Gryphon Gold Corporation
Borealis Mining Company
Canadian NI 43-101
Technical Report on the Mineral Resources of the Borealis Gold Project Located in Mineral County, Nevada, USA

April 28, 2008

Prepared by

Roger C. Steininger, Ph.D., CPG
Chief Consulting Geologist
Gryphon Gold Corporation
Reno, Nevada
Telephone: 775-742-6333

In association with:

Steve Wolff
Mining Engineering Consultant
Sugar Land, Texas
Telephone: 281-494-6973

Steven D. Craig, CPG
Vice President - Exploration
Gryphon Gold Corporation
Hawthorne, Nevada
Telephone: 775-945-5300

Jaye T. Pickarts, P.E.
Knight Piésold and Co.
Denver, Colorado
Telephone: 303-629-8788

(This page is intentionally left blank)

Gryphon Gold Corporation
Borealis Mining Company
Canadian NI 43-101
Technical Report on the Mineral Resources of the Borealis Gold Project Located in Mineral County, Nevada, USA

Table of Contents

List of Tables

List of Tables *(Continued)*

List of Tables *(Continued)*

List of Figures

List of Figures *(Continued)*

(This page is intentionally left blank)

Gryphon Gold Corporation
Borealis Mining Company
Canadian NI 43-101
Technical Report on the Mineral Resources of the Borealis Gold Project Located in Mineral County, Nevada, USA

1.0 Executive Summary

1.1 Introduction

This technical report has been prepared for filing pursuant to National Instrument 43-101, Standards of Disclosure for Mineral Projects of the Canadian Securities Administrators in connection with resource estimates and certain other information relating to Gryphon Gold Corporation's (Gryphon Gold) Borealis gold property. The format and content of this report are intended to conform to Form 43-101F1, Technical Report.

The purpose of this report is to update the Borealis Gold Project mineral resources based on the estimates completed in April 2008. The previous resource estimate as reported in *Technical Report on the Mineral Resources of the Borealis Gold Project Located in Mineral County, Nevada, USA* (Jan. 2007) was updated based on new drilling, sampling, and geologic interpretations. The effective date of the resource estimate for this report is April 28, 2008.

Based on preliminary review of the new drilling after the March 2006 date, it is evident that significant new sulfide gold resources are being defined in the Graben deposit as it is presently known.

1.1.1 Terms of Reference

Borealis Mining Company (BMC), the wholly owned Nevada operating subsidiary of Gryphon Gold Corporation, proposes to continue exploration in the search for more resources through drilling and sampling, and other geological and geophysical activities. Additional potentially mineable resources are required prior to consideration of re-starting gold and silver mining and ore processing activities at the Borealis Mine site on the Walker Lane gold belt. The principal operating permits have been granted for a future proposed mining operation.

1.1.2 Principal Contributions to this Technical Report

The principal author of this technical report is Dr. Roger C. Steininger, CPG, Consulting Geologist, a Qualified Person for the purpose of Canadian NI 43-101, Standards of Disclosure for Mineral Projects. Dr. Roger C. Steininger, CPG was the Chief Consulting Geologist in regard to geology, sampling, exploration, and mineral resource estimates. Additional input was provided by Knight Piésold and Co. (Knight Piésold) regarding environmental, permitting, and metallurgical issues. Mr. Steve Wolff, working closely with Gryphon Gold and its other consultants, has prepared new resource models.

Dr. Steininger visited the Borealis property numerous times from startup in 2003, through the present. Mr. Jaye Pickarts, P.E., Principal Metallurgical Engineer, Knight Piésold and Co., visited the Borealis property on several occasions during 2004, 2005, and 2006 for the duration of one day in each instance; he observed the district geologic setting and existing site conditions, and Mr. Pickarts reviewed selective reverse circulation drill-sample intercepts of the mineralization for metallurgical purposes only.

1.1.3 Basis of Study

The scope of work for this study includes revision of the resource estimates stated in the previous technical report dated January 11, 2007 and titled *Gryphon Gold Corporation Borealis Mining Company Canadian NI 43-101 Technical Report on the Mineral Resources of the Borealis Gold Project Located in Mineral County, Nevada, USA*.

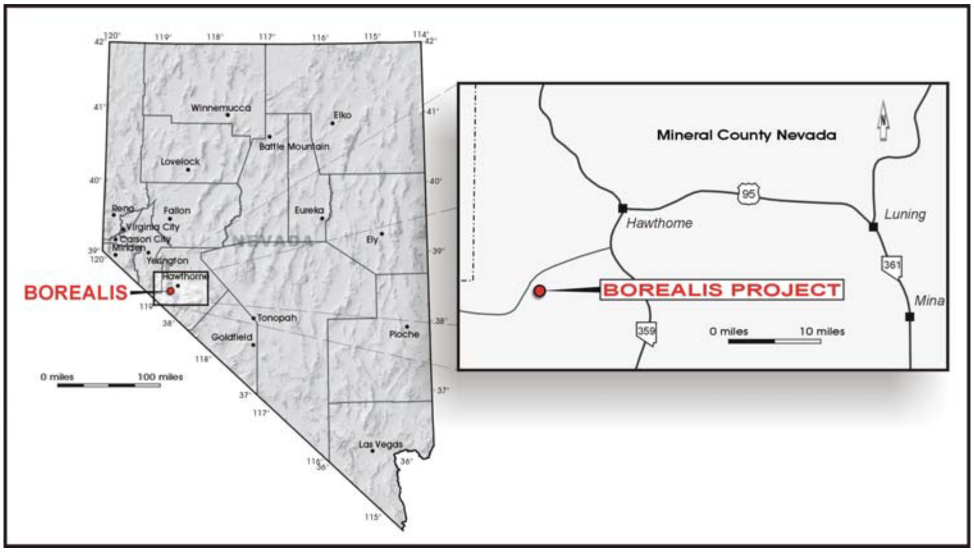
Revised resource models for each of the gold deposits have been developed for this study and are based on preexisting and new drilling in the areas of the deposits considered for mining.

Results from the 2005-07 metallurgical test program (completed by McClelland Metallurgical Laboratories in Reno, Nevada) using material collected from development drilling and surface sampling have been utilized to support assumptions based on approximate production reports of 10 years of historical heap-leaching activities at the mine in the 1980s.

The major units used in this report are those commonly used in the United States: dry short tons of 2,000 pounds (tons), troy ounces per short ton (opt), miles, feet, etc. Where metric units are used, such is noted.

1.2 Project Description and Location

The Borealis Gold Project is located in western Nevada, approximately 16 road miles southwest of the town of Hawthorne in the Walker Lane Mineral Belt and 12 miles northeast of the California border; see Figure 1.1 below. Hawthorne is 133 highway miles southeast of Reno and 314 highway miles northwest of Las Vegas.



(Source: Gryphon Gold, 2005)

Figure 1.1 - Location Map of the Borealis Project

Exploration at Borealis is proposed to continue finding additional potentially mineable resources. If sufficient oxidized resources are found and an open-pit, heap-leach operation can be considered, gold-bearing material would be mined from potential new pits, expansion of existing pit areas, and piles of previously processed ore and dump material. The material would be excavated by a conventional mining equipment fleet suitably sized for the scale of the operation. The ore would be crushed, agglomerated with lime, cyanide, and other reagents, and stacked on a lined pad where it would be leached to recover contained gold and silver. If sufficient sulfide bearing gold mineralization is discovered an underground or open pit mine might be developed. Sulfide mineralization will require some type of mill to produce a gold concentrate that will require additional processing, possibly off-site.

Reclamation of the surface disturbance caused by exploration road and drill-site construction is being completed contemporaneously with the proposed exploration operations as described in the Plan of Operations approved by the U.S. Forest Service (USFS) and the Reclamation Permit from the Nevada Division of Environmental Protection (NDEP) (in June 2006). Bonds have been and will continue to be posted with the USFS to ensure performance under the approved reclamation plan.

The principal operating permits have been granted for the proposed mine for a heap-leach operation. Acquisition of minor approvals, such as the artificial pond permit from the Nevada Department of Wildlife (NDOW), must be accomplished prior to project development and operation. These approvals are believed to be straightforward to obtain. The status of all approved permits is current and can be maintained with the appropriate fees being updated on an annual basis.

1.2.1 Land Status and Ownership

As of August 2007, the Borealis property is comprised of 751 unpatented mining claims (Figure 1.2) of approximately 20 acres each totaling about 15,020 acres and one unpatented mill site claim of about 5 acres. Of the 751 unpatented mining claims, 128 claims are owned by others but leased to Borealis Mining Company, and 623 of the claims were staked by Golden Phoenix Minerals, Inc. (Golden Phoenix) or Gryphon Gold and transferred to BMC.

The lands on which the claims are located were open to mineral location at the time of claim staking. There are no apparent conflicts with any privately owned land. There are some overlaps with surface improvements such as a power line right-of-way and stock watering facilities, but those improvements do not prevent the location of mining claims. There are some minor conflicts due to slight overlap between the claims and some of the competitor-owned RAM claims, primarily in sections 7, 18, and 19, T. 6 N., R. 29 E. In some cases, the Borealis claims are senior and would control the ground in conflict, and in some cases, the opposite is true. However, all conflicts appear to be limited to the edges of adjoining claims and thus are likely to be insignificant. All of the claims are shown on the Bureau of Land Management (BLM) records as being in good standing.

Mineral rights, through BMC as the owner or lessee of the claims, allow BMC to explore, develop, and mine the Borealis property subject to the prior procurement of required operating permits and approvals, compliance with the terms and conditions of the mining lease, and compliance with applicable federal, state, and local laws, regulations, and ordinances.

The 128 leased claims are owned by John W. Whitney, Hardrock Mining Company, and Richard J. Cavell, who are together referred to as the "Borealis Owners." BMC leases the claims from the Borealis Owners under a mining lease dated January 24, 1997 and amended as of February 24, 1997. The Borealis Mining Lease was assigned to BMC by the prior lessee, Golden Phoenix. The mining lease contains an "area of interest" provision such that any new mining claims located or acquired by BMC within the area of interest after the date of the mining lease shall automatically become subject to the provisions of the mining lease.

The term of the mining lease extends to January 24, 2009 but can be continued indefinitely thereafter for so long as any mining, development, or processing is being conducted on the leased property on a continuous basis.

The remainder of the Borealis property consists of 623 unpatented mining claims and one unpatented mill site claim staked by Golden Phoenix, Gryphon Gold, or BMC. Claims staked by Golden Phoenix were transferred to BMC in conjunction with the January 28, 2005 purchase of all of Golden Phoenix's interest in the Borealis property. A total of 202 claims of the total 623 claims held by Gryphon Gold are contiguous with the claim holdings, are located outside of the area of interest, and are not subject to any of the provisions of the lease.

All of the mining claims (including the owned and leased claims) are unpatented such that paramount ownership of the land is in the United States of America. Claim maintenance payments and related documents must be filed annually with the BLM and with Mineral County, Nevada to keep the claims from terminating by operation of law. BMC is responsible for those actions. At present, the estimated annual BLM maintenance fees are $125 per claim, or $94,000 per year for all of the Borealis property claims (751 unpatented mining claims plus one mill site claim) plus Mineral County filing fees of $6,400 at $8.50 per claim.

1.2.2 Royalty

Pursuant to the Borealis Mining Lease, a portion of the Borealis property which includes the 128 original core claims is subject to a net smelter return (NSR) royalty paid at month's end which is computed as being the average monthly price of gold divided by 100 with the result expressed as a percentage. The NSR cash value is determined by applying the resulting percentage to the price of gold. The initial mining operations will probably be located on the 128 claims in the core group.

As described in the terms of the Borealis Mining Lease, the Borealis property is currently subject to advance royalty payments of approximately $8,614.00 per month. These advance royalty payments are subject to adjustments in the Consumer Price Index. The Borealis Mining Lease expires in 2009 but is extendible year to year thereafter so long as mining activity continues on the Borealis property. Any commercial production from adjacent claims owned by others within the Borealis project area of interest and acquired by Gryphon Gold or BMC will be subject to a 2 percent net smelter return royalty, to be paid to the Borealis Owners.

1.3 Access, Climate, Local Resources, and Infrastructure

Access to the Borealis property is gained from the Lucky Boy Pass gravel road located about 2 miles south of Hawthorne from Nevada State Highway 359.

The nearest available services for both mineral exploration and possible future mine development and mine operations are in the small town of Hawthorne, located about 16 road miles to the northeast of the project area via a wide, well-maintained gravel road. Hawthorne has substantial housing, adequate fuel supplies, and a sufficient infrastructure available to take care of basic needs. For other goods and services, sources in Reno and elsewhere could supply any material required for the development project or mine operations.

The Borealis project area had been reclaimed to early 1990s standards. No buildings or power lines remain on the surface although a major electrical trunk line crosses the property and lies about 2 miles from the former mine site. The pits and the project boundary are fenced for public safety. Currently, access to the pits and heap-leaching areas is gained through locked gates. All currently existing roads in the project area are two-track roads with most located on reclaimed haul roads. Water for the historical mining operations was supplied from a well field in a topographically isolated basin located approximately 5 miles south of the planned mine site.

The elevation on the property ranges from 7,200 feet to 8,200 feet above sea level. Topography ranges from moderate and hilly terrain with rocky knolls and peaks to steep and mountainous terrain in the higher elevations. This relatively high elevation produces moderate summers with high temperatures in the 90°F range. Winters can be cold and windy with temperatures dropping to 0°F. Average annual precipitation is approximately 10 inches, part of which occurs as up to 60 inches of snowfall. Historically in the 1980s, the mine operated throughout the year with only limited weather related interruptions.

The predominate vegetation species include pinion pine, Utah juniper, greasewood, a variety of sagebrush species, crested wheat grass and fourwing saltbush from previous reclamation activities (JBR Environmental Consultants, 2004).

1.4 Property History

In 1978, the Borealis gold deposit was discovered by S.W. Ivosevic (1979), a Houston International Minerals Company geologist (a subsidiary of Houston Oil and Minerals Corporation). The property was acquired through a lease agreement with the Whitney Partnership, which later became the Borealis Partnership, following Houston's examination of the submitted property. Initial discovery of ore-grade gold mineralization in the Borealis district and subsequent rapid development resulted in production beginning in October 1981 as an open-pit mining and heap-leaching operation. Tenneco Minerals, Inc. (Tenneco) acquired the assets of Houston International Minerals in late 1981 and continued production from the Borealis open-pit mine. Subsequently, several other gold deposits were discovered along the generally northeast-striking Borealis trend and mined by open-pit methods. Also, several small deposits were discovered further to the west in the outlying area known as Orion's Belt (encompassing the Cerro Duro, Jaimes Ridge, and Purdy Peak deposits). Tenneco's exploration in early 1986 discovered the Freedom Flats deposit and then in October 1986 Echo Bay Mines (Echo Bay) acquired the assets of Tenneco Minerals.

With the completion of mining of the readily available oxide ore in the Freedom Flats deposit and other deposits in the district, active mining was terminated in January 1990, and leaching operations ended in late 1990. All eight open-pit operations are reported to have produced 10.7 million tons of ore averaging 0.059 ounces of gold per ton (opt Au) (Golden Phoenix Minerals, 2000). Gold recovered from the material placed on heaps was approximately 500,000 ounces plus an estimated 1.5 million ounces of silver. Reclamation of the closed mine began immediately and continued for several years.

Echo Bay decided not to continue with its own exploration, and the property was farmed out as a joint venture in 1990-91 to Billiton Minerals, which drilled 28 reverse circulation (RC) exploration drill holes totaling 8,120 feet on outlying targets. Billiton dropped the property with no retained interest. Santa Fe Pacific Mining, Inc. (Santa Fe Pacific) then entered into a joint venture with Echo Bay in 1992-93 (Kortemeier, 1993), compiled data, constructed a digital drill hole database, and drilled 32 deep RC and core holes, including a number of holes into the Graben deposit. Santa Fe Pacific had success in identifying new sulfide-zone gold mineralization but terminated the joint venture because of reduced exploration budgets. Echo Bay completed all reclamation requirements in 1994, showcased the reclamation, and then terminated its lease agreement with the Borealis Partnership in 1996.

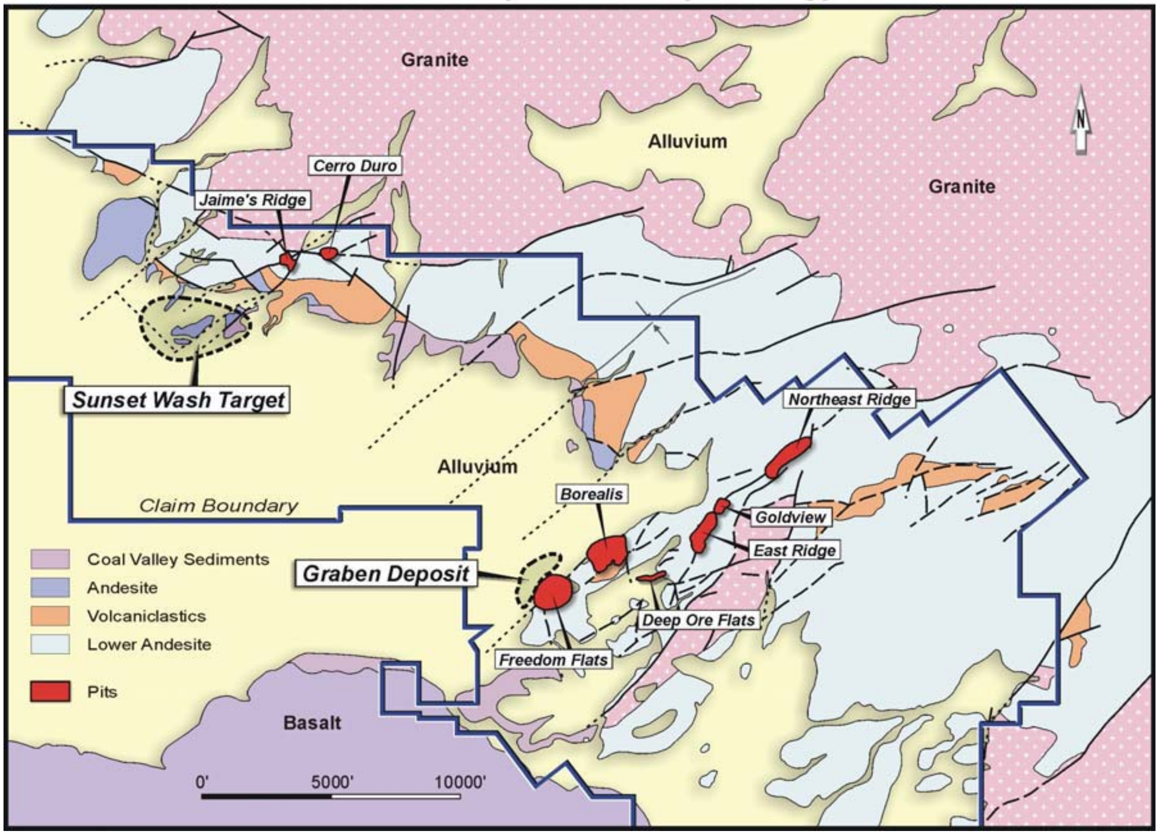
In late 1996, J.D. Welsh & Associates, Inc. negotiated an option-to-lease agreement for the Borealis property from the Borealis Partnership and immediately joint-ventured the project with Cambior Exploration U.S.A., Inc. (Cambior). During 1996, J.D. Welsh drilled 11 auger holes (totaling 760 feet) into Heap 1 to determine if there was sufficient remaining gold to consider reprocessing the heap. During 1997, Cambior performed a major data compilation program and several gradient Induced Polarization (IP) surveys. In 1998, the company drilled ten holes, which succeeded in extending the Graben deposit and in identifying new zones of gold mineralization near Sunset Wash. Cambior terminated the joint venture in late 1998 because of severe budget constraints.

During the Cambior joint-venture period in late 1997, Golden Phoenix entered into an agreement to purchase a portion of J.D. Welsh's interest in the property. J.D. Welsh sold his remaining interest in the property to a third party, who in turn sold it to Golden Phoenix; therefore, in 2000 the company controlled 100 percent interest in the lease (Golden Phoenix Minerals, 2000). Golden Phoenix maintained the property during the years of low gold prices, compiled a database, validated the drill hole data, and developed new mineral resource estimates for the entire property.

In July 2003, the Borealis property was joint-ventured by Golden Phoenix with BMC, which is a wholly owned subsidiary of Gryphon Gold Corporation. BMC, the operator of the joint venture, originally controlled the property through an option agreement with Golden Phoenix whereby BMC could earn a 70 percent joint-venture interest in the property. BMC had the right to acquire its interest in the Borealis property with a combination of qualified expenditures on work programs, and/or making payments to Golden Phoenix, and/or delivering a feasibility study over a period of 5 ½ years beginning July 2003. In January 2005, BMC purchased 100 percent interest in the lease agreement, and Golden Phoenix surrendered its interest in the property. During 2004 and 2005-07, Gryphon Gold conducted two drilling programs.

1.5 Geology and Mineralization

Epithermal gold and silver mineralization at Borealis is hosted by Miocene pyroclastics/tuffs, andesite flows, dacite flows, and laharic breccias. These volcanic units together exceed 1,200 feet in thickness, strike northeasterly, and dip shallowly to the northwest. Pediment gravels cover the volcanic rocks at lower elevations along the mountain front where drilling has identified large areas of hydrothermal alteration. Structures are dominantly northeast-striking faults with steep dips and generally west-northwest-striking faults with steep southerly dips. Both of these fault systems lie on regional trends of known mineralized systems; thus, Borealis appears to be at a major intersection of structural and mineralized trends. Another strong control for alteration/mineralization within the district is a series of north to north-northeast-trending structures that host the Graben deposit and other exploration targets. A number of these pre-mineral faults in the district may have been feeders for high-sulfidation hydrothermal systems. Figure 1.2 illustrates the local geology of the Borealis district and project area.



(Source: Echo Bay Mines, circa 1989, modified to reflect new property boundaries by Gryphon Gold, 2005)

Figure 1.2 – Local Geology of the Borealis District and Project Area

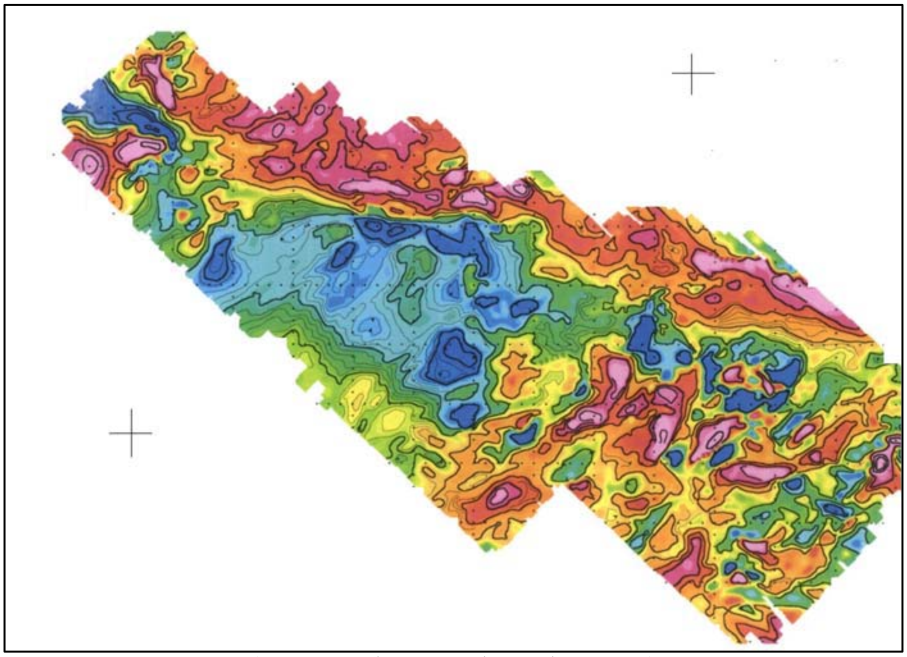
Gold mineralization is often associated with hydrothermal breccias, pervasive silica, and sulfides, principally pyrite. It is likely that the higher-grade deposits may have been localized along the intersections of small second-order faults with the major feeder structures. Many of the oxide deposits at the project site, such as the Borealis deposit, have a flat-lying tabular shape and appear to have formed within gently dipping volcanic units. The pyroclastic/tuff unit is the most favorable host for gold mineralization. Alteration and mineralization closely associated with ore-grade material are fine-grained vuggy to massive silica and pyrite often with and enveloped by advanced-argillic alteration including alunite and dickite. Outward from the central silica zone is a zone that may contain kaolinite, quartz, pyrite, dickite, and diaspore, and is surrounded by montmorillonite and pyrite, and finally an outermost broad propylitic halo with minor pyrite. Large bodies of opaline and microcrystalline silica occur peripheral to some mineralized zones. During its emplacement, finely-disseminated gold found in the Borealis mineralizing system was enclosed in pyrite, and through natural weathering and oxidation, this gold was released and made available to extraction by cyanidation. Gold still bound in pyrite or pyrite-silica is not recovered easily by a simple cyanide heap-leach operation. Widely-spaced drilling indicates that pediment gravels cover the majority of the altered and mineralized volcanics over a 7-mile-long zone in the southern and southwestern parts of the district. Much of this area has received only minor testing with systematic multidisciplinary exploration. Pediment gravels overlie many of the best exploration targets in the district.

1.6 History of Exploration Activities

Since the late 1970s, exploration has been completed at the Borealis property with the primary objective of finding near-surface oxidized gold deposits. Exploration work has consisted of field mapping, surface sampling, geochemical surveys, geophysical surveys, and shallow exploration drilling. Only limited drilling and geological fieldwork was completed in areas covered by pediment gravels even though Freedom Flats was an unknown, blind deposit without surface expression when discovered.

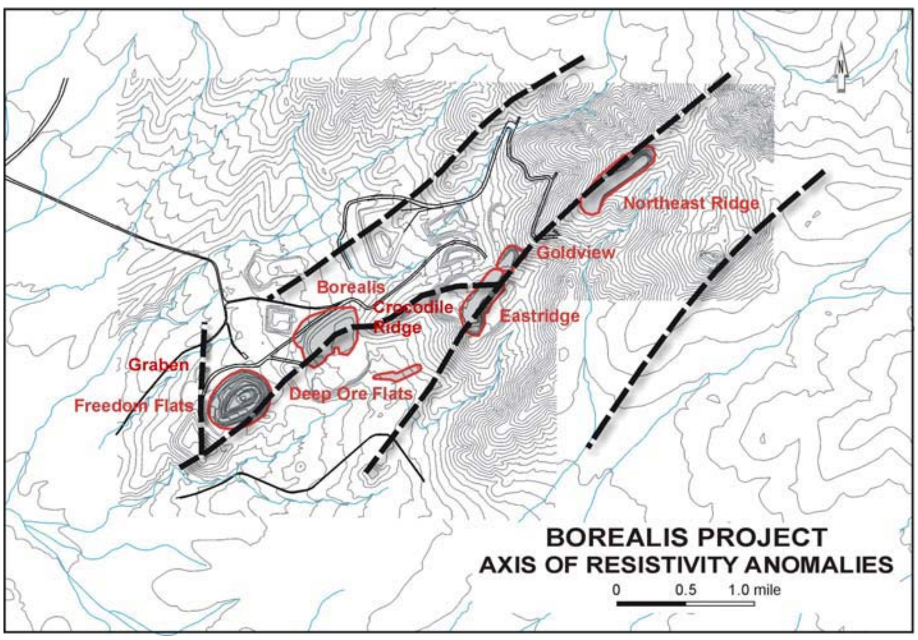
Many geophysical surveys were conducted by others in the Borealis district since 1978. In addition, regional magnetic and gravity maps and other information are available through governmental sources. The most useful geophysical data from the exploration programs are induced polarization – chargeability and resistivity – in combination with aeromagnetic data. These same geophysical tools are known to provide good guides to ore deposits in other high-sulfidation systems.

Resistivity was used successfully in the early exploration of the district to track favorable trends of strong silica alteration that is commonly associated with gold deposits. Chargeability anomalies were found later with the use of IP surveys that penetrated deeper to the sulfide zones and were found to reflect strong sulfide systems, for example, the Graben. Aeromagnetic data provide useful tools to identify potential hydrothermal alteration systems as magnetic lows, many of which are shown in medium to dark blue on Figure 1.3. An example of an interpretation of resistivity data is shown on Figure 1.4.



(Source: Echo Bay Mines, circa 1989)

Figure 1.3 - 1989 Borealis District Aeromagnetic Survey Map



(Source: J. Anzman and Gryphon Gold, 2005)

Figure 1.4 - Selected Resistivity Anomaly Trends of the Borealis District

Areas with known occurrences of gold mineralization, which are defined by historical exploration drilling and had historical mine production include Northeast Ridge, Gold View, East Ridge, Deep Ore Flats (also known as Polaris), Borealis, Freedom Flats, Cerro Duro, and

Jaimes Ridge. All of these deposits still contain gold mineralization remaining in place, contiguous with the portions of each individual deposit that were mined.

Discovery potential on the Borealis property includes oxidized gold mineralization adjacent to existing pits, new oxide gold deposits at shallow depth within the large land position, gold associated with sulfide minerals below and adjacent to the existing pits, gold in possible feeder zones below surface mined ore, and deeper gold-bearing sulfide mineralization elsewhere on the property. Both oxidized and sulfide-bearing gold deposits exhibit lithologic and structural controls for the locations and morphologies of the gold deposits

1.7 Drill Hole Database

The historical drill hole database used for the Borealis project resource models contains 2,417 drill holes with a total drilled length of 671,595 feet. These holes were drilled by several different operators on the property. Drill hole types include diamond core holes, reverse circulation holes, and rotary holes. Only a few core holes and deeper RC holes have down-hole survey information. Since most of the drilling is shallow, the absence of down-hole survey information is not significant. In the deeper Graben zone, however, non-surveyed drill holes may locally distort the shape of the mineralized zones. Drill hole sampling lengths are generally 5 feet for the RC holes but vary for the core holes based on geologic intervals. Gold assays in parts per billion (ppb) and troy ounces per short ton (opt) are provided for most of the drill hole sample intervals. Silver assays in parts per million (ppm) and opt are also provided for many of the sample intervals.

Mineralized zones covered by these drill holes include Northeast Ridge, Gold View, East Ridge, Deep Ore Flats, Borealis, Freedom Flats, and Graben. Except for Graben, all have been partially mined by previous operators of the project; the Borealis and Deep Ore Flats Pits are backfilled with waste from the Freedom Flats Pit. The drill holes in the west model area are mostly in the Cerro Duro, Jaimes Ridge, and Purdy Peak areas, at approximately 3 miles distant, northwest of the main Borealis Mine site. Cerro Duro and Jaimes Ridge also have had previous open-pit mining. Drill holes in the East Model area are mostly in the Boundary Ridge and Bullion Ridge areas, about 1 mile northeast of the main Borealis Mine site.

Also included in the drill hole data but in a separate electronic database, are the auger holes drilled in the heaps by J.D. Welsh, and the sonic drilling of the five Borealis heaps and parts of the Freedom Flats and Borealis Mine dumps that were completed by Gryphon Gold in May 2004. The J.D. Welsh program consisted of 11 holes totaling 760 feet. The Gryphon Gold program consisted of 32 holes totaling 2,475.5 feet. The Gryphon Gold dump holes were drilled deep enough to penetrate the soil horizon below the dump while holes on the heaps were drilled to an estimated 10 to 15 feet above the heap's liner. None of these latter holes penetrated the heap liners. Not all of the permitted holes were drilled during this phase of the program. Rather, a few holes were drilled on each heap and dump to obtain an initial and representative view of grade distribution.

Since the last update to the resource models, as reported in the January 2007 Technical Report, new drilling by Gryphon Gold during late 2006 through November 2007 was added to the drill hole database. The total Company drilling in the database currently includes 252 drill holes and 153,000.5 feet of drilling. The total number of Company drill holes used in the resource models is 214 holes and 143,516 feet of drilling.

1.8 Sample Preparation, Analysis, and Security

1.8.1 Historical

The Borealis Mine site operated from 1981 through 1990 producing 10.7 million tons of ore averaging 0.059 opt Au from eight open pits. The mined ore contained about 635,000 ounces Au (Eng, 1991) of which approximately 500,000 ounces of gold were recovered through a heap-leach operation. This historic production can be considered a bulk sample of the deposits validating the database that was used for feasibility studies and construction decisions through the 1980s. With over 2,400 drill holes that were compiled over a 30-year period by major companies, the amount of information on the project is extensive. It is primarily these data that have been used as the foundation of the current mineral resource estimate. The bulk of the data were collected beginning in 1978, the year of discovery of the initial ore-grade mineralization, and were continuously collected through the final year of full production. Subsequent explorers starting in the 1990s added to the database.

Nothing is known of the sample security arrangements made by the previous operators, but since the pits each produced the amounts of gold predicted or higher, it has been assumed that the security was adequate and it is unlikely that sample security was a problem. The same assumption is true for most of the subsequent explorers of the property – Billiton, Santa Fe Pacific, and Cambior – which were all substantial companies and probably used sound procedures.

1.8.2 2004 Program

A sonic drilling program was undertaken in spring 2004 to confirm the amount and grade of gold-bearing rock that exists in heaps and dumps. The drilling provided samples for metallurgical test work to define the geotechnical conditions and to obtain sufficient samples to demonstrate the geotechnical characteristics for design purposes in the waste characterization database. A separate drilling program was undertaken to install baseline groundwater monitoring systems.

As part of this program, a sonic drill rig was used to drill exploratory holes on the five previously leached heaps, as well as the Freedom Flats and Borealis Pits waste dumps. A total of 32 holes for a total of 2,475.5 feet were drilled with samples collected and composited for each hole.

Sample intervals were originally designed to be every 10 feet but were contingent upon drilling conditions. During the drilling process, sample intervals were immediately bagged and sealed when the sample tube was extracted from the hole. Individual runs varied from 1 to 3 feet, which were then combined to produce a sample with an interval length as close to 10 feet as practicable (the combination was completed at American Assay Laboratories, Inc. [AAL]). Combined intervals varied from 9 feet to 11 feet, except at the bottom of a hole where the interval was as short as 4 feet.

When the sample tube was extracted from the hole, the sample was immediately slid into a plastic sleeve that was sealed and marked with the drill hole number and footage interval. These plastic sample sleeves were not reopened until they reached the analytical lab. All of the drill procedures and handover to the analytical lab were monitored by an independent geologist hired through Geotemps, Inc. The contract field geologist also maintained lithologic logs for each drill hole. A non-blind standard was added as the last sample of each hole, which was obvious to the lab since the standard was in a pulp bag, although the lab did not know the gold value of the standard.

All samples were submitted to AAL of Sparks, Nevada. At the lab, each of the individual samples was combined into an analytical sample that approximated 10-foot intervals, as outlined above per instructions from the geologist. Each analytical sample was split in a rotary splitter with one-fifth of the sample removed for assay and the remaining four-fifths retained for metallurgical testing. Each analytical split was weighed, dried, and weighed again. The difference between the two weights represented the amount of water in the original sample. Each dried sample was crushed to less than ¼ inch, and a 300- to 500-gram sample was riffle split off for assay. The remaining sample was retained at the lab. Each assay sample was pulverized and assayed for gold and silver by one-assay-ton fire assay and a 2-hour 200-gram cyanide shake assay for dissolvable gold.

As part of the quality control program, standards were submitted to AAL with each drill hole, several assayed pulps and two standards were submitted to ALS Chemex, and three of the duplicates and two standards were submitted to Actlabs-Skyline. The average difference in analytical results from assays on the same pulps was less than 0.001 opt Au, and the standard deviation of the differences was 0.003 opt Au, which is extremely close and within the level of accuracy of the assaying method.

All samples were collected in plastic sample bags, sealed, and securely stored until picked up by the transport arranged under the authority of AAL. AAL maintained control of all samples from the pickup at the Borealis property until analytical work was completed. It is the opinion of Dr. Steininger, a Qualified Person under the terms of Canadian NI 43-101 who supervised this drilling and sampling program, that the security procedures were adequate and properly implemented during the program.

1.8.3 2005 Through November 2007 Program

Sampling procedures at the drill sites and monitoring of assays were standardized starting with the commencement of the reverse circulation drilling program in early 2005. Throughout the Borealis RC drilling program, samples were collected at 5-foot intervals from each hole starting at the surface and continuing through the end of the hole. Material from each 5-foot interval was split to about one-quarter of the original volume at the drill site, then bagged and sealed by the drilling contractor. At the completion of each hole, samples were moved to a secure site on the property prior to pickup by lab personnel.

Initially a blind standard was included at the end of each hole and a duplicate sample was collected at the drill and inserted in the sample sequence as a blind sample. This was later upgraded in mid-2006 so that one standard would be included with each fire assay tray at the lab. In addition, a blank sample was inserted as a blind sample within the drill sample sequence. After the standards, duplicates, and barren samples were put in place an assay lab truck and driver collected the drill samples from the Borealis secured storage and transported them to Sparks, Nevada. The initial assay facility was AAL. In mid-2006 analytical work was transferred to Inspectorate America Corporation (Inspectorate).

From the time that the pickup was made, the lab maintained control over the samples until coarse rejects and pulps were returned to the Borealis property. At the lab, each sample was dried and crushed to less than 1/4 inch, and a 300- to 500-gram sample was riffle split off for assay. The coarse rejects were retained at the lab until analyses were completed. Each assay sample was pulverized and assayed for gold and silver by one-assay-ton fire assay.

The initial quality control program consisted of: (1) standards included with samples from each drill hole, (2) duplicate samples collected at the drill, and (3) duplicate assays as part of the lab's internal control. The assays and these controls were monitored continually by a Qualified Person. If questionable assays were received, a decision on re-assaying portions of the hole or the entire hole was made at the time of receipt of the preliminary assay reports. In general, the quality control samples indicate that the analytical labs used by Gryphon Gold produced high-quality assays. The close correlation between assays of the original sample and the duplicate sample indicates that sampling at the drill produced representative samples.

Analytical results of the standards submitted with the drill samples were within two standard deviations of the standard's gold content, which was deemed acceptable. Generally, duplicate assays performed by the lab corresponded well with the original assays. These data indicated that both labs used by Gryphon Gold produced acceptable quality assays.

During the early part of the drilling program, a duplicate sample was collected at the drill, initially to ensure that a representative sample was collected. Secondly, these samples were also a check on lab assay reproducibility. Except for three samples, there is an extremely close correlation between the duplicate samples from each hole. This indicates that representative samples were collected at the drill and that the lab was able to produce similar assays for the same drill hole interval. The three samples with wider variations are probably representative of the nature of a gold deposit with occasional coarse gold and wide variations in gold content over short distances.

As a further check on the labs, coarse rejects from entire drill holes, or portions of holes, were submitted to a second lab for re-assay. Except for one drill hole, there was close correlation in the assays between respective drill hole intervals between the two labs. Overall, the assays from this one hole had a good correlation between labs with a few inconsistencies between the two labs. Some of AAL's assays were higher than Inspectorate's, and for other intervals, the reverse was the case. This suggests that the variations may be related to the natural variability in a gold deposit rather than an assay problem between the labs.

1.9 Data Verification

It is the opinion of the geological Qualified Person that drilling completed by Gryphon Gold verifies historical drilling results in the Northeast Ridge, East Ridge, Deep Ore Flats Borealis, and Freedom Flats deposit areas.

In addition, the drill hole database was verified by Mr. Steven Craig, a Qualified Person for the purpose of Canadian NI 43-101 for Golden Phoenix, during an 8-month intensive effort by reviewing every one of the 2,417 historical drill holes and over 125,000 assays on original sheets and comparing them line by line with the database, ensuring that only accurate information was in the database. Where several valid assays were found for a single interval, they were averaged to determine the grade used in the database. Drill hole collar location surveys on original sheets were also compared to the database information and improved where necessary. Down-hole survey information on original sheets for the deeper holes were also reviewed and compared with the database to ensure its accuracy.

Information presented above describes the limitations imposed by the lack of certain historical records on verification of the data. Based on operating results and historical descriptions, it appears that the sampling, sample preparation, assaying, and security of samples were conducted in an industry acceptable manner for the time period in which the samples were collected and processed, and it is the geological Qualified Person's opinion that the assays are suitable for mineral resource estimation.

1.10 Adjacent Properties

The nearest mining property to the Borealis Gold Project is the Esmeralda Project (formerly the Aurora Mine) owned and recently operated by Metallic Ventures Gold, Inc. (Metallic Ventures) (Figure 1.5). The Esmeralda Project lies in the Aurora Mining District, 10 miles southwest of the Borealis property. The Aurora Mining District had historical production of approximately 1.9 million ounces of gold and more than 2.4 million ounces of silver from as many as 30 veins (Vanderburg, 1937). Remaining mineral resources reported by Metallic Ventures in early 2003 were 1.3 million ounces of gold (Metallic Ventures Gold, Inc., 2004). The mineralized system is a low-sulfidation type with gold and minor silver in banded quartz-adularia-sericite veins hosted by Tertiary volcanics.

The Bodie Mining District is further southwest, 19 miles from the Borealis Mining District, along the same trend and has a reported 1.5 million ounces of gold and nearly 7.3 million ounces of silver of past production from a series of veins in Tertiary andesite host rocks (Silberman and Chesterman, 1991). The remaining mineral resources were reported at approximately 1.9 million ounces of gold in 1991(Galactic Resources Ltd., 1991).

The Bodie, Aurora, Borealis, and other minor districts are aligned along a northeast-southwest trend of mineralized districts commonly referred to as the Aurora-Borealis trend.

(Source: Gryphon Gold, 2005)

Figure 1.5 - Adjacent Properties

1.11 Mineral Processing and Metallurgical Testing

Eight open pit mines were developed at the Borealis Mine site during its operating years from 1981 to 1990. They include the Northeast Ridge, Gold View, East Ridge, Deep Ore Flats, Borealis, Freedom Flats, Jaimes Ridge, and Cerro Duro mines. Each pit has associated waste-rock disposal areas proximal to their mine areas. Two of the pits, Borealis and Deep Ore Flats, were backfilled with mine waste produced from proximate pits. Processing of the ore was by conventional cyanide-agglomerated heap leaching using both permanent and reusable pads. Precious metals were recovered using a Merrill Crowe process.

Historical heap-leach operations throughout the 1980s typically produced gold recoveries in the upper 70 to mid-80 percent range with silver recoveries ranging from 15 to 50 percent. These ores were primarily oxide and mixed oxide-sulfide and as such required cement agglomeration in order to achieve optimum solution percolation, pH control, and precious metal dissolution. Previous heap-leach operations also processed run-of-mine (ROM) ores (uncrushed), which were typically low-grade material that was stacked on the upper lifts of the heap leach pad (HLP). Historical gold recoveries for ROM ore ranged from 20 to 50 percent, and silver recoveries were typically less than 20 percent.

1.11.1 Metallurgical Testing

In 2004, the first phase of metallurgical test work was developed for the exploration drill samples. This work focused on determining the amenability of gold to cyanidation and the effect of particle size on gold recovery. The BMC geological staff collected 249 samples from historical leach pad areas and waste dumps for this program.

Subsequent metallurgical testing was developed in 2005 for a Phase 2 program that utilized samples collected from current exploration drilling in fresh gold mineralized zones. A total of 77 bottle roll tests were completed from these data. In addition, four bulk samples were collected from near-surface trenches for column leach tests. There has been no current test work performed on ROM-sized samples.

Table 1.1 below summarizes the expected metal recovery from the respective mineralized material locations.

Table 1.1 - Estimated Gold and Silver Recoveries

Area	Range of Au Recovery	Estimated Au Recovery	Range of Ag Recovery	Estimated Ag Recovery
Borealis Upper	62 – 86	78.0	25 – 81	55.3
Borealis Main	62 – 86	78.0	25 – 81	55.3
Deep Ore Flats	59 – 85	74.1	28 – 51	39.0
Freedom Flats	20 – 80	75.0	-	23.2
Gold View/East Ridge	40 – 92	63.4	8 – 33	23.2
Northeast Ridge	37 – 85	70.0	14 – 29	28.4
Middle Ridge	46 – 92	76.3	7 – 60	44.9
Orion's Belt	55 – 94	75.3	52 – 71	54.6
Old Leach Pads	-	43.3	-	23.2
ROM Leach Pads	-	50.9	-	23.2
Dump Material	62 – 86	71.3	25 - 81	55.3

1.11.2 Processing

A typical processing flow sheet for this mineralized material would require crushing in a two-stage crushing system to achieve a size of 80 percent less than ¾ inch. After crushing, the material would be agglomerated and stacked onto the HLP. Barren cyanide solution from the Adsorption, Desorption and Refining (ADR) plant would be distributed over the material with drip tubes. The pregnant leach solution then would be collected and pumped to the ADR plant where the gold and silver would be removed from the solution using a carbon circuit followed by stripping in a traditional pressure Zadra strip circuit. Pregnant solution from the strip circuit would be pumped through electro-winning cells where the precious metals would be electrically plated out of solution onto steel wool as a metallic sludge. The sludge would be placed in a mercury retort for removal of residual mercury and drying. Finally, it would be mixed with fluxes and smelted in an induction furnace to produce a gold/silver doré product. The doré product would be shipped offsite for further refining.

As exploration proceeds and if more recoverable silver is found than previously estimated, it is possible that a Merrill Crowe zinc precipitation process may be required in addition to or to replace the carbon adsorption process in order to efficiently recover the silver.

1.12 Mineral Resource Estimates

The mineral resource estimate for the Borealis Gold Project was prepared by Mr. Steve Wolff, mining engineer and consultant, not a Qualified Person for the purpose of Canadian NI 43-101. The study area encompasses the core of the BMC holdings and the principal gold deposits with known mineral resources.

1.12.1 Mineral Resource Model

Four three-dimensional block models were used to estimate the gold resource on the property. Each of these models used 20 by 20 by 20-foot blocks and three of the four were rotated so that model north was N. 50° E. The North and South models overlap slightly to more easily maintain continuity across model boundaries. The West Area model also used 20 by 20 by 20-foot blocks but was not rotated.

Drill Hole Data: There are 2,669 drill holes in the database of which 1,643 intersect zones of mineralization that are included in the resource estimate. Average grades inside the mineralized zones range from 0.007 opt Au to 0.084 opt Au. Variability of assays is moderate to high with coefficients of variation ranging from 1.02 to 3.33 within zones.

Mineral Resource Classification: Resource classifications were based on the drill hole grid spacing that was believed necessary to establish the continuity of mineralization (for indicated resource) and to provide reliable estimates for production planning (measured resource).

It is observed that the drill hole spacing in the previously mined areas was generally on an approximate 100-foot grid, that the grade zones were continuous and regular at that spacing, and that estimated resources are close to mine production; therefore, it is concluded that a 100-foot drill grid was acceptable for defining resources. In practice, grade zones were limited also to a small radius around drill holes unless mineralization appeared continuous regardless of drill hole spacing.

Gold and silver grade estimation within grade contour boundaries was done using inverse-distance-power weighting (IDW) interpolation. Grade contouring was used to limit search radius and for the development of composites and blocks within respective models. Search and weighting parameters for IDW estimation were set such that the orientation of the search ellipse and radii were based on the size and shape of the deposit and on the variogram ranges. The grade estimation was done in three passes, with each pass corresponding to one of the resource classes, i.e. Measured, Indicated, and Inferred.

Model Results: The mineral resource estimate for the pit areas is summarized in Tables 1.2 and 1.3. In all cases, the quantities shown are for the remaining resource, below the mined-out topography.

The mineral resource estimate for the heaps and dumps is summarized in Tables 1.4 and 1.5 and is based on the estimate of resource in the heaps and dumps completed in April 2005 and on the Gryphon Gold/Welsh drilling. The mineral resource Qualified Person has reviewed this estimate and determined that it is reasonable and complies with the NI 43-101 definitions and current resource estimating criteria.

Dump and heap resource estimates are classified as indicated and inferred based on drill hole spacing of approximately 200 feet and projections of less than 200 feet beyond drill holes. Inferred resource estimates are based on metallurgical balances and tonnage estimates based on data from previous operations (Behre Dolbear, 2004) and have not been drill tested.

Table 1.2 - Borealis Mineral Resource Estimate - March 2008 Summary of Measured and Indicated Mineral Resource - Combined Oxides and Sulfides							
Resource Class	**Deposit**	**Au Cutoff (opt)**	**Tons (1,000's)**	**Au Grade (opt)**	**Ag Grade (opt)**	**Contained Oz Gold**	**Contained Oz Silver**
Measured	Graben-Low Grade	0.010	374	0.014	0.128	5,200	47,800
	Graben-High Grade	0.010	2,053	0.090	0.346	183,800	711,100
	Freedom Flats	0.010	1,862	0.055	0.542	101,800	1,009,300
	Borealis	0.010	1,336	0.047	0.200	63,100	267,000
	Deep Ore Flats	0.010	30	0.021	0.819	600	24,600
	East Ridge	0.010	77	0.021	0.049	1,600	3,800
	NE Ridge	0.010	85	0.021	0.118	1,800	10,000
	Boundary Ridge	0.010	-	0.000	0.000	-	-
	Bullion Ridge	0.010	57	0.024	0.006	1,300	300
	Cerro Duro	0.010	297	0.039	0.710	11,700	210,700
	Jaimes Ridge	0.010	77	0.036	0.194	2,800	14,900
	Purdy Peak	0.010	294	0.026	0.065	7,500	19,000
	Alluvium / Tcv	0.010	88	0.031	0.066	2,700	5,800
	Total Measured		6,629	0.058	0.351	383,900	2,324,300
Indicated	Graben-Low Grade	0.010	2,472	0.016	0.114	39,600	282,700
	Graben-High Grade	0.010	10,291	0.063	0.328	648,900	3,379,000
	Freedom Flats	0.010	2,006	0.029	0.360	59,000	721,800
	Borealis	0.010	2,592	0.029	0.155	75,100	400,900
	Deep Ore Flats	0.010	531	0.022	0.566	11,600	300,700
	East Ridge	0.010	1,256	0.018	0.081	23,200	101,400
	NE Ridge	0.010	1,631	0.019	0.126	31,700	204,700
	Boundary Ridge	0.010	43	0.031	0.153	1,300	6,600
	Bullion Ridge	0.010	499	0.022	0.007	11,100	3,600
	Cerro Duro	0.010	339	0.042	0.633	14,200	214,800
	Jaimes Ridge	0.010	405	0.025	0.079	10,100	32,000
	Purdy Peak	0.010	628	0.019	0.081	12,200	50,600
	Alluvium / Tcv	0.010	236	0.024	0.070	5,600	16,500
	Total Indicated		22,931	0.041	0.249	943,600	5,715,300
Measured + Indicated	Graben-Low Grade	0.010	2,846	0.016	0.116	44,800	330,500
	Graben-High Grade	0.010	12,344	0.067	0.331	832,700	4,090,100
	Freedom Flats	0.010	3,868	0.042	0.447	160,800	1,731,100
	Borealis	0.010	3,928	0.035	0.170	138,200	667,900
	Deep Ore Flats	0.010	561	0.022	0.579	12,200	325,300
	East Ridge	0.010	1,333	0.019	0.079	24,800	105,200
	NE Ridge	0.010	1,716	0.020	0.125	33,500	214,700
	Boundary Ridge	0.010	43	0.031	0.153	1,300	6,600
	Bullion Ridge	0.010	556	0.022	0.007	12,400	3,900
	Cerro Duro	0.010	636	0.041	0.669	25,900	425,500
	Jaimes Ridge	0.010	482	0.027	0.097	12,900	46,900
	Purdy Peak	0.010	922	0.021	0.075	19,700	69,600
	Alluvium / Tcv	0.010	324	0.025	0.069	8,300	22,300
	Total Measured + Indicated		**29,560**	**0.045**	**0.272**	**1,327,500**	**8,039,600**

Table 1.3 - Borealis Mineral Resource Estimate - March 2008 Summary of Inferred Mineral Resource - Combined Oxides and Sulfides							
Resource Class	Deposit	Au Cutoff (opt)	Tons (1,000's)	Au Grade (opt)	Ag Grade (opt)	Contained Oz Gold	Contained Oz Silver
Inferred	Graben-Low Grade	0.010	3,638	0.016	0.111	58,000	403,700
	Graben-High Grade	0.010	7,925	0.049	0.295	387,200	2,341,100
	Freedom Flats	0.010	4,059	0.022	0.456	88,000	1,852,300
	Borealis	0.010	3,927	0.036	0.156	143,300	612,200
	Deep Ore Flats	0.010	2,622	0.019	0.364	51,000	953,400
	East Ridge	0.010	4,497	0.016	0.098	71,200	438,900
	Northeast Ridge	0.010	3,425	0.018	0.092	63,000	313,400
	Boundary Ridge	0.010	330	0.018	0.056	5,900	18,500
	Bullion Ridge	0.010	4,928	0.017	0.011	83,000	54,400
	Cerro Duro	0.010	129	0.029	0.540	3,800	69,600
	Jaimes Ridge	0.010	251	0.018	0.038	4,600	9,500
	Purdy Peak	0.010	184	0.014	0.083	2,600	15,200
	Alluvium / Tcv	0.010	247	0.017	0.074	4,300	18,400
	Total Inferred		**36,161**	**0.027**	**0.196**	**965,800**	**7,100,700**

Table 1.4 - Borealis Project March 2006 Mineral Resource Estimate Summary of Indicated Resource in Heaps						
Resource Zone	**Cutoff (opt)**	**Tons (1000s)**	**Au Grade (opt)**	**Ag Grade (opt)**	**Contained Oz Gold (1000s)**	**Contained Oz Silver (1000s)**
Tailings Releach	0.005	1,328	0.019	0.05	25.0	72.7
Freedom Flats	0.005	1,028	0.026	0.24	26.8	244.4
NE Ridge ROM	0.005	3,726	0.012	0.14	43.2	503.8
Total Indicated	0.005	6,082	0.016	0.13	95.0	820.8

Table 1.5 - Borealis Project March 2006 Mineral Resource Estimate Summary of Inferred Resource in Heaps and Dumps						
Resource Zone	**Cutoff (opt)**	**Tons (1000s)**	**Au Grade (opt)**	**Ag Grade (opt)**	**Contained Oz Gold (1000s)**	**Contained Oz Silver (1000s)**
Secondary Leach	0.005	1,608	0.008	0.12	13.2	185.2
ROM 2	0.005	2,180	0.008	0.07	17.4	157.4
Borealis Dump	0.005	3,200	0.011	0.14	35.8	448.0
East Ridge Dumps	0.005	4,019	0.012	0.05	47.4	201.0
NE Ridge Dump	0.005	3,056	0.008	0.08	248	244.5
Total Inferred	0.005	14,064	0.010	0.09	138.7	1,236.1

1.13 Other Important Considerations

The Borealis property is located on public lands partly within the Humboldt-Toiyabe National Forest, Bridgeport Ranger District, and BLM-administered lands. Because most activity to date has been within the USFS-administered lands, the Plan of Operations for this activity is subject to USFS approval and environmental analysis under the National Environmental Policy Act (NEPA). A project of this magnitude typically requires the preparation and approval of either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) with the EIS process generally being longer and more comprehensive. Since the Borealis project area has been extensively affected by previous mining operations, the USFS determined that resuming mining operations at the Borealis property would have no significant impact to public lands and that an EA would satisfy the NEPA requirements for this project. The Cerro Duro, Jaimes Ridge, and Purdy Peak resources and the exploration targets in the Central and West Pediment areas are within the BLM ground and require BLM approval for exploring or mining.

1.13.1 Permitting

The principal operating permits required for construction, operation, and closure of a potential mine on the Borealis property have been acquired from Nevada State and Federal regulatory agencies as of the date of this report. The approvals received cover a 10 million-ton project within the central operating area and include an exploration program within that operating area that recognizes the potential to expand the resource base with successful exploration results. Expansion of the project plans beyond 10 million tons will require routine modification of the operating permits. There are no known issues that would preclude the approval of such routine modifications by the applicable regulatory agencies.

The operating permits cover only the central operating area and exclude some of the Middle Ridge area and Orion's Belt. The deposits in Orion's Belt have been subject to recent mining operations and have been successfully reclaimed. No fatal flaws or material concerns which would preclude the permitting and development of mining operations in this area have been identified, although the timing of such permitting processes has not been fully assessed.

1.13.2 Conclusions and Recommendations

Analysis of the geologic data identified a significant in-place mineral resource that requires additional engineering studies prior to estimation of surface mineable reserves. Based on historical operational data and similar deposits and projects in the area, the field-proven process technology selected (heap leach and ADR plant, using either carbon adsorption or zinc precipitation) should be able to effectively produce gold doré for sale, once a mineral reserve has been established.

Having successfully obtained the major permits from the U.S. Forest Service and the Nevada Division of Environmental Protection, environmental and permitting issues no longer represent a significant risk to future project development.

The contributing Gryphon Gold authors, Dr. Roger Steininger and Mr. Steven Craig, recommend that Gryphon Gold undertake a systematic district-scale exploration program designed to discover and delineate large gold deposits within the greater Borealis property, outside of the known mineral deposits. The program should focus along known mineralized trends that project into untested gravel-covered areas with coincident geophysical anomalies. The contributing Gryphon Gold authors agree that the greatest potential in the district lies beneath a large gravel-covered area at the mountain range front with several potential blind deposits (with no surface expression). The Graben zone is an example of this type of deposit, and other high-potential targets include West Pediment (Sunset Wash), Central Pediment (Lucky Boy), and others yet to be named.

This district-scale exploration program should include both field and compilation geology, geophysics, geochemistry, permitting and claim maintenance, road construction and drill-site preparation, reverse circulation and core drilling, drill hole assaying, sampling protocol studies and assay quality control, preliminary metallurgical testing, and database management.

In addition, further sampling of the historical heaps and dumps is recommended because of the immediate potential to move inferred resource into indicated resources that may be considered for reserves.

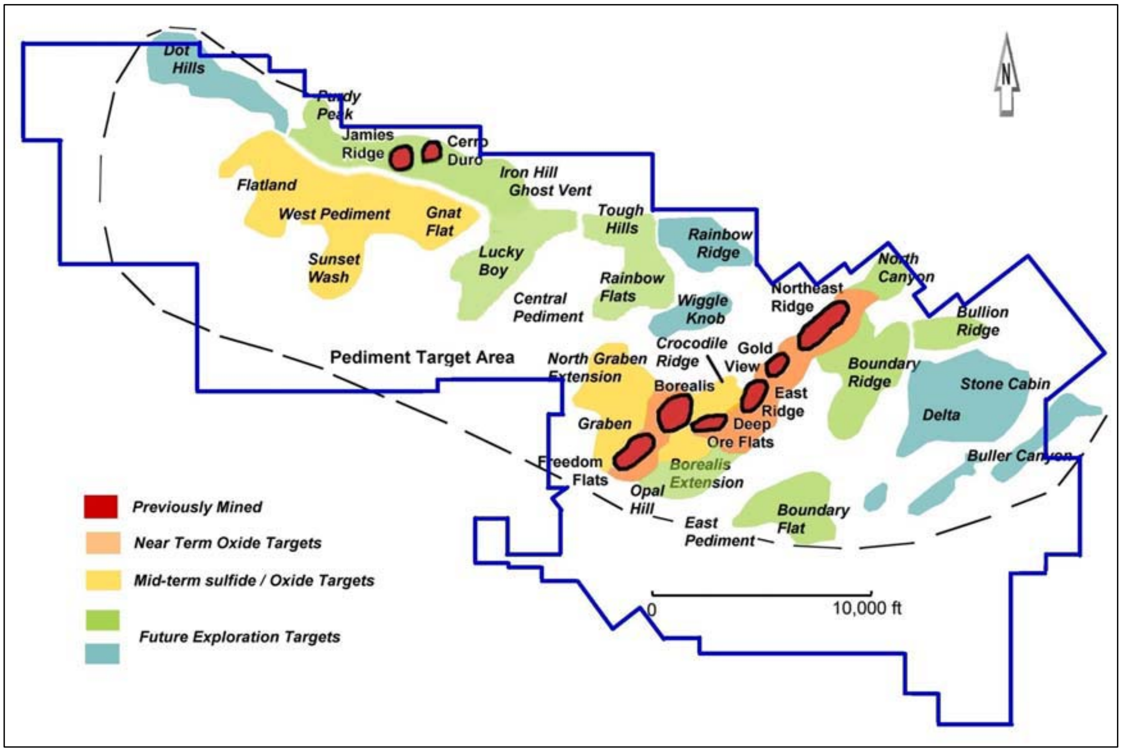
(This page is intentionally left blank)

2.0 Introduction and Terms of Reference

Gryphon Gold Corporation (referred to as "Gryphon Gold" or the "Company" in this report) is progressing with technical work at its 100 percent-owned Borealis Gold Project in Mineral County, Nevada in anticipation of developing additional mineral resources, which would allow the Company to consider mine development. The Company is focused on exploration drilling and infill drilling to enhance the resource categorization, expansion of the land position, and environmental reviews.

The purpose of this report is to update the resource model based on an enhanced geologic interpretation of additional data acquired and analyzed from 2005 through 2007 by Company geologists and engineers, upgrade certain resources, and report on technical activities to date. The newly developed and updated resource model lies within a defined study area that falls within the area disturbed by previous mining activities. The deposits within the boundaries of the central study area have been approved for mine development by State and Federal regulatory agencies. Other known deposits containing mineral resources are located outside the limits of the central study area in outlying areas. No fatal flaws or material concerns, which would preclude mining operations in these areas, have been identified to date although the timing of such permitting processes has not been fully assessed.

As an important part of this work, resource models were updated for several in-place gold deposits located within the boundaries of the central and outlying study areas and include the following deposits: West Alluvial Deposit, Graben, Freedom Flats, Borealis, Crocodile Ridge, Deep Ore Flats (also known as Polaris), East Ridge, Gold View, Middle Ridge (located between Gold View and Northeast Ridge), Northeast Ridge, and also the Purdy Peak, Jaimes Ridge, and Cerro Duro, deposits located further to the west, and Boundary Ridge and Bullion Ridge deposits located to the east. Resource estimates for deposits outside the study areas, but on claims controlled by Gryphon Gold, rely on historical drill hole data which were completed prior to the promulgation of the guidelines of Canadian NI 43-101.



(Based on information from Echo Bay Mines, circa 1989, modified by Gryphon Gold, 2005)
Figure 2.1 - Mineral Deposits and Prospects of the Borealis Property

Names of gold deposits and exploration targets are shown on Figure 2.1, which can be used as a reference to the geographic location and place names used in this report. Some of the most important exploration targets are reviewed in Section 10.0, Exploration.

Independent consultant Mr. Steve Wolff, working closely with Gryphon Gold and its other consultants, prepared these new resource models. Additional input was provided by Knight Piésold and Co. regarding environmental, permitting, and metallurgical issues. In addition, Dr. Roger Steininger, CPG was the Chief Consulting Geologist in regard to geology, sampling, and exploration.

The principal author of this technical report is Dr. Roger C. Steininger, Chief Consulting Geologist for Gryphon Gold, a Qualified Person for the purpose of Canadian NI 43-101, Standards of Disclosure for Mineral Projects. Dr. Steininger visited the Borealis property numerous times during 2003, 2004, 2005, 2006, 2007, and 2008. Jaye Pickarts, P.E., Principal Metallurgical Engineer, Knight Piésold and Co., individually visited the Borealis property on several occasions during 2004, 2005, and 2006 for the duration of one day in each instance; he observed the district geologic setting and existing site conditions, and reviewed selective RC drill-sample intercepts of the mineralization for metallurgical purposes only and assisted in developing the metallurgical testing.

The following summarizes the technical experts and Qualified Persons who have contributed to this study under the general direction of the principal author of this report:

- Mr. Steven D. Craig, CPG (AIPG), a Qualified Person for the purpose of Canadian NI 43-101, Standards of Disclosure for Mineral Projects, Vice President of Exploration for Gryphon Gold: mine geology. Mr. Craig is not independent of Gryphon Gold.

- Mr. Jaye T. Pickarts, P.E., a Qualified Person for the purpose of Canadian NI 43-101, Standards of Disclosure for Mineral Projects, Principal Metallurgical Engineer, Knight Piésold and Co.: metallurgical test work evaluation and conceptual processing flow sheet.

- Dr. Roger C. Steininger, Ph.D., CPG (AIPG), a Qualified Person for the purpose of Canadian NI 43-101, Standards of Disclosure for Mineral Projects, Consulting Chief Geologist for Gryphon Gold: mine geology. Dr. Steininger is not independent of Gryphon Gold.

- Steve Wolff, not a Qualified Person for the purpose of Canadian NI 43-101, Standards of Disclosure for Mineral Projects. Mr. Wolff is responsible for the resource estimates under the supervision of Dr. Steininger. Mr. Wolff is a graduate mining engineer with over 30 years experience, much of which is generating gold resource and reserve models for numerous consulting firms and mining companies.

Technical support has been provided by additional associates of these listed firms and individuals. Knight Piésold has provided support in the ongoing permits acquisition activities, geotechnical engineering, and metallurgical engineering (Knight Piésold and Co., 2003). Gryphon Gold provided staff support and assistance by drafting certain figures incorporated in the report (as credited below each illustration) and aiding in the final assembly of the report.

This mineral resource study has considerable existing information contained in Gryphon Gold's Borealis project files. This information consists of several thousand pages of documents and data gathered during more than 20 years of exploration, development, mining, and post-mining reclamation activities at Borealis and includes exploration results, geophysical surveys, mineralogical analyses, geologic interpretations, metallurgical testing, design engineering, operating results, technical correspondence and scientific publications. Gryphon Gold converted this information to electronic format to allow for ease of search and recovery.

This report utilizes this archival information provided by Gryphon Gold. The database has not been independently verified at this time. As the Borealis project advances, certain additional information will be gathered which will allow for further verification of historical results and confirmation of the possible technical concepts.

Wolff and Steininger frequently undertake mineral property studies, and are familiar with the mineral resource definitions and disclosure requirements of Canadian NI 43-101 to which the mineral resource classification in this report conforms. Neither Wolff nor any of the principals involved in this project have any direct pecuniary or contingent interests of any kind in Gryphon Gold or its mining properties. Wolff is to receive a fee for his work based on time expended and expenses incurred according to the Company's standard fee schedule.

The major units used in this report are those commonly used in the United States – dry short tons of 2,000 pounds (tons), troy ounces per short ton (opt), miles, feet, etc. Where metric units are used, such is noted.

3.0 Reliance on Other Experts

The opinions expressed in this report are based on the available information and geologic interpretations as supplied by Gryphon Gold Corporation and other third party sources, which were available at the time of this report. The authors of this report exercised all due care in reviewing the supplied information and believe that the basic assumptions are factual and correct and the interpretations are reasonable. Assumptions, conditions, and qualifications are as set forth in the body of this report.

Although Gryphon Gold's consultants have independently analyzed some of the data, the accuracy of the results and conclusions from the review rely on the accuracy of the supplied data. These consultants have relied on the supplied information and have no reason to believe that any material facts have been withheld, or that a more detailed analysis may reveal additional material information. The authors did not undertake a program of independent sampling, drilling, or assaying to determine or confirm gold or silver values.

The information in Section 4.3, Property Description and Ownership, has been provided by Gryphon Gold. This information has not been independently reviewed by the authors; however, it is supported by a title report by Gryphon Gold's attorney Parr Waddoups Brown Gee & Loveless dated December 2005.

Estimates of mineral resources are inherently forward-looking statements subject to error. Although resource estimates require a high degree of assurance in the underlying data when the estimates are made, unforeseen events and uncontrollable factors can have significant adverse or positive impacts on the estimates. Actual results will inherently differ from estimates. The unforeseen events and uncontrollable factors include: geologic uncertainties including inherent sample variability, metal price fluctuations, variations in mining and processing parameters, and adverse changes in environmental or mining laws and regulations. The timing and effects of variances from estimated values cannot be accurately predicted.

Information on the resources within the Borealis dumps and heaps as used in this document is verbatim (section 17.3 of this report) from the January 2007 43-101 report (Noble, 2007). Dr. Steininger reviewed the data in the January 2007 43-101 report and consider it reasonable and reliable.

(This page is intentionally left blank)

4.0 Property Description and Location

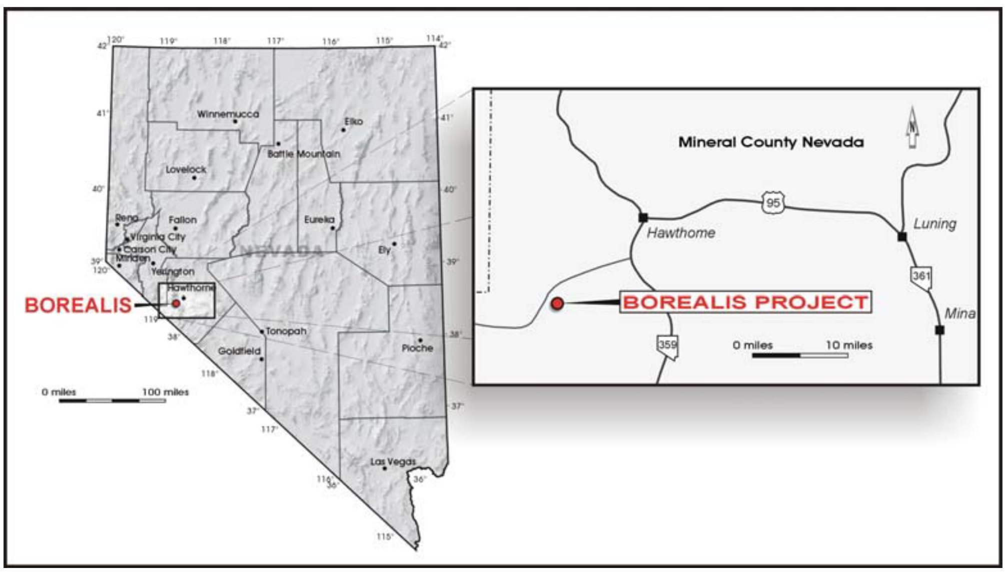
4.1 Location

The Borealis property is located in southwest Nevada, approximately 16 road miles southwest of the town of Hawthorne in the Walker Lane Mineral Belt and 12 miles northeast of the California border. Hawthorne is 133 highway miles southeast of Reno and 314 highway miles northwest of Las Vegas.

The project area is located in:

T6N, R28E	Sections 1-4, 11, and 12
T7N, R28E	Sections 25-27 and 33-36
T6N, R29E	Sections 2-24, and 27-29
T7N, R29E	Sections 30-32

Mount Diablo Meridian, Mineral County Nevada. The approximate center of the property is at lat 38º22'55" N., long 118º45'34" W. Figure 4.1 shows the location of and access to the Borealis project.



(Source: Gryphon Gold, 2005)

Figure 4.1 - Location Map of the Borealis Project

4.2 Study Area Boundaries

The defined study area falls within the boundary of the approximately 460-acre area where operating permit acquisition and other field activities are currently taking place. Two outlying areas approximately 3 miles to the northwest and 1 mile to the northeast of the central study area also have been included in the resource modeling efforts. The central and outlying study areas are wholly within the boundaries of mining claims controlled by Gryphon Gold and are coincident with the core areas disturbed by previous mining operations described in Section 18.1, Permitting.

Several known gold deposits are located within the boundaries of the area of study including, but not limited to the following: West Alluvial Deposit, Borealis, Crocodile Ridge, Deep Ore Flats (also known as Polaris), East Ridge, Freedom Flats, Gold View, Graben, Middle Ridge, Northeast Ridge, Cerro Duro, Jaimes Ridge, Purdy Peak, Boundary Ridge, and Bullion Ridge. The Cerro Duro, Jaimes Ridge, and Purdy Peak deposits are also known jointly as Orion's Belt.

4.3 Property Description and Ownership

4.3.1 General Property Description

As of August 2007, the Borealis property is comprised of 751 unpatented mining claims of approximately 20 acres each, totaling about 15,020 acres and one unpatented mill site claim of about 5 acres. Of the 751 unpatented mining claims, 128 claims are owned by others but leased to Borealis Mining Company, and 623 of the claims were staked by Golden Phoenix or Gryphon Gold and transferred to BMC.

The lands on which the claims are located were open to mineral location at the time of claim staking. There are no apparent conflicts with any privately owned land. There are some overlaps with surface improvements, such as a power line right-of-way and stock watering facilities, but those improvements do not prevent the location of mining claims. There are some minor conflicts due to slight overlap between the claims and some competitor-owned RAM claims, primarily in sections 7, 18, and 19, T. 6 N., R. 29 E. In some cases the Borealis claims are senior and would control the ground in conflict, and in some cases the opposite is true. However, all conflicts appear to be limited to the edges of adjoining claims and thus are likely to be insignificant. All of the claims are shown in the BLM records as being in good standing.

A review of federal and county land records relating to the Borealis property was done in 2003 by Parr Waddoups Brown Gee and Loveless, attorneys at law, and Roger Gash, who is a Certified Professional Landman and Nevada Commissioned Abstractor. Subsequent updates were completed in 2004 and January and May 2005. The review began with the 1996 conveyance of the property out of Echo Bay. The review of the claims did not go back to the original location dates for the various claims, some of which dated back to 1953. This was because Gryphon Gold was comfortable with the assumption that Echo Bay had successfully operated the property without legal challenges or significant problems.

4.3.2 Ownership, Purchase Agreement, and Mining Lease

Mineral rights, through BMC as the owner or lessee of the claims, allow BMC to explore, develop and mine the Borealis property, subject to the prior procurement of required operating permits and approvals, compliance with the terms and conditions of the mining lease, and compliance with applicable federal, state, and local laws, regulations and ordinances. The Company believes that all of its claims are in good standing.

The 128 leased claims are owned by John W. Whitney, Hardrock Mining Company and Richard J. Cavell, whom are referred to as the "Borealis Owners." BMC leases the claims from the Borealis Owners under a mining lease dated January 24, 1997 and amended as of February 24, 1997. The Borealis Mining Lease was assigned to BMC by the prior lessee, Golden Phoenix. The mining lease contains an "area of interest" provision, such that any new mining claims located or acquired by BMC within the area of interest after the date of the mining lease shall automatically become subject to the provisions of the mining lease. The term of the mining lease extends to January 24, 2009 but can be continued indefinitely thereafter for so long as any mining, development, or processing is being conducted on the leased property on a continuous basis.

The remainder of the Borealis property consists of 623 unpatented mining claims and one unpatented mill site claim staked by Golden Phoenix, Gryphon Gold or BMC. Claims staked by Golden Phoenix were transferred to BMC in conjunction with the January 28, 2005 purchase of all of Golden Phoenix's interest in the Borealis property. A total of 202 claims of the total 751 claims held by Gryphon Gold are contiguous with the claim holdings, are located outside of the area of interest, and are not subject to any of the provisions of the lease.

All of the mining claims (including the owned and leased claims) are unpatented, such that paramount ownership of the land is in the United States of America. Claim maintenance payments and related documents must be filed annually with the BLM and with Mineral County, Nevada to keep the claims from terminating by operation of law. BMC is responsible for those actions. At present, the estimated annual BLM maintenance fees are $125 per claim, or $94,000 per year for all of the Borealis property claims (751 unpatented mining claims plus one mill site claim).

Required documents were submitted and the fee was paid to the BLM on July 6, 2007 totaling $94,000 fulfilling the 2007 maintenance requirements for the then existing claims. In addition, county filing fees plus document fees totaling $6,400 were paid to Mineral County on August 1, 2007, in fulfillment of the annual filing requirements.

4.3.3 Royalty

Pursuant to the Borealis Mining Lease, a portion of the Borealis property which includes the 122 original core claims is subject to an NSR royalty which is computed as being the average monthly price of gold divided by 100 with the result expressed as a percentage. The initial mining operations will probably be located on the 122 claims in the core group. These initial 122 core claims expanded to 128 claims as a result of fraction filling.

The NSR cash value is determined by applying the resulting percentage to the price of gold. For example, using an assumed average monthly price of gold of $475 the NSR royalty would be 4.75 percent (net of refinery charges), which would translate into a cash cost of slightly less than $22.56 per ounce (i.e. $475 divided by 100 = 4.75 percent, 4.75 percent of $475 is $22.56 per ounce less refining charges).

As described in the terms of the Borealis Mining Lease, the Borealis property is currently subject to advance royalty payments of approximately $8,614.00 per month. These advance royalty payments are subject to adjustments in the Consumer Price Index. The Borealis Mining Lease expires in 2009 but is extendible year to year thereafter so long as any mining activity which continues on the Borealis property. Any commercial production from adjacent claims owned by others and acquired by Gryphon Gold or BMC within the Borealis project area of interest will be subject to a 2 percent NSR royalty to be paid to the Borealis Owners.

5.0 Accessibility, Climate, Local Resources, Infrastructure, and Physiography

5.1 Access

Access to the Borealis property is gained from the Lucky Boy Pass gravel road located about 2 miles south of Hawthorne from Nevada State Highway 359 (Figure 4.1). Hawthorne is about 133 highway miles southeast of Reno. The Borealis property is about 16 road miles from Hawthorne.

5.2 Climate and Physiography

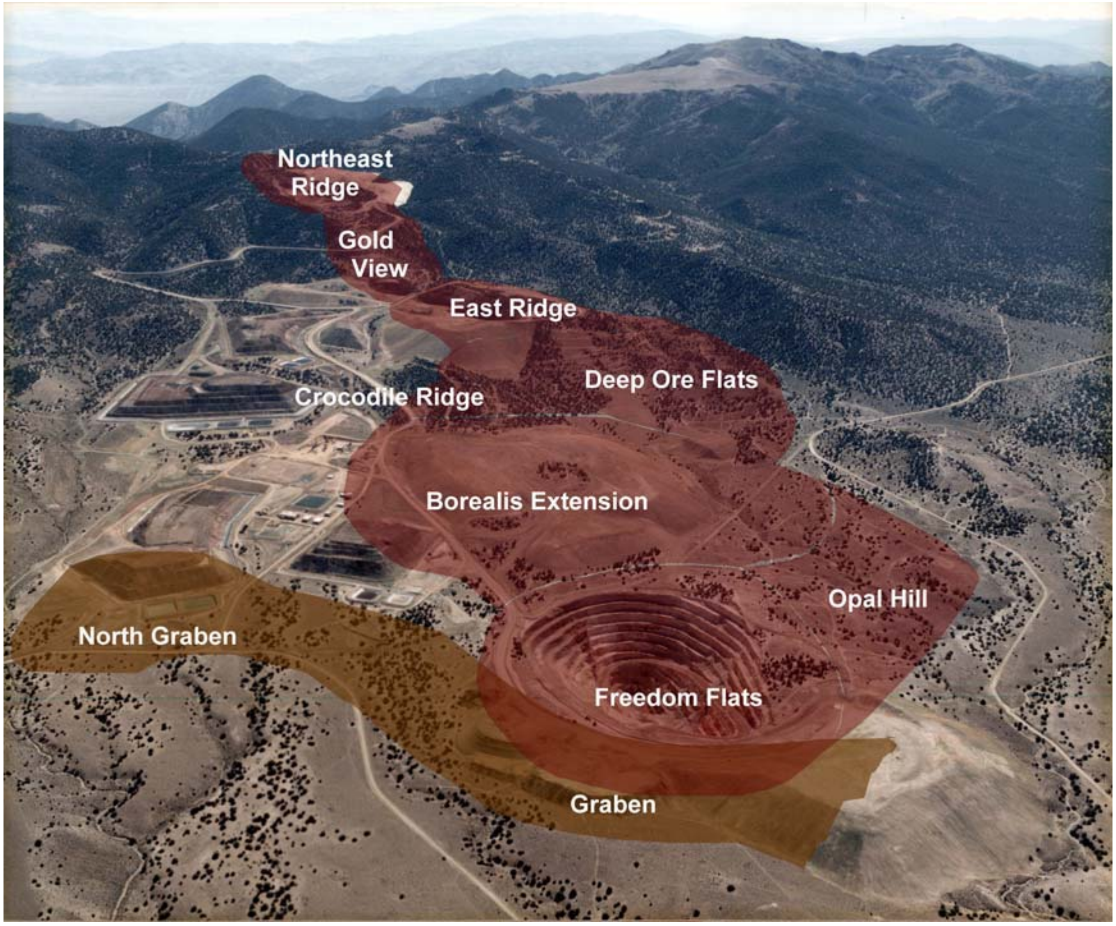
The elevation on the property ranges from 7,200 feet to 8,200 feet above sea level. Topography ranges from moderate and hilly terrain with rocky knolls and peaks, to steep and mountainous terrain in the higher elevations. This relatively high elevation produces moderate summers with high temperatures in the 90°F range. Winters can be cold and windy with temperatures dropping to 0°F. Average annual precipitation is approximately 10 inches, part of which occurs as up to 60 inches of snowfall. Historically in the 1980s, the mine operated throughout the year with only limited weather related interruptions.

The vegetation throughout the project area is categorized into six main community types: pinyon/juniper woodland, sagebrush, ephemeral drainages and areas disturbed by mining and reclaimed. Predominate species include pinyon pine, Utah juniper, greasewood, a variety of sagebrush species, crested wheat grass and fourwing saltbush in previously reclaimed areas (JBR Environmental Consultants, 2004).

5.3 Existing Site Conditions, Infrastructure, and Available Services

The Borealis project site (Figure 5.1) has been reclaimed to early 1990s standards, before new, more modern state regulations were promulgated. The pits and the project boundary are fenced for public safety. Currently, access to the pits and heap-leach areas is gained through a locked gate. No buildings or power lines located on the surface remain, although a major electrical transmission line crosses the property and lies about 2 miles from the former mining area. All currently existing roads in the project area are two–track roads with most located on the reclaimed haul roads. Water for the historical mining operations was supplied from a well field in a topographically isolated basin located approximately 5 miles south of the former Borealis Mine site.

A seismic assessment was made to help in the design of pit slopes, and heap and dump face angles based on information acquired from the U.S. Geological Survey (USGS). According to USGS data, the site is assigned with a peak horizontal free-field ground acceleration of 0.295 g for an earthquake with a 475-year return period. This equates to a 10 percent probability of that event being exceeded during a 50-year exposure period. For a facility with a 10-year life, this



(Source: Echo Bay Mines, circa 1991; modified by Gryphon Gold, 2004)

Figure 5.1 - Photograph of a Portion of the Borealis District, circa 1991
View to the East with Freedom Flats Pit in the Foreground

would equate to a 2 percent probability of exceedance during the project life. For facilities that do not impound water and their failure would not be associated with loss of life, excessive loss of property, or irreparable damage to the environment, this probability represents an acceptable level of risk.

The relatively high seismic parameters assigned to this site are due to the presence of several active faults in the area. The Wassuk Range Fault 1 and Fault 2 are located within 6 or 7 miles of the site. The faults are assigned characteristic magnitudes of 7.1 and 7.3, respectively. The return periods for such an event would be on the order of 10,000 years. For design of the pits, dumps, and heaps, a design earthquake event of magnitude 7.3 was used producing a peak horizontal free-field ground acceleration of 0.295 g. For the heap-leach facility, the free-field peak horizontal ground acceleration would be amplified by a factor estimated to be 2 to 3 as the seismic waves propagate vertically upward through the heaps. This would result in a peak crest acceleration at the top of the heap ranging from 0.59 to 0.89 g.

The nearest available services for both mineral exploration and possible future mine development work and mine operations are in the small town of Hawthorne, located about 16 miles to the northeast of the project area via a wide, well-maintained gravel road. Hawthorne has substantial housing available, adequate fuel supplies and sufficient infrastructure to take care of basic needs. For other goods and services, sources in Reno and elsewhere could supply most any material required for the development or mine operations.

(This page is intentionally left blank)

6.0 History

6.1 History of the District

The original Ramona Mining District, now known as the Borealis Mining District, produced less than 1,000 ounces of gold prior to 1981. In 1978 the Borealis gold deposit was discovered by S.W. Ivosevic (1979), a Houston International Minerals Company geologist (a subsidiary of Houston Oil and Minerals Corporation). The property was acquired through a lease agreement with the Whitney Partnership, which later became the Borealis Partnership, following Houston's examination of the submitted property. Initial discovery of ore-grade gold mineralization in the Borealis district and subsequent rapid development resulted in production beginning in October 1981 as an open pit mining and heap-leaching operation. Tenneco Minerals acquired the assets of Houston International Minerals in late 1981, and continued production from the Borealis Mine pit. Subsequently, several other gold deposits were discovered and mined by open pit methods along the generally northeast-striking Borealis trend. Also several small deposits were discovered further to the west in the Orion's Belt area. Tenneco's exploration in early 1986 discovered the Freedom Flats deposit beneath thin alluvial cover on the pediment southwest of the Borealis Mine pit. In October 1986 Echo Bay Mines acquired the assets of Tenneco Minerals.

With the completion of mining of the readily available oxide ore in the Freedom Flats deposit and other deposits in the district, active mining was terminated in January 1990, and leaching operations ended in late 1990. Echo Bay left behind a number of oxidized and sulfide-bearing gold mineral resources (Kirkham, 1987). All eight open pit operations are reported to have produced 10.7 million tons of ore averaging 0.059 opt Au (Golden Phoenix Minerals, Inc., 2000). Gold recovered from the material placed on heaps was approximately 500,000 ounces, plus an estimated 1.5 million ounces of silver. Echo Bay chose to close the mine instead of continuing development of the remaining mineral resources, because of impending new environmental closure regulations and the desire to focus on their McCoy/Cove gold-silver deposits south of Battle Mountain, Nevada. Reclamation of the closed mine began immediately and continued for several years in order to meet the deadline for the less-restrictive regulations. Echo Bay decided not to continue with its own exploration, and the property was farmed out as a joint venture in 1990-91 to Billiton Minerals, which drilled 28 RC exploration holes on outlying targets totaling 8,120 feet. Billiton dropped the property with no retained interest. Their exit was attributed to change in management direction and restructuring.

Santa Fe Pacific Mining, Inc. then entered into a joint venture with Echo Bay in 1992-93 (Kortemeier, 1993), compiled data, constructed a digital drill hole database and drilled 32 deep RC and deep core holes totaling 31,899.3 feet including a number of holes into the Graben deposit. Santa Fe Pacific had success in identifying new sulfide-zone gold mineralization, but terminated the joint venture because of reduced exploration budgets. Echo Bay completed all reclamation requirements in 1994, showcased the reclamation, and then terminated its lease agreement with the Borealis Partnership in 1996.

In late 1996, J.D. Welsh & Associates, Inc. negotiated an option-to-lease agreement for the Borealis property from the Borealis Partnership. J.D. Welsh performed contract reclamation work for Echo Bay and was responsible for monitoring the drain down of the leach heaps. During this time Welsh recognized the excellent remaining gold potential, and upon signing the lease, immediately joint-ventured the project with Cambior Exploration U.S.A., Inc. During 1997 Cambior performed a major data compilation program and several gradient IP surveys. In 1998 the company drilled ten holes totaling 10,413.5 feet which succeeded in extending the Graben deposit and in identifying new zones of gold mineralization near Sunset Wash. Cambior terminated the joint venture in late 1998 because of severe budget constraints (Benedict and Lloyd, 1998).

During the Cambior joint-venture period in late 1997, Golden Phoenix Minerals entered an agreement to purchase a portion of J.D. Welsh's interest in the property. J.D. Welsh sold his remaining interest in the property to a third party, who in turn sold it to Golden Phoenix; therefore, in 2000 the company controlled 100 percent interest in the lease (Golden Phoenix Minerals, Inc., 2000). Golden Phoenix personnel reviewed project data, compiled and validated a digital drill hole database (previously not in a computer-based resource modeling input form), compiled exploration information and developed concepts, maintained the property during the years of low gold prices, and developed new mineral resource estimates for the entire Borealis property.

In July 2003, the Borealis property was joint-ventured by Golden Phoenix with BMC, which is a wholly owned subsidiary of Gryphon Gold Corporation. BMC, the operator of the joint venture, originally controlled the property through an option agreement with Golden Phoenix whereby BMC could earn a 70 percent joint-venture interest in the property. BMC had the right to acquire its interest in the Borealis property with a combination of qualified expenditures on work programs, and/or making payments to Golden Phoenix, and/or delivering a feasibility study over a period of 5 ½ years beginning July 2003. In January 2005 BMC purchased 100 percent interest in the lease agreement and Golden Phoenix surrendered its interest in the property.

BMC and Gryphon Gold have expended a considerable effort consolidating the available historical data since acquiring an interest in the property. Files were located in the offices of Whitney and Whitney, Inc. (consultants to the Borealis Partnership), Golden Phoenix Minerals Inc., and Kinross Gold (successor to Echo Bay), all in Reno, Nevada. General information and data included, but are not limited to, a variety of historical production records, geologic reports, environmental reports, geophysical and geochemical surveys, historical land and legal documents, drill hole logs, and assay data. It is estimated that in excess of 150,000 pages of information has been located. This knowledge base has been scanned, and converted into a searchable electronic format. The electronic database has formed the basis for re-interpretation of the district geologic setting, and helped to form the foundation for a new understanding of the district's potential. Ownership of the information passed from Golden Phoenix to Gryphon Gold at the time Gryphon Gold acquired the remaining 30 percent interest from its JV partner. During 2004 and 2005-07 Gryphon Gold conducted two drilling programs.

6.2 Past Production

In the Borealis project area, several gold deposits have been defined by drilling and some have been partially mined. The past gold production from pits at Borealis, as reported by recent operating companies, is tabulated in Table 6.1. Past gold production totaled approximately 10.6 million tons of ore averaging 0.057 opt Au, although a report published in 1991 by Echo Bay Mines (Eng, 1991) indicated that 10.7 million tons of ore averaging 0.059 opt Au (635,000 ounces) was mined through 1989. Mine production resulting from limited operations in 1990 is not included in either figure. Although no complete historical silver production records still were found, the average silver content of ore mined from all eight pits appears in the range of 5 ounce of silver for each ounce of gold. It is likely that about 1.5 million ounces of silver was shipped from the property in the doré bullion.

Table 6.1 - Reported Past Borealis Production, 1981-1990

Deposit	Tons	Grade (opt Au)	Contained Gold (oz)
Crushed and Agglomerated Ore			
Borealis	1,488,900	0.103	153,360
Freedom Flats	1,280,000	0.153	195,800
Jaimes Ridge/Cerro Duro	517,900	0.108	55,900
East Ridge	795,000	0.059	46,900
Gold View	264,000	0.047	12,400
Total	**4,345,800**	**0.107**	**464,360**
Run of Mine Ore			
East Ridge	2,605,000	0.021	54,700
Deep Ore Flats (Polaris)	250,000	0.038	9,500
Gold View	396,000	0.009	3,500
Northeast Ridge	3,000,000	0.025	75,000
Total	**6,251,000**	**0.023**	**142,700**
Grand Total	**10,596,800**	**0.057**	**607,060**

Note: Eng (1991) reports that the material mined contained a total of 635,000 ounces of gold.

6.3 Borealis Property Development Background

In October 2003, Gryphon Gold engaged Behre Dolbear & Company, Inc. (Behre Dolbear), mining consultants, to develop a preliminary assessment for the redevelopment of the Borealis property. Behre Dolbear prepared a report titled *The Borealis Gold Project, Nevada: A Preliminary Scoping Study of Project Development,* dated June 7, 2004. The following information is based on this study. Portions of the following information are based on assumptions, qualifications and procedures, which are set out only in the Behre Dolbear Study. For a complete description of assumptions, qualifications and procedures associated with the following information, reference should be made to the full text of this study. It is the contributing Gryphon Gold author's opinion that the Behre Dolbear Study should be considered as preliminary in nature. Their study considered inferred mineral resources in its evaluations, which may be too speculative geologically to have economic considerations applied to them that would enable them to be considered as mineral reserves, and, therefore, there is no certainty the preliminary assessment will be realized.

In its report, Behre Dolbear described a resource estimate in which it identified measured and indicated mineral resources on the Borealis property and concluded that the Borealis property had excellent exploration potential. As a result of enhanced geologic interpretations based on detailed geologic analysis, re-logging of available core and RC samples, drilling of the preexisting heaps and dumps, and drilling of extensions of known mineralization, the mineral resources at Borealis as reported in this study were increased as presented in further detail in Section 17.0, Mineral Resource Estimates.

Behre Dolbear also analyzed the historical data on the property and produced a series of recommendations to evaluate and potentially develop the Borealis property. The principal recommendations of the Behre Dolbear Study were to:

1. Pursue a three-phase business plan to evaluate:

   a. the existing leach pads and mine dump materials for the possibility of releaching and gold production;

   b. the remaining oxide ores that could be mined and transported to the new leach pad; and

   c. the deeper high-grade sulfide mineralization.

2. Pursue the following mining scenario on the Borealis property (assuming it is determined that development of the proposed mining scenario is commercially feasible):

a. Process pre-existing heaps and dumps to provide initial feed to the heap-leach recovery plant.

b. Expand the mining operations to include the oxidized resources in areas outside the heaps and dumps in order to generate funds for further exploration and development.

c. Explore and develop the deeper sulfide mineralization of the Graben area.

According to Behre Dolbear, the principal steps to the development of the Borealis property consist of:

1. completing the permitting process;

2. continuing the drilling program and developing a feasibility study on the previously disturbed areas; and

3. building the mine facilities, if warranted by project economics.

Gryphon Gold's intention is to continue with the recommendations established in the Behre Dolbear Report with the eventual objective of developing the Borealis property, subject to discovering and developing sufficient resources to justify consideration of a mining operation. The Company acquired the principal operating permits in the first half of 2006. As of the date of this study, drilling was recently completed in the previously defined Graben resource area and in exploration targets further to the west to enhance the resource base and discover new gold deposits.

6.4 Previous Mineral Resource Estimates

Since the termination of mining by Echo Bay Mines in 1990, several companies have made estimates of the Borealis district mineral resources. Santa Fe Pacific and Cambior Exploration attempted estimates on selected portions of the property. Comprehensive estimates of all remaining mineral resources were made first by John Whitney in 1996, Whitney and Whitney, Inc. in 1999[1], Golden Phoenix in 2000 (Golden Phoenix Minerals, Inc., 1999, 2004), Behre Dolbear & Company, Inc.[2] in 2004, Noble in May 2005 in the Company's previous Canadian NI 43-101 compliant report *Technical Report of the Mineral Resources of the Borealis Gold Project Located in Mineral County Nevada, USA* (Noble, 2005), and Noble in January 2007 in a report,

---

[1] Whitney and Whitney Inc., is a well established, Reno, Nevada based management consulting firm offering business technical and management services to the minerals resource industry, assistance in the development of mining legislation taxation and investment policies and technical auditing of operations and mining reserves.

[2] Behre Dolbear and Company, Inc. is one of the oldest, continually operating mineral industry engineering and consulting firms in the world. The company specializes in performing studies and consulting for a wide range of businesses with interests in the minerals industry.

Technical Report on the Mineral Reserves and Development of the Borealis Gold Project, Located in Mineral County Nevada, USA.

Whitney and Whitney, Inc. (1999) estimated a total of 42,778,000 tons averaging 0.036 opt Au for a total of about 1,551,000 ounces Au, including 199,000 ounces Au in the heaps and stockpiles/dumps. The comprehensive estimates were compiled from data from several previous operators of the mine and estimated other mineral resources manually. Included in the Whitney and Whitney estimate is a mineral resource identified outside the model limits of this study near the area of Deep Ore Flats which contains mineralized material estimated in the range of 8,000,000 tons with an average grade of 0.030 opt Au (approximately 240,000 ounces). The data supporting this estimate has not been validated nor is the estimate to a Canadian NI 43-101 standard, and therefore it is not included in the resource inventory tabulated in this report.

Golden Phoenix (2000) completed a thorough compilation and review of the drill hole database and then estimated the mineral resources, primarily by manual methods with computer assistance and inverse-distance-power weighting (ID3) interpolation, but they did not include resources in the heaps and stockpiles. The Golden Phoenix estimate utilizes mining industry acceptable estimating techniques and parameters, but was not completed to Canadian NI 43-101 standards at the time of the estimate. As reported by Golden Phoenix (2000) in their U.S. public disclosure documents, Behre Dolbear reviewed the estimate and found it to be satisfactory.

In the report titled *A Preliminary Scoping Study of Project Development, Borealis Gold Project, Nevada* (Behre Dolbear, 2004), resources were calculated by ID3 for Freedom Flats and Graben, by the three-pass ID2 method for Deep Ore Flats (Polaris), and by the three-pass ordinary kriging method for Borealis, East Ridge/Gold View, and Northeast Ridge. The resource estimate in the Behre Dolbear Study was certified to Canadian NI 43-101 standards by their geological Qualified Person, but was not submitted for regulatory agency review because Gryphon Gold was a private Nevada company at the time of report completion. Additionally, this estimate does not reflect the increased level of geologic understanding that has been incorporated into the current model described in this technical report.

The Canadian NI 43-101 report completed by Noble in May 2005 reported a measured plus indicated mineral resource totaling 44.7 million tons with an average grade of 0.028 opt Au, containing 1.25 million ounces of gold. The report also documented an estimated inferred resource of 34.4 million tons with an average grade of 0.021 opt Au, containing about 730,000 ounces of gold.[3] In the January 2007 Canadian NI 43-101 report completed by Noble a total of

[3] Cutoff assumptions range from .005 opt to .010 opt depending on the physical characteristics if each deposit modeled. The results noted are reported as partially diluted mineral resources with allowance for surface mining with conventional mining equipment (dilution for underground mining if warranted, may be more or less than these estimates); metallurgical recovery is not applied.

35.1 million tons of measured and indicated resource with an average grade of 0.032 opt Au was reported, containing 1.12 million ounces of gold. The report also documented an inferred resource of 16.91 million tons with an average grade of 0.028 opt Au, containing about 470,000 ounces of gold.[3] The 2007 Noble report also documented an indicated resource of about 6.1 million tons with an average grade of 0.016 opt Au (97,600 ounces of gold) in the heaps, and an inferred resource of 14.1 million tons with an average grade of 0.010 opt Au in the heaps and dumps.

Table 6.2 - Comparison of Historical Post-Mining Resource Estimates

	Measured + Indicated			Inferred		
	k tons	opt	k oz	k tons	opt	k oz
In situ Resources						
Whitney & Whitney, Inc.	25,038	0.054	1351	2,700	0.022	60
Golden Phoenix Minerals, Inc.	33,399	0.044	1455	-	-	-
Behre Dolbear & Company, Inc.	14,822	0.040	594	12,125	0.048	583
Resource in Heaps and Dumps						
Whitney & Whitney Inc.	17,750	0.011	199	-	-	-
Golden Phoenix Minerals, Inc.	-	-	-	-	-	-
Behre Dolbear & Company, Inc.	-	-	-	16,312	0.019	304

Notes:

1 All estimates include resource estimates from Borealis, Freedom Flats, Polaris, East Ridge, Cerro Duro, Jamies Ridge and Purdy Peak and immediately adjacent contiguous resource zones.

2 Resource estimates by Whitney and Whitney, Inc. and Golden Phoenix Minerals, Inc. are not reported to current NI 43-101 standards (Whitney, 2004).

3 Behre Dolbear and Company, Inc. (2004) has certified that their resource estimate is compliant with NI 43-101 standards, but the report has not been submitted for regulatory agency review.

4 Cutoff grades are not reported for the Whitney and Whitney, Inc. estimate; the Golden Phoenix Minerals, Inc. estimate cutoff is .008 opt; and the Behre Dolbear cutoff is 0.010 opt. Metallurgical recovery is not applied.

6.5 In-Situ Mineral Resources at Boundary Ridge/Bullion Ridge

The Boundary Ridge/Bullion Ridge zone is located about 1 mile east of the Northeast Ridge and East Ridge resource areas. No recent commercially scaled mining took place in this area. Previously the Boundary Ridge/Bullion Ridge zone was not fully covered by the core group of mining claims controlled by Gryphon Gold, but new mining claims in this area were located by Gryphon Gold. Geologic mapping, sampling, and drilling of more than 70 holes was completed in this general area by previous operators. A Boundary Ridge/Bullion Ridge zone inferred resource estimate was completed by Whitney and Whitney, Inc., (1999) as shown in Table 6.3. This estimate has not been calculated to current Canadian NI 43-101 standards, nor has it been verified for this study, and should not be relied upon.

Table 6.3 - Historical Mineral Resource Estimate of the Boundary Ridge/ Bullion Ridge Zone (Whitney and Whitney, Inc., 1999)

Resource Class	Resource Zone	Cutoff (opt)	Tons (1000s)	Grade (opt)	Combined Oz Gold (1000s)
Inferred	Boundary/Bullion Ridge Zone	Not Available	2,700	0.022	60

Note: This estimate is not to Canadian NI 43-101 standards and was not reviewed or audited for this report.

(This page is intentionally left blank)

7.0 Geologic Setting

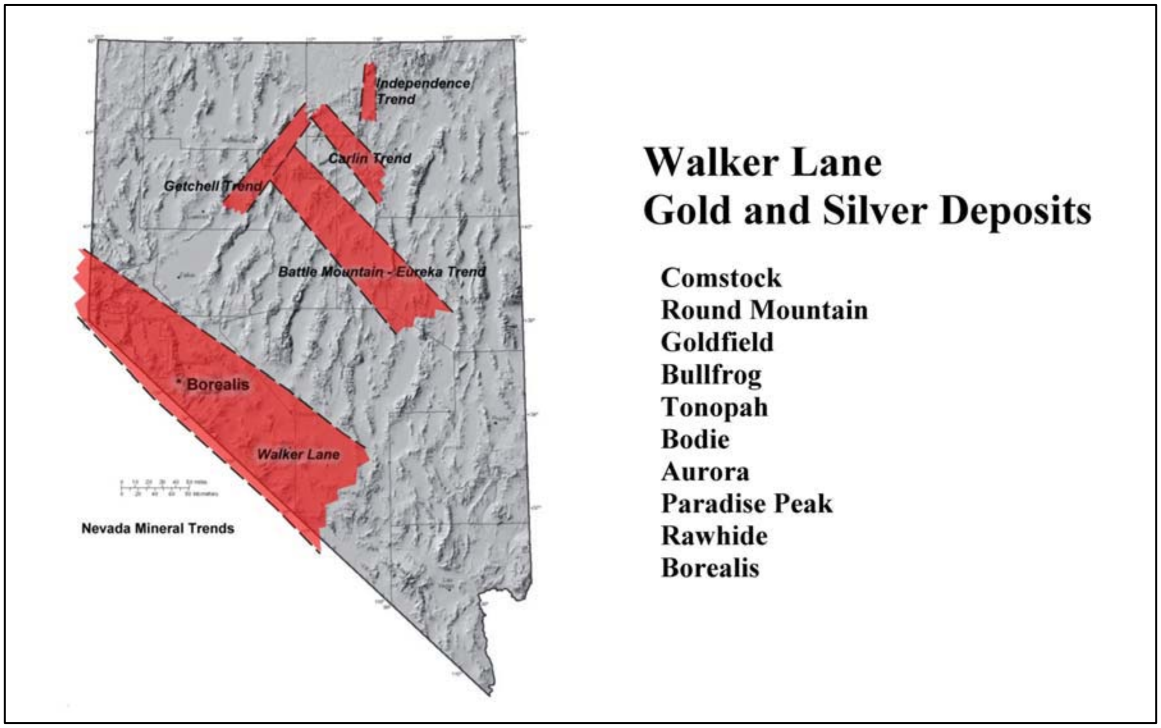
7.1 Introduction

This section has been compiled in association with Gryphon Gold's geologic staff, which includes Roger C. Steininger, Ph.D., CPG (AIPG), Chief Consulting Geologist, and Mr. Steven D. Craig, CPG (AIPG), Vice President of Exploration. Over the past 3 years, the geological information for the Borealis property has been continuously updated from the May 2005 Canadian NI 43-101 Technical Report. Additional information obtained includes:

- Drilling additional holes,
- Concurrent logging of new drill cuttings,
- Developing a better understanding of the systematic changes in alteration mineralogy and geochemistry utilizing multi-element analyses and applied reflectance spectroscopy,
- Conducting geophysical surveys,
- Re-logging of historical core and drill cuttings, and
- Re-interpreting historical geological and geophysical data.

7.2 Regional Geology

The Borealis Mining District lies within the northwest-trending Walker Lane Mineral Belt of the western Basin and Range Province, which hosts numerous gold and silver deposits, as shown on Figure 7.1. The Walker Lane structural zone is characterized by regional-scale, northwest-striking, strike-slip faults, although none of these are known specifically in the Borealis district. Mesozoic metamorphic rocks in the region are intruded by Cretaceous granitic plutons. In the Wassuk Range the Mesozoic basement is principally granodiorite with metamorphic rock inclusions (Eng, 1991). Overlying these rocks are minor occurrences of Tertiary rhyolitic tuffs, and more extensive andesite and dacite flows and pyroclastics. Near some fault zones, the granitic basement rocks exposed in the eastern part of the district are locally weakly altered and limonite stained.



(Source: Gryphon Gold Corporation, 2005)

Figure 7.1 - Walker Lane Gold and Silver Deposits

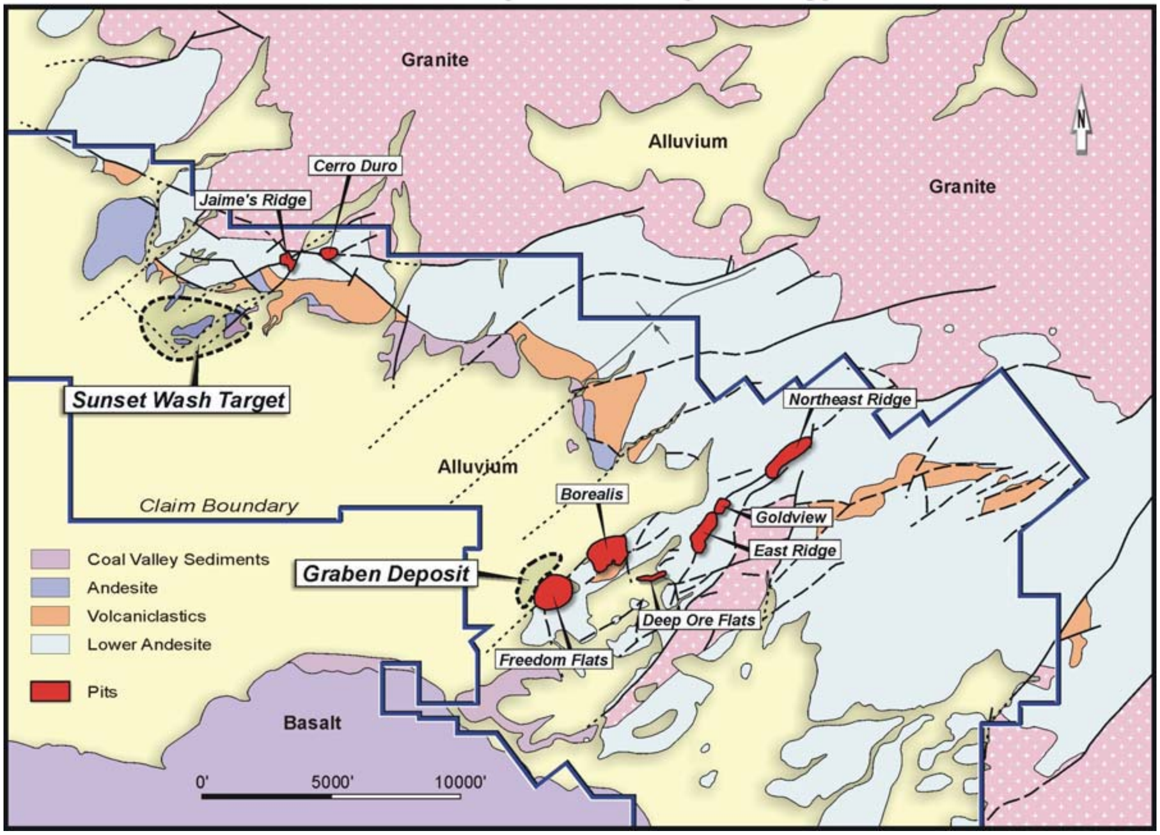
The oldest Tertiary rocks are rhyolitic tuffs in small isolated outcrops, and most of these tuffs were probably eroded prior to the deposition of the younger volcanic rocks in the Borealis area. The rhyolitic tuffs may be correlative with regionally extensive Oligocene rhyolitic pyroclastics found in the Yerington area to the north and within the northern Wassuk Range. On the west side of the Wassuk Range, a thick sequence of older Miocene andesitic and dacitic volcanic rocks unconformably overlies and is in fault contact with the granitic and metamorphic rocks, which generally occur east of the Borealis district. The ages of the andesites and dacites are poorly constrained due to limited regional dating, but an age of 19 to 15 Ma is suggested. (Ma refers to million years before present.). In the Aurora district, located 10 miles southwest of Borealis, andesitic agglomerates and flows dated at 15.4 to 13.5 Ma overlie Mesozoic basement rocks and host gold-silver mineralization. Based on these data, a broader age range for the andesites in the Borealis region can be considered as 19 to 13.5 Ma.

Rocks of the Miocene Wassuk Group locally overlie andesites/dacites and underlie much of Fletcher Valley, a late Tertiary structural basin located west of the Borealis Mine area. The Wassuk Group is up to 8,200 feet thick near its type locality, but is much thinner in the Borealis district where its Coal Valley member is found. Much of the Wassuk Group sedimentary rocks in the Borealis area have been removed by erosion. The Wassuk Group consists of a sequence of interbedded, fluviolacustrine, andesitic/dacitic sedimentary rocks with less abundant andesitic lava flows near its base, and it ranges in age from 13 to 8 Ma. Pliocene and Quaternary fanglomerates and pediment gravels overlie the Wassuk Group, or overlie the older andesite/dacite where the Wassuk Group is missing, and thicken in the direction of Fletcher Basin to at least 300 feet.

The Borealis Mining District lies within the northeast-trending (Bodie-) Aurora-Borealis Mineral Belt. The Aurora Mining District with 1.9 million ounces of past gold production (Vanderburg, 1937) lies 10 miles southwest of Borealis, and the Bodie Mining District with 1.5 million ounces of gold production lies 19 miles southwest of Borealis in California (Silberman and Chesterman, 1991). All three mining districts are hosted by late Tertiary volcanics. The intersection of northwesterly and west-northwesterly trending structures of the Walker Lane with the northeasterly trending structures of the Aurora-Borealis zone probably provided the structural preparation conducive to extensive hydrothermal alteration and mineralization at Borealis.

7.3 Local Geology

The Borealis district mineralization is hosted by upper and lower Miocene pyroclastics/tuffs, andesite and dacite flows and breccias, and, to a lesser degree, laharic breccias, which together exceed 1,000 feet in thickness, strike northeasterly, and dip shallowly to the northwest (Figure 7.2). The andesite is divided into upper and lower volcanic packages, which are laterally extensive and constitute the predominant bedrock in the past-producing part of the district. These units host most of the gold ore deposits, and the most favorable host horizon is the pyroclastic unit at the base of the upper andesite and the tuffaceous contact zone between the two andesite/dacite units. An overlying upper tuff is limited in aerial extent due to erosion (Eng, 1991). All of these units are cut by steeply dipping northeast-trending, west-northwest-trending, and north to north-northeast-trending faults that probably provided conduits for mineralizing hydrothermal fluids in the principal mineralized trend. Pediment gravels cover the altered-mineralized volcanic rocks at lower elevations along the range front and overlie many of the best exploration targets. Wide-spaced drilling indicates that pediment gravels cover the majority of the altered-mineralized area over a 7-mile long zone in the southern and southwestern parts of the district. Much of this area has received only minor testing with systematic multidisciplinary exploration. Figure 7.2 illustrates the local geology of the Borealis district and project area.



(Source: Echo Bay Mines, circa 1989, modified to reflect new property boundaries by Gryphon Gold, 2005)

Figure 7.2 - Geologic Map of the Borealis Project Area

7.4 Miocene and Younger Rocks

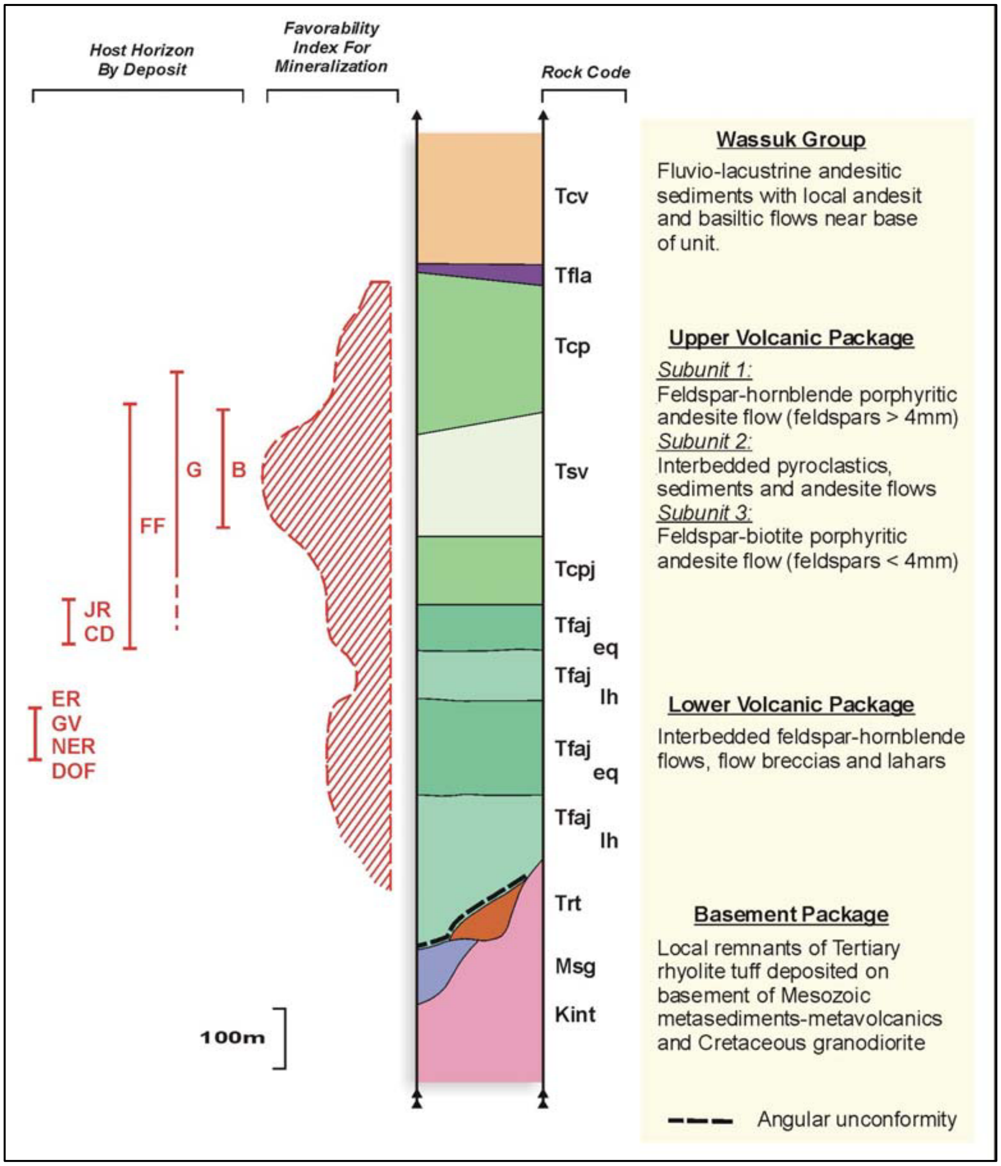
The lower andesite unit in the productive Borealis trend is the oldest volcanostratigraphic unit and is composed predominantly of andesitic flow breccias with less abundant lava flows and minor lahars. The unit is often mottled, ranging from light gray-green to purple-brown. The rocks typically are weakly porphyritic, containing phenocrysts of small feldspars and minor hornblende and biotite. Flow breccias consist of andesite clasts in the weakly altered groundmass of feldspar and clay minerals. These features cause the unit to be poorly indurated and incompetent. The lower andesite unit exceeds 500 feet in thickness and lies unconformably on, or is in fault contact with, Mesozoic basement rocks. The unit is not a favorable host rock, and only minor gold production has been derived from it.

The upper andesite unit is composed of green-gray, weakly to moderately porphyritic andesite lava flows that are more indurated and massive than those of the underlying lower andesite. These lavas contain 10 to 25 percent phenocrysts of feldspar with less abundant phenocrysts of biotite, hornblende, and pyroxene. An intermediate subunit in the lower part of the upper andesite consists of interbedded pyroclastic tuffs and sediments that host the greatest amount of gold mineralization. This unit is as much as 300 feet thick in the Freedom Flats deposit, and it is known to host ore-grade mineralization in each of the deposits of the district.

Overlying the andesite units is the upper tuff. This unit consists of a complex interbedded sequence of volcanoclastic sedimentary rocks, lava flows of intermediate to mafic composition, and less abundant tuffs. The upper tuff is host to some of the gold mineralization in the Freedom Flats and Borealis deposits. Figure 7.3 shows the volcanostratigraphic section in the Borealis district.

Overlying the upper tuff is the post-mineralization Wassuk Group, including the clastic sediments of the Coal Valley Formation, which consists of weakly cemented gravel, sandstone to conglomerate, and ash units, all of which appear to be locally derived. Lying above the Wassuk Group are Pliocene and Quaternary pediment gravels. The older gravel contains abundant clasts of opaline and chalcedonic silica. The younger gravel contains clasts of unaltered and propylitized andesitic/dacitic country rocks with less abundant clasts of silicified rock.

Intrusive rocks found in the Borealis area are often difficult to recognize due to intense alteration of both the host rocks and intrusive rocks. In the Freedom Flats pit, a fine- to medium-grained intrusive feldspar-biotite dacite porphyry that is relatively fresh to argillized was identified and contains up to 40 percent phenocrysts. This intrusion may be related to the igneous heat engine that drove the gold-bearing hydrothermal system in the Borealis district.



(Source: Gryphon Gold Corporation, based on information from Cambior Exploration, 1998)

Figure 7.3 - Volcanostratigraphic Section in the Borealis District

7.5 Structure

Regional structural trends that are important in the district are dominantly northeast-striking normal faults with steep dips and west-northwest-striking range-front faults with steep southerly dips. In addition, north to north-northeast-striking structures that host the Graben deposit and other exploration targets occur locally within the district. A pattern of northeast-trending horsts and grabens occur in the district according to Eng (1991). Two of the fault systems lay on regional trends of known mineralized systems, and Borealis appears to be at a major intersection of these mineralized trends. A number of the pre-mineral faults of all three orientations in the district may have been conduits for higher-grade hydrothermal mineralization, which often followed the planes of the faults and formed high-grade pods or "pipes." Movement along most of the faults in the Borealis district appears to be normal although some faults also display a strike-slip component of movement. Along the Borealis trend where most mining occurred in the district, rocks are mostly down dropped on the northwest side of northeast-trending faults, which forms part of a graben in which the Graben deposit occurs beneath thick alluvial gravels. The Graben deposit appears to be controlled by a north-northeast-trending structural zone dipping steeply to the east, and structures of this orientation are being recognized as more common in the district than previously thought.

All of these major faults acted as conduits for hydrothermal fluids or loci for development of mineralized hydrothermal breccias and silicification. Emplacement mechanisms of the ore deposits included hydrothermal brecciation concurrent with, and followed by, pervasive silicification and sulfide/precious metal introduction within or adjacent to feeder structures. It is likely that some deposits, such as the high-grade pod in the Freedom Flats deposit, may have been initially localized along the intersections of small second order faults with the major feeder structures. In plan view, these high-grade pods are relatively small, and diligent effort is required to locate and define them.

In the western part of the Borealis district where the Cerro Duro, Jaimes Ridge, and Purdy Peak deposits occur, structures are predominantly west-northwest-trending normal faults including some that separate Mesozoic granites from the Miocene volcanic rocks. These faults are responsible for localizing some of the mineralization in this part of the district along with northeast-trending faults. Post-mineral movement of a series of the west-northwest trending, range-front faults suggest a progressive down dropping of the southern blocks toward the valley floor. A secondary set of structures is northeast striking and also may control alteration and mineralization trends on the pediment.

Speculation on the occurrence of a volcanotectonic depression or a caldera in the Borealis district is tentatively supported by aeromagnetic anomalies that form two or more circular patterns beneath the pediment. Surface geology features are not definitive in identifying these structures, however; and confirmation of these possible volcanic structures and associated distinctive volcanic stratigraphy will depend on the results of drill holes that will explore the pediment area.

Post-mineral faulting is common and needs to be identified accurately, especially where ore-grade material is terminated or offset by faulting. Post-mineral faulting may be oriented: (1) west-northwesterly paralleling the range front, (2) northeasterly paralleling the other dominant regional and district faulting, and likely (3) northerly, by reactivating pre-mineral structures that likely controlled Graben mineralization. Post-mineral faulting has displaced portions of several of the previously mined deposits.

8.0 Deposit Types

This section has been compiled in association with Gryphon Gold's geologic staff, which includes two "Qualified Persons" for the purpose of Canadian NI 43-101, Standards of Disclosure for Mineral Projects: Roger C. Steininger, Ph.D., CPG (AIPG), Chief Consulting Geologist, and Mr. Steven D. Craig, CPG (AIPG), Vice President of Exploration.

8.1 Hydrothermal Gold Deposits

The Borealis hydrothermal system is recognized as a high-sulfidation-type system, generally with high-grade gold occurring along steeply dipping structures and with lower grade gold surrounding the high grade and commonly controlled by volcanic stratigraphy in relatively flat-lying zones. Gold deposits with minor silver are hosted by Miocene pyroclastics/tuffs, andesitic flows and flow breccias, dacite flows, and, to a lesser degree, laharic breccias, which are all reported to strike northeasterly and dip shallowly to the northwest. In the areas of some fault zones, the granitic basement rocks are weakly altered and limonite stained. Pediment gravels cover the altered-mineralized volcanic rocks at lower elevations along the mountain front, and there is potential for discovery of more blind deposits, similar to the Graben.

The Borealis hydrothermal system is defined as high-sulfidation (acid sulfate) based on the following features: presence of advanced argillic alteration with alunite, dickite, pyrophyllite, and diaspore deeper in the system; presence of large bodies of opaline silica; presence of many zones of acid leaching with feldspar phenocrysts removed leaving "vuggy" silica rock; presence of minor amounts of enargite; lack of adularia; and high iron-sulfide content, principally pyrite with minor marcasite.

Structures controlling ore deposits are both northeast-striking faults and generally west-northwest-striking faults. Another strong control within the district is a series of north to north-northeast-trending structures that host the Graben deposit and other exploration targets. Steeply dipping faults in the district may have been feeders for high-grade gold deposits. High-grade zones were likely to be formed by more than one episode of hydrothermal, possibly explosive, brecciation and silicification with accompanying metallic minerals. The vertical high-grade zone in the Freedom Flats deposit probably formed through this mechanism along a northeast-trending structure.

The Graben system appears to be localized along an elongate north-northeast-trending structural zone containing two or more high-grade pods that plunge steeply (45^0 to 60^0) to the east. Hydrothermal brecciation and pervasive silicification are also common to the Graben system. The Graben deposit is somewhat different than other deposits in the district. Both the low-grade gold zone and hydrothermal brecciation are more extensive. Within the low-grade gold aureole are at least two apparently separate high-grade gold zones. Resource modeling identifies continuity of the moderate to high-grade zone for 2,000 feet in length and from 50 to 200 feet wide. There are less developed and extensive "vuggy" silica zones (Buchanan, 1981). Additionally, the apparent structural control has a north-northeasterly orientation, which was considered to be unusual in the district but is becoming more prominent as geophysical surveys are conducted. Due to extensive gravel cover in the pediment environment, additional blind deposits such as the Graben are expected to be discovered as exploration progresses beneath the alluvium cover.

Other gold deposits in the district have similar alteration features but may have been developed by less explosive events. In these other systems, gold-bearing mineralizing fluids migrating upward along fault zones intersected favorable lithologic horizons where the gold-bearing fluids moved laterally and deposited lower grade mineralization. This process created gold deposits that have a flat-lying attitude and appear to be lenticular in section. The original Borealis deposit and the lower-grade portions of the Graben deposit are examples. The Graben deposit has components of both styles of mineralization.

The surface "footprints" of the high-grade pods found to date are rather small, and they can be easily missed with patterns of too-widely spaced geophysical surveys and drill holes. Once a higher-grade zone is suspected, fences of drill holes with a 100-foot spacing should be conducted and a 50-foot spacing may be required, but even this spacing may not be adequate to accurately define the high grade within the zones. Eng (1991) describes the underestimation of grades in the Freedom Flats deposit due to the drill holes missing small very high-grade pods (>0.5 opt Au) of mineralization and to possible loss of fines during drilling. Another aspect not covered by Eng, but one that has become extremely important, is the orientation of drill holes with respect to controls of the mineralized zones. Because much of the high-grade gold occurs along steeply dipping structures, the mineralized zones can best be defined by angle drill holes oriented approximately normal to the dip of the controlling features. Most of the drilling on the property, including the Graben deposit, is vertical and therefore did not sample adequately the steeply dipping higher-grade zones. Drill hole orientation has compounded the underestimation of grades within the district. A coarse gold component has been considered but not proven, and if present, it can be captured with very careful sampling of drill cuttings and core, collecting large samples, and special assaying techniques.

Most deposits mined in the district, including the Borealis, have a generally flatter tabular shape, and they may have formed parallel to, and within, permeable portions of gently dipping pyroclastic/tuff units, volcanic flows and flow breccias and along contact zones between lithologies. Beneath the northwest margin of the former Borealis Pit, additional flat-lying gold zones of the Borealis Extension and another deeper zone are found. Steeply dipping high-grade feeder structures have been identified within the original Borealis deposit and extend beneath the pit. Similarly, other steeply dipping high-grade feeder structures have been identified within other deposits and can be projected below the limit of drilling. Substantial drilling is required to define the extent of these mineralized zones.

8.2 Graben Breccias

The core of the Graben deposit is characterized by a complex hydrothermal breccia that hosts most of the gold mineralization and extends vertically and laterally beyond the limits of the deposit. The form of the breccia is imperfectly known, but there are indications that it has steeply dipping roots and flares near its top into a sub-horizontal zone that may be controlled by lithology or contact zones. Several varieties of breccia are present, many of which may be variations of the same event. Two units seem to have consistent crosscutting relationships in several core holes; therefore, at least two periods of brecciation are present. The younger unit is light gray, and it intrudes the older black breccia. The light-gray breccia contains about 40 percent clasts that are matrix supported. Typically, the clasts are from a few millimeters to a few centimeters across in an extremely fine-grained light-gray siliceous matrix. The majority of the clasts contain 100 percent texture-destructive secondary silicification. In a few areas, clasts of moderately silicified and weakly argillized welded tuff and siltstone occur. This breccia commonly contains 1 to 5 percent pyrite, most of which is in the matrix.

The black breccia contains a variety of sub-textures that will be described together as part of this breccia, but it is recognized that some, or all, of these could be separate brecciation events. Black breccia contains 40 to 60 percent clasts up to 10 cm across in a dense siliceous matrix. Clasts are matrix supported and consist primarily of dark gray to black highly siliceous material of unknown origin with lesser amounts of silicified andesite, welded tuff, and massive iron sulfide clots. In places, the unit is extremely black and sooty as if there is an organic component or, alternatively, very fine-grained sulfides. Several of the drill holes pass from the breccia into altered andesite. The contact zone is characterized by a gradational decrease in brecciation into unbrecciated silicified andesite over a distance of a few feet. There is also a corresponding decrease in the amount of silicification into argillized andesite.

Two of the more common textures within the black breccia are zones of banded matrix with few, if any, clasts and areas of vuggy textures. The banded zones typically occur with the banding at high-angles to the core axis. The areas of vuggy texture appear similar to other areas of “acid leaching” on the property. Generally, the cavities are lined with quartz and pyrite. All of the breccias are cut by at least two periods of quartz veins, the oldest of which is white quartz up to 10 mm wide, and the younger is dark quartz-pyrite veins that are up to 5 mm wide and cut the white quartz veins. Pyrite and minor marcasite are concentrated in the matrix where clots of >50 percent iron sulfides are common. Generally, the matrix contains 5 to 25 percent iron sulfides while the clasts contain 1 to 5 percent iron sulfides. The only feature within the breccia that seems to correlate with high grades of gold mineralization is the abundance of quartz veining of either type. While all of the breccias contain iron sulfides, not all breccias contain gold.

8.3 Gold in Alluvium

Several drill holes to the north and northeast of Freedom Flats and west of the former Borealis Pit encountered gold within the alluvium generally at the contact with, and above the underlying Coal Valley Formation sediments. These holes trace a gold-bearing zone that in plan appears to outline a paleochannel of a stream, or a gently sloping hillside, that may have had its origin in the eroding Borealis deposit. The zone is at least 2,500 feet long, up to 500 feet wide, and several tens to a hundred feet thick. An initial estimate of the average grade of this zone is about 0.005 opt Au. At this point, it is unknown if this is a true placer deposit or alluvial deposit of broken ore or some combination of both. Additional drilling and beneficiation tests are needed to determine if an economic concentration of gold exists in the alluvium. Noble (2007) estimated that this material contains an indicated resource of about 760,000 tons with an average grade of 0.009 opt Au and an inferred resource of about 701,000 tons with an average grade of 0.007 opt Au. No drilling was completed in the area of this deposit since the 2007 report.

9.0 Mineralization

This section has been compiled in association with Gryphon Gold's geologic staff, which includes "Qualified Persons" for the purpose of Canadian NI 43-101, Standards of Disclosure for Mineral Projects, Roger C. Steininger, Ph.D., CPG (AIPG), Chief Consulting Geologist, and Mr. Steven D. Craig, CPG (AIPG), Vice President of Exploration.

9.1 Introduction

Alteration and mineralization most closely associated with ore-grade mineralization are vuggy fine-grained silica, iron sulfides, and quartz veining, and hydrothermal breccia is also common. Alteration patterns grade outward from the central vuggy silica zone with variable alunite and dickite to a zone that may contain kaolinite, quartz, pyrite, dickite, and diaspore, which then grades outward into montmorillonite and pyrite, and finally to an outermost propylitic halo with minor pyrite (Figure 9.1). Advanced argillic alteration with alunite/dickite may overlap the kaolinite-bearing zones. The silver to gold ratio generally averages 5:1 in the ore zones, and silver commonly forms a discontinuous halo around, and overlaps, the central gold mineralization. In addition, gold deposits are commonly surrounded by a halo of much lower grade gold mineralization that generally exceeds 0.002 opt Au. Arsenic and antimony are strongly anomalous in a broad envelope around gold deposits. Recent fieldwork identified an early stage of chalcedonic silica alteration with pyrite containing elevated trace elements such as arsenic, antimony, and mercury, but it is largely devoid of precious metals mineralization. Recognition of this early, barren silica alteration is important so that it can be avoided when locating and optimizing drilling programs, although blind gold-bearing systems could underlie the barren silica. Post-mineral faulting is common, and needs to be identified accurately, especially where ore-grade mineralization is displaced or terminated by faulting.

Finely disseminated gold found in the Borealis mineralized system was initially enclosed within pyrite. In some portions of the deposits, through natural oxidation, the pyrite was converted to limonites and the gold was released; thus gold was made available to extraction by cyanidation. Limited evidence suggests coarse gold exists, possibly in the high-grade zones. Gold still bound in pyrite or pyrite-silica is not easily recovered by a simple cyanide heap-leach operation, and some type of milling operation would be anticipated.

9.2 Oxidized Gold Mineralization

Oxidized deposits in the district have goethite, hematite, and jarosite as the supergene oxidation products after iron sulfides, and the limonite type depends primarily on original sulfide mineralogy and abundance. Iron oxide minerals occur as thin fracture coatings, fillings, earthy masses, as well as disseminations throughout the rock.

Depth of oxidation is variable throughout the district and is dependent on alteration type, structure, and rock type. Oxidation ranges from approximately 250 feet in argillic and propylitic altered rocks to over 600 feet in silicified rocks that are also fractured. A transition zone from oxides to sulfides with depth is common with a mixing of zones containing oxide and sulfide minerals.

Except for the Graben deposit, all of the known gold deposits are at least partially oxidized. Typically the upper portion of a deposit is totally oxidized and the lower portion is unoxidized, and there is an extensive transition zone of partially oxidized sulfide-bearing gold mineralization. Oxidation has been observed as deep as 1,000 feet below the surface. Therefore, there is reason to believe that if additional gold deposits are found under gravel cover, some portion of them may be oxidized.

9.3 Gold-Sulfide Mineralization

Gold-sulfide deposits in the district are mostly contained within quartz-pyrite alteration with the sulfides consisting mostly of pyrite with minor marcasite, and lesser arsenopyrite and cinnabar. Many trace minerals of copper, antimony, arsenic, mercury, and silver have also been identified. Pyrite content ranges from 5 to 20 volume percent with local areas of nearly massive sulfides in the quartz-pyrite zone and it occurs with grain sizes up to a few millimeters. Euhedral pyrite grains are commonly rimmed and partially replaced with a later stage of anhedral pyrite overgrowths (Eng, 1990, 1991). Study of this phenomenon in other epithermal districts in Nevada has shown that gold occurs only in the late overgrowths.

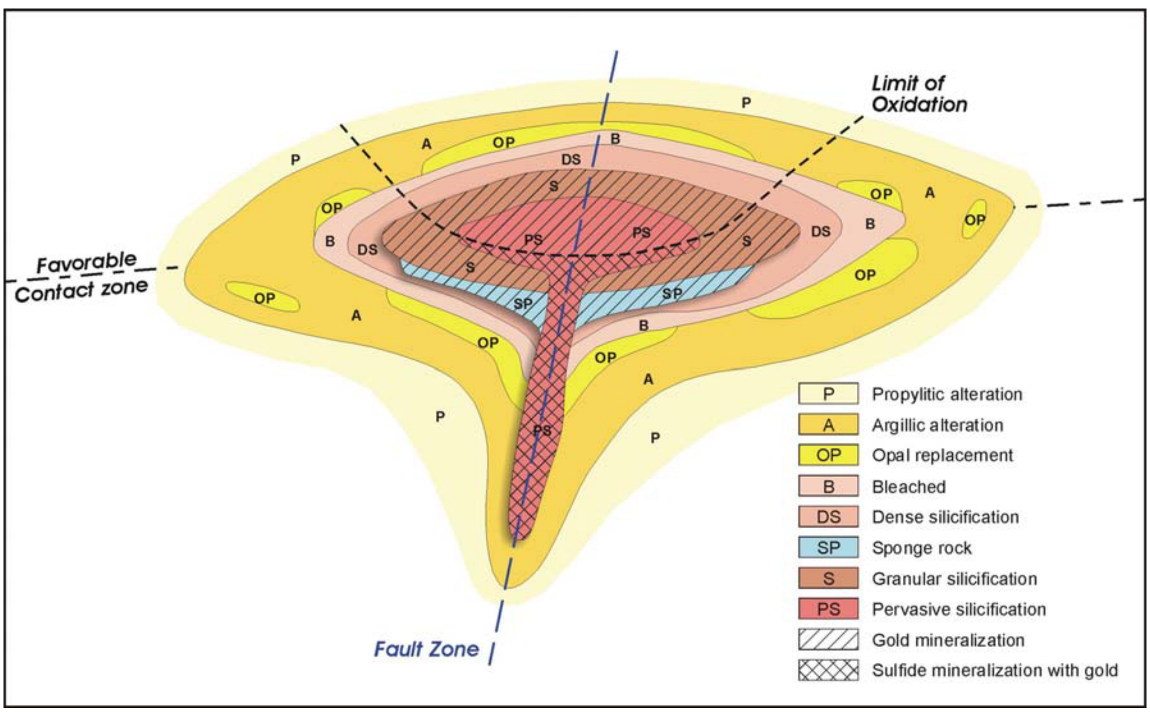
The Graben deposit is the best example found to date of the size and quality of gold-sulfide deposits within the district. In addition, gold-sulfide resources occur in the bottoms of most of the pits, most significant of which is beneath the Freedom Flats Pit. Potential targets below most pits would include the feeder structures, many of which would be expected to have high-grade gold-sulfide mineralization.

Within the lower-grade gold zone mineralization in the Graben deposit there are at least two large pods of high-grade gold, based on a 0.10 opt Au cutoff. The shape and extent of each is imperfectly known. These pods plunge 45^0 to 60^0 to the east-southeast, are traceable for at least 400 feet down plunge, and are part of a zone of intermediate to high grade that is continuous throughout the length of known Graben mineralization. Some of the holes intercepting the Graben have spectacular grades and thickness reminiscent of the long vertical intercepts in the Freedom Flats deposit. Examples of these intercepts in Freedom Flats include the following drill holes: FF-50 with 60 feet averaging 0.232 opt Au; FF-173 with 55 feet averaging 0.512 opt Au;

FF-223 with 20 feet averaging 0.470 opt Au and 75 feet averaging 0.241 opt Au; FF-229 with 110 feet averaging 0.856 opt Au, and GGCG-07 with 170 feet averaging 0.21 opt Au.

Much of Gryphon Gold's drilling since the January 2007 report was focused on the Graben deposit. An update of the resource estimate incorporating the new holes is presented in Section 17 of this report.

Hydrothermal alteration displays systematic patterns around the Graben's gold mineralization and other deposits in the district (Figure 9.1). Based on observations from re-logging drill core and sample cuttings from the Coal Valley Formation above the mineralized zone in the Graben, there is abundant opal alteration and hematite that probably represents the upper portion and the last stage of the hydrothermal system. This changes downward into an argillic zone that contains alunite and dickite in the inner portion. The base of the argillic zone, above sulfide mineralization, is commonly the base of the oxidized zone, suggesting that at least a portion of the clay minerals may be supergene. Below the limit of oxidization, within areas of gold mineralization, silicification is the most common alteration type. Drill holes at the margin of the deposit commonly intersect sulfide-bearing argillic alteration. The lack of silicification above the oxide boundary and argillization below the limit of oxidization indicates that at least a portion of the argillic alteration is hypogene. The upper portions of the silicified zone are



(Source: Echo Bay Mines, circa 1989)

Figure 9.1 - Typical Alteration Patterns of the Borealis District Gold Deposits

commonly dense chalcedonic quartz with pyrite. Toward the center of the silicified zone quartz becomes grainy and in places is gray spongy or vuggy silica typical of “acid leached” alteration.

As noted above, the Graben deposit has a large sub-horizontal, low-grade zone surrounding steeply dipping high-grade zones. Whereas gold is mostly restricted to the breccia, not all of the breccia is gold bearing. Most of the pyrite occurs as disseminations in silicified rock, which is mostly in the hydrothermal breccia. Minor amounts of iron sulfide occur in veins and on rims of clasts. Iron sulfides extend beyond gold mineralization. Limited attempts at ore microscopy have identified only a few grains of free gold, generally <1 mm across (Bloomstein, 1992). Most of the gold in the sulfide zone is reported to be within pyrite grains.

10.0 Exploration

This section has been compiled in association with Gryphon Gold's geologic staff, which includes "Qualified Persons" for the purpose of Canadian NI 43-101, Standards of Disclosure for Mineral Projects, Roger C. Steininger, PhD, CPG (AIPG), Chief Consulting Geologist, and Mr. Steven D. Craig, CPG (AIPG), Vice President of Exploration.

10.1 Introduction

Since the late 1970s, exploration completed at the Borealis property focused on finding near surface deposits with oxide-type gold mineralization. Exploration work consisted of field mapping, surface sampling, geochemical surveys, geophysical surveys, and shallow exploration drilling. Only limited drilling and geological field work was conducted in areas covered by pediment gravels, even though Freedom Flats was an unknown, blind deposit, without surface expression when discovered.

Many geophysical surveys were conducted by others in the Borealis district since 1978. In addition, regional magnetics and gravity maps and information are available through governmental sources. The most useful geophysical data from the historic exploration programs has been induced polarization (chargeability), aeromagnetics, and resistivity.

Areas with known occurrences of gold mineralization, which have been defined by historical exploration drilling, and had historical mine production include: Northeast Ridge, Gold View, East Ridge, Deep Ore Flats, Borealis, Freedom Flats, Jaimes Ridge, and Cerro Duro. All of these deposits still have gold mineralization remaining in place, contiguous with the portions of each individual deposit that were mined. Graben, Crocodile Ridge, Purdy Peak, Boundary Ridge, and Bullion Ridge are known gold deposits in the district that have not been mined.

Discovery potential on the Borealis property includes oxidized gold mineralization adjacent to existing pits, new oxide gold deposits at shallow depth within the large land position, gold associated with sulfide minerals below and adjacent to the existing pits, in possible feeder zones below surface mined ore and deeper gold-bearing sulfide mineralization elsewhere on the property. Both oxidized and sulfide-bearing gold deposits exhibit lithologic and structural controls for the locations and morphologies of the gold deposits.

10.2 Historical Exploration

The following areas have not been subject to historic mine production, but have been subject to historical exploration that identified gold mineralization.

10.2.1 Borealis Extension Deposit

The Borealis Extension deposit occurs at shallow to intermediate depth beneath the northern and western parts of the former Borealis Pit. Most of the mineralization begins at 110 to 375 feet below the surface. Generally the top of this target occurs at or slightly below 7,000 feet elevation. The primary target is defined by 16 contiguous drill holes completed by previous operators that have potential ore-grade intercepts. Thickness of low-grade mineralized intercepts ranges from 15 to 560 feet with nine holes having from 155 to 560 feet of >0.01 opt Au; average thickness of the zone is 236 feet. Gryphon Gold drilled an additional 16 holes into the deposit with mixed results. Further evaluation and drilling is required to fully evaluate this mineralized zone.

10.2.2 Graben Deposit

The Graben deposit has been defined with approximately 36 historical RC holes and 19 historical core holes. This drilling defined a zone of gold mineralization, using an 0.01 opt Au boundary, that extends at least more than 2,000 feet in a north-south direction and between 200 and 750 feet east-west, and up to 300 feet in thickness. The top of the deposit is from 500 to 650 feet below the surface. Near its southern margin the axis of the deposit is within 800 feet of the Freedom Flats deposit and along one portion of the southeastern margin low-grade mineralization may connect with the Freedom Flats mineralization through an east-west trending splay.

Through November 2007, Gryphon Gold has drilled an additional 58 RC drill holes into the Graben zone. All holes reported mineralized intervals. Gryphon Gold's Graben drilling program was designed to test for extensions of the interior high-grade zones and to expand the exterior boundaries of the deposit. Drilling along the margins of the deposit, particularly along the northwestern portion, identified significant extensions of lower and higher gold grade zones that indicated that their boundaries are not well defined. Drilling for extensions of the northern and southern high-grade pods also revealed that these zones are larger than previously thought. Additional drilling in, and around, the Graben deposit is needed before it can be considered fully explored. At this point the resource estimate for the deposit presented in Section 17 of this report probably represents a minimum size.

In mid-2007 a controlled source audio-frequency magnetotellurics CSAMT survey was conducted over the Graben deposit as a test case. Several anomalies were identified that correlated favorably with known mineralization. The survey lines ended to the northwest in a similar looking anomaly in an undrilled area. Additional CSMAT lines are being surveyed in the area to outline drill targets. The initial interpretation is that this could be an extension of the Graben deposit.

Exploration drilling in the Graben will be continuing as recent drill results are indicating that gold mineralization continues at the north end of the zone. The entire Graben zone has now expanded over a strike length of more than 1,800 feet. Future drilling will both fill in gaps between widely spaced holes in the Graben, and step out from the Graben zone in a north, east and west direction in order to delineate more gold mineralization and to determine the boundaries of the zone.

10.2.3 North Graben Prospect

The North Graben prospect is defined by the projection of known mineralization, verified by drill hole sampling, and coincident with a large intense aeromagnetic low and an elongate chargeability (IP) high. This blind target lies on trend of the north-northeast-elongate Graben mineralized zone. In 1989, Echo Bay completed a district-wide helicopter magnetic/electromagnetic survey, which identified a large, intense type aeromagnetic low in the North Graben area. This coincident magnetic low/chargeability high is now interpreted as being caused by an intensive and extensive hydrothermal alteration-mineralization system. Five drill holes completed in the North Graben by Gryphon Gold encountered a permissive geologic setting and trace levels of gold mineralization.

In early 2006 the Company completed four holes into the North Graben geophysical anomaly and one additional hole was drilled in 2007. All the holes intercepted a deep hydrothermal system as indicated by several zones of silicification, and pyrite up to 20 percent. None of the holes contained significant amounts of gold, but were geochemically anomalous in gold and silver. Additional CSAMT lines are being surveyed over the prospect. When these data are available the potential of the target will be assessed.

10.2.4 Sunset Wash Prospect

The Sunset Wash prospect consists of a gravel-covered pediment underlain by extensive hydrothermal alteration in the western portion of the Borealis district. Sixteen holes drilled by Echo Bay Mines indicate that intense alteration occurs within a loosely defined west-southwest belt that extends westerly from the Jaimes Ridge/Cerro Duro deposits. At the western limit of the west-southwest belt, Cambior's IP survey and drilling results can be interpreted to indicate that the alteration system projects toward the southeast into the pediment along a mineralized northwest-oriented fault. Cambior conducted a gradient array IP survey over the Sunset Wash area effectively outlining a 1,000 by 5,000 foot chargeability anomaly. The anomaly corresponds exceptionally well to alteration and sulfide mineralization identified by Echo Bay's drill hole results. Two structures appear to be mapped by the chargeability anomaly; one is a 5,000-foot long west-southwest-trending structure and the other is a smaller, northwest-trending structure that cuts off the west-southwest structure at its western limit. Alteration types and intensity identified by the drilling, combined with the strong IP chargeability high and the aeromagnetic low, strongly suggest that the robust hydrothermal system at Sunset Wash is analogous to the mineralized systems at Graben and Freedom Flats.

Geologic observations based on mapping and drill hole logging indicate that both the Freedom Flats and Graben deposits are localized along a favorable horizon near the contact between the upper and lower volcanic units. This same contact zone appears to underlie the Sunset Wash pediment at a shallow depth. The target concept suggests that mineralization should favor zones where mineralizing structures crosscut the upper and lower volcanic contact. Cambior drilled three holes to test portions of the Sunset Wash geophysical anomaly and to offset other preexisting drill holes with significant alteration. Each of the three holes was drilled vertically to maximize the depths tested. The three holes were collared in the upper volcanic unit, but only one crossed the contact.

The westernmost of Cambior's three holes encountered the most encouraging alteration and best gold mineralization suggesting that this drill hole is near the most prospective area. This drill hole intercepted hydrothermally altered rock from the bedrock surface to the bottom of the hole, including an extremely thick zone of chalcedonic replacement in the lower two-thirds of the hole.

Gryphon Gold drilled three holes in the same area, all of which encountered strongly developed hydrothermal alteration with anomalous gold and favorable pathfinder trace elements. To assist in defining the target a CSAMT survey was started late in 2007, but was suspended due to winter conditions. The survey will be completed in early 2008 after which additional drilling will be planned.

10.2.5 Boundary Ridge/Bullion Ridge Prospect

The northeast-trending alteration zone extending along Boundary Ridge into Bullion Ridge contains intense silicification that is surrounded by argillization, with abundant anomalous gold. Widely-spaced shallow drill holes completed by previous operators have tested several of the alteration/anomalous gold zones and defined discrete zones of mineralized material. A summary of the resource is tabulated in Section 17 of this report.

10.2.6 Central Pediment (Lucky Boy) Prospect

Another prospect area similar to North Graben and Sunset Wash is the Lucky Boy area, which may be in a shallower pediment environment in the central portion of the district near the range front. Historic drill holes in the periphery have found thick zones of silification and traces of gold mineralization. Echo Bay's aeromagnetic map shows another magnetic low and Cambior's IP map shows a coincident chargeability high in the area of the silicification.

Gryphon Gold drilled eight RC holes in this area during late 2006 and 2007. All of these holes encountered intense hydrothermal alteration with anomalous gold and favorable trace element geochemistry. A subsequent CSAMT survey indicates that these holes may have encountered the margins of a high-sulfidization gold system. Fill-in CSAMT lines are planned to further define the target after which additional drilling is anticipated.

10.3 Activities Planned to Expand Mineralized Zones and Explore Prospects

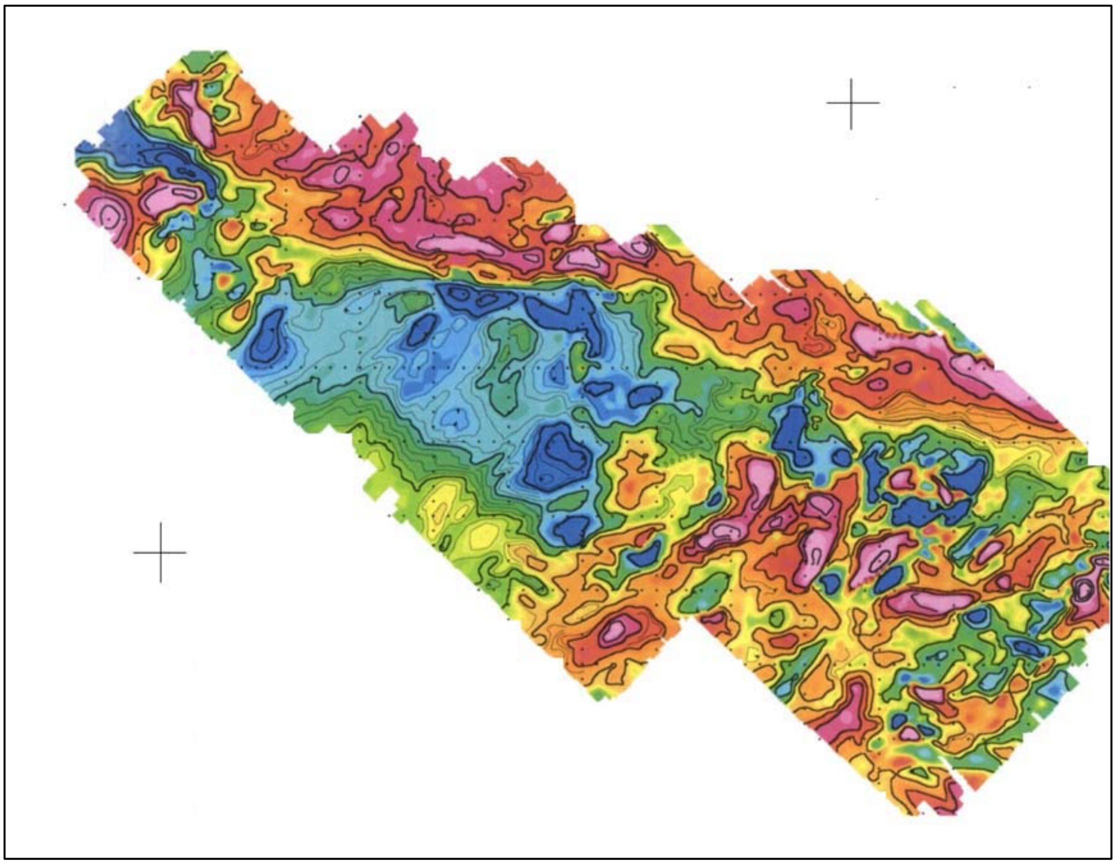
The Borealis property embraces numerous areas with potential for discovery of mineable gold deposits. The defined target areas can be grouped into categories based on the expectation for deposit expansion or potential for discovery. The current emphasis is focused on targets, which are the extensions of previously mined deposits, specifically the East Ridge-Gold View-Northeast Ridge mineralized trend, and around the margins of the Borealis, Freedom Flats, and Deep Ore Flats deposits. Each has the potential to add to the material that can be developed as part of an initial mine plan. To date the Company has drilled 220 holes on the Borealis property. These holes have been completed primarily in areas where resources are known to exist. In addition to advancing existing resources to a higher level of confidence, this drilling program has further information gathering objectives for metallurgical assessment, waste characterization, and hydrological analyses that are required in support of the operating permit applications, environmental assessment, and engineering design.

A systematic district-scale exploration program designed to discover and delineate large gold deposits within the greater Borealis property, outside of the known mineral deposits, will focus along known mineralized trends that project into untested gravel-covered areas with coincident geophysical anomalies. The greatest potential in the district lies beneath a large gravel-covered area at the mountain front with several potential blind deposits (with no surface expression). The Graben zone is an example of this type of deposit, and other high-potential targets include Sunset Wash, Central Pediment (Lucky Boy), and others yet to be named.

Planned activities and expenditures include both field and compilation geology, geophysics, geochemistry, permitting and claim maintenance, road construction and drill-site preparation, RC and core drilling, drill hole assaying, sampling protocol studies and assay quality control, preliminary metallurgical testing, and database management. Plans call for a budget to be sufficient to discover and delineate one or more deposits, but additional funding will be required for detailed development drilling and other development activities following a discovery.

10.3.1 Area Geophysical Surveys

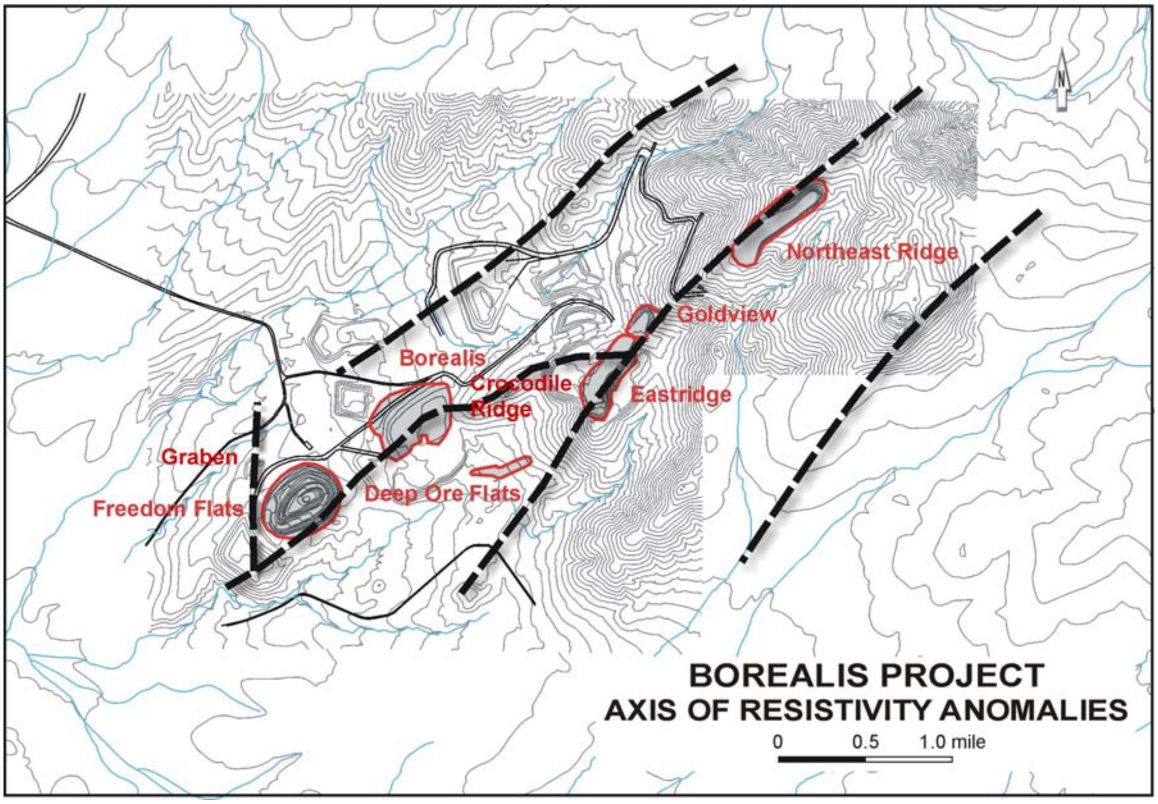
Many geophysical surveys have been conducted in the Borealis district since 1978, including the following: ground magnetics, VLF, IP/resistivity, seismic, CSAMT, helicopter magnetics and EM, e-scan, and gradient IP/resistivity (Corbett, 2000). In addition, regional magnetics and gravity maps and information are available through governmental sources. Resistivity was used successfully in the early exploration of the district to track favorable trends of strong silica alteration and associated gold deposits. The types of geophysical surveys currently found to be most useful in the Borealis area is chargeability, resistivity, and aeromagnetics, an example of which is shown on Figure 10.1.



(Source: Echo Bay Mines, circa 1989)

Figure 10.1 - 1989 Borealis District Aeromagnetic Survey Map

In addition to projections of known alteration and mineralization trends into pediment environments, geophysics is being used to define and prioritize the pediment targets. In particular, aeromagnetic (lows), and IP and CSAMT (resistivity and chargeability highs) data identify the most favorable covered targets and help site drill holes, especially where magnetics and IP/CSAMT show coincident anomalies. Resistivity highs are used to identify extensive silicification in covered areas. Other geophysical methods will be used where appropriate, possibly including ground magnetics, VLF, electromagnetics, gravity, and seismic. Each of these methods provides information that may be used in determining the subsurface geologic conditions, and how and where to test exploration targets. An example of an interpretation of resistivity data is shown on Figure 10.2.



(Source: J. Anzman and Gryphon Gold, 2005)

Figure 10.2 - Selected Resistivity Anomaly Trends of a Portion of the Borealis District

10.3.2 Applied Reflectance Spectroscopy and Geochemical Analyses

As Gryphon Gold explores for gold deposits in the Borealis district, it can enhance the odds of discovery by developing a better understanding of the outward signatures of mineralization. Hydrothermal mineral deposits commonly contain halos of alteration and geochemistry that surround the metals of interest. By understanding the systematic changes in alteration mineralogy and geochemistry as economic mineralization is approached, vectors can be developed that can turn near-misses into successes. The initial step in this understanding was taken with the discussion of the alteration patterns around the Graben deposits found in Steininger and Ranta (2005). This knowledge of mineralogical and geochemical changes as gold mineralization is approached was enhanced recently. Several new holes were drilled in, and around, Graben and North Graben and produced fresh drill cuttings that allow identification of geologic changes surrounding hydrothermal systems. Several of these holes were used to supply material for multi-element analyses to define geochemical changes. Finally, acquisition of the

ASD TerraSpec Pro Spectrometer and the services of Ms. Susan Judy, Consulting Geologist, in the interpretation of spectrometer results produced a better definition of alteration mineralogical changes (Judy, 2006a, 2006b, 2006c, 2006d).

Studies were undertaken to develop detailed information about alteration patterns around Borealis-type gold deposits. Spectroscopic data were collected from RC chips and core from four lines of historic drill holes in the Freedom Flats Pit. A drill hole section through the center of the Graben deposit was also analyzed for alteration mineralogy. Both are described in detail below. Geochemical analyses were not conducted in these areas due to the unavailability of pulps. The recently drilled fence of holes across the northern extension of the Graben deposit gave a unique opportunity to understand both alteration and geochemistry surrounding gold mineralization. Therefore, spectroscopic and geochemical analyses were undertaken on the four North Graben drill holes as a first use of this new data to direct exploration.

There are many subtleties in the data that may, or may not, be important and may vary from area to area dependent upon the original character of the host rock. For instance, a rock that is devoid in mafic minerals may not have chlorite developed at the margins of the altered area, where a mafic-rich rock may contain a substantial outer chlorite zone. A host rock that has a chromium component may display a chromium anomaly while that element may be lacking in other rocks in the area and no chromium anomaly is developed. Therefore, at this stage in the understanding of the geology of the district only those features that seem to be consistent in all four sections are considered important. As Gryphon Gold's knowledge of the district's geology expands, the subtleties in this information may take on more importance.

10.3.3 Freedom Flats Section

Ten drill holes were analyzed for alteration mineralogy along this section since several of the holes extend into and through the deposit, as well as a few holes that are peripheral to mineralization (see Freedom Flats geology and mineralization section). In general, the deposit is surrounded by an envelope of montmorillonite and opal (see Freedom Flats clay mineralogy section). As mineralization is approached, kaolinite becomes the dominant clay mineral. This zone may also contain nontronite (iron-rich kaolin) and alunite. Dickite, with or without alunite, occurs in the area of gold mineralization. Alunite is more concentrated in the lower portion of the deposit. Those holes that extended through mineralization displayed a reverse pattern with kaolinite immediately below the deposit and montmorillonite outward. Nontronite occurs in some of the kaolinite zones and may reflect the increasing iron-rich environment, as exemplified by increasing pyrite. Diaspore and pyrophyllite are also present in the dickite-alunite areas, probably reflecting the higher temperature acid-sulfate environment that existed as the Freedom Flats deposit formed.

As part of the Eng's (1991) work for the Freedom Flats deposit, x-ray diffraction clay mineral identification was conducted. These data were recently made available to Gryphon Gold. X-ray diffraction is the classic approach and reliable method for clay mineral identification. Samples from two drill holes along the Freedom Flats section in this study were also included in Eng's work. While there were some differences in identifying minor constituents, there was sufficient agreement between the two techniques to indicate that the spectroscopic analysis is a reasonable semi-quantitative approach to clay mineral identification for the Borealis district mineralization.

10.3.4 Central Graben Section

This cross-section was chosen as geologically typical of the Graben deposit, but as it turned out not particularly good for the alteration study. There is an alluvial layer that is about 150 feet thick under which is a thickness of Tertiary Coal Valley Formation to about 485 feet below the surface. Coal Valley contains increasing iron oxides and argillization with depth, but at this point it is difficult to determine if this is a hydrothermal or a supergene effect. If supergene, the alteration may have been produced by circulating groundwater that leached sulfides below producing acidic water that altered the Coal Valley above. The resulting alteration would then not be directly related to the hydrothermal events that produced the Graben deposit, although it might suggest that a sulfide system is nearby. Immediately below the Coal Valley Formation is gold mineralization that is hosted by a strongly silicified pyrite-rich breccia in the central part of the section. Some of the drill holes penetrated this breccia and extended into altered andesite. The change from possible post-mineralization Coal Valley into mineralized rock does not present an opportunity to look at alteration changes that occur as mineralization is approached.

A spectroscopic analysis indicates that dickite, with or without diaspore, is present within the silicified pyrite-rich gold-bearing zone. Holes that penetrated the mineralized system displayed a pattern of kaolinite nearest silicification and montmorillonite outward. Clay minerals in the Coal Valley are commonly mixtures of kaolinite, alunite, and some montmorillonite, but there is a lack of consistent patterns.

10.3.5 Conclusions and Recommendations

The combination of alteration and geochemical patterns provide a broad zone around precious-metal mineralization helping to direct exploration in the search for additional gold deposits within the Borealis district. The broad pattern transitioning from propylitic alteration to argillization, dominated by montmorillonite at the outer margins, and changing to kaolinite as the zone of silicification is approached is a distinctive and systematic pattern that can be detected by logging drill chips and employing spectroscopic analyses. The silica-pyrite zones also contain some combination of dickite, diaspore, and/or alunite that can be used as an indication of potential gold mineralization before assays are received. Rock-forming elements also display a systematic decrease as higher temperature and pervasive hydrothermal alteration is approached. Several trace elements, including As, Fe, Hg, Mo, Pb, S, Sb, Sn, W, and Zn are anomalous in a broader zone than, and directly related to, gold mineralization. These elements produce a target zone that extends beyond the gold deposit.

These features are systematic enough that a drill hole near a gold zone can be identified as a "near miss" but encouraging enough to continue drilling in the area. Having this information supplies a powerful tool for locating additional gold deposits in the Borealis district. Lucky Boy is one such example. The combination of geology, clay mineralogy, geochemistry, and geophysics indicate that a significant gold zone is probably nearby.

The contributing Gryphon Gold authors, Dr. Roger Steininger and Mr. Steven Craig, recommend that Gryphon Gold undertake a systematic district-scale exploration program designed to discover and delineate large gold deposits within the greater Borealis property, outside of the known mineral deposits. The program should focus along known mineralized trends that project into untested gravel-covered areas with coincident geophysical anomalies. The contributing Gryphon Gold authors' agree that the greatest potential in the district lies beneath a large gravel-covered area at the mountain front with several potential blind deposits (with no surface expression). The Graben zone is an example of this type of deposit, and other high-potential targets include North Graben area, West Pediment (including Sunset Wash and Vuggy Hill), Central Pediment (Lucky Boy), and others yet to be named.

This district-scale exploration program should include both field and compilation geology, geophysics, geochemistry, permitting and claim maintenance, road construction and drill-site preparation, reverse circulation and core drilling, drill hole assaying, sampling protocol studies and assay quality control, preliminary metallurgical testing, and database management.

In addition, further sampling of the historical heaps and dumps is recommended because of the immediate potential to move inferred resource into indicated resources that may be considered for reserves.

(This page is intentionally left blank)

11.0 Drilling

11.1 Gryphon Gold Drilling

Since the last update to the resource models, as reported in the January 2007 Technical Report, new drilling by Gryphon Gold from April 2006 through November 2007 was added to the drill hole database. The total Gryphon Gold drilling in the database currently includes 252 holes and 153,000.5 feet of drilling. Included in the Company drilling are 136 holes that were drilled after March 2006.

AMEC, a world leader in the provision of technical services, was retained to edit the entire drill hole data base, including all of the recently completed Gryphon Gold drill holes. Data entry for the Gryphon Gold drill hole assays was verified by compiling the original assay data sheets (Excel and comma-delimited text files) that were sent from the laboratories.

Finally, the Wolff compilation was compared to a Gryphon Gold compilation by joining the two sets of data and identifying significant differences. Differences between the two sets of data were checked and corrected until no more errors were found in the Wolff compilation.

11.2 Historical Drill Hole Database

The historical drill hole database used for the Borealis project resource models contains 2,417 drill holes with a total drilled length of 671,595 feet. A total of 1,947 holes were drilled inside the resource model areas. An additional 470 holes were either drilled outside the resource models at scattered locations throughout the district or did not have collar coordinates.

The historic holes were drilled by several different operators on the property. Drill hole types include diamond core holes, reverse circulation holes and rotary holes. Only a few core holes have down-hole survey information. Since most of the drilling is shallow, the absence of down-hole survey information is not significant. In the deeper Graben zone, however, unsurveyed drill holes may locally distort the shape of the grade zones. Drill hole sampling lengths are generally 5 feet for the RC holes, but vary for the core holes based on geological intervals. Sampling length is up to 25 feet for some of the early rotary holes. Gold assays in parts per billion (ppb) and troy ounces per short ton (opt) are provided for most of the sample intervals. Silver assays in parts per million (ppm) and opt are also provided for some of the sample intervals.

As a further check, about 5 percent of the assays from historic drill holes in the database were checked against original assays. This step identified only a relatively few errors, which were corrected but indicated that the database was accurate. An inspection of all of the historic holes by AMEC revealed that a few of the early generation of holes appeared to contain some possible down-hole contamination. These were mostly in mined-out areas of the property and were excluded from the database as a surety procedure.

Additional drilling of the five Borealis heaps and parts of the Freedom Flats and Borealis Mine dumps was completed by Gryphon Gold in May 2004. This program consisted of 32 holes totaling 2,478.5 feet. Dump holes were drilled deep enough to penetrate the soil horizon below the dump, while holes on the heaps were drilled to an estimated 10-15 feet above the heap's liner. None of these latter holes penetrated the heap liners. Not all of the permitted holes were drilled during this phase of the program. Rather, a few holes were drilled on each heap and dump to obtain an initial and representative view of grade distribution. Prior to Gryphon Gold's 2004 heap drilling program, in 1996 J.D. Welsh had drilled 11 auger holes totaling 760 feet into Heap 1 to determine the gold content remaining in that heap.

12.0 Sampling Method and Approach

12.1 General

The following includes information from research of historical records conducted by Gryphon Gold and is included for general reference.

The Borealis Mine site operated from 1981 through 1990 producing 10.7 million tons of ore averaging 0.059 opt Au from eight open pits. The mined ore contained 635,000 ounces of gold (Eng, 1991) of which approximately 500,000 ounces of gold were recovered through a heap-leach operation. This historic production can be considered a bulk sample of the deposits validating the database that was used for feasibility studies and construction decisions through the 1980s. With over 2,400 drill holes in the database that were compiled over a 30-year period by major companies, the amount of information on the project is extensive. It is primarily these data that were used in this study as the foundation of the current mineral resource estimate. The bulk of the data were collected beginning in 1978, the year of discovery of the initial ore-grade mineralization, and were continuously collected through the final year of full production. Subsequent explorers through the 1990s added to the database.

Specific detailed information on sampling methods and approaches by the various mine operators has not been found in the historic information; however, a report by John T. Boyd Co. (1981) noted that the "drilling, sampling and analytical procedures as well as assay checks were reviewed by Dames and Moore and reported as acceptable by industry standards." In addition, information in reports, monthly reports, and memos give some clues to the sampling methods and approaches. The early work describes between 7 and 9 percent of all samples being re-assayed, with higher-grade intervals re-assayed most frequently with approximately 20 percent of these intervals assayed again (Ivosevic, 1979). Also, there are many references to "assay checks" in the drill hole data with comparisons of assays of the same pulps and also of assays of different splits from the same sample intervals. Results of these comparisons generally were reported to be reasonably close. High-grade intervals often showed more variability in their assays. Santa Fe Pacific (1994) performed check assays on their drilling and found 23 percent variability in the high-grade assays. Their geologist reported, "rather than reflecting relative differences in the labs, I believe the difference is due to the inherent variability in the core. Perhaps we would have been better served to take the entire remaining core [for the check assay material] instead of sawing it in half again (resulting in a ¼ split)."

Echo Bay Mines did some quality checks on their drill cuttings sampling and assaying methods as part of their evaluation of the property prior to and following its purchase from Tenneco Minerals, which indicated that the original assays were reliable and representative. During their exploration and development programs they also drilled a number of core-hole twins of conventional rotary drill holes to compare assay results in the same areas. Echo Bay concluded that the vast bulk of drilling, which was conventional rotary, probably undervalued the gold content, especially in higher-grade zones. Anecdotal information from former Echo Bay management indicates that the mine consistently gave better results in terms of higher grade and better recovery of gold than planned or expected.

12.1.1 Freedom Flats Example

The principal ore body discovered by Tenneco/Echo Bay was the Freedom Flats deposit. The exploration, geology, and mineralization of the Freedom Flats gold deposit are described by Eng (1991). He reports that in Echo Bay's reconciliation of the Freedom Flats reserves, "actual mine production exceeded the original model reserve in grade and contained ounces by about 30 percent." In order to explain this discrepancy, he states, "due to the narrow linear trend of the mineralization, the deposit was drilled-out on 50-foot centers along drill fences spaced at 100 feet.

In-fill drilling was conducted between fences on 50- to 70-foot centers, where thick, high-grade mineralization was intersected. Holes were drilled around the perimeter of the deposit on 100-foot centers to close off all mineralization. A total of 99 RC holes were drilled in the main deposit area totaling 56,000 feet. All holes were drilled vertically. Due to the presence of abundant clay, most holes were drilled with water and foam injection; samples were collected using Jones splitters. In addition to rotary drilling, four HQ core holes totaling 2,687 feet were drilled primarily to obtain material for column leach metallurgical testing. Although continuous assays were not available for most of the core holes due to metallurgical sampling, the results of limited assaying suggested that the RC rotary holes underestimated the gold grades. The most likely cause for this discrepancy was the loss of fines during wet drilling. Later in Eng's report he states that the discrepancy also may be due in part to the small size of many of the higher-grade (>0.5 opt Au) ore pods, which were not intersected in close-spaced (50 feet) drilling. Another possible explanation not mentioned by Echo Bay is the problem created where predominantly vertical drilling patterns are used to test steeply dipping to vertical mineralized zones. There is also a possibility that coarse gold particles exist and have not being adequately sampled or assayed.

The presence of coarse gold and its effect on assay variability may have been overlooked by previous operators of the Borealis Mine site. Coarse gold was reported rarely in the district from small-scale placer operations and also by Houston Oil and Minerals Company geologists who found visible gold in the surface outcrops of historic prospect pits and other minor workings along highly mineralized structures. In addition, mineralogical reports on the higher-grade mineralized samples mention traces of free gold ranging from 2 microns to 29 microns from the Northeast Ridge and Borealis deposits (Honea, 1988 and Strachan, 1981).

12.2 Sampling of Existing Heaps and Dumps – Spring 2004

A drilling program was undertaken in spring 2004 to confirm the amount and grade of gold-bearing rock that exists on heaps and dumps. Sonic drilling also provided samples for metallurgical test work, to define the geotechnical conditions, and to obtain sufficient samples to demonstrate the geotechnical characteristics for design purposes in the waste characterization database. A separate drilling program was undertaken to install baseline groundwater monitoring systems.

As part of this program, a sonic drill rig was used to drill exploratory holes on the five previously leached heaps as well as the Freedom Flats and Borealis Pits waste dumps. A total of 32 holes for a total of 2,475.5 feet were drilled with samples collected and composited for each hole.

Visual observations of the samples obtained during the sonic drilling program indicate the previously leached ore in Heap 1 and Heap 2 contained more fines, with a clay-like texture, than coarse rock. Conversely, and as expected, the Heap 3 leach material, which was run-of-mine and the Borealis Waste Dump contain more coarse rock. If the gold values remaining in the previously leached material in the various leach heaps are associated with the coarse fraction and/or are bound by pyrite and/or silica, then additional gold recovery may be achieved by screening and gravity separation, or by leaching a finer material.

A thorough description of the sampling method, sample preparation, analytical techniques, and security procedures is found below in Section 13.2, Heap and Dump Drilling and Sampling Program – Spring 2004.

12.3 Drill Hole Database for Mineral Resource Model

The database used for the computer-generated resource model portion of this study consists of 2,673 drill holes with a total footage of 822,794.1 feet and 106,715 assayed intervals. Many of the high-grade intervals were assayed more than once to check and confirm the actual grades, so the total number of assays exceeds 107,000. The average depth of the holes is 308 feet but the bulk of the holes are less than 200 feet with a limited number of holes in selective locations extending 1,000 to 2,000 feet to test deeper mineralization. The average assayed interval was slightly larger than 5 feet with the bulk of the samples representing 5-foot intervals.

The first drilling was completed by Houston Oil and Minerals, the discoverer of the original Borealis deposit and the developer of the Borealis mine. Tenneco Minerals acquired Houston Oil and Minerals and continued operating the mine and drilling for new deposits. Echo Bay Mines acquired Tenneco Minerals in 1986 and continued all operations and drilling until the mine was shut down in 1990. Throughout the 1990s several companies including Billiton Minerals (28 drill holes), Santa Fe Pacific Mining (32 drill holes), J.D. Welsh & Associates (11 shallow auger holes in a heap), and Cambior Exploration (10 drill holes) continued exploring and evaluating the property thus adding to the database. Gryphon drilled 252 holes to date of which 214 holes were used in the resource estimate.

Santa Fe compiled the initial version of the computer database of drill holes with subsequent companies contributing to it. During their ownership Mr. Steven Craig of Golden Phoenix, a Qualified Person, thoroughly checked the accuracy and completeness of the database by individually checking 2,234 holes' survey and assay data line by line with the original survey and assay sheets, and revising the database where necessary. Although the methods and procedures used by Golden Phoenix appear to have been professional, thorough, and competent, Ms. Susan Judy conducted a further data check of the database.

For the current resource model update, Ms. Judy checked 5 percent of the drill holes used in the four model areas. A list of check holes was randomly chosen from the database for each of the North, South, East and West Resource Model areas. For each drill hole, assay, survey, depth, and orientation data in the database was compared against drill logs and assay certificates when available. For the North Area model this involved 28 of the 562 drill holes, for the South Area model 45 of the 892 drill holes, for the West Area model 13 of the 259 drill holes, and for the East Area model 3 of the 59 drill holes from Bullion Ridge. The error rate was less than 1 percent. All errors were corrected before proceeding with the resource modeling.

13.0 Sample Preparation, Analysis, and Security

13.1 Previous Mining Operations and Exploration

The following includes information from research of historical records conducted by Gryphon Gold and is included for general reference.

Houston Oil and Minerals, Tenneco, and Echo Bay are reported to have used standard sample preparation and analytical techniques in their exploration and evaluation efforts, but detailed descriptions of the procedures have not been found. The fact that a successful mine was developed producing about 500,000 ounces of gold indicates that their techniques of sampling, sample preparation, analysis, and security produced results that were representative, reliable, and are not unreasonable, although some questions remain, particularly with regard to the assaying of samples with potential coarse gold.

Most of the drill hole assaying was carried out by major laboratories that were in existence at the time of the drilling programs. Various labs including Monitor Geochemical, Union Assaying, Barringer, Chemex, Bondar-Clegg, Metallurgical Laboratories, Cone Geochemical, the Borealis Mine lab, and others were involved in the assaying at different phases of the exploration and mining activity.

13.1.1 Analysis and Quality Control

Early work on the property appeared to rely on assay standards that were supplied by the laboratories doing the assaying. However, Echo Bay Mines (1986) reported using seven internal quality control standards for their Borealis Mine site drill hole assaying program. The seven standards ranged in gold concentrations from 170 ppb to 0.37 opt. Assay labs involved in the round robin standards analyses were Cone Geochemical, Chemex, and the Borealis Mine site lab. The precision of the three labs was excellent (±1 to 8 percent) for the higher gold grades (0.154-0.373 opt); acceptable (±3 to 14 percent) for the lower grades (0.029-0.037 opt); and fair (±4 to 20 percent) for the geochemical anomaly grades (0.009 opt to 170 ppb). These data provide an initial estimation of the precision and accuracy of gold analyses of Borealis mineralization. The repeatability of assays suggests that coarse gold was not a problem for these samples, or that the samples were so small that potential coarse gold was missed entirely.

During 1986, Echo Bay instructed Chemex (1986) to analyze duplicate samples for five selected drill holes. A comparison was made of: (1) ½ assay-ton fire assay with a gravimetric finish versus, (2) ½ assay-ton fire assay with an atomic absorption finish versus, (3) hot cyanide leach of a 10-gram sample. The ½ assay-ton fire assay – gravimetric finish and the ½ assay-ton fire assay – AA finish gave essentially the same results. However the hot cyanide leach gave results that were 5-11percent higher in one comparison and significantly lower in another, prompting Chemex to conclude that cyanide leach assaying was not appropriate for Borealis samples. The great majority of the assays in the database are based on fire assays.

13.1.2 Security

Nothing is known of the sample security arrangements made by the previous operators, but since the various mined deposits each produced the amounts of gold predicted or higher, we can assume the security was adequate and it is unlikely that sample security was a problem. The same assumption is true for the subsequent exploration programs conducted by Billiton, Santa Fe Pacific, and Cambior, all of which were substantial companies that routinely used standard industry procedures.

13.2 Heap and Dump Drilling and Sampling Program - Spring 2004

Boart Longyear was contracted in spring, 2004 to drill with a sonic rig since this equipment would retrieve a core-like sample. All work completed during this program was under the supervision of Dr. Roger C. Steininger, Chief Consulting Geologist for Gryphon Gold, and a Qualified Person under the terms of Canadian NI 43-101.

Not only could a representative assay sample be obtained with this approach, but also the collected material should be representative of size distribution of material in the heaps and dumps. The initial two holes were drilled with 4-inch bits, but it became obvious that larger rocks were being pushed out of the way. Drilling then proceeded with a 6-inch bit, which appeared to capture more of the larger rock, producing a more representative size distribution sample. All sonic drill holes had a vertical orientation, and samples represent “true thickness” of the dump or heap material.

13.2.1 Sampling, Analysis, and Quality Control - Heap and Dump Drilling

Sample intervals were originally designed to be every 10 feet, but were contingent upon drilling conditions. Actual drill-sample interval lengths were subject to the position of the sample tube where this was extracted from the drill hole. Individual runs varied from 1 to 3 feet, which were then combined to produce a sample with an interval length as close to 10 feet as practicable (the combination was completed at American Assay Labs). Combined sample intervals routinely varied from 9 to 11 feet except at the bottom of a hole where the final sample intervals were typically shorter (Steininger, 2007).

When the sample tube was extracted from the drill hole, the sample was immediately slid into a plastic sleeve that was sealed and marked with the drill hole number and footage interval. These plastic sample sleeves were not reopened until they reached the analytical lab. All of the drill procedures and handover to the analytical lab were monitored by an independent geologist hired through Geotemps, Inc. The contract field geologist also maintained lithologic logs for each drill hole. A non-blind standard was added as the last sample interval of each drill hole. The standard was obvious to the lab because the standard was contained in a pulp envelope, although the lab did not know the gold value of the standard.

All samples were submitted to AAL of Sparks, Nevada. At the lab, each of the individual samples was combined into an analytical sample that approximated 10-foot intervals as outline above, as per instructions from the geologist. Each analytical sample was split in a rotary splitter with one-fifth of the sample removed for assay and the remaining four-fifths retained for metallurgical testing. Each analytical split was weighed, dried and weighed again. The difference between these two weights represented the amount of water in the original sample. Each dried sample was crushed to less than 1/4 inch and a 300- to 500-gram sample was riffle split off for assay. The remaining sample was retained at the lab. Each assay sample was pulverized and assayed for gold and silver by one-assay-ton fire assay. Also a two-hour cyanide shake assay for dissolvable gold was conducted for 200 grams of each assay sample.

Two additional samplings were undertaken on Heap 2. Twelve samples were collected along the new road cut and one "bulk" sample was collected from a backhoe cut made during reclamation. The road-cut samples were collected as rock chips over 10-foot intervals. Each sample was approximately 5 pounds of material that was collected to represent the size distribution of the material in the cut. Six of the samples were from the south side mid-point along the heap and six from near the east base. Each sample was assayed by AAL using one-assay-ton fire assay for gold and silver. The average grade of the 12 samples is 0.009 opt Au, which compares favorably with the average grade of the three holes drilled into the heap, which is 0.008 opt Au. About 20 pounds of representative material was collected from the backhoe trench. At AAL one-quarter of the sample was split out and assayed by one-assay-ton fire assay for gold and silver. This sample contains 0.008 opt Au, which corresponds with the average value for the heap as determined by drilling. The remaining three-quarters of the sample was sieved into four size fractions and assayed in the same manner as noted above. The results are displayed in Table 13.1, which indicates that the gold grade in the <2-inch material is significantly higher than in the larger material.

As part of the quality control program standards were submitted to AAL with each drill hole; several assayed pulps and two standards were submitted to ALS Chemex; and three of the duplicates and two standards were submitted to Actlabs-Skyline. Their results of the analyses of the standards and duplicates are shown in Tables 13.2 and 13.3. All of the data show good precision and accuracy except for ALS Chemex's analyses of the standard. Based on this information, the analyses from AAL are considered reliable.

Table 13.1 - Analytical Results of Bulk Sample from Road Cut Midway Between Top and Bottom of Heap 2

Type	Gold Grade (opt Au)	Silver Grade (opt Ag)
Bulk	0.008	0.102
<½-inch Material	0.010	0.095
½-inch to 1-inch Material	0.014	0.131
1-inch to 2-inch Material	0.010	0.066
>2-inch Material	0.007	0.029

Table 13.2 - Summary of Analytical Results from Bulk Standard Used in Quality Control Program, Accepted Value 0.019 opt Au

Analytical Lab	Number of Values and Average Gold Value	Variation from Accepted Value
American Assay Labs.	31 samples/0.017 opt Au	0.002
American Assay Labs. repeats	3 samples/0.017 opt Au	0.002
ALS Chemex	2 samples/0.022 opt Au	0.003
Actlabs-Skyline	2 samples/0.019 opt Au	None

Table 13.3 - Summary of Assay Analyses for the Same Sample by American Assay Laboratories and ALS Chemex

American Assay Lab.	ALS Chemex	Difference
0.022 opt Au	0.023 opt Au	0.001
0.003 opt Au	0.002 opt Au	0.001
0.012 opt Au	0.008 opt Au	0.004
0.002 opt Au	<0.001 opt Au	0.002
<0.001 opt Au	0.007 opt Au	0.007
0.004 opt Au	<0.001 opt Au	0.004
0.013 opt Au	0.011opt Au	0.002
0.008 opt Au	0.009 opt Au	0.001
0.005 opt Au	0.010 opt Au	0.005
0.025 opt Au	0.024 opt Au	0.001
0.023 opt Au	0.026 opt Au	0.003
0.014 opt Au	0.012 opt Au	0.002
0.008 opt Au	0.013 opt Au	0.005
0.005 opt Au	0.005 opt Au	0.000
0.018 opt Au	0.017 opt Au	0.001
0.008 opt Au	0.010 opt Au	0.002

The average difference in analytical results from assays on the same pulps is less than 0.001 opt Au, and the standard deviation of the differences is 0.003 opt Au, which is extremely close and within the level of accuracy of the assaying method.

The last piece of data that supports the reliability of the new results is the comparison with J.D. Welsh's original drilling of Heap 1 (Table 13.4). The bulk of the information indicates that sampling of the heaps and dumps was representative and those samples were accurately assayed.

Table 13.4 - Comparison of Heap 1 Assay Results with Previous Sampling Program

BMC Holes	Grade opt Au	Nearby Welsh Drill Holes	Grade opt Au
BOR-11	0.028	H-10	0.033
BOR-13	0.023	H-11	0.026
BOR-16	0.020	H-5	0.020
BOR-17	0.017	H-6	0.014

13.2.2 Security

All samples were collected in plastic sample bags, sealed, and securely stored until picked up by the transport arranged under the authority of AAL. AAL maintained control of all samples from the pickup at the Borealis project until the analytical work was completed. It is the opinion of Dr. Steininger, a Qualified Person under the terms of Canadian NI 43-101, who supervised this drilling and sampling program, that the security procedures were adequate and properly implemented during the program.

13.3 2005 Through Late-2007 Reverse Circulation Drilling

Sampling procedures at the drill sites and monitoring of assays were standardized starting with the commencement of the RC program in early 2005. Initially the program consisted of a limited number of standards and duplicates submitted with each drill hole. In May 2006 Gryphon Gold instituted more rigorous quality control procedures.

Throughout the Borealis RC drilling program during 2005-2007, samples were routinely collected at 5-foot intervals from each hole, starting at the surface and continuing through the end of the hole. Material from each 5-foot interval was split to about one-quarter of the original volume at the drill site, then bagged and sealed by the drilling contractor. At the completion of each drill hole, samples were moved to a secure site on the property where they were held until picked up by assay lab personnel. Initially, this was AAL, and starting in spring 2006, Inspectorate America Corp., both of Sparks, Nevada, became the assay facility of choice.

Until May 2006, a blind standard was included at the end of each drill hole and with the initial group of holes a duplicate sample was collected at the drill and included in the sample sequence as a blind sample. The new quality control program started in May 2006 required sufficient standards being inserted so that one standard would be included with each fire assay tray at the lab. Additionally, a blank sample was inserted as a blind sample within the drill sample sequence.

An assay lab truck and driver collected the drill samples from the Borealis project site secured storage and transported them to Sparks, Nevada. From the time that the pickup was made the lab maintained control over the samples, until coarse rejects and pulps were returned to the site. At the lab each sample was dried, crushed to less than 1/4 inch, and a 300- to 500-gram sample was riffle split off for assay. Each sample was subsequently pulverized and then assayed for gold and silver by one-assay-ton fire assay. The coarse rejects were retained at the lab until assaying was completed.

The quality control program consisted of standards included with each drill hole, duplicate samples collected at the drill, and duplicate assays as part of the lab's internal control. The assays and these controls were monitored continually by a Qualified Person, Dr. Roger Steininger. If questionable assays were received a decision on re-assaying portions of, or the entire hole, was made at the time of receipt of the preliminary assay reports. In general, the quality control samples indicate that both labs produced high-quality assays. The close correlation between assays of the original sample and the duplicate sample indicates that sampling at the drill produced representative samples.

13.3.1 2005-2007 Analytical Program

Analytical results of the standards submitted with the drill samples were within two standard deviations of the standard's gold content, which was deemed acceptable. Generally, duplicate assays preformed by the lab corresponded well with the original assays. These data indicated that both labs used by Gryphon Gold produced quality assays.

During the early part of the drilling program a duplicate sample was collected at the drill, initially to ensure that a representative sample was collected. Secondly, these samples were also a check on lab assay reproducibility. Except for three samples there is an extremely close correlation between the duplicate samples from each hole. This indicates that representative samples were collected are the drill and the lab was able to produce similar assays for the same drill hole interval. The three samples with wider variations are probably representative of the nature of a gold deposit with occasional coarse gold and wide variations in gold content over short distances.

13.3.2 Outside Lab Check

As a further check on AAL, six holes, or portions of a hole, were submitted to Inspectorate America for re-assay. Except for one hole, there was good correlation in the assays between respective drill hole intervals between the two labs. Overall, the assays from this one hole had a good correlation between labs with a few inconsistencies between the two labs. Some of AAL's assays were higher than Inspectorate's and for other intervals the reverse was the case. This suggests that the variations may be related to the natural variation in a gold deposit rather than an assay problem between the labs.

Through early 2006 all of the indications were that AAL was producing reliable assays from the Borealis drill hole samples.

13.3.3 Change of Labs

Primarily to improve turnaround time it was decided to change to Inspectorate America for analytical work in spring 2006. While a different lab was used the quality control program was not changed.

13.4 QC/QA Conclusions

Steininger (2007) presents an extensive summary of the entire quality control program. The conclusions are: "All of the quality control data outlined above strongly supports the conclusion that Gryphon Gold received quality analytical results throughout its drill program at Borealis. The analytical data also support the conclusion that gold is generally evenly distributed and fine-grained."

14.0 Data Verification

14.1 Historical Drill Hole Data

The following includes information from research of historical records conducted by Gryphon Gold and is included for general reference.

The drill hole database was verified by Mr. Steven Craig, a Qualified Person under the terms of Canadian NI 43-101, during an 8-month intensive effort by reviewing every one of the 2,417 drill holes and over 125,000 assays on original sheets and comparing them line by line with the database and ensuring that only accurate information was in the database. Where several valid assays were found for a single interval they were averaged to determine the grade used in the database. Drill hole collar location surveys from original survey documents also were compared to the database information and improved where necessary. Down-hole survey information from original survey documents for the deeper holes were also reviewed and compared with the database to ensure its accuracy.

Information presented above describes the limitations imposed by the lack of certain historical records on verification of the data. Based on operating results, and historical descriptions it appears that the sampling, sample preparation, assaying, and security of samples were conducted in an industry acceptable manner for the time period in which the samples were collected and processed, and it is the geological Qualified Person's opinion that the assays are suitable for resource estimation.

14.2 Semi-Quantitative Check Sampling

As part of the evaluation of the Borealis Gold Project, several samples have been collected (under the general overview of Gryphon Gold geologists) from selected areas on the property to generally validate original sample assays and identify possible mineral resource areas. Samples include an 18-foot interval of core, one pit wall rock chip sample, and two spoil pile samples. Table 14.1 summarizes the gold assay results from this sampling effort. The samples were not collected to be representative of the material, but only to give an indication if the original assays were "within the ballpark." The core sample was taken from an original drill core from within a higher-grade zone of the Graben deposit. It was cut from the remaining sawed core half and was re-sawed to produce a quarter sample of the core. There is no way to verify if all of the original sawed half of the core remained in the core box when Gryphon Gold Corporation obtained the newly sampled material. The pit sample was taken from the southeast margin of the East Ridge pit, on the pit floor over a 15-foot horizontal interval at coordinates 374,586 E., 4,249,990 N., and 7,425 feet elevation. The material was oxidized and silicified andesite. Samples were also collected from the spoil pile from holes BOR 11 and BOR 13 on Heap 1. All sample preparation and assays were performed by AAL.

While none of these new samples represent a statistical valid test of previous assays, they do indicate that the data used in developing knowledge of the property is generally reasonable and is within the appropriate gold grade range. The average value for the core interval is slightly lower than the original assay, but given that the new sample was about one-quarter of the original sample, within a higher-grade gold zone, variations are to be expected. The new assays support the contention that the interval is within the high-grade gold zone of the Graben deposit. The sample from the East Ridge Pit floor supports the contention that economic gold grades do exist at the pit margin. The results from the drill holes in the heaps are comparable to original assays, given that the new samples are not a systematic sample, totally representative of the material drilled.

Table 14.1 - Results of Selective Check Sampling at Borealis

Location	Original/Historical Assay Value	Recent Assay Value
CBO023 597-615’	0.201 opt Au	0.162 opt Au
East Ridge Pit floor		0.018 opt Au
BOR11 Heap 1	0.030 opt Au	0.026 opt Au
BOR 13 Heap 1	0.023 opt Au	0.019 opt Au

14.3 Data Base Verification

Five percent of the drill holes used in the resource model was checked by Ms. Susan Judy, Senior Geologist, a consultant to Gryphon Gold. Within the four model areas, 89 drill holes were randomly chosen and the following information was verified from data in the paper files: collar coordinates, hole depth, hole elevation, hole angle/dip and assays. The error between the data base and paper files was less than one-third of one percent overall for hole data and gold assay data. The error for silver assay data, which was not used in the resource model, was 6.1 percent.

15.0 Adjacent Properties

The nearest mining property to the Borealis Gold Project is the Esmeralda Project (formerly the Aurora Mine) owned and recently operated by Metallic Ventures (Figure 15.1). The Esmeralda Project in the Aurora Mining District lies 10 miles southwest of the Borealis property.
The Aurora Mining District had historical production of approximately 1.9 million ounces of gold and more than 2.4 million ounces of silver from as many as 30 veins (Vanderburg, 1937). Remaining mineral resources reported by Metallic Ventures in early 2003 were 1.3 million ounces of gold (Metallic Ventures Gold, Inc., 2004). The mineralized system is a low-sulfidation type with gold and minor silver in banded quartz-adularia-sericite veins hosted by Tertiary volcanics.

The Bodie Mining District is further southwest, 19 miles from the Borealis Mine site, along the same trend and has a reported 1.5 million ounces of gold and nearly 7.3 million ounces of silver of past production from a series of veins in Tertiary andesite host rocks (Silberman and Chesterman, 1991). The remaining mineral resources were reported at approximately 1.9 million ounces of gold in 1991 (Galactic Resources Ltd., 1991).

The Bodie, Aurora, Borealis, and other minor districts are aligned along a northeast-southwest trend of mineralized districts commonly referred to as the Aurora-Borealis trend.

(Source: Gryphon Gold, 2005)

Figure 15.1 - Location of Borealis Property and Other Important Nearby Gold Mining Properties in the Walker Lane and Aurora-Borealis Cross Trend

Notes:

Bodie Mining District:

Past production - 1.5 million ounces gold and 7.3 million ounces silver (Buchanan, 1981).

Remaining mineral resource - 1.9 million ounces gold
(Last reported by Galactic Resources Ltd., 1991)

Aurora Mining District:

Past production - 1.9 million ounces gold and 2.4 million ounces silver (Vanderburg, 1937)

Remaining mineral resource - 1.3 million ounces gold
(Last reported by Metallic Ventures Gold, Inc. in their 2004 annual report).

Borealis (Ramona) Mining District:

Past production - 0.6 million ounces gold and 1.5 million ounces silver

(The principal author of this report has been unable to verify the information noted above under Figure 15.1. **This information is not necessarily indicative of the mineralization on the Borealis property.** The references to mineral resources are historical, and for general reference purposes only, and may not be compliant with specific Canadian NI 43-101 guidelines.)

16.0 Mineral Processing and Metallurgical Testing

This section has been compiled in association with Gryphon Gold's consulting metallurgist, Jaye T. Pickarts, P.E., a Qualified Person for the purpose of Canadian NI 43-101, Standards of Disclosure for Mineral Projects, and Principal Metallurgical Engineer, Knight Piésold and Co. Samuel Engineering, Inc., a process design and construction management consulting group, has contributed supporting information regarding preliminary metallurgical flowsheet concepts. Bulk density data and tonnage factors were developed and provided by contributing Gryphon Gold authors.

16.1 Introduction

The gold mineralization at Borealis comprises large areas of silicification, hydrothermal brecciation, and advanced argillic alteration in Tertiary volcanic rocks. The volcanic stratigraphy consists of andesite flows, breccias, and tuffs. The gold deposits at Borealis are structurally controlled along a series of northeasterly-trending normal faults that dip steeply to the northwest. Gold generally occurs as submicron-size particles in highly altered andesite and tuff along fracture surfaces during late stage overgrowth on sulfide crystal faces (Eng, 1990 and Honea, 1988). Gold mineralization is finely disseminated and/or partially bonded with pyrite, and although there are very little ore mineralogy data available, historical operating reports suggest that some coarse gold may exist. Gold that is bound in pyrite or pyrite-silica is not easily recovered by simple heap-leach cyanidation (Behre Dolbear, 2004). There are no reports of carbonaceous refractory components within the old heap or dump materials. The previous mine operator employed a Merrill Crowe circuit in order to recover silver, followed by a retort to remove mercury.

16.2 Metallurgical History

Historically, eight open pit mines were developed at the Borealis project during its operating years from 1981 to 1990. They include the Borealis, East Ridge, Deep Ore Flats, Gold View, Freedom Flats, Northeast Ridge, Jaimes Ridge, and Cerro Duro mines. Each pit has associated waste-rock disposal areas proximate to the mine area. Two of the pits, the Borealis and the Deep Ore Flats, were backfilled with mine waste produced from proximate pits. Processing was by conventional cyanide-agglomerated heap leaching using both permanent and reusable pads. Precious metals were recovered using a Merrill Crowe process. Historical data for this section was drawn from Bechtel Group, Inc., (1980), Chemex, (1986), Houston International Minerals Corporation, (1981, 1982, 1983a, 1983b, 1983c, 1983d, 1983e, 1984, 1986), Washington Group International, Inc., (2003), Whitney, (1996), and Whitney and Whitney, Inc., (1996).

Historical heap-leach operations throughout the 1980's typically produced gold recoveries in the upper 70 to mid-80 percent range with silver recoveries ranging from 15 to 50 percent. These ores were primarily oxide and mixed oxide, and as such required cement agglomeration in order to achieve optimum solution percolation, pH control, and precious metal dissolution. Previous heap-leach operations also processed ROM ores (uncrushed), which were typically low-grade material that was stacked on the upper lifts of the heap leach pad. Historical gold recoveries for ROM ore ranged from 20 to 50 percent, and silver recoveries were typically less than 20 percent. There has been no current test work performed on ROM-sized samples.

16.3 Previous Metallurgical Investigation

In 2004, the first phase of metallurgical test work was developed for the exploration drill samples. This work focused on determining the amenability of gold to cyanidation and the effect of particle size on gold recovery. For this program the BMC geological staff collected 249 samples from historical leach pad areas and waste dumps (under the supervision of Qualified Person, Roger Steininger, Ph.D., CPG) . These samples were sent to AAL in Sparks, Nevada for analysis. The sample areas included:

- Five old leach pads (no. 1 – no. 5)
- Borealis Waste Dump

Only old leach pads no. 1, no. 2, and no. 3 and the Borealis Waste Dump contained sufficient gold grades to warrant additional metallurgical testing. The metallurgical test work has not been completed on old Leach Pad no. 2 samples.

Assay results indicate recoverable gold content in existing Leach Pad no. 1 and Pad no. 3 and in half of the Borealis Waste Dump. Shake leach testing, which consisted of a 200-gram sample sized to 80 percent passing 200 mesh and agitated leached for 2 hours, was conducted on Pad no. 1, Pad no. 3, and the Borealis Waste Dump. This produced encouraging results with gold recoveries averaging about 84 percent, 82 percent, and 100 percent, respectively. Since Leach Pad no. 1, Pad no. 3, and the Borealis Waste Dump showed the most encouraging results; only this material was subjected to additional metallurgical testing in this program.

Bottle roll leach testing was conducted on samples from these three locations. Bore hole composite samples were split, and duplicate bottle roll tests were conducted at material sized to 80 percent less than 1 ½, 1, ¾, and ½ inch. Triplicate head assays were run on the composite sample, and each test underwent a 72-hour cyanide leach, had triplicate tail assays, and the cyanide concentration was maintained at 1.0 g/l. The cyanide shake testing was conducted by AAL and the cyanide bottle roll tests were conducted at McClelland Metallurgical Laboratory. A summary of these 2004 data are shown in Table 16.1 below.

Table 16.1 - Summary Metallurgical Results, Scoping Bottle Roll Tests
Borealis Composites - Phase 1

Composite	Test Number	Feed Size, mm	Au Rec., %	Au g/t Ore			Au g/t, Ore Head Assay	Reagent Requirements, kg/mt ore	
				Extracted	Tail	Calc Head		NaCN Cons.	Lime Added
Pad no.1Comp A	CY-1	38	41.9	0.26	0.36	0.62	0.68	0.23	2.6
Pad no.1Comp A	CY-2	38	42.6	0.26	0.35	0.61	0.68	0.15	2.7
Pad no.1Comp A	CY-3	25	38.5	0.25	0.40	0.65	0.68	0.08	3.2
Pad no.1Comp A	CY-4	25	36.0	0.27	0.48	0.75	0.68	0.15	3.1
Pad no.1Comp A	CY-5	19	42.2	0.27	0.37	0.64	0.68	0.16	5.9
Pad no.1Comp A	CY-6	19	44.3	0.27	0.34	0.61	0.68	0.07	5.9
Pad no.1Comp A	CY-7	12.5	44.4	0.28	0.35	0.63	0.68	0.23	2.6
Pad no.1Comp A	CY-8	12.5	37.5	0.27	0.45	0.72	0.68	0.15	5.6
Pad no.1Comp A	CY-25	12.5	39.7	0.27	0.41	0.68	0.57	0.15	2.9
BOR Pad no.3	CY-9	38	54.9	0.28	0.23	0.51	0.33	0.75	4.6
BOR Pad no.3	CY-10	38	48.3	0.29	0.31	0.60	0.33	0.45	5.5
BOR Pad no.3	CY-11	25	53.3	0.24	0.21	0.45	0.33	0.38	5.4
BOR Pad no.3	CY-12	25	51.2	0.22	0.21	0.43	0.33	0.30	6.3
BOR Pad no.3	CY-13	19	53.2	0.25	0.22	0.47	0.33	0.38	6.8
BOR Pad no.3	CY-14	19	51.3	0.20	0.19	0.39	0.33	0.38	6.0
BOR Pad no.3	CY-15	12.5	50.0	0.17	0.17	0.34	0.33	0.45	4.8
BOR Pad no.3	CY-16	12.5	45.5	0.15	0.18	0.33	0.33	0.31	5.1
BOR Pad no.3	CY-26	12.5	50.0	0.18	0.18	0.36	0.37	0.37	5
Borealis Dump	CY-17	38	61.9	0.26	0.16	0.42	0.39	0.10	7.9
Borealis Dump	CY-18	38	63.4	0.26	0.15	0.41	0.39	0.29	8.1
Borealis Dump	CY-19	25	63.6	0.28	0.16	0.44	0.39	0.28	8.5
Borealis Dump	CY-20	25	77.3	0.58	0.17	0.75	0.39	0.28	8.6
Borealis Dump	CY-21	19	71.4	0.25	0.10	0.35	0.39	0.25	8.1
Borealis Dump	CY-22	19	73.2	0.30	0.11	0.41	0.39	0.17	8.1
Borealis Dump	CY-23	12.5	81.0	0.34	0.08	0.42	0.39	0.08	7.7
Borealis Dump	CY-24	12.5	78.4	0.29	0.08	0.37	0.39	0.25	8.1

16.4 Current Metallurgical Investigation

Metallurgical test work was completed under the general supervision of Jaye Pickarts, P.E. and Jeff Butwell, consulting metallurgist.

16.4.1 Sample Description

Subsequent metallurgical testing was developed in 2005 for a Phase two program that utilized samples collected from exploration drilling in fresh ore zones. In addition, four bulk samples were collected from near surface trenches. The areas from which the samples were collected include:

- Old Leach Pad no. 1
- East Ridge Pit

- Middle Ridge (Northeast Ridge Haul Road)
- Northeast Ridge Pit
- Deep Ore Flats
- Borealis Extension

The sample composites were made by combining a split of each interval from each hole into a hole composite. Each composite and hole was then fire assayed for gold and silver.

16.4.2 Bottle Roll Tests

Bottle roll leach tests were conducted on each of the drill hole composites that were made up from interval samples collected for each respective hole. Since these drill holes are related to development of the resource model outlined in Section 17.0, these metallurgical data were used to estimate the gold and silver recovery used in the project production schedule. For pits and deposits where recent metallurgical data were unavailable, the best available data were sourced from historical records.

The samples were prepared by collecting a spilt of each ore interval and combined to create a composite from each hole. The split was based on the drilling depth of each respective hole and the quantity produced from each hole to prevent a bias from any particular hole. All samples were collected by BMC geological staff, and the composites were made up by McClelland Metallurgical Laboratory staff under the direction of the project metallurgist.

Each composite sample was fire assayed for gold and silver. Assayed head screen and tail screen analysis was also completed on each composite. Duplicate bottle roll tests were conducted on each composite for a 72-hour cyanide leach, maintaining 1.0 g/l cyanide concentration and 10.5 pH. Triplicate tail assays were conducted on each composite.

All of the metallurgical samples were sized to 80 percent less than ¾ inch. However, since an RC rig was used in the drilling program, many of the samples were much finer and therefore used "as received" in the bottle roll tests. The feed size for these "as received" samples ranged from 1.15 mm to 19 mm depending on pit or deposit location. The fire assay work was completed by AAL and the metallurgical testing was completed by McClelland Metallurgical Laboratory. Seventy-seven bottle roll tests were completed on the drill hole samples for the areas listed above.

16.4.3 Column Test work

Similarly, bulk trench samples were obtained from four of the proposed production areas at the mine. Each of the four bulk samples were blended, split, and sized for metallurgical testing. In order to determine the material size for optimum gold recovery, duplicate bottle roll tests were conducted on each test sample that was sized to 80 percent less than 1½, 1, ¾, and ½ inch size fractions. Each bottle roll sample was leached for 72 hours and triplicate tail assays were conducted. A split from each bulk sample was fire assayed for gold and silver and analyzed for sulfur content and mercury. Ores that contained less than 1 percent sulfur are considered oxide or mixed oxide ores.

Agglomeration test work was also conducted on these samples to determine the amount of binding agent needed to ensure optimum solution percolation and agglomerate strength. Only the old Leach Pad no.1 ore required a cement-binding agent since this material was much finer that the expected pit run ore.

Based on the results obtained in the sized bottle roll tests, the one bottle roll size fraction that yielded the best bottle roll recovery (80 percent less than ¾ inch) was then agglomerated and loaded into 12-inch diameter, 20-foot columns for leaching. Barren solution containing 0.25 g/l NaCN was added at an equivalent rate of 0.005 gpm/ft^2. Each column was put under leach at a rate of 0.005 gpm/ft^2 for a minimum of 45 days, to simulate the expected leach cycle. Leaching continued until the gold grade in the pregnant solution reached a point where no additional recovery was observed. Each column then had a 3 to 7 day rest cycle and again barren solution was applied for another 10 days to complete the leach cycle.

At that point, rinsing was initiated to simulate and quantify the heap closure requirements. The leaching times for the columns are as follows:

- Column P-1, Old Leach Pad no.1, 56 days
- Column P-2, East Ridge Pit, 80 days
- Column P-3, Middle Ridge Pit, 80 days
- Column P-4, Northeast Ridge Pit, 80 days

Rinsing continued for 30 to 60 days depending on the ore type and allowed to drain for approximately 20 days. The entire cycle, from leaching through drain down, ranged from 119 to 129 days.

This quick leach cycle will then translate to the ADR plant and will speed up the production of doré metal. It also may be possible to increase the crush size of the agglomerate, which would reduce operating cost, without significantly impacting metal production.

In addition to the metallurgical data that was collected from these tests, several design data were collected, such as moisture content during leach, drain down moisture content, reagent consumptions, drain down rate, etc.

All of the assay and metallurgical work were conducted in Sparks, Nevada by AAL and McClelland Metallurgical Laboratory, respectively.

Column leach curves for the recent column test work (LP-1, East Ridge, Middle Ridge, and Northeast Ridge) are shown in Figure 16.1 below.

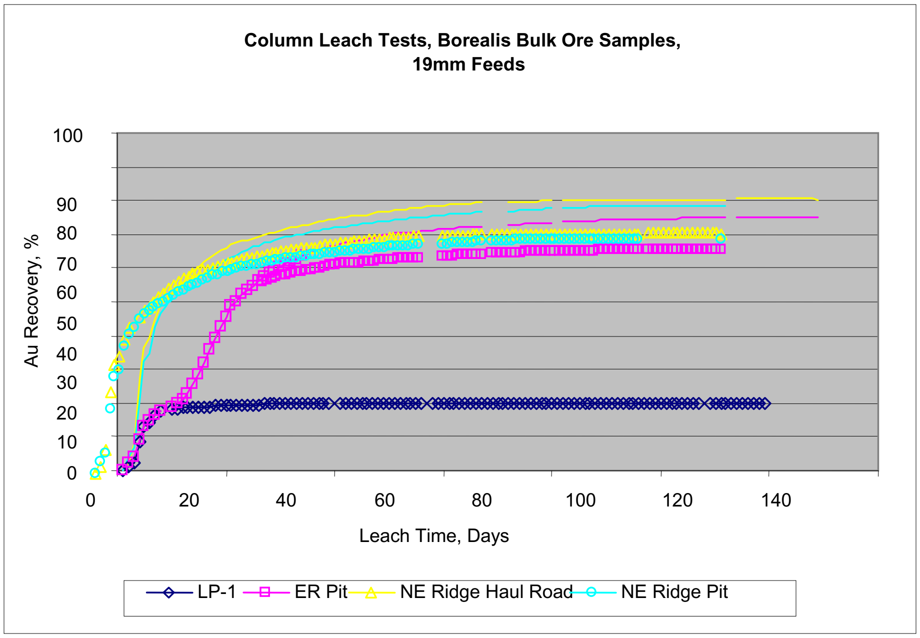


Figure 16.1 - Gold Leach Rate Profiles

16.5 Reagent Consumption

There appears to be more of a correlation between the cyanide consumption and material type than the particle size or gold content. Material that has a higher oxide content had the highest cyanide consumption and moderate lime consumption. Historically, ore from the Borealis property consumed 0.5 lbs of cyanide per ton of ore and 10 lbs of cement per ton of ore. For these metallurgical tests, cement was only used in the old Leach Pad no. 1 ore, since it had higher fines content. All of the other ores used lime as the agglomeration binder and alkalinity control. The column data show that the cyanide consumption ranged from the historical 0.5 lbs/ton to 1.3 lbs/ton. This may be attributed to the higher sulfur content of the ore. Lime consumption was substantially lower than the historical cement consumption, ranging from 1.6 lbs/ton to 5.0 lbs/ton, without a loss in agglomerate strength.

16.6 Summary of Results

All of the metallurgical samples show variability in the head gold content, especially with the Northeast Ridge ore. This can be explained by reviewing the mineralogy of the Borealis deposit, which indicates varying levels of oxides, sulfides and associated coarse gold throughout the deposit.

Since the drill holes are directly related to development of the resource model outlined in Section 17.0, these metallurgical data were used to estimate the gold and silver recovery used in the project production schedule. For pits and deposits where recent metallurgical data were unavailable, the best available data were sourced from historical records. The column data were mainly used for engineering design purposes since the bulk sample was obtained from only one location within the respective deposit and may not fully represent the estimated metal recovery.

The old Leach Pad no. 1 produced the lowest recoveries from both the bottle roll and column leach tests. This ore is fairly fine grained and had undergone a full leaching cycle during the 1980's operation and would be expected to produce low recoveries. The variation in head grade samples may be attributed to coarse gold, solution lensing in the heap, or incomplete gold dissolution. This material also had the highest sulfur content, 1.75 percent. The material from Leach Pad no. 1 that was used for the bottle roll and column test work, may have been sourced from the Freedom Flats Pit which had increasing sulfide material with depth. This can be attributed to the previous mine operators who mined and stacked more mixed oxide-type ore on the top of Leach Pad no. 1 as their operation entered closure.

The fresh ore samples from the various trenches and drill holes produced significantly higher recoveries and somewhat better head assay consistency. Gold recoveries for the Northeast Ridge Pit and Middle Ridge area ranged from 70 to 76 percent, indicating that these ores were most likely oxide and are consistent with historical data. The East Ridge recovery data are somewhat lower (63 percent gold recovery) and may indicate a mixed oxide type of ore. The preliminary metallurgical work that was conducted for the Deep Ore Flats and Borealis Extension indicate good gold recoveries ranging from 74 to 78 percent from bottle roll tests.

In reviewing all of the test data, the column metallurgical test work, as expected, produced higher gold recoveries. Column data are typically very similar to what would be expected in an actual heap leach pad for that sample. Cyanide solution is applied at a steady application rate, reagent addition is kept constant, and there is plenty of oxygen to maintain the dissolution of gold. However, since the bulk sample was obtained from only one location within each respective deposit, these recovery data could not be solely used to predict the estimated metal recovery.

Silver analysis from the metallurgical test work is relatively low especially in the mixed oxide ores. The historical production records indicate that the average silver recovery was 23.2 percent. The recent metallurgical test work produced recoveries ranged from 2.7 percent for the old

Leach Pad no. 1 ores to 44.9 percent for the Middle Ridge ores. Silver recoveries are expected to increase somewhat over the indicated recoveries determined by the metallurgical test work. This increase can be attributed to the slower silver leach kinetics that would result in additional silver recovery from continued leaching after achieving the expected gold recovery.

Silver recovery data were unavailable for some of the pits and deposits, and for the old heap and dump materials. Therefore, the best available data were sourced from historical metallurgical test work for the pits and deposits and from the historical production records for the old heaps and dumps.

Table 16.2 below summarizes the estimated metal recovery from the respective ore locations.

Table 16.2 - Estimated Gold and Silver Recoveries

Area	Range of Au Recovery	Estimated Au Recovery	Range of Ag Recovery	Estimated Ag Recovery
Borealis Upper	62 – 86	78.0	25 – 81	55.3
Borealis Main	62 – 86	78.0	25 – 81	55.3
Deep Ore Flats	59 – 85	74.1	28 – 51	39.0
Freedom Flats	20 – 80	75.0	-	23.2
Gold View/East Ridge	40 – 92	63.4	8 – 33	23.2
Northeast Ridge	37 – 85	70.0	14 – 29	28.4
Middle Ridge	46 – 92	76.3	7 – 60	44.9
Orion's Belt	55 – 94	75.3	52 – 71	54.6
Old Leach Pads	-	43.3	-	23.2
ROM Leach Pads	-	50.9	-	23.2
Dump Material	62 - 86	71.3	25 - 81	55.3

A separate series of bottle roll tests were conducted that evaluated the recovery effects of increasing the initial cyanide concentration from 1.0 gram per liter to 2.0 grams per liter. These results indicate gold recoveries increasing 0 to 5 percent depending on ore type and silver recoveries increasing 0 to 8 percent depending on ore type. While further investigation is warranted, these data indicate that there may be some upside potential to increase both gold and silver recoveries for certain ores.

16.7 Bulk Density and Tonnage Factor

Eight core samples from the Graben deposit were collected for bulk density measurements, which were completed in March 2005. Samples were collected to be representative of alteration types and grades within the deposit. Sample weights range from 197 to 1,203 grams and average 516 grams. Table 16.1 summarizes the alteration characteristics and grade ranges for each sample. Bulk density measurements were performed by McClelland Metallurgical Laboratories, (Sparks, Nevada) using the standard water displacement method. Bulk density results are displayed in Table 16.3. A weighted average tonnage factor, considering alteration and grade, is 12.24 ft^3/ton for the entire Graben deposit. Within the greater than 0.10 opt Au zone the density averages 11.69 ft^3/ton and within the lower grade zone (0.01 to 0.10 opt Au) the density is 12.52 ft^3/ton.

Table 16.3 - Alteration and Grade for Bulk Density Samples

Sample	**Alteration Type**	**Grade**	**Specific Gravity**	**Tonnage Factor (ft^3/ton)**
CBO2@729	Strong silicification and pyrite, with quartz veins	>0.25 opt Au	2.72	11.8
CBO6@784	Strong silicification and moderate pyrite	0.0X opt Au	2.63	12.2
CBO23@658	Strong silicification and pyrite, with quartz veins	>0.25 opt Au	2.68	11.9
CBO24@585	Strong silicification and pyrite	0.10-0.25 opt Au	3.12	10.3
CBO28@722	Strong silicification and moderate pyrite	>0.25 opt Au	2.44	13.1
CBO31@638	Moderate silicification and pyrite	>0.25 opt Au	2.69	11.9
CBO32@660	Strong silicification and pyrite, with quartz veins	0.10-0.25 opt Au	2.60	12.3
BC982@1000	Strong silicification and moderate pyrite	0.0X opt Au	2.49	12.9

Other tonnage factor data are available in the historic database. The tonnage factor for the mined portion of Freedom Flats is reported to be 16.4 ft^3/ton (Eng, 1991). Specific gravity measurement for Borealis, East Ridge, and Northeast Ridge deposits are summarized in Hoegberg (2000), but those measurements did not use accepted methods for measuring bulk density and are not considered reliable. Considering the absence of reliable bulk density data, tonnage factors were estimated based on historical tonnage factors and comparisons with similar gold deposits. The tonnage factors used for the resource estimate are shown in Table 16.4.

As would be expected, materials with the lower tonnage factors are the most silicified and commonly contain sulfides. The lighter tonnage factors are for material that is more argillized and oxidized.

Table 16.4 - Bulk Densities for Resource Estimation

Deposit	Tonnage Factor (ft^3/ton)
Dump or Backfill	20.0
Alluvium (QAL)	18.0
Coal Valley (TCV)	16.0
Graben Low-Grade Zone	12.5
Graben Mid-Grade and High-Grade Zones	11.7
Other Deposits Oxidized	13.0
Other Deposits Partial Oxidation	13.0
Other Deposits Sulfides	12.5

16.8 Heap Leach Processing Alternatives

It is often difficult to develop correlations and draw conclusions when evaluating ore with lower gold tenor as is found in the existing heaps and dumps. However, these metallurgical data do provide several clear options for improving or upgrading the gold recovery. This metallurgical discussion is based on the assay and screen analysis results from these metallurgical samples.

The Borealis Mine Dump has more coarse rock than Heap 1 or Heap 3, and the rock appears to be more durable. In addition, the Borealis Mine Dump rock has a lower gold grade and higher recovery which, when combined with the higher rock content, makes it ideal for use as a drain layer on the heap. Any recoverable fines component that will be screened out while separating the coarse rock may be used as a protective layer on the heap or agglomerated with the Heap 1 or Heap 3 material.

16.8.1 Heap Leach Plus Gravity

Future metallurgical test work will investigate the technical viability of producing a gravity concentrate. One option might be to process all of the material from Heap 1 and Heap 3, which would include separating the minus ¼-inch fraction prior to a gravity circuit by wet screening and then slurry agglomerating the fines onto the gravity circuit tail (remaining coarse fraction after the gravity separation). The plus ¼-inch fraction would then be resized to remove the plus ½-inch material and processed in a gravity circuit to remove any coarse gold. A gravity circuit could potentially recover the coarse gold. The weighted average split (52 percent) of the finer-size fraction represents about 3.1 million tons with a weighted average gold grade of 0.015 opt and an indicated gold recovery of 56 percent.

Based on the data developed for the 2005 Technical Report, the final combined heap leach feed material for this option (the gravity tail plus the fines fraction) would contain approximately 5.4 million tons with a weighted average gold grade of 0.013 opt and an indicated gold recovery of

50.3 percent. Although this option utilizes all of the Heap 1 and Heap 3 material, the gold grade and recovery from the heap leach may not be optimal. The fines fraction (minus ¼ inch) from Heap 1 and the coarse fraction from Heap 3 have both a lower gold content and recovery, thus reducing the overall heap leach grade and recovery.

16.8.2 Heap Leach Plus Gravity (Screen out the Low Grade)

Another process option would screen out these lower grade-size fractions (minus ¼ inch from Heap 1 and the plus ¼ inch from Heap 3) and process only the material with a higher grade and recovery. This process would wet screen out the plus ¼-inch material from Heap 1, which would then be resized and screened to remove the plus ½-inch fraction. The resized minus ½-inch fraction would then be processed in a gravity circuit to remove any coarse gold. A gravity circuit could potentially recover the coarse gold. The minus ½-inch fraction has a gold head grade of 0.031 opt and an indicated leach recovery of 55.4 percent and thus would be processed in the heap leach heap.

Conversely, the minus ¼-inch material would be screened out from Heap 3 and processed in the heap leach heap. This material has a gold head grade of 0.018 opt and an indicated leach recovery of 72.1 percent. The combined heap leach material for this option (the plus ½-inch fraction from Heap 1 and the minus ¼-inch fraction from Heap 3) would have a gold head grade of 0.22 opt and a recovery of 67.3 percent.

The lower-grade material that was screened out of Heap 1 and Heap 3 notionally would be stockpiled and potentially could be used in the construction of the protective layer and/or drain layer on the leach heap.

Other flow sheet iterations could be and probably should be explored with additional and more detailed metallurgical test work. Blending the Heap 1 and Heap 3 materials with other mined pit ores is also a viable option. This secondary leach ore could also be used as “fill in” production during waste mining periods or equipment maintenance shutdown.

17.0 Mineral Resource Estimates

17.1 General Statement

An updated mineral resource estimate for the main Borealis study area was prepared by Steve Wolff, Mining Engineering Consultant. The study area encompasses the core of the BMC holdings and the principal gold deposits with known mineral resources. This estimate updates the previous estimate by Noble in 2007 as follows:

- New drilling by Gryphon Gold from late 2006 through November 2007 was added to the drill hole database. The new data included 86 reverse circulation hole. The mineral zone outlines were modified as needed for the new drilling.
- The interpretations for oxidation class were modified using the new drilling from late 2006 through November 2007 and reinterpretation by Gryphon Gold geologists.
- Resource models for the deposits on the west side of the property include the Jaimes Ridge, Cerro Duro, and Purdy Peak areas; the east side includes Boundary Ridge and Bullion Ridge areas. Both models were prepared and are now included in the mineral resource estimate.
- Silver grade estimates were added to the resource models.

MineSight® software from Mintec, Inc. was used to create the resource models described in this section of the report.

17.1.1 Independent Review

The principal author supervised and reviewed Wolff's resource estimates, in association with Mr. Steve Craig (junior author of this document). Steve Wolff, while not a Qualified Person as defined by NI 43-101, has the experience necessary to be considered a QP; what lacking is membership in a recognized professional organization (see Wolff's certificate at end of this document). The principal author in his 40+ year career has been involved with, conducted, and supervised numerous resource estimations for porphyry and a variety of gold deposit types, as detailed in Steininger's certificate.

The review and evaluation of the Wolff model consisted of plotting out the block model with grades and classifications, along with original geological data and drill hole composite grades on cross section spaced every 100 feet through each deposit. These were visually inspected to determine if block grades were representative of surrounding drill holes, that the grade contour boundaries were adhered to, and if geological parameters were respected. The block model was also examined with respect to the developed variography and other statistically data. It is the opinion of Steininger and Craig that the Wolff model is a reasonable representation of mineralization encountered during drilling and should be an accurate resource model.

17.2 Mineral Resource Model

17.2.1 Resource Block Model Size and Location

Four three-dimensional block models are used to estimate the gold resource in the several deposits on the Borealis property. Each of these models uses 20 by 20 by 20-foot blocks and 3 out of 4 are rotated so that model north is N. 50° E. The North and South Models overlap slightly to more easily maintain continuity across the model boundaries, as shown on Figure 17.1, which displays the ore zones for the three rotated models, i.e., the South, North, and East Models. Model size and location parameters are summarized in Table 17.1 for the principal gold deposits in the South and North Model areas.

Table 17.1 - Block Model Dimensions and Location Parameters (Main Area)

	South Model			North Model		
	East (Columns)	**North (Rows)**	**Elevation (Levels)**	**East (Columns)**	**North (Rows)**	**Elevation (Levels)**
Origin	44200.00	22000.00	5800.00	51208.91	24226.03	7040.00
Block Size	20 ft	20 ft	20 ft	20 ft	20 ft	20 ft
Number Blocks	285	360	106	150	400	68
Total Length	5,700 ft	7,200 ft	2,120 ft	3,000 ft	8,000 ft	1,360 ft
Rotation	South and North Models are rotated 50 degrees clockwise from true north.					

Note: The model origin is located at the lower left corner of the block at the lower left corner of the model. The coordinates of the origin are specified before rotation to the local grid system. The coordinates shown above are equal to the Borealis grid coordinate less 400,000 East and 1,300,000 North.

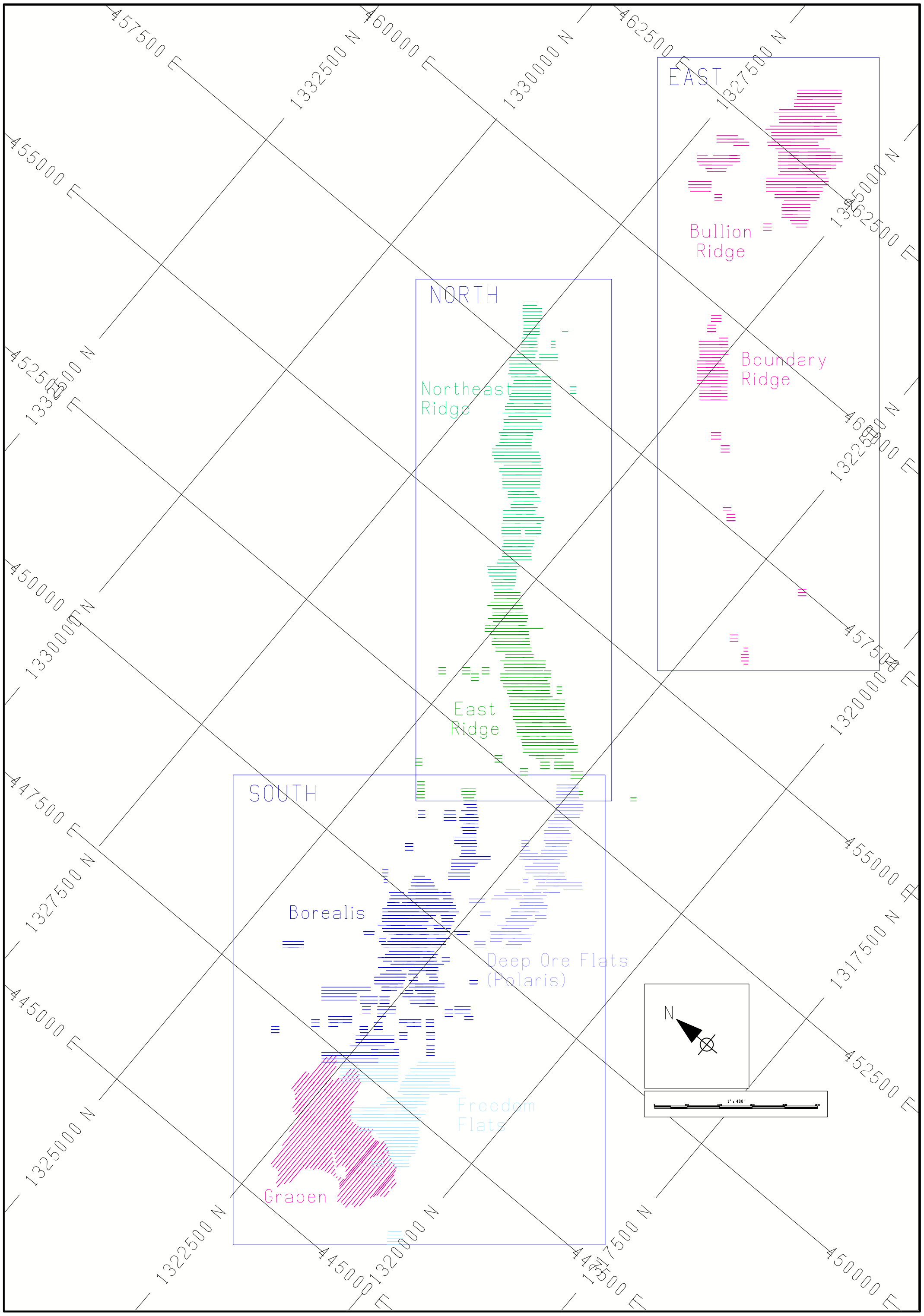


Figure 17.1 - Map Showing the North, South, and East Area Model Boundaries with Deposit Areas

A single resource model was used for the West Area deposits and one was used for the East Area deposits. The parameters for the West and East block model areas are shown in Table 17.2. Note that the West Area model was not rotated, but the East Area model was rotated to the same orientation as the South and North models.

Table 17.2 - Block Model Dimensions and Location Parameters (West and East Areas)

	West Model			East Model		
	East (Columns)	**North (Rows)**	**Elevation (Levels)**	**East (Columns)**	**North (Rows)**	**Elevation (Levels)**
Origin	33000.00	32500.00	6800.00	55118.59	22676.88	7400.00
Block Size	20 ft	20 ft	20 ft	20 ft	20 ft	20 ft
Number Blocks	350	225	52	170	470	60
Total Length	7,000 ft	4,500 ft	1,040 ft	3,400 ft	9,400 ft	1,200 ft
Rotation	West Model is not rotated. East Model is rotated 50 degrees clockwise from true north.					

Note: The model origin is located at the lower left corner of the block at the lower left corner of the model. The coordinates of the origin are specified before rotation to the local grid system. The coordinates shown above are equal to the Borealis grid coordinate less 400,000 East and 1,300,000 North.

17.2.2 Drill Hole Data

The historical drill hole database (pre-Gryphon Gold) was used unchanged in the Borealis deposit area except for a few collar locations that were corrected and a few selected holes with obvious down-hole contamination that were removed. The potentially contaminated holes were principally airtrack and open-hole rotary holes drilled early in the history of the property, mainly around the original Borealis Mine site.

The assay database for the Gryphon Gold drill hole assays was prepared by Gryphon Gold geologists by compiling the original assay data sheets (Excel and comma-delimited text files) that were sent from the laboratories. After the Excel spreadsheets were exported to comma-delimited text files (CSV), the CSV files were combined into a single file that also contained the name of the source file and the line number of the source file. The combined file was then edited to decode the drill hole names and interval "from's" and "to's" and to align the individual assays so that they were all in the same columns. The assay intervals were then edited to identify standards, blanks, and duplicates, and the "false" from-to intervals for the early blank samples were corrected to the actual from-to intervals. The less than (<) symbols on some of the samples below detection limit were then changed to minus signs (-). In general, the samples below detection limit were assigned a value equal to ½ the detection limit. A maximum value of 0.05 opt Ag was used for silver grades below the detection limit to minimize problems with highly variable detection limits. Multiple assays for the same interval were then averaged to create the final data for resource estimation.

Finally, the new compilation was compared to an original Gryphon Gold compilation by joining the two sets of data and identifying significant differences. Differences between the two sets of data were checked and corrected until no more errors were found in the new compilation. This procedure and the resulting database were vetted by Steve Wolff.

There are currently 2,260 drill holes in the four resource model areas, of which 1,643 intersect zones of mineralization that are included in this resource estimate. The number of drill holes and assays are summarized by zone in Table 17.3.

Average non-composited grades inside the mineralized zones range from 0.009 opt Au to 0.084 opt Au. Variability of assays is moderate to high, with coefficients of variation ranging from 1.02 to 3.33 within zones. The location of drill hole collars is shown on Figures 17.2, 17.3, 17.4, and 17.5 for the South, North, East, and West Area Models, respectively.

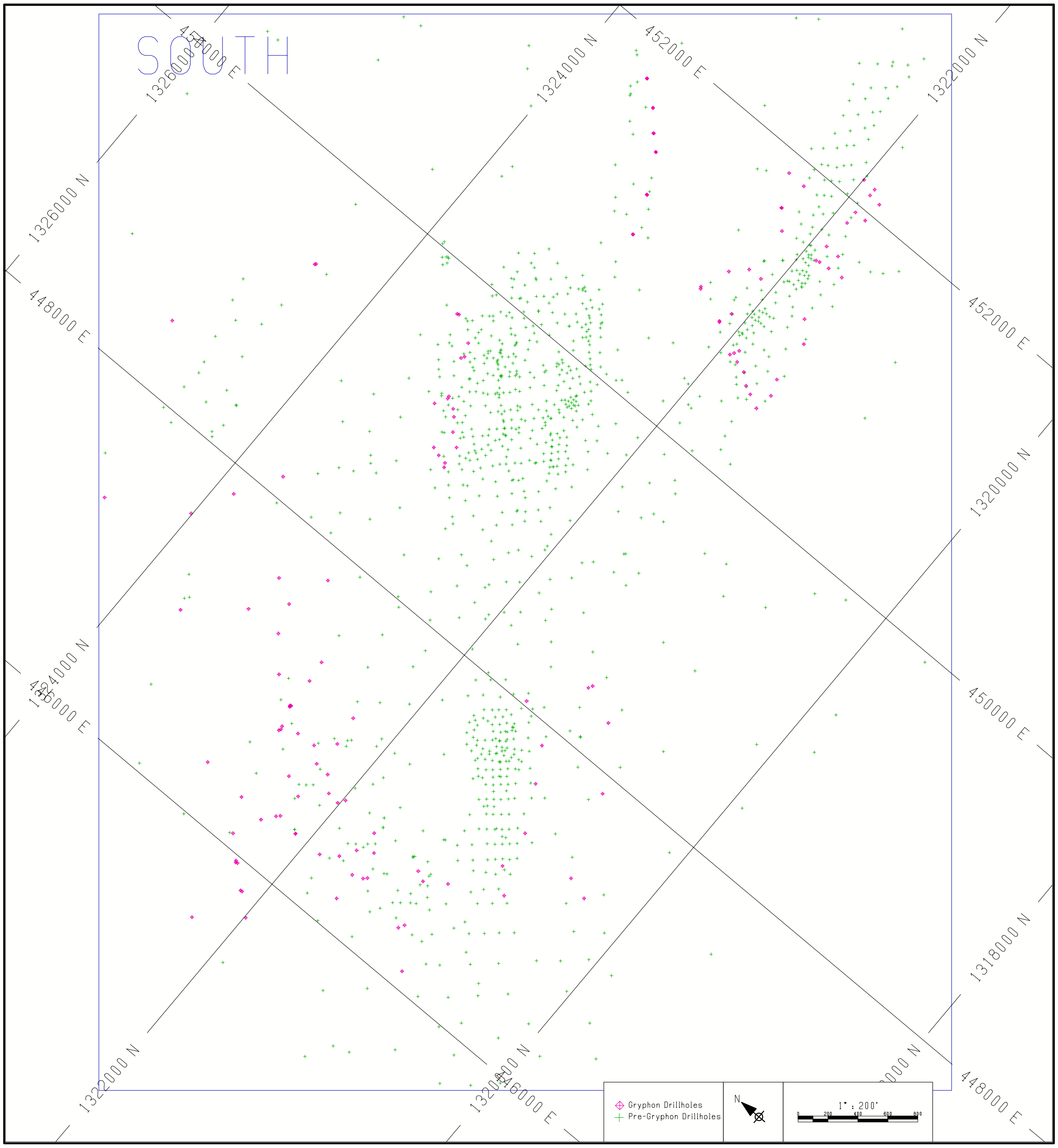
Table 17.3 - Summary of Drill Hole Sample Statistics for Drill Holes Intersecting the Mineralized Zones

Model	Deposit	No. Holes	Total Sample Intervals	Intervals Not Assayed	Intervals Assayed	Assayed Footage	Average Length	Average Gold
South	Graben - LG*	108	2,111	116	1,995	9,869	4.95	0.009
	Graben - HG**	99	3,380	111	3,269	16,182	4.95	0.066
	Freedom Flats	145	4,827	216	4,611	23,051	5.00	0.084
	Borealis	398	5,089	116	4,973	25,150	5.06	0.047
	Deep Ore Flats	153	1,479	9	1,470	7,362	5.01	0.021
	All Mineralized		16,886	568	16,318	81,613	5.00	0.054
	No Zone	326	73,475	3,823	69,652	351,633	5.05	0.001
North	East Ridge	225	4,878	49	4,829	24,212	5.01	0.020
	Northeast Ridge	269	5,807	88	5,719	28,660	5.01	0.019
	All Mineralized		10,685	137	10,548	52,872	5.01	0.019
	No Zone	96	10,737	171	10,566	54,283	5.14	0.001
West	Purdy Peak	38	541	5	536	2,685	5.01	0.021
	Jaimes Ridge	102	1,048	11	1,037	5,187	5.00	0.072
	Cerro Duro	43	774	3	771	3,855	5.00	0.045
	All Mineralized		2,363	19	2,344	11,727	5.00	0.052
	No Zone	142	7,276	166	7,110	35,560	5.00	0.001
East	Boundary Ridge	22	136	0	136	685	5.04	0.011
	Bullion Ridge	41	881	47	834	4,180	5.01	0.012
	All Mineralized		1,017	47	970	4,865	5.02	0.012
	No Zone	53	5,682	60	5,622	28,115	5.00	0.001
South	All Data Inside Model Limits	1,229	90,361	4,391	85,970	433,246	5.04	0.011
North		590	21,422	308	21,114	107,155	5.08	0.010
West		325	9,639	185	9,454	47,287	5.00	0.013
East		116	6,699	107	6,592	32,980	5.00	0.002
Models		2,260	128,121	4,991	123,130	620,668	5.04	0.011
Outside Models		426	31,544	763	30,781	157,587	5.12	0.001
All Data		2,672	159,613	5,755	153,858	777,990	5.06	0.009

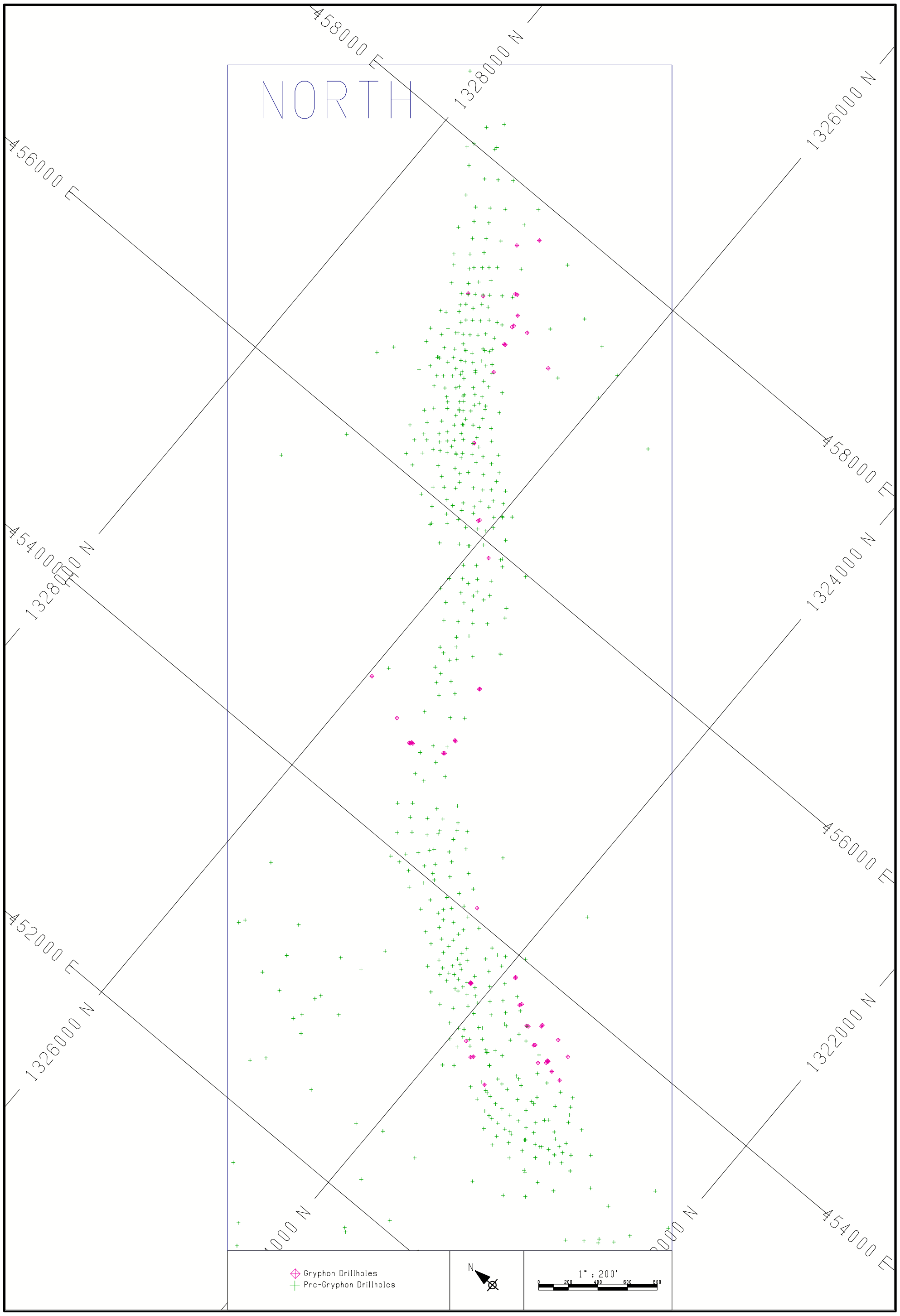
Notes: Drill holes may intersect more than one zone; therefore, the number of holes by zone is not additive. Totals are not additive because of overlap in South and North models.

* LG = low grade, which is defined as the area between the 0.01 and 0.03 opt Au boundaries.

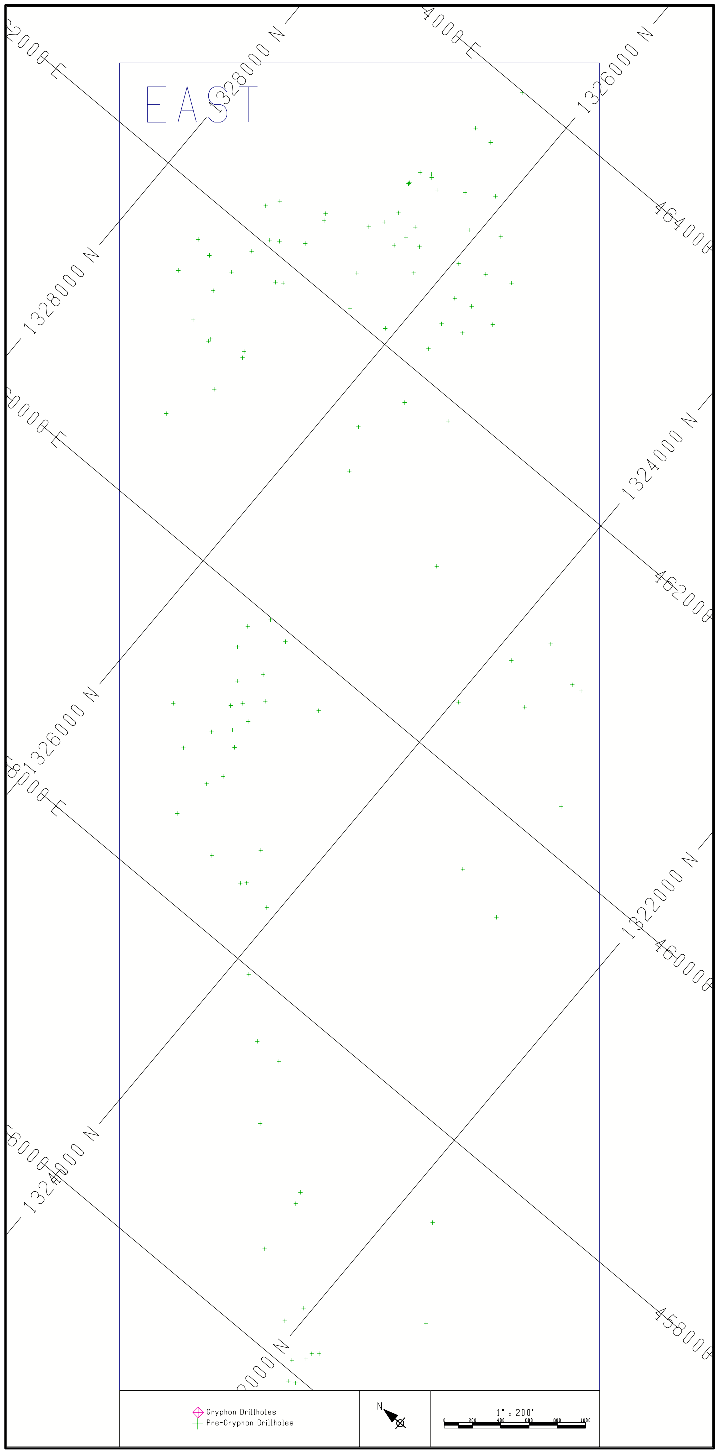
**HG = high grade, which is defined as the area within the 0.03 opt Au shell



(Source: S. Wolff, 2008)
Figure 17.2 - Drill Hole Collar Locations in the South Area Model

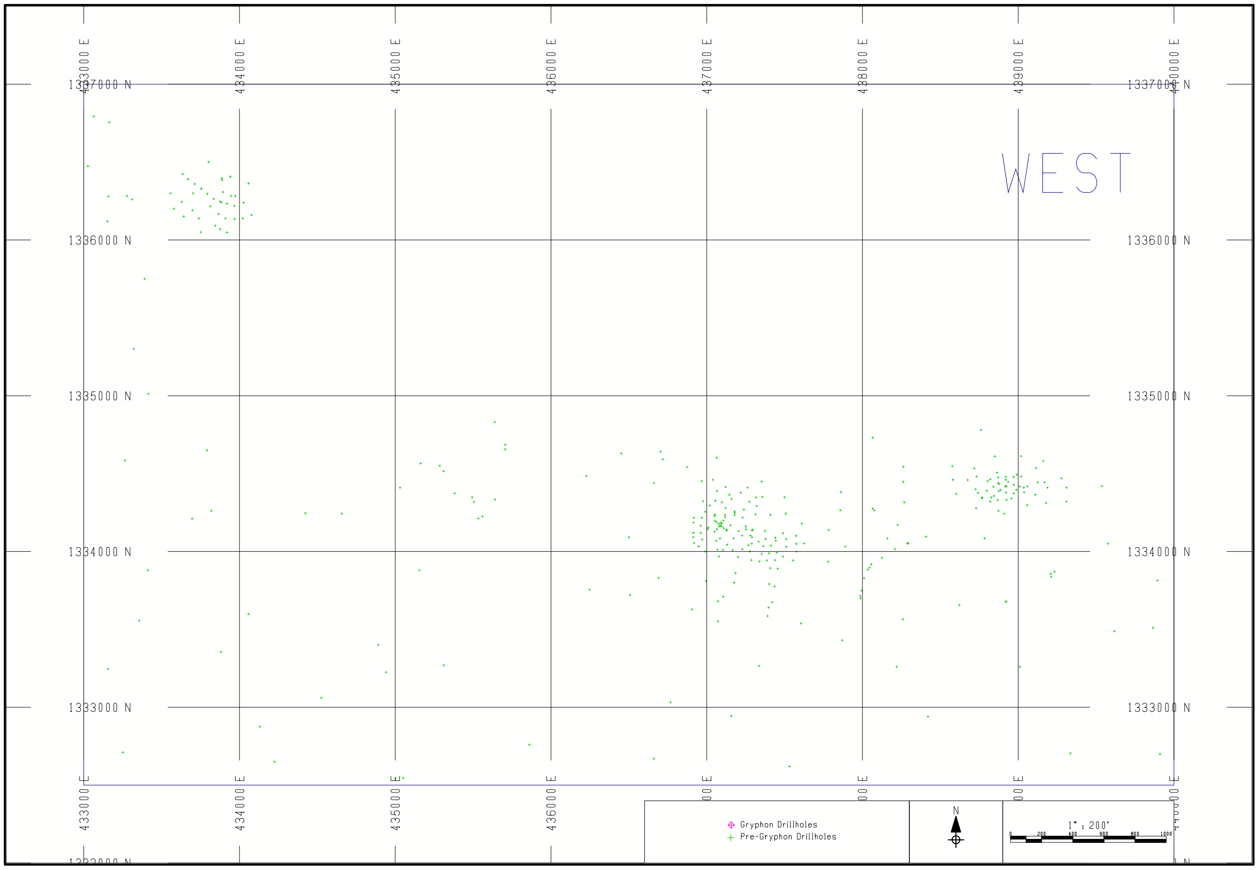


(Source: S. Wolff, 2008)
Figure 17.3 - Drill Hole Collar Locations in the North Area Model



(Source: S. Wolff, 2008)

Figure 17.4 - Drill Hole Collar Locations in the East Area Model



(Source: S. Wolff, 2008)

Figure 17.5 – Drill Hole Collar Locations in the West Area Model

17.2.3 Compositing

Raw assays were composited to 10-foot, fixed lengths for resource estimation using length-weighted averaging. Composite intervals were limited to within the interpreted gold grade zones (as defined in Section 1.2.7), in even 10-foot increments starting from the top of the grade zone in each drill hole. The coordinates of the midpoint of the composite were stored to use for selecting composites in the grade estimation of the three-dimensional model blocks.

Missing sample values were ignored in the calculation of the composited value, having no weighting or sample value influence. Composites with less than 5 feet of assayed drill samples were not used in the grade estimation.

17.2.4 Topographic Data and Models

AutoCAD files, provided by Gryphon Gold, contained topographic contours for the "original" topography, the "end mining" topography, and the "current" topography. The original topography data contains elevation contours at 25-foot intervals with some detailed contours at 5-foot contour intervals. Outside the main Borealis-Ridge areas data are on 40-foot contours. There is no evidence of pits or dumps on the original topography maps. The end mining topography is similar to the original topography, but shows the mined-out pits, some of the heaps, and some of the dumps. An aerial survey for portions of the Borealis property was taken in 2006. The areas not covered by this new survey were treated as in the previous work as follows.

Current topography is similar to the previous two but with more detailed contours at 5-foot intervals. The Borealis and Deep Ore Flats (Polaris) Pits have been backfilled in the current topography and all heaps and dumps are shown in what appears to be the current configuration. The exception is that the Northeast Ridge Pit is shown, but the Northeast Ridge dumps are not shown. The Northeast Ridge dumps were added to the current topography based on surveys of the dump areas in June 2004. The original topographic contours were edited in the area of the Borealis Pit, which appears to have been mined for a few months at the time of the original topography mapping.

Topographic data for the West Area was also available as AutoCAD files. These were edited to merge contours in the outlying areas, with more detailed data in the main part of the West Area. Pre-mining topography was not available for the West Area and was reconstructed using drill hole collar elevations.

There is little known about the dates and accuracy of the topographic data, although they all appear to have been prepared by Echo Bay during its operations. Considering that the Northeast Ridge dumps were not included in the data for the "current" topography, it is likely that it is based on aerial surveys during the final stages of mining that were manually corrected for mining at Northeast Ridge.(Ore Reserves Engineering, 2007)

Gridded topographic models were prepared from the topographic contour data above by generating digital terrain model (DTM) surfaces using MineSight® surface generation software, and overlaying the 20-foot by 20-foot model grid (in plan view) on the surfaces to select grid center point elevations. Because the models were all based on slightly different data, the elevations of the original and end mining topographic (topo) models were set equal to the elevation of the current topographic model if the difference in elevations was less than 5 feet. Several calculated models can be derived from these models as follows:

1. Maximum topo, which is equal to the maximum of current and original topography;
2. Fill topo, which is equal to the minimum of current and original topography; and
3. Minimum topo, which is equal to the minimum of current, end mining, and original topo.

All remaining resources are summarized using the minimum topography, which is the top of hard, unmined rock. The maximum and fill topo models will be used to define fill and backfill materials during mine planning.

17.2.5 Geologic Model for the Thickness of the QAL and TCV Formations

Models for the thickness of the QAL alluvium (geologically known as Qal) and the thickness of the TCV Coal Valley formation (geologically known as Tcv) were developed for the South, North, and West Models. The East model, new to this update, is considered to be all oxide material. These models were based on depths of the bottom of each formation from the drill hole logs as follows:

1. Depths to the bottom of each formation were extracted from the drill hole geologic logs in the Borealis historical data archives. If depths were available from recent relogging of drill cuttings or core, those depths were used rather than depths from the old logs.
2. The XYZ location of each intersection was computed for each formation.
3. Data were compared against the elevation of original (pre-mining) topography. Drill holes that were drilled more than 10 feet below the original topography and had a

zero (0.0) depth for the intersection were discarded since the drill hole was likely drilled from the bottom of a pit and the intersection point would be invalid.

4. The true depth of the intersection point was computed by subtracting the elevation of the intersection point from the elevation of original topography above that point if the hole was an angle hole dipping flatter than 80° from horizontal.

5. The depth of the bottom of QAL and the depth of the bottom of TCV were kriged to the center points of the topographic grid model using a zero-nugget, isotropic, linear variogram. The kriged depth to the bottom of TCV was adjusted so that it was always greater than or equal to the depth to the bottom of QAL.

6. The depths to the bottom of each formation were subtracted from the elevation of original topography to create models of the elevation of the bottom of each formation.

7. The resulting models were reviewed on contour maps and cross sections. A few intersections with anomalous depths were removed from the data. Removal of the anomalous data were justified both by inconsistencies that have been observed in the historical geologic logs, which were done over a long period of time by many different geologists with varied levels of training, and because it is often difficult to recognize the contacts in drill hole cuttings.

8. In some areas, the model was not contouring properly because of the complexity of the surfaces and/or the scarcity of the data. Control points were inserted manually to correct these problems and the depth models were recalculated.

9. A three-dimensional block model of formation type was created using the models of the elevation of formation bottoms as shown in Table 17.4. A code for heaps and dumps was added to this model so heaps and dumps could be identified in resource estimation and reconciliations.

Table 17.4 - Geologic Formation Model

Model Code	Formation	Surface at Top of Formation	Surface at Bottom of Formation
1	Heaps and Dumps	Maximum of Current and Pre-mining Topography	Pre-mining Topography
2	QAL	Pre-mining Topography	Bottom of QAL
3	TCV	Bottom of QAL	Bottom of TCV
4 - 7	Volcanics	Bottom of TCV	Bottom of Model

Although there are some difficulties in defining the depths of the QAL and TCV contacts in drill cuttings and questions regarding the reliability of some of the historical geologic logs, it is believed that the reliability of the Geologic Formation Model is adequate for resource estimation in and around the ore zones. Outside the ore zones, the contours are projected and are only approximate. Continued improvement of the QAL and TCV contact models is recommended both to improve the accuracy of the resource model and to improve the geological understanding of the deposit.

17.2.6 Model of the Depth of Oxidation and Partial Oxidation

The same procedure was used to create the model of the depth of oxidation and the depth of partial oxidation (mixed oxides and sulfides) as was defined above for the QAL and TCV contacts. A three-dimensional block model of oxidation state was created using the models of the Bottom of Oxidation and the Bottom of Partial Oxidation as shown in Table 17.5.

The depths of oxidation models were reviewed extensively for this update, particularly in those areas with new drilling. The primary result of this update is that the depth of partial oxidation has increased relative to the previous estimate.

Table 17.5 - Geologic Oxidation State Model

Model Code	Oxidation Type	Surface at Top of Oxidation Type	Surface at Bottom of Oxidation Type
5	Oxides	Pre-mining Topography	Bottom of Oxidation
6	Partial Oxides	Bottom of Oxidation	Bottom of Partial Oxidation
7	Sulfides	Bottom of Partial Oxidation	Bottom of Model

17.2.7 Grade Zone Models and Basic Statistics

Grade zone models were created for mineral resource estimation to control the shape and continuity of the ore zones. Grade zones were created for all deposits, except the Graben, using a minimum grade of 0.005 opt Au. For the Graben, 0.010 and 0.030 opt Au minimum grade zones were generated. The general procedure for creating the grade zones was as follows:

1. Cross sections perpendicular to the deposits' strikes were generated every 50 feet using the drill hole gold assays. An influence of 25 feet on either side of the section line was used to select the drill holes within each section's volume.

2. Gryphon personnel created grade zone polygons, using the minimum gold grade (0.005 opt Au), on each section within each deposit, except for the Graben deposit.

3. The Graben deposit received a detailed interpretation of geology and grade zoning by geologic consultant Paul Klipfel, who generated 0.010 and 0.030 opt Au grade shells.

4. The grade zone outlines were used to create three-dimensional block models of grade zones by assigning the code of the zone outline to all blocks with any portion of the block inside the outline. In addition, the percentage of the grade zone within all

blocks was stored. By doing this, precise volumes within the grade zone were computed for resource reporting.

5. Grade zone codes were assigned to the composites that are greater than 50 percent within the grade zones. The grade estimation was performed using only the composites that were coded within the grade zones.

6. Histograms, cumulative frequency plots, and variograms were compiled from the composites inside each deposit's grade zones for evaluation of the grade distributions and for grade estimation parameter determination. Except for the East and North Models, all deposits were treated uniquely in block model grade estimation.

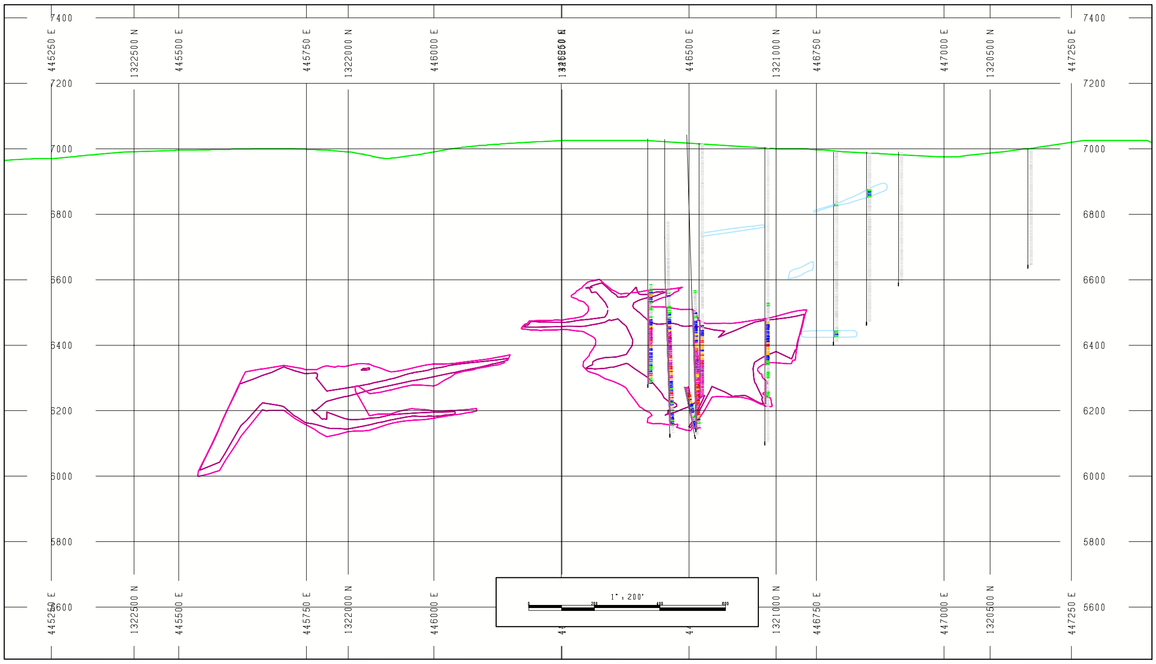
7. Silver was estimated using the gold grade zones and parameters.

Basic composite statistics within grade zones by deposit are given in Table 17.6. Figure 17.1 displays a plan view of all sectional grade zones for the South, North, and East model areas. Examples of typical grade zones in cross section are shown in Figure 17.6, for several sections of the Graben and Freedom Flats deposits. Examples of the resulting grade distributions are shown for the Graben High Grade and Freedom Flats deposits in Figures 17.7 and 17.8, respectively.

Table 17.6 - Summary of Basic Gold Grade Composite Statistics by Deposit (Inside Grade Zones)

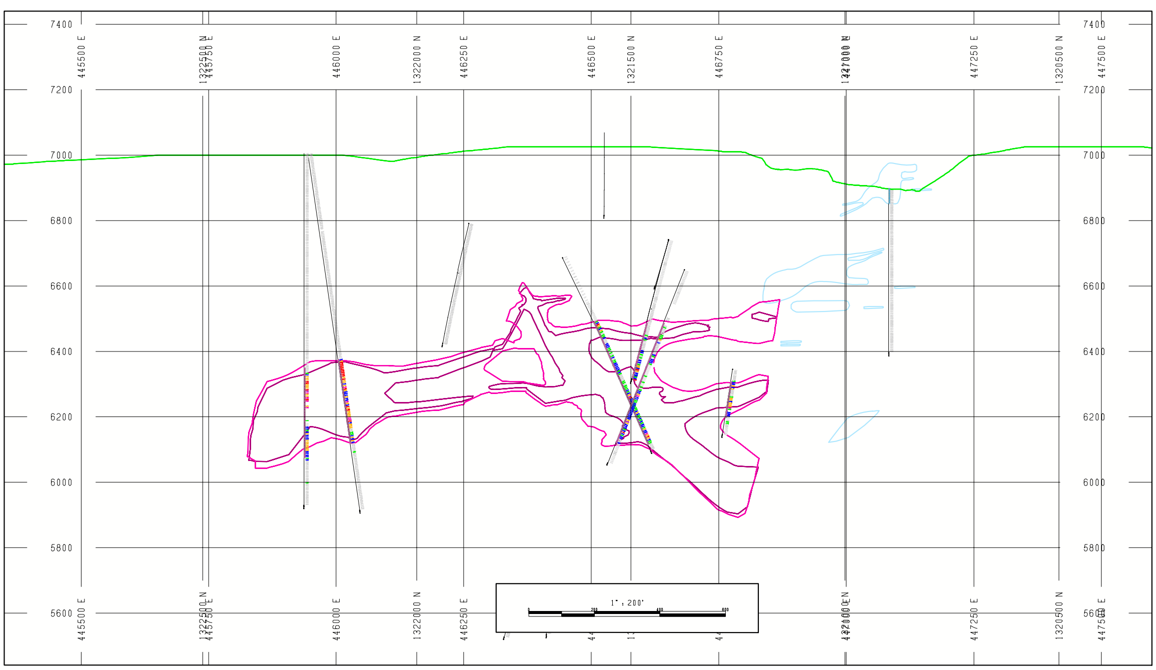
		Deposit Code	Total Length (feet)	Min. Au opt	Max. Au opt	Average Au opt	Coefficient of Variation
South	Graben Low-Grade	10	10,085	0.000	0.235	0.009	1.28
	Graben High-Grade	11	16,347	0.000	2.365	0.066	2.01
	Freedom Flats	1	23,266	0.000	2.176	0.084	1.93
	Borealis	2	25,322	0.000	4.340	0.047	3.18
	Deep Ore Flats	3	7,377	0.001	0.305	0.021	1.25
North	East Ridge	4	24,264	0.000	0.760	0.021	1.50
	Northeast Ridge	5	28,905	0.000	0.353	0.019	1.19
West	Purdy Peak	9	2,703	0.001	0.151	0.021	1.07
	Jaimes Ridge	8	5,227	0.000	0.769	0.072	1.54
	Cerro Duro	7	3,835	0.000	0.322	0.045	1.25
East	Boundary Ridge	11	685	0.004	0.128	0.012	1.35
	Bullion Ridge	12	4,255	0.000	0.109	0.013	0.94

Note: Graben and Boundary Ridge are in separate models, thus having the same code is immaterial.



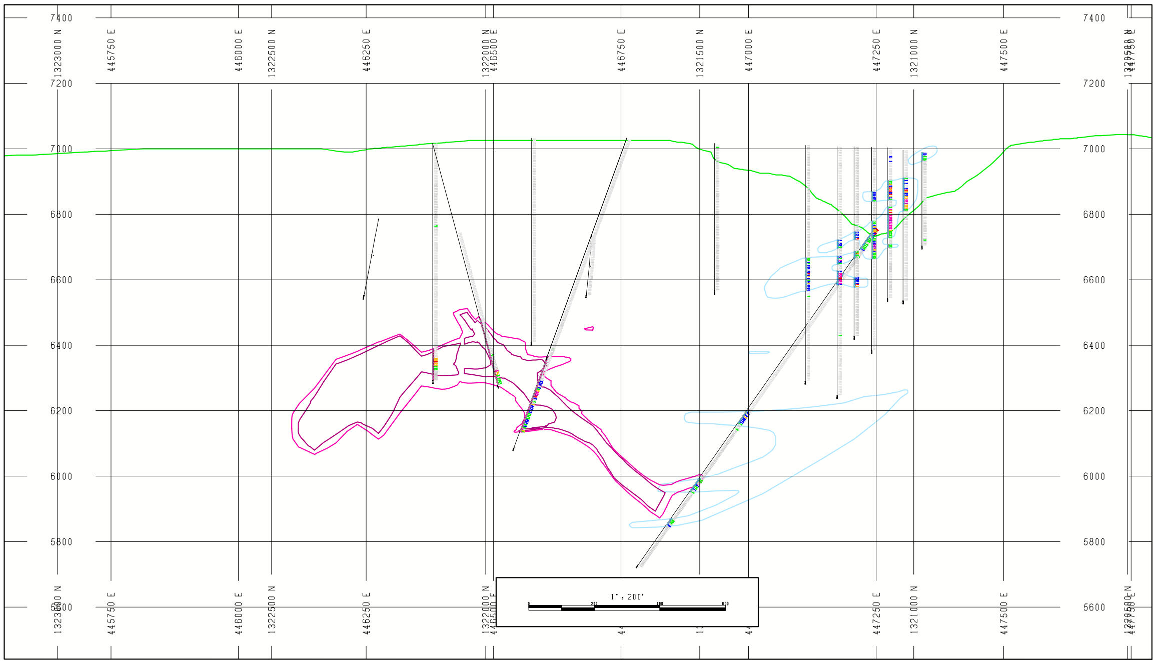
(Source: S. Wolff, 2008)

Figure 17.6 - Examples of Grade Zones on Cross Sections of the Graben and Freedom Flats Deposits – Section 0+1250 (Sections at 140° azimuth – looking N. 50° E.)



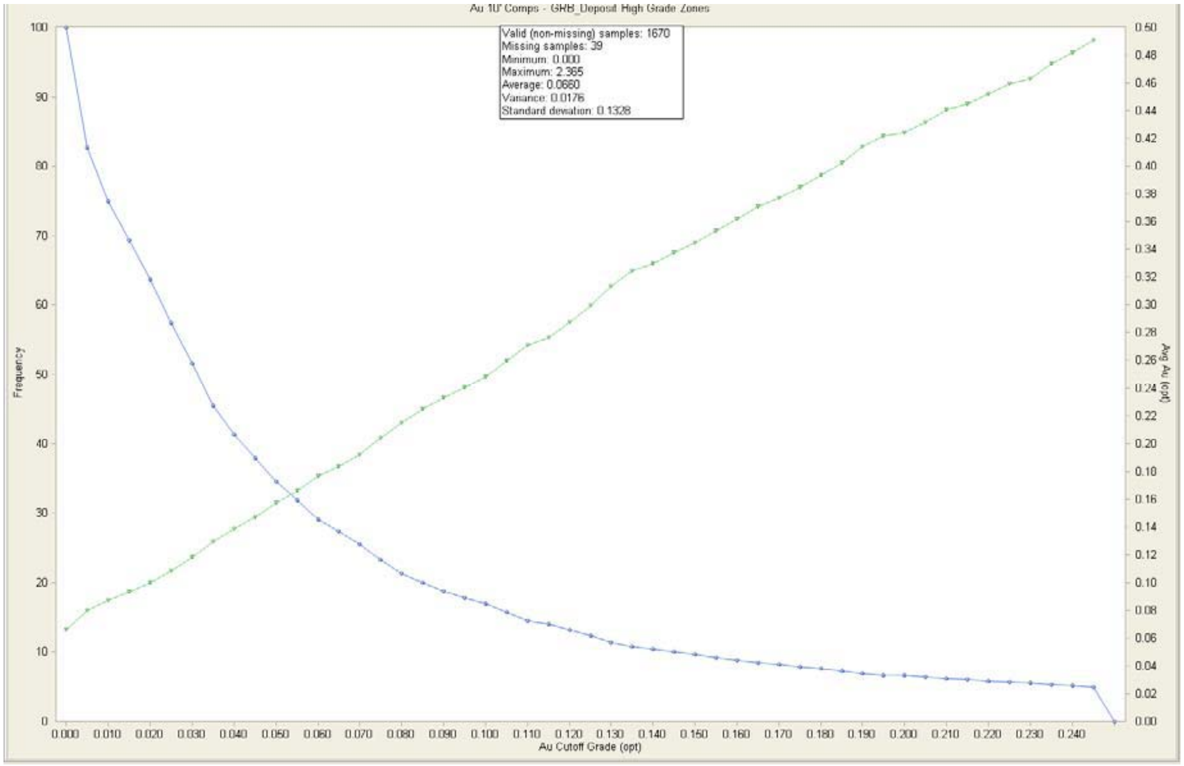
(Source: S. Wolff, 2008)

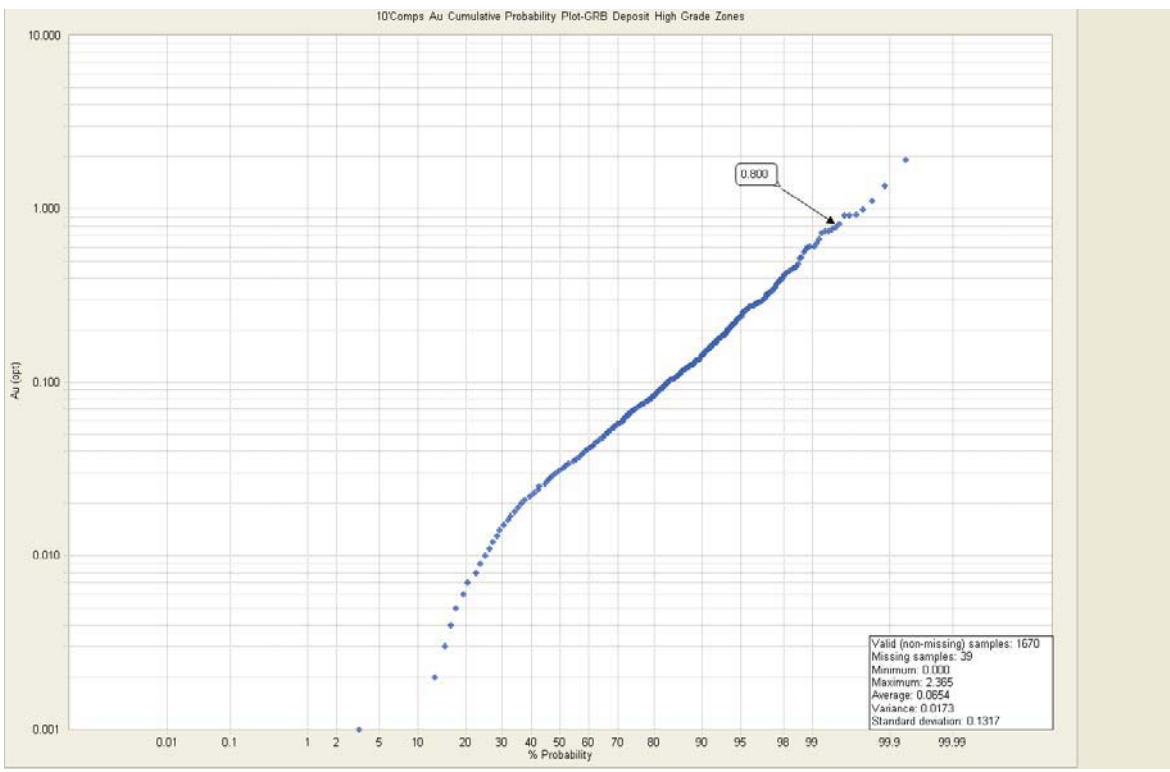
Figure 17.7 - Examples of Grade Zones on Cross Sections of the Graben and Freedom Flats Deposits – Section 0+1500 (Sections at 140° azimuth – looking N. 50° E.)



(Source: S. Wolff, 2008)

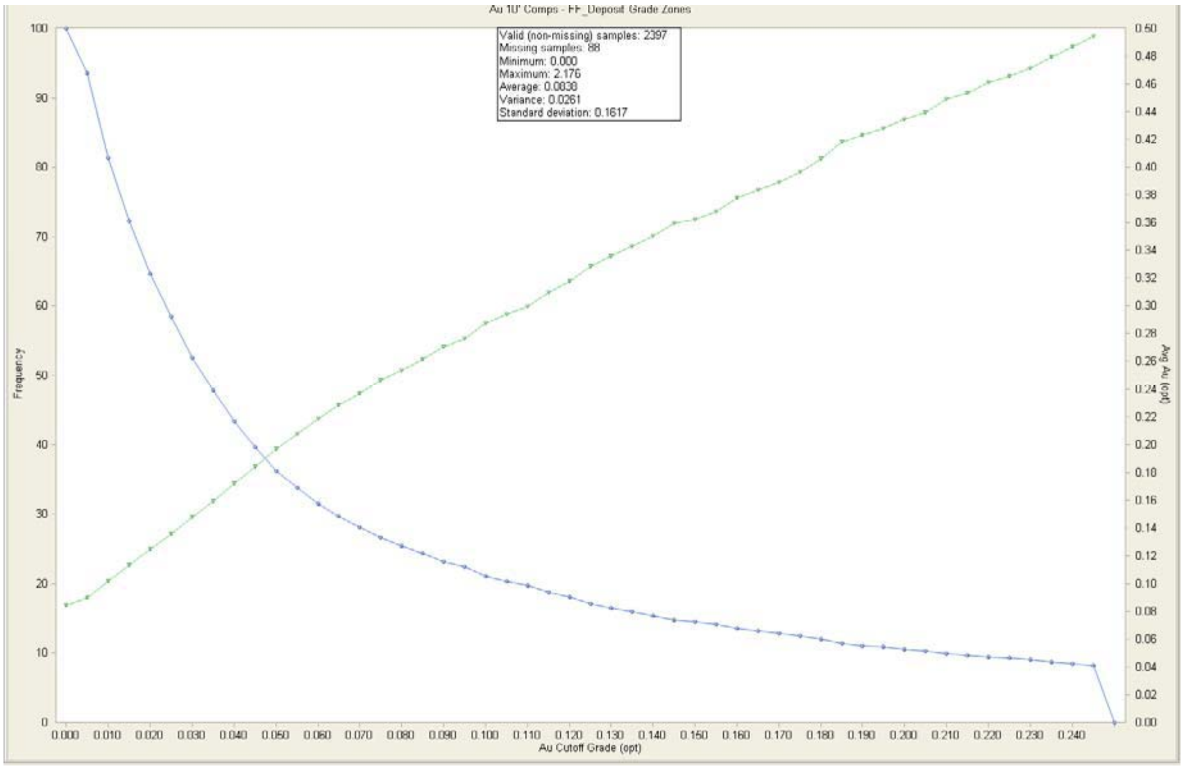
Figure 17.8 - Examples of Grade Zones on Cross Sections of the Graben and Freedom Flats Deposits – Section 0+1750 (Sections at 140^{o} azimuth – looking N. 50^{o} E.)

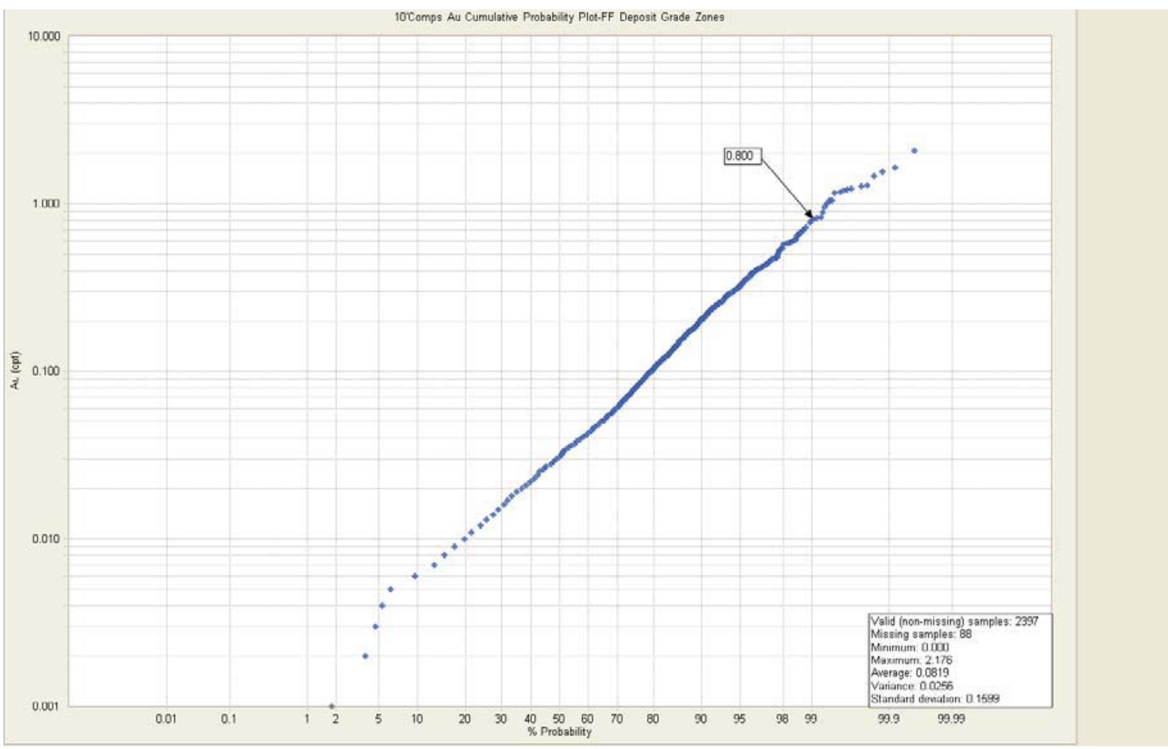




(Source: S. Wolff, 2008)

Figure 17.9 – Au Composites' Histogram and Cumulative Frequency Plot Within the Graben- High Grade Deposit Grade Zones





(Source: S. Wolff, 2008)

Figure 17.10 – Au Composites' Histogram and Cumulative Frequency Plot Within the Freedom Flats Deposit Grade Zones

17.2.8 Variograms

Variography was performed using experimental correlograms computed for each deposit using 10-foot composite gold grades. Correlograms were oriented along strike, perpendicular to strike, vertical, and omni-directional. Spherical models of the correlograms are generally well behaved but with significant variation in parameters for individual deposits, as summarized in Table 17.7. Nested models with two structures were used for all deposits, but only the maximum (second nesting) is displayed in Table 17.7.

Because individual correlograms were difficult to model and were generally similar, the North Area correlograms were combined for both the East Ridge and Northeast Ridge deposits. Similarly, the East model deposits, Boundary Ridge and Bullion Ridge, were combined to generate a single combined model.

Table 17.7 - Gold Grade Variogram Summary

Zone	Nugget	Total Sill	Directions (Azimuths) Pri.	Sec.	Ter.	Maximum Ranges (Ft) Pri.	Sec.	Ter.	Comment
Graben Low Grade	0.190	1.000	0	90	Vert	110	110	170	Bad form - combined with Graben High Grade
Graben High Grade	0.190	1.000	0	90	Vert	110	110	120	
Freedom Flats	0.190	1.000	45	135	Vert	185	65	140	
Borealis	0.100	1.000	75	165	Vert	150	125	80	
Deep Ore Flats	0.290	1.000	90	0	Vert	66	44	40	
East Ridge	0.020	0.388	50	140	Vert	76	46	40	Combined with Northeast Ridge
Northeast Ridge	0.020	0.388	50	140	Vert	76	46	40	Combined with East Ridge
Cerro Duro	0.058	0.625	120	30	Vert	95	95	50	
Jaimes Ridge	0.061	0.768	120	30	Vert	93	75	50	Major axis plunges -30 (down)
Purdy Peak	0.113	0.422	0	90	Vert	140	90	50	Major axis plunges +30 (up)
Boundary Ridge	0.023	1.011	140	50	Vert	80	75	48	Combined with Bullion Ridge
Bullion Ridge	0.023	1.011	140	50	Vert	80	75	48	Combined with Boundary Ridge

Notes:
1. Nugget, sill, and ranges are from spherical models of experimental correlograms.
2. Primary and secondary directions are horizontal azimuths unless otherwise specified.

17.2.9 Grade Estimation and Mineral Resource Classification

Grade estimation was done using inverse-distance-power weighting (IDW) interpolation. Silver was interpolated using the same procedure and parameters that were used for gold. Control of the estimation was maintained using the gold grade zones, the composite selection, and the IDW parameters, as follows:

1. Composites were selected such that only composites within the matching grade zones were used to estimate grades of blocks within the grade zones. No grade estimation was done outside the grade zones. No grade capping was applied to composites, but limited search distances were applied to high-grade outliers based on the cumulative probability plots.

   For example, estimation of the Graben low-grade zone was done using only composites from the Graben low-grade zone. Composites from the Graben high-grade zone were not used to interpolate blocks in the Graben low-grade zone.

2. The search and weighting parameters for IDW estimation were set such that the orientation of the search ellipse and the search radii were based on the size and shape of the deposit and on the variogram ranges. IDW anisotropies were set equal to the search radii.

3. The IDW power was determined using point validation and comparing the distributions generated for each weighting power to the actual value (composite) distribution, and choosing the power that generated the distribution parameters closest to the actual distributions' defining parameters.

4. The grade estimation was done in three passes, with each pass corresponding to one of the resource classes, i.e., measured, indicated, and inferred.

   a. For the first pass, anisotropic ellipse search distances were set to fifty percent of the variogram ranges for the grade estimation of measured resource blocks.

   b. For the second pass, anisotropic ellipse search distances were set to one hundred percent of the variogram ranges for the grade estimation of indicated blocks.

   c. For the third and final pass, anisotropic ellipse search distances were set to two hundred percent of the variogram ranges for the grade estimation of inferred blocks.

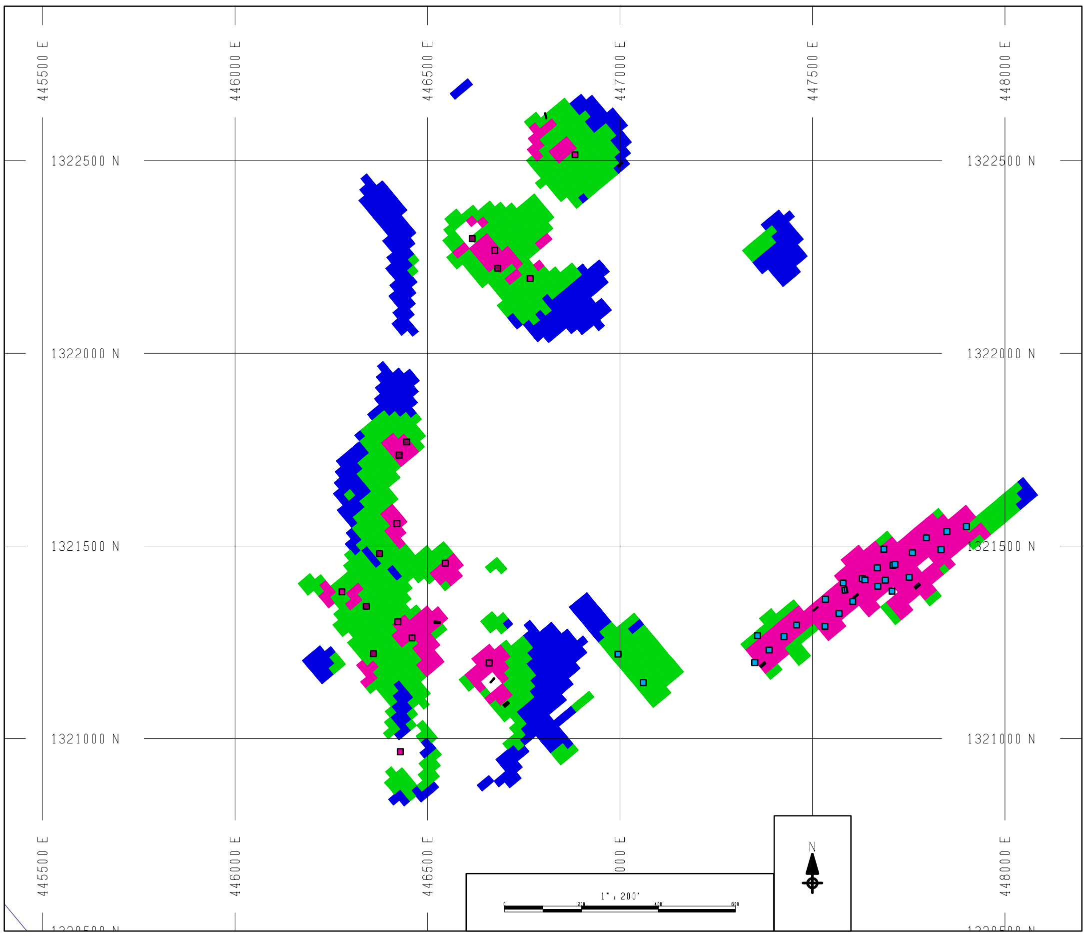
The final parameters for IDW estimation are summarized in Tables 17.8 through 17.10 for passes 1 through 3, respectively. As defined in step #4 above, the main criteria for resource classification is the percentage of the variogram range, as displayed in the "Search Ellipse Radii" columns of Tables 17.8 through 17.10. The other primary criteria displayed in these tables include the minimum number of composites, and the minimum number of drill holes. In effect, the degree of ore zone continuity as defined by the variography was used to determine the resource class confidence levels.

Table 17.8 - First Pass (Measured) Search and Weighting Parameters for Inverse Distance Estimation												
	Primary Modeling Plane Orientation (Degrees)			Search Ellipse Radii (ft) (Anisotropic Distances)			Min # Data Points	Max # Data Points	Max # Comp Per Hole	Min # Drill Holes	IDW Power	Au Outlier Cutoff (opt)	Au Outlier Search (ft)
Deposit	Azimuth	Plunge	Dip	Primary	Secondary	Tertiary							
Graben - Low Grade	0	0	0	55	55	85	4	13	2	2	5	0.05	27.5
Graben - High Grade	0	0	0	55	55	60	4	13	2	2	5	0.05	27.5
Freedom Flats	45	0	0	92.5	32.5	70	4	13	2	2	5	0.80	46.3
Borealis	75	0	0	75	62.5	40	4	13	2	2	5	0.50	37.5
Deep Ore Flats	90	0	0	33	22	20	4	13	2	2	5	0.09	16.5
East Ridge	50	0	0	38	23	20	4	13	2	2	5	0.20	19.0
Northeast Ridge	50	0	0	38	23	20	4	13	2	2	5	0.20	19.0
Boundary Ridge	140	0	0	40	37.5	24	4	13	2	2	5	None	None
Bullion Ridge	140	0	0	40	37.5	24	4	13	2	2	5	None	None
Cerro Duro	120	0	0	47.5	47.5	25	4	13	2	2	5	0.15	24.0
Jaimes Ridge	120	-30	0	46.5	37.5	25	4	13	2	2	5	0.30	23.3
Purdy Peak	0	30	0	70	45	25	4	13	2	2	5	0.09	35.0

Table 17.9 - Second Pass (Indicated) Search and Weighting Parameters for Inverse Distance Estimation													
Deposit	Primary Modeling Plane Orientation (Degrees)			Search Ellipse Radii (ft) (Anisotropic Distances)			Min # Data Points	Max # Data Points	Max # Comp Per Hole	Min # Drill Holes	IDW Power	Au Outlier Cutoff (opt)	Au Outlier Search (ft)
	Azimuth	Plunge	Dip	Primary	Secondary	Tertiary							
Graben - Low Grade	0	0	0	110	110	170	3	13	2	2	5	0.05	55.0
Graben - High Grade	0	0	0	110	110	120	3	13	2	2	5	0.05	55.0
Freedom Flats	45	0	0	185	65	140	3	13	2	2	5	0.80	92.5
Borealis	75	0	0	150	125	80	3	13	2	2	5	0.50	75.0
Deep Ore Flats	90	0	0	66	44	40	3	13	2	2	5	0.09	33.0
East Ridge	50	0	0	76	46	40	3	13	2	2	5	0.20	38.0
Northeast Ridge	50	0	0	76	46	40	3	13	2	2	5	0.20	38.0
Boundary Ridge	140	0	0	80	75	48	3	13	2	2	5	None	None
Bullion Ridge	140	0	0	80	75	48	3	13	2	2	5	None	None
Cerro Duro	120	0	0	95	95	50	3	13	2	2	5	0.15	48.0
Jaimes Ridge	120	-30	0	93	75	50	3	13	2	2	5	0.30	46.5
Purdy Peak	0	30	0	140	90	50	3	13	2	2	5	0.09	70.0

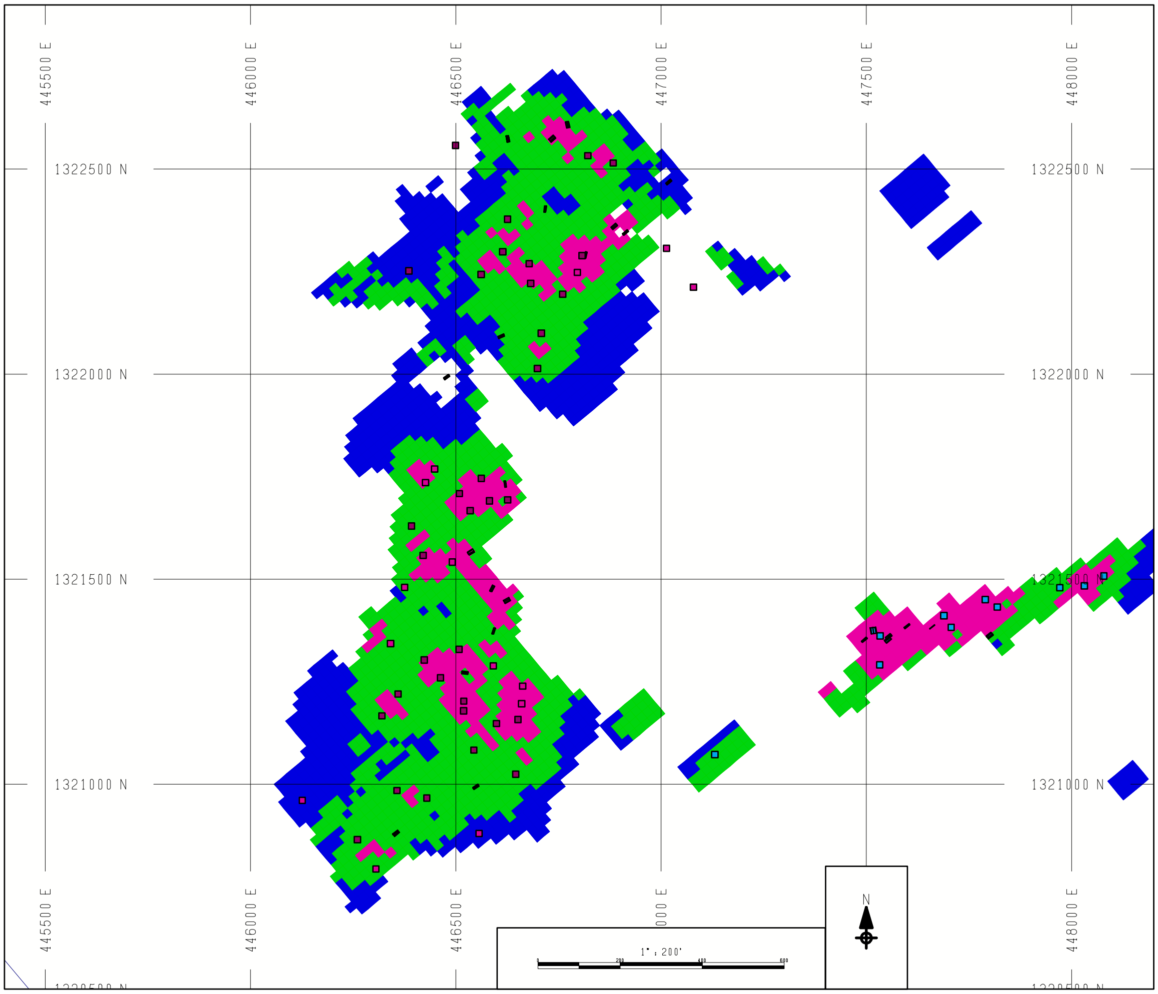
Table 17.10 - Third Pass (Inferred) Search and Weighting Parameters for Inverse Distance Estimation												
	Primary Modeling Plane Orientation (Degrees)			Search Ellipse Radii (ft) (Anisotropic Distances)			Min # Data Points	Max # Data Points	Max # Comp Per Hole	Min # Drill Holes	IDW Power	Au Outlier Cutoff (opt)	Au Outlier Search (ft)
Deposit	Azimuth	Plunge	Dip	Primary	Secondary	Tertiary							
Graben - Low Grade	0	0	0	220	220	340	2	13	2	1	5	0.05	55.0
Graben - High Grade	0	0	0	220	220	240	2	13	2	1	5	0.05	55.0
Freedom Flats	45	0	0	370	130	280	2	13	2	1	5	0.80	92.5
Borealis	75	0	0	300	250	160	2	13	2	1	5	0.50	75.0
Deep Ore Flats	90	0	0	132	88	80	2	13	2	1	5	0.09	33.0
East Ridge	50	0	0	152	92	60	2	13	2	1	5	0.20	38.0
Northeast Ridge	50	0	0	152	92	60	2	13	2	1	5	0.20	38.0
Boundary Ridge	140	0	0	160	150	72	2	13	2	1	5	None	None
Bullion Ridge	140	0	0	160	150	72	2	13	2	1	5	None	None
Cerro Duro	120	0	0	190	190	100	2	13	2	1	5	0.15	48.0
Jaimes Ridge	120	-30	0	186	150	100	2	13	2	1	5	0.30	46.5
Purdy Peak	0	30	0	250	180	100	2	13	2	1	5	0.09	70.0

The examples in Figures 17.11, 17.12, and 17.13 show the relationship of drill hole spacing and density to the resource classifications in Graben – Freedom Flats benches. The measured blocks (pink) show more closely-spaced drill hole composites than indicated blocks (green), which display more closely spaced drill hole composites than inferred blocks (blue). Note that the benches only show two dimensions of a three-dimensional search.

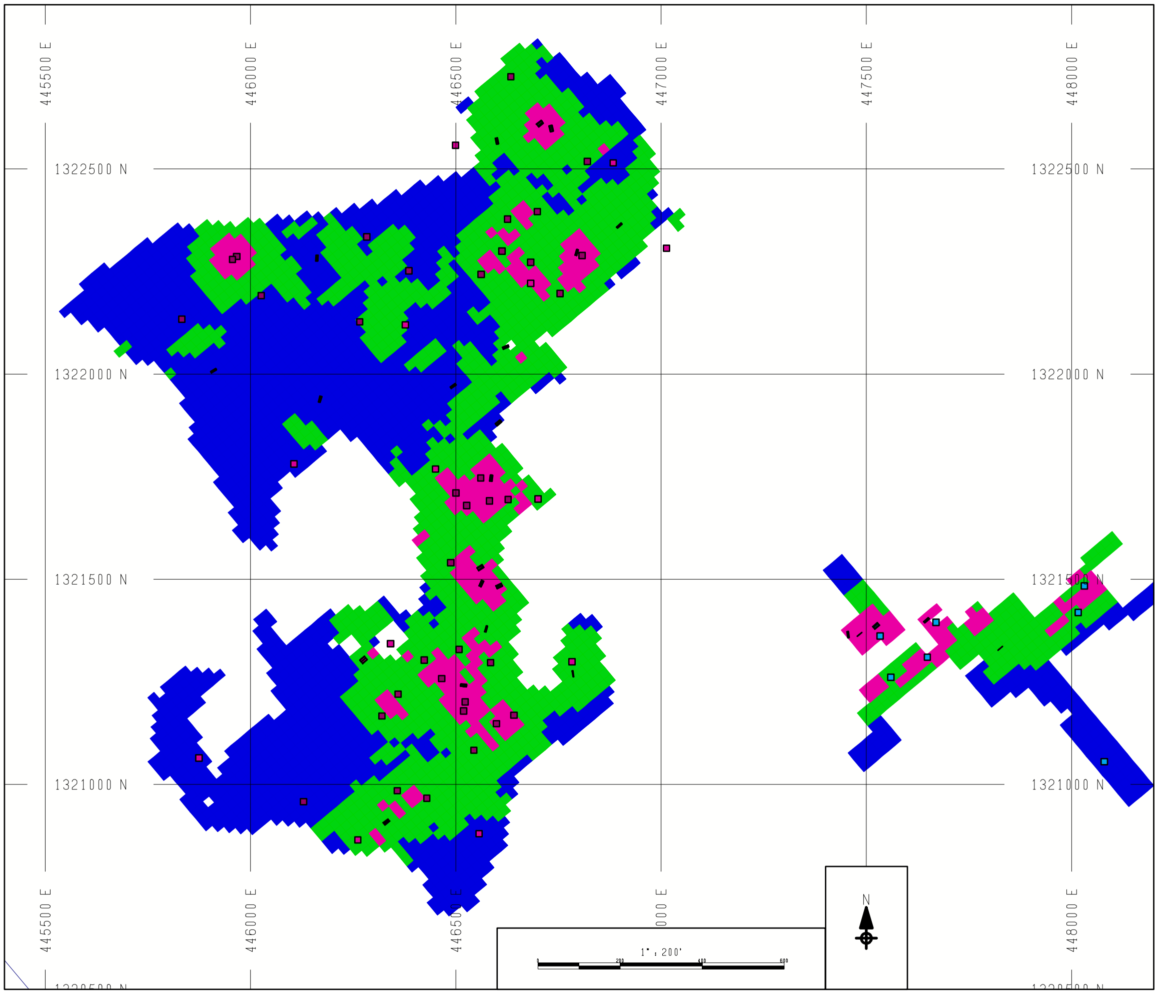


(Source: S. Wolff, 2008)

Figure 17.11 - Examples of the Relationship Between Drill Hole Spacing / Density and Resource Classifications (Graben-Freedom Flats - 6500 Bench)



(Source: S. Wolff, 2008)
Figure 17.12 - Examples of the Relationship Between Drill Hole Spacing / Density and Resource Classifications (Graben-Freedom Flats - 6400 Bench)



(Source: S. Wolff, 2008)

Figure 17.13 - Examples of the Relationship between Drill Hole Spacing / Density And Resource Classifications (Graben-Freedom Flats - 6300 Bench)

17.2.10 Comparison of Mineral Resource Estimates to Previous Production

The resource models were compared to reported production to verify the accuracy of the models, as shown in Table 17.11. This comparison is not reliable because of uncertainties in both the production records and in the cutoff grades used for production, and because of a low certainty of the original and mined topographies' accuracy.

The overall comparison for all pits combined is very good. However, on a pit-by-pit basis, some large differences are encountered. The largest differences are in the Borealis, Deep Ore Flats (Polaris), and Northeast Ridge Pit areas. Since the higher-grade zones within these pits have been mined out, the effect on the remaining resources is minimal.

Table 17.11 - Comparison of Mined-Out Portions of Resource Model to Reported Production

		Resource Model			Reported Production			Percent Difference		
Deposit	**Au Cutoff**	**Tons**	**Grade**	**Oz Au**	**Tons**	**Grade**	**Oz Au**	**Tons**	**Grade**	**Oz Au**
Borealis	0.015	1,536	0.071	108.3	1,489	0.103	153.4	-3%	46%	42%
Freedom Flats	0.035	1,288	0.147	189.3	1,280	0.153	195.8	-1%	4%	3%
Deep Ore Flats	0.010	190	0.032	6.1	250	0.038	9.5	32%	18%	56%
East Ridge + Gold View	0.040	966	0.067	64.6	1,059	0.056	59.3	10%	-16%	-8%
Northeast Ridge	0.015	3,326	0.031	102.4	3,000	0.025	75.0	-10%	-19%	-27%
Total		7,305	0.064	470.7	7,078	0.070	493.0	-3%	9%	5%

17.2.11 Summary of Model Results

The mineral resource estimate is summarized in the following tables (17.13 – 17.20). In all cases, the quantities shown are for the remaining resource, below the mined-out topography.

Tonnage factors for the different material types are given in Table 17.12.

Table 17.12. Borealis Tonnage Factors		
Material Type	**Model Code**	**Tonnage Factor (ft^3/ton)**
Heaps and Dumps	1	20.00
Alluvium (QAL)	2	18.00
TCV	3	16.00
Default Volcanics	4	13.00
Oxide Volcanics	5	13.00
Mixed Oxide-Sulfide Volcanics	6	13.00
Sulfide Volcanics	7	12.50
Graben Sulfides	8	11.80

Table 17.13 - Borealis Mineral Resource Estimate - March 2008 Summary of Measured and Indicated Mineral Resource - Combined Oxides and Sulfides							
Resource Class	Deposit	Au Cutoff (opt)	Tons (1,000's)	Au Grade (opt)	Ag Grade (opt)	Contained Oz Gold	Contained Oz Silver
Measured	Graben-Low Grade	0.010	374	0.014	0.128	5,200	47,800
	Graben-High Grade	0.010	2,053	0.090	0.346	183,800	711,100
	Freedom Flats	0.010	1,862	0.055	0.542	101,800	1,009,300
	Borealis	0.010	1,336	0.047	0.200	63,100	267,000
	Deep Ore Flats	0.010	30	0.021	0.819	600	24,600
	East Ridge	0.010	77	0.021	0.049	1,600	3,800
	Northeast Ridge	0.010	85	0.021	0.118	1,800	10,000
	Boundary Ridge	0.010	-	0.000	0.000	-	-
	Bullion Ridge	0.010	57	0.024	0.006	1,300	300
	Cerro Duro	0.010	297	0.039	0.710	11,700	210,700
	Jaimes Ridge	0.010	77	0.036	0.194	2,800	14,900
	Purdy Peak	0.010	294	0.026	0.065	7,500	19,000
	Alluvium / Tcv	0.010	88	0.031	0.066	2,700	5,800
	Total Measured		**6,629**	**0.058**	**0.351**	**383,900**	**2,324,300**
Indicated	Graben-Low Grade	0.010	2,472	0.016	0.114	39,600	282,700
	Graben-High Grade	0.010	10,291	0.063	0.328	648,900	3,379,000
	Freedom Flats	0.010	2,006	0.029	0.360	59,000	721,800
	Borealis	0.010	2,592	0.029	0.155	75,100	400,900
	Deep Ore Flats	0.010	531	0.022	0.566	11,600	300,700
	East Ridge	0.010	1,256	0.018	0.081	23,200	101,400
	Northeast Ridge	0.010	1,631	0.019	0.126	31,700	204,700
	Boundary Ridge	0.010	43	0.031	0.153	1,300	6,600
	Bullion Ridge	0.010	499	0.022	0.007	11,100	3,600
	Cerro Duro	0.010	339	0.042	0.633	14,200	214,800
	Jaimes Ridge	0.010	405	0.025	0.079	10,100	32,000
	Purdy Peak	0.010	628	0.019	0.081	12,200	50,600
	Alluvium / Tcv	0.010	236	0.024	0.070	5,600	16,500
	Total Indicated		**22,931**	**0.041**	**0.249**	**943,600**	**5,715,300**
Measured + Indicated	Graben-Low Grade	0.010	2,846	0.016	0.116	44,800	330,500
	Graben-High Grade	0.010	12,344	0.067	0.331	832,700	4,090,100
	Freedom Flats	0.010	3,868	0.042	0.447	160,800	1,731,100
	Borealis	0.010	3,928	0.035	0.170	138,200	667,900
	Deep Ore Flats	0.010	561	0.022	0.579	12,200	325,300
	East Ridge	0.010	1,333	0.019	0.079	24,800	105,200
	Northeast Ridge	0.010	1,716	0.020	0.125	33,500	214,700
	Boundary Ridge	0.010	43	0.031	0.153	1,300	6,600
	Bullion Ridge	0.010	556	0.022	0.007	12,400	3,900
	Cerro Duro	0.010	636	0.041	0.669	25,900	425,500
	Jaimes Ridge	0.010	482	0.027	0.097	12,900	46,900
	Purdy Peak	0.010	922	0.021	0.075	19,700	69,600
	Alluvium / Tcv	0.010	324	0.025	0.069	8,300	22,300
	Total Measured + Indicated		**29,560**	**0.045**	**0.272**	**1,327,500**	**8,039,600**

Resource Class	Deposit	Au Cutoff (opt)	Tons (1,000's)	Au Grade (opt)	Ag Grade (opt)	Contained Oz Gold	Contained Oz Silver
Measured	Graben-Low Grade	0.010	-	0.000	0.000	-	-
	Graben-High Grade	0.010	-	0.000	0.000	-	-
	Freedom Flats	0.010	227	0.062	0.650	13,900	147,300
	Borealis	0.010	837	0.049	0.243	40,900	203,200
	Deep Ore Flats	0.010	26	0.022	0.845	600	22,200
	East Ridge	0.010	35	0.021	0.017	700	600
	Northeast Ridge	0.010	26	0.018	0.090	500	2,400
	Boundary Ridge	0.010	-			-	-
	Bullion Ridge	0.010	57	0.024	0.006	1,300	300
	Cerro Duro	0.010	184	0.034	0.841	6,300	154,400
	Jaimes Ridge	0.010	62	0.040	0.213	2,500	13,200
	Purdy Peak	0.010	291	0.026	0.065	7,500	18,800
	Alluvium / Tcv	0.010	88	0.031	0.066	2,700	5,800
	Total Measured		**1,832**	**0.042**	**0.310**	**76,900**	**568,200**
Indicated	Graben-Low Grade	0.010	-	0.000	0.000	-	-
	Graben-High Grade	0.010	-	0.000	0.000	-	-
	Freedom Flats	0.010	371	0.031	0.144	11,400	53,400
	Borealis	0.010	979	0.022	0.157	21,200	153,500
	Deep Ore Flats	0.010	376	0.022	0.586	8,200	220,300
	East Ridge	0.010	318	0.017	0.062	5,500	19,600
	Northeast Ridge	0.010	286	0.017	0.075	4,800	21,400
	Boundary Ridge	0.010	43	0.031	0.153	1,300	6,600
	Bullion Ridge	0.010	499	0.022	0.007	11,100	3,600
	Cerro Duro	0.010	195	0.036	0.774	7,000	150,900
	Jaimes Ridge	0.010	213	0.029	0.089	6,200	19,000
	Purdy Peak	0.010	524	0.020	0.083	10,500	43,500
	Alluvium / Tcv	0.010	236	0.024	0.070	5,600	16,500
	Total Indicated		**4,041**	**0.023**	**0.175**	**92,800**	**708,300**
Measured + Indicated	Graben-Low Grade	0.010	-	0.000	0.000	-	-
	Graben-High Grade	0.010	-	0.000	0.000	-	-
	Freedom Flats	0.010	597	0.042	0.336	25,300	200,700
	Borealis	0.010	1,816	0.034	0.196	62,100	356,700
	Deep Ore Flats	0.010	402	0.022	0.603	8,800	242,500
	East Ridge	0.010	353	0.018	0.057	6,200	20,200
	Northeast Ridge	0.010	313	0.017	0.076	5,300	23,800
	Boundary Ridge	0.010	43	0.031	0.153	1,300	6,600
	Bullion Ridge	0.010	556	0.022	0.007	12,400	3,900
	Cerro Duro	0.010	379	0.035	0.806	13,300	305,300
	Jaimes Ridge	0.010	275	0.032	0.117	8,700	32,200
	Purdy Peak	0.010	815	0.022	0.076	18,000	62,300
	Alluvium / Tcv	0.010	324	0.025	0.069	8,300	22,300
	Total Measured + Indicated		**5,872**	**0.029**	**0.217**	**169,700**	**1,276,500**

Table 17.14 - Borealis Mineral Resource Estimate - March 2008
Summary of Measured and Indicated Mineral Resource - Oxide Material

Table 17.15 - Borealis Mineral Resource Estimate - March 2008 Summary of Measured and Indicated Mineral Resource - Partially Oxided Material							
Resource Class	Deposit	Au Cutoff (opt)	Tons (1,000's)	Au Grade (opt)	Ag Grade (opt)	Contained Oz Gold	Contained Oz Silver
Measured	Graben-Low Grade	0.010	-	0.000	0.000	-	-
	Graben-High Grade	0.010	-	0.000	0.000	-	-
	Freedom Flats	0.010	348	0.080	0.833	27,700	289,600
	Borealis	0.010	39	0.020	0.195	800	7,600
	Deep Ore Flats	0.010	1	0.012	0.506	-	300
	East Ridge	0.010	33	0.018	0.074	600	2,500
	Northeast Ridge	0.010	55	0.022	0.116	1,200	6,400
	Boundary Ridge	0.010	-	0.000	0.000	-	-
	Bullion Ridge	0.010	-	0.000	0.000	-	-
	Cerro Duro	0.010	-	0.000	0.000	-	-
	Jaimes Ridge	0.010	3	0.020	0.080	100	200
	Purdy Peak	0.010	1	0.010	0.035	-	-
	Alluvium / Tcv	0.010	-	0.000	0.000	-	-
	Total Measured		**479**	**0.064**	**0.640**	**30,400**	**306,600**
Indicated	Graben-Low Grade	0.010	-	0.000	0.000	-	-
	Graben-High Grade	0.010	-	0.000	0.000	-	-
	Freedom Flats	0.010	25	0.023	0.853	600	21,200
	Borealis	0.010	116	0.017	0.199	2,000	23,000
	Deep Ore Flats	0.010	108	0.024	0.441	2,600	47,500
	East Ridge	0.010	730	0.018	0.085	13,400	62,100
	Northeast Ridge	0.010	1,194	0.021	0.134	24,600	160,100
	Boundary Ridge	0.010	-	0.000	0.000	-	-
	Bullion Ridge	0.010	-	0.000	0.000	-	-
	Cerro Duro	0.010	-	0.000	0.000	-	-
	Jaimes Ridge	0.010	14	0.020	0.052	300	700
	Purdy Peak	0.010	7	0.016	0.066	100	500
	Alluvium / Tcv	0.010	-	0.000	0.000	-	-
	Total Indicated		**2,193**	**0.020**	**0.144**	**43,600**	**315,100**
Measured + Indicated	Graben-Low Grade	0.010	-	0.000	0.000	-	-
	Graben-High Grade	0.010	-	0.000	0.000	-	-
	Freedom Flats	0.010	373	0.076	0.834	28,300	310,800
	Borealis	0.010	155	0.018	0.198	2,800	30,600
	Deep Ore Flats	0.010	108	0.024	0.441	2,600	47,800
	East Ridge	0.010	763	0.018	0.085	14,000	64,600
	Northeast Ridge	0.010	1,249	0.021	0.133	25,800	166,500
	Boundary Ridge	0.010	-	0.000	0.000	-	-
	Bullion Ridge	0.010	-	0.000	0.000	-	-
	Cerro Duro	0.010	-	0.000	0.000	-	-
	Jaimes Ridge	0.010	17	0.020	0.057	400	900
	Purdy Peak	0.010	8	0.015	0.064	100	500
	Alluvium / Tcv	0.010	-	0.000	0.000	-	-
	Total Measured + Indicated		**2,672**	**0.028**	**0.233**	**74,000**	**621,700**

Table 17.16 - Borealis Mineral Resource Estimate - March 2008
Summary of Measured and Indicated Mineral Resource - Sulfide Material

Resource Class	Deposit	Au Cutoff (opt)	Tons (1,000's)	Au Grade (opt)	Ag Grade (opt)	Contained Oz Gold	Contained Oz Silver
Measured	Graben-Low Grade	0.010	374	0.014	0.128	5,200	47,800
	Graben-High Grade	0.010	2,053	0.090	0.346	183,800	711,100
	Freedom Flats	0.010	1,288	0.047	0.444	60,200	572,400
	Borealis	0.010	460	0.047	0.122	21,400	56,200
	Deep Ore Flats	0.010	3	0.018	0.665	100	2,200
	East Ridge	0.010	9	0.033	0.081	300	700
	Northeast Ridge	0.010	4	0.031	0.327	100	1,300
	Boundary Ridge	0.010	-	0.000	0.000	-	-
	Bullion Ridge	0.010	-	0.000	0.000	-	-
	Cerro Duro	0.010	113	0.048	0.497	5,400	56,300
	Jaimes Ridge	0.010	11	0.021	0.123	200	1,400
	Purdy Peak	0.010	3	0.014	0.069	-	200
	Alluvium / Tcv	0.010	-	0.000	0.000	-	-
	Total Measured		**4,319**	**0.064**	**0.336**	**276,700**	**1,449,600**
Indicated	Graben-Low Grade	0.010	2,472	0.016	0.114	39,600	282,700
	Graben-High Grade	0.010	10,291	0.063	0.328	648,900	3,379,000
	Freedom Flats	0.010	1,610	0.029	0.402	47,100	647,100
	Borealis	0.010	1,497	0.035	0.150	51,900	224,500
	Deep Ore Flats	0.010	47	0.017	0.693	800	32,900
	East Ridge	0.010	209	0.020	0.094	4,300	19,600
	Northeast Ridge	0.010	151	0.016	0.154	2,400	23,200
	Boundary Ridge	0.010	-	0.000	0.000	-	-
	Bullion Ridge	0.010	-	0.000	0.000	-	-
	Cerro Duro	0.010	144	0.050	0.443	7,200	63,900
	Jaimes Ridge	0.010	178	0.021	0.069	3,700	12,300
	Purdy Peak	0.010	97	0.017	0.068	1,600	6,700
	Alluvium / Tcv	0.010	-	0.000	0.000	-	-
	Total Indicated		**16,697**	**0.048**	**0.281**	**807,500**	**4,691,900**
Measured + Indicated	Graben-Low Grade	0.010	2,846	0.016	0.116	44,800	330,500
	Graben-High Grade	0.010	12,344	0.067	0.331	832,700	4,090,100
	Freedom Flats	0.010	2,899	0.037	0.421	107,300	1,219,500
	Borealis	0.010	1,957	0.037	0.143	73,300	280,700
	Deep Ore Flats	0.010	51	0.017	0.691	900	35,100
	East Ridge	0.010	218	0.021	0.094	4,600	20,300
	Northeast Ridge	0.010	155	0.016	0.158	2,500	24,500
	Boundary Ridge	0.010	-	0.000	0.000	-	-
	Bullion Ridge	0.010	-	0.000	0.000	-	-
	Cerro Duro	0.010	257	0.049	0.467	12,600	120,200
	Jaimes Ridge	0.010	189	0.021	0.072	3,900	13,700
	Purdy Peak	0.010	100	0.017	0.068	1,600	6,900
	Alluvium / Tcv	0.010	-	0.000	0.000	-	-
	Total Measured + Indicated		**21,016**	**0.052**	**0.292**	**1,084,200**	**6,141,500**

Table 17.17- Borealis Mineral Resource Estimate - March 2008 Summary of Inferred Mineral Resource - Combined Oxides and Sulfides							
Resource Class	Deposit	Au Cutoff (opt)	Tons (1,000's)	Au Grade (opt)	Ag Grade (opt)	Contained Oz Gold	Contained Oz Silver
Inferred	Graben-Low Grade	0.010	3,638	0.016	0.111	58,000	403,700
	Graben-High Grade	0.010	7,925	0.049	0.295	387,200	2,341,100
	Freedom Flats	0.010	4,059	0.022	0.456	88,000	1,852,300
	Borealis	0.010	3,927	0.036	0.156	143,300	612,200
	Deep Ore Flats	0.010	2,622	0.019	0.364	51,000	953,400
	East Ridge	0.010	4,497	0.016	0.098	71,200	438,900
	Northeast Ridge	0.010	3,425	0.018	0.092	63,000	313,400
	Boundary Ridge	0.010	330	0.018	0.056	5,900	18,500
	Bullion Ridge	0.010	4,928	0.017	0.011	83,000	54,400
	Cerro Duro	0.010	129	0.029	0.540	3,800	69,600
	Jaimes Ridge	0.010	251	0.018	0.038	4,600	9,500
	Purdy Peak	0.010	184	0.014	0.083	2,600	15,200
	Alluvium / Tcv	0.010	247	0.017	0.074	4,300	18,400
	Total Inferred		**36,161**	**0.027**	**0.196**	**965,800**	**7,100,700**

Table 17.18 - Borealis Mineral Resource Estimate - March 2008 Summary of Inferred Mineral Resource - Oxide Material							
Resource Class	Deposit	Au Cutoff (opt)	Tons (1,000's)	Au Grade (opt)	Ag Grade (opt)	Contained Oz Gold	Contained Oz Silver
Inferred	Graben-Low Grade	0.010	-	0.000	0.000	-	-
	Graben-High Grade	0.010	-	0.000	0.000	-	-
	Freedom Flats	0.010	313	0.035	0.052	10,900	16,300
	Borealis	0.010	374	0.023	0.195	8,700	73,000
	Deep Ore Flats	0.010	1,353	0.020	0.325	27,600	440,300
	East Ridge	0.010	880	0.017	0.078	14,700	68,500
	Northeast Ridge	0.010	1,023	0.016	0.062	16,000	63,200
	Boundary Ridge	0.010	330	0.018	0.056	5,900	18,500
	Bullion Ridge	0.010	4,928	0.017	0.011	83,000	54,400
	Cerro Duro	0.010	67	0.026	0.452	1,700	30,400
	Jaimes Ridge	0.010	159	0.018	0.040	2,900	6,300
	Purdy Peak	0.010	65	0.015	0.104	1,000	6,700
	Alluvium / Tcv	0.010	247	0.017	0.074	4,300	18,400
	Total Inferred		**9,737**	**0.018**	**0.082**	**176,800**	**795,900**

Table 17.19 - Borealis Mineral Resource Estimate - March 2008 Summary of Inferred Mineral Resource - Partially Oxidized Material							
Resource Class	Deposit	Au Cutoff (opt)	Tons (1,000's)	Au Grade (opt)	Ag Grade (opt)	Contained Oz Gold	Contained Oz Silver
Inferred	Graben-Low Grade	0.010	-	0.000	0.000	-	-
	Graben-High Grade	0.010	-	0.000	0.000	-	-
	Freedom Flats	0.010	3	0.013	0.366	-	1,000
	Borealis	0.010	63	0.016	0.084	1,000	5,300
	Deep Ore Flats	0.010	488	0.021	0.403	10,200	196,700
	East Ridge	0.010	1,800	0.016	0.086	29,000	154,300
	Northeast Ridge	0.010	1,594	0.021	0.105	32,700	168,200
	Boundary Ridge	0.010	-	0.000	0.000	-	-
	Bullion Ridge	0.010	-	0.000	0.000	-	-
	Cerro Duro	0.010	-	0.000	0.000	-	-
	Jaimes Ridge	0.010	6	0.016	0.097	100	600
	Purdy Peak	0.010	13	0.016	0.073	200	1,000
	Alluvium / Tcv	0.010	-	0.000	0.000	-	-
	Total Inferred		**3,967**	**0.018**	**0.133**	**73,200**	**527,000**

Table 17.20 - Borealis Mineral Resource Estimate - March 2008 Summary of Inferred Mineral Resource - Sulfide Material							
Resource Class	Deposit	Au Cutoff (opt)	Tons (1,000's)	Au Grade (opt)	Ag Grade (opt)	Contained Oz Gold	Contained Oz Silver
Inferred	Graben-Low Grade	0.010	3,638	0.016	0.111	58,000	403,700
	Graben-High Grade	0.010	7,925	0.049	0.295	387,200	2,341,100
	Freedom Flats	0.010	3,744	0.021	0.490	77,100	1,835,000
	Borealis	0.010	3,490	0.038	0.153	133,600	533,900
	Deep Ore Flats	0.010	781	0.017	0.405	13,200	316,500
	East Ridge	0.010	1,817	0.015	0.119	27,400	216,100
	Northeast Ridge	0.010	807	0.018	0.102	14,300	82,000
	Boundary Ridge	0.010	-	0.000	0.000	-	-
	Bullion Ridge	0.010	-	0.000	0.000	-	-
	Cerro Duro	0.010	62	0.033	0.636	2,100	39,200
	Jaimes Ridge	0.010	86	0.019	0.031	1,600	2,600
	Purdy Peak	0.010	106	0.013	0.071	1,400	7,500
	Alluvium / Tcv	0.010	-	0.000	0.000	-	-
	Total Inferred		**22,457**	**0.032**	**0.257**	**715,800**	**5,777,800**

17.3 Mineral Resources from Existing Heaps and Stockpiles

Since the January 2007 report no additional studies or drilling were undertaken on the heaps, stockpiles, and dumps at the Borealis property. Therefore, information presented here is from the Noble January 2007 report, without change.

During 2004, Gryphon Gold drilled and sampled the five heaps and portions of the Freedom Flats and Borealis Waste Dumps. Previously, J.D. Welsh & Associates, Inc. drilled Heap 1 (Welsh, 1996). The database used for the resource calculation consisted of 32 holes drilled by Gryphon Gold totaling 2,475.5 feet and 11 holes drilled by J. D. Welsh and Associates totaling 760 feet.

There are two nomenclatures in use for the heaps in the Borealis project. Table 17.21 shows the relationship between the two designations.

Table 17.21 - Heap Name Correlation Chart

Operational Name	Map Name
Tailing Releach	Western portion Heap 1
Freedom Flats	Eastern portion Heap 1
Secondary Leach	Heap 2
Run-of-Mine #1	Heap 5
Run-of-Mine #2	Heap 4
NE Ridge Run-of-Mine	Heap 3

Noble prepared the drilling data for this estimate from Excel spreadsheets and Adobe pdf-formatted documents of the Gryphon Gold assay data. The Welsh assay data were entered manually using data from scanned documents in the Gryphon Gold archives. Only the gold from the Welsh data were used for the resource estimate, because check assays indicated that the Welsh silver assays were unreliable. All data entry was printed and double-checked against the original documents.

The east and north coordinates for the Gryphon data were based on the permitted coordinates of the drill sites, since the hole locations were not surveyed after drilling. The collar elevations were estimated by projecting the collar XY points up to the intersection with the current topography DTM.

The coordinates for the Welsh drilling were estimated based on scaling from a map attached to the Welsh data. These coordinates were then adjusted so that the holes were all located on the top of the dumps. Drill hole collar elevations were also estimated by projecting to the current topography DTM.

Heap and dump volumes were estimated by constructing a seam-type block model with 50 by 50 foot horizontal dimensions and variable block height that extended from the DTM of the original surface topography up to the DTM of the current surface topography. The modeled blocks were further constrained by outlines around the fill areas that limited the volume to a minimum thickness of 2 feet. The shapes of these outlines were also guided by the current topographic contours, which indicate the break between intact topography and fill material. In the areas of the historical waste dumps, this method provides a good estimate of the volume of material. The volumes are slightly less reliable for the heap-leach piles because the topography at the base of the heaps was modified from the original topography to build the leach pad liners.

The heap volumes were checked by comparing against the tonnages compiled for each of the leach heaps by Whitney (1999). As shown in Table 17.22, the total measured volume compared very well with the total production volume, when a tonnage factor of 20 cubic feet/ton was used to convert tonnages to volumes. The 20 ft^3/t tonnage factor is also consistent with three recent column leach tests of samples from East Ridge and Northeast Ridge. These had an average tonnage factor of 20.9 ft^3/t after leaching, which considering the much greater height and larger settling time for the heap-leach piles is a very good match. The measured volumes and production records for the individual heaps are similar, although it appears that a portion of the material attributed to tailings releach, the Freedom Flats heap, and secondary leach may have ended up on the Northeast Ridge run-of-mine heap.

Table 17.22 - Production Volumes Versus Measured Heap Volumes

Heap	Production Tons (1000s)	Production Volume (Cubic Ft) (1000s)	Measured Volume (Cubic Ft) (1000s)	Volume Difference (Cubic Ft) (1000s)
Tailing Releach	1,721	34,415	26,564	(7,851)
Freedom Flats	1,249	24,973	20,556	(4,418)
Secondary Leach	1,910	38,210	32,161	(6,049)
NE Ridge Run-of-Mine	3,000	60,000	74,522	14,522
Run-of-Mine #1	2,201	44,020	43,605	(415)
Run-of-Mine #2	800	16,000	16,684	684
Total	10,881	217,618	214,091	(3,527)
Production volume is estimated based on 20 cubic ft/t				

Dump volumes were measured using the same method as was used for the heaps, and volumes were compared to waste tonnages that were estimated from the mined-pit reconciliations. This comparison, summarized in Table 17.23 is not as good as those for the heaps, on either an individual or overall basis. With the exception of Freedom Flats, the dump volumes are significantly lower than those estimated from the reconciliation. While the reasons for the differences are unknown, it is most likely attributable to material that was used for construction, road building, and other purposes, and the more conservative measured volumes are used for resource estimation.

Table 17.23 - Reconciliation Waste Volumes Versus Measured Dump Volumes

Heap	Reconciliation Waste Tons (1000s)	Production Volume (Cubic Ft) (1000s)	Measured Volume (Cubic Ft) (1000s)	Volume Difference (Cubic Ft) (1000s)
Tailing Releach	5,660	113,200	64,000	(49,200)
Freedom Flats	13,904	278,080	284,696	6,616
Deep Ore Flats	498	9,960	4,507	(5,453)
East Ridge+Gold View	3,000	60,000	80,382	20,382
Northeast Ridge	5,913	118,260	61,120	(57,131)
Total	28,975	579,500	494,714	(84,786)

Gold and silver grades were composited over the entire drill hole length for grade estimation. Compositing thus assumes the full height of the leach pile will be mined with no internal selectivity. Gold and silver grades were estimated for each of the heaps using nearest neighbor assignment to assign grades from composited drill holes to block model blocks. Resource grade summaries were estimated using a zero-grade cutoff. Because only a few drill holes sample the mine dumps, the grade of the dumps is estimated based on the resource model grades for waste in the mined-out pits.

Resources for the existing heaps and dumps are summarized in Table 17.24 and 17.25. The higher-grade heaps are assigned a resource class of indicated while the lower-grade heaps are assigned a resource class of inferred. The heap tonnages and grades are believed to be well established by the combination of sampling, volume measurement, and comparison with historical records. The resource category of the lower-grade heaps is discounted to inferred, because of the greater uncertainty that those resources may be reprocessed profitably. All of the waste dumps are assigned a resource class of inferred, reflecting the greater uncertainty of tonnage and grade estimates.

Table 17.24 - Borealis Project March 2006 Mineral Resource Estimate Summary of Indicated Resource in Heaps						
Resource Zone	**Cutoff (opt)**	**Tons (1000s)**	**Au Grade (opt)**	**Ag Grade (opt)**	**Contained Oz Gold (1000s)**	**Contained Oz Silver (1000s)**
Tailings Releach	0.005	1,328	0.019	0.05	25.0	72.7
Freedom Flats	0.005	1,028	0.026	0.24	26.8	244.4
NE Ridge ROM	0.005	3,726	0.012	0.14	43.2	503.8
Total	0.005	6,082	0.016	0.13	95.0	820.8

Table 17.25- Borealis Project March 2006 Mineral Resource Estimate Summary of Inferred Resource in Heaps and Dumps						
Resource Zone	**Cutoff (opt)**	**Tons (1000s)**	**Au Grade (opt)**	**Ag Grade (opt)**	**Contained Oz Gold (1000s)**	**Contained Oz Silver (1000s)**
Secondary Leach	0.005	1,608	0.008	0.12	13.2	185.2
ROM 2	0.005	2,180	0.008	0.07	17.4	157.4
Borealis Dump	0.005	3,200	0.011	0.14	35.8	448.0
East Ridge Dumps	0.005	4,019	0.012	0.05	47.4	201.0
NE Ridge Dump	0.005	3,056	0.008	0.08	24.8	244.5
Total Inferred Resource	0.005	14,064	0.010	0.09	138.7	1,236.1

Although the Secondary Heap appears to have an average grade that is too low to be of interest, a bulk sample was collected and screened producing results suggesting that upgrading might result in economically recoverable gold. The size fraction that is less than 2 inches averages 0.011 opt Au and the ½ - 2 inch fraction assayed 0.014 opt Au. More work is needed to determine if the heap can be upgraded and reprocessed by simple screening.

Three holes in the north-central portion of NE Ridge run-of-mine (Heap 3) contain 10 feet of 0.031, 50 feet of 0.030, and 20 feet of 0.017 opt Au, starting at the top of the holes. More drilling is needed to determine the full extent of this material and whether higher-grade material can be selectively reclaimed from the heap.

18.0 Other Relevant Data and Information

This section has been compiled in association with Gryphon Gold's consulting geotechnical and environmental engineering consultants Knight Piésold and Co. The principal contributor is Barbara Filas, P.E., C.E.M., a Qualified Person for the purpose of Canadian NI 43-101, Standards of Disclosure for Mineral Projects, and Mining/Environmental Engineer.

18.1 Permitting

The principal operating permits required for construction, operation and closure of a potential mine on the Borealis property have been acquired from Nevada State and Federal regulatory agencies as of the date of this report. The approvals received cover a 10 million-ton project within the central operating area, and include an exploration program within that operating area that recognizes the potential to expand the resource base with successful exploration results. Expansion of the project plans beyond 10 million tons will require routine modification of the operating permits. There are no known issues that would preclude the approval of such routine modifications by the applicable regulatory agencies.

The operating permits cover only the central operating area, and exclude some of the Middle Ridge area and all of Orion's Belt. The deposits in Orion's Belt have been the subject of recent mining operations, and were successfully reclaimed. No fatal flaws or material concerns, which would preclude mining operations in this area, have been identified, although the timing of such permitting process has not been fully assessed.

18.2 Permit Summary

The following is a summary and status of the permits required for the Borealis Gold Project:

- An Approved Plan of Operations from the USFS, Humboldt-Toiyabe National Forest has been received. The Environmental Assessment (EA) was approved for the Plan of Operations with a Finding of No Significant Impact (FONSI) on June 19, 2006. The Decision Notice was published on June 22 and 23, 2006 and is not appealable. Final revisions to the Plan of Operations were submitted to the USFS on June 23, 2006 and the USFS signed the Plan on June 29, 2006. The Plan of Operations can be implemented as soon as a reclamation bond of $4,205,377 is posted with the USFS.

- A Water Pollution Control Permit (WPCP) from the NDEP-Bureau of Mining Regulation & Reclamation (BMRR) was approved and granted to BMC on January 28, 2006. The permit allows BMC to construct and operate a 10-million ton capacity heap leach pad and processing plant as a zero-discharge facility.

- A Reclamation Permit from the NDEP-BMRR and reclamation bond amount were approved on June 23, 2006. This permit is the State of Nevada's approval of the Plan of Operations and is effective with the posting of the reclamation bond with the USFS.

- A Tentative Permanent Closure Plan to be administered by the NDEP-BMRR was submitted with the WPCP application and accepted by NDEP-BMRR. A Final Permanent Closure Plan will not need to be developed until 2 years prior to project closure.

- NDEP-Bureau of Air Pollution Control (BAPC) issued the Air Quality Operating Permit on April 28, 2006 for the Borealis processing facilities. The State of Nevada recently adopted new regulations regarding mercury emissions, and an application was filed under this new State program on September 14, 2006, as a compliance order pursuant to the approved air quality permit. Approval of the mercury permit is pending.

- A Surface Area Disturbance Permit from the NDEP-BAPC was approved and granted to BMC on April 3, 2006 for disturbances associated with construction and mining activities.

- The Storm Water Pollution Prevention Plan (SWPPP) has been prepared for the project. A Notice of Intent, filing fee, and the SWPPP will be submitted to the Bureau of Water Pollution Control (BWPC) 2 days prior to the start of mining operations to obtain coverage under the general National Pollutant Discharge Elimination System (NPDES) permit for Nevada mines.

- A Spill Prevention, Control, and Countermeasure (SPCC) Plan, under the jurisdiction of the U.S. Environmental Protection Agency (EPA), will be prepared and implemented before starting operations. The SPCC Plan will provide methods for storing, transporting, and using petroleum products as well as emergency response measures in the event of a release.

- A preliminary Emergency Release, Response and Contingency Plan (ERRCP) was submitted with the Plan of Operations. The ERRCP provides methods for storing, using, and transporting process chemicals on site as well as emergency response measures in the event of a release. A final ERRCP will be prepared prior to the start of leaching and processing activities. Both the USFS and the NDEP-BMRR require the ERRCP.

- Threatened & Endangered Species Act: No known threatened or endangered species have been identified within or near the project area. A Biological Assessment and Biological Evaluation (BA/BE) and a Wildlife Specialist Report were approved by the USFS on June 6, 2006. These reports identified three USFS sensitive plants and two other plant species of concern within the project area. Mitigation measures were developed for these plants and incorporated into the EA and Plan of Operations. The USFS concluded that the project may impact individual plants and plant habitat but will not likely contribute to a trend towards listing or cause a loss of viability to the population or species.

- Historical Preservation Act (Section 107): Consultation with the USFS and the State Historical Preservation Officer (SHPO) has occurred in conjunction with the preparation of the EA. The "Heritage Research Final Report, Gryphon Gold, USA, Mining and Exploration Project, Borealis Mine Area" was submitted to the USFS in March 2006. The report identifies prehistoric cultural resources located within and near the project area. This report was approved by the USFS and forwarded to SHPO for their review and comment on April 17, 2006. The SHPO approved the report in early May 2006. Mitigation measures consisting of avoidance and protection were incorporated into the EA and the Plan of Operations.

- Water Rights: Water Rights have been granted by the Nevada Division of Water Resources (NDWR) for two production wells located approximately 3 miles south of the project, in the same vicinity as the supply wells from the previous mining operation. Based on historic well productivity records, this water right and point of diversion has the capacity and productivity to meet project needs. A second set of water rights were obtained for a site about 10 miles to the south of the planned operation as a contingency; however, this water right has been forfeited as it has been deemed extraneous.

In addition, the BLM has granted approval for drilling exploration holes in the areas of the West Pediment and the Central Pediment, which are on the Borealis property but outside of the central project area.

18.3 Background and Status of Permits

18.3.1 Approved Plan of Operations

The Borealis Gold Project is located on public lands within the Humboldt-Toiyabe National Forest, Bridgeport Ranger District. As such, the Plan of Operations is subject to USFS approval and environmental analysis under the National Environmental Policy Act (NEPA). A project of this magnitude typically requires the preparation and approval of either an Environmental Assessment or an Environmental Impact Statement (EIS), with the EIS process generally being longer and more comprehensive. Since the Borealis project area has been extensively affected by previous mining operations, the USFS determined that resuming mining operations at the Borealis property would have no significant impact to public lands and that an EA would satisfy the NEPA requirements for this project. Upon completion of the EA, the USFS approved the project and issued a Finding of No Significant Impact on June 19, 2006. This Decision Notice was published in local and regional newspapers along with a description of the project and the environmental management requirements, mitigation measures, and monitoring programs. The USFS determined that their decision was not appealable because no individuals or organizations made adverse or applicable comments during the public disclosure process in October/November 2005 that allowed them the right to appeal the decision. All comments received either favored the project or were outside the jurisdiction of the USFS (Knight Piésold and Co., 2006).

The Plan of Operations (POO #02-04-08) and the Reclamation Permit Application for the Borealis project were originally submitted to the USFS and the NDEP-BMRR in August 2004. Agency review and comment on the plan resulted in BMC agreeing to modify portions of the plan to mitigate environmental impacts. Public notification and solicitation of comments then occurred in October 2005 through notices published in local and regional newspapers and public informational meetings in local towns. No adverse comments were received.

Knight Piésold, under a Third-Party Contractor Arrangement with the USFS, also prepared the Draft EA for the project, which was completed on January 6, 2006. This document was reviewed and commented on by the USFS Interdisciplinary (ID) Team consisting of approximately 20 individuals with technical expertise in a variety of disciplines. Based on their comments, the EA was revised and resubmitted on March 8, 2006 as a Final Draft. The Plan of Operations was also modified to incorporate both earlier review comments and the ID Team comments and was resubmitted on April 10, 2006 to the USFS and the NDEP-BMRR. These documents were essentially complete except for impacts and mitigation measures associated with vegetation and wildlife. The Plan of Operations also required final review of the reclamation cost estimate and proposed surety bond amount by both agencies.

After the BA/BE was finalized on June 6, 2006 (see below), the EA and Plan of Operations were updated to reflect the BA/BE analysis and recommended mitigation measures. The final EA was approved on June 19, 2006 with the signing of the Decision Notice. Replacement pages addressing biological mitigation measures and revised reclamation costs were submitted to the USFS and NDEP-BMRR on June 23, 2006. USFS acceptance of the Modified Plan of Operations was received on June 29, 2006.

The reclamation cost estimate included in the Plan of Operations was also revised in accordance with comments received from the USFS and the NDEP-BMRR. The maximum bond exposure amount for all activities proposed in the Plan of Operations is $7.7 million, or about $15,500 per acre of land disturbance. USFS has established that an initial bond amount of $4.2 million is required to commence operations based on the first year of project disturbance exposure. The USFS will reassess and update the bond estimate and adequacy of the financial surety provided on an annual basis.

18.3.2 Water Pollution Control Permit (WPCP)

The Regulations Branch of NDEP-BMRR issues the WPCP to ensure that the waters of the State are not adversely impacted by mining and mineral processing activities. The permit stipulates monitoring measures for the heap-leach facility and the waste-rock facilities on site. The heap leach and processing plant are designed as a zero discharge facility.

The Borealis Application for a WPCP was submitted in January 2005. NDEP-BMRR issued a draft fact sheet and permit for review and comment in September 2005. In November 2005, an Interim Supplemental Report was submitted to NDEP-BMRR that covered additional geologic and hydrologic investigative work performed during the summer 2005 field season. On November 28, 2005, NDEP-BMRR initiated the public review process by advertising the intent to issue the permit in the December 1, 2005 edition of the Mineral County Independent-News. The agency received a number of comments, which were addressed in the final notice to issue the permit. The Permit became effective on January 28, 2006.

18.3.3 Reclamation Permit

The Reclamation Branch of NDEP-BMRR issues Reclamation Permits to insure that the disturbance created by mining will be reclaimed to create a safe and stable condition to ensure a productive post-mining land use. In addition to obtaining a Reclamation Permit, an operator must file a surety with NDEP-BMRR or the USFS to guarantee that reclamation will be completed.
When a combination of public and private lands are involved, the NDEP-BMRR requires a 30-day notice period, followed by a 15-day period to respond to comment, which is followed by an 11-day "Notice of Final Decision" period. However, if a project such as Borealis is totally on public lands, then the NDEP-BMRR will use the NEPA environmental analysis to satisfy the public notification process. Once the NDEP-BMRR has received the Decision Notice from the USFS and proof that bonding has been secured, they will issue the Notice of Final Decision, initiating the 11-day review period. During this review period individuals and organizations can comment on the terms of the permit that would require responses by the NDEP-BMRR.

The Plan of Operation and the Reclamation Permit Application were submitted to NDEP-BMRR on August 5, 2004. The Reclamation Permit documents submitted to NDEP-BMRR are identical to the Plan of Operation documents submitted to the USFS. An April 2006 update of the application (reflecting changes produced by the EA) was prepared along with an updated version of the reclamation cost estimate and submitted to the agencies as discussed in Section 18.3.1. The NDEP-BMRR comments on the updated Plan of Operations were limited to the reclamation cost estimate. The NDEP-BMRR requested that the Interim Fluid Management portion of the cost estimate be increased and that some of the mining activities planned for Years 2-4 of the project be included in the initial surety bond for the project. The maximum bond estimate for all activities covered by the Plan of Operations/Reclamation Plan is $7.7 million, or about $15,500 per acre of land disturbance. USFS has established that an initial bond amount of $4.2 million for the first year of operations. Since USFS will reassess and update the bond estimate and adequacy of the financial surety provided on an annual basis, this frequency is more rigorous than the 3-year frequency that NDEP-BMRR normally requires. The NDEP-BMRR issued Permit #0248 on June 23, 2006 for the 499.3-acre Borealis project, contingent on the posting of the $4.2 million surety with the USFS.

18.3.4 Closure Plans

A mining operation is required to submit a Tentative Permanent Closure Plan at the time of the application for the WPCP. A Final Permanent Closure Plan must be submitted 2 years prior to the anticipated closure of the mine. Both plans must provide closure goals and a detailed methodology of activities necessary to achieve a level of stabilization of all known and potential contaminants at the site.

As discussed above, BMC submitted an application for a WPCP in January 2005. The WPCP Application included a Tentative Permanent Closure Plan and, since the WPCP has been issued, the Tentative Permanent Closure Plan is considered complete.

18.3.5 Air Quality Permit

The NDEP-BAPC has jurisdiction of air quality programs for Mineral County, Nevada. Air quality regulations require the BMC to secure an Air Quality Permit before it can begin construction of facilities. Since the operations are expected to emit less that 100 tons per year for any one regulated pollutant, less than 25 tons per year of total defined hazardous air pollutants, and less than 10 tons per year of any one hazardous air pollutant, the project qualifies for a Class 2 permit.

Based on the plant layout and equipment list, Knight Piésold prepared an emission inventory and application that was submitted in February 2006. Air dispersion modeling was performed by McVehil-Monnett Associates, Inc. in April 2006 to assist in the processing of the application. The NDEP-BAPC issued Air Quality Operating Permit AP1041-2125 to BMC on April 28, 2006.

In March of 2006, the Nevada Department of Conservation and Natural Resources-State Environmental Commission adopted amendments to the stationary source operating permits program to create the Nevada Mercury Air Emissions Control Program. This new program requires mercury air emission controls at precious metal mining facilities, as an adjunct to the current operating permit to construct program. The program applies to precious metals mining facilities that process mercury-containing ore and use thermal treatment processes that have the potential to liberate mercury into the atmosphere. The program requires maximum achievable control technologies (MACT) be applied to new and existing sources. This new program is currently being implemented and an application was filed for the Borealis project on September 14, 2006. Because the Borealis air quality permits were in process at the time the new mercury program was adopted, it was agreed with NDEP-BAPC that conformance with the mercury permit program would be addressed via a compliance order from NDEP-BAPC on the approved air quality permit to apply under the new program. This process avoided significant delays that could otherwise have been encountered with this entirely new permit program. NDEP-BAPC is currently reviewing this application and permit issuance is pending.

A Surface Area Disturbance (SAD) permit, allowing surface disturbance for construction and mining activities, prior to facility operations, was submitted at the same time as the Class 2 permit application and was approved on April 3, 2006.

18.3.6 Storm Water Permit

The Federal Clean Water Act includes requirements for the control of storm water discharges. The State of Nevada has addressed these requirements by issuing a General Permit for Storm Water Discharges Associated with Industrial Activity from Metal Mining Activities. Eligible dischargers are required to request inclusion in the general Permit by: (1) submitting a Notice of Intent (NOI) and filing fee to the NDEP 2 days prior to commencing operation, and (2) preparing and implementing a SWPPP. This plan must identify potential sources that would possibly affect water quality, and describe the practices that will be used to reduce pollutants in storm water discharges from the facility. A SWPPP has been developed for the project. At this point, it is only necessary to submit the NOI, filing fee, and a copy of the SWPPP 2 days prior to the start of operations.

18.3.7 Spill Prevention, Control, and Countermeasure Plan (SPCC)

A mine on the Borealis property will be a facility that has a total aboveground oil storage capacity greater than 1,320 gallons. Therefore, the operation will be required to comply with the EPA's SPCC Plan requirements. This plan will be specific to petroleum products and does not address other chemicals or materials used at the site. The rules require that the operation prepare and implement a SPCC Plan before starting operations. A copy of the SPCC Plan must be submitted to the USFS Bridgeport Ranger District.

18.3.8 Emergency Release, Response, and Contingency Plan (ERRCP)

A preliminary ERRCP was included in the Plan of Operations. The ERRCP addresses the storage, use, and transport of process chemicals on site including cyanide. The ERRCP provides measures for responding to unplanned spills and releases, spill prevention, spill containment, medical emergencies, emergency communications, and regulatory reporting. The ERRCP will be updated with site-specific information once the processing facilities are constructed and project personnel are in place. Copies of the final ERRCP will be distributed to the USFS Bridgeport Ranger District and the Regulatory Branch of NDEP-BMRR.

18.3.9 Threatened and Endangered Species Act

The Endangered Species Act requires that federal agencies protect threatened and endangered (T&E) species. Implementation of the law and regulations involves the preparation of a BA/BE for the project area. A draft of the BA/BE, prepared by JBR Environmental Consultants, Inc. (JBR), was submitted to the USFS in January 2006. This report was based on vegetation and wildlife surveys conducted by JBR in 2004 and 2005 that found no federally listed threatened, endangered, or candidate species in or near the Borealis project site. A total of four USFS sensitive plant species and two plant species of concern were identified within or in close proximity to the project area. Although these plants are not considered to be T&E species, they are relatively rare and could someday qualify for listing. Of the six plant species identified, four would be impacted by the project to some extent. No sensitive wildlife or wildlife species of concern were identified on site.

JBR reissued the Draft BA/BE in early March 2006 with changes in formatting requested by the USFS and additional information on plant occurrence, the extent of projected impacts, and proposed mitigation measures. JBR and Knight Piésold personnel subsequently met with the USFS Botanist and the Bridgeport District Wildlife Biologist on April 17, 2006 to discuss the occurrence of the plants, projected and cumulative impacts to the plants, and appropriate mitigation measures. The BA/BE was subsequently revised to incorporate the USFS comments and was submitted as a final draft on April 21, 2006. The USFS edited this document internally and issued it as a final document on June 6, 2006. The plant mitigation measures included in the BA/BE were subsequently incorporated in the EA and the Plan of Operations.

18.3.10 Historical Preservation Act

Preservation of cultural resources is required by the terms of the National Historic Preservation Act. The process to satisfy the requirements of the law is commonly referred to as “106 Consultation”. The USFS and SHPO are charged with enacting the terms of the act for this project. The law and regulations require the investigation of potential cultural resources, and the evaluation of such resources, if any are found. Also, there must be an assessment of the effects the project may have on the identified cultural resources.

The Borealis project area contains numerous prehistoric cultural resources, as the area was used by prehistoric Native Americans to quarry stone and make stone tools and hunting points. Extensive cultural resource surveys and treatment plans were implemented prior to and during the previous mine operations. Some historic mining artifacts were also identified during previous surveys, but they were not historically significant and are not an issue for this project.

Desert Research Institute (DRI) conducted a cultural resource survey of the project area in June and July 2005. The cultural resource survey identified seven prehistoric sites within or partially within the Borealis project area that were recommended as being eligible for inclusion in the National Register of Historic Places (NRHP). Four of these sites were disturbed to a small degree (e.g., two-track roads) by previously approved mining activity. The Plan of Operations will limit the disturbance in these areas to the same areas previously disturbed (i.e., there would be no incremental impact on these sites). Two of the three remaining NRHP-eligible sites will not be impacted by proposed mining activity. BMC modified the location and design of one of its waste-rock facilities to avoid impacting the seventh and final NRHP-eligible site.

A draft of the cultural resources survey was submitted to the USFS in September 2005. Comments were received from the USFS in December 2005 and were incorporated into a final draft report that was submitted to the USFS on January 9, 2006. The projected impact and mitigation measures included in this report were also included in the Draft EA that was submitted at about the same time. After USFS review, a final report was issued in March 2006. The USFS approved this report and forwarded it to SHPO for review and comment on April 17, 2006. The SHPO, which had been consulted during the project, did not have any comments or changes.

Impacts to cultural resource sites are expected to be minimal with three small, non-NHRP-eligible lithic scatters being destroyed and three other similar sites potentially impacted to a small degree by nearby mining activities.

18.3.11 Water Rights

BMC submitted a water rights application for the historic production wells located 3 miles southwest of the process site. These applications were based on developing two new production wells in the same location as the old production wells that were deactivated. Water rights have been approved and awarded to BMC by the NDWR. Once the water wells are put into production, historic production records suggest that BMC will have an adequate supply of process water for the duration of the project. A second water right was obtained at a location about 10 miles south of the project area as a contingency water supply; however, this permit has been forfeited as it was deemed extraneous.

18.4 Other Minor Permits and Authorizations

In addition to the permits listed above, there are a number of miscellaneous permits, licenses, authorizations, or plans that will be required for the project. These permits are necessary, but not considered cumbersome or time consuming to secure. The following list includes all known minor permits that may be required and the corresponding regulatory agency:

Table 18.1 - Other Minor Permits and Authorizations

Permit/License/ Authorization/Plan	Agency	Comments
Explosives License or Permit	U.S. Department of Justice, Bureau of Alcohol, Tobacco, Firearms and Explosives	Requires submitting identification information for employees who are authorized to possess explosive materials. ATF will act on the application in 90 days.
Hazardous Waste Generator Number (Registration)	EPA and NDEP	Application to be submitted to EPA and NDEP. The operation is expected to qualify as a conditionally exempt small generator.
Drinking Water Supply (Approval of Plans)	NDEP – Bureau of Safe Drinking Water (BSDW)	Submit facility design and demonstrate that a BSDW certified operator will control the treatment system. Supplied drinking water may be substituted if the treatment system is expensive to install and operate.
Radio Communications Permit	FCC	The FCC will be contacted.
MSHA Identification Number and MSHA Coordination	U.S. Department of Labor Mine Safety and Health Administration	BMC shall submit on-line registration and coordinate discussions with MSHA.
Building Permit	Mineral County Fire Marshall	A full set of plans to Mineral County Fire Marshall for approval. Commercial trailer/modular building plans must be submitted.
Special Use Permit	Mineral County, Planning Commission	Arrange for a meeting to present Borealis project for special permitting.
Septic Tank (Small Capacity Commercial Wastewater Disposal System)	NDEP-Bureau of Water Pollution Control	Design for septic tank must be submitted for review. Filled percolation tests are required.
Notification of Commencement or Closing of Mine Operations	Nevada Department of Business and Industry, Division of Industrial Relations, Mine Safety Section	Form to be filed upon determination of a start date.
Industrial Artificial Pond Permit	Nevada Department of Wildlife	BMC has the form to submit; need to identify "Responsible Person" in Nevada for official correspondence.
Fire Protection Certification	Nevada Department of Public Safety; Nevada State Fire Marshall	Contact will be made with the State Fire Marshall.
Right of Way for a Power Line (approximately 5,000 linear ft)	BLM	Application was submitted to BLM by the power company.

Table 18.1 - Other Minor Permits and Authorizations

Permit/License/ Authorization/Plan	Agency	Comments
		Awaiting review.

It is noted that the power line right-of-way is still in process. BMC has a contingency plan for using temporary generators in the absence of such right-of-way authorization. Any alternative power supplies used must comply with air quality and other project permits.

18.5 Other Information

The QP authors of this report are not aware of any other relevant data and information for the current technical report on the resources of the Borealis Gold Project that have not been discussed in this report.

19.0 Interpretation and Conclusions

19.1 Geology

The Borealis high-sulfidation system is one of the largest areas of epithermal alteration and mineralization in the state of Nevada, estimated at more than 20 square miles. Gold deposits occur in hydrothermal breccias and replacements within thick sequences of Miocene pyroclastics/tuffs, andesite flows, dacite flows, breccias, and lahars. More than half of the district is covered by variable thickness of alluvial gravel in a pediment environment. At depth, gold is closely associated with pyrite and minor marcasite in hydrothermal breccias, but near-surface deposits are oxidized up to 500 feet deep. Mineralization is commonly characterized by sub-horizontal low-grade gold aureoles within volcanic units surrounding steeply dipping high-grade zones following structures. These deposits occur primarily in northeast-trending zones of silicification in the mined portion of the district. Structures in the district are dominantly northeast-striking normal faults with locally steep dips, generally west-northwest-striking range-front faults with steep southerly dips, and north to north-northeast-striking zones similar to the Graben trend. All three structural sets control gold mineralization in different parts of the district.

19.2 Geophysics

Projections of known alteration and mineralization beneath covered areas are complemented by geophysics to define and prioritize targets. Resistivity highs successfully track favorable trends of extensive silicification and will be used in the current program in searching for extensions of deposits along known trends. Geophysical data found to be most useful for defining pediment exploration targets are IP, aeromagnetics, and resistivity. In particular, aeromagnetic (lows) and IP (chargeability and resistivity highs) data identify the most favorable covered targets and help site drill holes, especially where magnetics and IP show coincident anomalies. CSAMT definitions of resistivity highs are especially useful for developing specific drill locations.

19.3 Gold Deposits

Using the geologic model of flat-lying lower-grade surrounding steeply dipping higher-grade deposits, with variations to either end member, allows a flexible interpretation to be applied to any of the mineralized areas. Some flat-lying deposits may have several layers such as the three separate stacked layers at different elevations clearly identified in the Borealis deposit. An example of a large flat low-grade zone surrounding a narrow steep high-grade zone is clearly shown in the Graben deposit. Also, there is evidence in several deposits that more than one high-grade feeder structure may be present.

The most effective method of identifying and illustrating the configuration of low-grade and high-grade zones is by grade-boundary contouring. Using this method the project geologist interprets the shape of the gold deposit by connecting zones of similar grades from hole to hole with contours of two or more grade levels, and this results in the identification of the possible controls of mineralization. This information can then be applied to the search for extensions of mineralized zones, and the model of grade contours can be used to help guide and control mineral resource estimation

19.4 Mineral Resources

Models were interpreted for the overburden (alluvium plus Coal Valley Formation), the depth of oxidation, the depth of mixed oxides and sulfides, and an alluvial gold deposit previously unrecognized. Grade zones constructed with a better understanding of the geologic conditions were used to allow better conformation of the mineral resource models to the geology.

19.5 Mining

The Borealis property hosts multiple types of gold deposits, which provide several mine development options, or sequences of options (Behre Dolbear, 2004). This situation allows Gryphon Gold increased business flexibility and reduced risks. A staged sequence of mine development warrants further consideration and analysis. Conceptually, potential future development of the near-surface, heap-leachable oxide resources offers an option for a relatively low initial capital cost, early-stage mining operation; followed by a systematic mine expansion and increase of gold production by including additional oxide and/or sulfide deposits in the operation.

Additional information is required to optimize the most cost effective progression of the Borealis project towards becoming a viable mining operation. Recommendations of work required are detailed in Section 20.0, Recommendations.

19.6 District Exploration

A wealth of exploration data exists in the files of the Borealis project. All of this data has been digitized and the 150,000 plus pages of data, which is largely exploration information, have been entered into a digital database making it easily accessible. The district has been mapped geologically on several scales and an excellent map exists at a scale of 1 inch = 1000 feet. Many thousands of rock chip and soil samples have been taken of surface materials and analyzed for multiple trace elements from which multiple geochemical anomalies have been developed and mapped. The district has been flown with a helicopter survey for magnetics, resistivity, and VLF, and many other local geophysical surveys have been conducted over selected potions of the property. All of these data are excellent in quality and provide adequate coverage of the district for geological, geochemical and geophysical information. Using this cumulative data, over 2,600 drill holes have tested many of the anomalies; approximately 500 of these holes have been used for testing targets in the district outside of the central Borealis Mine area. However, most of the 500 holes were concentrated in the delineation of the Cerro Duro, Jaimes Ridge, and Purdy Peak deposits. Some of the drill hole logs have been hastily prepared or logged by inexperienced geologists, so the logs sometimes have inadequate information. Where drill samples are available, re-logging is necessary. Most of the drill holes in the outlying areas are relatively shallow (<500 feet) and originally designed to explore for near surface oxidized gold mineralization. As determined by recent Gryphon Gold drilling there is extensive untested potential in the district.

Discovery potential in the Borealis district includes oxidized gold mineralization adjacent to existing pits, new oxide gold deposits at shallow depth, gold associated with sulfide minerals below and adjacent to the existing pits, deeper gold-bearing sulfide mineralization elsewhere on the property. Expansion of gold mineralization adjacent to existing pits provides the best potential for rapid development of additional mineral resources. Projection of known mineralized structures and trends into covered areas provides the best potential for discovery of new deposits, including both near-surface oxide and deeper sulfide systems.

Because more than half of the district is covered by alluvium and this pediment area has very few drill holes in it, geophysical techniques, along with projection of known mineralization, will be used to identify and locate specific drill targets. Most of the strongest aeromagnetic lows, where coincident with IP highs, identify specific drill targets beneath the pediment, and only one of these has ever been tested by drilling: Freedom Flats. The aeromagnetic lows with IP highs along known mineral trends represent excellent exploration targets within a significant mineralized district. CSAMT surveys seem to be best suited for defining specific drill targets. Additional geophysical surveys will be needed to refine specific drill-site locations in testing these targets.

The geology of the Borealis district has many of the characteristics of districts where multiple gold deposits have been, and are being, discovered. A good analogy is the Yanacocha district in Peru, where the combination of lithology and structure provided the sites for numerous large high-sulfidation gold deposits. Using that analogy and the similarities in geology, it is likely that several more high-value gold deposits are waiting to be discovered in the Borealis district.

(This page is intentionally left blank)

20.0 Recommendations

The goal of the Borealis Gold Project going forward is to increase current resources, determine the feasibility of near-term mining, and discover and delineate new deposits within the greater Borealis property.

One way to increase current resources is to upgrade the substantial inferred classification of mineralization that has been identified. Much of this is supported by wide-spaced drilling and could be brought into the measured and indicated classifications with additional drill holes. The new block model sections and plans need to be reviewed and areas identified where addition drilling could, in the near-term, upgrade inferred mineralization, mainly in the areas of oxidized material. As part of this analysis a drilling plan should be formulated and implemented with regard to the overall mine development plan. While this program is still in the conceptual phase it is estimated for approximately $500,000 is sufficient for this drilling. Using costs from Gryphon Gold's recent drilling this represents 50 holes at approximately $10,000 per hole, which includes all costs of drilling, consumables, support, permitting, and reclamation.

In addition, further sampling of the historical heaps and dumps are recommended because of the immediate potential to move untested and inferred resources into indicated resources that may be considered for reserves. An addition 50 holes are recommended to test the remaining untested heaps and dump with an approximate cost of $250,000. These holes would be less than 100 feet deep and using recent Gryphon Gold drilling costs each hole would be approximately $5,000 all in.

With the new resource estimates and block models, the 2006 Borealis Feasibility Study should to be reviewed and updated. The cost of updating this technical report is estimated to be $250,000.

It is also recommended that the district-wide exploration program continue with particular emphasis on the Lucky Boy and Sunset Wash targets. Drilling should continue on these two targets working toward possible discovery of additional high-sulfidation gold deposits. Drilling is also recommended in the Cerro Duro and Jaimes Ridge area to explore for additional near-surface oxidized gold mineralization that could increase the resource base. Outside of these drill targets, work should continue on developing other areas where exploration can find oxidized gold mineralization that could be brought into production in the near-term and deeper high-grade gold mineralization for its long-term potential. Initially this drilling will consist of 12 to 24 widely result drilled holes and at an estimated cost of $1 to 2 million.

(This page is intentionally left blank)

21.0 References

A partial list of references follows that were used in support of this study:

Bechtel Group, Inc., Engineering Study of the Borealis Gold Plant, December 1980.

Behre Dolbear & Company, Inc., 2004, The Borealis Gold Project, Nevada: A Preliminary Scoping Study of Project Development. Unpublished report for Gryphon Gold Corp., June 7, 2004, 108 pp.

Benedict, J.F., and A.K. Lloyd, 1998, 1998 Drilling Report and Recommendations. Cambior Exploration (USA), Inc. Unpublished Report. July 26, 1998, 14 pp.

Bloomstein, E.I., 1992, April 1992 Monthly Report Quartz-Pyrite Alteration Graben area, Borealis Project. Santa Fe Pacific Mining, Inc. Internal Correspondence, May 13, 1992, 24 pp.

Buchanan, L.J., 1981, Precious metal deposits associated with volcanic environments in the Southwest, In Dickinson, W. R., and Payne, W. D., eds., Relations of tectonics to ore deposits in the southern Cordillera: Tucson, Arizona Geological Society Digest XIV, p. 237-262.

Chemex, 1986, Report on Fire Assay and Cyanide Leach Results Reported to Tenneco, Hawthorne, during the 1986 Season; November 1986, 5 pp.

Corbett, J.D., 2000, Geophysical Data Review, Borealis Project for Golden Phoenix Minerals Inc. May 2000. 46 pp.

Echo Bay Mines, 1986, Monthly Report (by Tony Eng), August 1986, 6 pp.

Eng, T., 1990, Geology and Mineralization of the Freedom Flats Gold Deposit, Borealis Mine, Mineral County, Nevada; Echo Bay Mines report, 39 pp.

Eng, T., 1991, Geology and Mineralization of the Freedom Flats Gold Deposit, Borealis Mine, Mineral County, Nevada: in Raines, G.L., et al, editors, Geology and ore deposits of the Great Basin: symposium proceedings, Geological Society of Nevada, Reno, vol. 2, p. 995-1019.

Galactic Resources Ltd, 1991, 1990 Annual Report, May 1991.

Golden Phoenix Minerals, Inc., 1999, Reserves Mined and Remaining, fax from Mike Fitzsimons of Gold Phoenix Minerals to John Whitney, 7 pp.

Golden Phoenix Minerals, Inc., 2000, Borealis Gold Project Descriptions: Golden Phoenix Minerals, Inc. public report, 6 pp.

Golden Phoenix Minerals, Inc., 2004, 2003 Annual Report, May 2004.

Hoegberg, H., 2000, Tonnage Factor Determinations, Borealis Deposit, Mineral County, Nevada: May 6, 2000, unpublished report, 9 pp.

Honea, R.M., 1988, Mineralogy of Metallurgical Test Samples, Non-published report to Echo Bay Mines Ltd., April 1988.

Honea, R.M., 1993, Polished Section Examination, Non-published report to Santa Fe Pacific Mining, August 1993.

Houston International Minerals Corporation, 1981, Effect of Soluble Pb on Extraction of Au and Ag, HIMC Internal Memo, September 1981.

Houston International Minerals Corporation, 1982, Column Leach Test on East Ridge "Denser Silica," HIMC Internal Memo, July 1982.

Houston International Minerals Corporation, 1983a, Column Leach Test #1 through #7, HIMC Internal Memo, May 1983.

Houston International Minerals Corporation, 1983b, Use of Sel-Rex Solution for Agglomeration, HIMC Internal Memo, May 1983.

Houston International Minerals Corporation, 1983c, Bag Leaching Testwork, HIMC Internal Memo, May 1983.

Houston International Minerals Corporation, 1983d, Column Leach Test on East Ridge – Borealis Type Ore, HIMC Internal Memo, July 1983.

Houston International Minerals Corporation, 1984, Preliminary Report on Marginal Ore Leaching, HIMC Internal Memo, March 1984.

Houston International Minerals Corporation, 1986, Leach Test on Northeast Ridge, HIMC Internal Memo, January 1986.

Ivosevic, S.W., 1979, 1978 Progress Report on Borealis Au Project, Ramona District, Mineral County, Nevada; Houston International Minerals Co. Report, April 1979, 86 pp.

JBR Environmental Consultants, 2004, Vegetation Survey Report Borealis Mine Site, Completed for Gryphon Gold Corporation, August 26, 2004, 22 pp.

Judy, S.A., 2006a, Investigation of Clay Alteration in the Freedom Flats Deposit, Mineral County, Nevada Using Applied Reflectance Spectroscopy and X-Ray Diffraction, Non-published internal report, Gryphon Gold Corporation, May 2006, 3 pp.

Judy, S.A., 2006b, Investigation of Clay Alteration in the Graben (Fence of Holes) Deposit, Mineral County, Nevada Using Applied Reflectance Spectroscopy and X-Ray Diffraction, Non-published internal report, Gryphon Gold Corporation, May 2006, 1 pp.

Judy, S.A., 2006c, Investigation of Clay Alteration in the Graben Deposit, Mineral County, Nevada Using Applied Reflectance Spectroscopy, Non-published internal report, Gryphon Gold Corporation, May 2006, 3 pp.

Judy, S.A., 2006d, Spectrographic Analysis of the North Graben Cross-Section, Borealis Deposit, Mineral County, Nevada, Non-published internal report, Gryphon Gold Corporation, May 2006, 3 pp.

John T. Boyd Co., 1981, Reserve Study and Mining Plan, Borealis Project, Mineral County, Nevada; January 1981, 103 pp.

Kirkham, R.A., 1987, Graben Extension-1987 Exploration Program, Final Report: Echo Bay Mines unpublished report and appendices, 7 pp.

Knight Piésold and Co., 2006, Plan of Operations for USDA Forest Service and Reclamation Permit Application for a Mining Operation for the NDEP, Volumes I and II, March 2006.

Knight Piésold and Co., 2003, Borealis Project Engineering and Environmental Evaluation and Pre-Feasibility Cost Estimates, Report of Findings; June 2003, 43 pp.

Kortemeier, C.P., 1993, Monthly Activity Reports (Borealis): various Santa Fe Pacific Mining Inc. unpublished monthly reports.

Metallic Ventures Gold, Inc., 2004, 2003 Annual Report, 2004, 40 pp.

Noble, A.C., (Ore Reserves Engineering), 2005. Canadian NI 43-101: Technical Report on the Mineral Resources of the Borealis Gold Project Located in Mineral County, Nevada, USA, May 2005.

Noble, A.C., (Ore Reserves Engineering), 2007. Gryphon Gold Corporation, Borealis Mining Company, Canadian NI 43-101: Technical Report on the Mineral Resources of the Borealis Gold Project Located in Mineral County, Nevada, USA, August 15, 2006, Revised January 11, 2007.

Santa Fe Pacific Mining, 1994, Monthly Activity Report; July 1994, 5 pp.

Silberman, M.L. and C.W. Chesterman, 1991, A Description of the Bodie Hills and Bodie Mining District, Mono County, California with annotated road log from Bridgeport to Bodie. In: R. H. Buffa and A. R. Coyner (Editors), Geology and Ore Deposits of the Great Basin, Field Trip Guidebook Compendium. Vol. 2, pp. 601-618.

Steininger, R.C., and D.E. Ranta, 2005, Geology of the high-sulfidation Graben gold deposit, Borealis District, Mineral County, Nevada: in Rhoden, H. N. et al, editors, Symposium 2005, Window to the World: symposium proceedings, Geological Society of Nevada, Reno, Vol. 1, pp. 385-398.

Steininger, R.C., 2007, Borealis Drill Hole Assay Quality Assurance Program, Non-published internal report, Gryphon Gold Corporation, October 2007.

Strachan, D.G., 1981, Ore Mineralogy at Borealis, Non-published internal report, Houston Oil and Minerals, October 1981.

Vanderburg, 1937, Reconnaissance of mining districts in Mineral County, Nevada: U. S. Bur. Mines Info. Circular 6941, 79 pp.

Washington Group International, Inc. 2003, Review of the Metallurgy of the Borealis Mine: unpublished report to Gryphon Gold Corporation, June 2003, 25 pp.

Welsh, J.D., and Associates, 1996, Borealis Gold Redevelopment Project, Mineral County, Nevada. Welsh internal company report, September 1996, 29 pp.

Whitney, J.W., 1996, Recap of Borealis Mining History, Recoveries, and Remaining Potential Resources: letter to John D. Welsh, J.D. Welsh & Associates, 3 pp.

Whitney and Whitney, Inc., 1996, Borealis Project, Recap of Borealis Annual Processing Plant Throughput and Recoveries 1982-1990: letter to John D. Welsh, J.D. Welsh & Associates, 10 pp.

Whitney and Whitney, Inc., 1999, Borealis Project, Target Zone Definition: memorandum to Michael Fitzsimonds, Golden Phoenix Minerals, Inc., 7 pp.

Whitney, J.W, 2004, Borealis Project, Large Gold Resource Target: memorandum to Gryphon Gold Corp., 3 pp.

22.0 Date

This report titled, "Technical Report on the Mineral Resources of the Borealis Gold Project Located in Mineral County, Nevada, USA" and dated April 29, 2008 was prepared and signed by the author:

Dated at Reno, Nevada, USA
May 6, 2008

Roger C. Steininger Ph.D.
Consulting Geologist
CPG 7417

Roger C. Steininger, Ph.D., CPG
Consulting Geologist
Reno, Nevada 89509
USA
Telephone: 775-7775
Fax: 775-323-1134
Email: audoctor@aol.com

CERTIFICATE AND CONSENT OF AUTHOR

I, Roger C. Steininger, CPG, do hereby certify that:

I am a self employed Consulting Geologist doing business as:
Roger C. Steininger, Ph.D.
Consulting Geologist
3401 San Mateo Avenue
Reno, Nevada 89509
USA

I graduated from Western Michigan University with a Bachelor of Science Degree in Geology in 1964.

I graduated from Brigham Young University with a Masters of Science Degree in Geology in 1966.

I graduated from Colorado State University with a Ph.D. in Earth Resources (Geology option) in 1986.

I am a Certified Professional Geologist with the American Institute of Professional Geologists, Certification Number 7417. In addition, I am a Member of the Society for Mining, Metallurgy, and Exploration (SME) and a Fellow of the Society of Economic Geologists (SEG).

I have practiced my profession as a geologist continuously since gradation from Brigham Young University for a total of 42 years.

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, registration as a Certified Professional Geologist, 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 am responsible for contributing to the preparation of this technical report dealing with the property and deposit geology, exploration, drilling and sampling of existing heaps and dumps, sampling, interpretation and conclusions, and recommendations relating to the Borealis gold property. I have visited the Borealis property on numerous occasions. I also supervised Mr. Wolff's resource modeling.

My involvement with the Borealis property is to serve in a consulting capacity to Gryphon Gold, assisting with understanding the geology, planning exploration, and directing the drilling programs. This involvement has been from October 2003 through the present.

10. I am not aware of any material fact or material change with respect to the subject matter of this Technical Report that is not reflected in this Technical Report, the omission to disclose which makes the Technical Report misleading.

I am NOT independent of the issuer applying all of the tests of Section 1.5 of National Instrument 43-101.

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

13. I consent to the filing of the Technical Report with stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 6th day of May, 2008.

AMERICAN INSTITUTE OF PROFESSIONAL GEOLOGISTS
CERTIFICATE NUMBER
AIPG
ROGER C. STEININGER
CERTIFIED PROFESSIONAL GEOLOGIST

Steven D. Craig, CPG
Gryphon Gold Corporation
Hawthorne, Nevada 89415
USA
Telephone: 775-945-5305
Fax: 775-945-5305
Email: scraig@gryphongold.com

CERTIFICATE AND CONSENT OF AUTHOR

I, Steven D. Craig, CPG, do hereby certify that:

1. I am Vice President of Exploration employed by:
   Gryphon Gold Corporation
   420 3rd Street, Suite B
   Hawthorne, Nevada, 89415
   USA

2. I graduated from Western State College with a Bachelor of Arts Degree in Geology in 1974.

3. I graduated from Colorado State University with a Masters of Science Degree in Economic Geology in 1980.

4. I am a Certified Professional Geologist with the American Institute of Professional Geologists, Certification CPG #10997. In addition, I am a Member of the Society for Mining, Metallurgy, and Exploration (SME).

5. I have practiced my profession as a geologist continuously since graduation from Western State College for a total of 32 years.

6. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, registration of a Certified Professional Geologist, 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.

7. I am responsible for contributing to the preparation of this technical report dealing with the property and deposit geology, exploration, drilling and sampling of existing heaps and dumps, sampling, interpretation and conclusions, and recommendations relating to the Borealis gold property. I have visited the Borealis property on numerous occasions.

8. My involvement with the Borealis property is to direct the exploration and geological program for Gryphon Gold, assisting with understanding the geology, planning exploration, and managing the drilling programs. This involvement has been from January 2006 through the present.

9. I am not aware of any material fact or material change with respect to the subject matter of this Technical Report that is not reflected in this Technical Report, the omission to disclose which makes the Technical Report misleading.

10. I am NOT independent of the issuer applying all of the tests of Section 1.5 of National Instrument 43-101.

11. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in accordance with that instrument and that form.

12. I consent to the filing of the Technical Report with stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 6th day of May, 2008.

Steven F. Wolff
Mining Engineering Consultant
4207 Austin Meadow Dr.
Sugar Land, Texas 77479
USA
Telephone: 281-494-6973
Fax: 775-945-5305
Email: sfwolff2@juno.com

CERTIFICATE AND CONSENT OF AUTHOR

I, Steven F. Wolff, do hereby certify that:

1. I am Mining Engineering Consultant doing business at:
   4207 Austin Meadow Dr.
   Sugar Land, TX 77479
   USA

2. I graduated from University of Arizona with a Bachelor of Science Degree in Mining Engineering in 1973.

3. I graduated from University of Arizona with a Masters of Science Degree in Mining Engineering 1978.

4. I have practiced my profession as a mining engineer continuously since graduation from University of Arizona for a total of 30 years.

5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of the required affiliation with a professional association (as defined in NI 43-101), I do not fulfill the requirements to be a "qualified person" for the purposes of NI 43-101. I do qualify with regard to the education and work experience requirements.

6. I am responsible for contributing to the resource section (Section 17) of this technical report dealing with the property and deposit geology, exploration drilling, sampling, interpretation and conclusions, and recommendations relating to the Borealis Gold property.

7. I am not aware of any material fact or material change with respect to the subject matter of this Technical Report that is not reflected in this Technical Report, the omission to disclose which makes the Technical Report misleading.

8. I am independent of the issuer applying all of the tests of Section 1.5 of National Instrument 43-101.

9. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in accordance with that instrument and that form.

10. I consent to the filing of the Technical Report with stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 6th day of May, 2008.

Steven F. Wolff

Jaye T. Pickarts, P.E.
Knight Piésold and Co.
Denver, Colorado 80265
USA
Telephone: 303-629-8788
Fax: 303-629-8789
Email: jpickarts@knightpiesold.com

CERTIFICATE AND CONSENT OF AUTHOR

I, Jaye T. Pickarts, P.E., do hereby certify that:

1. I am a Principal Metallurgical Engineer employed by:
   Knight Piésold and Co.
   1580 Lincoln Street, Suite 1000
   Denver, Colorado 80265
   USA

2. This certificate and consent relates to the "Technical Report on the Mineral Resources of the Borealis Gold Project Located in Mineral County, Nevada, USA" dated August 15, 2006, revised January 11, 2007, and revised April 28, 2008 and prepared for Gryphon Gold Corporation.

3. I graduated from the Montana College of Mineral Science and Technology, Butte, Montana with a Bachelor of Science Degree in Mineral Processing Engineering in 1982.

4. I am a Licensed Professional Engineer in the State of Colorado, USA, P.E. 32768. In addition, I am a Registered Member of the Society for Mining, Metallurgy, and Exploration (SME) and a QP Member of the Mining and Metallurgical Society of America (MMSA).

5. I have practiced my profession as a mineral processing/metallurgical engineer continuously since graduation for a total of 25 years.

6. I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, registration as a professional engineer, affiliation with a professional association (as defined in NI43-101) and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101.

7. I am responsible for preparing the 2004 metallurgical test plan for the existing heaps and dumps, reviewing the test data, and reporting and analyzing these results. I have prepared the metallurgical data in Section 16.0, exclusive of Sections 16.2 and 16.7, of the report titled "Technical Report on the Mineral Resources of the Borealis Gold Project Located in Mineral County, Nevada, USA" dated August 15, 2006, and revised the January 11, 2007 Technical Report relating to the Borealis gold property, and revised the April 28, 2008 ("the Technical Report"). I have visited the Borealis Project site on May 12, 2004 for a period of one day. The date of my most recent visit was February 23, 2006, during which time I spent 1 day(s) on the property.

8. I have had prior involvement with the property that is the part of the Technical Report. The nature of my prior involvement is preparation of the metallurgical test work evaluation and conceptual processing flow sheet for the plan of operation during June to October 2004.

9. 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.

10. I am independent of the issuer applying all of the tests of Section 1.5 of National Instrument 43-101.

11. I have read National Instrument 43-101 and Form 43-101F1, and the Technical Report has been prepared in accordance with that instrument and that form.

12. I consent to the filing of the Technical Report with stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 6th day of May 2008.

Signed Jaye T. Pickarts, P.E.