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Northern Dancer Project, Yukon, Canada

Largo Resources Limited

Preliminary Economic Assessment

AMC Project No. 710020

Effective Date 28 March 2011

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In accordance with the requirements of National Instrument 43-101, "Standards of Disclosure for Mineral Projects", of the Canadian Securities Administrators

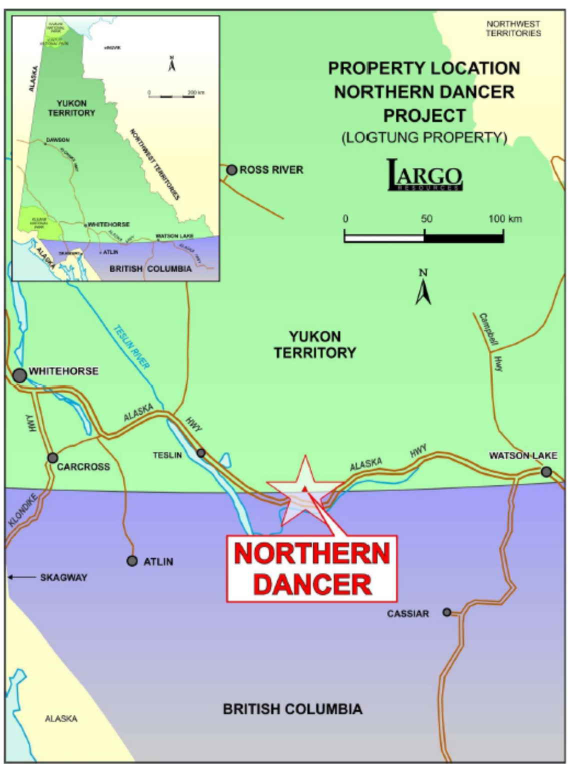
EXECUTIVE SUMMARY

This Preliminary Economic Assessment (PEA) refers to the Northern Dancer (formerly known as Logtung) Project, an exploration property straddling the border between Yukon Territory (Yukon) and the northern portion of British Columbia in Canada. Northern Dancer is operated by a Canadian company, Largo Resources Limited (Largo).

Northern Dancer is a tungsten-molybdenum deposit hosted by a coarse-grained, felsic intrusive complex and surrounding skarn. It has been drilled to a depth of up to 500 m below surface by previous operators and Largo. The deposit has been defined through the drilling of 134 drill holes on the property. Northern Dancer has been the subject of historic prefeasibility studies and Largo believes the project to be amenable to open pit mining.

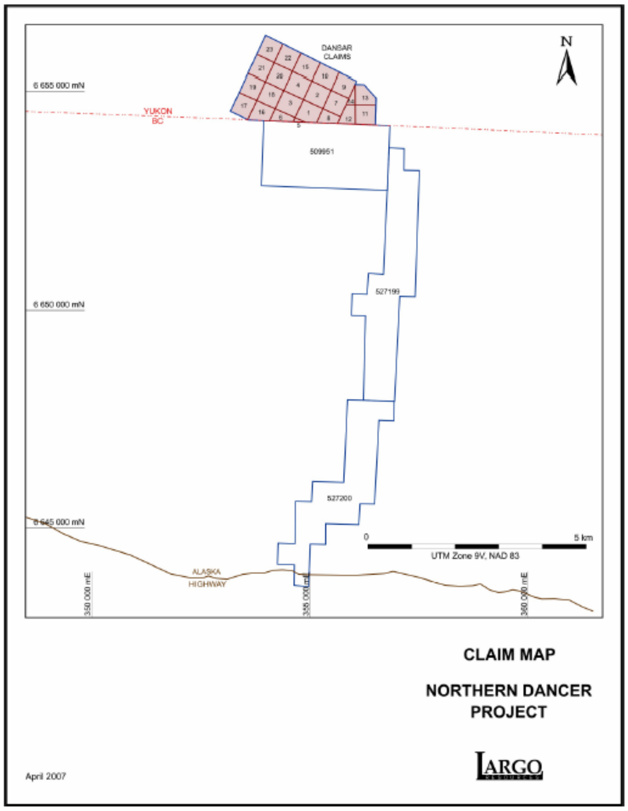
The deposit is located approximately 260 km to the southeast of the city of Whitehorse in Yukon. The closest community is the town of Teslin, approximately 65 km to the east of the property. The property is approximately 13 km to the north of the Alaska Highway. It is accessible by a combination of good quality paved roads and a short section of dirt road. Proximal sites with potential for hydro development to provide power to the project have been identified by Largo. Water is readily available at the site and there is highway access to tidewater at the port of Skagway in southeast Alaska as shown in Figure 1.

Figure 1 Largo Northern Dancer Location Map



Currently there are 23 contiguous mineral claims in the Yukon and three tenures in British Columbia that cover the Northern Dancer Project, with a total area of 1,500 ha. Figure 2 shows the location of these claims.

Figure 2 Location of Claims



Largo entered into an agreement with Strategic Metals Ltd. (Strategic Metals) on 15 February 2006, this gave it an option to acquire an initial 70% interest in Northern Dancer by:

- completing $5.0 million in work expenditures
- issuing four million Largo shares listed on the Toronto Stock Exchange (TSX)
- granting Strategic Metals a 1% net smelter return royalty interest in the property

On 14 March 2009 Largo completed its earn-in for the initial 70% interest, and on 14 March 2010 negotiated an extension to 15 May 2011 for the right to exercise a purchase of the remaining 30% interest in the property by providing an additional $4.8 million to Strategic Metals. Strategic Metals will retain the 1% net smelter royalty. The agreement allows Northern Dancer to be carried to production.

The Northern Dancer project area has been prospected since the 1920's. Numerous claim groups were staked throughout the years primarily for the exploration of lead-zinc-silver vein mineralization. Tungsten mineralization in the Northern Dancer area was first mentioned by the Geological Survey of Canada which mapped the area in the early 1950's. The first Mineral Resource estimate for the

Northern Dancer deposit, prepared by Largo in accordance with CIM (2005) Definition Standards, was based on a verified database including historic drilling data and data from Largo's 2006 drilling campaign. The results of this work were independently verified by Snowden Mining Industry Consultants Incorporated (Snowden) and publicly released on 2 April 2007.

In 2008 Largo conducted an exploration program of 38 diamond drill holes totalling 11,509 m. The program confirmed results from the prior exploration programs. The Northern Dancer deposit has now been drilled at a nominal 25 m sectional spacing. Given the density of drilling and confirmation of data, Largo completed an updated Mineral Resource estimate for the Northern Dancer deposit with technical assistance, advice, independent review and verification provided from Snowden. The Measured, Indicated and Inferred Mineral Resource publicly disclosed on 12 March 2009 triggered the publication of a NI 43-101 Technical Report by Snowden. Table 1 summarizes the results based on a 0.06% WO_3 cut-off grade.

Table 1 Mineral Resource as at March 2009

Category	Tonnage (Mt)	WO_3 (%)	Mo (%)	WO_3 (t*1000)	Mo (t*1000) ‡	WO_3 (million lbs)	Mo (million lbs)
Measured	30.8	0.114	0.03	35.1	9.1	77.3	20.1
Indicated	192.6	0.1	0.029	191.8	56.1	422.8	123.7
Measured & Indicated	223.4	0.102†	0.029	226.8	65.3	500.1	143.9
Inferred	201.2	0.089	0.024	178.3	48.9	393.1	107.7

Notes: Resource classification categories in accordance with CIM (2005) Standards on Mineral Resources and Reserves referred to in National Instrument NI 43-101. Mineral resources that are not reserves do not have demonstrated economic viability. Although 0.06% WO_3 *is considered a likely cut-off grade for this deposit based on 2009 economic factors and comparisons to other similar deposit types, it has not been confirmed by the appropriate economic studies. Totals may not add up exactly due to rounding. †The* WO_3 *grade shown here is correct, the grade of 0.107%* WO_3 *in the 12 March 2009 press release was a typographical error. ‡Largo calculated tonnes of Mo using MoS2 instead of Mo in their 12 March 2009 press release – the figures shown in this table are correct. Despite these typographical errors, the* quantities of WO_3 and Mo in pounds are *correct.*

The Northern Dancer deposit is characterized by the presence of a quartz vein stockwork and a northeast-trending sheeted vein set centred on a quartz feldspar intrusive complex. The quartz feldspar intrusive complex appears to be a branch emanating from the northern flank of a Cretaceous-aged quartz monzonite stock. The total mineralized area measures 2.5 km by 1.0 km and strikes north. Minerals of economic interest include scheelite, molybdenite, and molybdoscheelite, which are mainly distributed in a stockwork of fractures and veins in the metasedimentary rocks and quartz-feldspar porphyry dykes. Deposits of this type comprise large tonnage, generally low grade, hydrothermal mineralization related to igneous intrusions emplaced at high levels in the earth's crust.

Infill drilling, geotechnical work and environmental baseline studies/community relations took place in 2008 and have continued since that time. There are no known environmental liabilities attached to the property and it does not lie within an area selected as First Nations Settlement Land. It is located within the traditional territory of the Teslin Tlingit Council First Nation.

This PEA is based on a Mineral Resource Block Model Report published on 17 June 2009, which is summarized in the Mineral Resource Estimates section of this report. A Technical Report was also completed by Snowden and filed on 23 May 2008 in SEDAR. The NI 43-101Technical Reports published reflect statistical treatment of increasing amounts of assay data as drilling progressed on the property.

The Northern Dancer process plant conceptualized in this study will treat 30,800 t/d of Run of Mine ore (ROM) feed material through the crushing and ore sorting circuits. The resulting sorter concentrate, 65% of the ROM feed mass, will be processed through the grinding and molybdenum/tungsten recovery circuits at a rate 20,000 t/d. Medium grade flotation tungsten concentrate is converted to Ammonium Para-Tungstate (APT) on-site. Overall metal recoveries into concentrates are estimated at 75% for tungsten and 72% for molybdenum. The predicted APT conversion recovery is at 95% of tungsten in concentrate.

The economic assessment which follows is preliminary in nature. It includes inferred mineral resources which are considered too speculative geologically to have the economic considerations applied that would enable them to be categorized as mineral reserves and there is no certainty that the preliminary assessment will be realized. All qualifications and assumptions are discussed in this report.

Table 2 outlines the summary of estimated operating costs. Table 3 and Table 4 show the mine, mill and infrastructure estimated capital costs.

Table 2 Operating Cost Estimate

Activity	Fixed cost C$(000) /yr	Variable cost (NSR Model Inputs)	Average LOM ore+ waste costs C$ /t mined
Mining waste and ore		C$ 2.20/t mined	2.20
Ore rehandling		C$ 0.88/t mined	0.76
Concentrator operations		C$ 4.71/t mined	4.12
Reject rehandle		C$ 0.88/t mined	0.27
Tailings Management facility		C$ 0.20/t mined	0.11
APT operations		C$ 1.88/t mined	1.64
Camp, human resources and safety	10,000	-	0.54
Administration	8,000	-	0.47

The estimated total project capital cost is $C 824M. Contingencies have been applied in individual project areas together with a global contingency of $C 126M. The overall project capital contingency is $C177M (27%).The pre-production portion of the Capital Costs is estimated to be $C718 million which includes contingency. Sustaining capital costs are assessed at an average of $C5.32M per production year.

Table 3 Mine Capital Estimate (excluding global contingency)

Capital Item	C$(000)
Establishment Cost	7,500
Mining Fleet	56,461
Mining Other	6,565
Development EPCM	2,500
Total open pit capital cost (excluding contingency)	**73,026**

Table 4 Mill and Infrastructure Capital Estimate (excluding global contingency)

Capital Item	C$(000)
Hydroelectric power	191,300
Access roads, truck shop and other infrastructure	22,150
Tailings management facility	70,501
Camp	30,000
Process plant and APT plant	228,900
EPCM	61,001
Owners Cost	20,303
Mill and infrastructure capital cost (excluding contingency)	**624,154**

The PEA schedule employs a mining rate (ore and waste) of approximately 30 Mtpa for 23 years, for a total of 545.24M ore tonnes at an average grade of 0.08% WO_3 and 0.02% Mo. Higher grade ore will be mined in the earlier years of operation. Low grade ore stockpiled during the life of the mine will be sufficient to run the process plant for another 26 years once mining has been completed.

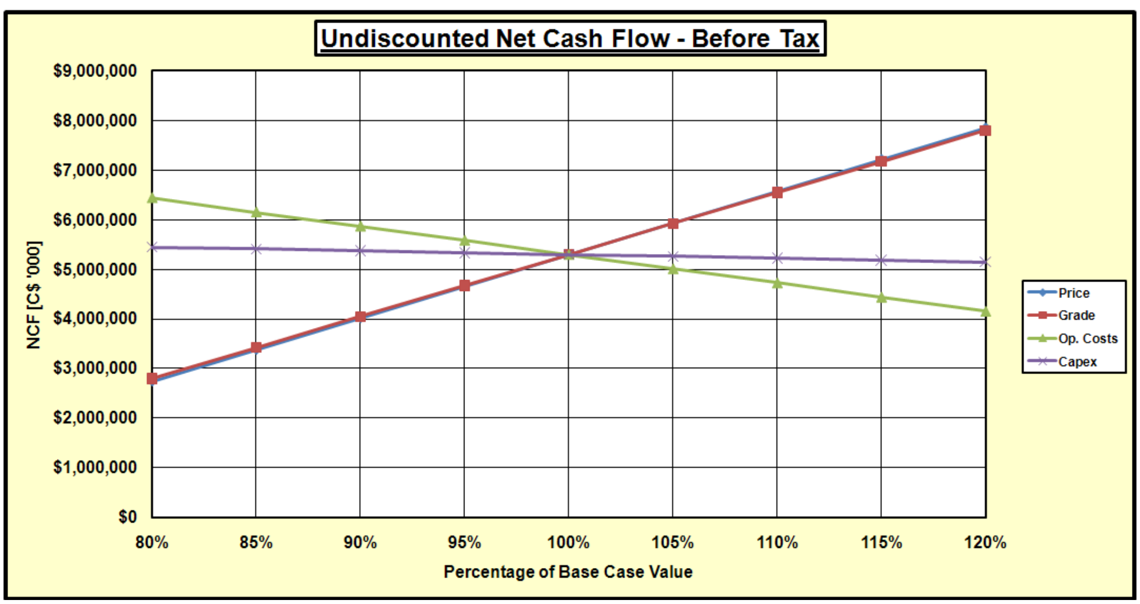
Metal prices used in the PEA are higher than those assumed for the 2009 Resource Estimate shown above in Table 1, allowing a lower cut-off grade (0.04% Equivalent WO_3) to be used for pit design, and resulting, therefore, in increased ore tonnes. Tungsten is priced at an APT price of $US 275/mtu of WO_3 in concentrate. Molybdenum is valued at a long term price of $US 17.5/lb with an 8% assessment for offsite costs and roasting. Life of Mine Mining Costs are estimated to be $C2.2/tonne ($US 2.00), with concentrator operations cost of $C 4.17/t ($US 3.79), Rejects rehandle of C$0.88/t ($US 0.80), Tails operating cost of C$0.20/t ($US 0.18), APT operations of C$1.88/t ($US 1.71) and General and Administration (G&A) costs at $C1.60/tonne ($US 1.46). A long-term exchange rate of $C 1.00 = $US 0.91 is assumed. The undiscounted cash flow summary for the PEA is shown in Table 5.

Table 5 Undiscounted Cash-flow Summary

Revenue and costs	C$(000)
Tungsten revenue	8,952,907
Molybdenum revenue	3,957,002
Total revenue	**12,909,908**
Concentrate Transport	26,264
Mo Roasting	226,121
WO_3 in APT Transport	33,082
Royalty (1% of gross revenue)	129,099
Total off-site costs	**414,566**
Mine operating costs	1,373,794
Milling and other site operating costs	4,721,656
Total site operating costs	**6,125,450**
Capital costs (mine)	73,026
Capital Cost (Plant and infrastructure)	624,154
Global Contingency	126,470
Total project capital	**823,651**
Sustaining capital	247,190
Net project cash-flow	**5,299,052**

The results of an analysis carried out to assess the sensitivity of the cash-flow to key estimates and assumptions are shown graphically in Figure 3. The project is most sensitive to changes in metal prices and grades.

Figure 3 Sensitivity of Net Cash-Flow to Key Input Parameters



Spreadsheet analysis indicates that the project has an unleveraged Internal Rate of Return (IRR) from Year -2 (start of project) of 20.0%. The pre-tax Net Present Value (NPV) at an 8% discount rate is $C1,009M. Payback is in Year 6 of production. Cumulative undiscounted cash flow is $C 5.299 billion. Table 6 summarizes the undiscounted net cash-flow before tax for a +/- 20% variation in metal prices or grades.

Table 6 Sensitivity to Changes in Mineral Grade and Metal Prices

Changes to metal price or grade are indicated below All other parameters remain unchanged	Undiscounted net cash-flow before tax (C$M)
No change to key input parameters	5,299
Metal prices or grades increase by 20%	7,855
Metal prices or grades decrease by 20%	2,743

The primary recommendation within this report is that the company moves to initiate a Pre-Feasibility study (PFS). The present report is a 'baseline' study or directional concept only. It requires refinement and upgrading in several areas to bring it to the stage of a commercial concept. Section 19 of this report outlines recommended activities and associated estimated costs to upgrade the status to a PFS level.

Largo is listed on the Toronto Stock -Venture Exchange (LGO: TSX-V). Reporting issuers are required to file Technical Reports for mineral projects on each property that is considered material to the company. This Preliminary Economic Assessment of the Northern Dancer deposit has been prepared for Largo by AMC Mining Consultants (Canada) Ltd (AMC) to disclose relevant information about the project.

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FIGURES

DISTRIBUTION LIST

4 copies to Largo Resources office
1 copy to AMC Vancouver office

1 INTRODUCTION

Largo Resources Ltd. (Largo) requested AMC Mining Consultants (Canada) Ltd (AMC) to undertake a Preliminary Economic Assessment ('PEA') on the Northern Dancer (ND), formerly known as Logtung, tungsten/molybdenum deposit using open pit mining methods, and to prepare an associated 43-101 compliant Technical Report (the Technical Report).

Infill and expansion drilling in 2008 (11,510m) was carried out on the property by Largo to better delineate and define the mineralization zones.

Following the successful 2008 drilling program, Largo contracted Snowden Mining Industry Consultants Inc. (Snowden) to prepare a Resource Estimate which was published in June 2009. The decision was then made to proceed to completion of a PEA of the Project. Initial work was conducted by Wardrop Engineering. The more recent work has been led by AMC with input from other independent consultants identified in the report.

The purpose of the Technical Report is to summarize the broad range of planning and technical studies that have been undertaken with respect to the ND Project, to provide a preliminary assessment of the economic potential of the Project, and to conclude whether further work, such as a prefeasibility study, is warranted.

The economic assessment presented within the Technical Report should be considered a preliminary evaluation appropriate to the 'scoping' stage of development of the project. The assessment has been based on a comprehensive block model database, pit design and optimization studies, various metallurgical and pre-concentration work, and to an appropriate level of mining, processing and G&A cost estimation.

To date there has been limited analysis of world tungsten/molybdenum markets into which the mined and processed products would be sold. Neither are there contracts or arrangements of any kind at this point with end users to sell these products.

The Technical Report was compiled by independent consultants, with identification and a Statement of Qualifications for each being attached herein. It provides a complete summary of past data together with more recent information generated subsequent to the Resource Estimate authored by Snowden in 2009.

The various agreements under which Largo holds title to the mineral lands for this project were previously verified by Snowden, through use of the Department of Energy, Mines and Resources of the Yukon Government's Yukon Mining Recorders website, and the British Columbia Government's Mineral Titles Online website. A reference to a description of the property, and ownership is provided for general information purposes, as required by NI 43-101. The descriptions of the option agreement and the conditions for transfer of the mining claims have been provided by Largo.

A resource block model in Datamine format, incorporating the 2008 and earlier drilling was received from Snowden for the PEA work. The model was that generated by Snowden as part of its assessment of the ND resource in 2009, the report of which is filed on SEDAR. The methodology and resource tonnage estimates from that report are described herein.

Pit design and optimization using the Snowden model and generation of mining costs was the responsibility of AMC for the Technical Report.

Matt Bolu P.Eng of Matt Bolu Consulting Engineering Inc. was responsible for design of a metallurgical test program and generation of a process flow-sheet using test data. Bolu was also responsible for estimates of recovery of concentrates, process and APT plant operating costs and final metal product specifications.

Capital cost estimation for surface infrastructure including; process plant, APT plant, camp and other buildings has been completed by Peter Smith of Axxent Engineering Inc.

All costs and revenues have been assembled into an economic evaluation spreadsheet by AMC.

Other contributors to this report included Erik Nyland P.Eng of Boreal Engineering Ltd (Whitehorse) who prepared an estimate of cost for the site access roads which has been integrated into the capital cost estimates.

Hemmera Envirochem Inc. (Vancouver) provided commentary on project environmental and permitting aspects.

Dennis E. Netherton P.Eng M.ASCE of SFPC StreamFlow Power (Canada) a division of Almarah Technical Services Inc. (South River Ontario) has examined the potential hydroelectric capacity of the ND region and provided capital and operating cost estimates for construction of hydroelectric dams. He also provided an estimate of power cost per KWHR.

John Lemieux of AMEC, formerly of Journeaux and Bedard Associates, has provided an analysis of tailings and waste management and associated operating and capital costs in contributing to the associated report section.

A listing of the main authors of the Technical report together with the sections for which they have been responsible is given in Table 1.1.

Table 1.1 List of Qualified Persons

Qualified Person	Position	Employer	Ind of Largo	Date of Site Visit	Professional Designation	Sections of Report
Qualified Persons responsible for the preparation and signing of this Technical Report						
Mr M Molavi	Principal Mining Engineer	AMC Mining Consultants (Canada) Ltd	Yes	1-Oct-10	BEng, M.Eng, P.Eng.	Sections 1,2,17,18,19
Mr G Hollett	Senior Mining Engineer	AMC Mining Consultants (Canada) Ltd	Yes		BEng, P.Eng.	Sections 17,20
Dr WS Board	Principal Consultant	Snowden Mining Industry Consultants Inc	Yes	5-7 July 2006 and Aug 21-22, 2008	PGeo	Sections 4-16
Mr M Bolu	Principal Engineer	Bolu Consulting Engineering Inc	Yes		MSc, P.Eng.	Section 17
Mr P Smith	Engineer	Axxent Engineering Ltd	Yes		B. Applied Science, P.Eng.	Section 17
Mr J Lemieux	Special Projects Manager	AMEC Earth and Environmental	Yes	2008	BEng, P.Eng.	Section 17,18
Mr DE Netherton	President and Engineer	Almarah Technical Services Inc	Yes	July 2010	MASCE, P.Eng.	Section 17
Mr E Nyland	President and Engineer	Boreal Engineering Ltd	Yes	2008	P.Eng.	Section 17
Mr S Weston	Engineer	Hemmera Envirochem Inc	Yes		PGeo	Section 17
Other Contributors						
Mr. H A Smith	Principal Mining Engineer	AMC Mining Consultants (Canada) Ltd	Yes		B.Sc., M.Sc. P.Eng	Sections 3-17, 18-20

2 RELIANCE ON OTHER EXPERTS

Property title and the status of Largo's earn-in agreement with Strategic Metals are described in Section 3.2 of this report. AMC is not an expert in legal matters and has relied upon the information and advice provided by Largo with respect to title status.

3 PROPERTY DESCRIPTION AND LOCATION

3.1 Location

Northern Dancer straddles the southern Yukon and northern British Columbia border, Canada as shown in Figure 3.1. The project is approximately 260 km southeast of Whitehorse, the territorial capital of the Yukon, and about 165 km west of Watson Lake. The property (in the vicinity of the field camp) lies at an elevation of about 1,371 m above mean sea level, rising to approximately 1,850 m at the highest point on the ridge above the camp.

The area is accessible by a series of paved and unpaved highways. Teslin, the nearest town, with a population of 2,000, is approximately 65 km west of the property. The ND Property (see Figure 3.2), is covered by 23 contiguous mineral claims in the Yukon and three tenures in British Columbia, covering 1,500 ha, as shown in Table 3.1. The Dansar claims are registered to: Archer, Cathro & Associates (1981) Limited (30%) and Largo Resources (Yukon) Ltd. (70%). The British Columbia tenures are registered to: Archer, Cathro & Associates (1981) Limited, who hold them in trust for the Strategic Metals joint venture. The concessions run contiguously north-south. The UTM Geographic Datum used for the area is NAD 83. The centre of the property is at latitude 60º 00' N, longitude 131º 37' W. The concession boundaries have not been surveyed.

Largo has represented that the local community welcomes the renewal of exploration and mining in the area. The concessions are isolated and there are no other exploration or mining properties of relevance adjacent to the property.

Table 3.1 Northern Dancer Claim Information

Claim Name	Grant Number	Territory or Province	Expiry Date
Dansar 1-4	YB91322-YB91325	Yukon Territory	12 March 2029
Dansar 5F-6F	YB91394-YB91395	Yukon Territory	12 March 2029
Dansar 7-14	YB93166-YB93173	Yukon Territory	12 March 2024
Dansar 15-23F	YB93507-YB93515	Yukon Territory	12 March 2024
Northern Dancer	509951	British Columbia	14 March 2015
Logtung 2-3	527199-527200	British Columbia	14 March 2015

Figure 3.1 Northern Dancer Property Location

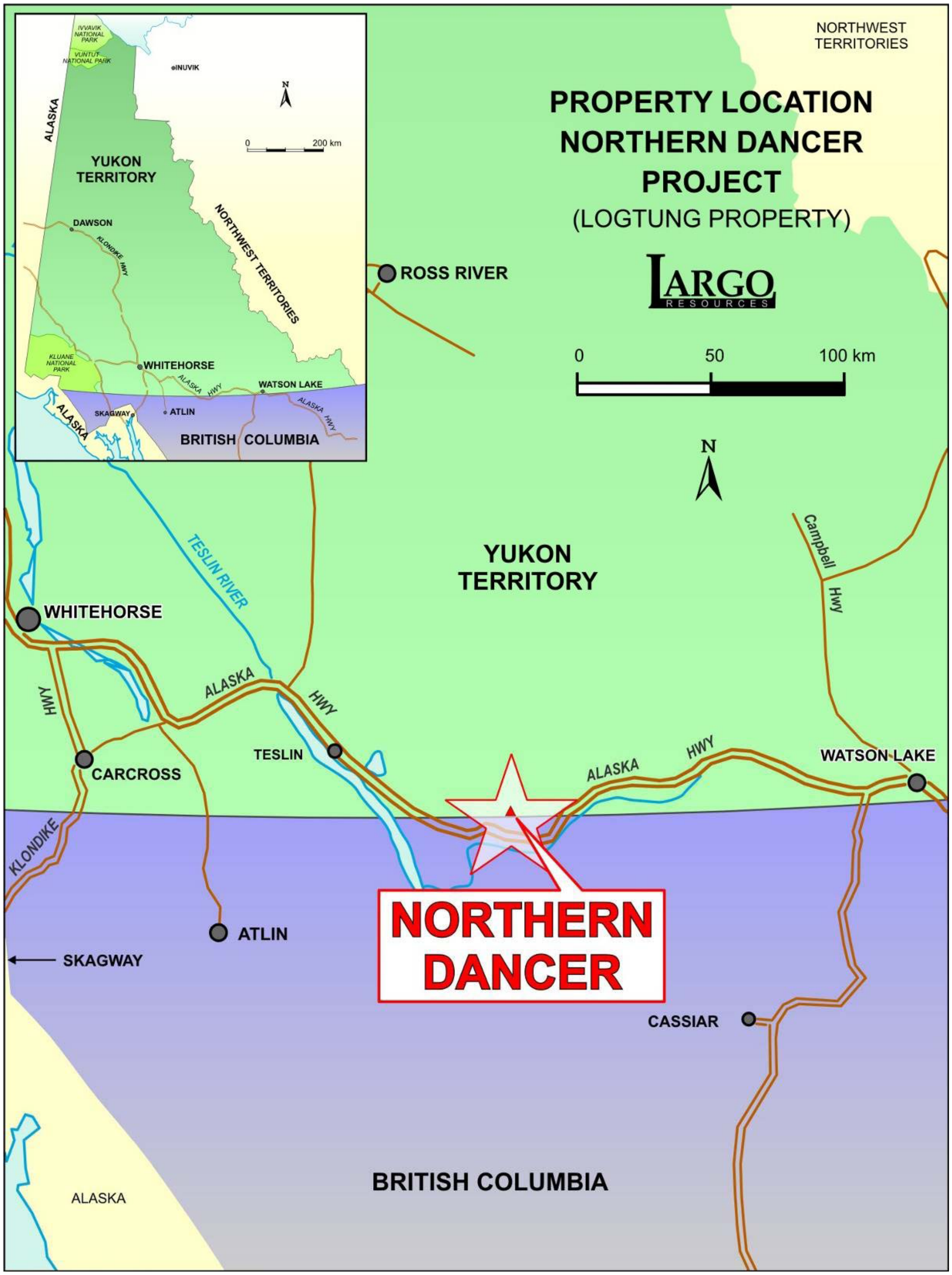
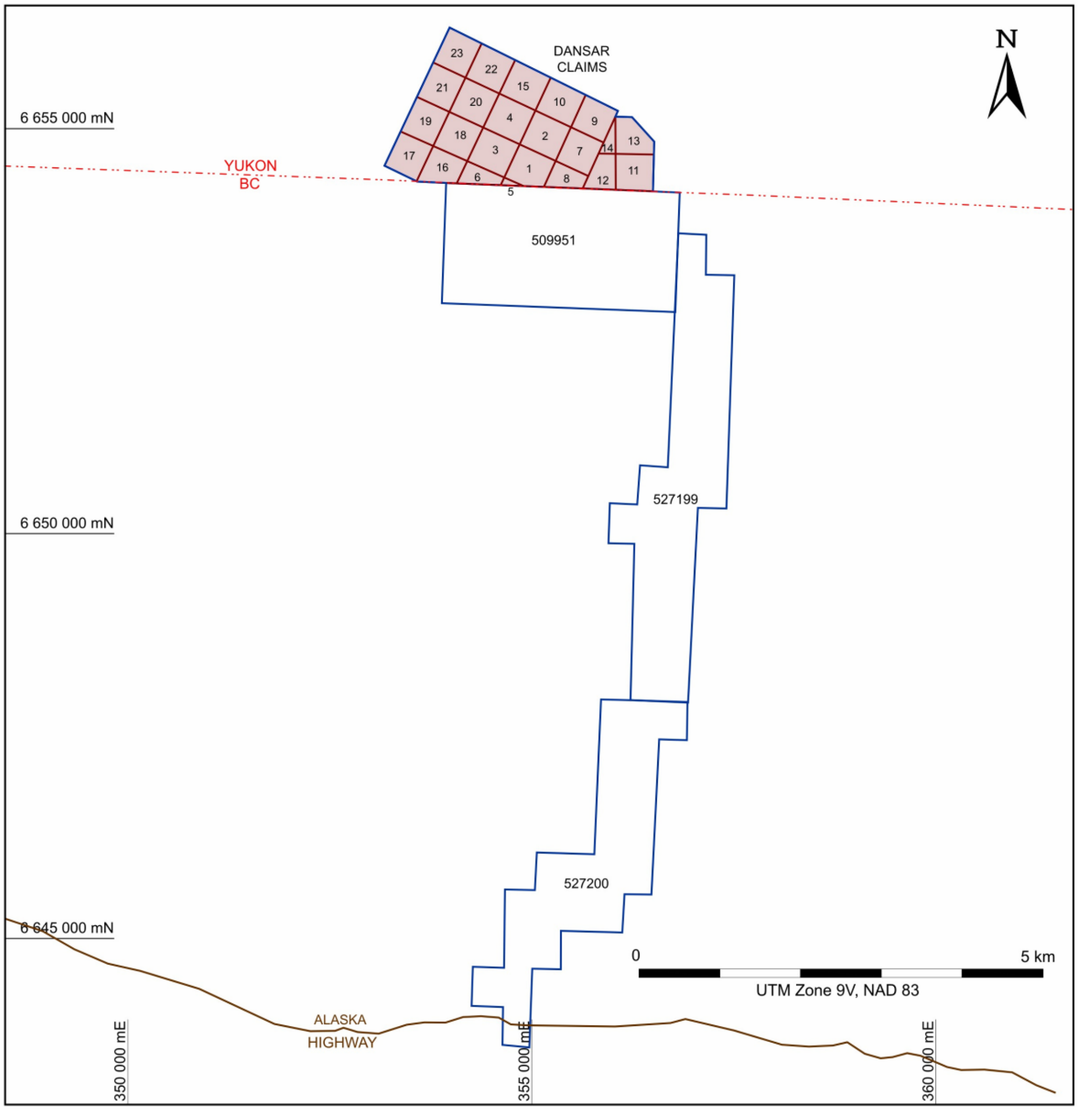


Figure 3.2 Location of Claims



CLAIM MAP

NORTHERN DANCER PROJECT

April 2007

3.2 Property Status

Largo has represented that the claims are currently registered as exploration licenses and are in good standing. The Yukon claims were staked under the Yukon Quartz Mining Act and are registered with the Watson Lake Mining Recorder in the name of Archer Cathro & Associates (1981) Limited and Largo Resources (Yukon) Ltd., The British Columbia claims are registered on the British Columbia Ministry of Energy and Mines Mineral Title On-Line database, which indicates that they are owned 100% by Archer Cathro & Associates (1981) Limited who holds them in trust for Strategic Metals.

Mineral claims in the Yukon can be maintained in good standing by performing approved exploration work to a value of $100 per claim per year or by making a $100 per claim per year cash payment to the Watson Lake Mining Recorder in lieu of work. Exploration in the Yukon is subject to Mining Land Use Regulations of the Yukon Quartz Mining Act and to approval by the Yukon Environmental and Socio-Economic Assessment Board (YESAB). Mineral claims in British Columbia can be maintained in good standing by performing approved exploration work to a value of $4 per hectare per year for the first three years filed and $8 per hectare per year for subsequent years filed to a maximum of ten years per filing. Alternatively the claims can be maintained for one year by making a $4 per hectare cash payment in lieu of work to the British Columbia Ministry of Energy and Mines.

Largo entered into an agreement with Strategic Metals on February 15, 2006, giving it an option to acquire an initial 70% interest in Northern Dancer by:

- Completing $5.0 million in work expenditures.
- Issuing four million Largo shares listed on the Toronto Stock Exchange (TSX).
- Granting Strategic Metals a 1% net smelter return royalty interest in the property.

AMC understands that, as of March 26, 2009, Largo has completed its earn-in for the initial 70% interest, and that Largo has the right to purchase the remaining 30% interest in the property for an additional $5.0 million or equivalent value in stock. Largo has negotiated a formal extension of the term during which it can purchase the remaining 30% interest it does not already own at the Northern Dancer Tungsten-Molybdenum deposit in the Yukon Territory until May 15, 2011.

AMC also understands that there are no known environmental liabilities attached to the property and that it does not lie within an area selected as First Nations Settlement Land, However, it does lie within the traditional territory of the Teslin Tlingit Council First Nations Council.

4 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

4.1 Access

Northern Dancer is approximately 13 km north of the Alaska Highway, 260 km by road southeast of Whitehorse and 165 km by road west of Watson Lake. The project is accessed by 65 km of paved highway (the Alaska Highway) east from the town of Teslin, followed by 13 km of well maintained gravel road to the Northern Dancer camp. There are both helicopter and fixed-wing commercial air services in Whitehorse and Watson Lake. Whitehorse, the territorial capital and the largest city in the Yukon, is served by an airport with multiple daily flights to and from Vancouver, British Columbia.

4.2 Infrastructure

Domestic power and telephone service are available in the town of Teslin, which is linked to the power grid. The phone and power grid do not extend to the project site from Teslin and to date the camp has been powered by diesel generator and has satellite communications. Most supplies and services required for exploration are available in Whitehorse and Watson Lake on a year-round basis. The closest preparation facility is located in Whitehorse and the closest analytical laboratory is in Vancouver. Limited services are available in Teslin including hotel, restaurant, fuel, groceries, some heavy equipment, a first aid nursing station, a Royal Canadian Mounted Police detachment, and a gravel airstrip. Water is available from a number of rivers and creeks which drain the general area. AMC understands that all necessary permits for water usage for exploration purposes have been in place through an application process with the Yukon Water Board.
Canada has a large and active mining industry. Infrastructure for mining equipment, services and personnel are available in a number of centres including Vancouver, Edmonton, and Toronto. The Yukon Territory has had a long and active mining history and, with several small active mines in the general area, a few local mining services are also available in Whitehorse. Deep water port facilities are available at Skagway, Southeast Alaska.

4.3 Climate and Physiography

The climate in the Northern Dancer area is typical of northern continental regions with long, cold winters, truncated fall and spring seasons, and short, cool summers. Detailed climate information is not available for the property; the closest weather station at Teslin reports average temperatures of -19°C in January and 14°C in July (Yukon Community Profiles, 2006). Average annual precipitation is 340 mm, mostly occurring as rain during the summer months. The winter snow pack averages approximately 1m. Although summers are relatively mild, Arctic cold fronts often cover the area and snowfall can occur in any month. The property is largely snow free between early June and late September. Sunlight ranges from 22 hours per day in June to 7 hours per day in December.

Northern Dancer is located in the Cassiar Mountain Range and is centred on a north-trending ridge that separates tributaries of the Smart River from the headwaters of Logjam Creek. Both of these drainages are part of the Yukon River watershed and flow into the Arctic Ocean via the Swift, Teslin, and Yukon Rivers. Local elevations range between

1,000m (near the Alaska Highway in the southern edge of the claim block) and 1,850m (in the northern part of the claim block). The area has undergone recent alpine glaciation and is typified by steep ridges separating broad U-shaped valleys which are blanketed by glacial till and moraines. Outcrop is more abundant along ridge crests and on north-and west-facing cirque walls. South- and east-facing slopes are usually covered by talus.

The main area of interest on the property is located above the tree line at 1,450m. Here, non-vegetated upper slopes give way to grassy lower slopes with scattered clumps of balsam and buck brush. At the lower elevations near the camp and closer to the highway, there are stands of balsam, spruce, and pine. There is no commercial timber on the property.

5 HISTORY

The following historical information as shown in Table 5.1 is summarized from Canamax (1983), Wengzynowski (2006), Eaton (2007), and other unpublished internal documents from previous operators.

Table 5.1 Summary of Exploration at the Northern Dancer Project

Period	Exploration Summary
1920s	Staked by various prospectors for lead-zinc-silver vein mineralization.
1950s	Mapped by the Geological Survey of Canada.
1976	Tungsten mineralization discovered on the property by Cordilleran Engineering Limited.
1977 to 1981	Amax Potash Limited built a road to the property, conducted geological mapping soil geochemistry, IP surveys, drilled 51 diamond drill holes totalling 11,869m and drove 496 m of underground workings.
1983 to 1986	In 1983 Canamax Resources Incorporated prepared a Prefeasibility Study concluding the deposit was uneconomic. It conducted airborne magnetic and electromagnetic surveys in 1984 and dropped the option in 1986.
1993	NDU Resources conducted soil geochemical survey and drilled two diamond drill holes totalling 234 m.
1998 to 2004	Nordac Resources (later renamed Strategic Metals) re-staked the deposit and performed rock sampling, trenching and road construction.
2006	Largo optioned the property from Strategic Metals and drilled 17 diamond drill holes totalling 3,944 m.

5.1 Historical Mineral Resources and Mineral Reserves

A historical Mineral Resource of 162 Mt at 0.13% WO_3 and 0.052% MoS_2 containing 464.3 million pounds of tungsten (as WO_3) and 114 million pounds of molybdenum was reported by Noble et al. (1984). This estimate was based on the drilling and exploration conducted between 1977 and 1981 by Amax. Noble et al. (1984) did not identify the Mineral Resource category and consequently no comparison of the historical estimate can be made to the CIM (2005) accepted categories. The historical Mineral Resource does not conform to the requirements of NI 43-101 and is reported here for historical information purposes only.

5.2 Previous Mineral Resource Estimates

5.2.1 April 2007 Mineral Resource Estimate

The first Mineral Resource estimate for the Northern Dancer deposit that was prepared in accordance with CIM (2005) Definition Standards was prepared by Largo, based on a verified database including historic drilling data and data from Largo’s 2006 drilling campaign. The results of this work were independently verified by Snowden and publicly released on 2 April 2007. Details of this Mineral Resource estimate are presented in a NI 43-101 Technical Report prepared by Snowden dated 17 May 2007 (Snowden, 2007a). The April 2007 Mineral Resource estimate for the Northern Dancer deposit is summarized in

Table 5.2, below. Largo also reported a molybdenite-rich, porphyry zone sub-set of Inferred Mineral Resource at a cut-off of 0.04% MoS_2 to highlight the presence of an elevated MoS_2 grade zone within the overall deposit as shown in Table 5.3.

Table 5.2 Inferred Mineral Resource for the Northern Dancer Deposit as of 2 April 2007

Cut-off grade	Tonnage	WO_3	MoS_2	WO_3	Mo
WO3 (%)	**(Mt)**	**(%)**	**(%)**	**(million lbs)**	**(million lbs)**
0.05	242	0.1	0.047	508	151
0.06	217	0.1	0.047	478	135
0.07	190	0.1	0.047	440	119
0.08	160	0.11	0.048	389	101
0.09	124	0.12	0.048	323	78
0.1	88	0.13	0.048	249	57
0.15	15	0.17	0.048	58	10

Notes: Resource classification categories in accordance with CIM (2005) Standards on Mineral Resources and Reserves referred to in National Instrument NI 43-101. Mineral resources that are not reserves do not have demonstrated economic viability. Although 0.05% WO_3 was considered a likely cut-off grade for this deposit based on comparisons to other similar deposit types at the time of that study, it had not been confirmed by the appropriate economic studies. Totals may not add up exactly due to rounding.

Table 5.3 Inferred Mineral Resource within the Molybdenite-rich Part of the Deposit as of 2 April 2007

Cut-off grade	Tonnage	WO_3	MoS_2	WO_3	Mo
MoS2 (%)	**(Mt)**	**(%)**	**(%)**	**(million lbs)**	**(million lbs)**
0.04	36.8	0.06	0.085	48.7	41.3

Notes: Resource classification categories in accordance with CIM (2005) Standards on Mineral Resources and Reserves referred to in National Instrument NI 43-101. Mineral resources that are not reserves do not have demonstrated economic viability. Although 0.04% MoS_2 was considered a likely cut-off grade for this deposit based on comparisons to the Ruby Creek project of Adanac Moly Corporation (Blower, 2005), it had not been confirmed by the appropriate economic studies. Totals may not add up exactly due to rounding.

5.2.2 March 2008 Mineral Resource Estimate

An updated Mineral Resource estimate for the Northern Dancer deposit was prepared in accordance with CIM (2005) Definition Standards by Largo in March 2008, based on a verified database including historic drilling data and data from Largo's 2006 and 2007 drilling campaigns. The results of this work were independently verified by Snowden and publicly released on 10 April 2008. Snowden considered that there was sufficient geological and grade data, and that this data was of sufficient quality to support a portion of the resource being classified in the Indicated category. Details of this Mineral Resource estimate are presented in a NI 43-101 Technical Report prepared by Snowden dated 25 May 2008 (Snowden, 2008). The 31 March 2008 Mineral Resource estimate for the Northern Dancer deposit is summarized in Table 5.4. Largo again reported a subset of the Mineral Resource inside the porphyry molybdenum-rich zone of the Northern Dancer deposit (Table 5.5), using a cut-off of 0.024% Mo (equivalent to a 0.04% MoS2 cut-off).

Table 5.4 Mineral Resource for the Northern Dancer Deposit as of 31 March 2008

Cut-off grade	**Tonnage**	**WO_3**	**Mo**	**WO_3**	**Mo**
WO_3 (%)*	**(Mt)**	**(%)**	**(%)**	**(million lbs)**	**(million lbs)**
Indicated					
0.06	**140.8**	**0.1**	**0.026**	**319.3**	**81.6**
0.14	17.1	0.17	0.029	64.3	11.2
Inferred					
0.06	**253.2**	**0.1**	**0.022**	**540.5**	**123.4**
0.14	18.7	0.16	0.023	67.1	9.4

*Notes: Mineral resources that are not reserves do not have demonstrated economic viability. Although 0.06% WO_3 was considered a likely cut-off grade for this deposit based on comparisons to other similar deposit types, it had not been confirmed by the appropriate economic studies. Totals may not add up exactly due to rounding. *Note: the resource was reported at a 0.14% WO_3 cut-off to highlight the presence of a high grade WO_3 zone.*

Table 5.5 Mineral Resource within the porphyry molybdenum-rich zone of the Northern Dancer deposit as of 31 March 2008

Cut-off grade	**Tonnage**	**WO_3**	**Mo**	**WO_3**	**Mo**
Mo (%)*	**(Mt)**	**(%)**	**(%)**	**(million lbs)**	**(million lbs)**
Indicated					
0.024	27.6	0.06	0.048	39.2	29.3
Inferred					
0.024	5.1	0.07	0.042	8.2	4.7

**Note: the molybdenum-rich portion of the deposit lies within the Quartz Feldspar Porphyry (QFP) domain and is included within the overall mineral resource presented in Table 6.4. Details of the molybdenum-rich portion of the deposit are presented here at a 0.024% Mo cut-off grade for characterization purposes only. Totals may not add up exactly due to rounding*

6 GEOLOGICAL SETTING

The geological setting for Northern Dancer has been described by Poole (1956), Harris, (1978), Harris (1979), Harris et al. (1981), Noble et al. (1984), Noble et al. (1986), Mihalynuk and Heaman (2002), and Roots et al. (2004). The information in this section is a summary from these reports. A recent age determination has been done by A. Brand and M. Mortenson of the University of British Columbia (Brand, 2008).

6.1 Regional Geology

The geological setting of the Northern Dancer area is tectonically complex. The property lies 130 km southwest of the Tintina Fault within the composite Yukon-Tanana Terrain Figure 6.1). Country rocks consist of Palaeozoic to Triassic fine grained clastic and carbonate sedimentary rocks that were deposited along the margin of North America and later deformed during early Mesozoic arc-continent collision.

The sedimentary rocks were intruded and thermally metamorphosed by an en echelon set of plutonic bodies of Early Jurassic age (e.g., Thirty mile Pluton Northwest, Thirty mile Pluton Southwest, Simpson Peak Batholith and Nome Lake Pluton; see Figure 6.1). These intrusive bodies range from ultramafic to granodioritic in composition and regionally define a northwest trend. A younger suite of Cretaceous aged (generally emplaced between 115 Ma and 97 Ma; e.g., Brand, 2008) intrusive bodies are also present. These intrusions define a similar trend to the older plutonic bodies and are quartz monzonite to monzogranite in composition. They range in size from batholith-sized bodies (e.g., Cassiar Batholith, Seagull Batholith, Marker Lake Batholith, Quiet Lake Batholith and Hake Batholith), through pluton-sized bodies (e.g. Kinkit Pluton) to narrow hypabyssal dykes. These intrusions host a number of porphyry-molybdenum deposits in northern British Columbia and the southern Yukon, including: Northern Dancer (formerly Logtung), Red Mountain, and Adanac (Mihalynuk and Heaman, 2002).

The Northern Dancer deposit is a porphyry tungsten-molybdenum deposit. The deposit is characterized by the presence of a quartz vein stockwork and a northeast-trending sheeted vein set centred on a quartz feldspar intrusive complex. The quartz feldspar intrusive complex appears to be a branch emanating from the northern flank of a Cretaceous-aged (~110 Ma (Brand, 2008)) quartz monzonite stock. The stock is a satellite to the Seagull Batholith, one of several Cretaceous tungsten-molybdenum-fluorine-rich intrusions that define a northwest trend in this part of the northern Canadian Cordillera.

Figure 6.1 Regional Geology of the Northern Dancer Project

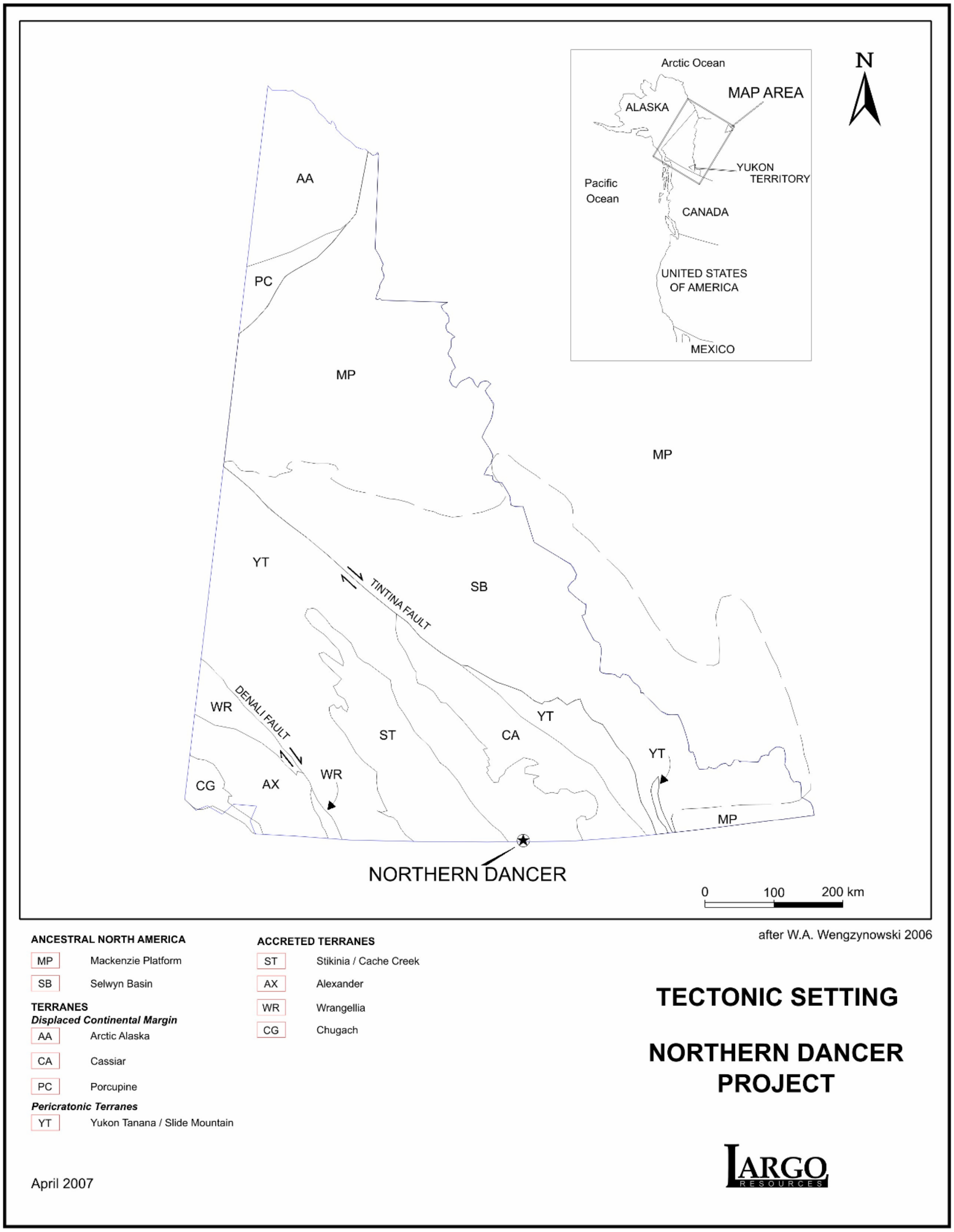
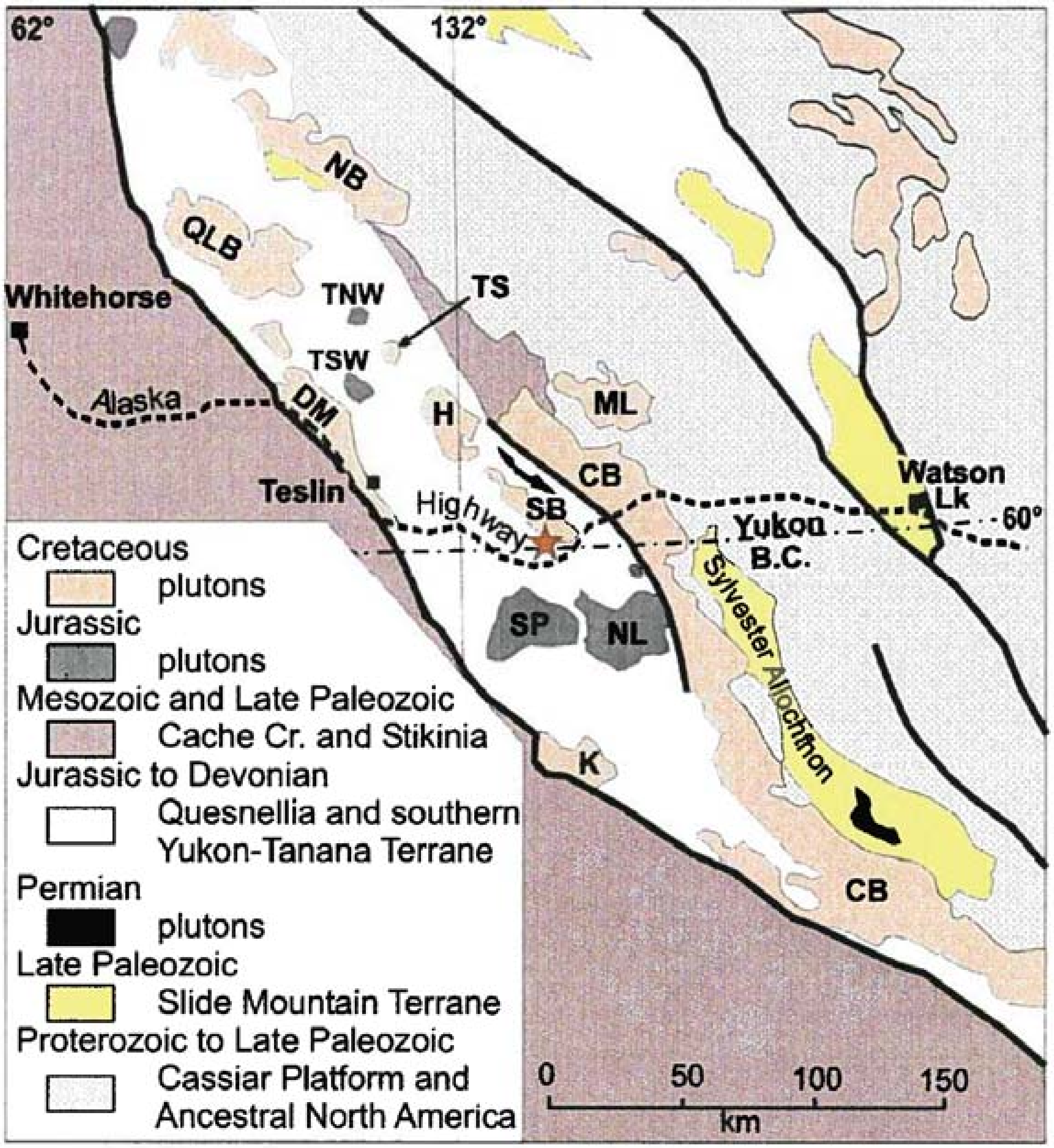


Figure 6.2 Simplified Geological Map of the Southern Yukon and Northern British Columbia, showing Major Intrusions



Key: CB=Cassiar Batholith; SP=Simpson Peak Batholith; NL=Nome Lake Batholith; K=Kinkit Pluton; SB=Seagull Batholith; ML=Marker Lake Batholith;H=Hake Batholith; DM=Deadman Pluton; QLB=Quiet Lake Batholith; NB=Nisutlin Batholith; TNW=Thirtymile Pluton Northwest; TNS=Thirty mile Pluton Southwest; TS=Thirty mile Stock. Star symbol indicates location of Northern Dancer deposit. (Adapted from Brand, 2008, as modified after Mortensen el al., 2007).

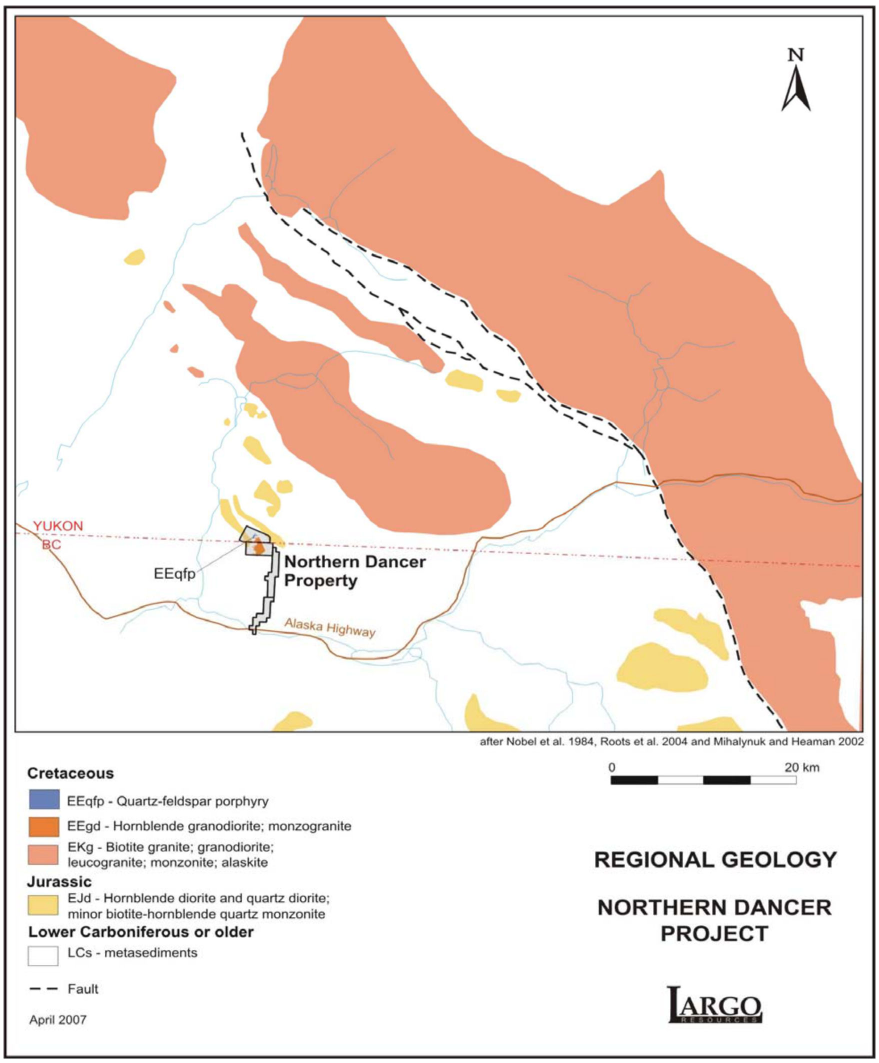
6.2 Local Geology

The main units in the vicinity of the property are summarized in Table 6.1 (after Roots et al., 2004) and Figure 6.3.

Table 6.1 Main Geological Units in the Vicinity of the Northern Dancer Project

Period	Geological Code	Details
Recent	*overburden*	glacial till
Cretaceous	EEqfp	quartz feldspar porphyry
	EEgd	hornblende granodiorite - monzogranite
	EKg	biotite granite, granodiorite, leucogranite, monzonite, and alaskite
Jurassic	*EJg*	un-foliated k-feldspar porphyritic granodiorite
	EJd	hornblende diorite and quartz diorite
	EJum	ultramafic rocks including gabbro, serpentinite, and dunite
Lower Carboniferous	LCs	quartz-plagioclase grit, metasandstone, phyllite, argillite, quartzite, and limestone rocks

Figure 6.3 Geological Setting of the Northern Dancer Project



6.3 Property Geology

The property is underlain by skarn and hornfels metasedimentary rocks that are assumed to have been derived from calcareous phyllite, siliceous argillite, and minor limestone of the Mississippian-aged Dorsey Group. Light green quartz-diopside skarn is the predominant rock type with subordinate amounts of reddish-brown garnet skarn and grey to black hornfels. The skarn and hornfels lithological units are, however, often interbanded.

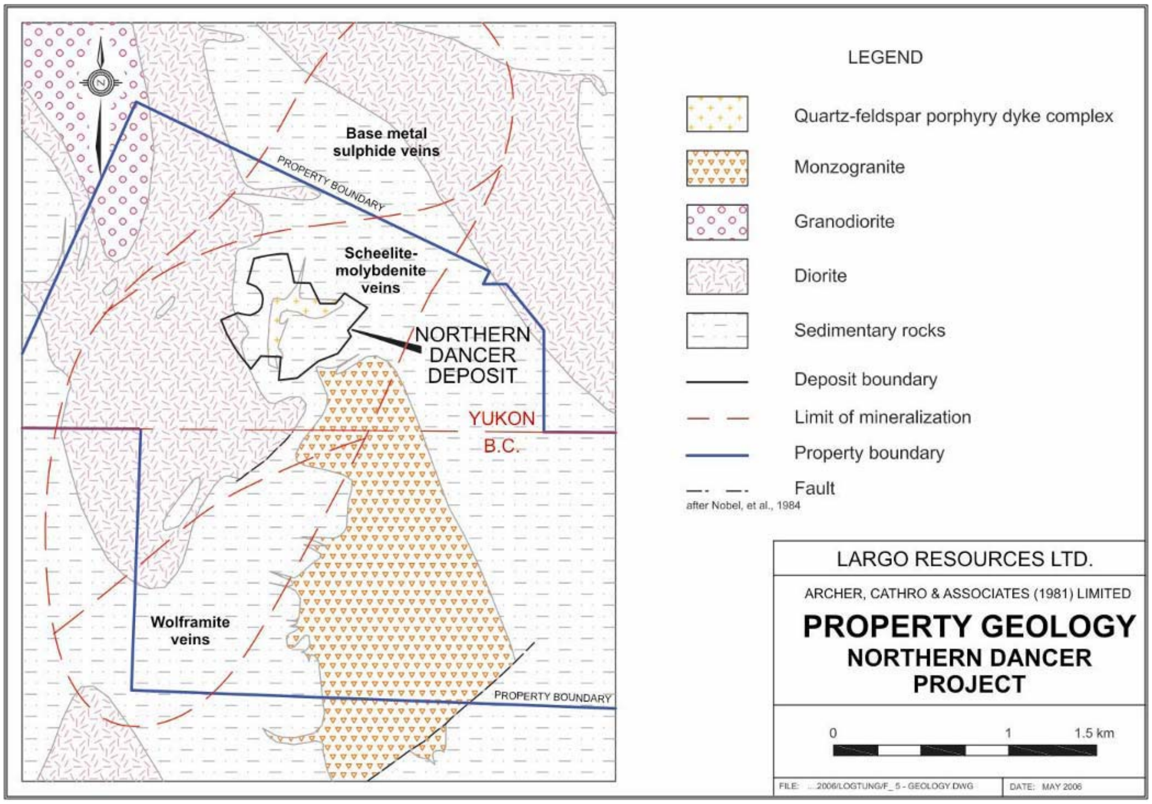
The metasedimentary rocks were intruded by fine- to coarse-grained Jurassic-aged diorite dykes (as shown in Table 6.1 and Figure 6.3) The emplacement of these dykes was associated with the development of a narrow contact aureole (about 30 m in width) of hornfels in the surrounding metasediments.

Intrusion of the quartz monzonite stock (~110 Ma) followed and appears to have been associated with the development of a set of quartz-feldspar porphyry dykes. The quartz-feldspar porphyry dykes appear to be concentrated at the northern end of the stock. Tungsten-molybdenum mineralization appears to be strongly associated with the quartz-feldspar porphyry dyke bodies

The total mineralized area along the northern and western contacts of the quartz monzonite body measures 2.5 km by 1.0 km, strikes north, and extends up to 3 m into the quartz monzonite. The area of highest grade mineralization occurs at the northern end of the northerly dipping quartz monzonite stock and is centred on the complex group of quartz-feldspar porphyry dykes.

Minerals of economic interest include scheelite, molybdenite, and molybdoscheelite, which are mainly distributed in a stockwork of fractures and veins in the metasedimentary rocks and quartz-feldspar porphyry dykes. About 20% of the mineralization occurs in a set of large northeast-striking sheeted quartz-pyrite veins, which are often pegmatitic and contain accessory beryl, fluorite, bismuthinite, chalcopyrite, sphalerite, and pyrrhotite. These sheeted veins appear to be associated with the emplacement of the quartz monzonite stock and quartz-feldspar porphyry dyke bodies. A further 5% of the scheelite and molybdenite are disseminated in garnet skarn bands.

Figure 6.4 Northern Dancer Property Geology



7 DEPOSIT TYPES

The Northern Dancer deposit is a porphyry tungsten-molybdenum system (e.g., Kirkham and Sinclair, 1984; Sinclair, 1995). Deposits of this type comprise large tonnage, generally low grade, hydrothermal mineralization related to igneous intrusions emplaced at high levels in the earth's crust. The mineralization may be confined to pluton-hosted disseminations, veins and veinlets in stockworks, vein sets, and breccias and occur in skarn, replacement, vein and disseminated deposits peripheral to plutons. Deposits of this type are amongst the world's largest, including copper, molybdenum, uranium, tungsten, gold, silver, and tin. Porphyry molybdenum deposits are common in the northern Cordillera, with examples including: Quartz Hill, Endako, Red Mountain, Adanac, Trout Lake, Henderson, and Climax.

8 MINERALIZATION

Previous work in the vicinity of the claims has outlined an extensive, multi-episode vein system (Table 8.1) that is enriched in several metals, most notably tungsten and molybdenum (Noble et al., 1984; Wengzynowski, 2006). Readers interested in a more detailed description of the vein system are referred to Chapter 4 of Brand (2008). The system is centred on a porphyry dyke complex and appears to form an approximately 3 km by 1 km kidney-shaped zone that is elongated along a north-north-easterly axis.

Most of the mineralization (approximately 95%) within the system occurs in veins and fractures. In addition, minor molybdenite is disseminated in the porphyry complex, some tungsten minerals are disseminated in skarn horizons and local disseminations of scheelite and molybdenite are found in the haloes of sheeted veins (Type 4; see Table 8.1). Although veins cross-cut all units and most are apparently related to emplacement of the porphyry dyke complex, it is possible that some veining and skarnification may predate that event.

Table 8.1 Description of vein types (after Noble, et al., 1984)

Feature	Descriptor	Type 1	Type 2	Type 3	Type 4
Mineralization	molybdoscheelite	yes	yes	no	no
	scheelite	no	dominant	yes	yes
	molybdenite	no	sparse	yes	yes
	other				bismuthinite
Distribution		best developed at north flank of monzogranite up to 1.5 km from west flank	70 m wide stockwork annulus around felsites (dominantly within 20 m)	restricted to stockwork in felsite, local in country rock up to 5 m from felsite contact	extends beyond deposit limit
Geometry	width	thin, 0.5 mm to 4 mm	thin, 1 mm to 2 mm, prominent alteration haloes	fracture (0.1mm) to vein (average 1 mm to 3 mm)	1 cm to 1 m
	style	random, 3D stockwork, "crackle breccia"	random, typical stockwork, can become sheeted near felsites contact	felsite cross-cut by random veins, can be sheeted (only random in metasediments)	sheeted, 1 per 2 to 5 m
Paragenesis		earliest, coeval with monzogranite	coeval with felsite, crosscut by Type 3	coeval with felsite, cross-cuts Type 2	later stage, cuts Types 1, 2, and 3

8.1 Mineralization Studies

Amax Potash Limited (Amax), one of the previous operators, undertook bulk sampling of a decline and diamond drill holes in 1980 to gain an understanding of the controls on mineralization. Amax believed there were generally two controls on mineralization: regional-scale controls affecting the whole deposit (zoning within the deposit) and local scale controls affecting smaller portions of the deposit, such as Type 4 sheeted veins.

Amax was of the opinion that:

- Although the porphyry dykes are enriched in molybdenum relative to the wallrock, they are relatively depleted in tungsten. This relationship is demonstrated in samples taken from pre-2006 drill holes (Table 8.2) and the decline (Table 8.3).
- Steeply dipping, north-easterly striking, sheeted veins appear to exert a major control on WO3 grade but do not influence distribution of MoS_2.

Table 8.2 Grade distribution by rock type in pre-2006 drilling samples

Rock Type	Average WO_3 (%)	Average MoS_2 (%)	WO_3:MoS_2
Wallrock	0.10	0.041	2.5 : 1
Porphyry complex	0.06	0.080	0.8 : 1

Table 8.3 Grade distribution by rock type in historic samples collected from the decline

Rock Type	Average WO3 (%)	Average MoS2 (%)	WO3:MoS2
Wallrock	0.10	0.041	2.5 : 1
Porphyry complex	0.06	0.080	0.8 : 1

Prospecting, mapping, and soil geochemical results from the various exploration programs, including Strategic Metals' work in 1998, 2001, and 2003, indicate that the potential for sheeted vein and skarn mineralization extends well beyond the outlined deposit. Also, results from the various prospecting programs suggest that tungsten±molybdenum mineralized veins south of the defined deposit could contain potential by-products including beryllium, bismuth, gold, and silver.

Brand (2008) inferred that the monzogranite and felsic dyke intrusive were the source of the tungsten and molybdenum metals. She demonstrated that the ore mineral assemblage and scheelite composition varies by vein/host environment, with:

- Type 1 veins containing only molybdoscheelite with an average of 4.85 wt.% MoO3 grade but do not influence distribution of MoS2
- Type 2 veins containing purer scheelite (1.13 wt.% MoO3)
- Type 3 veins containing primary molybdenite ± relatively pure scheelite (0.73 wt.% MoO3)
- Type 4 veins containing scheelite + molybdenite ± beryl (0.92 wt.% MoO3)

Brand (2008) noted that the molybdenum content of the scheelite is controlled by one, or a combination of geological conditions, including oxygen fugacity (fO_2) temperature, fluid composition, redox conditions, pressure, and sulphur fugacity (fS_2). Brand (2008) indicated that, on the basis of previous studies on the role of fO_2 and fS_2 in the stability of molybdenite and scheelite (e.g., Hsu, 1977; Darling, 1994), a decrease in fO_2 (and/or an increase in fS_2) could cause molybdoscheelite to split into a dual assemblage of scheelite and molybdenite. Brand (2008) also suggested that CO_2 could play a role in scheelite mineral chemistry.

9 EXPLORATION PROGRAMS

9.1 Historic Exploration

The exploration history of the Northern Dancer deposit has been described by Poole (1956), Poole et al. (1960), Bell (1976), Bacon (1977), Harris (1978), Harris (1979), Harris et al. (1981), Cathro (1982), Canamax (1983), Eaton (1994), Wengzynowski (2006), and Eaton (2007). The historic information presented in this section is summarized from these reports.

9.1.1 Pre-1977 Exploration

The Northern Dancer project area has been prospected since the 1920s.. Numerous claim groups were staked throughout the years primarily for the exploration of lead-zinc-silver vein mineralization.

Tungsten mineralization in the Northern Dancer area was first mentioned by the Geological Survey of Canada which mapped the area in the early 1950s (Poole, 1956 and Poole et al., 1960).

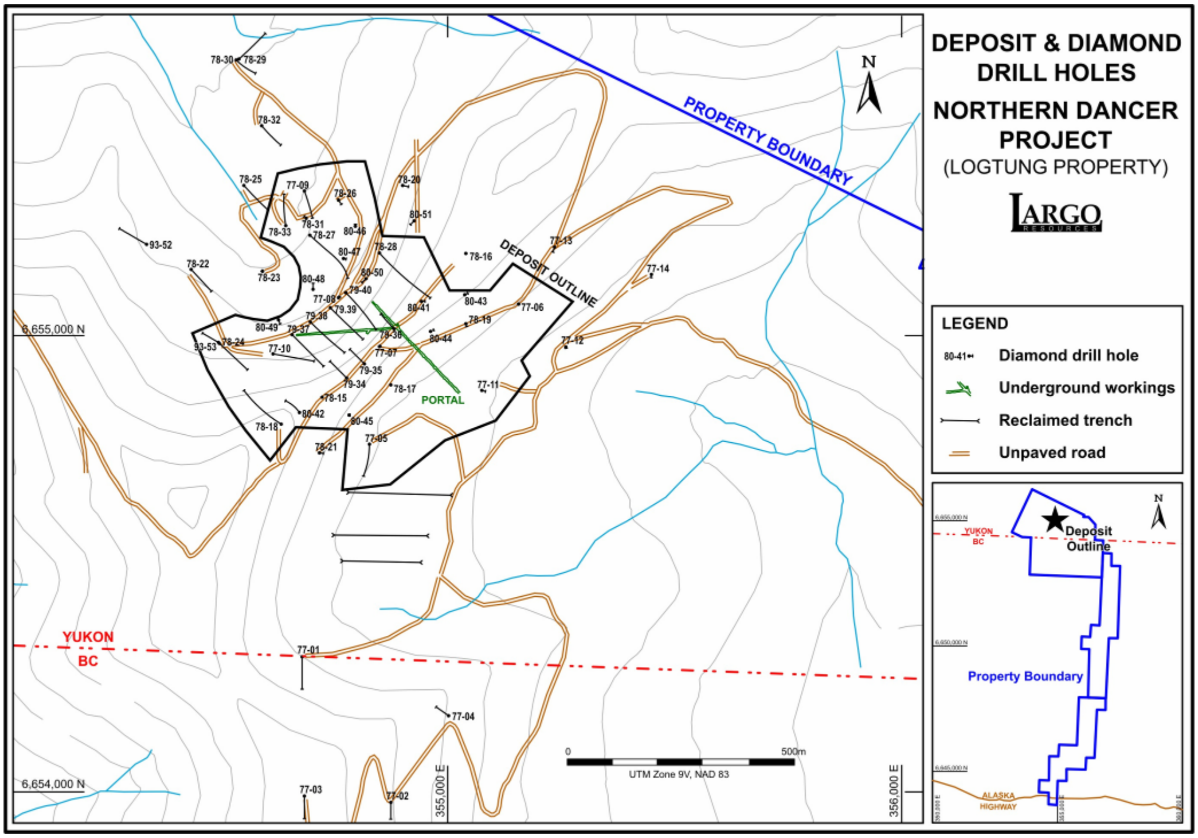
In 1976, Cordilleran Engineering Ltd discovered tungsten mineralization on behalf of the Bath Uranium Partnership, which was organized as a uranium exploration venture. They discovered tungsten stream sediment anomalies, but it was not until the following year that the anomalies were traced to their source and a large claim block was staked straddling the British Columbia-Yukon border. After preliminary prospecting, ownership of the claims was transferred to Logjam Resources Ltd, for which no details are available.

9.1.2 Amax Exploration from 1977 to 1981

Amax acquired the property in March 1977 and carried out extensive exploration during the
Amax acquired the property in March 1977 and carried out extensive exploration during the
summers of 1977 to 1981. Between 1977 and 1981 Amax built a road to the property and conducted geological mapping, soil geochemistry, IP surveys, drilled 51 diamond drill hole (Figure 9.1), totalling 11,869 m, and excavated 496 m of underground workings. The surface work was done on both sides of the border but only 474 m of the diamond drilling (in four drill holes) was done on the British Columbia claims, in the “BC Zone”. Most of the drilling focused on an area about 300 m north of the British Columbia-Yukon border where the Northern Dancer deposit was outlined.

In 1981, Amax created a digital model of the deposit, performed geostatistical studies, and undertook a preliminary evaluation of the site, which included housing, transportation, plant design, power supply, and geotechnical considerations.

Figure 9.1 Amax Diamond Drill Hole Location Plan



Historic drill hole shown as black drill hole traces.

9.1.3 Canamax Resources Incorporated Exploration from 1983 to 1986

In 1983 Amax transferred its interest to Canamax Resources Incorporated (Canamax) which then prepared a Prefeasibility Study that concluded the deposit was uneconomic. In 1984 airborne magnetic and electromagnetic surveys were conducted, and in 1986 Canamax dropped its option. Subsequently most of the Yukon and all of the British Columbia claims were allowed to lapse.

9.1.4 NDU Resources Limited Exploration in 1993

In 1993 NDU Resources Limited optioned the remaining claims and conducted exploration targeted at bulk tonnage gold mineralization modelled on the Fort Knox Deposit in Alaska (Eaton, 1994). The exploration program consisted of soil geochemical surveys, prospecting, and 234m of diamond drilling in two drill holes. Soil sampling outlined large areas of moderately to strongly anomalous tungsten, bismuth, and gold values but rock analyses and drilling returned disappointing results. The option was allowed to expire.

9.1.5 Strategic Metals Limited Exploration from 1998 to 2004

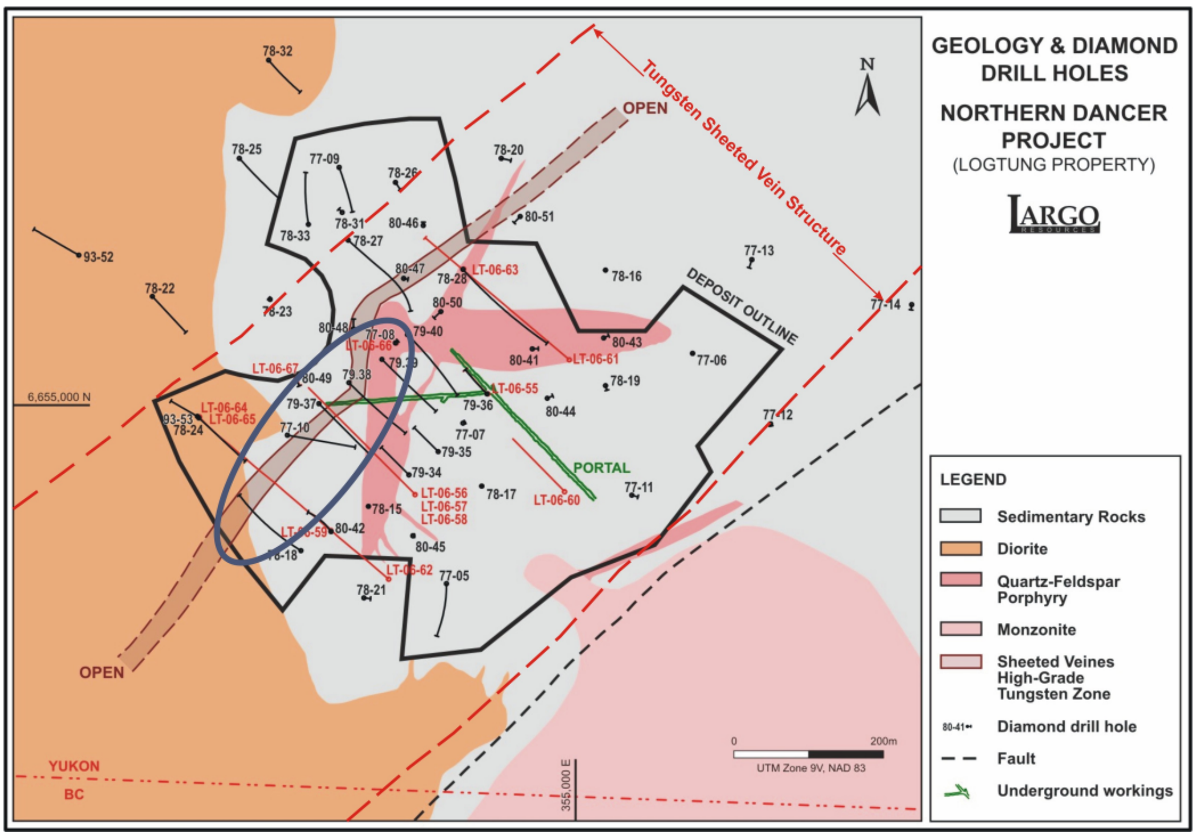
In 1998 Nordac Resources Limited (renamed Strategic Metals Ltd in 2001) re-staked the property and performed additional prospecting and limited rock sampling, which were directed primarily toward beryllium potential. Strategic Metals conducted digital data compilation and performed more prospecting in 2001 (Eaton, 2002), prospecting and hand trenching in 2003 (Eaton, 2004), and excavator trenching and road construction in 2004 (Eaton, 2005).

9.2 Largo Exploration

9.2.1 2006 Exploration

Largo optioned the property from Strategic Metals on April 10, 2006. In 2006, 17 diamond drill holes were completed, eight of which were designed to twin drill holes from the 1977 to 1980 Amax drilling program, and nine of which were infill drilling (Figure 9.2). Additional details of the 2006 drilling program are presented in Snowden (2007). Largo resurveyed all historic drill holes and surveyed the topography.

Figure 9.2 2006 Largo Diamond Drill Hole Location Plan



9.2.2 2007 Exploration

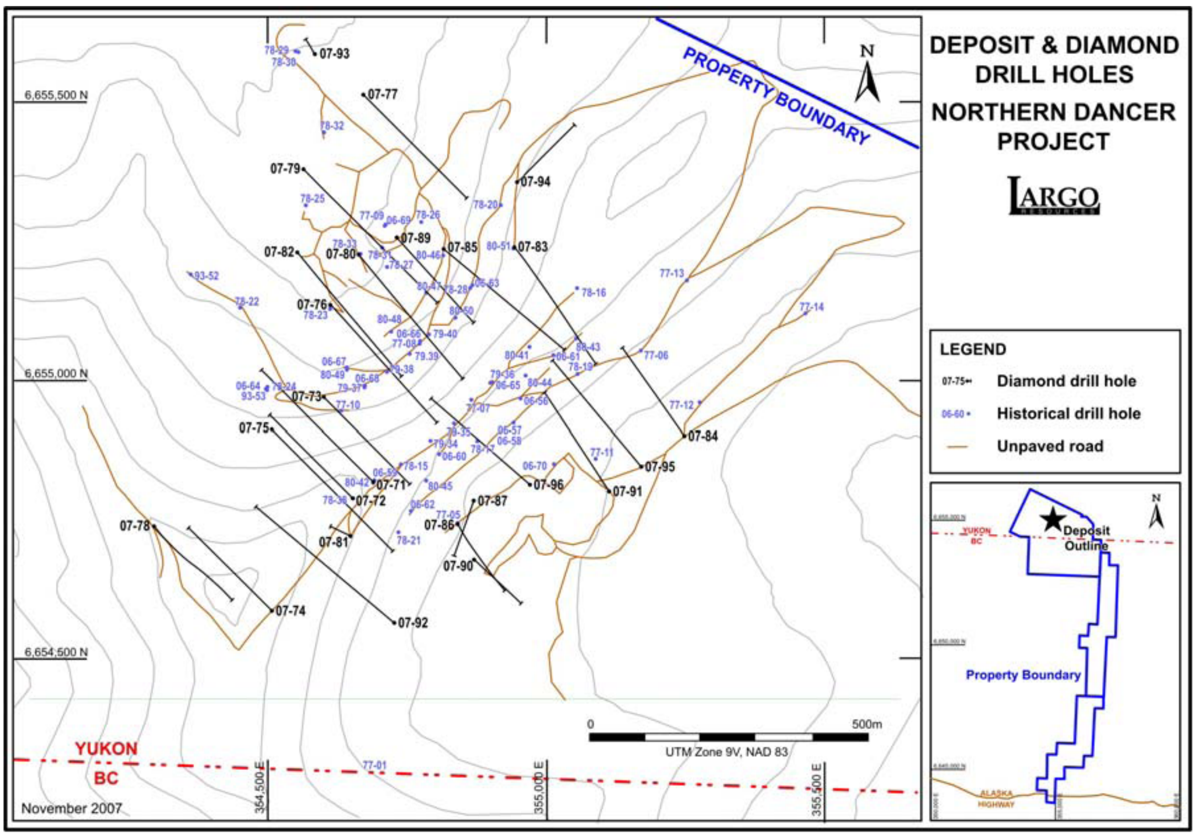
Drilling

An additional 26 drill holes were planned for 2007 (Figure 9.3):

- Twenty four of these drill holes were focused on infill drilling to facilitate upgrading of resource estimation confidence categories.
- A single exploration drill hole was drilled into a prospect identified in 2007, called the Marilyn Creek occurrence, centered on skarn-style molybdoscheelite and scheelite adjacent to small porphyritic felsic dykes.
- Largo, with technical services provided by Wardrop Engineering Inc., also drilled one drill hole for preliminary geotechnical assessment purposes.

Two drill holes were abandoned: LT07-88 due to poor ground conditions and LT07-93 due to excessive snowfall. Additional details relating to the 2007 drilling program are presented in Section 10.

Figure 9.3 2007 Largo Diamond Drill hole Location Plan



Drill holes drilled in 2007 shown as black drill hole traces.

Surface Sampling

Largo enlisted the services of Mesh Environmental Inc. which performed preliminary testing of "acid rock drainage" (ARD) through stream sampling along the southeastern basal area of the deposit, including seepage from the adit mouth. ARD testing also included selection of various lithological and mineralogical zones within the core obtained in 2007, to test for potential acid generating characteristics of these different zones.

Detailed geological mapping was performed on the northwest side of the ridge bisecting the property, as well as areas slightly to the northwest, leading to identification of the Marilyn Creek occurrence. A total of 22 rock samples were also taken, including six outcrop samples directly from the occurrence and four from an area of historic trenching (dates unknown) near the headwaters of the creek. Anomalous tungsten and molybdenum values ranging from <0.005% to 0.214% W and 22.4 ppm to 157.2 ppm Mo were obtained for these samples. Three of these were chip samples, returning lower values than the grab samples, the best result characterized by 0.049% W with 86.7 ppm Mo across 0.8 m.

Weakly anomalous molybdenum values were returned from the area of historic trenching; tungsten values generally reported at background levels with the exception of a single 0.8 m chip sample for which an assay of 0.008% W was obtained.

Minor massive galena-sphalerite veining was identified at two locations; one about 150 m east of the main deposit, returning values of up to 0.3 g/t gold and in excess of 100 g/t silver; the other along a stream west of the dioritic stock, returned an assay of 7.39 g/t gold and more than 100 g/t silver. Both occurrences are less than 0.15 m in width and a few metres in length and are not considered significant targets. Minor quartz-arsenopyrite veining, returning gold assay values up to 6.15 g/t, occurs about 600 m east of the deposit, slightly north of the northeast property boundary.

Base metal mineralization and elevated values of Bi, Sb, Pb, W and Mo were obtained from surface exploration and sampling along the structure that appears to limit mineralization in the northern parts of the deposit. This mineralization appears to be associated with a sliver of quartz-feldspar porphyry. Largo considered this as a worthwhile target for follow-up during the 2008 exploration program.

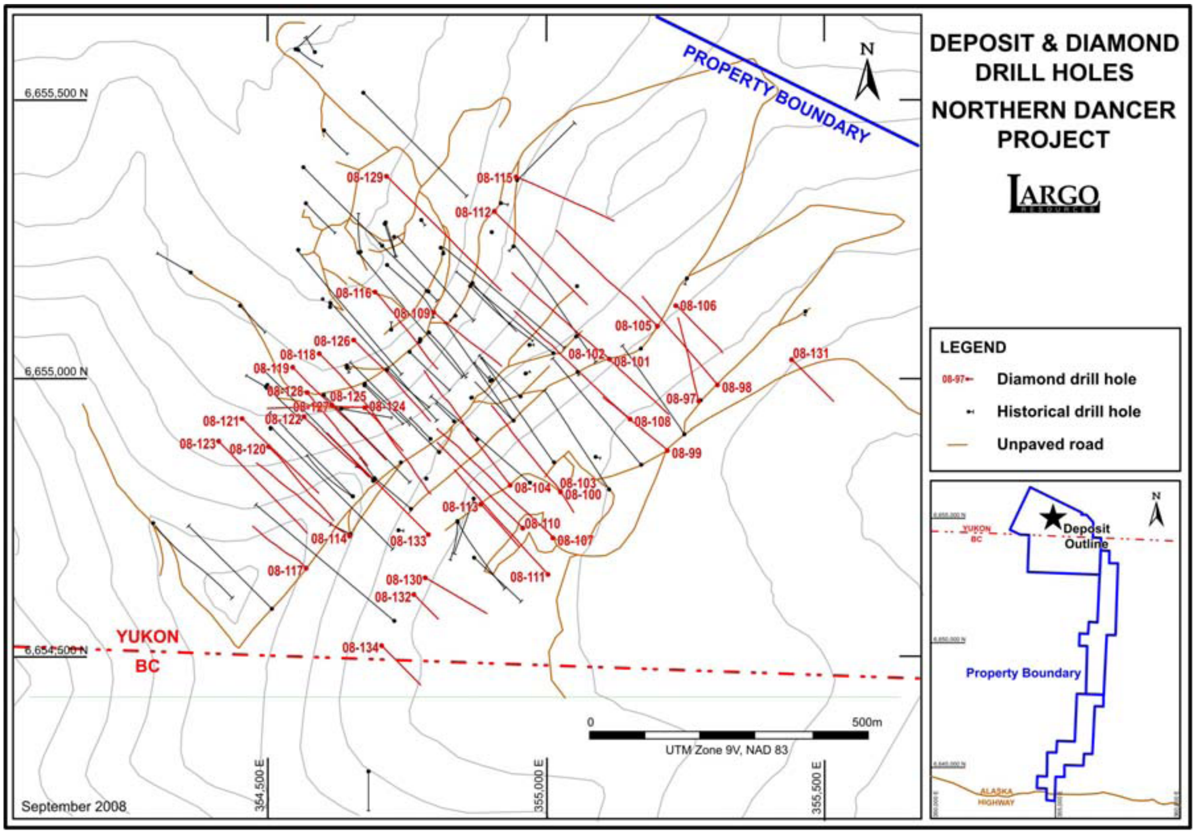
9.2.3 2008 Exploration

An additional 38 holes were drilled in 2008 (see Figure 10.4). The purpose of Largo's 2008 drill program at Northern Dancer project was to:

- Further define and expand the limits of the higher-grade tungsten and molybdenum zones outlined during the 2007 drill program.
- Upgrade the March 2008 resource that was publicly released on 10 April, 2008 (Snowden, 2008), in particular to upgrade a significant portion of the Inferred and Indicated resource to a Measured and Indicated category to produce a mineral resource that can form the basis for a Prefeasibility Study.

Additional details relating to the 2008 drilling program are presented in Section 10.

Figure 9.4 2008 Largo Diamond Drill Hole Location Plan



Drill holes drilled in 2008 shown as red drill hole traces.

10 DRILLING

Historic drilling has been described by Poole (1956), Poole et al. (1960), Harris (1978), Harris (1979), Harris et al. (1981), Eaton (1994), Wengzynowski (2006), and Eaton (2007). Details of the historic (pre-2006) drilling have been summarized from these reports. Largo's 2006 and 2007 drilling programs are described in Snowden (2007) and Snowden (2008) respectively. A summary of the diamond core drilling that has been conducted on the Northern Dancer Project including the 2008 drilling program is presented in Table 10.1. Collar coordinates for all drill holes drilled on the Northern Dancer property are listed in Appendix A of the Snowden-authored 43-101 Technical Report dated 1 June 2009 and entitled: 'Largo Resources Limited: Northern Dancer Project, Project No. V603, Mineral Resource Estimate Update' (the 2009 Snowden Technical report).

Table 10.1 Summary of Diamond Drilling by year

Year	Operator	Number of Drillholes	Total (m)
1977	Amax	14	2,839
1978	Amax	19	4,176
1979	Amax	7	1,676
1980	Amax	11	2,876
1993	NDU	2	234
2006	Largo	17	3,944
2007	Largo	26	8,493.70
2008	Largo	38	11,509.78

10.1 Drilling by Amax from 1977 to 1980

Between 1977 and 1980, Amax drilled 51 diamond drill holes totalling 11,631 m. In 1977, Amax began with an exploration program consisting of 14 drill holes totalling 2,839 m. This was followed up in 1978 with a program of 19 drill holes totalling 4,176 m. In 1979, seven drill holes totalling 1,676 m were drilled. In 1980, Amax contracted Canadian Longyear to drill eleven diamond drill holes totalling 2,876 m. Drill core diameters were variable; it appears that most drill holes were drilled to provide NQ drill core, with some BQ and HQ diameter drill core being recovered.

10.1.1 Collar Surveying

Historically, surface drill holes were surveyed by McElhanney Survey and Engineering Limited using a theodolite and triangulated using border monuments and associated control points.

10.1.2 Downhole Surveying

In this program, surveys were only taken at the collar and the end of the drill hole. On average, drill holes were 255 m long, ranging from 6 m to 427 m.

10.1.3 Core Recovery

Core recovery was generally above 80% for the eight drill holes that were checked in detail, though some logs noted caving as a problem.

10.1.4 Results

The potential for structurally or stratigraphically controlled zones of elevated grade within or adjacent to the bulk tonnage deposit was not evaluated by Amax or Canamax, but does appear to exist. Unfortunately, most of the pre-2006 drill holes were vertical or steeply inclined and therefore failed to properly test the steeply dipping, higher grade sheeted veins (Type 4; see Table 8.1). The best sheeted vein interval intersected averaged 1.07% WO3 and 0.125% MoS_2 across a 12 m thick section containing 15 veins, the largest of which had a drill core thickness of 50 cm. The pre-2006 drill data were too widely spaced to allow for correlation between skarn intersections, especially considering the strong deformation in the metasediments and the relative lack of data regarding bedding orientations. The best skarn interval reported contained 1.13% WO_3 and 0.129% MoS_2 over 4 m.

In the “BC Zone” (i.e., south of the Yukon-BC border), four drill holes hit mineralization (most significantly drill hole 77-01 with 8 m at 0.10% WO3 and drill hole 77-03 with 6 m of 0.16% WO_3 and 6 m of 0.13% WO3). No further drilling was done after 1980.

10.2 Drilling by NDU Resources in 1993

Two HQ diameter diamond drill holes were drilled in 1993 by E. Caron Diamond Drilling of Whitehorse, totalling 234 m, to test the main Au soil geochemical anomaly. Both drill holes were drilled entirely in diorite, and assays were considered disappointing.

10.3 Largo Drilling Programs - 2006 onwards

10.3.1 2006 Drilling Program

The 2006 diamond drilling program consisted of 17 drill holes totalling 3,944 m, eight of which were designed to twin drill holes from the 1977 to 1980 Amax drilling program, and nine of which were infill drilling. The work was contracted to Full Force Diamond Drilling Limited of Peachland, British Columbia. All drill holes were done with a Mandrill 1200 hydrostatic drill rig using NTW equipment.

Drilling was conducted between 22 April and 3 August 2006.

NTW diameter core was recovered and loaded into core boxes at the drill rig. Core boxes were then transported to camp for logging and sampling.

Collar Surveying

Surveyors from Underhill Geomatics Ltd. based in Whitehorse, Yukon, were on site between 29 August and 6 September 2006, conducting detailed GPS surveys of all of the 2006 drill hole collars. A detailed topographic survey was also conducted at this time.

Downhole Surveying

Downhole surveys were conducted using an Icefield MI-03 Inclinometer tool with readings taken every 15 m down the drill hole. Graphs of drill hole traces were plotted on site to assess the quality of the downhole surveying.

Core Recovery

Core recovery was generally greater than 90% for all drill holes drilled as part of the 2006 drilling program.

10.3.2 2007 Drilling Program

A total of 26 drill holes (8,493.7m) were drilled as part of the 2007 drilling program. One drill hole (LT07-94) was designed for preliminary geotechnical assessment purposes and has not been sampled for assaying. Two drill holes were abandoned due to ground conditions (LT07-88 and LT07-93). The work was contracted to Kluane Drilling headquatered in Whitehorse, Yukon. All drill holes were done with a Mandrill 1200 hydrostatic drill rig using NTW equipment. The 2007 drilling program was conducted between 7 June and 1 October 2007.

NTW diameter core was recovered and loaded into core boxes at the drill rig. Core boxes were then transported to camp for logging and sampling.

Collar Surveying

In September 2007, surveyors from Challenger Geomatics Limited out of Whitehorse, Yukon were on site and conducted detailed GPS surveys of all the 2007 drill hole collars.

Downhole Surveying

Downhole surveys were conducted using an Icefield MI-03 Inclinometer tool with readings taken every 15 m down the hole for three of the holes drilled during the 2007 drilling campaign; the instrument was then damaged. The remaining drill holes were surveyed using an EZ-Shot® downhole surveying tool with between two and five readings being taken down the length of the hole. Downhole survey data were reviewed in a spreadsheet to assess survey quality.

Core Recovery

Core recovery was generally greater than 95% for all drill holes drilled as part of the 2007 drilling program.

10.3.3 2008 Drilling Program

A total of 38 drill holes (11,509.78m) was drilled as part of the 2008 drilling program. The work was contracted to Kluane Drilling Ltd. All drill holes were done with two (2) Mandrill 1200 hydrostatic drill rigs using NTW equipment. The 2008 drilling program was conducted between 3 June and 14 September 2008.

NTW diameter core was recovered and loaded into core boxes at the drill rig. Core boxes were then transported 1.5 kilometres to the camp for inspecting, logging and sampling.

Collar Surveying

In September 2008, surveyors from Challenger Geomatics Limited were on site and conducted detailed GPS surveys of all the 2008 drill hole collars.

Downhole Surveying

Downhole surveys were conducted using a Reflex EZ-Shot® downhole surveying tool with a reading made every 30 m down the drill hole. Downhole survey data were reviewed in a spreadsheet to assess survey quality

Core Recovery

Core recovery was generally greater than 95% for all drill holes drilled as part of the 2008 drilling program.

10.3.4 Results of Largo's Drilling Programs

All 2006, 2007 and 2008 drill holes (with the exception of drill hole LT06-64, which was lost in overburden, and LT07-94, which was drilled as a geotechnical drill hole and has not been sampled for assaying) contained mineralization and produced significant assays. The average grade over the entire length of each drill hole and significant grade intersections are presented in the 2009 Snowden Technical Report, Appendices B and C respectively.

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2006 Drilling Program

The 2006 drilling program had two main goals: to evaluate the reproducibility of the historical Amax drilling results and to test for steeply dipping sheeted veins (Type 4) at depths shallower than previously intersected.

Results from drill holes drilled to twin selected historic drill holes confirmed the grades reported in the historic drill holes, taking inherent geological variability between drill holes, different generations of drilling techniques, assay methods and laboratory conditions, and sample support into account. It was concluded (Snowden, 2007a) that the historic drilling data were suitable for use in the generation of a Mineral Resource estimate at the Preliminary Assessment level.

The 2006 drilling also confirmed the presence and attitude of the northeast-trending, steeply dipping, tungsten-rich sheeted veins (Type 4 veins). It was found that shallower angled drill holes (-45°) gave better intersection angles with the sheeted veins than steeper drill holes. Type 4 veins were found to be characterized by local weak stockwork geometries. Shallower angled drill holes drilled in 2006 intersected sheeted veins at shallower depths than previously reported, indicating that the interpreted relationship of a tungsten grade increase with depth needed to be tested and revisited with additional shallow-angled drilling.

Other geological observations made during the 2006 drilling program included:

- The type of host rock was found to affect vein mineralogy and alteration envelopes, which were seen to change along strike as veins crosscut different host rocks.
- Disseminated scheelite was found to be present in garnet and pyroxene skarn horizons as well as in the haloes of Type 4 veins.
- The sulphide content of the deposit was found to be low, confirming observations of previous workers.

Additional details relating to the results of the 2006 drilling program are presented in Snowden (2007a).

2007 Drilling Program

The 2007 drilling program had two main goals: infill drilling to raise confidence in the Mineral Resource (i.e., to upgrade Inferred material to the Indicated category); and to investigate the potential of a high grade tungsten zone in the vicinity of the steeply-dipping sheeted veins.

The drilling was successful in upgrading a portion of the Mineral Resource to Indicated (see Snowden, 2008). The 2007 drilling also resulted in the delineation of a new mineralized domain for the Northern Dancer deposit: a mineralized diorite domain. Diorite in the south-western part of the deposit was found to be highly mineralized in several intersections, confirming earlier geochemical exploration results of Archer Cathro that indicated a relationship between diorite and mineralization. The nature of these structures was proposed for investigation as a part of the 2008 exploration program.

Numerical logging of mineral abundances and vein structures was conducted as part of the 2007 drilling program. Largo's objective was to generate three dimensional mineralogical models of the deposit using this information to assist in domain definition and refinement in future block models.

Additional geological observations made during the 2007 drilling program include:

- The type of host rock was found to affect mineralogy, grain size and distribution of stockwork mineralization. Diorite, for example, was found to host veins that contained less molybdoscheelite and molybdenite than other host rocks, with vein types 2 and 3 usually being absent. Only skarn was found to host all types of stockwork mineralization.

- Molybdenum grades appear to increase with depth, especially in the skarn domain. Largo consider this as being a function of the proximity to a felsic intrusive body that is a source of stockwork mineralization, alteration and silicification (e.g., the quartz monzonite and quartz-feldspar porphyry bodies). A molybdenum rich zone was identified proximal to the quartz-feldspar porphyry (QFP) at shallow depths in the north-eastern parts of the property, in agreement with this consideration. Additional drilling was proposed to further investigate this apparent relationship.
- Elevated grades were generally found to be associated with alteration haloes. Elevated tungsten grades were identified in the dark green pyroxene skarn alteration haloes developed in association with Type 2 and Type 4 veins.
- The disseminated scheelite found in garnet and pyroxene skarn horizons, as well as in the haloes of Type 4 veins, as part of the 2006 drilling program, was again noted during the 2007 drilling program. Such dissemination is considered to be associated with alteration haloes around the major stockwork vein systems. The scheelite generally displays a cloudy or dusty appearance due to the fine grained nature of the disseminated mineralization.

2008 Drilling Program

Largo's 2008 drill program at the Northern Dancer project had several objectives:

- To further define and expand the limits of the higher-grade tungsten and molybdenum zones outlined during the 2007 drilling program.
- To improve the molybdenum grade model for the deposit taking the northeast extension of molybdenum-rich zones in skarn and hornfels into account.
- To upgrade a significant portion of the Inferred and Indicated resource to the Measured and Indicated categories to produce a mineral resource that can form the basis for a Prefeasibility Study.

The drilling program was successful in upgrading a portion of the Mineral Resource to the Measured and Indicated categories (see Section 16). The 2008 drilling also investigated and delineated the nature of the sheeted veins within different rock domains, especially within diorite and skarn.

The 2008 drilling program also improved the molybdenum grade model for the deposit. This was achieved through improved delineation of the molybdenum-rich quartz-feldspar porphyry domain and through close-spaced drilling in the northeast of the property, where numerous molybdenum-rich (Type 3) veins crosscut skarn and hornfels rocks. The improved model is characterized by an overall increase in the molybdenum grade across the deposit.

Close-spaced drilling was conducted in the diorite domain to better define the mineralized diorite and its contact with the skarn and non-mineralized diorite domains. The results of this drilling highlighted physical properties of the diorite and diorite-hosted sheeted veins that could make them important targets for additional scheelite recovery metallurgical testwork.

11 SAMPLING METHOD AND APPROACH

11.1 Historic Sampling

The sampling method and approach of the historic data has been described by Poole (1956), Poole et al. (1960), Harris (1978), Harris (1979), Harris et al. (1981), Eaton (1994), Wengzynowski (2006), and Eaton (2007). Historic sampling method and approach data from these reports are summarised below.

11.1.1 Sampling by Amax from 1977 to 1980

Sampling of mineralization within the study area by previous operators has been conducted using both diamond drilling and trench sampling methods. Core was taken from the ground and placed sequentially in core boxes. Boxes were transported to the camp nearby where the core was inspected and recovery was noted. The core was geologically logged by a geologist, the scheelite content was estimated by fluorescence, and sample intervals were marked. Drill core was split in two halves using a core splitter; one half of the core sample was placed back in the core box and the other half was then bagged along with its corresponding sample tag for shipment. The core was shipped to the Rossbacher Laboratory in Burnaby, British Columbia. Core trays containing the remaining half core sample were placed in core racks and stored at the exploration core storage shack on the Northern Dancer property for future reference. The historic core boxes were noted to be in very poor state due to vandalism and neglect.

11.1.2 Sampling by NDU Resources in 1993

All drill hole core from this campaign was split on the property. Half of the core was sampled in 3 meter intervals and sent to ALS Chemex Laboratories in Smithers, British Columbia for preparation and then tested at their assaying facilities in Vancouver, British Columbia. The remaining core was stored on site with the core from earlier programs, and was also noted to be in a very poor state.

11.2 Sampling by Largo – 2006, 2007 and 2008

Largo's sampling methodology and approach did not changed significantly between the 2006, 2007 and 2008 drilling programs.

11.2.1 Core Logging

Core was transported by truck from the drilling site to a core shack located near camp. The core was photographed and cleaned prior to conducting geotechnical logging. RQD, recovery, magnetic susceptibility, and detailed fracture analysis were recorded as part of the geotechnical logging process. The core was then geologically logged, with sample intervals delineated on the core by the geologist.

Largo geologists logged the core in detail for each sample interval (approximately every 2 meters to replicate as closely as possible the Amax methodology), using the Amax geological legend. Observations were made concerning rock type, relative proportion of each vein type, vein host rock type and sulphide mineralogy. Core was scanned for variations in scheelite mineralization using an ultraviolet lamp in the on-site dark room. Sample intervals were defined on the basis of lithology, alteration, veining and mineralization, and marked on the core. Alteration and veining was described in 1 to 4 meter increments, and an estimate of the relative proportion of fluorescent minerals as observed under the ultraviolet lamp was made.

Core logging information was recorded on paper and then re-entered into an electronic drill log template as part of the 2006 drilling program. All geotechnical and geological logging conducted during the 2007 and 2008 drilling programs was digitally recorded using Gemcom Logger software. Each core box was labelled according to drill hole, box number and depth. Additional information written on the core box included recovery, RQD and sample interval.

11.2.2 Sample Preparation Prior to Dispatch of Samples

Lines along which the core was to be split/sawn were selected during the geological logging of the core by the geologist. In 2006 cores were split in half using a mechanical splitter, with one half labelled, bagged, and sealed for assaying and the remaining half stored in the core box. In 2007 and 2008 drill hole cores were cut by electrical saw, with one half labelled, bagged and sealed for assaying and the remaining half stored in the core box. Care was taken during both drilling programs to ensure that the splitter and core saw were thoroughly cleaned between the splitting/cutting of each sample.

Samples were taken at regular intervals, most commonly 1.5 or 2.0 metres, due to relative uniformity of mineralization. Individual sample lengths were also determined by changes in lithology, alteration, structural zones such as faults, or amount of quartz veining; thus not all sample lengths are identical. All sample intervals were laid out prior to sampling, with sample numbers marked with small wooden blocks, and intervals carefully documented. A tag with a specific identification number supplied by Acme Laboratories Ltd (Acme Laboratories) for each sample taken was stapled into the core tray within the respective sample interval. Sample bags were stored in the core shed prior to transportation.

11.2.3 Density Determinations

Density was measured on site by Archer Cathro in 2006. Sample intervals considered representative of the different rock types were selected from different drill holes for density measurements. Density measurements were conducted on whole core material prior to sampling using the industry-standard weight-in-water weight-in-air technique (Lipton, 1993). Core samples were weighed to the nearest tenth of a gram. A representative suite of 444 whole core samples, averaging between 20 cm to 30 cm in length, were sent to the Eco Tech Laboratory in Kamloops, British Columbia for density testing during the 2007 (180 samples) and 2008 (263 samples) drilling programs. The samples were wax-coated at the laboratory prior to conducting the density measurements using the weight-in-air weight-in-water technique. The laboratory ran duplicates and standards as part of its internal quality assurance and quality control (QA/QC) protocol, with the results indicating an acceptable level of precision and accuracy. Density samples were collected for all five mineralized domains, as well as for the quartz monzonite porphyry (QMP) and waste domains (see Table 11.1).

Table 11.1 Density by Rock Type (Density Measurements from 2007 and 2008)

Rock type	Number of samples	Average density (t/m^3)*
Hornfels	90	2.62 ± 0.13
Skarn	160	2.68 ± 0.19
Quartz-feldspar porphyry	53	2.57 ± 0.10
Dioritic dykes	21	2.64 ± 0.18
Diorite	93	2.67 ± 0.12
Quartz monzonite porphyry	27	2.63 ± 0.11

**Standard deviation shown with average.*

12 SAMPLE PREPARATION, ANALYSES, AND SECURITY

12.1 Historic Sample Preparation, Analyses and Security

Historic sampling preparation, analyses, and security have been described by Poole (1956), Poole et al. (1960), Harris (1978), Harris (1979), Harris et al. (1981), Eaton (1994), Wengzynowski (2006), and Eaton (2007). The information in this section is a summary from these reports.

12.1.1 Amax Sample Preparation from 1977 to 1981

A total of 40 batches of samples, containing approximately 40 samples each, was submitted to the Rossbacher Laboratory in Burnaby, British Columbia following the 1977 drilling program. Three Amax control samples were sent per batch. A total of 54 samples from five batches were reanalysed because of discrepancies in control samples. Three reject and pulp duplicates were also analysed. Molybdenum analysis was determined as MoS2 (%) and total Mo by atomic absorption, with a minimum detection limit of <0.001% MoS2. Tungsten analysis was determined as WO3 (%), colourmetrically with a minimum detection limit of <0.01% WO3.

No further laboratory, sample preparation, analytical or QAQC is available for the Amax drilling campaigns.

12.1.2 NDU Resources Sample Preparation in 1993

Half core samples from both drill holes drilled as part of the 1993 drilling program were sent to the ALS Chemex Laboratories in Vancouver. Samples were assayed for Au, Cu, W and geochemically analysed for a further 32 elements using the ICP technique. No additional information is available.

12.2 Largo Sample Preparation, Analyses and Security – 2006, 2007 and 2008

Sample preparation, analyses and security procedures used by Largo are not significantly different between the 2006, 2007 and 2008 drilling programs and are discussed in one section in this report.

Core samples were stored in the core shed until the batch was ready for transport to the assay laboratory. Samples were then transported by truck to Whitehorse and then couriered by bus to Acme Laboratories Ltd (Acme Laboratories) in Vancouver. Sample preparation (drying, crushing, splitting and pulverization) and analysis were conducted at Acme Laboratories.

Acme Laboratories operates a Quality Management System which complies with the requirements of BS EN ISO 9001:2000.

Molybdenum (Mo) and tungsten (W) were analysed by both Aqua Regia digestion with an ICP-OES finish (G1DX) and phosphoric acid leach with an ICP-OES finish (G7KP) at Acme Laboratories. Additional elements analysed for by the G1DX method include: Cu, Pb, Zn, Ag, Ni, Co, Mn, Fe, As, U, Au, Th, Sr, Cd, Sb, Bi, V, Ca, P, La, Cr, Mg, Ba, Ti, B, Al, Na, K, Hg, Sc, Tl, S, Ga, and Se. Fluorine was added to the list of elements to be analysed at Acme during the 2007 drilling program. The G7KP technique is more suitable for elevated molybdenum and tungsten values and provides a more complete digestion of tungsten into solution relative to the G1DX technique (the G1DX technique does not report molybdenum values greater than 0.2% and tungsten values greater than 0.01%). Largo elected to use the molybdenum and tungsten data derived from the G7KP technique for Mineral Resource estimation. The lower limits of detection for molybdenum and tungsten are 0.001% and 0.01%, respectively, using the G7KP technique. All assay results were reported as W% and Mo% and were later converted by Largo to WO3% (by multiplying W by 1.2611) and MoS2 % (by multiplying Mo by 1.6681).

All quarter-core field duplicate samples collected as part of the QA/QC protocol for the 2006 drilling program were submitted to SGS Lakefield Research Ltd (SGS Lakefield) in Ontario. SGS Lakefield operate a Quality Management System that meets ISO 9001 and ISO 17025 requirements. Mo was analysed by Aqua Regia digestion with an ICP-OES finish (Method 9-4-41) and W was analysed by Internal Standard XRF (Method 9-6-2) at SGS Lakefield. No other elements were requested to be analysed for in the field duplicates. All quarter-core field duplicate samples collected as part of Largo's 2007 and 2008 drilling programs were submitted to Acme Laboratories.

12.2.1 Quality control measures

Prior to the sampling program, a quality assurance and quality control (QA/QC) protocol was designed in conjunction with Snowden. Largo's QA/QC information focuses on molybdenum and tungsten, the two elements of most economic significance to the Northern Dancer Deposit. Only G7KP molybdenum and tungsten data from Acme Laboratories, in conjunction with the assay data determined at SGS Lakefield for the field duplicates collected during the 2006 drilling program, was assessed for QA/QC purposes as only this data was used in Mineral Resource estimation.

In addition to QA/QC controls submitted by the operators, Acme Laboratories and SGS Lakefield conducted its own internal quality control analyses.

Standards

Accuracy is a measure of how close an analytical result is to the actual value. Accuracy is measured by analyzing certified standard reference material, material for which the actual value of the variable of interest (tungsten and molybdenum in this case) is reliably known within a quantified narrow range of error. Standards included in the sample stream, prior to submission to the laboratory, make the expected value blind to the laboratory ("external standards"), even though the laboratory will inevitably know that the sample is a standard of some sort. By comparing the results of a laboratory's analysis of a standard to its certified value, the accuracy of the assay results of the laboratory is measured.

In 2006, two Canmet standards, BH-1 and MP-2, were used as field standards (see Table 12.1).Standard BH-1 was a wolframite tungsten standard, standard MP-2 was a wolframite-molybdenite tungsten-molybdenum standard. Field standards were randomly selected, inserted into the sample stream at a frequency of approximately 1 in 20 samples, and submitted blind to the analytical laboratory.

Table 12.1 Density by Rock Type (Density Measurements from 2007 and 2008)

Canmet Standard	Certified Value (Mo %)	Mo 95% c.l.*	Certified Value (W%)	W 95% c.l.*
BH-1	n/a	n/a	0.422	0.008
MP-2	0.281	0.01	0.65	0.02

**Note: c.l. = confidence limits*

In 2007and 2008, two different Standards, CDN-W-1 and CDN-MoS-1 from CDN Resource Laboratories Ltd (CDN), were used as field standards (see Table 12.2). Standard CDN-W-1 is a tungsten ore reference standard that was prepared from underground workings at North America Tungsten's Cantung mine in the Northwest Territories, Canada. It is high in sulphide consisting primarily of pyrite containing chalcopyrite. The tungsten occurs as scheelite.

Standard CDN-MoS-1 is a molybdenum ore reference standard that was prepared using mill feed material supplied by Thompson Creek Mining Company from its Endako Mine in British Columbia, Canada. The ore has been named Endako Quartz Monzonite consisting typically of 30% quartz, 35% pink tinged K-feldspar, 30% white to green tinged plagioclase with 5% partially chloritized black biotite. Primary ore minerals are molybdenite, pyrite and magnetite with minor amounts of chalcopyrite and traces of bornite, bismuthinite, scheelite and specularite.

Details of the preparation and certification of these standards can be found on CDN's website (http://www.cdnlabs.com/Standards.htm).

Field standards (in 2007 and 2008) were randomly selected, inserted into the sample stream at a frequency of approximately 1 in 30 samples, and submitted blind to the analytical laboratory.

Table 12.2 Density by Rock Type (Density Measurements from 2007 and 2008)

CDN Standard	Certified Value (Mo %)	Mo 95% c.l.*	Certified Value (W%)	W 95% c.l.*
CDN-W-1	n/a	n/a	1.04	± 0.10
CDN-MoS-1	0.065	± 0.008	n/a	n/a

**Note: c.l. = confidence limits*

Blanks

Cross-contamination of tungsten and/or molybdenum could occur through a variety of means during the sample handling process. The degree of contamination in a laboratory can be measured through the insertion of blank samples into sample batches. Blank samples contain only trace tungsten and molybdenum mineralization and should assay at or below the laboratory detection limit for these metals. If a blank sample has an analytical result significantly above the detection limit, contamination may be the cause.

Largo inserted 119 field blanks at a frequency of approximately one in 20 samples in 2006 drilling, 265 field blanks at a frequency of one in 30 samples in 2007 drilling and 196 field blanks, at a frequency of one in 30 samples in 2008 drilling . The blanks were made from landscaper's marble. Tests were conducted at Acme Laboratories prior to the start of the

2006 drilling program to confirm the absence of molybdenum and tungsten from this material.

Duplicates

Field duplicates as quarter core samples were inserted at a frequency of approximately one in 20 samples in 2006 and one in 30 samples in 2007 and 2008. Samples were analysed at SGS Lakefield in 2006 and at the Acme Laboratories in 2007 and 2008. 103 field duplicates were analysed in 2006, 265 in 2007 and 192 in 2008.

Analyses of coarse, crushed sample reject material were performed at a frequency of approximately one in 36 samples, at random intervals, always directly following the original sample. A total of 73 coarse reject duplicates were analysed in 2006 with 116 being analysed in 2007 and 179 being analysed in 2008.

Pulp duplicate analyses were performed at a frequency of approximately one in 36 samples, at random intervals at the time of original analysis, following coarse reject analysis. A total of 73 pulp duplicates were analysed in 2006, 191 were analysed in 2007 and 222 were analysed in 2008.

12.2.2 Security and chain-of-custody

Core samples were sealed into sample bags on site and stored in the core shed until the batch was ready for transport to the assay laboratory. The samples were then transported by truck to Whitehorse and then couriered (by Greyhound bus) to Acme Laboratories in Vancouver.

Sample preparation and analysis was conducted by the independent analytical laboratory. Sealed sample bags were only opened by technicians at the analytical laboratory. Largo is unaware of any sample bags that have been tampered with.

The samples were under the control of Archer Cathro in 2006 and Largo in 2007 and 2008 until they reached Whitehorse, where after they were in the custody of an independent third party transportation company (Greyhound in 2006, Byers Transport in 2007 and 2008) until they reached Vancouver where they were in the custody of the independent analytical laboratory (Acme Laboratories). Largo keeps and updates an electronic record of the sampling, sample handling and transportation chain-of-custody.

12.3 Statement on the Adequacy of Sample Preparation, Security, and Analytical Procedures

The author believes that the QA/QC sampling protocol indicated above is appropriate to ensure assay and density data quality and that the chain of custody description is of industry standard.

13 DATA VERIFICATION

13.1 Verification by Largo

13.1.1 Verification of Historical Records

Most historical exploration data presented in this report, including all drilling data used for historical Resource estimations, was collected by a reputable engineering firm on behalf of a major molybdenum producer. The results are mostly recorded in reports that were accepted for assessment credit to standards specified at the time by the Yukon Quartz Mining Act or the British Columbia Ministry of Energy and Mines regulations, which differ from those currently prescribed by NI 43-101. In addition, these assessment reports were submitted prior to current requirements for complete data records, including certificates of analysis and other documentation that would permit the author to verify the accuracy and internal consistency of all results presented.

Largo had access to raw data generated by Archer Cathro on behalf of its various clients since 1993 and has indicated its opinion that the data contained in the historical reports appears to be valid and reliable.

The following validation checks were undertaken by Largo:

- Where available, re-examination of original analytical certificates and geological drill hole logs.
- The range of values reported from various programs conducted on the Northern Dancer property were compared for internal consistency and were also compared to results from other known tungsten, molybdenum, and beryllium prospects that have been reported in the literature.

The verification procedures undertaken in connection with this assignment were intended to assess whether inadvertent errors may have occurred through sample handling and analytical procedures.

13.1.2 Twin Drill Hole Drilling Verification by Largo - 2006

To verify the accuracy of historic drilling eight new drill holes were drilled alongside historic drill holes, with similar dips, azimuths, and depths. Two drill holes were twinned from each year of the historic drill program (1977, 1978, 1979, and 1980), spaced around the property.

The inherent geological variability (nugget effect) and differences in analytical methods, core size, recovery and diversion of drill holes, all of which influence the comparison of different generations of drill hole data, have been taken into consideration as part of the interpretation of the twin drilling results presented in this report.

Overall the results of the 2006 program twin drill hole analysis confirmed the grades reported in the historic drill holes, taking inherent geological variability between drill holes, different generations of drilling techniques, assay methods, and laboratory conditions and sample support into account. The results indicated that the historic drilling data could be used in conjunction with more recent quality drilling data in the generation of an Inferred Mineral Resource compliant with NI 43-101 (Snowden, 2007a).

13.1.3 Other Data Verification Conducted by Largo

Largo conducted various checks as part of the 2007 and 2008 drilling programs including:

- Ensuring that drill hole collars were correctly located using GPS, maps and spatial relationship to existing drill holes.
- Continual cleanliness checks of the core saw between each sample, in particular between samples with visible molybdenite mineralization.
- Validation of official assay certificates against digital assay data files supplied by the analytical laboratory.
- Verification and validation of assay data accuracy using field standard control samples.
- Assessment of potential cross-contamination in the analytical laboratory using field blank control samples.
- Verification of density data through a review of laboratory QAQC data.
- Verification of compiled database integrity.

13.2 Verification by Snowden

13.2.1 2006 Drilling Program

Site Visit

Dr. Warwick Board, then of Snowden in Vancouver, visited the Northern Dancer property between 5 July and 7 July, 2006. At the time of Dr. Board's visit there was an active diamond drilling program in progress. Dr. Board reviewed the following during the site visit:

- Mineralization styles – Snowden visually inspected drill core displaying representative intersections through the different styles of mineralization reported for the Northern Dancer deposit. Molybdenite and scheelite mineralization was clearly visible in the core and displayed mineralogical associations in line with those portrayed in the literature (e.g., Noble et al., 1984)
- Drill hole locations – Snowden considered that adequate measures had been taken to ensure that the drill holes were accurately located. Drill hole collars had, however, not been surveyed at the time of the site visit.
- Drilling technique and core extraction – Snowden observed core extraction and core box loading at the drill rig and did not note any issues.
- Downhole surveying – Snowden reviewed the downhole deviation plots for several of the drill holes completed at the time of the site visit and did not note any significant erroneous deviations. Snowden considered the downhole survey information (available at that stage) to be of acceptable quality.
- Core recovery – Snowden conducted a visual inspection of several core boxes from several drill holes and noted that recoveries were generally greater than 90-95%.

- Geotechnical logging procedures – Snowden reviewed the geotechnical logging procedures on site and was of the opinion that they were of acceptable industry standard.
- Geological logging procedures – Snowden reviewed and discussed the geological logging process with several geologists responsible for logging core on site and found the nature and quality of the recorded information to be pertinent to deposit delineation and evaluation, and that the geological logging was of industry standard.
- Density measurements – Snowden reviewed the site-based density measurement procedure and considered it as being acceptable due to the general competency of the rock.
- Field QA/QC sampling – Snowden checked that the QA/QC protocol designed prior to the 2006 drilling program was being implemented as planned.

Snowden made several recommendations on improvements to future drilling programs but was of the overall opinion was that all aspects of the collection of geological and geotechnical data as part of the 2006 drilling program were of acceptable industry standard to facilitate the production of suitable quality data for Mineral Resource estimation.

QA/QC of Assay Data

Snowden conducted a detailed QA/QC of the assay data available from Largo's 2006 drilling program (Snowden, 2007b).

Snowden made recommendations for improvement relative to W accuracy and general improvement in protocols for future drilling programs but concluded that the Mo and W assay data generated during the 2006 drilling campaign were sufficiently accurate and precise, with no evidence of significant cross-contamination in the sampling and sample preparation protocols, and that they were suitable for use in the generation of a resource estimate for use in a Preliminary Assessment of the Northern Dancer deposit.

Historic Assay Data Quality pre-2006 Drilling Programs

Snowden conducted a detailed review of the results of the twin drill hole drilling conducted by Largo (Snowden, 2007b) and concluded that the historic drill hole data were of sufficient quality for use in the generation of a resource estimate for use in a Preliminary Assessment of the Northern Dancer deposit. Recommendations were made by Snowden for conducting a detailed reassessment of the historic drilling information and for investigating the limited evidence suggesting the possibility that tungsten could have been over reported in the historic data.

13.2.2 2007 Drilling Program

Downhole Survey Data

Snowden conducted an independent check of the downhole survey data and noted that, overall, deviations down the drill hole appeared to be within acceptable limits.

Recommendation was made by Snowden to gather more downhole survey data to facilitate the definition of downhole survey deviations; this was noted as not being a material issue at the Preliminary Assessment level but one that would be of increasing importance as the study progresses to a Preliminary Feasibility Study stage. Further recommendations were made re collection of magnetic susceptibility data and surveying of a selection of drill holes using a non-magnetic downhole survey tool, together with investigation of several anomalous downhole survey data.

Assay QA/QC data

Snowden conducted an independent check of Largo's field standard, field blank and field duplicate control sample data, as well as Acme Laboratories' coarse reject and pulp duplicate data. No laboratory standard and blank control sample data were provided to Snowden, thereby precluding an analysis of this data.

Overall Snowden considered that the Mo and W assay data generated during the 2007 drilling campaign were sufficiently accurate and precise, with no evidence of significant cross-contamination in the sampling and sample preparation protocols, and that they were suitable for use in the generation of a Mineral Resource estimate for use in a Preliminary Assessment of the Northern Dancer deposit.

Observations by Snowden relative to the independent check included a recommendation to investigate elevated tungsten values for two field blank samples, a note re two samples labelled as field standard CDN-MoS-1 appearing to be mislabelled field blanks, and observation that, overall, the majority of the assays determined for the CDN-MoS-1 and the CDN-W-1 field standard control samples submitted during the 2007 drilling program were within acceptable limits. Recommendation was made for a review of the accuracy in molybdenum assay data and a check of several anomalous data values with Acme Laboratories. Overall, the degree of precision for the field and pulp duplicates was considered to be acceptable for the current level of study. Recommendation was made for a detailed review of the 2007 duplicate QA/QC data and discussion of the results with Acme Laboratories to improve confidence in the precision of its tungsten and molybdenum data as the study moves beyond the PEA level. Snowden also recommended the creation and maintenance of a separate QA/QC database populated with all field and laboratory control sample data. A final recommendation was to conduct 'real-time' QA/QC assessments of all field and laboratory control sample data in future drill programs to facilitate timely intervention and remediation of any identified problems.

13.2.3 2008 Drilling Program

- Dr Warwick S. Board, then of Snowden, visited the Northern Dancer property between 21 and 22 August 2008 and conducted the following data verification assessments of Largo's 2008 drilling program, which was in operation during the visit.
- Observation of the entire exploration drilling process was made, from drilling, through core collection, handling, logging, sample selection, sampling, sample preparation, sample chain-of-custody and sample despatch. Snowden also inspected all relevant rock outcrop along the ridge line across which the deposit is straddled.

- Independent checks were conducted on 33 drill hole collar locations (22 collar locations from the 2008 drilling program, nine from the 2007 drilling program and two from the 2006 drilling program) using a handheld GPS unit. No discrepancies were noted.
- Independent checks were conducted on Largo's 2008 downhole survey data, with some similar observations being made to those of the 2007 assessment. Snowden noted that the drill hole traces were smooth, with minimal deviation in dip and azimuth down drill hole. The few errant readings were generally inside the casing near the drill hole collar. Snowden also noted that downhole survey data were collected every 25 to 30 meters downhole and recommended that, for future drilling programs, this be done every 15 meters. The recommendation arose from the presence of pyrrhotite in some of the samples, which indicated the possibility of localized magnetic disturbances that could affect the downhole survey data. Snowden recommended that Largo collect magnetic susceptibility data with each EZ-Shot® survey measurement to assess the potential for erroneous readings due to the presence of magnetic material. Snowden also recommended that, for future programs, Largo survey a selection of drill holes using a non-magnetic downhole survey tool (e.g., a Robertson or SRG borehole gyroscope) in addition to the EZ-Shot® tool as an additional check on the quality of the downhole survey data, particularly in those drill holes for which anomalous magnetic susceptibility readings were obtained. Snowden observed that, overall, the downhole survey data appeared to be of acceptable quality for use in mineral resource estimation.
- Five independent samples of selected drill hole intersections were collected and independently arranged for sample transportation, preparation and analysis at the ALS Chemex laboratory in Vancouver. Results of the independent sample analyses are presented in Table 13.1. It can be seen from these results that, taking differences in sample support (half core for Largo samples versus quarter core for Snowden samples) and analytical laboratories, as well as the inherent variability in the mineralization within the deposit (the nugget effect) into account, the magnitude of WO_3 and Mo grades in Largo's samples are matched in the independent samples.

Table 13.1 Details of independent sampling conducted during 2008 site visit

Drill hole	Sample	No. From-To	Largo sample data ACME Laboratory		Snowden sample data ALS Chemex Laboratory	
			MoS_2 (%)	WO_3 (%)	MoS_2 (%)	WO_3 (%)
LT07-89	644243	212-214 m	0.045	0.21	0.040	0.15
LT07-89	644245	216-218 m	0.125	0.07	0.110	0.06
LT08-109	05511	293-295 m	0.215	0.03	0.187	0.04
LT08-109	05488	253-255 m	0.073	0.60	0.100	0.54
LT08-113	1364	182-184 m	0.013	0.08	0.023	0.06

Snowden conducted a detailed review of Largo's 2008 QA/QC data and noted that the drilling data from this program are sufficiently accurate, precise and uncontaminated to be used with confidence in mineral resource modelling, and that they could support a Measured classification for part of the deposit. Snowden also noted that there appeared to be a few minor sample mislabelling errors (in particular related to sample standards and blanks) that should be corrected in the QA/QC database.

Snowden reviewed Largo's geological interpretation for the Northern Dancer deposit and considered it to be reasonable. A parallel resource model was generated by Snowden using Datamine Studio 2 and the reported grades and tonnes were comparable to an acceptable degree to those generated by Largo.

13.3 Verification Not Conducted by Snowden

Snowden did not verify the following aspects of Largo's 2006, 2007 and 2008 drilling programs:

- A site visit was not made during Largo's 2007 drilling program. Snowden mining engineers were, however, on site during this program and noted that Largo's drilling operations were being conducted in accordance with industry accepted practices.
- Collar location survey data quality – the survey contractors used were considered to be professional organisations and, as such, were expected to provide data of acceptable quality. The results of the independent drill hole collar checks conducted during the August 2008 site visit support this contention.
- Snowden did not carry out independent exploration work, drill any drill holes, or carry out any significant program of independent sampling or assaying, except for the limited independent sampling presented in Section 13.2.2. Molybdenite and scheelite mineralization were noted to be obvious in many parts of the drill core and the molybdenum and tungsten grade data from Largo's drilling programs were seen to be of similar magnitude and display similar trends to those of the historic drilling conducted by previous operators. Snowden was therefore of the opinion that an extensive program of independent sampling and assaying was not required.
- Snowden did not independently check assay data in Largo's assay database against the hardcopy assay certificates provided by the laboratory.

13.4 Statements Regarding Verification

The author is of the opinion that the data used by Largo for the generation of the March 2009 Mineral Resource is of acceptable quality to support a Measured, Indicated and Inferred classification for the Northern Dancer Mineral Resource estimate. The author also considers that, as the project moves beyond the PEA stage with the aim of upgrading the majority of the Mineral Resource to the Measured and Indicated categories, resolution of issues associated with the 2007 assay and downhole survey data should be undertaken as per the recommendations noted above.

14 ADJACENT PROPERTIES

AMC is not aware of any adjacent property information that is relevant to the Northern Dancer Project Preliminary Economic Assessment.

15 MINERAL PROCESSING AND METALLURGICAL TESTING

15.1 Introduction

In addition to the historical metallurgical testing conducted by AMAX Inc. in the late 1970's and early 1980's, Largo completed scoping and preliminary level metallurgical testing on samples from the ND property during 2008 through to 2010.

15.2 Metallurgical Testing and Mineralogy

The 2008 metallurgical testing was a scoping level program and was conducted by SGS Lakefield in Ontario. The testwork used three batches of samples including crushed assay rejects and drill core splits. The test program focused on mineralogy including modal analyses, gravity separation, sulphide and scheelite flotation as well as pre-concentration. The head grades for these samples ranged between 0.12-0.03% WO_3 and 0.09-0.02% Mo.

Gravity separation test results on these samples indicated that medium grade tungsten concentrates could be produced at recoveries acceptable in the industry. Scheelite flotation tests indicated that high stage tungsten recoveries could be achieved using conventional reagents at medium fine grinds. A limited number of moly flotation tests on assay rejects and drill core samples indicated that relatively high Mo rougher recoveries could be obtained using conventional reagents and at medium to medium-fine primary grind sizes. Pre-concentration tests using ore sorting and heavy liquid separation showed varying degrees of promise. Ore sorting showed the highest success rate while heavy liquid test results pointed toward the use of lower specific gravity medium in the next phase of testing.

The 2010 preliminary metallurgical testing program was conducted by Inspectorate Mining & Services in Richmond, BC. Nearly 3 tonnes of drill core samples, reported to be representative of the high grade skarn, hornfels and QFP rock types, were used to prepare a single composite test sample. This composite sample assayed 0.094% WO_3, 0.033% Mo and 0.76% $S_{(t)}$. The objective of the testwork was to provide sufficient information to assist in future process development test programs, and it incorporated mineralogy, moly and scheelite flotation, scheelite gravity separation and pre-concentration tests.

Moly and scheelite rougher flotation tests in this program confirmed and in some cases exceeded previously achieved metal recoveries. Scheelite gravity separation tests produced marketable grade concentrates at moderate recoveries. Results of the preliminary ore sorting tests using 25 mm size rocks continued to show potential for rejection of low grade waste from the feed materials. Testing for ammonium paratungstate conversion of tungsten concentrates will be tested in future test programs.

Collectively, the results from these tests led to the development of conceptual process flowsheets as presented in this section.

15.3 Mineralogy

Modal analyses using the QemScan technique mineralogy on the high-tungsten and hi-moly samples from the 2008 test program showed that scheelite and molybdenite were the only minerals of tungsten and molybdenum respectively. Wolframite was not detected in the investigation. The high-tungsten sample contained significant levels of calcium minerals such as wollastonite, fluorite and apatite while the same were in low-to-trace amounts in the high-moly sample. Silicate minerals constituted the majority of mass in both samples and iron sulphide minerals such as pyrite and pyrrhotite were less than 2.5% in the high-tungsten sample and less than 1% in the high-moly sample. Liberation data demonstrated that scheelite liberation reaches +50% levels in the 150 μm size range in both samples investigated. However, molybdenite liberation reaches nearly 60% level in the 300 μm size range in the high-tungsten sample while the same liberation levels are reached in the 38 μm size range in the high-moly sample.

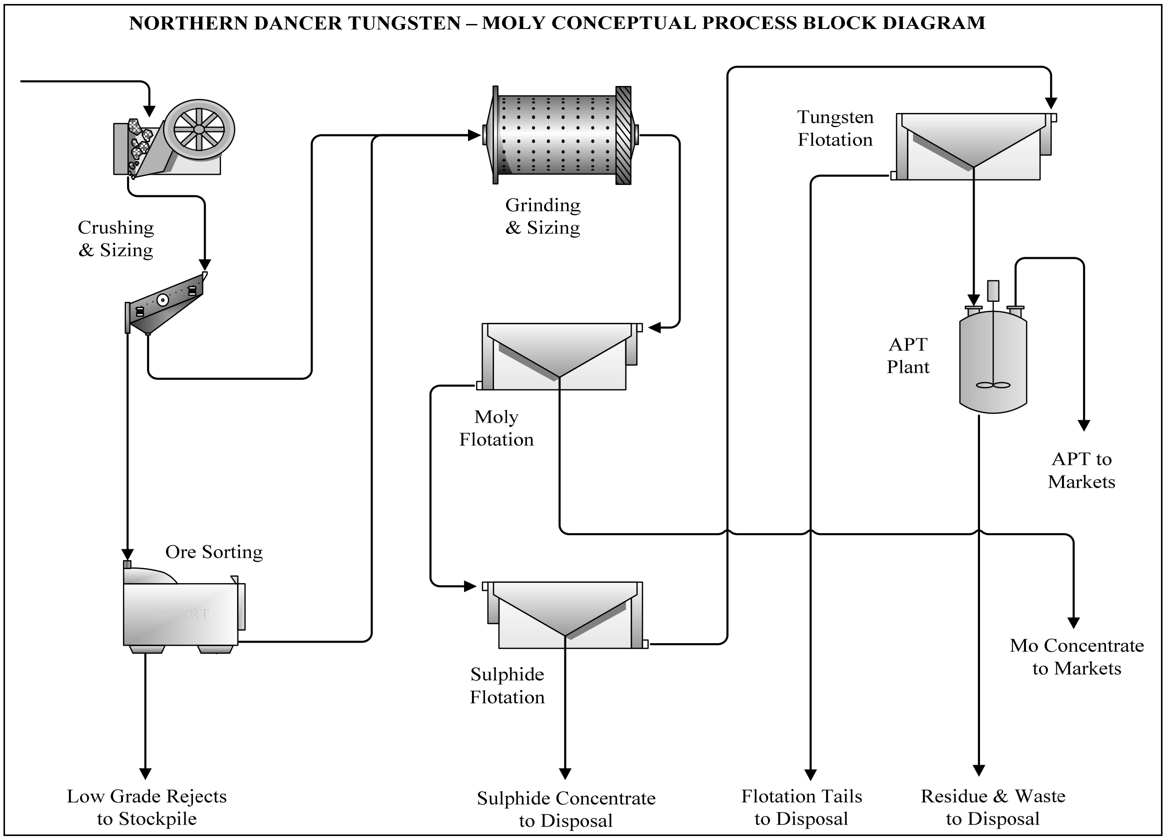
Optical mineralogy on the composite sample from the 2010 test program showed that scheelite is the primary tungsten mineral however, trace amounts of wolframite were also observed. Molybdenite was observed to be the only molybdenum mineral. Silicate minerals accounted for >98% of the sample mass along with minor amounts of iron sulphides including pyrite.

15.4 Description of Process Developed

In the process conceptualized for Northern Dancer the run of mine feed materials are crushed and sized to prepare size ranges suitable for ore sorting. The low grade waste is removed into a reject stockpile for future processing, use in dam and/or road building as appropriate. The resulting upgraded product from the sorting are further crushed to prepare feed for the process plant. Following grinding to a size suitable for liberation of the minerals of interest, the feed materials are subjected to molybdenite and sulphide flotation including their regrind and cleaner circuits.

Rougher tailings from the moly/sulphide flotation circuit are sent to the scheelite flotation circuit for the recovery of a medium grade scheelite flotation concentrate. Both concentrates are dewatered in their respective circuits and the moly concentrate is filtered and dried before shipment to markets. The scheelite concentrate, after thickening, is sent to the ammonium paratungstate (APT) plant for conversion into a direct marketable product. Figure 15.1 shows the main steps of this conceptualized process.

Figure 15.1 Conceptualized Process Diagram (From M. Bolu Engineering Inc.)



A brief description of each major process circuit is provided below.

Crushing and Ore Sorting: Feed material from the open pit mine is crushed to nominal 75-mm and is screened to suitable size ranges for ore sorting. Ore sorting is predicted to reduce overall throughput from 11.2 M t/a to 7.3 M t/a rate through the separation of a low grade reject stream from the feed materials. The concentrate and a fines product are further crushed to prepare feed for the downstream grinding circuit.

Grinding: The crushed feed materials are ground to a liberation size suitable for optimum rougher flotation recovery of minerals of interest such as molybdenite and scheelite. Rod mills and screens are proposed for this circuit in order to mitigate slimes generation and the resulting scheelite losses in the downstream flotation circuits. Final ground product is thickened to a density suitable for the subsequent moly flotation circuit.

Molybdenum and Bulk Sulphide Flotation: The ground and thickened product is sent to moly rougher flotation and the resulting rougher concentrate is reground and cleaned in a multi cleaner stage flotation circuit to produce a marketable grade moly product. Fine grind mills and column flotation cells are considered for the cleaner circuit while the rougher circuit is expected to employ tank cells. Moly concentrates are dewatered and dried before packaging for the markets. Moly rougher tailings are sent to a bulk sulphide flotation circuit to remove additional sulphides ahead of scheelite flotation, and the bulk sulphide concentrate is sent to the tailings storage facility for disposal. Bulk sulphide tailings continue to scheelite flotation circuit.

Tungsten Flotation: Bulk sulphide tailings are conditioned with the appropriate reagents through stages of conditioning ahead of scheelite rougher-scavenger flotation. Rougher concentrate is sent to cleaner flotation while scavenger concentrate is recycled to the rougher feed, through a regrind circuit. Cleaner flotation will utilize column cells in producing a medium grade concentrate for the downstream APT conversion. Tungsten concentrate is thickened and stored for the downstream APT conversion at site.

APT Plant: The proposed process for converting tungsten concentrates to ammonium paratungstate (APT) is based on alkali digestion method. Tungsten concentrates from the process plant are digested in autoclaves at high temperature and pressure with alkali reagents. The resulting sodium tungstate solution is recovered from the gangue residue. The residue is sent to the tailings storage facility for disposal while the concentrated sodium tungstate solution is treated through various purification steps to remove compounds of such impurities as; As, P, Si, and Mo. Sodium tungstate solution is converted to ammonium tungstate which is then crystallized to produce APT for markets. All waste products will be sent to engineered ponds within the tailings storage facility for storage.

Tailings disposal and Fresh Water Supply: Process tailing streams such as the bulk sulphide concentrate and tungsten flotation tailings are sent to the tailings pond for disposal. Tailings supernatant water will be recycled to the mill as process make-up water. Residues and waste products from the APT plant are also sent to the tailings pond or engineered and dedicated storage ponds for disposal as required. Fresh water source for potable, reagent mixing and other process make-up purposes is envisaged to be obtained from surrounding rivers.

15.5 Process Throughput, Metallurgy and Production

The following metallurgical predictions are based on results of preliminary testwork conducted on Northern Dancer samples and on previous experience on similar projects.

The throughput for the proposed plant is 11.2M t/a ROM feed material at average ROM feed grades of 0.095% WO_3 and 0.031% Mo. A summary of metallurgical predictions is provided in Table 15.1.

Table 15.1 Metallurgical Predictions

Plant Feed	
	0.095 %WO_3
	0.031 %Mo
	11,242,000 t/a
Process Feed after Ore Sorting	
	0.137% WO_3
	0.041% Mo
	7,300,000 t/a
Process Plant Concentrate Production	
	Tungsten: 75% at 40% WO_3
	Moly: 72% at 50% Mo; 5.5M Lbs/a
APT Plant Recovery and Production	
	95% Tungsten Recovery
	761,000 mtu WO_3

Through crushing and ore sorting the throughput rate is reduced to 7.3 M t/a after low grade material is separated within the ore sorting circuit. The process plant, starting from grinding and through to downstream circuits treats 7.3M t/a of feed material. Overall metal recoveries to concentrates are predicted at 75% for tungsten and 72% for molybdenum at concentrate grades of +40% WO_3 and +50% Mo respectively. APT conversion recovery is predicted at 95% on concentrates treated, resulting in an annual production of 761,000 mtu of WO_3. Moly production is estimated at 5.5M Lbs per annum of contained Mo in concentrates.

16 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES

The Northern Dancer Mineral Resource estimate was prepared by Largo. Dr. Warwick S. Board, P. Geo., Principal Consultant with Snowden in 2009, independently reviewed and verified the estimate (March 2009 Northern Dancer Mineral Resource Estimate) and assumes responsibility for it in the Technical Report.

All statistical and geostatistical analyses presented in this section are focused on tungsten and molybdenum as they are the most economically important constituents of the Northern Dancer deposit. Tungsten and molybdenum grade data were converted to WO_3 and MoS_2 for resource estimation purposes.

It is recommended that further study and possible estimation of fluorine (as CaF_2) is performed due to its possible deleterious effect on metallurgical recovery of tungsten.

16.1 Disclosure

16.1.1 Important Information

It is important to note the following when considering the Mineral Resource estimates in this Technical Report.

Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

- A Measured mineral resource (CIM, 2005) is that part of a mineral resource for which quantity, grade or quality, densities, shape, and physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough to confirm both geological and grade continuity. This classification requires a high level of confidence in, and understanding of, the geology and controls of the mineral deposit.
- An Indicated mineral resource (CIM, 2005) is that part of a mineral resource for which quantity, grade or quality, densities, shape, and physical characteristics can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed. An Indicated mineral resource estimate is of sufficient quality to support a preliminary feasibility study.
- An Inferred mineral resource (CIM, 2005) is that part of a mineral resource for which quantity and grade or quality can be estimated on the basis of geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through

appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes. Confidence in an Inferred mineral resource estimate is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure. Inferred mineral resources must be excluded from estimates forming the basis of feasibility or other economic studies.

- 0.06% WO_3 was considered as being a likely cut-off grade for this deposit for the 2009 Resource Estimate that is described herein. With current economic inputs (2011) a cut-off grade of 0.04% WO_3 has been established for pit design purposes.

The Mineral Resource presented in this report was estimated using the Canadian Institute of Mining, Metallurgy, and Petroleum (CIM) Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council on the 11 December 2005.

16.2 Known Issues That Materially Affect Mineral Resources

Snowden and Largo are not aware of any issues that materially affect the Mineral Resource estimates. This conclusion has been based on the following:

- There are no known environmental liabilities attached to the property
- Largo has represented that all licenses are in good standing
- Largo has represented that there are no outstanding legal issues; no legal action, or injunctions pending against the project
- Largo has represented that the mineral and surface rights have secure title
- There are no known permitting, marketing, or socio-economic issues
- Largo has represented the project has government support and does not lie within an area selected as First Nations Settlement Land

16.3 Database

The Gemcom mining software database generated for the Northern Dancer deposit during the 2006 drilling program was updated with drilling data (geological, survey, density and assay data) collected during the 2007 and 2008 drilling programs. The latest (as of February 2009) Northern Dancer Gemcom database contains information for 134 drill holes, including 53 historic drill holes and 81 drill holes drilled during the 2006, 2007 and 2008 drilling programs.

Eleven of the 53 historical drill holes (drill holes 77-01, 77-02, 77-03, 77-04, 77-13, 77-14, 78-22, 78-29, 78-30, 78-32, and 93-52) were not used for Mineral Resource estimation purposes as they were outside of the area of interest. Five drill holes from the 2006, 2007 and 2008 drilling programs were not used in the generation of the current Mineral Resource estimate: drill holes LT06-64, LT07-88 and LT07-93 were abandoned due to ground conditions; drill hole LT07-94 is a geotechnical drill hole and was not sampled; drill hole LT08-131 was drilled outside of the area of interest.

The final de-surveyed drill hole database used in the generation of the March 2009 Mineral Resource estimate contained 15,795 records. The database was validated with Gemcom's internal validation tools and double checked with hard copies of original data. Snowden imported survey, lithology, density and assay data into the Datamine Studio 2 mining software and independently conducted a series of basic database validation tests. No significant database errors were noted.

16.4 Geological Solids and Domain Interpretation

Historical maps, including several cross-sections and two geological maps from Amax (circa 1970s), were scanned and digitised in AutoCAD, and converted to NAD83 UTM grid coordinates. These drawings were imported into the Gemcom mining software and used as a reference guiding geological domain interpretation and the construction of a three-dimensional model.

Geological domains were clipped to the recent quality topographical surface, generated as part of the 2006 drilling program.

Seven lithological domains were delineated. Drilling data in the Gemcom Database were coded according to the domain codes presented in Table 16.1. Four of these domains are considered as being mineralized domains. Example sections through the geological model for the Northern Dancer Deposit are presented in Appendix D of the Snowden 2009 report.

Unmineralized domains are treated as waste domains. However, due to the nature of Northern Dancer deposit, weak mineralization is developed in drill hole intersections in parts of the unmineralized diorite (4100) and monzonite (5000) domains. It was deemed appropriate for mine planning purposes to assign the average drill hole grade for the variables of interest as the domain grade for these domains, rather than assign a null or absent grade value to them. The shale and argillite domain occurs outside of the area of interest for resource estimation and mine planning and was therefore not considered in the generation of the March 2009 Mineral Resource model.

The mineralized diorite dyke domain (8000), used in previous resource models (e.g., Snowden, 2007a; 2008), was critically reviewed in the generation of the March 2009 Mineral Resource model. It was decided, on the basis of geostatistical, geological and spatial analyses, that this domain was an unnecessary complication and should be removed. Data coded as domain 8000 were incorporated into one of the remaining mineralized domains, based on spatial location (e.g., where the dyke domain intersected the hornfels domain, the data were reassigned a domain code of 1000). The majority of the diorite dyke data were included in the skarn (2000) and hornfels (1000) domains.

Table 16.1 Lithological Domains and Mineralization

Lithology	Rock code	Mineralization
Hornfels	1000	yes
Skarn	2000	yes
Mineralized diorite	4000	yes
Unmineralized diorite	4100	no
Quartz-monzonite porphyry (QMP)	5000	no
Quartz-feldspar porphyry (QFP)	6000	yes
Shale and argillite	900	no

16.5 Block Modeling

Block model coordinates were based on the extents of the modelled geological domains, with a lower elevation suitable for pit optimisation. The block model azimuth is rotated 45° counter clockwise.

Block size was set to 20 mE by 20 mN by 20m elevation based on assumed open pit mining selectivity requirements and drill hole spacing. Kriging Neighbourhood Analysis (KNA) testing was conducted on a series of different block sizes to assess the selected block size. The selected block size is considered as being acceptable for the current drill spacing and level of study. The block model origin (in Gemcom mining software format) is presented in Table 16.2.

Table 16.2 Block Model Origin

Axis	Coordinates (m)	Block Size (m)	Number of Blocks
Northing (X)	353000	20	150
Easting (Y)	6653750	20	150
Elevation (Z)	1760	20	75

16.6 Density Assignment

The average densities determined for each rock type (see Section 0) were used in conjunction with the geological domain codes to assign density data to the block model (see). A total of 263 samples were sent to the Eco Tech Laboratory in Kamloops, B.C. for density testing in 2008. A further 181 samples were tested in the same laboratory facility in 2007 (see Snowden, 2008). An additional 467 density data from the 2006 density testing carried out by Archer Cathro on site, were incorporated into the density database for the purposes of generating lithological density averages.

Table 16.3 Block Model Density Assignment by Mineralized Domain

Rock Type	Rock Code	Assigned Density (t/m3)
Hornfels	1000	2.71
Skarn	2000	2.77
Mineralized diorite	4000	2.72
Unmineralized diorite	4100	2.72
Quartz-monzonite porphyry (QMP)	5000	2.61
Quartz-feldspar porphyry (QFP)	6000	2.62

16.7 Compositing of Assay Intervals

Drill hole assay intervals must be composited to maintain consistent sample support during grade estimation. Largo selected a 5 meter composite length such that internal dilution and variance would be appropriate for the selective mining unit and estimation block size. Most assay intervals in historical drill holes were sampled at 4 meter intervals.

Snowden conducted a series of tests to assess different composite lengths and found that a 5 meter composite length was most suitable for the Northern Dancer project.

16.8 Top Cuts

Analysis of histograms and log probability plots indicated that top cuts only were necessary for MoS2 in the skarn domain and WO_3 in the monzonite domain to minimise local bias in the estimate. A top cut of 0.7% was applied to MoS_2 in skarn domain and a top cut of 0.106 % was applied to WO_3 in the monzonite domain. Top cuts were applied after data compositing. Ideally top cuts should be applied post-compositing to minimize metal loss through data manipulation. Snowden conducted a series of tests to assess the impact of the application of top cuts pre- and post-compositing and noted no significant differences.

16.9 Variogram Analysis

Three dimensional grade continuity analyses were conducted on the gold data using Snowden's Supervisor software. Domain-coded, composited sample data were used for the variography. Variogram fans and experimental variograms were generated in normal score-transformed space. Variograms were modelled in normal score-space and back transformed prior to use in estimation. Nested nugget and spherical models were used to model the experimental variograms. Back transformed variogram models were checked against untransformed experimental variograms, where these could be meaningfully generated, as a validation step. Variogram model parameters for WO_3 and MoS_2 are presented in Table 16.4 and Table 16.6. Strike orientations for domains 1000 (hornfels), 2000 (skarn) and 4000 (diorite) were modelled using the known geometry of the sheeted veins. Dip and dip plane orientations were modelled using orientations developed in the variogram fans, which were assessed for geological reasonableness. Anisotropy in domain 6000 (quartz-feldspar porphyry) was modelled with an average northerly strike and a vertical dip. Additional drilling would assist in refining the geological anisotropy model for domain 6000.

Table 16.4 Variogram parameters for WO_3

Domain	Direction			Gemcom ADA Angle (X=direction 1)	Nugget	Sill 1	Range 1			Sill 2	Range 2			Sill 3	Range3		
	Major	Semi Major	Minor														
	D1	D2	D3				D1	D2	D3		D1	D2	D3		D1	D2	D3
1000	-25°→315°	00°→225°	65°→315°	(315°,-25°,225°)	0.31	0.69	265	120	20	-	-	-	-	-	-	-	-
2000	-40°→315°	00°→225°	50°→315°	(315°,-40°,225°)	0.35	0.54	75	65	20	0.11	300	365	25	-	-	-	-
4000	-61°→196°	24°→232°	-15°→315°	(195.97°,-61.09°,231.88°)	0.32	0.33	75	115	125	0.35	145	200	125	-	-	-	-
6000	-90°→000°	00°→180°	00°→270°	(0°,-90°,180°)	0.17	0.57	75	180	65	0.27	200	200	150	-	-	-	-

Orientation notation convention: -25°→315° signifies a moderate dip of 25° along an azimuth of 315° (i.e., towards the northwest)

Table 16.5 Variogram parameters for MoS_2

Domain	Direction			Gemcom ADA Angle (X=direction 1)	Nugget	Sill 1	Range 1			Sill 2	Range 2			Sill 3	Range3		
	Major	Semi Major	Minor														
	D1	D2	D3				D1	D2	D3		D1	D2	D3		D1	D2	D3
1000	-25°→315°	00°→225°	65°→315°	(315°,-25°,225°)	0.32	0.68	310	105	20	-	-	-	-	-	-	-	-
2000	-40°→315°	00°→225°	50°→315°	(315°,-40°,225°)	0.41	0.45	190	130	25	0.14	350	465	125	-	-	-	-
4000	-61°→196°	24°→232°	-15°→315°	(195.97°,-61.09°,231.88°)	0.38	0.30	170	150	75	0.32	280	225	145	-	-	-	-
6000	-90°→000°	00°→180°	00°→270°	(0°,-90°,180°)	0.17	0.57	75	180	65	0.27	200	200	150	-	-	-	-

Orientation notation convention: -25°→315° signifies a moderate dip of 25° along an azimuth of 315° (i.e., towards the northwest)

16.10 Grade Interpolation and Boundary Conditions

MoS_2 and WO_3 grades were estimated into all domains using ordinary kriging. Domain boundaries were considered as hard boundaries (i.e., blocks coded as one domain did not use grades from drill holes coded as a different domain). Block discretisation was set to 3 x 3 x 3. An expanding search ellipsoid approach was adopted. The orientation of the search ellipsoid was defined by the orientation of the continuity ellipsoid modelled by variography. The first search ellipse was defined with maximum extents within the range of the variogram for the domain of interest (between two thirds and 90% of the variogram range), ensuring that the anisotropy of the continuity model was honoured. The second search pass was conducted at between 1.5 times and two times this initial range (depending on domain, grade variable and continuity model for that domain) with the third search pass expanded to inform all blocks in the domain.

A minimum of twelve and a maximum of 25 samples were used to generate grade estimates during the first and second search passes for all domains. A maximum of five samples per drill hole was used in the estimation of block grades in domains 4000 and 6000. No such restriction was necessary in the estimation of block grades in the 1000 and 2000 domains. The minimum and maximum number of samples was changed to six and 15, respectively, for the third search pass, the other constraints remaining unchanged.

Kriging efficiency and slope of regression parameters were recorded in the block model for model validation purposes. A nearest neighbour model was also generated for model validation purposes.

Largo's geological wireframes were generated such that there was overlap between the different domains. As a result of this a precedence approach is required to resolve overlap between the different mineralized domains. The coding precedence used by Largo is presented in Table 16.6 (i.e., overlaps between skarn and hornfels would be overprinted by rocks coded as hornfels; overlaps between the recoded hornfels and mineralized diorite would be overprinted by rocks coded as mineralized diorite, etc.). Largo followed Snowden's recommendation (Snowden, 2008) and significantly revised the wireframe interpretation to remove gaps in the interpretation.

Table 16.6 Domain Precedence Order (Gemcom software format)

Precedence Order	Rock Type	Rock Code
1	Quartz-feldspar porphyry	6000
2	Quartz monzonite porphyry	5000
3	Diorite (Waste)	4100
4	Diorite (Mineralized)	4000
5	Hornfels	1000
6	Skarn	2000

Largo generated a fault-bounded grade shell based on a 0.17% WO_3 equivalent grade (WO_3 Eq.) to constrain and report the high grade portions of the deposit, in addition to the global mineral resource estimate. Various sensitivity tests were conducted using hard and soft boundary conditions on the grade shell. Based on the sensitivity test data Largo elected to use the hard boundary results for reporting the mineral resource within the of the high grade part of the deposit. The WO_3 Equivalent grade is based on a Mo price of $12/lb, a WO_3 price of $9.07/lb, a recovery of 80% for Mo and 65% for WO_3, in the formula: WO_3 Eq. = WO_3 (%) + 1.736 * Mo (%). These metal prices and recoveries are of historical nature and would have applied to the analysis that was performed in 2009.

16.11 Mineral Resource Classification

The Mineral Resource estimate was classified in accordance with CIM Definition Standards (2005), taking drill hole spacing, data quality (and confidence therein), variogram confidence, search volume, and kriging quality into account. Snowden considers that there is sufficient drilling and sampling information, and that this information is of a sufficient quality, to support a Measured, Indicated and Inferred classification for the Northern Dancer Mineral Resource.

Resource classification was conducted by generating three dimensional wireframe solids around those parts of the block model for which the drill hole data and grade estimates met certain criteria (that differed by resource estimation category). The resulting classification was iteratively refined to be geologically reasonable to prevent the generation of numerous discontinuous and small areas of a higher confidence category being separated by a larger area of a lower confidence category (i.e., a ‘spotted dog’ or ‘postage stamp’ approach to resource classification was precluded in this way). Attention was also given to the mining method and potential pit optimization scenarios in the generation of coherent confidence classification wireframes. Areas in the Inferred category, where grade extrapolation was considered unrealistic, were removed from the mineral resource.

16.12 Model Validation

The March 2009 Mineral Resource estimate was validated using the following techniques:

- Global comparison of model and input sample grades by domain.
- Visual inspection of block and sample grades in section and plan.
- Trend plots of average input sample and block grades in easting, northing and elevation.
- Grade-tonnage reporting checks using alternative software.
- Snowden independently generated a parallel model using the Datamine Studio 2 mining software. Comparisons between this model and Largo’s model indicated several minor issues that required resolution. Largo iteratively refined its model on the basis of Snowden’s recommendations. A final comparison between the two models revealed no significant differences.

Snowden was satisfied that the grade estimation reproduced the grade characteristics of the input sample data with an appropriate level of variance reduction due to change of support (i.e., from sample to block support).

16.13 Mineral Resource Reporting

The March 2009 Mineral Resource for the Northern Dancer deposit is presented for a range of different cut-off grades in Table 16.7 and Table 16.8.

Table 16.7 Mineral Resource for the Northern Dancer deposit as of March 2009

Cut-off grade WO_3 (%)	Tonnage (Mt)	WO_3 (%)	Mo (%)	Contained WO_3 (million lbs)	Contained Mo (million lbs)
Measured					
0.05	33.8	0.109	0.030	80.9	22.3
0.06	**30.8**	**0.114**	**0.030**	**77.3**	**20.1**
0.07	26.9	0.121	0.030	71.7	17.7
0.08	23.1	0.128	0.030	65.3	15.4
0.09	18.9	0.138	0.031	57.6	13.0
0.10	15.6	0.147	0.032	50.5	11.0
0.15	5.6	0.191	0.035	23.4	4.2
Indicated					
0.05	226.4	0.093	0.029	464.0	143.6
0.06	**192.6**	**0.100**	**0.029**	**422.8**	**123.7**
0.07	158.6	0.107	0.030	374.1	103.8
0.08	126.7	0.115	0.030	321.5	83.8
0.09	98.1	0.124	0.031	267.9	66.3
0.10	73.3	0.134	0.031	216.0	50.6
0.15	16.7	0.184	0.037	67.8	13.5
Measured and Indicated					
0.05	260.2	0.095	0.029	544.9	166.0
0.06	**223.4**	**0.102**	**0.029**	**500.1**	**143.8**
0.07	185.5	0.109	0.030	445.7	121.5
0.08	149.8	0.117	0.030	386.8	99.2
0.09	117.0	0.126	0.031	325.4	79.3
0.10	88.9	0.136	0.031	266.5	61.6
0.15	22.3	0.186	0.036	91.3	17.8
Inferred					
0.05	290.6	0.078	0.022	501.0	141.6
0.06	**201.2**	**0.089**	**0.024**	**393.1**	**107.7**
0.07	136.4	0.100	0.028	300.4	82.8
0.08	96.0	0.111	0.030	234.0	64.4
0.09	70.6	0.120	0.032	186.7	49.4
0.10	51.8	0.129	0.033	147.4	37.1
0.15	9.9	0.174	0.036	37.9	7.8

Totals may not add up exactly due to rounding

Table 16.8 Mineral Resource for the Northern Dancer deposit within the 0.17% WO_3 Eq. grade shell (as of March 2009)

Cut-off grade WO_3Eq (%)	Tonnage (Mt)	WO_3 (%)	Mo (%)	WO_3EQ (%)	Contained WO_3 (million lbs)	Contained Mo (million lbs)
Measured						
0.10	27.8	0.114	0.034	0.173	70.2	20.7
0.11	26.4	0.127	0.034	0.177	68.2	20.1
0.12	24.1	0.121	0.036	0.183	64.3	18.9
0.13	21.3	0.127	0.037	0.190	59.5	17.3
0.14	19.0	0.132	0.038	0.197	55.3	15.7
0.15	16.7	0.138	0.038	0.204	50.6	14.1
0.16	14.1	0.145	0.039	0.213	45.1	12.3
0.17	12.2	0.152	0.040	0.221	40.7	10.7
0.18	10.4	0.158	0.041	0.229	36.2	9.3
0.19	8.8	0.165	0.041	0.237	32.2	8.0
0.20	7.3	0.173	0.041	0.245	27.9	6.7
Indicated						
0.10	100.5	0.109	0.039	0.176	240.7	86.4
0.11	97.4	0.110	0.039	0.179	236.5	84.7
0.12	93.4	0.112	0.040	0.181	230.3	82.4
0.13	86.5	0.115	0.041	0.186	218.6	78.1
0.14	77.4	0.119	0.042	0.192	202.3	72.0
0.15	67.8	0.123	0.043	0.198	184.3	64.7
0.16	58.0	0.128	0.045	0.206	163.9	57.0
0.17	48.1	0.134	0.046	0.214	141.9	48.9
0.18	39.0	0.140	0.048	0.223	120.4	41.1
0.19	31.0	0.147	0.049	0.233	100.7	33.6
0.20	24.7	0.155	0.050	0.242	84.8	27.3
Measured and Indicated						
0.10	128.3	0.110	0.038	0.176	311.0	107.1
0.11	123.8	0.112	0.038	0.178	304.7	104.8
0.12	117.5	0.114	0.039	0.182	294.6	101.2
0.13	107.8	0.117	0.040	0.187	278.2	95.3
0.14	96.4	0.121	0.041	0.193	257.5	87.7
0.15	84.5	0.126	0.042	0.199	234.9	78.8

Table 16.8 Mineral Resource for the Northern Dancer deposit within the 0.17% WO_3 Eq. grade shell (as of March 2009) *(Cont'd)*

Cut-off grade	Tonnage	WO_3	Mo	WO_3EQ	Contained WO_3	Contained Mo
WO_3Eq (%)	(Mt)	(%)	(%)	(%)	(million lbs)	(million lbs)
0.16	72.1	0.131	0.044	0.207	209.0	69.2
0.17	60.3	0.137	0.045	0.215	182.6	59.6
0.18	49.4	0.144	0.046	0.224	156.6	50.4
0.19	39.8	0.151	0.047	0.234	132.9	41.7
0.20	32.0	0.160	0.048	0.243	112.7	34.0
Inferred						
0.10	10.3	0.112	0.039	0.180	25.4	8.8
0.11	10.1	0.113	0.039	0.181	25.1	8.7
0.12	9.7	0.114	0.040	0.184	24.6	8.6
0.13	9.0	0.117	0.041	0.189	23.2	8.1
0.14	8.1	0.121	0.043	0.195	21.5	7.6
0.15	7.2	0.125	0.044	0.200	19.8	6.9
0.16	6.2	0.130	0.045	0.208	17.7	6.1
0.17	5.4	0.134	0.047	0.214	15.8	5.5
0.18	4.5	0.138	0.049	0.223	13.6	4.8
0.19	3.6	0.142	0.051	0.231	11.4	4.1
0.20	3.1	0.144	0.054	0.237	9.9	3.7

Notes: The higher grade shell is included in the mineral resource presented in Table 17.7. Although a 0.17% WO_3 equivalent was considered a likely cut-off grade for this deposit based on comparisons to other similar deposit types at the time the resource was estimated in 2009, it has not been confirmed by the appropriate economic studies. Totals may not add up exactly due to rounding.

17 OTHER RELEVANT DATA AND INFORMATION

AMC, in corroboration with other Largo consultants, has completed this section of the PEA. A summary of the results of that work is presented in this section.

It should be noted that the economic assessment is preliminary in nature, and there is no certainty that the results of the preliminary economic assessment will be realized.

This preliminary economic assessment considers as its base case the construction of an open pit and mineral processing plant for the production and sale of a Molybdenum concentrate and Tungsten in APT form.

17.1 Mine Operations

For the purpose of this PEA, it has been assumed that the Northern Dancer deposit will be mined using open pit mining methods.

The selected mining operating rate is 30 Mt/a to supply the processing plant with 11.2 Mt/a of ore. The total Life of Mine (LOM) waste to mineralized material ratio is 0.15t of waste per 1t of ore produced.

The operation is amenable to conventional truck and shovel/front end loader mining, with blasting as required. The initial primary equipment fleet for the study consists of four 229 mm blasthole capable drill rigs, two 12 m^3 diesel hydraulic face shovels, one 11 m^3 front end loader and fourteen 100 t haul trucks. In addition, the primary fleet is supported by track dozers, motor graders, water trucks and other suitably sized ancillary equipment.

In general, both the face shovels and loader would be used to mine in bulk ore and waste on a 10 m bench. Use of a wheel loader allows some flexibility in mining locations for blending and ore supply purposes. The wheel loader may also be used for rehandle of mineralized material on the ROM.

The mining schedule has been based on a five phase approach. Three grade bands based on Net Smelter Return (NSR) have been used in the schedule: High Grade, Medium Grade and Low Grade. The mining sequence has been set to preferentially mine and treat High Grade material early in the mine life to improve the project Net Present Value (NPV). Medium and Low Grade materials are stockpiled for rehandle and processing later in the mine life.

Mine planning was conducted through the application of Gemcom Software International Inc. (Gemcom) Whittle™ and Gemcom Surpac™ software packages. This includes block model manipulations, pit optimization, conceptual planning, and preliminary assessment level production scheduling.

All mining estimates are at PEA or Scoping Study level accuracy, +/- 30%. The mine plan also includes Inferred material.

17.1.1 Block Model

The Datamine block model generated by Snowden in its 2009 resource estimation work was supplied to AMC for mine design purposes. For reference, physical details for the model are shown in Table 17.1.

Table 17.1 Details of the Northern Dancer Block Model (Datamine)

Type	Y	X	Z
Minimum Coordinates	6,654,100	353,900	980
Maximum Coordinates	6,655,900	355,600	1760
User Block Size	20	20	20
Subblocking	Y		
Rotation	0		

17.1.2 Optimization Parameters

AMC used the LG algorithm application in Gemcom's Whittle™ program to perform the pit optimization. The Whittle™ input parameters are explained below.

Processing Rate

A production rate of 11.242 Mt/a mill feed was confirmed by Largo as the basis for the pit optimization.

Metal Prices and Exchange Rates

Metal prices and exchange rates used as pit optimization parameters for this project were provided by Largo and are shown in Table 17.2. AMC considers the metal prices to be reasonable under 2011 economic conditions and the exchange rate to be acceptable for a PEA assessment of a potentially long-life mining project.

Table 17.2 Metal Prices and Exchange Rates

Commodity	Price (US$)
WO_3	275 / mtu
Mo	16 / lb
Canadian Dollar	0.91

Note*: The metal prices shown are used as pit optimization and scheduling input parameters only. Different metal prices were used for project economic evaluation. one metric tonne unit(mtu) is 10 kilograms.*

Metal Recoveries

Recoveries for the two metals were provided by Bolu Consulting Engineering Inc. (BCE) as described in section 15. For reference purposes, the recoveries as used for the optimization are shown in Table 17.5.

Table 17.3 Metal Process Recoveries

Commodity	Process Recovery
WO_3 – Overall Recovery to Concentrate	75%
Mo – Overall Recovery to Concentrate	72%

Geotechnical Parameters

Currently there has been no formal geotechnical assessment completed for the Northern Dancer property. Inspection of limited core from 3 drillholes by AMC indicated that the rock mass appears to be generally of good quality. For this reason, and to remain consistent with previous studies completed on the project, an overall slope angle of 45 degrees has been used for the optimization. Further design criteria are shown in Table 17.4. Completion of a geotechnical assessment will form part of the recommendations of this study.

Table 17.4 Geotechnical Parameters

Design Criteria	Unit	Value Used
Overall Slope Angle for Optimization	Degrees	45
Operating Bench Height	m	10
Operating Benches per Catch Bench	Number	2
Bench Height	m	20
Bench Face Angle	Degrees	70
Catch Bench Width	m	11
Inter-ramp Slope Angle	Degrees	48
Ramp Width	m	24

Costs of Metal Production

Costs of metal production, also known as selling costs as shown in Table 17.5, were provided by BCE and Largo. These include all costs associated with selling the final metal products, such as royalties, smelting charges and transport.

The cost of metal production also includes the cost of operating the APT plant and is expressed, for optimization purposes, in $/t of concentrate (wet).

Table 17.5 Selling Costs and Criteria

Design Criteria	Unit	Value Used
WO_3 Concentrate Grade	%	50.0
Mo Concentrate Grade	%	50.0
Concentrate Moisture Content	%	0.5
APT Recovery (% WO_3)	%	95.0
APT Cost per tonne of Concentrate	C$/t	1,313.91
Mo Concentrate Freight Cost	C$/t	140
Mo Roasting and Sales	C$/lb Metal	1.1
Royalty	% of NSR	1.0

Net Smelter Return Calculation

Each block in the block model has had a Net Smelter Return (NSR) calculated, with the values recorded using C$/t terms. The NSR is net of all selling costs and criteria as detailed above.

The NSR has been calculated using a Net Smelter Price (NSP), which deducts the selling costs from the base metal price to arrive at a "mine gate" value of in-situ material. The calculated NSP values are shown in Table 17.6.

Table 17.6 Metal Prices and NSP

Metal	Metal Price (US$)	Metal Price (US$)	Metal Price (C$)	NSP (C$)
WO_3	275 / MTU	27,500 / t	30,220 / t	25,781 / t
Mo	16 / lb	35,274 / t	38,763 / t	35,671 / t

The NSP formula is:

NSP ($/t) = (Metal Price ($/t) * APT or Smelting Recovery (%)) – Selling Costs ($/t)

Selling Costs ($/t) = (Metal Price ($/t) * Royalty (%)) + APT, Smelting and Transport ($/t)

The NSR formula is:

NSR ($/t) = WO_3(%) x Recovery(WO_3%) / 100 x NSP(WO_3)

+ Mo(%) x Recovery(Mo%) /100 x NSP(Mo)

Mine Operating Costs

Mine operating costs have been based on AMC operating and project experience of similar sized operations in Canada and internationally. Processing plus General and Administration (G&A) costs for the project were provided by BCE.

Operating costs used for the optimization are shown in Table 17.7.

Table 17.7 Site Operating Costs

Project Area	Unit	Value
Mining, all material	C$/t mined	2.20
Stockpile rehandle	C$/t rehandled	0.88
Processing	C$/t processed	4.93
G&A	C$/t processed	1.60

Mining Dilution and Recovery

The Northern Dancer project is a large tonnage, low grade deposit. Material on the edges of the ore zones is likely to be mineralized to some extent. The effects of mining recovery and dilution are therefore expected to be minimal. For this reason, the approach taken in this PEA is to set dilution at 0% and mining recovery to 100%.

17.1.3 Open Pit Optimization and Analysis

The pit optimizations were conducted using the Lerchs-Grossman (LG) algorithm utilizing Gemcom's Whittle™ software. Each block is assigned a value that shows the net cash flow that would result from mining that block. This value is calculated as the sale price minus the operating costs and selling costs; blocks that return a zero or negative are considered waste blocks. Blocks with a zero density are coded as air blocks.

LG optimization is used to identify the optimal limit of an open pit. The process considers the potential revenue generated from a block, the cost of mining the block, and the cost of mining the blocks above for access. The blocks that must be mined to access a mineralized material block are selected based on an overall slope angle that estimates the final slope including design face angle, catch benches, and ramps. If the result of the net revenue minus the cost is positive, the increment, including the mineralized material block and those which must be mined to access it, are added to the shell. The process considers deeper and deeper material until the increment does not add value. This is considered the optimal pit under the financial scenario being tested. The process is run iteratively with increasing commodity prices to generate a suite of shells of increasing size which can be evaluated under a range of financial scenarios. The analysis provides an understanding of the potential return from a shell and the financial risks associated with selecting a particular shell as the basis of design work if the inputs are different to those forecast.

The suite of shells is used as a guide for selecting pit stages as well as the final pit. It should be noted that the LG algorithm does not apply a factor for the time value of money and therefore a schedule needs to be run to assess the effect of time costs and discount rates. Whittle 4X allows the shells to be scheduled and a discounted surplus calculated to estimate this effect. A discount rate of 8% has been used for this project.

When determining the value of a block, a grade of material is assessed against the recovery of the material and the sale price, minus processing costs and selling costs. When an NSR value is used, the recovery is 100%, as metal recoveries have already been accounted for in the NSR calculation. Similarly, the selling costs are already accounted for and the effective sale value of the NSR is 1, or 100%. Site mining and processing costs are allocated as per normal. This scenario creates an effective NSR break even cut-off grade equal to the total cost of processing a tonne of ore.

Cut-off and Cut-over Grades

Based on the information given above, cut-off and cut-over grades can be calculated for each of the processing paths. The break even cut-off grade is the grade at which the material, when processed, will neither make a profit nor cause a loss. Any material above this grade will, by definition, create a positive value for the mine.

Using tungsten equivalent as the grade, Figure 17.1 shows this situation graphically for the Northern Dancer project using the inputs from the previous section, with the actual WO_3 cut-off grade shown in Table 17.8. In the graph, the point at which the value curves cross the x axis, having a value of $0/t, represents the break-even cut-off grade.

For the purpose of this PEA and based on current metal prices and costs AMC has calculated a cut-off grade of 0.04% WO_3, which is lower than the 2009 Resource estimate cut-off grade of 0.06% WO_3 described in this report. AMC recommends that in the next phase of this project a new Resource Estimate be prepared reflecting up-to-date economic parameters and other relevant information.

Figure 17.1 Cut-off Grade Curve (WO_3 Equivalent)

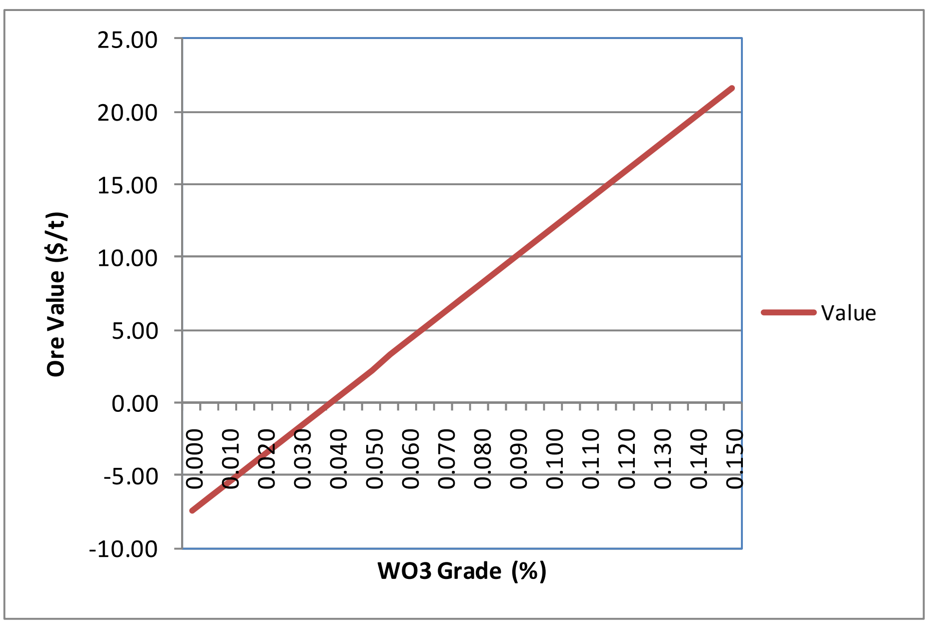


Table 17.8 Break-even Cut-off Grade (WO_3 Equivalent) used for Pit Optimization

Item	Unit
Break-even Cut-off Grade (WO_3 Equivalent)	0.04%

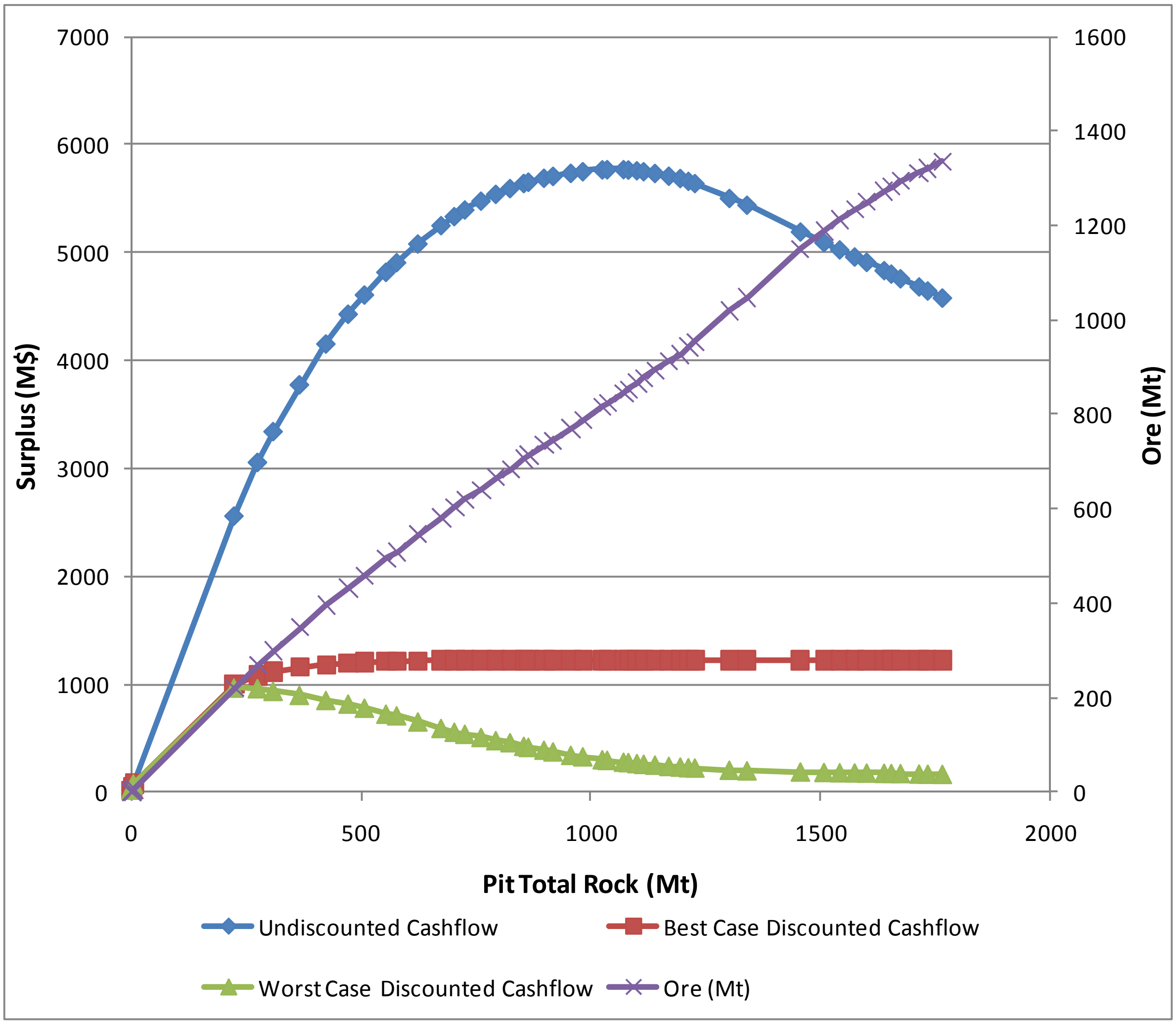
Optimization Results

The results of the open pit optimizations are shown graphically in Figure 17.2.

The three cash flow curves shown in the figure are defined in the Whittle™ manual as follows:

- Blue Curve: The undiscounted open pit value. Its usefulness lies in identifying the “Optimal Pit” as identified by the LG algorithm. This is unaffected by scheduling.
- Red Curve: The discounted open pit value for the Best Case. The best case schedule consists of mining out the smallest pit, and then mining out each subsequent pit shell from the top down, before starting the next pit shell. This schedule is seldom feasible because the pushbacks are usually much too narrow. Its usefulness lies in setting an upper limit to the achievable NPV.
- Green Curve: The discounted open pit value for the Worst Case. The worst case schedule consists of mining each bench completely before starting on the next bench. This schedule or one very close to it is usually feasible. It also sets a lower limit to the NPV.
- Purple Curve: The purple curve on the graph indicates tonnes of ore within the pit shells.

Figure 17.2 Whittle Optimization Results



The undiscounted cashflow for the Northern Dancer project displays the regular value curve, increasing rapidly before flattening out near revenue factor 1, then reducing again. However, the discounted best case scenario is almost a flat line. This indicates that the processing rate selected is relatively low in relation to the amount of ore in the pit. For example, the revenue factor 1 pit contains 927Mt or ore, which corresponds to over 80 years of processing. With discounting the effect of revenue from the end of the mine life in this situation is very low, resulting in very little change in NPV between shells and creating the flat-line discounted cash flow seen in the graph.

Phase and Final Pit Selection

Five phases have been selected for scheduling the Northern Dancer project. The phases have been selected to reduce the level of initial stripping and increase head grades in the early years of production as a means of improving NPV. The phases are based on a minimum mining width of 80m and selected for practicality of mining.

The final shell has been selected using scheduling iterations to test for maximum NPV and Internal Rate of Return (IRR). The optimal, or Revenue Factor 1, shell as identified by Whittle™ is the shell with the highest undiscounted cashflow, which does not take into account the effect of scheduling and the discount rate. Once the discount rate is applied, the pit shell with the highest, or in this case equivalent, NPV is generally smaller than the identified optimal, an effect that is highlighted in the optimization results graph in Figure 17.2.

Given the above and the long mine life, the final pit selected for this study is much smaller than the Revenue Factor 1 pit. In this case, increasing the size of the pit did not have a material effect on NPV. A smaller pit therefore generates the same return with a proportionately lower risk profile. The difference between the selected final shell and Revenue Factor 1 shells is detailed in Table 17.9.

Table 17.9 Revenue Factor 1 vs. Final Shell Comparison

Pit	Rev. Factor 1	Selected Final
Pit Number	36	15
Total Tonnes (Mt)	1,195.1	624.5
Waste Tonnes (Mt)	268.1	78.7
Ore Tonnes (Mt)	927.0	545.8
Strip Ratio	0.29	0.14
WO3 (%)	0.07	0.08
Mo (%)	0.02	0.02
NSR ($/t)	17.95	20.83

The pit phases are shown in plan view in Figure 17.3 while Figure 17.4 shows the pit phases in a southwest to northeast cross-section, looking northwest, with calculated NSR grades from the block model highlighted.

Figure 17.3 Northern Dancer Pit Phases – Plan View

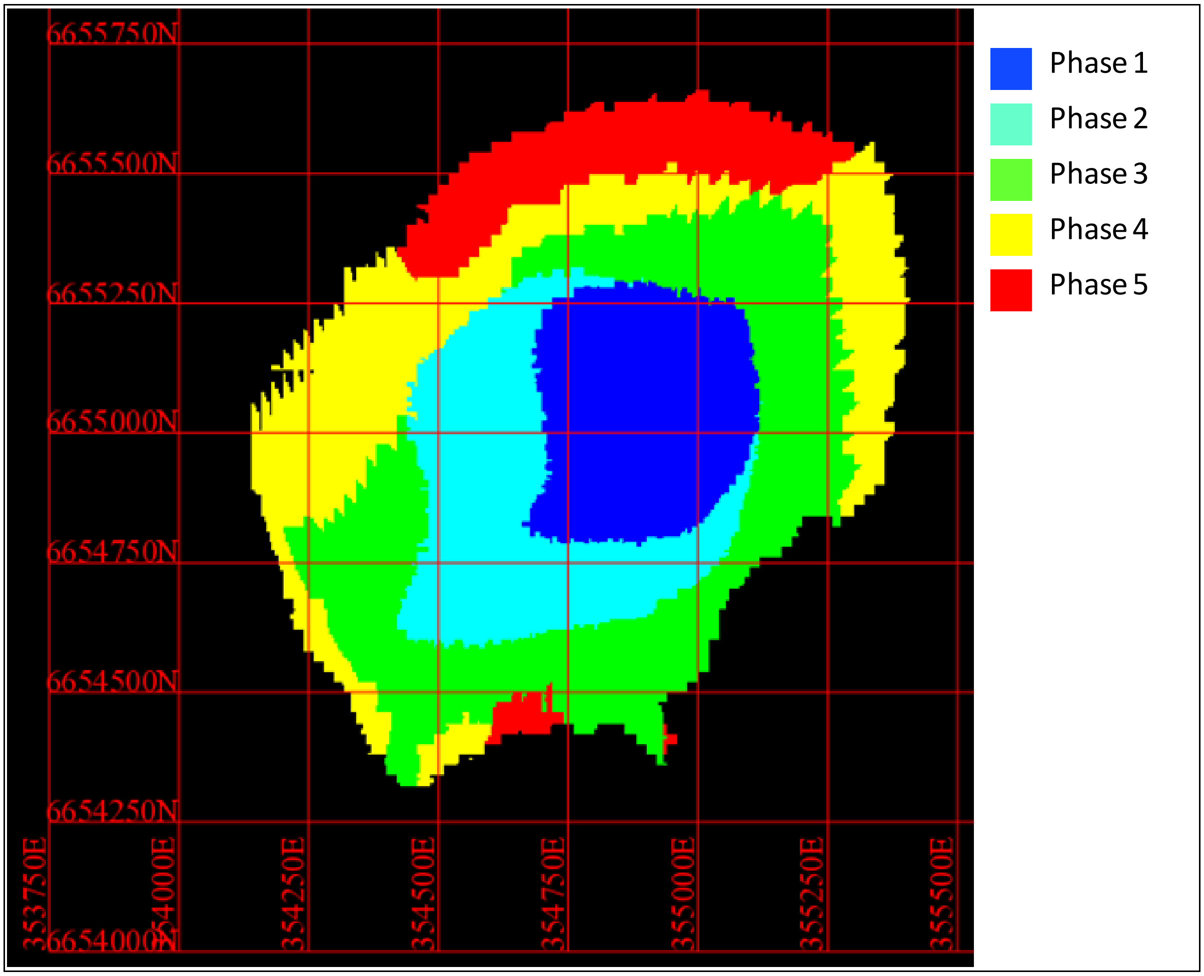
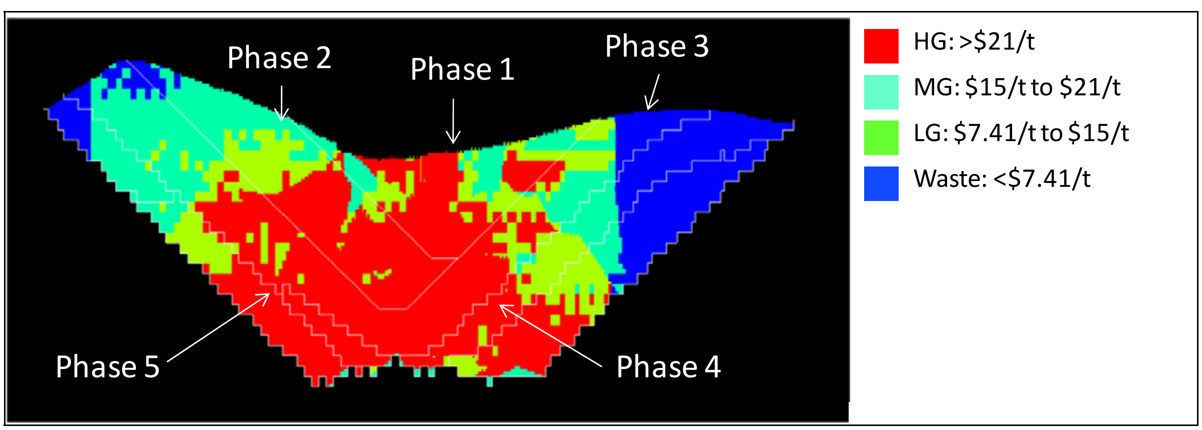
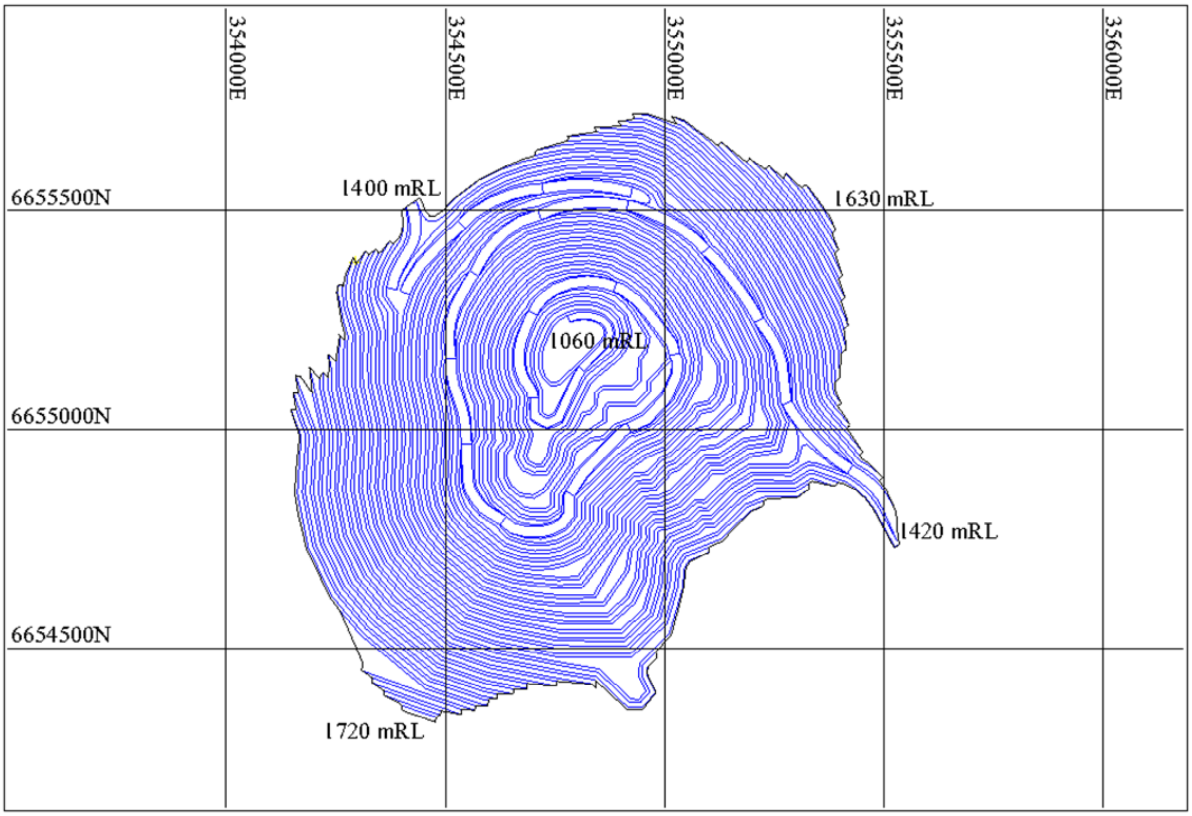


Figure 17.4 Northern Dancer Pit Phases and Grades – Section View



Scheduling for the project was completed based on the adjusted pit shells from the minimum mining width procedure. A scoping level pit design based on the ultimate pit was also completed to test for practicality and determine a likely pit exit location. This design is shown in plan view in Figure 17.5.

Figure 17.5 Scoping Level Final Pit Design – Plan View



17.1.4 Mine Schedule

Scheduling for the Northern Dancer project has been completed using a model built in Microsoft Excel. The inputs used for scheduling are shown in Table 17.10.

Table 17.10 Scheduling Inputs

Schedule Input	Value
Processing plant throughput	11.242 Mt/a
Mining rate	30.0 Mt/a
Maximum mining benches per year	16
High Grade cut-off ($/t NSR)	> 21
Medium Grade cut-off ($/t NSR)	15 to 21
Low Grade cut-off ($/t NSR)	7.41 to 15
Waste cut-off	< 7.41

Initial scheduling iterations indicated that stockpiling material in the Low and Medium Grade categories while selectively processing High Grade material made a marked improvement to the NPV over using a flat break-even cut-off grade scenario. The Medium and Low Grade materials are processed during periods when there is limited High Grade material available, while the stockpiles are assumed to be rehandled and processed at the end of the mine life.

Using this methodology there is no pre-stripping period, with ore being available to process in the first year of mining. In the current schedule, the mine operates for 23 years, while the process plant operates for a total of 49 years. The maximum size of the ore stockpile is 295 Mt.

The mine schedule is displayed graphically in Figure 17.6, with the complete schedule shown in Figure 17.6.

Figure 17.6 Mine Schedule Graph

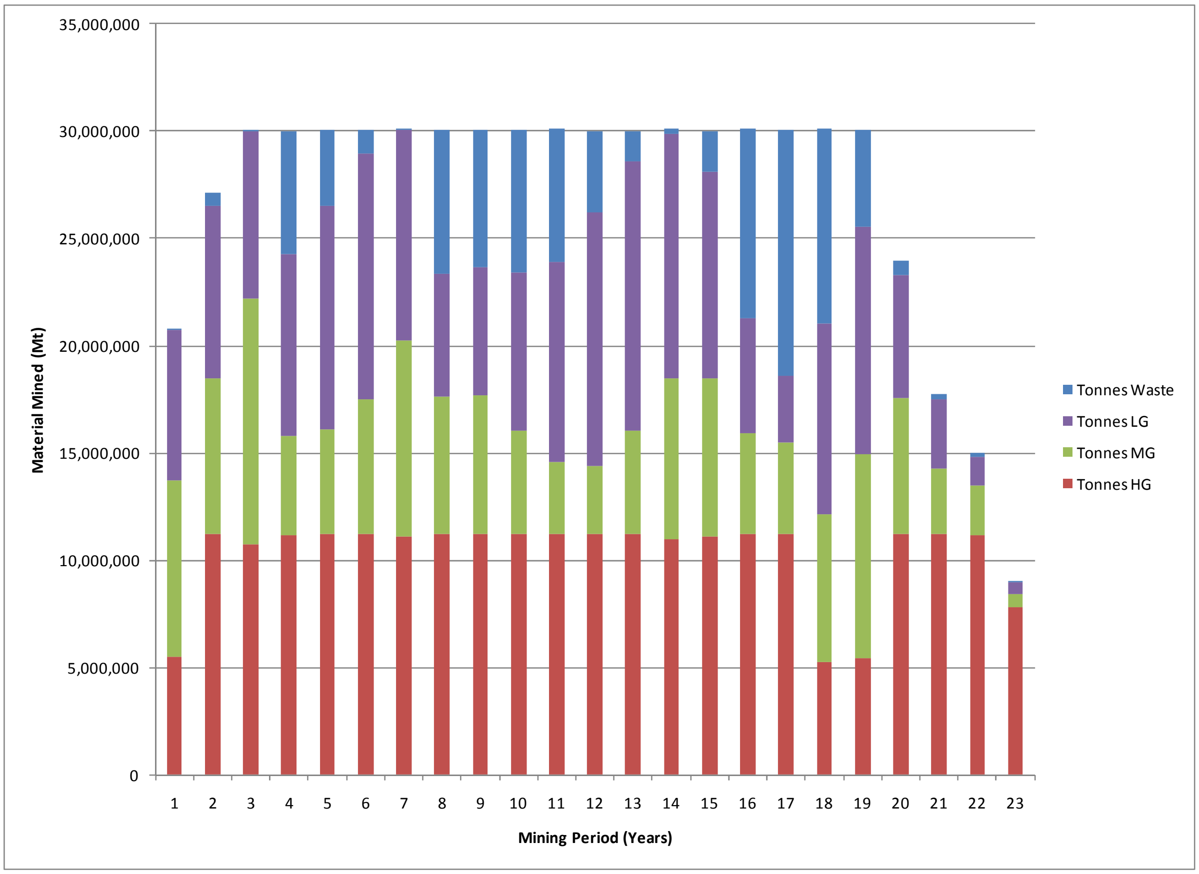


Table 17.11 Mine Schedule

Period	Tonnes Mined	Waste Mined	Total Ore Mined				HG Ore Mined				MG Ore Mined				LG Ore Mined			
			Mined	WO3	Mo	NSR	Mined	WO3	Mo	NSR	Mined	WO3	Mo	NSR	Mined	WO3	Mo	NSR
Year	Mt	Mt	Mt	%	%	$/t	Mt	%	%	$/t	Mt	%	%	$/t	Mt	%	%	$/t
1	20.8	0.0	20.7	0.07	0.02	18.24	5.5	0.10	0.02	25.84	8.2	0.07	0.02	17.46	7.0	0.05	0.02	13.18
2	27.1	0.6	26.5	0.07	0.02	19.36	11.2	0.09	0.03	25.85	7.2	0.06	0.02	18.09	8.0	0.04	0.01	11.42
3	30.0	0.0	30.0	0.08	0.02	19.98	10.7	0.11	0.03	28.01	11.4	0.07	0.02	17.38	7.8	0.05	0.01	12.77
4	30.0	5.8	24.3	0.08	0.02	20.20	11.2	0.11	0.03	28.14	4.6	0.07	0.02	18.13	8.5	0.04	0.01	10.84
5	30.1	3.5	26.5	0.07	0.02	19.88	11.2	0.10	0.03	28.43	4.9	0.07	0.02	17.40	10.4	0.04	0.01	11.86
6	30.1	1.1	28.9	0.07	0.02	20.46	11.2	0.10	0.04	30.53	6.3	0.07	0.02	17.18	11.5	0.05	0.01	12.39
7	30.1	0.0	30.0	0.07	0.02	20.25	11.1	0.11	0.03	29.31	9.1	0.06	0.02	17.73	9.8	0.04	0.01	12.31
8	30.1	6.7	23.4	0.08	0.02	20.79	11.2	0.10	0.03	27.50	6.4	0.07	0.02	17.88	5.8	0.04	0.01	10.95
9	30.0	6.4	23.7	0.07	0.02	20.04	11.2	0.09	0.03	26.02	6.4	0.07	0.02	18.25	6.0	0.04	0.01	10.77
10	30.0	6.6	23.4	0.07	0.02	19.83	11.2	0.09	0.03	26.40	4.8	0.06	0.02	18.38	7.4	0.04	0.01	10.81
11	30.1	6.2	23.9	0.07	0.03	21.08	11.2	0.11	0.04	30.40	3.4	0.06	0.03	18.01	9.3	0.04	0.01	11.01
12	30.0	3.8	26.2	0.08	0.02	21.34	11.2	0.12	0.04	33.34	3.2	0.06	0.02	17.82	11.8	0.04	0.01	10.92
13	30.0	1.4	28.6	0.07	0.02	20.07	11.2	0.11	0.04	31.66	4.8	0.06	0.02	17.63	12.6	0.04	0.01	10.68
14	30.1	0.2	29.8	0.07	0.02	19.73	11.0	0.10	0.04	30.15	7.5	0.06	0.02	18.04	11.4	0.04	0.01	10.73
15	30.0	1.9	28.1	0.07	0.02	19.98	11.1	0.11	0.03	29.11	7.4	0.06	0.02	17.90	9.6	0.04	0.01	11.04
16	30.1	8.8	21.3	0.09	0.03	23.82	11.2	0.12	0.04	32.04	4.7	0.07	0.02	17.92	5.4	0.04	0.01	11.82
17	30.1	11.5	18.6	0.10	0.03	27.25	11.2	0.13	0.04	34.99	4.3	0.06	0.02	17.18	3.1	0.05	0.01	13.11
18	30.1	9.1	21.0	0.07	0.02	17.59	5.3	0.11	0.03	28.85	6.9	0.06	0.02	17.11	8.9	0.04	0.01	11.32
19	30.0	4.5	25.5	0.06	0.02	17.00	5.4	0.10	0.03	26.38	9.5	0.07	0.02	18.07	10.6	0.04	0.01	11.23
20	24.0	0.7	23.3	0.08	0.02	20.89	11.2	0.10	0.03	27.59	6.3	0.06	0.02	18.26	5.7	0.04	0.01	10.72
21	17.7	0.2	17.5	0.09	0.03	25.36	11.2	0.12	0.03	31.29	3.1	0.07	0.02	18.23	3.2	0.04	0.01	11.30
22	15.0	0.2	14.8	0.11	0.03	29.13	11.2	0.12	0.04	33.47	2.3	0.06	0.02	18.23	1.3	0.04	0.02	11.78
23	9.0	0.0	9.0	0.10	0.04	29.45	7.8	0.11	0.04	31.74	0.6	0.07	0.02	19.12	0.6	0.02	0.02	8.90
TOTAL	**624.5**	**79.2**	**545.2**	**0.08**	**0.02**	**20.85**	**236.2**	**0.11**	**0.03**	**29.58**	**133.3**	**0.07**	**0.02**	**17.80**	**175.7**	**0.04**	**0.01**	**11.42**

As previously stated, the processing plant operates for 49 years, including a year of ramp up operating at 50% capacity. The processing schedule is displayed graphically in Figure 17.7 with the complete schedule shown in Figure 17.7.

Figure 17.7 Process Schedule Graph

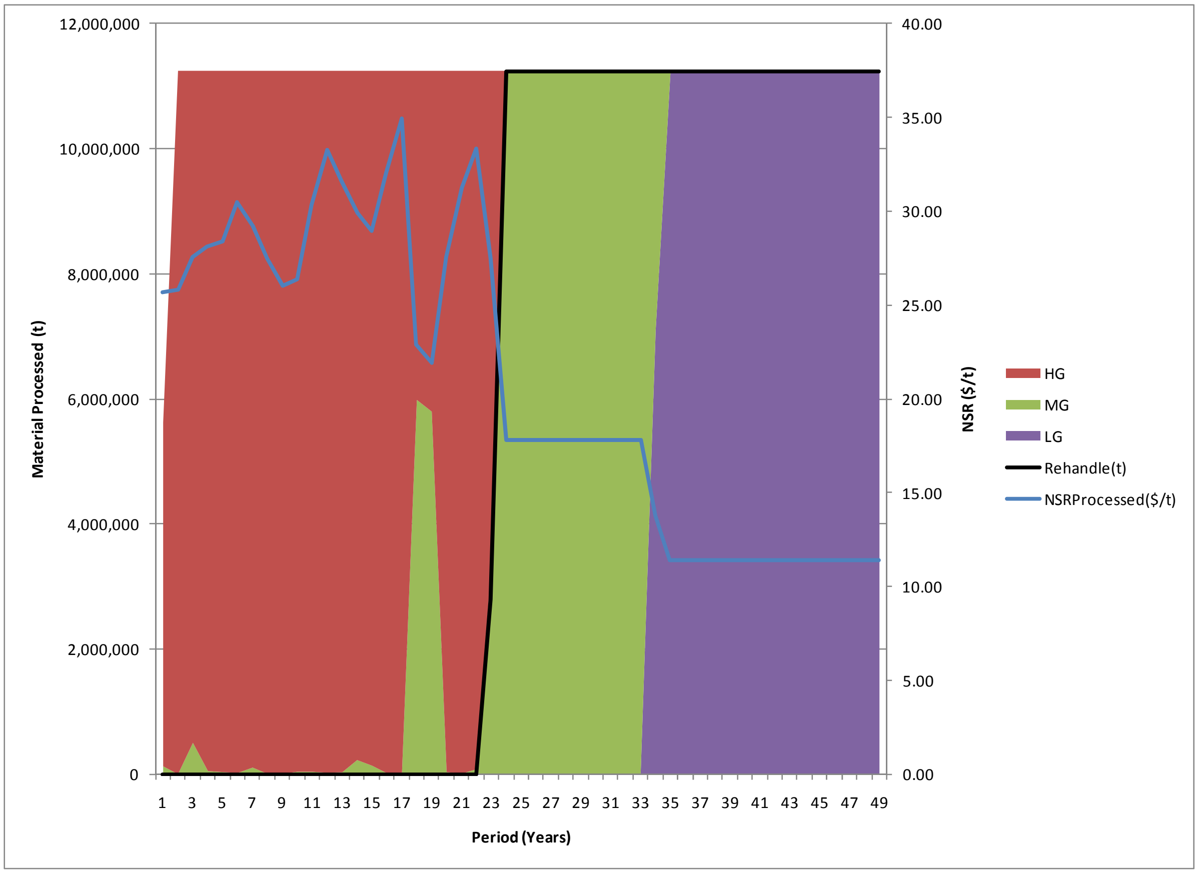


Table 17.12 Processing Schedule

	Total Ore Processed				HG Ore Processed				MG Ore Processed				LG Ore Processed			
Period	**Tonnes**	**WO3**	**Mo**	**NSR**	**Tonnes**	**WO3**	**Mo**	**NSR**	**Tonnes**	**WO3**	**Mo**	**NSR**	**Tonnes**	**WO3**	**Mo**	**NSR**
Year	**Mt**	**%**	**%**	**$/t**	**Mt**	**%**	**%**	**$/t**	**Mt**	**%**	**%**	**$/t**	**Mt**	**%**	**%**	**$/t**
1	5.6	0.10	0.02	25.65	5.5	0.10	0.02	25.84	0.1	0.07	0.02	17.46	0.0	0.00	0.00	0.00
2	11.2	0.09	0.03	25.85	11.2	0.09	0.03	25.85	0.0	0.07	0.02	17.76	0.0	0.00	0.00	0.00
3	11.2	0.10	0.03	27.54	10.7	0.11	0.03	28.01	0.5	0.07	0.02	17.60	0.0	0.00	0.00	0.00
4	11.2	0.11	0.03	28.09	11.2	0.11	0.03	28.14	0.0	0.07	0.02	17.68	0.0	0.00	0.00	0.00
5	11.2	0.10	0.03	28.40	11.2	0.10	0.03	28.43	0.0	0.07	0.02	17.64	0.0	0.00	0.00	0.00
6	11.2	0.10	0.04	30.50	11.2	0.10	0.04	30.53	0.0	0.07	0.02	17.57	0.0	0.00	0.00	0.00
7	11.2	0.11	0.03	29.20	11.1	0.11	0.03	29.31	0.1	0.07	0.02	17.60	0.0	0.00	0.00	0.00
8	11.2	0.10	0.03	27.49	11.2	0.10	0.03	27.50	0.0	0.07	0.02	17.63	0.0	0.00	0.00	0.00
9	11.2	0.09	0.03	26.02	11.2	0.09	0.03	26.02	0.0	0.07	0.02	17.69	0.0	0.00	0.00	0.00
10	11.2	0.09	0.03	26.37	11.2	0.09	0.03	26.40	0.0	0.07	0.02	17.74	0.0	0.00	0.00	0.00
11	11.2	0.11	0.04	30.35	11.2	0.11	0.04	30.40	0.0	0.07	0.02	17.75	0.0	0.00	0.00	0.00
12	11.2	0.12	0.04	33.30	11.2	0.12	0.04	33.34	0.0	0.07	0.02	17.76	0.0	0.00	0.00	0.00
13	11.2	0.11	0.04	31.62	11.2	0.11	0.04	31.66	0.0	0.07	0.02	17.75	0.0	0.00	0.00	0.00
14	11.2	0.10	0.04	29.90	11.0	0.10	0.04	30.15	0.2	0.07	0.02	17.77	0.0	0.00	0.00	0.00
15	11.2	0.10	0.03	28.98	11.1	0.11	0.03	29.11	0.1	0.07	0.02	17.78	0.0	0.00	0.00	0.00
16	11.2	0.12	0.04	32.02	11.2	0.12	0.04	32.04	0.0	0.07	0.02	17.79	0.0	0.00	0.00	0.00
17	11.2	0.13	0.04	34.95	11.2	0.13	0.04	34.99	0.0	0.06	0.02	17.77	0.0	0.00	0.00	0.00
18	11.2	0.09	0.02	22.93	5.3	0.11	0.03	28.85	6.0	0.06	0.02	17.72	0.0	0.00	0.00	0.00
19	11.2	0.08	0.02	21.93	5.4	0.10	0.03	26.38	5.8	0.07	0.02	17.75	0.0	0.00	0.00	0.00
20	11.2	0.10	0.03	27.56	11.2	0.10	0.03	27.59	0.0	0.07	0.02	17.78	0.0	0.00	0.00	0.00
21	11.2	0.12	0.03	31.28	11.2	0.12	0.03	31.29	0.0	0.07	0.02	17.79	0.0	0.00	0.00	0.00
22	11.2	0.12	0.04	33.36	11.2	0.12	0.04	33.47	0.1	0.07	0.02	17.80	0.0	0.00	0.00	0.00
23	11.2	0.10	0.03	27.51	7.8	0.11	0.04	31.74	3.4	0.07	0.02	17.81	0.0	0.00	0.00	0.00
24	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00
25	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00

	Total Ore Processed				HG Ore Processed				MG Ore Processed				LG Ore Processed			
Period	**Tonnes**	**WO3**	**Mo**	**NSR**	**Tonnes**	**WO3**	**Mo**	**NSR**	**Tonnes**	**WO3**	**Mo**	**NSR**	**Tonnes**	**WO3**	**Mo**	**NSR**
Year	**Mt**	**%**	**%**	**$/t**	**Mt**	**%**	**%**	**$/t**	**Mt**	**%**	**%**	**$/t**	**Mt**	**%**	**%**	**$/t**
26	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00
27	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00
28	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00
29	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00
30	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00
31	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00
32	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00
33	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00	11.2	0.07	0.02	17.81	0.0	0.00	0.00	0.00
34	11.2	0.05	0.02	13.77	0.0	0.00	0.00	0.00	4.1	0.07	0.02	17.81	7.1	0.04	0.01	11.42
35	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
36	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
37	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
38	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
39	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
40	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
41	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
42	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
43	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
44	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
45	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
46	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
47	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
48	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
49	11.2	0.04	0.01	11.42	0.0	0.00	0.00	0.00	0.0	0.00	0.00	0.00	11.2	0.04	0.01	11.42
TOTAL	**545.2**	**0.08**	**0.02**	**20.85**	**236.2**	**0.11**	**0.03**	**29.58**	**133.3**	**0.07**	**0.02**	**17.80**	**175.7**	**0.04**	**0.01**	**11.42**

The total mineral inventory within each phase is shown in Table 17.13. The inventory contains Indicated and Inferred material, which is acceptable for a PEA. The level of confidence of a PEA is not high enough to quote a Mineral Reserve and therefore the inventory should not be referred to as such.

Table 17.13 Phase and Final Shell Mineral Inventory

	Total	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Total Material (Mt)	**624.5**	45.1	83.4	165.3	176.9	153.8
Waste (Mt)	**79.2**	0.01	0.7	10.4	31.3	36.8
Strip Ratio	**0.15**	0.00	0.01	0.07	0.22	0.31
Ore (Mt)	**545.2**	45.0	82.7	154.9	145.6	117.0
Grade - NSR C$/t	**20.85**	20.64	22.68	22.11	18.54	20.84
Grade - WO_3%	**0.08**	0.07	0.09	0.08	0.07	0.08
Grade - Mo%	**0.02**	0.02	0.02	0.03	0.02	0.02

17.1.5 Mining Operations

Operations are planned for 365 days/year, with crews working in two 12-hour shifts. Selection of mining equipment was based on the geometry and style of the orebody and the required mining rates. The machine classes are appropriate for the operation but have not been optimized for the purpose of this study.

Fleet requirements were estimated based on available operating hours, individual machine availability, utilization of availability and site conditions such as haulage profiles and production cycle times. Mobile support fleet requirements were estimated using operating experience to match the active mining fleet. Major fleet classes, assumptions, and numbers are show in Table 17.14.

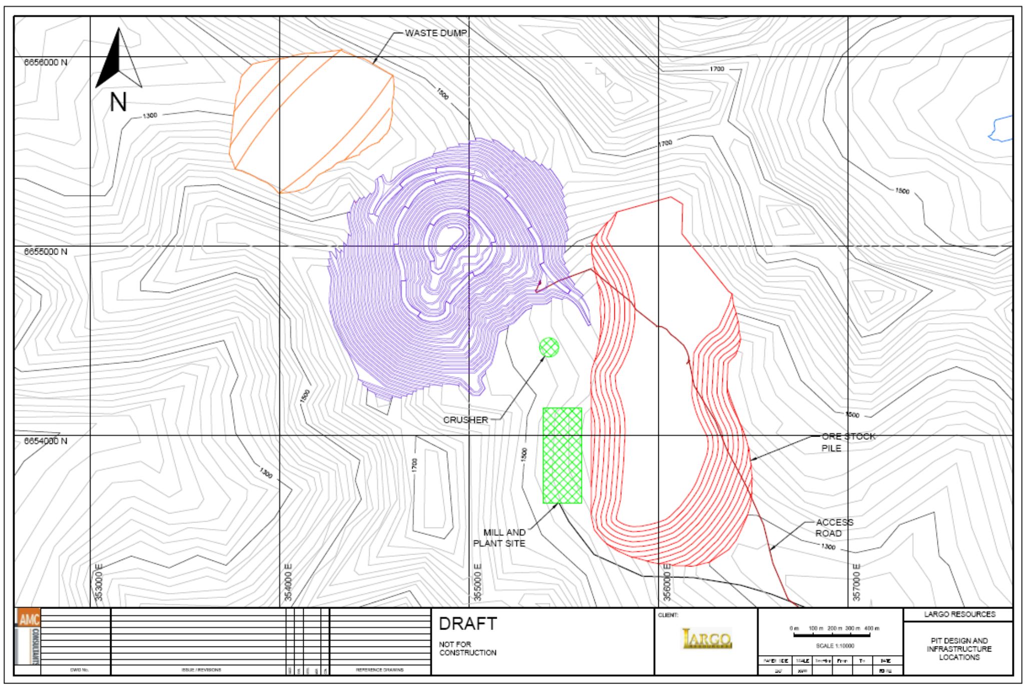
Table 17.14 Primary Mining Fleet Assumptions

Fleet	Class	Example	Availability	Utilization	Initial Fleet	Max Fleet
Shovel	250t Class	Liebherr 9250	85%	80%	2	2
Loader	12m3 Bucket	Cat 992K	80%	80%	1	1
Truck	100t Capacity	Cat 777F	82%	80%	14	22
Drill	229mm	Atlas Copco DM45	75%	80%	4	4
Dozer	48t/300kW	D10T	75%	80%	3	4
Grader	27t/220KW	Cat 16M	80%	80%	3	3
Watertruck	40t Capacity	Cat 770	80%	80%	2	2

Initial haulage profiles for the project are downhill as the pit straddles a ridge line. For the purpose of the study it has been assumed that waste will be hauled to a dump in the northwest of the pit, while ore will either be directly hauled to the crusher or stockpiled to the southeast of the pit.

The general layout of the project is shown in Figure 17.8, detailing the location of the final pit, crusher, ore stockpile and waste dump.

Figure 17.8 Mine Area General Layout



There is limited hydro-geological information for the Northern Dancer project. The project is in a high rain and snowfall area, however as the pit is situated on a ridge line the catchment area for surface inflow is relatively small.

Given the limited amount of data it has been assumed for this study that pit dewatering will be achieved through pumping from the pit floor to a holding pond on the surface via staging points where necessary. Initial capital of C$1.5M has been allocated for pumps, pipes and other infrastructure, while ongoing costs are captured under sustaining capital.

17.1.6 Personnel Estimate

The mine at Northern Dancer is assumed to operate 24 hrs/day, 365 days/yr, with two twelve-hour shifts per day. A roster of 14 days on, 14 days off has been used to estimate the required personnel for the site. Table 17.15 shows a proposed list of initial site personnel in the form of an example organizational chart.

Table 17.15 Proposed Initial Mine Personnel List and Organization

Total Mine											**216**
Mining Manager					1						
Mine Operations			134	Mine Technical			25	Mine Maintenance			56
Crew 1		G'ral Mine Foreman	Mine Supt	Surveying Crew 1		Short Term Planners	Technical Supt	Maint Crew 1		Shop Foreman	Maint Supt
Shiftboss	1			Chief Surv.	1			Shiftboss	1		
Instr/assist	1			Surveyor	2			Mech/elec	7		
Operators	27	1	1	Surveying Crew 2		2	1	Boil shop	2	1	1
Crew 2				Chief Surv.	1			Tire shop	1		
Shiftboss	1			Surveyor	2			Warehouse	1		
Instr/assist	1					Mine Planners		Helpers	2		
Operators	27							Maint Crew 2			
Crew 3								Shiftboss	1		
Shiftboss	1					2		Mech/elec	7		
Instr/assist	1							Boil shop	0		
Operators	27							Tire shop	0		
Crew 4						Geologists	Chief Geologist	Warehouse	1		
Shiftboss	1							Helpers	2		
Instr/assist	1					3	1	Maint Crew 3			
Operators	27							Shiftboss	1		
Blast Crew 1		Supporting Staff				Geology Technicians		Mech/elec	7		
Foreman	1							Boil shop	2		
Shotfirer	2							Tire shop	1		
Labourers	3	2				10		Warehouse	1		
Blast Crew 2								Helpers	2	Maint Planners	
Foreman	1	Safety						Maint Crew 4			
Shotfirer	2							Shiftboss	1		
Labourers	3	2						Mech/elec	7	2	
								Boil shop	0	Supporting Staff	
				67	**Working Dayshift**			Tire shop	0		
				41	**Working Nightshift**			Warehouse	1		
				108	**Offsite**			Helpers	2	2	

17.1.7 Capital Expenditure Estimate

An estimate of capital expenditure has been completed for the mining fleet and associated items based on the mine schedule in Section 17.1.4. The estimate for initial mine capital is shown in Table 17.16.

The costs for the equipment have been sourced from a number of locations, including supplier budgetary quotes, the CostMine Estimator's Guide from InfoMine USA Inc. and operational experience. Some of the values were provided in US dollar terms, and were converted to Canadian Dollars using the exchange rate given in Table 17.16.

A contingency value of 30% has been included to cover variability in supplier pricing, transport, exchange rate and allowance for other undefined items.

A fleet replacement schedule has been completed for the life of the mine and extended to include the period of rehandling after the completion of the open pit.

Table 17.16 Initial Capital Estimate

Fleet	Class	Example	Cost/Item C$'000	Number	Total (C$'000)
Shovel	250t Class	Liebherr 9250	4,479	2	8,957
Loader	12m3 Bucket	Cat 992K	2,250	1	2,250
Truck	110t Capacity	Cat 777F	1,700	14	23,800
Drill	229mm	Atlas Copco DM45	1,209	4	4,835
Dozer	48t/300kW	D9T	1,023	3	3,069
Grader	27t/220KW	Cat 16M	834	3	2,502
Water truck	40t Off-highway	Cat 770	751	2	1,502
Scraper	8.4m3 Capacity	Cat 613G	385	1	385
Lighting Plants	Diesel/Electric	Wacker	16	10	164
Fuel/Lube Truck	20t Truck	Kenworth T470	549	2	1,099
Boilermaker Truck	20t Truck	Kenworth T470	330	1	330
Sand truck/Snow Plough	20t Truck	Kenworth T470	330	3	989
Integrated Tool Carrier	11t/100kW	924H	180	1	180
Tyre Handler	24t/190kW	966H	541	1	541
Workshop Tooling			549	1	549
Sample/Dewatering truck	4x4 Truck	Fuso FG140	88	2	176
Dewatering Equipment			1,500	1	1,500
Light Vehicles	4x4	Ford F250	55	12	659
Survey Equipment		Trimble	220	1	220
General Mining Package		Surpac	55	6	330
Other (PC's, Software etc)			549	1	549
Subtotal					**54,586**
Contingency				30%	16,376
TOTAL					**70,961**

17.1.8 Risks and Opportunities - Mining

There are inherent risks involved with any potential mining operations. There are risks specific to the mine plan, as well as possible areas of improvement. Some of these are identified below.

The mine schedule has been run using a relatively aggressive maximum bench advance rate of 16 benches per year. However, this maximum occurs only twice in the mine life, relating to the upper benches of Phases 1 and 2 where the volumes per bench are quite low. While this advance rate should be achievable through adequate management and scheduling it does introduce a small risk factor that should be investigated during the next level of study.

The schedule described in Section 17.1.4 includes inferred material in the estimate of mineral inventory. This is acceptable for a study at PEA level however is generally not acceptable for more advanced study types. This introduces a risk factor to the mine plan that the inferred material may not be converted to a higher confidence level (materials, measured and/or indicated), at during later studies. The amount of inferred material contained within the mine plan is detailed in Table 17.17.

Table 17.17 Mine Plan Mineral Inventory by Category

Inventory Class	Unit	Inventory	Portion of Total
Measured Material	Mt	37.2	7%
Measured WO_3 Grade	%	0.10	9%
Measured Mo Grade	%	0.03	9%
Indicated Material	Mt	266.1	49%
Indicated WO3 Grade	%	0.09	54%
Indicated Mo Grade	%	0.03	58%
Measured and Indicated Material	**Mt**	**303.3**	**56%**
M+I WO_3 Grade	**%**	**0.09**	**63%**
M+I Mo Grade	**%**	**0.03**	**66%**
Inferred Material	Mt	241.9	44%
Inferred WO3 Grade	%	0.06	37%
Inferred Mo Grade	%	0.02	34%

The stockpiling strategy that results in a stockpile of approximately 295 Mt of mineralized material introduces its own risks. First is the possible oxidation of the ore over time resulting in changing metallurgical parameters. Next, the material may consolidate over time, creating issues with re-handling. Finally, there is also the potential for acid generation within the stockpile that may require capture and treatment of runoff water.

There are other risks to the project that are common to all mining operations. These include potential issues with availability of key equipment and consumables, and the availability of properly qualified personnel. Both issues will need further investigation as the project advances.

While there are many opportunities for improving the project, there are three main opportunities that directly affect the mine plan and that could possibly improve the NPV of the project.

The first opportunity relates to the possible use of contract mining. For the purpose of the PEA it has been assumed that an owner operator scenario has been used with initial mining fleet being purchased and expanded as necessary through sustaining capital. The long mine life at Northern Dancer makes it amenable to owner-operator mining however there may be efficiency gains through the use of a contractor. This should be investigated during the next phase of study, including assessment of the availability of suitable contractors in the region.

Secondly, there may be scope to improve the schedule through the use of cut-off grade optimization. For the purpose of this PEA manually selected grade bands have been used for mine scheduling. It is possible that the cut-off grade used to determine the feed to the processing streams could be varied on a period by period basis using an optimization strategy to vary stripping and metal production throughout the mine life with the goal of increasing NPV.

Finally, linked to the theory of cut-off grade optimization is the added step of schedule optimization. The current schedule has been manually created to satisfy set constraints of mining rate, processing rate and maximizing the identified High Grade material. Use of optimization software could automate this process, making it possible to vary mining rates and cut-off grades to determine what improvements could be made to the project NPV under different scenarios.

17.2 Tailings Management, Water Treatment

17.2.1 Preliminary Site Investigation

Largo engaged Mr. John Lemieux of Journeaux Bedard & Associates Inc., Montreal, Quebec to conduct an assessment of potential tailings sites for the Northern Dancer Project. Mr. Lemieux visited the site in July, 2008.

A total of 6 sites, along with two variations to two of the six sites, for a total of 8 sites were studied. The assessment initially examined the potential handling volume of each site using a tailings deposition angle of 1%. Using an estimated volume of 200 million tonnes of tailings to be stored with an assumed 1.5 tons per cubic meter with uniform silt with a specific gravity of approximately 2.8, it was estimated that the space required for tailings storage was approximately 150 million cubic meters. The scenario considered assumed that the tailings could be transported via pipeline as 40% solid slurry. Water would be decanted from the tailings and returned to mill for recycle.

Based on these assumptions, Lemieux (2008) concluded that all eight (8) options examined could provide the required storage area. To compare the sites a typical dam cross-section was used.

Major considerations of the assessment then included several factors such as:

- Cost of construction, operation and maintenance
- Minimizing risks associated with high dams, liquefiable tails, earthquakes, landslides, avalanches, and flash floods
- Foundation issues
- Accessibility
- Aggregate quality and proximal supply

17.2.2 Surficial Materials

Lemieux (2008) also examined the surficial geology of the area. From this examination he noted that it was clear that granular material was abundant, whereas fine impermeable material was limited to dense, sandy, humid, boulder till that could be difficult to excavate.

17.2.3 Dam Type and Construction Materials

For assessment purposes, a granular fill dam was selected as the dam type. This form of dam would use run of pit granular material costed at $7 per cubic meter as the mass of the dam. Engineered granular material costed at $15 per cubic meter would sandwich a geomembrane costed at $37.50 per square meter, on the upstream slope. Rip rap, comprising of crushed stone from the pit and/or natural boulders costed at $15 per cubic meter, would cover everything. Stripping for the foundation key of the membrane at a one (1) meter thickness was estimated to cost $7.50 per square meter. Lemieux (2008) noted that a possible option to a membrane could be a good till but whether suitable tills existed in the region of the tailings site was not examined during the short field visit. Lemieux did not include any cost estimates associated with foundation preparation such as dealing with bedrock, soil injection, rock injection, diversion ditches or other possible key considerations.

17.2.4 Potential Site Volumes and Other Site Characteristics

For each of the eight sites, Lemieux (2008) noted the potential contained quantity, site elevation, maximum height, and preliminary cost estimate for the tailing site.

Lemieux (2008) then reviewed the options on a preliminary basis to narrow down further studies. As a result further analysis was conducted in the Upper Screw Creek area to the east in 2008 and, in later studies, by Lemieux in 2011 on Cabin Creek to the north, and Logjam creek to the south.

17.2.5 Evaluation of Thickened and Paste Tailings Management Options

In 2011, Lemieux completed a comparative preliminary feasibility evaluation of both thickened and paste tailings management options including estimated capital and operating costs in an effort to reduce pumping/pipeline requirements and the initial capital expenditures in the early stages of the Project.

For the purposes of this investigation the following design criteria were established:

1. The tailings are non acid generating, but may leach contaminants and some contaminants may be added during the milling process. The tailings and process water are considered contaminated, storm floods must be contained and dams must be made relatively impermeable to reduce seepage. Surplus water must be treated before leaving the site.
2. The tailings will consist of 55% fine sand and 45% silt and finer particles. The anticipated grain size distribution is shown on Figure 1, Appendix 3 of the Lemieux (2011) report, along with the grain size distribution of the tailings at the Xstrata Nickel Kidd Met tailings management site, which is referenced for comparison purposes in that the author believes that it provides a reasonable basis for benchmarking the proposed tailing disposal at ND.
3. The tailings will be thickened to 60-65% solids by weight.
4. The mill location is fixed.
5. Total quantity of tailings to store is 172.5Mt over 24 years at an in-situ thickened tailings dry density of 1.5t/ m^3 (reference the recently measured Kidd Met site value of 1.58t/m3) equals 115M m^3.
6. To facilitate calculations at this early feasibility stage of the project an average linear tailings deposition angle of 2% was used. This is the same average linear tailings deposition angle as that of the Kidd Met site.

For the 2011 assessment it is assumed that any water remaining in the thickened tailings once it reaches the tailings management area will not be returned to the mill but instead will be left to flow to the environment with treatment as required.

The thickened and paste tailings comparative estimate was prepared using the unit costs from the 2008 study.

17.2.6 Methodology

All valleys surrounding the pit site were analysed and three scenarios were examined relative to containment of the required tonnage at a 2% deposition angle. Two approaches were considered:

- place one dam at the required life of mine location and lift it sequentially over the years or

- construct many small dams moving further and further down the valley over time to accommodate the increasing volume of tailings. Considering that road construction, tree clearing and foundation preparation can be significant cost components it was decided to choose the sequential raising of one dam at the life of mine location.

17.2.7 Project Approach and Water Treatment

The approach is to construct a main dam that will initially be built of sand and gravel. As tailings become available the main dam will be raised, downstream method, sequentially as required with tailings over the years. At the same time, a rock fill berm will be constructed, parallel to the main dam, offset upstream by about 250 meters. This rock fill berm will simply serve as a physical barrier to hold back the fine tailings particles (leaving water flow through) that would fill the shallow water pond upstream of the main dam.

A small pond is required to ensure minimal treatment of the water for total suspended solids before recirculating to the mill. The rock berm will also be raised sequentially over time being only slightly higher (2 meters max.) than the main dam at anytime. The rock berm raises will be built using the upstream method which means that each new lift will be built on tailings thus reducing significantly the quantity of rock fill required.

Process water seeping and decanting through the relatively permeable main dam will be contained by a second recirculation dam thus creating the recirculation basin. The design flood event chosen to dimension the recirculation dam is the combined 100 year return period rain and snow melt. Lemieux (2011) further provides a rationale for this design as per practice in other provinces.

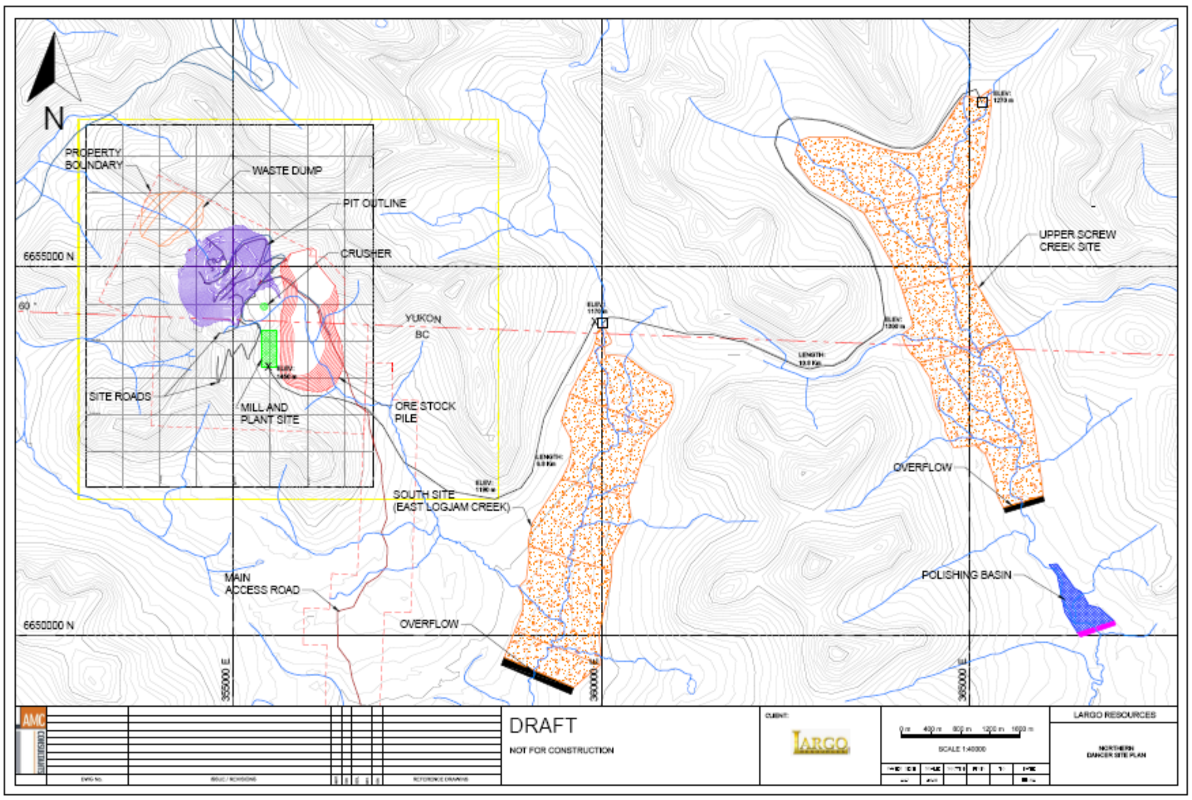
Lemieux (2011) also notes that it is advantageous to have some containment as it can provide a readily available supply of process water that can be pumped to the mill in order to increase recirculation and limit fresh water usage, especially during winter months. At this point, it is thought that the process water will have relatively low suspended solids (TSS) and could be recycled back to the mill or treated and released to the environment. As indicated above, it is assumed for the PEA that any water remaining in the thickened tailings once it reaches the tailings management area will not be returned to the mill. The cost of a treatment plant has not been estimated.

17.2.8 Site Alternatives

The Cabin Creek valley was initially evaluated but has the important disadvantage over the other two sites in that it has a large opening to the west halfway down the length of the valley thus requiring two important dams whereas the other sites only require one. The Cabin Creek option was not developed further.

Dam construction volumes were calculated for both Screw and Logjam Creeks. Unit costs from the 2008 study were used to allow for comparison. The Logjam creek dam will require about 3.2Mm^3 of materials whereas the Screw creek dam would require 0.62Mm^3. Figure 17.9 shows the location of these 2 sites in relation to the mine and process plant.

Figure 17.9 Proposed Tails Management Facility sites



17.2.9 Cost Estimate for Tailings Impoundment

An initial detailed estimated capital cost and Tailings Impoundment Investment Schedule was developed by Lemieux (2008) based on a range of information including:

- Estimated critical and normal water balance
- Preliminary stability (static and 0.08g seismic)
- Site layout plan
- Tailings pipe, head loss, and profile

- Process return pipe, head loss, and profile
- Typical road/ditch/pipeline cross section
- Typical cross section of dam
- Volume elevation curve for polishing basin

Lemieux (2008) noted that the costs derived at that time, were not absolute construction costs but should be considered as comparative cost index values (CCIV). The basis of the cost assumption was to provide a full comparison of the sites for scoping study purposes, with the need for further evaluation to provide a better definition of costs in further studies likely associated with a prefeasibility assessment of the Northern Dancer Project.

This data was later integrated into the additional studies conducted in 2011 to derive the current cost estimate.

Clearly from a dam construction point of view the Screw creek option is more economical and presents a much lesser risk liability. However, all other elements being the same, the Screw Creek option will require a 13km pipeline estimated at a cost of approximately $C 13M. Lemieux (2011) provides detail on the capital cost estimates for both sites in his report. Lemieux (2011) noted a preliminary investment schedule as shown in Table 17.18.

Table 17.18 Preliminary Investment Schedule

Logjam Creek	**Year 0**	**Year 1-2**	**Year 10+**	**Total**
	$CM	$CM	$CM	$CM
Wood clearing	2.00	1.10		
Road	0.80			
Recirculation Dam	6.30			
Main Dam	9.70	8.00	14.00	
Total	18.80	9.10	14.00	**41.90**
Screw Creek	**Year 0**	**Year 1-2**	**Year 10+**	**Total**
	$CM	$CM	$CM	$CM
Pipeline	13			
Wood clearing	2	1.8		
Recirculation Dam	6.3			
Main Dam	3.2		3.3	
Total	24.5	1.8	3.3	**29.6**

A 25% contingency was applied to the above values for economic evaluation. The total capital cost for the Screw Creek Option is almost 42% lower than the Logjam Creek option and the initial investment during the first two years is approximately $C1.7M less for the Screw Creek option. Both of these options are significantly lower cost than the $C115.5M conventional tailings deposition option evaluated in 2008.

17.2.10 Project Considerations and Suitability

Lemieux (2008) noted that other considerations such as permitting issues, restoration elements, dust, detailed water balance, land ownership, climate data, and watershed characteristics are some of the elements that will require detailed examination in completing an assessment of the potential of Logjam Creek and Upper Screw Creek as tailings sites for the Northern Dancer Project. Total capital investments for dam construction are significantly less because the use of a high capacity thickener allows most of the process water to return directly to the mill. This eliminates the need to construct a recycle pump/pipeline to ensure operation of the mill during the winter when free flowing water is limited. Water to the mill will come from high capacity thickeners connected in series and from fresh water sources; no water will be recycled from the tailings management facility. The thickened tailings are expected to form a 2% deposition slope rather than the 1% slope initially estimated (2008), this results in significantly lower dam heights. Surface drainage ditches around the tailings area will be required where possible in order to reduce the quantity of fresh water entering it.

Lemieux (2011) noted that thickening the tailings more to achieve a paste has no net advantage in the case of the Northern Dancer project.

17.3 Site Services – Power and Infrastructure

17.3.1 Power

SFPC StreamFlow Power (Canada) (SFPC), a Division of Almarah Technical Services Inc., of South River, Ontario was contracted by Largo in 2010 to complete a prefeasibility study of potential hydroelectric capacity for the Project. Mr. Dennis E. Netherton (P.Eng, M.ASCE) of SFPC visited the region in July 2010 to evaluate potential site alternatives for hydroelectric generation within reasonable transmission distance from the Northern Dancer site.

After an initial desktop study involving a review of all known potential power sites in the region and studies conducted on individual power sites, SFPC selected to further evaluate four potential sites in the region. These four sites were: (i) Morley River below Morley Lake; (ii) Swift River below Swift Lake; (iii) Dorsey Lake and (iv) Morley River above Morley Lake.

17.3.1.1 Site Evaluation

At Morley River below Morley Lake, denoted in SFPC (2010) as Alternative 2, SFPC examined a site that had been examined in detail by Acres Consulting Group in 1983 as a potential run-of-river power site. The site is characterized with a 38 meter drop over the projected run trajectory. It would have the longest transmission line to Northern Dancer, although has benefits such as close access from the Alaska Highway to the proposed location of the power canal intake and the power house. However SFPC (2010) noted that this alternative would be challenging from annual flow capacity levels as the damming of

Morley Lake would be difficult and would require a control dam height of more than 20 meters in order to provide a little more than half the required flow for less than half the energy supply provided in the site proposed at Morley River above Morley Lake, denoted as Alternative 1 in the SFPC (2010) report.

At Swift River below Swift Lake, denoted in SFPC (2010) as Alternative 3, SPC envisioned a power house installation below Swift Lake at the falls location situated approximately 14 kilometres downstream from the proposed Swift Lake Control Dam and outlet works within a generally flat sloping valley setting. SFPC (2010) ranked this alternative lowest of all alternatives examined due to poor access, lack of good reservoir sites, a long transmission corridor, and little ability for expansion.

Although Dorsey Lake was not examined in great detail, it was examined as a potential reservoir site for the Smart River. SFPC (2010) noted that the capacity of this alternative is very limited and flows would be considerably smaller than all other alternatives examined, based on a watershed area of only 360 square kilometres. By comparison the watershed areas at Swift River are 3320 square kilometres and that of the Wolf/Morris lake system north of Morley Lake is approximately 1700 square kilometres. SFPC noted that if additional power capacity of 2-4 MW was required, it may prove useful to evaluate this site in more detail.

SFPC concluded that the Morley site above, and north of, Morley Lake (Alternative 1 in the SFPC (2010) report) demonstrated the best means for the provision of power required by the Project. SFPC proposed that the approach consist of the construction of low dams on the Wolf and Morris Lakes. In this way it would be possible to maintain the desired energy levels year-round. SFPC proposed a system of three generating stations utilizing run-of-river power systems, with a two machine development at each site to provide a robust energy system that could provide a system capacity of 67% even with the complete loss of a station. This development would require timber removal around the two reservoir lakes that could be sold, or possibly stockpiled for use in a wood burning boiler for mine and work camp heating.

17.3.1.2 Energy Cost Comparison

SFPC (2011) provided an addendum study that presents comparisons of annual energy costs for Owner Build and Operate, Independent Operator Build and Operate, and Diesel Power on site at 30 cents per kW hr. or $300 per MW hr. As noted on Table 17.19, SFPC (2011) assigned a target return on investment (ROI) of 15% for the Independent Operator.

For the ‘Owner Build and Operate’ scenario, the total estimated capital cost was $190,406,372, with an annual energy cost of $14,054,632, that results in an average cost per kilowatt hour of $0.0446 assuming approximately 300M kW hr energy production pa (see Table 17.19 below). The annual energy cost of the ‘Independent Operator Build and Operate’ was much higher at $24,883,919 and as such was not considered a viable option at this time. Furthermore, the price associated with the 'Owner Build' option was very attractive in comparison to that of diesel generated power and is also more of an environmentally sound approach for resource development.

Largo intends to conduct further examinations of energy options in later planning stages. These may include, but also may not be limited to, energy from possible gas pipeline developments such as the Alaska Gas Pipeline or projects being considered in the Eagle Plains area of Northern Yukon, the use of transported liquefied gas from existing gas developed areas in north-eastern BC until pipelines are established, wind generated power, bio-fuels, and the possibility of generating hydro power through public-private partnership initiatives.

Table 17.19 Energy Cost Summary

SFPC (StreamFlow Power Canada)

APPENDIX A
FIGURE 4 ADD 1
NOV 30 2010

NORTHERN DANCER MINE - ADDENDUM STUDY MINIMUM 36 MW CAPACITY
ENERGY COST COMPARISONS

SITE LOCATION	ESTIMATED CAPEX AT EACH SITE	ESTIMATED OPEX AT EACH SITE	ESTIMATED PRICE PER KWHR CAPEX&OPEX AT EACH SITE	TOTAL PRODUCTION AT EACH SITE KWHRS/YEAR	ANNUAL COST OF ENERGY
OWNER BUILD					
ALT 1 SITE 1	$94,540,639.00	$1,375,642.00	$0.0548	124,392,000	$6,816,682
ALT 1 SITE 2	$41,890,040.00	$1,095,584.00	$0.0385	88,476,000	$3,406,326
ALT 1 SITE 3	$53,975,693.00	$1,131,735.00	$0.0405	94,608,000	$3,831,624
	$190,406,372.00	**$3,602,961.00**		**307,476,000**	**$14,054,632**
OPERATOR BUILD *					
ALT 1 SITE 1	$94,540,639.00	$1,375,642.00	$0.0937	124,392,000	$11,655,530
ALT 1 SITE 2	$41,890,040.00	$1,095,584.00	$0.0629	88,476,000	$5,565,140
ALT 1 SITE 3	$53,975,693.00	$1,131,735.00	$0.0810	94,608,000	$7,663,248
	$190,406,372.00	**$3,602,961.00**		**307,476,000**	**$24,883,919**
DIESEL POWER					
ON SITE POWER **	$48,000,000.00	$0.22	$0.3000	**307,476,000**	**$92,242,800**

NOTES
307,476,000 KILOWATT HOURS PER YEAR = 35.100 MEGAWATTS GENERATING CAPACITY OPERATING 8760 HOURS PER YEAR
1 STANDARD YEAR = 8760 HOURS - INSTALLED CAPACITY = 36.884 MW
ASSESSED AS AVERAGE YEAR, FLAT INDUSTRIAL DEMAND CURVE - NO ALLOWANCE FOR MINIMUM ONSITE DIESEL GENERATING CAPACITY WITH PEAK HYDRO CAPACITY TO OPTIMIZE HYDRO PLANT SIZE
* ASSUMES OPERATOR'S TARGET ROI = 15%
*ASSUMES OPERATOR GETS 30% RESALE AT END OF YR 35

** CLIENT SUPPLIED AND OUR ESTIMATE BASED ON UNIT COSTS PLUS FUEL AND MAINTENANCE COSTS COMBINED NO FUEL PRICE ESCALATION FACTOR

17.3.1.3 Infrastructure

Provisions for the following infrastructure have been made in the capital budget in this PEA report, for further details see Section 17.11, Capital Cost Estimate.

- Crushing, ore storage and reclaim stockpiles areas
- Process plant

- APT plant
- Construction camp and sewage treatment plant
- Office buildings with first aid and lockers
- Truck shop
- Warehouse
- Laboratory
- Fuel storage
- Explosives magazine

17.4 Environmental and Permitting

17.4.1 Environmental Baseline Studies

Largo has conducted a broad range of environmental baseline studies in the Northern Dancer area from 2007 to current which have primarily comprised of:

- Water sampling program of all drainages from the Northern Dancer deposit and some regional testing sites
- Preliminary acid rock generation investigations
- Fisheries investigations of the proposed access route and primary drainages in the local watershed
- Wildlife investigations of the local watershed and outlying areas

During this period Largo has also examined implications for permitting the project. The following will briefly outline the key activities conducted to date and the proposed activities that will be conducted through the pre-development phase to the production phase of this Project.

17.4.2 Water Sampling Program

- As part of the field baseline studies, Access Consulting Group (Access) has conducted regular site visits from 2008 to current day. All water quality samples were collected using standard field and custody QA/QC measures, and were analysed at Maxxam Analytics Inc. in Burnaby, British Columbia for the following parameters:
- Physical parameters (conductivity, pH, total suspended solids, colour, hardness, total and dissolved solids, turbidity)
- Nutrients (ammonia, nitrogen, phosphate)
- Organics (alkalinity, hydroxide, carbonate, total organic carbon)

- Cyanide
- Total and dissolved metals (suite of 33 metals, including all parameters found in the CCME and MMER guidelines)

In all sampling events to date, water quality has been considered typical of streams in undisturbed, alpine drainages underlain primarily by igneous and metamorphic rock. The water was soft, weakly buffered and low in dissolved solids with pH in the range of 6.7 to 8.35. Hardness, alkalinity and dissolved solids fluctuated in concentration in an inverse manner to stream flow – indicating dilution from runoff during high flow periods, and the greater influence of groundwater during low flow periods. In the headwater creeks, chemical constituents were slightly elevated, but, with few exceptions, were indicative of good quality water for supporting aquatic life – only aluminium approached water quality effects threshold levels for fish. The 2008 sampling program entailed a more consistent sampling effort of water chemistry over the spring-fall period.

Access has been collecting water quality samples at thirteen sites covering all drainages associates with the Northern Dancer site and regional test locations. The locations of these sites are indicated on the map.

Sites were chosen to include:

- downstream areas in drainages that have the potential to be affected by exploration activities and/or future mine development;
- reference sites upstream of any potential development, whose data would be useful in determining if changes in water quality were development-related.

Once the test results were received, Access completed a comparative analysis of 2008 water quality data with both Metal Mining Effluent Regulations (MMER) Schedule 4: Authorized Limits of Deleterious Substances, and Canadian Council of Ministers on the Environment (CCME) Guidelines for the Protection of Freshwater Aquatic Life (Access Consulting Group, 2009).

Although the Project is not currently subject to authorizations with associated discharge criteria (MMER or Water Licences), the MMER limits were included for comparison with a view towards providing a comprehensive water quality description of the local watershed for potential project permitting. While some water quality parameters did exceed CCME guidelines, it is important to note that these are guidelines only, and not enforceable criteria. All parameters for all samples and sites were below the MMER limits for deleterious substances.

The data collected by Access did show natural related metal exceedances of CCME guidelines. Natural exceedances of aluminium, cadmium, copper, and selenium were documented by Nordin (2006) on a water sample collected on the northern side of the Northern Dancer deposit. As this locality was isolated from all project related activities, it clearly indicates that elevated exceedances of various elements result from natural runoff in the area. It also indicates that further study is required to appropriately delineate natural versus project related exceedances in the area.

In addition, MESH Environmental Inc (MESH) in 2008 conducted water quality samples down-gradient from the old portal (ref. Amax site activity 1977 – 1981). Water quality samples collected from these stockpile samples was near neutral with respect to pH with low conductivity values. However, concentrations of F, Al, Cd, Mo and Se, and, in one sample, Hg, were higher than the concentrations recommended by the Canadian Water Quality Guidelines for the Protection of Aquatic Life. As a result of these findings a static test point was established on the stockpile samples but has not been regularly tested to this point. Testing is now expected to resume on these static tests as part of the next phase of the project.

17.4.3 Fisheries Investigations

With the exception of the Smart River, documentation of previous fisheries investigations in this area was not discovered. It appears that very little to date is known about the fisheries resources of this part of the Smart River/Swift River. Preliminary watershed Investigations into fish and fish habitat in the vicinity of the Northern Dancer deposit and all possible associated drainages were conducted in 2008 for Largo by Access.

Previous to the investigations by Access, a total of six species of fish had been recorded in the Swift and Smart Rivers in the vicinity of the mining property, namely:

- Arctic grayling (*Thymallus arcticus*)
- Chinook salmon (Oncorhynchus tshawytscha)
- Dolly Varden char (*Salvelinus malma*)
- Humpback whitefish (*Coregonus clupeaformis*)
- Longnose suckers (*Catostomus catostomus*)
- Slimy Sculpin (*Coitus cognatus*)

Previous investigations by Canamax (1983) also indicated that the magnitude of the Chinook salmon run in the Swift River was considered moderate, at between 50 to 100 individuals and spawning was considered minimal. The Swift River is known to be used by Arctic grayling for spawning proposes. The Smart River is considered to be a productive stream for fish, providing over-wintering areas, although the Chinook salmon run was considered to be less than 50.

The Access investigations were conducted by Access for Largo Resources Ltd and investigated fish and fish habitat in 2008 at numerous sites along the Smart River/Swift River drainage, including Logjam Creek, Two Ladder Creek, "Dorsey Creek" (a temporary name assigned to an unnamed creek), Screw Creek and the Smart River. The only fisheries/fish habitat investigations conducted within the three tenures in British Columbia included sites along the western portion of Logjam Creek and all other small creeks along the access route.

The results of these surveys identified that with the exception of the very small tributaries to Logjam Creek that crossed the mine road, all streams sampled are swift, high gradient systems cascading from higher altitude terrain, providing very limited or no suitable habitat for fish. Additionally, the very cold water temperatures encountered would generally serve as a deterrent to most species of fish moving into these streams from the Swift and Smart Rivers. Small resident bull trout populations are noted exceptions to this rule, as they have been documented as requiring very clear, cold, sediment-free high gradient headwater streams for successful survival. Studies to date have indicated that there appears to be a limited population of bull trout identified in the Screw Creek area. This will require further investigation to be conducted with advancement of the Northern Dancer Project.

17.4.4 Wildlife Investigations

Preliminary wildlife investigations have been conducted in the Northern Dancer area. A report by Canamax (1983) noted that, based upon interviews with Yukon game biologists and field observations, the area does not appear to be important as wildlife habitat, especially for large mammals such as Dall's sheep. Only a few woodland caribou were thought to migrate to the area during the summer. Moose were found to be fairly common at lower elevations. Grizzly bears appeared few in numbers, although wolves were fairly common and little data was collected with respect to birds, furbearers or small mammals.

To further verify the initial findings on the presence of wildlife in the area, Largo contracted Dr. Grant Lortie in July of 2008 to conduct a helicopter reconnaissance for wildlife within the environmental baseline study area. Lortie (2009) reported sighting several moose moving from lower elevations into the upper elevation in response to plant phenology and that the duration of their occupancy in higher elevations while variable, was likely highly dependent on arrival of prohibitive snow conditions. Lortie also concluded that, due to the dense conifer cover, a determination of the actual moose population and rut activity in the environmental study area would require a Fall survey after early snowfall (i.e. October). He also reported no past or current evidence of mountain sheep or mountain goat in the environmental baseline study area. Sheep trails on upper scree slopes and ridges were absent. He did note that the presence of these species is known to occur further north in the mountains east of Dorsey Lake but this is outside of the environmental baseline study area.

Lortie (2009) also noted that there was a lack of evidence of presence of golden eagle and gyrofalcon. Populations of ptarmigan were probably limited by snow depth in the Northern dancer region with a subsequent lack of gyrofalcon for which the ptarmigan is food source. Lortie also speculated that, even though vegetation in areas such as on a dry ridge to the immediate southeast of the drilling areas at Northern Dancer provided suitable habitat for ground squirrels which are prey for eagles and gryrofalcons, their populations may also be limited by other factors.

Several moose, one grizzly with a two year old cub, and an inactive beaver house were identified within the environmental baseline study area. There were no sightings of caribou.

17.4.5 ARD Characterization

MESH Environmental Inc. (Mesh) was requested in 2008 to conduct a desktop study to identify potential environmental and/or permitting considerations for the Project. This work included a preliminary analysis of geochemical indicators from testwork completed in 20 drill core samples, 4 surface grab samples of weathered stockpile material that came from the adit (ref. Amax site activity (1977 – 1981), and 3 water quality samples.

Results indicated that, while sulphide values are generally considered low to moderate, similarly low to moderate neutralization potential exists in the rock types anticipated to be excavated in an open pit operation. The majority of samples tended to classify as uncertain with respect to acid generating potential based on standard ABA testing. Based on limited results, the hornfels, diorite and quartz monzonite units would likely be considered PAG or uncertain, albeit with relatively low sulphide contents. The skarn and quartz feldspar porphyry unit would likely be considered uncertain to non-PAG with respect to ARD classification. Material that had already been weathered in small stockpiles adjacent to the portal (assumed to be hornfels) consistently classified as PAG, however pH values are currently only weakly acidic after 26+ years of exposure and weathering.

Metal contents of all units consistently reported elevated levels of W and Mo as might be expected from the area, as well as Se. Occasionally, elevated contents of Bi, Cd, Co, Cr, Cu, S and in one sample, F and U, were detected in certain samples representing the skarn and intrusive units, but not in the hornfels samples.

Leach extraction tests conducted on the four surface samples anticipated to be hornfels indicated that the weathered material is slightly acidic with low alkalinity and conductivity values and low sulphate concentrations (4 to 40 mg/L) indicating relatively minimal content of minerals soluble in near neutral pH conditions. Leachate concentrations of Al, Cd, Cu, Mo and Zn were considered elevated based on a comparison to Canadian Water Quality Guidelines for the Protection of Aquatic Life. Se values in the weathered hornfels were significantly lower than those in the drill core samples, indicating either high variability in the deposit, or the release of Se during the 26+ years of exposure and weathering.

The ABA tests on four very preliminary tailings samples suggest that Sulphide Rougher Tails can be produced that are likely non-potentially acid generating, with negligible sulphur content.

Other tailings streams (such as Molybdenum Rougher Tails) are likely to contain higher sulphur content, with low neutralization potential, such that acid generation potential is uncertain. Based on these preliminary results, it appears that there may be some potential for ARD and ML from the wastes associated with the Northern Dancer project, and potential for Mo and Se leaching under neutral pH conditions. MESH (2008) concluded that more detailed testwork would be required to better delineate and quantify these issues.

17.4.6 Climatology Surveys

The Pelly Mountains region is highlighted by the Pelly Mountain range, within which the Property is located. Largo established a base weather station on the mountain and has been monitoring climatological conditions since 2008. Situated in higher elevations, the Property experiences mean yearly temperatures near -3 °C, with January and July means near -20 °C and 10 °C respectively. Precipitation is moderate throughout the year, with a mean annual deposition of 500 to 650 mm. Largo intends to establish more robust climatological instrumentation and surveys of various parts of the environmental baseline study areas as the Project advances through the pre-development phase.

17.4.7 Permitting

Currently there are only limited regulatory environmental monitoring requirements for the site activities, as only the Yukon Mining Land Use permit, the Yukon Water Use permit and the equivalent British Columbia regulations govern exploration activity requirements. Environmental monitoring activities have been established at the Project in advance of and in preparation for project proposal development and project assessment using BC protocols and Metal Mining Effluent Regulations (MMER) guidelines as standards. By applying these standards to the environmental monitoring program, Largo is preparing for the program's eventual application to authorizations such as the federal MMER and territorial quartz mining and water use regulations, and British Columbia mine development regulations.

MESH in 2008 conducted a preliminary review of permitting requirements. It concluded that, beyond some possible geochemical aspects that are yet to be sufficiently tested and based on previous work conducted by Canamax (1983), there did not appear to be any major environmental or ecological constraints to the development of the Project. MESH added that key issues would be the typical fisheries habitat and water quality concerns, which could be adversely impacted, particularly by the large volumes of waste materials proposed for the site. MESH made several recommendations on the collecting and/or upgrading of baseline information to help further understand how the Project would meet the current standards for detailed information.

MESH in 2008 noted that in moving through the environmental assessment phase of development, the project will likely be governed by a relatively new process under the Yukon Environmental and Socio-economic Assessment Act (YESAA). The project would also likely require an environmental assessment under the federal Canadian Environmental Assessment Act (CEAA), and a Section 2 Authorization under the Metal Mining Effluent Regulations (MMER) for initially considered tailings storage scenarios. Key permits that are likely required include a Yukon Water Licence and Yukon Land Use Permit, a Territorial Hardrock (Quartz) Mining Permit, and BC Ministry of Forests Special Use Permit for use or upgrading of roads in BC. While YESAA allows for concurrent evaluation of environmental impacts and permits, no permits can be issued until the various environmental review processes have been completed. Overall timing for the YESAA process, once the Project Proposal has been submitted, and excluding time for the proponent to respond to supplemental information requests, is 348 to 858 days. And while the various review and permitting processes (i.e. YESAA, CEAA, MMER) attempt to operate in a coordinated manner, each has its own information requirements and timelines. To minimize the timeframe required to move through the environmental and permitting processes, it is imperative to develop a thorough Project Proposal in consultation with all interested parties, and optimize engineering design through consideration of environmental consequences.

Largo also contracted Hemmera EnviroChem Inc. ('Hemmera') in 2010 to undertake a review of environment work completed on the Project in order to consider future data collection requirements related to environmental baseline studies, provide guidance with respect to the environmental assessment processes, and to identify any important next step(s) for the environmental approvals process. This was important as in discussions by Largo with BC and Yukon Government officials YESAA and BCEAA processes could possibly adopt a harmonized environmental assessment approach and it was therefore felt that an independent and objective point of view on that possibility should be acquired from Hemmera who have a lot of experience in dealing with EA processes in both jurisdictions.

Hemmera noted that a preliminary project description consistent with Canadian Environmental Assessment (CEAA), British Columbian Environmental Assessment (BCEAA), and Yukon Economic and Socio-Economic Environmental Assessment (YESAA) requirements that acknowledged options, alternates and related project uncertainties could be prepared to facilitate establishing a reasonable basis for a coordinated environmental assessment process. Hemmera recommended that a range of activities be conducted to supplement current knowledge should include studies in hydrology, fisheries and water quality, wildlife and vegetation, and socio-economic factors.

Consequently, Largo plans to ensure that all requirements related to environmental and socio-economic monitoring measures are implemented throughout the Property for all pre-development phases of the Project, the life of mine, and to prepare for any regulatory instruments that may be applied to the Project.

17.5 Occupational Health and Safety

Largo has developed a comprehensive set of policies governing the activities of employees, consultants, subcontractors and visitors that apply to any activities on site or on behalf of the company. A field manual has been prepared outlining Largo's occupational health and safety policies. Field employees are required to attend an annual field orientation safety program and be aware of emergency measures and incident reporting procedures. Largo requires that all its employees, subcontractors, and consultants have appropriate coverage through the relevant Worker Compensation Health and Safety jurisdiction.

17.6 Community Relations

Northern Dancer is located within the traditional territory of the Teslin Tlingit Council ("TTC"), a First Nation government whose members primarily reside in the community of Teslin, Yukon. Largo has held several meetings with the TTC, other community groups in Teslin and Yukon, and representatives from the Governments of Yukon and Canada to provide regular updates on exploration activities and related environmental and engineering studies for the Project.

Largo is now preparing to enter into the EIA process and will be working with the relevant First Nations groups to initiate a traditional knowledge of the Project area and to also discuss the range of study findings and subsequent proposed plans for the mine development. Data will be collected to describe the human environment which will include, but may not be limited to, land use, archaeology, and socio-economics.

17.7 Markets

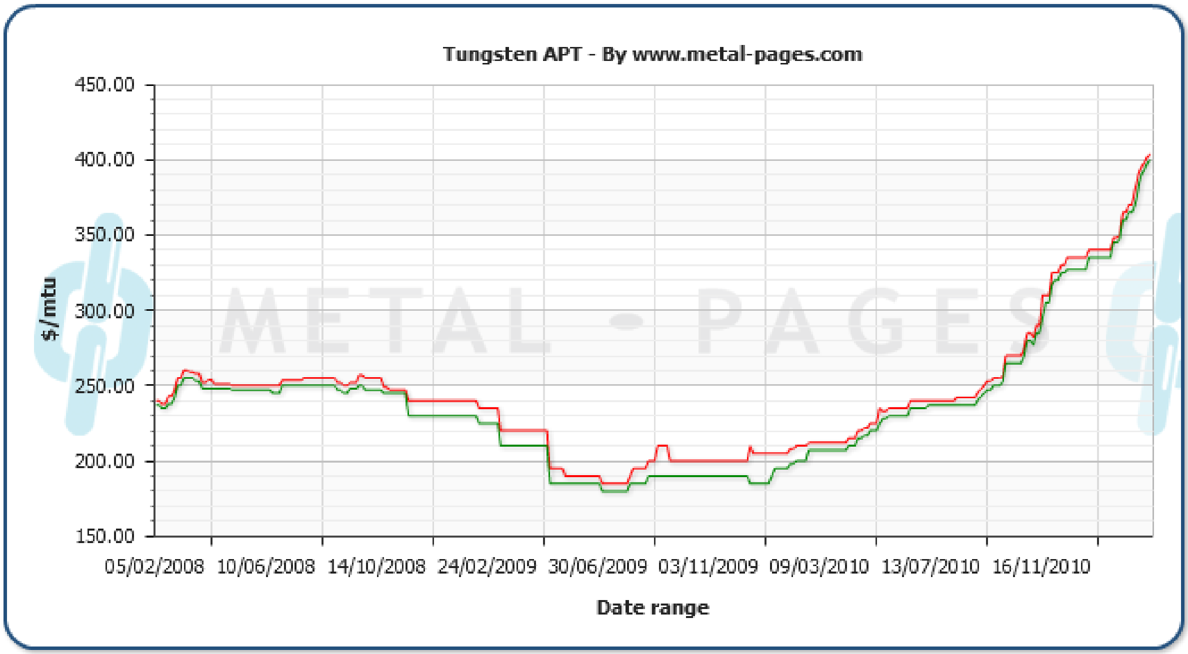
Tungsten has particular properties that are important to many industries. Its very high melting point and density make it invaluable for cutting tools across a variety of applications, with this reportedly accounting for about 60% of demand. The high melting point also has applications for military hardware. China is the dominant supplier and, for this reason, tungsten has been deemed to be a strategic metal. Exports from China are reported to have decreased since 2008 and, as of February 2011, prices were around all time highs.

A detailed market study has not been completed for tungsten but the current high demand, and potential expansion of applications and emerging market demand suggest that market conditions may be robust in the future.

17.7.1 Tungsten – APT Price

Markets for the sale of tungsten products including APT are currently very buoyant with prices in March 2011 reaching in excess of US$400 per mtu, as indicated by the following chart provided through www.metal-pages.com.

Figure 17.10 Tungsten APT Price



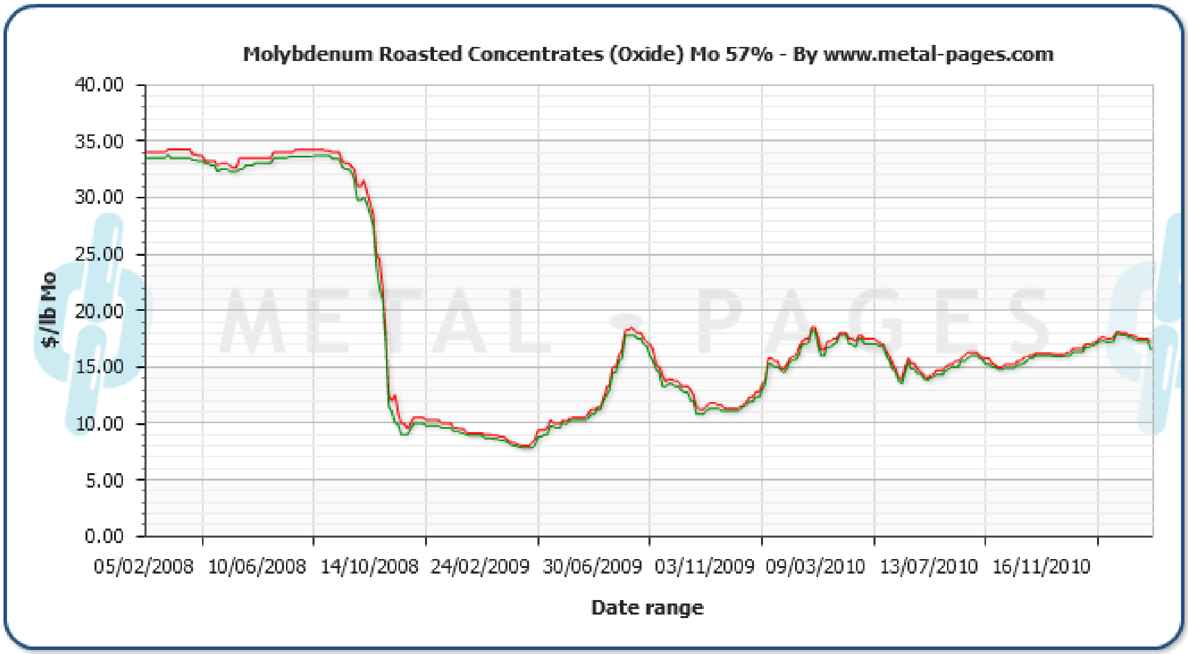
The PEA has assumed a price of US$275 per mtu for a base case analysis. AMC considers this to be a reasonably conservative price given the recent history of tungsten prices.

17.7.2 Molybdenum - Roasted Concentrates

The main use of molybdenum is in high strength steel alloys, which find uses in a variety of applications including the automotive and energy industries and construction projects. Molybdenum has a particular ability in high temperature applications and for corrosion reduction.

Markets for the sale of molybdenum products including molybdenum roasted concentrates have remained fairly stable over the last few years within a range of US$12 –US$18 per lb after sustaining higher levels of about US$35 per lb prior to late 2008, as indicated by the following chart provided through www.metal-pages.com.

Figure 17.11 Molybdenum Roasted Concentrates Price



A report by Metal-Pages dated 16 February 2011 by analysts at New York-based CPM Group predicted that molybdenum roasted concentrate prices will average $US21.75/lb in 2011, rising to $28.50/lb in 2012, according to projections.

It was considered to be relatively conservative to assume a base case price of US$17.50 per lb for the purposes of the PEA.

17.8 Contracts

No contracts have been established to date for sales of tungsten and/or molybdenum concentrates.

17.9 Taxes

The current economic analysis has been completed on a before-tax basis. With further project planning Largo will be seeking an interpretation of applicable taxes that will relate to the project from the Governments of Yukon, British Columbia, and Canada.

17.10 Operating Cost Estimate

17.10.1 Process Operating Cost Estimate

Process operating cost estimates includes costs for operating and maintaining the process and APT plants from primary crusher feed through to concentrate load out facilities, tailings management, and the APT processing including residue disposal of the same. Total average life of mine operating cost for the combined process and APT plants is estimated at US$67.5M/a, or US$6.01/t of feed material processed. These costs include major cost centres such as labour, power, consumables, maintenance, reagents, fuel oil and other miscellaneous items and are shown in Table 17.20.

Table 17.20 Estimate of Process Operating Costs

Cost Centre	US$M/a	US$/t
Labour	10.1	0.90
Power	14.2	1.26
Consumables	40.0	3.56
Misc/Other	3.2	0.29
Total	67.5	6.01

The estimated process operating costs are also summarized below in Table 17.21 as: Concentrator operations @ C$4.71/t and APT operations @ C$1.88/t. The sum of these figures converted to $US is approximately $US6.01/t.

Consumables, the largest cost centre, include reagents, grinding steel and maintenance supplies. Labour costs include management and labour for plant operations and maintenance. Estimates of consumable use are based on test results and past experience, while consumable prices are based on in-house data base for the same. All freight for consumables is included in the prices. Maintenance supplies and repairs are based on factors on capital costs as widely used in the industry. Power consumption is based on average loads obtained from the preliminary equipment list and experience of other process estimates.

CDN$ Exchange rate used is 0.91 and power cost used for the estimate is US$0.046/kWh.

Table 17.21 outlines the summary of estimated operating costs.

Table 17.21 Operating Cost Estimate

Activity	Fixed cost C$(000) /yr	Variable cost	Average LOM ore+ waste costs C$ /t mined
Mining waste and ore		C$ 2.20/t mined	2.20
Ore rehandling		C$ 0.88/t mined	0.76
Concentrator operations		C$ 4.71/t mined	4.12
Reject rehandle		C$ 0.88/t mined	0.27
Tailings Management facility		C$ 0.20/t mined	0.11
APT operations		C$ 1.88/t mined	1.64
Camp, human resources and safety	10,000	-	0.54
Administration	8,000	-	0.47

17.11 Capital Cost Estimate

The estimated total project capital cost is $C 824M. Contingencies have been applied in individual project areas together with a global contingency of $C126M (20%). The overall project capital contingency is $C177M (27%).The pre-production portion of the Capital Costs is estimated to be $C718 million which includes contingency. Sustaining capital costs are assessed at an average of $C5.32M per production year. Table 17.22 shows the Mine capital estimate and Table 17.23 shows the mill and infrastructure capital estimate.

Table 17.22 Mine capital estimate (excluding global contingency)

Capital Item	C$(000)
Establishment Cost	7,500
Mining Fleet	56,461
Mining Other	6,565
Development EPCM	2,500
Total open pit capital cost	**73,026**

Table 17.23 Mill and Infrastructure capital estimate (excluding global contingency)

Capital Item	C$(000)
Hydroelectric power	191,300
Access roads, truck shop and other infrastructure	22,150
Tailings management facility	70,501
Camp	30,000
Process plant and APT plant	228,900
EPCM	61,001
Owners Cost	20,303
Mill and infrastructure capital cost (excluding contingency)	**624,154**

A further breakdown of the surface facilities capital cost is as follows:

17.11.1 Surface facilities capital cost estimate

The Capital Cost Estimate below is for the surface facilities of the Northern Dancer Project. The surface facilities are part of the overall tungsten-molybdenum project described in this Preliminary Economic Assessment.

The estimate was prepared in US Dollars and was based on prices ruling February 11, 2011. An exchange rate of Can$1.00 = US$1.00 was used.

The Capital Cost Estimate for the Surface Facilities is summarized in Table 17.24.

Table 17.24 Capital Cost Estimate for Surface Facilities

ITEM	TOTAL COST US$ Million
DIRECT CAPITAL COSTS	
CRUSHING, ORE STORAGE & RECLAIM	50.8
PROCESS PLANT EQUIPMENT	77.4
PROCESS PLANT BUILDING	33.6
APT PROCESS PLANT EQUIPMENT	35.0
APT PROCESS PLANT BUILDING	5.3
CONSTRUCTION CAMP INCL SEWAGE TREATMENT	30.0
OFFICE INCL FIRST AID & LOCKER ROOMS	1.7
TRUCK SHOP, TOOLS, & LUBE OIL	7.0
WAREHOUSE	0.6
LAB & LAB EQUIPT	1.2
FUEL STORAGE	0.3
EXPLOSIVES STORAGE AREA	0.2
Directs Sub-Total	**243.1**
INDIRECT CAPITAL COSTS	
SPARES	5.0
CONSTRUCTION INDIRECTS	8.0
FIRST FILL & WAREHOUSE INVENTORY	8.0
EPCM	31.6
COMMISSIONING & STARTUP	4.0
Indirects Sub-Total	**56.6**
Directs + Indirects Sub-Total	**299.6**
CONTINGENCY 25%	74.9
TOTAL ESTIMATED CAPITAL COSTS	**374.6**

Excluded from Indirect Capital Costs which are not dealt with in the PEA report are; escalation, taxes, and duties. Should this project proceed to the pre-feasibility level, these costs must be determined.

Assumptions

Aggregates and backfill soils are available locally; actual soil bearing conditions are adequate for estimated foundations; the construction work will be continuous

Process Equipment

Based on current preliminary process flow sheets, an equipment list of major process and mechanical equipment was developed by Bolu Consulting Inc. for the concentrator and APT plants. Major equipment prices were obtained from in-house data. All other equipment was estimated using factored costs from similar projects.

Buildings

The milling and concentrator building envelope was estimated to be 12,000m^2 in size and the APT building 1,900m^2. A truck shop suitable for servicing the ore trucks in all weather was estimated based on recent experience. All other buildings were sized and priced based on similar projects.

Labour

Installation man-hours and costs were estimated as a % of direct costs based on historical data. A factor of 30% was added to account for the remote, northern conditions and a tightening labour supply.

EPCM

The EPCM costs were estimated as 13% of the direct costs. This estimate took into account the remote, northern conditions for the CM work.

Contingency

A contingency of 25% was added to all direct and indirect costs to reflect the level of estimate.

17.12 Economic Analysis

The assumption was made that the mining fleet was leased from Caterpillar. A mining cost of C$2.20/t has been assumed for both ore and waste.

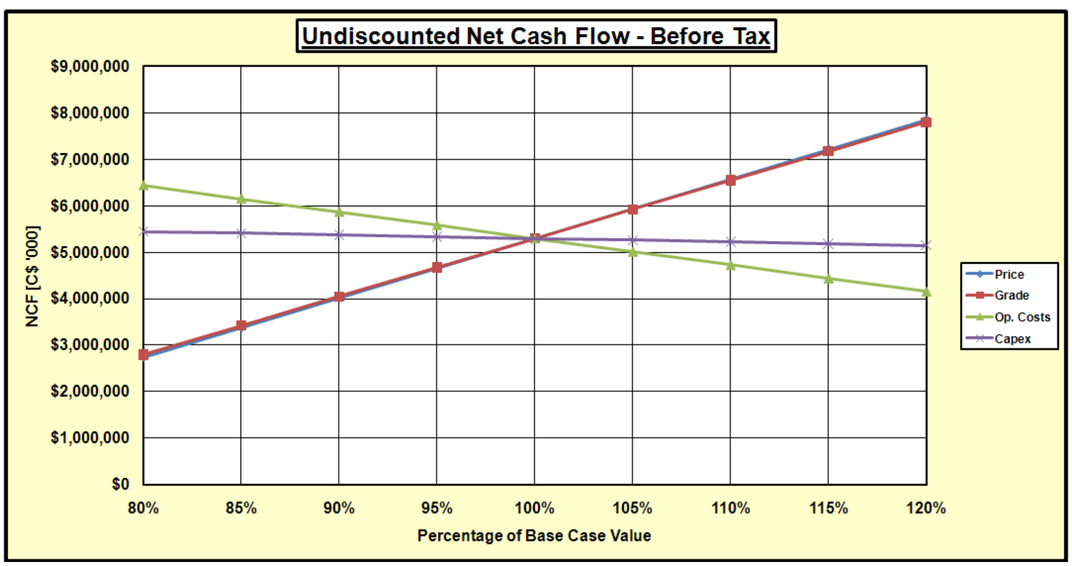
The undiscounted cash-flow summary for the mine is shown in Table 17.25.

Table 17.25 Undiscounted cash-flow summary (staged open pit)

Revenue and costs	C$(000)
Tungsten revenue Molybdenum revenue	8,952,907 3,957,002
Total revenue	**12,909,908**
Concentrate Transport Mo Roasting WO_3 in APT Transport Royalty (1% of gross revenue)	26,264 226,121 33,082 129,099
Total off-site costs	**414,566**
Mine operating costs Milling and other site operating costs	1,373,794 4,721,656
Total site operating costs	**6,125,450**
Capital costs (mine) Capital Cost (Plant and infrastructure) Global Contingency	73,026 624,154 126,470
Total project capital	**823,651**
Sustaining capital	247,190
Net project cash-flow	**5,299,052**

An analysis, carried out to assess the sensitivity of the cash-flow to key estimates and assumptions is shown graphically in Figure 17.11. The project is most sensitive to changes in metal prices.

Figure 17.12 Sensitivity of cash-flow to key input parameters



Spreadsheet analysis indicates that the project has an Unleveraged IRR from Year -2 of 20.00%. The pre-tax NPV at an 8% discount rate is $C1,009M. Payback is in Year 6 of production. Cumulative cash flow is $C 5.299 billion. Table 17.29 summarises the undiscounted net cash-flow before tax, for selected changes in key parameters.

Table 17.26 Sensitivity to Changes in Mineral Grade and Metal Prices

Changes to key input parameters are indicated below All other parameters remain unchanged	Undiscounted net cash-flow before tax (C$M)
No change to key input parameters	5,299
Metal prices or grades increase by 20%	7,855
Metal prices or grades decrease by 20%	2,743

17.13 Mine Life

The financial projections associated with this preliminary economic assessment employ a mining rate for ore and waste of approximately 30M tpa for 23 years. During this time there will be sufficient ore stock piled to run the process plant for another 26 years once mining has stopped.

17.13.1 Production Quantities Based on Grade

A summary of the mining schedule is shown in Table 17.27. The adopted pit contains a total tonnage of approximately 624Mt. The mill feed schedule is shown in Table 17.28. Plant feed fraction totaled 545Mt grading 0.08% WO_3 and 0.02% Mo.

Table 17.27 Estimated Production Schedule

Period	Total	Waste	Ore	WO3	Mo
Year	Mt	Mt	Mt	%	%
1	20.75	0.01	20.74	0.07	0.02
2	27.14	0.65	26.49	0.07	0.02
3	30.01	0.01	30.01	0.08	0.02
4	30.01	5.75	24.26	0.08	0.02
5	30.06	3.52	26.54	0.07	0.02
6	30.06	1.12	28.94	0.07	0.02
7	30.07	0.03	30.04	0.07	0.02
8	30.07	6.69	23.38	0.08	0.02
9	30.04	6.36	23.68	0.07	0.02
10	30.04	6.64	23.40	0.07	0.02

11	30.09	6.18	23.91	0.07	0.03
12	30.00	3.78	26.22	0.08	0.02
Period	**Total**	**Waste**	**Ore**	**WO3**	**Mo**
Year	**Mt**	**Mt**	**Mt**	**%**	**%**
13	30.01	1.41	28.60	0.07	0.02
14	30.09	0.24	29.85	0.07	0.02
15	30.01	1.90	28.11	0.07	0.02
16	30.08	8.79	21.30	0.09	0.03
17	30.05	11.47	18.58	0.10	0.03
18	30.10	9.05	21.05	0.07	0.02
19	30.04	4.52	25.53	0.06	0.02
20	23.99	0.70	23.29	0.08	0.02
21	17.73	0.24	17.49	0.09	0.03
22	14.98	0.16	14.82	0.11	0.03
23	9.01	0.00	9.01	0.10	0.04
TOTAL	**624.45**	**79.22**	**545.24**	**0.08**	**0.02**

Table 17.28 Estimated Mill Feed

	Total Ore Processed			
Period	**Tonnes per Year**	**WO3**	**Mo**	**NSR**
Year	**Mt/a**	**%**	**%**	**$/t**
1	5.6	0.10	0.02	25.65
2	11.2	0.09	0.03	25.85
3	11.2	0.10	0.03	27.54
4	11.2	0.11	0.03	28.09
5	11.2	0.10	0.03	28.40
6	11.2	0.10	0.04	30.50
7	11.2	0.11	0.03	29.20
8	11.2	0.10	0.03	27.49
9	11.2	0.09	0.03	26.02
10	11.2	0.09	0.03	26.37
11	11.2	0.11	0.04	30.35

Table 17.28 Estimated Mill Feed *(cont'd)*

	Total Ore Processed			
Period	**Tonnes per Year**	**WO3**	**Mo**	**NSR**
Year	**Mt/a**	**%**	**%**	**$/t**
12	11.2	0.12	0.04	33.30
13	11.2	0.11	0.04	31.62
14	11.2	0.10	0.04	29.90
15	11.2	0.10	0.03	28.98
16	11.2	0.12	0.04	32.02
17	11.2	0.13	0.04	34.95
18	11.2	0.09	0.02	22.93
19	11.2	0.08	0.02	21.93
20	11.2	0.10	0.03	27.56
21	11.2	0.12	0.03	31.28
22	11.2	0.12	0.04	33.36
23	11.2	0.10	0.03	27.51
24-33	11.2	0.07	0.02	17.81
34	11.2	0.05	0.02	13.77
35-49	11.2	0.04	0.01	11.42
TOTAL	**545.2**	**0.08**	**0.02**	**20.85**

18 INTERPRETATION AND CONCLUSIONS

The Northern Dancer property is a tungsten molybdenum deposit in the Yukon Territory that has been explored by several surface mapping and diamond drilling programs. A tungsten-molybdenum mineralized skarn-porphyry system has been outlined by historic drilling to a depth of at least 500 m. Drilling during the 2007 and 2008 drilling programs succeeded in confirming the presence of tungsten and molybdenum mineralization in the deposit, and increasing confidence in the Northern Dancer Mineral Resource estimate. The 2008 drilling program was successful in partially delineating zones with elevated tungsten and molybdenum. Additional infill drilling in the vicinity of these zones will assist in delineation refinement and raise confidence in geological and grade continuity associated with them.

There is sufficient drilling and with drilling data being of acceptable quality to support a Measured and Indicated classification for a portion of the Northern Dancer Mineral Resource. Largo has conducted additional delineation type drilling in 2010; however those results are not included in this report. The results of this additional drilling will be addressed in the next study phase. A Measured, Indicated and Inferred Mineral Resource has been estimated using information from 134 diamond drill holes drilled on the property. That estimate (the March 12, 2009 Mineral Resource Estimate), reported at a 0.06% WO_3 cut-off grade, contains Measured mineral resources of 30.8 million tonnes grading 0.114% WO_3 and 0.030% Mo, and Indicated mineral resources of 192.6 million tonnes grading 0.100% WO_3 and 0.029% Mo. The Measured and Indicated mineral resource estimate contains 500.1 million pounds of WO_3 (226.8 k tonnes) and 143.8 million pounds of Mo (65.3 k tonnes). Inferred mineral resources were estimated to be 201.2 million tonnes grading 0.089% WO_3 and 0.024% Mo containing 393.1 million pounds of WO_3 (178.3 k tonnes) and 107.7 million pounds of Mo (48.9 k tonnes). The cut-off grade at 0.06% was based on the assumption that the deposit could be mined by open-pit mining and that tungsten and molybdenum would be economically recoverable using economic parameters appropriate for a 2009 estimate. The assumptions used were not confirmed by appropriate economic studies. For the purpose of the 2011 PEA and this Technical Report AMC has calculated a new cut-off grade of 0.04% WO_3 based on current metal prices and what it considers are reasonable assumptions for exchange rate and operating costs. The mineral inventory based at 0.04% WO_3 cut-off grade is shown below:

Table 18.1 Mineral Inventory

Inventory Class	Unit	Inventory	Portion of Total
Measured Material	Mt	37.2	7%
Measured WO_3 Grade	%	0.10	9%
Measured Mo Grade	%	0.03	9%
Indicated Material	Mt	266.1	49%
Indicated WO3 Grade	%	0.09	54%
Indicated Mo Grade	%	0.03	58%
Measured and Indicated Material	**Mt**	**303.3**	**56%**
M+I WO_3 Grade	**%**	**0.09**	**63%**
M+I Mo Grade	**%**	**0.03**	**66%**
Inferred Material	Mt	241.9	44%
Inferred WO3 Grade	%	0.06	37%
Inferred Mo Grade	%	0.02	34%

AMC recommends that in the next phase of this project a new resource estimate be established reflecting contemporary prices and other relevant information.

Largo has conducted various environmental investigations since 2007 in an effort to collect required environmental baseline data for filing of a project description with appropriate regulatory authorities in Yukon, British Columbia, and Canada. Efforts to date have concluded that, beyond some possible geochemical aspects that are yet to be sufficiently tested, there do not appear to be any major environmental or ecological constraints to the development of the Project (MESH, 2008). This is encouraging Largo to advance a range of studies in order to complete a comprehensive environmental and socio-economic assessment of the Project as soon as possible. It has also led to the conclusion that there appear to be no major environmental or ecological constraints that impact the potential economics of the Project. AMC considers that this conclusion is reasonable at this stage of the project but that the projected comprehensive assessment is necessary to provide a more definitive basis for that conclusion.

The results of the mining section of this report indicate that mining of the Northern Dancer deposit by open pit methods is a viable option from a practical operations perspective, subject to the risks and opportunities covered in section 17.1.8. Total mining production has been estimated at 545.24Mt over a 23 year Life of Mine. Ore processed has been estimated at 545.24Mt at average grades of .08% WO_3 and 0.02% Mo and assuming a 11.2Mtpa processing rate for 49 years.

A very preliminary design and budget is included in this report for the potential tailings disposal program. This will require an in-depth review to assess viability for the PFS phase.

Based on the current understanding of the Northern Dancer deposit, and assuming long-term metal prices of $US 275/mtu of WO_3 and molybdenum $US 17.5/lb, exchange rate of $C 1.00 = $US 0.91 and WO3 overall recovery to concentrate of 75% and Mo overall recovery to concentrate of 72% respectively;

- Cumulative undiscounted cash flow is $C 5.299 billion (before taxes and depreciation).
- Pre-tax Net Present Value (NPV) at an 8% discount rate is $C1, 009M
- The project has an unleveraged Internal Rate of Return (IRR) from the project start date (Year -2) of 20.0%.
- Payback is achieved in Year 6 of production (Year 8 from start of project).

An economic sensitivity assessment has shown that, for the resource, price, cost and other key parameter assumptions used in the project, it is most sensitive to metal price and grade moderately sensitive to operating cost and less sensitive to capital cost variations.

The main conclusion from the PEA is that, barring any major and prolonged decline in tungsten and molybdenum prices, the next logical step for the project is to move to a prefeasibility study phase. A list of recommendations relevant to that next step is found in Section 19 below.

19 RECOMMENDATIONS

The list of recommendations encompasses comments from the various contributors to the Technical Report. AMC recommends the following actions be undertaken:

- **Exploration and Resource upgrade**
  - Re-examine the deposit and produce a revised resource estimate using all appropriate drilling, up-to-date pricing and costs, and other relevant information. The revised pit outline produced for the PEA may form the basis for that estimate but AMC notes that further exploration work will be required to upgrade the inferred portions of the resource unless a lower tonnage option based on the current measured and indicated resource is selected.
  - In the future drilling programs incorporate recommendations on downhole survey data collection requirements as per section 13.2 of this report.
  - Revisit the previous QA/QC database and investigate and resolve issues as per recommendations in section 13.2 of this report.

  Estimated cost of infill drilling and assaying program is $1,950,000. (The resource estimation cost is included in the PFS study estimate below).

- **Geotechnical Investigations**
  - Collect additional geotechnical data to allow determination of suitable geotechnical parameters for pit wall slope design. This work would include drilling, data collection and assessment. Estimated cost of the geotechnical investigation is $675,000.
- **Additional Metallurgical and Processing Test Work**
  - Undertake additional metallurgical test work on composite samples that represent the higher grade material outlined in the 2009 Mineral Resource Estimate.
  - Perform density testing on any and all metallurgical samples collected to provide additional verification of the density database. Continue to collect representative density measurements on drillhole core for additional drilling programs to be initiated on the property, especially for the units with more variable densities (e.g., skarn). Request all density QAQC data from the independent laboratory conducting the density testing. All future sampling programs should include an analysis of fluorine (as $CaF2$) due to its deleterious influence on metallurgical recovery of tungsten. Should additional metallurgical test work indicate that fluorine presence is a significant issue, its implications should be included in future Mineral Resource estimates.
  - Generate processing flowsheet, metal recoveries and PFS level plant design.

  Estimated cost for the above metallurgical and process testing is $450,000.

- **Environmental and Socio-Economic Assessment**
  - Advance a comprehensive environmental and socio-economic assessment concurrently with completing a prefeasibility of the project. Due to the broad range of activities associated with this proposed assessment, a two phased approach is suggested. Phase I of the project will develop an implementation plan that will also better define required activities and associated costs. Phase II will cover implementation of those activities in order to prepare a Project Description for regulatory authorities. Estimated cost for Phase I is $50,000 and the program implementation is expected to be in the range of $1,000,000.
- **Mine Engineering and Prefeasibility Study**
  - **New Resource Estimate:** Following the infill drill program create a new block model and produce a revised resource estimate. Estimated cost $100,000.
  - **Infrastructure and Site Investigations:** Conduct a PFS level assessment of civil related issues - road alignments, avalanche analysis, survey benchmarks, and a topographic survey. Estimated cost $250,000.
  - **Hydrogeology Investigations:** Conduct a field work program, data analysis and reporting. It should be possible to combine the hydrogeological field work with the geotechnical drilling program. The hydrogeological work is estimated to cost of the order of $150,000.
    - **Contractor Analysis:** Evaluate the benefits of using a mining contractor vs. an owner operator scenario, including investigating the quality and availability of suitable contractors in the region. Estimated cost $50,000.
    - **Drill and Blast Study:** Perform a more detailed investigation into suitable blasting parameters. This information will help determine suitable powder factors and explosive type mixes, which will flow on into the operating costs. This should include investigating the quality and availability of suitable explosives supply and contract blasting groups within the region. Assuming that good rock characteristic data is available, the estimated cost of this recommendation is $10,000.
    - **Cut-off Grade Optimization:** Complete a cut-off grade study to determine if varying the cut-off grade over the life of the mine with the current schedule has a material effect on the NPV of the project. Particularly examine the impact of running for a significant number of years in the later part of the project at low grade. The estimated cost of this recommendation is $40,000.
    - **Schedule Optimization:** Re-schedule the project using an automated schedule optimization package such as MineMax Scheduler. This can be

completed independently or simultaneously with the cut-off grade optimization. Estimated cost $80,000.

- **Fleet Size Optimization**: Complete a study into the sizing of the loading equipment and truck fleet comparing fleet numbers, capital and mining rates, examining possible effects on dilution, mining recovery and downstream effects on processing and revenue. Estimated cost $15,000.

- **Energy Evaluation:** Further investigate energy alternatives relative to the importance of power as a major part of both capital and operating costs of this project. This will include a comprehensive evaluation of all energy options for the project and then definition of an improved cost estimate of the preferred energy alternative (likely to be run-of-river); this assessment will go beyond the initial evaluation given in this report to also address development specific issues with that alternative. Estimated cost of this study is: $75,000

- **Waste and Tails Management:** Develop a better understanding and produce a more definitive plan for the proposed tails management facility. Estimated cost of a study is $100,000.

- **Community Relations:** Maintain an ongoing liaison and consultation with groups such as Teslin Tlingit Council and the community of Teslin and others. Estimated cost is $50,000.

- **Market and Transportation Analysis:** Pursue a strategy to identify optimized markets and evaluate the most economic mode of final product transport to those markets. Estimated cost is $50,000.

- **Project Management, Cost and Economics Assessment and Reporting:** Manage project and coordinate sub-consultants over all PFS project aspects. Peer review geology, geotechnical, mining and processing report sections. Co-ordinate and/or conduct cost estimating. Perform financial and economic analysis. Perform site visits and generate final PFS report. Estimated cost is $250,000.

20 REFERENCES

Access Consulting Group, 2009. Northern Dancer Project – 2008 Environmental Baseline Studies and Data Summary. Unpublished report, 14 pp.

Bacon, N.R., 1977 Report on the Logjam Creek Property, Bath - 1976 Uranium Partnership, pp. 23-36.

Bell, L.A., 1976 Logjam Creek Tungsten Prospect, internal correspondence, Union Carbide Exploration Corporation, p. 4.

Blower, S., 2005 Technical Report – Mineral Resource Estimate, Ruby Creek Project, British Columbia, 11 April 2005.

Bolu, Matt, 2011, “Process section-Rev2.dox” Process section of Largo Northern Dancer PEA report dated 28 March 2011. Received via email on 23 March 2011.

Brand, A.A., 2008. Mineralogy, geochemistry, and geochronology of the Northern Dancer tungsten-molybdenum deposit, Yukon and British Columbia. Unpublished M.Sc. thesis, University of British Columbia, Canada. 242p.

Canamax, 1983 anon, Preliminary Feasibility Study, Logtung Project, Canamax Resources Inc., September 1983, p. 166.

Cathro, R.J., 1982 Progress Report on Barb-Log Claim Group, A.M.P. Exploration & Mining Co. Ltd., p.13.

CIM, 2005 CIM Definition Standards on Mineral Resources and Mineral Reserves, Prepared by the CIM Standing Committee on Reserve Definition, Adopted by CIM Council, 2005.

Eaton, W.D., 1994 Prospecting, Geochemical and Diamond Drilling Report, Logtung Property, Assessment Report for NDU Resources Ltd.

Eaton, W.D., 2002 Prospecting and Digital Data Compilation, Northern Dancer Property, Assessment Report for Strategic Metals Ltd.

Eaton, W.D., 2004 Assessment Report Describing Prospecting and Hand Trenching at the Logtung Property for Strategic Metals Ltd.

Eaton, W.D., 2005 Geological Mapping and Sample Collection, Logtung Property, Assessment Report for Strategic Metals Ltd.

Eaton, W.D., 2007, Assessment Report describing Diamond Drilling at the Northern Dancer Property for Largo Resources Ltd. and Strategic Metals Ltd.

Harris, F.R., 1978. 1977 Property Report, Logtung Property, Company Report for Amax Potash Limited, p. 43.

Harris, F.R., 1979. 1978 Property Report, Logtung Property, Company Report for Amax Potash Limited, p. 28

Harris, F.R., Parry, S.E., McNeil, W.H., 1981. 1980 Logtung Bulk Sampling Program, Company Report for Amax Potash Limited

Hemmera, 2010. Northern Dancer Project Preliminary Review For Environmental Assessment Approvals. File 1232-001.01 Unpublished Report. 24pp.

Kirkham, R.V. and Sinclair, W.D. (1984). Porphyry Copper, Molybdenum and Tungsten. In: Canadian Mineral Deposit Types: A Geological Synopsis. *Economic Geology Report 36*, pp. 51-56.

Lemieux, J. 2008 For Largo Resources Northern Dancer, "An assessment of potential tailings sites for the Northern Dancer Project." Mr. John Lemieux of Journeaux Bedard & Associates Inc., Montreal, Quebec.

Lemieux, J. 2011 For Largo Resources Northern Dancer, "Final Report Evaluation of Thickened and Paste Tailings Options" AMEC Project TX 10 1498 03. Dated January 19, 2011.

Lipton, I.T., 1993. Measurement of Bulk Density for Resource Estimation. In: Mineral Resource and Ore Reserve Estimation – The AusIMM Guide to Good Practice. *A.C. Edwards (ed.)*, The Australasian Institute of Mining and Metallurgy, Melbourne, Australia, pp. 57-66.

Lortie, Grant, 2009. Wildlife Survey of the Northern Dancer Property, July 17-18, 2008. Unpublished report., 6p.

Mesh Environmental Inc., 2008. Scoping of Environmental Issues with Focus on Geochemical Analysis. Northern Dancer Project, Yukon.

Mihalynuk, M.G. and Heaman, L.M., 2002. Age of mineralized porphyry at the Logtung deposit W-Mo-Bi-Be (beryl, aquamarine), Northwest BC (2002). In: Geological Fieldwork, British Columbia Geological Survey, Paper 2002-1, pp.35-40.

Mortensen, J.K., Brand, A. and Liverton, T. 2007. Laser ablation ICP-MS U-Pb zircon ages for Cretaceous plutonic rocks in the Logtung and Thirtymile Range areas of southern Yukon. In: Yukon Exploration and Geology 2006. *D.S. Edmond, G.D. Bradshaw, L.L. Lewis and L.H. Weston (Eds.)*, Yukon Geological Survey, pp. 213-221.

Netherton D. 2011 Evaluation of increasing energy production, pre-feasibility level studies of potential hydroelectric capacity at the Northern Dancer mine near Teslin, Yukon Territory prepared for Largo Resources Ltd. By: StreamFlow Power (Canada) A Division of Almarah Technical Services Inc. February 2, 2011. SFPC 2010-17A1

Noble, S.R., Spooner, E.T.C. and Harris, F.R., 1984 The Logtung Large Tonnage, Low Grade W (Scheelite) – Mo Porphyry Deposit, South-Central Yukon Territory; Econ. Geol., Vol. 79, 1984, pp. 848-868.

Noble, S.R., Spooner, E.T.C. and Harris, F.R., 1986 Logtung: A porphyry W-Mo deposit in southern Yukon, in CIM special vol. 37, pp. 274-287.

Nyland E. 2011 "Northern Dancer All Weather Access Road" report by: Boreal Engineering Ltd. Revised March 2011.

Poole, W.H., 1956, Geology of the Cassiar Mountains in the vicinity of the Yukon-BC boundary; Princeton University, unpublished PhD thesis.

Poole, W.H., Roddick, J.A. and Green, A.H. 1960, Geology Wolf Lake map-area, Yukon Territory; Geological Survey of Canada, Map 10-1960.

Roots, C., Nelson, J., Mihalynuk, M., Harms, T., deKeijzer, M. and Simard., R-L, 2004, Bedrock Geology, Dorsey Lake, Yukon Territory; Geological Survey of Canada, Open File 4630; Yukon Geological Survey Open File 2004-2.

Sinclair, W.D., 1995. Porphyry W. *In*: Selected British Columbia Mineral Deposit Profiles, Volume 1 – Metallics and Coal. *D.V. Lefebure and G.E. Ray (eds.)*, British Columbia Ministry of Energy, Employment and Investment, Open File 1995-20, pp.101-104.

Snowden, 2007a. Northern Dancer Project Mineral Resource Estimate Technical Report - Revised. NI 43-101 Technical Report prepared for Largo Resources Ltd. by Snowden Mining Industry Consultants Inc., 17 May 2007, Project No. V525, Vancouver, Canada, 67 pp. (Revised May 2009).

Snowden, 2007b. Logtung Project: QAQC Report. Report prepared for Largo Resources Ltd by Snowden Mining Industry Consultants Inc., March 2007, Project No. V489, Vancouver, Canada, 64 pp.

Snowden, 2008. Northern Dancer Project Mineral Resource Estimate Update. NI 43-101 Technical Report prepared for Largo Resources Ltd. by Snowden Mining Industry Consultants Inc., 25 May 2008, Project No. V525, Vancouver, Canada, 84 pp.

Snowden, 2009. Northern Dancer Project Mineral Resource Estimate Update. NI 43-101 Technical Report prepared for Largo Resources Ltd. by Snowden Mining Industry

Consultants Inc., 1 June 2009, Project No. V603, Vancouver, Canada, 81 pp plus appendices.

Wengzynowski, W.A., 2006, Technical Report describing Geology, Geochemistry, Geophysics, and Mineralization at the Logtung Property prepared for Largo Resources Ltd.

Yukon Community Profiles, 2006, Community Profiles- Online database: Yukon Government.

21 DATE AND SIGNATURES

Signed by:

[original signed by]

____
Mo Molavi, P.Eng.
Principal Mining Engineer, AMC Mining Consultants (Canada) Ltd
On 5 April 2011
Effective date of report 28 March 2011

Signed by:

[original signed by]

____
Greg Hollett, P.Eng.
Senior Mining Engineer, Regional Manager & Director, AMC Mining Consultants (Canada) Ltd
On 5 April 2011
Effective date of report 28 March 2011

Signed by:

[original signed by]

____
Warwick S Board, P.Geo.
Senior Resource Geologist, Silver Standard Resources Inc
On 5 April 2011
Effective date of report 28 March 2011

Signed by:

[original signed by]

____
HM Matt Bolu, P.Eng.
Principal Process Engineer for Bolu Consulting Engineering Inc
On 5 April 2011
Effective date of report 28 March 2011

Signed by:

[original signed by]

Erik W Nyland, P.Eng.
President of Boreal Engineering Ltd
On 5 April 2011
Effective date of report 28 March 2011

Signed by:

[original signed by]

H Matt Bolu, P.Eng.
Principal Process Engineer for Bolu Consulting Engineering Inc
On 5 April 2011
Effective date of report 28 March 2011

Signed by:

[original signed by]

Peter J Smith, P.Eng.
President & CEO of Axxent Engineering Ltd.
On 5 April 2011
Effective date of report 28 March 2011

Signed by:

[original signed by]

Dennis Earl Netherton P. Eng.
Largo Resources Limited
On 5 April 2011
Effective date of report 28 March 2011

Signed by:

[original signed by]

John Lemieux, P. Eng.
AMEC
On 5 April 2011
Effective date of report 28 March 2011

Signed by:

[original signed by]

Scott P. Weston, P. Geo.
Largo Resources Ltd
On 5 April 2011
Effective date of report 28 March 2011

22 CERTIFICATES

Mo Molavi

CERTIFICATE OF QUALIFIED PERSON

I, Mo Molavi P. Eng., M Eng, B Eng, of Vancouver, British Columbia do hereby certify that:

1. I am a Principal Mining Engineer of AMC Mining Consultants (Canada) Limited, Suite 1330, 200 Granville Street, Vancouver, British Columbia V6C 1S4.
2. The title and date of the technical report to which this certificate applies to are "Northern Dancer Project, Yukon, Canada, Largo Resources Limited, Preliminary Economic Assessment, AMC Project No. 710020 dated 28, March 2011."
3. I graduated with a B Eng in Mining Engineering from the Laurentian University in Sudbury Ontario in 1979 and an M Eng in Mining Engineering specializing in Rock Mechanics and mining methods from the McGill University of Montreal in 1987.
4. I am a registered member in good standing of the Association of Professional Engineers and Geoscientists of Saskatchewan and a Member of the Canadian Institute of Mining, Metallurgy and Petroleum.
5. I have worked as a Mining Engineer for a total of 30 years since my graduation from university and have relevant experience in project management, feasibility studies and technical report preparations for mining projects in North America.
6. I have read the definition of "qualified person" set out in NI 43-101 and certify that, by reason of my education, affiliations with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101
7. I visited the Northern Dancer Property on 1st October 2010.
8. I am responsible for coordination and collation of various contributors sections and in specific; the Executive Summary, sections 1, 2, 17.5, 17.6, 17.7, 17.8, 17.9, 17.12, 18 and 19.
9. I am independent of the issuer as described in section 1.4 of NI 43-101
10. I have had no prior involvement with the Northern Dancer property that is the subject of this technical report.
11. I have read NI 43-101 and the technical report has been prepared in compliance with NI 43-101
12. As of the date of this certificate, to the best of my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading

Dated this 28th day of March 2011

[signed and sealed]

Mo Molavi, P.Eng.
Principal Mining Engineer
AMC Mining Consultants (Canada) Ltd

G Hollett

CERTIFICATE OF QUALIFIED PERSON

I, Gregory Hollett P. Eng. of Vancouver, British Columbia do hereby certify that:

1. I am a Senior Mining Engineer for AMC Mining Consultants (Canada) Ltd, with a business address at #1330 – 200 Granville St., Vancouver BC, V6C 1S4
2. The title and date of the technical report to which this certificate applies to are "Northern Dancer Project, Yukon, Canada, Largo Resources Limited, Preliminary Economic Assessment, AMC Project No. 710020 dated 28, March 2011."
3. I am a graduate of Curtin University of Western Australia, (Bachelor of Engineering (Mining Engineering), 2000) and am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia, License #157783. I have practiced my profession continuously for 11+ years and have relevant experience in open pit mining projects for base and precious metals in North America, South America, Africa and south-east Asia. I have read the definition of "qualified person" set out in NI 43-101 and certify that, by reason of my education, affiliations with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101
4. I have not visited the Northern Dancer Property.
5. I am responsible for Chapter 17.1 titled "Mine Operations".
6. I am independent of the issuer as described in section 1.4 of NI 43-101
7. I have had no prior involvement with the Northern Dancer property that is the subject of this technical report.
8. I have read NI 43-101 and the technical report has been prepared in compliance with NI 43-101
9. 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

Dated this 28th day of March 2011

[signed and sealed]

Gregory Hollett P. Eng
Senior Mining Engineer
AMC Mining Consultants (Canada) Ltd

WS Board

<u>CERTIFICATE of QUALIFIED PERSON</u>

(a) I, Warwick S. Board, Senior Resource Geologist, Silver Standard Resources Inc., 1400 – 999 W. Hastings St., Vancouver, BC V6C 2W2; do hereby certify that:

(b) I am a co-author of the technical report titled "Northern Dancer Project, Yukon, Canada, Preliminary Economic Assessment" prepared for Largo Resources Limited by AMC Consultants (AMC Project No. 710020) and dated 28 March 2011 (the "Technical Report") relating to the Northern Dancer property.

(c) I graduated with a Bachelor of Science (Honours) Degree in Geology from the University of Cape Town (South Africa) in 1993. I graduated with a Master of Science degree in Geology in 1998 and a Doctor of Philosophy degree in Geology in 2002, both from the University of Cape Town. I am a registered Professional Geoscientist (P.Geo. #31256) with APEGBC, a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM), a registered Professional Natural Scientist with the South African Council for Natural Scientific Professions (Pr.Sci.Nat.) and a member of the Society of Economic Geologists. I have worked as a geologist for a total of thirteen years since my graduation from university.

I have read the definition of 'Qualified Person' set out in National Instrument 43-101 ('the Instrument') and certify that by reason of my education, affiliation with a professional association, and past relevant work experience, I fulfil the requirements of a 'Qualified Person' for the purposes of the Instrument. I have been involved in mining and Mineral Resource evaluation consulting practice for five years. During my working career I have been involved in geochemical exploration and Mineral Resource evaluation of porphyry Cu-Au and porphyry Mo-W±Au±Ag deposits.

(d) I visited the Northern Dancer Project between the 5 July and 7 July 2006, and again between August 21 to 22 2008.

(e) I am responsible for the preparation of Section 16 of the Technical Report, relating to work I conducted as a Principal Consultant at Snowden Mining Industry Consultants Inc. in 2009 (see reference Snowden, 2009 in the attached report).

(f) I am independent of the issuer as defined in Section 1.4 of the Instrument.

(g) Other than the work conducted and presented in the 17 May 2007, 25 May 2008, and 1 June 2009 technical reports prepared for Largo Resources Ltd and filed on SEDAR, I have not had any other prior involvement with the property that is the subject of the Technical Report.

(h) I have read the Instrument and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form.

(i) As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated at Vancouver BC this 28th Day of March, 2011.

<u>[signed and sealed]</u>

Warwick S. Board, M.Sc., Ph.D., P.Geo., MAusIMM, Pr.Sci.Nat.

HMM Bolu

CERTIFICATE OF QUALIFIED PERSON

I, H.M. Matt Bolu, P. Eng. of Surrey, British Columbia do hereby certify that:

1. I am the Principal Process Engineer for Bolu Consulting Engineering Inc., with a business address at #310 – 304 West Cordova St., Vancouver BC, V6B 1E8
2. The title and date of the technical report to which this certificate applies to are "Northern Dancer Project, Yukon, Canada, Largo Resources Limited, Preliminary Economic Assessment, AMC Project No. 710020 dated 28 March 2011."
3. I graduated with a M. Sc., degree in Minerals Engineering from the University of Birmingham, England in 1978 and am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia. I have practiced my profession continuously for 33+ years and have relevant experience in operations, testing, design and engineering of tungsten (in particular), base and precious metals as well as industrial minerals projects throughout in North America, Europe and Asia. I have read the definition of "qualified person" set out in NI 43-101 and certify that, by reason of my education, affiliations with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101
4. I have not visited the Northern Dancer Property.
5. I am responsible for Chapter 15 titled "Mineral Processing and Metallurgical Testing" and Chapter 17 titled " Production and Operating Cost Estimate"
6. I am independent of the issuer as described in section 1.4 of NI 43-101
7. I have had no prior involvement with the Northern Dancer property that is the subject of this technical report.
8. I have read NI 43-101 and the technical report has been prepared in compliance with NI 43-101
9. 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

Dated this 28th day of March 2011

[signed and sealed]

H.M. Matt Bolu, P. Eng

EW Nyland

CERTIFICATE OF QUALIFIED PERSON

I, Erik W Nyland, P. Eng. do hereby certify that as the preparer of the capital cost estimate for the all weather access roads described in the "Preliminary Economic Assessment dated March 28, 2011 on the Northern Dancer Project, Yukon, Canada"

I, hereby make the following statements:

1. I am the President of Boreal Engineering Ltd. with its office at 20 Arctic Chief Place, Whitehorse, Yukon.
2. I graduated with a Bachelors Degree in Civil Engineering from the University of Alberta in 2003.
3. I am a registered member in good standing of the Association of Professional Engineers and Geoscientists of BC, registration number 149795.
4. I am a registered member in good standing of the Association of Professional Engineers of Yukon, registration number 1535.
5. I have worked as a civil engineer, project manager, and senior engineering manager in Canada since graduation from university.
6. I have read the definition of "qualified person" set out in National Instrument 43- 101 ("NI 43-101") and hereby certify that by reason of my education, affiliation with a professional association (as defined by NI 43-101), and past relevant work experience on mining projects, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
7. I am the qualified person responsible for a part of Section 17 of this Preliminary Economic Assessment on the Northern Dancer Project, Yukon Territory, Canada.
8. I have visited the site of the project.
9. I have no prior involvement with the property that is the subject of the Preliminary Economic Assessment
10. I am not aware of any material fact or material change with respect to the subject matter of Section 17 of the Preliminary Economic Assessment for which I am responsible that is not reflected in the Preliminary Economic Assessment, the omission to disclose which makes the Preliminary Economic Assessment misleading.
11. To the best of my knowledge I am independent of the issuer applying all of the tests in section 1.4 of National Instrument 43-101.
12. As of March 21, 2011, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading.
13. I have read the National Instrument 43-101 and form 43-101F1, and I believe that section 17 of this Preliminary Assessment report for which I am partly responsible has been prepared in compliance with that instrument and form.
14. I consent to the filing of the Preliminary Economic Assessment with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Preliminary Economic Assessment.

Dated this 28th day of March 2011

[signed and sealed]

Erik Nyland P. Eng.
Whitehorse Yukon Canada

Peter J Smith

CERTIFICATE OF QUALIFIED PERSON

I, Peter J. Smith, P. Eng. do hereby certify that as the author of the capital cost estimate for the surface facilities described in Section 17 of this Preliminary Economic Assessment dated March 28, 2011 on the Northern Dancer Project, Yukon, Canada, I hereby certify that:

1. I am the President & CEO of Axxent Engineering Ltd. with its office at 312, 7485 - 130th Street, Surrey, BC, V3W 1H8
2. I graduated with a Bachelors Degree in Applied Science (Civil Engineering) from the University of British Columbia in 1968
3. I am a registered member in good standing of the Association of Professional Engineers and Geoscientists of BC, registration number 12720
4. I have worked as a civil engineer, project manager, and senior engineering manager in Canada and internationally since graduation from university
5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and hereby certify that by reason of my education, affiliation with a professional association (as defined by NI 43-101), and past relevant work experience on mining projects, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101
6. I am the qualified person responsible for Section 17 of this Preliminary Economic Assessment on the Northern Dancer Project, Yukon Territory, Canada
7. I have not visited the site of the project
8. I have no prior involvement with the property that is the subject of the Preliminary Economic Assessment
9. I am not aware of any material fact or material change with respect to the subject matter of Section 17 of the Preliminary Economic Assessment for which I am responsible that is not reflected in the Preliminary Economic Assessment, the omission to disclose which makes the Preliminary Economic Assessment misleading
10. I am independent of the issuer applying all of the tests in section 1.4 of National Instrument 43-101
11. As of March 28, 2011, to the best of my knowledge, information and belief, the technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading
12. I have read National Instrument 43-101 and Form 43-101F1, and I believe that Section 17 of this Preliminary Economic Assessment , for which I am responsible, has been prepared in compliance with that instrument and form
13. I consent to the filing of the Preliminary Economic Assessment with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Preliminary Economic Assessment.

[signed and sealed]

Peter Smith, P. Eng

Signed: March 28, 2011

Location: Vancouver, BC, Canada

DE Netherton

CERTIFICATE OF QUALIFIED PERSON

As the author of a portion of section 17 "Northern Dancer Project, Yukon, Canada, Largo Resources Limited, Preliminary Economic Assessment, AMC Project No. 710020 dated 28, March 2011."

I Dennis Earl Netherton P. Eng. do certify that:

1. I graduated with a Bachelor of Engineering (Civil) from Lakehead University in 1981.
2. I am a registered Professional Civil Engineer with the Association of Professional Engineers of Ontario (membership No. 33789504).
3. I am a member in good standing of several other technical associations and societies, including:
    a. Canadian Geotechnical Association (Member)
    b. American Society of Civil Engineers (Member and Candidate Fellow)
    c. Canadian Dam Association (Member)
    d. The Canadian Institute of Mining, Metallurgy and Petroleum (Member)
4. I have worked as a professional Civil Engineer in the resource development sector for 29 years and for 10 years prior to that as a Civil Technologist.
5. Because of education, experience and professional registration, I fulfill the requirements of a Qualified Person as defined in NI 43-101. My work experience includes many years of involvement in water supply and hydroelectric development covering all aspects from field and photographic surveys on the James Bay Project, the Gongola Mada and Dep River Projects in Nigeria, geotechnical investigations of dam sites and canal works, hydrology studies of river and lake systems. My work has routinely required the design of key elements for such developments, or the contracting of known specialists for assistance or peer review. More recently, I served as the engineer of record for the permitting of the Ocona Power Project in1996 the Laguna Piaz Project (Piaz 1) in 1998 and the Alto Cercapuquio Project (AC 1) respectively in the Arequipa, La Libertad, and Junin Departments of Peru.
6. I am a registered user of the Canadian Ministry of Natural Resources RETSCREEN hydro evaluation program since 2000. Additionally, I have given instruction on the use of the program to employees, managers and heads of government agencies and finance groups.
7. I am the contracted party responsible for the preparation of Hydro Power potential and cost of energy portion of Section 17 of this PEA report.
8. I have visited the Northern Dancer property in July 2010.
9. I am independent of the parties involved in the transaction for which this report is required, as defined in Section 1.4 of NI 43-101;
10. I have had no prior involvement with the mineral properties in question;
11. I have read NI 43-101 and the portions of this report for which I am responsible have been prepared in compliance with that instrument;
12. As of the date of this certificate, to the best of my knowledge, information and belief, the section of the technical report for which I take responsibility contains all scientific and technical information that requires disclosure to make this report not misleading.

Dated this 28 day of March 2011
[signed and sealed]

Dennis E. Netherton P. Eng.

S Weston

CERTIFICATE OF QUALIFIED PERSON

As the author of a portion of section 17 "Northern Dancer Project, Yukon, Canada, Largo Resources Limited, Preliminary Economic Assessment, AMC Project No. 710020 dated 28, March 2011."

I, Scott P. Weston, P. Geo, hereby certify that:

1) I am employed by, and carried out this assignment for:

   Hemmera Envirochem Inc. 250 – 1380 Burrard Street Vancouver, BC V6Z 2H3

   Phone: 604.404.4009 Fax: 604.669.0430 Email: sweston@hemmera.com
2) I hold the following academic qualifications:
   - Bachelor of Science (Physical Geography). University of British Columbia (UBC), Vancouver, BC. 1995.
   - Masters of Science (Environment and Management). Royal Roads University, Victoria, BC. 2003.
3) I am a member in good standing of the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC).
4) I have worked as a geomorphologist and environmental scientist in resource development industries for 16 years.
5) I do, by reason of my education, affiliation with a professional association and past relevant work experience, fulfil the requirements to be a "qualified person" for the purposes of NI 43-101. My work experience includes 10 years of designing, leading and conducting environmental baseline studies and environmental monitoring.
6) I am responsible for review of Section 17.5 of Largo Resources Ltd. Northern Dancer Preliminary Economic Assessment Report dated 28 March 2011, and am familiar with the primary literature used to compile this Section.
7) I am not aware of any material facts or material changes with respect to the subject matter of Section 17.5 of the assessment report not contained within the report, of which the omission to disclose makes the report misleading.
8) I am independent of the parties involved in the transaction for which this report is required, as defined in Section 1.4 of NI 43-101.
9) I have no prior involvement with the mineral properties in question.
10) I have read National Instrument 43-101 and the portions of this report for which I am responsible have been prepared in compliance with that instrument.
11) As of the date of this certificate, to the best of my knowledge, information and belief, the section of the technical report for which I take responsibility contains all scientific and technical information that requires disclosure to make this report not misleading.

Dated this 28th day of March, 2011

[signed and sealed]

Scott P. Weston, P. Geo.

JL Lemieux

CERTIFICATE OF QUALIFIED PERSON

I, John Lemieux, P. Eng., hereby certify that: I am employed by, and carried out this assignment for AMEC, Suite 400 – 1868 Blvd. des Sources, Pointe-Claire, QC, H9R 5R2 tel. (514) 429-6555, fax (514) 429-6550.

1. I hold the following academic qualifications: B.Eng. Mining, University of McGill, 1994;
2. I am a Chartered Engineer registered with the “Ordre des Ingénieurs de Québec” (registration number 113626) and with “Professional Engineers Ontario” (registration number 100156370);
3. Also, I am a professional member in good standing of The Canadian Institute of Mining, Metallurgy and Petroleum;
4. My work experience includes 15 years as a geotechnical engineer for the mining industry, specifically in mining environment for containment of process water and solids including field investigation, conceptual design, detailed engineering, construction supervision and management.
5. I have visited the Northern Dancer property in 2008;
6. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of NI 43-101.
7. I am responsible for the preparation of Section 17.2 of this report entitled “Preliminary Economic Assessment for the Northern Dancer Project”, dated March 28, 2011.
8. I have not had prior involvement with the property that is the subject of the Assessment Report.
9. I am not aware of any material facts or material changes with respect to the subject matter of the assessment report not contained within the report, of which the omission to disclose makes the report misleading.
10. I am independent of the issuer applying all of the tests in section 1.5 of National Instrument 43-101.
11. I have read National Instrument 43-101 and Form 43-101E1; the portions of this report for which I am responsible have been prepared in compliance with the instrument.
12. I consent to the filing of the Assessment Report with the British Columbia Mineral Titles, Ministry of Energy, Mines and Resources, Government of British Columbia.

Dated this 28nd day of March, 2011

[signed and sealed]

John Lemieux, P. Eng.