



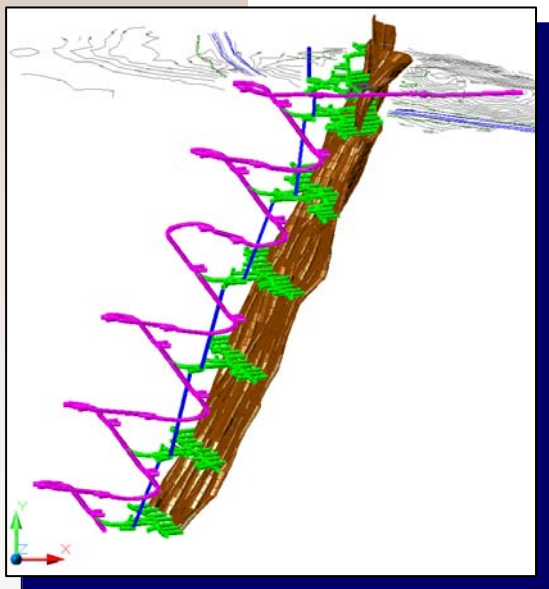
# Liberty Mines Inc

## Preliminary Economic Assessment for the Hart Project, Ontario, Canada



Report Prepared for  
**Liberty Mines Inc**

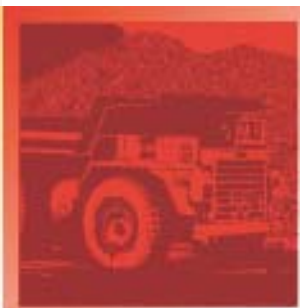
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Project Number 3CL008.007

February 26, 2010

# Preliminary Economic Assessment, Hart Project, Ontario, Canada

## Liberty Mines Inc

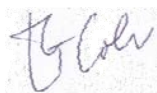
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**February 26, 2010**

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## **Cautionary Statement**

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This Preliminary Assessment is preliminary in nature. It includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary assessment will be realized.

## **Executive Summary**

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### **Introduction**

The assets of Liberty Mines Inc (“Liberty”) include the Hart nickel project (“Hart”). Considerable recent drilling activity has occurred over this property to delineate significant Kambalda-style nickel sulphides mineralization.

Liberty engaged SRK Consulting (Canada) Inc. (“SRK”) in the spring of 2009 to prepare a Preliminary Economic Assessment (Scoping Study) for the Hart nickel project and compile a technical report. This technical report was prepared following the guidelines of the Canadian Securities Administrators National Instrument 43-101 and Form 43-101F1, and in conformity with generally accepted CIM “Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines.”

This current Independent Technical Report describes the status of all aspects of the project and presents the Life-of Mine Plan.

### **Property Description and Agreements**

The Hart project consists of twenty-one contiguous unpatented mining claims held by Liberty Mines Inc. The claims cover approximately 992 hectares, and are in the process of being legally surveyed. The property was acquired from Canadian Arrow Mines (“Canadian Arrow”) by way of an option agreement. Liberty satisfied the option agreement and earned 100 percent ownership on January 18, 2008.

SRK visited the Hart project on January 14, 2008 and again in September 2009.

### **Location, Access and Physiography**

The Hart project is located approximately twenty-six kilometres southeast of the city of Timmins, Ontario. The property is accessed from the city of Timmins by a series of gravel roads. The access roads are used in all seasons, and are winter safe.

The Hart deposit is located in an area that is relatively flat with poor drainage. The topography is generally flat with a few local rock outcrops and ranges in elevation from 290 to 330 metres above sea level. This area of northeast Ontario is characterized by climate typical of northern boreal forest areas, with extended periods of sub-zero temperatures in the winter months from November through to March. Moderate temperatures prevail during the summer months with temperatures in the range of ten to thirty degrees Celsius accompanied by moderate precipitation.

The Hart project surface area is large enough to accommodate all future mining related infrastructures. It is located in close proximity to other Liberty assets including the active Redstone and McWatters Mines.

### **History**

Minor trenching was completed by L.N. Hart on surface iron formation exposures in the period 1960 to 1964. Between 1964 and 1969, Norlex Mines Ltd. completed 1,854 metres of drilling in thirteen holes on the property. Eight of the Norlex drill holes intersected the nickel mineralization. Paramaque Mines Ltd. drilled 1,950 metres of

core in six diamond drill holes in 1968 and 1969 that intersected the nickel mineralization. McWatters Gold Mines Limited acquired the property from Paramaque in 1969 and completed 2,440 metres of drilling in eight holes.

Starfire Minerals Inc (“Starfire”) drilled a total of six very shallow holes in the immediate area of the surface nickel showing in 2002. Canadian Arrow acquired the property in 2004 and drilled five drill holes, totalling 306 metres. Liberty optioned the property in 2006 and subsequently drilled 104 core boreholes (31,277 metres) in 2007 and 2008.

On January 18, 2008 Liberty met all obligations to Canadian Arrow Mines as set out under the option agreement, so that now Liberty owns 100 percent of the Hart property with no subsidiary involved.

## Geology and Mineralization

The Hart nickel 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. To date five nickel-copper platinum group metals deposits have been discovered in the Shaw Dome (including the Hart deposit) and numerous showings have been identified. These five deposits occur in komatiitic rocks found within the Deloro assemblage near the base of the Tisdale assemblage.

Five main rock types have been identified from Hart diamond drill core and surface mapping: footwall intermediate to felsic volcanics, banded iron formation, ultramafic flows, felsic dikes, and mafic dikes. The Hart deposit sulphide zone can be subdivided in three distinct zones: an upper zone of nickel-enriched banded iron formation, a basal lower zone consisting of massive to semi-massive sulphides and an interstitial zone of disseminated sulphides.

The komatiitic rocks, which host the nickel mineralization are serpentinized and locally altered to talc, chlorite and carbonate. The main sulphide zone that comprises the majority of the mineral resource consists of komatiite-hosted massive to semi-massive sulphides lying conformably on dacitic pyroclastic flows. Typical sulphide concentrations range from sixty to eighty percent pyrrhotite and ten to thirty percent pentlandite. Other sulphide minerals include minor pyrite and chalcopyrite.

## Mineral Resource Estimation

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.

The database used for resource estimation includes drilling data collected during three exploration programs conducted during the period 2005 to 2008. The total database comprises 115 boreholes and five surface trenches.

Three 3D wireframes (iron formation, massive sulphide and disseminated sulphide) were constructed from the drilling information and a 0.3 percent nickel threshold to constrain grade estimation. The massive and disseminated sulphide wireframes were sub-divided in to two sub-domains (lower and upper).

Assay intervals in each wireframe were composited to 1.0 metre and extracted for statistical analyses and grade interpolation. After review of probability plots, nickel and copper composites were capped at 4.86 and 0.33 percent, respectively.

Isatis software was used to model traditional experimental variograms from the capped composites for the various mineralization domains for nickel and copper in all three principle directions. A single spherical structure variogram was fitted for each direction coinciding with geological features of the nickel mineralization. A Datamine sub-block routine was used to fill the mineralization wireframes with un-rotated blocks. Parent block size was set at 2.5 by 2.5 by 2.5 metres in the easting, northing and elevation directions respectively. An average specific gravity was assigned to each domain based on 231 pycnometry measurements obtained from the various sulphide mineralization types.

Block grades were estimated using inverse distance squared estimator because it was found to appropriately reflect general grade trends. Block grade estimation was completed in a single pass using the search ellipse ranges defined by variography.

Mineral resources were classified on the basis of variography and the confidence in geological interpretation. An Indicated Mineral Resource classification was assigned to blocks within the primary variography range from sample points. An Inferred Mineral Resource classification was assigned to blocks within twice the primary variography range from informing data.

Mineral resources for the Hart deposit have been estimated according to the “CIM Standards on Mineral Resources and Reserves: Definitions and Guidelines” (December, 2005) by Glen Cole, P. Geo an independent Qualified Person as defined by NI43-101. The Mineral Resources for the Hart nickel deposit are reported at a single cut-off of 0.46 percent nickel, that is considered by Liberty management to be achievable by a future underground mine, considering the nature of the nickel mineralization, its geometry and the projected underground extraction scenario. This cut-off is primarily based on current mining experience at the comparable McWatters and Redstone Mines. The Mineral Resource Statement for the Hart nickel project is presented in Table i.

**Table i: Mineral Resource Statement, Hart Nickel Project Timmins, Ontario, SRK Consulting, January 1, 2010**

<b>Sulphide Zone</b>	<b>Classification</b>	<b>Tonnes (000's)</b>	<b>Nickel (%)</b>	<b>Copper (%)</b>	<b>Contained Nickel (lbs 000's)</b>
<b>IF Zone</b>	Indicated	120	0.70	0.06	1,850
	Inferred	12	0.86	0.07	225
<b>Massive Zone</b>					
Lower	Indicated	999	1.56	0.11	34,352
	Inferred	228	1.40	0.09	7,044
Upper	Indicated	353	1.36	0.09	10,588
	Inferred	59	1.12	0.08	1,466
<b>Disseminated Zone</b>					
Lower	Indicated	60	0.63	0.04	838
	Inferred	22	0.52	0.02	255
Upper	Indicated	14	0.50	0.03	152
	Inferred				
<b>Total</b>	Indicated	1,546	1.40	0.10	47,779
	Inferred	322		0.08	8,990

\* Reported at 0.46% nickel cut-off. All figures have been rounded to reflect the accuracy of the estimate. Mineral Resources are not Mineral reserves and do not have demonstrated economic viability.

## Exploration and Drilling

The relevant exploration drilling information considered for resource estimation was collected during three exploration programs conducted during the period 2005 to 2008. The total database comprises 115 boreholes and five surface trenches.

The drilling database includes eleven core boreholes drilled by Starfire and Canadian Arrow as well as 104 NQ calibre core boreholes drilled by Bradley Bros using industry best practices.

## Sampling Method, Approach and Analyses

Liberty used industry best practices to sample, handle and assay core samples collected on the Hart project. Core samples were collected from half core split mechanically lengthwise. Sampling intervals honour geological boundaries.

Liberty submitted their core samples to the accredited ALS-Chemex laboratory for preparation in Timmins and assaying in the North Vancouver, British Columbia laboratory. Each sample was assayed for nickel and copper by aqua regia digestion and atomic absorption spectrometry and occasionally for gold, platinum and palladium by conventional ICP-AES.

Liberty implemented adequate analytical quality control measures to monitor the reliability of assay results delivered by the primary laboratory. This includes the use of quality control samples and blanks, and check assaying at umpire laboratories.

## Data Verifications

SRK visited the Hart project on January 18, 2008 during active drilling. SRK inspected active and recent drilling sites, and reviewed with Liberty personnel field and drilling procedures. Drill core from five recent boreholes was examined to ascertain the geological setting of the nickel mineralization and to verify logging information.

SRK reviewed the analytical quality control data produced by Liberty and summarized these data on a bias chart to ascertain the reliability of assay data delivered by the primary laboratory.

SRK collected seven core samples replicating the original sampling intervals for independent verification. The verification samples were specifically collected to attest to the existence of nickel and copper mineralization on the Hart property.

In the opinion of SRK, exploration data collected by Liberty generally meet “industry best practices” and are sufficiently reliable for the purpose of resource estimation.

## Mineral Processing and Metallurgical Testing

Liberty operates the Redstone Mill located at the Redstone mine and approximately 6 kilometres by road from the Hart project. This 2,000 tonne per day capacity mill has been specifically built to process nickel sulphide ore with a high MgO content.

The mill uses conventional flotation and a laser induced plasma spectrometer online analyzer to measure the magnesium and nickel contents of the ground ore entering the flotation circuit. During the third and fourth quarter of 2009, the mill achieved an average nickel recovery of ninety five percent with a monthly throughput between

4,000 and 10,000 tonnes. Mill feed head grade varied between 0.8 and 2.2 percent nickel.

## Mine Plan

The Hart Potentially Mineable Tonnage averages 1.29 percent nickel over 1.7 million tonnes that will benefit from a selective low cost mining method. The tabular deposit strikes SSE at an average dip angle of seventy-five degrees to a depth of 570 metres below surface

On surface, the deposit area is characterized by poorly drained overburden ranging from zero to 11 metres thickness.

Open at depth and along strike the known resource has a 220 metre strike length with average thickness of three metres near surface and 11 metres at depth. The deposit averages 3,000 tonnes per vertical metre.

From diamond drill information it appears that the footwall contacts are sharp with massive mineralization against volcanic rock while the hangingwall is gradational with a transition into a low grade disseminated sulphide zone.

This study assumes the rock mass characterization at the nearby Redstone and McWatters Nickel Mines are representative of what may be experienced at Hart. Rock mass quality at the site is therefore assumed to be poor to fair which suggests a non-entry stoping method be employed to recover the resource.

An owner-operated underground mine (with contractor support) is planned with ramp access (4m x 4m). Material handling options weighed the pros and cons of trucks against a monorail system for development and production needs at the mine. The monorail system was selected due to its proven economics and performance characteristics as well as its flexibility to expand if the mine expands. Listed in order of importance are the prime criteria which support the monorail as the recommended material handling method as compared to diesel trucks: smaller development excavations are required; lower operating costs; no additional ventilation; reduced mine air heating requirements, higher reliability, automatable.

After consideration of several mining methods, (including open pit, cut & fill and longhole retreat) Alimak mining was selected as most appropriate.

Alimak raise mining was selected based primarily on economic consideration of methods, the geometry of mineralization, nickel grade and assumed geotechnical characteristics. Alimak raise mining over 100 metre vertical intervals can provide the Hart property with high recovery, minimum dilution, optimum productivity and safety. The planned mining method also employs pastefill in a primary and secondary stoping sequence that is easily expanded if the resource expands.

SRK estimates a mine life of 4.5 years (38 months in production) with an average mining rate of 45,000 tonnes per month.

A 3-D model was constructed to plan the underground mine and estimate life-of-mine development requirements. Expectations are that a total of 8,500 metres of lateral development and 560 metres of raise development will be required over the life of mine.

Hart Mine will be accessed by a 4 x 4m ramp, 4m x 3m levels and 3m x 3m drawpoints. Raises for fresh air are planned at 3m x 3m from surface to the bottom of the designed mine, with exhaust exiting through the main access ramp.



All underground broken rock will be mucked by LHDs and hauled to remuck bays located on the levels. Monorail operators will use smaller LHD's to self load the monorail cars for transport to surface. Upon arrival at surface the monorail cars will be tipped into bins. Highway haulage trucks will then drive under the bins and load with plant feed for delivery to the Redstone mill 6 kilometres away or short haul 200 meters to surface waste storage.

Mine contractors will perform the following functions at Hart; ramp development, Alimak raise development, production drilling and blasting. Liberty crews will be used to develop all working levels (40m L, 90m L, 190m L, 290m L, 390m L, 490m L and 570m L) as well as perform all mine service, rock handling and paste backfilling functions.

SRK prepared an underground production schedule with an average ore production rate of 1,500tpd over a mine life of 38 months. LoM plant feed totals 1,729kt at an average grade of 1.29% Ni.

## Environmental

Liberty intends to conduct environmental studies and obtain the necessary permits to be able to conduct mining operations for Hart. Liberty has initiated the permitting process for Hart.

The Hart project will benefit from the environmental programs and plans already developed by Liberty at its other mining operations that can be amended to address the Hart project. These plans include "Spill Prevention and Emergency Response".

Mine dewatering effects need to be studied but Liberty does not expect to adversely impact any other water users, surface water features, or sensitive areas.

Harts main rock types, assumed to be similar to those at the nearby McWatters Mine, are expected to show that, on aggregate, they are unlikely to be acid generating.

Liberty will need to prepare a closure plan in compliance with Mine Development and Closure under Part VII of the Mining Act and Ontario Regulation 240/00.

## Project Risks and Opportunities

### Risks

The most significant project risk is the economic viability of the Hart project if the nickel price or exchange rate experience significant and prolonged negative variances from the values used in the economic assessment.

The underground geotechnical conditions at Hart have been assumed to be similar to the neighbouring mines operated by Liberty. There is a risk that future geotechnical assessment based on underground development exposures will lead to less favourable estimates of stope dimensioning and external dilution, resulting in a negative impact on project economics.

### Opportunities

SRK believes that there is a strong potential to increase the Inferred Resources at Hart particularly by drilling the depth extensions of the sulphide zones. It is most likely that additional infill drilling will upgrade the current Inferred mineral resources to an Indicated classification.

The project is most sensitive to the nickel price and any increase in the nickel price will have a positive effect on the project cashflow.

## Conclusion and Recommendations

The Hart nickel property shows potentially mineable tonnage which can be extracted using proven mining methods, productivities and costs.

Of the total estimated tonnage, 77% is based on indicated resources and 23% is based on inferred resources.

SRK recommends Liberty move towards preparation of a Prefeasibility Study to confirm and/or optimise the findings within this Scoping Study.

The indicative pre-tax economic results of this scoping study indicate the project, based on the cost and revenue estimates contained in the report, is positive using an 8% discount factor, an exchange rate of \$CAN 1.00 = \$US 0.90 and a US\$7.00/lb nickel value. Also, SRK recommends:

- Increasing the drill density at depths between 450 to 600 metres below surface;
- Undertake structural investigations to improve the quality of the 3D geological model;
- Continue to model the intrusive dikes and also attempt to identify portions of the disseminated sulphide and ironstone hosted zones exhibiting higher nickel grades;
- Update the resource model once the geological model has been updated.
- Continue the permitting process and supporting studies including characterization of ARD potential of rock types, and geochemical characterization of tailings and site discharge water;
- Basic engineering for application of the monorail technology needs to be undertaken;
- A pastefill consultant be tasked to confirm the suitability of creating a quality pastefill for use at Hart and to perform basic engineering, costing and scheduling for a pastefill plant and distribution system;
- Geotechnical investigation and assessment should be conducted to verify planned stoping dimensions and external dilution estimates;

## Table of Contents

<b>Cautionary Statement.....</b>	<b>i</b>
<b>Executive Summary.....</b>	<b>ii</b>
Introduction .....	ii
Property Description and Agreements.....	ii
Location, Access and Physiography.....	ii
History.....	ii
Geology and Mineralization .....	iii
Mineral Resource Estimation.....	iii
Exploration and Drilling.....	v
Sampling Method, Approach and Analyses .....	v
Data Verifications.....	v
Mineral Processing and Metallurgical Testing .....	v
Mine Plan.....	vi
Environmental.....	vii
Project Risks and Opportunities .....	vii
Conclusion and Recommendations.....	viii
<b>Table of Contents .....</b>	<b>ix</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 .....	1
1.2 Scope of work.....	1
1.3 Basis of the work .....	2
1.4 Qualification of SRK .....	2
1.5 Project team .....	3
1.6 Site Visit.....	3
1.7 Acknowledgements .....	4
<b>2 Reliance on other Experts and Declaration .....</b>	<b>5</b>
<b>3 Property Description and Location.....</b>	<b>6</b>
3.1 Introduction.....	6
3.2 Land Tenure .....	6
3.3 Underlying agreements .....	8
<b>4 Accessibility, Climate, Local Resources, Infrastructure and Physiography .....</b>	<b>9</b>
<b>5 History .....</b>	<b>11</b>
<b>6 Geological Setting .....</b>	<b>13</b>
6.1 Introduction.....	13
6.2 Regional Geological setting.....	13
6.3 Property Geology.....	16
<b>7 Deposit Types.....</b>	<b>18</b>
<b>8 Mineralization .....</b>	<b>24</b>
<b>9 Exploration.....</b>	<b>28</b>
9.1 Historical .....	28
9.2 Exploration Work by Liberty.....	28
9.3 Future Exploration Work.....	28
<b>10 Drilling.....</b>	<b>30</b>
10.1 Introduction.....	30
10.2 Drilling by Liberty (post 2005).....	30
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 .....	38
<b>12 Sample Preparation, Analysis and Security .....</b>	<b>40</b>
12.1 Sample Preparation and Analyses .....	40
12.2 Quality Assurance and Quality Control Program .....	41
12.3 Specific gravity database .....	44
<b>13 Data Verifications .....</b>	<b>46</b>
13.1 Introduction .....	46
13.2 Control Sampling Assay Protocols .....	46
13.3 SRK Independent Verifications .....	46
<b>14 Adjacent Properties .....</b>	<b>49</b>
<b>15 Mineral Processing, Mineralogy and Mineral Testing .....</b>	<b>50</b>
<b>16 Mineral Resource and Mineral Reserve Estimates .....</b>	<b>51</b>
16.1 Introduction .....	51
16.2 Database validation .....	51
16.3 Resource Estimation .....	52
16.3.1 Database .....	52
16.4 Solid Body Modelling .....	52
16.5 Compositing .....	54
16.6 Statistics .....	55
16.7 Grade Capping .....	57
16.8 Variography .....	57
16.9 Block Model and Grade Estimation .....	60
16.10 Model Validation .....	60
16.11 Mineral Resource Classification .....	60
16.12 Mineral Resource Statement .....	61
<b>17 Additional Requirements for Technical Reports on Development Properties and Production Properties .....</b>	<b>64</b>
17.1 Mine Development History and Current Status .....	64
17.1.1 Terms of Reference .....	64
17.1.2 Hart Property Current Status .....	64
17.2 Mine Geotechnical .....	64
17.3 Planned Mining Methods and Layout .....	64
17.3.1 Mining Context .....	64
17.3.2 Selected Mining Method .....	65
17.3.3 Alimak Raise Mining Description .....	65
17.3.4 Alimak Raise Mining Methodology .....	66
17.3.5 Plant Feed and Waste Handling .....	69
17.4 Estimate of Potentially Mineable Tonnes .....	72
17.4.1 Methodology .....	72
17.4.2 Net Smelter Return .....	73
17.4.3 Cut Off Grade .....	74
17.4.4 Practical Mining Shapes (Stope Design) .....	76
17.4.5 Estimated External Dilution .....	76
17.4.6 Stope Mining Losses .....	77
17.4.7 Economic Parameters .....	77
17.4.8 Potentially Mineable Tonnage Estimate .....	77
17.4.9 Production Rate .....	80
17.5 Underground Mine Model .....	80
17.5.1 General Description .....	82
17.5.2 Mine Access .....	82
17.5.3 Stopping Access .....	83
17.5.4 Ventilation Raises .....	92
17.5.5 Life of Mine Development Requirements .....	93
17.6 Development and Production Schedule .....	94

17.6.1	Introduction.....	94
17.6.2	Contractor Involvement .....	96
17.7	Manpower, Equipment and Services.....	97
17.7.1	Mine Manpower.....	97
17.7.2	Mining Equipment.....	99
17.7.3	Surface Haulage.....	103
17.7.4	Grade Control .....	104
17.7.5	Backfill .....	105
17.7.6	Dewatering .....	105
17.7.7	Electrical Power Distribution.....	106
17.7.8	Equipment Maintenance.....	106
17.7.9	Materials and Supplies Handling.....	107
17.8	Hart Mine Site Infrastructure.....	107
17.9	Environmental Considerations .....	111
17.9.1	Environmental Studies .....	111
17.9.2	Environmental Liabilities.....	111
17.9.3	Emergency Response Plan.....	114
17.9.4	Acid Rock Drainage.....	115
17.9.5	Environmental Permits .....	115
17.9.6	Environmental Monitoring.....	115
17.9.7	Redstone Nickel Concentrator and Tailings Ponds.....	116
17.9.8	Closure Plan .....	117
17.10	Life of Mine Plan.....	117
17.10.1	Concentrator Feed Schedule .....	117
17.10.2	Operating Costs .....	118
17.10.3	Capital Costs .....	120
17.10.4	LoM Plan Economic Results .....	122
17.10.5	Sensitivity Analyses.....	123
17.11	Project Risks and Opportunities .....	125
17.11.1	Project Risks.....	125
17.11.2	Opportunities .....	126
<b>18</b>	<b>Interpretation and Conclusions .....</b>	<b>128</b>
<b>19</b>	<b>Recommendations .....</b>	<b>132</b>
<b>20</b>	<b>References .....</b>	<b>134</b>
<b>APPENDIX A</b>	<b>.....</b>	<b>137</b>
<b>APPENDIX B</b>	<b>.....</b>	<b>139</b>
<b>APPENDIX C</b>	<b>.....</b>	<b>145</b>

## List of Tables

Table i: Mineral Resource Statement, Hart Nickel Project Timmins, Ontario, SRK Consulting, January 1, 2010 .....	iv
Table 1: Norlex Mines Ltd drill results, Hart Nickel Project .....	11
Table 2: Paramaque Mines Ltd drill results, Hart Nickel Project .....	11
Table 3: Classification of mineralization types in komatiite-associated magmatic Ni-Cu-PGE deposits (from Lesher and Keays, 2002) ..	22
Table 4: Summary of drilling data available for the Hart Project .....	30
Table 5: Statistics of the sampled drilling lengths within modelled mineralized solids at the Hart Project .....	38
Table 6: Summary of specific gravity data available for the Hart project (by sulphide mineralization type) .....	44
Table 7: Comparative analyses for SRK check assay verification .....	47
<b>Table 8: Descriptive Statistics (original, composited and capped) for composited Ni% and Cu% data from the five modelled geostatistical domains .....</b>	<b>56</b>
Table 9: Variography analyses: ranges for nickel and copper for all modelled directions and for all modelled mineralization domains ..	59
Table 10: Parameters of the Hart Block Model constructed by SRK ...	60
Table 11: Mineral Resource Statement*, Hart Nickel Deposit, Timmins, Ontario, SRK Consulting January 1, 2010 .....	62
Table 12: Liberty NSR Terms and Mill Factors .....	74
Table 13: Cut Off Grade Calculations .....	75
Table 14: Dilution .....	76
Table 15: Estimated Site Operating Costs .....	77
Table 16: Hart Potentially Mineable Tonnage – SRK, January 1 <sup>st</sup> , 2010 .....	77
Table 17: Hart Potential Mineable Tonnage Details .....	79
Table 18: Hart Production Schedule .....	80
Table 19: Hart Ventilation Requirements .....	92
Table 20: Capital and Operating Waste Development Metres .....	93
Table 21: LoM Capital Lateral Development (Waste) by Half Year .....	95
Table 22: LoM Operating Lateral Development (mineralized) by Half Year .....	96
Table 23: Operating Raise Development (mineralized) by Half Year ..	96
Table 24: LoM Mine Production Schedule .....	96
Table 25: Hart Project Manpower Requirements (1,500 tpd) .....	98
Table 26: Mobile Equipment Assumptions .....	100
Table 27: Hart Equipment List .....	102
Table 28: Production Drilling Productivity .....	103
Table 29: Annual Paste Backfill Requirement by Level .....	105
Table 30: Reporting Thresholds .....	113
Table 31: Processing Schedule for Hart's Potential Mineable Resource .....	117
Table 32: Estimated Total Operating Costs .....	118
Table 33: Breakdown of Mining Cost per Tonne .....	118
Table 34: Key Unit Costs used in LoM Estimate .....	119
Table 35: Redstone Plant Operating Cost Estimate .....	119
Table 36: Hart General and Administration Cost Estimate .....	120

Table 37: Mine Capital Cost Requirements .....	121
Table 38: Hart Indicative Pre-Tax Economic Model Results–page 1.	122
Table 39: Hart Indicative Pre-Tax Economic Model Results -page 2	122

## List of Figures

Figure 1: Location of the Hart Project in Central Ontario, Canada. ....	6
Figure 2: Hart Project mining claim plan.....	7
Figure 3: Detailed location map of the Hart Project relative to the city of Timmins. ....	8
Figure 4: Hart Project surface vegetation. ....	10
Figure 5: Simplified regional geological setting of the Abitibi Belt.....	15
Figure 6: Location of the Hart Project shown on an extract from Map P2455, produced by the Ontario Geological Survey.....	16
Figure 7: Simplified surface geological map of the Hart Project. ....	17
Figure 8: 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). ....	18
Figure 9: 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). ....	20
Figure 10: Semi-massive sulphide mineralization (primarily pyrrhotite and pentlandite) from drill core (H-07-48).....	25
Figure 11: Microphotograph of Massive Sulphides. Scale 1cm = 120 microns. Illustrates the relative coarseness of the pentlandite in this sample. The large grains at the upper right and bottom centre are pyrrhotite (buff colour) with intergrown pentlandite (creamy yellow with abundant black polishing pits). The smooth surfaced cream-coloured grain at the upper left is pyrite. ....	26
Figure 12. Microphotograph of semi-massive sulphides. Scale 1cm = 120 microns. Shows intimate intergrowths of silicate gangue (acicular black) with pentlandite in pyrrhotite (buff colour). Pentlandite areas (pale yellow, e.g. bottom right, upper centre) in this photo range from 200 to 30 microns. ....	27
Figure 13: Plan position of the Hart Project in relation to other Shaw Dome properties in relation to Liberty's regional claim outline overlain on an aeromagnetic image of the area. ....	29
Figure 14: Extract from a typical drill log layout *H08-99) from the Hart drilling program highlighting drilling details .....	32
Figure 15: Plan map showing drillhole collar locations, grid layout, and claim outlines. ....	34
Figure 16: Idealized section showing drill holes and geology .....	35
Figure 17. An extract from Hart drill log for H-08-99 in DH Logger format.....	37
Figure 18: Histogram of sampled lengths within the modelled mineralized solids .....	39
Figure 19: Plot for the blank control nickel and copper samples used by Liberty .....	42
Figure 20: Plot for the control nickel and copper samples used by Liberty (top=copper, bottom=nickel) .....	43

Figure 21: Scatter plot showing the relationship between specific gravity and nickel grade .....	45
Figure 22: Graph showing comparative Ni% and Cu% assays for SGS (ICP90Q) and ALS Chemex (AA46) .....	48
Figure 23: The recently commissioned Redstone Mill located adjacent to Redstone Mine close to the Hart Project area .....	50
Figure 24: Simplified vertical section (looking east) of the Hart modelled solids (mineralization solids in red).....	53
Figure 25: Oblique view of the modelled mineralization solids at Hart in relation to informing drillhole data (looking northeast) .....	54
Figure 26: Histogram of all sampled intervals within all mineralized solids.....	55
Figure 27: Probability Plots for composited nickel and copper for all data sources within various mineralized zones .....	58
Figure 28: Nickel Grade Tonnage Curve for Hart Indicated (top) and Inferred Resources (bottom).....	63
Figure 29: Alimak Raise Mining Stages 1. Collar raise, 2 Breakthrough and drill, 3 Load and blast.....	67
Figure 30: Vertical Projection Showing Typical Sequence in Primary and Secondary Stopes .....	68
Figure 31: Typical Section in Ramp Showing Monorail Supported From back .....	69
Figure 32: Train Loading Sequence .....	70
Figure 33: Toggle Loadout above COB and Truck Load-In .....	71
Figure 34: Estimation Methodology Flowchart.....	73
Figure 35: 3D View of Resource and Development Plan .....	81
Figure 36: Typical Ramp Cross Section showing Tramming Monorail .....	83
Figure 37: Surface and Mine Portal.....	84
Figure 38: Ramp and 40m Level .....	85
Figure 39: 90m Level Plan.....	86
Figure 40: 190m Level Plan.....	87
Figure 41: 290m Level Plan.....	88
Figure 42: 390m Level Plan.....	89
Figure 43: 490m Level Plan.....	90
Figure 44: 570m Level Plan.....	91
Figure 45: LoM Manpower Levels .....	99
Figure 46: 25t Monorail Productivity on 18% Grade .....	100
Figure 47: 40t Truck Productivity on 15% Grade .....	101
Figure 48: Toggle Loadout above COB and Truck Loadout .....	104
Figure 49: Alternative Train Configuration showing Mancar and Rock Cars .....	107
Figure 50: Hart – Paste Plant and FAR Surface Plan.....	109
Figure 51: Surface Plan - Hart Portal and Supporting Infrastructure .	110
Figure 52: Hart Cash Flow Sensitivity.....	124
Figure 53: Hart Pre-Tax NPV Sensitivity .....	124
Figure 54: Hart Nickel Price Sensitivity.....	125



# 1 Introduction

## 1.1 Background

The assets of Liberty Mines Inc (“Liberty”) include a 100 percent interest in the Hart Nickel Resource (“Hart”), located about 27 kilometres southeast of Timmins, Ontario, Canada in Langmuir Township about six kilometres east of the Redstone Mine.

Hart is a multi-million pound intermediate nickel grade discovery at the advanced exploration stage that has excellent potential.

Considerable recent drilling activity has occurred over this property between 2005 and 2008, which has delineated significant Kambalda-style nickel-copper massive sulphides preserved locally in palaeo-topographic depressions.

Liberty approached SRK Consulting (Canada) Inc. (“SRK”) in January 2008 to commission an initial mineral resource estimate for the Hart nickel project. During the ensuing months SRK and Liberty worked together to compile a validated database and model the geology of the deposit to be used for resource estimation. A mineral resource statement was issued to Liberty on June 22, 2008. It formed the basis for a press release issued by Liberty on June 23, 2008 to disclose publically the initial mineral resource estimate for the Hart nickel project.

In early 2009 Liberty approached SRK to develop a Preliminary Economic Assessment of that resource.

Economic analyses includes forecast mine production rates that contain capital costs to develop and sustain the mining operation as well as operating costs, and projected cash flows.

This PEA was prepared following the guidelines of the Canadian Securities Administrators National Instrument 43-101 and Form 43-101F1, and in conformity with generally accepted CIM “Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines”.

## 1.2 Scope of work

For the Hart project, the technical report will be a Preliminary Economic Assessment that will include the mine development and production plan, and an estimate of mineable tonnage that will include Inferred mineral resources. No changes are needed to the resource block model – the existing model will be used.

The report will benefit from SRK’s previous involvement in previous resource work done to date. Besides site meeting and discussions with Liberty personnel SRK will prepare a capital cost estimate as a basis for the Hart site infrastructure and mine services. SRK will model the facilities after the other Liberty mines and draw on Liberty’s cost information as much as possible.

If a cost estimate is needed for special containment of “iron formation” waste rock, SRK will solicit help on a factored estimate from the SRK our Geo-environmental Group in Vancouver.

### **1.3 Basis of the work**

This report is based on information provided to SRK by Liberty as well as information collected during the site visit.

SRK conducted certain verifications of exploration data from the Liberty drilling program from drill core, files and records maintained by Liberty. SRK has no reason to doubt the reliability of the information provided by Liberty.

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

- Discussions with Liberty personnel;
- Datasets provided by Liberty;
- Field data verifications derived from the site visits; and
- Additional information obtained from the public domain sources
- A previous technical report by SRK
- A resource block model prepared by SRK
- Certain labour and supply costs provided by Liberty
- Actual operating data from Liberty's Redstone mill

### **1.4 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 judgment issues

## 1.5 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. Phil Bridson, P. Eng. on underground mine 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 two occasions; initially on August 17, 2006 and then again during the period 4 to 6 June 2007. 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 practicing his profession continuously since 1994 and has extensive experience in mine design, planning and economic modeling. 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. Bridson, P. Eng is an Associate Mining Engineer with SRK. Mr. Bridson is an independent qualified person.

This report was reviewed by Mr. Ken Reipas, P. Eng. SRK Principal Mining Engineer.

## 1.6 Site Visit

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

Mr. Glen Cole visited the Hart site on January 14, 2008 accompanied by Mr. Randall.

The visits main purpose was to conduct geological investigations, validations and inspections of available diamond drill core from the Liberty drilling programs. Validation samples of split core were taken by SRK. SRK also visited active drilling sites. The nickel mineralization does not outcrop.

Mr. MacKenzie visited the Hart site in October 2009 accompanied by Mr. Bridson. The purpose of their visit was to confirm the sites location, topography and accessibility.

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

SRK was given full access to all relevant data and held discussions with Liberty exploration personnel to obtain information on the current exploration work, understand field procedures used to collect, record, store and analyze exploration data.

## **1.7 Acknowledgements**

SRK would like to acknowledge the support and input provided by Liberty exploration, operations and executive personnel for the preparation of this report. Mr. William Randall in particular provided all the validated and formatted data and geological models and provided valuable technical insight and suggestions that enhanced the resource modelling process. Mr. Tyron Breytenbach supervised much of the Hart exploration program.

Mr Gary Nash, Bill Rogers, Tony Linton, and Mike Kernick have accompanied SRK on various visits as well as have provided answers to our questions and/or validated our conceptual designs.

## 2 Reliance on other Experts and Declaration

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 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.

A small portion of the project database (five drill holes) originates from exploration programs and sampling activities in 2005. These data cannot always be adequately verified and a reliance on the integrity of such data received from Liberty exists.

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.

The qualified persons preparing this technical report are not experts in the assessment of potential environmental liabilities associated Hart project. As such, no verification was conducted by SRK and no opinion is expressed regarding the environmental aspect of this exploration project.

The Hart nickel project is an undeveloped exploration property. Minimal surface disturbances have arisen from the surface exploration work completed by Liberty. These include, line cutting, ground geophysical surveying and surface diamond drilling. The exploration work was completed within the government authorizations.

SRK was informed by Liberty that there are no known litigations potentially affecting the Hart Property.

## 3 Property Description and Location

### 3.1 Introduction

The general location of the Hart Project is shown in Figure 1. It is located approximately twenty-seven kilometres 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 5,350,230 mN and 493,900 mE. The property is located in Eldorado 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 Hart Project in relation to the City of Timmins is shown in Figure 3.



Figure 1: Location of the Hart Project in Central Ontario, Canada.

### 3.2 Land Tenure

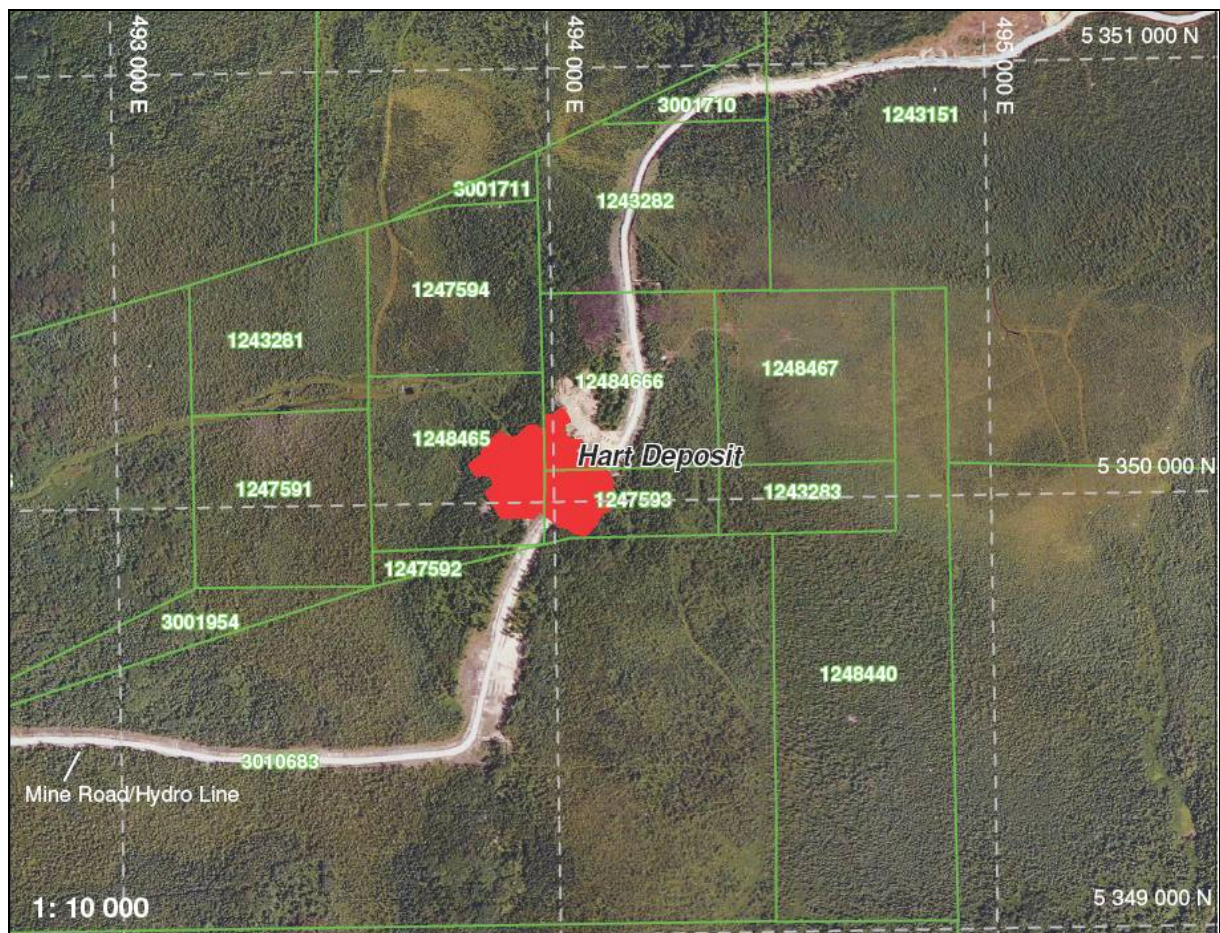
The Hart Property consists of twenty-one contiguous unpatented mining claims held by Liberty Mines Inc. and located in Langmuir and Eldorado Townships of the Porcupine Mining Division. These claims total approximately 992 hectares, and are in the process of being legally surveyed. The details of these



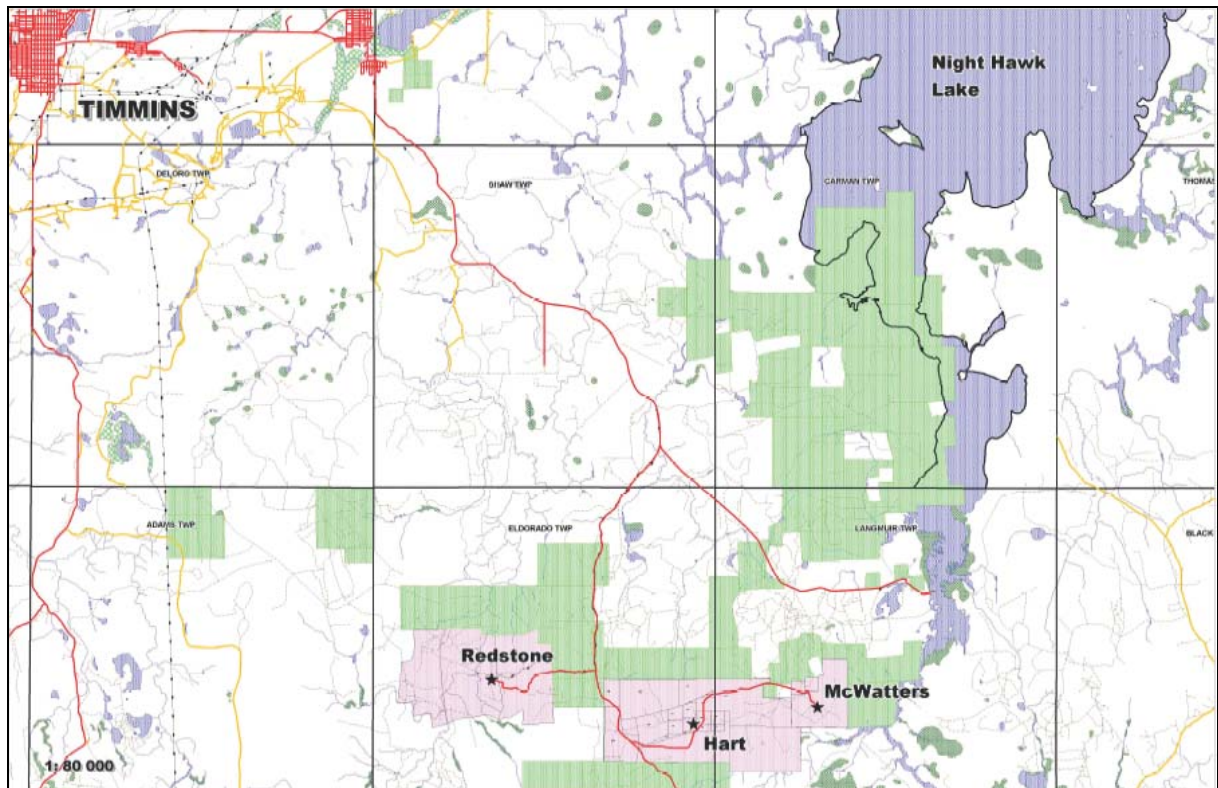
claims are listed in Appendix A. A Plan showing the Hart Project mining claims is shown in Figure 2.

SRK verified the ownership status of these tenements on the Ministry of Northern Development and Mines Mining Claims Information System. As of the effective date of this technical report, all mining claims are valid with expiry dates ranging from May 28, 2010 to July 18, 2013 (see Appendix A).

The mineral resources reported herein are all located on claims number 1248466, 1248465 and 1247593 (Figure 2).



**Figure 2: Hart Project mining claim plan.**



**Figure 3: Detailed location map of the Hart Project relative to the city of Timmins.**

### **3.3 Underlying agreements**

On July 17, 2006 Liberty optioned the Hart property from Canadian Arrow Mines. At this time the property consisted of claims 1243281, 1243282, 1243283, 1247591, 1247592, 1247593, 1247594, 1248465, 1248466, and 1248467 (the remaining claims were staked by Liberty). On January 18, 2008 Liberty met all obligations to Canadian Arrow Mines as set out under the option agreement, so that now Liberty owns 100 percent of the Hart property with no subsidiary involved.



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

The Hart 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, as well as mineral exploration activities.

The property is accessed from the city of Timmins by a series of gravel roads. Approximately twenty-six kilometres southeast of Timmins, a road branches east to the Hart property. Approximately three kilometres east along this road the deposit location is reached. The access roads are used in all seasons, and are winter safe.

The Hart 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 290 to 330 metres above sea level.

No waters flow through the site. The site naturally drains to the south into the Forks 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 is a combination of typical black spruce-lowland areas and slightly higher ground with soft wood forest (Figure 4). This vegetation type tends to represent a forest to wetland transition zone, and is characterized by poplar, pine, black spruce, bog rosemary, pale laurel, and sphagnum.

Wildlife communities around the Hart deposit 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.

The climate is typical of northern boreal forest areas, with extended periods of sub zero temperatures in the winter months of November through to March. Moderate temperatures prevail during the summer months with temperatures in the range of ten to thirty degrees Celsius accompanied by moderate precipitation. Experience indicates that most preliminary exploration activities can be executed in the summer months.

The Hart Project surface area is large enough to accommodate all future mining related infrastructures. The Hart Project is located in close proximity to other Liberty owned infrastructures, including the operational Redstone Mine as well as to the McWatters Project, which currently in at an early stage of development.



**Figure 4: Hart Project surface vegetation.**

## 5 History

The exploration history of the Hart property has been summarized by Brereton (2004), from which the following compilation has been extracted.

Minor trenching was completed by L.N. Hart on the surface iron formation exposures in the period 1960 to 1964. It is probable that the first indications of nickel were recorded at that time. In the period 1964 to 1968, Norlex Mines Ltd. carried out ground EM and magnetic surveys and completed 1,854 metres of drilling in thirteen holes on the property. Eight of the Norlex drill holes intersected nickel mineralization and are summarized in Table 1.

Paramaque Mines Ltd. subsequently acquired the property and drilled 1,950 metres of core in six diamond drill holes in the period 1968 to 1969. These holes were also successful in intersecting nickel mineralization and are summarized in Table 2.

**Table 1: Norlex Mines Ltd drill results, Hart Nickel Project.**

Hole No.	Core length (ft)	Ni (%)	Cu (%)
NLX 64-1	21.2	0.65	
	3.7	1.24	
NLX 64-5	15	2.10	0.18
NLX 64-6	4.4	0.53	
	31.5	0.31	
	9.2	0.68	
	8	1.12	
NLX 64-8	10	0.50	
	4.9	0.51	
NLX 64-10	17.2	0.89	0.11
NLX 64-12	2.2	0.87	
NLX 64-13	12.9	0.83	

**Table 2: Paramaque Mines Ltd drill results, Hart Nickel Project.**

Hole No.	Core length (ft)	Ni (%)	Cu (%)
PAR 69-1	26.6	0.32	
	5.0	1.78	
	3.0	2.48	
PAR 68-2	25.3	0.22	
PAR 69-3	30.8	0.44	
PAR 68-4	20.4	0.25	
	7.2	2.77	0.13
PAR 68-5	29.0	0.20	
PAR 68-6	10.6	0.62	
	6.6	1.11	0.11

McWatters Gold Mines Limited acquired the property from Paramaque in 1969 and completed 2,440 metres of drilling in eight holes. The results of this work are missing from assessment files in the Timmins MNDM office, which may suggest that this drilling did not intersect mineralization. No evidence of this drilling has been found on site.

Tontine Mining Limited purchased McWatters Gold Mines Limited in 1969 and apparently completed a feasibility study on the economics of the Hart deposit (this work is only referenced in a report by Timmins Nickel Inc with no information available on this study). Timmins Nickel Inc purchased the Hart property in 1989 and completed airborne magnetic and EM surveys over the area. This initial program was followed by ground magnetics and IP over the mineralized portion of the ultramafic. Timmins Nickel never carried out a drill program on the Hart Project.

Starfire Minerals Inc drilled a total of six very shallow holes in the immediate area of the surface showing in 2002. The holes were also extremely closely spaced and therefore tested the same portion of the nickel mineralization, referred to in this report as the IF Zone. These holes are considered in the present mineral resource estimate, but are deemed of limited value to the overall definition of the ore body. Low values were reported.

Canadian Arrow Mines acquired the property in 2004 through their subsidiary Legendary Ore Mining Company. Canadian Arrow Mines conducted ground geophysics over the property and completed diamond drill program comprising of five drill holes, totalling 306 metres.

Since 2005, Liberty has drilled a total of 104 drillholes with an average length of 301 metres. A limited amount of surface trenching was also undertaken.

## 6 Geological Setting

### 6.1 Introduction

The geology section of this report focuses on the description of the property geology, exploration work completed to date, database development, quality assurance/quality controls (“QA/QC”), geological modeling, and resource estimation.

### 6.2 Regional Geological setting

The Hart 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 Achaean 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 5): 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 (> five percent), while the Tisdale assemblage contains more andesitic rocks and sulphide facies iron formations (Sproule et al., 2003).

The Shaw Dome is a major anticline centred approximately 20 km southeast of Timmins, Ontario (Muir, 1979; Green and Naldrett, 1981; Figure 5). 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. 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 & Guillmette, 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 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 2,725 Ma and 2,707 Ma (Stone & Stone, 2000 and references therein). The UKH rocks are cumulate, spinifex textured and aphyric komatiites that extruded sometime before 2,703 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.

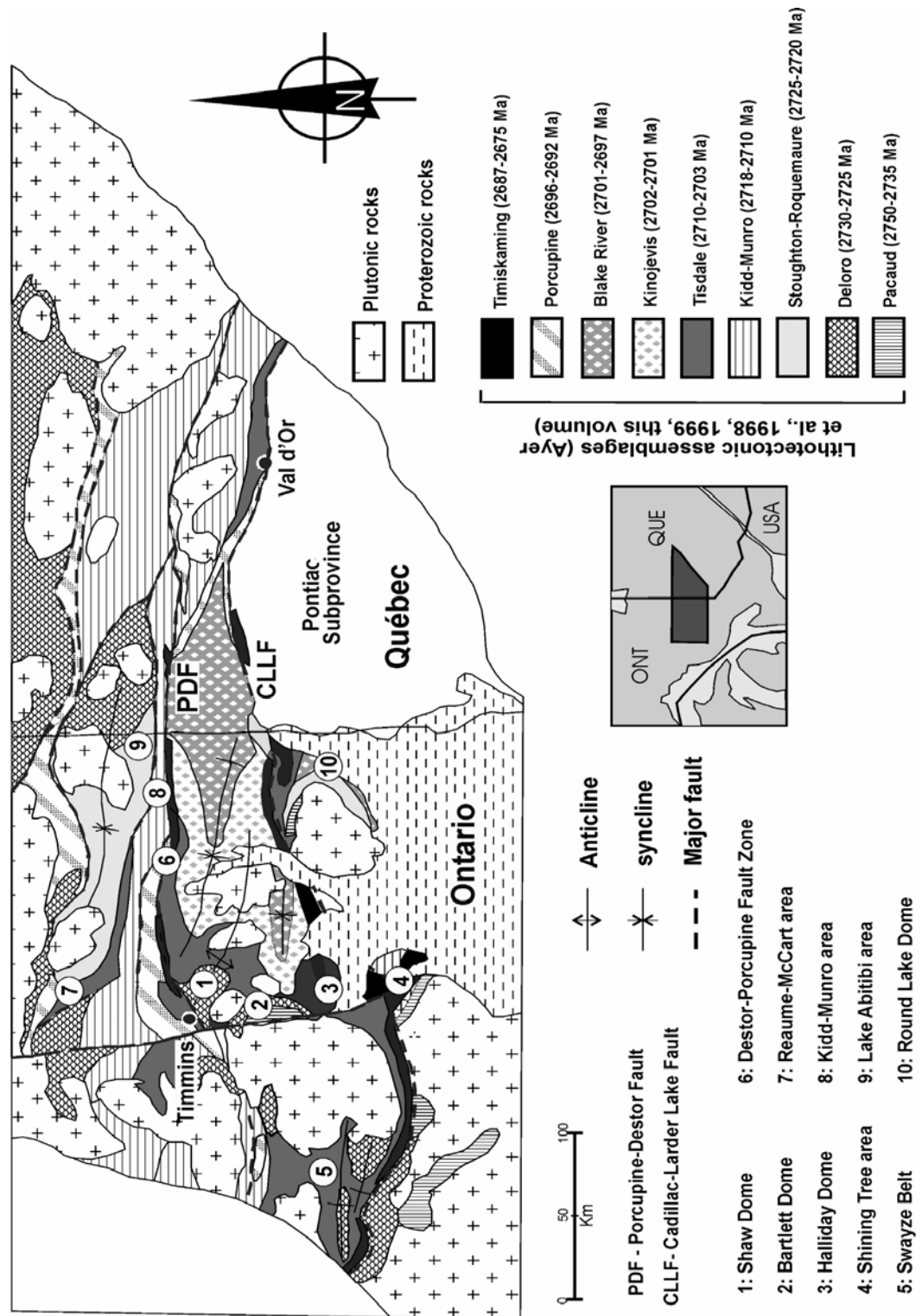
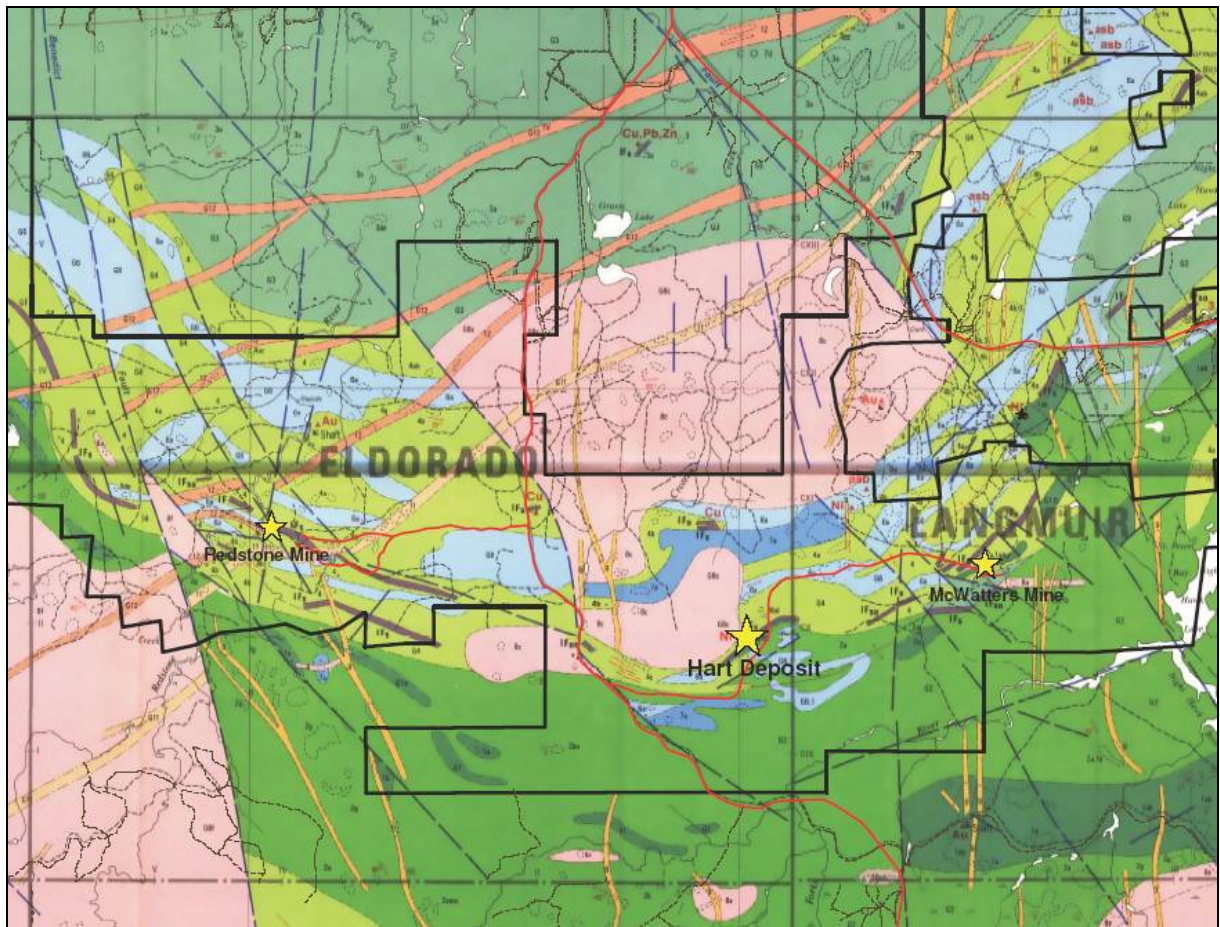


Figure 5: Simplified regional geological setting of the Abitibi Belt.





**Figure 6: Location of the Hart Project shown on an extract from Map P2455, produced by the Ontario Geological Survey.**

### 6.3 Property Geology

Five main rock types have been identified from diamond drill core and surface mapping: footwall intermediate to felsic volcanics, banded iron formation (BIF), mineralized ultramafic flows, felsic dykes, and mafic dykes. A surface geology map based on outcrop mapping and diamond drilling is shown in Figure 7. Based on whole rock data the volcanic rocks range in composition from andesite to dacite, classified using a total alkalis versus silica (TAS) diagram. They often exhibit pyroclastic textures, including blocks, bombs and lapilli. The ultramafic rocks are of komatiitic composition plotting near the 100 percent Mg apex on the Jensen cation plot (Jensen, 1976). The dykes are syeno-diorites and gabbros respectively (also using a TAS diagram).

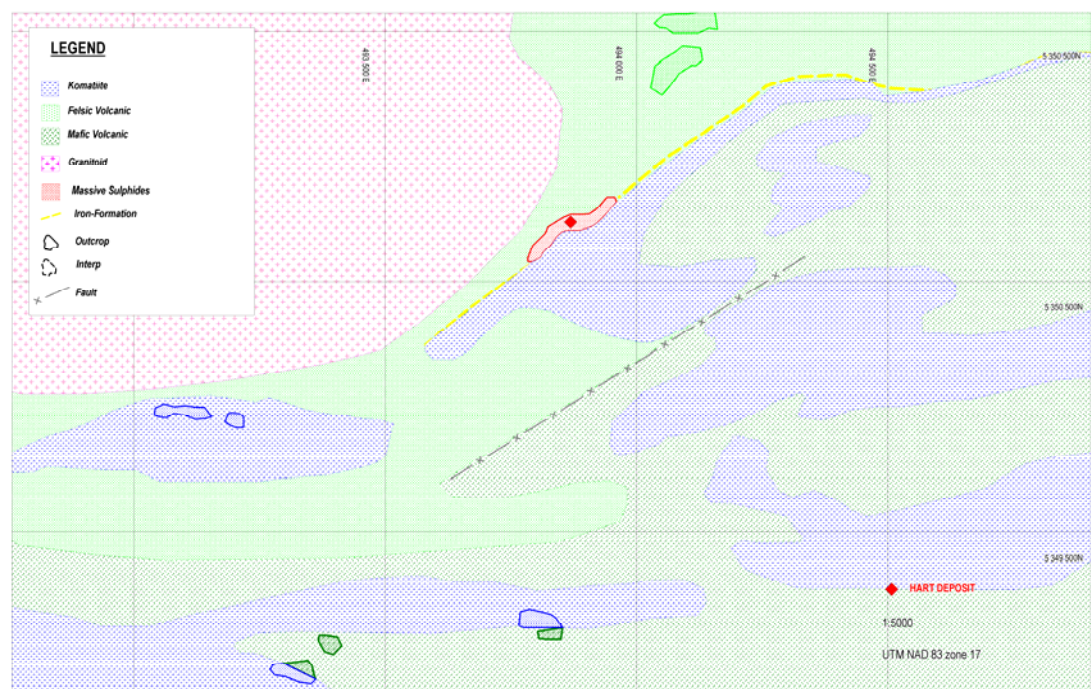
The ultramafic flows, known as komatiites, lie conformably on the banded iron formation which, in turn, overlies the dacitic, pyroclastic volcanic flows. In localized areas the banded iron formation has been thermally eroded so that the komatiitic flows are in direct contact with the felsic volcanic rocks, forming palaeotopographic embayments. During this process, and as a direct result of the sulphur contamination, nickel-sulphide precipitation occurred within the still active ultramafic flows, accumulating due to gravitational settling in many



of these localized embayments. Subsequent regional tectonic events have uplifted the package so that it now dips SSE at an average angle of seventy-five degrees from horizontal. Little subsequent structural modification has been detected in core samples, unlike the nearby Redstone deposit which has been subjected to considerable post mineralization stress.

The process of sulphide assimilation by the komatiitic flow has been well recorded in the Hart deposit. In addition to the classical magmatic sulphide assemblage a contaminated iron formation (IF Zone) occurs near surface. This geological unit bears more visual resemblance to the barren banded iron formations that flank it, including predominant quartzitic and graphitic bedding planes, but contain significant nickel mineralization. Values range from anomalous to over two percent Ni. This area is interpreted as in situ evidence of sulphide assimilation, showing that the sulphur source and depositional environments can occur in very close proximity. This IF Zone also occurs in a stratigraphically higher region than the magmatic sulphides, re-enforcing the model.

The komatiitic rocks, which host the mineralization are serpentinized and locally altered to talc, chlorite and carbonate. Spinifex textures are common, occurring at distinct stratigraphic horizons, serving as a tentative marker horizon. The contained sulphide minerals in decreasing abundance are pyrrhotite, pentlandite, minor pyrite and chalcopyrite, occurring predominantly as massive to semi-massive sulphides at the base of the komatiitic flow. The total sulphide abundance decreases with increasing distance from the basal contact, in keeping with the classical model involving sulphide settling in an active magmatic environment. As result, the deposit exhibits the full range of concentrations from one to 100 percent sulphides



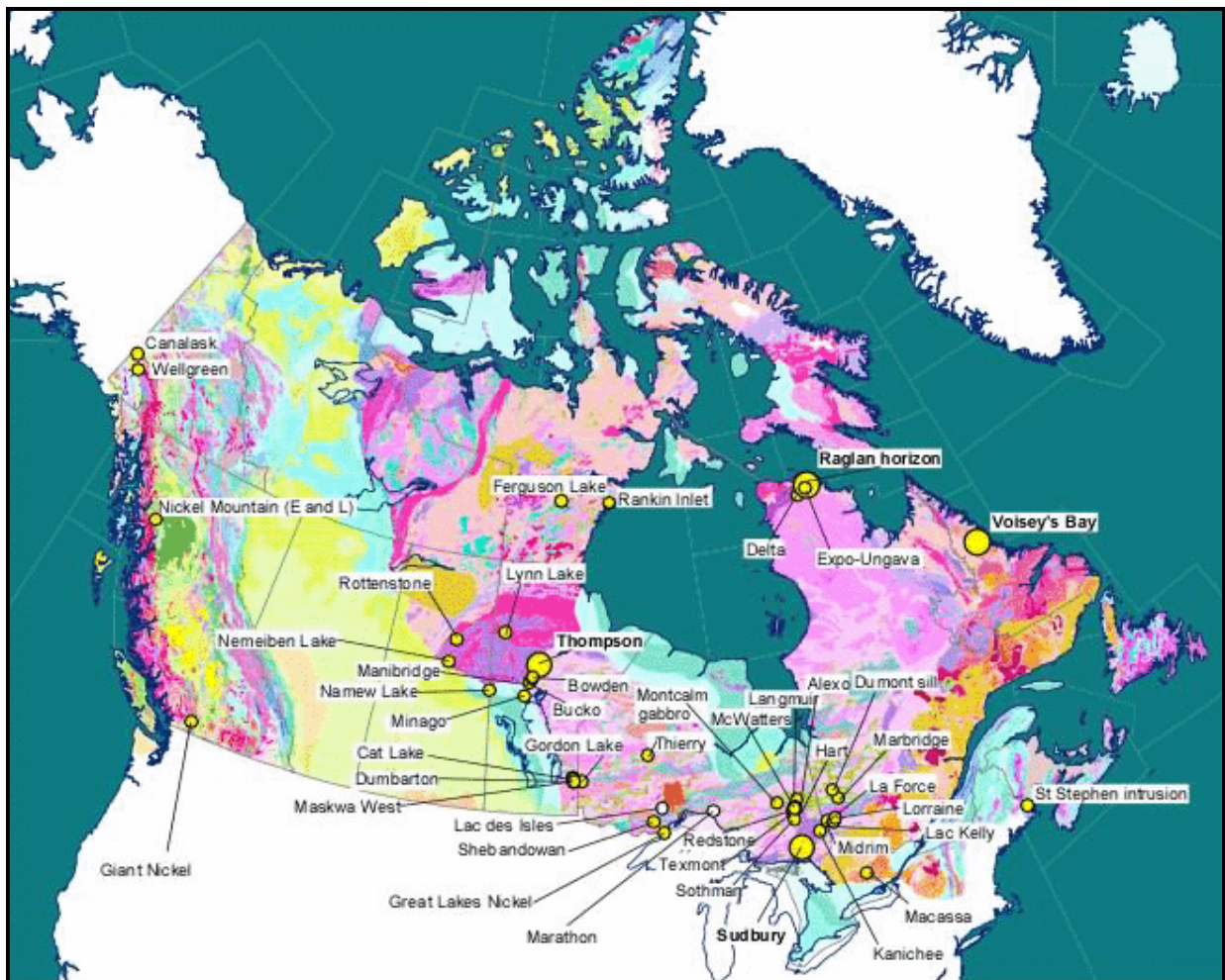
**Figure 7: Simplified surface geological map of the Hart Project.**

## 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 8.

Considerable research by various writers over the years indicates that komatiite hosted nickel deposits in the Timmins area are similar to the Achaean 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 Hart) assemblages. This is consistent with the interpretation that komatiite associated Ni-Cu-(PGE) deposits form within lava channels of channelized sheet flows, but not within sheet flows or lava lobes.



**Figure 8: 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).**

Tisdale assemblage ultramafic volcanic rocks with high MgO contents (up to thirty-two percent) are defined as aluminium undepleted komatiites (“AUK”). Individual flows are usually less than 100 metres 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.

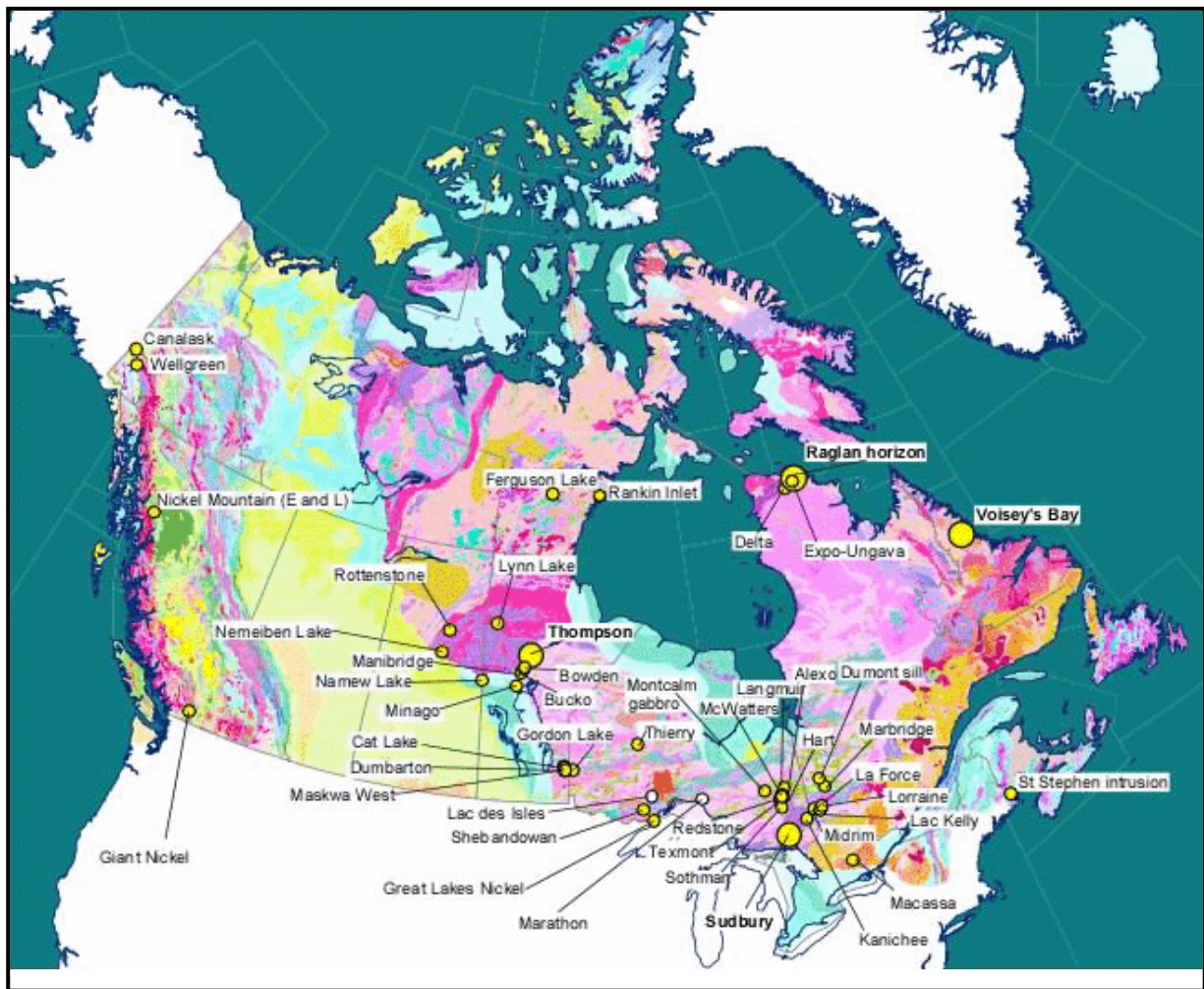
The following three paragraphs are largely based on Leshner & Keays (2002), parts of which are paraphrased.

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 3 from Leshner & Keays, 2002).

The distribution of magmatic Ni-Cu-PGE sulphide deposits in Canada, with a resource size greater than 100,000 tonnes is shown in Figure 8.





**Figure 9: 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).**

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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 3 from Leshner & Keays, 2002).

Table 3: Classification of mineralization types in komatiite-associated magmatic Ni-Cu-PGE deposits (from Lesher and Keays, 2002).

Origin Type	Magmatic					Hydrothermal-Metamorphic			Tectonic
	I		II			III	IV		V
	basal/footwall		strata-bound internal			reef			
Subtype	I stratiform	I b footwall vein	II a blebby	II b interstitial	II c cloudy	stratiform	IV a meta-sediment	IV b vein	offset
Sulphide distribution	at or near the bases of komatiitic peridotite or komatiitic dunite units	veins or stringers in host or wall rocks associated with Type I a mineralization	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 rocks associated with Type I mineralization	faults and shear zones within host or wall rocks associated with Type I mineralization
Sulphide textures	massive, net-textured, disseminated; sometimes xenolith- or xenomelt-bearing	massive	blebby	intercumulus, interstitial or lobate	intercumulus, interstitial	disseminated, rarely net-textured	layered, banded, laminated	massive to disseminated, typically associated with quartz and/or carbonate	brecciated, typically heterolithic; durchbewegung
Ore tenor	typically moderate-low, slightly fractionated	variable, commonly enriched in Cu-PGE relative to associated contact ores	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 Cr and Ir relative to associated magmatic ores	variable, commonly depleted in Cr, Pt, and Au relative to associated magmatic ores
Timing and paragenesis	early magmatic, segregated prior to or during emplacement	early or late magmatic, injected during initial emplacement or formed via fractional crystallization of MSS	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 fluids	syn-tectonic, mobilized from massive or net-textured sulphides
Examples	Alexo, Kambalda, Langmuir, Windarra, Hart	Kambalda, Alexo, Hart	Damba-Silwane, Otter shoot (Kambalda)	Mt. Keith, Dumont, Perseverence Main	Katinniq, Perseverence Main	Delta, Romeo II, Fred's Flow, Boston Creek Unit	Jan shoot (Kambalda), Langmuir, Thompson, Hart	Kambalda, Langmuir, Donaldson West	Thompson, Nepean, Perseverence 1A, Redross, Redstone, Trojan, Windarra

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 ore 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 IIb. Type III (stratiform "reef") mineralization is a more recently-recognized primary mineralization type in this association and is normally subeconomic, but is an important ore type in other associations (e.g., Bushveld, Stillwater). Type IVa (Ni-enriched metasediment) mineralization occurs in many deposits where Type I ores 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 ore type. Type V (offset) mineralization is associated with almost all Type I deposits and is common both at Redstone and Hart deposits.

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;
- Airborne and ground electromagnetic surveys will detect the location of massive sulphide mineralization, whereas magnetic surveys should detect pyrrhotite rich sulphide mineralization.

## 8 Mineralization

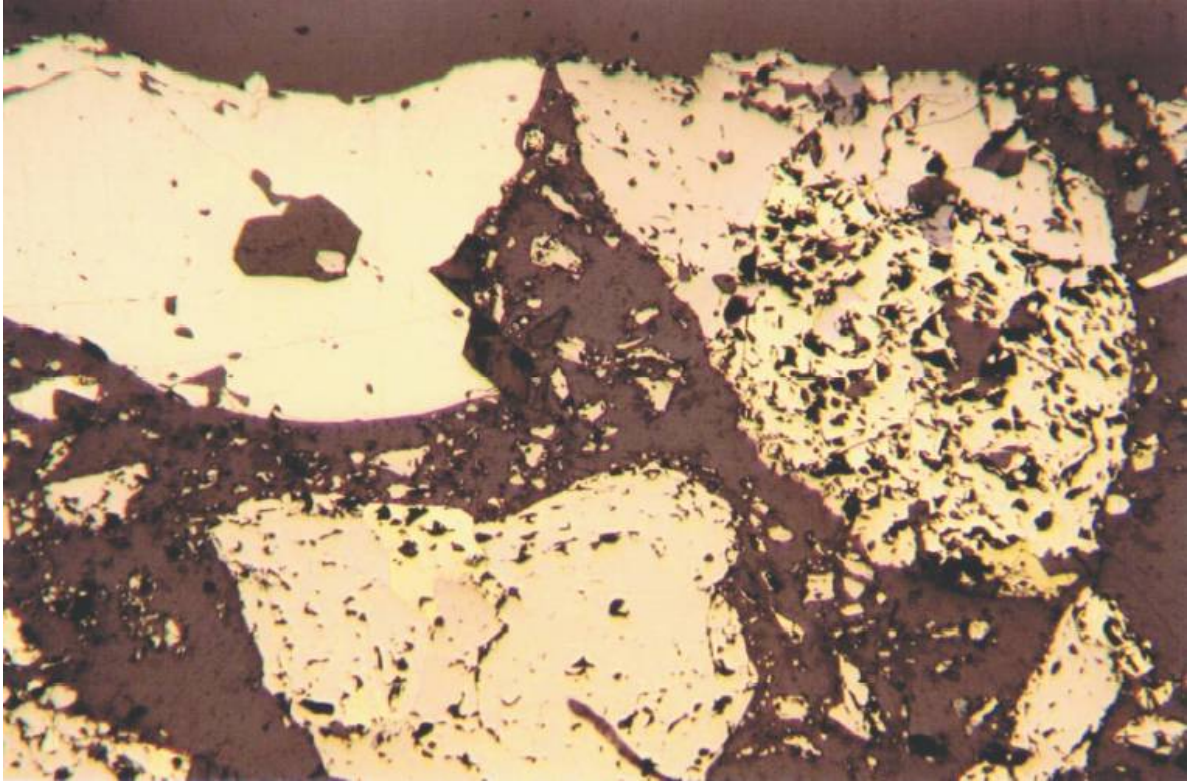
The Hart deposit mineralized zone can be subdivided in three distinct zones: an upper zone of Ni-enriched banded iron formation (IF Zone), a basal, lower zone consisting of massive to semi-massive sulphides (Figure 10), and a stratigraphically overlying zone of disseminated sulphides. The IF Zone consists primarily of altered metasediments including quartzite, graphite, and abundant pyrite and troilite. Overlying ultramafic rocks have enriched the iron sulphides with nickel. This zone is well bedded and primarily sedimentary.

The main zone that comprises the majority of the mineral resource consists of komatiite-hosted massive to semi-massive sulphides lying conformably on dacitic pyroclastic flows. The sulphide assemblage consists of pyrrhotite, pentlandite, and minor pyrite and chalcopyrite. Typical sulphide concentrations range in the sixty to eighty percent pyrrhotite and ten to thirty percent pentlandite. The pentlandite occurs intergrown with pyrrhotite as irregular grains that are generally relatively coarse grained. Microphotographs of thin sections taken from this zone are shown in Figure 11 and Figure 12. The massive zone is overlain by disseminated sulphides of varying sulphide modal abundance, ranging from under one percent to twenty-five percent. The sulphide minerals are similar to those of the massive zone, with the exception of minor amounts of millerite also identified in thin section. Silicate minerals have been completely serpentized and/or carbonatized.

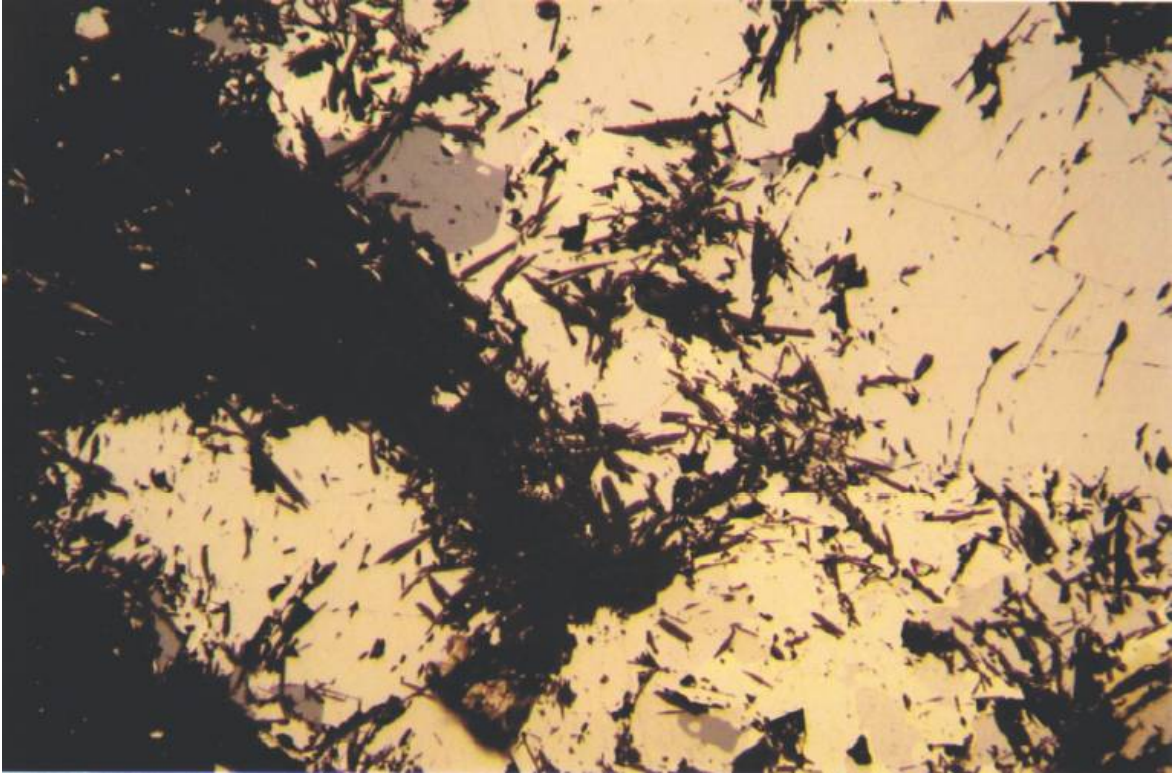




**Figure 10: Semi-massive sulphide mineralization (primarily pyrrhotite and pentlandite) from drill core (H-07-48).**



**Figure 11: Microphotograph of Massive Sulphides. Scale 1cm = 120 microns. Illustrates the relative coarseness of the pentlandite in this sample. The large grains at the upper right and bottom centre are pyrrhotite (buff colour) with intergrown pentlandite (creamy yellow with abundant black polishing pits). The smooth surfaced cream-coloured grain at the upper left is pyrite.**



**Figure 12. Microphotograph of semi-massive sulphides. Scale 1cm = 120 microns. Shows intimate intergrowths of silicate gangue (acicular black) with pentlandite in pyrrhotite (buff colour). Pentlandite areas (pale yellow, e.g. bottom right, upper centre) in this photo range from 200 to 30 microns.**

## **9 Exploration**

### **9.1 Historical**

A review of the historical exploration activities on the Hart Property has been presented in Section 5 of this report.

### **9.2 Exploration Work by Liberty**

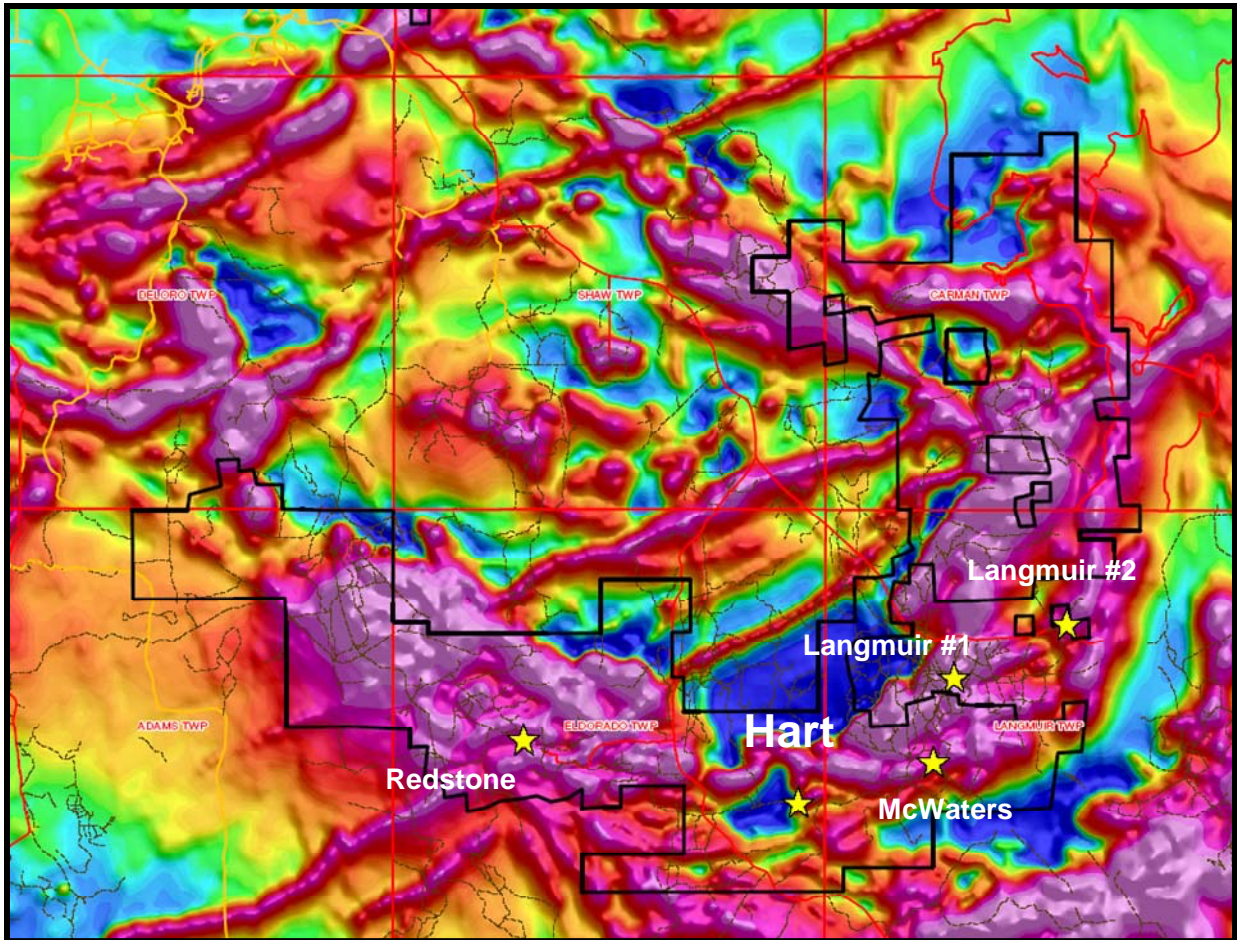
Since 2005, Liberty has drilled a total of 104 NQ size diamond drillholes with an average length of 301 metres. A total of five surface trenches were also undertaken.

### **9.3 Future Exploration Work**

The komatiitic flow that hosts the Hart ore zone continues at depth and has a strike length of several kilometres. Future exploration will focus on drill testing the depth extension from surface and/or underground drill bays in the event of mining. At depth a gabbroic dyke is known to cross-cut the mineralization. The nature of the ore body below this dyke is unknown and warrants further exploration.

The Hart Property is shown on a regional aeromagnetic image of the area (in relation to Liberty's regional claim outline) is shown in Figure 13. The entire strike length of the komatiitic flow package is prospective as the geological setting has been shown to be fertile. It is recommended that the strike length be evaluated and drill tested. Of particular importance is the identification of nickel enriched metasediments in the immediate vicinity of the magmatic sulphides, such that future exploration should be well aware of this relationship. There are numerous instances throughout the Shaw Dome of iron formations in contact with komatiitic flows that may exhibit a similar signature upon closer inspection.





**Figure 13: Plan position of the Hart Project in relation to other Shaw Dome properties in relation to Liberty's regional claim outline overlain on an aeromagnetic image of the area.**

# 10 Drilling

## 10.1 Introduction

During the period 1964 to 2002, a number of exploration companies undertook various phases of drilling activities in the vicinity of the Hart property. 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 Starfire Minerals Inc., Canadian Arrow Mines, and Liberty Mines Inc. Total drilling amounted to 32,054 metres of diamond drill core. Details of this drilling are tabulated in Table 4.

**Table 4: Summary of drilling data available for the Hart Project**

Company	Period	Type	No. Holes	Total Metres	Drilling Details Average Metres
Starfire Minerals	2002	Surface DD	6	471	78.5
Canadian Arrow	2005	Surface DD	5	306	61
Liberty Mines	2007-08	Surface DD	104	31,277	301

Diamond drilling conducted by Starfire Minerals consists of six, short angled holes. Original drill logs and assay certificates from Swastika Laboratories, Kirkland Lake, ON (Canada), were found. Surface plan maps showing drillhole locations were also located, which aided in reconstructing drillhole locations. Casings were inconsistently left in the ground enabling Liberty Mines to survey a few of the holes, adding confidence to the data. The drill core pertaining to this phase of drilling has not been examined by Liberty staff or SRK, and therefore has not been independently verified.

Diamond drilling conducted by Canadian Arrow Mines consists of five angled holes. Original drill logs and assay certificates from Swastika Laboratories, Kirkland Lake, ON were examined. Drillhole collars were all identified and surveyed. Drill core from this phase of drilling is stored at the Redstone Mine site, where Liberty staff was able to corroborate geological and analytical data satisfactorily.

## 10.2 Drilling by Liberty (post 2005)

All drilling by Liberty was conducted from surface. A total of 104 HQ-size core boreholes with an average length of 301 metres were completed on the site (31,277 metres). The core is stored at the Redstone Mine site and is available for review.


The drilling contractor for the entire program was Bradley Bros of Timmins. The boreholes are labelled by a clear alphanumeric code. The drill core was not routinely photographed, 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 twenty-five metre intervals with an EZ

Shot Reflex instrument. Casing is used for one hole per set-up for all surface drill locations, with collar pickets installed with clear labels indicating location, borehole names, azimuth, and dip. Core orientation is achieved with the EzyMark system. Core recovery and rock quality determination were routinely collected.

An example of the output of a typical Liberty drill log (H08-99), highlighting all drilling information in DH logger (Century Systems) output is shown in Figure 14: .

Jul 31, 2008



LIBERTY MINES INC.

LIBERTY MINES DETAILED LOG

Page 1 of 5

Hole Number: H-08-99

Units: METRIC

Borehole ID: H-08-99

Primary Grid: HART:

Primary North: 3699.89

Primary East: 2561.03

Primary Elev: 2296.93

Destination Grid: UTM:

Destination North:

Destination East:

Destination Elev:

Project Number: HART

Claim #: 30310638

Township: Eldorado

Logged By: tdunnett

Log Finished: Apr 28, 2008

Core Storage: Redstone Minesite

Casing: Left in hole

Start Date: Apr 28, 2008

Finish Date: May 16, 2008

Drill Contractor: Bradley Bros.

Core Size: NQ

Hole Length: 569.00

Azimuth: 360.00

Dip: -67.00

Comments:

Survey Tests

Depth	Az	Dip	Depth	Az	Dip	Depth	Az	Dip	Depth	Az	Dip
0	360.00	-67.00	28.0000	355.20	-66.50	53.0000	357.90	-66.50	77.0000	357.30	-66.60
101.0000	355.30	-66.80	125.0000	356.70	-66.90	149.0000	32.00	-66.70	173.0000	1.30	-66.70
197.0000	359.80	-67.10	221.0000	2.50	-67.10	245.0000	2.50	-67.10	269.0000	2.60	-67.60
293.0000	3.10	-67.10	317.0000	3.20	-66.90	341.0000	359.10	-66.90	365.0000	2.60	-66.80
389.0000	3.40	-67.00	413.0000	3.30	-66.70	437.0000	3.30	-66.70	461.0000	5.10	-66.60
485.0000	4.70	-66.40	509.0000	2.20	-66.30	533.0000	2.70	-66.30	557.0000	3.10	-65.80
569.0000	3.50	-65.70									

Detailed Lithology

From

To

Lithology

Mineralization Data

From

To

Mineralization Type

Mineralization Style

Min %

Assay Data

Sample Number

From

To

Ni %

Cu %

Au gpt

Pt gpt

Pd gpt

0	17.00	CAS, Casing													
17.00	28.00	KPd, Komatiite													
28.00	28.20	MD, Mafic Dike													
		hard, black, non-magnetic.													
28.20	36.00	KPd, Komatiite													
		very broken and soft Kpd													
36.00	38.00	FLT, Fault Zone													
38.00	65.00	KPd, Komatiite													
		very broken and soft Kpd													
65.00	96.80	KPd, Komatiite													
		more competent rock													
96.80	97.80	Kosx, Komatiite Spinifex													
		spinifex texture clearly visible.													
97.80	106.70	KPd, Komatiite													
106.70	111.40	Kosx, Komatiite Spinifex													
111.40	119.80	KPd, Komatiite													
119.80	123.10	Kosx, Komatiite Spinifex													

Figure 14: Extract from a typical drill log layout \*H08-99) from the Hart drilling program highlighting drilling details



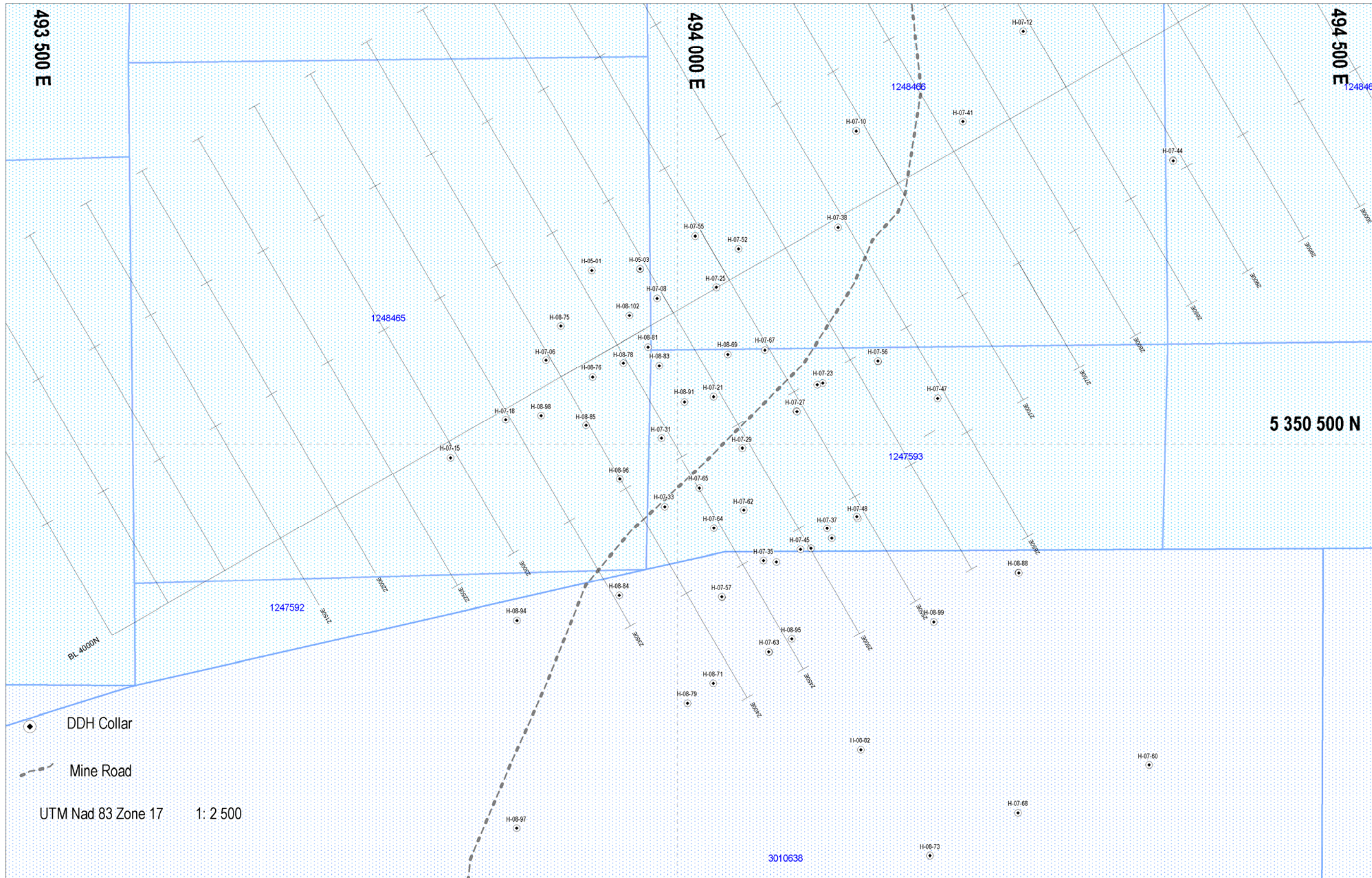
### 10.3 Drilling Pattern and Density

The plan position and a typical section showing the typical drilling pattern conducted at Hart are illustrated in Figure 15 and Figure 16.

Starfire Minerals and Canadian Arrow Mines drilled eleven surface holes targeting near surface mineralization. The maximum depth below surface achieved was approximately eighty metres, although drilling typically targeted depths less than sixty metres below surface. Drilling was conducted on a very tight pattern with one, two, or three drill holes per setup. These two phases of diamond drilling intersected what has been identified as the IF Zone, corresponding to Type IVa nickel mineralization (Leshner & Keays, 2002). The main zone was not intersected by this drilling.

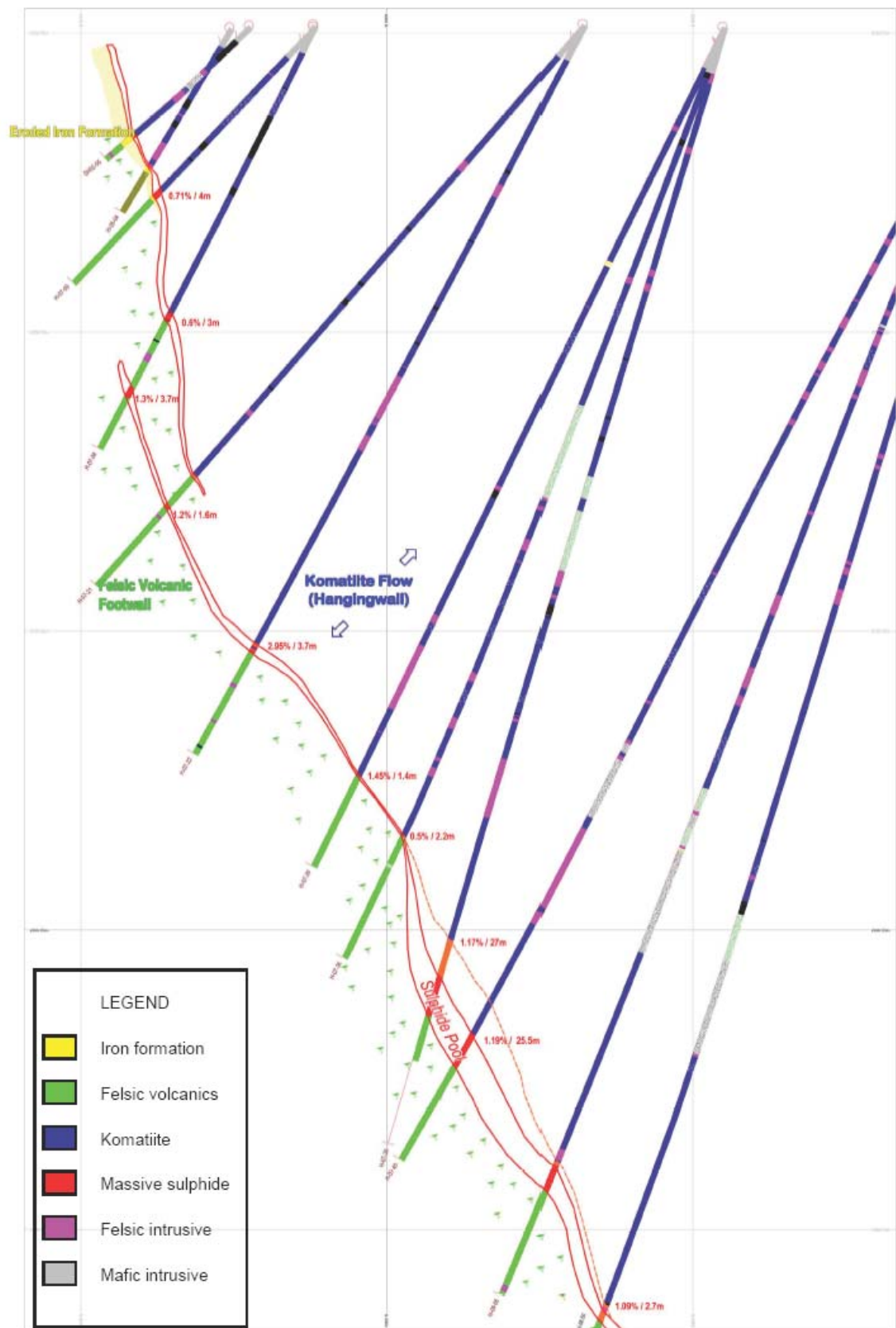
Liberty drilled 104 core boreholes from surface. These holes were all drilled grid north, with dips angles ranging from seventy-nine to forty-five degrees. Two to three boreholes were typically drilled from each setup. Drilling was designed to achieve a drill spacing of between twenty to thirty metres for the upper part of the deposit (above 250 metres below surface), and forty-five to seventy metres below 250 metres. The varying drill spacing was to ensure higher confidence in areas to be mined first, while also allowing an acceptable confidence in the delineation of the lower zone (Figure 16). Intersection widths in the lower zone are also larger, contributing to a sparser drill density.

It is the opinion of SRK that the drilling strategy and pattern have produced an adequate drill density to support resource estimation.



**Figure 15: Plan map showing drillhole collar locations, grid layout, and claim outlines.**





**Figure 16: Idealized section showing drill holes and geology**


# 11 Sampling Approach and Methodology

## 11.1 Introduction

Data reviewed as part of in this study and used for geological modelling and resource estimation represent an aggregated data collected during various phases of exploration drilling from 2005 to 2008. Exploration field procedures implemented by exploration staff for the 2005 drilling is unavailable. However, the historical portion of the total data set is relatively minor (only five drill holes) and does not have a material impact on the reported mineral resources.

SRK was able to review core handling, logging or sampling procedures implemented by Liberty. All drill core is transported to the secure Redstone core yard, near the main office, where it is logged. Core is marked for sampling and mechanically split lengthwise for assaying. Half of the split core is submitted for sample preparation and analyses (and sometimes for specific gravity), whereas the other half remains stored in the original core boxes. Drill core logging and sampling information are recorded into DH logger (Century Systems) format, with adequate detail on lithology and mineralization. Assay results for nickel (percent), copper (percent), gold (gpt), platinum (gpt) and palladium (gpt) are recorded adjacent to lithology descriptions. SRK notes that gold, platinum and palladium have not been routinely sampled. An extract from the drill log for H-08-99 from 527.1 metres to 569 metres is provided in Figure 17.

Jul 31, 2008



LIBERTY MINES INC.

LIBERTY MINES DETAILED LOG

Page 5 of 5

Hole Number: H-08-99

Units: METRIC

Detailed Lithology			Mineralization Data					Assay Data							
From	To	Lithology	From	To	Mineralization Type	Mineralization Style	Min %	Sample Number	From	To	Ni %	Cu %	Au gpt	Pt gpt	Pd gpt
527.10	534.50	<b>SMS, Semi Massive Sulphide</b> 40-60% Sulphides. <b>RQD</b> 527.00 - 536.00 : % RQD 98.00 % Recovery 100.00						E106279	527.10	528.00	1.1800	0.0800			
								E106280	528.00	529.00	1.4100	0.1400			
								E106281	529.00	530.00	1.4000	0.0800			
								E106282	530.00	531.00	1.4600	0.1000			
								E106283	531.00	532.00	1.5200	0.1100			
								E106284	532.00	533.00	1.5300	0.0600			
								E106285	533.00	534.00	1.2400	0.1100			
								E106286	534.00	534.50	1.5100	0.0800			
534.50	535.00	<b>MS, Massive Sulphide</b> cba 40 degrees, massive Ni Sulphides, tested positive with xray gun for Ni. <b>RQD</b> 527.00 - 536.00 : % RQD 98.00 % Recovery 100.00						E106287	534.50	535.00	3.3800	0.0800			
535.00	569.00	<b>FV, Felsic Volcanic</b> foliated, 1% fe-sulphides. <b>RQD</b> 527.00 - 536.00 : % RQD 98.00 % Recovery 100.00						E106288	535.00	536.00	0.0900	0.0050			

RQD

From	To	Drill Length	Recovered Length	Piece Length >10cm	Recovery %	RQD %	Description
527.00	536.00	9.00	9.00	8.82	100.00	98.00	

Figure 17. An extract from Hart drill log for H-08-99 in DH Logger format

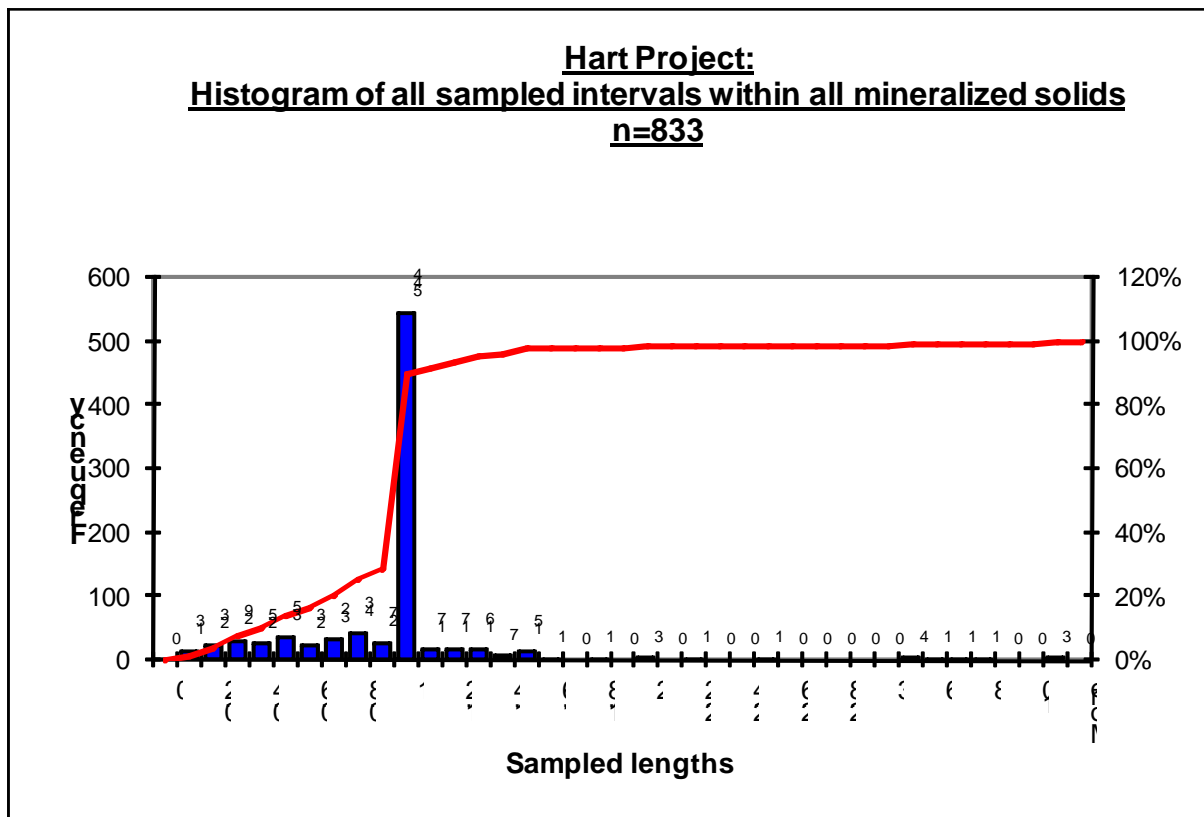
## 11.2 Sampling protocols

Summary statistics for sample lengths for the total Liberty drilling sampled intervals within mineralized solids at Hart is shown in Table 5. It is noted that the mean sample length for the Liberty drilling sampling within the modelled mineralized solids is 0.96 metres. During 2007 -2008, Liberty sampled all mineralized core intercepts, including a footwall sample below the massive sulphide basal contact as well as continuous sampling over all visibly mineralized sulphides in the overlaying disseminated sulphide zone. Records of sampling protocols for 2005 (and prior to that) sampling programs are unavailable. Only sample records from 2005 to 2008 were used for resource estimation.

A histogram illustrating the sampling intervals within all the modelled mineralized solids at the Hart project is shown in Figure 18. It can be noted that about ninety percent of sample intervals are 1.0 metre in length or less.

**Table 5: Statistics of the sampled drilling lengths within modelled mineralized solids at the Hart Project**

<b>Statistic</b>	<b>Length</b>
Mean	0.96
Standard Error	0.02
Median	1.00
Mode	1.00
Standard Deviation	0.73
Sample Variance	0.54
Kurtosis	113.54
Skewness	9.45
Range	10.98
Minimum	0.02
Maximum	11.00
Sum	848.27
Count	883



**Figure 18: Histogram of sampled lengths within the modelled mineralized solids**

## 12 Sample Preparation, Analysis and Security

### 12.1 Sample Preparation and Analyses

Information regarding the historical sample preparation, analyses and procedures is not available to SRK. However, they represent a very small portion of the total assay data and are not considered to have a significant impact on the overall database. Summarized information regarding Liberty sample preparation and analyses is documented here.

The primary laboratory used by Liberty for drill core analyses is the accredited ALS Chemex Laboratory. Samples submitted for assaying were prepared at the Timmins sample preparation facility and subsequent analyses were performed at the ALS Chemex North Vancouver laboratory. Total turn-around time is reported to be about four weeks.

ALS Chemex North Vancouver laboratory is accredited to ISO 9001 by QMI and ISO 17025 by the Standards Council of Canada for a number of specific test procedures, including fire assay for gold with atomic absorption and gravimetric finish, multi-element inductively coupled plasma optical emission spectroscopy (“ICP-AES”) and atomic absorption assays for silver, copper, lead and zinc. ALS Chemex laboratories also participate in a number of international proficiency tests, such as those managed by CANMET and Geostats. At ALS Chemex, core samples were prepared using industry standard preparation procedures.

After reception, samples were organized into batches and weighed (method code LOG-22). Samples were then crushed to seventy percent passing below two millimetre mesh screen (CRU-31). A sub-sample of up to 1,500 grams was prepared using a riffle slipper (SPL-21) and pulverized to eighty-five percent passing below seventy-five microns (PUL-31).

Generally analyses are conducted for only nickel and copper, with analyses for platinum, palladium and gold conducted only by request. The assay method used for base metals is aqua regia digestion followed by fusion and AAS (analytical code AA46). Analyses for precious metals are reported from an aqua regia leach and using conventional inductively coupled plasma optical emission spectroscopy (“ICP-AES”) analyses (analytical code ME-ICP41).

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



## 12.2 Quality Assurance and Quality Control Program

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.

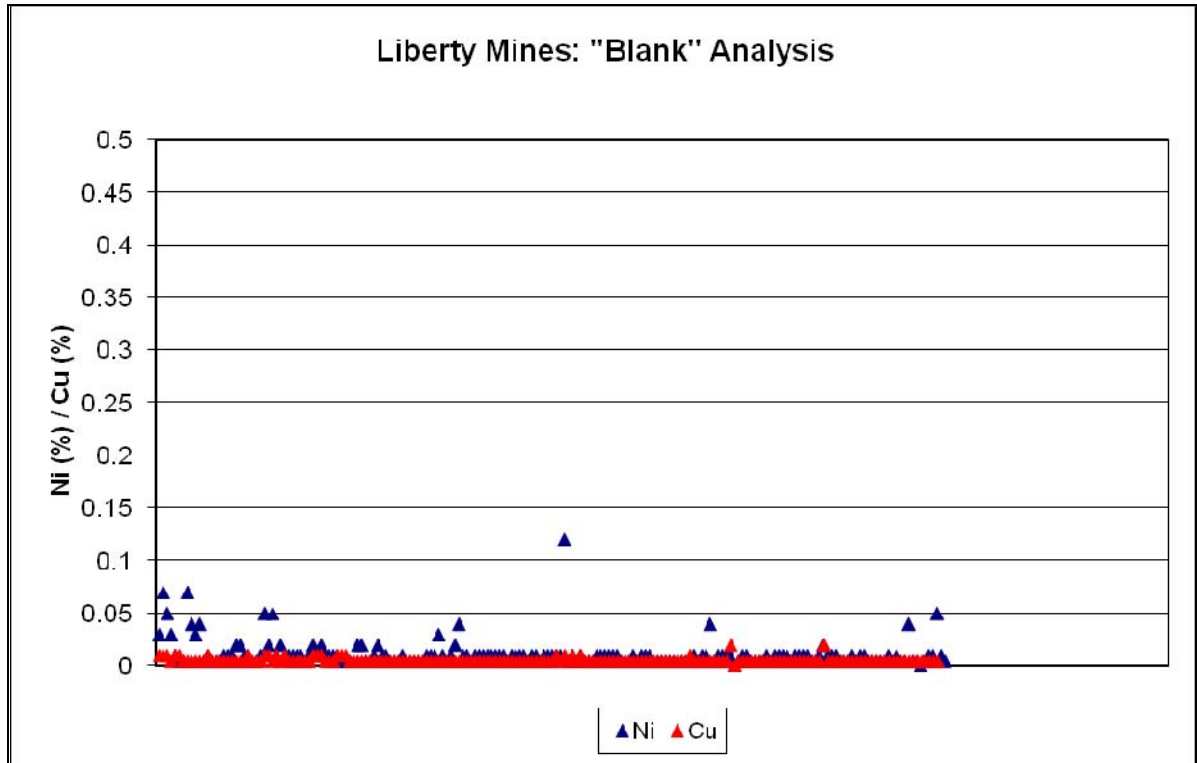
Aspects of the quality control measures implemented by Liberty have been reviewed by SRK. It is SRK's opinion that recent quality control measures implemented and documented by Liberty, generally meet industry best practices. Analytical quality control measures typically involve internal and external 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 quality assurance measures taken by ALS Chemex, a series of external analytical quality control measures were implemented by Liberty. This includes the use of sample blanks and quality control samples inserted at approximately every ten to twenty samples (usually about two per batch).

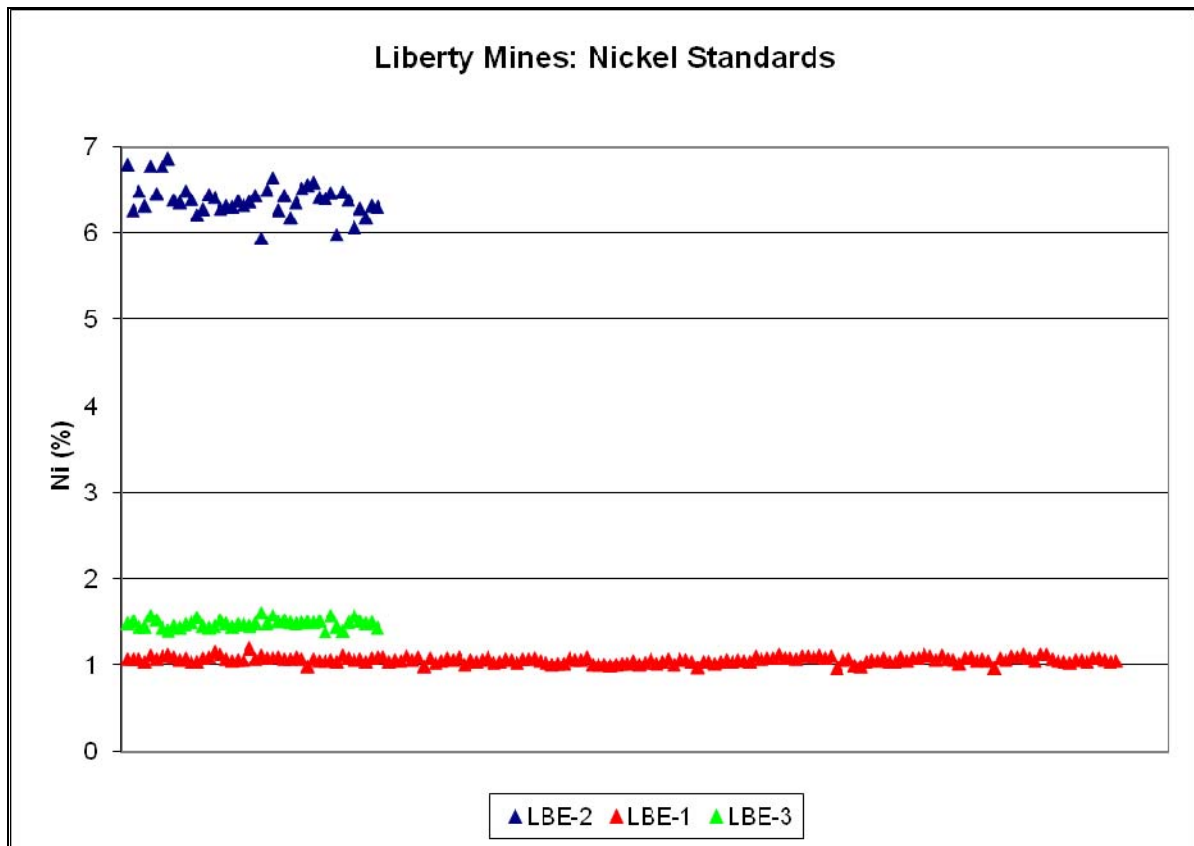
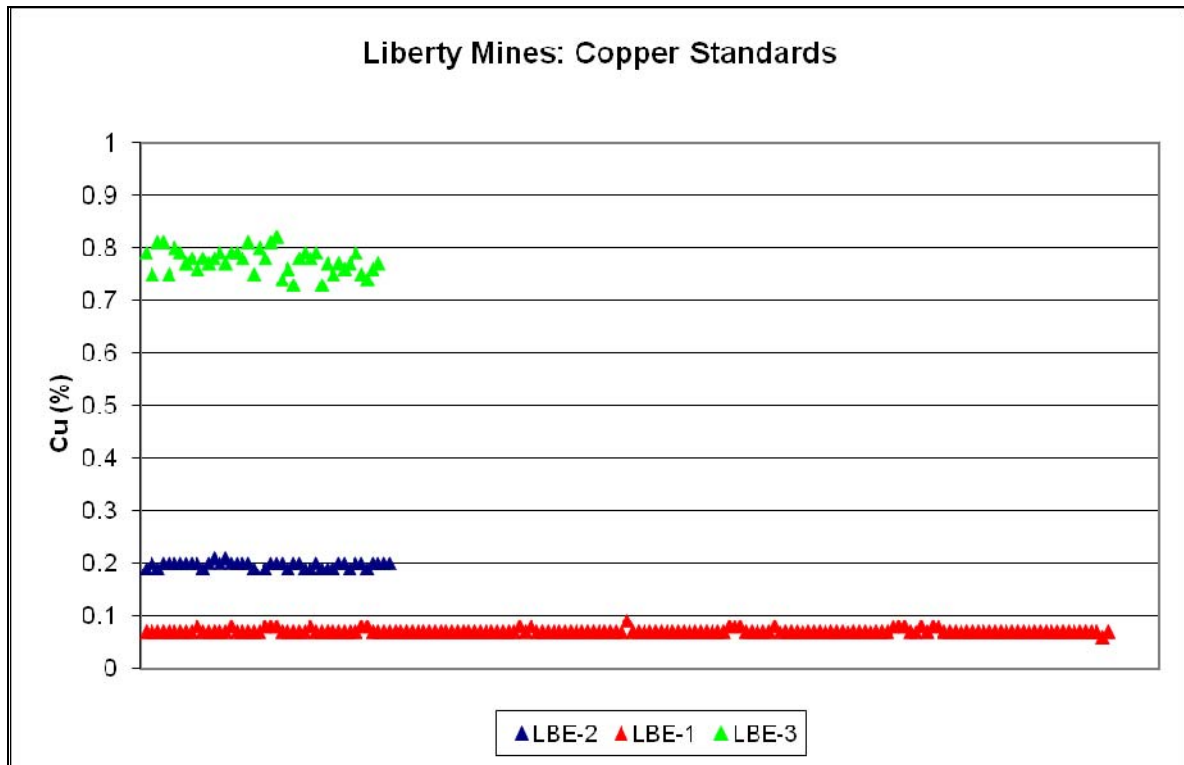
Certified blank samples are used by Liberty. These blanks have recently also been verified by Liberty, by sending ten blank samples to the SGS Laboratory at Lakefield. Nickel and copper assay results for the 'blank' samples are shown in Figure 19. A slight variance is noted in a limited number of samples available.

Three commercial certified reference material samples (LBE-1, LBE-2, and LBE-3) were used by Liberty. Reference samples LBE-1 and 2 were produced from Redstone Mine material, whereas LBE-3 was produced from material from the Montcalm Mine near Timmins. Assay results for the certified reference material samples are summarized in Figure 20. The recommended values for the copper and nickel reference materials are as follows:

	Ni %	Cu %
LBE-1	1.090	0.071
LBE-2	6.440	0.200
LBE-3	1.540	0.780



**Figure 19: Plot for the blank control nickel and copper samples used by Liberty**



**Figure 20: Plot for the control nickel and copper samples used by Liberty (top=copper, bottom=nickel)**

## 12.3 Specific gravity database

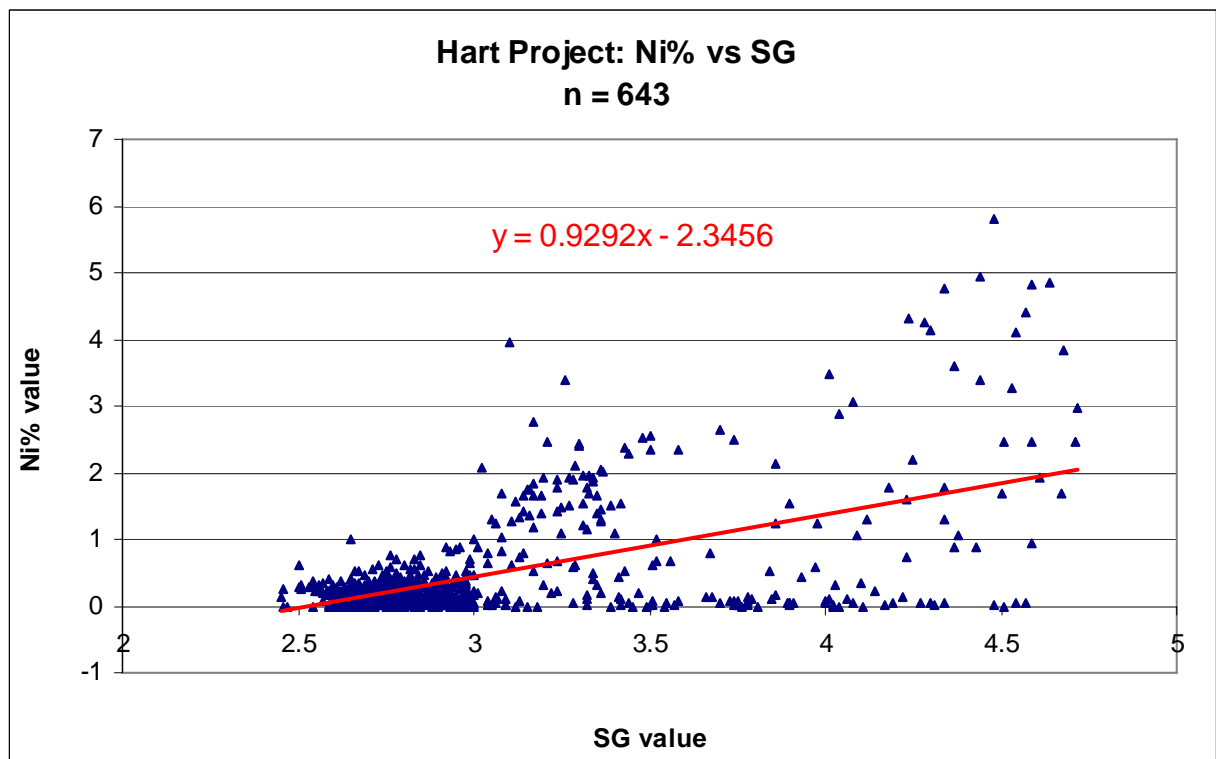
Specific gravity measurements were collected during the Liberty core drilling program in 2007 and 2008. No reliable specific gravity data exist for the 2005 drilling program.

A total of 643 specific gravity determinations are available for the Hart project. Two hundred and thirty one determinations were made from within the nickel-copper sulphide mineralization considered for resource estimation.. All specific gravity measurements were made by ALS Chemex from core pulp samples, using a pycnometer (Method Code OA-GRA08b). The statistics of this dataset is summarized in Table 6. This table differentiates between the three sulphide mineralization types (iron formation, massive and disseminated). The mean specific gravity for each type was used to estimate tonnages.

**Table 6: Summary of specific gravity data available for the Hart project (by sulphide mineralization type)**

<b>Statistic</b>	<b>Iron Formation</b>	<b>Massives</b>	<b>Disseminated</b>
Mean	4.00	3.47	2.82
Standard Error	0.13	0.05	0.02
Median	4.05	3.30	2.78
Mode	na	3.17	2.78
Standard Deviation	0.41	0.55	0.16
Sample Variance	0.17	0.30	0.02
Kurtosis	0.96	-0.33	3.47
Skewness	-1.09	0.92	1.68
Range	1.30	2.07	0.76
Minimum	3.13	2.65	2.61
Maximum	4.43	4.72	3.37
Sum	39.98	436.87	267.57
Count	10	126	95

A general positive relationship exists between specific gravity and nickel grade (Figure 21).



**Figure 21: Scatter plot showing the relationship between specific gravity and nickel grade**

## 13 Data Verifications

### 13.1 Introduction

The mineral resource model presented herein was prepared by SRK from exploration data provided by Liberty and a geological interpretation provided by Mr. Will Randall, P. Geo, a former employee of Liberty. As required under National Instrument 43-101, and Form 43-101F1, SRK has verified the quality and reliability of the all data and geological interpretations provided by Liberty and considered for resource estimation.

After review by SRK, the geological model provided by Liberty was found to be reasonable and appropriate for resource estimation.

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 prior to 2007. SRK was however able to review the procedures adopted by Liberty exploration staff since 2007, during which most of the exploration data for the Hart project was collected (see Table 4).

### 13.2 Control Sampling Assay Protocols

Control sampling procedures applied by Liberty at Hart include techniques such as the following:

- 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);
- Replicate analysis on 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;
- Validation of the assay results in the database compared with the original assay certificates;
- The Century Systems database system used by Liberty is more than just a database; it is a management tool that combines borehole logging and assay data in a way that integrates seamlessly with Datamine Studio. Century Systems has built-in data verification tools, generating data input error and quality control reports for management action.

### 13.3 SRK Independent Verifications

During the site visit, SRK was able to verify many of the surface drill collar positions and review most of the exploration protocols and procedures used by Liberty exploration staff. SRK found that these protocols and procedures generally meet industry 'best practices'. In addition SRK inspected core from five drill holes drilled by Liberty in 2008. Generally logging in the digital database compares well to what SRK observed in the drill core.

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

SRK also collected seven core samples for independent verification analyses. Care was taken to replicate sampled intervals for various types of sulphide mineralization (low and high grade nickel mineralization). The verification samples were specifically collected to attest to the existence of nickel and copper mineralization on the Hart property.

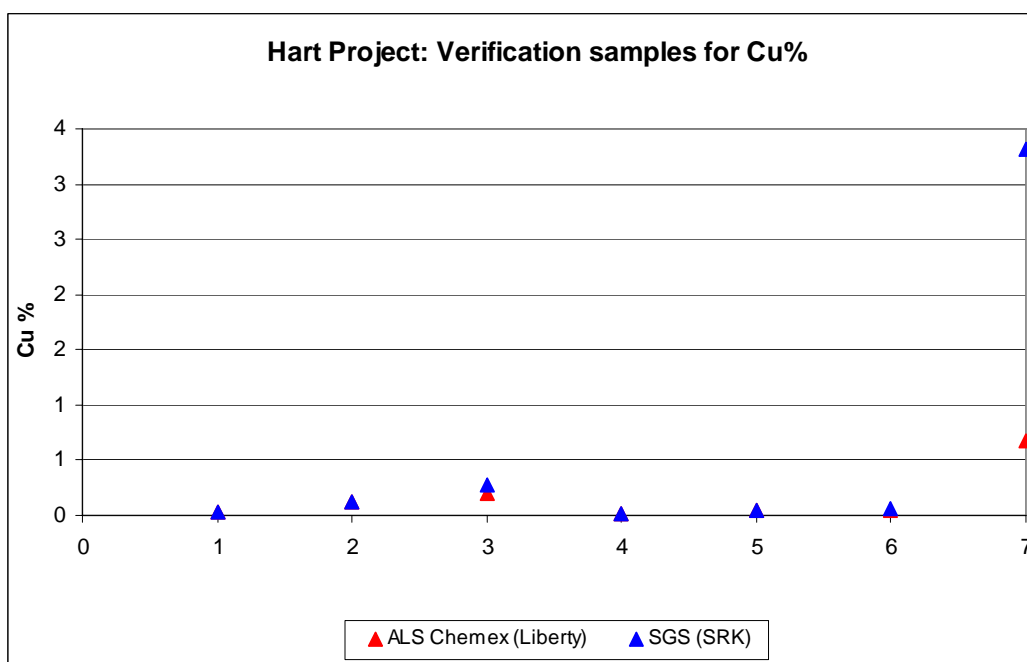
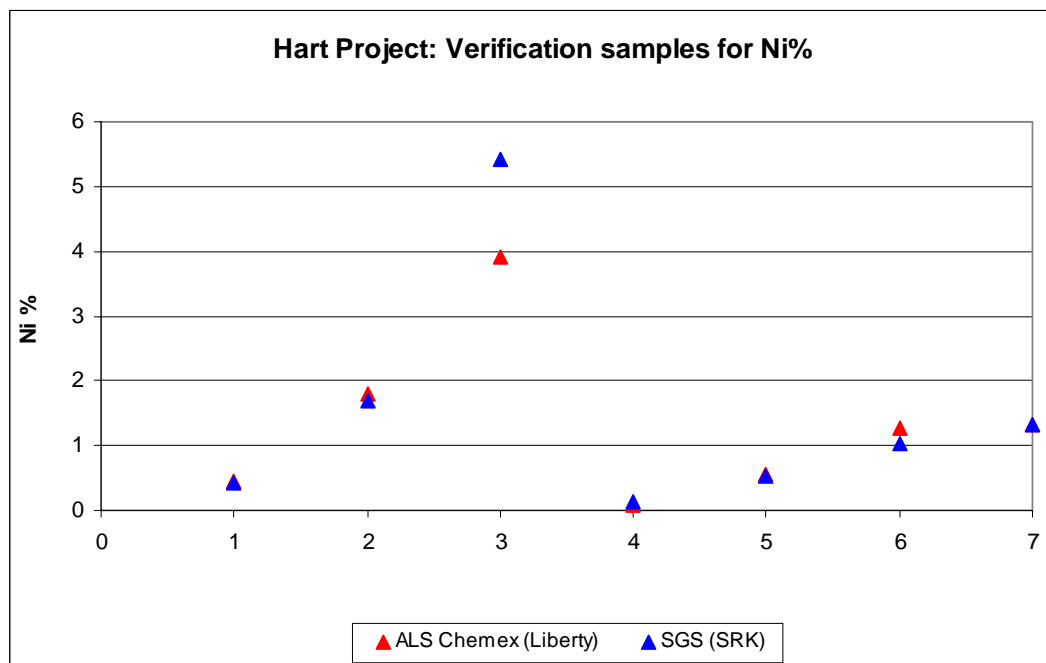
The SRK samples were submitted to SGS Laboratories in Toronto for independent analyses using a ‘near total’ four acid digestion followed by ICP-AES (analytical code ICP90Q). Liberty used and aqua regia digestion followed by atomic absorption finish. The comparative results are summarized in Table 7 and graphically in Figure 22. SRK regard the variance in nickel and copper grades in Table 7 to be acceptable and typical for deposits of this nature.

The verification study showed that although average assays are similar, for higher nickel grades SGS results tend to be higher, whereas at lower nickel grades ALS Chemex yield marginally higher results. These variations are however not considered significant.

In the opinion of SRK, the analytical results delivered by ALS-Chemex are sufficiently reliable for the purpose of resource estimation.

**Table 7: Comparative analyses for SRK check assay verification.**

Hole #	Sample #	Drill Depth (m)	SGS ICP 90Q		ALS Chemex AA46	
			Ni%	Cu%	Ni%	Cu%
H07-29	E96149	276.0 – 277.0	0.43	0.03	0.44	0.03
	E96150	277.0 – 277.2	1.69	0.12	1.81	0.12
	E97301	277.2 – 277.6	5.42	0.27	3.90	0.20
H07-55	E107844	61.0 – 61.6	0.13	<0.01	0.09	0.01
	E107845	61.6 – 62.6	0.54	0.04	0.55	0.04
H07-50	E105715	451.0 – 452.05	1.03	0.06	1.27	0.05
	E105716	452.05 – 452.2	1.31	3.31	1.31	0.67
<b>Average</b>			<b>1.51</b>	<b>0.55</b>	<b>1.34</b>	<b>0.16</b>



**Figure 22: Graph showing comparative Ni% and Cu% assays for SGS (ICP90Q) and ALS Chemex (AA46)**



## 14 Adjacent Properties

Liberty owns a large portion of the surrounding claims, including three of the four known deposits of the Shaw Dome. Hart is located in the central portion of Langmuir Township (Figure 6). 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.

Liberty owns the Redstone deposit that contains a reported Measured and Indicated mineral resource of 418,931 tonnes at an average grade of 2.32 percent nickel (SRK, 2007). This resource estimate only reflects the nickel mineralization contained to a depth of 508 metres, where current mining activities are taking place. The neighbouring Liberty-owned McWatters deposit host an Indicated Mineral Resource of 714,870 tonnes at 0.94 percent nickel and an Inferred Mineral Resource of 13,829 tonnes at 3.39 percent nickel (Liberty Mines Inc, 2008) McWatters is currently in the pre-production mining stages. In addition to the known deposits in the area there are many other prospects, including the Galata showing and the mineralized intervals delineated by Golden Chalice Resources on the Langmuir Property to the east of the Hart Deposit.

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 (undated Ministry of Northern Development and Mines Resident Geologist Report ).

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 Mineral Testing

It is envisioned by Liberty that the sulphide mineralization from the Hart property could be processed at the Redstone Mill, located at the Redstone mine site approximately twenty-five kilometres southeast of Timmins, Ontario. This modern nickel concentrator was commissioned in July 2007 with a designed capacity of 2,000 tonnes per day of nickel sulphide ore with a high MgO content.

Liberty has initiated test work (open cycle test at different grades on representative core samples) on Hart sulphide mineralization to assess the compatibility of the sulphide mineralization with the Redstone mill process. The test work, which was done internally, as well as completed mineralogical petrographic reports, is under review by an independent qualified person. At the time this report has been prepared, results of this review had not yet been received.



**Figure 23: The recently commissioned Redstone Mill located adjacent to Redstone Mine close to the Hart Project area**

## **16 Mineral Resource and Mineral Reserve Estimates**

### **16.1 Introduction**

The Hart nickel deposit has an historical resource of 770,000 tonnes grading 0.9 percent nickel (Ministry of Northern Development and Mines Resident Geologist Report, 1999). The details of how this historical resource estimate was derived are uncertain. This historical mineral resource estimate was prepared prior to the adoption of NI43-101 and should not be relied upon.

SRK prepared a mineral resource estimate for the Hart project in accordance with NI 43-101 guidelines in June 2008. There has been no additional resource data generated since that estimate. This section describes the resource estimation process followed by SRK in June 2008.

This section summarizes the data, methodology and parameters used by SRK to estimate the mineral resources for the Hart deposit. The mineral resource estimates considers all Canadian Arrow and Liberty drilling data acquired during the period 2005 to 2008. The limited drilling data collected prior to this period was not considered.

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 Jean-Francois Couture, P.Geo 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 3 was used to construct the geological solids. Datamine Studio Version 2.1 was used to build composites, the block model, to run the 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**

Data used for resource estimation were validated as discussed in Section 13. The database records provided to SRK by Liberty were audited against digital log sheets, sections and plans. Database records reflect original data. Lithology codes applied are the standardized codes used by Liberty exploration staff on all Liberty Projects in the Shaw Dome being based on reasonable geological criteria suitable for the local variances within this type of deposit. These lithology codes facilitated the geological modelling process.

The Excel and Datamine format database provided to SRK was checked for any missing data, overlapping intervals and for duplicated data inputs. The assay database comprises of two data types viz. drill data as well as limited surface trench data.

## **16.3 Resource Estimation**

### **16.3.1 Database**

The database used for resource estimation includes exploration drilling data collected during three exploration programs conducted during the period 2005 to 2008. The Liberty drilling database is summarized in Table 4. The total database comprises 3,209 sample records from 115 drill holes and five surface trenches.

The Hart borehole database contains validated information about drill collar location, assay results for nickel and copper, lithology and surveying for all Liberty and Canadian Arrow drill holes. Additional information available in the database includes structural, rock quality determination, core recovery and specific gravity data. SRK is of the opinion however that the Hart dataset is adequate in detail, size and quality for resource modelling and grade estimation for this style of sulphide mineralization.

## **16.4 Solid Body Modelling**

Nickel (and copper) grades are spatially related to three kinds of sulphide mineralization. The highest and most continuous nickel mineralization is associated with the basal massive sulphide mineralization horizon. Disseminated sulphides overlay the massive sulphide mineralization forming discontinuous bodies with highly variable nickel grades. Locally, nickel sulphide also occurs in an iron formation..

Resource estimation was constrained to three 3D wireframes interpreted from the drilling data:

Iron formation hosted mineralization;

Massive sulphide mineralization, subdivided into ‘upper’ and a ‘lower’ sub-domains;

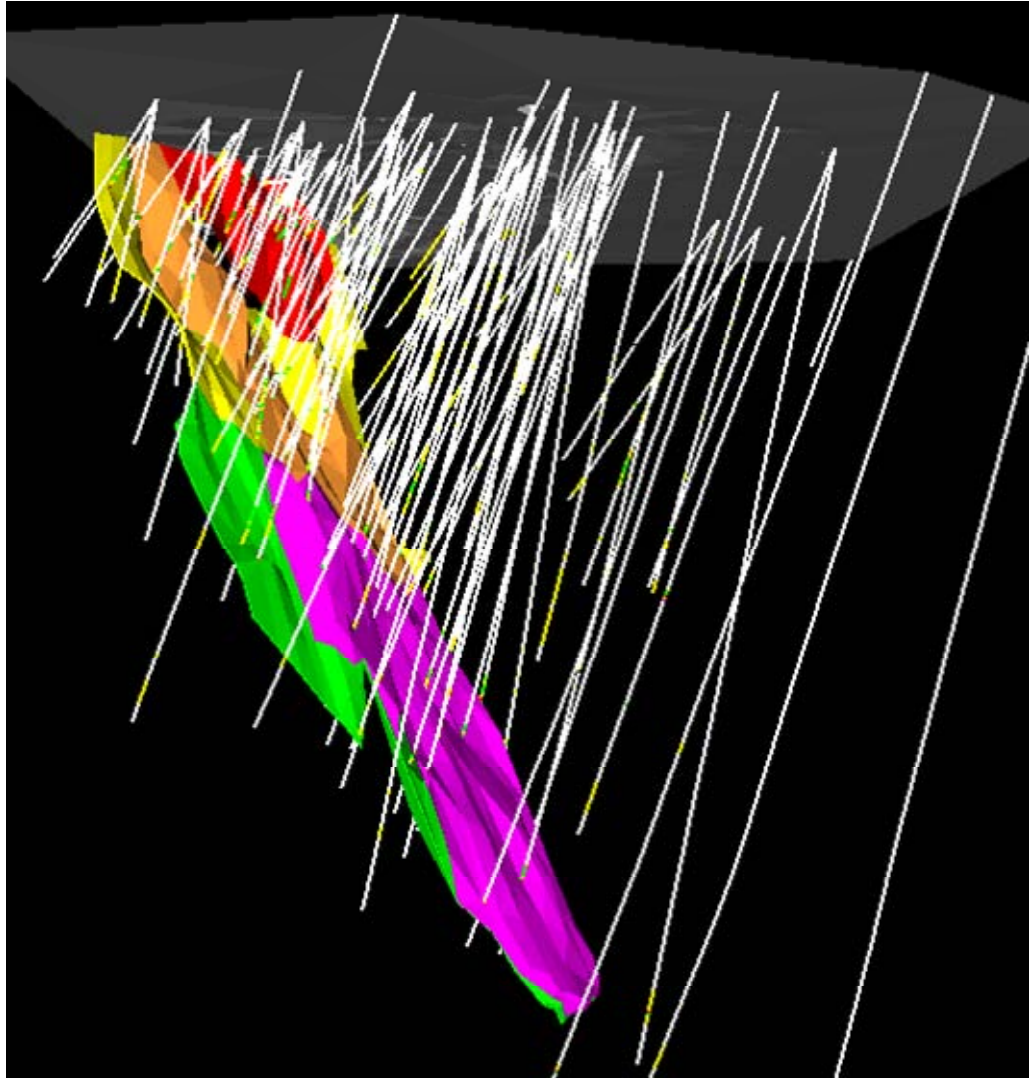
Disseminated sulphide mineralization, generated using a 0.3 percent nickel threshold. Also divided into ‘upper’ and a ‘lower’ sub-domains.

The distinction between ‘upper’ and ‘lower’ sub-domains is defined by an inferred structural break in the sulphide mineralization at an average depth of between 200 to 230 metres below surface. A simplified section and an oblique view illustrating all the relevant wireframes constructed to constrain resource estimation are shown in Figure 24 and Figure 25.



A felsic intrusion cross cuts the modelled ore domains and has been modelled from drillhole data. The volume of this intrusion was removed from the resource volumes.

It is recognized that this geological model is a simplification of the reality at Hart. The model should be seen as a starting point upon which to attach more detail as this becomes available. It is particularly important that the structural geology aspects be investigated during future drilling programs to improve the understanding of the geometry of the sulphide mineralization.



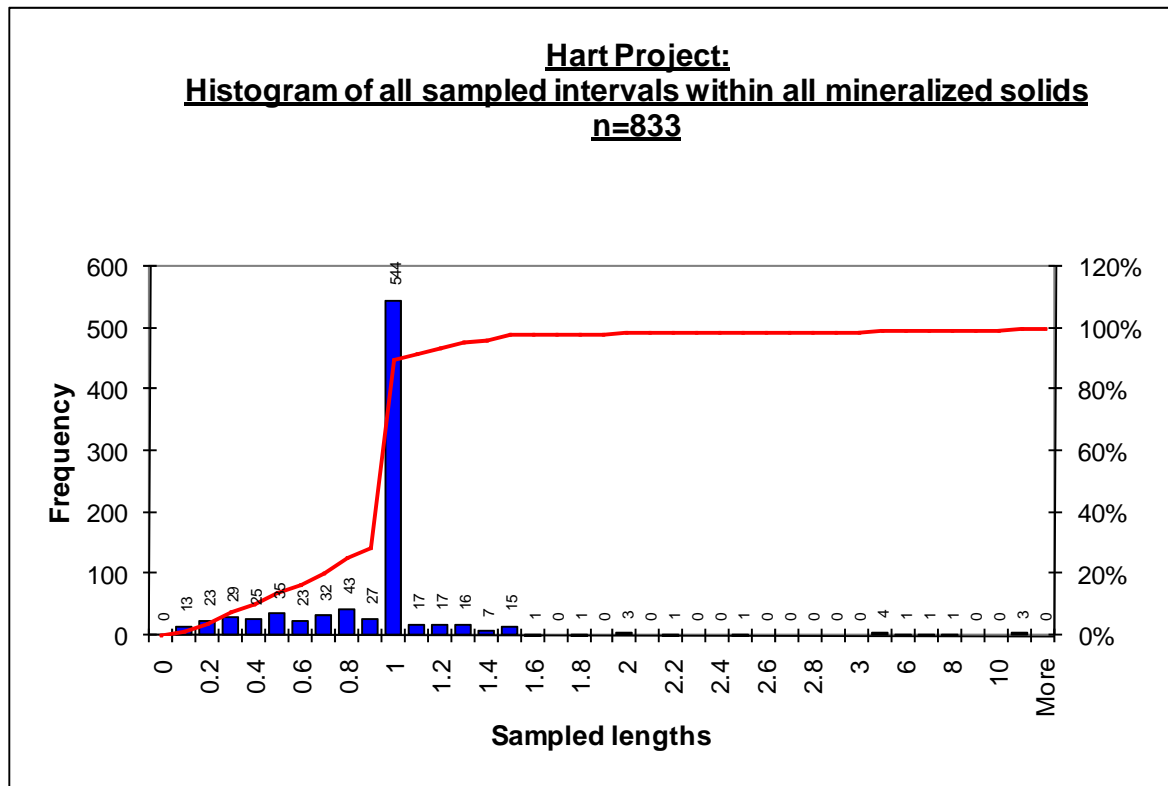
**Figure 25: Oblique view of the modelled mineralization solids at Hart in relation to informing drillhole data (looking northeast)**

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.

## 16.5 Compositing

Composite files were created using uncapped values starting at the drillhole collar position and defined within each sulphide mineralization type.

An optimum composite length of one metre was chosen for the input data within the modelled mineralized solids. Composites were extracted to a workspace for statistical analyses and grade interpolation. The core sample interval lengths are summarized in Figure 26. A value of zero was assigned to unsampled intervals. The mean sample length is 0.96 metre (mode = one metre) with a maximum of eleven metres.



**Figure 26: Histogram of all sampled intervals within all mineralized solids**

After excluding all data within modelled dykes, composited datasets were generated for the modelled sulphide sub-domains. There are seventy-seven composites in the iron formation sub-domain, 109 in the Upper Massive, 163 in the Lower Massive sub-domain and 251 and 297 composites in the Upper and Lower Disseminated sub-domains, respectively.

## 16.6 Statistics

Basic statistics for nickel and copper composites within the sulphide sub-domains are presented in Table 8. This table compares composited metal grades with the original assay data and capped composite. The statistical signature of each of the three sub-domains is substantially different, justifying the decision to separate each sub-domain for geostatistical analyses.

Histograms for composited nickel and copper within the five modelled mineralized zones are provided in Appendix B.

HART: BASIC STATISTICS TABULATIONS

Iron Formation	Upper Massives			Lower Massives			Upper Disseminated			Lower Disseminated		
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Nickel %

	Original	Composited	Capped	Original	Composited	Capped	Original	Composited	Capped	Original	Composited	Capped	Original	Composited	Capped
Mean	0.69	0.68	0.68	1.04	1.09	1.08	1.68	1.71	1.70	0.33	0.30	0.30	0.31	0.27	0.27
Standard Error	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.09	0.09	0.02	0.01	0.01	0.02	0.01	0.01
Median	0.61	0.61	0.61	0.80	0.88	0.88	1.61	1.57	1.57	0.31	0.30	0.30	0.27	0.26	0.26
Mode	0.31	0.00	0.00	0.80	0.39	1.45	0.01	0.00	0.00	0.30	0.00	0.00	0.01	0.00	0.00
Standard Deviation	0.45	0.41	0.41	0.94	0.86	0.82	1.12	1.11	1.09	0.23	0.17	0.17	0.25	0.24	0.24
Sample Variance	0.21	0.17	0.17	0.89	0.73	0.67	1.26	1.23	1.19	0.05	0.03	0.03	0.06	0.06	0.06
Kurtosis	3.20	3.53	3.53	6.35	7.50	4.34	1.39	1.31	0.82	55.05	5.49	5.49	19.29	16.58	16.58
Skewness	1.36	1.31	1.31	2.06	2.06	1.64	0.99	0.96	0.85	5.81	1.09	1.09	3.52	2.87	2.87
Range	2.39	2.34	2.34	5.68	5.68	4.86	5.80	5.80	4.86	2.79	1.31	1.31	2.01	1.98	1.98
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	2.39	2.34	2.34	5.68	5.68	4.86	5.80	5.80	4.86	2.79	1.31	1.31	2.01	1.98	1.98
Sum	54.80	52.08	52.08	138.74	118.28	117.46	301.36	278.02	277.08	76.61	75.07	75.07	80.24	79.59	79.59
Count	80	77	77	133	109	109	179	163	163	234	251	251	257	297	297

Copper %

	Original	Composited	Capped	Original	Composited	Capped	Original	Composited	Capped	Original	Composited	Capped	Original	Composited	Capped
Mean	0.06	0.06	0.06	0.08	0.07	0.07	0.12	0.12	0.11	0.02	0.02	0.02	0.02	0.02	0.02
Standard Error	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Median	0.05	0.05	0.05	0.06	0.07	0.07	0.11	0.11	0.11	0.01	0.01	0.01	0.01	0.01	0.01
Mode	0.04	0.05	0.05	0.01	0.02	0.02	0.11	0.11	0.11	0.01	0.01	0.01	0.01	0.01	0.01
Standard Deviation	0.05	0.04	0.04	0.08	0.06	0.06	0.10	0.09	0.07	0.03	0.02	0.02	0.03	0.02	0.02
Sample Variance	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Kurtosis	5.90	2.23	2.23	23.57	2.73	2.73	12.88	12.71	0.99	88.76	129.76	129.76	99.93	26.56	26.56
Skewness	2.05	1.19	1.19	3.73	1.37	1.37	2.93	2.69	0.94	8.97	10.01	10.01	8.79	4.10	4.10
Range	0.28	0.19	0.19	0.66	0.31	0.31	0.68	0.68	0.33	0.33	0.31	0.31	0.41	0.17	0.17
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	0.28	0.19	0.19	0.66	0.31	0.31	0.68	0.68	0.33	0.33	0.31	0.31	0.41	0.17	0.17
Sum	4.68	4.47	4.47	10.18	8.07	8.07	21.36	19.31	18.66	3.99	3.83	3.83	5.25	4.88	4.88
Count	80	77	77	133	109	109	179	163	163	234	251	251	257	297	297

Table 8: Descriptive Statistics (original, composited and capped) for composited Ni% and Cu% data from the five modelled geostatistical domains



Nickel and copper data are highly skewed with a dominance of lower values, within the disseminated sulphide and ironstone hosted domains. A more uniform grade distribution occurs in the massive sulphide domains. Copper values are however uniformly low in all mineralized domains.

## 16.7 Grade Capping

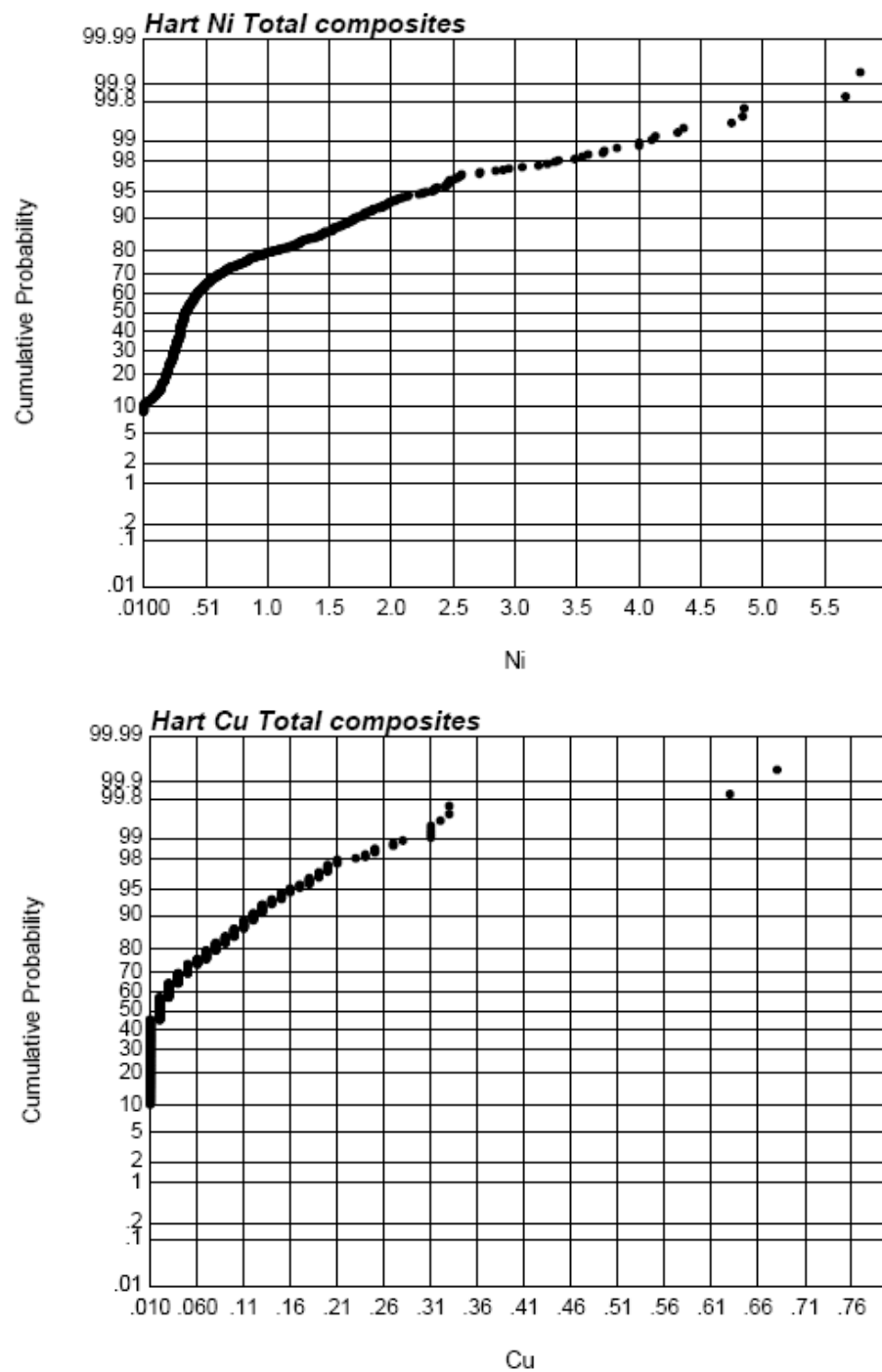
Based on careful examination of the combined composited nickel and copper datasets for all data within the all the modelled mineralized zones and by consideration of the respective probability plots (Figure 27), nickel and copper composites were capped at 4.86 and 0.33 percent, respectively. Capping only impacts the lower and upper massive sulphide sub-domains

## 16.8 Variography

Isatis software version 5.1.7 was used to generate all variograms. Traditional experimental variograms were modelled from the capped composited datasets for the various mineralization domains (two massive sulphides and two disseminated sulphides and one iron formation domain) for nickel and copper for all three principle directions.

A total of thirty variograms were then fitted, yielding the directional ranges listed in Table 9. Based on the highly irregular variograms obtained from the Hart dataset, it was decided not to use kriging as a grade estimation technique, but rather to use an inverse distance square algorithm.

A single spherical structure variogram (including a nugget effect) was constructed and fitted for each direction (strike = N090, dip direction = N180 and normal to the reference plane) and inputted into the Datamine for grade estimation. These directions coincide with local modelled geological orientations, yielding optimal variograms. Slightly different search ellipses (ranges) were used for nickel and copper in the disseminated sulphide sub-domains to reflect their different geological imprints compared to the massive sulphide sub-domains. Variograms for all sub-domains were modelled with the reference plane inclined at negative sixty degrees in the dip direction to conform to geological modelling.



**Figure 27: Probability Plots for composited nickel and copper for all data sources within various mineralized zones**

**Table 9: Variography analyses: ranges for nickel and copper for all modelled directions and for all modelled mineralization domains**

<b>Modelled Direction:</b>	<b>Nickel (m)</b>	<b>Copper (m)</b>
<b>Iron Formation Domain</b>		
Strike (90°)	45	50
Dip (180°)	45	55
Vertical	7	7
<b>Massive Sulphide Domains</b>		
<u>Lower</u>		
Strike (90°)	60	40
Dip (180°)	50	50
Vertical	10	10
<u>Upper</u>		
Strike (90°)	30	30
Dip (180°)	55	70
Vertical	10	10
<b>Disseminated Sulphide Domains</b>		
<u>Lower</u>		
Strike (90°)	25	70
Dip (180°)	30	45
Vertical	5	5
<u>Upper</u>		
Strike (90°)	45	35
Dip (180°)	35	40
Vertical	5	5

## 16.9 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 2.5 metres by 2.5 metres by 2.5 metres in the easting, northing and elevation directions respectively. The parameters of the Datamine block model constructed by SRK are presented in Table 10.

A three split Datamine sub-block routine was applied during block model construction (with a minimum block size of 0.31 by 0.31 by 0.31 metre) to ensure that the modelled mineralized zones are adequately filled.

Block grade estimation was completed in a single pass using the search ellipse ranges defined by variography as outlined in the previous section. In addition, the minimum and maximum numbers of samples used for grade estimation were set at two and twenty respectively.

The block models were coded to differentiate between resource classes (see Section 16.5 below). Specific gravity values appropriate to the mineralization code were added to the model (as per Section 12.3). The block models were cut to only include modelled ore below the bedrock surface and the volumes occupied by felsic intrusions were excluded from tonnage estimation

**Table 10: Parameters of the Hart Block Model constructed by SRK**

Aspect	Block Model
Block origin:	
X	2,330
Y	3,805
Z	1,715
Rows	110
Columns	140
Levels	238
Percent Model	No
Rotation	No

### 16.10 Model Validation

Global and local grade estimates were checked for appropriateness. Original nickel and copper drilled grades were compared with block grades on a section-by-section basis. Grade estimation by inverse distance squared was found to appropriately reflect general grade trends and appropriately correspond to proximal borehole grades. Other verification checks were also conducted to validate the integrity of the block model (including QQ plots and statistical reconciliations with the informing composited dataset).

### 16.11 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, legal, title, taxation, socio-economic, marketing or other relevant issues that could potentially affect this estimate of mineral resources. Mineral reserves can only be estimated based on the results of an economic evaluation as part of a preliminary feasibility study or a feasibility study. As such no mineral reserves have been estimated by SRK as part of the present assignment. There is no certainty that all or any part of the mineral resource will be converted into mineral reserve.

Mineral resources for the Hart 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 independent Qualified Person as defined by NI43-101.

Mineral resource classification is based on variography and on the confidence of geological interpretation and modelling. Both are directly related to the current drill spacing.

An Indicated Mineral Resource classification was assigned to blocks within the primary variography distance from sample points (as per Table 9).

An Inferred Mineral Resource classification was assigned to blocks within twice the primary variography range from informing data.

## **16.12 Mineral Resource Statement**

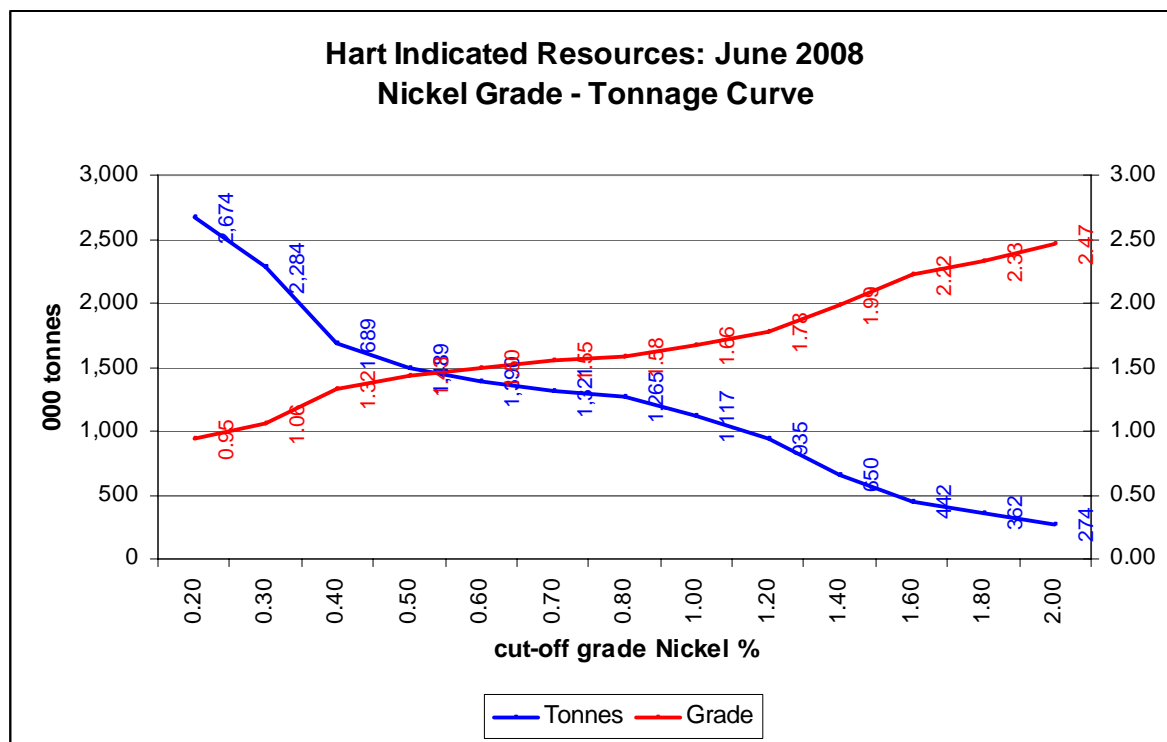
The Mineral Resources for the Hart nickel deposit are reported at a single cut-off of 0.46 percent nickel, that is considered by SRK and Liberty management to be achievable by a future underground mine, considering the nature of the nickel mineralization, its geometry and the projected underground extraction scenario.. This cut-off is primarily based on current mining experience at the comparable Redstone Mine.

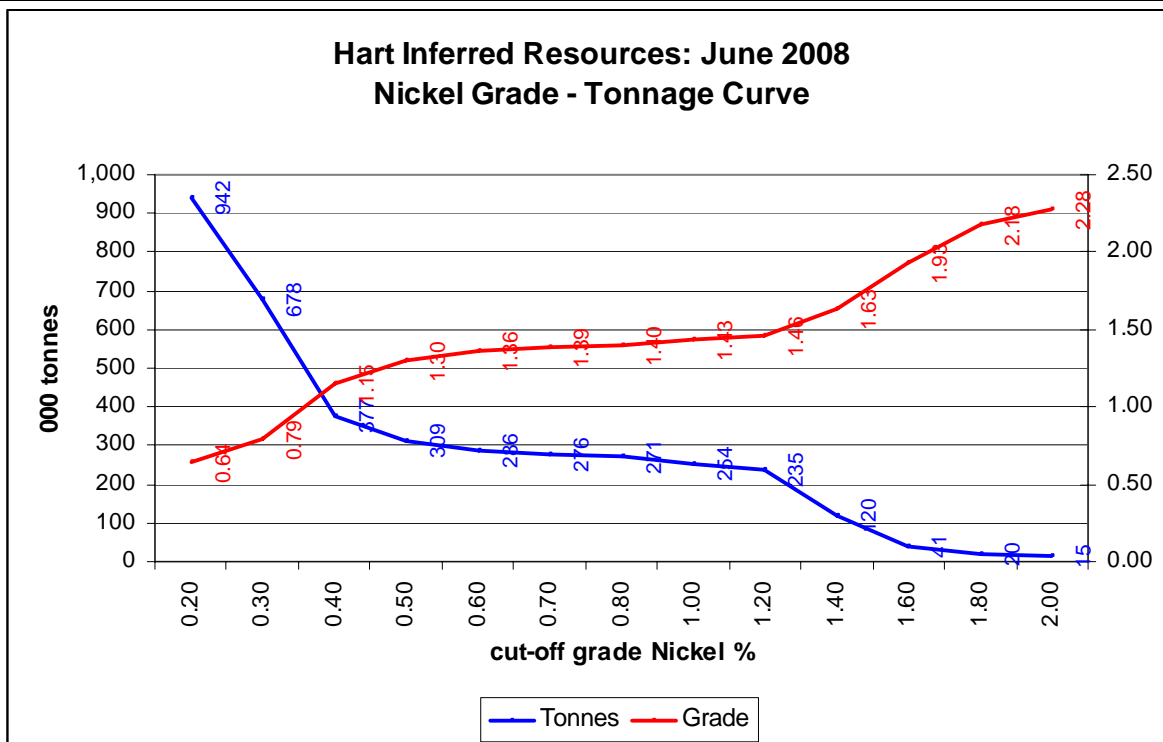
The Mineral Resources statement for the Hart nickel project is presented in Table 11. The numbers have been rounded to reflect the relative accuracy of the estimates. Tonnage and metal grades are sensitive to the cut-off grade. Grade tonnage curves are presented in Figure 28. Other sensitivity tables are presented in Appendix C.

**Table 11: Mineral Resource Statement\*, Hart Nickel Deposit,  
 Timmins, Ontario, SRK Consulting January 1, 2010**

Sulphide Zone	Classification	Tonnes (000's)	Nickel (%)	Copper (%)	Contained Nickel (lbs 000's)
<b>IF Zone</b>	Indicated	120	0.70	0.06	1,850
	Inferred	12	0.86	0.07	225
<b>Massive Zone</b>					
Lower	Indicated	999	1.56	0.11	34,352
	Inferred	228	1.40	0.09	7,044
Upper	Indicated	353	1.36	0.09	10,588
	Inferred	59	1.12	0.08	1,466
<b>Disseminated Zone</b>					
Lower	Indicated	60	0.63	0.04	838
	Inferred	22	0.52	0.02	255
Upper	Indicated	14	0.50	0.03	152
	Inferred				
<b>Total</b>					
	Indicated	1,546	1.40	0.10	47,779
	Inferred	322	1.27	0.08	8,990

\* Reported at 0.46% nickel cut-off. All figures have been rounded to reflect the accuracy of the estimate. Mineral Resources are not Mineral reserves and do not have demonstrated economic viability.





**Figure 28: Nickel Grade Tonnage Curve for Hart Indicated (top) and Inferred Resources (bottom)**



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

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

#### **17.1.1 Terms of Reference**

Liberty Mines retained SRK Consulting (Canada) Inc. (SRK) to provide a Scoping Study for the Hart deposit. SRK utilized the January 1, 2010 geological model as a basis for scoping study mine design.

#### **17.1.2 Hart Property Current Status**

Other than exploration activity as discussed in Section 9 of this report, no clearing or mining work has been commenced at the Hart Property. Application for a mining lease has been submitted and permitting is in progress.

### **17.2 Mine Geotechnical**

Geotechnical assumptions have been made based on expectations of similar characteristics evidenced at McWatters and Redstone nickel mines situated within 3 and 6 kilometres either side of the Hart property.

Mineralization RQD of 50 and UCS of 70 MPa have been assumed with host material characteristics slightly higher at 55 and 80 respectively. Weakening structures including faults have been considered as potentially integral to underground development and/or stope production scenarios.

### **17.3 Planned Mining Methods and Layout**

#### **17.3.1 Mining Context**

The Hart deposit averages 1.38 percent nickel over 1.87 million tonnes (Table 11) and will benefit from a selective low cost mining method. The tabular deposit strikes SSE at an average dip angle of seventy-five degrees to a depth of 570 metres below surface

The deposit has a 220 metre strike length and average thickness ranging from 3 metres near surface to 11 metres at depth. The deposit has an average of 3,000 tonnes per vertical metre.

From diamond drill information it appears that the footwall contacts are sharp with massive ore against volcanic rock while the hangingwall is gradational with a transition into a low grade disseminated sulphide zone.

On surface, the deposit area is characterized by poorly drained with overburden ranging from zero to 11 metres thickness.

A conventional owner-operated, ramp accessed, underground mine is proposed. After consideration of several mining methods, (including open pit, cut & fill and longhole retreat) Alimak mining was selected as the most appropriate method.

### **17.3.2 Selected Mining Method**

The mining method selected for use at the Hart property was selected based primarily on the geometry of mineralization, nickel grade and geotechnical characteristics.

Initial methods considered included open pit near surface, cut & fill and longhole methods with and without backfill. Open pit mining was considered because the resource comes very close to surface but this option was discounted because of the high stripping ratio required.

Cut & Fill was discounted even though this method provided high selectivity. Conceptual work showed excessive development requirements and poor productivities from higher elevation stopes would present a lower cash flow. Further, actual shrinkage work at Hart's sister mine Redstone, indicated that a non-entry mining method was desirable to improve safety considerations.

Vertical longhole methods were discounted since they were not as selective, created larger dilution issues and required an increase in the mine lateral development cost due to the 30 metre limit on drilling sublevel spacing.

Alimak raise mining over 100 metre level intervals was identified as the best method to provide the Hart property with optimum productivity, safety and economics.

The addition of pastefill in primary stopes allowed for complete extraction of mineral and improved Net Present Values (NPV).

### **17.3.3 Alimak Raise Mining Description**

Raise mining is a "longhole" method of bulk mining tabular and narrow vein deposits. The main mining access is gained by driving a raise up dip along the centre of the stope hangingwall. The production drill holes are oriented along strike tipped slightly down from horizontal.

The advantages of this mining method include:

Less Development - The bulk of the waste development required is the ore zone access and the raise climber nests. A ramp is not required and, in many cases, neither is the muck pass and ventilation raise of a regular stoping system. The change in geometry and improvement in ground support allows stope heights in the order of 75 to 150 metres.

The sub-horizontal production drillhole direction allows the use of the undercut as a slot into which the ore can initially expand.

Faster Access to Undeveloped Mining zones – Once the climber nests are established, raises are driven in the vein immediately contributing to production.

Better Ground Control - Cables can be installed in the raise hangingwall, where they will do the most good. The stopes can also be mined in a shrinkage fashion, with host wall rock supported by the broken ore.

Less Dilution - The production drill sits in the middle of its work, cutting the drilled length in half. This improves drill accuracy which, in conjunction with the better ground control, reduces dilution.

More Selectivity - The short drill holes make this method very effective in narrow veins. The geology is exposed down the entire dip length of the stope on both sides of the raise. The vein contacts can be both extrapolated from across the raise and interpolated between raises. Stopes can be as little as 1 metre thick.

Faster Overall Extraction – After development and production drilling are concluded production of broken material is rapid since the cycle simply involves load, blast and muck. Added advantages include fewer drill setups, surveys, fill fences, and backfill arrangements.

#### 17.3.4 Alimak Raise Mining Methodology

(See references - Manrock)

The raise climber mining method (**Error! Reference source not found.**) is comprised of the following:

Lateral Development

Bottom Sill: Access and haulage drifts are driven from the ramp on the hanging or footwall of the mining zone. The drifts are sized to accommodate the LHD's or trucks as may be required.

Drawpoints and climber nests are always in the hangingwall. The climbers require nests about 3 metres in width, 2.7 metres in height and 12 metres in length. The nest will be slashed out of the drawpoint backs if development is from the hangingwall side.

Top Sill Access: These drifts are also driven from the ramp or existing development but, unless there is another lift, they often need only be large enough for the movement of supplies.

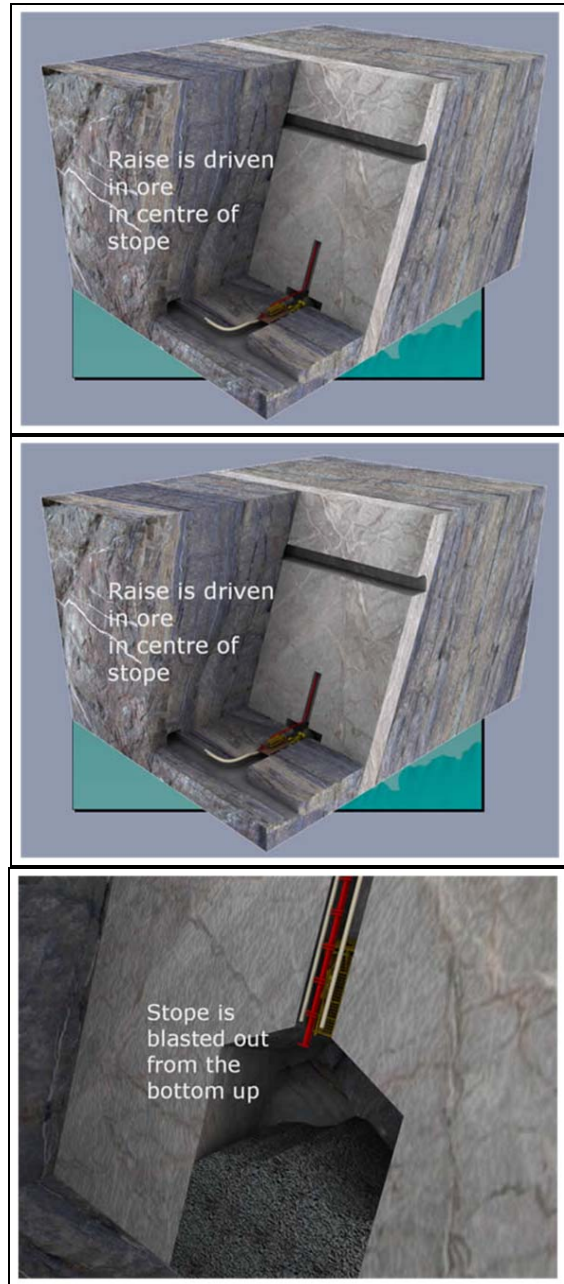
##### **Raises**

Raise Development: Raises must be driven big enough that a 2.4 metre drill can be rotated within the raise, or about 2.7 x 2.7 metres horizontally.

Raise Rehabilitation: After the raise is driven it often must be rehabilitated, subject to ground conditions, for the safety of production crews.

Hangingwall Support: Hart ground is considered to require that the stope hangingwall be supported with resin-grouted cable bolts only in the raise. This

is very cost effective as the raise is centred in the stope, which concentrates the support where it is needed most.



**Figure 29: Alimak Raise Mining Stages 1. Collar raise, 2 Breakthrough and drill, 3 Load and blast**

### **Production**

**Drilling:** Drill holes extend 13 metres to just less than half way to the next raise and are oriented slightly down from horizontal. The down dip helps the toes break to the stope wall. Hole diameter at Hart has been specified as 50mm to avoid hangingwall / footwall damage in narrow veins.

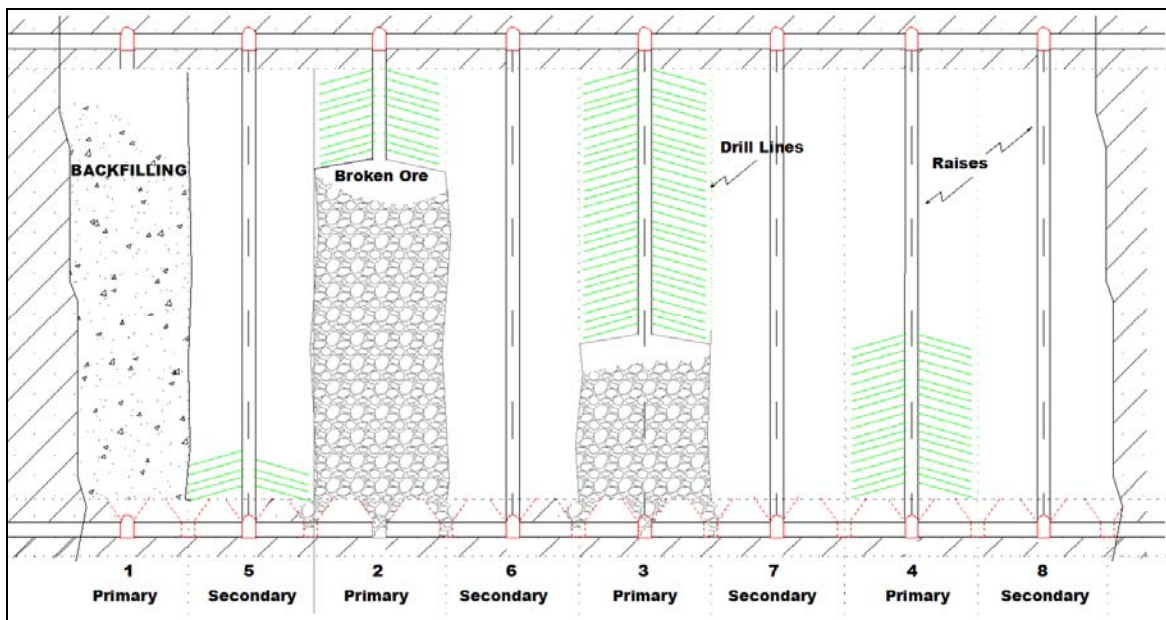
**Loading & Blasting:** The holes are most often mechanically loaded with either ANFO or an emulsion explosive. The blasts are timed to slash down, with the footwall holes often the last to fire. It is safest to take a few rings per blast, so that miss-holes or other blasting problems are accessible for correction.

**Mucking Swell:** Some blasted material is left in the stope while blasting to provide confinement. The broken rock often compacts slightly, resulting in an effective swell of about one third its unbroken volume.

**Final Mucking:** Once the stope is completely blasted the stope is mucked empty.

### Backfill

A fill fence is established at the bottom drawpoint. Pastefill distribution piping is extended into the top sill access. Pastefill is poured into the stope until the bottom drawpoint behind the barricade is flooded and a plug is formed. Once the pastefill plug has formed (1 to 3 days) the remainder of the stope is filled with paste. Mining can commence in adjacent stopes once sufficient cure is achieved in the paste (7 to 28 days). Multiple mining activities can occur on the same level simultaneously. (Figure 30)

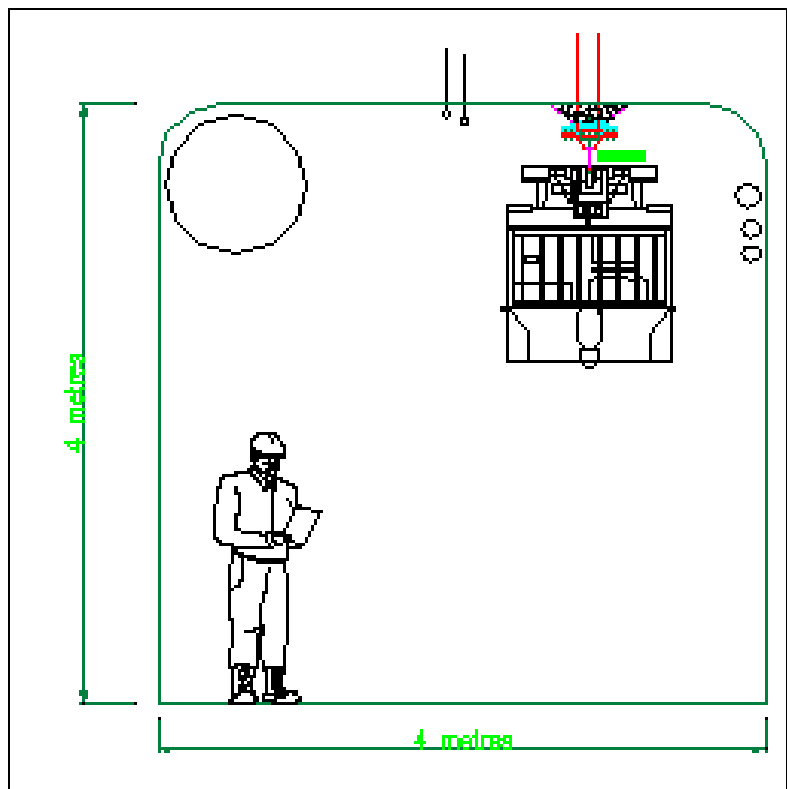


**Figure 30: Vertical Projection Showing Typical Sequence in Primary and Secondary Stopes**

### 17.3.5 Plant Feed and Waste Handling

Once the surface portal is completed a -18% decline (ramp) will be developed down to the lowest level of the mine. The 4 x 4 metre ramp will be located in the hangingwall of the deposit to facilitate the Alimak mining technique. For the first 150 metres of development the 5.3 m<sup>3</sup> (6yd<sup>3</sup>) LHD's will transport the waste directly to surface storage. Thereafter remucks will be established at 150 metre intervals so development faces can be cleared to the remucks by LHD's in a maximum of 3.5 hours.

As the ramp advances at 150 metre intervals contractors will install monorail track and electrics on the ramp back so that the monorail can be used for broken rock removal (Figure 31).



**Figure 31: Typical Section in Ramp Showing Monorail Supported From back**

During development broken rock from remuck bays will be loaded by 3.1 m<sup>3</sup> LHD (4yd<sup>3</sup>) into 8.3 tonne monorail cars. The operators of the electric monorail train will self load his train as shown in Figure 32. Operators will have a wireless remote that allows them to position the train as required for loading.

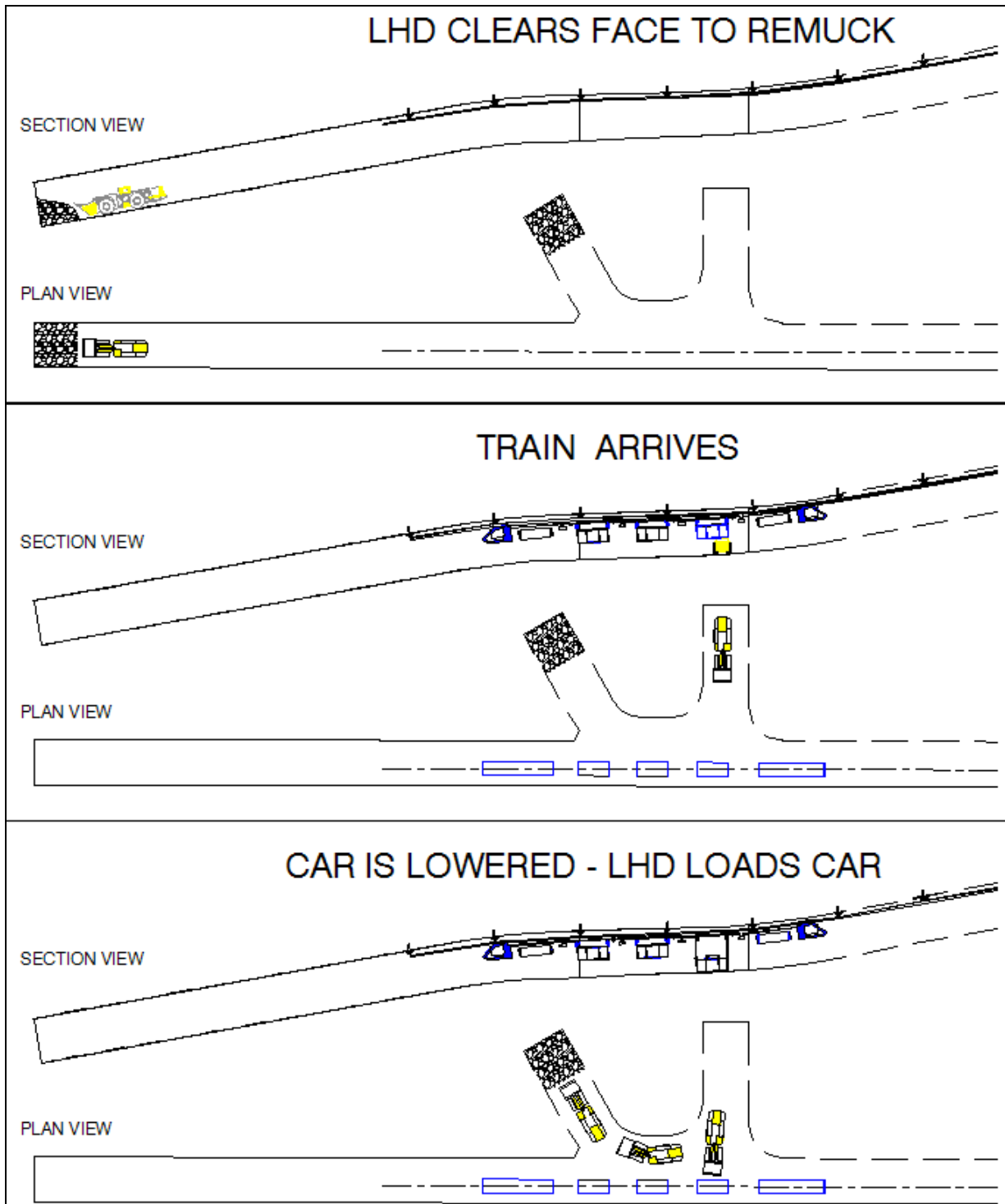
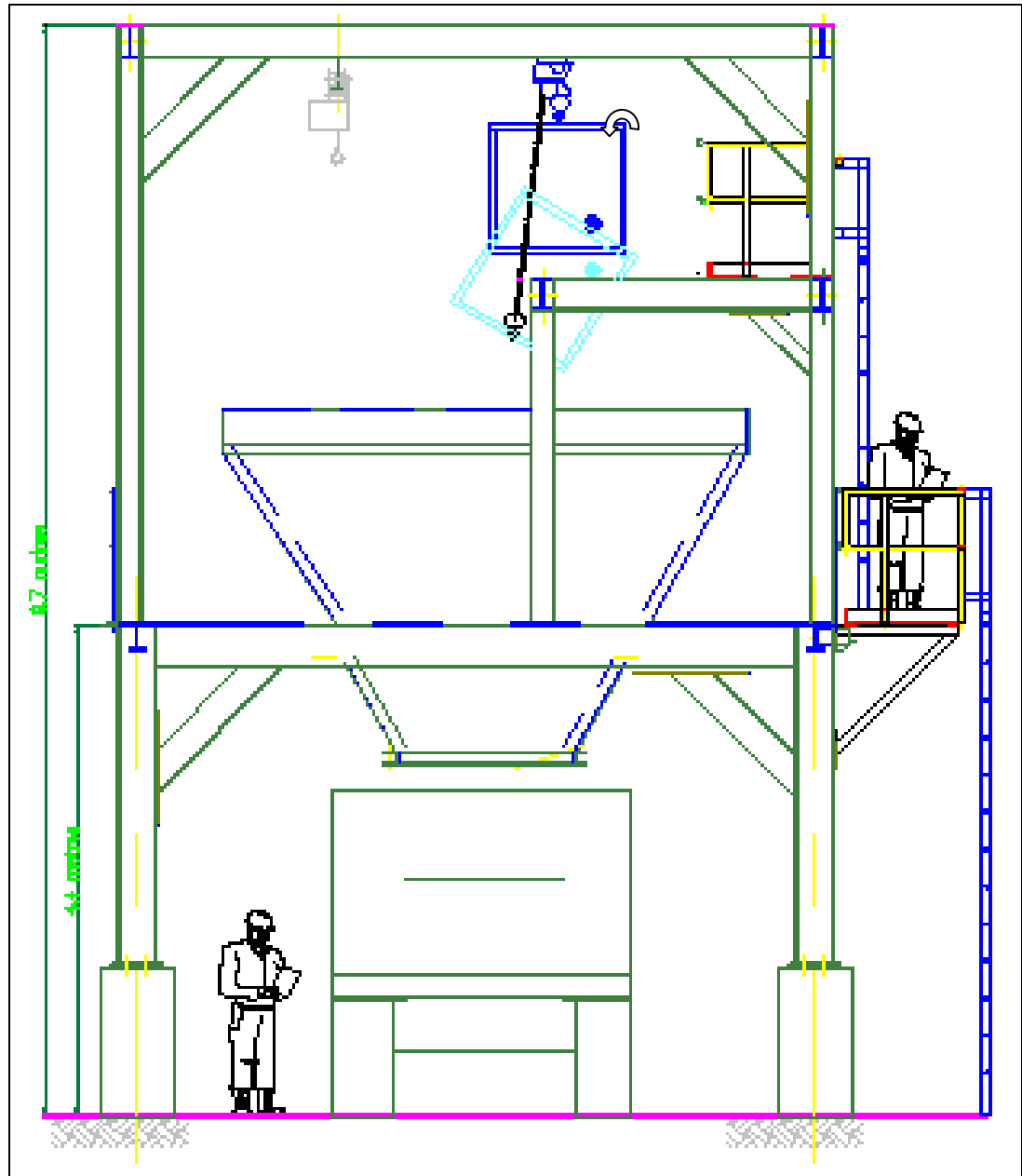


Figure 32: Train Loading Sequence





**Figure 33: Toggle Loadout above COB and Truck Load-In**

The broken rock will then be trammed to surface and toggle dumped into a coarse rock bin as shown in Figure 33.

Highway haulage trucks will load from the overhead bin and transport the material to respective storage or processing areas. The distance from Hart to the Redstone mill is 6 kilometres by road. Waste storage is conceived to be within 500 metres of the Hart portal.

Once in production blasted material will be pulled from drawpoints by LHD's, and trammed a maximum of 150 metres to the level remucks for monorail loading and transport. A monorail train and operator arriving at the remuck will load 25 tonnes into the train using the 3.1 m<sup>3</sup> LHD (4yd<sup>3</sup>). Relocation of

the train will be done by the operator without having to leave the LHD. A wireless control allows the operator to raise and lower cars as well as relocate the train within the confines of the loading station.

Loading arrangements can be seen in the typical level drawings shown in section 17.5.3 Stope Access.

Underground crushing is not a requirement as Alimak mining will provide fine fragmentation suitable for material handling concerns.

All of the development waste rock will be trucked to surface for permanent storage at the planned waste storage area.

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

- 360 kt of development waste rock;
- 1,729 kt of plant feed mineralization including development sources.

## 17.4 Estimate of Potentially Mineable Tonnes

Cautionary Note: This Preliminary Assessment is preliminary in nature. It includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary assessment will be realized.

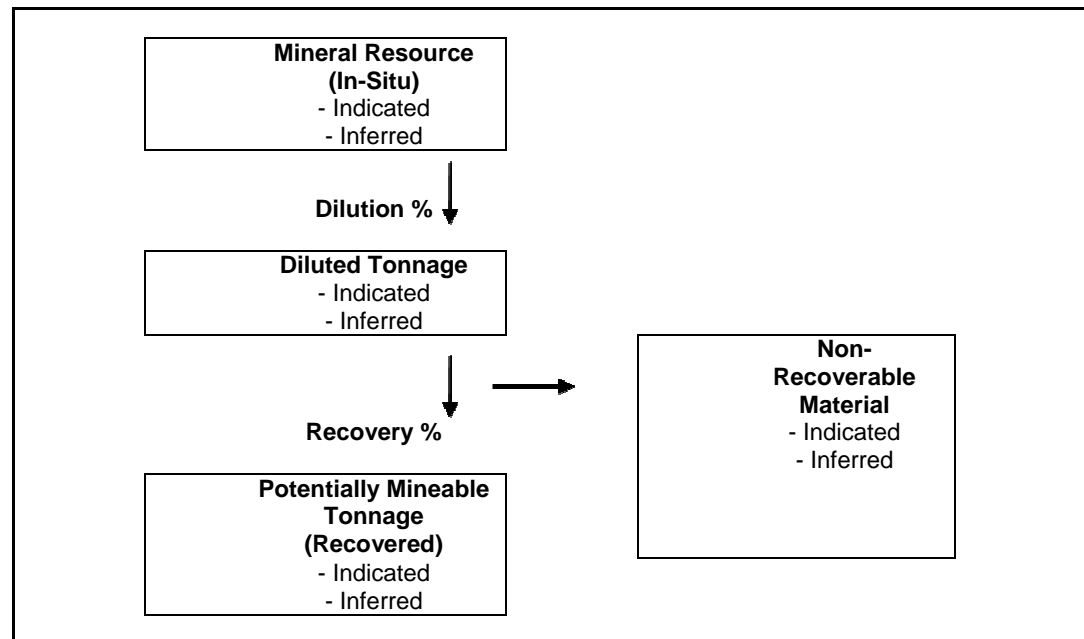
### 17.4.1 Methodology

The following methodology was used for estimating Harts potentially mineable tonnage:

- SRK’s resource block model was updated;
- 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 the selected mining method;
- Using the resource block model and the cut off grades, underground mineable shapes were created in 3D;
- 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;
- A 3D model of the Hart deposit was created showing 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 the potentially minable tonnage. An economic exercise was performed on the entire schedule. The material in the LoM schedule is based on resource classifications of indicated and inferred.

Figure 34 demonstrates the methodology and decision path taken to estimate the Hart potentially mineable tonnage.



**Figure 34: 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 12 shows the key input parameters to the NSR calculation.

**Table 12: Liberty NSR Terms and Mill Factors**

<b>Xstrata Terms</b>		
Ni Con Grade	$\geq 10\% \& < 15\%$	
Payable Accountability		88%
	$\geq 15\% \& < 20\%$	
		89%
	$\geq 20\%$	
		90%
Cu Con Grade	$= 1.00\%$	
Payable Accountability		85%
Co Con Grade	$= 0.30\%$	
Payable Accountability		50%
Smelting US\$/tonne con milled		\$250
Ni Refining US\$/lb accountable Ni		\$0.75
Cu Refining US\$/lb accountable Cu		\$0.5611
Co Refining US\$/lb accountable Co		\$2.5503
Ni Price Participation US\$/lb accountable Ni	5% if Ni $> \$6/\text{lb}$	
Cu Price Participation US\$/lb accountable Cu	10% if Cu $> \$1.20/\text{lb}$	
MgO Penalty US\$/tonne con milled	\$7.50/% if $> 4\% \& \leq 7\%$	
Transportation US\$/tonne con milled		\$0.00
<b>NSR Calc:</b>		
Ni Price US\$/lb		\$7.00
Cu Price US\$/lb		\$2.70
Co Price US\$/lb		\$15.00
ExR \$1.00Cdn = \$0.90US		\$0.90
Mill recovery		90%
Ni Con Grade		15.00
Cu Con Grade		1.00
Co Con Grade		0.30
MgO		4.47
tonnes to lbs		2204.6226

### 17.4.3 Cut Off Grade

Mine operating costs were estimated from first principals based on actual unit costs for labour and consumables provided by Liberty. Also, a budget quote was obtained from a mine contractor to support and verify costing for the Alimak mining method.

These costs were applied along with first principal mining development and stoping performance calculations to estimate the unit mining costs. Estimated and actual unit costs for processing, surface truck haulage and general and administration, based on Liberty's ongoing area operations, 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 13 shows the cut off grade calculation.

**Table 13: Cut Off Grade Calculations**

<b>Xstrata Terms</b>	
Ni Con Grade	>=10%&<15%
Payable Accountability	88%
	>=15%&<20%
	89%
	>=20%
	90%
Cu Con Grade	=1.00%
Payable Accountability	85%
Co Con Grade	=0.30%
Payable Accountability	50%
Smelting US\$/tonne con milled	\$250
Ni Refining US\$/lb accountable Ni	\$0.75
Cu Refining US\$/lb accountable Cu	\$0.5611
Co Refining US\$/lb accountable Co	\$2.5503
Ni Price Participation US\$/lb accountable Ni	5% if Ni>\$6/lb
Cu Price Participation US\$/lb accountable Cu	10% if Cu>\$1.20/lb
	\$7.50/% if
	>4%&<=7%
MgO Penalty US\$/tonne con milled	
Transportation US\$/tonne con milled	\$0.00
<b>NSR Calc:</b>	
Ni Price US\$/lb	\$7.00
Cu Price US\$/lb	\$2.70
Co Price US\$/lb	\$15.00
ExR \$1.00Cdn = \$0.90US	\$0.90
Mill recovery	90%
Ni Con Grade	15.00
Cu Con Grade	1.00
Co Con Grade	0.30
MgO	4.47
tonnes to lbs	2204.6226
Potentially mineable resource tonnes	1,000
<b>Potentially Mineable Resource COG Ni grade</b>	<b>0.46</b>
Mineable Ni Con tonnes	28
Mineable Ni Metal in Ni Con tonnes	4
Mineable Cu Metal in Ni Con tonnes	0.28
Mineable Co Metal in Ni Con tonnes	0.08
Accountable Ni Metal in Ni Con tonnes	4
Accountable Cu Metal in Ni Con tonnes	0.23
Accountable Co Metal in Ni Con tonnes	0.04
Accountable Ni Metal in Ni Con lbs	8,123
Accountable Cu Metal in Ni Con lbs	517
Accountable Co Metal in Ni Con lbs	91
Liberty Gross NSR Revenue Cdn\$	\$66,253
Xstrata Smelting TC Cdn\$	-\$7,667
Xstrata Ni Refining Cdn\$	-\$6,769
Xstrata Cu Refining Cdn\$	-\$322
Xstrata Co Refining Cdn\$	-\$259
Xstrata Ni Price Participation Cdn\$	-\$451
Xstrata Cu Price Participation Cdn\$	-\$86
Xstrata MgO Penalty Cdn\$	-\$108
Xstrata Transportation Cdn\$	\$0
Sub Total Processing Costs	-\$15,663
Liberty NSR Revenue Cdn\$	\$50,590
Liberty NSR Net Revenue/tonne con	<b>\$1,832.98</b>
Liberty NSR Net Revenue/tonne feed	\$50.59
Alimak Mining Cost	-\$29.57
Milling Cost	-\$14.81
Admin Cost	-\$4.95
Haulage Cost	-\$1.07
Liberty Margin	\$0.19

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

Stope outlines targeting above cut off resources were designed using AMINE software. The outlines were based on practical mining shapes and thus incorporated limited amounts of internal dilution. Planned dilution material nickel grade was estimated directly from the block resource model as part of the mining shape volume.

The in-situ resources in the mining shapes were selected using a cut-off grade of 0.46% Ni for Alimak mining.

A minimum mining width of 1.5 metres was observed for the Alimak stopes designs. Smaller widths approached an economic limit and were not considered further at this time.

The in-situ tonnes and grades inside the mining shapes were tabulated and factors accounting for estimated mining losses and external dilution were applied.

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

#### 17.4.5 Estimated External Dilution

External dilution estimates included 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.

Wall dilution material nickel grade was estimated by the mining engineer, using the engineered stope mine designs. The nickel grade applied to the wall 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.

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 Hart was determined by mining method and wall exposure.

Backfill dilution is the backfill material which spalls or fails from the primary stopes into the secondary stopes. To minimise the effect of wall dilution and increase confidence of geotechnical stability, pastefill has been selected as the fill of choice and zero backfill dilution has been assessed for the purpose of this study.

Table 14 shows the total estimated dilution in the Hart Alimak raise mine plan:

**Table 14: Dilution**

Planned Dilution	12.08%
Wall Dilution	4.72%
Fill Dilution	0.00%
<b>Total Dilution</b>	<b>16.80%</b>

### 17.4.6 Stope 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 dilution.

### 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 in Table 15.

**Table 15: Estimated Site Operating Costs**

	Average LOM Operating Cost \$ per tonne Cdn
Alimak Mining	\$29.57
Concentrator	\$14.81
Site Administration	\$8.32
U/G Haulage to Concentrator	\$1.07
<b>Total Site Operating</b>	<b>\$53.77</b>

### 17.4.8 Potentially Mineable Tonnage Estimate

SRK's January 1st, 2010 estimate of Potentially Mineable Tonnage for the Hart Nickel Deposit is summarized in Table 16.

**Table 16: Hart Potentially Mineable Tonnage – SRK, January 1<sup>st</sup>, 2010**

Classification	Quantity Tonnage	Grade Ni (%)	Contained Metal	
			(tonnes)	(lbs)
Indicated	1,333,140	1.44	19,240	42,406,000
Inferred	396,060	0.79	3,130	6,899,200
<b>Total</b>	<b>1,729,100</b>	<b>1.29</b>	<b>22,370</b>	<b>49,305,200</b>

*Numbers shown have been rounded and may not add up.*

Cautionary Note: This Preliminary Assessment is preliminary in nature. It includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary assessment will be realized.

The independent potentially mineable resource 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 Mineable Resources guidelines.

The potential mineable tonnage 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 potential mineable tonnage estimate are based on a cut-off grade of 0.46% Ni for the Alimak mining method. 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 were used in the cut-off grade calculation.

Details of the potentially mineable tonnage are shown in Table 17.

Of the total estimated tonnage, 77% is based on indicated resources and 23% is based on inferred resources.

**Table 17: Hart Potential Mineable Tonnage Details**

Alimak Mining Levels	Stope Name	Potential Mineable Tonnage	Ni %
90mL	90-3 P	19,445	0.8
90mL	90-4 S	10,991	0.42
90mL	90-5 P	12,078	0.6
90mL	90-6 S	9,671	0.74
90mL	90-8 S	9,682	0.47
90mL	90-9 P	10,458	0.53
90mL	90-10 S	12,100	0.55
90mL	90-11 P	13,874	0.75
90mL	90-12 S	9,698	0.74
190mL	190-3 P	19,019	0.97
190mL	190-4 S	23,156	1.25
190mL	190-5 P	30,609	1.48
190mL	190-6 S	25,132	0.82
190mL	190-7 P	27,379	0.88
190mL	190-8 S	23,017	0.93
190mL	190-9 P	20,622	1.18
190mL	190-10 S	26,297	0.89
190mL	190-11 P	18,704	0.67
190mL	190-12 S	14,102	0.52
290mL	290-1 P	12,580	0.53
290mL	290-2 S	25,451	0.8
290mL	290-3 P	41,838	1.07
290mL	290-4 S	27,234	1.2
290mL	290-5 P	23,018	1.09
290mL	290-6 S	21,933	0.68
290mL	290-7 P	21,527	1.64
290mL	290-8 S	19,868	1.8
290mL	290-9 P	34,899	2.13
290mL	290-10 S	49,443	1.3
290mL	290-11 P	36,255	0.95
390mL	390-2 S	24,594	1.19
390mL	390-3 P	36,527	1.17
390mL	390-4 S	27,456	1.26
390mL	390-5 P	40,719	1.6
390mL	390-6 S	43,128	2.05
390mL	390-7 P	54,981	2.34
390mL	390-8 S	57,682	2.1
390mL	390-9 P	33,488	1.96
390mL	390-10 S	36,069	1.61
390mL	390-11 P	32,393	1.51
490mL	490-4 S	43,309	1.58
490mL	490-5 P	72,816	1.67
490mL	490-6 S	63,186	1.06
490mL	490-7 P	45,318	0.9
490mL	490-8 S	42,305	1.04
490mL	490-9 P	44,507	1.12
490mL	490-10 S	63,910	1.19
490mL	490-11 P	38,931	1.23
570mL	570-5 P	46,386	1.28
570mL	570-6 S	37,270	1.13
570mL	570-7 P	34,196	1.17
570mL	570-8 S	41,435	1.25
570mL	570-9 P	56,002	1.35
570mL	570-10 S	40,834	1.38
570mL	570-11 P	21,575	1.33
Total Hart Mine		1,729,100	1.29

## 17.4.9 Production Rate

Hart's average production rate of 1,500 tpd varies over the Life of Mine ("LoM") depending on stope production and backfill cycles. (Table 18)

**Table 18: Hart Production Schedule**

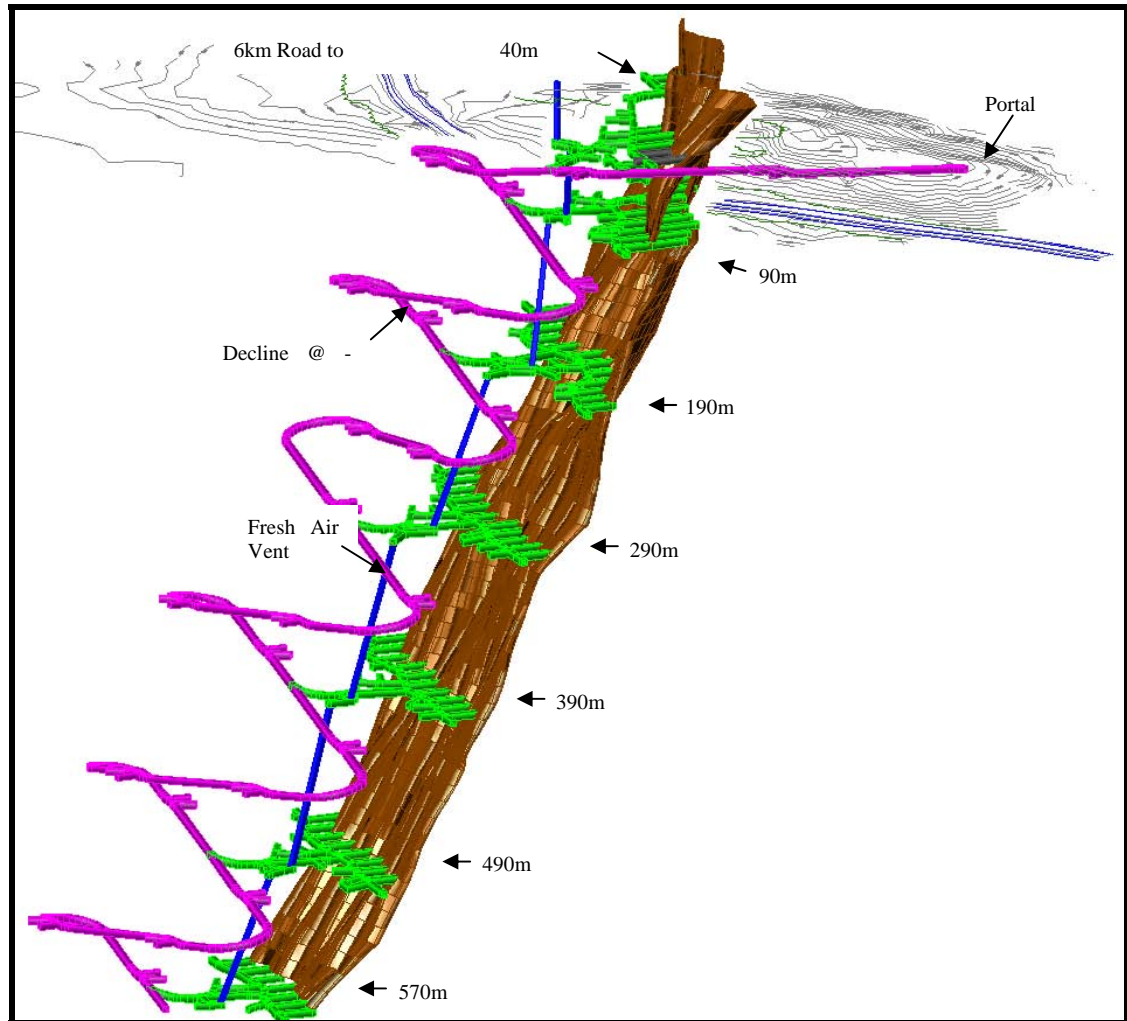
	2011		2012		2013		2014		
	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	Total
90m Level	47,741	60,256							107,997
190m Level		119,213	108,824						228,037
290m Level		1,440	107,603	165,440	39,563				314,046
390m Level			4,320	158,813	223,904				387,037
490m Level					31,281	235,061	147,940		414,282
570m Level						50,191	195,405	32,105	277,701
Tonnes Mined	47,741	180,909	220,747	324,253	294,748	285,252	343,345	32,105	1,729,100
Tonnes/day	783	994	1,220	1,782	1,637	1,567	1,907	1,036	

The Alimak mining will ramp up from an average of 800 tonnes per day (tpd) in the first half of 2011 to an annual rate of 1,650 tpd by the second half of 2012. Production is shown as peaking in the first half of 2014 at 1,900 tpd but expectations are that this peak will be smoothed by pushing some production into late 2014 when mining production is complete.

Total production is scheduled for 1,729,100 tonnes at 1.29% Ni.

## 17.5 Underground Mine Model

The Hart deposit mining model is shown in Figure 35. The model was created using AMINE software. The figure shows ramp development in the hangingwall of the deposit with remucks every 150 metres. Levels are separated by a nominal 100 meters and connected by ventilation raises.



**Figure 35: 3D View of Resource and Development Plan**

### 17.5.1 General Description

The resource is tabular from surface to 570 m Level and is inclined at 75 degrees, with a nominal strike length of about 220 metres. Resource thickness ranges from an average of 3 metres at 40m Level then thickening to an average of 11 meters at 570m Level.

SRK's conceptual mine design includes seven levels for the mine namely 40m, 90m, 190m, 290m, 390m, 490m, and 570m Levels. Level names imply the vertical depth below surface, and mine plans are shown in a local mining grid not UTM.

A crown pillar will be left between surface and 40m Level as the resource appears to thin out quickly and disappear before reaching surface. All levels have been designed as 4m x 3m excavations with drawpoints modeled at 3m x 3m to facilitate mucking by LHDs.

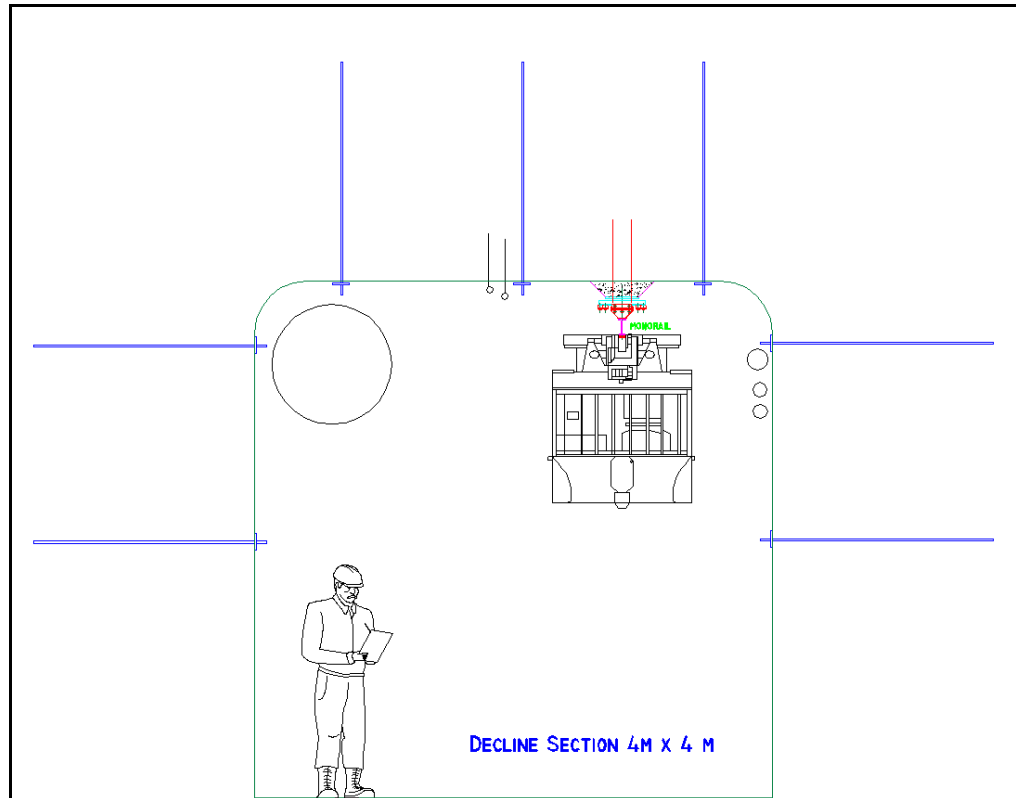
### 17.5.2 Mine Access

The mine will be accessed via a surface portal (4m x 4m) leading to a -18% decline positioned in the hangingwall of the orebody. (Figure 31)

The decline flattens to 5% every 150 metres to facilitate remucks and flattens to 5% again whenever level accesses are required.

All decline development is planned at 4m x 4m to allow access by conventional development and production equipment. Monorail transport will be used in the ramp and entrances to levels to facilitate the movement of men material and blasted rock. A cross section of the ramp shows the monorail supported from the back. The monorail is proven and capable of tramming in declines as steep as 24% at a velocity of 1.5 metres per second and in the case of Hart mine a velocity of 2.0 m/s in the -18% decline when going up and 3.5 m/s when coming down.

The total planned length for the ramp is 4,425 meters. From a surface elevation of 0 meters the ramp provides continuous access down to the lowest mining level at an elevation of 570 meters.



**Figure 36: Typical Ramp Cross Section showing Tramming Monorail**

The mine's second exit will be through the 3m x 3m fresh air raise ("FAR"). The FAR/Escapes Raise will be equipped from 570m Level through to surface with a timber manway installed by a contractor.

### 17.5.3 Stoping Access

Alimak stopes will be accessed via 3m x 3m x-cuts at the base of each stoping panel. These x-cuts will each have Alimak nests recessed into the backs to allow unimpeded development of the raises while LHD's muck any swell from beneath the raises. These x-cuts will be driven off of the hangingwall access levels (4m x 3m) each of which contains:

- Sumps
- Lunchroom/Refuge stations;
- Explosive and cap magazines;
- Remucks;
- Level Storages;
- Electrical X-cuts;
- Ventilation FAR access and secondary escape ways;
- Portable fuel stations and;
- Latrines.

Level plans for Hart mine are shown in Figure 38 through Figure 44.

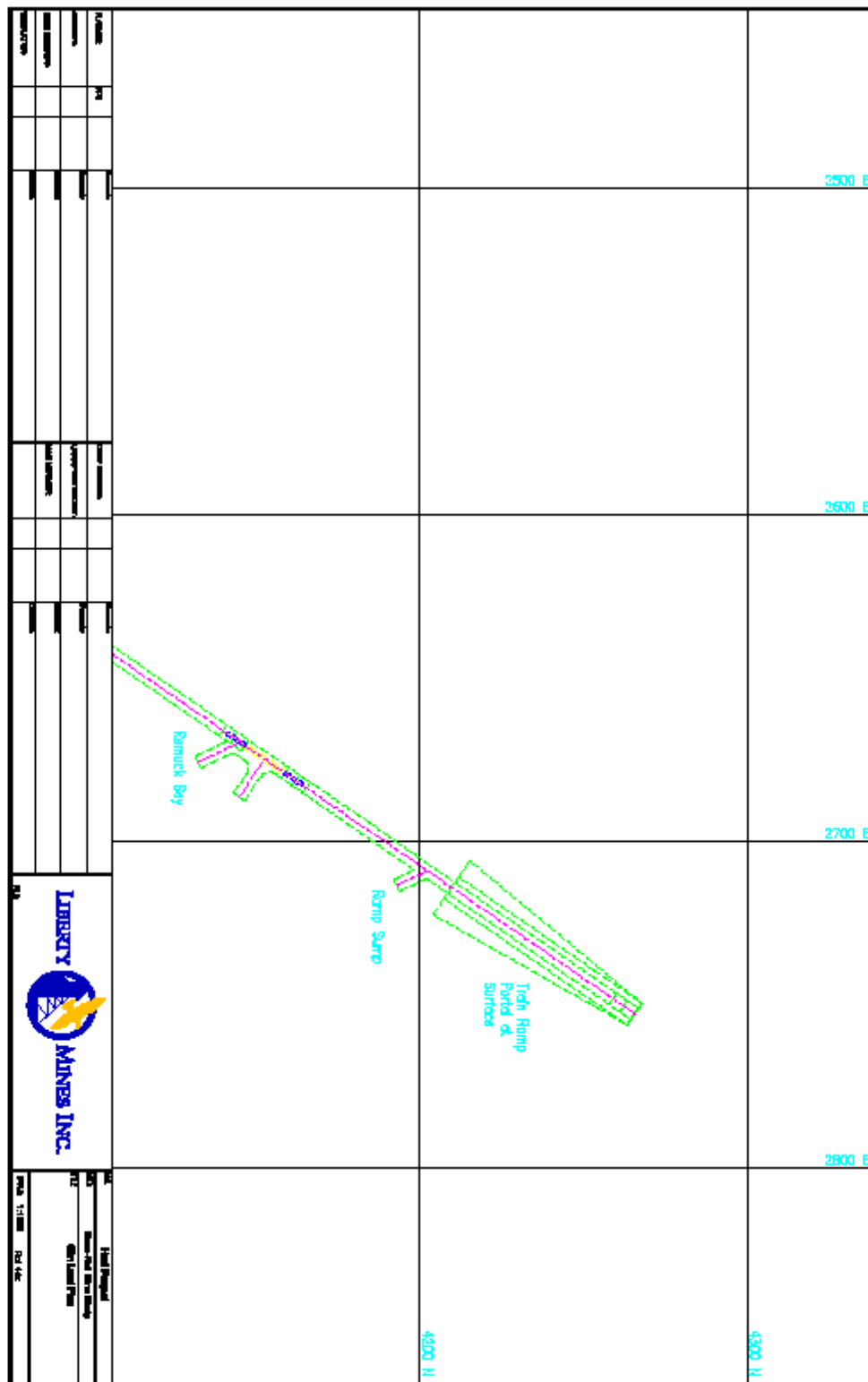


Figure 37: Surface and Mine Portal

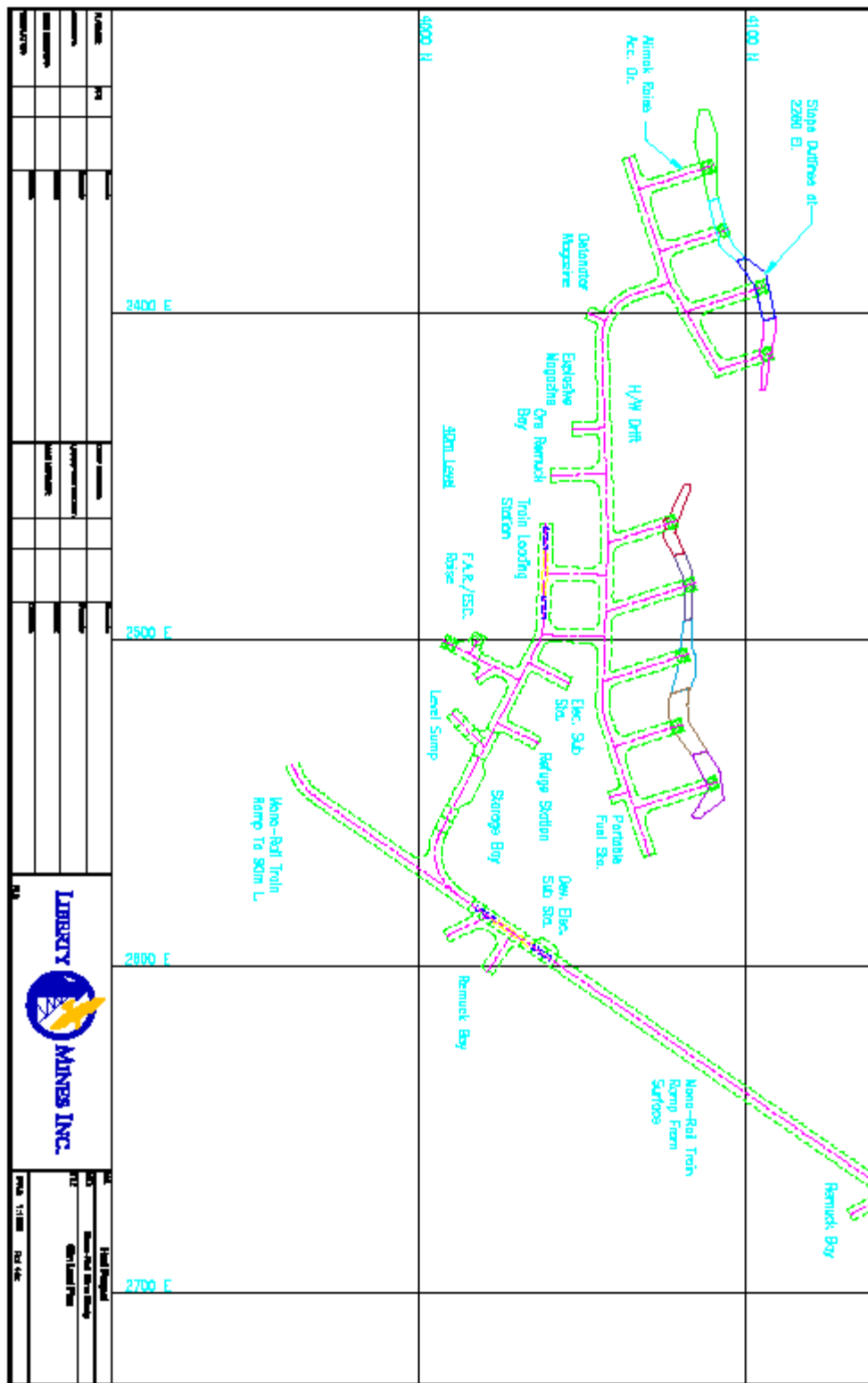


Figure 38: Ramp and 40m Level



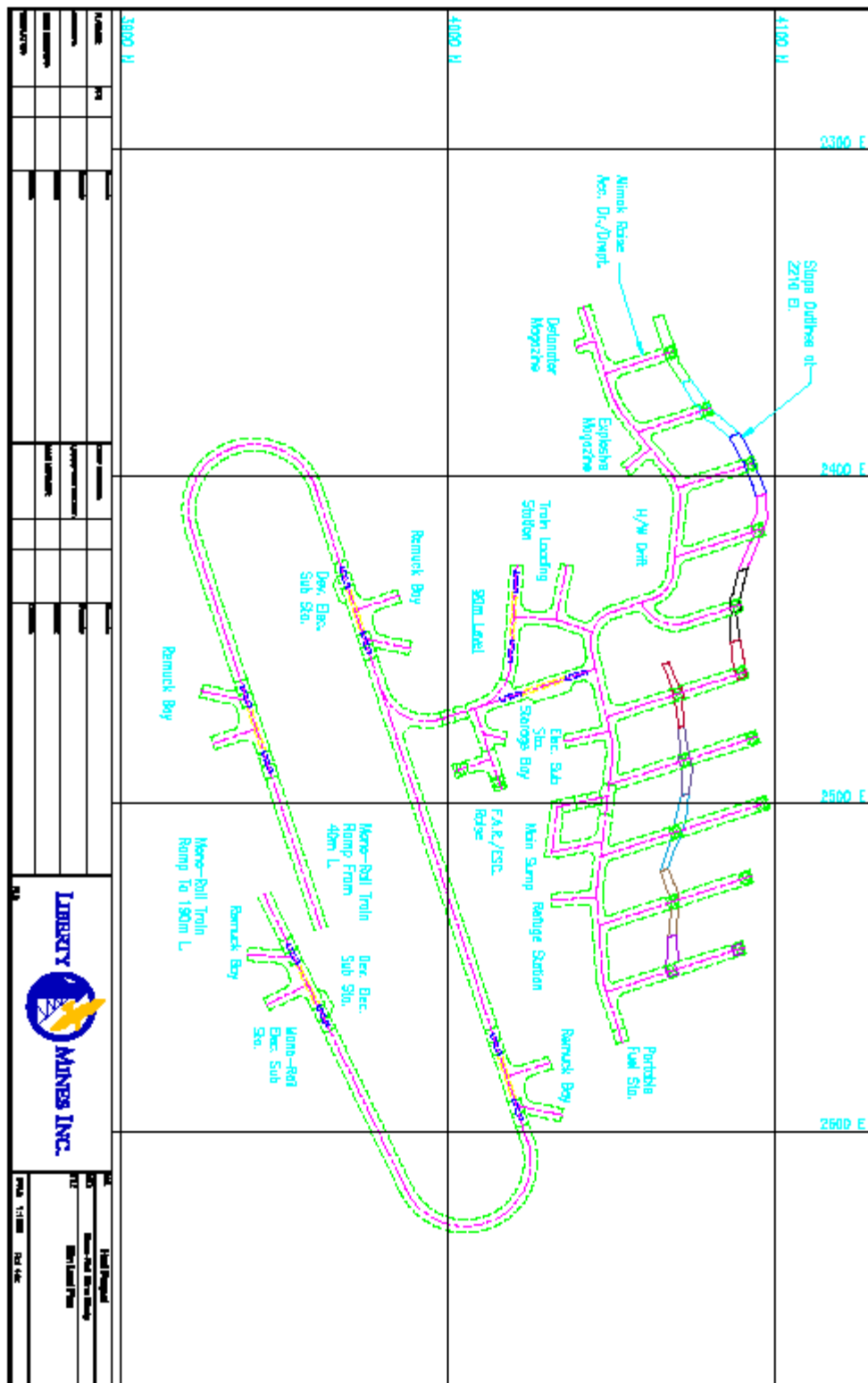


Figure 39: 90m Level Plan

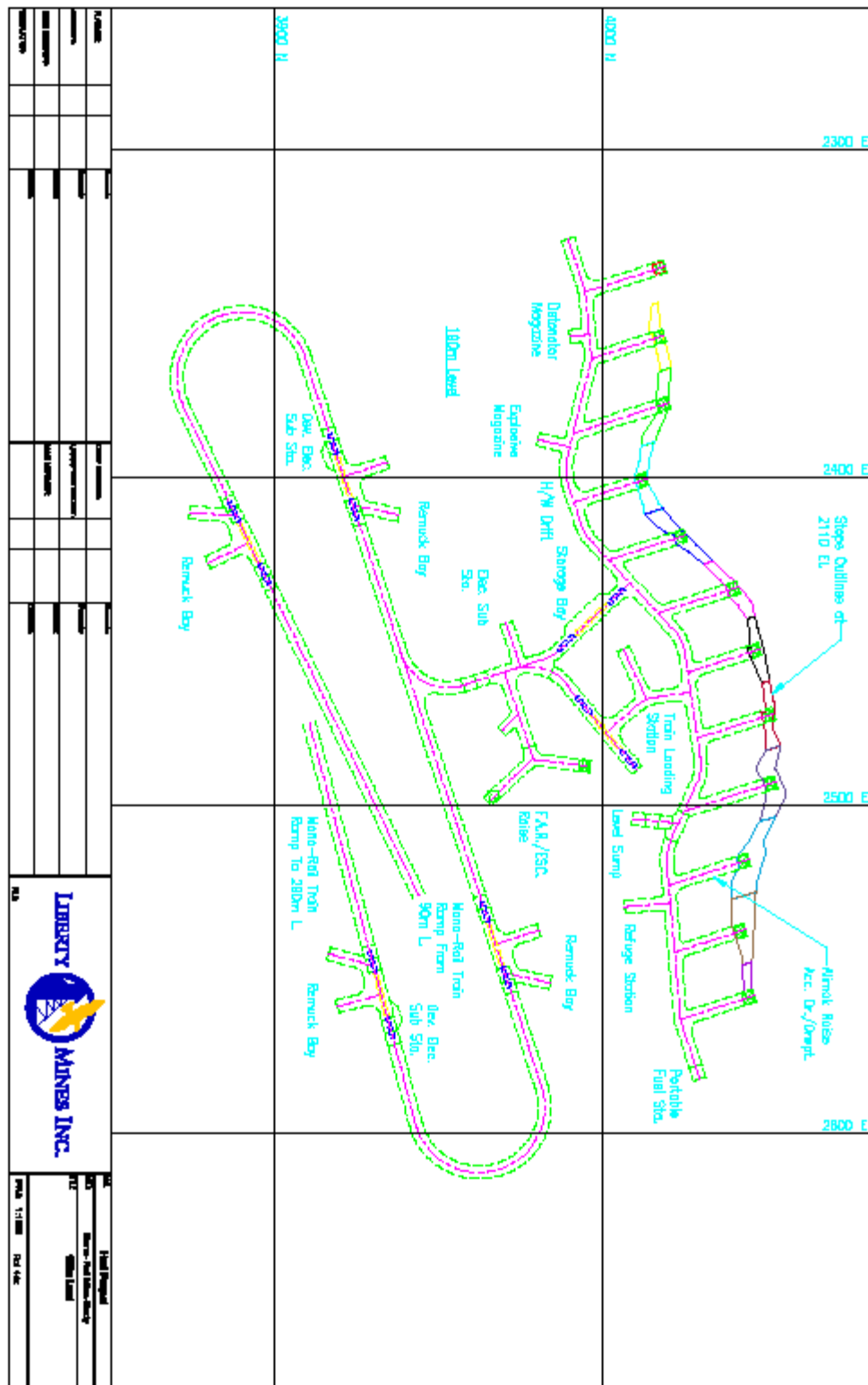


Figure 40: 190m Level Plan

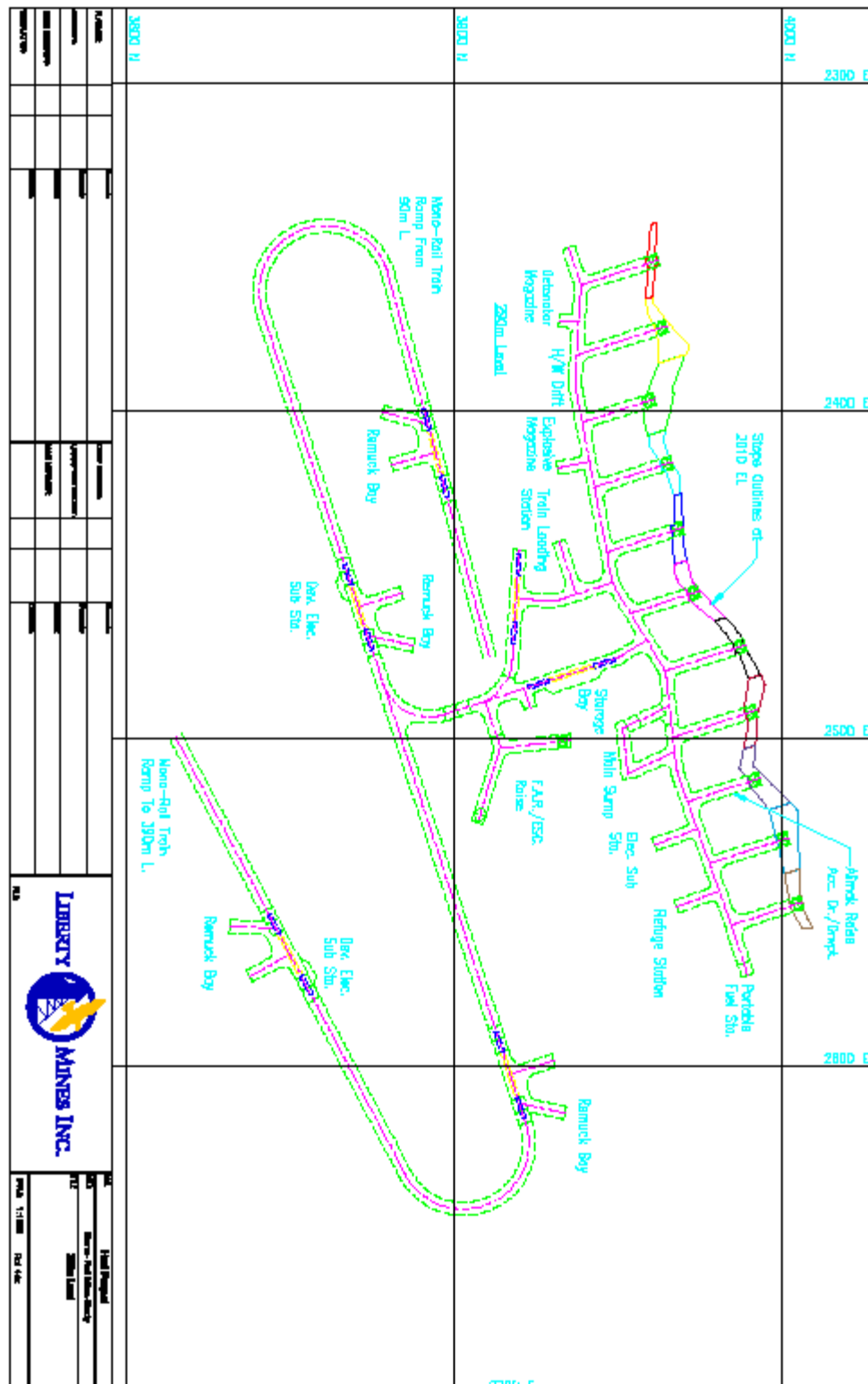


Figure 41: 290m Level Plan





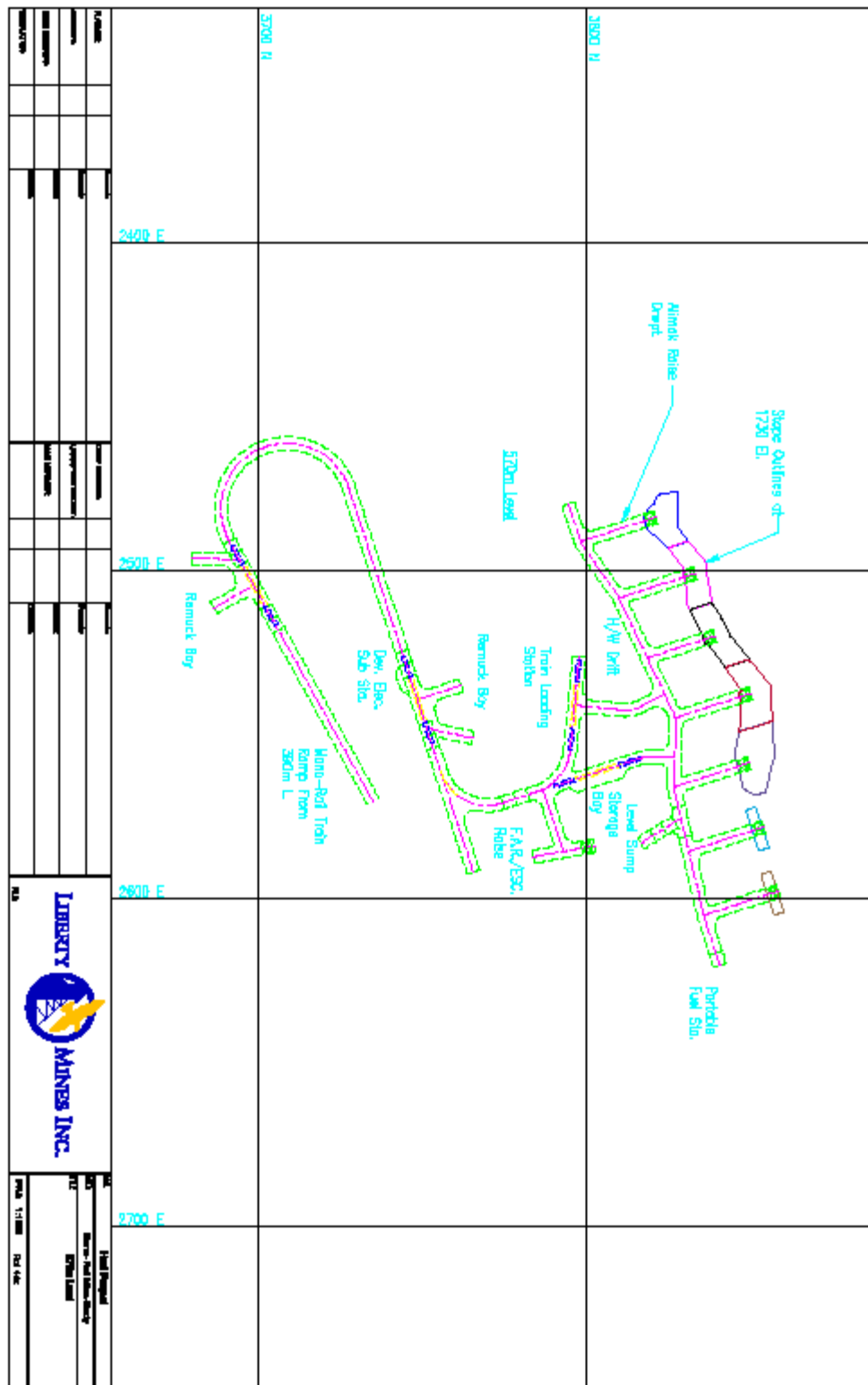


Figure 44: 570m Level Plan

## 17.5.4 Ventilation Raises

Conventional Alimak techniques will be used to drive Fresh Air Raises (“FAR”) between levels starting with a connection from 40m Level and surface. This particular leg of the ventilation raise will need a grouted collar prepared on surface to receive the FAR. Contractors have been included in the cost to drive each raise and outfit each with a manway as a second egress from the mine.

FAR excavation dimensions have been planned at 3m x 3m to facilitate 98.6 m<sup>3</sup>/sec (209,000 cfm) of air into the mine (Table 19).

Three 250 Hp fans will be required to provide the basic air reticulation portrayed in the above figure. The first of the 250 Hp fans will be mounted on surface forcing air from a heating plenum underground via the near vertical FAR system. Two of the 250 Hp fans will be installed in bulkheads on mucking levels to provide series air flow. Fifteen smaller fans ranging in size from 10 Hp to 50 Hp and flexible steel tubing have been considered in the design to provide alternate air flows to development faces or working areas otherwise not in the direct path of the fresh air.

Ventilation x-cuts have been planned on each level to receive and redirect air either down to the next level or through a bulkhead to the working level.

**Table 19: Hart Ventilation Requirements**

<u>CFM BY EQUIPMENT (ROUGH):</u>					
Type	Quantity	BHP	CFM	Total	
Road Grader	1	82	8,200	8,200	
Jumbo	2	152	15,200	30,400	
Telehandler	2	140	14,000	28,000	
4yd Scoop	3	200	20,000	60,000	
Utility Vehicle	5	50	5,000	25,000	
				151,600	CFM
<u>CFM BY JOB:</u>					
Type	Quantity	CFM	Total		
Drilling	2	30,400	60,800		
Blasting	1	14,000	14,000		
Mucking	2	40,000	80,000		
Development	1	35,200	35,200		
			190,000	CFM	
<u>MINE-WIDE</u>					
Design Minimum Vent Flow:			209,000	CFM	(max plus 10%)
<b>MINE-WIDE</b>			<b>98.6</b>	<b>m<sup>3</sup>/s</b>	
Surface - 0m					
Mine Bottom - 570m (1,870 ft)					

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

The surface ventilation raise collar and raises have been offset a safe distance from the influence of any mining.

### 17.5.5 Life of Mine Development Requirements

Life of mine development requirements are detailed below in Table 20. Development dimensions are planned at 4m x 4m for the main decline and 4m x 3m for working levels. Drawpoints have been designed at 3m x 3m dimensions.

**Table 20: Capital and Operating Waste Development Metres**

Lateral Development				Lateral Development			
40m Level	Length (m)	No.	Total (m)	90m Level	Length (m)	No.	Total (m)
Ramp from Surface	240	1	240	Mono Rail Ramp From 40m Level	323	1	323
Ramp Development Elec. Sub Sta.	4	1	4	Ramp Development Elec. Sub Sta.	4	1	4
Monorail Remuck Station	28	2	56	Monorail Remuck Station	28	2	56
Level Access Drift	108	1	108	Level Access Drift	73	1	73
Train Loading Station	53	1	53	Train Loading Station	81	1	81
Refuge Station	12	1	12	Refuge Station	12	1	12
F.A.R./ESC. Raise Access Drift	32	1	32	F.A.R./ESC. Raise Access Drift	38	1	38
Level Sump	12	1	12	Main Mine Sump	34	1	34
Backfill Level Sump	4	1	4	Backfill Level Sump	4	1	4
Level Electrical Sub Station	12	1	12	Level Electrical Sub Station	12	1	12
Monorail Storage Bay Slash	7	1	7	Monorail Storage Bay Slash	7	1	7
H/W Wall Drift	273	1	273	Foot Wall Drift	252	1	252
Draw point/Alimak Raise Access Stub	8	9	72	Draw point/Alimak Raise Access Stub	8	10	80
Explosive Magazine	12	1	12	Explosive Magazine	12	1	12
Detonator Magazine	4	1	4	Detonator Magazine	4	1	4
Ore Remuck Bay	12	1	12	Fuel Bay	4	1	4
Fuel Bay	4	1	4				
Lateral Development				Lateral Development			
190m Level	Length (m)	No.	Total (m)	290m Level	Length (m)	No.	Total (m)
Mono Rail Ramp From 90m Level	640	1	640	Mono Rail Ramp From 190m Level	640	1	640
Ramp Development Elec. Sub Sta.	4	2	8	Ramp Development Elec. Sub Sta.	4	2	8
Monorail Remuck Station	28	4	112	Monorail Remuck Station	28	4	112
Level Access Drift	82	1	82	Level Access Drift	84	1	84
Train Loading Station	83	1	83	Train Loading Station	86	1	86
Refuge Station	12	1	12	Refuge Station	12	1	12
F.A.R./ESC. Raise Access Drift	63	1	63	F.A.R./ESC. Raise Access Drift	58	1	58
Level Sump	12	1	12	Main Mine Sump	34	1	34
Backfill Level Sump	4	1	4	Backfill Level Sump	4	1	4
Level Electrical Sub Station	12	1	12	Level Electrical Sub Station	12	1	12
Monorail Storage Bay Slash	7	1	7	Monorail Storage Bay Slash	7	1	7
Foot Wall Drift	269	1	269	Foot Wall Drift	228	1	228
Draw point/Alimak Raise Access Stub	8	12	96	Draw point/Alimak Raise Access Stub	8	11	88
Explosive Magazine	12	1	12	Explosive Magazine	12	1	12
Detonator Magazine	4	1	4	Detonator Magazine	4	1	4
Fuel Bay	4	1	4	Fuel Bay	4	1	4



**Table 20: Continued**

Lateral Development				Lateral Development			
390m Level	Length (m)	No.	Total (m)	490m Level	Length (m)	No.	Total (m)
Mono Rail Ramp From 290m Level	640	1	640	Mono Rail Ramp From 190m Level	640	1	640
Ramp Development Elec. Sub Sta.	4	2	8	Ramp Development Elec. Sub Sta.	4	2	8
Monorail Remuck Station	28	4	112	Monorail Remuck Station	28	4	112
Level Access Drift	74	1	74	Level Access Drift	84	1	84
Train Loading Station	84	1	84	Train Loading Station	87	1	87
Refuge Station	12	1	12	Refuge Station	12	1	12
F.A.R./ESC. Raise Access Drift	40	1	40	F.A.R./ESC. Raise Access Drift	46	1	46
Level Sump	12	1	12	Main Mine Sump	34	1	34
Backfill Level Sump	4	1	4	Backfill Level Sump	4	1	4
Level Electrical Sub Station	12	1	12	Level Electrical Sub Station	12	1	12
Monorail Storage Bay Slash	7	1	7	Monorail Storage Bay Slash	7	1	7
Foot Wall Drift	209	1	209	Foot Wall Drift	199	1	199
Draw point/Alimak Raise Access Stub	8	10	80	Draw point/Alimak Raise Access Stub	8	8	64
Explosive Magazine	12	1	12	Explosive Magazine	12	1	12
Detonator Magazine	4	1	4	Detonator Magazine	4	1	4
Fuel Bay	4	1	4	Fuel Bay	4	1	4
Lateral Development				Vertical Development (3m x 3m Raise)			
570m Level	Length (m)	No.	Total (m)	40m Level FAR\Esc. Rse.	Length (m)	No.	Total (m)
Mono Rail Ramp From 290m Level	578	1	578	90m Level FAR\Esc. Rse.	45	1	45
Ramp Development Elec. Sub Sta.	4	2	8	190m Level FAR\Esc. Rse.	94	1	94
Monorail Remuck Station	28	4	112	290m Level FAR\Esc. Rse.	98	1	98
Level Access Drift	75	1	75	390m Level FAR\Esc. Rse.	98	1	98
Train Loading Station	65	1	65	490m Level FAR\Esc. Rse.	100	1	100
F.A.R./ESC. Raise Access Drift	38	1	38	570m Level FAR\Esc. Rse.	80	1	80
Level Sump	12	1	12				
Monorail Storage Bay Slash	7	1	7				
Foot Wall Drift	146	1	146				
Draw point/Alimak Raise Access Stub	8	7	56				

## 17.6 Development and Production Schedule

### 17.6.1 Introduction

#### Underground

Underground development is categorized as “capital waste development” or “operating waste development” or “operating mineralized 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 7,950 meters plus 560 meters of raise. Total capital waste tonnage is 333,160 tonnes.

Of the 7,950 metres of capital lateral development 4,530 meters will be developed and outfitted for access by the monorail system.

Operating waste development is defined as development required to maintain stope operations including: development of stope accesses and loading stations. Total lateral operating waste development is 1,080 meters. Total operating waste tonnage is 27,410 tonnes.

Operating mineralized development is defined as any development required in the deposit. This includes the over cut and under x-cut for the Alimak stopes as

well as the Alimak raises when in the deposit. Total operating mineralized development is 4,910 meters. Total operating mineralized tonnage is 141,380 tonnes. The LoM Capital and Operating Lateral Waste Development schedule is summarized by half years in Table 22 below.

Alimak raising and blasthole stopes will have production drilling and blasting performed by contractor personnel and equipment. Mucking and lateral development will be carried out by Liberty personnel. Stope mucking was scheduled at 1,500 tonnes per day but varies allowing for production ramp-up and some peaks in later years as production stopes become more available. In any case the total planned mining rate does not exceed 1,900 tonnes per day due to stope blast availability. The LoM development and production schedules are summarised by half years in Table 21, Table 22, Table 23 and Table 24

**Table 21: LoM Capital Lateral Development (Waste) by Half Year**

Capital Lateral Development (Waste)		2010		2011		2012		2013		Meters	Tonnes
		1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half		
Surface	Portal										
40m Level	Ramp from Surface		300							300	13,536
	Level Access Drift			210						210	7,106
	FAR /Esc Rse Access Drift			30						30	1,015
	HW Drift			305						305	10,321
90m Level	Ramp from 40m Level		385							385	17,371
	Level Access Drift			160						160	5,414
	FAR /Esc Rse Access Drift			40						40	1,354
	HW Drift			330						330	11,167
190m Level	Ramp from 90m Level		215	545						760	34,291
	Level Access Drift			155	20					175	5,922
	FAR /Esc Rse Access Drift			65						65	2,200
	HW Drift				325					325	10,998
290m Level	Ramp from 190m Level			355	405					760	34,291
	Level Access Drift				180					180	6,091
	FAR /Esc Rse Access Drift				55					55	1,861
	HW Drift				260	50				310	10,490
390m Level	Ramp from 290m Level				495	265				760	34,291
	Level Access Drift					170				170	5,753
	FAR /Esc Rse Access Drift					40				40	1,354
	HW Drift					265				265	8,968
490m Level	Ramp from 390m Level					635	125			760	34,291
	Level Access Drift						180			180	6,091
	FAR /Esc Rse Access Drift						45			45	1,523
	HW Drift						280			280	9,475
570m Level	Ramp from 490m Level						700			700	31,584
	Level Access Drift						50	115		165	5,584
	FAR /Esc Rse Access Drift							40		40	1,354
	HW Drift							155		155	5,245
<b>Capital Raise Development (Waste)</b>											
40m Level	FAR/Esc Raise			40						40	1,020
90m Level	FAR/Esc Raise			45						45	1,140
190m Level	FAR/Esc Raise				95					95	2,410
290m Level	FAR/Esc Raise				100					100	2,540
390m Level	FAR/Esc Raise					100				100	2,540
490m Level	FAR/Esc Raise						100			100	2,540
570m Level	FAR/Esc Raise							80		80	2,030
Capital Development Totals			900	2,280	1,935	1,525	1,480	390		8,510	333,160

**Table 22: LoM Operating Lateral Development (mineralized) by Half Year**

		2010		2011		2012		2013		Meters	Tonnes
Operating Lateral Development (Waste)		1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half		
40m Level	Alimak Rse Access Drawpoints			135						135	3,426
90m Level	Alimak Rse Access Drawpoints			225						225	5,711
190m Level	Alimak Rse Access Drawpoints				180					180	4,568
290m Level	Alimak Rse Access Drawpoints				90	75				165	4,188
390m Level	Alimak Rse Access Drawpoints					150				150	3,807
490m Level	Alimak Rse Access Drawpoints						120			120	3,046
570m Level	Alimak Rse Access Drawpoints							105		105	2,665
<b>Total Operating Lateral Development Meters</b>				360	270	225	120	105		1,080	27,410

**Table 23: Operating Raise Development (mineralized) by Half Year**

		2010		2011		2012		2013		Meters	Tonnes
Operating Raise Development		1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half		
90m Level				350	100					450	12,960
190m Level					600	400				1,000	28,800
290m Level					50	700	350			1,100	31,680
390m Level						150	550	300		1,000	28,800
490m Level							400	400		800	23,040
570m Level							400	160		560	16,100
<b>Total Operating Raise Development Meters</b>				350	750	1,250	1,700	860		4,910	141,380

**Table 24: LoM Mine Production Schedule**

	2011		2012		2013		2014		TOTAL
	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	
<b>Days</b>	<b>61</b>	<b>182</b>	<b>181</b>	<b>182</b>	<b>180</b>	<b>182</b>	<b>180</b>	<b>31</b>	<b>1,179</b>
90m Level	47,741	60,256							107,997
190m Level		119,213	108,824						228,037
290m Level		1,440	107,603	165,440	39,563				314,046
390m Level			4,320	158,813	223,904				387,037
490m Level					31,281	235,061	147,940		414,282
570m Level						50,191	195,405	32,105	277,701
Tonnes									
Mined	47,741	180,909	220,747	324,253	294,748	285,252	343,345	32,105	1,729,100
Tonnes/day	783	994	1,220	1,782	1,637	1,567	1,907	1,036	

## 17.6.2 Contractor Involvement

All ramp development at Hart will be carried out by contractors. Liberty personnel will develop all capital and operating excavations associated with level and deposit accesses.

Contractors will be tasked to drive raises for fresh air as well as raises in the deposit to facilitate stope production.

Contractors will participate in production activities in that they will do the production drilling and blasting in the Alimak stopes. Liberty personnel will muck the blasted material from the Alimak stopes as well as execute all other rock handling tasks including operation of the monorails.

## **17.7 Manpower, Equipment and Services**

### **17.7.1 Mine Manpower**

The maximum number of mine and mill personnel excluding mine contractors is estimated at 112 employees as listed in Table 25. Administration and technical service personnel (10 persons) vary regarding time allotted to the Hart mine. Residual time for these persons has been allocated to Liberty's adjacent projects namely Redstone and McWatters.

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. Liberty will be responsible for all level development and rock transport. Contractors will be used to develop the main ramp, drive the FAR system and execute raising and production drilling and blasting.

Management and technical staff will work a Monday to Friday dayshift schedule.

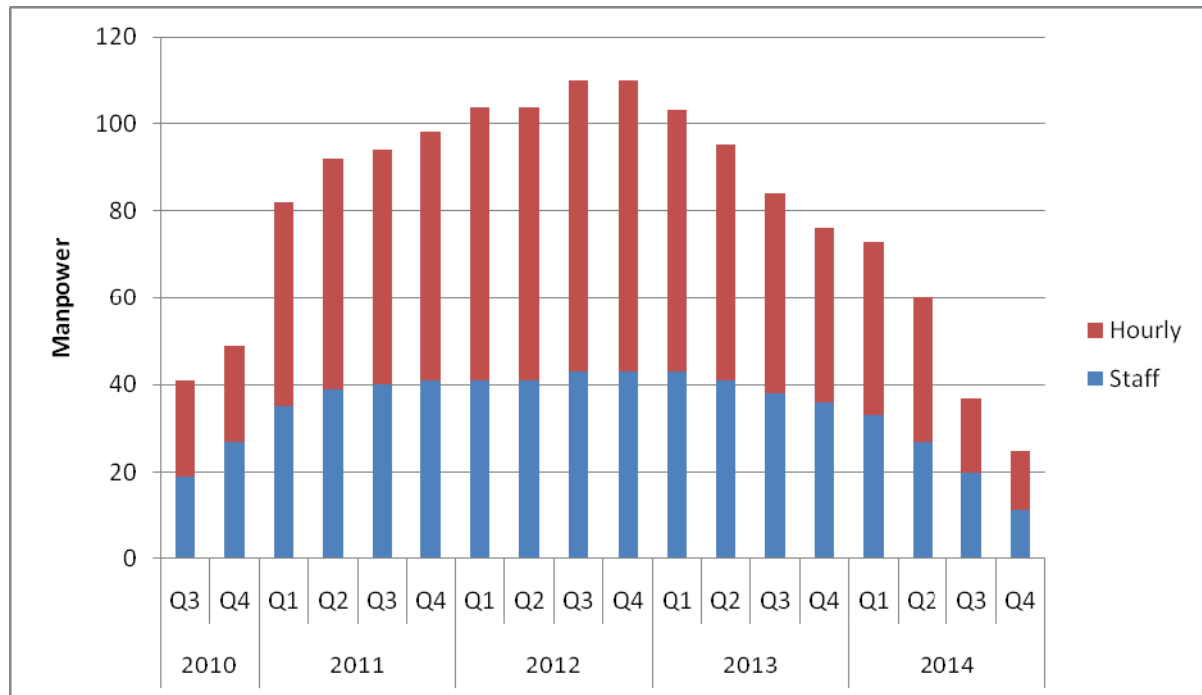
The development miners shown in Table 25 include the manpower requirements for both capital and operating development (two Liberty crews per shift). Table 25 also states the average percentage of time that personnel are accountable to Hart instead of Liberty's other two projects.

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 25: Hart Project Manpower Requirements (1,500 tpd)**

Category	Shift	Men/Shift	Total	Time Allocated to Hart
<b>Administration and Technical</b>				
	Days 5&2	1	1	70%
Mine Manager	Days 5&2	1	1	50%
Mine Super	Days 5&2	1	1	50%
Mill Manager/Metallurgist	Days 5&2	1	1	70%
Mine Trainer	Days 5&2	1	1	70%
Safety Officer	Days 5&2	1	1	70%
Accountant	Days 5&2	1	1	50%
Payroll Specialist	Days 5&2	1	1	50%
IBA Coordinator	Days 5&2	1	1	50%
Health/Safety/Training	Days 5&2	1	1	50%
Security & First Aid	Days 5&2	2	8	50%
Environmental Coordinator	Days 5&2	1	1	50%
Environmental Specialist	Days 5&2	1	1	50%
Receiving/counter attendant	Days 5&2	1	1	50%
Chief Geologist	Days 5&2	1	1	70%
Mine Geologist	Days 5&2	1	1	70%
Mine Geologist Sampler	Days 5&2	1	1	70%
Mine Engineer	Days 5&2	1	1	70%
Mine Planner	Days 5&2	1	1	70%
Mine Lead Surveyor	Days 5&2	1	1	70%
Chief Electrician	Days 5&2	1	1	70%
Chief Mechanic	Days 5&2	1	1	70%
Janitor	Days 5&2	1	1	70%
<b>Subtotal</b>			<b>30</b>	
<b>Supervision</b>				
Mill Foreman	Days 5&2	1	4	100%
Underground Foreman	4&4	1	6	100%
<b>Subtotal</b>			<b>10</b>	
<b>Underground Development</b>				
Development Miners	4&4	6	18	100%
Train Operator	4&4	2	6	100%
Raise Mining	4&4	Contractor		
<b>Subtotal</b>			<b>24</b>	
<b>Underground Production</b>				
Long Arm 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	100%
Millwright	Days 5&2	1	4	100%
Lab	Days 5&2	1	4	100%
<b>Subtotal</b>			<b>24</b>	
<b>Surface Haulage</b>				
Truck Drivers	4&4	2	6	100%
Dozer Operator	4&4	Contractor		
<b>Subtotal</b>			<b>6</b>	
<b>Services</b>				
General Laborer	4&4	1	3	100%
Mechanics	Days 5&2	2	6	100%
Electricians	Days 5&2	1	3	100%
<b>Subtotal</b>			<b>12</b>	
<b>Total Mine</b>			<b>112</b>	

Figure 45 shows the Hart LoM manpower build-up of staff and hourly employees. Manpower levels peak at of 112 persons in the 3rd quarter of 2012. Development requirements begin to decreases thereafter and manpower continues to decrease until the end of mine life in the 4th quarter of 2014.



**Figure 45: LoM Manpower Levels**

### 17.7.2 Mining Equipment

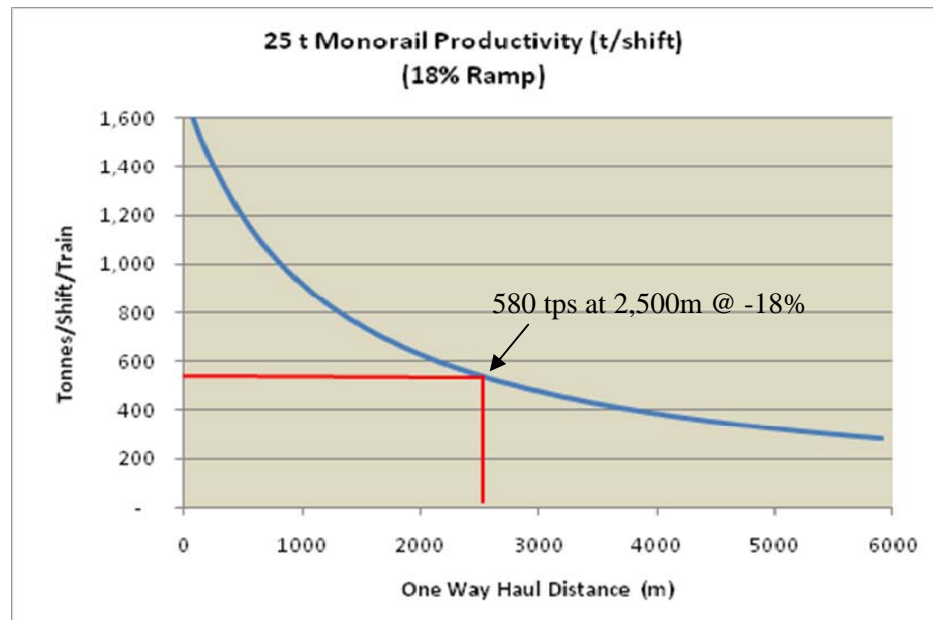
Mining equipment was selected for its compatibility with stoping and development requirements in terms of productivity, physical size and maneuverability. The production and development schedules are not fully optimized and, therefore, the equipment fleet may require some modification during further studies. The following table shows the main equipment operation assumptions used in equipment productivity analysis.

The operating assumptions selected were based on experience and are within industry norms. Fleet sizes for major equipment units such as face jumbos, explosives loading equipment, LHDs and trucks were estimated on scheduled quantities of work and productivities. Service equipment without specific productivity factors (scissor lifts, forklifts, man carriers, etc) were given a general utilization based on experience. For example, it was estimated that one ground control crew of two men will require a full shift to bolt and prepare two headings for drilling. The Telehandler used for this task will therefore be fully utilized for the ground support role.

**Table 26: Mobile Equipment Assumptions**

Element	Assumption	Unit
Loose Waste Material Density:	2.10	tonnes/m3
Box/bucket Fill Factor:	90	%
Utilization of effective working time:	80	%
Availability during production shifts:	90	%
Operating efficiency:	90	%
Shift duration:	10.5	Hours
Travel time, lunch, inspections, etc:	1	Hours
Production shifts per day:	2	Shifts
Working days per month:	30	Days
Net Utilization	6.89	hours/shift
Max. travel speed	6	km/hr
Jumbo productivity	2	rounds/shift
Monorail or Truck loading time	10	Minutes
Monorail or Truck dump time	1	Minute

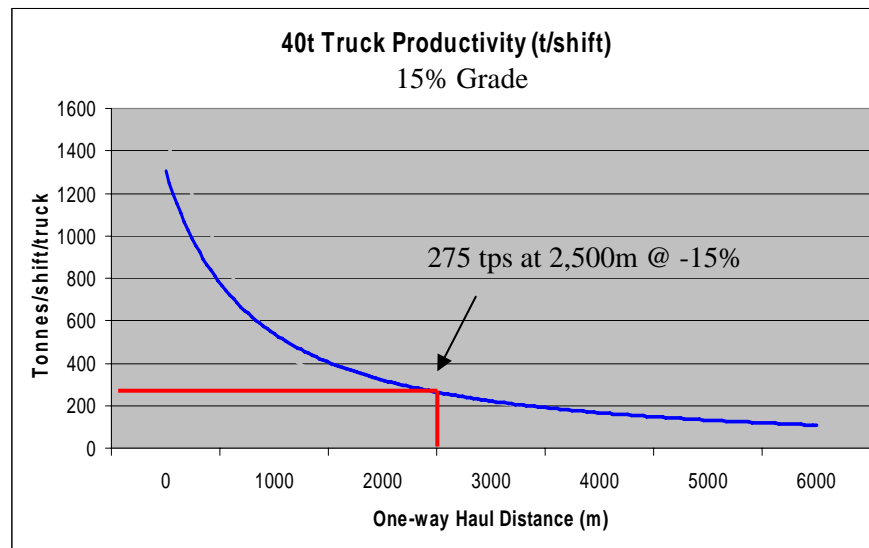
The largest variable in defining the equipment requirements for the project was the monorail haulage distance for the blasted rock. The haul distance from a level in the upper part of the mine will be hundreds or thousands of metres less than the haul from a lower stope. To account for this situation the mine was divided by levels (7) and the average haul distance for each level was calculated. Annual weighted average haul distances were then compiled and the appropriate monorail productivity was assigned for tramming in that production year. The monorail productivities used are represented in Table 26 and Figure 46. Figure 47 compares productivity for a single 40t



**Figure 46: 25t Monorail Productivity on 18% Grade**

The chart shows that a monorail train with 25 tonne capabilities on an 18% grade and working 2 shifts per day can produce 1,160 tonnes per day from the center of the orebody. Hart will be using two trains and should both trains be mucking from the lowest level (570m Level) then only 1,400 tonnes per day can be produced. It is useful to consider that the monorail trains are modular and another ore-car could be added to supplement tonnage requirements if required.

The reader will be interested in a comparison with conventional trucks so a chart has been provided that highlights productivity differences.



**Figure 47: 40t Truck Productivity on 15% Grade**

Trade-offs between trucks and the monorail show the monorail to be recommended. While the monorail train adds capital cost the operating savings significantly increase the project cash flow and NPV. Significant cost items affected by the monorail include:

- Smaller excavation, saves capex
- Lower energy cost, electric vs diesel
- Can go deeper
- Lower maintenance cost
- Reduced labour – if train runs with no operator?
- Lower ventilation and heating costs

Table 27 lists all the equipment purchase and rebuild requirements for the Hart project. Equipment already owned and potentially usable for Hart comes from Liberty's McWatters mine.



**Table 27: Hart Equipment List**

	Owned	Rebuild	Required	To Purchase	Comments
<b>G&amp;A Equipment</b>					
Pickups	8		8		
Personal Carrier	4		4		
Wheel Loader	2		2		
Forklift	1		1		
Grader	1		1		
<b>Mobile Equipment</b>					
2-boom Development Jumbo	1		2	1	McWatters to provide 1 unit
2-boom Development Jumbo - Rebuild		1			Rebuild McWatters Jumbo
3.1 cu m (4yd) LHD	1		3	2	McWatters to provide 1 unit
3.1 cu m (4yd) LHD - Rebuild		1			Rebuild McWatters 4yd scoop
5.3 cu m (6yd) LHD	1		1		McWatters to provide 1 unit
5.3 cu m (6yd) LHD - Rebuild		1			Rebuild McWatters 6yd scoop
26 tonne Truck	1		1		From McWatters
Scissor Lift	1		1		From McWatters
Anfo Loader	1		2	1	From McWatters
Telehandler			2	2	
Utility Vehicles (2 for train)			5	5	
Personnel Carriers (2 for train)			4	4	
966 Loader	1		1		From McWatters
Forklift			1	1	
Monorail Train Complex			2	2	
<b>Stationary Equipment</b>					
Heater (portable diesel)			1	1	
Electrical Power Centers			2	2	
Air Compressors			2	2	
Main Ventilation Fans			4	4	
Auxiliary Vent Fans (50hp)			15	15	
Ventilation Steel Tubing (m)			1,580	1,580	\$105/m
Ventilation					
Doors/Bulkheads/Construction			7	7	
Refuge Stations			6	6	
Powder Magazines			6	6	
Cap Magazines			6	6	
Storage Bays			7	7	
Portable Fuel Stations			3	3	
Portable Latrines			3	3	
Sumps (including pumps)			3	3	
Monorail Switches			12	12	
Monorail Rail/Electrical Bus (m)			4,530	4,530	
<b>Buildings</b>					
Pastefill Plant (including pipe)			1	1	
Train Surface Loadout, Office & Warehouse			1	1	

All minor repairs to equipment when underground will be conducted 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.

Hart Alimak production drilling productivity estimate is shown in Table 28. This function will be performed by a drilling contractor.

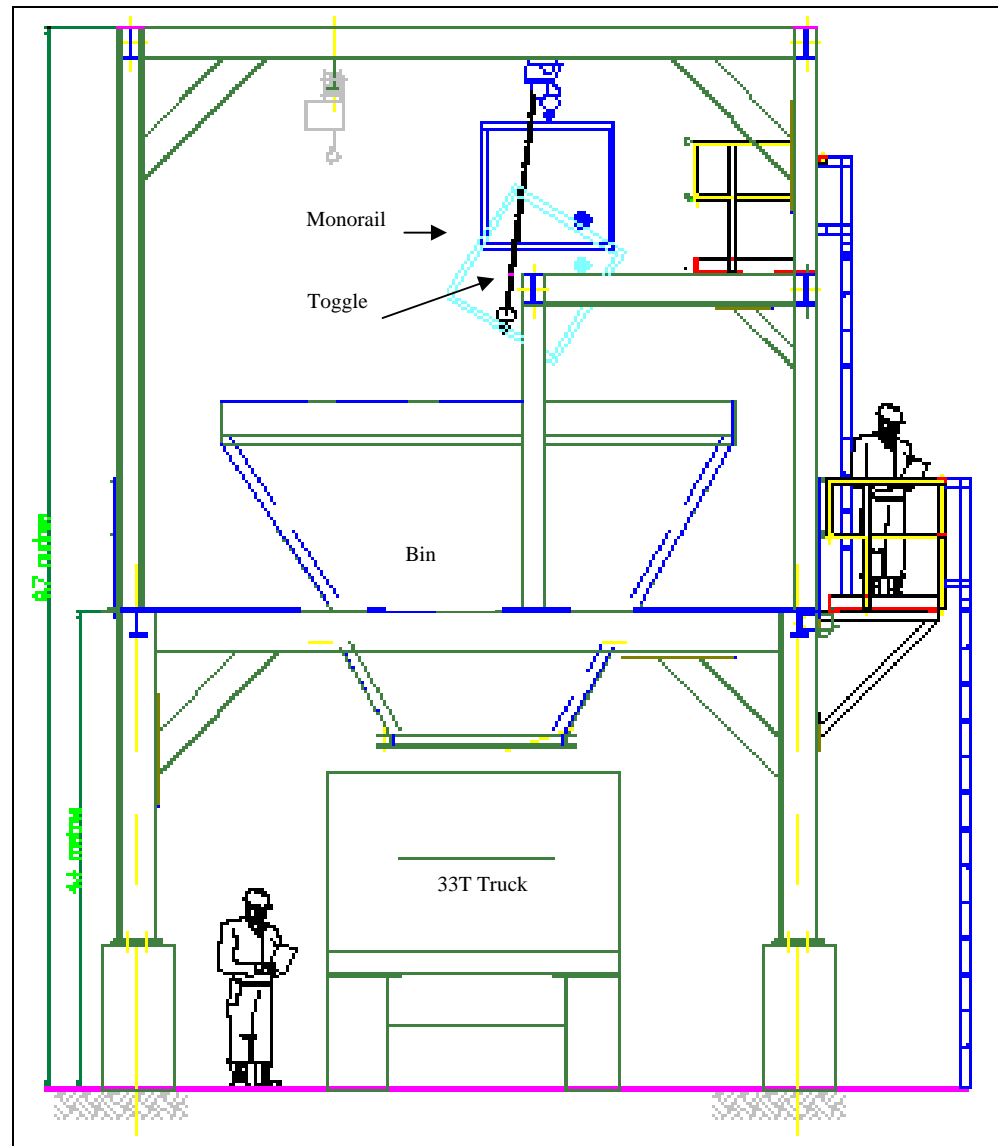
**Table 28: Production Drilling Productivity**

Shifts per day	2	
Meters per ring	30	M
Rings per blast	8	Rings
Meters per blast	240	m
Tonnes per blast	2,000	tonnes
Tonnes per meter	8.33	tonnes
Effective drilling time per shift	6.89	hrs
Drilling time per hole	0.33	hrs
Holes drilled per shift	21	holes
Average hole length	10	m
Hole diameter	50.8	mm
Meters drilled per shift	210	m

Calculations indicate that the mean fragment size of blasted rock will be 5.3cm with 99% passing 45cm. Any oversize will be either mud-blasted or discarded as waste at the end of shift. Where available a dead end 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 Haulage

The broken rock will be trammed to surface by monorail and toggle dumped (Figure 48) into a plant feed bin or waste bin. Highway haulage trucks (33 tonne tri-axial) will load from the appropriate bin and transport the waste or plant feed material to respective storage or processing areas. The distance from Hart to the Redstone mill is 6 kilometres by road for feed delivery direct to the mill and waste storage is planned to be within 500 metres of the Hart portal.



**Figure 48: Toggle Loadout above COB and Truck Loadout**

#### 17.7.4 Grade Control

Samples will be collected daily from each stope drawpoint and/or development 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 Backfill

Backfill will be comprised of paste tailings fill. The mill will generate sufficient tails in its deep thickener allowing a fines portion to be scalped and later screened or filtered for use to produce a high quality paste. Tails filter cake will be delivered to the paste plant by ready mix trucks under contract to the mine.

Pastefill will be generated at the plant at productivities of 1,200 tpd and delivered by pipeline to the appropriate stopes (Table 29). This study has detailed the costs of a suitable plant, mill modifications, and underground distribution system requirements including associated instrumentation.

**Table 29: Annual Paste Backfill Requirement by Level**

Level	2011	2012	2013	2014	Total
90m Level	46,300				<b>46,300</b>
190m Level	37,700	58,800			<b>96,500</b>
290m Level		141,200			<b>141,200</b>
390m Level		63,000	101,400		<b>164,400</b>
490m Level			146,400	20,800	<b>167,200</b>
570m Level				113,400	<b>113,400</b>
<b>Total</b>	<b>84,000</b>	<b>263,000</b>	<b>247,800</b>	<b>134,200</b>	<b>729,000</b>

The transport of paste tailings to the underground workings will be in a pipeline via the FAR. This routing will provide the shortest access to the initial stoping areas and will assist in keeping the pipeline at a temperature above freezing. The use of ventilation raises significantly reduces the length of backfill pipe and provides easy stope access.

The cement content of the paste fill will be determined upon final tailings size distribution and recipe calculations however, an assumption of 3% cement has been used in the cost estimate. The main purpose of the backfill is to support primary stopes so that secondary stopes can be recovered without excessive spans of hangingwall being unsupported.

### 17.7.6 Dewatering

Sumps will be established at each level entrance (40m, 90m, 190m and 290m, 390m, 490m and 570m). Pumps will be sized for the potential maximum (25 year storm event) mine inflow of approximately 2,000 cubic meters per day (300gpm) based on expectations of similar hydrology to Redstone and McWatters mines. 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 plant feed supply.

### 17.7.7 Electrical Power Distribution

Power for the underground mine will be used by dewatering pumps, auxiliary ventilation fans, the face jumbo and production drills and monorail trains. Monorail trains (2) will each draw 120 kW of power when going up-ramp or when running on the level. When going down-ramp the monorails will generate approximately 90% of 120kW back into the system. When the trains are not moving, (includes loading or dumping) they will draw no load from mine power.

The main electrical substation for the mine will be located at the surface plant area. Electricity for the mine will be carried via a 4160V overhead line to the portal area where it will be connected to the underground distribution system. Primary power underground will be supplied to local underground substations where it will be transformed to 600V for use by ventilation fans, jumbos, pumps, monorail, etc.

Electrical cable reticulation in the mine will be carried down the ramp to the first ventilation raise and then down the raises to reduce the length of cable required. Every 20 metres of ventilation raise equals approximately 150 meters of decline so the cost saving of installing the cable in the ventilation raises will be significant.

Small portable power centres will be located at each working cross cut/ramp intersection and will have sockets for ventilation fans, jumbos and pumps. The power centre will be located just inside the ventilation cross cut where it will be protected from mobile equipment damage.

On surface power will be used to operate the main fresh air fan and air compressors.

### 17.7.8 Equipment Maintenance

The existing surface maintenance shop for rubber tired mobile equipment is located at McWatters Mine, 3 kilometres from Hart. That shop is equipped to meet foreseeable maintenance requirements for conventional equipment ranging from LHD's to personnel carriers.

A monorail service bay is located at Hart in the combined office and warehouse maintenance building.

The Hart mine layout allows access to all levels using the monorail. In the event a mobile piece of equipment needs servicing that cannot be accommodated underground then that piece will be slung and brought to surface by the monorail and carried by flatbed to the McWatters shop. Equipment lifts are standard practice for mine monorails and their lift capabilities exceed 27 tonnes so even the largest LHD will be a practical and quick lift exercise for the train. All underground mobile equipment will be fitted with engineered lugs for monorail transport purposes.

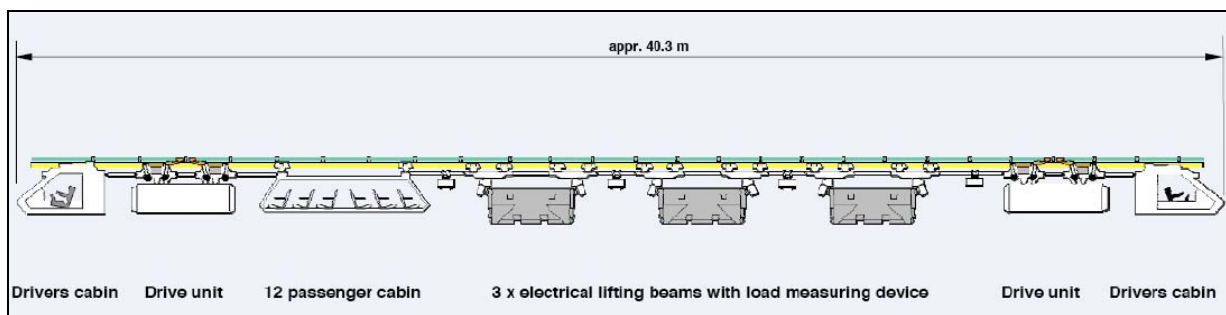
Monorail trains download diagnostics every time they cycle to surface. If a train part is identified as worn then the train will continue past the surface

dump area into the warehouse/train maintenance bay for servicing. Electric monorail trains are similar to mine hoists in reliability. If a train does require a tow to surface another train can attach and pull that damaged unit to the surface maintenance shop.

Minor equipment repairs will be performed underground on levels or near mine workings as required. Service vehicles have been included in the capital estimate for mechanics and electricians. Regular preventative maintenance will be performed underground or at the surface shops depending on severity of maintenance.

### 17.7.9 Materials and Supplies Handling

Areas have been designated in the mine plan to store all consumable materials. Explosives and cap magazines will be established and commissioned underground. Materials will be transported by monorail to the working levels and distributed on the level by teleremote forklifts. While the plan includes 5 individual jeeps for supervision and/or operations use the men and materials will more often be transported by monorail from the surface loading dock to and between any underground level. Planning indicates that enough capacity exists in the train schedule to tram supplies and men during dayshift and rock and men during nightshift. The monorail train can be quickly reconfigured (minutes) to handle men or materials. Figure 49 shows a man and rock car arrangement on the same train.



**Figure 49: Alternative Train Configuration showing Mancar and Rock Cars**

## 17.8 Hart Mine Site Infrastructure

The Hart mine is a satellite site of the Liberty Redstone and McWatters Mines. As such it requires only a portion of what a stand-alone operation would require in terms of infrastructure.

As shown in Figure 50, infrastructure on site is planned to consist of a 1,200 tonne per day pastefill plant centrally located on surface above the deposit, and a distance of 200 metres from the mine portal. Adjacent to the pastefill plant (Figure 50) is the Fresh Air Raise collar and heating plenum. The FAR has been located to accommodate the pastefill distribution pipeline to underground.

Directly across from the mine portal site infrastructure (Figure 51) includes:

- Train loadout/Truck loading
- Mechanical maintenance shops (for monorail train);
- Office complex, ;
- Site warehouse;
- Fuel depot
- Security gate, ;
- Compressor building;
- Parking lots;
- Lay-down yard areas
- 5 Megawatt Transformer station
- Settling and treatment ponds.

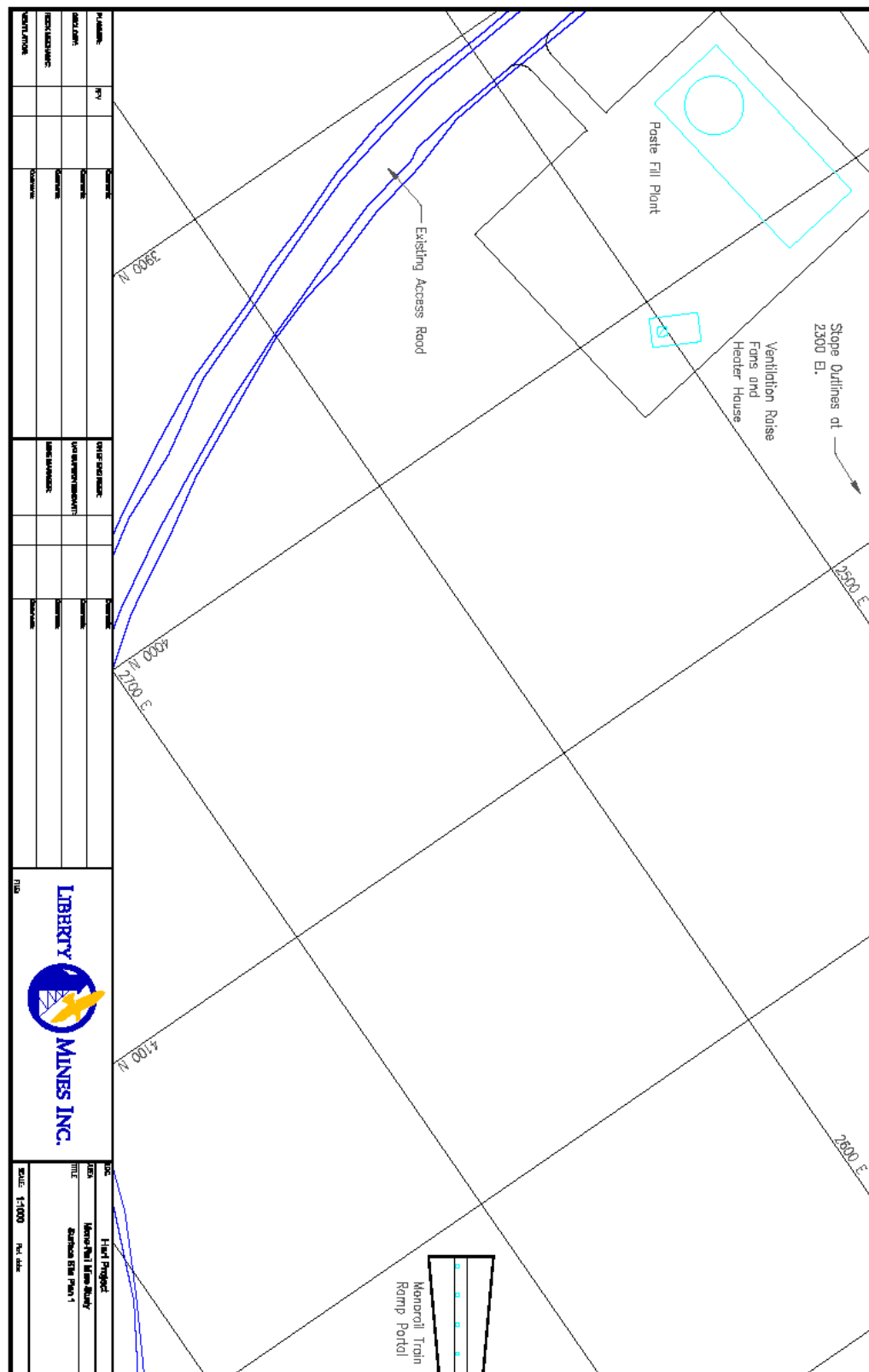


Figure 50: Hart – Paste Plant and FAR Surface Plan



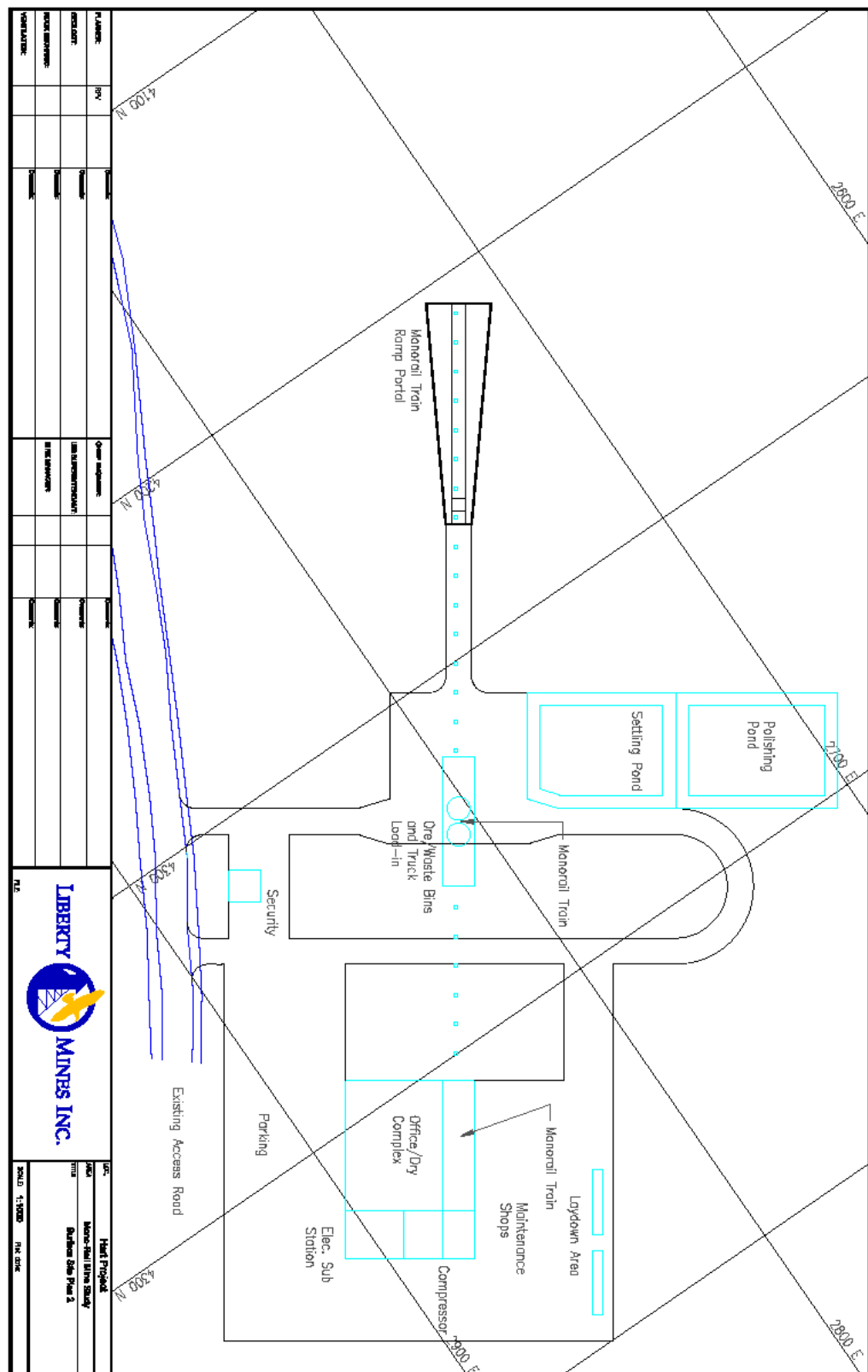


Figure 51: Surface Plan - Hart Portal and Supporting Infrastructure

## **17.9 Environmental Considerations**

### **17.9.1 Environmental Studies**

Application for a mining lease at Hart has been made and permitting is in progress. The Redstone mill complex and tailings areas have already been approved for environmental permitting. The mill is in operation currently processing McWatters and Redstone ore.

### **17.9.2 Environmental Liabilities**

Underground mining operations will be accessed by a ramp extending from a portal at surface. Bulk mining with Alimak mining methods will be utilized. All plant feed will be brought to surface using an electric monorail where it will be loaded into highway trucks and hauled to the Redstone nickel concentrator at the Redstone mine site. The development waste rock will be trucked to surface and stockpiled for various future applications throughout the site.

Liberty has prepared a Spill Prevention and Contingency Plan for use at McWatters and Redstone mines. This same plan will be extended to apply to Hart mine.

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 30 lists risk agents and their corresponding reporting thresholds:

**Table 30: Reporting Thresholds**

<b>Risk agent</b>	<b>Reporting Threshold</b>
Cement /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 rainfall and flooding. No threshold is defined.
Sewage	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 rainfall and flooding. Release of more than 2300 kg is reportable, very low probability event.
Ore leachate	Uncontrolled leachate from failed or overtopped detention ponds which releases to surface water is reportable. No threshold for quantity is defined.
Water 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 rainfall and flooding. Release of more than 2300 kg is reportable, very low probability event.
Water treatment reagent solution	Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Organic reagents / solvents	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 rainfall and flooding. Release of more than 450 kg is reportable, very low probability event.
Organic reagents / solvents	Release of 100 kg and less is not reportable unless it is released within 50 m of surface water during an extreme rainfall event.
Sulphuric acid	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.
Wastewater	Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Wastewater	Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Wastewater	Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Off-spec treated water	Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Off-spec treated water	Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Off-spec treated water	Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Off-spec treated water	Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Treated / fresh water	Release according to permit is not reportable
Tailings slurry	Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Process 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.
Tailings leachate	Uncontrolled leachate to surface water is reportable. <b>No threshold for quantity is defined.</b>
Tailing	Uncontrolled tailings to surface water are reportable. <b>No threshold for quantity is defined.</b>
Tailing	Uncontrolled tailings to surface water are reportable. <b>No threshold for quantity is defined.</b>
Potassium 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.
Potassium hydroxide solution	Uncontrolled release of more than 20 m <sup>3</sup> from failed or overtopped tanks is reportable. Very low frequency event.
Diesel fuel / gasoline	Release to water is reportable. 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.
Vehicle 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. Release to the land of larger than 100 L of fuel is reportable. Very low frequency event.
Ethylene glycol	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 within 50 m of surface water during an extreme rainfall event.
Lubricating oils and greases	Release to water is reportable. 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.

Bunker C 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.
Hazardous 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 at Hart will be stored in approved containers. All waste oil will be pumped into and stored in a 1,100 litre (250 gallon) steel tank located beside the McWatters maintenance shop. All other wastes (contaminated soil, oil filters and waste chemicals) from Hart will be 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 at Hart (contaminated or non-contaminated) will be stored in waste ammonium nitrate bins where it will be picked up by Nordex Explosives Ltd. and transported to their site for disposal.

### 17.9.3 Emergency Response Plan

An Emergency Response Plan (“ERP”) has been developed for McWatters and Redstone mines. That plan will be extended to include Hart mine as appropriate. The plan 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.

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).

Sampling is undertaken daily at the settling pond at McWatters and Redstone. 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.

#### **17.9.4 Acid Rock Drainage**

Acid rock drainage at Hart is expected to be similar to that found at McWatters Mine. 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  $NPR \gg 4$  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.

#### **17.9.5 Environmental Permits**

Hart has or is making application for the following permits for the Hart project.

Certificate of Approval for Industrial Sewage Works from the Ontario Ministry of the Environment for the collection, transmission, treatment and disposal of sewage from Hart mine.

Permit to Take Water Number to dewater and use water.

Certificate of Approval for Air for the operation of the site with respect to fugitive emissions from the mine portal that discharges the return air in the mine handling mineralization and waste; a surface plant feed storage pile; a surface waste rock pile; and haul road. In addition, the permit will request approval for 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.

#### **17.9.6 Environmental Monitoring**

Liberty has developed and implemented environmental monitoring programs to address its regulatory obligations under the Ontario Environmental Protection Act for McWatters and Redstone mines including the Metal Mining

Effluent Regulations (“MMER”) of the Fisheries Act. These programs will also be developed for the Hart project.

The program currently consists at the other two sites, of twice monthly monitoring of receiving water quality upstream of the discharge points, downstream of the discharge points and any tributary mixing zones and locations.

Periodic (typically once every three years) sampling of sediment chemistry (metals, TOC, moisture content) and of benthic invertebrates at these locations is also performed.

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).

Hart will be treated the same as Redstone or McWatters where waste water is pumped from underground and/or open pit workings to water treatment plants. In conjunction with settlement and treatment ponds, the water is treated to below regulatory limits and discharged. Monitoring is done at the treatment ponds and discharge weir.

Domestic sewage generated from the mine dry and underground will be directed to a septic system on site. 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 haul roads and rock piles are monitored and treated with water as necessary to control dust.

To date at Redstone and McWatters Mines, there have been no values exceeding any MISA/MMER threshold. 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.

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

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

The plant feed from Hart mine would be milled at the Redstone mill. As such, the tailings produced would be kept at the Redstone tailings pond. A 12 metre 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 or into ready-mix trucks for return to Hart’s proposed pastefill plant.

Fresh water will be pumped from the Redstone River to the Redstone Mine and to the mill. The Redstone Mine 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.

### 17.9.8 Closure Plan

The Hart closure plan is currently under study in house. by Liberty.

## 17.10 Life of Mine Plan

### 17.10.1 Concentrator Feed Schedule

The concentrator feed schedule for Hart was developed at 1,500 tonnes per day, commencing in November 2011 when plant capacity becomes available as the McWatters project processing is scheduled to be completed. Plant feed from the Hart mine will begin about 6 months earlier, and excess 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 285,000 tonnes in Q2 of 2014.

The concentrator feed schedule for Hart's potential mineable resource is shown in Table 31.

**Table 31: Processing Schedule for Hart's Potential Mineable Resource**

	2011		2012		2013		2014		
Stope	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	1st Half	2nd Half	TOTAL
90m Level		79,500	28,497						107,997
190m Level			228,037						228,037
290m Level			14,966	273,000	26,080				314,046
390m Level					243,920	143,117			387,037
490m Level						129,883	270,000	14,399	414,282
570m Level								277,701	277,701
Tonnes Milled		79,500	271,500	273,000	270,000	273,000	270,000	292,100	1,729,100
Cumulative Mined	47,741	228,650	449,397	773,650	1,068,398	1,353,650	1,696,995	1,729,100	
Cumulative Milled		79,500	351,000	624,000	894,000	1,167,000	1,437,000	1,729,100	
Stockpiled	47,741	149,150	98,397	149,650	174,398	186,650	259,995		



## 17.10.2 Operating Costs

### Operating Cost Summary

The total operating costs estimated for the Hart project are shown in Table 32.

**Table 32: Estimated Total Operating Costs**

<b>Function</b>	<b>Operating Cost \$ per tonne Cdn</b>
Alimak Mining	\$29.57
Concentrator	\$14.81
Site Administration	\$8.32
U/G Haulage to Concentrator	\$1.07
<b>Total Site Operating Cost</b>	<b>\$53.77</b>

SRK considers that the operating cost estimates and technical economic results presented for Hart are suitable to support a scoping level study. The historical Redstone mill operating achievements have been incorporated into the estimate.

### Mine Operating Cost

Mine operating costs were estimated based on first principles since there is no production cost history at Hart 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 underground Alimak mining costs include a contractor's quote for raising, drilling and blasting.

**Table 33: Breakdown of Mining Cost per Tonne**

<b>Operating Item</b>	<b>\$ per tonne</b>
lateral development	\$1.36
raising	\$5.89
LH drilling	\$1.74
production blasting	\$2.08
production mucking	\$1.38
secondary breaking	\$0.09
primary haulage	\$1.51
services	\$7.17
ventilation	\$2.44
maintenance	\$0.11
paste fill	\$5.81
<b>Total Alimak Mining</b>	<b>\$29.57</b>

Key unit costs for the Hart project are shown in Table 34 below.

**Table 34: 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 35.

**Table 35: Redstone Plant Operating Cost Estimate**

<b>Throughput (TPD)</b>	<b>1500</b>
Labour	\$3.56
Consumables	\$5.84
Electrical Maint.	\$0.43
Mechanical Maint.	\$0.34
Heating	\$0.27
Loader Operations	\$0.10
Power Consumption	\$3.57
Contingency (5%)	\$0.70
<b>Total Cost/Tonne</b>	<b>\$14.81</b>

### General and Administration Operating Cost

Hart's general and administration cost estimate for a year at full production is shown in Table 36. The estimate, prepared by Liberty and reviewed by SRK, is based on actual and projected costs. LoM average site G&A cost per tonne attributed to Hart is estimated at \$8.32 per tonne milled. The LoM average G&A unit cost is higher than indicated by the table due to periods of lower production during ramp up.

**Table 36: Hart General and Administration Cost Estimate**

<b>G&amp;A Cost Item</b>	<b>Cost/Year</b>
Labor	\$2,292,614
Supplies	\$54,858
Equip costs	\$273,109
Buildings	\$88,480
Environmental monitoring & permits	\$135,670
Water treatment	\$90,250
Communications	\$41,291
Travel & bussing	\$14,747
Professional associations & certification	\$5,014
Recruiting & medicals	\$4,129
Specialized software/hardware	\$32,443
Accounting & legal services	\$94,379
Insurance	\$153,366
<b>Total</b>	<b>3,280,350</b>

### **Surface Truck Haulage Operating Cost**

The average cost for plant feed haulage from Hart to the Redstone mill is estimated at \$1.07 per tonne.

## **17.10.3 Capital Costs**

### **Mine Capital Cost Requirements**

The capital cost requirements anticipated at Hart are detailed in the following table.

Table 37 shows the total capital cost estimate for the Hart project including al closure provision cost.

**Table 37: Mine Capital Cost Requirements**

		<b>2010</b>		<b>2011</b>		<b>2012</b>		<b>2013</b>		<b>2014</b>		<b>Total</b>	
		<b>Meters</b>	<b>\$M</b>	<b>Meters</b>	<b>\$M</b>	<b>Meters</b>	<b>\$M</b>	<b>Meters</b>	<b>\$M</b>	<b>Meters</b>	<b>\$M</b>	<b>Meters</b>	<b>\$M</b>
<b><u>U/G Development:</u></b>	<u>\$/meter</u>	<u>meters</u>		<u>meters</u>		<u>meters</u>		<u>meters</u>		<u>meters</u>		<u>meters</u>	
Liberty Lateral	\$1,500			2,135	\$3.203	1,080	\$1.620	310	\$0.465			3,525	\$5.288
Contractor Lateral	\$3,105	900	\$2.795	1,800	\$5.589	1,725	\$5.356					4,425	\$13.740
Contractor Raise	\$5,000			280	\$1.400	200	\$1.000	80	\$0.400			560	\$2.800
Contractor Raise Manway	\$1,890			280	\$0.529	200	\$0.378	80	\$0.151			560	\$1.058
<b>Paste Plant:</b>													
Equipment			\$3.713		\$2.923								\$6.636
Ventilation			\$0.180		\$0.914		\$0.539		\$0.095				\$1.728
U/G Facilities			\$0.030		\$1.538		\$0.387		\$0.007				\$1.962
Paste Plant					\$5.000								\$5.000
<b><u>Monorail Train:</u></b>	<u>\$/meter</u>	<u>meters</u>		<u>meters</u>		<u>meters</u>		<u>meters</u>		<u>meters</u>		<u>meters</u>	
Train Surface Loadout			\$1.547		\$1.547								\$3.095
Train Complex			\$0.950		\$0.950		\$1.900						\$3.800
Electrical Substation					\$0.080		\$0.080						\$0.160
Engineering Support			\$0.144		\$0.144		\$0.072						\$0.360
Switches			\$0.135		\$0.135		\$0.270						\$0.540
Rail/Electrical Bus	\$1,510	800	\$1.208	1,900	\$2.869	1,700	\$2.567	130	\$0.196				\$6.840
Rail/Electrical Bus Inst	\$230	800	\$0.184	1,900	\$0.437	1,700	\$0.391	130	\$0.030				\$1.042
<b>Closure:</b>											\$0.350		\$0.350
<b>Contingency</b>	20%		\$2,177		\$5,452		\$2.912		\$0.269		\$0.070		\$10,880
<b>Total</b>			\$13,064		\$32,709		\$17,471		\$1.614		\$0.420		\$65,277

## 17.10.4 LoM Plan Economic Results

A life of mine pre-tax cash flow model was developed for the Hart Scoping Study.

The average mine production rate is approximately 1,500 tonnes per day which matches the planned concentrator feed rate of 1,500 tonnes per day.

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 38 and Table 39.

**Table 38: Hart Indicative Pre-Tax Economic Model Results–page 1**

	2010	2011	2012	2013	2014	Total
	\$M	\$M	\$M	\$M	\$M	\$M
Revenue		\$7.010	\$87.882	\$131.404	\$95.874	\$322.169
Xstrata Processing Cost		-1.657	-20.776	-31.065	-22.665	-\$76.163
Prospector's Royalty						
NSR		\$5.352	\$67.106	\$100.339	\$73.208	\$246.006
Operating Costs	-\$1.251	-\$11.465	-\$28.055	-\$29.096	-\$23.110	-\$92.977
Operating Margin	-\$1.251	-\$6.112	\$39.052	\$71.243	\$50.098	\$153.029
Capital	-\$13.064	-\$32.709	-\$17.471	-\$1.614	-\$0.420	-\$65.277
Pre Tax Cash Flow	-\$14.315	-\$38.821	\$21.581	\$69.630	\$49.678	\$87.752
Pre Tax NPV @ 8%	\$55.583					
Payback Years	3.45					
C1		\$13.40	\$3.74	\$3.02	\$3.16	\$3.51
C1 + Capital		\$47.65	\$5.20	\$3.11	\$3.20	\$5.00

**Table 39: Hart Indicative Pre-Tax Economic Model Results -page 2**

		2010	2011	2012	2013	2014	Total
Mined	tonnes		228,650	545,000	580,000	375,450	1,729,100
Mined	tonnes/day		940	1,500	1,600	1,780	
Milled	tonnes		79,500	544,500	543,000	562,100	1,729,100
Milled	tonnes/day		1,500	1,500	1,500	1,550	
Revenue	Cdn \$/t milled		\$88.17	\$161.40	\$242.00	\$170.56	\$186.32
Xstrata Processing Costs	Cdn \$/t milled		-\$20.84	-\$38.16	-\$57.21	-\$40.32	-\$44.05
Prospector's Royalty	Cdn \$/t milled						
NSR	Cdn \$/t milled		\$67.33	\$123.24	\$184.79	\$130.24	\$142.27
Operating Costs	Cdn \$/t milled		-\$144.21	-\$51.52	-\$53.58	-\$41.11	-\$53.77
Operating Margin	Cdn \$/t milled		-\$76.88	\$71.72	\$131.20	\$89.13	\$88.50
Capital	Cdn \$/t milled		-\$411.43	-\$32.09	-\$2.97	-\$0.75	-\$37.75

Total Margin	Cdn \$/t milled	<b>-\$488.31</b>	\$39.63	\$128.23	\$88.38	\$50.75
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### 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 Hart Scoping Study would be 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 taxes or other levies were considered in the economic assessment for the current Scoping Study.

### Markets

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

## 17.10.5 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 52 and Figure 53 show the cash flow and NPV sensitivity results for the LoM. The base case indicative results for the LoM yield a pre-tax cash flow of \$87.752M Cdn and NPV at 8% of \$55.5M Cdn.

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

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

Figure 54 shows the impact of the Ni price (US\$) in \$0.50 increments on the LoM pre-tax cash flow and pre-tax NPV. The break even Ni price for the Hart project is US\$4.95 per pound.

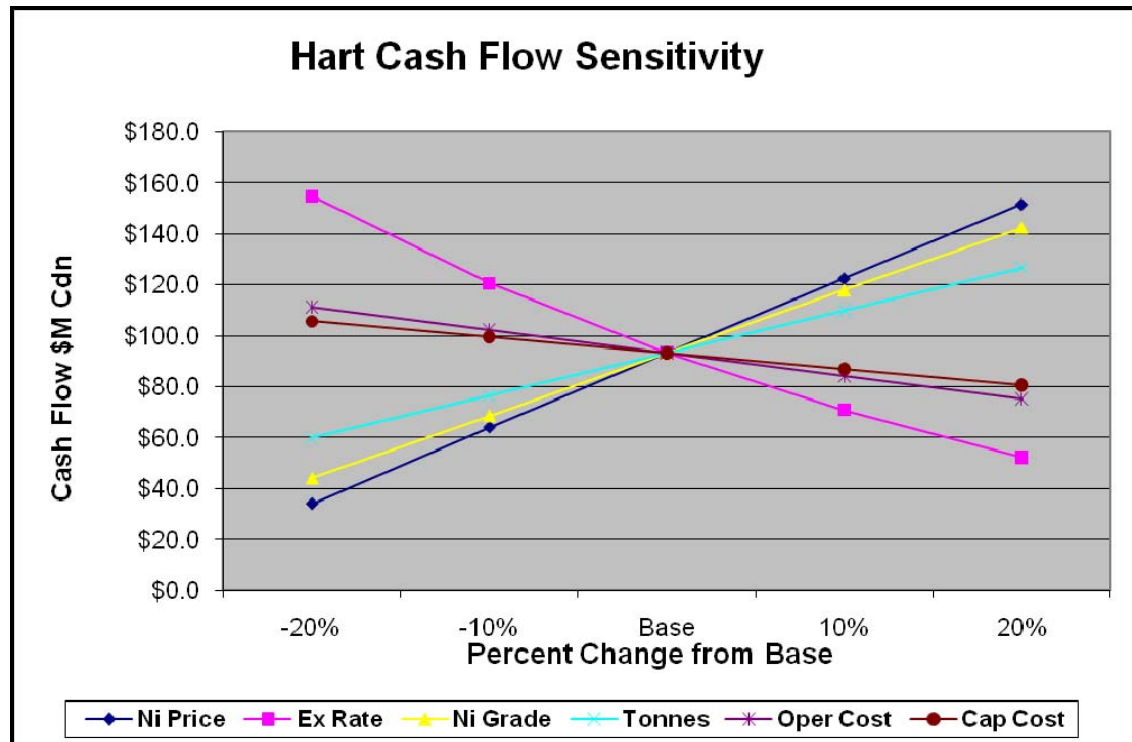


Figure 52: Hart Cash Flow Sensitivity

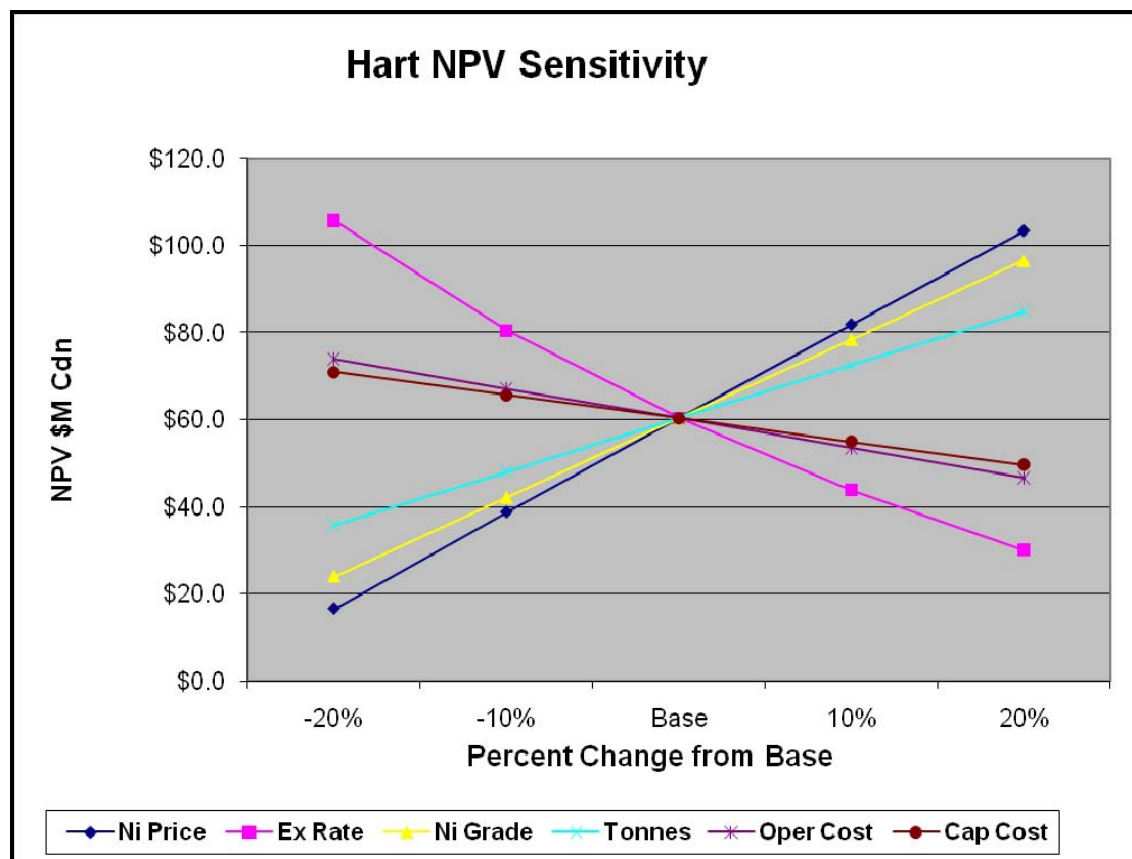


Figure 53: Hart Pre-Tax NPV Sensitivity

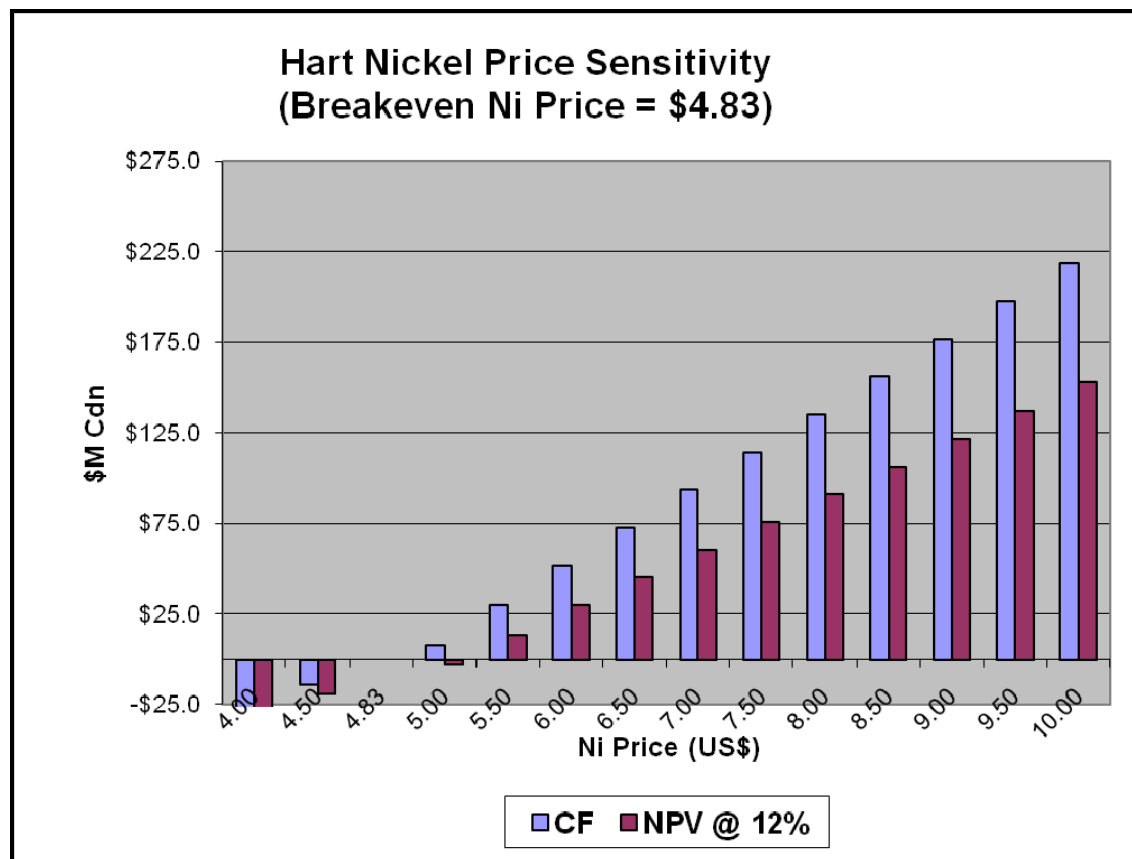


Figure 54: Hart Nickel Price Sensitivity

## 17.11 Project Risks and Opportunities

### 17.11.1 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.

SRK estimates a pre-tax, break even nickel price of US\$4.95 per pound (exchange rate 0.90) for the project. There is a risk to the economic viability of the project should the nickel price drop to lower levels then this over an extended period. It may be possible to partially mitigate this risk through long term agreements/contracts for supplies, energy and labour, or through a long term concentrate sales agreement.

#### Underground Mining

##### Potential Loss of Planned Tonnage

With Alimak mining techniques over 100m level spacing there is a potential of changing thickness in the mining zone resulting in production delay and/or tonnage loss caused by blast failure or “bridging” of the blasted material.



When very narrow (less than 2 m) thicknesses are encountered carefully engineered stoping plans (including resuing techniques) may be required to recover the vein without increasing dilution.

When miss-holes occur in Alimak Raise mining the miners must re-access the area and reload (or in the worst case remotely re-drill and reload) the round. Production delays and/or tonnage loss could be caused if miss-holes or bootlegs impede a clear break to the stope lines. This risk can be mitigated by instituting a quality control program on drilling and blasting activities. Bridging of blasted material in narrow regions of the stope can occur and remain undetected if the toes of the blast holes remain unbroken. Again quality control of drilling and blasting is imperative.

#### External Dilution

There is always a risk that the Alimak mining method dilution assumptions could be greater than estimated.

#### Stope Design

Risk exists as a geotechnical study has not been completed at Hart. The study once completed may indicate more support requirements or smaller panel sizes than have been assumed in this report.

### 17.11.2 Opportunities

#### Exploration Potential

The ultramafic body that hosts the Hart nickel mineralized zone continues at depth and trends SSE over hundreds of metres. There is potential for extensions to the deposit and for further discoveries of economic nickel mineralization. The nickel grade potential at depth appears to be very good compared to the average grade of the currently defined deposit.

The potential delineation of additional economic sub-parallel mineralization would increase the overall tonnes per vertical meter with a positive impact on mining economics.

#### Underground Mining

The Alimak mining 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 and raise access. If low grade zones are encountered, they can be resued by altering the blasting parameters to create coarser fragmentation likely to be identified and sorted at the drawpoints.

The method lends itself to significant level spacing opportunities where deposit thickness is sufficient to exploit. For example at the former HBMS Namew Lake Mine level intervals occasionally reached more than 200 metres in deposit thicknesses exceeding 8 meters. Potential exists to eliminate 490m Level where deposit thicknesses are 8 metres or more depending on confidence in the method gained in higher regions of the mine.

Should future exploration results allow mining deeper, the monorail system specified in the study will be well suited to support the deep mining.

### **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% for the next few years and with postponement of many large capital nickel projects it is possible that the study nickel price of US\$7.00 per pound could be exceeded during the life of the project.

## 18 Interpretation and Conclusions

### Geology and Mineral Resources

An appreciation of the geological controls determining the distribution of nickel mineralization at the Hart Deposit and the continuity of particularly the basal higher grade massive sulphide type mineralization has been gained from appropriately spaced drilling and from operational and exploration experience gained by Liberty on similar deposits in the Shaw Dome.

The current drill density has allowed the massive sulphide deposit to be extrapolated and modelled confidently down to approximately 450 metres below surface. Our understanding of the nickel grade distribution within the lower grade structurally – controlled disseminated type mineralization in the hanging wall has been limited by the discontinuous nature of mineralization and by a limited understanding of the structural elements that influence its continuity. The structurally distorted and variable grade iron formation zone is seen as a lower priority target, despite its shallow location. The massive sulphide horizon is the primary target for underground mining.

Although exploration history at Hart dates back to the period 1960 to 1964, only verified data acquired in the period 2005 to 2008 has been applied for resource estimation purposes. This high quality dataset has facilitated resource modelling and estimation in this study. The exploration methodologies and protocols practiced by Liberty exploration staff conform to industry ‘best practices’. Liberty management has applied a quality management system that compares well to industry standard. Sampling protocols, drilling procedures, database management and overall quality assurance and quality control are areas that have receive priority. The implementation of industry standard database management systems and 3D modelling software packages on Liberty have contributed considerably to the high exploration standards.

The geology model and classified resource estimate reflect current knowledge of the Hart mineralization continuity and associated grade trends. Modelled resources are classified as Indicated or Inferred. An opportunity exists to upgrade the resources in the deeper portion of the deposit (>450 metres) by increasing the drilling density as well as by increasing our understanding of the structural framework upon which the Hart deposit is based. Such an improved structurally based resource body will not only lead to upgraded resources but also to reduced risk in future mining decisions based on this model.

Although this first NI43-101 compliant resource estimate for Hart is the largest nickel resource identified to date at the Shaw Dome, it should serve as a starting point, which should be continually updated and enhanced as additional data and interpretations become available. The close proximity of the Hart Deposit to other existing Liberty mining and processing infrastructure should favourably impact future mining feasibility studies.

## **Mining**

- SRK concludes that Alimak Raise mining with 100m spaced sublevels and paste backfill is the preferred method for mining the Hart resource;
- An Alimak Raise stoping method with pastefill, employing primary and secondary stopes is expected to remain stable as the mine goes deeper due to the use of quality pastefill;
- Based on the mine records at Liberty's sister mines (Redstone and McWatters) , mine water inflow is assumed to average roughly 100 litres per hour and have maximum flows of 200 lph;
- Underground ramp access with monorail trains is the recommended option over diesel truck haulage. The mine will benefit more from the train system as the mine gets deeper;
- The monorail system provides an opportunity if the mine production rate is ever increased as it doesn't have the same ventilation or interference issues as diesel trucks;
- SRK estimates a mine life of 4.5 years (38 months production) with an average mining production rate of 45,000 tonnes per month;
- No underground primary crushing is required, as stope fragmentation designs will commutate the mineralization sufficiently for handling by train underground and by trucks on surface.

## **Mineral Processing**

- Liberty's existing Redstone nickel concentrator will efficiently handle Hart feed although a maximum stockpile of approximately 285 kt will build up, with milling continuing after mining eases;
- Planned metallurgical recovery of nickel ranges from 85 percent to 95 percent based on historical milling results and the planned mill nickel head grade;
- Indications are that the Hart mineralization will produce a saleable nickel concentrate with a grade of approximately 15 percent nickel similar to Redstone and McWatters mines;
- The existing, permitted tailings management facility adjacent to the Redstone mill has sufficient capacity for tailings generated over the Hart planned life-of-mine.

## **Environmental**

- 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 at its Redstone and McWatters operations. It is Liberty's intent to extend this plan to Hart;
- Hart will inherit Liberty's Emergency Response Plan ("ERP") from Redstone and McWatters Mine. The plan identifies 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;

- Rock types at site are similar to Redstone and McWatters rock. Those rocks 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 initiated the application process for the necessary permits to be able to conduct mining operations at the Hart project site;
- Liberty intends to develop 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 is currently investigating 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. This study has assigned an amount of \$350K to address the closure at a scoping level.

### **Potential Mineable Tonnage**

- SRK estimates Hart’s Potentially Mineable Tonnage at 1,729,100 tonnes with an average grade of 1.29 percent 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;
- The in-situ Mineral Resources included into the Mineable Tonnage estimate are based on a cut-off grade of 0.46 percent Ni for the Alimak Raise mining method.

### **Project Economics**

- The Hart scoping study demonstrates a viable concept at the study nickel price of US\$7.00 per pound;
- LoM net NSR revenue based on plant feed of 1,729,100 tonnes at 1.29 percent Ni is estimated at \$246 million;
- Mine site unit operating costs are estimated at \$53.77 per tonne milled;
- The estimated unit cost for processing at 1500 tpd is \$14.81 per tonne milled;
- The LoM average general and administration operating cost is estimated at \$8.32 per tonne milled;
- Surface truck haulage costs to the Redstone mill are estimated at \$1.07 per tonne milled;
- LoM operating costs are estimated at \$93.0 million;
- Total project capital requirements are estimated at \$65.3 million;

- Undiscounted pre-tax LoM indicative cash flow is estimated at \$87.8 million;
- The indicative project Pre-Tax NPV at an 8 percent discount rate is \$55.6 million;
- The indicative project pre-tax IRR is estimated at 50 percent.

### **Project Risks and Opportunities**

- The most significant project risk is to the economic viability of the Hart project should the nickel price or exchange rate experience significant negative variances from the values used in the economic assessment.
- The most significant project opportunity is the conversion of Inferred Mineral Resources to the Indicated classification through additional exploration.

## 19 Recommendations

### Resource Development

Significant nickel mineralization has been identified by Liberty on the Hart project. Confidence in estimating mineral resources at Hart is determined by various factors, including the following:

- An appreciation of the variables associated with komatiite-associated Ni-(Cu) deposits;
- An understanding of the 3D structural geological framework within which the nickel sulphide mineralization resides;
- The drilling density;
- Quality control procedures used to collect exploration data.

SRK believes that there is a strong potential to increase the Inferred Resources at Hart particularly by drilling the depth extensions of the sulphide zones. Additional infill drilling is warranted to upgrade the Inferred mineral resources to an Indicated classification.

SRK recommends that Liberty consider the following for its future exploration work at Hart:

- Increase the drill density at depths between 450 to 600 metres below surface; (Estimated at \$675k from surface and \$500k from underground)
- Undertake structural investigations to improve the understanding of the distribution of the sulphide mineralization improve the quality of the 3D geological model;
- Continue to model the intrusive dikes that occur in proximity to the sulphide zones of mineralization;
- Attempt to identify portions of the disseminated sulphide and ironstone hosted zones exhibiting higher nickel grades;
- Update the resource model once the geological model has been updated;

### Mining

- SRK recommends further work to support a Prefeasibility Study to confirm and/or optimize the findings within this Scoping Study. (\$250k) SRK further recommends that future work should be done in stages, investigating areas of risk as early as possible in the overall work program;
- A pastefill consultant should be commissioned to confirm the suitability of creating a quality pastefill for use at Hart. (\$60k);
- As part of the prefeasibility study, a pastefill consultant should be tasked to perform basic engineering, costing and scheduling for a pastefill plant and distribution system. (\$100k);

- Geotechnical investigations should be conducted to establish rock mass strength ratings and to provide recommendations on stope design, ground support and dilution estimation. (\$50k);
- Hydrogeological studies should be performed to confirm the potential inflow issues associated with the mining plan. (\$50k);
- A monorail system is recommended to access and service the mining. (costs are included in the capital estimate);
- Basic engineering for application of the monorail technology needs to be undertaken to support the recommended prefeasibility study. (\$100k) This cost has already been included in this study capital section;
- The mine plans presented in this report are not for construction, and further studies and detailed engineering would be required before implementation at the Hart site;

### **Environmental**

- Continue the permitting process and initiate supporting studies including any further characterization of ARD potential of rock types, and geochemical characterization of tailings and site discharge water.



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# **APPENDIX A**

## **Hart Property Mining Claims**

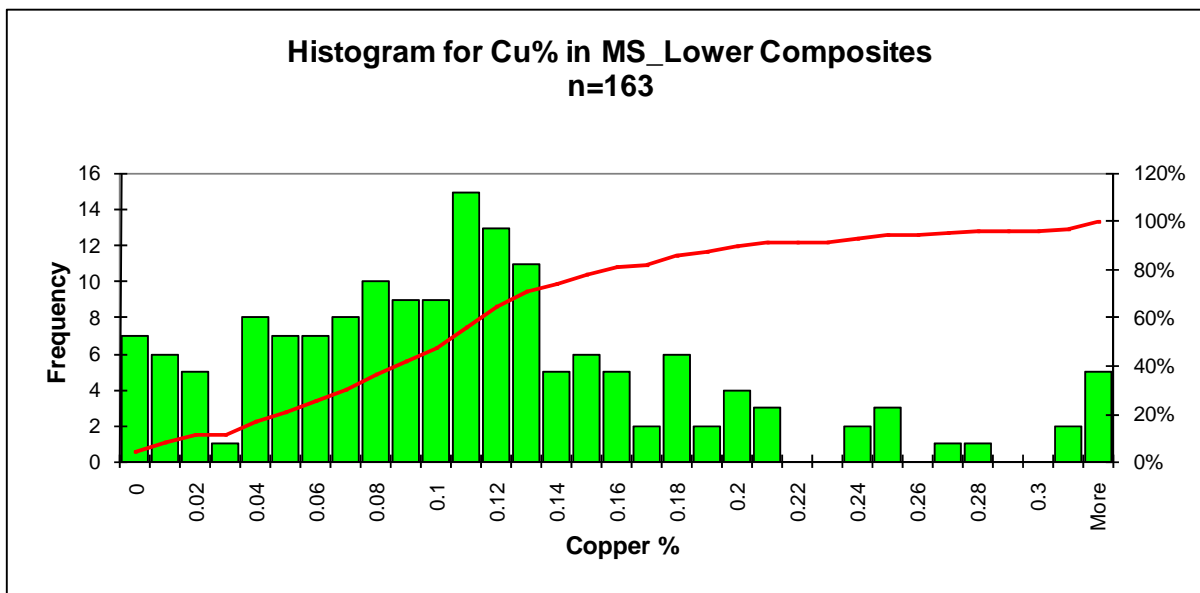
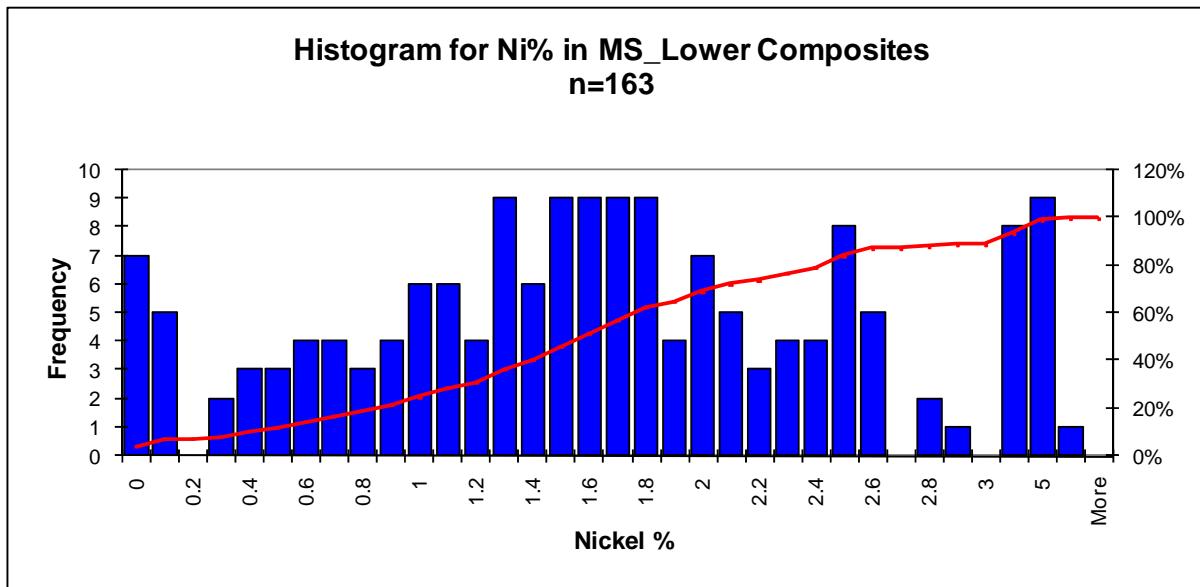
Township	Claim Number	Area	Map Area	Recording Date	Claim Due Date	Status	Percent Option
LANGMUIR	<a href="#">1243151</a>	208	42 A/6	2001-Jun-19	2010-Jun-19	Active	Liberty Mines Inc
ELDORADO	<a href="#">1243281</a>	16	42 A/6	2001-Jul-18	2013-Jul-18	Active	Liberty Mines Inc
ELDORADO	<a href="#">1243282</a>	32	42 A/6	2001-Jul-18	2011-Jul-18	Active	Liberty Mines Inc
LANGMUIR	<a href="#">1243283</a>	16	42 A/6	2001-Jul-18	2013-Jul-18	Active	Liberty Mines Inc
ELDORADO	<a href="#">1247502</a>	48	42 A/6	2001-May-28	2010-May-28	Active	Liberty Mines Inc
ELDORADO	<a href="#">1247591</a>	16	42 A/6	2001-Jun-06	2013-Jun-06	Active	Liberty Mines Inc
ELDORADO	<a href="#">1247592</a>	16	42 A/6	2001-Jun-06	2013-Jun-06	Active	Liberty Mines Inc
ELDORADO	<a href="#">1247593</a>	16	42 A/6	2001-Jun-06	2013-Jun-06	Active	Liberty Mines Inc
ELDORADO	<a href="#">1247594</a>	16	42 A/6	2001-Jun-06	2013-Jun-06	Active	Liberty Mines Inc
ELDORADO	<a href="#">1248406</a>	64	42 A/6	2001-Jul-03	2012-Jul-03	Active	Liberty Mines Inc
LANGMUIR	<a href="#">1248440</a>	64	42 A/6	2002-Mar-12	2012-Mar-12	Active	Liberty Mines Inc
LANGMUIR	<a href="#">1248464</a>	16	42 A/6	2001-Jun-04	2011-Jun-04	Active	Liberty Mines Inc
ELDORADO	<a href="#">1248465</a>	16	42 A/6	2001-Jun-04	2013-Jun-04	Active	Liberty Mines Inc
ELDORADO	<a href="#">1248466</a>	16	42 A/6	2001-Jun-04	2013-Jun-04	Active	Liberty Mines Inc
LANGMUIR	<a href="#">1248467</a>	16	42 A/6	2001-Jun-04	2013-Jun-04	Active	Liberty Mines Inc
LANGMUIR	<a href="#">1248468</a>	16	42 A/6	2001-Jun-04	2011-Jun-04	Active	Liberty Mines Inc
ELDORADO	<a href="#">3001710</a>	16	42 A/6	2002-Mar-27	2012-Mar-27	Active	Liberty Mines Inc
ELDORADO	<a href="#">3001711</a>	16	42 A/6	2002-Mar-27	2012-Mar-27	Active	Liberty Mines Inc
ELDORADO	<a href="#">3001954</a>	32	42 A/6	2002-Mar-27	2010-Mar-27	Active	Liberty Mines Inc
ELDORADO	<a href="#">3005464</a>	176	42 A/6	2003-Nov-20	2011-Nov-20	Active	Liberty Mines Inc
ELDORADO	<a href="#">3010638</a>	160	42 A/6	2003-Jan-07	2012-Jan-07	Active	Liberty Mines Inc
<b>Total</b>		<b>992</b>					

# **APPENDIX B**

## **Histograms for composited data**

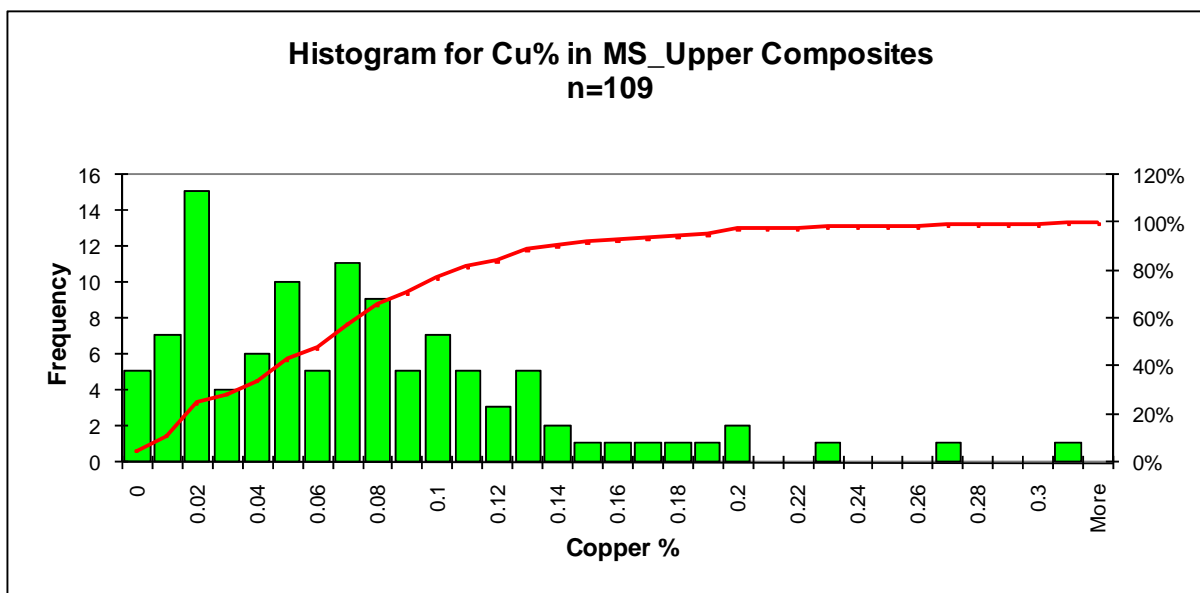
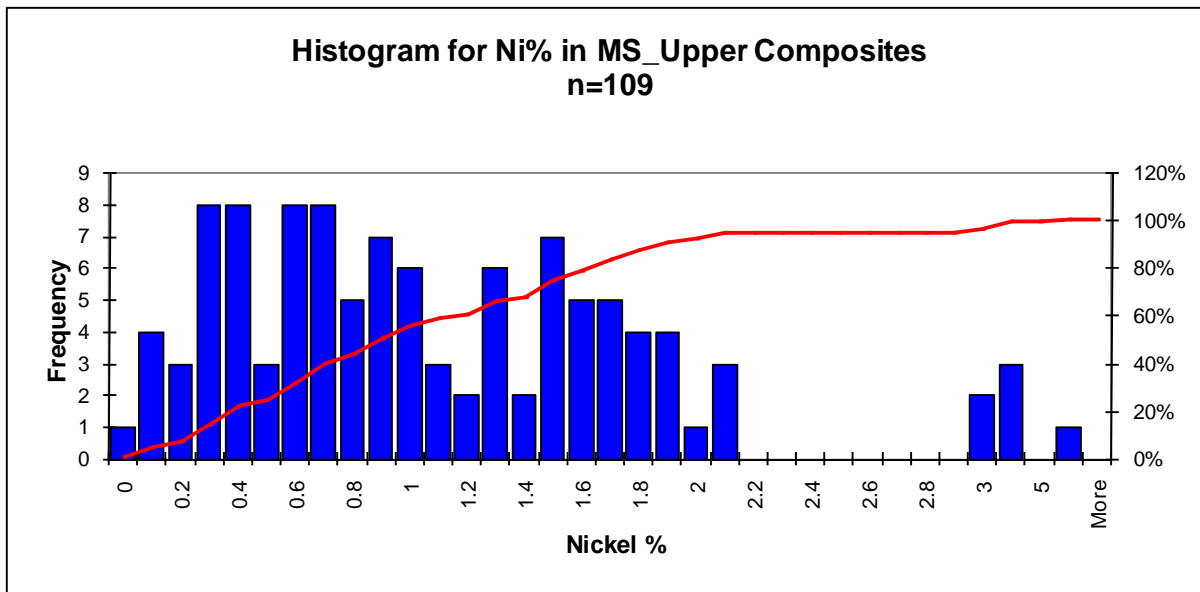
## MASSIVE SULPHIDES

### Lower Domain



## MASSIVE SULPHIDES

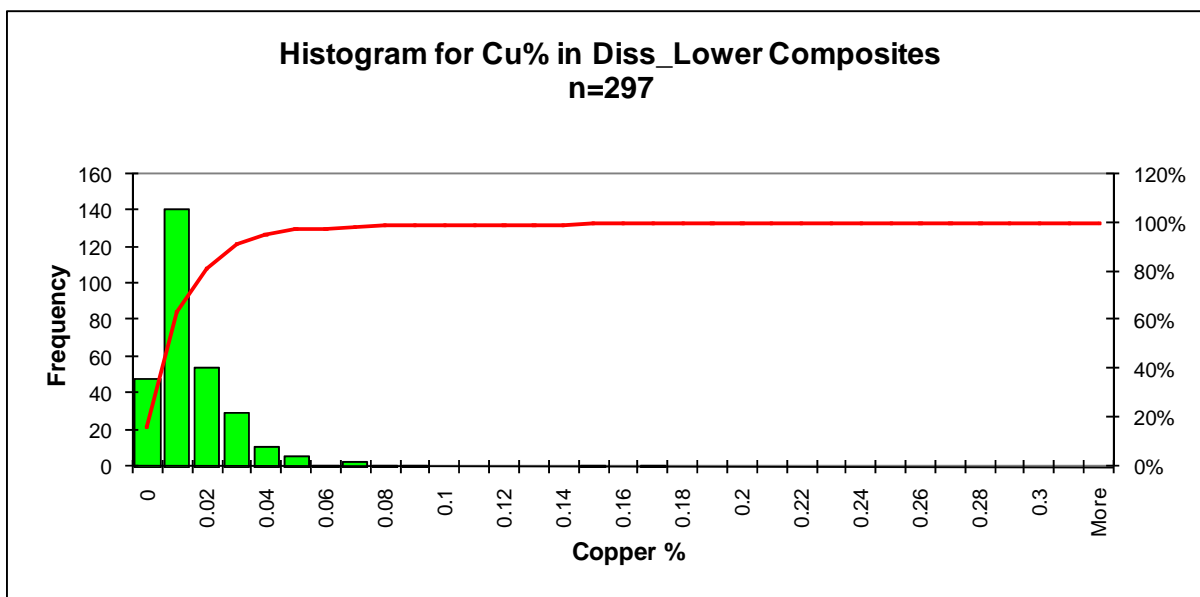
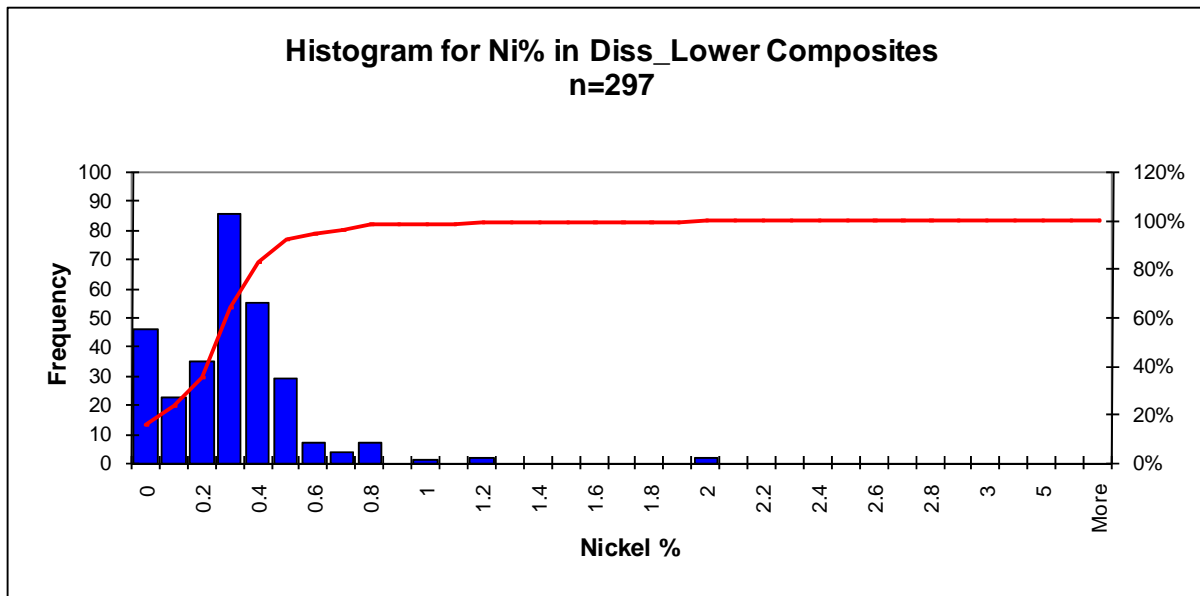
### Upper Domain





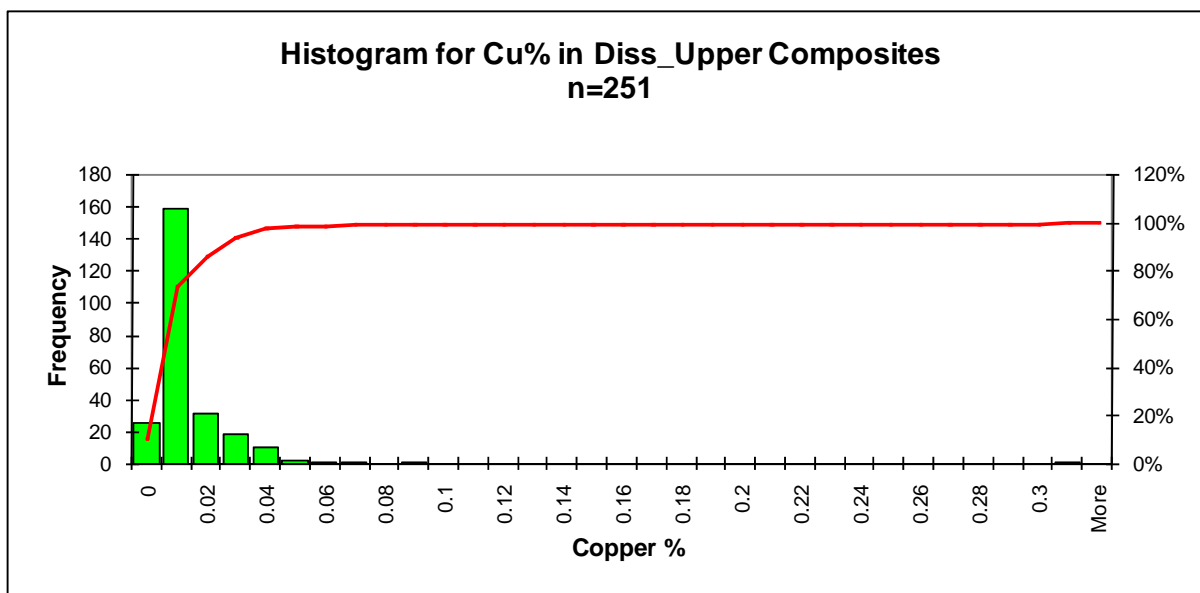
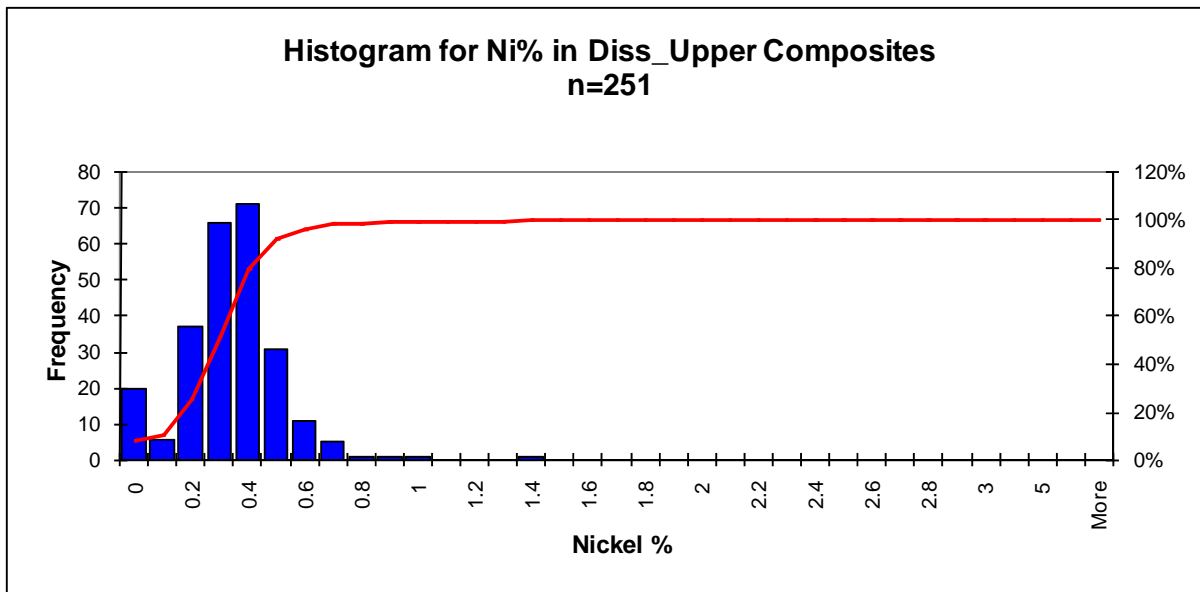
## DISSEMINATED SULPHIDES

### Lower Domain

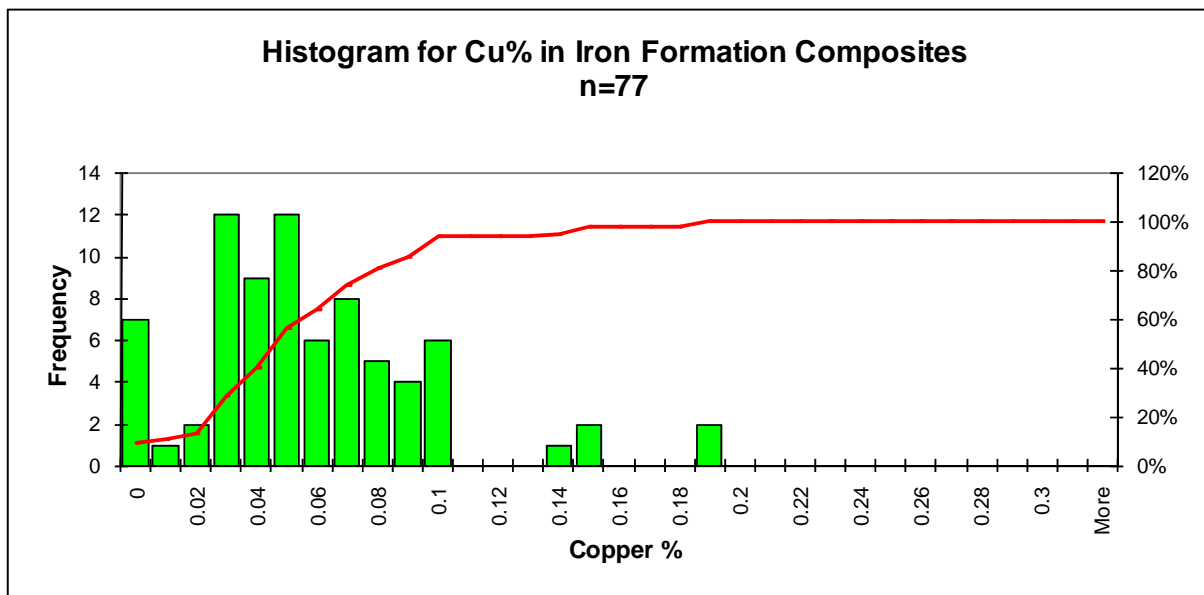
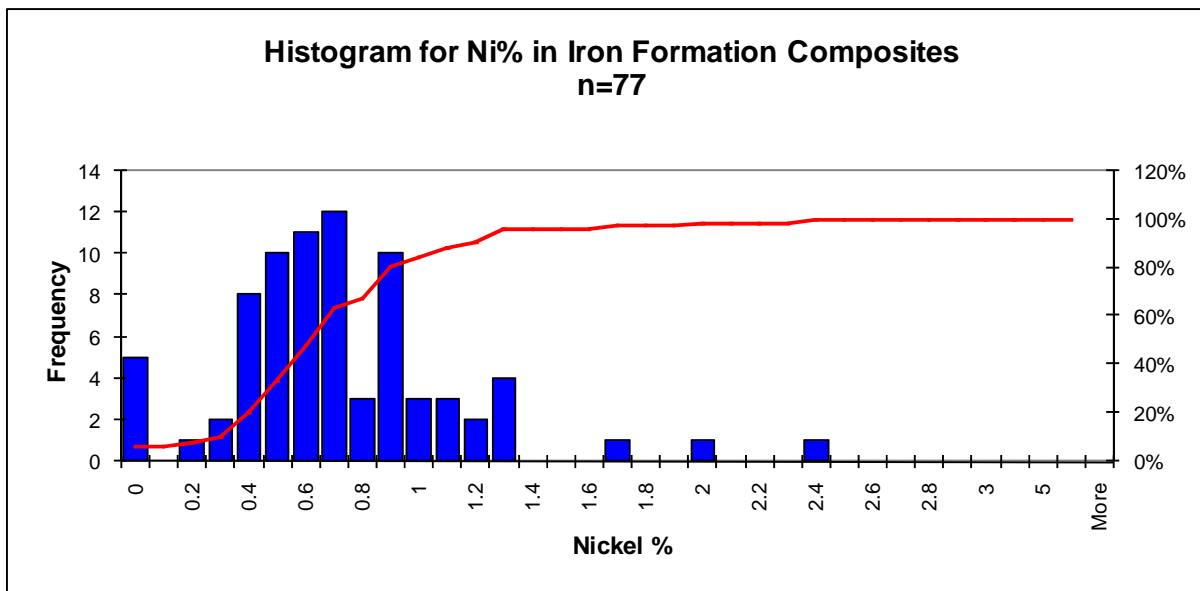


## DISSEMINATED SULPHIDES

### Upper Domain



## IRONSTONE HOSTED SULPHIDES



# **APPENDIX C**

## **Hart Resource sensitivity tables**

## INDICATED

### Iron Formation:

Ni% cut off	Tonnes (t)	Ni%	Cu%
0.20	136,752	0.67	0.06
0.30	136,644	0.67	0.06
0.40	131,852	0.68	0.06
0.50	117,316	0.71	0.06
0.60	80,864	0.78	0.07
0.70	50,928	0.85	0.07
0.80	29,972	0.93	0.07
1.00	6,632	1.08	0.08
1.20	252	1.22	0.08
1.40			
1.60			
1.80			
2.00			

### All Massives:

Above	Tonnes (t)	Ni%	Cu%
0.20	1,433,374	1.44	0.10
0.30	1,410,298	1.46	0.10
0.40	1,378,287	1.49	0.10
0.50	1,319,971	1.53	0.10
0.60	1,288,949	1.55	0.11
0.70	1,258,507	1.58	0.11
0.80	1,226,315	1.60	0.11
1.00	1,105,313	1.67	0.11
1.20	932,632	1.78	0.12
1.40	649,709	1.99	0.13
1.60	442,331	2.22	0.15
1.80	361,654	2.33	0.16
2.00	274,331	2.47	0.17

### All Disseminated:

Above	Tonnes (t)	Ni%	Cu%
0.20	1,103,996	0.34	0.02
0.30	736,722	0.38	0.02
0.40	178,399	0.50	0.03
0.50	52,142	0.66	0.04
0.60	22,473	0.82	0.05
0.70	11,432	0.98	0.06
0.80	8,663	1.06	0.06
1.00	4,588	1.21	0.07
1.20	2,267	1.33	0.06
1.40	395	1.54	0.07
1.60	127	1.76	0.06
1.80	37	1.92	0.06
2.00			

## INFERRED

### Iron Formation:

Above	Tonnes (t)	Ni%	Cu%
0.20	13,692	0.84	0.07
0.30	13,692	0.84	0.07
0.40	13,692	0.84	0.07
0.50	13,692	0.84	0.07
0.60	13,271	0.85	0.07
0.70	11,387	0.89	0.07
0.80	9,221	0.92	0.07
1.00	267	1.03	0.07
1.20			
1.40			
1.60			
1.80			
2.00			

### All Massives:

Above	Tonnes (t)	Ni%	Cu%
0.20	289,377	1.34	0.09
0.30	288,950	1.34	0.09
0.40	288,433	1.34	0.09
0.50	282,288	1.36	0.09
0.60	270,129	1.40	0.09
0.70	264,640	1.41	0.09
0.80	261,711	1.42	0.09
1.00	253,810	1.43	0.09
1.20	235,252	1.46	0.09
1.40	120,419	1.63	0.10
1.60	40,672	1.93	0.12
1.80	20,358	2.18	0.13
2.00	14,643	2.28	0.13

### All Disseminated:

Above	Tonnes (t)	Ni%	Cu%
0.20	638,606	0.32	0.02
0.30	375,833	0.37	0.02
0.40	75,269	0.46	0.02
0.50	13,426	0.56	0.02
0.60	2,679	0.65	0.02
0.70			
0.80			
1.00			
1.20			
1.40			
1.60			
1.80			
2.00			

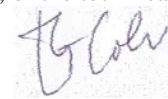
## CERTIFICATE AND CONSENT

**To accompany the report entitled: Mineral Resource Estimate for the Hart Project in Ontario, Canada. Dated February 26, 2010**

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 Hart Project and surrounding areas on 14 January 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, I am independent of the issuer as defined in Section 1.4 of National Instrument 43-101;
- 7) I am a principal author of this technical report and accept professional responsibility for the entire content of this technical report;
- 8) SRK Consulting (Canada) Inc. was retained by Liberty Mines Inc. to prepare a mineral resource estimate for the Hart Project in accordance with NI 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 Hart 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;
- 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  
February 26, 2010



Glen Cole, P.Geo  
Principal Resource Geologist

## CERTIFICATE AND CONSENT

**To accompany the report entitled: Mineral Resource Estimate for the Hart Project in Ontario, Canada. Dated February 26, 2010**

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;
- 1) 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;
- 2) I am a Professional Engineer registered with the Association of Professional Engineers of the province of Ontario (#90470477);
- 3) I have visited the Hart site and the Redstone Mill site in August and September 2009;
- 4) 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;
- 5) I, as a qualified person, I am independent of the issuer as defined in Section 1.4 of National Instrument 43-101;
- 6) I am the principal author of this technical report and accept professional responsibility for assembly of all sections of this technical report;
- 7) SRK Consulting (Canada) Inc. was retained by Liberty Mines Inc. to prepare a Preliminary Economic Assessment (Scoping Study) for the Hart 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 Hart 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  
February 26, 2010



Andrew MacKenzie, P.Eng  
Principal Mining Engineer




**CERTIFICATE**

**To accompany the report entitled: Preliminary Economic Assessment, Hart Project, Ontario, Canada. Dated February 26, 2010.**

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 various companies 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 Hart Mine site and the Redstone Mill site in June and November 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, I 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 Hart 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 Hart 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  
February 26, 2010

  
Philip Bridson, P. Eng  
Consulting Sr. Mining Engineer

Project number: 3CL008.007

Toronto, February 26, 2010

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 “Preliminary Economic Assessment, Hart Project, Ontario, Canada” (the “Technical Report”) dated February 26, 2010 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 26<sup>th</sup> day of February 2010.



Glen Cole, P.Geol  
Principal Resource Geologist

Project number: 3CL008.007

Toronto, February 26, 2010

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 “Preliminary Economic Assessment, Hart Project, Ontario, Canada” (the “Technical Report”) dated February 26, 2010 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 26<sup>th</sup> day of February 2010.

A handwritten signature in dark ink, appearing to read 'A. MacKenzie', is written over a light grey circular stamp.

Andrew MacKenzie, P. Eng  
Principal Mining Engineer