operators. Rhyolite, felsite, porphyry and serpentinite were intersected in the drill holes. Disseminated pyrite was noted in the drill holes, with the highest assay of 0.13 percent Ni over an unknown width (assays not documented on drill logs). Hole 2 was abandoned and was recommended for re-drilling during a later program. Cantri Mines did not report any follow up work.

### **5.1.12 Seaway Copper Mines Limited (1971)**

In 1971 Seaway Copper Mines Limited acquired the claims held by Cantri Mines. A prospectus for work on the project was prepared, however work was not reported.

### **5.1.13 International Nickel Company (1971)**

In 1971 International Nickel Company completed a ground magnetometer survey on a small group of claims in what is now the northeast corner of the McWatters Property. Further work was not reported by International Nickel.

### **5.1.14 Pamour Porcupine Mines Ltd. (1975)**

In 1975, Pamour Porcupine Mines Ltd. completed a single 123 metre drill hole (404 ft) on a single claim in the northwest corner of what is now the McWatters Property. Diorite and Serpentinized peridotite were intersected in the drill hole, with only a trace of pyrite. The highest assay result was 0.17 percent Ni / 1.8 m. Follow up work was not reported.

### **5.1.15 Noranda Exploration Co. Ltd. (1977)**

In 1977, Noranda Exploration Co. completed geological and geophysical surveys on two claims on what is now the north part of the McWatters property. A weak zone of conductivity was identified but was not recommended for drilling. Follow up work was not reported.

### **5.1.16 Canadian Nickel Co. Ltd. 1987**

In 1987 Canadian Nickel Co. Ltd completed airborne electromagnetic surveys parts of Langmuir and Eldorado townships. The survey covered the majority of what is now the McWatters Property. Canadian Nickel did not report any follow up work.

### **5.1.17 Ontario Geological Survey (1988)**

In 1988, the O.G.S. completed an airborne electromagnetic and magnetic survey over the Timmins Area, which included Langmuir Township. A number of strong airborne electromagnetic and magnetic features were identified, many which may not have been evaluated.

### **5.1.18 Timmins Nickel Inc. (1991)**

In 1991, Timmins Nickel Inc. completed ground HLEM and magnetic surveys over a small portion of what is now the McWatters Property. Timmins Nickel did not report any follow up work on the McWatters portion of the property.

### **5.1.19 Outokumpu Mines Ltd. (1994, 1995)**

In 1994 Outokumpu Mines Ltd completed ground geophysical surveys, mechanical stripping, and diamond drilling totalling 2,137 meters (7,011 ft) on the northwest corner of what is now the McWatters property. Thick sequences of ultramafic rocks were intersected; however sulphide mineralization was not encountered. Mechanical stripping was completed on an area 75 by 75 meters (246 by 246 ft), to expose the ultramafic/volcanic contact, and the historical showing identified by Galata (1967). Outokumpu did not complete any additional work.

## **5.2 Exploration Work by Liberty**

### **5.2.1 Liberty Mineral Exploration Inc. (2001 - 2004)**

In 2001, Liberty Mineral Exploration Inc. purchased the assets 2004428 Ontario, which included the nine claims that formed the McWatters Property. Liberty Mineral Exploration conducted a drill program on the McWatters deposit that spanned over three years totalling 7,965 meters of drill core.



### **5.2.2 Liberty Mines Inc. (2005 – present)**

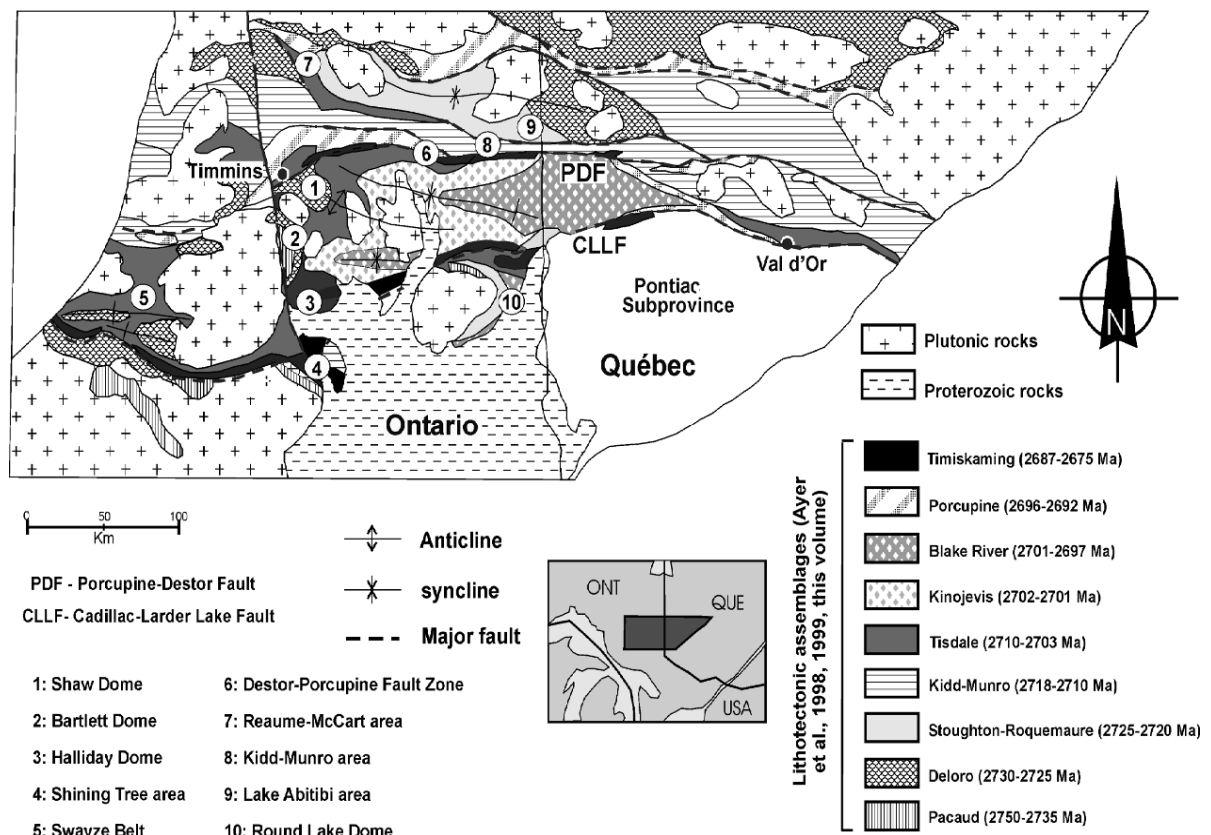
Liberty Mineral Exploration Inc. name was then changed to Liberty Mines Inc. on June 30th, 2005. Based on the diamond drilling conducted by Liberty Mineral Exploration a NI 43-101 compliant resource estimate by Roscoe Postle Associates Inc. was commissioned by Liberty. The result was an indicated resource of 540,400 tonnes at an average grade of 1.06 percent Ni, reported at a 0.5 percent Ni cut-off grade.

During 2006 and 2007 Liberty carried out a drill program consisting of 12,676 meters of drill core. The program was designed both as an exploration and in-fill drill program, considering future mining operations on the deposit.

## 6 Geological Setting

### 6.1 Regional Geology

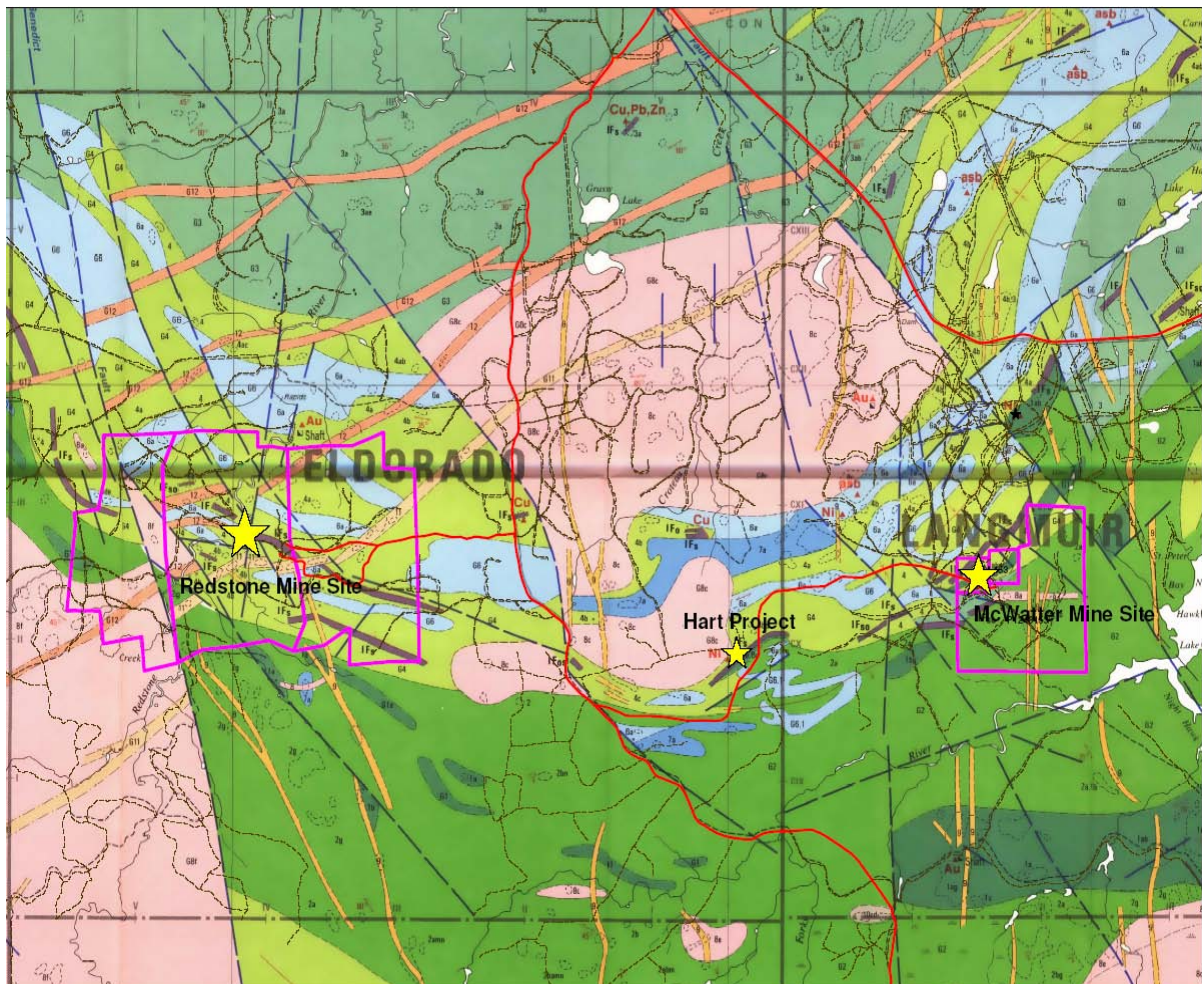
The McWatters deposit is hosted by ultramafic rocks that form part of, or intrude, the Tisdale assemblage that flank the Shaw Dome and form part of the Abitibi greenstone belt (AGB). The Abitibi greenstone belt is one of the youngest parts of the Archean Superior Province forming what is considered one of the largest and best-preserved belts of its kind in the world. The Abitibi belt developed between 2.8 to 2.6 Ga (Jackson and Fyon, 1991) and has been subdivided in 9 lithotectonic assemblages (Ayer et al., 2002; Sproule et al., 2002). The relationships between these assemblages are ambiguous and may represent a superposition of allochthonous terranes (each terrane having been formed in a different tectonic environment), or a tectonically complex and structurally deformed single autochthonous terrane formed along a convergent margin, or a combination of both these. Even though the AGB has been subdivided into 9 distinct lithotectonic assemblages, only four of these are generally accepted to contain komatiitic rocks and therefore considered prospective for ultramafic-hosted Ni-Cu-(PGE) sulphide deposits. These four assemblages have distinct and well defined ages as well as spatial distribution (Figure 6-1): the Pacaud assemblage (2750-2735 Ma), the Stoughton-Roquemaure assemblage (2723-2720 Ma), the Kidd-Munro assemblage (2719-2711 Ma), and the Tisdale assemblage (2710-2703 Ma). These four assemblages differ considerably in the physical volcanology and geochemistry of the komatiitic flows. It is important to note that the latter two of these assemblages contain larger volumes of high magnesium, Al-undepleted komatiites (>5 percent), while the Tisdale assemblage contains more andesitic rocks and sulphide facies iron formations (Sproule et al., 2003)



**Figure 7. Simplified Regional Geological Setting of the Abitibi Greenstone Belt**

The Shaw Dome is a major anticline centred approximately 20 km southeast of Timmins, Ontario (Muir, 1979; Green and Naldrett, 1981; Figure 7). The anticlinal structure may be a result of regional folding that affected rocks north of the Shaw Dome or, more probably, due to the diapiric action of a large granitic body which partially outcrops in the central south-east portion of the dome.

Volcanic rocks associated with the Shaw Dome have been associated with the Deloro assemblage (2730 to 2725 Ma: Ayer et al., 1999) and younger Tisdale assemblage. Pyke (1982) further sub-divided these assemblages into three volcanic formations: lower, middle, and upper volcanic formations. The lower formation of the Deloro assemblage is not exposed in the Shaw Dome, while the middle formation occupies the central part of the Dome north of the Redstone mine and the exposed granitic intrusive rocks depicted in Figure 8.



**Figure 8. Location of the McWatters Mine shown on an Extract from Map P2455 produced by the Ontario Geological Survey**

The upper volcanic formation of the Deloro was described by Pyke (1982) to contain a relative abundance of sulphide facies iron formations and a predominance of intermediate to felsic volcanic rocks of dacitic to andesitic composition. Pyke (1982) does not mention the presence of extrusive komatiitic rocks in this assemblage having mapped all of the ultramafic rocks contained within this supracrustal package as intrusive in nature (Pyke, 1970, 1975). Pyke (1982) does, however, add that “there is some intercalation of the komatiites (of the Tisdale assemblage) with the Deloro Group volcanic rocks”. Since, both intrusive and extrusive ultramafic rocks have been identified within the Deloro volcanic package (Hall & Houle, 2003; Houle et al., 2004; Houle & Guilmotte, 2005) outlined by Pyke (1982). Therefore, either the assumption that the Deloro assemblage is devoid of komatiitic flows needs to be revised or the disconformity that delineates the contact between Deloro and Tisdale rocks needs to be modified.

Stone & Stone (2000) divided the komatiitic rocks into two horizons making no reference to stratigraphy: the lower komatiitic horizon (LKH) and the upper

komatiitic horizon (UKH). The UKH consists of extrusive komatiitic rocks intercalated with calc-alkalic volcanic rocks and sulphide facies iron formations, while the LKH consists of komatiitic rocks that intrude the underlying felsic to intermediate volcanic flows and interbedded iron formations. The rocks that form the LKH are mostly dunites, whelrlites, pyroxenites, and gabbros that intruded sometime between 2725 Ma and 2707 Ma (Stone & Stone, 2000 and references therein).

The UKH rocks are cumulate, spinifex textured and aphyric komatiites that extruded sometime before 2703 Ma (Corfu et al., 1989). The UKH komatiitic intrusions are interpreted to represent part of the feeder system that resulted in the eruption of channelized komatiitic flows that are, at least initially, cogenetic and form what is now a large dyke-sill-lava complex. Observations and interpretations by Stone & Stone (2000) are supported by later mapping of Adams, Shaw, Langmuir, and Carman Twps by Houle et al. (2004) and Houle & Guillmette (2005).

To date five Ni-Cu-(PGE) deposits have been discovered in the Shaw Dome (Redstone, Hart, McWatters, Langmuir #1, Langmuir #2), and numerous showings have been identified (Galata, etc). These five deposits occur in komatiitic rocks found within the Deloro assemblage near the base of the Tisdale assemblage.

Proterozoic dykes of the Matachewan swarm and the Abitibi swarm intrude all of the rocks described so far. The Matachewan dykes generally trend north to north-west while the younger Abitibi swarm trends north-east.

## 6.2 Property Geology

There are no outcrops in the immediate area of the McWatters deposit. Four main rock types have been identified through diamond drill core: footwall intermediate volcanics, mineralized ultramafic flows, felsic dykes, and mafic dykes. Based on whole rock data the intermediate volcanic rocks range in composition from basaltic andesite to andesite, classified using a total alkalis versus silica (TAS) diagram. The ultramafic rocks are of komatiitic composition plotting near the 100 percent Mg apex on the Jensen cation plot (Jensen, 1976), however the extrusive nature of the body is uncertain as associated textures (spinifex, flow breccia) have not been identified to date. Its spatial association and similar silicate and sulphide mineralogy to other extrusive bodies is the basis of the classification. The dykes are syeno-diorites and gabbros respectively (also using a TAS diagram).

The komatiitic rocks, which host the mineralization are serpentinized and locally altered to talc, chlorite and carbonate. Massive and cumulate textures are locally preserved and are best developed near the center of the body where pyroxene occurs as an intercumulus phase. The contained sulphide minerals observed in decreasing abundance were pyrite, heazlewoodite and minor chalcopyrite, occurring predominantly as disseminations but also as pods, veins, and massive to semi-massive veins. Rather than being situated along the basal contact of a trough-shaped flow, the sulphides in the McWatters deposit occupy irregular volumes suspended within a large mass of ultramafic

cumulates that apparently lack any kind of komatiitic flanking sheet flows or any other indication of a volcanic origin. The massive sulphide bodies are, however, often associated with andesitic wedges that appear to be fault bound.

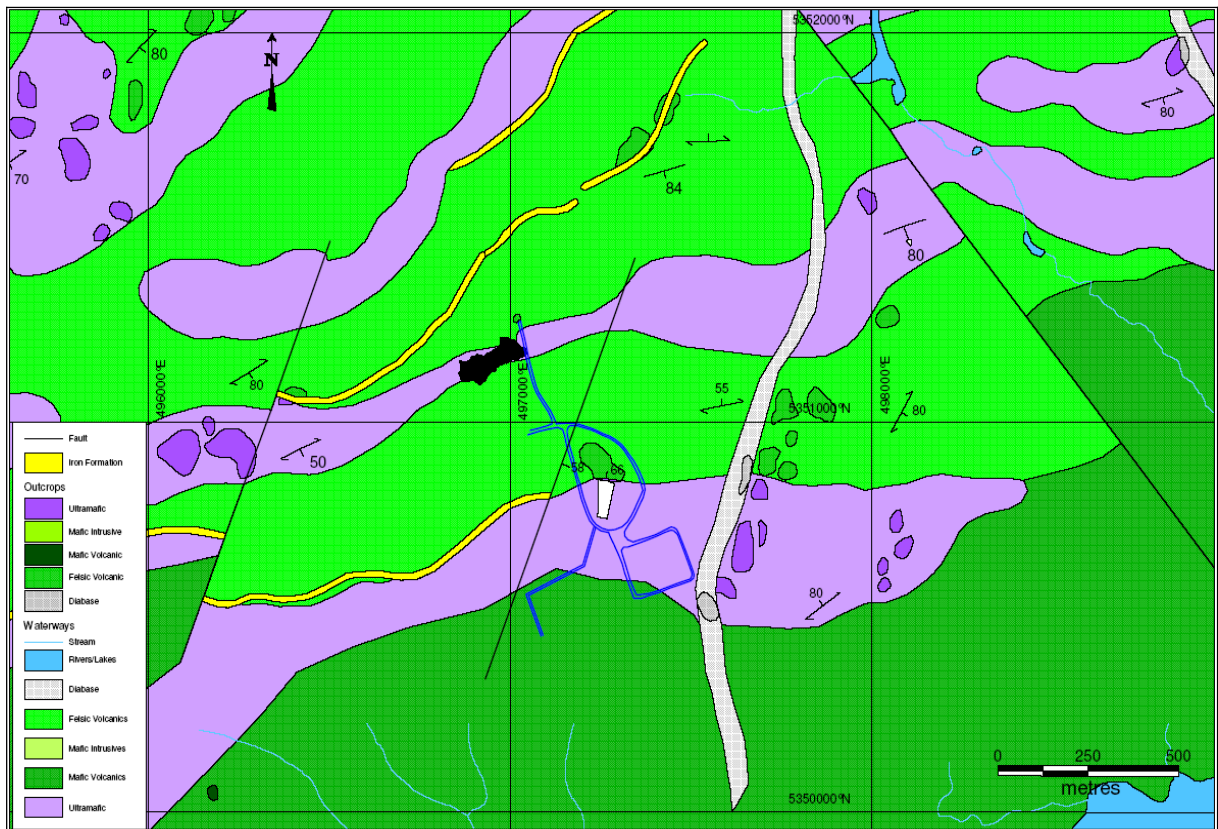
The McWatters deposit differs markedly from the rest of the known deposits in the Shaw Dome. The ultramafic body hosting the McWatters deposit is discordant, evidently cutting up through the iron formation that sits immediately on its north flank, as indicated by recent, more detailed magnetic surveys conducted by Liberty. The ultramafic body displays a characteristically high magnetic response that can be traced for several kilometers to the west, and appears to cross-cut the predominant stratigraphy. Several drillholes along the strike length confirm the presence of ultramafic rocks along most of this magnetic anomaly, making it possible to conclude that it represents a continuous ultramafic body. The discordant nature of this ultramafic unit suggests that it is intrusive, and therefore has a markedly different genesis relative to its extrusive counterparts in the Shaw Dome.

Along some sections the mineralization is present in more than one distinct volume, and it is possible that these each represent different intrusions or pulses within a single intrusion along the same path at different times. The outlines of the ultramafic body are only moderately understood, and it is entirely possible that multiple mineralized bodies exist within the same ultramafic massif, both at depth and on strike. Although this deposit offers a more challenging target for drill-based exploration due to its complexity, it also offers a much greater potential for the discovery of a very large deposit because of its greater size. Kambalda-type flow-hosted deposits are limited in size by the constraints imposed by the geometry of the lava flows, whereas an intrusion has the potential to be much larger. A probable analog to the McWatters deposit is the giant Mt Keith deposit in Australia (299 Mt at 0.57 percent Ni, of which 0.28 percent is hosted by silicate minerals; Butt and Brand, 2003 (<http://www.crcleme.org.au/>), which is also hosted by a subvolcanic dunitic intrusion. In the terminology of Leshner and Keays (2002) these correspond to Type II deposits. It should be noted that Leshner and Keays (2002), like most of the recent literature about dunite-hosted disseminated sulfide deposits of this type, referred to them as being hosted by channelized lava flows, but recent work at Mt Keith has shown it to be intrusive in origin.

Even though rock exposure is extremely limited in the area surrounding the McWatters deposit, the scope of work on the property has enabled a detailed geological map to be produced by Liberty staff.

Figure 9 is a plan map of the property geology, including the deposit outline (black) and an outline of the surface infrastructure (blue).





**Figure 9. Simplified Surface Geological Map of the McWatters Deposit**

## 7 Deposit Types

The distribution of magmatic Ni-Cu-PGE sulphide deposits in Canada, with a resource size greater than 100,000 tonnes is shown in Figure 10.

Considerable research by various writers over the years indicates that komatiite hosted nickel deposits in the Timmins area are similar to the Archean age nickel deposits of the Kambalda and Windarra areas in Western Australia.

In the AGB four of the assemblages contain komatiites. Komatiite-associated Ni-Cu-(PGE) deposits have only been identified within the Kidd- Munro and Tisdale (including McWatters) assemblages. This is consistent with the interpretation that komatiite associated Ni-Cu-(PGE) deposits form within lava channels of channelized sheet flows or intrusives, but not within sheet flows or lava lobes.

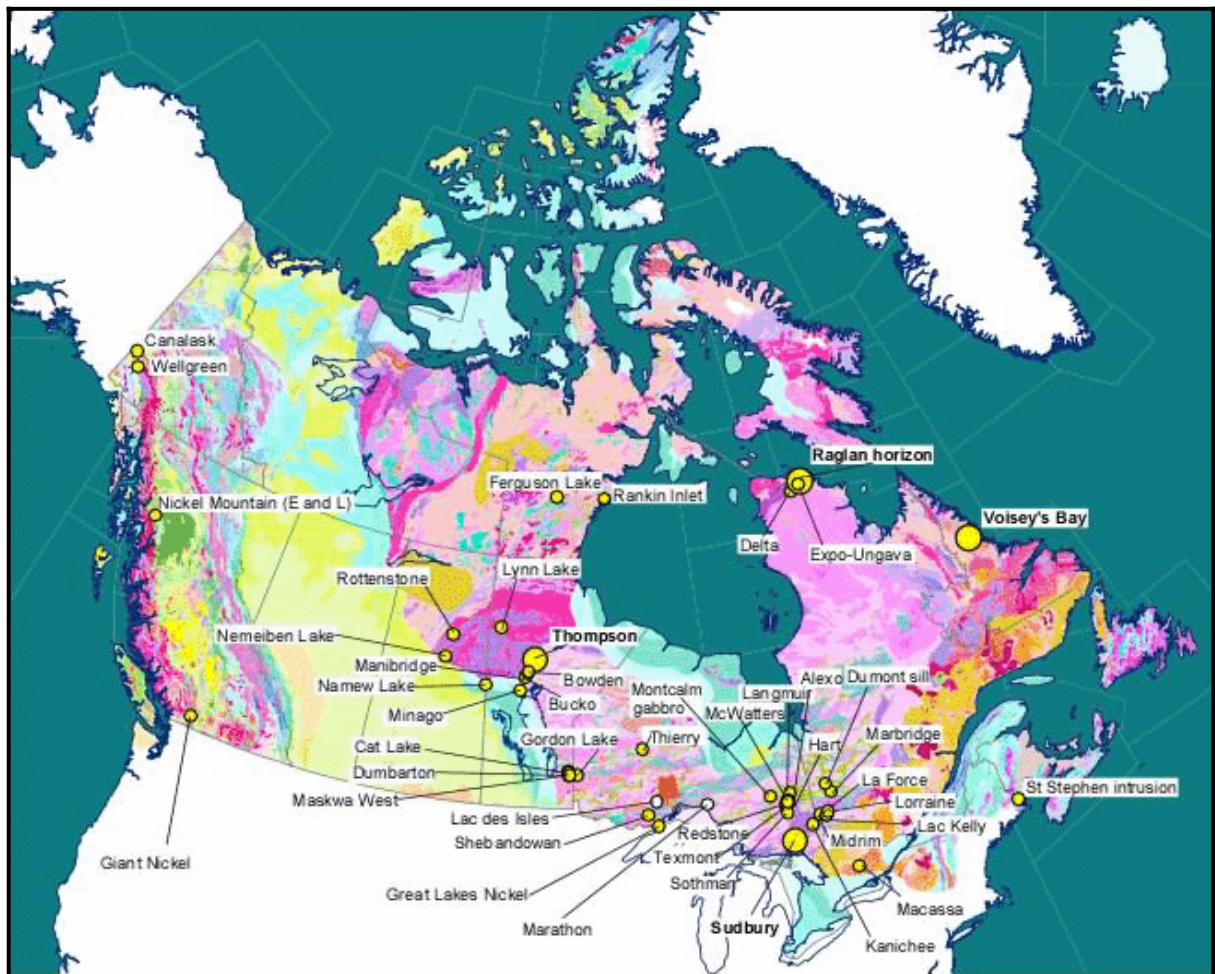
Tisdale assemblage ultramafic volcanic rocks with high MgO contents (up to 32%) are defined as aluminum undepleted komatiites (“AUK”). Individual flows are usually less than 100 meters thick and typically occur at or near the base of ultramafic sequences. The flow units can be recognised by the presence of chilled contacts, the distribution of spinifex textures, marked compositional or mineralogical changes at unit boundaries and the presence of ultramafic breccia or sulphidic sediments at contacts. Intrusive counterparts have also been recognized in the Tisdale assemblage.

The following three paragraphs are largely based on Lesher & Keays (2002), parts of which are paraphrased.

*Komatiite-hosted Ni-Cu-PGE deposits are one of several lithological associations within the broader group of magmatic Ni-Cu-PGE deposits. Mineralization occurs in both extrusive and intrusive settings and experimental studies indicate that komatiitic magmas/lavas were emplaced at very high temperatures. Deposits of this association are mined primarily for their Ni contents, but they contain economically-significant amounts of Cu, Co, and PGE.*

*Komatiite-associated nickel sulphide deposits are part of a continuum of lithotectonic associations in the family of magmatic Ni-Cu-PGE deposits, which contains a variety of mineralization types (Table 4 from Lesher & Keays, 2002).*





**Figure 10. Map Showing the Distribution of Magmatic Ni-Cu-PGE Sulphide Deposits in Canada, with Resources Greater than 100,000 Tonnes (after Wheeler et al, 1996)**

**Table 4. Classification of Mineralization Types in Komatiite-Associated Magmatic Ni-Cu-PGE Deposits (from Lesher & Keays, 2002)**

Magmatic					Hydrothermal-Metamorphic	
I basal/footwall		II strata-bound internal		III reef	IV	
	I a blebby	II b interstitial	II c cloudy		IV a meta-sediment	IV b vein
stratiform	coarse disseminations within komatiitic peridotite or dunite units	fine disseminations within komatiitic peridotite or dunite units	very fine disseminations within komatiitic peridotite or dunite units	at or near contact between lower cumulate zones and upper gabbro zones within strongly differentiated units	layers in sulphidic metasediments associated with Type I mineralization	veins in wall rock associated with Type I mineralization
massive, net-textured, disseminated; sometimes xenolithic or xenomelt-bearing	blebby	intercumulus, interstitial or lobate	intercumulus, interstitial	disseminated, rarely net-textured	layered, banded, laminated	massive to disseminated typically associated with quartz carbonate
typically moderate-low, slightly fractionated	moderately high, relatively unfractionated	typically high, relatively unfractionated	variable (high to low)	typically high, relatively fractionated	variable, commonly depleted in Cr and Ir relative to associated magmatic ores	variable, commonly depleted in relative to associated magmatic ores
early magmatic, segregated prior to or during emplacement	intermediate magmatic, segregated during crystallization of cumulate host rock	intermediate magmatic, segregated during crystallization of cumulate host rock	late magmatic but meta-morphically modified, segregated during crystallization of cumulate host rock	late magmatic, segregated during final stages of crystallization of host rock	late magmatic or syn-metamorphic	syn-metamorphic mobilized in hydrothermal
Alexo, Kambalda, Langmuir, Windarra, Hart	Damba-Silwane, Otter shoot (Kambalda)	Mt. Keith, Dumont, Perseverance Main	Katinniq, Perseverance Main	Delta, Romeo II, Fred's Flow, Boston Creek Unit	Jan shoot (Kambalda), Langmuir, Thompson, Hart	Kambalda, Langmuir, Donaldson

*Most of the deposits in the Shaw Dome are **Type I** (stratiform basal), including Liberty's Redstone and Hart deposits. **Type Ib** (magmatic footwall vein) mineralization is a minor mineralization type associated with Type I deposits, but is an important mineralization type in other associations (e.g., Cu-PPGE-rich footwall veins at Sudbury). **Types IIa** (blebby disseminated) and **IIc** (cloudy disseminated) are common minor mineralization types associated with Types I and Ib. **Type III** (stratiform "reef") mineralization is a more recently-recognized primary mineralization type in this association and is normally subeconomic, but is an important mineralization type in other associations (e.g., Bushveld, Stillwater). **Type IVa** (Ni-enriched metasediment) mineralization occurs in many deposits where Type I mineralization are intimately associated with sulphidic metasedimentary rocks, as is the case with the Hart deposit. **Type IVb** (hydrothermal vein) mineralization is a relatively minor, but genetically important secondary mineralization type. **Type V** (offset) mineralization is associated with almost all Type I deposits and is common both at Redstone and Hart deposits.*

The McWatters deposit conforms to various mineralization types: **Type I** (basal massive sulphide layer), **Types IIa** and **IIc** (disseminated zone overlying the massives), and possibly **Type IVb** as there are clear indications of hydrothermal activity in the sulphide mineralogy.

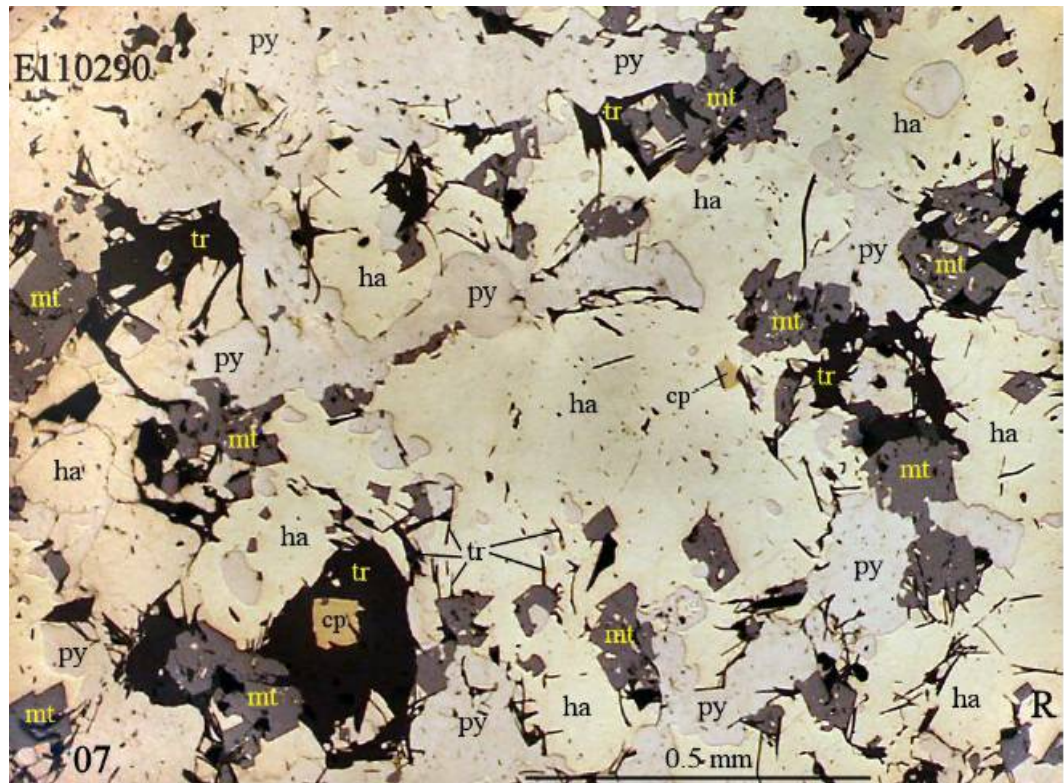
The genesis of the Shaw Dome and the Australian deposits is attributed to the combined effect of lava channels (or channelized sheet flows) and intrusives, which provides the heat and metal sources, and sulphide bearing iron formations in the footwall that provide an external sulphur source. Thermal erosion of the underlying rocks by the komatiite flows is considered to be the dominant mechanism for adding sulphur to the magma and to the creating a depositional 'trough' for sulphide minerals. Type II mineralization characteristically contains disseminated sulphide mineralization within channelized flows resulting in large tonnage low grade deposits. Characteristics of this deposit type which should be used in exploration methodologies include:

- Geological mapping of komatiite flow units;
- Presence of sulphidic footwall rocks;
- Lithogeochemical surveys can detect AUK komatiites; and
- Airborne and ground electromagnetic surveys will detect the location of massive sulphide mineralization, whereas magnetic surveys should detect pyrrhotite rich sulphide mineralization.

## 8 Mineralization

The McWatters mineralized zone can be readily subdivided in two distinct zones: an upper zone of altered dunitic rocks containing disseminated sulphides, and a basal, lower zone consisting of massive sulphides. The upper zone directly overlies the lower zone, which is principally in contact with wedges of andesitic, footwall volcanic rocks. The two zones combined form a mineralized body approximately 150 meters in strike length by 30 meters to 40 meters in width extending down to a depth of approximately 160 meters. The body dips steeply to the south at an average dip of approximately 82 degrees.

Historically mineralization was thought to consist of pyrite, pentlandite, millerite, and minor chalcopyrite in order of decreasing abundance. However, petrographical work carried out by Liberty did not find evidence for this mineralogical assemblage, but instead a more unique and less common assemblage consisting primarily of pyrite and heazlewoodite (Figure 11). Heazlewoodite ( $\text{Ni}_3\text{S}_2$ ) is one of the most nickel rich sulphide minerals, and is generally thought to be of hydrothermal origin, most often found in dunites and lherzolites.



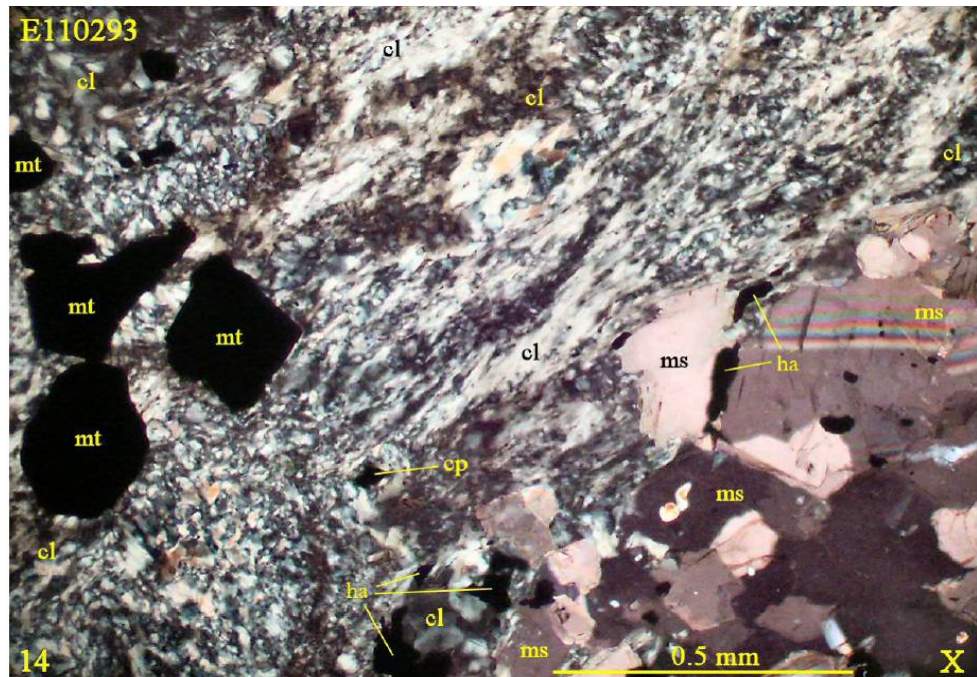
**Figure 11. Thin Section Microphotograph of Mineralized Core from the McWatters Deposit Showing the Predominant Sulphide Assemblage: Heazlewoodite (ha) and Pyrite (py)**



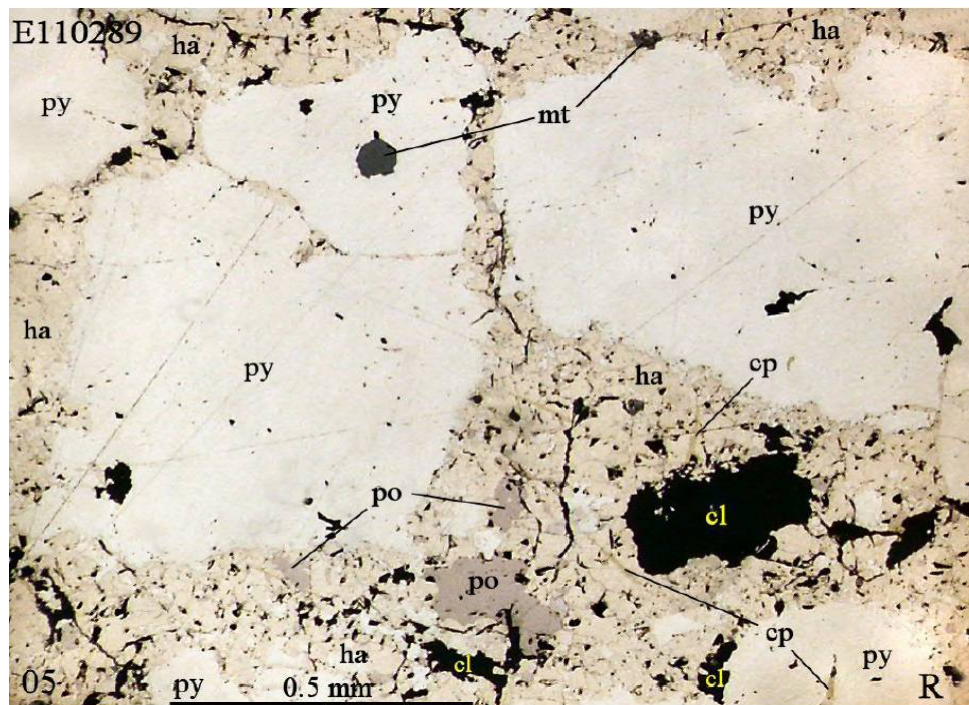
Thin section studies of the upper zone revealed a mineralized core consisting of altered dunite/peridotite that is dominated by anhedral olivine (and possibly pyroxene) grains that were altered completely to antigorite-magnetite; antigorite was in turn altered slightly to strongly to talc. In other instances the dunite/peridotite is dominated by chlorite with lesser magnesite/ankerite. Sulphide mineralization in this upper zone consists primarily of pyrite and heazlewoodite (1 to 10 percent modal abundance), with trace amounts of chalcopyrite and chromite. Heazlewoodite grains are generally between 0.05-0.2 mm in size (Figure 12).

The massive sulphide dominated lower zone is also comprised primarily of pyrite (40 percent-50 percent) and heazlewoodite (30 percent-40 percent) (Figure 13). Heazlewoodite grain sizes range up to 1.5 millimeters. Other common minerals include (in order of decreasing abundance): pyrrhotite, chlorite, tremolite, magnetite, and chalcopyrite.

The mineralogical observations appear to support the interpretation that the ultramafic body hosting the mineralization is intrusive. The mineralization could be interpreted as hydrothermally modified magmatic sulphides.



**Figure 12. Microphotograph of a Thin Section Showing the Mineral Assemblage of the Disseminated Zone at McWatters . Magnetite (mt), Chlorite (cl), Heazlewoodite (ha), Magnesite (ms), Chalcopyrite (cp)**



**Figure 13. Microphotograph of a Thin Section Showing Mineralogy of the Massive Sulphide Dominated Basal Layer at McWatters . Pyrite (py), Pyrrhotite (py), Chlorite (cl), Heazlewoodite (ha)**

## **9 Exploration**

### **9.1 Historical**

A review of the historical exploration activities on the property can be found in Section 5.

### **9.2 Future**

The ultramafic body that hosts the McWatters nickel mineralized zone continues at depth and trends east-west over several kilometers. Future in-mine exploration is expected to focus on drill testing the depth extension of the nickel mineralization from drill bays on the lower levels of the mine.

During 2008, Liberty tested the airborne geophysical response of the McWatters mineralized body in order to determine which method detected a recognizable signature. The VTEM system successfully detected an electromagnetic response associated with the deep seated, flat lying massive sulphide layer. The entire strike length of the ultramafic body was subsequently flown using this very same system. Future exploration will target geophysical anomalies associated with discordant ultramafic bodies that exhibit similar characteristics to those detected at McWatters.

## 10 Drilling

### 10.1 Introduction

During the period 1961 to 1995, a number of exploration companies undertook various phases of drilling activities in the vicinity of the McWatters Mine. Poor records exist of the diamond drilling during this period, and the results have not been used in the present study. The block model used in this study was based on drilling conducted by Liberty Mineral Exploration Inc. and Liberty. Total drilling amounted to 20,641 meters of diamond drill core. Details of this drilling are tabulated in Table 5.

**Table 5. A Tabulation of Diamond Drilling Activities Conducted at the McWatters Mine**

Company	Period	Type	Drilling details		
			No. Holes	Total (metre)	Mean length (metre)
Liberty Mineral Expl.	2001-04	Surface DD	49	7,965	163
Liberty Mines	2006-07	Surface DD	92	12,676	138

Diamond drilling conducted by Liberty Mineral Exploration Inc. consists of 49 vertical holes, for which very limited survey data was collected. Original drill logs and assay certificates from Swastika Laboratories, Kirkland Lake, ON (Canada), were found. Surface plan maps showing drill hole locations were also located, which aided in reconstructing drill hole locations. Approximately 75 percent of the casings were left in the ground enabling Liberty to survey a majority of the holes, adding confidence to the data. All the drill core belonging to this phase of drilling are stored on the Redstone Mine site, and it has been entirely either checked or relogged. All sampling matched the tags and assay certificates.

### 10.2 Drilling by Liberty (post 2004)

All drilling by Liberty was conducted from surface. A total of 92 holes with an average length of 138 meters were completed on the site. All the drilling done by Liberty was diamond drill core, with the core safely stored on surface at the Redstone Mine site for checking and review.

The core size for surface drilling was NQ, the size being deemed a natural balance between productivity and accuracy. The drilling contractor for over 90 percent of the program was Laframboise Drilling from Hilliardton, ON. Bradley Bros of Timmins performed a limited number of geotechnical holes. The boreholes are numbered by a clear alphanumeric code. The drill core was not routinely photographed for a digital record, although representative core intersections were photographed.

Drill collars were surveyed by a land surveyor, with the original collar azimuth and plunge setup determined by compass and/or cut grid lines. Downhole



surveying was routinely conducted at 25 metre intervals with a Maxibor instrument. Casing is used for one hole per set-up for all surface drill locations, with collar pickets installed with clear labels indicating location, hole names, azimuth, and dip. Core orientation is achieved with the EzyMark system. In terms of geotechnical data, RQD and recovery percentages have been routinely collected.

An example of the output of a typical Liberty drill log (MCW-07-65), highlighting all requisite drilling information in DH logger (Century Systems) output is shown in Figure 16.

### 10.3 Drilling Pattern and Density

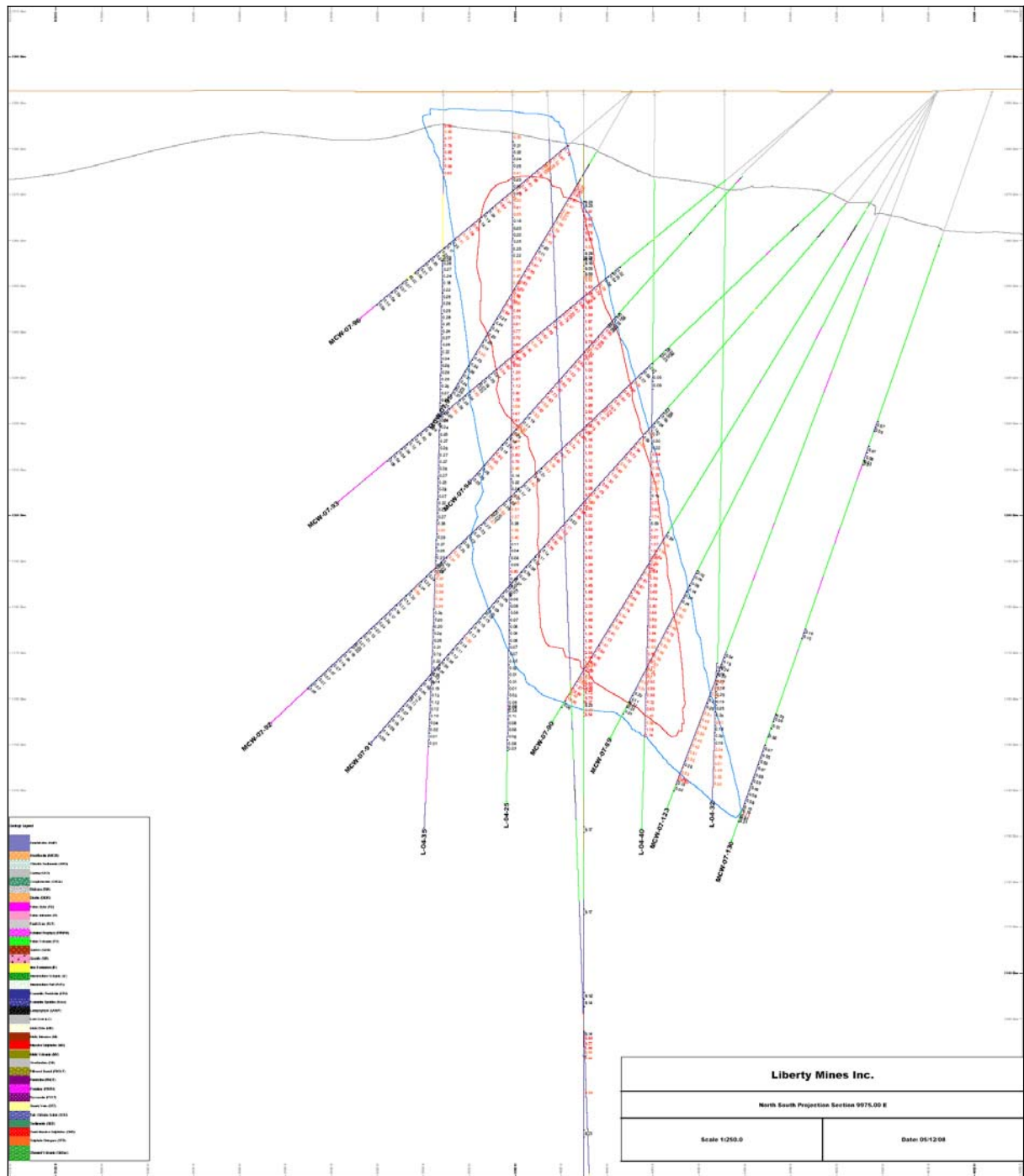
Liberty Mineral Exploration drilled 49 surface holes to an average drill length of 163 meters. These holes were all vertical drill holes. The maximum depth below surface achieved was about 250 meters, although drilling typically targets depths less than 150 meters below surface. Drilling was done on a 15 metre by 15 metre pattern with one drill hole per set-up.

Liberty drilled 92 drill holes from surface average drill length of 138 meters. These holes were all drilled grid north, with dips angles ranging from -86 to -39.2 degrees. Set-ups typically consisted of 2-3 drill holes fanning with varying dip angles. Drilling was designed to achieve a drill spacing that fell somewhere in the 7.5 metre to 10 metre range. The tight drill spacing was to ensure accuracy while modelling the sulphide concentrations in the disseminated zone, especially in the 0.5 percent to 0.8 percent range. The plan position of all drilling conducted at McWatters is illustrated in Figure 14, with a typical cross-section showing drill spacing illustrated in Figure 15.

It is the opinion of SRK that the drilling strategy and pattern have produced an adequate drill density to construct resource models of sufficient confidence to allow mine design and economic modeling.



**Figure 14. Plan of Diamond Drill Hole Collars by Liberty Shown on the McWatters Grid**



**Figure 15. Geological Long-Section of the McWatters Deposit Showing Geology, Assay Data, and Drill Hole Traces**

# 11 Sampling Approach and Methodology

## 11.1 Introduction

Data reviewed in this study and applied for geological modeling and resource estimation was the product of historical and current exploration programs by two different companies. Historical exploration field procedures implemented by exploration staff have been summarized in the NI 43-101 compliant Technical Report on the McWatters Nickel Deposit, Timmins, ON, prepared by Roscoe Postle Associates Inc (RPA). This report is filed on SEDAR under Liberty Mines Inc., on the 9th of November, 2005. As stated in this report, it is the opinion of RPA that sampling procedures implemented by Liberty Mineral Exploration met the minimum requirements set out in *Mineral Exploration Best Practices Guidelines*.

SRK was able to review core handling, logging or sampling procedures implemented during the current Liberty drilling programs. All drill core was transported to the secure Redstone core yard, near the main office, where it was logged. Core was marked for sampling and mechanically split. Half of the split core was submitted for sample preparation and analyses (and sometimes for specific gravity), whereas the other half remained stored in the original core boxes. The results of drill core logging and sampling were recorded into DH logger (Century Systems) format, with adequate detail on lithology and mineralization recorded. Assay analyses results for Ni percent, Cu percent, Au gpt, Pt gpt and Pd gpt were recorded adjacent to lithology descriptions. Au, Pt and Pd were not routinely sampled however. An extract from the drill log for diamond drill hole MCW-07-65, including the header information, is shown in Figure 16.

## 11.2 Sampling Protocols

Liberty sampling during the exploration program carried out on the McWatters site has followed industry best practices, as set out in *Mineral Exploration Best Practices Guidelines*. Liberty have sampled all mineralized core intercepts, which include a footwall sample below the massive sulphide basal contact as well as sample coverage of all mineralized intercepts in the disseminated zone to the massive sulphide. Figure 17 shows an extract from a typical drill log produced by Liberty, showing sampling procedures and logging details.





## 5

585

Azim

Az	Dip	Depth	Az	Dip	Depth	Az	Dip	Depth
100	-57.00	35.0000	1.10	-56.80	59.0000	3.10	-56.30	83.0000
100	-57.00	149.3000	343.00	-57.30				
Mineralization Data			Assay Data					
Lithology			From	To	Mineralization Type	Mineralization Style	Min %	
5, Casing								
Felsic Volcanic								
at grey to light green felsic volcanic (Dacite). Massive to pyroclastic with rtz-carb-epidote infilling in fractures. Weathered & vuggy from 13.0 to 0m.								
, Mafic Diike								
k grey/brown mafic dyke. Sharp upper contact @ 35 degrees to CA. No mineralization.								
Felsic Volcanic								
at grey to light green felsic volcanic (Dacite). Massive to pyroclastic with rtz-carb-epidote infilling in fractures. No mineralization.								
Felsic Diike								
d grey/green/pink felsic dyke. Sharp upper contact @ 30 degrees to CA. Locally blocky/broken.			35.50	39.30	PY	DIS	1 - 5%	
ucture								
50 - 39.20 : F, 80, sharp upper contact, broken/blocky.								
Felsic Volcanic								
at grey to light green felsic volcanic (Dacite). Massive to pyroclastic with rtz-carb-epidote infilling in fractures. Locally blocky/broken.			39.30	44.45	PY	DIS	< 1%	
ucture								
60 - 42.80 : BLKY, 40, broken/blocky felsic volcanic.								



7-65

	Lithology	Mineralization Data					Assay Data					
		From	To	Mineralization Type	Mineralization Style	Min %	Sample Number	From	To	Ni %	Cu %	
							C394860	88.00	89.00	0.2400		
							C394862	90.00	91.00	0.2700		
							C394864	92.00	93.00	0.3900		
							C394866	94.00	95.00	0.1800		
							C394868	96.00	97.00	0.2700		
							C394833	61.00	62.00	0.0300		
							C394835	63.00	64.00	0.0300		
							C394837	65.00	66.00	0.0600		
							C394839	67.00	68.00	0.3700		
							C394841	69.00	70.00	0.1800		
	STR, Stringer Sulphide Stringers of Pyrrhotite/Pentlandite/Pyrite in chloritic komatiite. Strongly magnetic.						C394843	71.00	72.00	0.2500		
							C394845	73.00	74.00	0.3300		
							C394847	75.00	76.00	0.4600		
							C394849	77.00	78.00	0.8300		
							C394915	142.80	144.20	142.80		144.20
	MS, Massive Sulphide Massive sulphides of pyrite/pentlandite/pyrrhotite/chalcopyrite. Majority is pyrite/pentlandite.											
												C394916
	KPD, Komatiite Very soft purple/grey/green Komatiite. Numerous irregular/wispy carb-quartz-chl stringers with several containing po/py/pn. Sharp upper contact @ 75 degrees to CA. Locally blocky/broken.							C394917	145.15	146.20	0.1500	0.005
								C394918	146.20	147.20	0.1300	0.005
								C394919	147.20	148.20	0.1400	0.005
								C394920	148.20	149.30	0.5300	0.010

Structure Type	Angle to Core Axis	Description
----------------	--------------------	-------------

F	80	sharp upper contact, broken/blocky.
---	----	-------------------------------------

BLKY	40	broken/blocky felsic volcanic.
------	----	--------------------------------

FLT	20	minor gouge
-----	----	-------------

FLT	55	Broken gravel
-----	----	---------------

BD	47	well layered & altered with pink carb.
----	----	--

FLT	15	blocky/broken, soapy, missing core.
-----	----	-------------------------------------

FLT	20	blocky/broken, some gouge @ lower contact.
-----	----	--

BLKY	20	blocky/broken, some clay, some
------	----	--------------------------------

## **12 Sample Preparation, Analyses and Security**

### **12.1 Sample Preparation and Analyses**

Information regarding the historical Liberty Mineral Exploration sample preparation, analyses and procedures is available in the NI 43-101 compliant Technical Report on the McWatters Nickel Deposit, Timmins, ON, prepared by Roscoe Postle Associates Inc (RPA). Summarized information regarding the Liberty program is documented here.

The primary laboratory used by Liberty for drill core analyses was ALS Chemex, with sample preparation undertaken at the ALS Chemex Timmins sample preparation facility and subsequent analyses undertaken at the ALS Chemex Vancouver laboratories. Total turn-around time was reported to be about four weeks.

In terms of sample preparation, steps usually taken after drying core samples were fine crushing to 70 percent <2 millimeters (code CRU-31) and splitting with a riffle splitter. Split samples were pulverized and then split again to 85 percent <75 microns (code PUL-31).

Generally analyses were conducted for only nickel and copper, with analyses for Platinum, palladium and gold conducted on request. The assay method used was aqua regia digestion followed by fusion and AAS (analytical code AA46). Analyses for precious metals were reported from an aqua regia leach and using conventional ICP-AES analyses (analytical code ME-ICP41).

The ALS Chemex has ISO 9001 and ISO17025 registration in North America. SRK is unable to comment on the security measures in place during the sample handling processes during the various phases of data generation, as no information relating to this aspect is available.

Analytical results were returned by ALS Chemex to Liberty electronically with data directly updated to the Century Systems database. Certificates of Analyses were received for all assay data, which were checked against the original digital data. The original master pulps were stored for 90 days subsequent to the submission of the Certificates of Analyses, thereafter they were returned to site on request for storage.

### **12.2 Quality Assurance and Quality Control Programs**

Quality control measures are typically set in place to ensure the reliability and trustworthiness of exploration data. This includes written field procedures and independent verifications of aspects such as drilling, surveying, sampling and assaying, data management and database integrity. Appropriate documentation of quality control measures and analysis of quality control data are an integral

component of a comprehensive quality assurance program and an important safeguard of project data.

The field procedures implemented by Liberty Mineral Exploration during their exploration program can be found in the NI 43-101 compliant Technical Report on the McWatters Nickel Deposit, Timmins, ON, prepared by Roscoe Postle Associates Inc (RPA). Aspects of the quality control measures implemented by Liberty have been reviewed by SRK. It is SRK's opinion that recent quality control measures implemented and documented by Liberty, meet industry best practice guidelines.

Analytical control measures typically involve internal and external laboratory measures implemented to monitor the precision and accuracy of the sampling, preparation and assaying process. They are also important to prevent and monitor the voluntary or inadvertent contamination of samples. Assay certificates and Quality Assurance and Quality Control Reports from ALS Chemex were made available to SRK, who noted that internal and external laboratory control measures were in place.

In addition to the inferred quality assurance measures taken by ALS Chemex in Vancouver, a series of external analytical quality control measures to monitor the reliability of assaying results delivered by ALS Chemex Laboratories was implemented by Liberty. A series of blanks and standards were inserted at approximately every 10 to 20 samples (usually about 2 per batch).

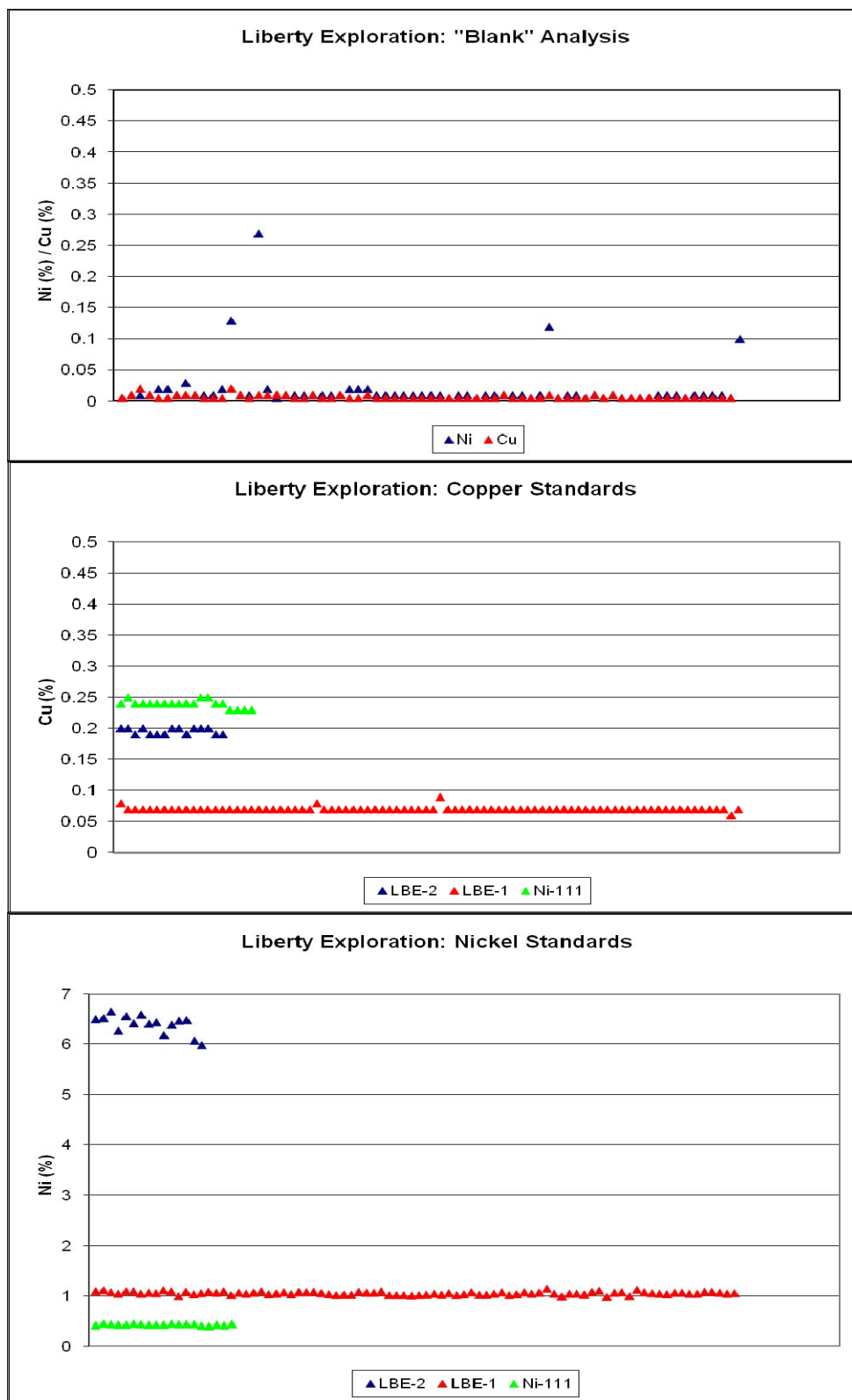
Certified blank samples were used by Liberty. These blanks have recently also been verified by Liberty, by sending ten blank samples to the SGS Laboratory at Lakefield. The results of the assayed nickel and copper 'blanks' are shown in Figure 18. A high variance is noted in a limited number of deviant samples (4). The reason for this is unknown, but is most probably due to a sampling error where waste ultramafic was used instead of the standard blank material.

Two commercial certified standards (LBE-1 and LBE-2) and one 'uncertified' standard (Ni111) were applied by Liberty. The recommended nickel and copper values for the reference materials are tabulated in Table 6. The results of the Liberty control samples (blanks and standards) are plotted in Figure 18.

**Table 6. Standard Samples for Quality Control**

Reference Material	Ni %	Cu %
LBE-1	1.090	0.071
LBE-2	6.440	0.200
Ni111	0.420	0.240





**Figure 18. Plot for the control Nickel and Copper Samples Used by Liberty (top=blank, middle=copper and bottom=nickel)**

## 12.3 Specific Gravity Data

Specific gravity measurements were collected during the Liberty core drilling program in 2006-7. All specific gravity data has been determined at the ALS Chemex laboratories in Vancouver from core pulp samples using the pycnometer method.

A total of 235 specific gravity determinations are available for the McWatters deposit. These were all assigned to a single weathering profile with three geo-domains differentiated. A summary of the weighted averages of this dataset is shown in Table 7. This table differentiates between data from massive sulphides, disseminated mineralization and from other rock types. A histogram of the total specific gravity dataset is shown in Figure 19.

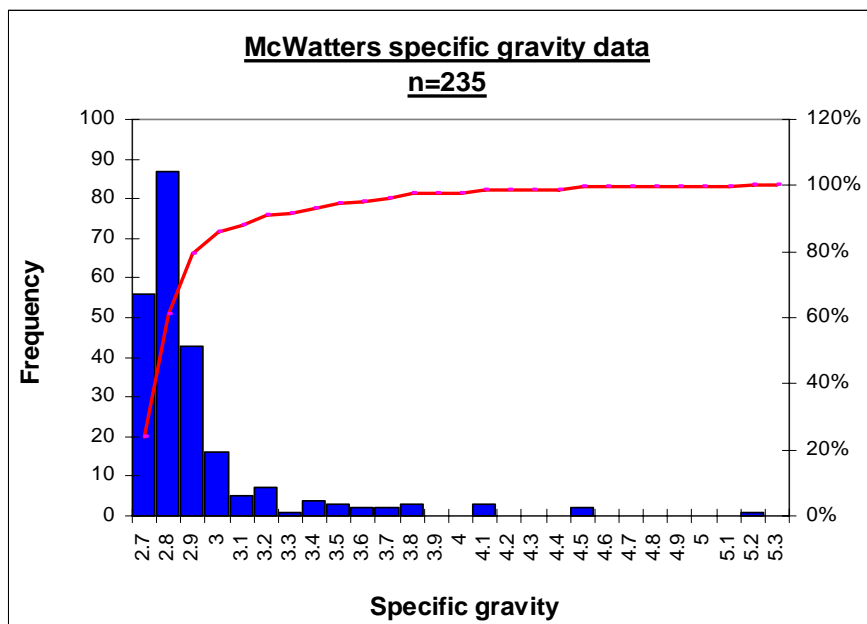
Specific gravity measurements were taken for mineralized samples from a whole spectrum of grades. A general positive relationship between specific gravity and Ni percent is apparent from the McWatters dataset. This positive relationship is highlighted in Figure 20 that shows the modeled linear relationship between specific gravity and Ni percent. The correlation coefficient between specific gravity and Ni percent is 0.6523.

For resource estimation, the linear relationship between specific gravity and nickel grade was modeled to estimate the specific gravity for each block in the resource model.

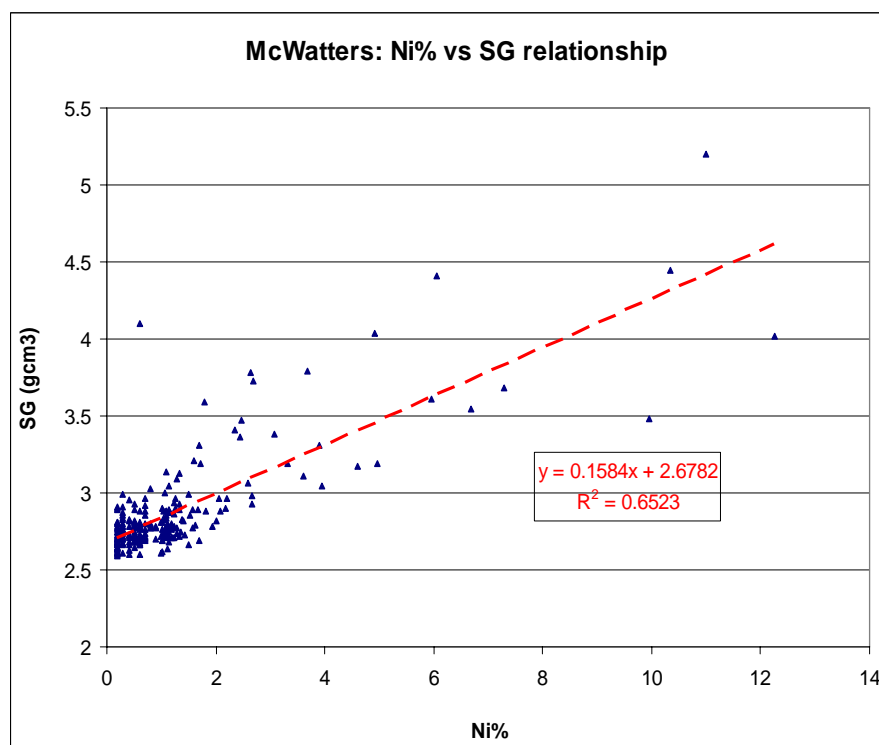
The linear relationship is:  $\text{specific gravity} = 0.1584 \times (\text{Ni } \%) + 2.6782$

**Table 7. Summarized Weighted Averages per Rock Type of the Specific Gravity Database**

<b>Rock Type</b>	<b>Samples</b>	<b>Ni%</b>	<b>Specific Gravity</b>
<b>Mineralized Material</b>			
Disseminated Sulphides	200	0.74	2.77
Massive Sulphides	26	4.41	3.48
<b>Non- mineralized Material</b>			
Other Rock Types	9	1.58	3.12
<b>Total / Average</b>	<b>235</b>	<b>1.18</b>	<b>2.86</b>



**Figure 19. Histogram of Specific Gravity Data (gcm<sup>3</sup>) for the Total McWatters Database**



**Figure 20. Scatter Plot Showing the Relationship between SG and Ni% from the McWatters Dataset**

## 13 Data Verification

### 13.1 Historical Data Verifications

It is good practice for exploration staff to implement field procedures designed to verify the collection of exploration data and to minimize the potential for inadvertent data entry errors.

SRK was unable to comment on the procedures adopted by Liberty during the 2002 to 2004 drilling campaign since no record is available of the data verification procedures adopted during this period. SRK was however able to review the procedures adopted by Liberty exploration staff for the recent 2006 to 2007 drilling campaign. A well structured data entry protocol was adopted by Liberty, with all verified data being captured in an industry standard Century Systems database.

### 13.2 Control Sampling Assay Protocols

Control sampling procedures applied by Liberty at McWatters was similar to that adopted for its Redstone exploration drilling campaign. Techniques such as the following were applied:

- Validation of the assay results in the database compared with the original assay certificates;
- Taking replicate core samples from a second split of the pulverized sample at the laboratory;
- Duplicate analyses of selected samples;
- Sieve tests to verify the grinding on the pulp required for assaying;
- Insertion of routine blank samples to check for possible sample contamination during the preparation and assaying process;
- Application of appropriate grade certified control samples (standards);
- A check assaying program with an umpire laboratory.

Liberty has introduced the Century Systems database to all its exploration projects. This system as applied on McWatters is more than just a database, it is a management tool that combines borehole logging, mine mapping and assay data in a way that integrates seamlessly with Datamine, which is the modelling and design software applied. Century Systems also functions as a data verification tool, generating data input error and QAQC reports for management action.

### 13.3 SRK Independent Verifications

During the site visit to McWatters, SRK was able to verify many of the underground drillhole collars positions and review most of the exploration protocols and procedures applied by Liberty exploration staff. In addition SRK selected five drill holes from the recent Liberty drill program for high level

logging which was compared to database information. Generally logging compared well, to that observed.

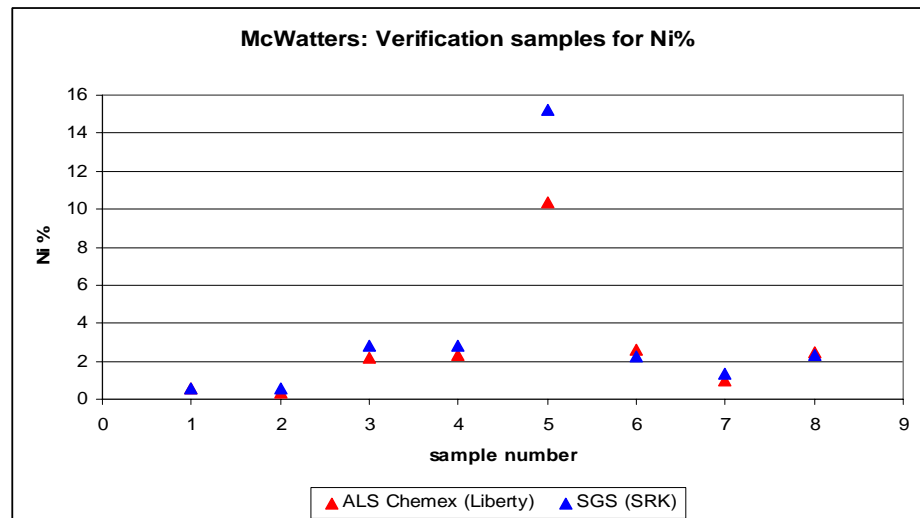
Assay results were compared to actual core intersections and a good correlation between sulphide mineralization and higher grades was observed.

SRK also took eight additional independent core samples for comparative analyses. These eight samples were taken from recently drilled remnant split Liberty core from previously sampled positions, taking care to sample core of varying sulphide mineralization (low as well as high grade samples taken).

The SRK samples were submitted to SGS Laboratories in Toronto for independent analyses. In contrast to Liberty, which analysed by aqua regia digestion (which yields a partial leach only) followed by AAS (ALS Chemex code AA46), SRK elected to have a ‘near total’ four acid digestion followed by ICP-AES (analytical code ICP90Q). The comparative results from this verification study are provided in Table 8 and graphically in Figure 21. SRK regard the variance in nickel and copper grades in Table 8 to be acceptable and typical for deposits of this nature.

**Table 8. Comparative Analyses for SRK Check Assay Verification**

Sample #	ALS Chemex (Liberty) ICP90Q		SGS (SRK) AA46	
	Ni%	Cu%	Ni%	Cu%
E103670	0.56	0.03	0.59	0.03
E103671	0.37	0.03	0.57	0.02
E103672	2.17	0.05	2.81	0.05
E103676	2.36	0.15	2.82	0.15
E103682	10.35	1.32	15.20	1.06
E098946	2.60	0.07	2.29	0.05
E098947	0.99	0.01	1.37	0.02
E098948	2.47	0.08	2.34	0.12
<b>Average:</b>	<b>2.73</b>	<b>0.22</b>	<b>3.50</b>	<b>0.19</b>



**Figure 21. Graph Showing Comparative Ni% Assays for SGS (ICP90Q) and ALS Chemex (AA46)**

The verification study suggests that average nickel assays for SGS (ICP90Q) tend to be higher than that of ALS Chemex (AA46) for all grades.

Considering that average grades have been distorted by high grade sample E103682 and the small comparative database, these variations are however not seen as significant.

After review, SRK is satisfied that the exploration data available for the McWatters nickel project were generally acquired by Liberty using industry best practices guidelines. The quality and reliability of the sampling information is generally sufficient to support resource estimation.

## 14 Adjacent Properties

Liberty owns a large portion of the surrounding claims, including three of the four known deposits of the Shaw Dome. McWatters is located in the central portion of Langmuir Township (Figure 6-2). The Redstone nickel deposit is located to the west in neighbouring Eldorado Twp and is the westernmost deposit known to date. The Redstone Mine is currently in production and is equipped with concentrating facilities on site. Going eastward, located between McWatters and Redstone, is the Hart nickel deposit, which lies entirely within Liberty's claim package. Langmuir #2, to the north, is shared with Inspiration Mining Corp, who owns part of the claims containing the mineralized zone. Langmuir #1 is the fourth deposit, and lies within a claim group whose mining rights belong to Inspiration Mining Corp.

The Redstone deposit has a reported NI 43-101 compliant measured and indicated resource of 418,931 tonnes with an average grade of 2.32 percent Ni. This resource estimate only reflects mineralization contained in the upper 508 m of the deposit, where current mining activities are taking place. The neighbouring Hart deposit has a reported NI43-101 compliant indicated resource of 1,390,000 tonnes grading 1.50 percent nickel and an inferred resource of 286,000 tonnes grading 1.36 percent nickel. In addition to the known deposits in the area there are many other prospects, including the Galata showing (up to 7.5 percent Ni) and the recently discovered mineralized intervals by Golden Chalice Resources.

Both Langmuir #1 and Langmuir #2 are past producing mines with total reported production of 111,502 tonnes with an average grade of 1.74 percent nickel, and 1,133,750 tonnes with an average grade of 1.50 percent nickel respectively. Neither of these deposits has reported NI 43-101 compliant resource estimations.

All nickel deposits of the Shaw Dome are hosted by ultramafic rocks, which have generally been interpreted as extrusive komatiitic flows, with the exception of McWatters. The latter deposit may be hosted by an ultramafic dyke that cross-cuts an iron formation.

## 15 Mineral Processing, Mineralogy and Metallurgical Testing

### 15.1 Introduction

On July 17, 2007, Liberty commissioned the Redstone Nickel concentrator, located on the Redstone Mine site. The plant is designed to process up to 2,000 tonnes per day of high MgO nickel, copper platinum group metals sulphide mineralization. The plant has been processing mineralized material from Liberty's Redstone and McWatters Nickel Mines.

The Redstone concentrator processed 104,506 wet tonnes of mineralized material from the Redstone mine during the 2007 and 2008 campaigns; and 15,705 wet tonnes of mineralized material from the Mc Watters mine in late September to October 31, 2008. The concentrator demonstrated, during its operations, suitability to high MgO nickel sulphide mineralization achieving outstanding nickel recovery.

### 15.2 Processing

#### 15.2.1 Mineralization Type

The Redstone Mill has been specifically built to process nickel sulphide mineralization with a high MgO content. The nickel sulphide deposits in the Shaw Dome are typically hosted by komatiitic flows with an average MgO content ranging from eighteen percent to over thirty percent.

#### 15.2.2 Predicted Metallurgical Recoveries

Predicted nickel recoveries for the McWatters mine mineralized material are based primarily on previous plant performance, as well as metallurgical testing performed on drill core from the deposit. The predicted metallurgical performance for the McWatters plant feed is tabulated in Table 9.

**Table 9. Predicted Plant Metallurgical Performance for McWatters**

<b>Ni head grade range (%)</b>	<b>Predicted Ni recovery (%)</b>
0.35 - 0.40	78
0.40 - 0.50	80
0.50 - 0.60	82
0.60 - 0.80	85
0.80 - 1.50	90
+1.50	92



Concentrate grade is predicted to range from 10 percent to more than 15 percent nickel as the head grade ranges from low grade to high grade mineralization as shown above.

### 15.2.3 Previous Plant Performance

The Redstone plant operated between July 14, 2007 to October 31, 2008, at which time the plant was placed on care and maintenance until mid-September 2009. During this operational period the plant processed high MgO komatiitic nickel mineralized material from the Redstone mine. Processing results for the period are considered representative of future operation.

Redstone plant throughput for the period averaged 222 tonnes of mineralization per day with an average head grade of 1.93 percent nickel, producing 1,776.9 tonnes of nickel in concentrate. The concentrate grade averaged 17.9 percent nickel. Average nickel recoveries for the period were 88.1 percent.

The plant started processing Mc Watters development material on September 20, 2008 through to October 31, 2008. During this period 15,705 wet tonnes of mineralized material were processed. An average head grade of 0.51 percent nickel was measured at the mill, achieving average nickel recovery of 83 percent. Recovery fluctuated between 64 and 95 with head grades ranging from 0.33 to 1.15 percent nickel. The metallurgical performance for both mines during operation is summarized in Table 10.

In October of 2009, a test run of 0.45 percent nickel mineralization from McWatters over two shifts yielded an average nickel recovery of 85.90 percent and a concentrate grading 10.08 percent.

**Table 10. Redstone Plant Metallurgical Performance**

Plant Feed from	Year	Tonnes	Head Grade (Ni%)	Con Grade (Ni%)	Average Ni Recovery (%)
Redstone	2007	41,355	2.07	18.71	88.7
Redstone	2008	63,151	1.84	17.48	87.74
McWatters	2008	15,705	0.51	13.73	82.92
Redstone	2009	30,000	1.00	15.00	90.00

### 15.2.4 Plant Flow Sheet Description

#### Crushing

All sulphide mineralization is trucked to the crusher house from the respective mine sites. Surface pads are specifically designed to maintain separate piles for each mine. The crusher coarse bin can store 100 tonnes, which is drawn by a simplicity pan feeder on a variable frequency drive to control tonnage throughput. The pan feeder feeds a 810 x 1070 mm (32 x 42 inch) Birdsboro Jaw crusher. All minus 76 mm (3 inch) material is then conveyed to a Gator Double Deck screen. The top screen has an opening of 25 x 25mm (1 inch square) and the bottom deck consists of a 10 x 76 mm (3/8 x 3 inch) opening. All material over 10 mm (3/8 inch) reports to a 298 kW (400Hp) cone crusher. This crushed material is then conveyed back to the screen deck for screening. The final crushed product is conveyed to two 800 live metric tonne bins for

mill feed. The crusher house was operated at an average rate of 160 tonnes per hour.

### **Grinding**

Feed product for phase I grinding is drawn from one of the two 800 live tonne fine mineralized material bins via slot feeders. Material is conveyed to a 3.1 x 4.0 metre (10 x 13 feet) Dominion Ball Mill at a feed rate of 20-23 tonnes per hours. The mill is lined with rubber lifters and shell liners. The slurry density in the mill is maintained at seventy-four to seventy-eight percent at a specific gravity of 2.8. Slurry is pumped to a cyclone bank which consists of 4 Krebs D15 cyclones. Underflow is gravity fed to the mill for regrind and overflow of P80 65 microns reports to the conditioning tank.

The phase II grinding circuit is a mirror image of the phase I circuit with an independent feed belt, pump and cyclone. This gives the circuit the flexibility to treat mineralization from different mines independently to maximize recovery. Phase III consists of an addition of one 3.1 x 4.0 metre (10 x 13 feet) Dominion Ball Mill which will be a regrind mill for the Mc Watters circuit to increase throughput from 500 to over 1,000 tonnes per day. The three mills have the flexibility of operating in series to run one type of mineralization at high tonnage of up to 2,000 tonnes per day.

### **Flotation**

The phase I plant's flotation circuit consists of two 14.2 cubic meter (500 cubic feet) tank rougher cells with a slurry grade of 1.6 to 2.2 percent on average. Final concentrate collected at this stage has an average grade of eighteen percent nickel. The tails of the rougher cells is gravity fed to the first of six 14.2 cubic meter (500 cubic feet) Scavenger tank cells. The last cell reports to the tailings discharge box, and all concentrated nickel collected is pumped to the cleaning stage which consists of three 14.2 cubic meter (500 cubic feet) Scavenger Cleaner cells. In the cleaner stage Talc is further depressed to clean the average nickel grade of five percent to a fourteen to sixteen percent nickel grade. Tails from the cleaner circuit are directed to the feed end of the scavenger to collect any remaining nickel. Phase II and III flotation circuits operate in a similar fashion with the addition of more cells for residence time, along with rougher cleaner cells to upgrade the rougher concentrate. All final concentrate reports to the 7.9 metre (26 feet) conventional thickener. Slurry density is then thickened from thirty to sixty five percent.

### **Concentrate Dewatering**

The 6.1 metre (20 feet) thickener pumps the sixty percent density slurry to a 14.2 cubic meter (500 cubic feet) holding tank which feeds the Larox filter press. This state of the art dewatering press operates fully on automation and can produce up to ten tonnes per hour. The average moisture of the concentrate cake is eight percent and is gravity fed to a seventy tonne storage bin. The final product is conveyed from the storage bin where it is weighed before loading into haulage trucks. A new certified truck weigh scale has been installed for this purpose. Samples are collected for assay and moisture content and is then transported to the buyer where the concentrate again is weighed and sampled in the buyer's storage area.

### **On Stream Analysis**

A new Laser Induced Spectrometer on stream analyzer has been installed. This analyzer measures nickel and MgO values on a two minute interval at feed and tails. This enables plant operation to react to MgO and head grade changes in a timely manner elevating recoveries while lowering chemical consumption and, therefore, reducing operating costs. The on stream analyzer is fully functional.

### **Reagents**

The main reagents consumed are Depramin C which depresses Talc, copper sulphate which is an activator, Potassium Amyl Xanthate a collector, and DVX which acts as a frother.

## **15.3 Laboratory**

The laboratory is located in the Redstone Mill and is under the supervision of the mill manager. The laboratory is equipped with a jaw crusher, ring, puck and riffler for sample preparation. The wet lab consists of a hot plate and digestion station. All sample assaying is done by atomic absorption. Concentrate samples are sent to a certified independent analytical laboratory as part of routine analytical quality control procedures. The laboratory sample load consists of ten percent from the mill, eighty percent from geology, and ten percent from the environmental department.

## **15.4 Plant Personnel**

The mill manager is responsible for the construction, operation and budgeting of the mill complex. The plant operates twenty-four hours a day, seven days a week with a staff of twenty-eight employees. An Operations Superintendent assumes the responsibility for four mill shifters and all activities concerning mill processes. A Mill Metallurgical Supervisor is employed to ensure quality control in the assay laboratory and conduct test work to improve operating costs and nickel recovery.

Crews are divided into four operating crews headed by a Mill Shifter, who is responsible for two mill operators, along with a crusher and loader operator.

## **15.5 Plant Operating Costs**

Plant operating costs summarized in Table 11 are based on historical production data at the lower tonnages and projections to be achieved at higher tonnages.

**Table 11. Redstone Plant Operating Cost Estimate**

<b>Throughput (TPD)</b>	<b>500</b>	<b>1000</b>	<b>1500</b>	<b>1800</b>
Labour	\$8.20	\$5.27	\$3.89	\$3.34
Consumables	\$6.58	\$6.44	\$6.38	\$6.37
Electrical Maint.	\$0.82	\$0.50	\$0.47	\$0.42
Mechanical Maint.	\$1.10	\$0.55	\$0.37	\$0.30
Heating	\$0.89	\$0.45	\$0.30	\$0.25
Loader Operations	\$0.33	\$0.16	\$0.11	\$0.09
Power Consumption	\$5.50	\$4.55	\$3.90	\$3.33
Contingency (5%)	\$1.17	\$0.90	\$0.77	\$0.71
<b>Total Cost/Tonne</b>	<b>\$24.59</b>	<b>\$18.81</b>	<b>\$16.19</b>	<b>\$14.81</b>

## 15.6 Future Prospects and Upgrades

The plant is considering the purchasing of a gravity circuit to separate the platinum group metals and gold from the nickel concentrate. The concentrate weighing system was upgraded to include a certified truck weigh scale. A rock breaking system is being sourced to accommodate the oversize muck coming from Redstone and McWatters Mine.

## 16 Mineral Resource and Mineral Reserve Estimates

### 16.1 Introduction

Unclassified historical resources have been reported for McWatters (ODM Geological Report 86). This historical estimate is unverified and as such is non- NI 43-101 compliant by definition. A total of 433,430 tonnes (477,768 tons) grading 0.73 percent nickel in the Upper Zone and 150,400 tonnes (165,790 tons) grading 1.92 percent nickel in the Lower Zone for a total of 12,134 tonnes (26,749,814 pounds) of nickel was reported.

In 2005, Roscoe Postle Associates Inc. completed an updated NI 43-101 compliant resource estimate for the McWatters nickel deposit. Due diligence for this resource estimation included a review and compilation of all 2003 and 2004 sample assay data, survey data and surface topography. Aspects of the RPA (2005) resource estimate include:

- Data composited to one meter lengths;
- Block model dimensions of 2.5m x 2.5m x 2.5m;
- ID<sup>5</sup> grade interpolation used within geologically defined solids;
- Indicated and Inferred resources classified according to data density and search radii criteria;
- Search radii of 100m for Inferred and 35m for Indicated resources;
- A density of 3.2t/m<sup>3</sup> was assumed;
- Nickel grades were capped at 9 percent.

The Mineral Resource estimate at a cut off of 0.5 percent nickel is tabulated in Table 12.

**Table 12. Mineral Resource Estimate for the McWatters Nickel Property (RPA, 2005)**

Classification	Zone	Quantity Tonnage	Grade Ni (%)	Contained Metal (lbs)
Indicated	0.5 Upper	496,500	0.77	16,823,000
	0.5 Lower	43,900	4.29	8,305,600
	<b>Sub-total:</b>	<b>540,400</b>	<b>1.06</b>	<b>25,128,600</b>
Inferred	0.5 Lower	4,300	4.29	817,900
	<b>Sub-total:</b>	<b>4,300</b>	<b>4.29</b>	<b>817,900</b>

SRK was commissioned by Liberty in October 2007 to compile an updated NI43-101 compliant resource estimate for the Mc Watters Nickel Deposit. This resource estimate dated January 2008 is tabulated in Table 13. The same resource was referenced in the Interim technical report prepared by SRK in December 2008.

**Table 13. Mineral Resource Estimate for the McWatters Nickel Property (SRK, 2008)**

Classification	Zone	Quantity Tonnage	Grade Ni (%)	Contained Metal (tonnes) (lbs)	
Indicated	Disseminated Zone (Upper)	665,308	0.72	4,790	10,557,640
	Massive Zone (Lower)	49,562	3.93	1,948	4,292,922
	<b>Sub-total:</b>	<b>714,870</b>	<b>0.94</b>	<b>6,738</b>	<b>14,850,561</b>
Inferred	Massive Zone (Lower)	13,829	3.39	469	1,033,242
	<b>Sub-total:</b>	<b>13,829</b>	<b>3.39</b>	<b>469</b>	<b>1,033,242</b>

*\*Mineral resources are not mineral reserves and do not have demonstrated economic viability  
Resources are reported at a cut off grade of 0.50% Ni. Resources have been rounded to reflect the accuracy of the estimate.*

This section summarizes the data, methodology and parameters used by SRK to estimate the updated mineral resources for the Mc Watters Nickel Deposit. The mineral resource model considers all available drilling data.

All resource estimation work was completed by Glen Cole, P.Geo from data received from William Randall, P.Geo from Liberty. The resource estimation and accompanying technical report was reviewed by Dr JF Couture of SRK.

The mineral resources presented herein are reported in accordance with the Canadian Securities Administrators' National Instrument 43-101 and have been estimated in conformity with generally accepted CIM "Estimation of Mineral Resource and Mineral Reserves Best Practices" guidelines. Mineral resources are not mineral reserves and do not have demonstrated economic viability. There is no guarantee that all or any part of the mineral resource will be converted into mineral reserve.

Datamine Studio Version 2.1 was used to construct solids, build composites and the block model, to run grade interpolation and to estimate and tabulate mineral resources. Isatis Version 5.1.7 was used to undertake geostatistical analyses of the dataset and to generate variograms for nickel and copper.

## 16.2 Database Validation

The data verifications adopted by SRK and Liberty are discussed in Section 13. Minimal data verification was possible for the data generated prior to 2006.

Database records reflect original drill data, except for the lithology codes which have been simplified and standardized by Liberty according to reasonable geological criteria. These lithology codes facilitated the geological modelling process.

The Excel and Datamine format database provided to SRK were checked for any missing data, overlapping intervals and for duplicated data inputs. The assay database comprises of a single data type viz. diamond drill data from various periods.

## 16.3 Resource Estimation

### 16.3.1 Database

The database used for resource estimation includes exploration drilling data collected during various exploration programs conducted during the period 2002 to 2007. The McWatters drilling database that was received from Liberty on 14 January 2008 comprises of 153 drill holes from the following diamond drill sources:

- Diamond drilling by Liberty during 2002 -2004 (L-series) = 49 holes;
- Diamond drilling by Liberty during 2006 -2007 (MCW-series) = 92 holes; and
- Other diamond drilling (RTH and TH-series) = 12 holes.

The total resource assay database comprises of 6,667 records. The borehole database received from Liberty contains information about drill collar location, assay results for nickel and copper (and sometimes precious metals), lithology and surveying for all Liberty drill holes.

SRK is of the opinion however that the McWatters dataset is adequate for resource modelling and grade estimation for this style of sulphide mineralization.

### 16.3.2 Solid Body Modelling

Nickel (and copper) grades are spatially related to two kinds of sulphide mineralization at McWatters. The highest, most continuous grades are associated with the basal massive sulphide mineralization horizon which is locally highly variable in thickness. Overlaying the massive sulphide mineralization, disseminated type sulphides occur which are discontinuous in nature and associated with highly variable nickel grades. An additional complexity is the occurrence of barren intrusive dykes which complicate the continuity of known mineralization. The 3D orientation of such intrusive material has been modelled by Liberty.

With considerable interpretive input from Liberty exploration staff, the following geological entities were modelled:

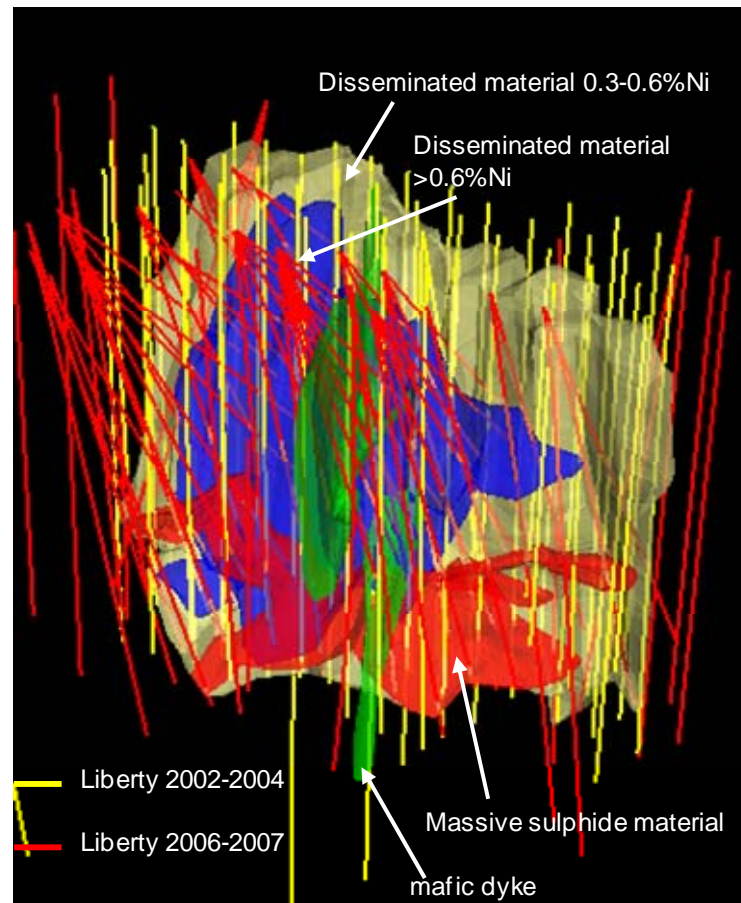
The basal massive sulphide horizon was delineated from drill intersections. For the disseminated mineralized body, shells to estimate low grade mineralization (0.3 percent Ni) distributions as well as to estimate high grade mineralization (0.6 percent Ni) distributions were constructed for use as hard boundaries in the grade estimation process.

Mafic dykes cross cut the modelled mineralized domains and have been modelled accordingly from drillhole data. In addition felsic dykes have also been modelled (non-cross cutting). These intrusions have been coded and removed during resource determinations. Mineralized domains (massives, 0.3

percent Ni and 0.6 percent Ni domains) are reported excluding material (and sampling data) from barren intrusions.

The above methodology enables the creation of surfaces to simplistically define the extent of the two types of mineralization on McWatters (Figure 22). These surfaces will also become hard boundaries for the selection of data representing the two mineral types for geostatistical analyses and variography.

It is recognised that this geological model is a simplification of the reality on McWatters. No weathered surfaces have been modelled, as all drilled material is considered fresh by all available logging detail and by site inspection of the Liberty core by SRK.



**Figure 22. Simplistic Oblique Sectional View looking NNW of the result of the Geological Modeling Process Applied at McWatters**

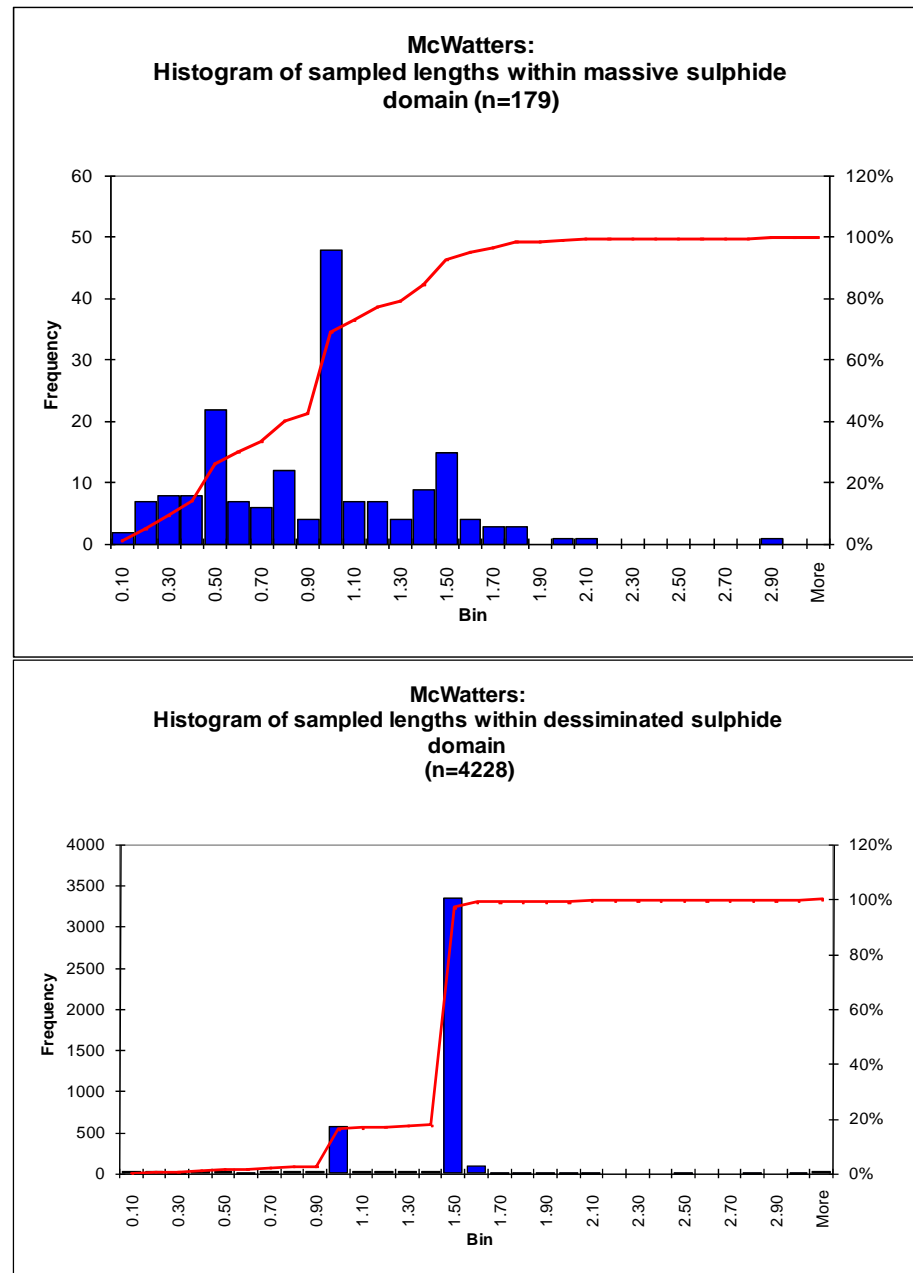
### 16.3.3 Compositing

Composite files were created using uncapped values starting at the drillhole collar position and defined within each of the two 'mineralized zones' viz. the lower massive sulphide zone and the overlaying disseminated type sulphide zone.



All assays were composited to 1.5 metre intervals and extracted to a workspace for statistical analyses and grade interpolation.

Certain intervals within the historical database (within the mineralized zones) were not sampled for reasons unknown. These intervals were assigned a value of zero in the compositing process. The original sample drill widths within both types of mineralized solids are illustrated in Figure 23.



**Figure 23. Histogram of Original Sampled Widths Within Modelled Massive and Disseminated Sulphide Mineralized Zones**

### 16.3.4 Statistics

A tabulation of summary statistics (uncapped and capped) of composited drill data within the massive and disseminated sulphide domains is provided in Table 14. After excluding all data within modelled mafic dykes, composited datasets were generated for the 3 modelled mineralized domains with the following sizes (massive sulphides= 149, 0.3 Ni percent domain= 4330 (inclusive of 0.6 Ni percent domain) and the 0.6 Ni percent domain= 1499).

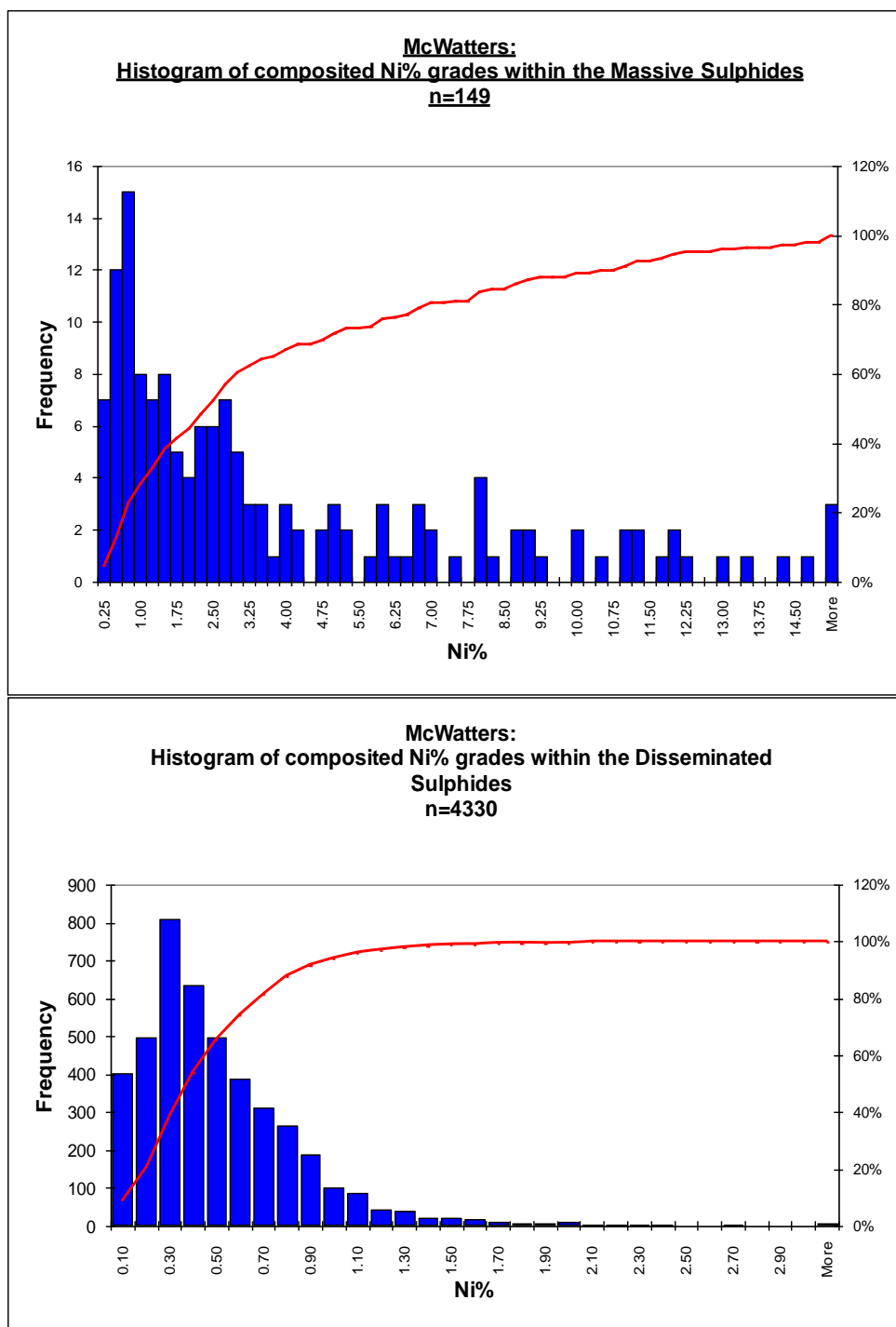
The statistical signature of each of these mineralized zones is substantially different, justifying the decision to separate these two data populations for geostatistical analyses which should result in higher confidence grade estimations.

Histograms for composited nickel grades within the two mineralized zones are provided in Figure 24. Nickel data is highly skewed with a dominance of low values, although within the massive sulphide zone a significant portion (about 10 percent of the total) of the data is in the higher grade tail (exceeding 10 percent Ni). The higher grade tail is insignificant in the stringer type sulphide zone.

**Table 14. A Tabulation of Summary Statistics of Composited Drill Data with both Modelled Mineralized Types**

Domain	Total Samples		Maximum		Minimum		Mean		Variance	
	Uncapped	Capped	Uncapped	Capped	Uncapped	Capped	Uncapped	Capped	Uncapped	Capped
<b>Massive Sulphides:</b>										
Total	149	149	15.80	15.00	0.00	0.00	3.88	3.87	15.84	15.59
<b>Disseminated Sulphides:</b>										
0.3%Ni domain*	4,330	4,330	4.59	2.50	0.00	0.00	0.45	0.45	0.11	0.11
0.6%Ni domain	1,499	1,499	4.59	2.50	0.00	0.00	0.72	0.72	0.13	0.12

\* inclusive of 0.6% Ni domain

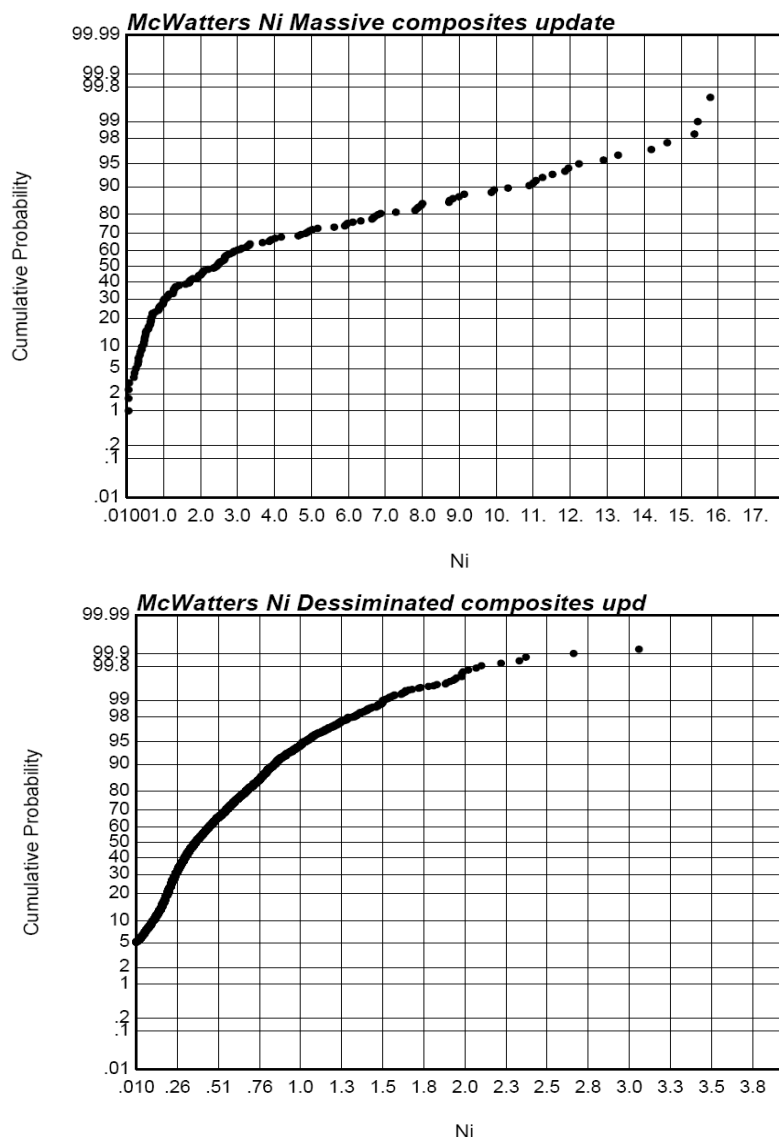


**Figure 24. Histogram for Composited Nickel Within the Two Modelled Mineralized Zones**

### 16.3.5 Grade Capping

Based on careful examination of the composited nickel datasets for all data within the modelled massive sulphide and disseminated mineralized zones and by consideration of the probability plots for nickel composite data within these zones (Figure 25) the following cappings were applied:

Massive sulphide zone: 15 percent Ni  
 Disseminated sulphide zone: 2.5 percent Ni



**Figure 25. Probability Plots for Composited Nickel for Data Within the Massive Sulphide and Disseminated Sulphide Zone**

### 16.3.6 Variography

Isatis software version 5.1.7 was used to generate all variograms. Traditional experimental variograms were modeled from the composited datasets from the two mineralization zones (basal massive sulphide and overlying disseminated type sulphides) for nickel and for all three principle directions.

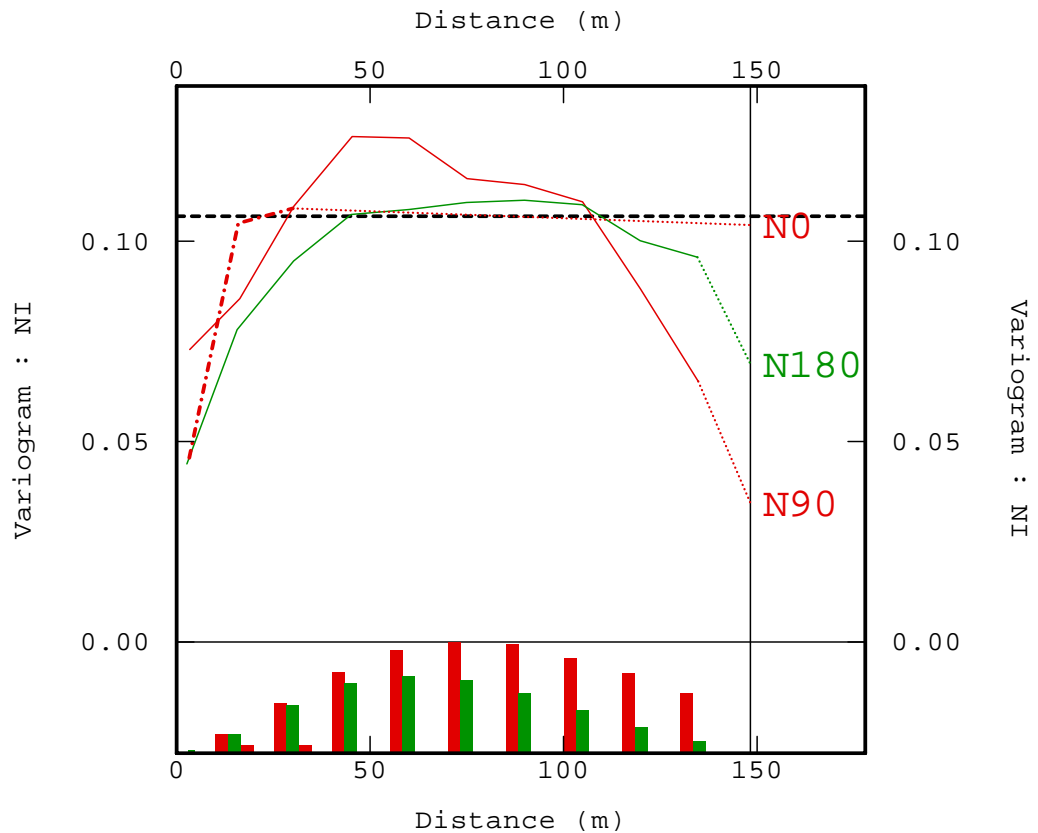
The very low copper grades at McWatters motivated that copper was not analysed for. A single spherical structure variogram (including a nugget effect) was constructed and fitted for each direction for nickel (primary = N090, secondary = N180 and normal to the reference plane) and inputted into the Datamine Grade process. Nickel had slightly different search ellipses (ranges) in the disseminated sulphide domain to the massive sulphide domain reflecting different geological imprints.

Variograms for the disseminated sulphide domain was modelled with the reference plane inclined at -80 degrees to the south, whereas the massive sulphide domain was modelled with the reference plane at 0 degrees. An illustrative experimental variogram for nickel in the disseminated sulphide zone is shown in Figure 26 (all 3 directions). Modelled ranges for all directions for both mineralized zones are tabulated in Table 15.

For nickel the major axis (Y) is orientated at N090 degrees, the regular minor axis (X) orientated at N180 degrees and the Z axis being orientated perpendicular to these. These directions coincide with local modelled geological orientations, yielding the 'best' variograms.

**Table 15. Variography Analyses Ranges for Nickel for all Modelled Directions and for both the Two Mineralization Zones**

<b>Modelled direction</b>	<b>Range (metre)</b>
Massive Sulphide Zone	
X Axis	30
Y Axis	20
Z Axis	3
Disseminated Sulphide Zone	
X Axis	45
Y Axis	30
Z Axis	18



**Figure 26. Illustrative Experimental Variograms for the Three Modelled Directions within the Disseminated Sulphide Domain Derived from Composite Data**

### 16.3.7 Block Model and Grade Estimation

Criteria used in the selection of block size includes the borehole spacing, composite assay length, a consideration of potential mining unit sizes as well as the geometry of the modelled mineralized zones. The block size was set at 2.5m x 2.5m x 2.5m in the easting, northing and elevation directions respectively. The parameters of the Datamine block model constructed by SRK are presented in Table 16.

A two split Datamine sub block routine was applied during block model construction (with a minimum block size of 0.65m x 0.65m x 0.65m) to ensure that the modeled mineralized zones are adequately filled.

**Table 16. Parameters of the McWatters Block Model Constructed by SRK**

<b>Aspect</b>	<b>Block Model</b>
<b>Block Origin:</b>	
X	9,900
Y	4,900
Z	1,125
Rows	84
Columns	60
Levels	70
Percent Model	No
Rotation	No

Block grades were estimated using ordinary kriging (OK) grade estimation methodologies.

Block grade estimation was completed in a single pass using the search ellipse ranges defined by variography as outlined in the previous section.

For the all classes of Mineral Resources defined in this study, applied search ellipse ranges were:

Massive sulphides: X=30 meters, Y=20 meters and Z=3 meters for nickel;  
Disseminated sulphide type sulphides: X=45 meters, Y=30 meters and Z=18 meters for nickel

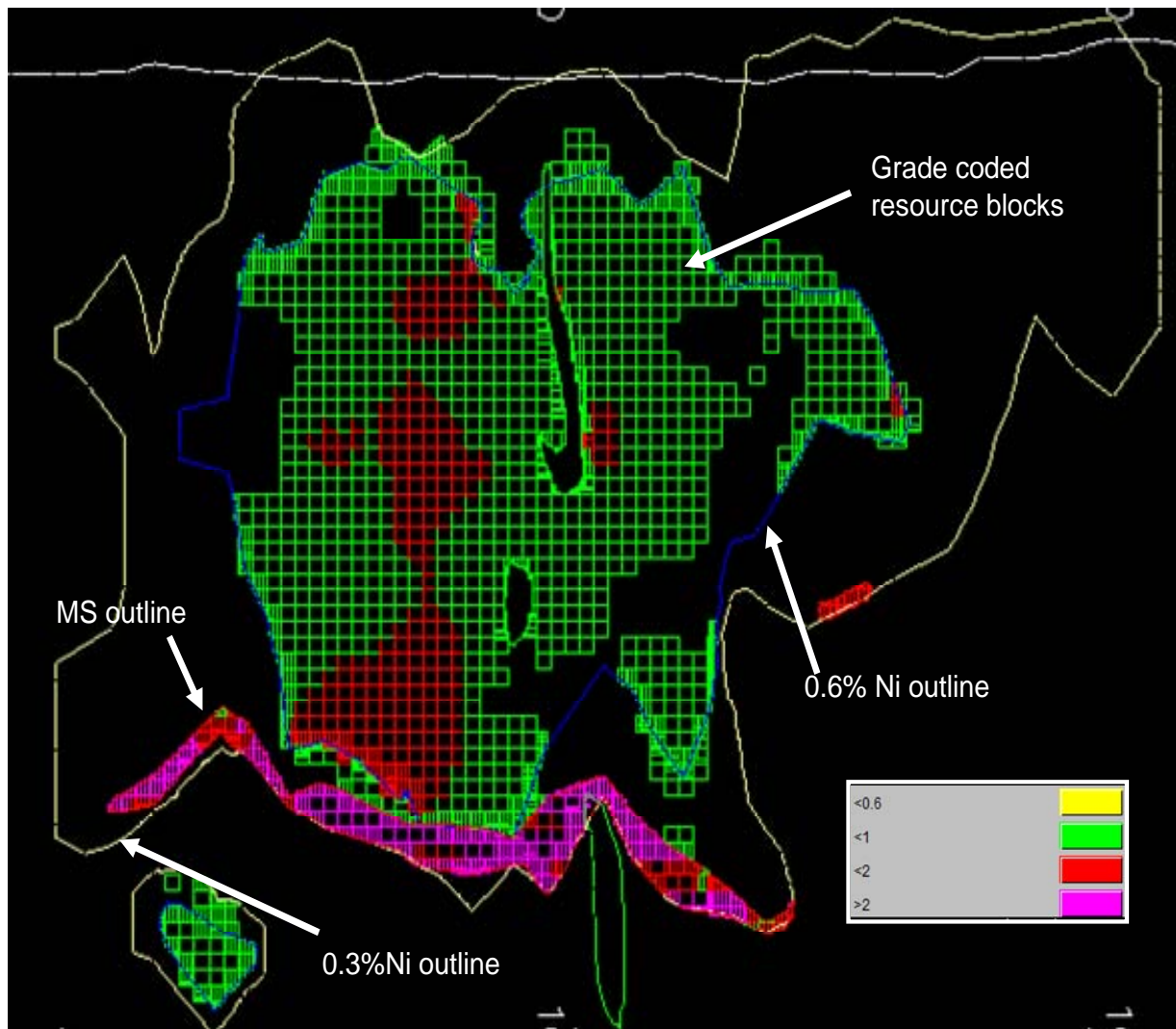
In addition, the minimum and maximum numbers of samples used for grade estimation were set at 4 and 20 respectively. Additional fields for mineralization type and classification were added to the block model.

Specific gravity values appropriate to the mineralization code were added to the model (values previously discussed).

## 16.4 Model Validation

Global and local grade estimates were checked for appropriateness. Original nickel drilled grades were compared with block grades on a section-by-section basis. Grade estimation by ordinary kriging (OK) was found to appropriately reflect general grade trends and appropriately correspond to proximal borehole grades.

An example of the McWatters block grade estimation output generated by OK is shown in Figure 27, which is a west to east section (looking north) showing nickel block grade distribution relative to modelled mineralized zone outlines.



**Figure 27. West to East Section (looking north) Showing Nickel Grade Distribution in Relation to Zone Outlines**

## 16.5 Mineral Resource Classification

Mineral resources have been estimated in conformity with generally accepted CIM “Estimation of Mineral Resource and Mineral Reserves Best Practices” Guidelines. Mineral resources are not mineral reserves and do not have demonstrated economic viability.


SRK is not aware of any known environmental, permitting, and legal; title, taxation, socio-economic, marketing or other relevant issues that could potentially affect this estimate of mineral resources.

Mineral resources for the McWatters deposit have been classified according to the “CIM Standards on Mineral Resources and Reserves: Definitions and Guidelines” (December, 2005) by Glen Cole, P. Geo an appropriate Qualified Person as defined by NI43-101. Mineral resources were classified by using the



search distance to informing data criteria tabulated in Table 18. For the well defined massive sulphide domain, Indicated resources are defined within the primary modelled variogram ranges, whereas Inferred resources are defined within four times the primary variogram ranges. For the less well defined disseminated sulphide domain, Indicated resources are defined within the primary modelled variogram ranges, whereas Inferred resources are defined within two times the primary variogram ranges. All resources defined at McWatters meet the Indicated classification criteria. Reported resources have been depleted by mining completed up to July 27, 2009.

**Table 17. The Classification Scheme for McWatters Highlighting Search Distances in Each Direction Modelled for Nickel in both Modelled Mineralized Domains**

Details	Classification	
	Indicated	Inferred
	 confidence	
<b>Massive sulphide domain</b>		
X dist	30	120
Y dist	20	80
Z dist	3	12
<b>Disseminated sulphide domain</b>		
X dist	45	90
Y dist	30	60
Z dist	18	36

## 16.6 Mineral Resource Statement

Shallow resources at McWatters are amenable to open pit extraction, whereas the deeper resources have the potential to be extracted by underground mining methods. Open pit resources are reported within a designed pit at a single cut-off of 0.27 percent nickel, whereas underground mining resources are reported at a cut off of 0.65 percent nickel, which is the cut-off Liberty management and SRK believe is achievable at future projected underground mining methods, volumes and associated costs.

A classified Mineral Resources statement for the McWatters resource is presented in Table 18. The numbers have been rounded to reflect the relative accuracy of the estimate.

**Table 18. Mineral Resource Statement, McWatters Nickel Project, Ontario, SRK Consulting, July 27, 2009**

Classification	Zone	Mining Type	Quantity Tonnage	Grade Ni (%)	Contained Metal (tonnes)	(000'lbs)
<b>Open Pit Mining</b>						
Indicated	Disseminated Zone	Open Pit*	368,400	0.45	1,646	3,629
<b>Underground Mining</b>						
Indicated	Disseminated Zone	SLC / BH**	382,200	0.86	3,287	7,075
	Massive Zone	Cut and Fill***	41,900	3.57	1,497	3,297
<b>Combined Mining</b>						
Indicated	<b>Total</b>	<b>Combined</b>	<b>792,500</b>	<b>0.81</b>	<b>6,430</b>	<b>14,172</b>

*Mineral resources are not mineral reserves and do not have demonstrated economic viability. Numbers have been rounded to reflect the accuracy of the estimate.*

*\* Open Pit Resources reported within a designed pit at a cut off grade of 0.27% Ni.*

*\*\*Sub-level caving (SLC) and longhole stope (BH) resources are reported within designed stopes at a cut off grade of 0.55% Ni.*

*\*\*\* Cut and fill stope resources are reported within designed stopes at a cut off grade of 0.65% Ni.*

*Cut-off grades are based on a nickel price of US\$7.00/lb and on a mill recovery of eighty-seven percent.*

## 16.7 Mineral Reserve Statement

The December 15, 2009 SRK Mineral Reserve Statement for the McWatters Nickel Deposit is summarized in Table 19.

**Table 19. McWatters Mineral Reserve Statement – SRK Consulting, December 15, 2009**

Classification	Zone	Quantity Tonnage	Grade Ni (%)	Contained Metal (tonnes) (lbs)	
Probable	Pit	245,000	0.33	810	1,790,000
Probable	SLC/BH	546,000	0.68	3,710	8,180,000
Probable	CF	81,000	1.91	1,540	3,400,000
<b>Probable</b>	<b>Total</b>	<b>872,000</b>	<b>0.70</b>	<b>6,060</b>	<b>13,370,000</b>

The independent mineral reserve estimate, prepared by SRK, is reported in accordance with Canadian Securities Administrator's National Instrument 43-101 and conforms to generally accepted Canadian Institute of Mining ("CIM") "Estimation of Mineral Resources and Mineral Reserves Best Practices" guidelines.

The mineral reserve estimate was prepared by Mr. Philip Bridson, P. Eng., Sr. Associate Mining Engineer, SRK Consulting (Canada) Inc. By virtue of his background and professional experience, Mr. Bridson is an independent "Qualified Person" as defined by National Instrument 43-101.

Cut and fill mining was determined to be the optimal mining method for the higher grade massive zone in the lower part of the mine. Sub level caving was determined to be the optimal mining method for the disseminated zone located in the central portion of the orebody while the upper portion from surface to the 45m level was found to be best suited for open pit mining.

The in-situ mineral resources included into the mineral reserve estimate are based on cut-off grades of 0.25% Ni for the open pit, 0.54% Ni for sublevel cave, and 0.63% Ni for cut and fill mining methods. A Ni price of US\$7.00 per pound and an exchange rate of \$1.00 CAD = \$0.90 US was used in all calculations.

# **17 Additional Requirements for Technical Reports on Development Properties and Production Properties**

## **17.1 Mine Development History and Current Status**

### **17.1.1 McWatters Mine Current Status**

At the McWatters mine, Liberty has completed development of a surface portal and underground decline (-15%) to the 90m level, a total length of approximately 700 meters. All ramp, level and supporting excavations are planned at 5m high x 5m wide to accommodate mine vehicles, as well as ventilation and service requirements. Development for 65m level has been completed and 90m level has been collared for later development. Currently mining crews at site are focused on advancing development to the 150m level as a priority so that mining can commence in the planned cut and fill stope(s) at that horizon by late 2009.

A 3 x 3m fresh air raise (“FAR”) has been driven by Alimak from 65m level to surface. On surface a ventilation fan has been installed to provide downcast air to the mine. Propane heaters are installed below the fan in an air plenum to provide sufficient heat to keep mine workings above 4<sup>0</sup>C during winter months. The fresh air ventilation raise system will be extended from 140m level to 65m level to provide the planned lower mine workings with sufficient air volume, planned at 212 cubic meters per second (“cms”) (450,000cfm). Used air is being exhausted up the ramp to the surface portal.

All lateral development work is being performed by Liberty employees while contractors are responsible for development and installation of the fresh air raise system.

Ramp development air is currently being provided via a 300 hp fan and flexible 1.2m duct from the mine portal to the ramp face. A transition from portal ducted air to 65m level FAR air is planned for December 2009 following completion of bulkheads and vent-doors at the base of 65m level FAR.

Following sufficient underground development advance, Liberty crews will begin ore production.

Upon successful submission and acceptance of a closure plan expected in late 2009, stripping on surface for the open pit will begin.

### 17.1.2 McWatters Existing Mine Infrastructure

The following infrastructure and mine equipment is currently on site at the McWatters mine. In addition, the McWatters mine site is supported by existing infrastructure at Liberty's nearby Redstone Mine (a distance of 9 kilometers from McWatters) including an office, laboratory, mine dry and surface maintenance shop and a nickel processing plant.

Existing infrastructure at McWatters includes:

- Security building;
- 1,500m of unpaved site roads;
- 20 car parking area;
- Mechanical shop;
- Surface fuel storage and dispensing station;
- Ventilation raise collar (fresh air);
- Contractors office trailers;
- Surface transformer and substation (4160volt for underground);
- Laydown areas for consumables;
- Communications systems (surface phones, leaky feeder underground, and surface internet).

Existing equipment on site that is being used for underground development is listed below. This equipment is owned by Liberty.

Type	Number
• 2-boom development jumbo	1
• 3.1m <sup>3</sup> (4yd <sup>3</sup> ) load-haul dump ("LHD")	1
• 5.3m <sup>3</sup> (6yd <sup>3</sup> ) LHD	2
• 26 tonne truck	1
• 30 tonne truck	2
• Scissor lift	1
• Anfo loader	1
• Personnel carriers	4
• Submersible Pumps	4
• Auxiliary ventilation fans (50 hp)	5
• Electrical power centers	2
• Main surface ventilation fan	1
• Air compressors	2

Surface equipment planned for use in McWatters open pit includes trucks owned by Liberty and a leased excavator and dozer as shown below.

Type	Number
• 740 Cat Articulated Trucks – 30 Tonne	2
• Hitachi 350 Excavator 2.8T/bucket	1
• Tracked Dozer	1

A contractor will provide open pit drilling and blasting services.

## 17.2 Mine Geotechnical

### 17.2.1 Information Available

Four reports dealing with geotechnical aspects of the McWatters mine are listed below. Refer to the References list at the end of this report. Two of the reports have a focus on the crown pillar and this is because the mining method initially anticipated for McWatters as early as 2007 was open stoping with no backfill, using rib pillars and a crown pillar to maintain mine stability.

- 1) B. Mohanty, 2006, Internal memo to Liberty, “Results of Uniaxial Unconfined Compressive Strength Tests”
- 2) John G. Henning, PhD, P. Eng, June 2007, “Crown Pillar Evaluation, McWatters Zone”
- 3) Mirarco, Laurentian University, October 2008, “Ground Support Guidelines for Drifts at McWatters Mine”
- 4) SRK Consulting (Canada) Inc, July 2009, “McWatters Crown Pillar Evaluation”

The contents of these reports are summarized below.

#### Report (1)

This report presents the results of laboratory testing of representative rock samples including mafic and ultramafic rock types.

#### Report (2)

No underground workings existed at McWatters, but rock quality designation (“RQD”) values were available from drill logs and the 2006 unconfined compressive strength (“UCS”) test results were available. There was no evaluation of the structural features of the rock mass.

The report includes an estimate of rock mass conditions and an assessment of the crown pillar based on the “Scaled Span” method (after T.G. Carter 1992). The report includes design recommendations for the crown pillar and also recommends that once underground exposures are available, that additional detailed rock mass quality information should be obtained.

#### Report (3)

This report provides recommendations for addressing some difficult ground conditions observed in the development of the decline ramp from the portal, including a water bearing fault structure that was intersected, and an area of weak ground requiring shotcrete.

The report includes a rock mass characterization, a recommended ground control plan, and an appendix with detailed ground support recommendation for drifts.

### **Report (4)**

This report was prepared with the initial expectation that it would support an open stoping mining method and a design for the crown pillar. SRK completed a work program to collect and analyze data, including:

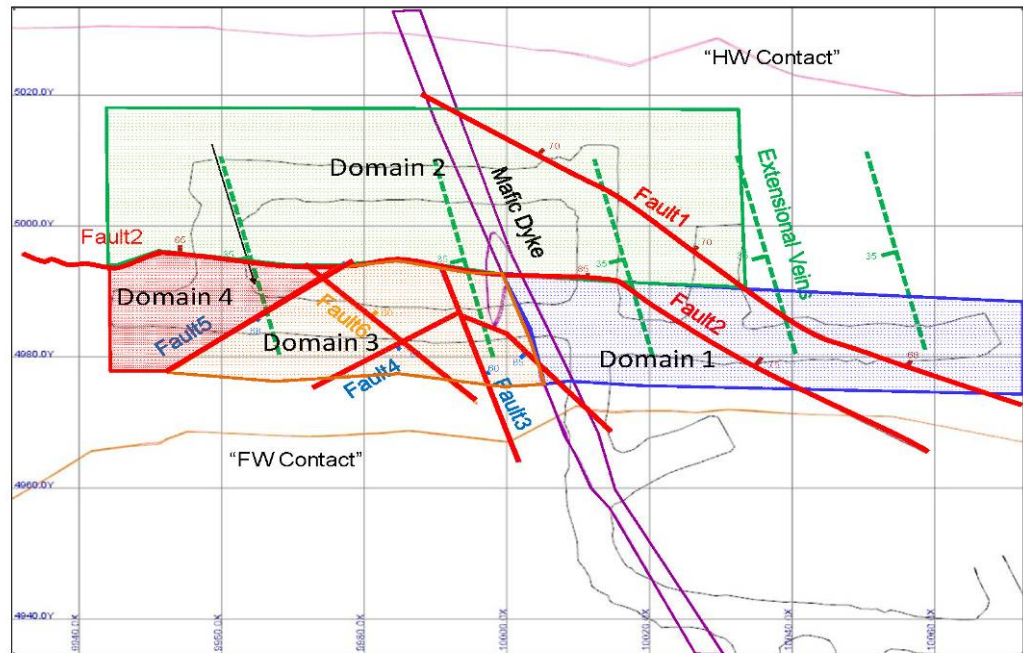
- Detailed structural/geotechnical review logging of all crown pillar related holes;
- Geotechnical line mapping of underground exposures on 65m level;
- Structural Interpretation of fabric and weak zones within the crown pillar
- Generation of geotechnical domains;
- Evaluation of crown and rib pillar stability –empirical and numerical;
- Detailed geotechnical and structural mapping of the 45m level;
- Final review of crown pillar stability: structural, hydrogeological and geotechnical;

The report includes a rock mass assessment and identifies geotechnical domains. It covers stability assessments for the initial mining concepts that involved open stopes, rib pillars and the proposed crown pillar.

The rock mass characterization (see below) showed that the McWatters ore zone is of fair to poor rock mass quality and that the open stoping method was likely not the best mining method. Even with reduced stope sizes and the use of cemented backfill there would remain a significant risk of ground instability.

### **17.2.2 Rockmass Characterization**

SRK determined geotechnical domains following geotechnical mapping and re-logging of all drill holes in the area of the crown pillar. The domains on 65m level are shown in Figure 28. Domains 1 through 4 are in order of descending rock quality.



**Figure 28. Geotechnical Domains on 65m Level**

Table 20 provides the geotechnical parameters associated with each domain. Factors such as major fault structures, alteration, and microdefect intensity have been accounted for in the engineering design values and reflect the performance of the rock mass. Domain 3 in particular is affected by the presence of multiple major fault structures.

**Table 20. Geotechnical Parameters per Domain**

Data Source	Field Mapping		Engineering Design			Comments
Domain	IRS (MPa)	GSI	IRS* (MPa)	Q	RMR <sub>76</sub>	
1	60-80	50-60	75	1.9-5.9	50-60	Lower values in close proximity to Fault 1 and Fault 2
2	60-80	45-55	75	1.1-3.4	45-55	Lower values in close proximity to Fault 1
3	30-50	40-50	35	0.6-1.9	40-50	Influence of faults in Domain 3 will significantly reduce rock mass quality
4	35-55	25-35	40	0.1-0.4	25-35	Potentially isolated zone of poor rock mass quality

### 17.2.3 Implications for Mining

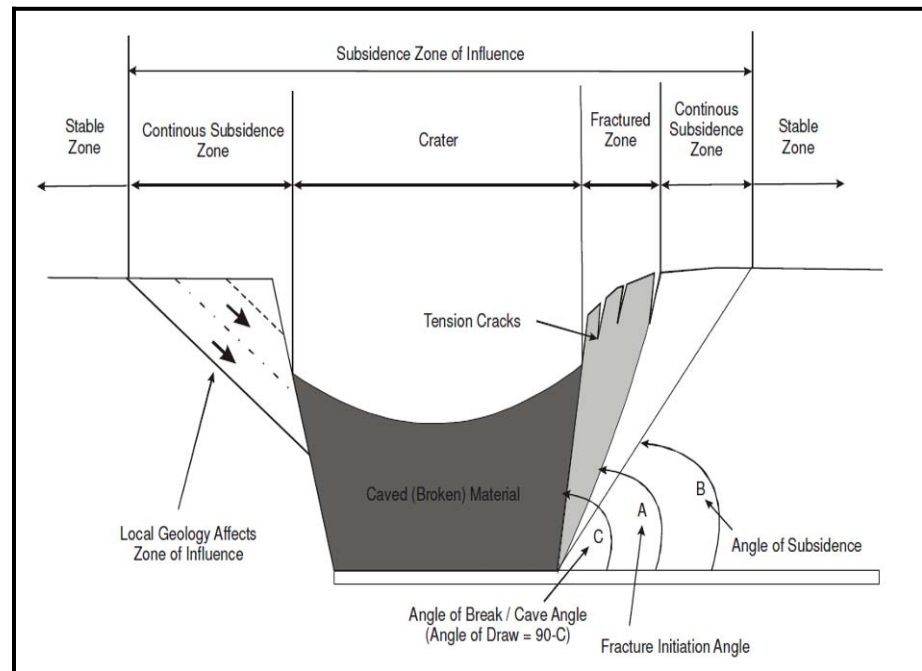
The results of SRK's report (4) Crown Pillar Evaluation initiated a re-assessment of the mining methods for McWatters. This resulted in the final mining methods selection which included elimination of the crown pillar by open pit mining and a sublevel caving method for the body of the deposit immediately below the open pit, taking advantage of the caveability of the rock mass. Both methods met the criteria of being bulk, low cost methods.

## 17.2.4 Subsidence Assessment

SRK conducted a subsidence assessment for the planned sublevel caving layout. Surface infrastructure had been sited before a caving method was selected. The nearby infrastructure on surface which must be preserved includes:

- The fresh air raise collar. This raise also serves as the second exit from the mine;
- The wet overburden layer surrounding the planned open pit limits with its planned perimeter roadway and drainage ditch.

SRK assessed subsidence using the most widely used empirical method - the Laubscher's approach which takes into account geometry and depth of the cave, physical properties of the in situ and caved material as well as buttressing effect of the caved rock. Figure 29 shows how terms describing subsidence are defined.



**Figure 29. Terminology used in Describing Subsidence**

In the case of empirical methods (Laubscher's subsidence estimate), two charts are available:

- 1) The first chart is typically used for draw control and water inflow assessment;
- 2) The second chart is more appropriate for locating the infrastructure.

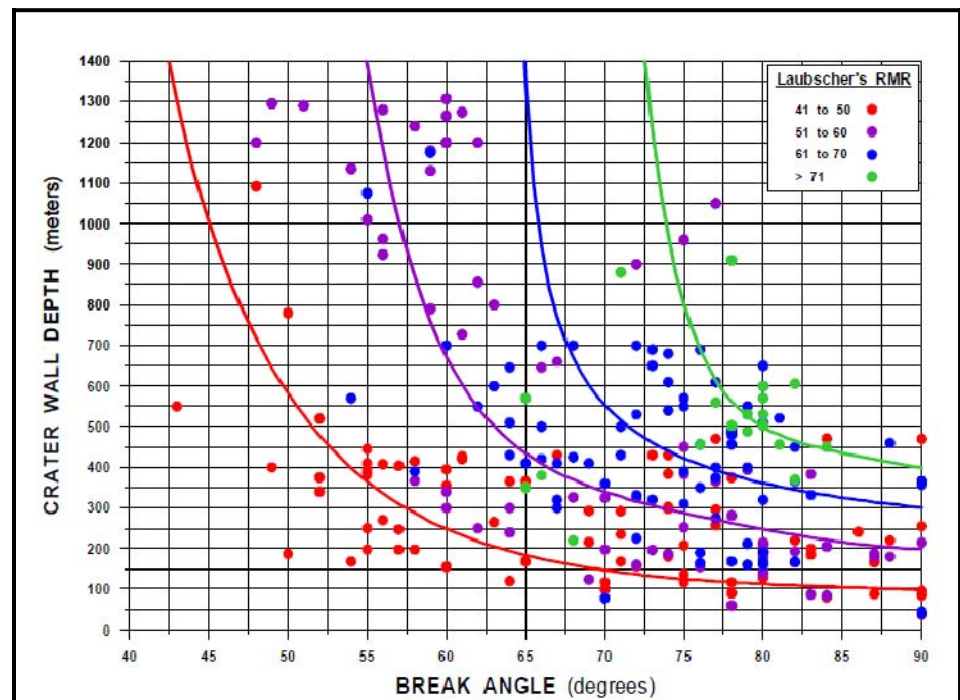
Chart (1) was used to assess the surface perimeter location of the overburden, which will be stripped back just beyond the open pit crest. The chart indicates a cave angle (or break angle) for this purpose of approximately 75 degrees.



The critical angle for the cave to reach the overburden perimeter road is approximately 64 degrees, providing a margin of safety.

Chart (2) was used to assess the surface location of the fresh air raise collar. The chart indicates a cave angle for this purpose of approximately 62 degrees. The critical angle for the cave to reach the raise collar is approximately 51 degrees, also providing a margin of safety.

This method of assessment is not a precise method, as cave mining has shown a range of outcomes. This is illustrated in Figure 30 where large number of case studies are plotted (after Karzulovic 2002).



**Figure 30. Variation of Break Angle Evaluated in Large Number of Case Studies is Significant (Karzulovic 2002)**

Considering Figure 30 for the McWatters case would utilize the red curve, based on typical RMR values for McWatters. The maximum crater wall depth would approach 140m. Figure 30 indicates a break angle of close to 70 degrees which generally falls in line with Laubscher's empirical approach.

## 17.2.5 Hydrogeology

Two reports dealing with the McWatters site hydrogeology are listed below. Refer to the References list at the end of this report.

- 1) Amec Earth and Environmental, July 2006, "Hydrogeological Study, Liberty Mines Inc. McWatters Mine Project, Langmuir Township"
- 2) Amec Earth and Environmental, October 2009, "Hydrogeological Study McWatters Mine Project, Cochrane District, Ontario"

SRK referenced report (2) which is the most recent assessment of hydrogeologic conditions. The report describes the preparation of a hydrogeologic model for McWatters overburden and bedrock, and the calibration of the model to underground pumping records.

The overburden layer, to be excavated for the planned open pit, is characterized in the following excerpt from the Amec October 2009 report,

*.....black fibrous organics were encountered in all boreholes overlying silty clay/clayey silt. The organics layer varied from approximately 0.05 to 1.5 m in depth. The organics varied from topsoil to peat/muskeg. In the vicinity of the proposed pit footprint, a silty clay/clayey silt unit overlies a layer of sand with varying gravel and silt content, which varies in thickness from 0.3 m to approximately 12.2 m. The bottom portion of the sand unit, represented mainly by sandy silt, is in direct contact with bedrock.*

The report includes an estimate of 1,000m<sup>3</sup> per day as the typical dewatering rate to be expected for the proposed open pit and fully developed underground mine. During a significant rainfall event (25 year return period storm) this pumping rate is expected to double. Readers are referred to the full report, listed in the References section.

## **17.3 Planned Mining Methods**

### **17.3.1 Mining Context**

The McWatters deposit is a mid to low-grade deposit that will benefit from a bulk, low cost mining method. Nickel grades near surface are approximately 0.41% Ni and increase to 1.91% Ni on average at the 150m level.

The orebody is relatively shallow and extends at a 75 degree dip from surface to a depth of 160 meters. The target area of the deposit for mining has a strike length of approximately 100 meters and an average thickness of 26 meters. Ore UCS has been estimated at 60 to 80 MPa with host material slightly higher. Known weakening structures include faults that have been mapped in existing underground development.

The footwall contact of the deposit is sharp with massive ore against the volcanic rock. The hangingwall contact is not as well defined, being gradational with a transition into a low grade disseminated sulphide zone.

On surface, the deposit is overlain by a layer of poorly drained overburden approximately 11m thick.

### **17.3.2 Selected Mining Methods**

Mining methods were selected for discrete zones of the deposit, based primarily on the geometry of mineralization, nickel grade and geotechnical characteristics.

Initial methods considered included open stoping techniques with rib pillars between stopes (and no backfilling) but these methods were discarded after geotechnical analysis identified rib pillar failure as high risk.

Consideration of backfill to support the ribs was quickly dismissed also since rib-pillar failure would likely occur before backfilling could take place.

The final selection of mining methods included open pit, sublevel cave and cut and fill. Refer to Figure 33.

### Open Pit

A small open pit is planned where the deposit extends to surface, eliminating a crown pillar that would otherwise result from underground mining. The planned quantities of overburden and waste rock are 583kt and 254kt respectively. Open pit mining will recover 245kt of ore using standard surface mining techniques, for an overall strip ratio of 3.6:1 including overburden and waste rock. The pit depth is planned at 45m below surface.

The pit will be completed in approximately 10 months, beginning with overburden removal. Waste rock excavation will begin in February 2010, and ore extraction will begin in May 2010.

Water inflow will be ditched, diverted and/or pumped into a 1,200 cubic meter pit sump located at the rock overburden interface near the pit access ramp. A 150mm diameter HDPE pipe is planned to direct the mine water to the existing settling pond on site.

**Waste dumps for overburden and waste rock are located approximately 300m from the pit edge as shown in**

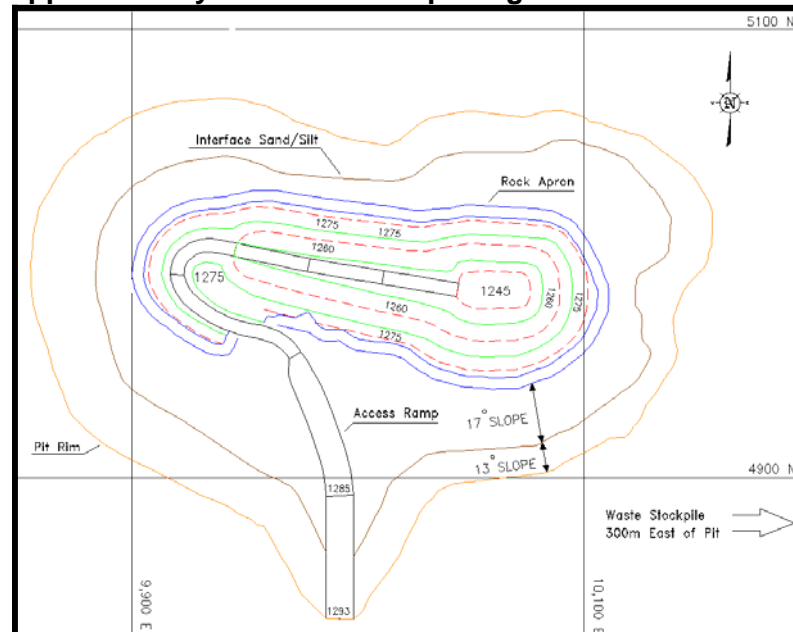
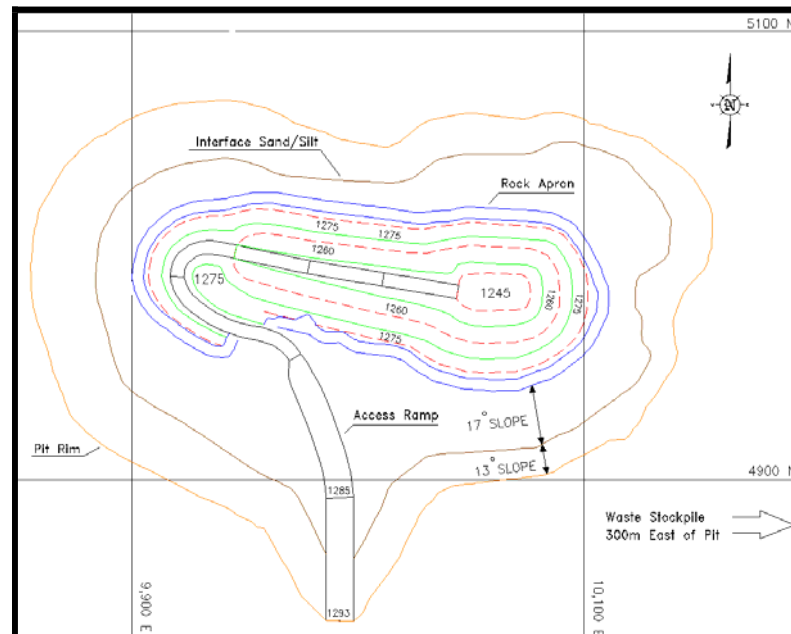


Figure 31. Overburden and waste stockpiles are designed to contain the 837kt of combined overburden and waste rock that will be generated from the pit.



**Figure 31. Plan of Open Pit**

### Sub-level Cave

After mining is finished in the open pit, sublevel cave mining will commence in the area immediately below the pit, breaking through to the pit bottom. Sublevels are planned 65m, 90m, 120m and 140m levels. The first level to begin mining will be 65m level which is closest to pit bottom. Sub-level cave mining will retreat along strike towards the underground access ramp.

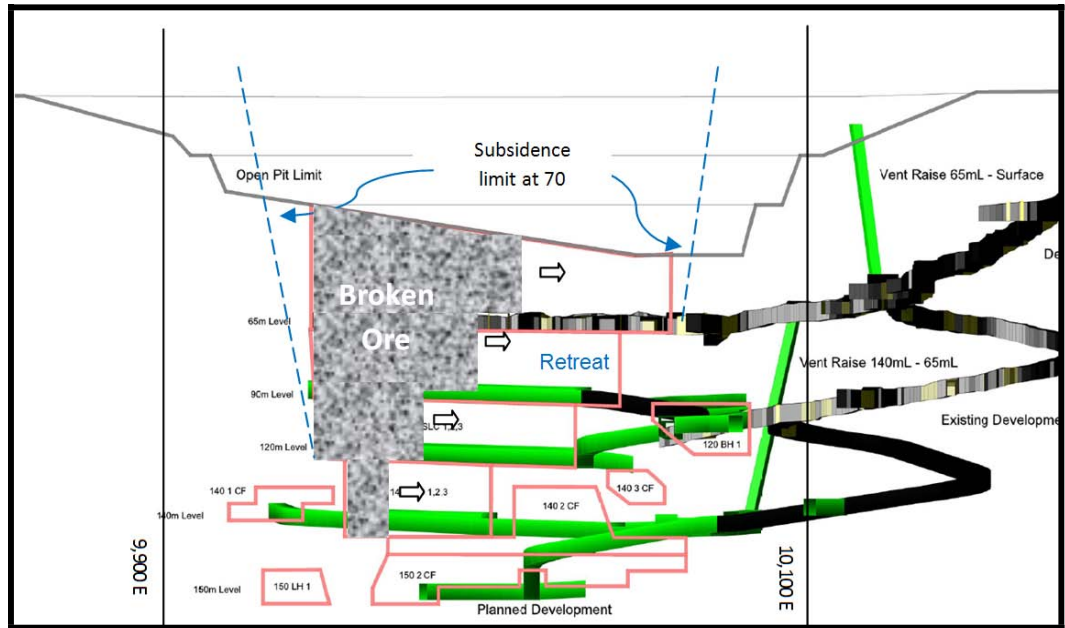
Slot raises will be created by use of inverse raising techniques to provide sufficient void to initiate ring blasting on each sublevel drift. Regular production blasting will include emulsion loading of one or two rings, with nine fanned upholes per blast ring (holes 76mm diameter). Blasting two rings at a time will produce 4,500 tonnes of ore.

On the uppermost sublevel (65m level) mucking will be limited to less than 50% of blasted ore to create a buffer layer of broken ore overhead. The buffer layer will be maintained through the draw control strategy, avoiding remote mucking and daylighting of any of the draw points. Engineering will monitor tonnage pulled from each drawpoint.

On the lowest sublevels, mucking will continue until excessive dilution appears in the draw point, as determined by inspections by the mine geologists and ore sampling every shift.

Ore will be loaded into diesel trucks at the remucks on the main ramp for haulage to surface. Ore dumped on surface will be reloaded into tri-axle highway trucks for final delivery to the Redstone mill.

Planned sublevel cave tonnage is 546,000 tonnes at a grade of 0.68% Ni based on overall external dilution of 7% and a mining recovery of 90%.



**Figure 32. Vertical Projection Showing Subsidence Limit of Sublevel Cave looking North**

### Cut and Fill

Mining on 150m level and a small area on 120m level will be mechanized cut and fill in 5m lifts with post pillars as needed depending on width.

These areas are higher grade (average 1.91% Ni) with an average width of 5 meters, and this mining method will selectively extract the ore with minimal dilution. Total tonnes planned for cut and fill areas amounts to 81kt.

Backfill will consist of mine development waste rock and it will be placed in the stopes by LHD and pushed up to the back using a push plate attachment on the LHD (referred to as a “jammer” attachment).

A single boom jumbo will perform the stope face drilling and access cross cut development. Loading, blasting mucking and ground support will complete the cycle and provide an average 280 tonnes per blast. In-stope productivity is estimated at 75 tonnes per man shift (11-hr shift basis).

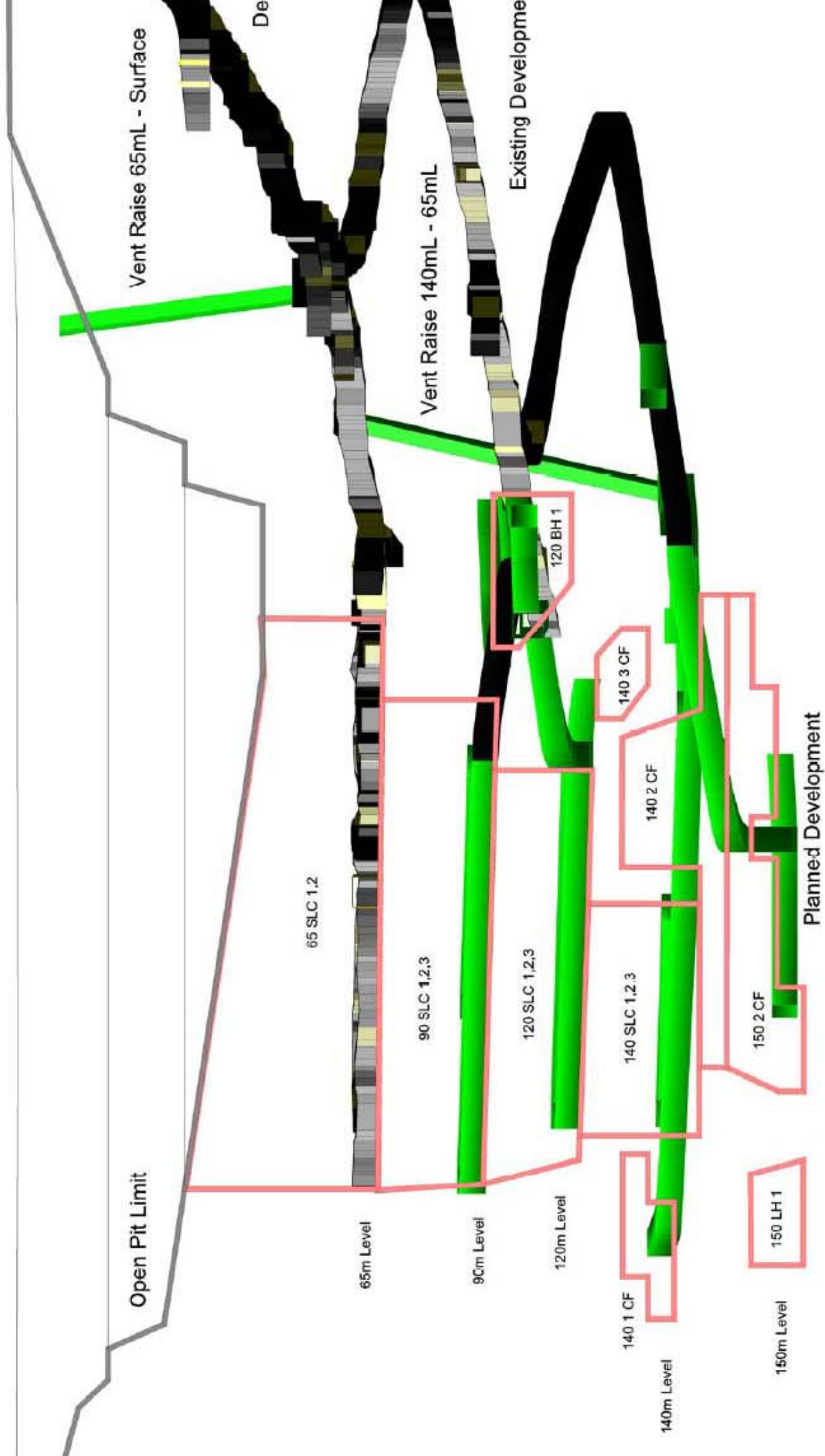


Figure 33. McWatters Vertical Projection Showing Mining Methods, looking North

### 17.3.3 Ore and Waste Handling

All underground ore will be mucked from development faces or drawpoints with 3.1 or 4.6m<sup>3</sup> LHDs (4 or 6yd<sup>3</sup>) and hauled an average of 80 meters (one way) to remuck bays located at the main access ramp. Ore from the remuck bays (one per level) will be loaded by LHD into 30 tonne trucks and hauled to the surface stockpile next to the mine portal.

Primary ore crushing will not be required underground as all ore transport to surface will be by truck.

Most of the development waste rock will be trucked to surface for permanent storage at the existing waste pad. Once the sill cut has been completed at the planned 150m level cut and fill stope, some waste rock will be used as unconsolidated backfill.

Life of mine (“LoM”) planned quantities are:

- 96kt of development waste rock broken;
- 50kt of waste rock used as backfill.

## 17.4 Mineral Reserve Estimate

### 17.4.1 Methodology

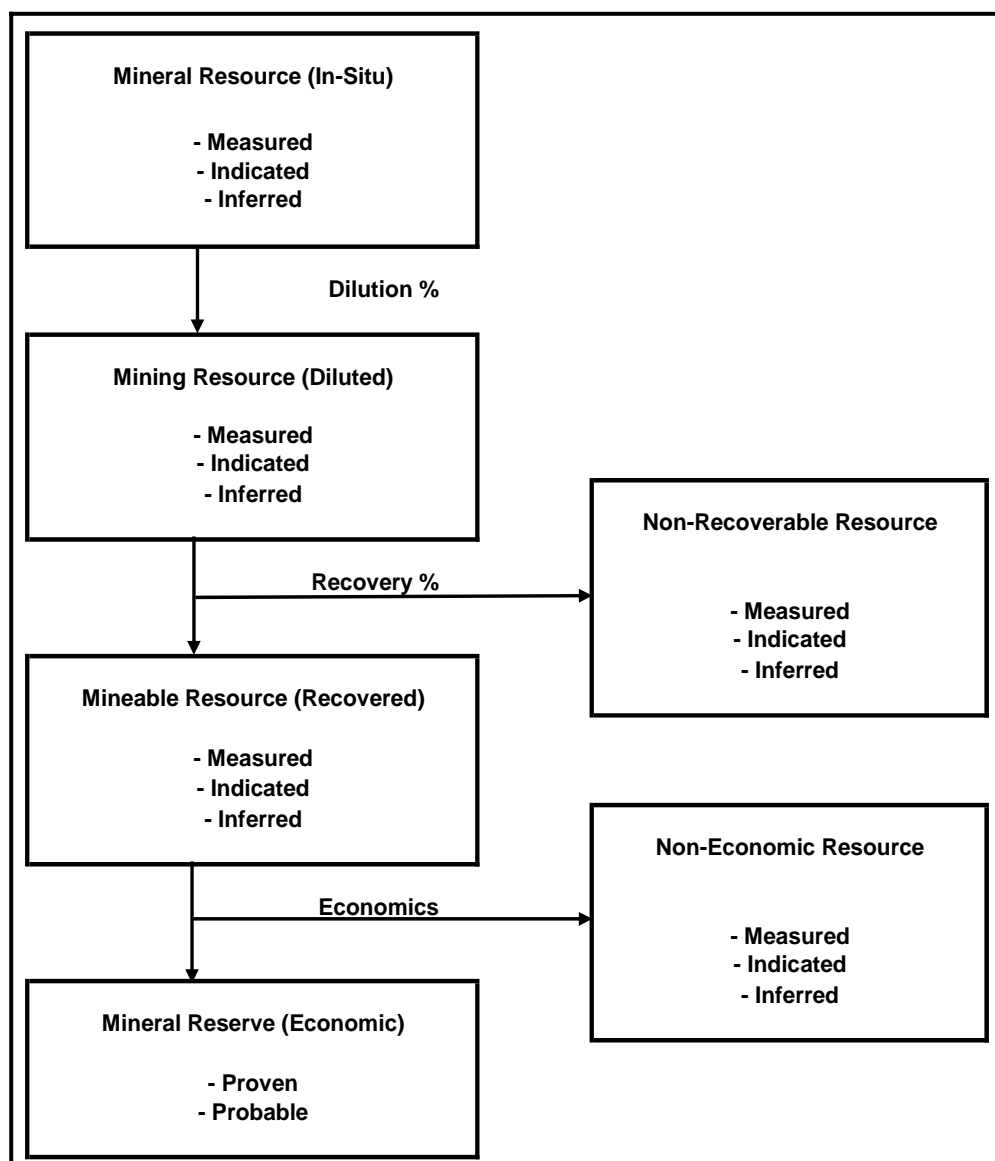
The following methodology was used for estimating McWatters mineral reserves:

- SRK’s resource block model was updated to reflect any existing or expected development that may affect the status of mining blocks at the start date of the new mining plan;
- An NSR model was created based on terms provided by Liberty that are based on an existing nickel concentrate sales agreement;
- Site operating costs were estimated;
- Cut off grades were calculated for each mining method;
- Using the resource block model and the cut off grades, underground mineable shapes were created in 3D. For the open pit, mining limits in the deposit were set based on the cut off grade and the geometry of the crown pillar;
- The resource block model was used to tabulate the in-situ tonnes and nickel grades for each mining shape (stope);
- Using an Excel spreadsheet, factors were applied for dilution and mining recovery, and stope results were assessed in terms of nickel grade and dilution amounts;
- This process was conducted iteratively as required, to optimize the planned stopes;
- Economics were applied to each stope’s mineable material based on the NSR formula (Ni price and exchange rate), and mine operating costs including mining, milling, site administration and surface haulage to

Redstone mill. Any stope that had a negative margin was deemed uneconomic and excluded from reserves;

- A 3D model of the McWatters deposit was updated to provide underground ramp access to all planned mining areas. Life-of-mine (“LoM”) development requirements were tabulated;
- A LoM development and production schedule was generated for potentially economic stopes. An economic evaluation was performed on the entire schedule. The material in the LoM schedule includes probable reserves. The mineral reserves exclude inferred mineral resources.

Figure 34 demonstrates the methodology and decision path taken to estimate the McWatters mineral reserves.



**Figure 34. Mineral Reserve Estimation Methodology Flowchart**



## 17.4.2 Net Smelter Return

SRK prepared an NSR model using terms supplied by Liberty which are based on a current nickel concentrate sales agreement with Xstrata Nickel. Other inputs to the NSR model included process metallurgical recovery, a nickel price of US\$15,430 per tonne (US\$7.00 per pound), and a currency exchange rate of \$1.00 Cdn = \$0.90 US.

Table 21 shows the key input parameters to the NSR calculation.

**Table 21. Liberty NSR Terms and Mill Factors**

<b>NSR Calculation</b>	
<b>Xstrata Terms</b>	
Ni Con Grade	>=10%&<15%
Payable Accountability	88%
	>=15%&<20%
	89%
	>=20%
	90%
Smelting \$/tonne con (Cdn \$)	\$250
Ni Refining \$/lb Ni (Cdn \$)	\$0.75
Penalties/tonne con (Cdn \$)	\$30
Transportation/tonne con (Cdn \$)	\$0
Ni Price Participation	5% if Ni>\$6/lb
MgO Penalty	\$7.50/% if >4%&<=7%
	\$10 if >7%
S Penalty	\$3/% if <7%
<b>NSR Calc:</b>	
Ni Price US\$/lb	\$7.00
ExR \$1.00Cdn = \$0.90US	\$0.90
Mill recovery	85%
Ni Con Grade	15
tonnes to lbs	2204.6226

## 17.4.3 Cut Off Grade

Mine operating costs were estimated for each mining method, based on actual unit costs for labour and consumables provided by Liberty. These costs were applied along with first principal mining development and stoping performance calculations to estimate the unit mining costs. Estimated unit costs for processing, surface truck haulage and general and administration were added to obtain the estimated site cost.

The NSR model was then used to calculate in-situ nickel grade cut-off values to be used in delineation of the mining shapes.

Table 22 shows the cut off grade calculation.

**Table 22. McWatters Cut Off Grade Calculations**

	Pit Cut COG	SLC/BH Slope COG	CF Slope COG
<b>Xstrata Terms</b>			
Ni Con Grade	>=10%&<15%	>=10%&<15%	>=10%&<15%
Payable Accountability	88%	88%	88%
	>=15%&<20%	>=15%&<20%	>=15%&<20%
	89%	89%	89%
	>=20%	>=20%	>=20%
	90%	90%	90%
Cu Con Grade	=1.00%	=1.00%	=1.00%
Payable Accountability	85%	85%	85%
Co Con Grade	=0.30%	=0.30%	=0.30%
Payable Accountability	50%	50%	50%
Smelting US\$/tonne con milled	\$250.00	\$250.00	\$250.00
Ni Refining US\$/lb accountable Ni	\$0.75	\$0.75	\$0.75
Cu Refining US\$/lb accountable Cu	\$0.5611	\$0.5611	\$0.5611
Co Refining US\$/lb accountable Co	\$2.5503	\$2.5503	\$2.5503
Ni Price Participation US\$/lb accountable Ni	5% if Ni>\$6/lb	5% if Ni>\$6/lb	5% if Ni>\$6/lb
Cu Price Participation US\$/lb accountable Cu	10% if Cu>\$1.20/lb	10% if Cu>\$1.20/lb	10% if Cu>\$1.20/lb
	\$7.50/% if	\$7.50/% if	\$7.50/% if
MgO Penalty US\$/tonne con milled	>4%&<=7%	>4%&<=7%	>4%&<=7%
Transportation US\$/tonne con milled	\$0.00	\$0.00	\$0.00
<b>NSR Calc:</b>			
Ni Price US\$/lb	\$7.00	\$7.00	\$7.00
Cu Price US\$/lb	\$2.70	\$2.70	\$2.70
Co Price US\$/lb	\$15.00	\$15.00	\$15.00
ExR \$1.00Cdn = \$0.90US	\$0.90	\$0.90	\$0.90
Mill recovery	87%	87%	87%
Ni Con Grade	15.00	15.00	15.00
Cu Con Grade	1.00	1.00	1.00
Co Con Grade	0.30	0.30	0.30
MgO	4.47	4.47	4.47
tonnes to lbs	2204.6226	2204.6226	2204.6226
Mineable resource tonnes	<b>1,000</b>	<b>1,000</b>	<b>1,000</b>
<b>Mineable Resource COG Ni grade</b>	<b>0.25</b>	<b>0.54</b>	<b>0.63</b>
Mineable Ni Con tonnes	15	31	37
Mineable Ni Metal in Ni Con tonnes	2	5	5
Mineable Cu Metal in Ni Con tonnes	0.15	0.31	0.37
Mineable Co Metal in Ni Con tonnes	0.04	0.09	0.11
Accountable Ni Metal in Ni Con tonnes	2	4	5
Accountable Cu Metal in Ni Con tonnes	0.12	0.27	0.31
Accountable Co Metal in Ni Con tonnes	0.02	0.05	0.05
Accountable Ni Metal in Ni Con lbs	4,268	9,218	10,754
Accountable Cu Metal in Ni Con lbs	272	587	685
Accountable Co Metal in Ni Con lbs	48	104	121
Liberty Gross NSR Revenue Cdn\$	\$34,806.77	\$75,182.61	\$87,713.05
Xstrata Smelting TC Cdn\$	(\$4,027.78)	(\$8,700.00)	(\$10,150.00)
Xstrata Ni Refining Cdn\$	(\$3,556.33)	(\$7,681.68)	(\$8,961.96)
Xstrata Cu Refining Cdn\$	(\$169.40)	(\$365.91)	(\$426.89)
Xstrata Co Refining Cdn\$	(\$135.88)	(\$293.49)	(\$342.41)
Xstrata Ni Price Participation Cdn\$	(\$237.09)	(\$512.11)	(\$597.46)
Xstrata Cu Price Participation Cdn\$	(\$45.29)	(\$97.82)	(\$114.12)
Xstrata MgO Penalty Cdn\$	(\$56.79)	(\$122.67)	(\$143.12)
Sub Total Processing Costs	(\$8,228.55)	(\$17,773.68)	(\$20,735.96)
Liberty NSR Revenue Cdn\$	<b>\$26,578.21</b>	<b>\$57,408.93</b>	<b>\$66,977.09</b>
Liberty NSR Net Revenue/tonne con	\$1,832.98	\$1,832.98	\$1,832.98
Liberty NSR Net Revenue/tonne ore	\$26.58	\$57.41	\$66.98
Mining Cost \$/tonne ore	(\$4.56)	(\$35.00)	(\$45.00)
Milling Cost \$/tonne ore	(\$16.19)	(\$16.19)	(\$16.19)
Admin Cost \$/tonne ore	(\$3.25)	(\$3.25)	(\$3.25)
Haulage Cost \$/tonne ore	(\$1.61)	(\$2.52)	(\$2.52)
Liberty Margin \$/tonne ore	\$0.97	\$0.45	\$0.02

#### **17.4.4 Practical Mining Shapes (Stope Design)**

Stope outlines representing potentially economic resource blocks were designed using AMINE software. The outlines were based on practical mining shapes and thus incorporated limited amounts of internal dilution.

The in-situ resources in the mining shapes were selected using a cut-off grade of 0.25% Ni for the open pit, 0.54% Ni for sublevel caving and 0.63% Ni for cut and fill.

A minimum mining width of 5.0 meters was observed for the underground designs to accommodate the planned mining equipment.

The in-situ tonnes and grades inside the mining shapes were tabulated and conservative factors for mineability (mining losses) and dilution were applied.

This process was conducted iteratively as required, to optimize the planned stopes.

#### **17.4.5 Estimated Dilution**

Dilution estimates included planned internal dilution, external wall dilution and backfill dilution. The dilution applied was determined from the engineered stope mine designs and estimated according to stope width and mining method.

Internal dilution material nickel grade was estimated directly from the block resource model as part of the mining shape volume. External dilution material nickel grade was estimated by the resource geologist, using the block resource model. The nickel grade applied to the external dilution tonnage ranges from zero to 0.30% Ni based on the mining method and gradational nature of the Ni mineralization at the deposit boundary.

External wall dilution is the waste that falls off the walls of the stope outside the stope mining line and is removed in the course of mining. Wall dilution will vary from mining level to mining level and is directly related to wall rock stability, mining method used, ground support and wall opening exposure. Wall dilution at McWatters was determined by mining method and wall exposure. A zero Ni grade was applied to the pit wall dilution tonnage.

Backfill dilution is the backfill material removed from the stope floor during the course of mucking in the cut and fill stopes. An assumed depth of 0.5 meters of excavated backfill was applied to arrive at an estimated backfill dilution tonnage.

Total external dilution in the McWatters mine plan from all mining methods was estimated to be:

Planned Dilution	21%
Wall Dilution	7.2%
Fill Dilution	<u>0.6%</u>
Total Dilution	29%

#### 17.4.6 Mining Losses

A mining loss factor for each stope was based on the planned mining method and extraction method.

Mining losses vary depending on the mining method used and are based on historical mine site data or in-house estimates. Factors that affect mining losses are blasting techniques and any blast failures, oversized material, LHD mucking procedures, mining equipment selectivity and excessive external dilution.

After accounting for estimated mining losses, the estimated overall mining recovery for the McWatters mine plan is 88%.

#### 17.4.7 Economic Parameters

Mining and other site costs were assigned to each planned mining shape to check the economics. These costs are shown below.

The mining costs applied based on mining method are:

Open pit	\$ 4.56 per tonne
Sublevel cave	\$35.00 per tonne
Cut and fill	\$45.00 per tonne

In addition the following costs applied:

Milling	\$16.19 per tonne
Site Administration	\$ 3.25 per tonne
Haulage to mill from Pit	\$ 1.61 per tonne
Haulage to mill from Underground	\$ 2.52 per tonne

Therefore the total cost applied to each mining shape in the reserve sheet was:

Open pit	\$ 25.61 per tonne
Sublevel cave	\$ 56.96 per tonne
Cut and fill	\$ 66.96 per tonne

All mining shapes with average NSR values (\$/tonne) greater than the total unit costs shown above were retained in the mine plan.

#### 17.4.8 Mineral Reserve Estimate

The December 15, 2009 SRK Mineral Reserve Statement for the McWatters Nickel Deposit is summarized in Table 23.

**Table 23. McWatters Mineral Reserve Statement – SRK Consulting, December 15, 2009**

Classification	Zone	Quantity Tonnage	Grade Ni (%)	Contained Metal (tonnes) (lbs)	
Probable	Pit	245,000	0.33	810	1,790,000
Probable	SLC/BH	546,000	0.68	3,710	8,180,000
Probable	CF	81,000	1.91	1,540	3,400,000
<b>Probable</b>	<b>Total</b>	<b>872,000</b>	<b>0.70</b>	<b>6,060</b>	<b>13,370,000</b>

The independent mineral reserve estimate, prepared by SRK, is reported in accordance with Canadian Securities Administrator's National Instrument 43-101 and conforms to generally accepted Canadian Institute of Mining ("CIM") "Estimation of Mineral Resources and Mineral Reserves Best Practices" guidelines.

The mineral reserve estimate was prepared by Mr. Philip Bridson, P. Eng., Sr. Associate Mining Engineer, SRK Consulting (Canada) Inc. By virtue of his background and professional experience, Mr. Bridson is an independent "Qualified Person" as defined by National Instrument 43-101.

The in-situ mineral resources included into the mineral reserve estimate are based on cut-off grades of 0.25% Ni for the open pit, 0.54% Ni for sublevel cave, and 0.63% Ni for cut and fill mining methods. A Ni price of US\$15,430 per tonne (US\$7.00 per pound) and an exchange rate of \$1.00 Cdn = \$0.90 US was used in all calculations.

Details of the mineral reserve including stope types, NSR values, mining and other site costs and margin are shown in Table 24.

**Table 24. McWatters Mineral Reserve Details**

Stope Data			Liberty Economics					Mineral Reserve		
Zone	Level	Stope Name	Stope NSR	Stope Mine Cost	Mill, Admin & Other Cost	Stope Margin	Stope Net Revenue	Category	Tonnes	% Ni
			\$/tonne	\$/tonne	\$/tonne	\$/tonne	\$			
Pit	1280	Pit Cut 1	27.45	(4.56)	(21.05)	1.84	36,229	PB	19,711	0.26
	1275	Pit Cut 2	31.31	(4.56)	(21.05)	5.70	258,352	PB	45,293	0.29
	1270	Pit Cut 3	33.92	(4.56)	(21.05)	8.31	362,741	PB	43,633	0.32
	1265	Pit Cut 4	34.50	(4.56)	(21.05)	8.89	398,322	PB	44,789	0.32
	1260	Pit Cut 5	35.86	(4.56)	(21.05)	10.25	463,153	PB	45,201	0.34
	1255	Pit Cut 6	39.43	(4.56)	(21.05)	13.82	310,280	PB	22,448	0.37
	1250	Pit Cut 7	42.43	(4.56)	(21.05)	16.82	258,245	PB	15,357	0.40
	1245	Pit Cut 8	42.63	(4.56)	(21.05)	17.02	152,237	PB	8,945	0.40
SLC/BH	65	65 SLC 1 HW	65.02	(35.00)	(21.96)	8.06	1,037,847	PB	128,691	0.61
	65	65 SLC 2 FW	60.46	(35.00)	(21.96)	3.50	60,462	PB	17,267	0.57
	90	90 SLC 1 HW	67.19	(35.00)	(21.96)	10.23	844,993	PB	82,565	0.63
	90	90 SLC 2	72.24	(35.00)	(21.96)	15.28	1,238,917	PB	81,073	0.68
	90	90 SLC 3 FW	53.89	(31.00)	(21.96)	0.93	4,273	PB	4,598	0.51
	120	120 SLC 1 HW	65.89	(35.00)	(21.96)	8.93	310,123	PB	34,709	0.62
	120	120 SLC 2	81.04	(35.00)	(21.96)	24.08	1,259,334	PB	52,301	0.76
	120	120 SLC 3 FW	58.43	(35.00)	(21.96)	1.47	53,366	PB	36,263	0.55
	120	120 BH 1	230.49	(35.00)	(21.96)	173.53	1,975,072	PB	11,382	2.17
	140	140 SLC 1 HW	58.73	(35.00)	(21.96)	1.77	40,809	PB	23,081	0.55
	140	140 SLC 2	83.87	(35.00)	(21.96)	26.91	911,408	PB	33,872	0.79
	140	140 SLC 3 FW	82.51	(35.00)	(21.96)	25.55	758,214	PB	29,678	0.78
	150	150 LH 1	68.59	(35.00)	(21.96)	11.63	118,079	PB	10,152	0.65
CF	140	140 1 CF CUT 2	313.03	(45.00)	(21.96)	246.07	2,188,074	PB	8,892	2.94
	140	140 1 CF CUT 1	348.80	(45.00)	(21.96)	281.84	1,728,356	PB	6,132	3.28
	140	140 2 CF CUT 4	114.40	(45.00)	(21.96)	47.44	249,685	PB	5,263	1.08
	140	140 2 CF CUT 3	188.54	(45.00)	(21.96)	121.58	551,445	PB	4,536	1.77
	140	140 2 CF CUT 2	247.65	(45.00)	(21.96)	180.69	1,753,600	PB	9,705	2.33
	140	140 2 CF CUT 1E	196.36	(45.00)	(21.96)	129.40	1,413,462	PB	10,923	1.85
	140	140 2 CF CUT 1W	196.33	(45.00)	(21.96)	129.37	1,413,372	PB	10,925	1.85
	140	140 3 CF CUT 2	165.87	(45.00)	(21.96)	98.91	130,582	PB	1,320	1.56
	140	140 3 CF CUT 1	150.14	(45.00)	(21.96)	83.18	88,213	PB	1,061	1.41
	150	150 2 CF CUT 3E	144.42	(45.00)	(21.96)	77.46	473,878	PB	6,118	1.36
	150	150 2 CF CUT 3W	144.42	(45.00)	(21.96)	77.46	473,878	PB	6,118	1.36
	150	150 2 CF CUT 2E	102.56	(45.00)	(21.96)	35.60	91,774	PB	2,578	0.96
	150	150 2 CF CUT 2W	71.76	(45.00)	(21.96)	4.80	23,997	PB	4,994	0.68
	150	150 2 CF CUT 1	262.84	(45.00)	(21.96)	195.88	410,267	PB	2,094	2.47
			74.10	(27.34)	(21.70)	25.06	21,843,040		871,670	0.70

## 17.4.9 Production Rate

McWatters Mine production rate as determined by SRK varies over the Life of mine (“LoM”) depending where the production is sourced.

The upper portion of the mine from surface to the 45m level is to be mined by open pit and is scheduled to produce at an average rate of 1,400 tonnes per day starting in March 2010 with completion in October 2010. Total mine production scheduled from the pit is 245,000 tonnes at an average of 0.33% Ni.

The sublevel cave/blasthole production rate averages 1,800 tonnes per day. Total ore production scheduled from sublevel cave/blasthole is 546,000 tonnes at 0.68% Ni.

In cut and fill stopes with a single face the production rate is 280 tonnes per cycle while in a double face it is 560 tonnes per cycle. Total production scheduled from cut and fill is 81,000 tonnes at 1.91% Ni.

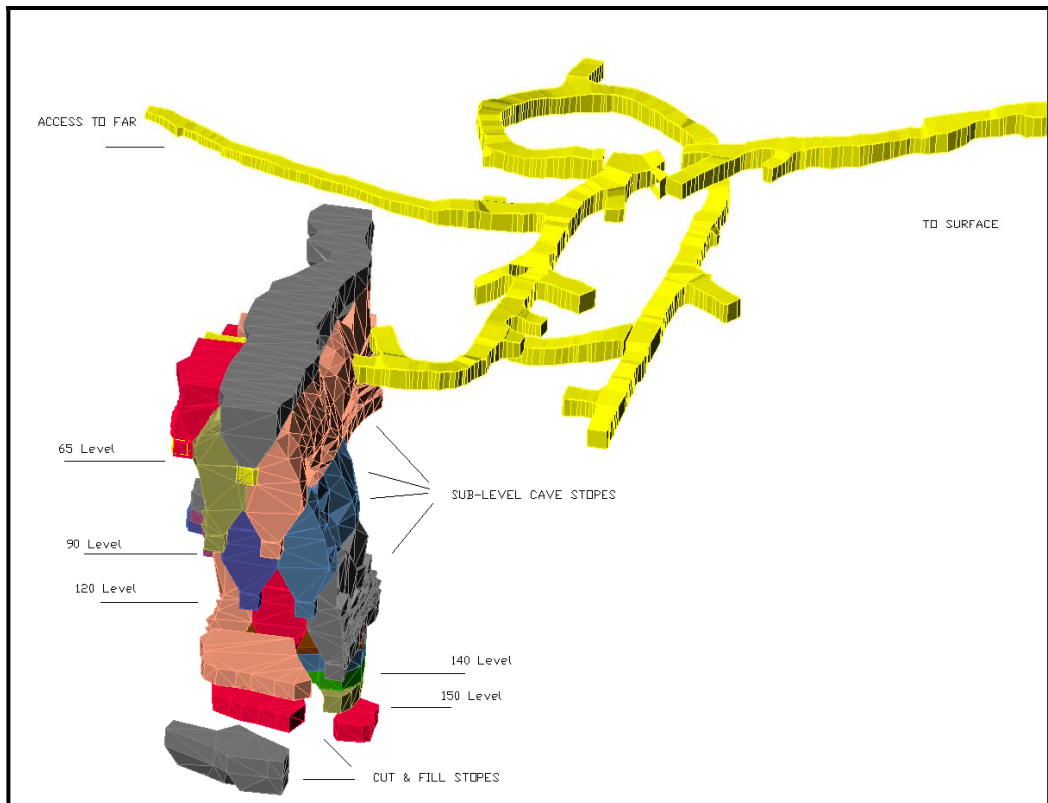
Total planned mine production from McWatters is 872,000 tonnes at 0.70% Ni mined at an average production rate of 1,500 tonnes per day from December 2009 through July 2011. Refer to Table 25.

**Table 25. Production Rates by Mining Method**

	Tonnes	Nominal Rate Mined Tonnes / day	Distribution %
Pit	245,378	1,400	28
SLC/BH	545,597	1,800	63
CF	80,925	220	9
<b>Total</b>	<b>871,900</b>	<b>1,500</b>	<b>100</b>

## 17.5 Underground Mine Model

McWatters mine model is shown in Figure 35. The model was created using AMINE software. The figure shows existing development already completed at the time of this study.



**Figure 35. 3D View of Deposit and 2008 Development**

### **17.5.1 General Description**

Level names imply the depth below surface, and mine plans are shown in a local mining grid (not UTM).

The orebody is tabular from surface to 150m level and is inclined at 75 degrees, with a nominal strike length of about 100m and an average thickness of 26m in the target mining area.

Pit bottom is planned at 45m below surface. Sublevel cave mining has been planned for intermediate mining horizons on 65m, 90m, 120m and 140m levels.

Cut and fill mining will be employed deeper in the mine on 120m and 150m levels.

All development excavations have been planned and modeled with dimensions of 5m high by 5m wide.

### **17.5.2 Mine Access**

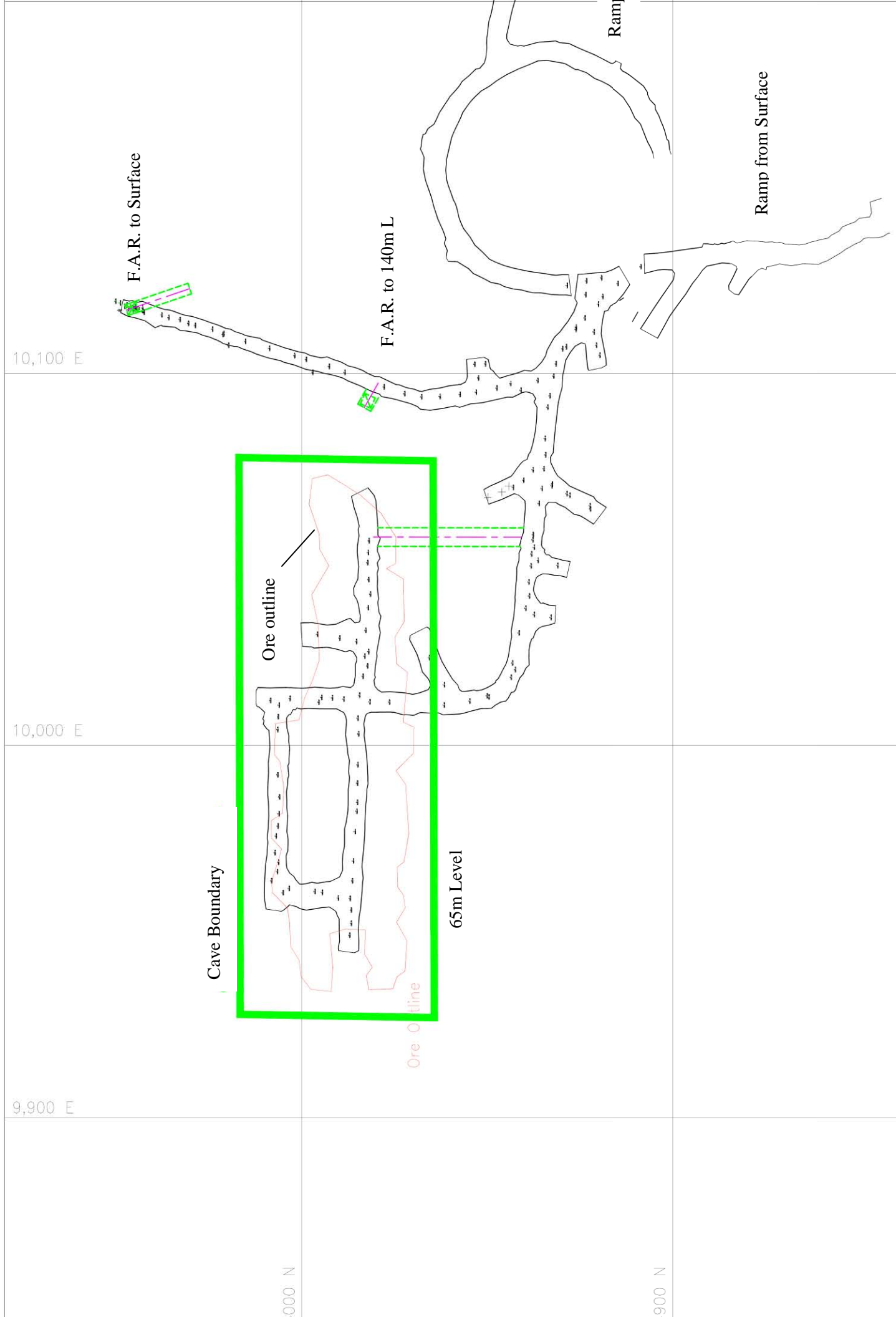
Mine access is via a surface portal and -15% decline. All mine development is 5m x 5m to allow for development and production equipment requirements. The total planned length for the ramp is 935 meters. From surface elevation of 0 meters the ramp provides access down to the lowest mining level at an elevation of 155 meters.

The mine's second exit will be through the 3m x 3m fresh air raise (FAR). The FAR is planned to be equipped from 140m Level through to 65m Level and from 65m Level to surface with a timber manway installed by a contractor.

### **17.5.3 Stopping Access**

Level plans are shown in the following figures, numbers 36 through 40.

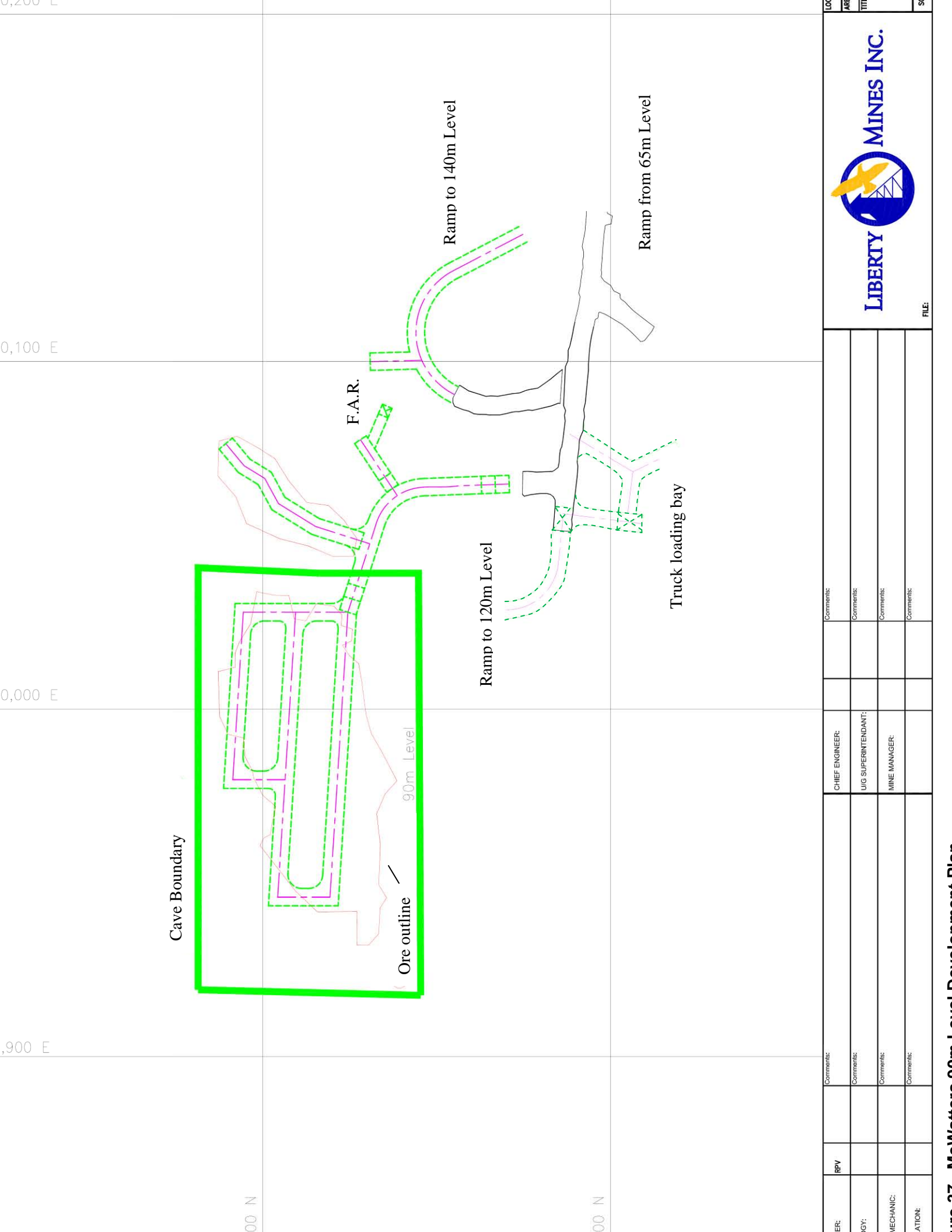





OWNER:	RPV	Comments:	CHIEF ENGINEER:	Comments:
GEOLOGY:		Comments:	UIG SUPERINTENDANT:	Comments:
CK MECHANIC:		Comments:	MINE MANAGER:	Comments:
VENTILATION:		Comments:		Comments:

LIBERTY MINES INC.

FILE:



LOC:					
ARE:					
TITLE:					
SR:	FILE:				
ER:	RPV	Comments:	CHIEF ENGINEER:	Comments:	 <b>LIBERTY MINES INC.</b>
GV:		Comments:	UG SUPERINTENDANT:	Comments:	
MECHANIC:		Comments:	MINE MANAGER:	Comments:	
ATION:		Comments:		Comments:	

10,100 E

10,000 E

9,900 E

10,000 N

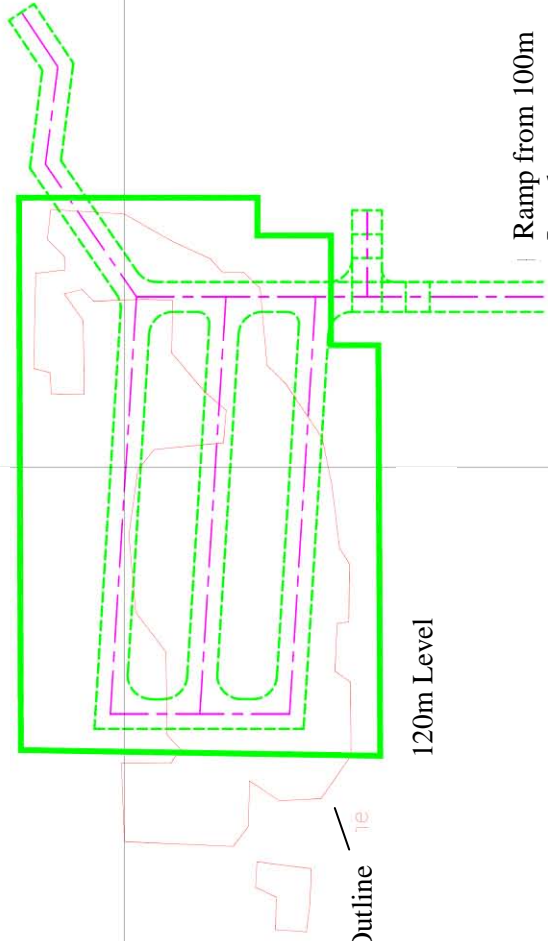
9,900 N

Cave Boundary

Ore Outline

120m Level

Ramp from 100m



OWNER:	RPV	Comments:		CHIEF ENGINEER:		Comments:	
GEOLOGY:		Comments:		UIG SUPERINTENDANT:		Comments:	
BLACK MECHANIC:		Comments:		MINE MANAGER:		Comments:	
VENTILATION:		Comments:				Comments:	

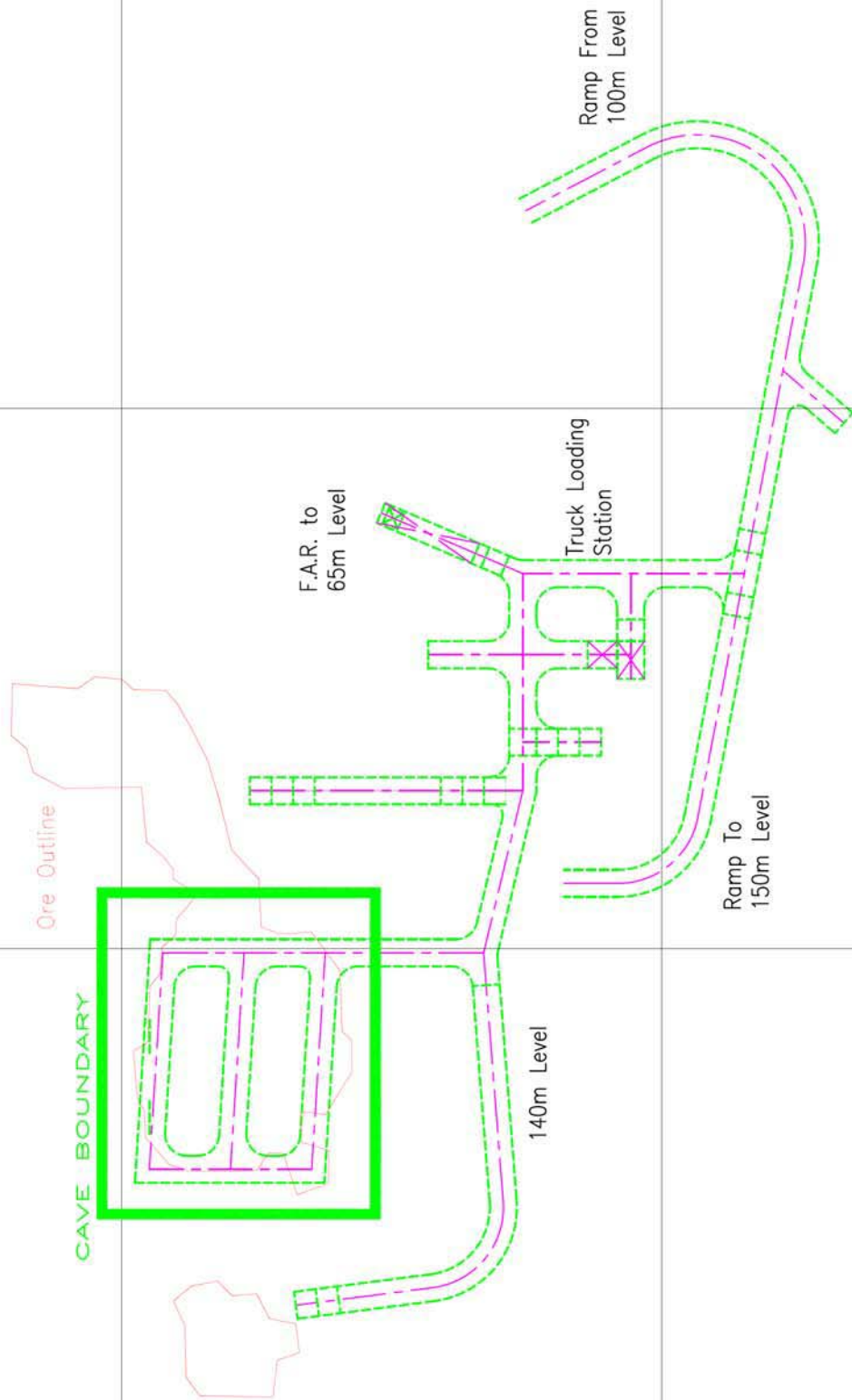
10,100 E

10,000 E

9,900 E

10000 N

10000 N



APPROVER:	RPV	Comments:	CHIEF ENGINEER:	Comments:	FILE:
GEOLOGY:		Comments:	U/G SUPERINTENDANT:	Comments:	
TRUCK MECHANIC:		Comments:	MINE MANAGER:	Comments:	
VENTILATION:		Comments:		Comments:	



## 17.5.4 Ventilation Raises

Two ventilation raises are planned for McWatters Mine to make up the fresh air raise system. The first raise runs from surface to 65m Level and the second raise runs from 65m level to 140m level.

Both raises are planned as 3m x 3m rectangular excavations developed using mechanized raise climbing equipment (Alimak). The raises are connected in series by a 27m ventilation drift and will serve to provide 212cms of fresh heated air to the underground.

The upper leg of the ventilation raise system from 65m level to the surface collar has been completed.

The lower raise leg will be driven off-ramp, in waste from 140m level to 65m level.

Bulkheads and ventilation doors have been included in the design so that operators can control and/or regulate air to work areas as required.

The surface ventilation raise collar and both raises have been located outside of the influence of the open pit and sub-level cave mining subsidence.

## 17.5.5 Life of Mine Development Requirements

Life of mine development requirements are detailed below in Table 26 through Table 28. Development dimensions are planned at 5m x 5m for both ore and waste headings.

**Table 26. Capital Waste Development Meters**

	<b>Capital Waste Development Meters</b>	<b>2009</b>	<b>1010</b>	<b>Total</b>
090m level	Access Ramp from 100m level	70		70
	FAR Access Drift	20		20
100m level	Remuck Bay	15		15
	Electrical Sub Station	15		15
120m level	Access Ramp from 100m level		65	65
	Sump		15	15
140m level	Main Ramp from 100m level	198		198
	Remuck Bay	15		15
	140m level Access Drift	38		38
	140m level H.W. Drift	36	36	72
	Sump		15	15
	FAR Access Drift	27		27
	140m level – 65m level FAR	70		
150m level	Main Ramp from 140m level	138		138
	<b>Total Capital Waste Development</b>	<b>642</b>	<b>131</b>	<b>773</b>

**Table 27. Operating Waste Development Meters**

	<b>Operating Waste Development Meters</b>	<b>2009</b>	<b>2010</b>	<b>Total</b>
065m level	Stope Access Drift		40	40
090m level	120 BH 1 O/C Access Drift	15		15
100m level	Truck Loading Station	50		50
120m level	Stope Access Drift		230	20
	120 BH 1 U/C Access Drift		15	15
140mLevel	SLC Stope Access Drift		30	30
	140 1 CF Stope Access Drift		87	87
	Truck Loading Station	33		33
	140m level Ore Remuck Bay	15		15
	140 2 CF Cut 1 Access Drift		60	60
	140 2 CF Cut 2 Backlash		35	35
	140 2 CF Cut 3 Backlash		70	70
	140 2 CF Cut 4 Backlash		70	70
	140 3 CF Cut 1 Access Drift		15	15
	140 3 CF Cut 2 Backslash		35	35
	140 1 CF Cut 2 Backslash		35	35
150m level	150 LH 1 Stope Access Drift	25		25
	150 2 CF Stope Access Drift	32		32
	150 2 CF Cut 2 Backslash	35		35
	150 2 CF Cut 2 Access Drift	20		20
	150 2 CF Cut 3 Backslash		70	70
<b>Total Operating Waste Development</b>		<b>225</b>	<b>582</b>	<b>807</b>

**Table 28. Operating Ore Development Meters**

	<b>Operating Ore Development Meters</b>	<b>2009</b>	<b>2010</b>	<b>Total</b>
090m level	120 BH 1 O/C Drift		40	40
	90 SLC 1 HW Sill Drift		90	90
	90 SLC 2 Sill Drift		90	90
	90 SLC 3 FW Sill Drift		61	61
120m level	120 SLC 1 H W Sill Drift		80	80
	120 SLC 2 Sill Drift		80	80
	120 SLC 3 FW Sill Drift		100	100
	120 BH 1 U/C Drift		50	50
140m level	140 SLC 1 HW Sill Drift		55	55
	140 SLC 2 Sill Drift		55	55
	140 SLC 3 FW Sill Drift		70	70
	140 2 CF Cut 1 W		146	146
	140 2 CF Cut 1 E		146	146
	140 2 CF Cut 2		130	130
	140 2 CF Cut 3		60	60
	140 2 CF Cut 4		70	70
	140 3 CF Cut 1		14	14
	140 3 CF Cut 2		18	18
	140 1 CF Cut 1		82	82
	140 1 CF Cut 2		119	119
150m level	150 LH 1	30		30
	150 2 CF Cut 1	28		28
	150 2 CF Cut 2W	51	16	67
	150 2 CF Cut 2E	35		35
	150 2 CF Cut 3W		82	82
	150 2 CF Cut 3E		82	82
<b>Total Operating Ore Development</b>		<b>144</b>	<b>1,736</b>	<b>1,880</b>

## 17.6 Development and Production Schedule

### 17.6.1 Introduction

#### Open Pit

Total material (overburden, waste rock and ore) in the open pit will be mined at an average rate of approximately 3,600 tpd over an 11 month period. Ore production, beginning in May 2010, is planned at an average rate of 1,330 tpd.

#### Underground

Underground development is categorized as “capital” or “operating waste development” or “operating ore development”.

Capital waste development is defined as development required to maintain infrastructure including: development of the ramp, level accesses, FAR accesses, remuck bays, electric sub stations, sumps and the FAR itself. Total lateral capital waste development is 703 meters plus 70 meters of raise. Total capital waste tonnage is 45,513 tonnes.

Operating waste development is defined as development required to maintain stope operations including: development of stope accesses, truck loading stations and cut and fill stope backslashes. Total lateral operating waste development is 807 meters. Total operating waste tonnage is 50,438 tonnes.

Operating ore development is defined as any development required in ore. This includes the over cut and under cut for the blasthole stopes, sill drifts for the sublevel cave stopes and all the cut and fill stoping. Total lateral operating ore development is 1,880 meters. Total jumbo ore tonnage is 141,000 tonnes.

Single face cut and fill stopes were assumed to be able to achieve 20 rounds per month, producing 8,400 tonnes at 280 tonnes per cycle. Double face cut and fill stopes were assumed to achieve 40 rounds per month, producing 16,800 tonnes. Based on geotechnical assessment, the maximum cut and fill back span was determined to be 8.0 meters. Wider areas will employ non-recoverable post pillars.

Sublevel cave and blasthole stopes will have production drilling performed by contractor personnel and equipment. Blasting and mucking will be carried out by Liberty personnel. Stope mucking was scheduled at 1,240 to 1,800 tonnes per day, and even when combined with cut and fill production, the total planned mining rate does not exceed 1,800 tonnes per day due to haulage equipment availability. The LoM production schedule is summarised by quarter in Table 29.



Stope	Tonnes	2009 Q4	2010				2011			2009	2010	2011
			Q1	Q2	Q3	Q4	Q1	Q2	Q3			
Pit Cut 1	19,711			19,711							19,711	
Pit Cut 2	45,293			45,293							45,293	
Pit Cut 3	43,633				43,633						43,633	
Pit Cut 4	44,789				44,789						44,789	
Pit Cut 5	45,202				45,202						45,202	
Pit Cut 6	22,448					22,448					22,448	
Pit Cut 7	15,357					15,357					15,357	
Pit Cut 8	8,945					8,945					8,945	
Tonnes Pit	245,378			65,004	133,624	46,750					245,378	
65 SLC 1 HW	128,691					81,719					81,719	
65 SLC 2 FW	17,268											
90 SLC 1 HW	82,565											
90 SLC 2	81,073											
90 SLC 3 FW	4,598											
120 SLC 1 HW	34,709											
120 SLC 2	52,301											
120 SLC 3 FW	36,263											
120 BH 1	11,382											
140 SLC 1 HW	23,081											
140 SLC 2	33,872											
140 SLC 3 FW	29,678											
150 LH 1	10,152	2,250										
Tonnes SLC/BH	545,633	2,250										
140 1 CF Cut 2	8,892											
140 1 CF Cut 1	6,132											
140 2 CF Cut 4	5,263											
140 2 CF Cut 3	4,536											
140 2 CF Cut 2	9,705											
140 2 CF Cut 1E	10,923											
140 2 CF Cut 1W	10,925											
140 3 CF Cut 2	1,320											
140 3 CF Cut 1	1,061											
150 2 CF Cut 3E	6,118											
150 2 CF Cut 3W	6,118											
150 2 CF Cut 2E	2,578	2,625										
150 2 CF Cut 2W	4,994	3,825										
150 2 CF Cut 1	2,094	2,100										
Tonnes CF	80,659	8,550										
Total Mined	871,900	10,800										

## 17.6.2 Contractor Involvement

All lateral waste and ore development at McWatters Mine will be carried out by Liberty personnel.

A contractor will drive the 140mL fresh air raise from 140m level to 65m level. Underground production drilling will be performed by a contractor. Open pit drilling and blasting will be performed by a contractor.

## 17.7 Manpower, Equipment and Services

### 17.7.1 Mine Manpower

The average mine and mill personnel other than Administrative and Technical are estimated at 90 persons as listed in Table 30. Administration and technical service personnel (10 persons) vary regarding time allotted to McWatters. Residual time for these persons has been allocated to Liberty's adjacent projects namely Redstone and Hart.

The mine will operate seven days a week with two 10.5 hour shifts per day working a four days on and four days off schedule. The mine will be owner operated with only underground Cubex drilling, raise development, open pit drilling/blasting and dozer work being contracted out. Management and technical staff will work a Monday to Friday dayshift schedule.

The development miners shown in Table 30 include the manpower requirements for both capital and operating development. Table 30 also states the average percentage of time that personnel are accountable to McWatters instead of Liberty's other two projects.

The mill operates twenty-four hours a day, seven days a week with a staff of twenty-eight employees. An Operations Superintendent assumes the responsibility for four mill shifters and all activities concerning mill processes.

Table 30 shows the peak labour force which occurs in February 2010 when underground development and production along with open pit mining and mill operations are all active.

**Table 30. McWatters Mine Manpower Requirements**

Category	Shift	Men/Shift	Total	Time Allocated to McWatters
<b>Administration and Technical</b>				
VP exploration	Days 5&2	1	1	20%
Mine Manager	Days 5&2	1	1	40%
Mine Super	Days 5&2	1	1	40%
Mill Manager/Metallurgist	Days 5&2	1	1	100%
Mine Trainer	Days 5&2	1	1	40%
Safety Officer	Days 5&2	1	1	40%
Accountant	Days 5&2	1	1	40%

Category	Shift	Men/Shift	Total	Time Allocated to McWatters
Payroll Specialist	Days 5&2	1	1	40%
IBA Coordinator	Days 5&2	1	1	45%
Health/Safety/Training	Days 5&2	1	1	45%
Security & First Aid	Days 5&2	2	8	45%
Environmental Coordinator	Days 5&2	1	1	30%
Environmental Specialist	Days 5&2	1	1	30%
Receiving/counter attendant	Days 5&2	1	1	45%
Chief Geologist	Days 5&2	1	1	20%
Mine Geologist	Days 5&2	1	1	40%
Mine Geologist Sampler	Days 5&2	1	1	40%
Mine Engineer	Days 5&2	1	1	33%
Mine Planner	Days 5&2	1	1	33%
Mine Lead Surveyor	Days 5&2	1	1	30%
Chief Electrician	Days 5&2	1	1	40%
Chief Mechanic	Days 5&2	1	1	40%
Janitor	Days 5&2	1	1	50%
<b>Subtotal</b>			<b>30</b>	
<b>Supervision</b>				
Mill Foreman	Days 5&2	1	4	50%
Underground Foreman	4&4	1	3	50%
Pit Foreman	4&4	1	3	100%
<b>Subtotal</b>			<b>10</b>	
<b>Underground Development</b>				
Development Miners	4&4	3	9	100%
Truck driver	4&4	2	6	100%
Raise Mining	4&4	Contractor		
<b>Subtotal</b>			<b>15</b>	
<b>Underground Production</b>				
Cubex Drillers	4&4	Contractor		
Production Miners	4&4	2	6	100%
<b>Subtotal</b>			<b>6</b>	
<b>Mill</b>				
Operator	Days 5&2	4	16	50%
Millwright	Days 5&2	1	4	50%
Lab	Days 5&2	1	4	50%
<b>Subtotal</b>			<b>24</b>	
<b>Open Pit</b>				
Truck Drivers	4&4	2	6	100%
Dozer Operator	4&4	Contractor		
Excavator	4&4	1	3	100%
Drill / Load / Blast	4&4	Contractor		
<b>Subtotal</b>			<b>9</b>	
<b>Services</b>				
General Laborer	4&4	1	3	100%
Mechanics	Days 5&2	2	2	100%
Electricians	Days 5&2	1	1	50%
<b>Subtotal</b>			<b>6</b>	
<b>Total Mine</b>			<b>90</b>	

## 17.7.2 Mining Equipment

**Table 31. McWatters Mine Equipment List**

	Owned	Leased	Contracted	Required
G&A Equipment				
Pickups	8			
Personal Carrier	4			
Wheel Loader	2			
Forklift	1			
Grader	1			
Underground Equipment				
2-Boom Jumbo	1			
4 yd scoop	1			
6 yd scoop	2			
26 t Truck	1			
30t Truck	2			
Scissor lift	1			
Anfo loader	1			
Cubex ITH Drill			Contractor	
Jacklegs and Stoppers (each)	5			
Pumps	4			
Auxiliary Vent Fans	5			
Power center	2			
Main Vent Fan	1			
Compressor	2			
Open Pit Equipment				
740 Cat Trucks	2			
Dozer			Contractor	
Impact Hammer inc'd grizzly				1
Hitachi 350		Leased		
Pit Drill			Contractor	
Pit Light Standards		Leased		
27 Hp Pump	1			1
Compressor	1			
Total	38			2

All minor repairs to equipment when underground will be affected on the levels while all major repairs will be conducted in the surface maintenance shop or contracted out to an independent shop in the community of Timmins.

One mechanical pickup and one electrical pickup have been assigned to maintenance from the pickup fleet so that small parts, consumables or tools can be brought by the tradesmen to the respective workplace.

McWatters underground production drilling productivity estimate is shown in Table 32. This function will be performed by a drilling contractor.

**Table 32. Production Drilling Productivity**

Shifts per day	2	
Meters per ring	179.1	m
Rings per blast	2	rings
Meters per blast	358.2	m
Tonnes per blast	4,082	tonnes
Tonnes per meter	11.40	tonnes
Effective drilling time per shift	5.76	hrs
Cubex drilling time per hole	0.76	hrs
Holes drilled per shift	7.56	holes
Average hole length	19.9	m
Hole diameter	76.20	mm
Meters drilled per shift	150	m

Calculations indicate that the mean fragment size of blasted ore will be 15cm with 95% passing 45cm. Any oversize will be either mud-blasted or jackleg drilled and loaded for blasting at the end of shift. Where available a deadend drift will be designated as a blasting chamber but if none is available then the oversize will be blasted near the stope drawpoint.

### 17.7.3 Surface Ore Haulage

Surface ore haulage will be conducted as follows. Underground mine trucks will dump the ore onto a storage pad next to the portal. A 3.6m<sup>3</sup> (4.8yd<sup>3</sup>) wheel loader will handle the ore from the pad into 33 tonne tri-axle highway trucks. The equipment and manpower costs for the surface ore haulage are accounted for separately from mining costs.

The surface ore trucks will traverse the 9km distance to the Redstone mill where they will dump directly into the mill feed hopper, and from there to the primary crusher.

### 17.7.4 Grade Control

Ore samples will be collected daily from each drawpoint or ore face and assayed in the Liberty laboratory located at Liberty's Redstone site.

The assay results will be used to support monthly reconciliations that will include:

- Predicted grade (mine plan block model grade) vs sampled grade;
- Predicted grade (mine plan block model grade) vs mill headgrade.

Significant and consistent variances highlighted in the reconciliation studies will be followed up and resolved.

### **17.7.5 Ventilation**

During development ventilation down ramp will be achieved using 1.22 metre (48 inch) diameter ventilation ducting and 75kW (100Hp) ventilation fans. Exhaust air will return up the decline to surface.

A 450kW (600Hp) fan mounted on surface will provide 212 cubic meters per second (“cms”) (450,000cfm). Ventilation bulkheads and doors will be constructed as required to direct air flow to work areas.

Once ramp development passes 140m level, the lower leg of the fresh air raise system will be driven with dimensions of 3 x 3m by Alimak to provide fresh air into the lower mine. Ventilation bulkheads and doors will be constructed as required to direct air flow to work areas.

All mine air will be exhausted to surface through the ramp completing the circuit. Mine air heaters are installed in the ventilation plenum below the surface fan to maintain minimum temperatures in the mine above freezing.

Air requirements for the mine have been derived based on the estimated underground diesel fleet.

### **17.7.6 Dewatering**

Sumps will be established at each level entrance (65m, 90m, 120m and 150m). Pumps will be sized for the potential maximum (25 year storm event) mine inflow of approximately 2,000 cubic meters per day (300gpm). The submersible pumps will be positioned on the clear water side of the sumps ensuring that the majority of fines are captured in the bottom of the sumps. Pumps will lift the clear water up the ramp to surface to the surface water treatment ponds.

Sumps will be designed to allow LHD access for cleaning as required, and slimes will be allowed to drain before mixing with the ore supply.

### **17.7.7 Electrical Power Distribution**

Power for the underground mine will be used to power dewatering pumps, auxiliary ventilation fans, the face jumbo and production drills. On surface power will be mainly drawn by the main fresh air fan and air compressors.

A 4,160volt feeder cable has been installed in the decline and power will be distributed with portable transformers and breakers on each level.

### **17.7.8 Equipment Maintenance**

The existing surface maintenance shop is equipped to meet the foreseeable maintenance requirements. The McWatters mine has a relatively small overall layout size, and it will not be difficult to transport equipment to the shop as needed. Some minor equipment break down repairs will be performed underground in the mine workings. Preventative maintenance will be performed in the surface shop.

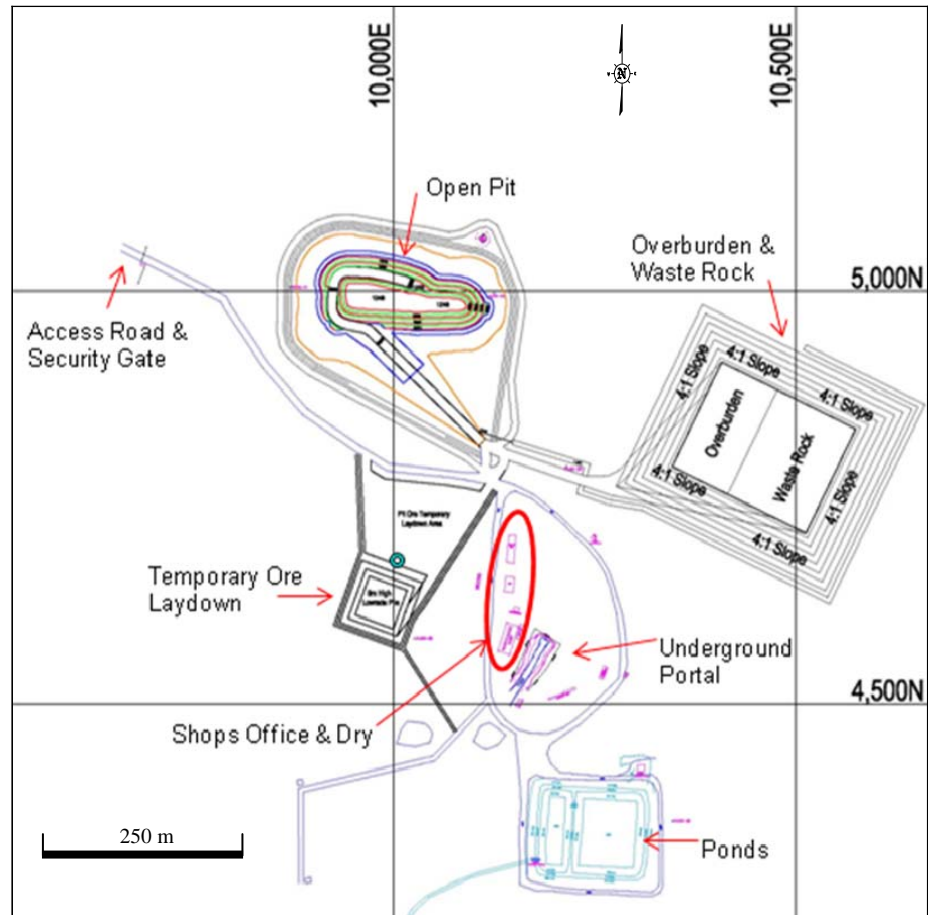
### **17.7.9 Materials and Supplies Handling**

Areas have been designated in the mine to store all consumable materials. Explosives and cap magazines have been established and commissioned underground. Materials will transported by scissor lift, man carrier or LHD.

## **17.8 McWatters Mine Site Infrastructure**

The McWatters mine is a satellite site of the Liberty Redstone mine and as such requires only a portion of what a stand-alone operation would require in terms of infrastructure. As shown in Figure 41, infrastructure on site currently consists of centrally located mechanical maintenance shops, trailer office complex, mine dry, security gate, and settling and treatment ponds.

Additional infrastructure planned for site includes a small open pit mine, a stockpile for overburden and waste rock and a temporary ore laydown area. The underground mine is accessed via a portal, completed in early 2008, from which the ramp initiates.



**Figure 41. McWatters Mine – Existing and Planned Surface Infrastructure**

## 17.9 Recoverability

McWatters ore will be processed at the nearby Redstone mill owned by Liberty.

Refer to section 15 Mineral Processing, Mineralogy and Metallurgical Testing

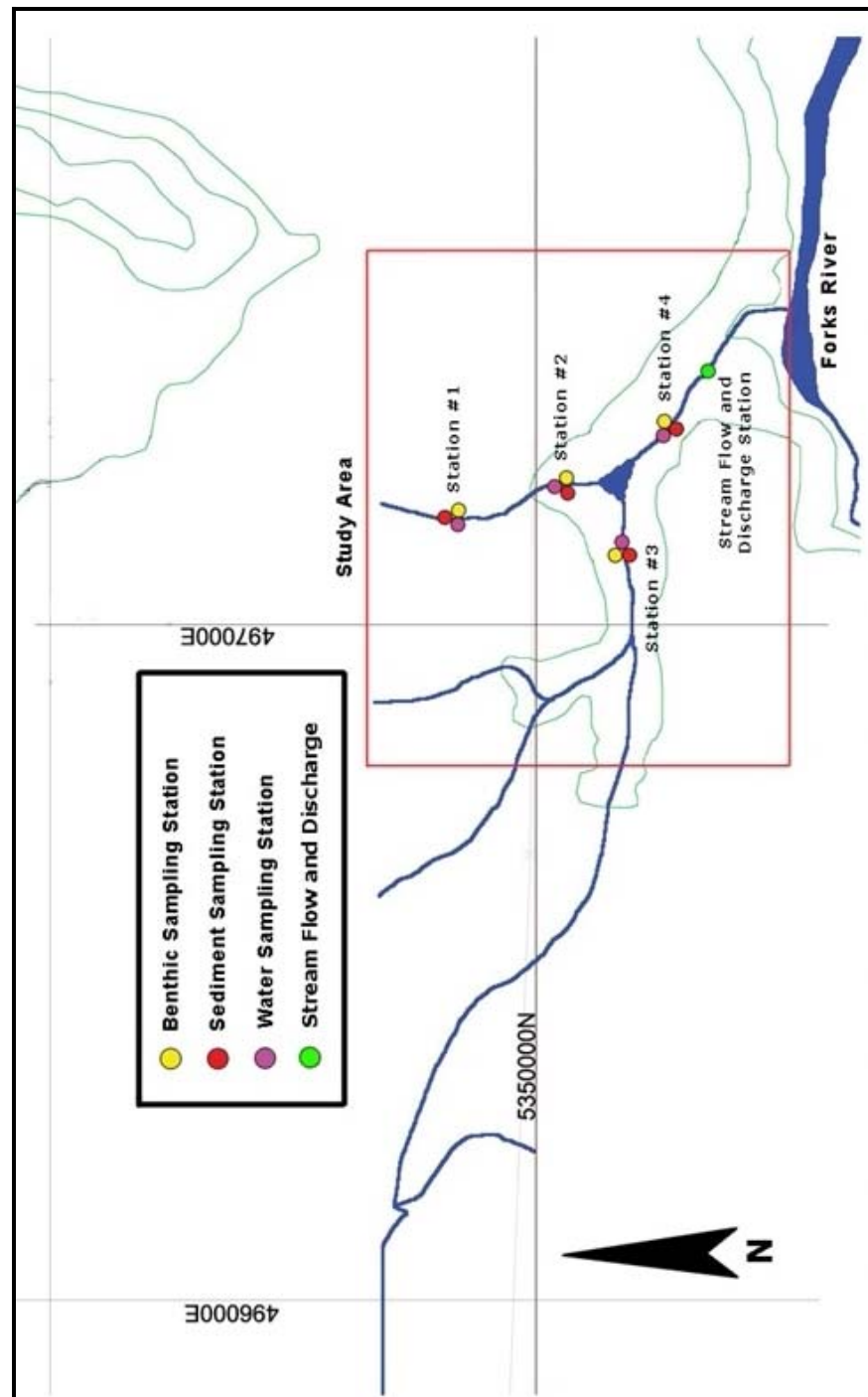
## 17.10 Environmental Considerations

### 17.10.1 Environmental Studies

In support of an application for an Ontario Ministry of the Environment Certificate of Approval for Industrial Sewage Works, BZ Environmental Consulting was retained by Liberty Mines Inc. to undertake a characterization of the baseline conditions at a tributary of the Forks River that was proposed as a drainage channel for mine water produced when the mine begins production. The following is a summary of the report dated August 2007.



Surface water samples from the four stations (Figure 42) on the drainage creek generally had negligible concentrations of most of the measured parameters. In many cases, concentrations were below the detectable limits of the analytical laboratory. Only chloride, aluminum and iron had concentrations that exceeded the Provincial Water Quality Objectives (“PWQO”) at one or more stations. There were no results observed that exceeded Municipal/Industrial Strategy for Abatement (“MISA”).



**Figure 42. Map of Study Area showing Monitoring Stations**

Sediment samples from all four sample stations showed elevated levels of total organic carbon, chromium, copper, iron, manganese, and nickel. In most cases these levels were above the Provincial Sediment Quality Guidelines Lowest Effect Level, but below the Severe Effect Level (“SEL”). The only result observed to exceed the SEL occurred for one replicate sample at Station 4 for manganese.

The results of the benthic macroinvertebrate survey suggest only moderate water quality. Most stations showed an absence of members of the pollution intolerant orders Ephemeroptera, Plecoptera, and Trichoptera (“EPT”) and also scored relatively high values in the Hilsenhoff Biotic Index.

A stream fish community survey found that pollution intolerant brook trout were only found inhabiting the lower reaches of the tributary, while the upper reaches were inhabited by more tolerant species like northern redbelly dace and brook stickleback.

The empirical information collected during the field observations indicated that the upper reaches of the drainage ditch lack the bio-diversity and measurable quantities of both fish and benthic communities as compared to the lower reaches. Both water quality and sediment quality are consistent between the upper and lower stations. In general the quality of habitat of the aquatic environment improves significantly downstream.

The McWatters underground mine and open pit are subject to the Metal Mining Effluent Regulations (“MMER”) of the Fisheries Act. AECOM Canada Ltd. was engaged in July 2009 to produce a Characterization and Initial Environmental Effects Monitoring (“EEM”) Study Design Report for the McWatters site, which is currently in progress. The report is expected to show little if any impact on the environment as there have been no instances of metal or particulate non-compliance since discharge to the Forks River began July 28, 2008

AMEC Earth & Environmental, a division of AMEC Americas Limited (“AMEC”), was retained by Liberty Mines Inc. to complete a hydrogeological study for the McWatters Mine Project for an underground operation only in May 2007; and subsequently in October 2009, for a combined underground and open pit operation. A previous investigation May 2007 report by AMEC included the installation of three overburden monitoring wells. In order to obtain additional information pertaining to the hydrogeological setting of the McWatters open pit, AMEC directed and supervised the installation of five additional overburden wells in August 2009. These wells were intended to further characterize the overburden aquifers at the site and identify potential relationships between the proposed development, these aquifers and nearby surface water features. Hydraulic conductivity values were calculated from well recovery data using the Hvorslev solution method. From this and other data a numerical groundwater flow model for the McWatters mine site was constructed. The McWatters site is a remote operation with no other water users in the immediate area.

Based on the information obtained and modeled AMEC concluded that, with respect to the radius of influence and the localized simulated dewatering effects, it is not anticipated that the pumping (800 to 900 m<sup>3</sup>/d of groundwater seepage – under steady state conditions) required to dewater the underground and open pit mining operations will impact any other water users, surface water features, sensitive areas or potential contaminant sources within the area of influence. Furthermore, pumping from the bedrock is not expected to affect local streams (as there are none situated within 750m from the pit) that are thought to be primarily fed by shallow groundwater flow through the muskeg deposits and are generally separated from the bedrock system by a significant thickness of clay aquitard material.

### **17.10.2 Environmental Liabilities**

Underground mining operations are accessed by a ramp extending from a portal at surface. Bulk mining with sublevel caving techniques will be utilized. All ore is trucked to surface and hauled to the Redstone nickel concentrator at the Redstone mine site for concentrating. The development waste rock is trucked to surface and stockpiled for various future applications throughout the site.

Ore from the open pit will be mainly trucked directly to the mill for processing, although some ore may be temporarily stockpiled on site. Waste rock from the open pit will be accumulated as a 4:1 sloped pile as is overburden removed to expose the mineralization below. There is a fuel depot, a machine shop and propane storage tanks on site as well as a settling pond and an adjacent water treatment pond.

Liberty has prepared a Spill Prevention and Contingency Plan. The purpose of this plan is to help prevent or reduce the risk of spills of pollutants and prevent, eliminate or ameliorate any adverse effects that result or may result. This is achieved through detailed information and guidance on actions important for the prevention of spills and procedures to detect and respond to them when they occur. The structure of the plan is designed in accordance with the requirements of Ontario Regulation 224/07 – Spill Prevention and Contingency Plans.

Table 33 lists risk agents and their corresponding reporting thresholds:

## 1. Reporting Thresholds

Content		Reporting Threshold
Concrete/ Asphalt		Spill of Cement /Concrete/ Asphalt in surface water is reportable. Release on land is not reportable unless within 50 m from surface water during the extreme event.
		Release of raw or partially treated sewer to surface water is reportable.
		Release to the land is reportable if larger than 20 m <sup>3</sup> .
Ammonium nitrate		Spill of ammonium nitrate in surface water is reportable. Release on land of less than 2300 kg is not reportable unless within 50 m from surface water during the extreme event.
		Release of more than 2300 kg is reportable, very low probability event.
		Uncontrolled leachate from failed or overtopped detention ponds which releases to surface water is reportable. No threshold for quantity is defined.
Treatment reagents		Spill of reagent in surface water is reportable. Release on land of less than 2300 kg is not reportable unless within 50 m from surface water during the extreme event.
		Release of more than 2300 kg is reportable, very low probability event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Treatment reagent solution		Spill of solvent in surface water is reportable. Release on land of less than 450 kg is not reportable unless within 50 m from surface water during the extreme event.
		Release of more than 450 kg is reportable, very low probability event.
		Release of 100 kg and less is not reportable unless it is released within 50 m of surface water during an extreme rainfall event.
Reagents / solvents		Release of more than 450 kg is reportable, very low probability event. Release of 454 kg and less is not reportable unless it is released within 50 m of surface water during an extreme rainfall event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Acid		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Alkaline		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Treated water		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Treated water		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Fresh water		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Slurry		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Water in tailings slurry		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Leachate		Uncontrolled leachate to surface water is reportable. <b>No threshold for quantity is defined.</b>
		Uncontrolled tailings to surface water are reportable. <b>No threshold for quantity is defined.</b>
		Uncontrolled tailings to surface water are reportable. <b>No threshold for quantity is defined.</b>
Sodium hydroxide		Release of more than 450 kg is reportable, very low probability event. Release of 454 kg and less is not reportable unless it is released within 50 m of surface water during an extreme rainfall event.
		Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
		Release to water is reportable.
Sulfuric acid / gasoline		Regulation exempts less than 100 L of fuel under circumstances.
		Release less than 100 L to the land is not reportable unless it is released within 50 m of surface water during an extreme rainfall event.
		Release to the land of larger than 100 L of fuel is reportable. Very low frequency event.
Oils, Lubricants, Antifreeze and Fuels		Release to water is reportable.
		Regulation exempts less than 100 L of fluid under circumstances.
		Release less than 100 L to the land is not reportable unless it is released within 50 m of surface water during an extreme rainfall event.
Glycol		Release to the land of larger than 100 L of fuel is reportable. Very low frequency event.
		Release to the land of larger than 100 L of glycol is reportable. Very low frequency event. Release less than 100 L to the land is not reportable unless it is released during an extreme rainfall event.
		Release to water is reportable.
Greases and oils		Regulation exempts less than 100 L of oil under circumstances.
		Release less than 100 L to the land is not reportable unless it is released within 50 m of surface water during an extreme rainfall event.
		Release to the land of larger than 100 L of fuel is reportable. Very low frequency event.
Fuel Oil		Release to water is reportable.
		Release less than 100 L to the land is not reportable unless it is released within 50 m of surface water during an extreme rainfall event.
		Release to the land of larger than 100 L of fuel is reportable. Very low frequency event.
Sediments and liquid wastes		Release to water is reportable.
		Release of 10 kg and less is not reportable unless it is released within 50 m of surface water during an extreme rainfall event.
		Release to the land of larger than 10 kg of waste is reportable. Very low frequency event.

Wastes generated or created on site are stored in approved containers. All waste oil is pumped and stored in a 1100 litre (250 gallon) steel tank located beside the maintenance shop. All other wastes (contaminated soil, oil filters and waste chemicals) are stored in 200 litre (45 gallon) waste material drums to be removed from site by a certified waste hauler and disposer.

Waste ammonium nitrate from explosives (contaminated or non-contaminated) is stored in waste ammonium nitrate bins where it is picked up by Nordex Explosives Ltd. and transported to their site for disposal.

### **17.10.3 Emergency Response Plan**

An Emergency Response Plan (“ERP”) was developed to identify potential worst-case emergency situations and responses, to outline the responsibilities of employees during these emergencies and to ensure that all requirements of applicable laws are met. Water from underground workings is pumped to the treatment plant to remove particulates and metals. The underflow from a thickener is sent to the Redstone mill and does not enter the McWatters settling or treatment ponds. The overflow from the thickener is pumped to the McWatters settling pond, which in turn overflows to the treatment pond and finally through the discharge weir into a drainage ditch leading to the Forks River. The ERP was established to deal with any one of the three discharge levels:

**E1** – Emergency Level 1 corresponds to elevated contaminant concentrations within the footprint of the mine water settling pond. Contaminant elevations consist of any level exceeding the regulated monthly average threshold for each contaminant (i.e. - copper, nickel, arsenic, zinc, lead, total suspended solids, ammonia and radium 226).

**E2** – Emergency Level 2 corresponds to elevated contaminant concentrations within the footprint of the mine water treatment pond. Contaminant elevations consist of any level exceeding the regulated monthly average threshold for each contaminant (i.e. - copper, nickel, arsenic, zinc, lead, total suspended solids, ammonia and radium 226).

**E3** – Emergency Level 3 corresponds to elevated contaminant concentrations from the treatment pond discharge weir. Contaminant elevations consist of any level exceeding the regulated monthly average threshold for each contaminant (i.e. - copper, nickel, arsenic, zinc, lead, total suspended solids, ammonia and radium 226).

**Table 34. MISA/MMER Monthly Average Thresholds**

Parameter	Daily MISA/ C of A/ MMER Concentration Limit	Monthly MISA/C of A/ MMER Average Concentration Limit
Total Suspended Solids	30 mg/L	15 mg/L
Total Ammonia Nitrogen	20mg/L	10mg/L
Arsenic	0.5 mg/L	0.25 mg/L
Copper	0.3 mg/L	0.15 mg/L
Nickel	0.75 mg/L	0.375 mg/L
Lead	0.3 mg/L	0.15 mg/L
Zinc	1.0 mg/L	0.5 mg/L
pH		6.0 – 9.5
Radium 226	1.11 Bq/L	0.37 Bq/L
Acute Toxicity		50%

Sampling is undertaken daily at the settling pond; on an as needed basis at the treatment pond; and thrice weekly at the discharge weir. If any results exceed the thresholds, various actions are taken by the environmental staff to contain the water in one or all of the noted areas. For example, a level E3 emergency requires the installation of stop logs in the treatment pond discharge channel to contain the water within the treatment pond. If it is apparent that the ponds will fill to their maximum water heights before the concentration is reduced, the mine water system will have to be shut down. This will effectively halt the mining activities until problem has been rectified.

#### 17.10.4 Acid Rock Drainage

Four main rock types can be identified at the McWatters site: footwall intermediate volcanics, mineralized ultramafic flows, felsic dykes, and mafic dykes. Each rock type was sampled according to the Guidelines and Recommended Methods for the Prediction of Metal Leaching (“ML”) and Acid Rock Drainage (“ARD”) at Mine sites in British Columbia. The samples were then sent to the ALS CHEMEX lab in Vancouver for analysis of total sulphur, paste pH, and Acid Base Accounting (“ABA”).

Testing revealed that the rock types to be extracted during mining show pH values that are non-acid generating, both from ABA and Shake Flask tests. Neutralizing Potential Ratio (“NPR”) values and sulphide-S percentages also show that, on aggregate, these rocks are unlikely to be acid generating as they average  $NPR > 4$  and sulphide-S %  $< 0.3$ . The few samples of andesitic composition with  $NPR < 4$  and sulphide-S %  $> 0.3$  yielded an average pH of 9, indicating that they are unlikely to have a negative impact on the overall ML and ARD potential of the rock type.

#### 17.10.5 Environmental Permits

The following permits were obtained to be able to commence mining operations at the McWatters project:

- a) Certificate of Approval for Industrial Sewage Works Number 0613-78CHG8 issued November 7, 2007 by the Ontario Ministry of the Environment for the collection, transmission, treatment and disposal of

sewage from McWatters mine includes but is not limited to the following conditions shown in Table 35 to Table 37.

**Table 35. Effluent Limits**

<b>Table 1 - Effluent Limits</b>		
<b>Effluent Parameter</b>	<b>Maximum Daily Concentration</b> (milligrams per litre unless otherwise indicated)	<b>Monthly Average Concentration</b> (milligrams per litre unless otherwise indicated)
Column 1	Column 2	Column 3
Total Suspended Solids	30	15
Total Ammonia Nitrogen (Ammonia Nitrogen + Ammonium Nitrogen)	20	10
Arsenic	0.5	0.25
Copper	0.3	0.15
Nickel	0.75	0.375
Lead	0.3	0.15
Zinc	1.0	0.5
pH of the effluent maintained between 6.0 to 9.5, inclusive, at all times		

**Table 36. Effluent Monitoring**

<b>Table 2 - Effluent Monitoring</b>		
(Samples of the effluent to be collected at the outlet of the treatment pond when discharge occurs)		
<b>Parameters</b>	<b>Sample Type</b>	<b>Minimum Frequency</b>
Total Suspended Solids	Grab	Thrice per Week
Total Dissolved Solids	Grab	Weekly
Dissolved Organic Carbon	Grab	Weekly
Dissolved Inorganic Carbon	Grab	Weekly
Total Ammonia Nitrogen (Ammonia + Ammonium)	Grab	Weekly
Nitrate Nitrogen	Grab	Weekly
Total Phosphorus	Grab	Weekly
Sulphate	Grab	Weekly
Sulphide	Grab	Weekly
Chloride	Grab	Weekly
Hardness	Grab	Weekly
Alkalinity	Grab	Weekly
Calcium	Grab	Weekly
Magnesium	Grab	Weekly
Sodium	Grab	Weekly
Potassium	Grab	Weekly
Arsenic	Grab	Weekly
ICP metal scan <sup>1</sup>	Grab	Weekly
Acute Lethality to Rainbow Trout	Grab	Monthly
Acute Lethality to <i>Daphnia magna</i>	Grab	Monthly
pH	Grab/Probe	Weekly
Temperature	Grab/Probe	Weekly

<sup>1</sup> ICP metal scan includes Cd, Co, Cr, Cu, Pb, Fe, Mn, Mo, Ni, Zn, Ba, Be, Ag, Sr, Ti, and V.



**Table 37. Receiver Monitoring**

<b>Table 3 - Receiver Monitoring</b> (Samples to be collected at: SP1. Upstream of the discharge point at the tributary of Forks River (494516 Easting 5348100 Northing); SP2. Downstream of discharge point at head of Forks River (497620 Easting 5349594 Northing); and SP3. Tributary mixing zone (497285 Easting 5349788 Northing))			
Parameters	Sample Type	Minimum Frequency During Effluent Discharge	Minimum Frequency During No Effluent Discharge
Total Suspended Solids	Grab	Twice per month	May, July and October
Total Dissolved Solids	Grab	Twice per month	May, July and October
Dissolved Organic Carbon <sup>1</sup>	Grab	Twice per month	May, July and October
Dissolved Inorganic Carbon <sup>1</sup>	Grab	Twice per month	May, July and October
Total Ammonia Nitrogen (Ammonia + Ammonium)	Grab	Twice per month	May, July and October
Nitrate Nitrogen <sup>1</sup>	Grab	Twice per month	May, July and October
Total Phosphorus <sup>1</sup>	Grab	Twice per month	May, July and October
Sulphate <sup>1</sup>	Grab	Twice per month	May, July and October
Sulphide <sup>1</sup>	Grab	Twice per month	May, July and October
Chloride <sup>1</sup>	Grab	Twice per month	May, July and October
Hardness <sup>1</sup>	Grab	Twice per month	May, July and October
Alkalinity <sup>1</sup>	Grab	Twice per month	May, July and October
Sodium <sup>1</sup>	Grab	Twice per month	May, July and October
Potassium <sup>1</sup>	Grab	Twice per month	May, July and October
Calcium <sup>1</sup>	Grab	Twice per month	May, July and October
Magnesium <sup>1</sup>	Grab	Twice per month	May, July and October
Arsenic	Grab	Twice per month	May, July and October
ICP metal scan <sup>2</sup>	Grab	Twice per month	May, July and October
pH	Grab	Twice per month	May, July and October
Temperature	Grab	Twice per month	May, July and October

<sup>1</sup> Only at sampling point SP3.

<sup>2</sup> ICP metal scan includes Cd, Co, Cr, Cu, Pb, Fe, Mn, Mo, Ni, Zn, Ba, Be, Ag, Sr, Ti, and V.

The average daily flow rate of discharge from the treatment pond is 414 m<sup>3</sup>/day. An amendment to this permit is intended to allow a daily flow rate of 1000 m<sup>3</sup>/day to accommodate an open pit and underground operation.

- b) Permit to Take Water Number 478-777K66 granted December 19, 2007 to dewater and use water. Refer to Table 38.

**Table 38. Permit to Take Water**

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Underground Mine	Mine	Other - Dewatering	Dewatering	350	24	504,000	275	17 497932 5351039
2	Underground Mine	Mine	Other - Dewatering	Dewatering	700	24	1,000,000	90	17 497932 5351039
3	Forks River	River	Other - Industrial	Industrial	208	24	300,000	365	17 497489 5349621
4	Settling Pond	Pond Dugout	Other - Industrial	Industrial	208	24	300,000	365	17 497157 5350635
						Total Taking:	1,815,000		

This Permit grants the taking of water at a rate of 700 litres per minute or 1,000,000 litres per day from the McWatters underground mine for 90 days during the spring freshet, each year. During the remaining 275 days, the Permit holder shall take no more than 350 litres per minute or 504,000 litres per day. Notwithstanding the limits in the table, this Permit limits the taking of water from Forks River to up to 10 percent of the instantaneous stream flow present on the day(s) of taking. At no time shall the withdrawal rate exceed 10 percent of available stream flow at the water taking location. Permitted taking rates may therefore have to be adjusted downward to remain within this 10 percent maximum.

An application to amend this permit is in progress to allow for typical maximum of 1,000 m<sup>3</sup>/day with an extraneous maximum of 2,050m<sup>3</sup>/day to accommodate both the underground and open pit operations.

- c) Certificate of Approval for Air Number 0160-76AKWN issued October 9, 2007 for the operation of the site with respect to fugitive emissions from the mine portal that discharges the return air in the mine handling ore and waste; a surface ore storage pile; a surface waste rock pile; and haul road. In addition, the permit approve the use of a propane fired mine heater having a maximum heat input of 15,360,000 kilojoules per hour used to heat intake fresh air, exhausting into the atmosphere; propane fired heating equipment having a total maximum heat input of 1,688,000 kilojoules per hour exhausting into the atmosphere; maintenance welding exhausting into the atmosphere; one (1) standby diesel generator set having a rating of 1100 kilowatts, to provide power during emergency situations, exhausting into the atmosphere; and fuel storage tanks used to refuel on site vehicles, exhausting into the atmosphere.

The Company shall develop in consultation with the District Manager and acceptable to the Director, a Best Management Practices Plan for the control of fugitive dust emissions. This Best Management Practices Plan shall include, but not be limited to:

- (i) Identification of the main sources of fugitive dust emissions such as: on-site traffic; paved roads/areas; unpaved roads/areas; material stock piles; loading/unloading areas and loading/unloading techniques; material spills; material conveyance systems; exposed openings in process and storage buildings; and general work areas;
- (ii) Potential causes for high dust emissions and opacity resulting from these sources;
- (iii) Preventative and control measures in place or under development to minimize the likelihood of high dust emissions and opacity from the sources of fugitive dust emissions identified above. Details of the preventative and control measures shall include: a description of the control equipment to be installed; a description of the preventative procedures to be implemented; and/or the frequency of occurrence of periodic preventative activities, including material application rates, as applicable;
- (iv) Procedures to measure fugitive dust emissions;
- (v) An implementation schedule for the Best Management Practices Plan, including training of facility personnel;
- (vi) Inspection and maintenance procedures and monitoring initiatives to ensure effective implementation of the preventative and control measures; and
- (vii) A list of all Ministry comments received, if any, on the development of the Best Management Practices Plan, and a description of how each Ministry comment was addressed in the Best Management Practices Plan.

## **17.10.6 Environmental Monitoring**

Liberty has developed and implemented environmental monitoring programs to address its regulatory obligations under the Ontario Environmental Protection Act for the project and the Metal Mining Effluent Regulations (“MMER”) of the Fisheries Act.

Twice monthly monitoring of receiving water quality upstream of the discharge point at the tributary of Forks River, downstream of the discharge point at the head of Forks River and the tributary mixing zone are the expected frequency and monitoring locations. Periodic (typically once every three years) sampling of sediment chemistry (metals, TOC, moisture content) and of benthic invertebrates at these locations is also required. The use of the Biotic Ligand Model to estimate the toxic values of copper in the lower receiver by the comparison of these results to the analytical results obtained pursuant to the twice monthly monitoring is to be submitted monthly. Effluent monitoring is conducted as per MMER regulations at maximum specified frequency for the duration of mine life (i.e., pH, TSS, and deleterious substances weekly; acute toxicity monthly; chronic toxicity twice yearly; effluent characterization four times per year).

Waste water is pumped from the underground and open pit workings (in future) to the water treatment plant. In conjunction with settlement and treatment ponds, the water is treated to below regulatory limits and discharged into an unnamed tributary that flows south into the Forks River. Monitoring is done at the treatment ponds and discharge weir.

Domestic sewage generated from the mine dry and underground is directed to a septic system on site located north of the mine dry. The dry is equipped with a potable water system fed from a well. It is equipped with softening, sulphur and UV systems. Domestic water is monitored for E. coli and coliform bacteria.

Fugitive emissions from the haul road and rock piles are monitored and treated with water as necessary to control dust.

To date, there have been no values exceeding any MISA/MMER threshold at the McWatters site. There were some values above the amount of water allowed to be dewatered from the underground mine during the spring and summer of 2009 due to a very rainy season and the encounter of a fault structure while extending the ramp. An application for an amended Permit to Take Water and an amended Certificate of Approval for Industrial Sewage Works are in progress which have a higher maximum dewatering and discharge limits to allow for atypical situations.

#### **17.10.7 Redstone Nickel Concentrator and Tailings Ponds**

The Redstone mill can process up to 2,000 tonnes per day of altered komatiite nickel bearing ore. Tailings are pumped from the mill to the tailings basin.

The ore from McWatters mine is milled at the Redstone mill. As such, the tailings produced are kept at the Redstone tailings pond. A 12m diameter (40 foot) deep cone paste thickener in the mill is capable of producing a paste consisting of 60% solids for discharge into the tailings basin to minimize the amount of water to be contained.

Fresh water is pumped from the Redstone River to the Redstone underground mine and to the mill. The underground utilizes the water for drilling, washing of stopes and general cleaning. The mill uses the water for general purposes within the crushing and grinding circuits. Recycled water is pumped into the mill process via the recycle pond.

The water is utilized for process water requirements (e.g. chemical mixing, ball mill feed, pump glands etc.) thus minimizing the use of river water.

#### **17.10.8 Closure Plan**

The McWatters closure plan is designed so that the impact to the site is minimal upon closure of the open pit and underground mine. The portal area will be backfilled with rock to grade; the liners for settling and treatment ponds will be removed and placed underground before backfilling the portal; the berms for the ponds will be leveled to grade; the site will be cleared of all

buildings and trailers; the roads will be scarified and hydro-seeded; the waste rock and overburden piles for the pit will be hydro-seeded. Power poles and lines will be removed. The end result at site will be that of an attractive small lake within a naturally vegetated area.

The estimated cost of the mine closure is \$334,616 for the site and underground mine, plus an additional \$85,000 for the open pit amendment. Financial assurance for \$334,616 was submitted by Liberty Mines Inc. to the Ministry of Northern Development and Mines in September 2007 with a letter of credit; upon submission of an amendment to the existing Closure Plan, Liberty will issue an additional letter of credit for the financial assurance for the open pit part of the project.

Certifications were made by the Chief Executive Office and the Chief Financial Officer of the company that:

- The attached closure plan complies in all respects with Mine Development and Closure under Part VII of the Mining Act and Ontario Regulation 240/00, including the Mine Rehabilitation Code of Ontario as set out in Schedule 1 of Ontario Regulation 240/00;
- Cost estimates of the rehabilitation work described in the attached closure plan are based on the market value cost of the goods and services required by the work; and,
- 
- The amount of financial assurance provided for in the attached closure plan is adequate and sufficient to cover the cost of the rehabilitation work required in order to comply with Ontario Regulation 240/00, including the Mine Rehabilitation Code of Ontario as set out in Schedule 1 of Ontario Regulation 240/00.

## **17.11 Life of Mine Plan**

### **17.11.1 Concentrator Feed Schedule**

The concentrator feed schedule was developed at 1,500 tonnes per day at Liberty's request. This differs from the average mine production rate of 1,800 tonne per day. The excess McWatters mine production will be stockpiled in an area set aside for this purpose in front of the Redstone concentrator. The stockpile is expected to reach a maximum size of approximately 40,000 tonnes.

The concentrator feed schedule for McWatters ore is shown in Table 39.

Product Code	Tonnes	2009				2010				2011				
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1001 Cut 1	19,711			19,711										
1001 Cut 2	45,293			33,689										
1001 Cut 3	43,633				11,604									
1001 Cut 4	44,789				43,633									
1001 Cut 5	45,202				44,789									
1001 Cut 6	22,448				1,824									
1001 Cut 7	15,357													
1001 Cut 8	8,945													
1001 SLC 1 HW	128,691													
1001 SLC 2 FW	17,268													
1001 SLC 1 HW	82,565		6,750											
1001 SLC 2	81,073		2,175	1,275										
1001 SLC 3 FW	4,598													
1001 SLC 1 HW	34,709													
1001 SLC 2	52,301													
1001 SLC 3 FW	36,263													
1001 BH 1	11,382		1,875	9,525										
1001 SLC 1 HW	23,081													
1001 SLC 2	33,872													
1001 SLC 3 FW	29,678													
1001 LH 1	10,152	2,250	7,900											
1001 1 CF Cut 2	8,892													
1001 1 CF Cut 1	6,132			6,150										
1001 2 CF Cut 4	5,263													
1001 2 CF Cut 3	4,536													
1001 2 CF Cut 2	9,705													
1001 2 CF Cut 1E	10,923													
1001 2 CF Cut 1W	10,925			825										
1001 3 CF Cut 2	1,320			2,625										
1001 3 CF Cut 1	1,061													
1001 2 CF Cut 3E	6,118		6,150											
1001 2 CF Cut 3W	6,118		6,150											
1001 2 CF Cut 2E	2,578	2,625												
1001 2 CF Cut 2W	4,994	3,825	1,200											
1001 2 CF Cut 1	2,094	2,100												
Tonnes Milled	871,900	10,800	32,200	93,300	138,000	135,000	133,500	136,500	138,000	135,000	133,500	136,500	138,000	54,600

## 17.11.2 Operating Costs

### Operating Cost Summary

The total operating costs estimated for the McWatters project are shown in Table 40. Total costs are shown by mining method.

**Table 40. Estimated Total Operating Costs**

<b>Function</b>	<b>Operating Cost \$/tonne</b>
Pit Waste	\$4.56
Pit Ore	\$4.56
SLC/BH	\$35.00
CF	\$45.00
Concentrator	\$16.19
Site Administration	\$3.25
Haulage to Concentrator	\$1.61
<b>Total Pit</b>	<b>\$25.61</b>
<b>Total SLC/BH</b>	<b>\$56.50</b>
<b>Total CF</b>	<b>\$66.50</b>

Open pit costs are per tonne of rock mined (ore plus waste), underground mining costs are per tonne mined, surface ore haulage is per tonne mined, concentrator and G & A are per tonne processed.

SRK considers that the operating cost estimates and technical economic results presented for the McWatters Project meet or exceed pre-feasibility level accuracy and are therefore suitable to support a production decision and an estimate of Mineral Reserves. The historical McWatters mine and Redstone mill operating achievements have been incorporated into the estimates presented wherever possible.

### Mine Operating Cost

Mine operating costs were estimated based on first principles since there is no production cost history at McWatters to use as a basis of estimate. Labour unit rates were provided by Liberty. Equipment operating costs were based on industry cost guide publications. The open pit operating cost includes a contractor's quote for drilling and blasting.

Key unit costs for the McWatters project are shown in Table 41 below.

**Table 41. Key Unit Costs used in LoM Estimate**

<b>Key Consumables Pricing</b>	<b>Unit</b>	<b>Price</b>
Fuel	liter	\$ 1.00
ANFO	25 kg	\$19.00
Handibulk 2002	100 kg	\$ 140.00
110 MPA concrete	m <sup>3</sup>	\$ 183.50
Electricity	KWh	\$ 0.067
Propane	liter	\$ 1.00
<b>Key Labour Rates (all incl'd)</b>		
Chief Geologist/Engineer		\$148,500
Chief Electrician/Mechanic		\$155,000
Surface Miner		\$70,000
Underground Miner		\$83,000
Equipment Operator		\$70,000
Mechanic/Electrician		\$70,000
Laborer		\$40,500

### Process Operating Cost

The process plant operating cost estimate is shown in Table 42.

**Table 42. Redstone Plant Operating Cost Estimate**

<b>Throughput (TPD)</b>	<b>1500</b>
Labour	\$3.89
Consumables	\$6.38
Electrical Maint.	\$0.47
Mechanical Maint.	\$0.37
Heating	\$0.30
Loader Operations	\$0.11
Power Consumption	\$3.90
Contingency (5%)	\$0.77
<b>Total Cost/Tonne</b>	<b>\$16.19</b>



### General and Administration Operating Cost

The general and administration cost estimate for a year at full production is shown in Table 43. The estimate, prepared by Liberty and reviewed by SRK, is based on actual and projected costs. Average site G&A cost per tonne attributed to McWatters is estimated at \$3.25 per tonne milled. The LoM average G&A unit cost is higher due to periods of lower production during ramp up.

**Table 43. General and Administration Cost Estimate**

<b>G&amp;A Cost Item</b>	<b>Cost/Year</b>
Labor	3,886,650
Supplies	93,000
Equip costs	463,000
Buildings	150,000
Environmental monitoring & permits	230,000
Water treatment	153,000
Communications	70,000
Travel & bussing	25,000
Professional associations & certification	8,500
Recruiting & medicals	7,000
Specialized software/hardware	55,000
Accounting & legal services	160,000
Insurance	260,000
<b>Total</b>	<b>5,561,150</b>

### Surface Ore Haulage Operating Cost

Haulage costs for transporting the McWatters mine ore production to the concentrator at Redstone vary according to the origin of the ore. The estimate includes two scenarios. Scenario one envisions the underground ore which has been placed on the ground outside the underground portal being picked up by a wheel loader and loaded into one of three 33 tonne surface trucks for hauling the 9km one way distance to Redstone. The cost for this underground ore process has been calculated as \$2.52 per tonne for surface haulage.

The second scenario involves ore coming from the open pit. Open pit ore is already loaded into one of the three 40 tonne surface trucks. This ore already bears a cost of \$4.56 per tonne for open pit mining and haulage out of the pit. The haulage cost to move this open pit ore to the mill is calculated as \$1.61 per tonne since the ore does not have to be reloaded into a surface haulage truck.

The average cost for ore haulage from McWatters to the Redstone mill is \$2.26 per tonne.

## 17.11.3 Capital Costs

### Mine Capital Cost Requirements

Up to the time when activities resumed at the McWatters mine site in August 2009, Liberty reports that the capital costs shown in Table 44 had already been spent for the McWatters project.

**Table 44. McWatters Sunk Capital Costs**

<b>McWatters Sunk Capital Costs</b>	<b>\$ 000's</b>
Road	\$1,700
Settling & Treatment Ponds/Treatment Facility	\$3,950
Portal	\$600
Shop, Compressor Building Site, Development	\$550
Closure Bond	\$350
Ramp Development to 100m level	\$3,300
<b>Total Capital Costs prior to August 2009</b>	<b>\$10,450</b>

The McWatters mine has a compliment of mobile mine equipment that will meet all its mining needs. Therefore, no capital expenditures regarding mobile mine equipment purchases are necessary for the life of mine (LoM).

Table 45 shows the cost of capital development at McWatters mine including an additional closure provision cost.

**Table 45. Mine Capital Cost Requirements**

		2009		2010		2011		Total	
		Meters	\$M	Meters	\$M	Meters	\$M	Meters	\$M
<b>U/G Development:</b>	<b>\$/meter</b>	<b>meters</b>		<b>meters</b>		<b>meters</b>		<b>meters</b>	
Lateral	\$1,500	572	\$0.858	131	\$0.197			703	\$1.055
Raise	\$5,000	70	\$0.350					70	\$0.350
Raise Manway	\$1,890	70	\$0.132					70	\$0.132
U/G Construction			\$0.060						\$0.060
<b>Pit:</b>	<b>\$/tonne</b>	<b>tonnes</b>		<b>tonnes</b>		<b>tonnes</b>		<b>tonnes</b>	
Overburden	\$1.63	237,554	\$0.388	371,580	\$0.607			609,134	\$0.996
Sump Construction					\$0.079				\$0.079
Excavator Lease			\$0.011		\$0.061				\$0.072
Impact Hammer					\$0.217				\$0.217
Closure:							\$0.070		\$0.070
Contingency	15%		\$0.270		\$0.174		\$0.011		\$0.455
<b>Total</b>			<b>\$2.070</b>		<b>\$1.335</b>		<b>\$0.070</b>		<b>\$3.485</b>

## 17.11.4 LOM Plan Economic Results

A life of mine pre-tax cash flow model was developed for the McWatters mine.

The average mine production rate is 1,800 tonnes per day while the concentrator feed rate is 1,500 tonnes per day resulting in two production schedules inputted into the model. The mine costs are calculated against the mine production schedule while the concentrator and site administration costs are calculated against the concentrator feed schedule.

The following assumptions were used in the analysis:

Ni Price	\$7.00 US
Exchange Rate	\$1.00 Cdn = \$0.90 US
Discount Rate	8%

The results of the LoM analysis are shown in Table 46 and Table 47.

**Table 46. McWatters Economic Model Results – page 1**

	2009	2010	2011	Total
	\$M	\$M	\$M	\$M
McWatters Revenue	\$1.70	\$39.96	\$43.51	\$85.16
Xstrata Processing Cost	(\$0.40)	(\$9.45)	(\$10.29)	(\$20.13)
Prospector's Royalty	(\$0.14)	(\$1.46)	(\$1.35)	(\$2.95)
NSR	\$1.15	\$29.06	\$31.87	\$62.08
Operating Costs	(\$0.92)	(\$21.07)	(\$23.46)	(\$45.46)
Operating Margin	\$0.23	\$7.99	\$8.41	\$16.63
Capital	(\$1.61)	(\$1.73)	(\$0.10)	(\$3.44)
Pre Tax Cash Flow	(\$1.38)	\$6.26	\$8.31	\$13.19
* NPV @ 8%	\$10.69			
Payback Years	1.22			
C1	\$5.40	\$5.27	\$5.35	\$5.31
C1 + Capital	\$12.37	\$5.58	\$5.37	\$5.61

*\* NPV calculation shown includes the full 2009 year. Considering only two weeks remains in 2009 recalculation without 2009 yields a project NPV of \$11.540 million*

**Table 47. McWatters Economic Model Results - page 2**

		2009	2010	2011	Total
Ore/Waste Mined	Tonnes	10,800	720,128	371,200	1,102,128
Ore/Waste Mined	tonnes/day	245	1,989	1,759	
Ore Milled	Tonnes	10,800	398,500	462,600	871,900
Ore Milled	tonnes/day	245	1,100	1,500	
Revenue	Cdn \$/t ore milled	\$156.97	\$100.27	\$94.05	\$97.68
Xstrata Processing Costs	Cdn \$/t ore milled	(\$37.11)	(\$23.71)	(\$22.24)	(\$23.09)
Prospector's Royalty	Cdn \$/t ore milled	(\$13.05)	(\$3.66)	(\$2.92)	(\$3.38)
NSR	Cdn \$/t ore milled	\$106.81	\$72.91	\$68.90	\$71.20
Operating Costs	Cdn \$/t ore mined/milled	(\$85.60)	(\$52.87)	(\$50.72)	(\$52.13)
Operating Margin	Cdn \$/t ore mined/milled	\$21.21	\$20.04	\$18.18	\$19.07
Capital	Cdn \$/t ore mined	(\$149.11)	(\$4.33)	(\$0.21)	(\$3.94)
Total Margin	Cdn \$/t ore mined/milled	(\$127.90)	\$15.71	\$17.97	\$15.13

## **Taxes**

SRK does not provide expert advice on taxation matters.

The results of tax calculations are based on the information provided by Liberty and documentation publicly available.

The McWatters Project is subject to income and/or revenue taxes as follows;

- Ontario mining tax: 10%;
- Ontario income tax: 10%;
- Ontario capital tax: 0%;
- Federal capital tax: 0%;
- Federal income tax: 15%.

No municipal taxes or other levies were considered in the current scope. Liberty has an impairment charge of about \$30 million written off from 2008. As a result, Liberty anticipates that they will not be paying tax on the pre-tax cashflow at McWatters.

The impairment charge is published in Liberty's financial statements posted on Sedar and/or is accessible from [www.libertymines.com](http://www.libertymines.com), corporate financials archive.

At the time of printing, the amount of income tax payable for the duration of the McWatters project is anticipated to be zero.

## **Markets**

Liberty ships its nickel in concentrate exclusively to Xstrata Nickel's smelter in Sudbury, Ontario.

### **17.11.5 Sensitivity Analyses**

This section presents the results of sensitivity analyses performed on changes to the following financial inputs:

- Ni Price;
- Cdn/US Exchange Rate;
- Ni Grade;
- Production Tonnes;
- Operating Costs;
- Capital Costs.

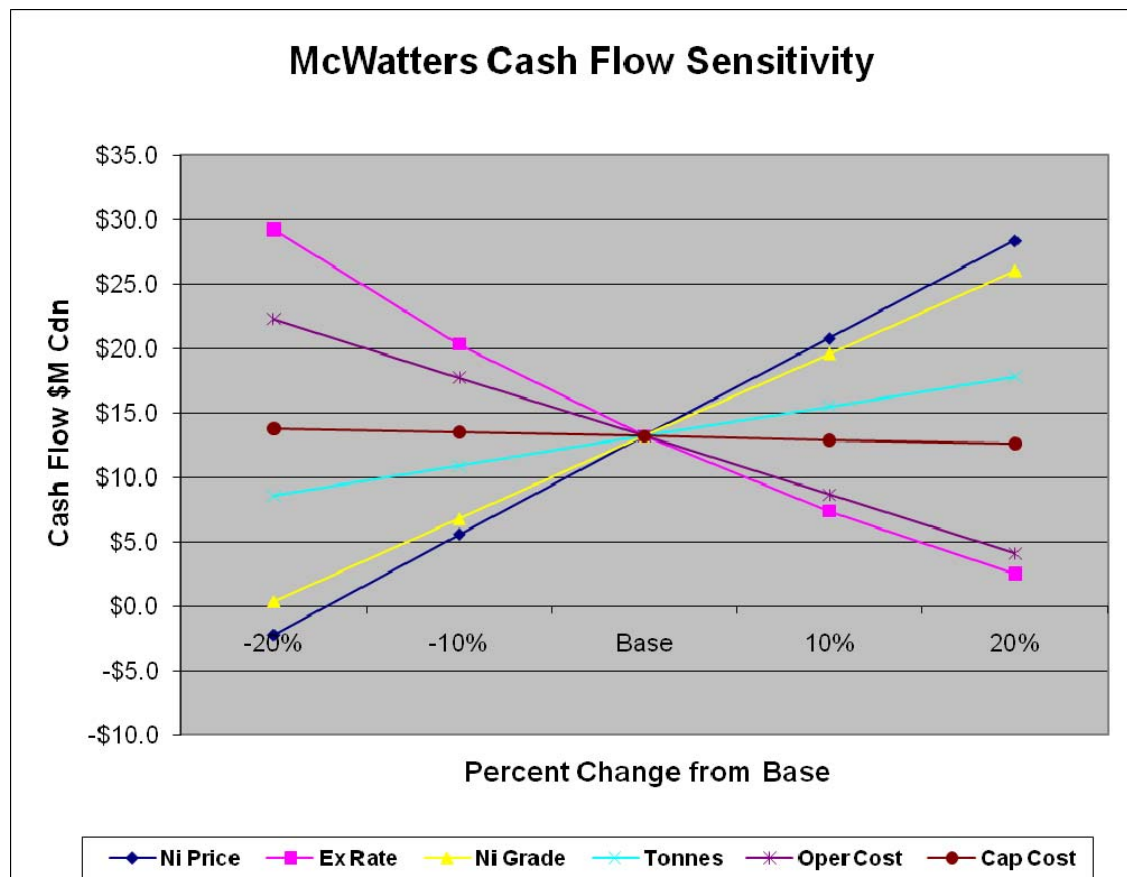
Figure 43 and Figure 44 show the cash flow and NPV sensitivity results for the LOM. The base reflects the LOM with a cash flow of \$13.2M Cdn and NPV at 8% of \$10.7M Cdn. SRK notes that the NPV of \$10.7M includes the effect of consideration of a full 2009 year. Considering only two weeks remains in 2009 recalculation without 2009 yields a project NPV of \$11.54 million.

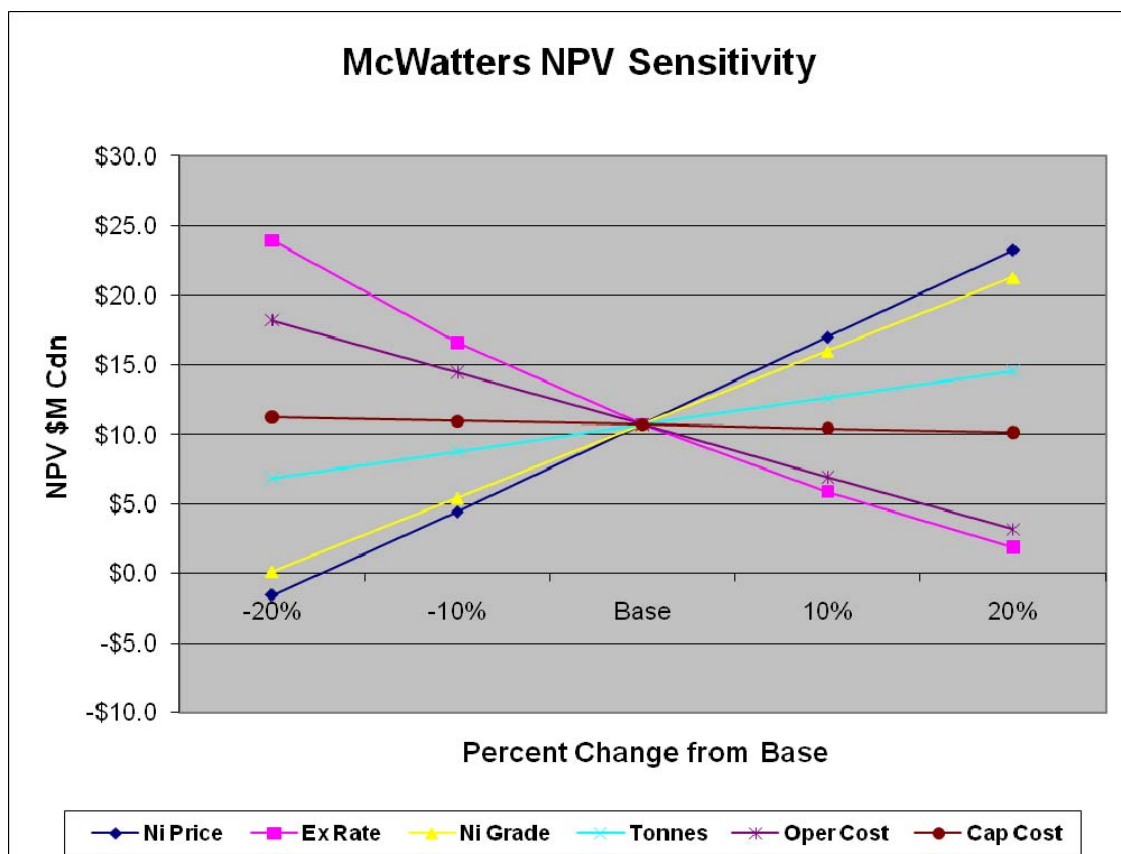
The impact on both cash flow and NPV is greatest in the following order:

- Cdn/US exchange rate;
- Ni Price;
- Ni Grade;
- Operating Cost;
- Production Tonnes;
- Capital Cost.

Figure 46 shows the impact of the Ni price (US\$) in \$0.50 increments on the LOM cash flow and NPV. The break even Ni price for the McWatters project is \$5.80

**Figure 43. Cash Flow Sensitivity**





**Figure 44. McWatters NPV Sensitivity.**

**Note:** NPV base calculation of \$10.7M as shown in Figure 45 includes the full 2009 year. Considering only two weeks remains in 2009 recalculation without 2009 yields a project NPV of \$11.540 million.

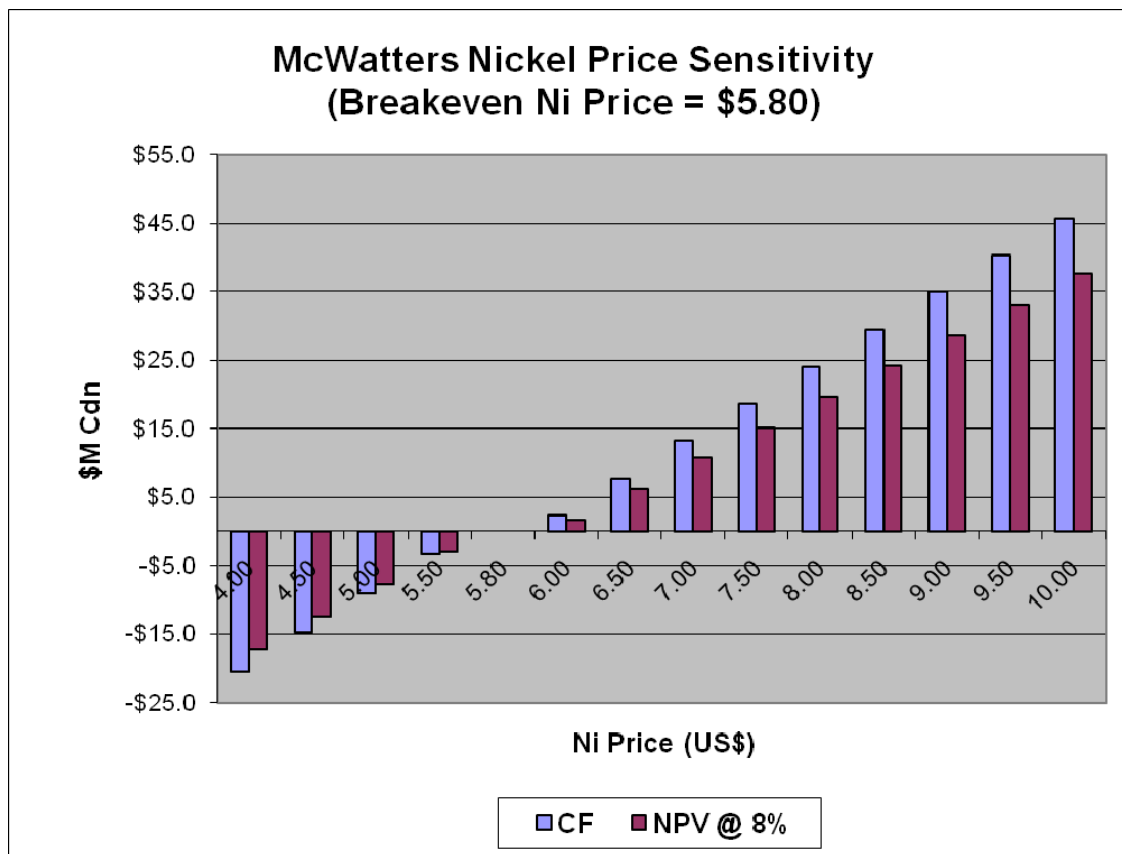


Figure 46. McWatters Nickel Price Sensitivity

## **17.12 Project Risks and Opportunities**

### **17.12.1 Project Risks**

#### **Project Economics**

Experience over the past decade confirms that the metal markets are subject to wide fluctuations in metal demands and prices which result in ensuing fluctuations in labour, equipment and consumable costs. A sure mitigation against these risks is continuously review opportunities to maintain or decrease McWatters breakeven price per pound of \$5.80. Liberty's greatest sensitivity is to changes in the Canadian and US exchange rates from a base of \$Cdn 0.90 = \$US 1.00. Locking in one or two year terms for fuel, energy and contracting needs would alleviate some of this risk since it is unlikely that energy or contracting costs have much downside potential.

#### **Open Pit Mining**

Open pit mining risks are related to controlling water inflow and handling of the overburden layer that contains silty clay. Difficulties experienced could result in an ore production delay.

#### **Underground Mining**

With the sublevel caving method, production delays and/or ore loss could be caused by sublevel brow failure or "bridging" in the blasted material. Brow failure could result from areas of weak ground or adverse structures, making hole loading difficult. Bridging can occur and remain undetected when the toe end of the blast holes remain unbroken.

There is also a risk that the sublevel cave dilution could be greater than estimated.

### **17.12.2 Opportunities**

#### **Exploration Potential**

The ultramafic body that hosts the McWatters nickel mineralized zone continues at depth and trends east-west over several kilometers. There is potential for extensions to the deposit and for further discoveries.

#### **Underground Mining**

The sublevel caving method has a degree of flexibility and selectivity. It can respond to changes in the outline of the deposit identified by information gained during mine development. If low grade zones are encountered, they can be left behind by mucking only the swell and by altering the blasting parameters to create coarser fragmentation less likely to be pulled on subsequent sublevels.

#### **Nickel Price**

Over the past five years nickel prices have fluctuated between \$3 and \$23 dollars per pound. Economic forces that drove these fluctuations can largely be attributed to rapid growth in China. With growth expectations in that country expected to meet or exceed 8% this year and in 2010 as well as



cancelation of most large capital projects for nickel operators it would be reasonable to assume that the study price of \$7.00 is reasonable and perhaps even conservative.

### **Pit vs Sub Level Cave interface optimisation**

Recent SRK preliminary optimisation models have identified an opportunity to improve cash flow through redressing the interface between the open pit and sub level cave mining areas.

Conceptual level calculations indicate a potential for decreasing waste stripping and overburden removal. Various models show cost savings in the range of two to four million pre-tax capital dollars. The authors are confident in these findings and strongly recommend mining and geotechnical engineering be allocated to complete optimisation.

## 18 Other Relevant Information

All data and information considered relevant to this project has been included in this report.

## 19 Conclusions

### Geology and Mineralization

- The McWatters mineralized zone can be readily subdivided in two distinct zones: an upper zone of altered dunitic rocks containing disseminated sulphides, and a basal, lower zone consisting of massive sulphides;
- The two zones combined form a nickel mineralized body approximately 150 meters in strike length by 30 meters to 40 meters in width extending down to a depth of approximately 160 meters;
- The body dips steeply to the south at an average dip of approximately 82 degrees.

### Mineral Resources

- SRK is of the opinion that the exploration data acquired by Liberty is sufficiently reliable to interpret with confidence the boundaries of the nickel mineralization and to support evaluation and classification of mineral resources in accordance with generally accepted CIM “Estimation of Mineral Resource and Mineral Reserve Best Practices”.
- The block model used in this study was based on drilling conducted by Liberty Mineral Exploration Inc. and Liberty Mines amounting to a total of 20,641 meters of diamond drill core;
- For the McWatters project, SRK estimates total Indicated Mineral Resources (open pit plus underground) at 792.5 kt at an average grade of 0.81% Ni;
- The characteristics of the McWatters deposit are of sufficient merit to justify advancing the project to the economic feasibility stage.

### Mining

- An open stoping method without backfill, employing non-recoverable rib pillars is not expected to remain stable due to the “fair” ore strength and multiple fault structures;
- Similarly, designing a crown pillar above open stopes would create a significant risk of instability;
- SRK concludes that open pit mining should be used to recover the near surface disseminated mineralization, thus avoiding a crown pillar;
- SRK concludes that sublevel caving should be the method applied to the underground disseminated mineralization;
- Cut and fill mining is best suited to the massive mineralization;
- Based on the 2009 hydrogeology study, mine water inflow is expected to average 1,000m<sup>3</sup> per day;
- Underground ramp access with diesel truck haulage is suitable for this shallow deposit;
- SRK estimates a mine life of 2 years with an average ore mining production rate of 1,800tpd. 28% of the production will come from open pit and 72% from underground;
- No underground primary crushing is required, as ore will be trucked to the process plant.

### **Mineral Processing**

- Liberty's existing Redstone nickel concentrator, located 9km west of the McWatters project will efficiently handle the McWatters ore, as demonstrated by previous processing results;
- Planned metallurgical recovery of nickel ranges from 85% to 90% for McWatters ore, based on historical milling results;
- Based on actual mill results, the McWatters ore will produce a saleable nickel concentrate with a grade of approximately 15% nickel;
- The existing, permitted tailings management facility adjacent to the Redstone mill has sufficient capacity for tailings generated by McWatters feed.

### **Environmental**

- Mine dewatering effects are not expected to adversely impact any other water users, surface water features, or sensitive areas;
- Liberty has prepared a Spill Prevention and Contingency Plan to help prevent or reduce the risk of spills of pollutants and prevent, eliminate or ameliorate any adverse effects that may result;
- Liberty has an Emergency Response Plan ("ERP") to identify potential worst-case emergency situations and responses, to outline the responsibilities of employees during these possible emergencies and to ensure that all requirements of applicable laws are met;
- Four main rock types at the McWatters site were sampled and subjected to analysis of total sulphur, paste pH, and Acid Base Accounting ("ABA"). Testing revealed that the rock types to be extracted during mining show pH values that are non-acid generating, both from ABA and Shake Flask tests. Neutralizing Potential Ratio ("NPR") values and sulphide-S percentages also show that, on aggregate, these rocks are unlikely to be acid generating;
- Liberty has obtained the necessary permits to be able to conduct mining operations at the McWatters project site;
- Liberty has developed and implemented environmental monitoring programs to address its regulatory obligations under the Ontario Environmental Protection Act for the project and the Metal Mining Effluent Regulations ("MMER") of the Fisheries Act;
- Liberty has prepared a closure plan in compliance with Mine Development and Closure under Part VII of the Mining Act and Ontario Regulation 240/00, including the Mine Rehabilitation Code of Ontario as set out in Schedule 1 of Ontario Regulation 240/00;
- The McWatters closure plan is being amended to include the planned open pit.

### **Mineral Reserves**

- SRK estimates McWatters Probable Mineral Reserves at 872,000 tonnes with an average grade of 0.70% Ni. A nickel price of US\$15,430 per tonne (US\$7.00 per pound) and an exchange rate of \$1.00 Cdn = \$0.90 US was used in the estimation;
- Total Probable Mineral Reserves are comprised of open pit at 245,000 tonnes at 0.33% Ni and underground at 627,000 tonnes at 0.84% Ni;

- The in-situ mineral resources included into the mineral reserve estimate are based on cut-off grades of 0.25% Ni for the open pit, 0.54% Ni for sublevel cave, and 0.63% Ni for cut and fill mining methods;

### **Project Economics**

- The open pit and the underground mine assessed individually and together in the combined production schedule are economically viable at the study nickel price of US\$7.00 per pound;
- LoM net revenue based on plant feed of 872kt at 0.70% Ni is estimated at \$62 million;
- Open pit mine unit operating costs are estimated at \$4.56 per tonne mined;
- Underground mine unit operating costs are estimated at \$35 per tonne mined for sublevel cave and \$45 per tonne mined for cut and fill;
- The estimated unit cost for processing at 1,500tpd is \$16.19;
- The LoM average general and administration operating cost is estimated at \$3.25 per tonne milled;
- The average surface ore haulage cost to the Redstone mill is estimated at \$2.26 per tonne;
- LoM operating costs are estimated at \$45 million;
- Total project capital requirements are estimated at \$3.5 million;
- Undiscounted pre-tax LoM cash flow is estimated at \$13.2 million;
- The estimated project NPV (Including year 2009) at a 8% discount rate is \$10.7 million. Considering only 2 weeks remain in 2009 a recalculation excluding 2009 yields an NPV of \$11.54 Million;
- The project IRR is estimated at 460% excluding sunk costs.

### **Project Risks and Opportunities**

Opportunities exist below the defined reserve that should be explored to potentially increase mine life and capital utilization beyond 2011.

The economic viability of the project is contingent upon the realization of metal prices forecasts, exchange rate predictions, and the success of mine operators in meeting production targets. The latter can be achieved through stringent project scheduling and cost control measures managed by the owner's team.

Uncertainty in the exchange rate between Canada and the United States currencies is the largest economic risk faced by McWatters Project. Current project economics set the exchange rate as \$1.00 Cdn = \$0.90 US. The \$US smelter contract is the specific instrument that ties this project to the exchange rate and potentially returns a variable revenue based on the fluctuation in the dollar. As Canada's fortunes are historically linked to the United States expectations are reasonable that fluctuations in the dollar would be gradual and moderate. In the unlikely event that the Canadian dollar rose over \$1.10 the project would experience a significant negative impact.

The planned open pit presents a risk for operation over the spring thaw period. If that thaw occurs rapidly or an extensive amount of precipitation compounds the inflows during the thaw period then the project may be delayed for a period of days. Opportunity exists to prepare in advance by reserving standby pumping capacity from local vendors as spring 2010 approaches.

Opportunity to decrease capital costs exists by completing detailed optimisation of the Open Pit and Sub level cave interface.

## 20 Recommendations

### Geology and Exploration

- The ultramafic body that hosts the McWatters nickel mineralized zone continues at depth and trends east-west over several kilometres. Future in-mine exploration should drill test the depth extension of the nickel mineralization from drill bays on the lower levels of the mine; (Drilling Program - \$300,000)
- The mineralized zones are bisected by intrusive material and by significant structures, these should be mapped during production and modeled to proactively assess their impact on mining; (Structural Modeling - \$20,000)
- Assess structural controls on mineralization once underground exposures are available; (Included above)
- SRK recommends that sampling, mapping be conducted to support a future update to the massive sulphide zones which are currently defined on wider spaced drill data. (Resource Modeling - \$20,000)

### Geotechnical and Hydrogeology

- The October 2008 report, “Ground Support Guidelines for Drifts at McWatters Mine” by Mirarco, Laurentian University includes a recommended ground control implementation plan, and detailed ground support recommendations for drifts; (Geotech Audit - \$15,000)
- As additional rock exposures become available in the open pit and underground, SRK recommends further geotechnical mapping and rock mass characterization work to extend the identified geotechnical domains and to identify potentially unstable wedges formed by adverse joint/joint, and fault/joint combinations; (Included in Technical Services Operating Costs)
- As these types of structures are identified, further stope stability and wedge analyses should be completed to check for potential instabilities; (Soil/Geotech Consultant - \$20,000)
- SRK recommends that once the sublevel caving is initiated after open pit completion, a survey monitoring program should be set up to track the progress of the crater and to measure any movements along the pit perimeter; (Mining Consultant - \$20,000)
- As the discharge of the water taking is to be to a treatment works, an amendment to Industrial Sewage Works Certificate of Approval (“C of A”) No. 0613-78CHG8, dated 7 November 2007, will be required. This C of A is to be amended to allow for the higher water flow rate requirements. (Consultant - \$12,000)

### Mining

- The mine plans presented in this report are not for construction, and detailed engineering is required before implementation at the McWatters

site. SRK recommends the preparation of optimized open pit bench plans and underground driving layouts incorporating all relevant detailed site information with sign off by Liberty's technical and operations staff; (Included in Technical Services Operating Costs)

- A grade control program should be implemented including monthly reconciliations, and careful tracking of surface stockpile balances; (Included in Technical Services Operating Costs)
- A draw control monitoring program should be established to track tonnes and grades blasted and mucked from each draw point. (Mining Consultant - \$15,000)
- Engineering should complete optimisation studies of the open pit and sub level cave interface. It is suggested that capital costs can potentially be reduced in the range of \$2 to \$4 million dollars by the elimination of some waste and overburden stripping. (Consultant - \$50,000)

## 21 References

- Amax Minerals 1980, 1978. Report on an Aeromagnetic Survey, South Timmins Area. Assessment Report.
- Amec Earth and Environmental, October 2009. Hydrogeological Study McWatters Mine Project, Cochrane District, Ontario.
- Amec Earth and Environmental, July 2006. Hydrogeological Study Liberty Mines Inc. McWatters Mine Project, Langmuir Township.
- Ayer, J.A., Amelin, Y., Corfu, F., Ketchum, J., Kwok, K., and Trowell, N.F., 2002. Evolution of the southern Abitibi greenstone belt based on U-Pb geochronology: autochthonous volcanic construction followed by plutonism, regional deformation and sedimentation. *Precambrian Research*, v. 115, p 63-95.
- Ayer, J.A., Trowell, N.F., Madon, Z., Kamo, S., Kwok, Y.Y., and Amelin, Y., 1999. Compilation of the Abitibi greenstone belt in the Timmins-Kirkland Lake area: revisions to stratigraphy and new geochronology results; *in* Summary of Field Work and Other Activities 1999, Ontario Geological Survey, Open File Report 6000, p.4-1 to 4-14.
- Britton, J.W., 1966. Report on Magnetic and Electromagnetic Surveys, Eldorado 3-64 Claim Group, Mining Corporation (1964) Limited, 10p.
- Canadian Nickel Company Ltd. Assessment Report T-3124, MNDM office Timmins Ontario.
- Cantri Mines Limited. Assessment Report T-1258, MNDM office Timmins Ontario.
- Coad, P.R., 1977. Nickel Sulphide Deposits Associated with Ultramafic Rocks of the Abitibi Belt and Economic Potential of Mafic-Ultramafic Intrusions; Ontario Geological Survey, OFR 5232, 105 p.

- Corfu, F., Krogh, T.E., Kwok, Y.Y., Jensen, L.S., 1989. U-Pb zircon geochronology in the southwestern Abitibi greenstone belt, Superior Province. *Can. J. Earth Sci.* 26, 1747–1763.
- Eckstrand, O. R., 1996. Nickel-copper sulphide, in *Geology of Canadian mineral Deposit Types*. Geological Survey of Canada. *Geology of Canada*. No. 8. p. 584-605.
- Energy, Mines and Resources Canada, 1986. Canadian Mineral Deposits not being Mined In 1986. *Mineral Bulletin MR 213*.
- Galata, E. Assessment Report T-1387, MNDM office, Timmins, Ontario.
- Green, A. 1978 The Langmuir Nickel Deposit, Timmins, Ontario; Unpublished Ph.D.Thesis, University of Toronto, Ontario.
- Green, A., and Naldrett, A.J. 1981. The Langmuir Volcanic Peridotite-Associated Nickel Deposits: Canadian Equivalents to the Western Australian Occurrences. *Economic Geology*, Vol. 76, pp. 1503-1523.
- Hall, L.A.F., and Houle, M.G. *Geology and Mineral Potential of Shaw, Eldorado and Adams Townships, Shaw Dome Area: in Summary of Field Work and Other Activities 2003*, Ontario Geological Survey, Open File Report 6120, p6-1 to 6-14.
- Harding, W.D., and Berry, L.G., 1939. *Geology of the Keefer-Eldorado area*, Ontario Department of Mines, v. 47, pt. 4., p. 1-26.
- Henning, J.G., 2007. Crown Pillar Evaluation, McWatters Zone. 8p.
- Houle, M.G., and Guilmette, C., 2005. Precambrian Geology of Carman and Langmuir Townships. Ontario Geological Survey, P3268.
- Houle, M.G., Hall, L.A.F, and Tremblar, E., 2004. Precambrian Geology of Eldorado and Adams Townships. Ontario Geological Survey, P3542.
- Jackson, S.L., and Fyon, A.J., 1991. The western Abitibi subprovince in Ontario; in *Geology of Ontario*, edited by P.C. Thurston, H.R. Williams, R.H. Sutcliffe and G.M. Stott, Ontario Geological Survey, Special Volume 4, p. 405-482.
- Jackson, S.L., Fyon J.A., The Western Abitibi Subprovince in Ontario; in *Geology of Ontario*, Ontario Geological Survey, Special Volume 4 Part 1.
- Keast, Todd, P.Geo., Technical Report on the McWatters Property for Liberty Mineral Exploration Inc., Porcupine, Ontario N.T.S. 42A/SW, March 8, 2002
- Kilburn, L.C., 1961. Report on Eldorado Township Claims, Flaconbridge Nickel Mines Limited, AFRI# 42A06SE1820.
- Leahy, E.J., 1971. *Geology of the Night Hawk Lake Area Distric of Cochrane*. Ontario Department of Mines Geological Report 96.
- McWatters Gold Mines, Assessment Report T-652, MNDM office Timmins Ontario.
- Mespi Mines, 1964. Report on the Conduct of an Airborne Geophysical Survey In the District of Cochrane. Assessment Report T-964.



Mirarco – Mining Innovation, David F. Wood Consulting Ltd., October, 2008.  
Ground Support Guidelines for Drifts at McWatters Mine

Muir, T.L., 1979. Discrimination between extrusive and intrusive Archean ultramafic rocks in the Shaw Dome area using selected major and trace elements. Canadian Journal of Earth Sciences, v. 16, p.80-90.

National Explorations Ltd. Assessment Report T-1194, MNDM office Timmins Ontario.

Ontario Geological Survey, 1988. Airborne electromagnetic and total intensity magnetic Survey, Timmins Area, Langmuir Township O.G.S. Map 81089.

Outokumpu Mines Ltd. Assessment Report T-3657, MNDM office Timmins Ontario.

Pamour Porcupine Mines Ltd. Assessment Report T-1673 MNDM office Timmins Ontario.

Pyke, D.R., 1970. Geology of the Langmuir and Blackstock Townships Ontario Department of Mines Geological Report 86, 64p.

Pyke, D.R., 1975. Geology of Adams and Eldorado Townships, Timmiskaming District. Ontario Geological Survey, M2253.

Pyke, D.R., 1978. Geology of the Redstone River Area, Districts of Timiskaming Ontario Geological Survey. GR 161, 75p.

Pyke, D.R., 1982. Geology of the Timmins Area, District of Cochrane. Ontario Geological Survey, GR 219, 141p.

Roscoe Postle Associates, 2005. Technical Report of the McWatters Nickel Deposit, Timmins, ON; prepared for Liberty by Nathan E. Fier & David A. Ross.

Seaway Copper Mines Limited. Assessment Report MNDM office Timmins, Ontario.

Silverplace Mines Limited. Assessment Report T-1364, MNDM office Timmins Ontario.

Sproule R. Leshner C.M. Ayer J.A. and Thurston P.C. Komatiite Petrogenesis and Geodynamic Regimes in the Abitibi Greenstone Belt, Superior Province Canada.

Sproule, R.A., Leshner, C.M., Ayer, J., Thurston, P.C., and Herzberg, C.T., 2002. Spatial and Temporal Variations in the Geochemistry of Komatiitic Rocks in the Abitibi Greenstone Belt. Precambrian Research, v. 115, p. 153-186.

Sproule, R.A., Leshner, C.M., Ayer, J.A. and Thurston, P.C., 2003. Geochemistry and metallogenesis of komatiitic rocks in the Abitibi greenstone belt, Ontario. Ontario Geological Survey, Open File Report 6073, 119p.

SRK Consulting (Canada) Inc. July 2009. McWatters Crown Pillar Evaluation.

- SRK Consulting (Canada) Inc. December 2008. Interim Technical Report for the McWatters Nickel Project, Ontario, Canada.
- Stone, M.S., and Stone, W.E., 2000. A crustally contaminated komatiitic dyke-sill-lava complex, Abitibi greenstone belt, Ontario. *Precambrian Research*, v. 102, p. 21-46.
- Stone, W.E., Heydari, M., and Seat, Z., 2004. Nickel tenor variations between Archean komatiite-associated nickel sulphide deposits, Kambalda ore field, Western Australia: the metamorphic modified model revisited. *Mineralogy and Petrology*, 82, p. 295-316.
- The International Nickel Co. of Canada Ltd. Assessment Report T-50. MNDM office Timmins Ontario.
- Timmins Nickel Assessment Report T-3547, MNDM office Timmins Ontario.
- Urban Quebec Mines Limited, Assessment Report T-1016, MNDM office Timmins Ontario.

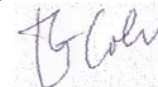
### **CERTIFICATE AND CONSENT**

**To accompany the report entitled: Technical Report McWatters Nickel Project, Ontario, Canada. Dated December 18, 2008.**

I, Glen Cole, residing at 15 Langmaid Court, Whitby, Ontario do hereby certify that:

- 1) I am a Principal Resource Geologist with the firm of SRK Consulting (Canada) Inc. (SRK) with an office at Suite 1000, 25 Adelaide Street East, Toronto, Ontario, Canada;
- 2) I am a graduate of the University of Cape Town in South Africa with a B.Sc (Hons) in Geology in 1983; I obtained an M.Sc (Geology) from the University of Johannesburg in South Africa in 1995 and an M.Eng in Mineral Economics from the University of the Witwatersrand in South Africa in 1999. I have practiced my profession continuously since 1986. I am an expert in geostatistical techniques and geological and resource modelling. Since 2006, I have estimated and audited mineral resources for a variety of early and advanced base and precious metals projects in Africa, Canada, Chile and Mexico. Between 1989 and 2005 I have worked for Goldfields Ltd at several underground and open pit mining operations in Africa and held positions of Mineral Resources Manager, Chief Mine Geologist and Chief Evaluation Geologist, with the responsibility for estimation of mineral resources and mineral reserves for development projects and operating mines. Between 1986 and 1989 I worked as a staff geologist on various Anglo American mines;
- 3) I am a Professional Geoscientist registered with the Association of Professional Geoscientists of the province of Ontario (APGO#1416) and am also registered as a Professional Natural Scientist with the South African Council for Scientific Professions (Reg#400070/02);
- 4) I have personally inspected the McWatters Project and surrounding areas on January 14, 2008;
- 5) I have read the definition of “qualified person” set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
- 6) I, as a qualified person, am independent of the issuer as defined in Section 1.4 of National Instrument 43-101;
- 7) SRK Consulting (Canada) Inc. was retained by Liberty Mines Inc. to prepare a technical report for the McWatters nickel project in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM “Best practices” and Canadian Securities Administrators National Instrument 43-101 guidelines;
- 8) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Redstone Project or securities of Liberty Mines Inc.;
- 9) That, as of the date of this certificate, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading; and
- 10) I consent to the filing of the technical report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the technical report.

Toronto, Canada  
December 18, 2008



Glen Cole, P.Geo  
Principal Resource Geologist

### **CERTIFICATE AND CONSENT**

**To accompany the report entitled: Technical Report for the McWatters Nickel Project,  
Ontario, Canada. Dated December 18, 2009.**

I, Andrew MacKenzie, residing at 11 Joliette Place, Keswick, Ontario do hereby certify that:

- 1) I am a Principal Mining Engineer with the firm of SRK Consulting (Canada) Inc. (SRK) with an office at Suite 2100, 25 Adelaide Street East, Toronto, Ontario, Canada;
- 2) I am a graduate of Queen's University in Kingston, ON with a B.Sc. in Mining Engineering, 1994. I have practiced my profession continuously since 1994. I am an expert in underground mine planning. From 1994 to 1999 I worked at INCO Sudbury's underground mines holding positions in mine engineering and mine operations, including positions of Mine Planner, Divisional Engineer and Project Manager. From 1999 to 2003 I was principal consultant for Paste Systems Inc. And MacKenzie Consultancy based in Sudbury, Ontario. From 2003 to 2009 I was the Manager of Engineering for Dynatec Corporation. As such I was responsible for cost estimates, feasibilities and engineering projects for dozens of mine contracting efforts throughout North America. As a Principal Mining Engineer with SRK I have completed a variety of projects involving scoping studies, feasibility studies, due diligence reviews and independent reporting;
- 3) I am a Professional Engineer registered with the Association of Professional Engineers of the province of Ontario (#90470477);
- 4) I have visited the McWatters Mine site and the Redstone Mill site in August and September 2009;
- 5) I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
- 6) I, as a qualified person, am independent of the issuer as defined in Section 1.4 of National Instrument 43-101;
- 7) I am the principal author of this technical report and accept professional responsibility for assembly of all sections of this technical report;
- 8) SRK Consulting (Canada) Inc. was retained by Liberty Mines Inc. to prepare a technical report for the McWatters nickel project in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM "Best practices" and Canadian Securities Administrators National Instrument 43-101 guidelines;
- 9) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the McWatters Project or securities of Liberty Mines Inc.;
- 10) That, as of the date of this certificate, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading; and
- 11) I consent to the filing of the technical report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the technical report.

Toronto, Canada  
December 18, 2009

Andrew MacKenzie, P.Eng  
Principal Mining Engineer


### **CERTIFICATE AND CONSENT**

**To accompany the report entitled: Technical Report for the Redstone Nickel Mine,  
Ontario, Canada. Dated December 18, 2009.**

I, Carlo Cattarello, residing at 424 Amwell St, Haileybury, Ontario, Canada do hereby certify that:

- 1) I am a registered Professional Engineer in Ontario since 1967 with my present office at 424 Amwell St., Haileybury, Ontario, Canada;
- 2) I am a graduate of Michigan Technological University in Houghton, Michigan, with a BSc. in Metallurgical Engineering in 1961. From 1961 to 1983 I held senior Metallurgical positions (Mill Superintendent) with major Canadian mining companies. From 1983-2003, I was a Professor of milling and metallurgy at Haileybury School of Mines. From 2003 to the present, I have done consulting work for numerous mining companies and formed Cattarello Metallurgical Consultants Inc. in 2007 to formalize my consulting career and have continued to do work in Canada and Mexico;
- 3) I am a Metallurgical Engineer registered with the Professional Engineers of Ontario (#1922);
- 4) I have personally inspected the Redstone Mill on October 30, 2009;
- 5) I have read the definition of “qualified person” set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
- 6) I, as a qualified person, am independent of the issuer as defined in Section 1.4 of National Instrument 43-101;
- 7) I have reviewed Section 15: Mineral Processing, Mineralogy and Metallurgical Testing and accept professional responsibility for this section of the technical report;
- 8) I was retained by Liberty Mines Inc. to review the metallurgical data contained in a technical report for the Redstone mine in accordance with National Instrument 43-101 and Form 43-101F1 guidelines;
- 9) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the Redstone Project or securities of Liberty Mines Inc.;
- 10) That, as of the date of this certificate, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading; and
- 11) I consent to the filing of the technical report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the technical report.

Haileybury, Canada  
November 3, 2009

  
Carlo Cattarello, P.Eng  
Consulting Metallurgist


**CERTIFICATE**

**To accompany the report entitled: Technical Report for the McWatters Nickel Project,  
Ontario, Canada. Dated December 18, 2009.**

I, Philip Bridson, residing at 25 Herman Mayer Drive, Lively, Ontario do hereby certify that:

- 1) I am a Senior Mining Engineer with the firm of SRK Consulting (Canada) Inc. (SRK) with an office at 1A Serpentine Street, Copper Cliff, Ontario, Canada;
- 2) I am a graduate of Michigan Technological University in Houghton, Michigan with a B.Sc. in Mining Engineering, 1972 and a B.Sc. in Engineering Administration 1972. I have practiced my profession continuously since 1972. I am an expert in underground long range and short range mine planning and scheduling, financial evaluations, Life of Mine development and analysis, project evaluations and strategic planning. From 1972 to 2008 I worked at Canadian and US underground mines holding positions as a miner, Blasthole Engineer, First Line Supervisor, Design Engineer, Sr. Development Engineer, Sr. Project Engineer, Sr. Long Range Planning Engineer, Sr. Planning Supervisor and Sr. Business Planner. Since 2009 I have worked as a consultant mining engineer with SRK Consulting (Canada) Inc, based in Sudbury. As a Mining Engineer I have completed a variety of projects for mining companies involving scoping studies, pre-feasibility studies, feasibility studies, project evaluations, and Life of Mines for projects in Canada, US and Australia. As a Qualified Person I have been directly involved in producing annual NI 43-101 mineral reserve statements and reports for Hudson Bay Mining & Smelting, Noranda Brunswick Mine, Falconbridge and Xstrata since 1990 to 2008;
- 3) I am a Professional Engineer registered with the Association of Professional Engineers of the province of Ontario (#5181011);
- 4) I have visited the McWatters Mine site and the Redstone Mill site in June 2009;
- 5) I have read the definition of “qualified person” set out in National Instrument 43-101 and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of National Instrument 43-101 and this technical report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1;
- 6) I, as a qualified person, am independent of the issuer as defined in Section 1.4 of National Instrument 43-101;
- 7) I am responsible for the preparation of Sections 16 and 17 of this technical report;
- 8) SRK Consulting (Canada) Inc. was retained by Liberty Mines Inc. to prepare a technical report for the McWatters nickel project in accordance with National Instrument 43-101 and Form 43-101F1 guidelines. This assignment was completed using CIM “Best practices” and Canadian Securities Administrators National Instrument 43-101 guidelines;
- 9) I have not received, nor do I expect to receive, any interest, directly or indirectly, in the McWatters Project or securities of Liberty Mines Inc.;
- 10) That, as of the date of this certificate, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading; and
- 11) I consent to the filing of the technical report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the technical report.

Sudbury, Canada  
December 18, 2009

  
Philip Bridson, P. Eng  
Consulting Sr. Mining Engineer

## **CERTIFICATE OF QUALIFIED PERSON**

### **EUGENE J. PURITCH, P.ENG.**

I, Eugene J. Puritch, P. Eng., residing at 44 Turtlecreek Blvd., Brampton, Ontario, L6W 3X7, do hereby certify that:

1. I am an independent mining consultant and President of P & E Mining Consultants Inc.
2. This certificate applies to the technical report entitled "Technical Report, McWatters Nickel Project, Ontario, Canada" (the "Technical Report") and dated December 18, 2009.
3. I am a graduate of The Haileybury School of Mines, with a Technologist Diploma in Mining, as well as obtaining an additional year of undergraduate education in Mine Engineering at Queen's University. In addition I have also met the Professional Engineers of Ontario Academic Requirement Committee's Examination requirement for Bachelor's Degree in Engineering Equivalency. I am a mining consultant currently licensed by the Professional Engineers of Ontario (License No. 100014010) and registered with the Ontario Association of Certified Engineering Technicians and Technologists as a Senior Engineering Technologist. I am also a member of the National and Toronto Canadian Institute of Mining and Metallurgy.

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 fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

I have practiced my profession continuously since 1978. My summarized career experience is as follows:

- Mining Technologist - H.B.M. & S. and Inco Ltd., 1978-1980
  - Open Pit Mine Engineer – Cassiar Asbestos/Brinco Ltd., 1981-1983
  - Pit Engineer/Drill & Blast Supervisor – Detour Lake Mine, 1984-1986
  - Self-Employed Mining Consultant – Timmins Area, 1987-1988
  - Mine Designer/Resource Estimator – Dynatec/CMD/Bharti, 1989-1995
  - Self-Employed Mining Consultant/Resource-Reserve Estimator, 1995-2004
  - President – P & E Mining Consultants Inc, 2004-Present
4. I have not visited the McWatters Property.
  5. I am responsible for co-authoring Sections 17.3.2 and 17.4.8 of the Technical Report.
  6. I am independent of the issuer applying the test in Section 1.4 of NI 43-101.
  7. I have had no prior involvement with the McWatters Project that is the subject of this Technical Report.
  8. I have read NI 43-101 and Form 43-101F1 and this Technical Report has been prepared in compliance therewith.
  9. As of the date of this certificate, 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.

Signed Date: December 18, 2009



Eugene J. Puritch, P. Eng. – President  
P&E Mining Consultants Inc.

## CERTIFICATE

I, Bruce Murphy, FSAIMM, do hereby certify that:

1. I am currently employed as a Principal Consultant – Mining Rock Mechanics by:  
SRK Consulting (Canada) Inc.  
Suite 2200 – 1066 West Hastings Street  
Vancouver, BC V6E 3X2  
Canada
2. This certificate applies to the technical report entitled “Technical Report for the McWatters Nickel Project, Ontario, Canada. Dated December 18, 2009.
3. I am a graduate of University of the Witwatersrand, Johannesburg, South Africa with a M.Sc. degree in Mining Engineering. I have practiced my profession continuously since graduation working in the rock engineering field on operating mines till 2002 and then in the consulting field.
4. I am a Fellow of the South African Institute of Mining and Metallurgy (FSAIMM) in good standing.
5. I have not received, nor do I expect to receive, any interest, directly or indirectly, in the subject property or securities of Liberty Mines Inc.
6. 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 am a “qualified person” for the purposes of NI 43-101.
7. I visited the McWatters Mine site from June 23 to 25th, 2009.
8. I am responsible for the development of the hard rock slope design angles that have been used for the layout of the open pit used in this technical report. These slope design angles were reported in the following: Technical Memorandum entitled “McWatters Pit Slope Recommendations” (26 August, 2009) presenting the limited kinematic assessment and rock mass assumptions for a proposed McWatters open pit. A final update Technical Memorandum was submitted by SRK entitled “McWatters Slope Design Review – December 13, 2009 Rev 2 Pit” (December 14, 2009). This memorandum presented the final slope design recommendations for use in the final revision of the McWatters open pit, and should be read in conjunction with the August 2009 memorandum.
9. I am independent of the issuer, Liberty Mines Inc., as described in section 1.4 of NI 43-101.
10. The only previous involvement I have had with the McWatters Nickel Project was the development of a Mining Plan Report for the Redstone property of Liberty Mines Inc.
11. I have read NI 43-101, including Form 43-101F1, and this technical report has been prepared in compliance with that Instrument.
12. As of the date of this certificate, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make this technical report not misleading.
13. I consent to the filing of this technical report with any stock exchange or other regulatory authority, and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of this technical report.

Dated this 18st day of December, 2009.



Bruce Murphy, FSAIMM  
SRK Consulting (Canada) Inc.



Project number: 3CL008.006

Toronto, December 18, 2009

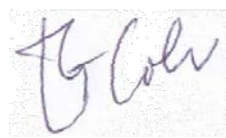
To:

Securities Regulatory Authorities  
B. C. Securities Commission (BCSC)  
Alberta Securities Commission (ASC)  
Ontario Securities Commission (OSC)  
L' Autorité des marchés financiers (AMF)  
Toronto Stock Exchange (TSX)

### **CONSENT of AUTHOR**

I, Glen Cole, do hereby consent to the public filing of the technical report entitled “Technical Report for the McWatters Nickel Project, Ontario, Canada” (the “Technical Report”) dated December 18, 2009 and any extracts from or a summary of the Technical Report under the National Instrument 43-101 disclosure of Liberty Mines Inc. and to the filing of the Technical Report with any securities regulatory authorities.

Dated this 18th day of December 2009.



Glen Cole, P. Geo  
Principal Mining Engineer

Project number: 3CL008.006

Toronto, December 18, 2009

To:  
Securities Regulatory Authorities  
B. C. Securities Commission (BCSC)  
Alberta Securities Commission (ASC)  
Ontario Securities Commission (OSC)  
L’Autorité des marchés financiers (AMF)  
Toronto Stock Exchange (TSX)

### **CONSENT of AUTHOR**

I, Andrew MacKenzie, do hereby consent to the public filing of the technical report entitled “Technical Report for the McWatters Nickel Project, Ontario, Canada” (the “Technical Report”) dated December 18, 2009 and any extracts from or a summary of the Technical Report under the National Instrument 43-101 disclosure of Liberty Mines Inc. and to the filing of the Technical Report with any securities regulatory authorities.

Dated this 18th day of December 2009.



Andrew MacKenzie, P. Eng  
Principal Mining Engineer