# TECHNICAL REPORT

# AND RESOURCE ESTIMATE

# ON THE

# CHEMINIS GOLD MINE PROPERTY

# LARDER LAKE, ONTARIO

**Latitude 48°07'02" N, Longitude 79°39'50" W**

**For**

**BEAR LAKE GOLD LIMITED**

**By**

**P & E Mining Consultants Inc.**

**NI 43-101 & 43-101F1**
**TECHNICAL REPORT**

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**P & E Mining Consultants Inc.**
**Report No. 211**

**Effective Date: April 8, 2011**
**Signing Date: May 27, 2011**

***IMPORTANT NOTICE***

*This report was prepared as a National Instrument 43-101 Technical Report, in accordance with Form 43-101F1, for Bear Lake Gold Limited ("Bear Lake") by P & E Mining Consultants Inc. ("P&E"). The quality of information, conclusions and estimates contained herein is consistent with the level of effort involved in P&E's services and based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This report is intended to be used by Bear Lake, subject to the terms and conditions of its contract with P & E. This contract permits Bear Lake to file this report as a Technical Report with Canadian Securities Regulatory Authorities pursuant to National Instrument 43-101, Standards of Disclosure for Mineral Projects. Any other use of this report by any third party is at that party's sole risk.*

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## EXECUTIVE SUMMARY

The following report was prepared to provide an NI 43-101 compliant Technical Report and independent Resource Estimate of the gold mineralization at the Cheminis Property, Larder Lake Area, Ontario (the "Property" or the "Project"). Bear Lake Gold Limited, ("Bear Lake") has a 100% outright interest in the property.

Mr. Antoine Yassa, P. Geo., a qualified person under the terms of NI 43-101, conducted several site visits to the Property from June 2010 to March 2011. An independent verification sampling program was conducted in March by Mr. Yassa.

The purpose of the current report is to provide an independent Technical Report and Resource Estimate of the gold mineralization present on the Cheminis Property, in conformance with the standards required by NI 43-101 and Form 43-101F. The estimate of mineral resources contained in this report conforms to the CIM Mineral Resource and Mineral Reserve definitions (December, 2005) referred to in National Instrument (NI) 43-101, Standards of Disclosure for Mineral Projects.

The Cheminis Property, which is part of a larger Property package known as the Larder Lake Gold Project, was acquired by NFX Gold Inc., ("NFX") on September 16, 2008, by way of acquisition of all of the issued shares of Maximus Ventures Ltd., ("Maximus"). As part of the closing, NFX changed its name to Bear Lake Gold Ltd. Maximus is now a wholly-owned subsidiary of Bear Lake.

Bear Lake owns Patents, Leases and Licenses of Occupation within the McVittie/McGarry Townships area. Neither Licenses of Occupation nor Patents have expiries; they remain in good standing (provided that annual rents/taxes are paid) in perpetuity. Leases are good for 21-year renewable terms, again subject to payment of annual rents/taxes.

These contiguous land holdings cover approximately 2,168 hectares in McVittie and McGarry Townships, within the heart of the Larder Lake gold mining district, some seven km west of the formerly producing Kerr Addison gold mine, (11 million ounces of gold). The overall Larder Lake Gold Project is typically referred to as six separate properties, namely the Barber Larder, Bear Lake, Cheminis, Cheminis North, Fernland and Swansea Properties.

The Larder Lake Gold Project is located in northern Ontario, 35 km east of Kirkland Lake and six km west of Virginiatown. It can be accessed by Quebec Provincial Highway 117 (also the Trans-Canada Highway, "TCH") west from Rouyn-Noranda, QC, which essentially becomes Highway 66. A direct route from North Bay, ON is north via Highway 101 to Highway 117, then west on Hwy 117 until it becomes Hwy 66.

The Cheminis Mine, located on the Cheminis Property, is immediately adjacent to the north side of Highway 66. All parts of the Larder Lake Property are accessible by truck or all-terrain vehicles on non-serviced roads and trails.

Climate is characterized by mild summers and cold winters with mean temperatures ranging from –15°C in January to +20°C in July. Mean annual precipitation ranges from 40 millimeters ("mm") in February to 120 mm in September. The climate on the Property area is favourable for year-round exploration and mining.

The topography of the Property is essentially flat with the highest elevations between 335 and 350 m asl. Vegetation can be described as boreal, consisting mostly of black spruce, poplar and alders.

Kirkland Lake, located 35 km west is a comprehensive mining centre supplying personnel, contractors, equipment and supplies to a number of operations in the area. The TCH is located at the southern edge of the property and the Ontario Northland Transportation Commission railway is located approximately three km to the north. A power line also crosses the Property at the southern edge, parallel to the TCH.

The Larder Lake Property has been the subject of extensive past exploration work, beginning in 1937. From 1938 to 1940, Cheminis Gold Mines Ltd. sank a three-compartment shaft to a depth of 533 feet, with 4,929 feet of lateral work completed on levels 150, 275, 400 and 525 feet. In 1940 the Cheminis Mine was closed. In 1947, Amalgamated Larder Mines Ltd., the owner at that time, recommenced underground development with deepening of the shaft to 1,085 feet and development of the 1035 level. Underground drilling results were disappointing and the operation was closed without production. By 1990 Northfield had acquired a 78.5% interest in the Larder Lake Property. Northfield rehabilitated the mine, proceeded with development and began limited production, which began in November, 1991, and continued with brief periods of shutdown to allow further development, until July, 1996. Over the production period 260,000 tons were mined at a recovered grade of 0.104 oz Au/ton. Milling of the ore was done on a custom basis at the Holt-McDermott, Macassa and AJ Perron (former Kerr Addison) mills in the area.

No work has been undertaken on the Cheminis Property since a 2006 diamond drilling program was completed.

The consolidated rocks in the area are of Precambrian age. They consist of tightly-folded Archean volcanic and sediment intruded by syenite and unconformably overlain by relatively flat-lying Proterozoic sediment of the Cobalt series. The economic mineral deposits are confined to the Archean rocks.

Most of the volcanics are of Keewatin age. This is the oldest rock group, which consists of andesite interbedded with bands of tuff, agglomerate and rhyolite. These rocks are unconformably overlain by Temiskaming sediments and volcanics. The Temiskaming andesite which generally underlies the sediments is confined to a belt south of the Larder Lake Break.

The Temiskaming was followed by an orogenic period in which rocks were folded into tight synclines and anticlines, faulted, then intruded and altered by Algoman syenite and solutions. This orogeny caused the first movement on the Main Break. The carbonate solutions which permeated the fault zones were probably more or less contemporaneous with these intrusives. The combination of carbonatization and the release of free quartz produced brittle areas along the Main Break which fractured with a recurrence of movement along this fault. These fractures formed the passage ways for the quartz and gold solutions.

After an extended period of erosion the Cobalt sediments were deposited. The Cobalt greywacke, arkose and conglomerate are unsorted and show little disturbance.

There have been later movements both post ore and post Huronian on old faults.

The Larder Lake Break is the most important structural feature in the area. It forms part of the fault zone which extends from Kirkland Lake, Ontario to Val-d'Or, Quebec, along or adjacent to which are situated most of the gold mines in this area.

The Larder Lake Break marks the boundary between rocks of the Abitibi Geosyncline to the north and the rocks of the Temiskaming Supergroup to the south, and may be considered as a locus of major crustal adjustment during an early Precambrian period of geosynclinal collapse in the region.

In the Larder Lake district, the break area is strongly anomalous in gold content, with higher concentrations of the metal occurring in roughly tabular areas of considerable extent. To date, approximately 13 million ounces of gold have been produced from such systems in the Larder Lake district.

Across the Larder Lake Break, at least four dominantly sedimentary formations occur; these are marked by the presence of variably sheared green to gray carbonate rock, mudstone, sandstone and shale, which are often very highly auriferous. The Kerr formation, which is the most northerly and youngest of these, is also the largest, and has been the source of practically all of the gold production from the area. In the Kerr formation, the bulk of production was from heavily-veined green carbonate rock ("carbonate ore") and cherty pyritic mudstone ("flow ore"), which occur repetitively within it. Other less important ore types known from the Kerr Addison Mine include auriferous chert, veined pyrite rock and veined syenite.

The Kerr Addison Mine, and the Omega and Cheminis Mines, lie within the same geological formations and share common characteristics. The development of this highly productive formation is intermittent along the Larder Lake Break, and it should be kept in mind that the frequency, extent and tenor of gold zones within it may be expected to vary in different locations.

The Cheminis mineralization fits broadly into the category of quartz-carbonate vein gold. This subtype of gold deposits consists of simple to complex quartz-carbonate vein systems associated with brittle ductile shear zones and folds in deformed and metamorphosed volcanic, sedimentary, and granitoid rocks. In these deposits gold occurs in veins or as disseminations in immediately adjacent altered wall rocks, and is generally the only or the most significant economic commodity. The veins occur in structural environments characterized by low- to medium-grade metamorphic rocks and brittle-ductile rock behavior, corresponding to intermediate depths within the crust, and by compressive tectonic settings. Deposits of this type have commonly been referred to as mesothermal gold quartz vein deposits, but they in fact encompass both mesothermal and hypothermal classes as initially defined by Lindgren (1933).

Quartz-carbonate vein deposits account for approximately 80% of the production from lode gold deposits in Canada. The Canadian Shield, and the Superior Province in particular, contains the most significant deposits and accounts for more than 85% of the gold production from quartz-carbonate veins in Canada.

The Cheminis Property gold bearing zones may be grouped into three main types: flow, carbonate and sedimentary.

**Flow Type**

Gold occurs with pyrite grains disseminated throughout volcano-sedimentary rocks having chemical composition of Fe-tholeiitic basalt. The host rocks generally consist of mixtures of detrital mud, fine to coarse mafic pyroclastic and basaltic flow-top material. Finely disseminated carbon and/or graphitic slips are usually present. Gold is quite homogeneously distributed. Visible gold is very rare. Usually gold concentration correlates positively with the degree of silicification, fineness of pyrite and concentration of pyrite. The term "flow ore" is a historical reference for this style of mineralization and has been retained for this report but placed in quotation marks to clarify that it is not necessarily ore in the reserve/economic sense. Examples at the Cheminis Mine are the "A", "B", "C" and "D" Zones.

**Carbonate Type**

Gold occurs as erratically distributed native gold in quartz veinlets, usually part of quartz-carbonate stockwork in fuchsitic to chloritic altered ultramafic volcanic rocks. An example of this at the Cheminis mine is the NCGZ. The term "carbonate ore" is a historical reference for this style of mineralization and has been retained for this report but placed in quotation marks to clarify that it is not necessarily ore in the reserve/economic sense.

**Sedimentary Type**

Gold is found with fine-grained arsenopyrite and certain extremely fine-grained wispy masses of pyrite. Generally coarse pyrite is barren of gold. Gold is more erratically distributed in "flow ore", but much less so than in "carbonate-ore". Visible gold is rare. The host rock is intensely sericitized and silicified greywacke, or argillaceous siltstone. Examples at Cheminis mine are the North Sediment Gold Zone and the South Sediment Gold Zone. The term "sedimentary-ore" is a historical reference for this style of mineralization and has been retained for this report but placed in quotation marks to clarify that it is not necessarily ore in the reserve/economic sense.

In order to estimate the resources on the Cheminis Property to NI 43-101 standards for disclosure for mineral projects, P&E requested that Bear Lake resample roughly 10% of historical core that was stored at the mine site. A list of the constrained samples was given to the Bear Lake geologist, and ¼ splits were taken of the core.

Sixty-seven samples were collected, in addition to 15 samples collected by Antoine Yassa, the independent QP. Samples were assembled into batches of 24 samples, which included one certified reference material and one blank sample. Four batches were sent to Laboratoire Expert in Rouyn-Noranda. Resampling results were consistent with original results.

The Cheminis Deposit domain boundaries were determined from lithology, structure and grade boundary interpretation from visual inspection of drill hole sections. Five domains were created named NCB, SS, D, S-HW and DS. These domains were created with computer screen digitizing on drill hole sections in Gemcom by the authors of this report. The domain outlines were influenced by the selection of mineralized material above 2.5 g/t Au that demonstrated a lithological and structural zonal continuity along strike and down dip.

The bulk density used for the creation of a density block models was derived from site visit samples taken by Antoine Yassa and analysed at Agat Laboratories in Mississauga, Ontario. The

average bulk density for the Cheminis resource was derived from 15 samples and determined to be 2.68 tonnes per cubic metre.

The resource estimate was derived from applying a Au cut-off grade to the block model and reporting the resulting tonnes and grade for potentially mineable areas. The volumes of the existing underground workings were removed from the resource estimate which is:

| **2011 CHEMINIS RESOURCE ESTIMATE @ 2.5 G/T AU CUT-OFF GRADE(1)(2)(3)** | | | |
|---|---|---|---|
| **Classification** | **Tonnes** | **Au g/t** | **Au oz.** |
| Indicated | 335,000 | 4.07 | 43,800 |
| Inferred | 1,391,000 | 5.22 | 233,400 |

***(1)*** *Mineral resources which are not mineral reserves do not have demonstrated economic viability. The estimate of mineral resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*
***(2)*** *The quantity and grade of reported inferred resources in this estimation are uncertain in nature and there has been insufficient exploration to define these inferred resources as an indicated or measured mineral resource and it is uncertain if further exploration will result in upgrading them to an indicated or measured mineral resource category.*
***(3)*** *The mineral resources in this technical report were estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council.*

It is recommended to undertake an approximate 15,000 metre diamond drill program with the goal of expanding the resources on strike and at depth, and to fill in gaps in the block model with the possibility of upgrading the resource categories. The approximate cost of the diamond drill program is $CDN 2 million.

# 1.0 INTRODUCTION AND TERMS OF REFERENCE

## 1.1 TERMS OF REFERENCE

The following report was prepared to provide an NI 43-101 compliant Technical Report and independent Resource Estimate of the gold mineralization at the Cheminis Property, Larder Lake Area, Ontario (the "Property" or the "Project"). Bear Lake Gold Limited, ("Bear Lake") has a 100% outright interest in the property.

This report was prepared by P & E Mining Consultants Inc., ("P & E") at the request of Mr. Francois Viens, President, Bear Lake Gold. Bear Lake is a Longueuil, Québec based company trading on the TSX Venture Exchange (TSX-V) under the symbol of "BLG", with its corporate office at:

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This report is considered current as of April 8, 2011.

Mr. Antoine Yassa, P. Geo., a qualified person under the terms of NI 43-101, conducted several site visits to the Property from June 2010 to March 2011. An independent verification sampling program was conducted in March by Mr. Yassa.

In addition to the site visit, P & E carried out a study of all relevant parts of the available literature and documented results concerning the project and held discussions with technical personnel from the company regarding all pertinent aspects of the project. The reader is referred to these data sources, which are outlined in the "Sources of Information" section of this report, for further detail on the project.

The purpose of the current report is to provide an independent Technical Report and Resource Estimate of the gold mineralization present on the Cheminis Property, in conformance with the standards required by NI 43-101 and Form 43-101F. The estimate of mineral resources contained in this report conforms to the CIM Mineral Resource and Mineral Reserve definitions (December, 2005) referred to in National Instrument (NI) 43-101, Standards of Disclosure for Mineral Projects.

## 1.2 SOURCES OF INFORMATION

This report is based, in part, on internal company technical reports, and maps, published government reports, company letters and memoranda, and public information as listed in the "References" Section 19.0 at the conclusion of this report. Several sections from reports authored by other consultants have been directly quoted in this report, and are so indicated in the appropriate sections. P&E has not conducted detailed land status evaluations, and has relied upon previous qualified reports, public documents and statements by Bear Lake regarding property status and legal title to the project.

## 1.3 UNITS AND CURRENCY

Unless otherwise stated all units used in this report are metric. Gold assay values are reported in g/t Au unless some other unit is specifically stated. The CDN$ is used throughout this report.

## 1.4 GLOSSARY OF ABBREVIATIONS

In this document, in addition to the definitions contained heretofore and hereinafter, unless the context otherwise requires, the following terms have the meanings set forth below.

| | |
|---|---|
| "$" and "C$" | means the currency of Canada. |
| "AA" | is an acronym for Atomic Absorption, a technique used to measure metal content subsequent to fire assay. |
| "asl" | means above sea level. |
| "Au" | means gold. |
| "Azi" | means azimuth. |
| "CIM" | means the "Canadian Institute of Mining, Metallurgy and Petroleum." |
| "CSA" | means the Canadian Securities Administrators. |
| "DDH" | means diamond drillhole. |
| "E" | means east. |
| "el" | means elevation level. |
| "g/t" | means grams per tonne. |
| "g/t Au" | means grams of gold per tonne of rock |
| "ha" | means Hectare. |
| "IP" | means Induced Polarization. |
| "kg" | means kilogram. |
| "km" | means kilometre equal to 1,000 metres or approx. 0.62 statute miles. |
| "m" | means metric distance measurement equivalent to approximately 3.27 feet |
| "M" | means million. |
| "Ma" | means millions of years. |
| "mm/an" | means millimetres per annum. |
| "Mt" | means millions of tonnes. |
| "N" | means north. |
| "NE" | means northeast. |
| "NI 43-101" | means Canadian Securities Administrators National Instrument 43-101. |
| "NN" | means Nearest Neighbour. |
| "NTS" | means National Topographic System. |
| "NW" | means northwest. |
| "NSR" | is an acronym for "Net Smelter Return", which means the amount actually paid to the mine or mill owner from the sale of ore, minerals and other materials or concentrates mined and removed from mineral properties, after deducting certain expenditures as defined in the underlying smelting. |
| "oz/T" | means ounces per ton. |
| "P&E | means P&E Mining Consultants Inc. |
| "ppm" | means parts per million. |
| "Project" | means Larder Lake Property or Project. |
| "Property" | means Larder Lake Property or Project. |
| "S" | means south. |

| | |
|---|---|
| “SE” | means southeast. |
| “SEDAR” | means the System for Electronic Document Analysis and Retrieval. |
| “SW | means southwest. |
| “t” | means metric tonne equivalent to 1,000 kilograms or approximately 2,204.62 pounds. |
| “T” | means Short Ton (standard measurement), equivalent to 2,000 pounds. |
| “US$” | means the currency of the United States. |
| “UTM” | means Universal Transverse Mercator. |
| “W” | means west. |

## 2.0 RELIANCE ON OTHER EXPERTS

The authors wish to make clear that they are qualified persons only in respect of the areas in this report identified in their "Certificates of Qualified Persons" submitted with this report to the Canadian Securities Administrators. The authors have relied, and believe that they have a reasonable basis to rely upon Mr. Francois Viens who has contributed the legal, environmental, marketing and taxation information stated in this report.

Although copies of the licenses, permits and work contracts were reviewed, an independent verification of land title and tenure was not performed. P & E has not verified the legality of any underlying agreement(s) that may exist concerning the licenses or other agreement(s) between third parties.

A draft copy of the report has been reviewed for factual errors by Bear Lake. Any changes made as a result of these reviews did not involve any alteration to the conclusions made. Hence, the statement and opinions expressed in this document are given in good faith and in the belief that such statements and opinions are neither false nor misleading at the date of this report.

## 3.0 PROPERTY DESCRIPTION AND TENURE

## 3.1 DESCRIPTION AND TENURE

The 100% ownership of the Cheminis Property, which is part of a larger property package known as the Larder Lake Gold Project, was consolidated as a result of the completion of a business combination between NFX Gold Inc., ("NFX") and Maximus Ventures Ltd. ("Maximus") on September 16, 2008, by way of acquisition of all of the issued shares of Maximus by NFX. As part of the transaction, NFX changed its name to Bear Lake Gold Ltd. Maximus became a wholly-owned subsidiary of Bear Lake.

Bear Lake owns Patents, Leases and Licenses of Occupation within the McVittie/McGarry Townships area, (see Table 3.1). Neither Licenses of Occupation nor Patents have expiries; they remain in good standing (provided that annual rents/taxes are paid) in perpetuity. Leases are good for 21-year renewable terms, again subject to payment of annual rents/taxes.

**TABLE 3.1**
**LIST OF PROPERTIES COMPRISING LARDER LAKE GOLD PROJECT**

| Property | Claims |
|---|---|
| Cheminis Property | 8 patented |
| Cheminis North | 10 patented |
| Bear Lake | 26 patented |
| | 2 Licences of Occupation |
| | 1 claim surface rights only |
| Barber Larder | 7 patented |
| | 2 Licences of Occupation |
| Fernland | 11 patented |
| Swansea | 28 leased |
| | |
| **TOTAL** | **62 Patented claims with surface and mineral rights**<br>**1 patented claim with surface rights only**<br>**4 licences of occupation (underlain by water)**<br>**28 leased claims** |

These contiguous land holdings cover approximately 2,168 hectares in McVittie and McGarry Townships (Figure 3.1), within the heart of the Larder Lake gold mining district, some seven km west of the formerly producing Kerr Addison gold mine, (11 million ounces of gold). The overall Larder Lake Gold Project is typically referred to as six separate properties, namely the Barber Larder, Bear Lake, Cheminis, Cheminis North, Fernland and Swansea Properties. Five of the properties are owned 100% by Bear Lake Gold. The Swansea property is owned 75% by Bear Lake and 25% by Newstrike Resources Inc.

The Mining Lands Section of MNDMF confirmed that all of Bear Lake's Rent/Tax accounts (T0005, LT0382 and LO0007) are in good standing.

**Figure 3.1 Larder Lake Gold Project Claims Location Map**

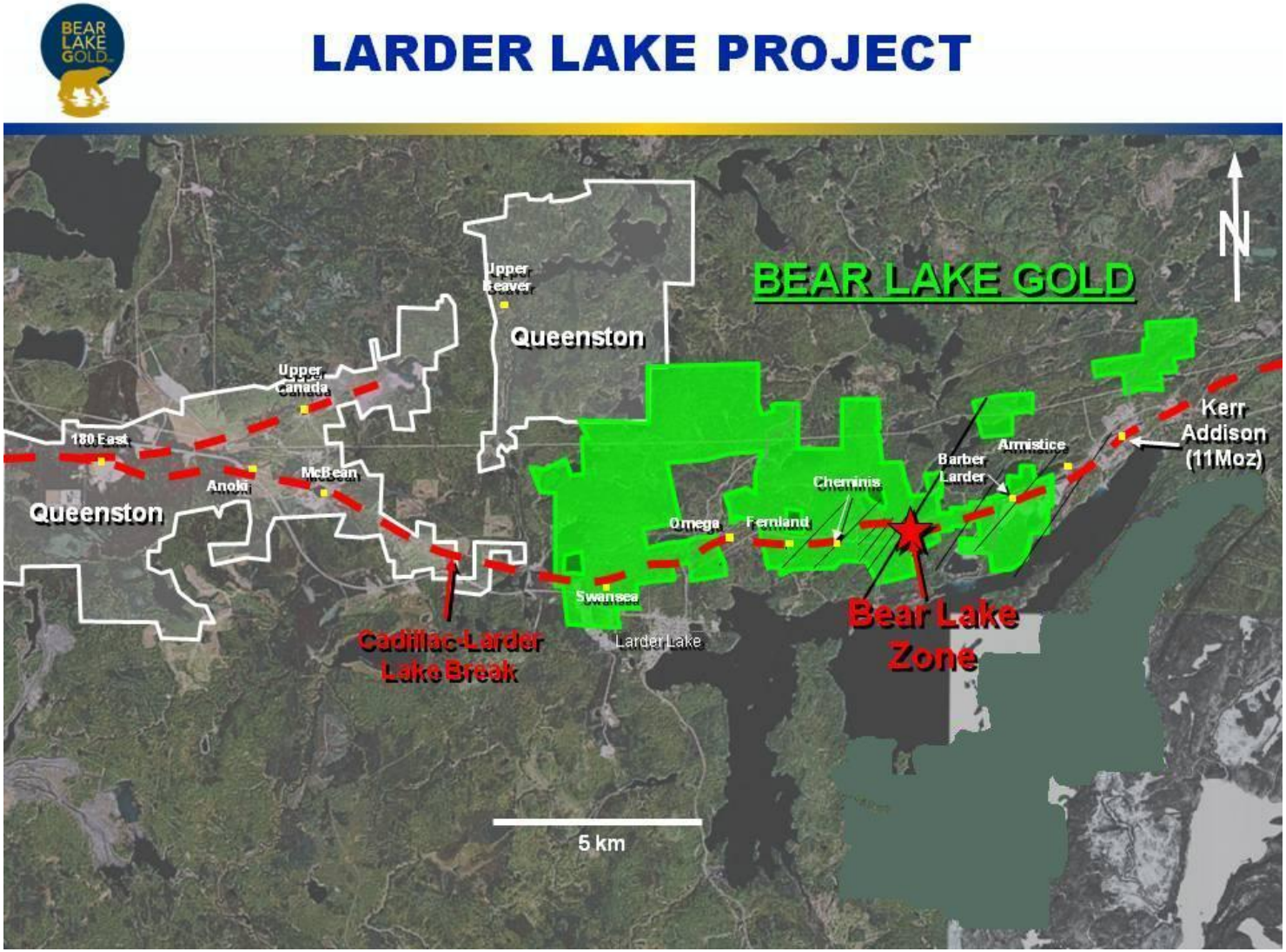
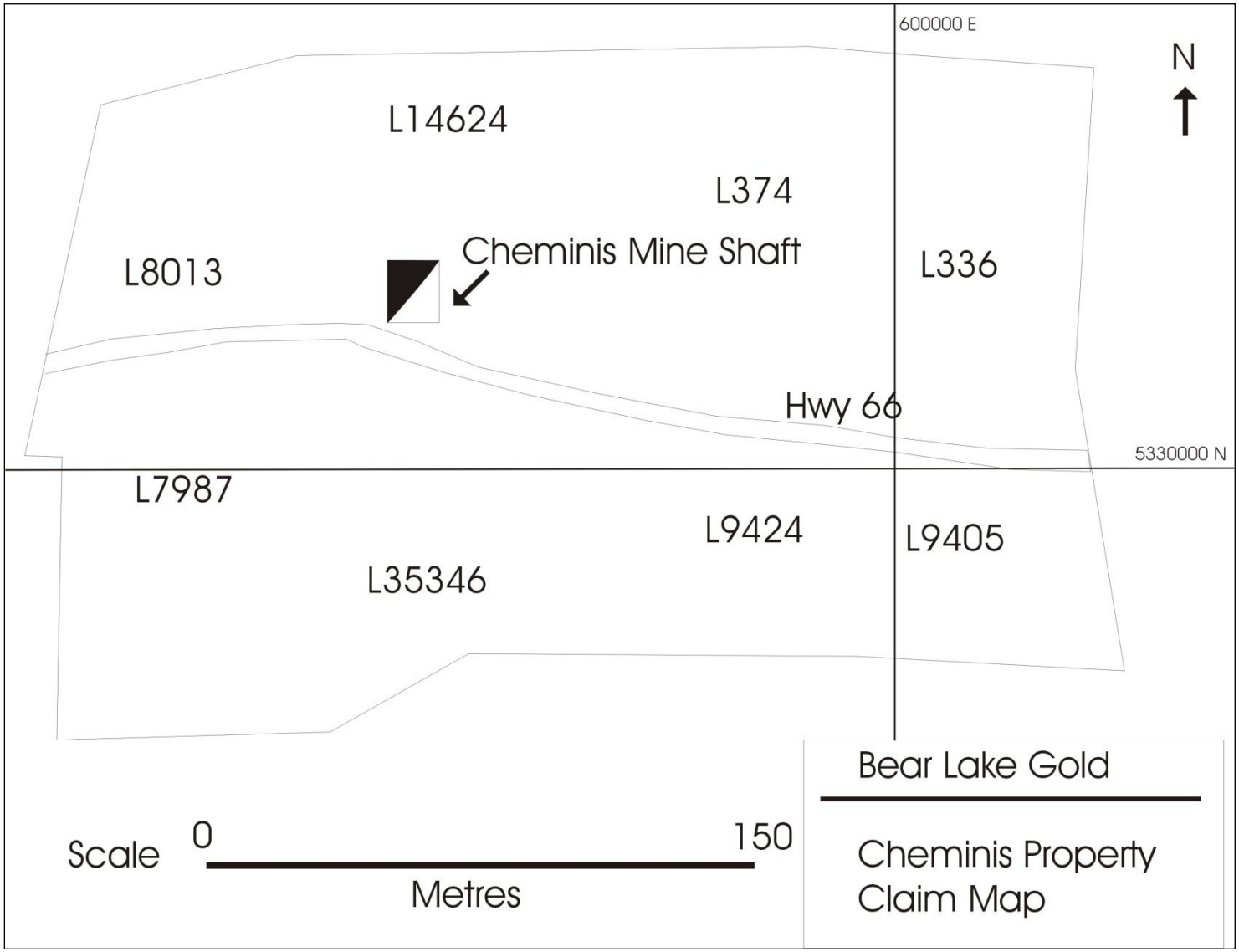


**Figure 3.2 Detailed Claim Map of the Cheminis Property**



## 4.0 LOCATION, ACCESS, CLIMATE, PHYSIOGRAPHY AND INFRASTRUCTURE

### 4.1 LOCATION AND ACCESS

The Larder Lake Gold Project is located in northern Ontario, 35 km east of Kirkland Lake and six km west of Virginiatown (Figure 4.1 and Figure 4.2). It can be accessed by Quebec Provincial Highway 117 (also the Trans-Canada Highway, "TCH") west from Rouyn-Noranda, QC, which essentially becomes Highway 66. A direct route from North Bay, ON is north via Highway 101 to Highway 117, then west on Hwy 117 until it becomes Hwy 66.

The Cheminis Mine, located on the Cheminis Property, is immediately adjacent to the north side of Highway 66. All parts of the Larder Lake Property are accessible by truck or all-terrain vehicles on non-serviced roads and trails.

The UTM NAD 83, Zone 17 coordinates for the Larder Lake Property are 601,000 East, 5,330,500 North.

**Figure 4.1 Cheminis Mine Property**

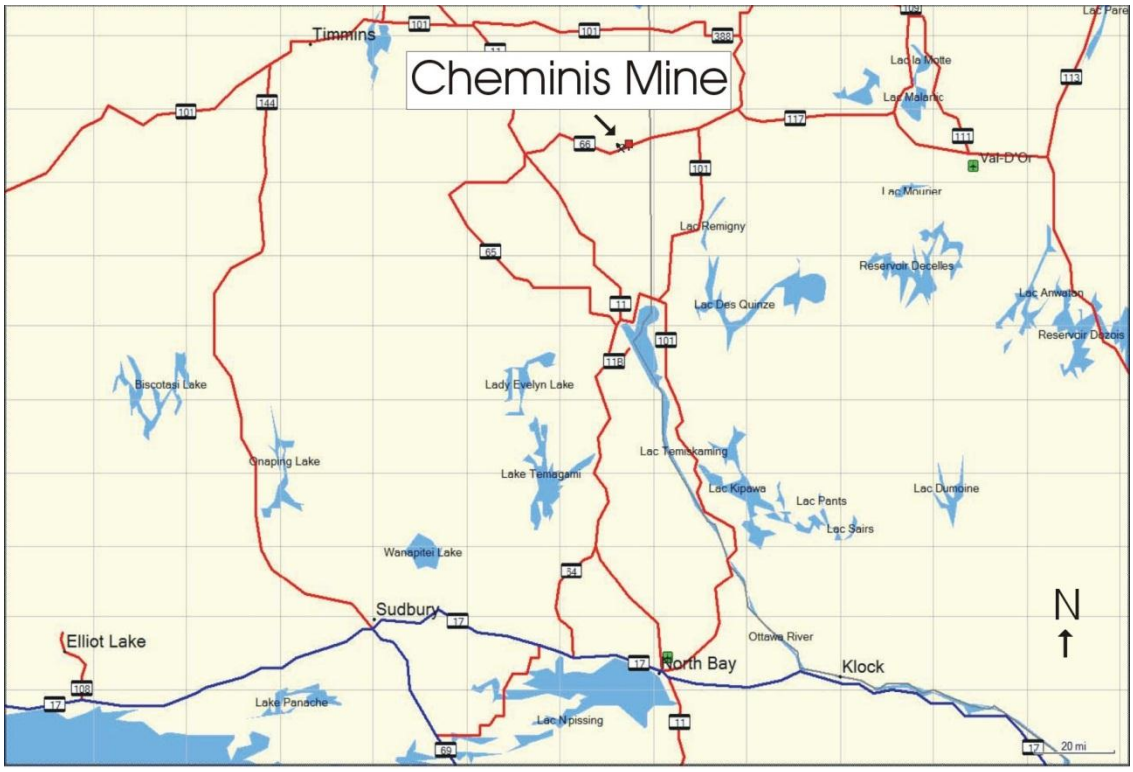


**Figure 4.2 Cheminis Mine Detailed Location Map**


## 4.2 CLIMATE AND PHYSIOGRAPHY

Climate is characterized by mild summers and cold winters with mean temperatures ranging from –15°C in January to +20°C in July. Mean annual precipitation ranges from 40 millimeters ("mm") in February to 120 mm in September. The climate on the Property area is favourable for year-round exploration and mining.

The topography of the Property is essentially flat with the highest elevations between 335 and 350 m asl. Vegetation can be described as boreal, consisting mostly of black spruce, poplar and alders.

## 4.3 INFRASTRUCTURE

Kirkland Lake, located 35 km west of the Property is a comprehensive mining centre supplying personnel, contractors, equipment and supplies to a number of operations in the area. The TCH is located at the southern edge of the property and the Ontario Northland Transportation Commission railway is located approximately three km to the north. A power line also crosses the Property at the southern edge, parallel to the TCH.

# 5.0 HISTORY AND PREVIOUS EXPLORATION

## 5.1 HISTORY

The Larder Lake Property has been the subject of extensive past exploration work. The following Table 5.1 provides a brief exploration and ownership history up to and including Bear Lake's involvement. Note that no work has been completed on the Cheminis Property since 2006 when diamond drilling was completed. Results of this drilling were detailed in the report titled, "NI 43-101 Technical Report on the Larder Lake Property, Larder Lake, Ontario", dated June 4, 2008 and authored by John Wakeford, P. Geo (the "2008 Technical Report") which is filed on the SEDAR website at www.sedar.com under Bear Lake's profile.

**TABLE 5.1**
**HISTORICAL WORK COMPLETED ON THE CHEMINIS PROPERTY**

| Company | Year | Work Completed |
|---|---|---|
| Cheminis Gold Mines Ltd. | 1937 | Diamond drilling, sinking of 3 compartment shaft from 1939-40 to a depth of 533 ft. 4,929 feet of lateral development on levels 150, 275, 400 and 525 ft. |
| Amalgamated Larder Mines Ltd. | 1940 | Purchased property. In 1941 diamond drilling resumed. 1947 underground development recommenced. Shaft deepened to 1,085 ft and development of 1,035 level. Underground drilling turned up poor results for current Au price. Mine closed with no production. |
| CEMP Investments Ltd. | 1970 | Acquired property. |
| Patrick Harrison | 1971 | Rights transferred from CEMP. |
| Hanna Mining Company | 1975 | Optioned property from Patrick Harrison. Widely spaced diamond drilling completed and option dropped. |
| Kerr Addison Mines/Eldor Resources Ltd./Northfield Minerals Inc. | 1978 | Optioned property from Patrick Harrison. Northfield carried out widely spaced diamond drilling until 1987. Drilling led to discovery of "D" Zone, a "flow-ore" style mineralized zone in FW of known mineralization. |
| Golden Shield Resources Ltd. | 1987 | Assets of Kerr Addison, including Cheminis Mine were purchased. Diamond drilling was continued by Golden Shield. |
| Northfield Minerals Inc. | 1990 | acquired 78.5% of Larder Lake Property. Cheminis Mine rehabilitated, development recommenced. Limited production began in November 1991 to July 1996. 260,000 tonnes mined at 0.104 opt Au. |
| NFX Gold Inc. | 1996 | Assumed ownership of Northfield interest. Mine rehabilitation and 865 and 1,035 levels were extended. Underground drilling (10,878 ft) from 865 and 1,035 ft levels in 1997-98. Goal was to increase resources in the D Zone below 1,035 level. Drilling cross cuts were also excavated from the 1,035 level to drill upper portions of the D Zone. Best hole, 97-8 returned 5.5 g/t Au/8.1 m from S. Sediment Zone. Two deep holes drilled to test below and east of D Zone. |
| FNX Mining Company Inc. | 1998 | Joint ventured Property with NFX. Fence of holes drilled to complete a cross section of the Larder Lake Break at 200 m intervals. 12,596 m drilled. |
| | 1999 | Surface stripping and channel sampling completed on the North Carbonate Gold Zone, "NCGZ" on Bear Lake Property. Confirmed presence of mineralized zone along a strike length of 200 m. VG observed. |
| | 2002 | Lumber clearing on Cheminis Property exposed qtz-stockwork mineralization. Zone named Bear Lake West. |
| NFX | 2003 | Surface drilling to test NCGZ on Bear Lake Property. 1,491 m drilled. |
| | 2003 | NFX reacquired 25% joint venture interest in Larder Lake Property from FNX. |
| | 2004 | Data compilation, ground mag, 2,541 m drilling in 35 holes testing for near-surface shallow mineralization. Best result was NFX-08-04 returning 9.5 g/t Au/4 m. |
| Maximus Ventures Ltd. | 2005 | Maximus optioned Property with a right to acquire from NFX a 60% interest in the Larder Lake Property. Drilling of 3,047 m on Barber Larder. |
| | 2006 | 13,878 m of diamond drilling in Cheminis Mine and Fernland shaft areas. |
| | 2007-08 | Diamond drilling on Bear Lake and Fernland Properties. No drilling on the Cheminis Property. |
| Bear Lake Gold/Maximus/NFX | 2008 | In June 2008, Maximus acquired a 60% interest in the Larder Lake Property and in September 2008, NFX acquired all shares of Maximus. NFX changed name to Bear Lake Gold Ltd. |
| | 2008-2011 | Drilling continues on Bear Lake Property. No drilling since 2006 on Cheminis. |

From 1938 to 1940, Cheminis Gold Mines Ltd. sank a three-compartment shaft to a depth of 533 feet, with 4,929 feet of lateral work completed on levels 150, 275, 400 and 525 feet. In 1940 the Cheminis Mine was closed. In 1947, Amalgamated Larder Mines Ltd., the owner at that

time, recommenced underground development with deepening of the shaft to 1,085 feet and development of the 1035 level. Underground drilling results were disappointing and the operation was closed without production. By 1990 Northfield had acquired a 78.5% interest in the Larder Lake Property. Northfield rehabilitated the mine, proceeded with development and began limited production, which began in November, 1991, and continued with brief periods of shutdown to allow further development, until July, 1996. Over the production period 260,000 tons were mined at a recovered grade of 0.104 oz Au/ton. Milling of the ore was done on a custom basis at the Holt-McDermott, Macassa and AJ Perron (former Kerr Addison) mills in the area.

The Fernland shaft is located approximately one mile to the west of the Cheminis Mine. This shaft was sunk in 1938 to a depth of 547 feet with 3 levels installed, and two small mineralized zones were outlined at the time containing reported values ranging from 0.10 to 0.30 oz. Au/ton. There was no production from this site.

In 1997 Armistice Resources Ltd., whose property adjoins the Bear Lake property to the west, initiated an underground exploration drift on the 2,250 foot (685 meter) level which included a short portion of the drift on the Bear Lake property.

## 5.2 PREVIOUS FEASIBILITY STUDIES

There have been no feasibility studies completed on the Cheminis Property.

## 5.3 PREVIOUS METALLURGICAL TESTING

There has been no metallurgical testing completed on the Cheminis Property.

## 6.0 GEOLOGICAL SETTING

## 6.1 REGIONAL GEOLOGY

The consolidated rocks in the area are of Precambrian age. They consist of tightly-folded Archean volcanics and sediments intruded by syenite and unconformably overlain by relatively flat-lying Proterozoic sediments of the Cobalt series (Figure 6.1). The economic mineral deposits are confined to the Archean rocks.

Most of the volcanics are of Keewatin age. This is the oldest rock group, which consists of andesite interbedded with bands of tuff, agglomerate and rhyolite. These rocks are unconformably overlain by the Temiskaming sediments and volcanics. The Temiskaming andesite which generally underlies the sediments is confined to a belt south of the Larder Lake Break.

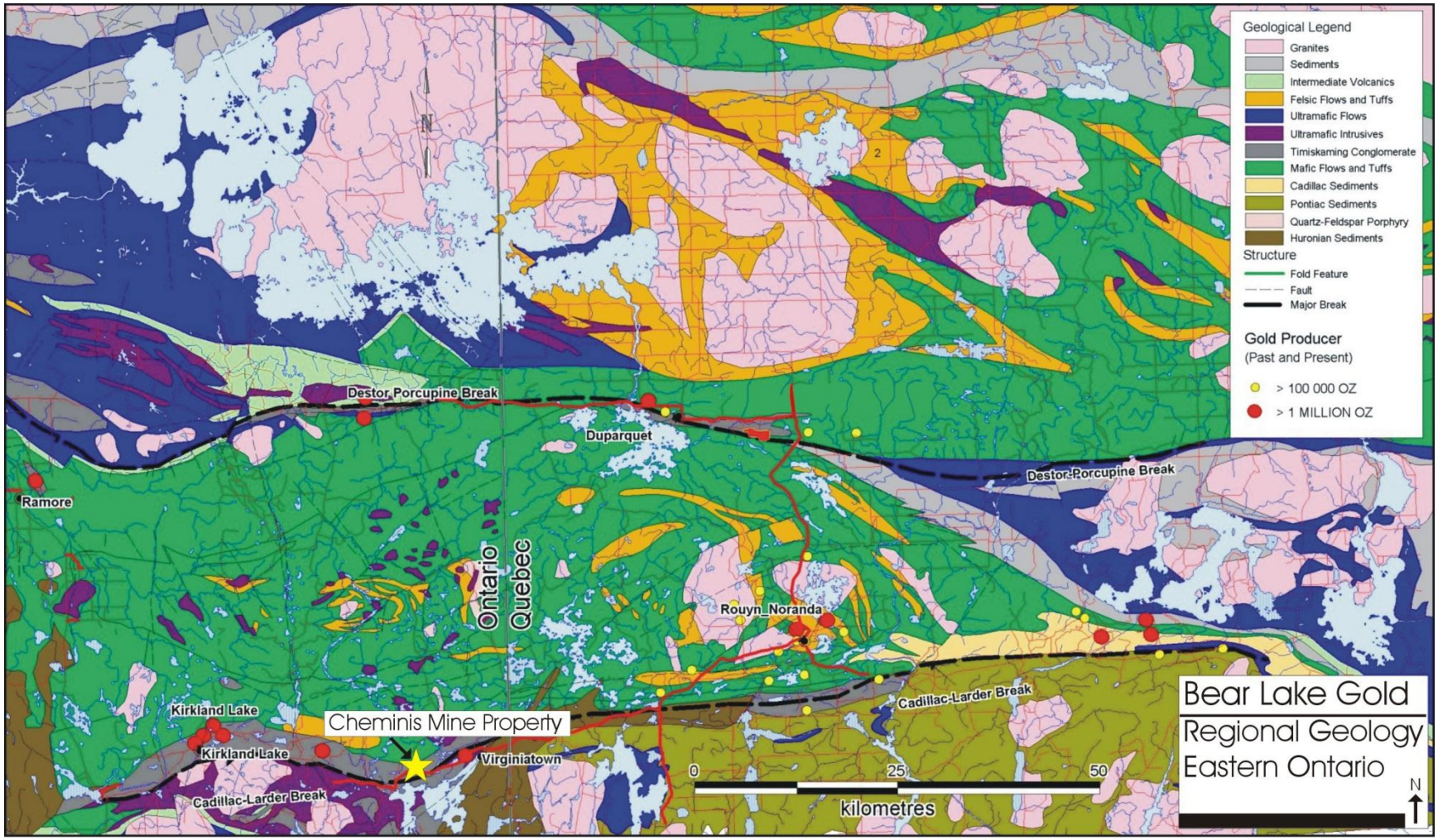
The Temiskaming was followed by an orogenic period in which rocks were folded into tight synclines and anticlines, faulted, then intruded and altered by Algoman syenite and solutions. This orogeny caused the first movement on the Main Break. The carbonate solutions which permeated the fault zones were probably more or less contemporaneous with these intrusives. The combination of carbonatization and the release of free quartz produced brittle areas along the Main Break which fractured with a recurrence of movement along this fault. These fractures formed the passage ways for the quartz and gold solutions.

After an extended period of erosion the Cobalt sediments were deposited. These Cobalt greywacke, arkose and conglomerate are unsorted and show little disturbance.

There have been later movements both post ore and post Huronian on old faults.

The Larder Lake Break is the most important structural feature in the area. It forms part of the fault zone which extends from Kirkland Lake, Ontario to Val-d'Or, Quebec, along or adjacent to which are situated most of the gold mines in this area.

**Figure 6.1 Regional Geology of Eastern Ontario**



## 6.2 LOCAL GEOLOGY

The most prominent geological feature of the Larder Lake district is the persistent lithostructural belt known as the Larder Lake Break which strikes across the area in a N70°E direction (Figure 6.1). This belt is highly disturbed, steeply-dipping, and is composed mainly of intercalated metasediment and mafic to ultramafic volcanics.

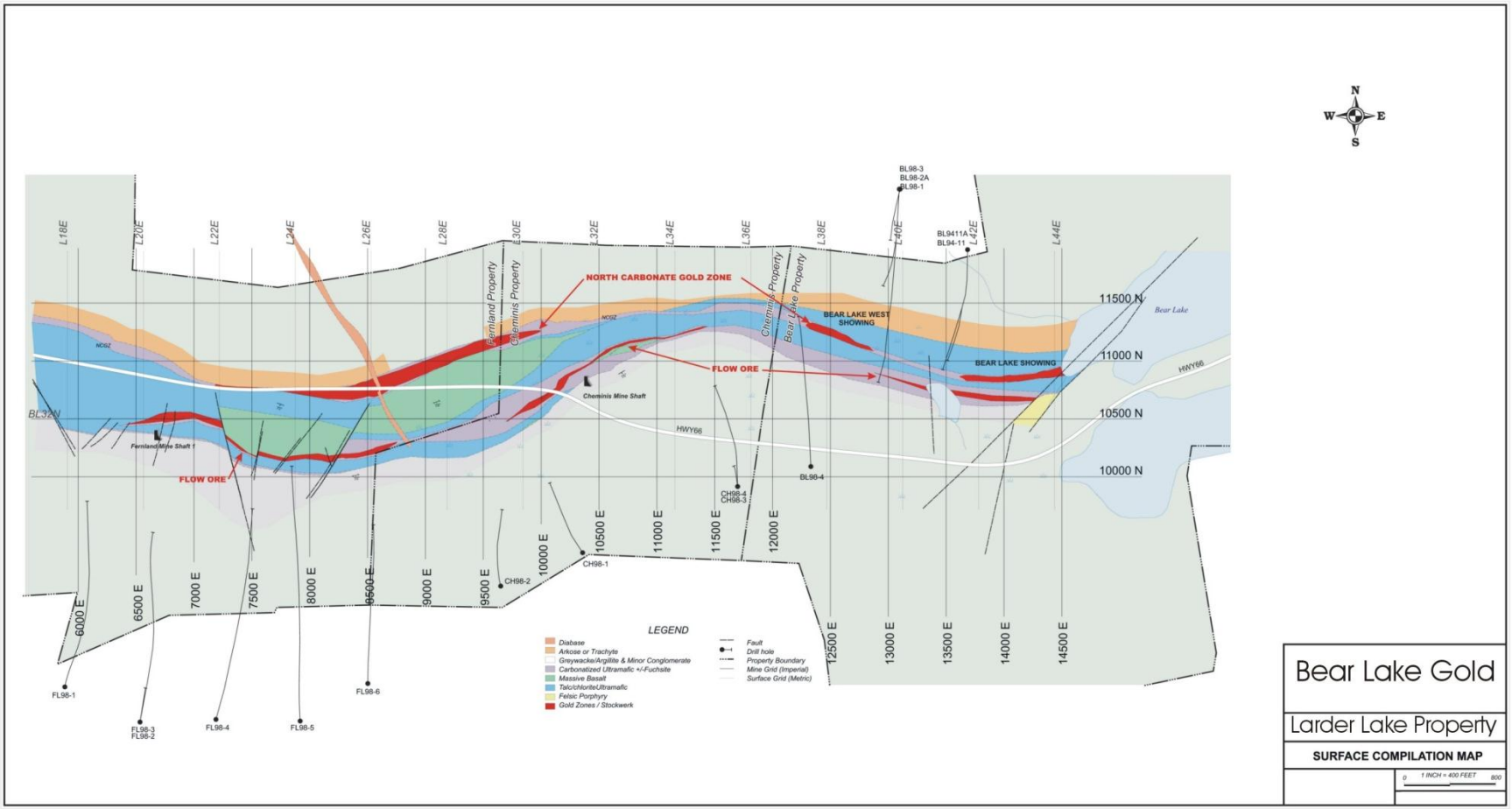
The Larder Lake Break marks the boundary between rocks of the Abitibi Geosyncline to the north and the rocks of the Temiskaming Supergroup to the south, and may be considered as a locus of major crustal adjustment during an early Precambrian period of geosynclinal collapse in the region.

In the Larder Lake district, the break area is strongly anomalous in gold content, with higher concentrations of the metal occurring in roughly tabular areas of considerable extent. To date, approximately 13 million ounces of gold have been produced from such systems in the Larder Lake district.

Across the Larder Lake Break, at least four dominantly sedimentary formations occur; these are marked by the presence of variably sheared green to gray carbonate rock, mudstone, sandstone and shale, which are often very highly auriferous. The Kerr formation, which is the most northerly and youngest of these, is also the largest, and has been the source of practically all of the gold production from the area. In the Kerr formation, the bulk of production was from heavily-veined green carbonate rock (“carbonate ore”) and cherty pyritic mudstone (“flow ore”), which occur repetitively within it. Other less important ore types known from the Kerr Addison Mine include auriferous chert, veined pyrite rock and veined syenite.

The Kerr Addison Mine, and the Omega and Cheminis Mines, lie within the same geological formations and share common characteristics. The development of this highly productive formation is intermittent along the Larder Lake Break, and it should be kept in mind that the frequency, extent and tenor of gold zones within it may be expected to vary in different locations.

**Figure 6.2 Detailed Deposit Geology of the Larder Lake Property and Cheminis Mine Area**



## 7.0 DEPOSIT TYPES

Quartz-Carbonate Vein Gold

This section is derived from the "Geology of Canadian Mineral Deposit Types", edited by O.R. Eckstrand, W.D. Sinclair, and R.I. Thorpe, 1995. This particular section on quartz-carbonate vein gold, which is a sub-type of lode gold deposits, was written by Francois Robert.

This subtype of gold deposits consists of simple to complex quartz-carbonate vein systems associated with brittle ductile shear zones and folds in deformed and metamorphosed volcanic, sedimentary, and granitoid rocks. In these deposits gold occurs in veins or as disseminations in immediately adjacent altered wall rocks, and is generally the only or the most significant economic commodity. The veins occur in structural environments characterized by low- to medium-grade metamorphic rocks and brittle-ductile rock behavior, corresponding to intermediate depths within the crust, and by compressive tectonic settings. Deposits of this type have commonly been referred to as mesothermal gold quartz vein deposits, but they in fact encompass both mesothermal and hypothermal classes as initially defined by Lindgren (1933).

Quartz-carbonate vein gold deposits are widely spread throughout Canada and they occur principally in the following geological areas: the greenstone belts of the Superior, Churchill, and Slave provinces, the oceanic terranes of the Canadian Cordillera, and the turbiditic Meguma terrane and the ophiolitic Baie Verte district in the Appalachians. The largest concentration of these deposits occurs in the greenstone belts of the south-central Superior Province. Typical Canadian examples of such deposits include: Goldenville, Nova Scotia; Sigma- Lamaque, O'Brien, and Casa-Berardi, Quebec; Kerr Addison, Macassa, Dome, Hollinger-McIntyre, Campbell Red Lake, and MacLeod-Cockshutt, Ontario; San Antonio, Manitoba; Star Lake, Saskatchewan; Giant Yellowknife, Camlaren, and Lupin, Northwest Territories; Bralorne-Pioneer and Cariboo Gold Quartz-Island Mountain, British Columbia. Other examples throughout the world include the following deposits or districts: Mother Lode and Grass Valley, California; Alaska-Juneau, Alaska; Homestake, South Dakota; Mt. Charlotte, Victory, Norseman, and Bendigo-Ballarat, Australia; Ashanti and Prestea, Ghana; and Passagem, Sao Bento and Crixas, Brazil.

Importance

Quartz-carbonate vein deposits account for approximately 80% of the production from lode gold deposits in Canada. The Canadian Shield, and the Superior Province in particular, contains the most significant deposits and accounts for more than 85% of the gold production from quartz-carbonate veins in Canada.

Size and Grade of Deposits

Quartz-carbonate vein gold deposits display a wide range of sizes, which can vary as a function of the price of gold, as it is possible in almost every case to selectively mine the higher grade portions of the deposits at times of lower gold prices, and lower grade material as well at times of higher prices. Deposits of Superior Province are the largest, typically containing between 6 and 60 t of gold to a maximum of 1000 t, those of Churchill Province between 5 and 10 t, and those of the Meguma terrane, less than 3 t. Typical tonnage and grade of quartz-carbonate vein deposits are a few million tonnes of ore at a grade of 6 to 10 g/t gold.

Geological Features

## Geological Setting

At the regional scale, quartz-carbonate vein gold deposits occur in two contrasting geological environments: deformed clastic sedimentary terranes and deformed volcano-plutonic terranes containing diverse volcanic assemblages of island-arc and oceanic affinities. Despite lithological and structural differences, these two types of environments share the following characteristics: greenschist to locally lower amphibolite metamorphic facies, brittle-ductile nature of the deformation, and geological structures recording compressional to transpressional tectonic settings. Quartz-carbonate vein gold deposits in these environments tend to occur in clusters, or districts, and they are by far more abundant in volcano-plutonic terranes than in clastic sedimentary terranes. Both types of environments are present in a number of districts, in which they are separated by major fault zones. However, in such cases auriferous quartz-carbonate veins preferentially occur in the volcano-plutonic domains. Key characteristics and examples of these two geological environments are presented below.

## Clastic Sedimentary Terranes

Clastic sedimentary terranes mineralized with quartz-carbonate veins are not very common in Canada but, where present, they typically occupy extensive areas. These terranes include the Meguma terrane, Nova Scotia, the "Yellowknife basin" in the Slave Province, and sedimentary rocks of the Sheep Creek district and of the Barkerville terrane in the Cariboo district, both in British Columbia.

Most clastic sedimentary terranes are characterized by important thicknesses of well-bedded turbidites consisting of greywacke, mudstone, shale, and minor conglomerate. In the Meguma terrane, the turbidite sequence consists of vein-bearing quartz-rich greywacke and interbedded slate of the Goldenville Formation and overlying thinly laminated slate of the Halifax Formation (Graves and Zentilli, 1982). Some sequences, such as the Contwoyto Formation in the Slave Province, also contain significant proportions of interbedded iron-formation and mafic volcanic rocks. The presence of quartzite and/or limestone in the Cariboo (Sutherland-Brown, 1957) and Sheep Creek districts (Matthews, 1953) are indicative of continental margin environments. Clastic sedimentary sequences contain only small proportions of intrusive rocks, most of which form large, postfolding dioritic to granitic bodies such as the Devonian granodiorites and monzogranites in the Meguma terrane.

Gold-bearing clastic sedimentary sequences are invariably folded, and commonly in a complex manner. Folds range from open to isoclinal, and may be accompanied by a penetrative axial plane cleavage. In many cases, younger faults cut the folds at moderate to high angles. The Meguma terrane is characterized by a series of shallowly plunging, northeast-to east-northeast-trending upright folds which are cut by northwest-striking faults and intruded by Devonian granites. Most sequences have been metamorphosed to the greenschist facies, and in some regions, such as in the Contwoyto Lake area, to the lower and middle amphibolite facies.

## Volcano-Plutonic Terranes

Volcano-plutonic terranes are the most important hosts to vein gold mineralization in Canada. They are represented by the abundant Precambrian greenstone belts of the Canadian Shield and by the Phanerozoic island arc-oceanic assemblages of the Canadian Cordillera and the

Appalachians. Representative districts include: Baie Verte, Newfoundland; Val-d'Or, Cadillac, and Casa-Berardi, Quebec, Larder Lake, Kirkland Lake, Timmins, Beardmore- Geraldton district, and Red Lake, Ontario; Rice Lake, Manitoba; La Ronge, Saskatchewan; and Coquihalla, Bridge River, and Cassiar, British Columbia.

Mineralized volcano-plutonic terranes form elongate belts bounded by, or transected by, crustal-scale fault zones. These belts typically comprise contrasting geological domains, which may include clastic sedimentary sequences, separated from the volcano-plutonic domains by the major fault zones. This is the case at Val d'Or and Beardmore-Geraldton, where volcano plutonic terranes to the north are separated from turbidite sequences to the south by the Larder Lake-Cadillac and Barton Bay fault zones, respectively. In other districts, such as Bridge River, major faults may separate contrasting volcanic assemblages: the Fergusson thrust fault separates the oceanic Bridge River Group from the Cadwallader Group of island arc affinity, (Leitch, 1990).

Volcano-plutonic terranes are lithologically more diverse than clastic sedimentary sequences. Volcanic supracrustal rocks dominate and typically include basaltic tholeiitic domains of oceanic affinity and mafic to felsic tholeiitic to calc-alkaline domains of island arc affinity.

Ultramafic rocks are volumetrically important in some Archean terranes where they form komatiitic volcanic domains. In Phanerozoic terranes, ultramafic rocks occur mostly as serpentinite bodies along fault zones, as in the Bridge River district, and may represent remnant ophiolite sequences. Narrow belts of clastic sedimentary rocks are also present in many volcano-plutonic terranes and include both flysch-like and molasse-like facies. The flysch-like facies consist of greywacke-mudstone with locally abundant conglomerate and iron-formation, as represented by the Cadillac Group at Val-d'Or and the Northern, Central, and Southern Metasedimentary Belts at Beardmore-Geraldton. Fluvial-alluvial sequences of polymictic conglomerate, arenite, and sandstone, referred to as Timiskaming-type in the Superior Province, are representative of the molasse-like facies and are present along major fault zones and unconformably overlie volcanic rocks in many Precambrian districts such as Kirkland Lake, Rice Lake, and La Ronge.

In the Bridge River district, ribbon chert and argillites overlie basalts of the oceanic Bridge River Complex. In contrast to clastic sedimentary sequences, volcano-plutonic terranes contain abundant associated intrusive rocks, including batholiths, stocks, sills, and dykes, emplaced at several stages during their volcanic and tectonic evolution. Early, synvolcanic intrusions include gabbro sills and dykes and subvolcanic diorite-tonalite plutons such as the Bourlamaque pluton at Val-d'Or and the Bralorne intrusions at Bridge River. Syn- to late tectonic intrusions evolve from commonly porphyritic diorite-tonalite stocks and dykes, to monzonitic to syenitic plutons, to late granitic batholiths.

Superimposed tectonic fabrics and folds in many volcano-plutonic terranes indicate complex structural evolutions linked with the history of associated major fault zones. In many areas, a dominant episode of compressional deformation, involving thrusting, folding, and development of upright penetrative fabrics subparallel to major faults, is followed by transcurrent deformation largely localized along the major faults (Card, 1990; Leitch, 1990). In addition to first-order major faults, these terranes are characterized by abundant higher-order subsidiary shear zones and faults, subparallel to the regional trend, any of which may host auriferous quartz-carbonate veins. Metamorphic grade is greenschist in most volcano-plutonic terranes but reaches lower amphibolite in some districts such as Red Lake, Ontario.

## Distribution of Quartz-Carbonate Vein Districts and Deposits

A large number of quartz-carbonate vein gold districts, especially those in volcano-plutonic terranes, are spatially associated with crustal-scale fault zones, which are generally regarded as the major conduits for auriferous fluids. This association is particularly well illustrated by gold deposits of the Abitibi greenstone belt. Within districts, however, auriferous veins are in fact more closely associated with smaller subsidiary structures adjacent to major faults, resulting in a dispersion of deposits away from such faults, as in the Val-d'Or district.

Within volcano-plutonic terranes, quartz-carbonate veins may occur in any rock type present within a district, and deposits typically consist of simple to complex networks of veins and related shear zones. They are most common in parts of the districts that are dominated by mafic volcanic rocks, as in the Red Lake, Yellowknife, and Cassiar districts. Vein deposits also occur in areas dominated by iron-formation-bearing clastic sedimentary belts such as in the Beardmore-Geraldton district, and in large felsic plutons as illustrated by the Bourlamaque pluton at Val-d'Or.

## Age of Host Rocks and Mineralization

Volcanic and sedimentary host rocks to quartz-carbonate vein gold deposits in Canada range in age from Archean to Jurassic. However, most veins occur in rocks of four main age groups: Late Archean, Early Proterozoic, Cambrian-Ordovician, and Triassic-Jurassic. Of these four groups, rocks of Late Archean age have yielded most of the Canadian gold production from deposits of this type. In a large number of volcano-plutonic terranes, field and geochronology studies show that the gold-bearing veins formed relatively late in the local structural evolution, after folding of supracrustal rocks and emplacement of the syn to late tectonic intrusions. At Val-d'Or, the Sigma-Lamaque vein system cuts a 2685 +/- 2 Ma tonalite stock and a swarm of 2694 +/- 2 Ma feldspar porphyry dykes that have both intruded 2705 +/- 2 Ma volcanic rocks (Wong et al., 1991). Deposits in the Kirkland Lake and Timmins districts, hosted in 2725-2700 Ma volcanic rocks, postdate Timiskaming sedimentation, bracketed between 2680 and 2676 Ma, and the intrusion of 2673 +6/-2 Ma albitite dykes at Hollinger-McIntyre (Corfu, 1993). In the Red Lake district, gold mineralization is bracketed between 2720 and 2700 Ma, corresponding to the last stages of tectonism and plutonism, and is much younger than the volcanism, which lasted from 3000 to 2730 Ma (Corfu and Andrews, 1987). Similar young relative ages are indicated for the Bralorne- Pioneer deposit: quartz-carbonate veins are hosted by 270 +/- 5 Ma diorite-tonalite and coeval volcanic rocks, but they cut albitite dykes dated at 91.4 +/- 1.4 Ma (Leitch, 1990). Thus, in most documented cases, quartz-carbonate veins are significantly younger than the host volcanic sequences and emplaced more or less synchronously with late magmatic activity within, and adjacent to the greenstone belts during the late Archean.

In clastic sedimentary terranes, two distinct relative ages of vein formation are recognized: (1) prefolding, such as in the sedimentary strata of the Meguma terrane of Nova Scotia, (Graves and Zentilli, 1982); and (2) postfolding, associated with fractures and faults oblique to fold axial surfaces, such as in the Cariboo and Sheep Creek districts in British Columbia (Matthews, 1953; Sutherland- Brown, 1957).

The absolute ages of quartz-carbonate vein deposits are not well constrained. In the southern Abitibi greenstone belt, direct dating of hydrothermal rutile, scheelite, and muscovite by U-Pb, Sm-Nd, and 40Ar-39Ar techniques, respectively, give ages 50-80 Ma younger than any known plutonic rock in the area (Corfu, 1993). At Val-d'Or, rutile and scheelite ages of ~2600 Ma from

quartz-tourmaline-carbonate veins at the Sigma deposit conflict with the 2682 Ma age of a hydrothermal zircon from the same sets of veins (Claoué-Long et al., 1990). The significance of such "young" ages is still unclear.

In the Canadian Cordillera, the age of the Bralorne- Pioneer deposit is bracketed between -90 and -85 Ma by premineral albitite dykes and intra- to postmineral hornblende-bearing dykes (Leitch, 1990). The K/Ar ages of vein-related white micas suggest mineralization ages of ~130 Ma in the Cassiar district (Sketchley et al., 1986) and ~140 Ma in the Cariboo district (Andrew et al., 1983).

Similar Lower Cretaceous mineralization has also been documented along the Mother Lode gold belt in California (Bohlke and Kistler, 1986). In some districts, there is growing evidence for the existence of multiple generations of auriferous quartz-carbonate veins. In the Rice Lake district, Brommecker et al. (1989) have documented two generations of gold-bearing quartz-carbonate veins related to two distinct deformation increments. At Val-d'Or, late quartz-tourmaline-carbonate veins crosscut dykes and are typically not deformed, whereas earlier quartz-carbonate veins are overprinted by deformation and commonly cut by dykes (Robert, 1994).

**Host Rock Associations**

In general, quartz-carbonate veins occur in any rock type present in a given district. However, there are a number of recurring deposit-scale lithological associations which are in part reflected in the geometric and/or hydrothermal characteristics of the deposits. These different lithological associations are best regarded as different facies, or styles, of quartz-carbonate vein deposits. They reflect variations in structural and chemical controls exerted by the host lithology on the development of the vein networks. Volcanic-hosted quartz-carbonate vein deposits are the most common. They occur most commonly in mafic volcanic rocks and associated ultramafic rocks and are represented by the Belleterre, Kerr Addison, Campbell Red Lake, Giant Yellowknife, and Erickson deposits. Characteristics common to this category of deposits include relatively wide, highly schistose host shear zones and wide haloes of carbonate alteration (fuchsite-bearing if hosted in ultramafic rocks), reflecting both the ductile and the Fe-Mg-rich nature of the host rocks. Several deposits of this group are centered on intrusive complexes comprising stocks, irregular bodies, and dykes of diorite, tonalite, and syenite, which are commonly porphyritic. This is the case at the Sigma-Lamaque, Macassa, Dome, Hollinger-McIntyre, and Bralorne-Pioneer deposits, which display relatively complex vein and shear zone patterns. Other deposits, represented by the San Antonio and Norbeau mines, occur in laterally extensive differentiated tholeiitic gabbro sills. They consist of relatively complex vein networks which are largely confined to the most differentiated, quartz-bearing or granophyric units within the sills. Veins may be confined to such units because of their more competent nature and because their Fe-rich nature is favourable for gold precipitation.

Volcanic-hosted deposits include many of the largest Canadian quartz-carbonate vein deposits. Some deposits of this subtype also have the greatest vertical extent, reaching 2 km or more in several mines, including Sigma.

Another group of deposits is tonalite-hosted and occurs in large diorite-tonalite and monzonite plutons within volcano-plutonic terranes. Examples include the Ferderber and other deposits in the Bourlamaque pluton at Val-d'Or, the Silidor and Pierre Beauchemin deposits in the Flavrian pluton at Noranda, and the Star Lake deposit and pluton in the La Ronge belt. The host intrusion may also lie immediately outside greenstone belts, as at Renabie. Deposits of this type are

characterized by relatively simple geometries and the quartz-carbonate veins and host shear zones are spatially associated with mafic dykes present in these intrusions.

Iron-formation-hosted quartz carbonate veins also form an important group of deposits in both clastic sedimentary sequences and volcano-plutonic terrane, represented by the Central Patricia, MacLeod-Cockshutt, and Lupin deposits. Orebodies in such deposits are within zones that contain abundant quartz-carbonate veins and that are generally restricted to the iron-formation layers. The veins in all cases postdate folding of the sedimentary layers and, in a number of cases, they are parallel to the axial planes of the folds.

Finally, other deposits are turbidite-hosted. In these, veins either occur in fold hinges as at Goldenville and at Camlaren (Boyle, 1979), or in fractures and faults cutting the folds at a moderate to high angle, as in the Cariboo and Sheep Creek districts. These deposits lack obvious spatial relationships to intrusive rocks and are characterized by poorly developed alteration halos. In some districts, specific sedimentary units are preferentially mineralized, such as the Upper Nugget and Upper Nevada quartzites in the Sheep Creek district (Matthews, 1953), or the Rainbow Formation in the Island Mountain deposit (Sutherland-Brown, 1957).

In several districts within volcano-plutonic terranes, there is one particular setting of quartz-carbonate veins which dominates, despite the presence of other rock types. For example, nearly all vein deposits in the La Ronge district occur within granitoid intrusions, whereas those in the Beardmore-Geraldton district are associated with iron formation.

**Form and Structure**

Quartz-carbonate vein gold deposits consist of networks of veins and related host structures. An important characteristic of a large number of vein deposits, especially in volcano-plutonic terranes, is their significant vertical extent, which exceeds 1 km in several deposits, and 2 km in a few deposits listed above. The networks display simple to complex geometries involving single to multiple sets of veins and host structures (Hodgson, 1989). They comprise veins in one or more of the following structural settings: (1) in faults and shear zones; (2) in extensional fractures and stockwork zones, including breccias; and (3) in association with folds. As illustrated by the Sigma-Lamaque deposit at Val-d'Or, a large number of networks combine veins in shear zones and in spatially associated extensional fractures. Veins and their different settings are described below. Vein networks in volcanic-hosted deposits commonly display complex geometries, especially those centred in intrusive complexes such as Bralorne-Pioneer and Sigma-Lamaque, whereas those in tonalite-hosted deposits generally consist of a single set of mineralized structures.

**Veins in Faults and Shear Zones**

Faults and shear zones probably represent the most common host structures to quartz-carbonate veins, and they are a component of almost every gold deposit. Veins hosted by these types of structures occur principally in volcanic-dominated terranes, where they are found in practically every rock type. The nature of the host shear zones ranges from ductile to most commonly brittle-ductile, correlating in part with the metamorphic grade of the host rocks (Colvine, 1989). These shear zones have moderate to steep dips, and can be traced for several hundred metres to a few kilometres along strike and down dip. They are typically high-angle reverse to reverse-oblique shear zones, and less commonly strike-slip.

The mineralized shear zones may occur individually, as parallel sets, or may form anastomosing, conjugate, or more complex arrays (Poulsen and Robert, 1989). These shear zones are generally discordant to the stratigraphic layering but, in a number of cases, they parallel bedding planes or intrusive contacts (such as along dykes), reflecting the influence of strength anisotropy on their development.

Quartz-carbonate veins in shear zones and faults, commonly referred to as shear veins, typically form tabular to lenticular bodies within the central parts of brittle-ductile shear zones, either parallel, or slightly oblique, to the host structure (Hodgson, 1989; Poulsen and Robert, 1989). The veins range in thickness from a few tens of centimetres to a few metres and may reach a few hundred metres in their longest dimension. Mineralized shear veins or portions of veins commonly occur at splays and intersections of shear zones, at bends in the general trend of the host structure, as well as at the intersection of the shear zone with a specific rock type.

Shear veins in shear zones are typically laminated. Laminations are defined by thin septa and slivers of altered and foliated wall rocks, incorporated into the vein by multiple-opening episodes. In several deposits, individual quartz-carbonate laminae are also bounded by striated slip surfaces, in some cases with hydrothermal slickenlines indicating vein development in active shear zones. With increasing proportion and thickness of wall rock slivers, laminated veins may also grade into sheeted veinlet zones.

In a number of deposits, shear veins display some degree of folding and boudinage due to postvein displacement along the host shear zone or to subsequent folding of the entire shear zone (Poulsen and Robert, 1989).

**Veins in Extensional Fractures and Stockwork Zones**

Veins in extensional fractures, or extensional veins, stockwork zones, and hydrothermal breccias occur principally in volcano-plutonic terranes and are present in a significant number of deposits. They are not as common as shear veins and represent a major source of ore in only a small proportion of deposits.

Extensional veins may form arrays of planar to sigmoidal veins within shear zones or at frontal and lateral terminations of shear veins (Robert, 1994), or form sets of regular tabular bodies extending outside shear zones in less deformed rocks, such as the subhorizontal extensional veins of the Sigma-Lamaque deposit. They also occur as sets of en echelon veins in relatively competent host lithologies such as small intrusions of intermediate to felsic composition. In most cases, extensional veins are spatially associated with shear veins and they have relatively shallow dips, which are consistent with the reverse to reverse-oblique movements along the associated shear zone.

Extensional veins within shear zones and stockwork zones are typically a few centimetres thick and a few metres long, whereas those outside shear zones are commonly several tens of centimetres thick and a few hundred metres in their longest dimensions. At the Sigma-Lamaque deposit, sub-horizontal extensional veins, less than one metre thick, commonly occupy areas as great as 5000 m2 in extent (Robert and Brown, 1986a). The internal structure of extensional veins contrasts with that of shear veins and is commonly characterized by mineral fibres at high angles to vein walls, as well as by crack-seal and open-space filling textures.

Stockwork zones are important in a number of deposits; at San Antonio in the Rice Lake district, for example, they constituted a large proportion of the ore mined. Stockworks consist of several sets of extensional veins, which can grade into hydrothermal breccias in areas of intense veining. They are preferentially developed in competent lithologies, such as the granophyric facies of the differentiated gabbro sill hosting the San Antonio deposit. Other types of hydrothermal breccias also occur along shear veins: they include "jigsaw-puzzle" breccias, characterized by angular fragments of altered wall rock in a fine grained matrix of quartz and/or tourmaline, and by fault breccias, composed of crushed and rotated vein and wall rock fragments in a dominantly hydrothermal matrix.

**Veins Associated with Folds**

Veins associated with folds probably represent the least common structural setting of quartz-carbonate veins. Veins in such settings occur almost exclusively in folded clastic sedimentary rocks, in either volcano-plutonic or clastic sedimentary terranes.

Quartz-carbonate veins are associated with folds ranging from those of regional scale, as in the Meguma terrane, to deposit-scale asymmetric folds, as in the MacLeod-Cockshutt deposit. Veins display diverse geometric and age relationships to the folds. They may be folded along with their host rocks, as in the case of bedding-parallel veins in the Meguma terrane, which occur in anticlinal hinge areas where they are typically stacked and saddle-shaped. Veins may also be syn- to late folding and be either parallel to axial plane cleavage in hinge zones, as at MacLeod-Cockshutt, or in extensional veins perpendicular to fold axes (AC joints), as is the case in the Cariboo district (Sutherland-Brown, 1957). In other cases, laminated quartz veins occur in fractures and faults cutting obliquely across fold axial surfaces as at the Lupin deposit (Lhotka and Nesbitt, 1989) and in the Sheep Creek district (Matthews, 1953).

<u>Ore and Gangue Mineralogy</u>

**Ore Mineralogy**

In most quartz-carbonate vein deposits, as at Sigma- Lamaque, gold mineralization occurs in both the veins and the adjacent altered wall rocks, in varying proportions. The bulk of the gold occurs within the veins in turbidite-hosted deposits but within altered wall rocks in iron-formation hosted deposits. In most cases, gold is intimately associated with sulphide minerals, both in the veins and altered wall rocks. The dominant sulphide mineral is pyrite, or arsenopyrite in sediment-hosted deposits, commonly accompanied by variable, but minor amounts of sphalerite, chalcopyrite, pyrrhotite, and galena. Trace amounts of molybdenite are also present in a number of deposits. The sulphide contents of the veins rarely exceed 5 volume per cent; within laminated veins, sulphide minerals are commonly distributed along thin, altered wall rock slivers, which thus indirectly control the distribution of gold within the veins.

The main ore mineral in most deposits is native gold, which typically contains some silver. Gold-to-silver ratios of the ore range from 5:l to more than 9:1, and cluster around a ratio of ~9:1, distinct from that of most epitherma1 veins. Gold typically occurs as coatings on, or as inclusions and fracture-fillings within, sulphide grains, as well as isolated grains and fracture fillings in quartz. Other significant ore minerals in quartz-carbonate veins are tellurides, mostly petzite and calaverite, which are particularly abundant in deposits associated with felsic stocks such as Macassa (Thompson et al., 1950) and Sigma-Lamaque (Robert and Brown, 1986b).

## Gangue Mineralogy

The most common gangue minerals in the vein deposits considered here are quartz and carbonate. Quartz typically accounts for more than 85% of the vein fillings. Carbonates, including calcite, dolomite, or ankerite in various combinations, typically comprise less than 10-15% of the vein fillings. Veins at the Campbell Red Lake deposit, which are dominated by dolomite and ferro-dolomite, represent a notable exception (Andrews et al., 1986). Other generally minor constituents of the veins include albite, chlorite, and white mica. Tourmaline and scheelite are also present in minor amounts in many quartz-carbonate veins. Tourmaline is particularly abundant in veins in the Val-d'Or district, where it may represent up to 15-20 volume per cent of the vein fillings (Robert and Brown, 1986b).

Host rock composition exerts some influence on the accessory gangue mineralogy of the veins. Arsenopyrite rather than pyrite is the dominant vein and altered wall rock sulphide mineral in deposits hosted by sedimentary rocks, such as Lupin and those of the Meguma terrane. The composition of carbonate minerals in the veins also reflects that of the host lithology: the Fe and Mg contents of Ca-carbonates increase proportionally with the Fe and Mg contents of the host rocks. Fuchsite normally occurs in veins which are in the vicinity of altered ultramafic rocks.

Quartz-carbonate vein deposits typically lack vertical mineralogical zoning, despite their significant vertical extent. A notable exception is the Sigma-Lamaque deposit, in which the tourmaline-pyrite assemblage gives way in some veins to a pyrrhotite-chlorite-biotite assemblage at depths in excess of 1.6 km (Robert and Brown, 1986b). In general, pyrite is the dominant sulphide mineral in deposits hosted by greenschist grade rocks, whereas pyrrhotite dominates in deposits hosted by amphibolite grade rocks (Colvine, 1989).

### Hydrothermal Alteration

Wall rock hydrothermal alteration around auriferous quartz-carbonate veins varies in scale, intensity, and mineralogy as a function of host rock composition. Several fundamental types of alteration can be distinguished and these generally combine to form zoned alteration haloes at the vein or the deposit scales. In most documented cases, alteration assemblages have been superimposed on previously metamorphosed rocks, as is the case at Bralorne-Pioneer (Leitch, 1990) and at Sigma-Lamaque (Robert and Brown, 1986b). Two documented exceptions include the Campbell Red Lake and adjoining A.H. White (Dickenson) deposits, where wall rock alteration either predated or was synchronous with amphibolite grade metamorphism (Andrews et al., 1986), and the Eastmain River deposit in northern Quebec, where wall rock alteration is interpreted to have taken place during amphibolite grade metamorphism (Couture and Guha, 1990).

### Alteration Types

The main types of alteration around quartz-carbonate veins include carbonatization, sulphidation, alkali metasomatism, chloritization, and silicification (Boyle, 1979). Carbonatization is the most common and most extensive type of alteration. Zones of carbonate alteration around individual veins and structures commonly coalesce to envelope the entire orebody. This type of alteration involves progressive replacement of Ca-, Fe-, and Mg-silicates by carbonate minerals and is characterized by additions of CO2, accompanied by release of Al and Si, fixed in other alteration minerals or in veins. The amounts of introduced carbonates depend, in part, on the amount of Ca, Fe, and Mg present in the host lithology.

Sulphidation of wall rocks is common around veins and, in most cases, is restricted to their immediate proximity. Pyrite is the most common sulphide, followed by pyrrhotite, mostly present in amphibolite grade rocks. Arsenopyrite is also common around veins hosted by clastic sedimentary rocks. Sulphides generally comprise less than 10% of the altered rocks, except in oxide facies iron-formation, in which they make up as much as 75% of the altered rocks, as at McLeod-Cockshutt (Horwood and Pye, 1955).

Sodium and potassium metasomatism is observed in proximity to most quartz-carbonate veins. Potassium metasomatism is the most common and typically consists of sericitization of chlorite and plagioclase; fuchsite, rather than sericite, is generally present in altered ultramafic rocks, and K-feldspar and biotite are alteration products in a few deposits. Sodium metasomatism results largely in the formation of albite, and in some cases of paragonite. Chloritization of amphibole, biotite, and pyroxene (at constant Fe and Mg), commonly accompanies incipient carbonatization.

In some deposits, intense chloritization may be accompanied by addition of Fe and Mg to the rock. A distinction should be made between hydrothermal chlorite considered here and chlorite produced by metamorphism of the host rocks. Silicification, sensu stricto, i.e. the addition of silica, has been documented mostly in clastic sedimentary rocks (Boyle, 1979). A more common form of silicification in mafic and ultramafic host rocks, due to silica release from carbonatization reactions, is a local increase in the abundance of quartz, either as quartz-flooding of the rock matrix or as abundant quartz veinlets.

Gold is commonly enriched in intensely altered rocks adjacent to quartz-carbonate veins. In many cases, as at Sigma, these altered zones reach economic grades (Robert and Brown, 1986b). In fact, a significant proportion of the extracted gold in several deposits is derived from altered rocks adjacent to veins.

Alteration Zoning Patterns

The above different types of alteration commonly combine to form zoned alteration envelopes around veins or deposits (Robert, 1987). The resulting zoning patterns result largely from progressive carbonatization of wall rocks and accompanying alkali metasomatism. In igneous wall rocks of ultramafic to intermediate composition, outer alteration zones are characterized by replacement of metamorphic amphibole, epidote, and/or serpentine by calcite +/- dolomite and chlorite; those minerals are accompanied by talc +/- tremolite in ultramafic rocks and albite in mafic to intermediate rocks. With increasing intensity of alteration and proximity to veins, chlorite-calcite assemblages are replaced by dolomite-white mica assemblages with or without pyrite. Inner alteration assemblages consist of ankerite-albite-pyrite assemblages; magnesite and siderite are also present in Mg- and Fe-rich igneous host rocks. In general, the iron content of carbonate minerals increases towards the mineralized zones.

Veins in clastic sedimentary rocks typically lack well defined alteration envelopes. Where present, they tend to be narrow and are characterized by replacement of chlorite and biotite by carbonates, white mica, and albite, and by formation of arsenopyrite. Where veins intersect iron formation, the alteration is typically controlled by bedding and laminations: for example, layers of magnetite are selectively altered and replaced by sulphides, generally pyrite, over distances as great as several decimetres on either side of a vein.

Definitive Characteristics

Quartz-carbonate vein gold deposits consist of simple to complex vein and shear zone networks with significant vertical extents, hosted by rocks in deformed volcano-plutonic terranes, and less commonly in deformed clastic sedimentary terranes. The deposits occur in districts spatially associated with large-scale fault zones. The veins occupy shear zones, faults, stockwork zones, and extensional fractures, or are associated with folds: they are generally discordant, at least in part, to lithological units. The veins are composed mainly of quartz, with less abundant carbonate and pyrite. Commonly associated minerals include tourmaline, scheelite, fuchsite, and arsenopyrite. Hydrothermal alteration of wall rocks is dominated by carbonatization, and accompanied by alkali metasomatism and sulphidation of the rocks immediately adjacent to the veins.

Genetic Models

In contrast to many other deposit types, there is no real consensus on the origin of quartz-carbonate veins in deformed terranes and, as a result, a number of genetic models have been proposed for their formation (Roberts, 1987; Kerrich, 1989). Studies of fluid inclusions and hydrothermal alteration in several deposits points to a relatively uniform fluid composition and temperature, irrespective of their occurrence in volcano-plutonic or clastic sedimentary terranes (Kerrich and Wyrnan, 1990). The auriferous fluids are typically CO2-bearing (5-15 mol % CO2 +/- CH4), low-salinity fluids, at 300-350°C, which underwent phase separation in a number of deposits.

Differences between districts in the Sr, Pb, C, and O isotope compositions of the auriferous fluids contrast with the relatively uniform bulk fluid composition and indicate multiple source regions for these fluid components, including sources external to, and underneath, the host supracrustal sequences (Kerrich, 1989). However, such isotopic tracers do not allow unequivocal discrimination of the nature and origin of the fluids. Among all the genetic models proposed for quartz-carbonate veins, the orthomagmatic model has historically been the most commonly advocated (e.g., Emmons, 1937).

According to this model, gold and the hydrothermal fluids are derived from ascending felsic magmas generated during tectonism and metamorphism. A variation on this model involves derivation of the gold from the host supracrustal sequences by their interaction with the magma and associated hydrothermal fluids. In the last two decades, a number of fluid-source models, based largely on fluid inclusion and isotopic tracer studies, have also been proposed and reviewed by Roberts (1987), Kerrich (1989), and others. In the metamorphic model, gold is considered to be leached from the underlying supracrustal rocks by a metamorphic fluid released during prograde metamorphism and focused into shear zones and related dilational zones. A variation on this model has been suggested by Graves and Zentilli (1982) for the origin of the folded veins of the Meguma terrane by which pore fluids, released by greenschist metamorphism during incipient folding and cleavage development, induced hydraulic fracturing and transported locally-derived gold and other vein constituents into these fractures. Nesbitt and Muehlenbachs (1989) developed a model involving deep circulation of meteoric waters in the vicinity of major fault zones for quartz-carbonate vein deposits of the Canadian Cordillera.

In the mantle degassing/granulitization model, upward streaming of mantle-derived CO2 is thought to induce dehydration and granulitization of the lower crust, possibly accompanied by

magma generation; the resulting H2O-CO2 fluids, leaching gold from the lower crust, rise to higher crustal levels along major shear zones, where gold and other components are deposited.

In light of the recent recognition that many quartz-carbonate vein gold districts occur at transpressive accretionary plate margins, many authors relate the formation of these deposits to accretionary processes (e.g. Kerrich and Wyman, 1990). In this model, fluids are generated by thermal re-equilibration and metamorphism of subducted material following cessation of subduction. Such deep fluids, which may dissolve gold and other vein components anywhere along their path, are thought to be channelled upwards along crustal-scale faults.

Related Gold Deposit Types

A number of gold deposits that are primarily of quartz-carbonate vein type, contain orebodies typical of the disseminated-replacement subtype of gold deposits, which suggests a possible genetic link between the two subtypes. In the Cariboo district, for example, both quartz-carbonate veins and pyrite replacement (manto) orebodies in limestone were mined (Suther1and-Brown, 1957); the Campbell Red Lake-Dickenson deposit, apart from more abundant quartz-carbonate vein orebodies, also includes sulphidic orebodies of the East South "C" type (Andrews et al., 1986). In the Cariboo district, quartz-carbonate veins clearly overprint pre-existing pyrite replacement orebodies (Robert and Taylor, 1990) and the two styles of ore are not related to the same hydrothermal event. However, in most hybrid gold deposits, the temporal and possible genetic relationships between different styles of orebodies are not clearly established.

A similar problem exists for iron-formation-hosted gold deposits of the stratiform type: the relationships are not clearly established between finely disseminated gold in cherty sulphide-banded iron-formation and quartz-carbonate veins, with which at least some gold is spatially associated. In contrast, iron-formation-hosted gold deposits of the nonstratiform type simply represent a subset of the quartz-carbonate vein deposits considered here.

## 8.0 MINERALIZATION

The Cheminis Property gold bearing zones may be grouped into three main types: flow, carbonate and sedimentary.

Flow Type

Gold occurs with pyrite grains disseminated throughout volcano-sedimentary rocks having chemical composition of Fe-tholeiitic basalt. The host rocks generally consist of mixtures of detrital mud, fine to coarse mafic pyroclastic and basaltic flow-top material. Finely disseminated carbon and/or graphitic slips are usually present. Gold is quite homogeneously distributed. Visible gold is very rare. Usually gold concentration correlates positively with the degree of silicification, fineness of pyrite and concentration of pyrite. The term "flow ore" is a historical reference for this style of mineralization and has been retained for this report but placed in quotation marks to clarify that it is not necessarily ore in the reserve/economic sense. Examples at the Cheminis Mine are the "A", "B", "C" and "D" Zones, as outlined on Figure 8.1, which is a generalized cross section of the Cheminis deposit.

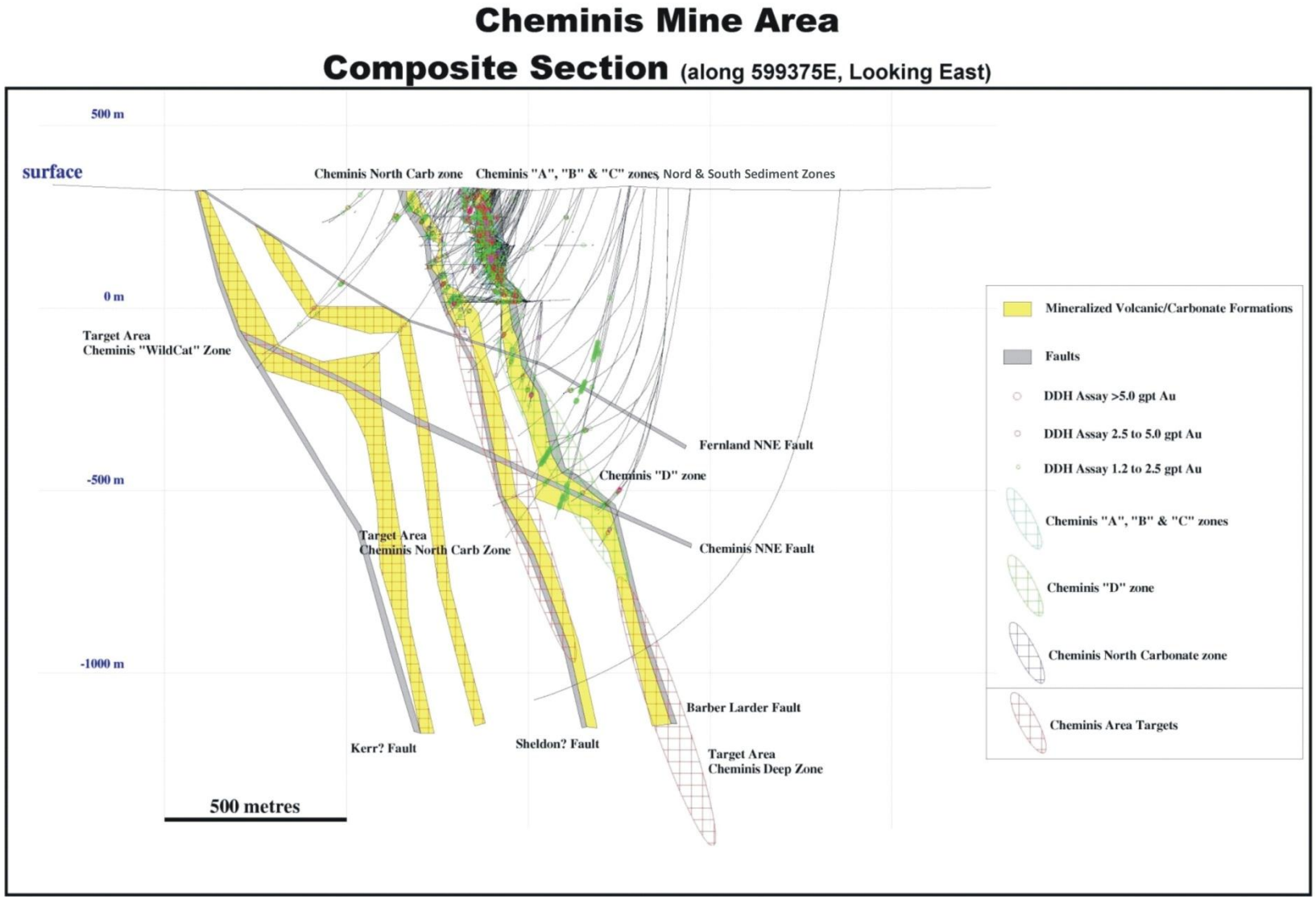
Carbonate Type

Gold occurs as erratically distributed native gold in quartz veinlets, usually part of quartz-carbonate stockwork in fuchsitic to chloritic altered ultramafic volcanic rocks. An example of this at the Cheminis mine is the NCGZ, as outlined on Figure 6.2. The term "carbonate ore" is a historical reference for this style of mineralization and has been retained for this report but placed in quotation marks to clarify that it is not necessarily ore in the reserve/economic sense.

Sedimentary Type

Gold is found with fine-grained arsenopyrite and certain extremely fine-grained wispy masses of pyrite. Generally coarse pyrite is barren of gold. Gold is more erratically distributed in "flow ore", but much less so than in "carbonate-ore". Visible gold is rare. The host rock is intensely sericitized and silicified greywacke, or argillaceous siltstone. Examples at Cheminis mine are the North Sediment Gold Zone and the South Sediment Gold Zone. The term "sedimentary-ore" is a historical reference for this style of mineralization and has been retained for this report but placed in quotation marks to clarify that it is not necessarily ore in the reserve/economic sense.

**Figure 8.1 Composite Cross Section of the Cheminis Mine Area**



## 9.0 EXPLORATION

There has been no exploration work undertaken by Bear Lake Gold on the Cheminis Property since the 2008 Technical Report.

## 10.0 DRILLING

There has been no drilling undertaken by Bear Lake Gold on the Cheminis Property since the 2008 Technical Report.

## 11.0 SAMPLING METHOD AND APPROACH

In order to estimate the resources on the Cheminis Property to NI 43-101 standards for disclosure for mineral projects, P&E requested that Bear Lake resample roughly 10% of historical core that was stored at the mine site. A list of the constrained samples was given to the Bear Lake geologist, and ¼ splits were taken of the core.

Sixty-seven samples were collected, in addition to 15 samples collected by Antoine Yassa, the independent QP. Samples were assembled into batches of 24 samples, which included one certified reference material and one blank sample. Four batches were sent to Laboratoire Expert in Rouyn-Noranda. Results of the resampling program are presented in Section 13.3 of this report.

## 12.0 SAMPLE PREPARATION, ANALYSES AND SECURITY

There are no details of the sample preparation, analyses and security prior to 2004.

In 2004, the diamond drill holes were logged, and any intervals believed by the geologist to be of merit were sampled. Sample intervals varied from 30 cm to 1 metre for narrow structures and up to 1.5 metres for wider structures. Core was half sawn with a diamond saw or split with a hydraulic splitter with one half being sent to the lab for analysis and the other half retained in the box for witness purposes.

Samples were bagged, placed in a large nylon bag, tied and shipped to Swastika Laboratories in Swastika, Ontario and ALS Chemex in Val-d'Or, Quebec. Samples were analyzed using fire assay on a 30 gram aliquot sample, with an atomic absorption finish.

Swastika re-assayed every tenth sample, in addition to samples reporting higher gold values.

There was a QA/QC program integrated into the 2004 drill program, details of which are presented in the 2008 Technical Report.

In 2006, sampling protocol remained the same, however samples were sent to Laboratoire Expert in Rouyn-Noranda, Quebec. Laboratoire Expert is registered under ISO 9001:2000 quality standard and participates in the CANMET PTP-MAL Laboratory Proficiency testing.

Results of all drilling for the 2004 and 2006 programs at Cheminis were presented in the 2008 Technical Report.

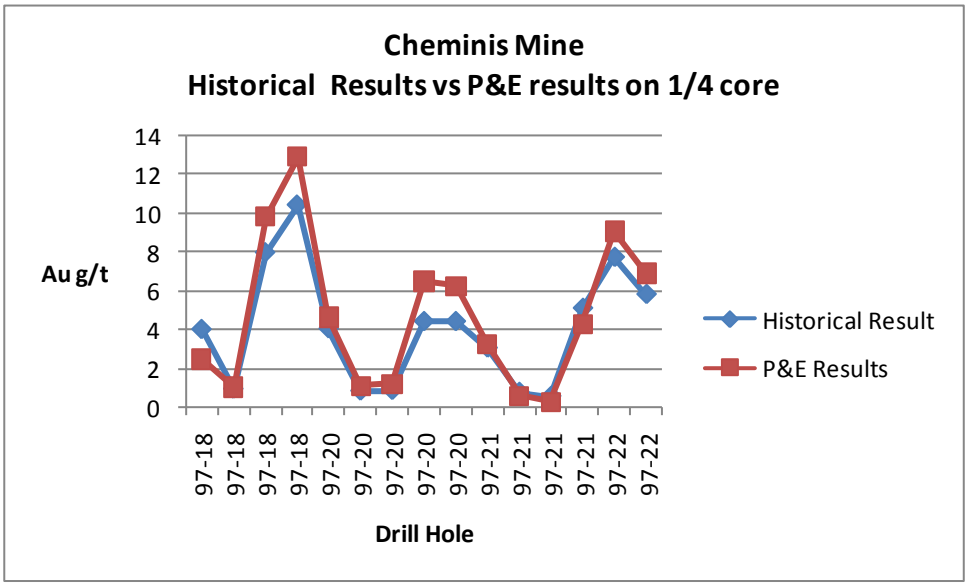
## 13.0 DATA VERIFICATION

### 13.1 SITE VISIT AND INDEPENDENT SAMPLING

Mr. Antoine Yassa, P. Geo., independent QP, visited the Cheminis site on several occasions, the last date being March 16, 2011.

Mr. Yassa collected 15 samples from four holes by taking ¼ splits of the remaining ½ core in the core box. The samples were taken by Mr. Yassa to Dicom courier in Rouyn-Noranda where they were shipped to the offices of P&E in Brampton, Ontario. From there the samples were sent by courier to AGAT Labs in Mississauga for analysis. At no time were any officers or employees of Bear Lake advised as to the location of the samples to be collected. Samples were analyzed for gold using lead collection fire assay with an AA finish, and results are presented in Figure 13.1.

**Figure 13.1 P&E Independent Site Visit Verification Samples for Gold**




### 13.2 QUALITY CONTROL ON MOST RECENT DRILLING

The holes drilled at Cheminis prior to 2004 did not have a quality control ("QC") program in place. Beginning in 2004, a QC program was implemented with one blank being inserted within the mineralized interval and two certified reference materials alternately inserted. The blank material was obtained from barren sediment zones in old holes from the Cheminis property. Two certified reference materials, G301-3 and G903-7 were obtained from Geostats Pty in Australia. Standard G301-7 had a gold grade of 1.96 g/t Au and G903-7 had a gold grade of 13.6 g/t Au. According to the 2004 Summary Report authored by Trent Eggeling of NFX, all grades reported from the blanks and the certified reference material fell within acceptable limits.

The next drill program at Cheminis after 2004 was in 2006. The QC program was maintained. A series of three varying grade certified reference materials were purchased from Rocklabs of New Zealand and introduced in the sample stream. Protocols were one standard per batch of samples assayed.

Quality control field blank samples were randomly and specifically inserted following samples suspected of containing gold mineralization to monitor for potential contamination during sample preparation and assaying. In addition, a duplicate sample of the drill core was also prepared on a regular basis to monitor precision.

All diamond drill core was analyzed at Laboratoire Expert in Rouyn-Noranda, Québec.

An evaluation of the assay results and quality control samples demonstrated the data to be of good integrity with good levels of accuracy and precision as determined from the duplicates and standards assay results.

## 13.3 2011 VALIDATION PROGRAM FOR HISTORICAL DRILLING

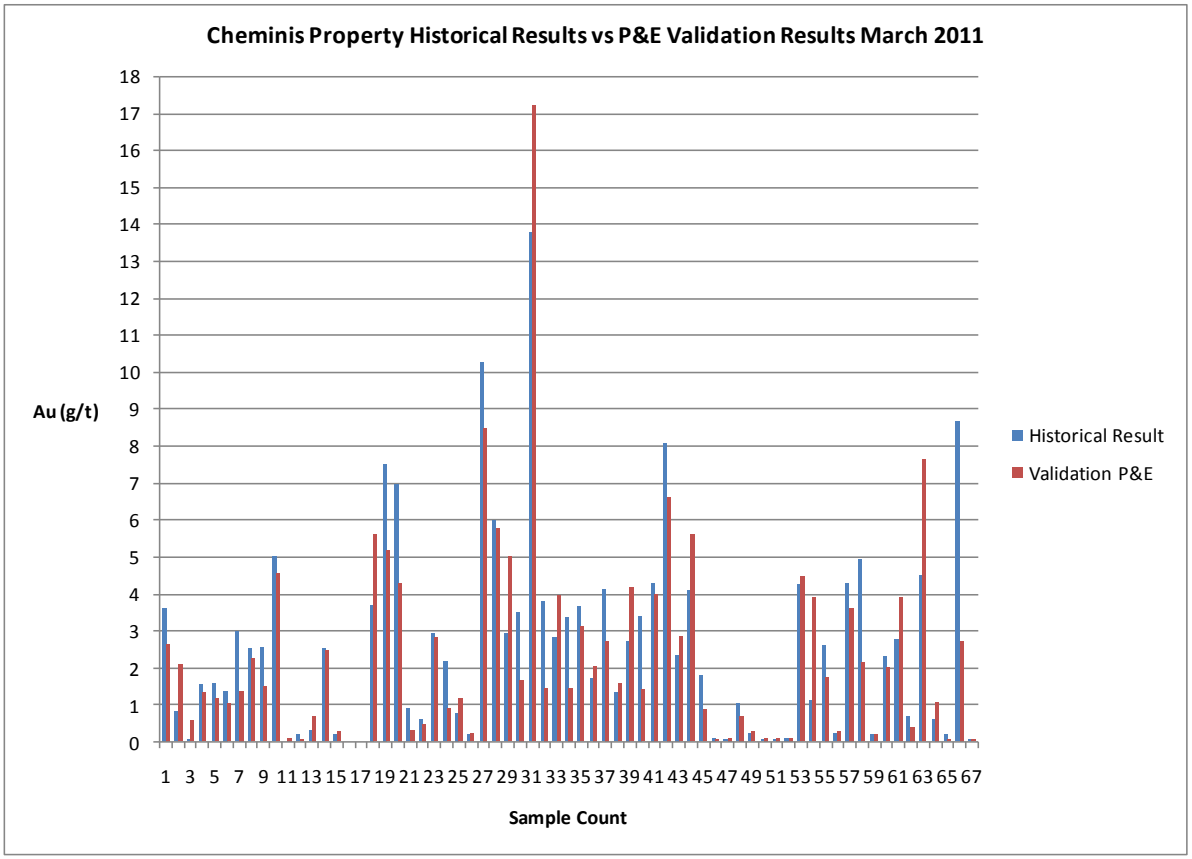
In order to validate the historical results for use in a NI 43-101 compliant resource estimate, 10% of the assays in the constrained model were checked by resampling ¼ splits of the remaining ½ core in the box. Samples chosen for the validation program are presented in Table 13.1. Samples were batched into 24 samples, including one blank and one certified reference material and were delivered to Lab Expert in Rouyn-Noranda.

**TABLE 13.1**
**LIST OF SAMPLES CHOSEN FOR VALIDATION OF HISTORICAL DRILLING**

| Drill Hole | No. of Samples | Comment |
|---|---|---|
| 83-2D | 3 | |
| 97-20 | 3 | |
| 97-21 | 1 | |
| 97-22 | 1 | |
| CH-98-4 | 7 | |
| NFX06-01 | 2 | |
| NFX06-02 | 11 | |
| NFX06-18 | 3 | |
| NFX06-20 | 8 | |
| NFX06-24 | 5 | |
| NFX06-25 | 6 | |
| U-05-94-2 | 5 | |
| U-05-94-3 | 4 | |
| U-05-94-4 | 7 | |
| U-05-94-6 | 1 | |
| 97-18 | 4 | A. Yassa site visit samples |
| 97-20 | 5 | A. Yassa site visit samples |
| 97-21 | 4 | A. Yassa site visit samples |
| 97-22 | 2 | A. Yassa site visit samples |
| Total | 82 | |

The author of this section reviewed the results of all the QC data, which were all within the norms. A graph of the original results versus current results was created and compared, and can be seen in Figure 13.2. Considering this is an Archean lode-gold deposit and the comparison is being made between ½ core and ¼ core, the results demonstrate that the original results are reproducible and can be relied upon for use in the current resource estimate.

**Figure 13.2 Comparison of Historical Assays vs. Current Validation Program Assays**



## 14.0 ADJACENT PROPERTIES

The Kirkland Lake/Larder Lake area remains in 2011 a very active area for exploration and development. Several mining companies are active in the sector and the projects and companies are presented in the following paragraphs. All of the information below has been obtained directly from the companies' websites. Mineralization as described for each project is not necessarily indicative of the mineralization on the Cheminis Property and it is not the authors' intention to suggest otherwise.

Armistice Resources

The McGarry Gold Project consists of 34 contiguous patented mining claims and licences of occupation covering a total area of approximately 484 hectares in the southwestern section of McGarry Township, Ontario. The Project is also host to a mining plant consisting of a three compartment vertical shaft to a depth of 2,290 feet below surface, a 10 foot double drum hoist capable of operating to depths of 4,200 feet, a 105 foot steel headframe, a hoist/compressor building, a dry/shop building and an electric power substation.

Situated within the highly prolific Larder Lake Mining Division, the McGarry Project adjoins the past-producing Kerr Addison Mine property to the west. Production from the Kerr Addison Mine totaled approximately 11 million ounces of gold from 41 million tons of ore over its 58-year operating life. Armistice has identified a mineralized system at a depth of 2,200 feet on the McGarry Project, which is geologically identical to that of the adjacent Kerr Addison property. The Company believes that the mineralized system on the Project represents either a duplicate of, or a downfaulted extension of the Kerr Addison system. As a result, Armistice believes that the McGarry Project has the potential of hosting an extensive gold bearing system similar to that occurring at the Kerr Addison Mine, but extending to greater depth.

From 1985 to 1989, Armistice spent in excess of $30 million on exploration and development of the McGarry Project. This included the deepening of the shaft, enlargement and refurbishment of the shaft to bring it up to production capacity, installation of a mining plant to sustain production to 4,000 feet, the completion of approximately 10,000 feet of underground development and over 250,000 feet of exploration drilling. Based on the results of the exploratory underground diamond drilling programs, a total drill indicated resource of 433,981 tons grading 0.25 ounces of gold per ton, or 108,495 ounces of contained gold, has been estimated to a depth of 2,600 feet on the Project.

The McGarry Project is free and clear of all encumbrances and in good standing. Mineral and surface rights are included in the Project title, which is registered to Armistice. Title is maintained through the annual property tax payments to the township of McGarry and the Ministry of Northern Development and Mines. There are no assessment work requirements for continuing tenure.

On March 2, 2011 Armistice issued a news release announcing they expect to begin gold production in Q4-2011 from the McGarry Mine gold project. In addition, a major surface diamond drilling program with an initial 60,000 feet, estimated to cost approximately $2.5 million was to begin in mid-March.

Mistango River Resources (formerly GLR Resources)

Mistango River Resources holds the Omega Mine property located slightly east-northeast of the town of Larder Lake, Ontario. The property consists of 17 contiguous leased and patented mining claims comprising some 635 acres. The latest news release issued by the company in December 2010 stated that data from the property are currently being reviewed and they expect to complete a NI 43-101 compliant resource at some time in the future.

Kirkland Lake Gold

Kirkland Lake Gold owns five former producing mines in the Kirkland Lake camp, and currently the Macassa Mine, located 35 km east of the Larder Lake Property is in production. In 2010, a mine and mill expansion were completed at Macassa in order to increase hoisting capacity from 1,000 tpd to 3,600 tpd. The current reserves and resources at Macassa stand at:

| | |
|---|---|
| **Proven and Probable:** | 1,397,000 oz. Au at 0.56 opt (19.2 g/t Au); |
| **Measured and Indicated:** | 1,267,000 oz. Au at 0.47 opt (16.2 g/t Au); |
| **Inferred:** | 1,002,000 oz. Au at 0.58 opt (19.9 g/t Au). |

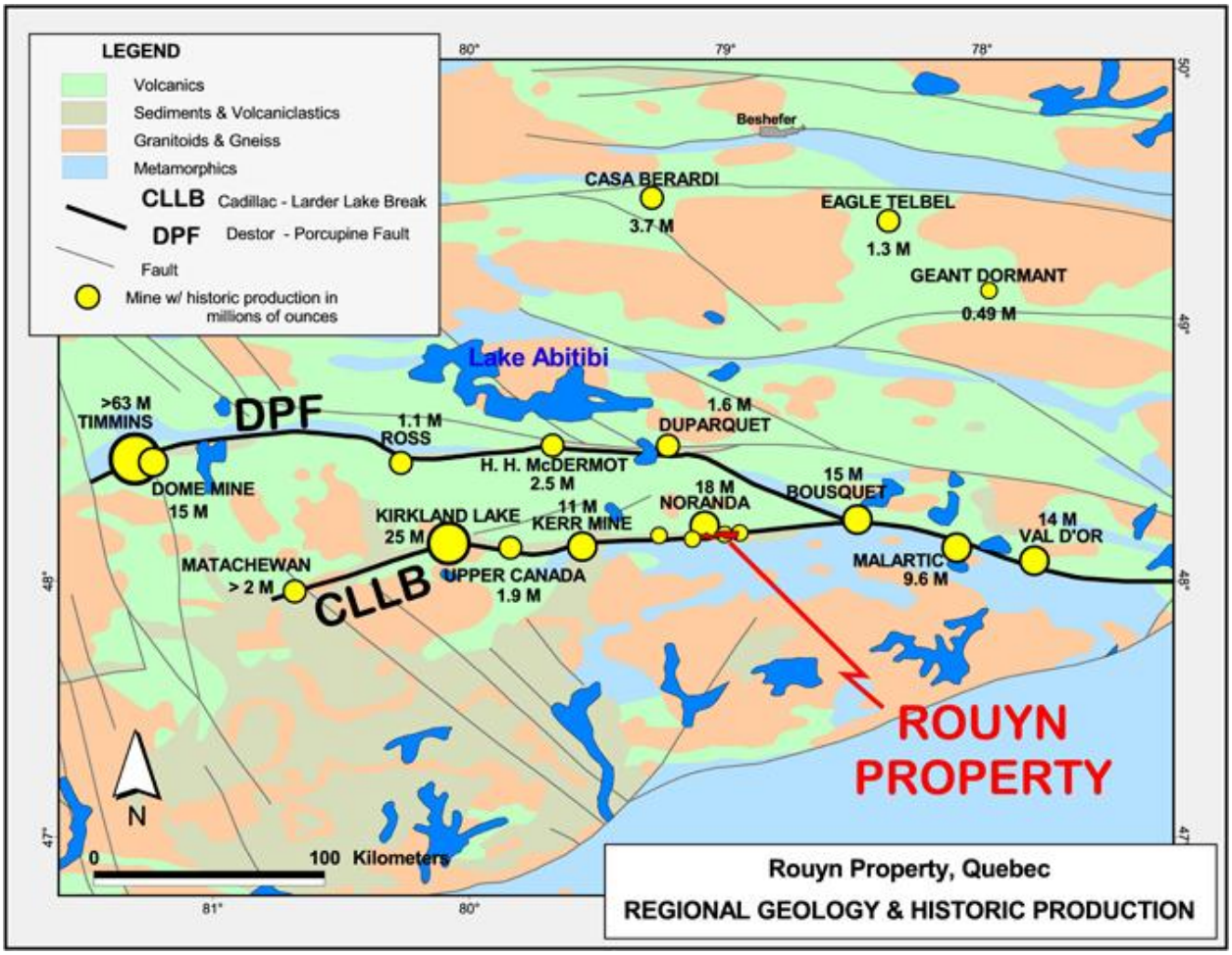
Yorbeau Resources

Yorbeau Resources controls a 12 km segment of the Larder Lake–Cadillac Break, situated approximately 40 km south-east of Rouyn-Noranda, (see Figure 14.1). The Rouyn Property is divided into seven "Blocks": Augmitto, Cinderella, Durbar, Lake Gamble, Astoria, Wright-Rouyn and Lake Bouzan. Yorbeau's exploration work carried out on the contiguous Augmitto and Cinderella Blocks during 2005-2009 confirmed the presence of both sediment-hosted and carbonate type ores within the blocks. The geology and mineralization show many characteristics similar to the Kerr Addison Mine.

Yorbeau conducted an exploration program during 2009 on the mineralized corridor between the Augmitto and Astoria deposits that followed on the discovery of two gold zones in 2008 – the Cinderella and Lake Gamble zones.

Drilling continued in 2010 and continues in 2011, specifically on the Augmitto-Astoria corridor. On May 10, 2011 the company announced that the preparation of a NI 43-101 compliant resource estimate had been commissioned to Roscoe-Postle Associates Inc. for the Augmitto Deposit.

**Figure 14.1 Yorbeau Resources Geological Location Map for the Rouyn Property**



## 15.0 METALLURGICAL PROCESSING AND METALLURGICAL TESTING

Preliminary test work to investigate the recovery of gold by direct cyanidation and flotation was conducted by Lakefield Research on samples from the Cheminis A and C Zones. The study was commissioned by Golden Shield Resources in March 1988.

Settling and filtration characteristics of the ore were examined, Bond Work Indices were determined and mineralogical examinations were performed. Results of this preliminary test work can be found in the NI 43-101 technical report titled "Technical Report on the Cheminis Gold Property" dated November 20, 2003 prepared for NFX by Martin Bourgoin, P.Geo. of MRB & Associates, Val-d'Or Quebec, which is filed on the SEDAR website at www.sedar.com under Bear Lake's profile.

## 16.0 2011 RESOURCE ESTIMATE

## 16.1 INTRODUCTION

The purpose of this report section is to estimate the Mineral Resources of the Cheminis Deposit in compliance with NI 43-101 and CIM standards. This resource estimate was undertaken by Eugene Puritch, P.Eng. and Antoine Yassa, P.Geo. of P&E Mining Consultants Inc. of Brampton Ontario. The effective date of this resource estimate is April 8, 2011.

## 16.2 DATABASE

All drilling data were provided by Bear Lake Gold Ltd., in the form of Excel files and an MS-Access database. Thirty nine (39) drill cross sections were developed on a local grid looking Northeast on a 60o azimuth on a 15 metre spacing named from 1-E to 39-E.

The Gemcom database for this estimate was constructed from 330 surface drill holes and 461 underground drill holes of which 25 surface drill holes and 92 underground drill holes were utilized in the resource calculation. All remaining data were not in the area that was modeled for the resource estimate. A drill hole plan is shown in Appendix-I.

The database was verified in Gemcom with minor corrections made to bring it to an error free status. The Assay Table of the database contained 24,903 Au assays. Drill assay data grade values are expressed in metric units, while down hole interval data and grid coordinates are in the UTM system.

## 16.3 DATA VERIFICATION

Verification of 6,024 assay database values was performed with original laboratory paper and electronically issued certificates from Swastika Labs, Spectrolab, Accurassay and ALS Chemex. Some minor errors were detected and corrected in the Gemcom database. The checked assays represent 86% of the data used in the resource estimate and approximately 21% of the total database.

## 16.4 DOMAIN INTERPRETATION

The Cheminis Deposit domain boundaries were determined from lithology, structure and grade boundary interpretation from visual inspection of drill hole sections. Five domains were created named NCB, SS, D, S-HW and DS. These domains were created with computer screen digitizing on drill hole sections in Gemcom by the authors of this report. The domain outlines were influenced by the selection of mineralized material above 2.5 g/t Au that demonstrated a lithological and structural zonal continuity along strike and down dip. In some cases mineralization below 2.5 g/t Au was included for the purpose of maintaining zonal continuity. Smoothing was utilized to remove obvious jogs and dips in the domains and incorporated a minor addition of inferred mineralization. This exercise allowed for easier domain creation without triangulation errors from solids validation.

On each section, polyline interpretations were digitized from drill hole to drill hole but not typically extended more than 50 metres into untested territory. Minimum constrained true width for interpretation was approximately 2.0 metres. Interpreted polylines from each section were “wireframed” in Gemcom into 3-D domains. The resulting solids (domains) were used for

statistical analysis, grade interpolation, rock coding and resource reporting purposes. See Appendix-II.

## 16.5 ROCK CODE DETERMINATION

The rock codes used for the resource model were derived from the mineralized domain solids. The list of rock codes used is as follows:

| Rock Code | Description |
|---|---|
| 0 | Air |
| 10 | NCB Domain |
| 20 | SS Domain |
| 30 | D Domain |
| 40 | S-HW Domain |
| 50 | DS Domain |
| 99 | Waste |

## 16.6 COMPOSITES

Length weighted composites were generated for the drill hole data that fell within the constraints of the above-mentioned domains. These composites were calculated for Au over 1.0 metre lengths starting at the first point of intersection between assay data hole and hanging wall of the 3-D zonal constraint. The compositing process was halted upon exit from the footwall of the aforementioned constraint. Un-assayed intervals were set to ½ assay detection limit values. Any composites that were less than 0.30 metres in length were discarded so as not to introduce any short sample bias in the interpolation process. The constrained composite data were transferred to Gemcom extraction files for the grade interpolation as X, Y, Z, Au, files.

## 16.7 GRADE CAPPING

Grade capping was investigated on the raw assay values in the database within the constraining domains to ensure that the possible influence of erratic high values did not bias the database. Extraction files were created for the constrained Au data. From these extraction files, log-normal histograms were generated. See graphs in Appendix-III.

**TABLE 16.1**
**AU GRADE CAPPING VALUES**

| Domain | Capping Value Au g/t | Number of Assays Capped | Cumulative % for Capping | Raw Coefficient of Variation | Capped Coefficient of Variation |
|---|---|---|---|---|---|
| NCB | 20 | 2 | 98.9 | 1.34 | 1.22 |
| SS | 20 | 3 | 99.0 | 1.30 | 1.13 |
| D | No Cap | 0 | 100 | 1.02 | 1.02 |
| S-HW | 7 | 1 | 98.0 | 1.12 | 0.96 |
| DS | No Cap | 0 | 100 | 0.91 | 0.91 |

## 16.8 VARIOGRAPHY

A reasonable omnivariogram was developed for the combined constrained composites from the five 3D domains. Directional variography was not attainable for the composite dataset indicating that more drilling will be required to increase resource classification. See variogram in Appendix-IV.

## 16.9 BULK DENSITY

The bulk density used for the creation of a density block models was derived from site visit samples taken by Antoine Yassa, P.Geo. and analysed at Agat Laboratories in Mississauga, Ontario. The average bulk density for the Cheminis resource was derived from 15 samples and determined to be 2.68 tonnes per cubic metre.

## 16.10 BLOCK MODELING

The Cheminis Deposit resource model was divided into a block model framework containing 4,312,000 blocks that were 5m in X direction, 5m Y direction and 5m in Z direction. There were 140 columns (X), 140 rows (Y) and 220 levels (Z). The block model was rotated 30 degrees counter clockwise. Separate block models were created for rock type, density, percent, class and Au.

The percent block model was set up to accurately represent the volume and subsequent tonnage that was occupied by each block inside the constraining domain. As a result, the domain boundary was properly represented by the percent model ability to measure individual infinitely variable block inclusion percentages within that domain.

The Au composites were extracted from the Microsoft Access database composite table into separate files. Inverse distance cubed (ID3) grade interpolation was utilized. The first grade interpolation pass was utilized for the Indicated classification and the second Inferred. The resulting Au grade blocks can be seen on the block model cross-sections and plans in Appendix-V. Grade blocks were interpolated using the following parameters:

**TABLE 16.2**
**AU BLOCK MODEL INTERPOLATION PARAMETERS ALL DOMAINS**

| A-Vein | Dip Dir. | Strike | Dip | Dip Range (m) | Strike Range (m) | Across Dip Range (m) | Max # per Hole | Min # Sample | Max # Sample |
|---|---|---|---|---|---|---|---|---|---|
| Indicated | 150° | 240° | -65° | 30 | 30 | 15 | 2 | 3 | 20 |
| Inferred | 150° | 240° | -65° | 100 | 100 | 50 | 2 | 1 | 20 |

## 16.11 RESOURCE CLASSIFICATION

During the Cheminis classification interpolation search ellipsoid passes, 6,045 grade blocks were coded as Indicated and 22,397 as Inferred. Classification block cross-sections and plans can be seen in Appendix VI.

## 16.12 RESOURCE ESTIMATE

The resource estimate was derived from applying an Au cut-off grade to the block model and reporting the resulting tonnes and grade for potentially mineable areas. The volumes of the existing underground workings were removed from the resource estimates. The following calculation demonstrates the rationale supporting the Au cut-off grade that determines the underground potentially economic portions of the mineralization.

**Underground Au Cut-Off Grade Calculation CDN$**

| | |
|---|---|
| Au Price | US$1,158/oz. (24 month trailing average price March 31, 2011) |
| $US/$CDN Exchange Rate | $0.95 |
| Au Recovery | 95% |
| Mining Cost (1,000tpd) | $70.00/tonne mined |
| Process Cost (1,000tpd) | $15.00/tonne milled |
| General/Administration | $8.00/tonne milled |

Therefore, the Au cut-off grade for the underground resource estimate is calculated as follows:

**Operating costs per ore tonne = ($70 + $15 + $8) = $93/tonne**
**[($93)/[($1,158/oz./$0.95/31.1035 x 95% Recovery)] = 2.50g/t**

The above data were derived from similar gold projects to Cheminis.

The resulting resource estimate can be seen in the following table.

**TABLE 16.3**
**CHEMINIS RESOURCE ESTIMATE @ 2.5 G/T AU CUT-OFF GRADE(1)(2)(3)**

| Classification | Tonnes | Au g/t | Au oz. |
|---|---|---|---|
| Indicated | 335,000 | 4.07 | 43,800 |
| Inferred | 1,391,000 | 5.22 | 233,400 |

***(1)*** *Mineral resources which are not mineral reserves do not have demonstrated economic viability. The estimate of mineral resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*
***(2)*** *The quantity and grade of reported inferred resources in this estimation are uncertain in nature and there has been insufficient exploration to define these inferred resources as an indicated or measured mineral resource and it is uncertain if further exploration will result in upgrading them to an indicated or measured mineral resource category.*
***(3)*** *The mineral resources in this technical report were estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council.*

**TABLE 16.4**
**CHEMINIS RESOURCE ESTIMATE SENSITIVITY(1)(2)(3)**

| | INDICATED | | | INFERRED | | |
|---|---|---|---|---|---|---|
| Cut-Off Au g/t | TONNES | Au g/t | Au oz | TONNES | Au g/t | Au oz |
| 5.0 | 68,699 | 6.82 | 15,064 | 557,977 | 7.92 | 142,116 |
| 4.5 | 89,302 | 6.34 | 18,197 | 624,775 | 7.58 | 152,240 |
| 4.0 | 115,740 | 5.86 | 21,795 | 741,869 | 7.05 | 168,178 |
| 3.5 | 166,242 | 5.21 | 27,868 | 872,063 | 6.56 | 183,898 |
| 3.0 | 233,889 | 4.65 | 34,937 | 1,106,982 | 5.85 | 208,061 |
| 2.5 | 334,999 | 4.07 | 43,847 | 1,390,586 | 5.22 | 233,423 |
| 2.0 | 433,800 | 3.66 | 50,990 | 1,576,937 | 4.87 | 246,857 |
| 1.5 | 519,754 | 3.34 | 55,863 | 1,853,214 | 4.41 | 262,520 |
| 1.0 | 598,351 | 3.07 | 59,001 | 2,165,785 | 3.95 | 274,976 |
| 0.5 | 686,166 | 2.77 | 61,130 | 2,492,353 | 3.53 | 282,623 |
| 0.001 | 744,099 | 2.57 | 61,579 | 2,969,827 | 2.99 | 285,397 |

## 16.13 CONFIRMATION OF ESTIMATE

As a test of the reasonableness of the resource estimate, the block model was queried at a 0.1 /t Au cut-off grade with blocks in all classifications summed and their grades weight averaged. This average is the average grade of all blocks within the mineralized domain. The values of the interpolated grades for the block model were compared to the length weighted capped average grades and average grade of composites of all samples from within the domains. See below.

**TABLE 16.5**
**COMPARISON OF WEIGHTED AVERAGE GRADE OF CAPPED ASSAYS AND COMPOSITES WITH TOTAL BLOCK MODEL AVERAGE GRADES**

| Data Type | Au (g/t) |
|---|---|
| Capped Assays | 2.59 |
| Composites | 2.54 |
| Block Model | 2.76 |

The comparison above shows the average grade of all the Au blocks in the constraining domains to be somewhat higher than the weighted average of all capped assays and composites used for grade estimation. This is due to the localized clustering of some lower grade assays which were smoothed by the block modeling grade interpolation process. The block model Au values will be more representative than the capped assays or composites due to the block model's 3D spatial distribution characteristics. In addition, a volumetric comparison was performed with the block model volume of the model blocks versus the geometric calculated volume of the domain solids.

**Block Model Volume =** 1,740,869 $m^3$
**Geometric Domain Volume=** 1,741,614 $m^3$
**Difference=** 0.04%

## 17.0 OTHER RELEVANT DATA AND INFORMATION

There are no other data relevant to the Cheminis Project that have not been discussed in a previous section of this report.

## 18.0 CONCLUSIONS AND RECOMMENDATIONS

## 18.1 CONCLUSIONS

The Cheminis Property was modeled into five domains determined from lithology, structure and grade boundary interpretation from visual inspection of drill hole sections. The domain outlines were influenced by the selection of mineralized material above 2.5 g/t Au that demonstrated a lithological and structural zonal continuity along strike and down dip. The resulting resources were estimated using a two-year trailing average gold price of $US 1,158/oz and a cut-off grade of 2.5 g/t Au. Resources were classed in both the Indicated and Inferred categories.

**TABLE 18.1**
**2011 CHEMINIS RESOURCE ESTIMATE @ 2.5 G/T AU CUT-OFF GRADE(1)(2)(3)**

| Classification | Tonnes | Au g/t | Au oz. |
|---|---|---|---|
| Indicated | 335,000 | 4.07 | 43,800 |
| Inferred | 1,391,000 | 5.22 | 233,400 |

***(1)*** *Mineral resources which are not mineral reserves do not have demonstrated economic viability. The estimate of mineral resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*
***(2)*** *The quantity and grade of reported inferred resources in this estimation are uncertain in nature and there has been insufficient exploration to define these inferred resources as an indicated or measured mineral resource and it is uncertain if further exploration will result in upgrading them to an indicated or measured mineral resource category.*
***(3)*** *The mineral resources in this technical report were estimated using the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), CIM Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council.*

## 18.2 RECOMMENDATIONS

It is recommended to undertake an approximate 15,000 metre diamond drill program with the goal of expanding the resources on strike and at depth, and to fill in gaps in the block model with the possibility of upgrading the resource categories. The approximate cost of the diamond drill program is $CDN 2 million.

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# 20.0 CERTIFICATES

**CERTIFICATE of AUTHOR**

**TRACY J. ARMSTRONG, P.GEO.**

I, Tracy J. Armstrong, P.Geo., residing at 2007 Chemin Georgeville, res. 22, Magog, QC J1X 0M8, do hereby certify that:

1. I am an independent geological consultant contracted by P&E Mining Consultants Inc.
2. This certificate applies to the technical report entitled "Technical Report and Resource Estimate on the Cheminis Gold Mine Property, Larder Lake, Ontario" (the "Technical Report") with an effective date of April 8, 2011.
3. I am a graduate of Queen's University at Kingston, Ontario with a B.Sc (HONS) in Geological Sciences (1982). I have worked as a geologist for a total of 25 years since obtaining my B.Sc. degree. I am a geological consultant currently licensed by the Order of Geologists of Québec (License No. 566), the Association of Professional Geoscientists of Ontario (License No. 1204) and the Association of Professional Engineers and Geoscientists of British Columbia (License 34720).

   I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

   My relevant experience for the purpose of the Technical Report is:

   - Underground production geologist, Agnico-Eagle Laronde Mine 1988-1993
   - Exploration geologist, Laronde Mine 1993-1995
   - Exploration coordinator, Placer Dome 1995-1997
   - Senior Exploration Geologist, Barrick Exploration 1997-1998
   - Exploration Manager, McWatters Mining 1998-2003
   - Chief Geologist Sigma Mine 2003
   - Consulting Geologist 2003-present.

4. I did not visit the Cheminis Property.
5. I am responsible for Sections 1 through 15, 17 and jointly responsible for Section 18, as well as the overall structuring of the Technical Report.
6. I am independent of the Issuer applying the test in Section 1.4 of NI 43-101.
7. I have had prior involvement with the Property that is the subject of this Technical Report as co-author of a 2006 Technical Report.
8. I have read NI 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance therewith.
9. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective date: April 8, 2011
Signing Date: May 27, 2011

***{SIGNED AND SEALED}***

_____
Tracy J. Armstrong, P.Geo.

**CERTIFICATE of AUTHOR**

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

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

1. I am an independent mining consultant and President of P & E Mining Consultants Inc.
2. This certificate applies to the technical report entitled "Technical Report and Resource Estimate on the Cheminis Gold Mine Property, Larder Lake, Ontario" (the "Technical Report") with an effective date of April 8, 2011.
3. I am a graduate of The Haileybury School of Mines, with a Technologist Diploma in Mining, as well as obtaining an additional year of undergraduate education in Mine Engineering at Queen's University. In addition I have also met the Professional Engineers of Ontario Academic Requirement Committee's Examination requirement for Bachelor's Degree in Engineering Equivalency. I am a mining consultant currently licensed by the Professional Engineers of Ontario (License No. 100014010) and registered with the Ontario Association of Certified Engineering Technicians and Technologists as a Senior Engineering Technologist. I am also a member of the National and Toronto Canadian Institute of Mining and Metallurgy.

   I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.

   - I have practiced my profession continuously since 1978. My summarized career experience is as follows:
   - Mining Technologist - H.B.M.& S. and Inco Ltd., 1978-1980
   - Open Pit Mine Engineer – Cassiar Asbestos/Brinco Ltd., 1981-1983
   - Pit Engineer/Drill & Blast Supervisor – Detour Lake Mine, 1984-1986
   - Self-Employed Mining Consultant – Timmins Area, 1987-1988
   - Mine Designer/Resource Estimator – Dynatec/CMD/Bharti, 1989-1995
   - Self-Employed Mining Consultant/Resource-Reserve Estimator, 1995-2004
   - President – P & E Mining Consultants Inc, 2004-Present
4. I have not visited the Cheminis Property.
5. I am jointly responsible for Section 16 and co-authoring Section 18 of the Technical Report.
6. I am independent of the issuer applying the test in Section 1.4 of NI 43-101.
7. I have had no prior involvement with the Property that is the subject of this Technical Report.
8. I have read NI 43-101 and Form 43-101F1 and this Technical Report has been prepared in compliance therewith.
9. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Effective Date: April 8, 2011

Signing Date: May 27, 2011

***{SIGNED AND SEALED}***

_____

Eugene J. Puritch, P. Eng.

**CERTIFICATE of AUTHOR**

**ANTOINE R. YASSA, P. GEO**

I, Antoine R. Yassa, P. Geo., residing at 241 Rang 6 West, Evain, Quebec, do hereby certify that:

1. I am an independent geological consultant contracted by P& E Mining Consultants Inc.;
2. This certificate applies to the technical report titled "Technical Report and Resource Estimate on the Cheminis Gold Mine Property, Larder Lake, Ontario" (the "Technical Report") with an effective date of April 8, 2011;
3. I am a graduate of Ottawa University at Ottawa, Ontario with a B.Sc (HONS) in Geological Sciences (1977). I am currently licensed by the Order of Geologists of Québec (License No 224) and the Association of Professional Geoscientists of Ontario (License No. 1890). 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 and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101. This report is based on my personal review of information provided by the Issuer and on discussions with the Issuer's representatives. My relevant experience for the purpose of the Technical Report is:
    - Minex Geologist (Val d'Or), 3D Modeling (Timmins), Placer Dome 1993-1995;
    - Database Manager, Senior Geologist, West Africa, PDX, 1996-1998
    - Senior Geologist, Database Manager, McWatters Mine 1998-2000;
    - Database Manager, Gemcom modeling and Resources Evaluation (Kiena Mine) QAQC Manager (Sigma Open pit), McWatters Mines 2001-2003;
    - Database Manager and Resources Evaluation at Julietta Mine, Far-East Russia, Bema Gold Corporation, 2003-2006
    - Consulting Geologist 2006 to present.
4. I am responsible for co-authoring Section 16.0 of the Technical Report;
5. I visited the Cheminis Gold Mine Property on February 17, 2011;
6. I have not had prior involvement with the Cheminis Gold Mine Property that is the subject of this Technical Report;
7. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading;
8. I am independent of the issuer applying the test in Section 1.4 of NI 43-101;
9. I have read NI 43-101 and Form 43-101F1 and the Report has been prepared in compliance therewith.

Effective date: April 8, 2011

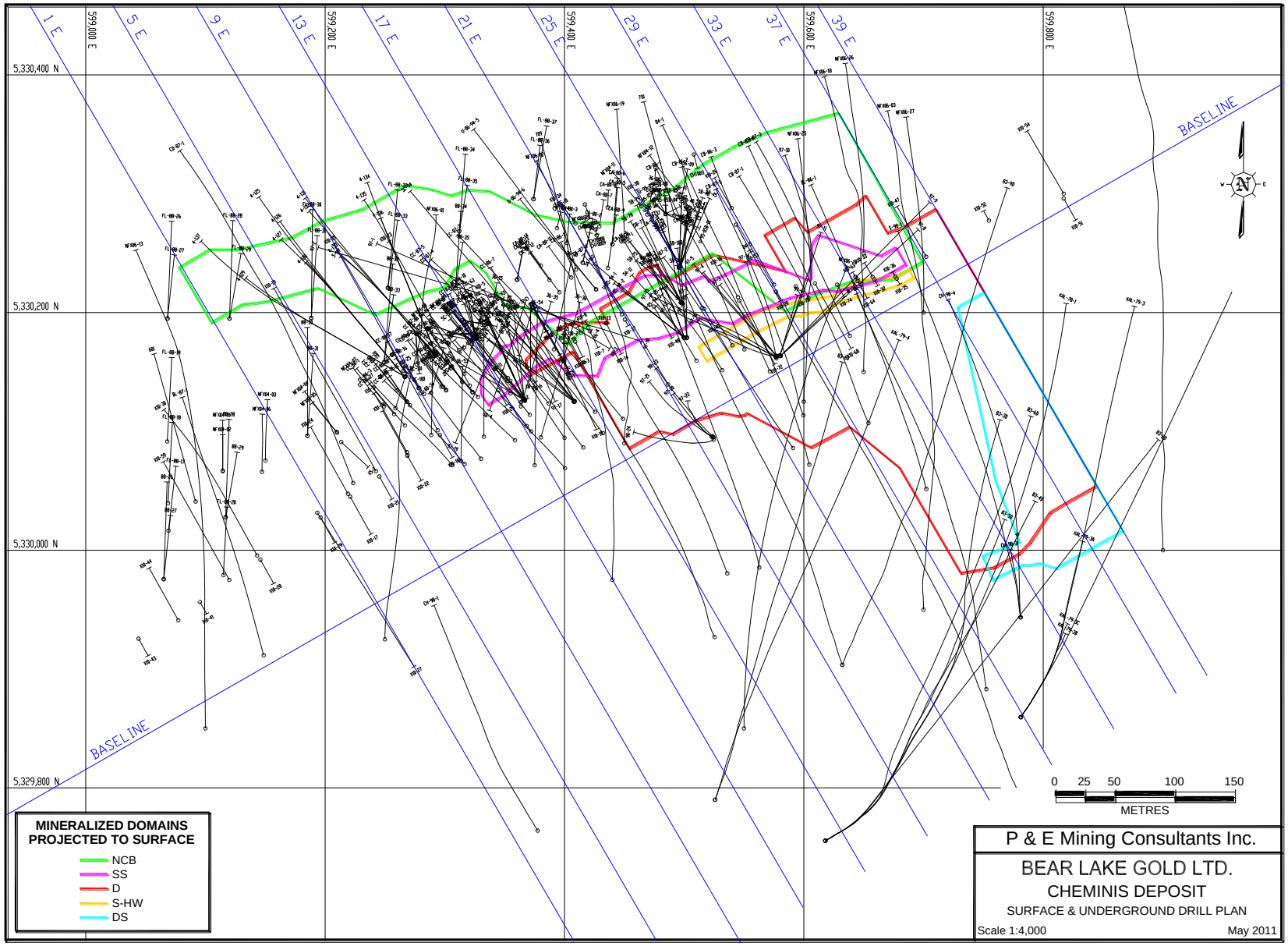
Signing date: May 27, 2011

***{SIGNED AND SEALED}***

_____

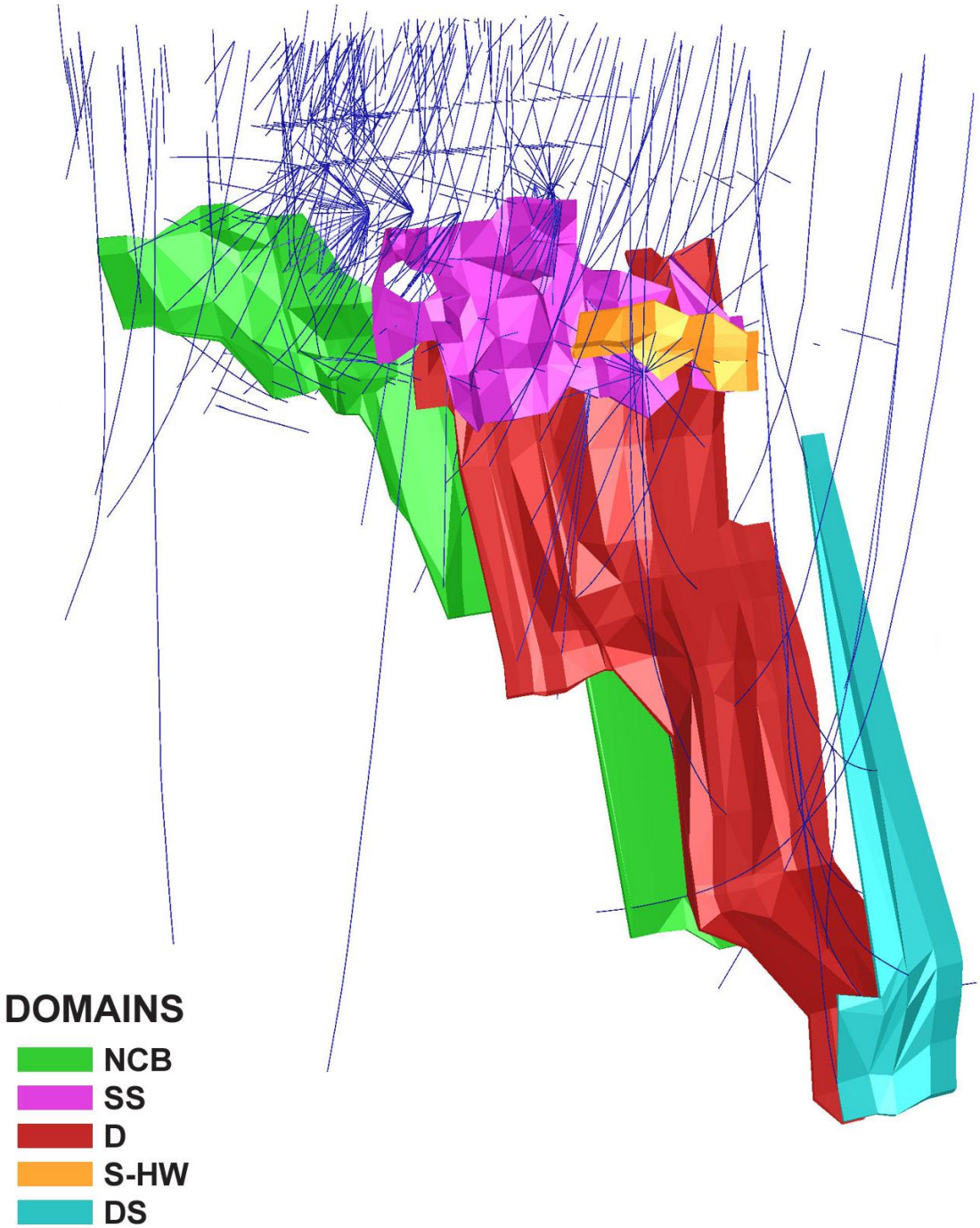
Antoine R. Yassa, P.Geo.
OGQ # 224

# APPENDIX I. SURFACE & UNDERGROUND DRILL HOLE PLAN

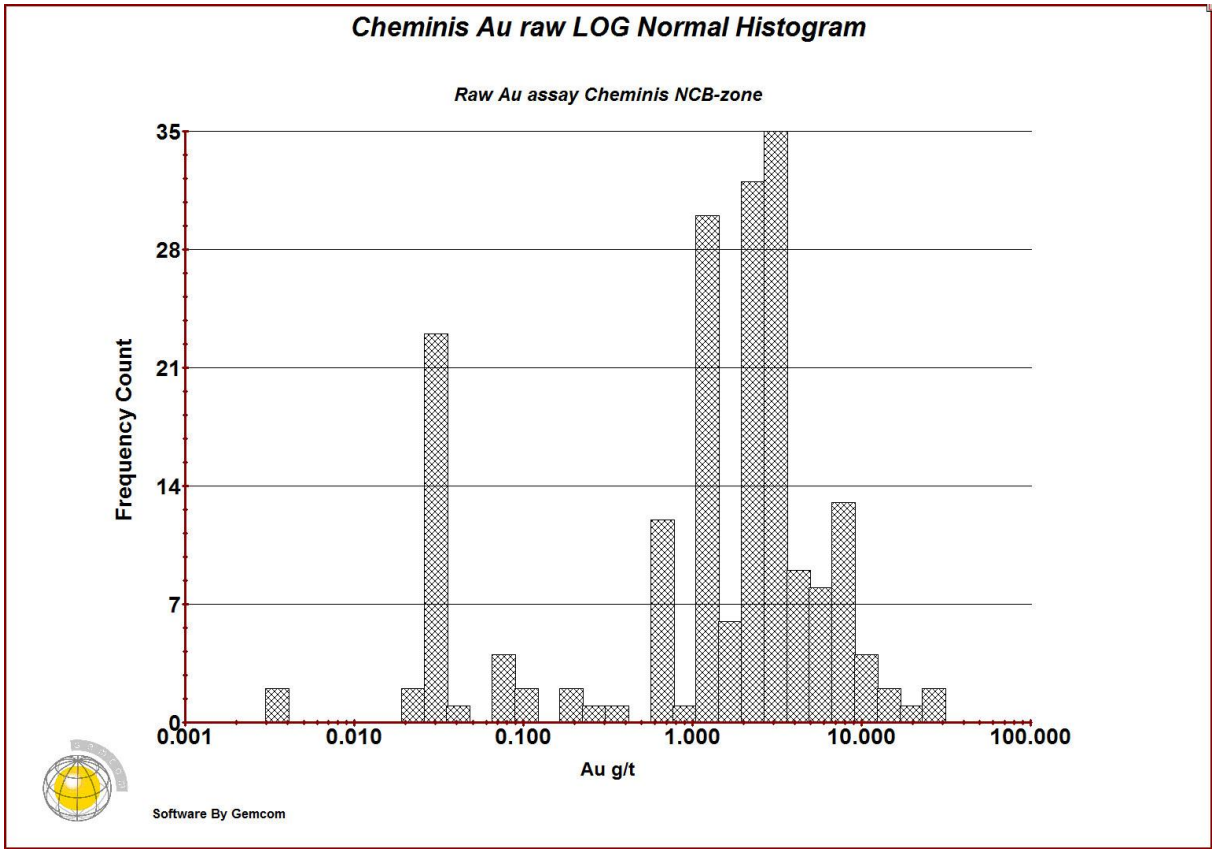

1 E
5 E
9 E
13 E
17 E
21 E
25 E
29 E
33 E
37 E
39 E
559,000 E
559,200 E
559,400 E
559,600 E
559,800 E
5,330,400 N
5,330,200 N
5,330,000 N
5,329,800 N
BASELINE
BASELINE
MINERALIZED DOMAINS
PROJECTED TO SURFACE
NCB
SS
D
S-HW
DS
0 25 50 100 150
METRES
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
SURFACE & UNDERGROUND DRILL PLAN
Scale 1:4,000
May 2011

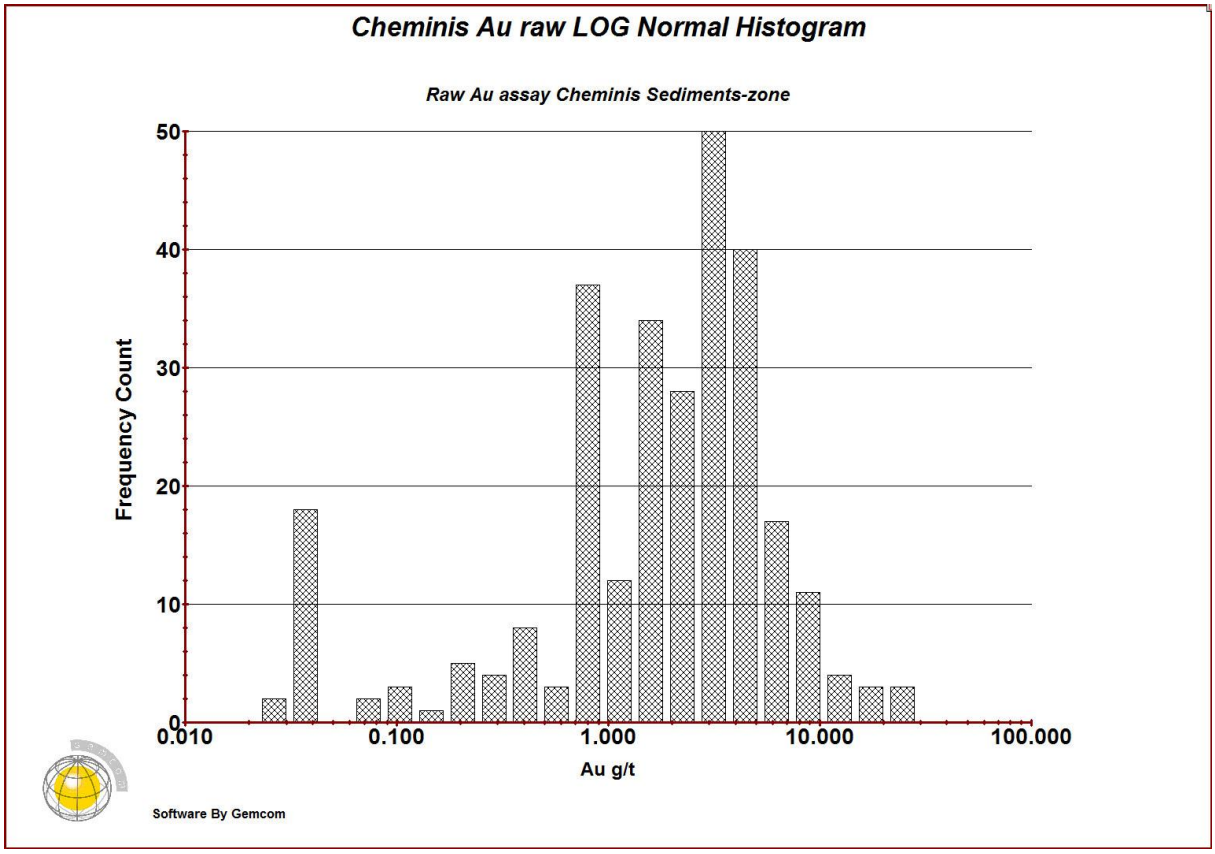
# APPENDIX II. 3D DOMAINS

# CHEMINIS DEPOSIT
# 3D DOMAINS



# APPENDIX III. LOG NORMAL HISTOGRAMS


Cheminis Au raw LOG Normal Histogram
Raw Au assay Cheminis NCB-zone
Frequency Count
35
28
21
14
7
0
0.001
0.010
0.100
1.000
10.000
100.000
Au g/t
Software By Gemcom


Cheminis Au raw LOG Normal Histogram
Raw Au assay Cheminis Sediments-zone
Frequency Count
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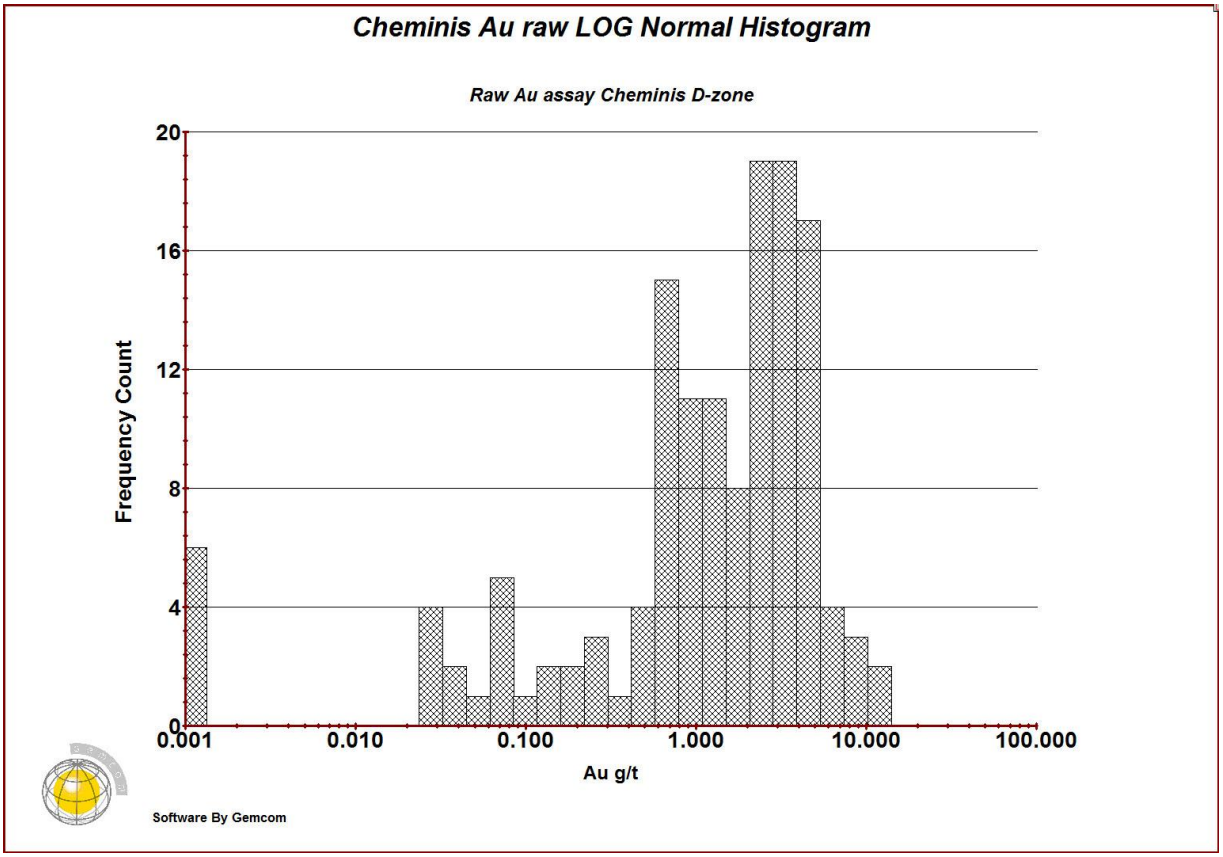
40
30
20
10
0
0.010
0.100
1.000
10.000
100.000
Au g/t
Software By Gemcom


Cheminis Au raw LOG Normal Histogram
Raw Au assay Cheminis D-zone
Frequency Count
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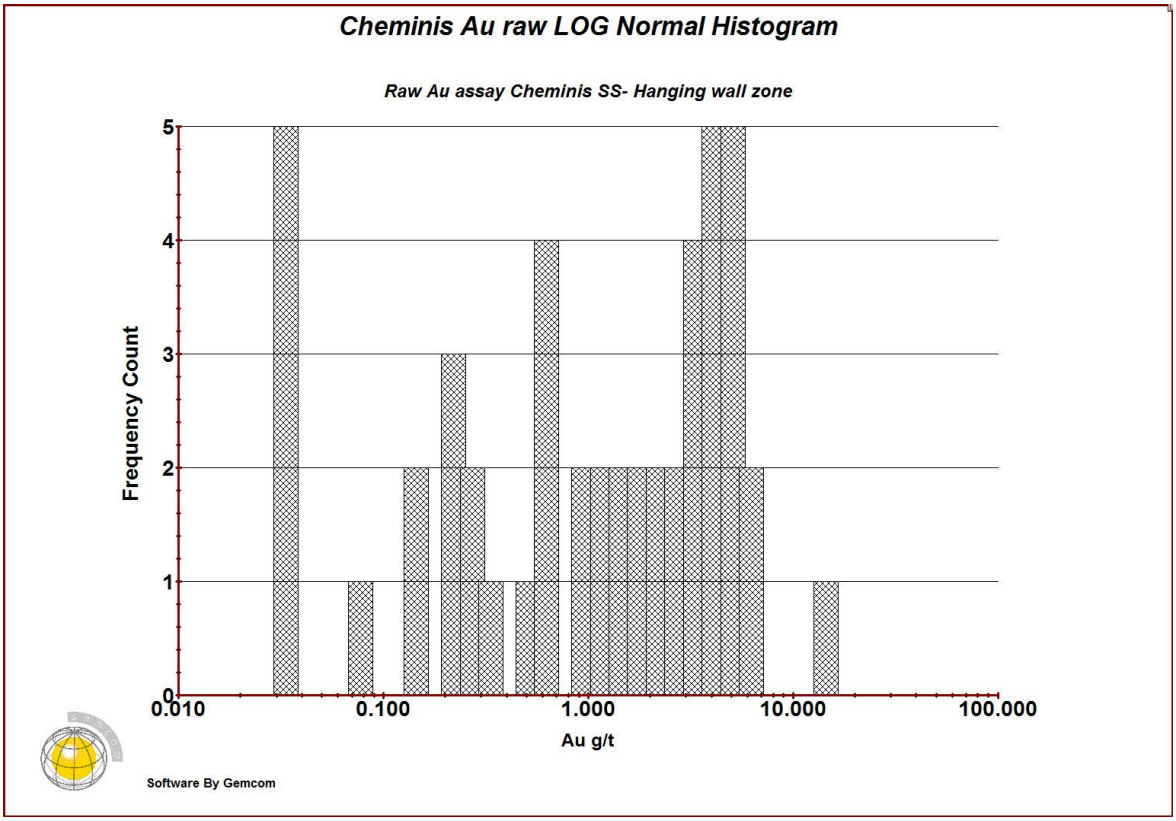
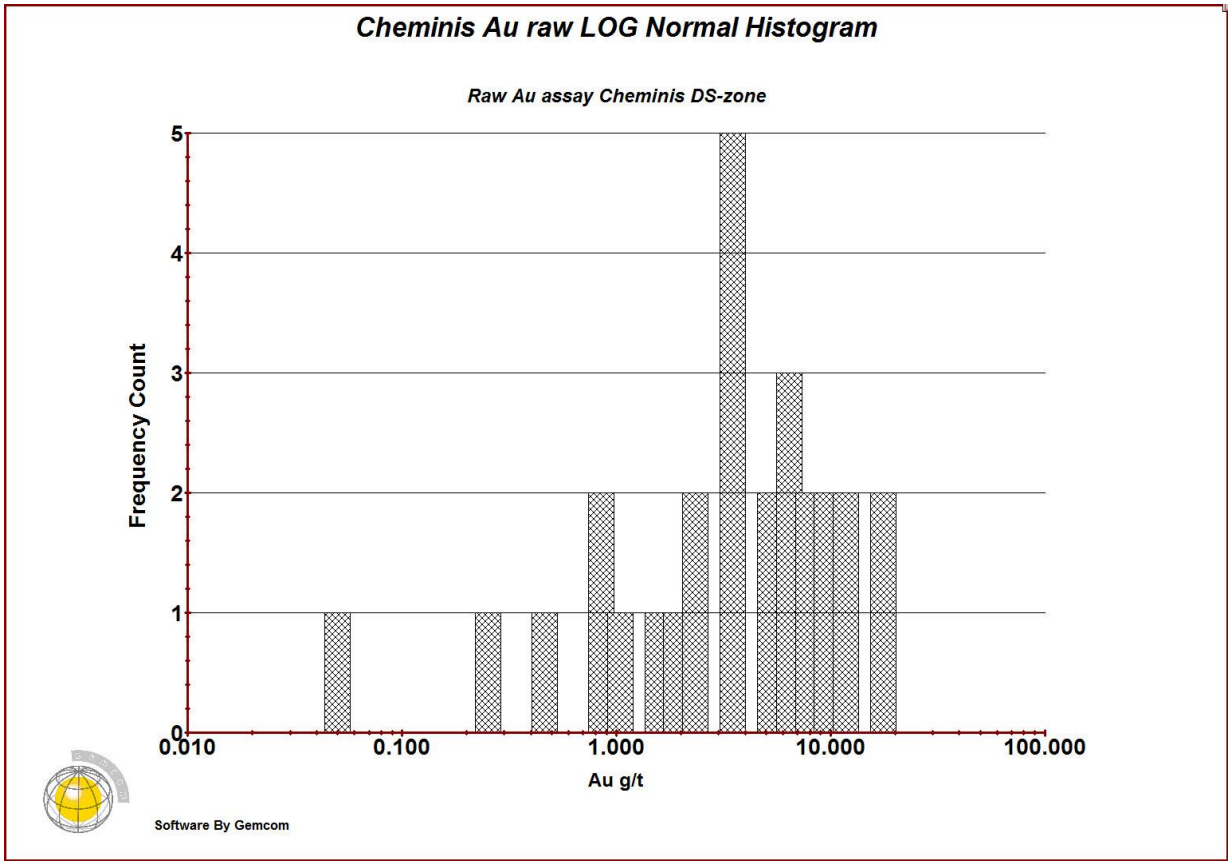
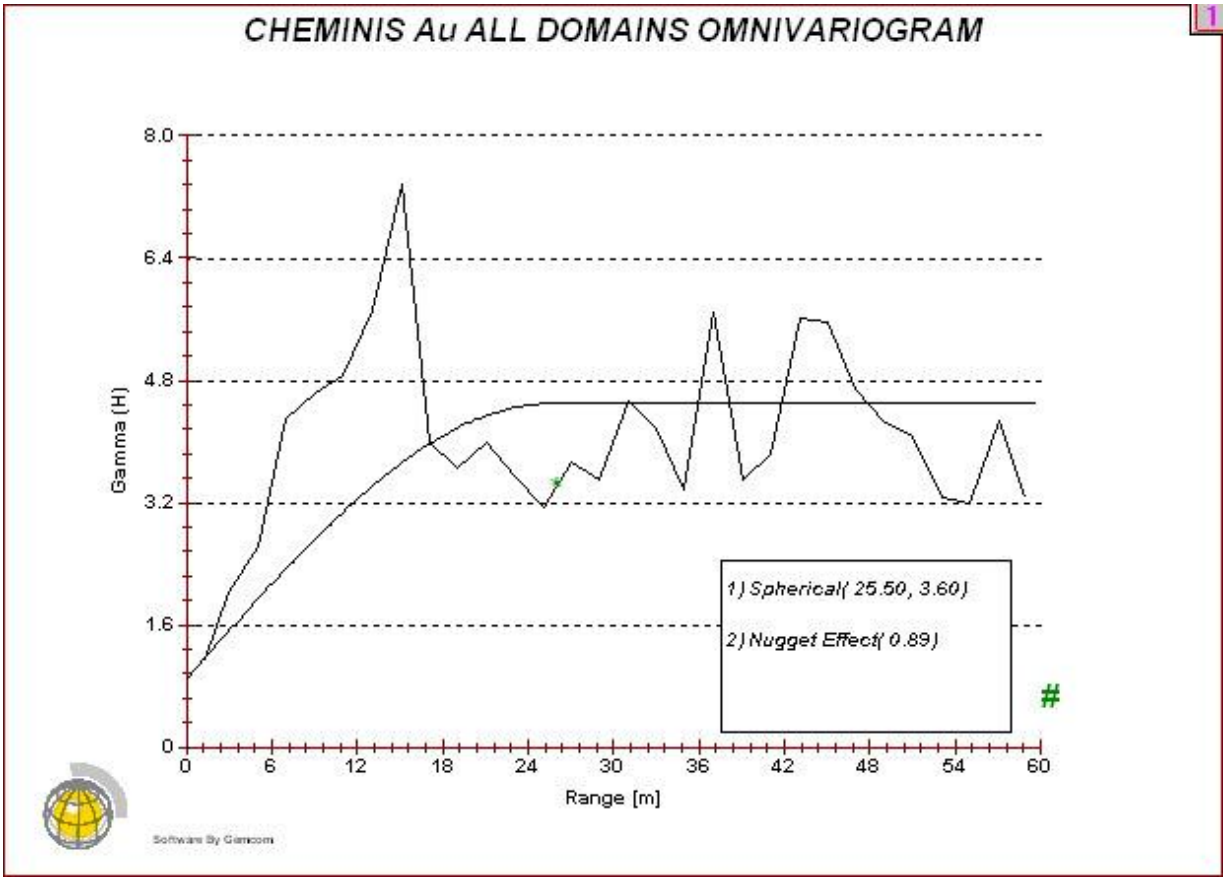
16
12
8
4
0
0.001
0.010
0.100
1.000
10.000
100.000
Au g/t
Software By Gemcom

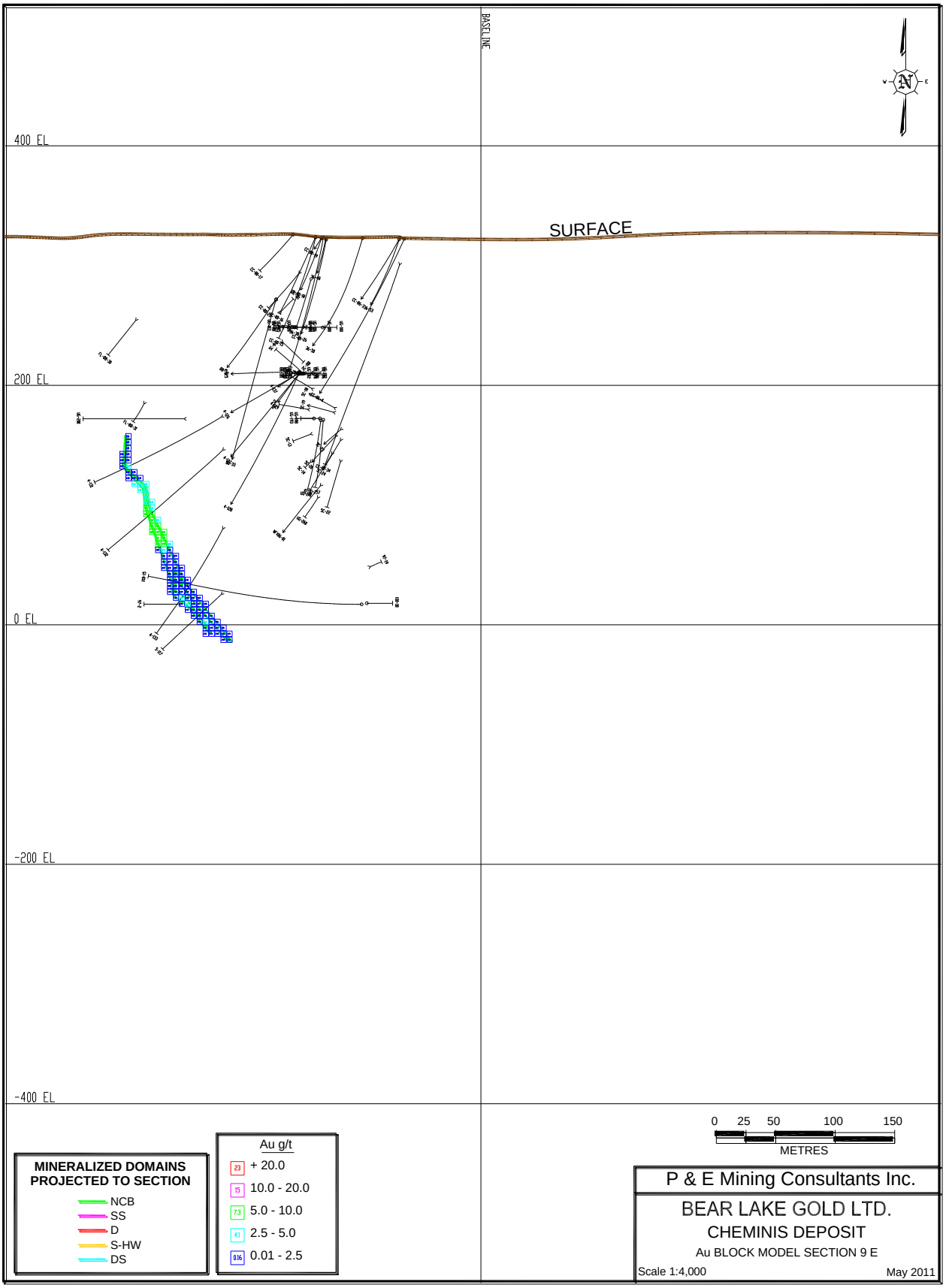

Cheminis Au raw LOG Normal Histogram
Raw Au assay Cheminis SS- Hanging wall zone
Frequency Count
5
4
3
2
1
0
0.010
0.100
1.000
10.000
100.000
Au g/t
Software By Gemcom

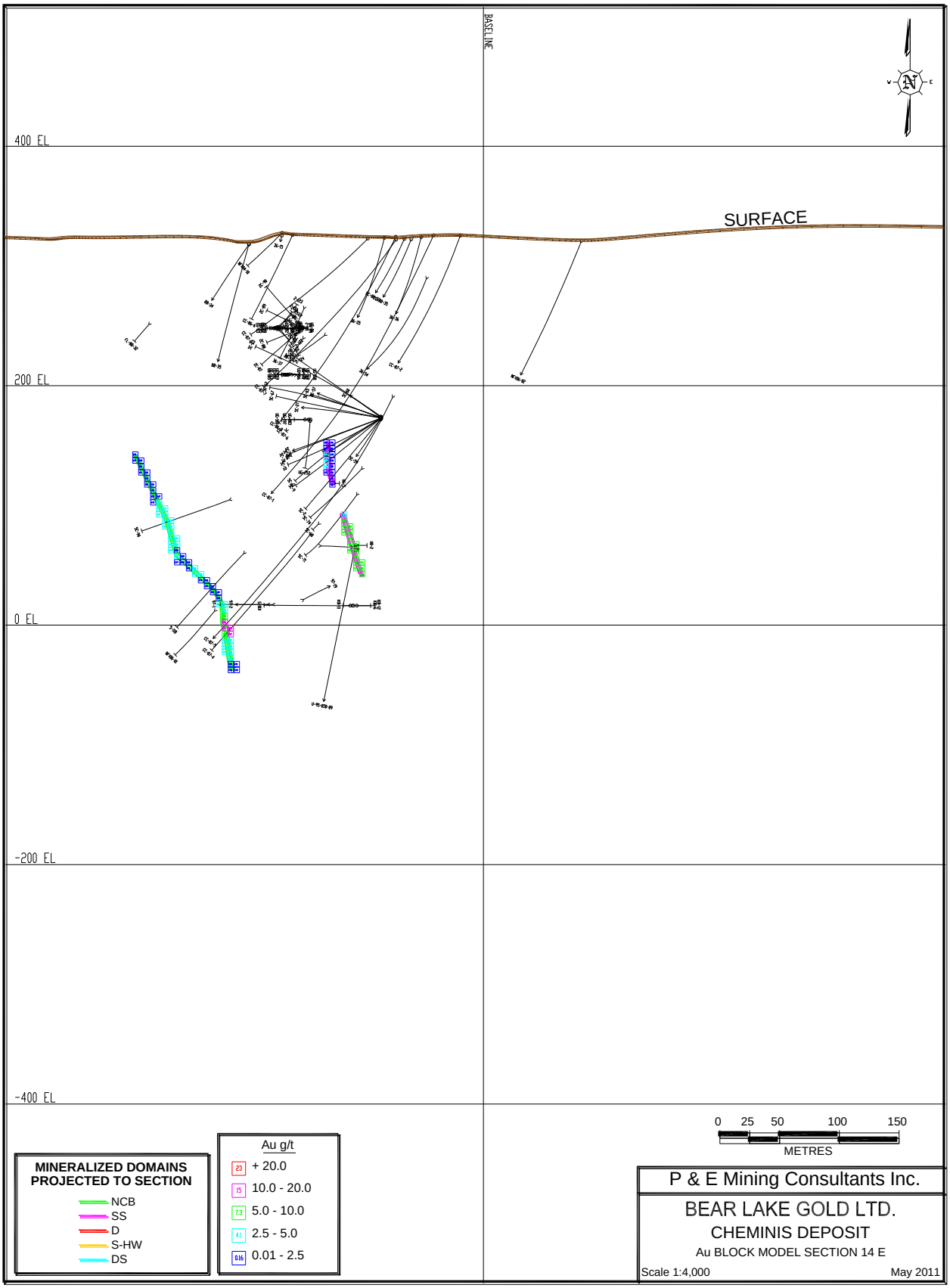

Cheminis Au raw LOG Normal Histogram
Raw Au assay Cheminis DS-zone
Frequency Count
0
1
2
3
4
5
0.010
0.100
1.000
10.000
100.000
Au g/t
Software By Gemcom

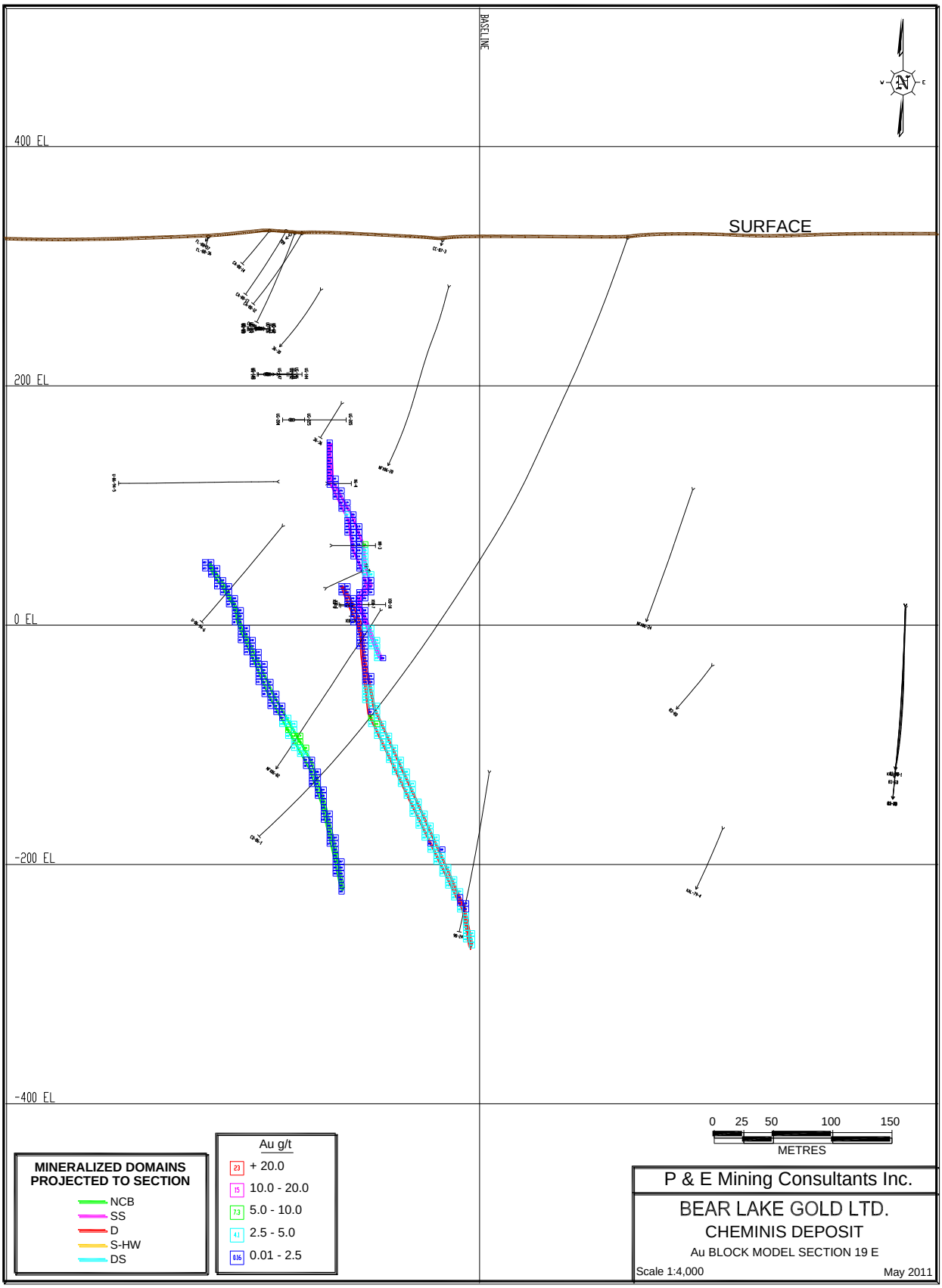
# APPENDIX IV. VARIOGRAMS

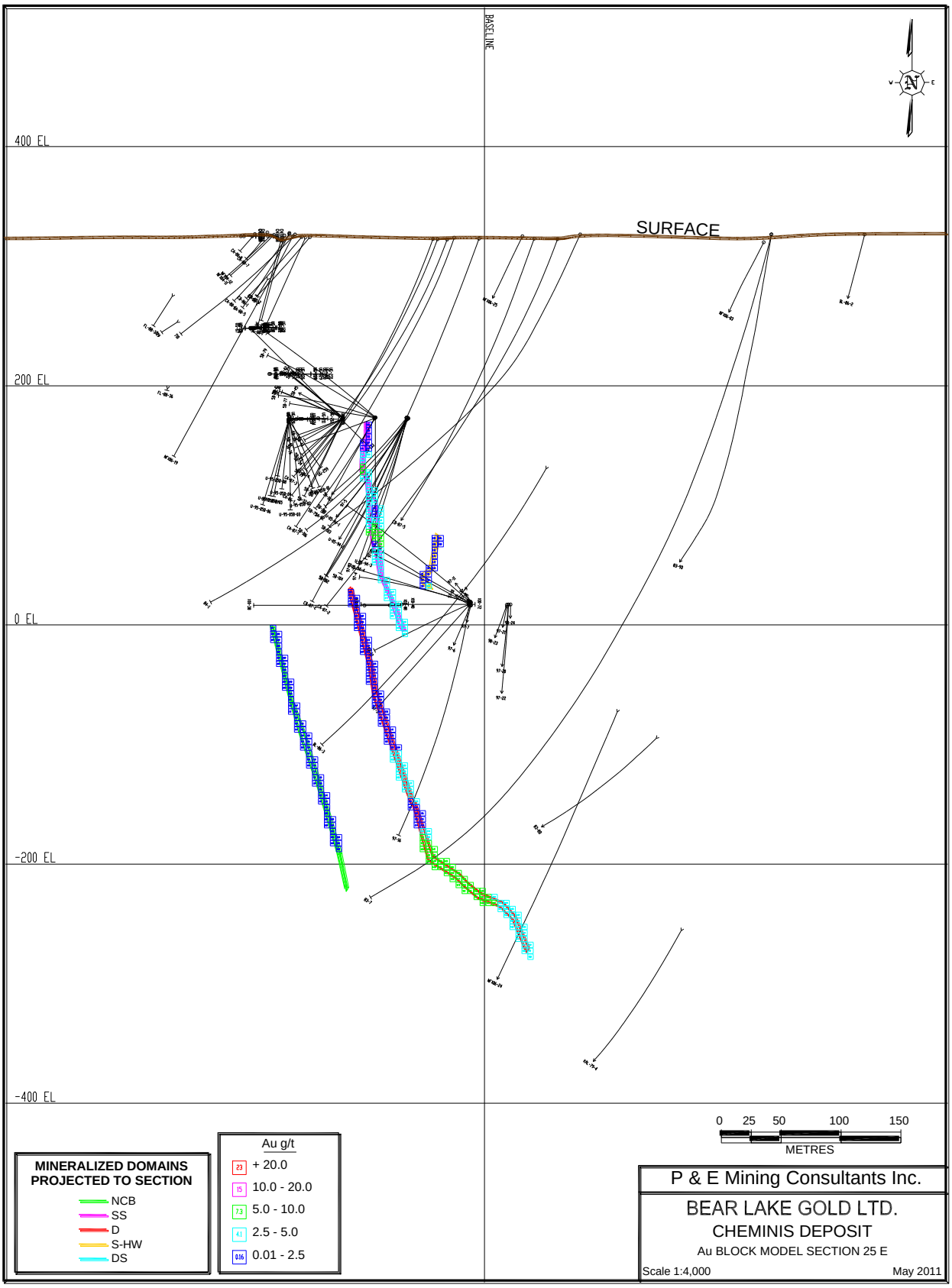

CHEMINIS Au ALL DOMAINS OMNIVARIOGRAM
1
8.0
6.4
4.8
3.2
1.6
0
Gamma (H)
0
6
12
18
24
30
36
42
48
54
60
Range [m]
1) Spherical( 25.50, 3.60)
2) Nugget Effect( 0.89)
#
Software By Gemcom

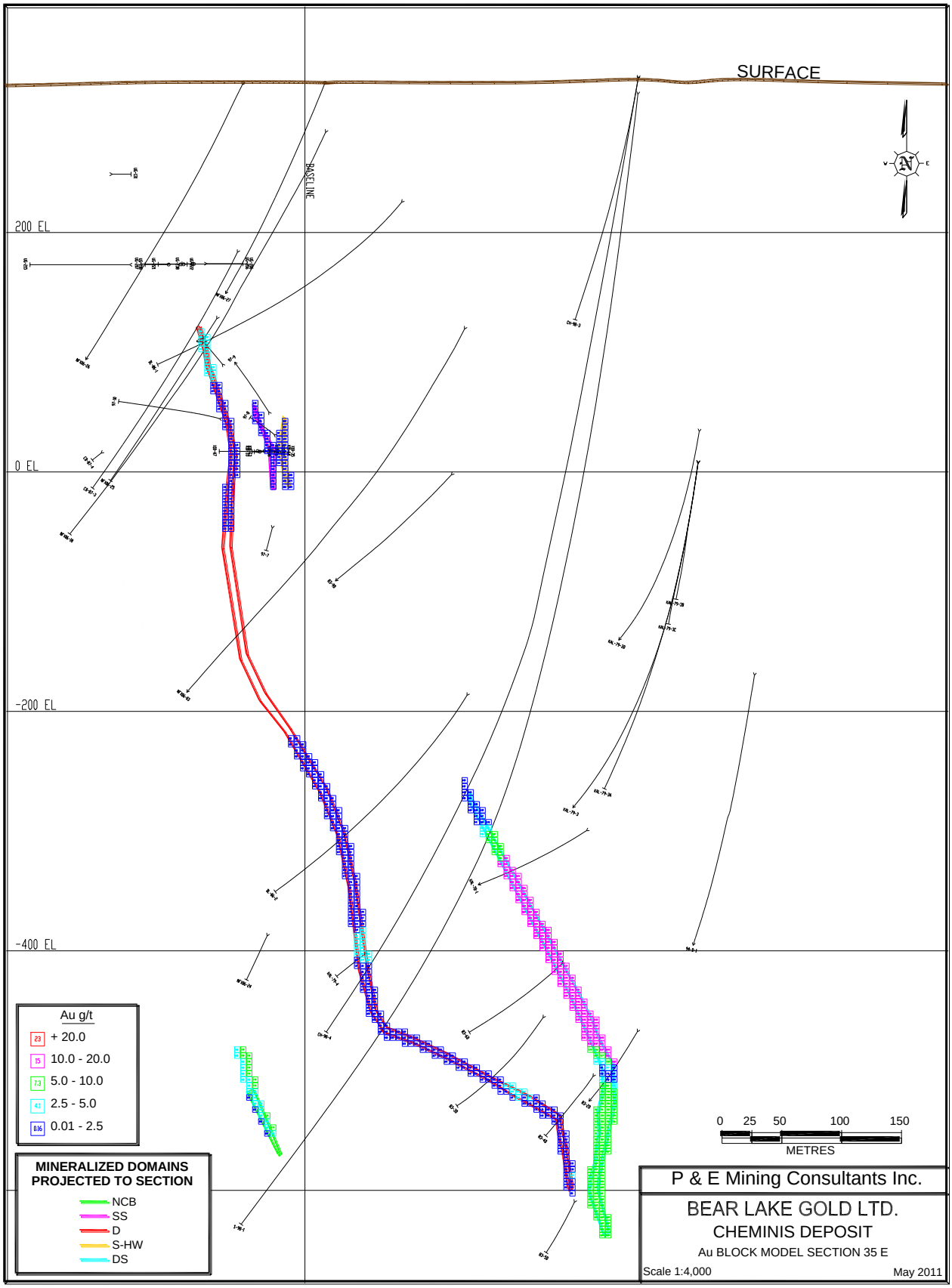
# APPENDIX V. AU BLOCK MODEL CROSS SECTIONS AND PLANS

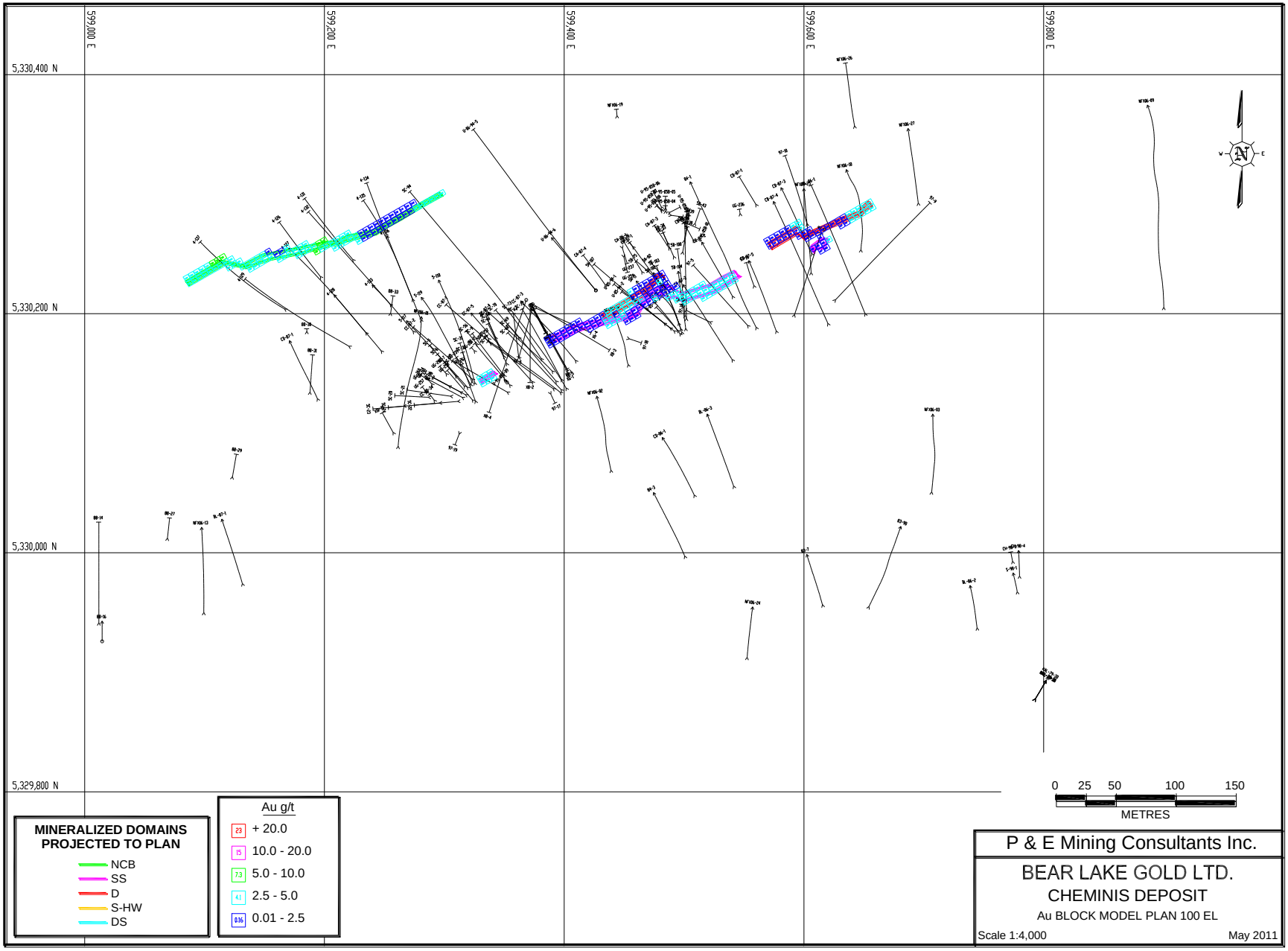

BASELINE
400 EL
SURFACE
200 EL
0 EL
-200 EL
-400 EL
MINERALIZED DOMAINS PROJECTED TO SECTION
NCB
SS
D
S-HW
DS
Au g/t
+ 20.0
10.0 - 20.0
5.0 - 10.0
2.5 - 5.0
0.01 - 2.5
0 25 50 100 150
METRES
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
Au BLOCK MODEL SECTION 9 E
Scale 1:4,000
May 2011

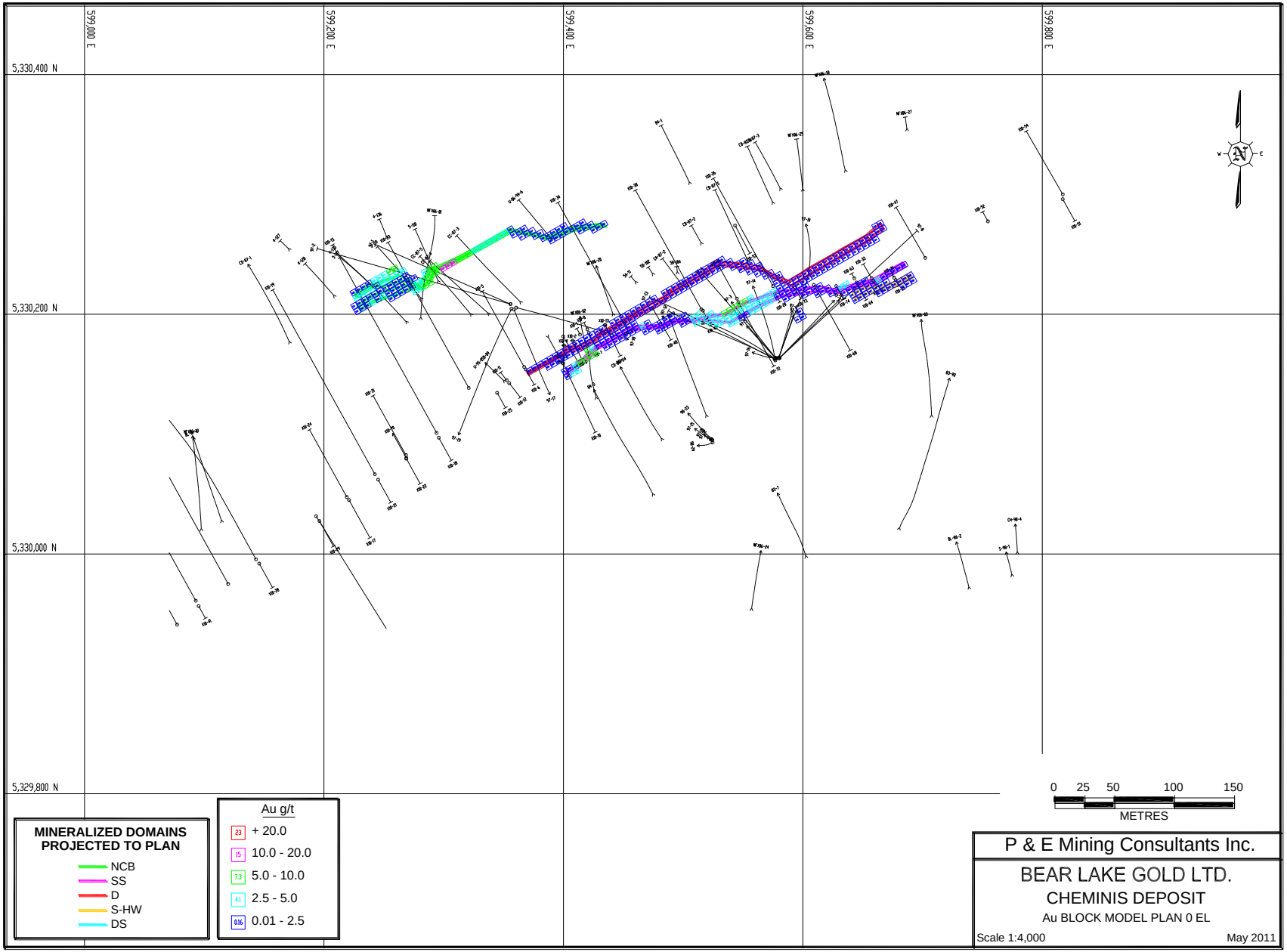

BASELINE
400 EL
SURFACE
200 EL
0 EL
-200 EL
-400 EL
MINERALIZED DOMAINS PROJECTED TO SECTION
NCB
SS
D
S-HW
DS
Au g/t
+ 20.0
10.0 - 20.0
5.0 - 10.0
2.5 - 5.0
0.01 - 2.5
0 25 50 100 150
METRES
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
Au BLOCK MODEL SECTION 14 E
Scale 1:4,000
May 2011

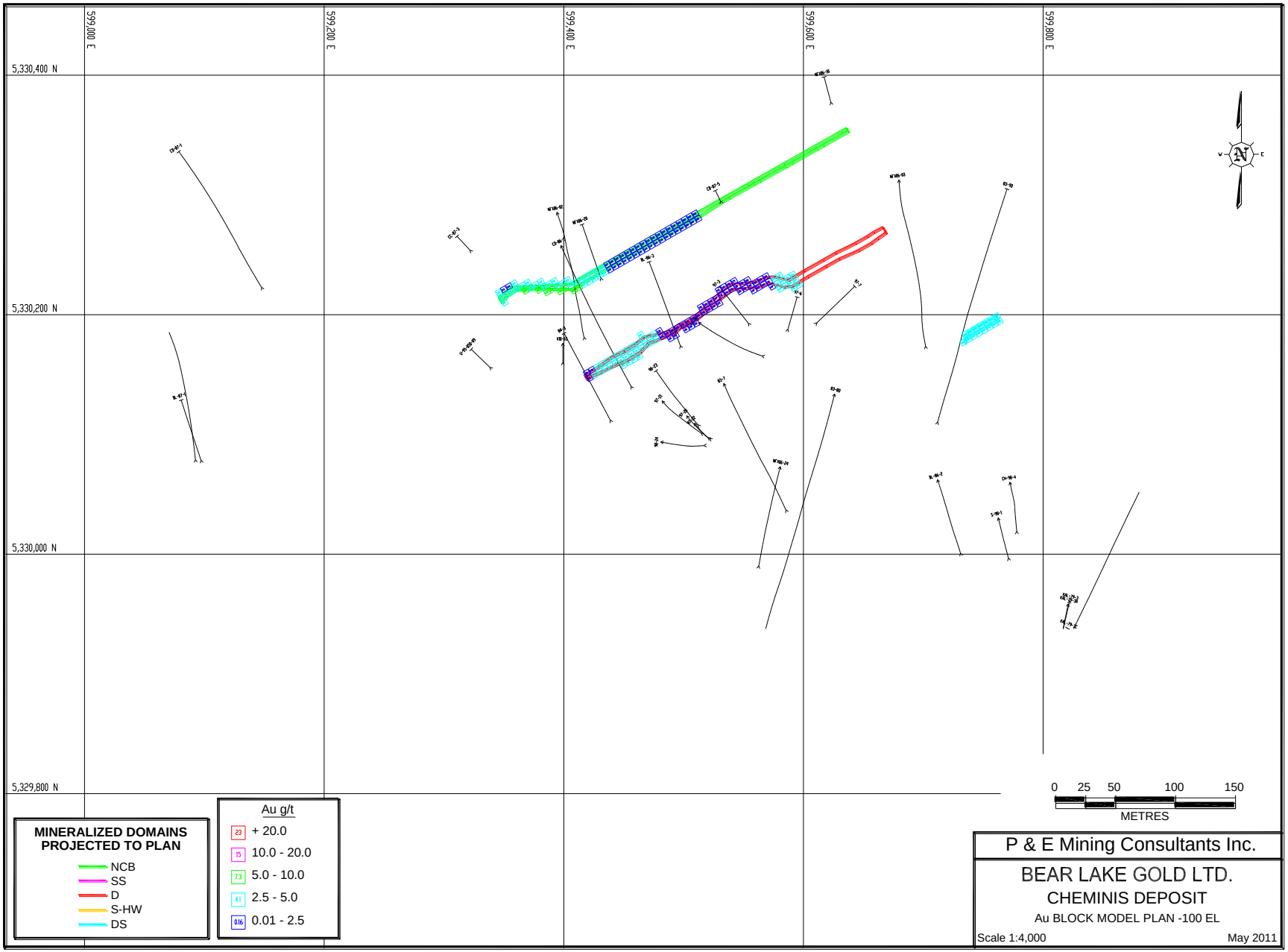

BASELINE
400 EL
SURFACE
200 EL
0 EL
-200 EL
-400 EL
0 25 50 100 150
METRES
MINERALIZED DOMAINS PROJECTED TO SECTION
NCB
SS
D
S-HW
DS
Au g/t
+ 20.0
10.0 - 20.0
5.0 - 10.0
2.5 - 5.0
0.01 - 2.5
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
Au BLOCK MODEL SECTION 19 E
Scale 1:4,000
May 2011

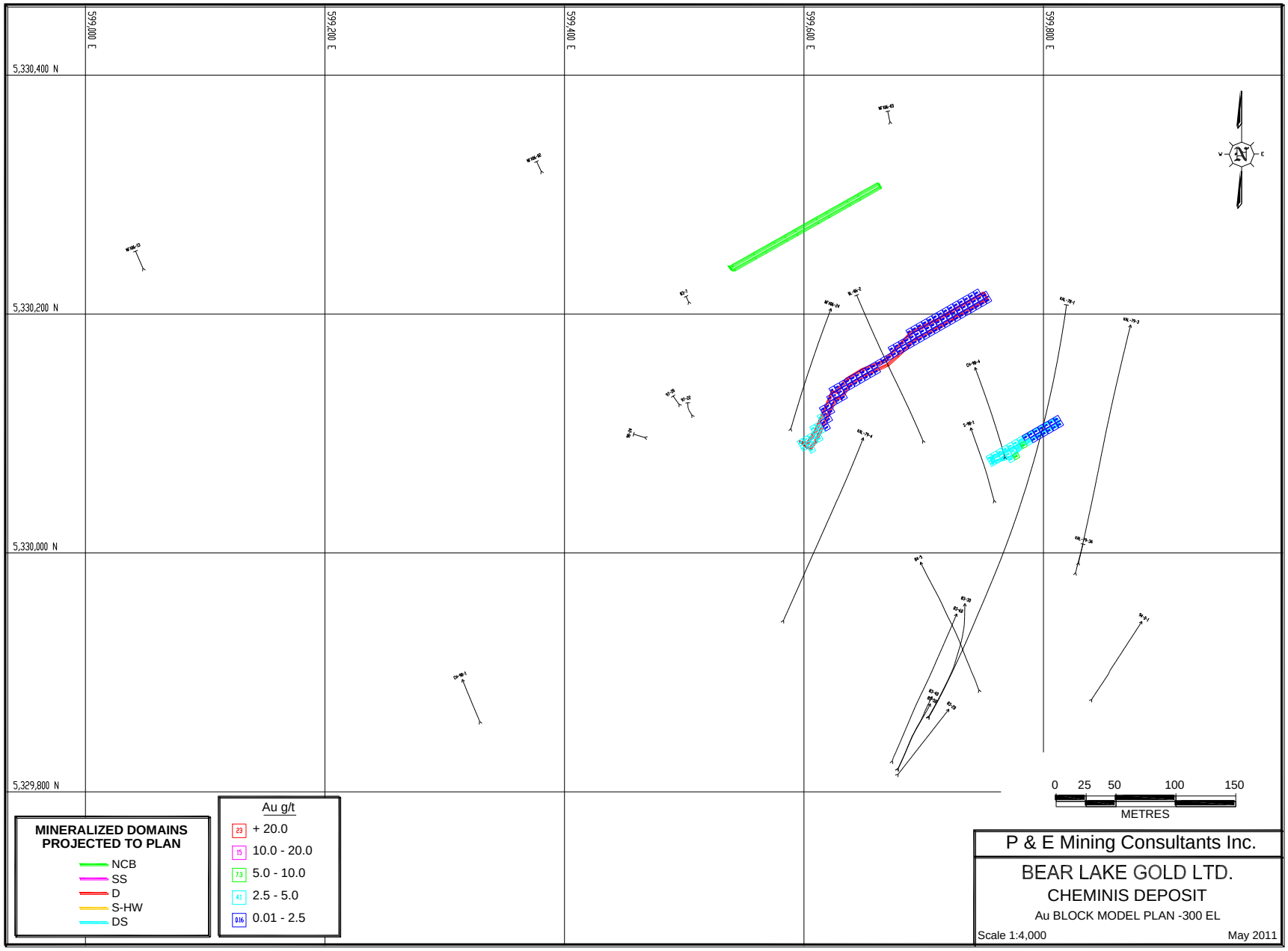

BASELINE
400 EL
SURFACE
200 EL
0 EL
-200 EL
-400 EL
MINERALIZED DOMAINS PROJECTED TO SECTION
NCB
SS
D
S-HW
DS
Au g/t
+ 20.0
10.0 - 20.0
5.0 - 10.0
2.5 - 5.0
0.01 - 2.5
0 25 50 100 150
METRES
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
Au BLOCK MODEL SECTION 25 E
Scale 1:4,000
May 2011

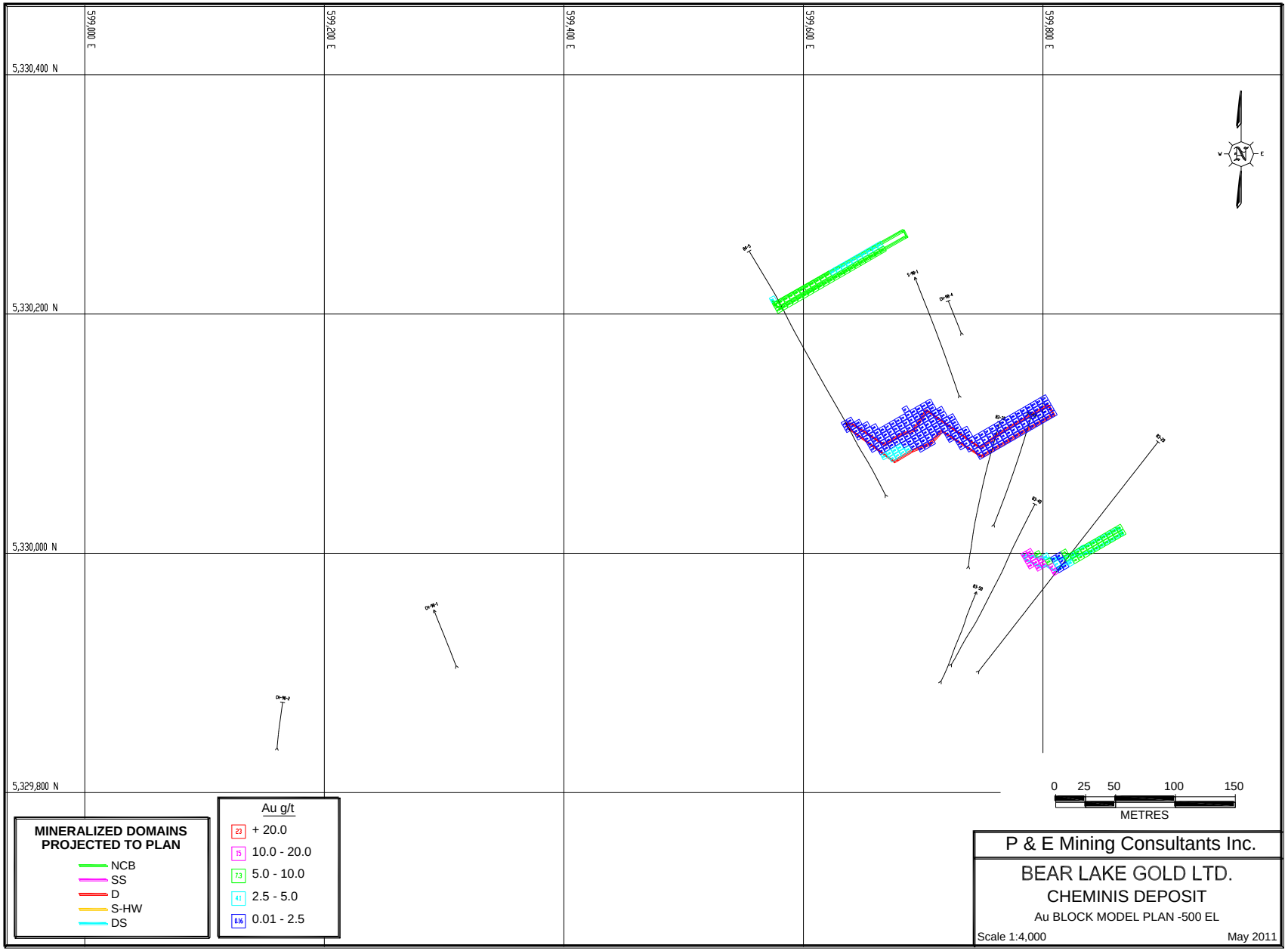

SURFACE
BASELINE
200 EL
0 EL
-200 EL
-400 EL
Au g/t
+ 20.0
10.0 - 20.0
5.0 - 10.0
2.5 - 5.0
0.01 - 2.5
MINERALIZED DOMAINS PROJECTED TO SECTION
NCB
SS
D
S-HW
DS
0 25 50 100 150
METRES
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
Au BLOCK MODEL SECTION 35 E
Scale 1:4,000
May 2011


599,000 E
599,200 E
599,400 E
599,600 E
599,800 E
5,330,400 N
5,330,200 N
5,330,000 N
5,329,800 N
MINERALIZED DOMAINS PROJECTED TO PLAN
NCB
SS
D
S-HW
DS
Au g/t
+ 20.0
10.0 - 20.0
5.0 - 10.0
2.5 - 5.0
0.01 - 2.5
0 25 50 100 150
METRES
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
Au BLOCK MODEL PLAN 100 EL
Scale 1:4,000
May 2011

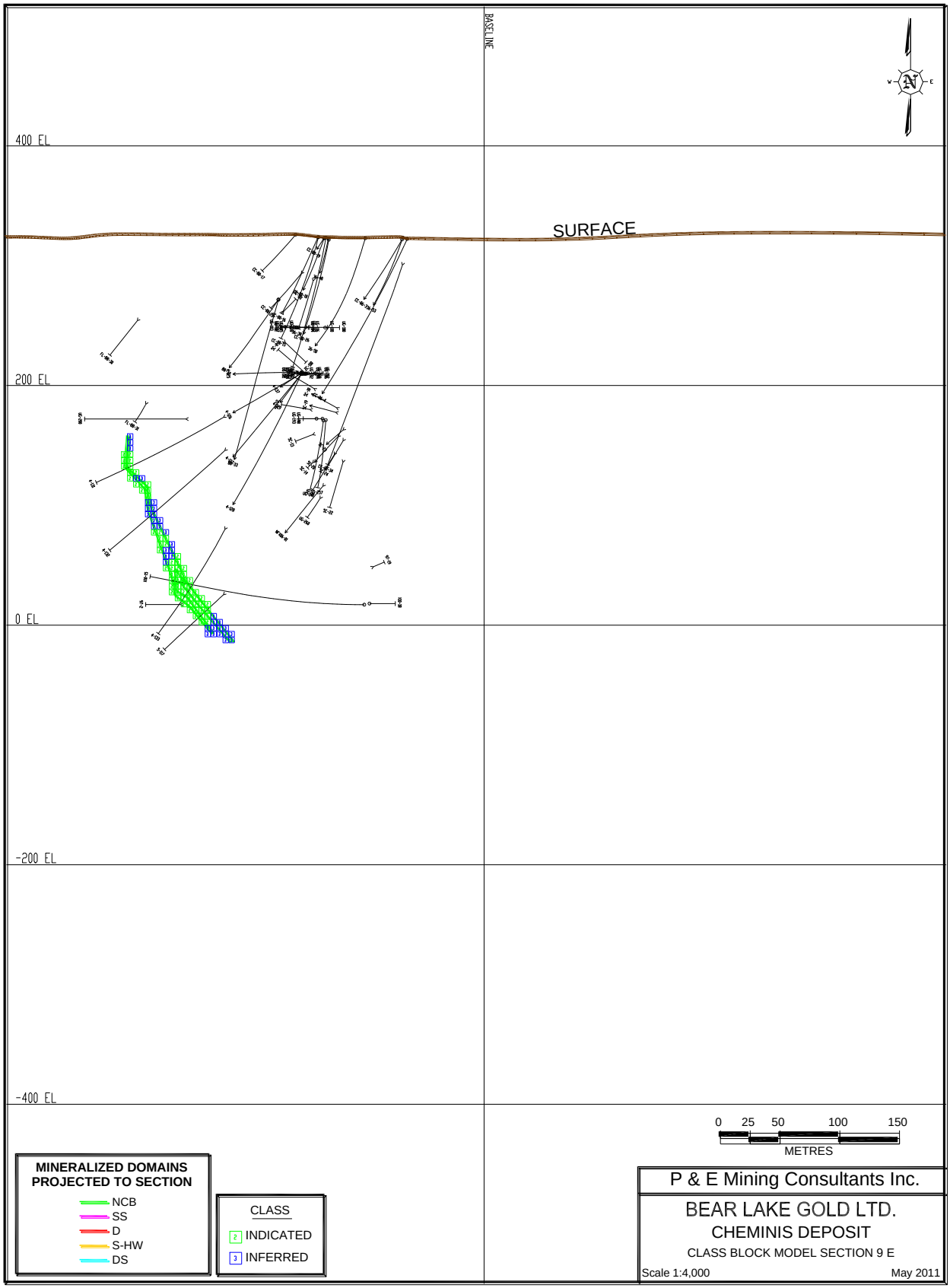

599,000 E
599,200 E
599,400 E
599,600 E
599,800 E
5,330,400 N
5,330,200 N
5,330,000 N
5,329,800 N
MINERALIZED DOMAINS PROJECTED TO PLAN
NCB
SS
D
S-HW
DS
Au g/t
+ 20.0
10.0 - 20.0
5.0 - 10.0
2.5 - 5.0
0.01 - 2.5
0 25 50 100 150
METRES
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
Au BLOCK MODEL PLAN 0 EL
Scale 1:4,000
May 2011

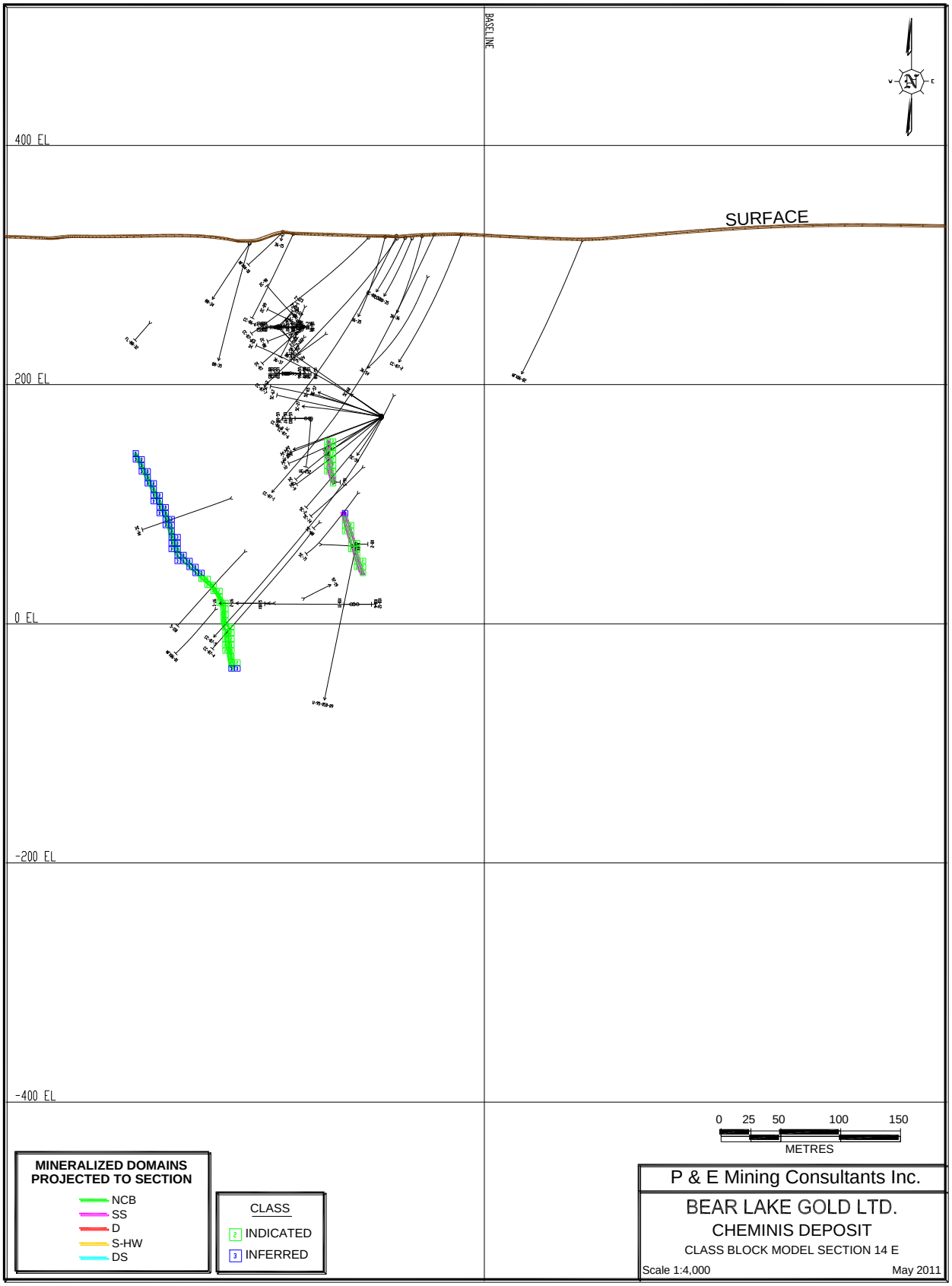

559,000 E
559,200 E
559,400 E
559,600 E
559,800 E
5,330,400 N
5,330,200 N
5,330,000 N
5,329,800 N
MINERALIZED DOMAINS PROJECTED TO PLAN
NCB
SS
D
S-HW
DS
Au g/t
23 + 20.0
15 10.0 - 20.0
7.3 5.0 - 10.0
4.1 2.5 - 5.0
0.16 0.01 - 2.5
0 25 50 100 150
METRES
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
Au BLOCK MODEL PLAN -100 EL
Scale 1:4,000
May 2011

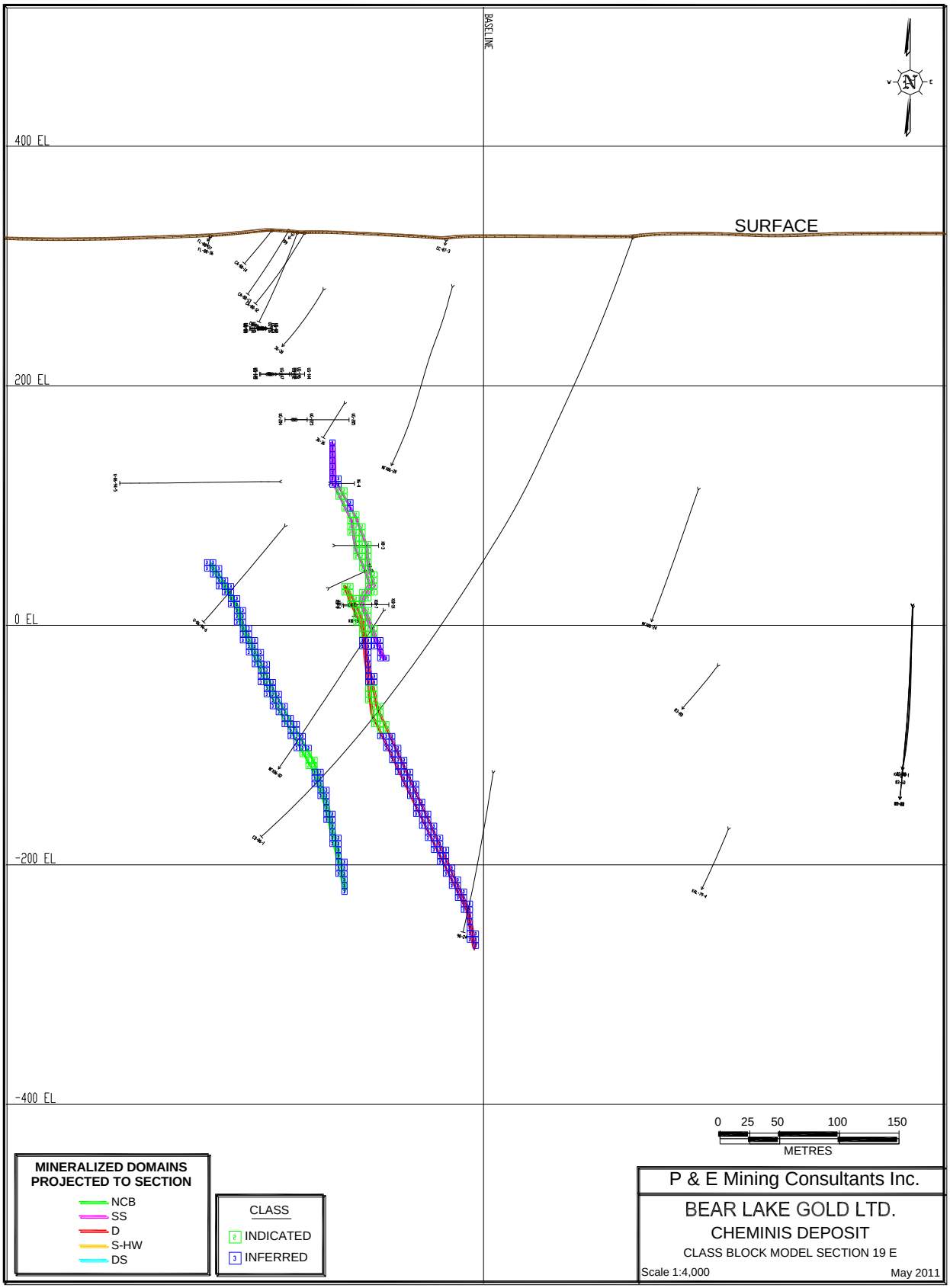

599,000 E
599,200 E
599,400 E
599,600 E
599,800 E
5,330,400 N
5,330,200 N
5,330,000 N
5,329,800 N
MINERALIZED DOMAINS PROJECTED TO PLAN
NCB
SS
D
S-HW
DS
Au g/t
+ 20.0
10.0 - 20.0
5.0 - 10.0
2.5 - 5.0
0.01 - 2.5
0 25 50 100 150
METRES
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
Au BLOCK MODEL PLAN -300 EL
Scale 1:4,000
May 2011

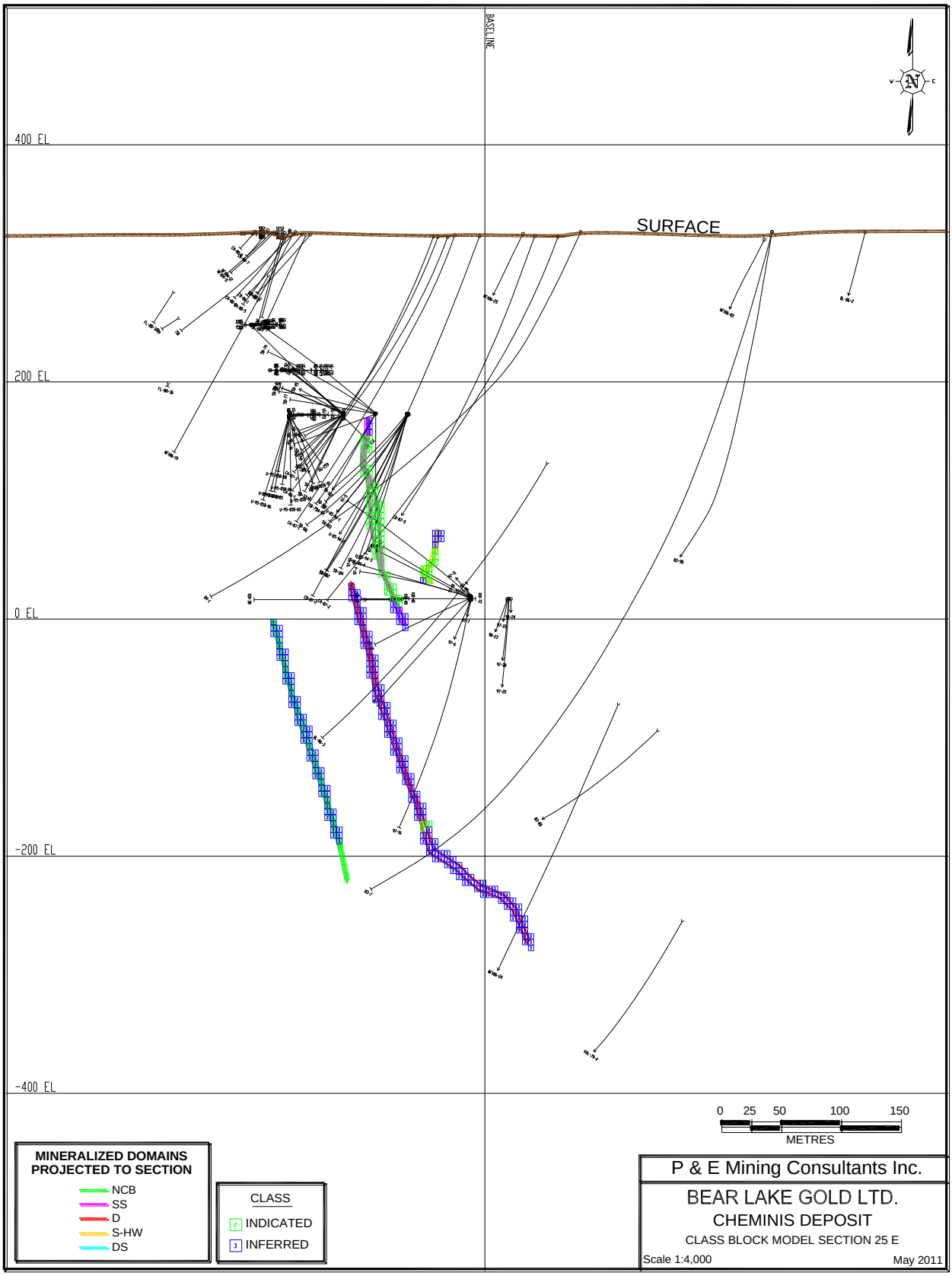

599,000 E
599,200 E
599,400 E
599,600 E
599,800 E
5,330,400 N
5,330,200 N
5,330,000 N
5,329,800 N
MINERALIZED DOMAINS PROJECTED TO PLAN
NCB
SS
D
S-HW
DS
Au g/t
+ 20.0
10.0 - 20.0
5.0 - 10.0
2.5 - 5.0
0.01 - 2.5
0 25 50 100 150
METRES
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
Au BLOCK MODEL PLAN -500 EL
Scale 1:4,000
May 2011

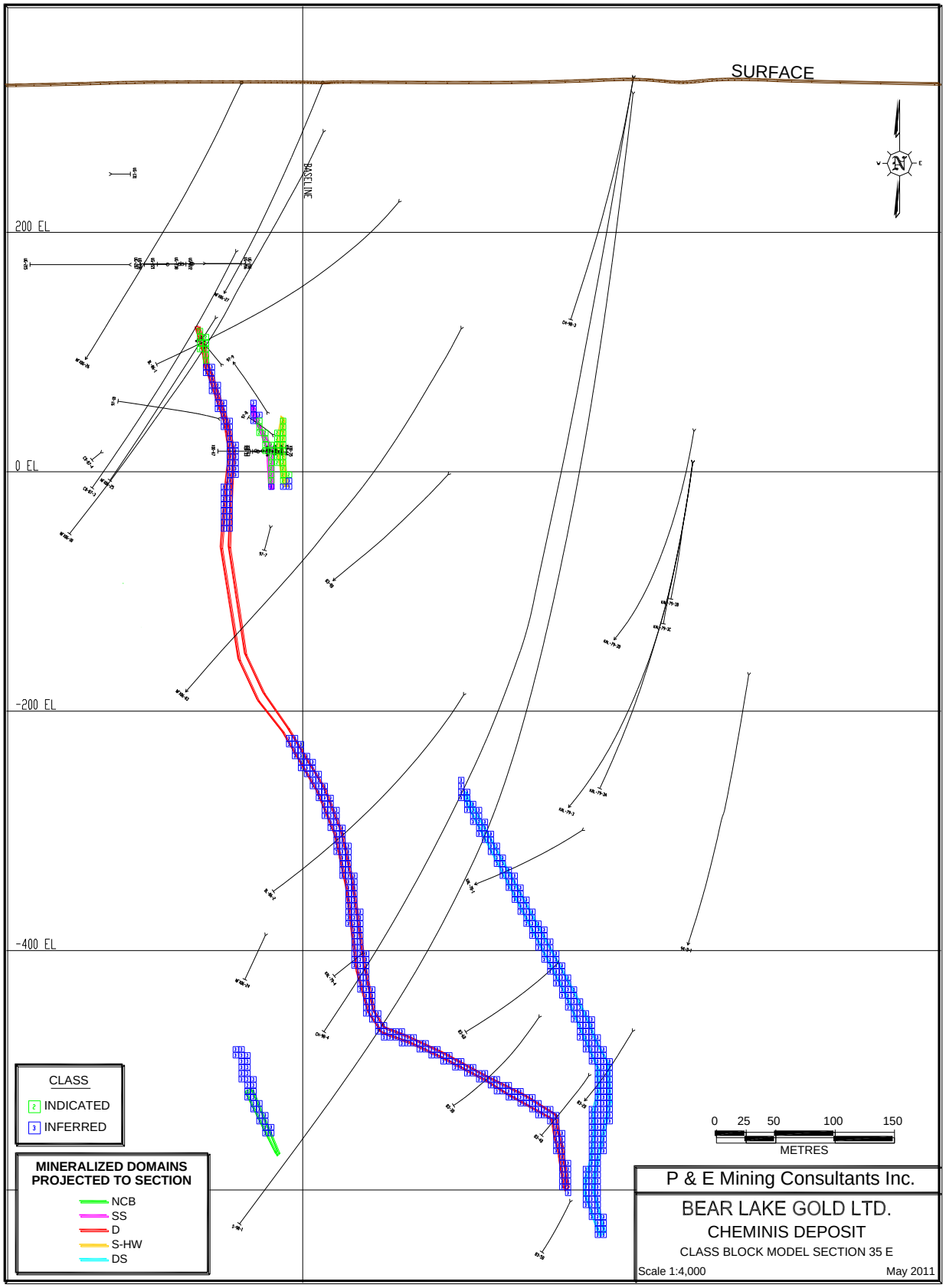
# APPENDIX VI. CLASSIFICATION BLOCK MODEL CROSS SECTIONS AND PLANS

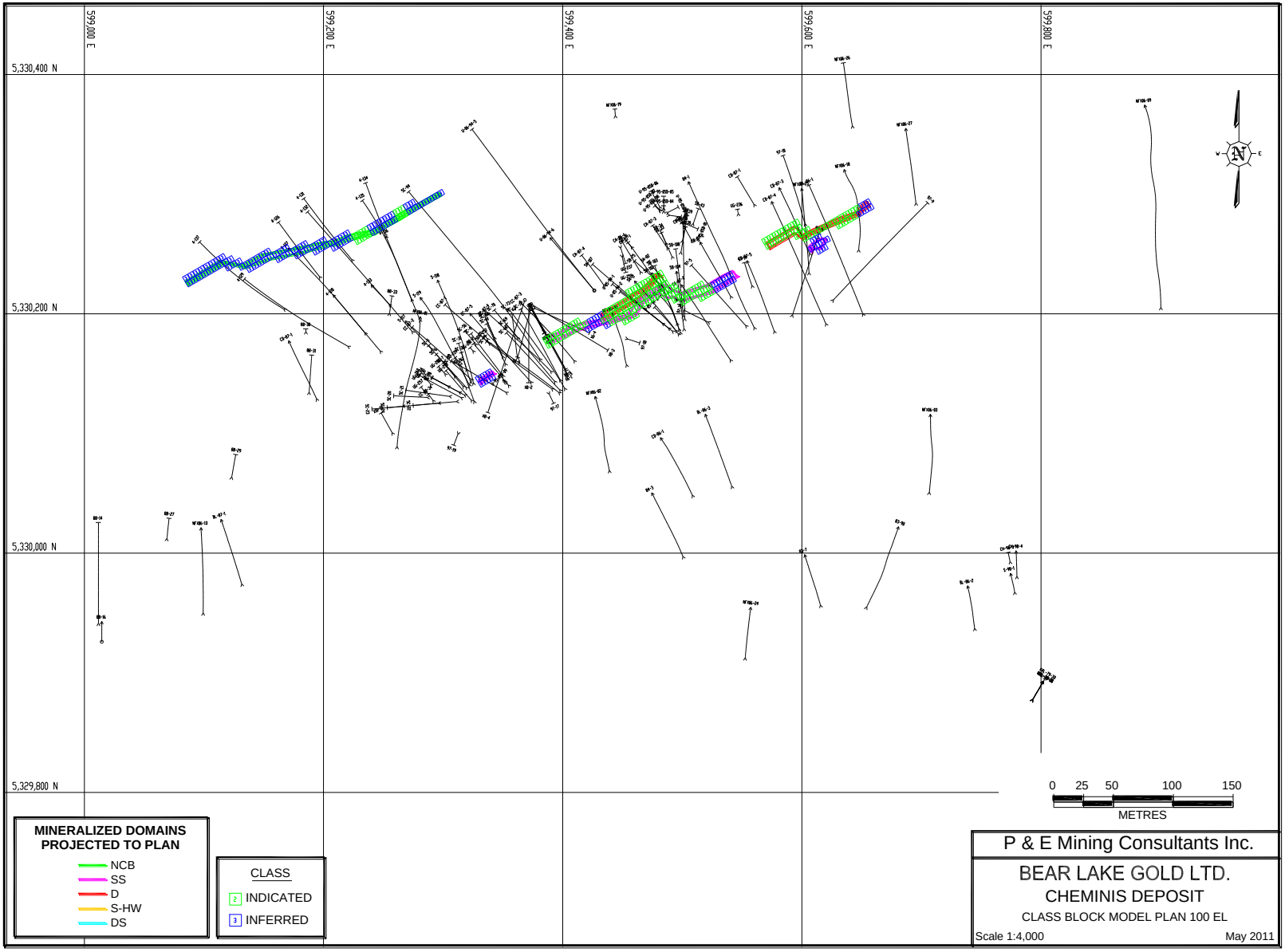

BASELINE
400 EL
SURFACE
200 EL
0 EL
-200 EL
-400 EL
0 25 50 100 150
METRES
MINERALIZED DOMAINS PROJECTED TO SECTION
NCB
SS
D
S-HW
DS
CLASS
2 INDICATED
3 INFERRED
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
CLASS BLOCK MODEL SECTION 9 E
Scale 1:4,000
May 2011

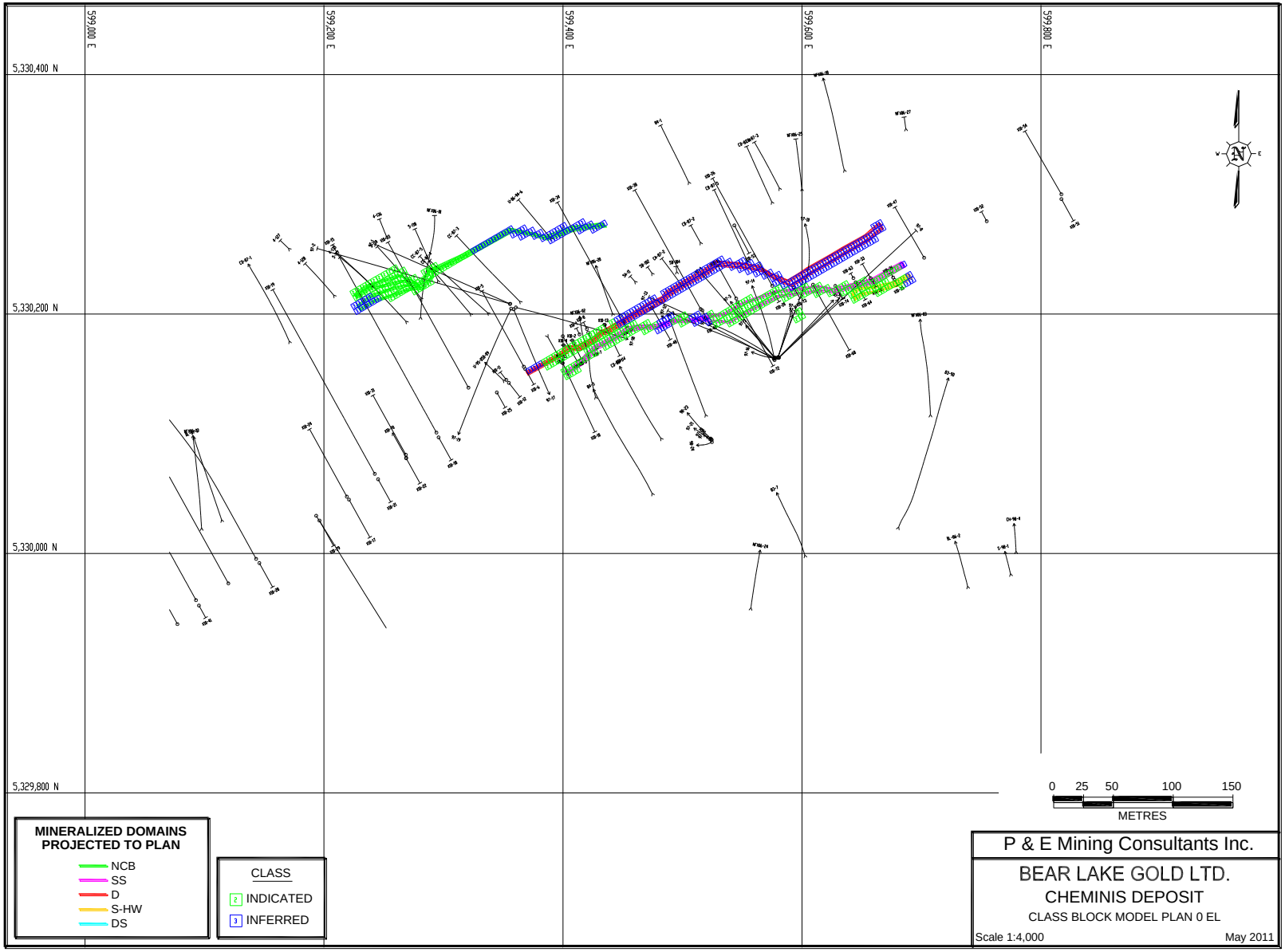

BASELINE
400 EL
SURFACE
200 EL
0 EL
-200 EL
-400 EL
0 25 50 100 150
METRES
MINERALIZED DOMAINS PROJECTED TO SECTION
NCB
SS
D
S-HW
DS
CLASS
2 INDICATED
3 INFERRED
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
CLASS BLOCK MODEL SECTION 14 E
Scale 1:4,000
May 2011

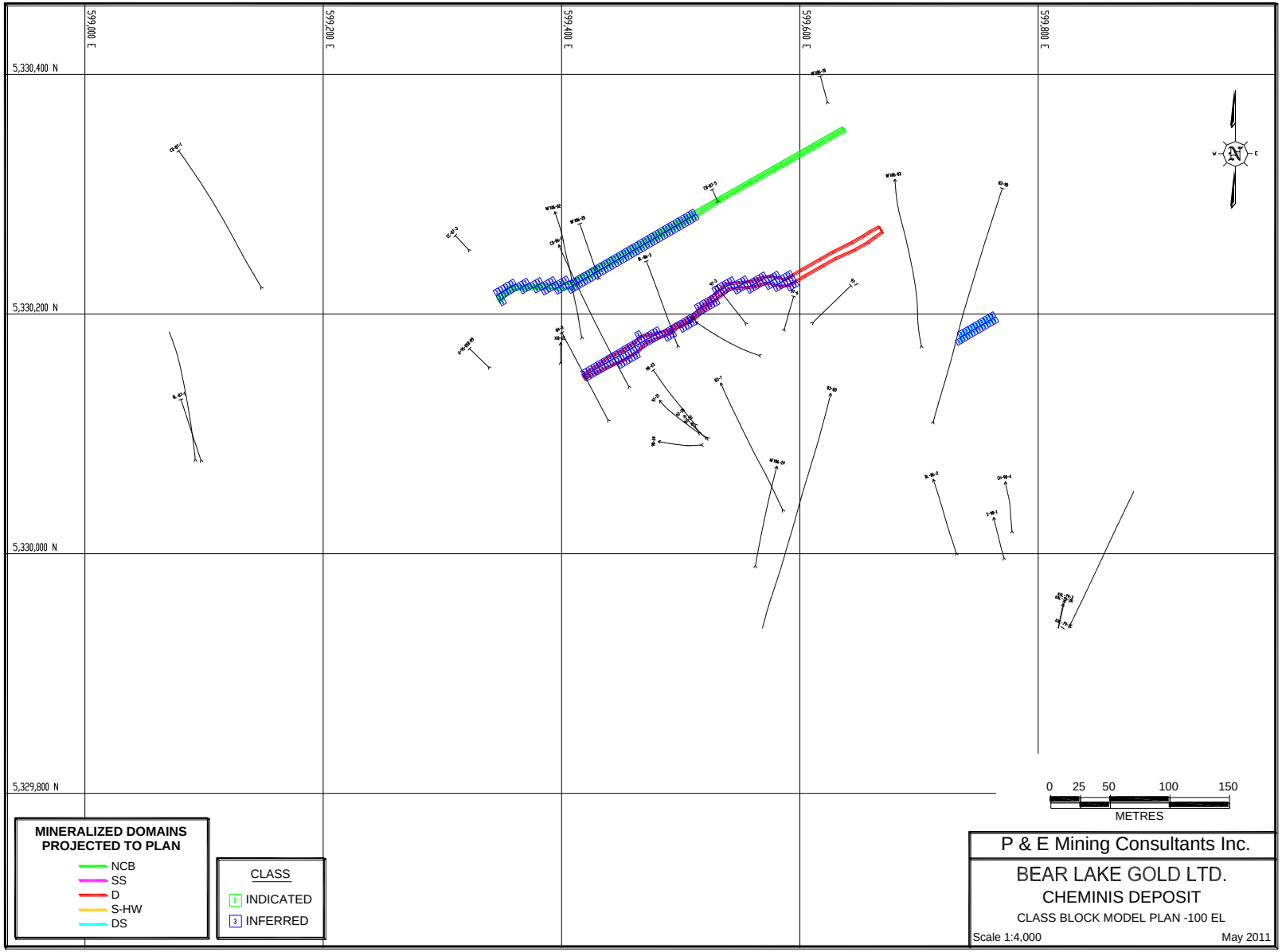

BASELINE
400 EL
SURFACE
200 EL
0 EL
-200 EL
-400 EL
0 25 50 100 150
METRES
MINERALIZED DOMAINS PROJECTED TO SECTION
NCB
SS
D
S-HW
DS
CLASS
INDICATED
INFERRED
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
CLASS BLOCK MODEL SECTION 19 E
Scale 1:4,000
May 2011

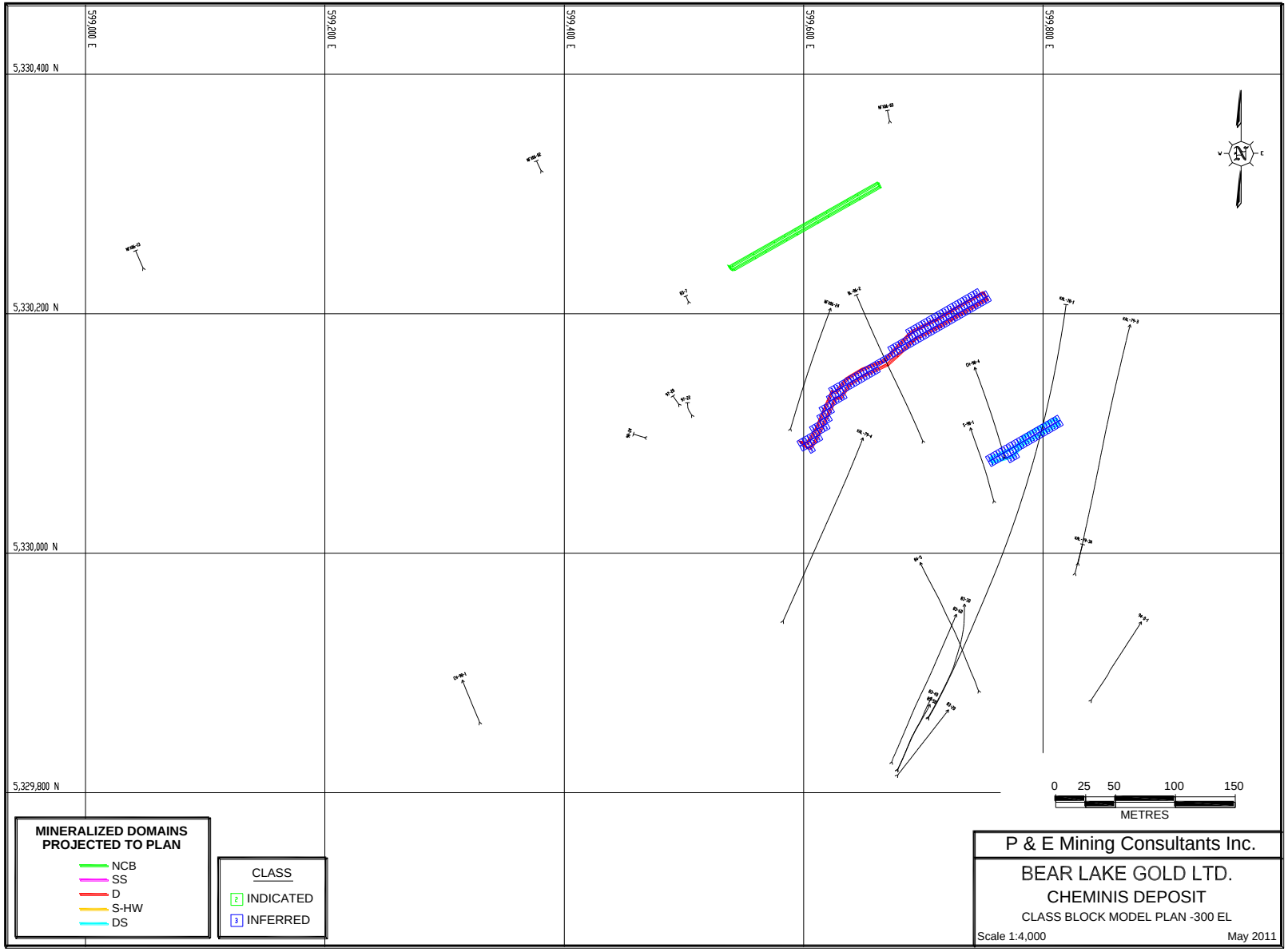

BASELINE
400 EL
SURFACE
200 EL
0 EL
-200 EL
-400 EL
0 25 50 100 150
METRES
MINERALIZED DOMAINS PROJECTED TO SECTION
NCB
SS
D
S-HW
DS
CLASS
2 INDICATED
3 INFERRED
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
CLASS BLOCK MODEL SECTION 25 E
Scale 1:4,000
May 2011

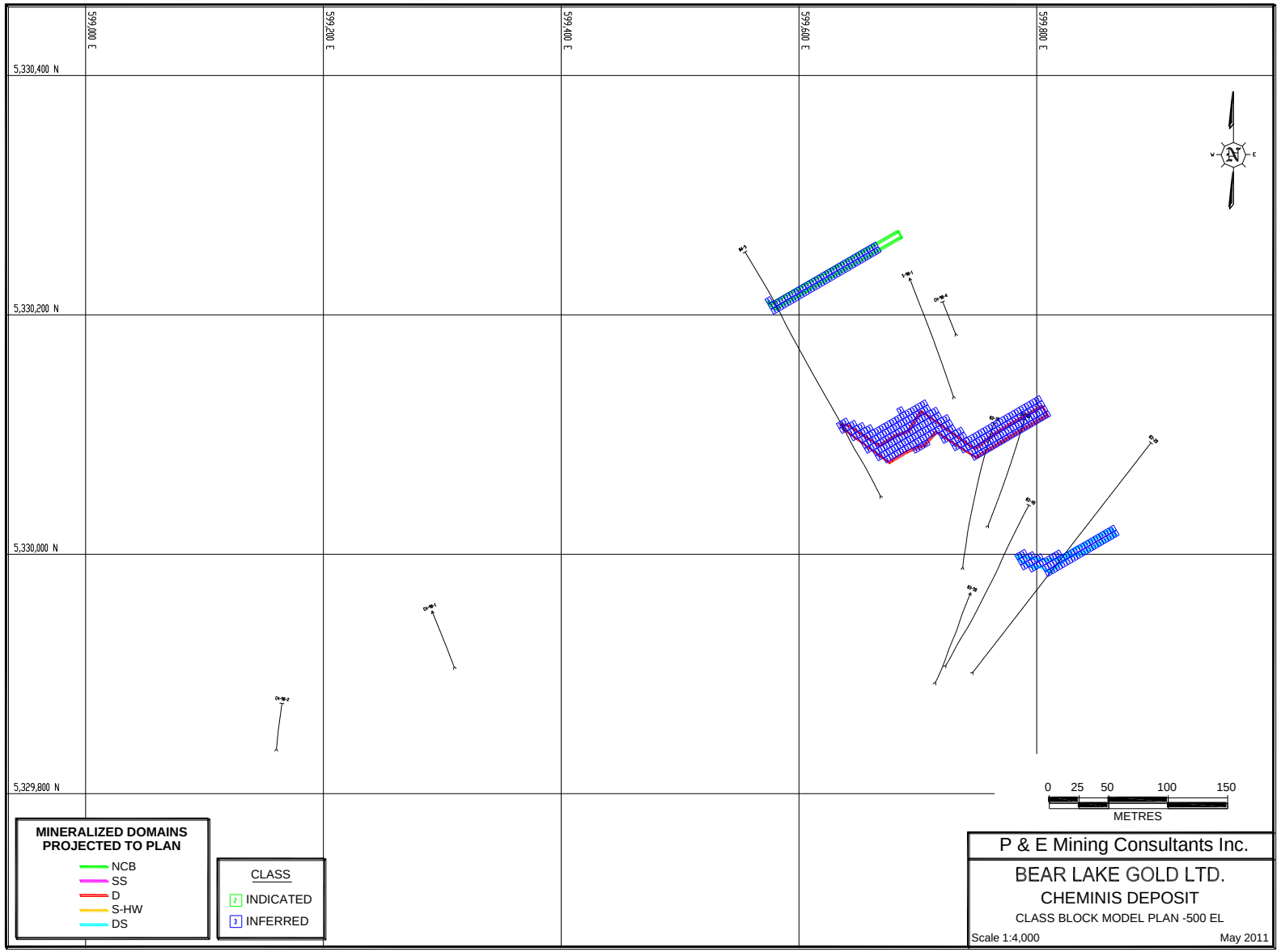

SURFACE
BASELINE
200 EL
0 EL
-200 EL
-400 EL
CLASS
2 INDICATED
3 INFERRED
MINERALIZED DOMAINS PROJECTED TO SECTION
NCB
SS
D
S-HW
DS
0 25 50 100 150
METRES
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
CLASS BLOCK MODEL SECTION 35 E
Scale 1:4,000
May 2011


599,000 E
599,200 E
599,400 E
599,600 E
599,800 E
5,330,400 N
5,330,200 N
5,330,000 N
5,329,800 N
0 25 50 100 150
METRES
MINERALIZED DOMAINS PROJECTED TO PLAN
NCB
SS
D
S-HW
DS
CLASS
2 INDICATED
3 INFERRED
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
CLASS BLOCK MODEL PLAN 100 EL
Scale 1:4,000
May 2011


599,000 E
599,200 E
599,400 E
599,600 E
599,800 E
5,330,400 N
5,330,200 N
5,330,000 N
5,329,800 N
0 25 50 100 150
METRES
MINERALIZED DOMAINS PROJECTED TO PLAN
NCB
SS
D
S-HW
DS
CLASS
2 INDICATED
3 INFERRED
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
CLASS BLOCK MODEL PLAN 0 EL
Scale 1:4,000
May 2011


599,000 E
599,200 E
599,400 E
599,600 E
599,800 E
5,330,400 N
5,330,200 N
5,330,000 N
5,329,800 N
0 25 50 100 150
METRES
MINERALIZED DOMAINS PROJECTED TO PLAN
NCB
SS
D
S-HW
DS
CLASS
2 INDICATED
3 INFERRED
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
CLASS BLOCK MODEL PLAN -100 EL
Scale 1:4,000
May 2011


599,000 E
599,200 E
599,400 E
599,600 E
599,800 E
5,330,400 N
5,330,200 N
5,330,000 N
5,329,800 N
0 25 50 100 150
METRES
MINERALIZED DOMAINS PROJECTED TO PLAN
NCB
SS
D
S-HW
DS
CLASS
2 INDICATED
3 INFERRED
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
CLASS BLOCK MODEL PLAN -300 EL
Scale 1:4,000
May 2011


599,000 E
599,200 E
599,400 E
599,600 E
599,800 E
5,330,400 N
5,330,200 N
5,330,000 N
5,329,800 N
0 25 50 100 150
METRES
MINERALIZED DOMAINS PROJECTED TO PLAN
NCB
SS
D
S-HW
DS
CLASS
INDICATED
INFERRED
P & E Mining Consultants Inc.
BEAR LAKE GOLD LTD.
CHEMINIS DEPOSIT
CLASS BLOCK MODEL PLAN -500 EL
Scale 1:4,000
May 2011