	A REAL	OGICAL & GEOCHEMICAL
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	V	AULT CLAIM GROUP

# OKANAGAN FALLS AREA OSOYOOS MINING DIVISION

by

MURRAY S. MORRISON, B. Sc.

MINERAL CLAIMS:	Vault 1-13 & Vault 14-18 Fractions (79 units)
LOCATION:	The Vault Claim Group is located immediately northwest of
	Okanagan Falls, B.C. Lat. 49°22' N; Long. 119°37' W;
	N.T.S: Map 82-E-5E
<u>OWNER:</u>	Aqua Regia Minerals Inc.
<b>OPERATOR:</b>	Aqua Regia Minerals Inc.
DATE STARTED:	August 30, 2002
DATE COMPLETED:	January 7, 2003

GEOLOGICAL SURVEY BRANCH ASSESSMENT REPORT

Kelowna, B.C.

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**SUMMARY** 

The Vault epithermal gold property covers a large portion of the White Lake Tertiary Basin immediately northwest of Okanagan Falls, B.C. The property has been explored for precious metals since 1982 when it was first staked by the writer. Much of the early work was concentrated near the centre of the 18 square kilometre property where three zones of precious metals have been discovered. The majority of the exploration was conducted by the Vault Joint Venture (Inco Ltd. 60% and Seven Mile High Resources Inc. 40%) between 1986 and 1990.

Three successive Eocene formations (Marron, Marama and White Lake) rest unconformably one upon the other on the property. The Marron Formation is comprised predominantly of trachytic flow rocks. The Marama Formation is made up of a lower sequence of mixed volcaniclastics, pyroclastics and sediments and an upper sequence comprised predominantly of dacitic flows and tuffs. The White Lake Formation is a mix of sediments, pyroclastics and andesitic lahars.

The rocks are folded into asymmetrical northeasterly plunging synclines and anticlines. Late east-west and north-south block faults have segmented the fold structures within the Eocene rocks.

The main epithermal mineralizing events appear to post-date the folding and pre-date the late block faulting.

The three main precious metal deposits discovered on the Vault property in the 1980's include the Central Zone, East Zone and North Vein. The Central Zone is located on the Vault 1 mineral claim and it contains a possible geological reserve of 1.3 million tonnes of 2 grams per tonne (gpt) gold. The East Zone is represented by a single drill intercept (i.e. 2.93 m of 7.12 gpt gold) recovered from a quartz vein at a vertical depth of 550 metres, 300 metres east of the Central Zone on the Vault 1 mineral claim. The East Zone may represent an extension of the Central Zone, but no follow-up drilling was ever conducted. The North Vein is on the

#### SUMMARY continued

Vault 2 mineral claim 400 metres north of the Central Zone. The vein has a drill indicated reserve of 152,000 tonnes of 14 gpt gold (plus minor silver values) to a depth of 200 metres.

The best gold values at the Central Zone occur within some of the lower units of the Lower Marama Formation where the gold is associated with small quartz veins and silica replacement zones.

The North Vein is an epithermal composite quartz/calcite/adularia vein which cuts through the Marron volcanics for over 1100 metres across the Vault 2 mineral claim. The vein, which averages only 55 cm in width extends to at least 400 metres in depth, but it has only been drilled extensively to the 200 metre depth.

The model for the Central Zone suggests that epithermal solutions have ascended fissures in the Marron Formation and invaded the Lower Marama Formation. It is believed that the solutions have moved freely through the most permeable units (i.e. lahars and lapilli tuffs), but have dammed up against impervious units (i.e. mudstones or dense flow rocks). Precipitation of silica with gold values occurs where there are abrupt changes in conditions. The brecciation of brittle silicified rocks and the invasion of additional epithermal solutions have upgraded the gold values of the deposit. Inco geologists also recognized vertical zoning at the Central Zone.

It is believed that the Vault property has the potential to host more veins like the North Vein and/or more zones like the Central Zone. In recent years, exploration programs including geological mapping and drilling have been conducted peripheral to the centre area of the property by the writer in an attempt to find new mineralized zones. This work has been financed by the property owner, Aqua Regia Minerals Inc. of Calgary, Alberta.

#### SUMMARY continued

The recent work has included detailed mapping on the Vault 1 and 4 mineral claims (2000 - 2001) and drilling on the west-central portion of the Vault 1 mineral claim (2001). The current geological mapping and biogeochemical surveying programs, which are described in this report, were also financed by Aqua Regia Minerals Inc.

The biogeochemical survey conducted over a small portion of the North Vein indicates that the technique might be useful for finding similar veins.

Geological mapping on the eastern side of the property failed to locate any zones of surface mineralization. The mapping, however, did identify folds and fault structures which have possible economic implications. Syncline and anticline folds adjacent the west side of Skaha Lake appear to be the offset equivalents of important folds mapped on the central portions of the property. The total offset is 900 metres, but it may occur across two northwest striking faults that separate the central portion of the property from the eastern portion.

It is important to know the offset across each fault in order to find possible eastern extensions of the Central Zone, East Zone or North Vein precious metal deposits under the hayfields east of Highway 97.

Further regional mapping is recommended to determine the lateral and vertical components of displacement across each fault.





#### **INTRODUCTION**

This report, written for government assessment credits, discusses work programs which were conducted on the Vault gold property located immediately northwest of Okanagan Falls, B.C. The work was conducted by the writer between August, 2002 and January, 2003.

All of the work was financed by Aqua Regia Minerals Inc. of Calgary, Alberta which owns title to the Vault Claim Group. The work included the reclamation of drill sites and access routes on portions of the Vault 1 mineral claim where drilling was conducted during October, 2001. The work also included an experimental biogeochemical survey conducted over a small area on the Vault 2 mineral claim and a reconnaissance geological mapping program conducted over portions of the Vault 2, 3, 4, 6, 7-10, 12, 13 & 16-18 mineral claims.

The Vault Claim Group consists of seven modified grid mineral claims and eleven, 2-post and fractional mineral claims which cover an area of 18 square kilometres.

The original Vault 1 mineral claim was staked by the writer in March, 1982 to cover a silicified gossan zone in Eocene rocks which contained epithermal quartz veins. The potential for an epithermal precious metal deposit was recognized immediately and "Vault" seemed an appropriate name for the property

During the early 1980's, the Vault property was drilled on several occasions by four different exploration companies (see History), but it was not until 1987 that Inco Ltd. geologists finally achieved the first significant intersection (i.e. 10.8 grams per ton gold over 8.6 metres).

The gold interception occurred within volcaniclastic rocks of the Lower Marama Formation on the north-central portion of the Vault 1 mineral claim. The discovery lead to an aggressive drilling program. Between 1987 and 1989 more than 60 deep diamond drill holes were drilled on the new "Central" and "East" Zones underlying the Vault 1 mineral claim by the Vault Joint Venture (Inco Ltd., 60% and Seven Mile High Resources Inc., 40%). A

#### **INTRODUCTION** continued

considerable amount of gold was discovered, but a firm reserve figure was never announced, due to the complex geology and the erratic distribution of gold values.

In 1989 & 1990, the Vault Joint Venture concentrated exploration efforts on the North Vein, a composite quartz/calcite/adularia vein, which crosses the southern side of the Vault 2 mineral claim for over 1100 metres. The vein, which intrudes trachyte flows of the Marron Formation, was intercepted in over forty diamond drill holes, some of which tested the vein at depths greater than 350 metres. The reserves of the vein are stated to be 152,000 tonnes of 0.14 gpt gold, plus minor silver values to a depth of 200 metres.

Very little exploration was conducted on the property between 1991 and 2000.

During the aggressive exploration programs of 1986 - 90, most of the work was conducted over a narrow belt which extends up to 300 metres north and south of the boundary of the Vault 1 & 2 mineral claims. The North Vein, Central Zone and East Zones all occur within the belt. Elsewhere, the property was not explored with the same vigour in spite of apparent favourable geology.

In the period September, 2000 to March, 2001, the writer conducted a detailed geological mapping program and a ground magnetometer survey over portions of the Vault 1, 4 & 5 mineral claims in an effort to evaluate ground lying up to 2 km south and 1 km west of that covered by the intensive drilling programs of the 1986-90 seasons (Morrison, March, 2001).

Fine Percussion Drill Holes (totalling 363 metres) were drilled during October, 2001 to test targets outlined by the 2000/2001 work program (Morrison, December, 2001).

The geology on the central portion of the Vault Claim Group has been studied in detail and documented in several reports (see References), but until the present survey, very little work has been carried out on the eastern side of the property. The current mapping program was

#### **INTRODUCTION** continued

designed to investigate the geology on the eastern side of the property at a reconnaissance scale (1: 5000) in an effort to gain a better understanding of the geology of the property at large. This geology is illustrated on map V-03-1 which accompanies this report.

In addition to the mapping program, a small experimental biogeochemical survey was conducted over segments of the North Vein on the Vault 2 mineral claim. The purpose of the survey was to test the effectiveness of such a survey over a known mineralized vein.

Figure 8 shows profiles of the gold, silver and manganese values that were obtained in the vicinity of the North Vein. The Certificate of Analyses for all of the samples makes up Appendix C of this report.

#### LOCATION AND ACCESS

The Vault Claim Group is located immediately northwest of Okanagan Falls, B.C. (Lat. 49°22' N; Long. 119°37' W; N.T.S. 82-E-5E). The main area of previous intense exploration lies 4 kilometres northwest of town, or 10 kilometres south of the Penticton Airport.

Highway 97 cuts diagonally through the centre of the property from northwest to southeast, while the paved White Lake road crosses the western side of the Claim Group. Several dirt bush roads give access to the central portion of the property between the two paved roads. Farm roads cross much of the property to the northeast of the highway. A narrow road and an old railway grade (now a walking and bike trail) give good access to the east side of the property adjacent Skaha Lake.



#### PHYSICAL FEATURES AND CLIMATE

The Vault Claim Group covers a rocky, hummocky landscape immediately west of the southern end of Skaha Lake in the Okanagan Valley. Elevations range from 339 metres at Skaha Lake to 800 metres on Mount McLellan on the southern edge of the property. The average elevation of the Claim Group is 600 metres.

Much of the northern portion of the property has a light forest of Ponderosa pine, whereas Douglas fir is the more dominant forest species on the southern half of the property. Northfacing slopes support a dense growth of Douglas fir. Some of the forest has been selectively logged in recent years.

The property is sometimes used as summer rangeland for cattle and shallow lakes, which are filled by small streams during the spring snow melt, provide adequate drinking water for the livestock.

Sagebrush and prickly-pear cactus grow on exposed southern slopes in the semi-arid region which receives only 40 cm of precipitation annually. Most of the rain occurs during spring and autumn months. Snow begins to accumulate in November and generally melts from the property by late March. The snow cover rarely exceeds 30 cm.

#### **CLAIM STATUS**

The Vault Claim Group is comprised of seven modified grid mineral claims (68 units) and eleven, 2-post and fractional mineral claims. The mineral claims are contiguous as illustrated on Figure 4.

All of the mineral claims lie within the Osoyoos Mining Division and are owned by Aqua Regia Minerals Inc. of Calgary, Alberta.

Specifics relating to each mineral claim are listed below:

CLAIM <u>NAME</u>	<u>UNITS</u>	TENURE <u>NUMBER</u>	EXPIRY 
Vault 1	8	246374	March 22, 2004
Vault 2	12	246381	March 22, 2004
Vault 3	4	246382	March 22, 2005
Vault 4	18	246383	March 22, 2004
Vault 5	7	246384	March 22, 2004
Vault 6	3	246713	March 22, 2004
Vault 7	16	246714	March 22, 2004
Vault 8	1	246865	March 22, 2005
Vault 9	1	246866	March 22, 2005
Vault 10	1	246864	March 22, 2004
Vault 11	1	246867	March 22, 2004
Vault 12	1	246868	March 22, 2004
Vault 13	1	246869	March 22, 2004
Vault 14 Fraction	1	246872	March 22, 2004
Vault 15 Fraction	1	246873	March 22, 2004
Vault 16 Fraction	1	246874	March 22, 2004
Vault 17 Fraction	1	246875	March 22, 2004
Vault 18 Fraction	1	246876	March 22, 2004

\* The Expiry Dates are based on the acceptance of this report for assessment work credits).





Magnetic declination 19°00'

0 m 500 m 1000 m Scale 1: 20,000

Copied from Government Mineral Titles Reference Map.

for hunion

AQUA REGIA N	INERALS INC
VAULT CLAIM GROUP OKANAGAN FALLS AREA, OSOYOOS M.D., B.C.	
MINERAL CLAIMS	
Drawn By: M.M.	N.T.S. 82-E-5E
June 2003	FIGURE 4

#### **HISTORY**

During the first nine years (1982 - 90), the Vault property had a robust history with several cycles of exciting exploration followed by failure and disappointment. No fewer than four operators explored the property and three of them were large, highly respected exploration companies. Over four million dollars were spent on exploration programs on the property before the dormant 1990's.

The Vault 1 mineral claim was staked March 8, 1982, by the writer, M. Morrison of Kelowna, B.C. to cover a gossanous area of silicified breccias that carried anomalous gold values. The property was soon optioned to Riocanex Inc. (May, 1982). Riocanex immediately added the Vault 2-5 mineral claims to the property and conducted geological and geochemical surveys on the Vault 1 & 2 mineral claims.

Late in the 1982 season, Riocanex drilled four Percussion Drill holes, totalling 295 metres, to test the silicified "Discovery Zone" on the Vault 1 mineral claim. In April, 1983, Riocanex followed-up the 1982 program with four N.Q. diamond drill holes to further test the silicified zone. A total 632 metres were drilled, but the results were disappointing (2 metres of 2.3 gpt gold and 13.8 gpt silver in one hole and another 2 metres of 2.3 gpt gold and 6.5 gpt silver in a second hole). Riocanex terminated their option in May, 1983.

Late in 1983, Dome Exploration (Canada) Ltd. optioned the property, and early in 1984 crews conducted 3.0 km of Induced Polarization and Ground Magnetometer Surveys over the Discovery Zone on the Vault 1 mineral claim.

Dome followed-up their geophysical surveys with the drilling of seven B.Q. diamond drill holes. The best intercept was only 1 metre of 2.50 gpt gold and 7.0 gpt silver. Dome terminated their option in August, 1984.

Seven Mile High Resources Inc. of Kelowna, B.C. optioned the Vault Claim Group in November, 1984. In April, 1985, crews, under the direction of the writer, conducted

#### HISTORY continued

geological and geochemical surveys over an area of three square kilometres south of the region covered by the Riocanex 1982 surveys. Five square kilometres of ground magnetometer and VLF-EM surveys were also conducted over the Vault 1 & 4 mineral claims.

In April, 1985, the surveys resulted in the discovery of a new, large, gossanous, silicified and clay-altered zone on the northern side of the Vault 4 mineral claim.

In August, 1985, a program of Percussion Drilling was conducted under the direction of the writer. Two drill holes were drilled to test the eastern extension of the Discovery Zone. These drill holes encountered fault problems and were abandoned short of their target. Five drill holes were then drilled to test the new Vault 4 target. Impressive zones of clayalteration and silicification were encountered in several of the drill holes, but no economic minerals were intercepted. The drill holes only proved that a large epithermal system occurs on the property.

On May 1, 1986, the property was optioned by Seven Mile High Resources Inc. to Inco Ltd. and the Vault Joint Venture was formed (Inco Ltd. 60% and Seven Mile High Resources Inc. 40%). Two diamond drill holes were drilled in August, 1986, by Inco Ltd. One drill hole returned negligible values, but the second hole, located 750 m east of the Discovery Zone, returned 7.4 gpt gold over 1.05 m from 373.10 - 374.15 metres from a horizon considered to be a favourable host and further drilling was recommended (E. N. Hunter, 1987).

In 1987, two drilling programs were conducted by the Vault Joint Venture. The first program involved six N.Q. diamond drill holes. The best interceptions were only 22.1 m of 1.8 gpt gold and 4.0 m of 3.1 gpt gold. Late in 1987, an additional 16 N.Q. diamond drill holes were drilled (for a total of 4665 m in 1987). In the late program, several encouraging intersections were encountered with the best coming from drill hole 72408 (10.8 gpt gold over 8.36 m) (Groeneweg, 1989).

**HISTORY** continued

In 1988, 49 N.Q. diamond drill holes were drilled (18,307 m) and a large auriferous epithermal system with several ore grade interceptions was defined over a length of 450 metres. This zone was later called the Central Zone.

During the 1988 program, one deep step-out drill hole was drilled 300 metres east of the Central Zone. This drill hold returned 2.93 m of 7.12 gpt gold (Groeneweg, 1989).

Also in 1988, a Legal Survey of the main Vault claim posts was conducted by S. J. Buzikievich, B.C.L.S.

In 1989, a total of 75 N.Q. diamond drill holes were drilled (13,229 m). Approximately 50 of the drill holes were drilled to test the North Vein to a depth of 200 metres.

In 1990, four deep N.Q. diamond drill holes tested the north Vein to depths of 350 metres. Also in 1990, a surface trenching program exposed the North Vein over a length of 400 metres and detailed sampling was conducted.

Seven Mile High Resources Inc. had an independent Mineral Inventory conducted for them by Orcana Mineral Associates Ltd. in 1989 (Saunders, 1989).

Exploration on the property was low key in the 1990's with the exception of an Induced Polarization and Ground Magnetometer Survey which was conducted over 3 km of lines in 1997 by Aqua Regia Minerals Inc. and a partner. The survey covered portions of the Central Zone and an area lying north and east of the Central Zone. In hindsight, it is interesting to note that the Central Zone is outlined very well by the Induced Polarization survey.

A program consisting of detailed geological mapping, ground magnetometer surveying and altimeter surveying was conducted over portions of the Vault 1, 4 & 5 mineral claims for

#### HISTORY continued

Aqua Regia Minerals Inc. by the writer between September, 2000 and March, 2001 (Morrison, March, 2001). Some of the targets defined during the 2000/2001 mapping program were drilled with a Percussion Drill (i.e. 5 holes totalling 363 metres) in October, 2001 (Morrison, December, 2001).

#### **REGIONAL GEOLOGY**

The regional geology of the Okanagan Falls area was mapped by B. N. Church of the B.C. Department of Mines and it is described in Bulletin 61 dated 1973.

Two of Church's maps, which appeared in earlier government publications (1969 & 70), are added to this report as Figures 5 & 6. The maps illustrate that the Vault Claim group covers volcanic and sedimentary rocks of Eocene Age. Three different Formations are recognized. The lowermost Marron Formation is unconformably covered by the Marama Formation which in turn is unconformably overlain by the White Lake Formation.

The Marron Formation is made up of extensive lava flows which are largely trachytic porphyries. There are also minor interbedded pyroclastics. The Marama Formation, which unconformably overlies the Marron Formation is made up of a Lower Unit of mixed volcaniclastic and pyroclastic sediments of trachytic, andesitic and dacitic composition and an Upper Unit comprised of dacitic flows and pyroclastics. The White Lake Formation is comprised of a mix of coarse lahars, volcanic flows, tuffs and sediments which unconformably overlie the Marama Formation.

The Eocene rocks have been folded into northeasterly plunging folds and segmented by steep east-west and north-south faults.





BOUNDARY OF BEDROCK EXPOSURE TOPOGRAPHIC CONTOUR, 500' INTERVAL



#### **REGIONAL MINERALIZATION**

The most notable example of precious metal mineralization within Eocene rocks in the Okanagan Falls region (prior to the discovery of the Vault mineralization) was the Dusty Mac occurrence located 2.5 km northeast of town. A near-surface silicified zone which carried good silver and gold values was drilled extensively by Noranda Mines in the late 1960's. The deposit was considered to be too small and uneconomic at the time and Noranda dropped their option on the property. Shortly thereafter, precious metal prices increased dramatically and Dusty Mac Mines Ltd., a Vancouver based company, extracted the deposit with a profitable open pit operation during 1975-76. In all, 93,653 tonnes of ore grading 6.29 gpt gold and 146.59 gpt silver were mined.

The abandoned open pit allows for a good view of the epithermal deposit. A lahar unit comprised of Eocene andesite has been flooded with silica, brecciated, and flooded again. The lahar unit lies directly below a mudstone unit of the White Lake Formation. It is believed that the mudstone unit provided an impervious cap for the ascending epithermal solutions. The gold and silver mineralization is disseminated throughout the andesite/quartz breccia.

#### **RECLAMATION PROGRAM (October, 2001, Drill Sites)**

The October, 2001, Percussion Drilling Program on the Vault 1 mineral claim involved the preparation of five drill sites and a 500 metre access route through an open pine forest.

Reclamation of the five drill sites and the access route was conducted in August, 2002. A Case 580 Turbo 4x4 Tractor equipped with a front end scoop and a back-hoe was contracted from A & R Excavating of Penticton, B.C. The contractor filled in the sumps at each drill site and recontoured the sites to their natural form. Four hours were required to complete the job which included travel time for the tractor from Penticton.

#### **RECLAMATION PROGRAM** continued

A day of pick and shovel labour was required to complete the drill site clean up.

All of the drill sites and disturbed sites along the access route were planted with grass seed and a 13-16-10 fertilizer was spread over the seeded areas.

#### **BIOGEOCHEMICAL SURVEY**

#### <u>Grid</u>

An east-west Baseline was measured for 535 metres at grid 2+00N on the Vault 2 mineral claim for the current survey. Grid lines 0+35W, 3+00E, 4+00E and 5+00E were then measured north for 175 metres to cross the old North Vein Trench area. Stations were marked at each 25 metre interval along each line as illustrated on Figure 7.

In all, 675 metres of flagged grid line were established using a Silva Ranger compass and a hip chain.

#### Sample Medium

Over a period of years, the writer has conducted many biogeochemical surveys over mineral properties in Southern British Columbia. Several species of trees have been sampled and various portions of the trees have been used. During this experimental work, it was discovered that the deadwood branches of pine trees and Lodgepole pine, in particular, are great retainers of silver. In fact, the ashed material of the deadwood branches of Lodgepole pine yield silver values of 5 to 10 times greater than the values from livewood twigs from the same trees and up to 40 times greater than the silver values from other forest species such as the Balsam fir.

#### **BIOGEOCHEMICAL SURVEY** continued

#### Sample Medium continued

The Lodgepole pine trees are clearly the species of choice with regard to silver analyses, but they are lacking in the current survey areas. Ponderosa pine were, therefore, selected as a good alternative for this year's survey.

The concentration of silver and some other elements in the deadwood branches might be explained by the fact that the branches die slowly over a period of weeks or months and that as they die the movement of fluids through the wood tissue gets restricted. It seems that in the dying phase, some elements are deposited at a greater rate than they are removed. Because the dying process is required to bring about the concentration of certain elements, it is important that the branches collected for samples be fully dead and attached to the tree. Branches that have been broken during wind storms should not be collected because they have not gone through the lengthy dying process. Also, because there is such a large upgrade in the concentration of silver in dead branches compared with live branches, it is important to collect only the branches that are completely dead.

#### Sampling Procedures

The deadwood branches of Ponderosa pine were used for this year's survey. At each sample site, several deadwood branches of 1/2 to 1 cm in diameter were broken from 2 to 4 trees. These branches were stripped of much of their loose bark and lichen and broken into 10 cm lengths before being placed in "kitchen catcher" garbage bags with identification tags. Approximately 200 grams of branches were collected for each sample.

Trees of equal size were used wherever possible and a size of 30 cm in diameter was the most common in the survey area. The number and size of the trees that were sampled at each site were recorded in a notebook. The amount of lichen and bark on the branches was also noted (the analytical results from other surveys conducted by the writer indicate that the

#### **BIOGEOCHEMICAL SURVEY** continued

#### Sampling Procedures continued

size of the trees and the amount of lichen or bark on the branches have little effect on the silver values recorded).

In all, 27 samples were collected and shipped to Acme Analytical Laboratories in Vancouver for standard ICP-MS Analyses of 35 elements. The laboratory procedures are listed in Appendix C along with the results.

#### **Results**

Four experimental biogeochemical grid lines cross segments of the North Vein that had been exposed by the 1990 trenching program. The trenches have since been filled, but float of banded quartz/calcite vein material indicates that the vein was at least 30 cm thick where crossed by the lines.

#### Manganese

Manganese is the only element out of the 35 analyzed which yielded elevated values that are somewhat correlative with the North Vein. The four geochemical profiles on Figure 8 illustrate that manganese reaches peak values directly over the North Vein on lines 0+35W and 3+00E and reaches peak values 25 metres to the south of the vein on lines 4+00E and 5+00E. The peak of 5029 parts per million (ppm) manganese on line 0+35W is particulary impressive in that it occurs immediately over the North Vein. The peaks on the other three profiles are more subtle.

#### **BIOGEOCHEMICAL SURVEY** continued

#### **<u>Results</u>** continued

#### Gold and Silver

The profiles for the gold and silver values obtained during the survey are also illustrated on Figure 8. These values demonstrate very little correlation with the North Vein, although the Vein is known to contain good gold and silver values. The only gold profile that shows an increase in values (22 parts per billion) over the Vein is the profile for L4+00E, and the only silver profile that shows an increase in values (10.7 ppm) near the Vein is the profile for L0+35W. There is no correlation between the gold and silver values.

The two highest gold values (23.7 ppb at 2+00N on L035W and 36.8 ppb at 2+25N on L3+00E) occur in areas of deep drift 100 metres "down-glacier" from the North Vein.

#### **Discussion of Results**

The experimental survey is much too small to draw conclusive results, but it does indicate that the manganese content in the deadwood branches from Ponderosa pine might be useful in defining the trace of the North Vein or other targets like it. It would require more sample lines across the North Vein to prove the effectiveness of the survey technique.

It appears that the values of the other 34 elements (including gold and silver) extracted from the deadwood branches of Ponderosa pine are of little use in tracing the position of the North Vein.







#### **PROPERTY GEOLOGY - Central Portion of the Vault Claim Group - Review**

#### Introduction

Much has been written about the geology on the central portion of the Vault Claim Group (see References) and only a brief review will be given under the titles that follow.

#### Summary of Property Geology - Central Area

The three Eocene Formations (i.e. Marron, Marama and White Lake) described under the title Regional Geology occur on the Vault Claim Group. They are folded into asymmetrical anticlines and synclines and are cut by east-west and north-south faults. Epithermal solutions ascending fractures in the Marron Formation have flooded out into the permeable horizons of the Lower Marama Formation on the central portion of the property. Strong argillic alteration and silica replacement occur within lahars, tuffs and other permeable sediments.

Precious metals occur within epithermal quartz/calcite/adularia veins which cut throught the Marron Formation and with quartz veins and silica replacement zones within the Lower Marama Formation on the central portion of the property. Several significant ore grade gold intervals have also been encountered in drill holes drilled on the central portion of the property.

#### Structural Geology and Faulting

The Eocene Marama Formation which unconformably overlies the Early Eocene Marron Formation is folded into a syncline on the Vault 1 mineral claim and an asymmetrical anticline on the Vault 4 mineral claim. The axes of the folds strike and plunge northeasterly. The Marama Formation wedges out to expose the underlying Marron Formation on the western sides of the Vault 1, 4 & 5 mineral claims. To the east, the Marama Formation thickens to at least 450 metres.

#### PROPERTY GEOLOGY - Central Portion of the Vault Claim Group - Review cont'd

#### Structural Geology and Faulting continued

On the Vault 1 mineral claim, the Marama Formation is successively down dropped to the south by a series of east-west block faults, and dropped to the east by another series of north-south block faults.

#### **Mineralization and Alteration**

Two main styles of mineralization are represented by the North Vein and Central Zones on the central portion of the Vault Claim Group and these will be described in the paragraphs that follow.

#### North Vein

The North Vein is a precious metal bearing epithermal composite vein comprised of quartz, calcite and adularia. The vein cuts through brittle trachyte flow rocks of the Marron Formation which underlie the southern side of the Vault 2 mineral claim. The vein is exceedingly persistent and extends over 1100 metres in an east-west direction and dips steeply south to a depth of at least 400 metres.

The vein is irregular in width (5 to 100 cm) and pinches and swells along strike and dip. The upper 200 metres of the vein have been drilled extensively and a reserve of 152,000 tonnes of 14 gpt gold (plus minor silver values) has been calculated over an average vein width of 55 cm. Electrum is the main ore mineral. Pyrite (2 to 3%) is the only notable sulphide.

The trachyte within the shear zone is fragmented and clay altered. Moderate silicification and/or clay alteration extends for up to 20 metres into the hanging wall rocks on the south

### PROPERTY GEOLOGY - Central Portion of the Vault Claim Group - Review cont'd

#### Mineralization and Alteration continued

#### North Vein continued

side of the vein. Quartz and carbonate veinlets within the trachyte also become more numerous as the vein is approached from the south.

#### Central Zone

The Central Zone on the northern side of the Vault 1 mineral claim has been penetrated by over 50 diamond drill holes. The main host rocks for precious metal mineralization are the lahars and lapilli tuffs of the Lower Marama Formation. These volcanic rocks have been flooded with epithermal silica solutions, fractured, and injected again. Intercalated mudstones and flow rocks appear to have acted as effective dams for epithermal solutions that ascended through the permeable lahar and tuff units. Repeat brecciation and multiphase veinlets are characteristic of portions of the deposit.

Precious metal bearing quartz veins and veinlets often have an east-west strike and they are most numerous between 0+50S and 1+50S on the Central grid zone. Some of the best precious metal values of the Central Zone occur within the upper portions of a lahar unit and the lower portions of a felsic unit near the contact of the two units.

Grades as high as 15.0 gpt gold over 8.8 metres and 10.0 gpt gold over 13.4 metres were reported by the Vault Joint Venture, and tonnage estimates range from 61,000 tonnes of 10 gpt gold, or 505,000 tonnes of 3 gpt gold, to 1.3 million tonnes of 2 gpt gold. (Due to the lack of in-fill drilling and data, all of the reserve figures calculated to date have been reported with qualifying statements.)

#### PROPERTY GEOLOGY - Central Portion of the Vault Claim Group - Review cont'd

#### Mineralization and Alteration continued

Central Zone continued

The dimensions of the Central Zone, if projected vertically to surface, occur from 0+50S to 1+50S and from 5+00E to 9+50E on the old property grid.

The dominant gold bearing mineral is electrum, while pyrite (2-10%) is the most common assessory sulphide. Very fine-grained pyrite (1-2%) is disseminated throughout the rocks for several tens of metres from the Central Zone. Silver, arsenic and molybdenite occur in anomalous values for several tens of metres above the main gold values and are important pathfinder elements.

Argillic alteration and silica replacement are common and can extend through the permeable rock units for hundreds of metres beyond the good gold values.

A significant intercept (i.e. 2.93 m of 7.12 gpt gold) was recorded from a quartz vein at 550 metres depth, 300 metres east of the Central Zone. The new zone is known as the East Zone, but no follow-up drilling has been done in the area.

### **PROPERTY GEOLOGY - Eastern Side of the Vault Claim Group**

#### **Mapping Control**

Map control points were established with a Global Positioning Instrument (Magellan Meridian) which is generally accurate within three metres. Scattered control stations were marked in the map area and these stations were checked into from time to time to correct for diurnal variations. If the variations were more than a few metres, the values of the map control points were adjusted for variation.

Traverse points were measured along the railway grade and along the old road above the railway grade on the east side of the property. Other traverses were conducted up the ridges to the west of Skaha Lake. In addition to the traverses, GPS readings were recorded around the perimeters of large outcrop or on top of small outcrop for mapping purposes.

### **Introduction**

The current work program involved reconnaissance geological mapping (at 1: 5000 scale) and prospecting on the eastern side of the Vault Claim Group. The mapping was conducted in an attempt to determine the relationship of the Eocene rocks on the eastern side of the property with those on the central portion of the property (west of Highway 97) where they are known to host significant gold mineralization. The prospecting was carried out with the belief that new occurrences of gold mineralization might also be discovered on the eastern portion of the property.

The geology on the eastern side of the Vault Claim Group is well exposed on rocky bluffs which rise from the shoreline of Skaha Lake to heights of 300 metres above the lake over a distance of 500 to 1000 metres to the west. Rock cuts along an old railway grade near the lake edge and along an old road 40 metres above the railway grade allow for a good examination of the geology.

#### PROPERTY GEOLOGY - Eastern Side of the Vault Claim Group continued

#### Introduction continued

Although the rocks are well exposed in the cuts, they have been subjected to much deformation and it is sometimes difficult to determine which rocks lie upon which. A traverse along the old railway grade from the bridge at the southwest corner of Skaha Lake indicates that the sequence of sediments and volcanics gets younger towards the north and that it may include the Lower Marama, Upper Marama and White Lake Formations.

#### Summary of the Geology on the Eastern Side of the Vault Claim Group

Northward from the old railway bridge there are two conglomerates that are well exposed in the railway rock cuts. It is thought that these conglomerates may form a part of the Lower Marama Formation. The first conglomerate is poorly sorted with subangular clasts of assorted andesites, while the second conglomerate is better sorted with subrounded clasts of andesites and minor siltstone and sandstone interbeds.

A dacitic rock with strong flow-banding overlies the second conglomerate to the north. The dacitic rock is believed to represent the Upper Marama Formation.

The White Lake Formation rests on top of the dacitic unit and it consists of a variety of sediments and volcanics. The basal unit is a conglomerate which features subangular clasts of the banded dacite. A few tens of metres of mixed bedded siltstones, tuffaceous sandstones and tuffaceous conglomerates (lahars) lie on top of the basal unit. A massive (15 metre thick) andesitic agglomerate overlies the bedded sediments and tuffaceous conglomerates (lahars) overlies the bedded sediments and tuffaceous conglomerates (lahars) overlies the massive agglomerate. Finally, a very thick (i.e. several hundred metres) andesitic lahar covers all of the earlier rocks for a distance of at least 1500 metres to the north.

The rocks summarized in the previous paragraphs will be described more fully under the titles that follow.

#### PROPERTY GEOLOGY - Eastern Side of the Vault Claim Group continued

#### **Eocene Lower Marama Formation?**

A bedded (30-200 cm beds) poorly sorted conglomerate is exposed in the railway grade cuts over a distance of 180 metres just north of the old railway bridge at Okanagan Falls. The conglomerate is comprised of a mix of subangular to subrounded andesitic clasts most of which are porphyritic and range from 1 to 50 cm in size. Much of the conglomerate is stained purple with hematite. There are pockets of clay alteration and limonite staining within the conglomerate, usually along, or near, bedding contacts.

The general attitude of the conglomerate is 160 degrees with dips northeast towards Skaha Lake of 44 to 47 degrees. Near the central portion of the outcrop, the strike changes to 020 degrees and the beds dip 70 degrees southeast.

The conglomerate is thought to be a part of the Lower Marama Formation.

A second conglomerate, also thought to be a part of the Lower Marama Formation, is well exposed over a distance of 180 metres in railway rock cuts 600 metres north of the conglomerate described above. This conglomerate is also poorly sorted with subrounded clasts of 2 to 50 cm. Most of the clasts are comprised of porphyritic andesites. There are minor black shale and brown siltstone interbeds of 3 to 10 cm within the conglomerate which are very irregular (disrupted) in attitude. Towards the north end of the outcrop, the beds are less disrupted and siltstone and sandstone comprise up to 5% of the rock. The average attitudes measured are 130/20NE.

Some of the conglomerate with subrounded clasts also outcrops near the road above the railway grade.

#### PROPERTY GEOLOGY - Eastern Side of the Vault Claim Group continued

#### **Eocene Upper Marama Formation?**

A grey, very fine-grained dacite occurs along the railway grade 110 metres north of the conglomerate described above. The dacite features pronounced flow-banding (1 to 2 cm). The flow-banding has been subjected to much disruption and local folding, but near the railway grade, the attitudes range from 120/20NE to 120/60NE.

The grey dacite occurs for 180 metres along the road above the railway grade where the flowbanding also exhibits local folding and disruption.

The grey dacite underlies much of a ridge which projects 650 metres southwest from the railway outcrop. Along the ridge, there are minor outcrops of sediments and lapilli tuff and it is not clear if the ridge is comprised of several dacitic flows with intercalated sediments, or if a single folded, segmented, disrupted and eroded flow is represented.

The southwest end of the ridge is defined by a cliff of dacitic rock. The cliff is up to 30 metres high and nearly vertical. The dacite on the cliff is highly disrupted. The flowbanding has many attitudes, some vertical, but most dipping northeasterly into the cliff. Strong joints also cut the cliff in a northeasterly direction, and it is believed that the cliff represents a fault scarp with a northwesterly strike.

#### **Eocene White Lake Formation**

All of the Eocene rocks lying above the Upper Marama Formation are believed to belong to the White Lake Formation. The White Lake Formation is comprised of an assortment of sediments and volcanics with the dominant rock being a very thick lahar unit.
#### Eocene White Lake Formation continued

The basal unit of the White Lake Formation is a conglomerate which features subangular clasts of banded dacite that equal up to 30% of the rock. Clasts of the dacite are generally 5 to 30 cm. The basal conglomerate unit is best exposed along the old dirt road immediately north of the dacite outcrops.

There is a mix of poorly exposed sediments on the hillside just to the north of the basal unit. The sediments are tens of metres in thickness and they include bedded siltstones, sandstones, tuffaceous sandstones, and tuffaceous conglomerates (lahars). Fossils of leaves are common within the siltstones. Some of the sandstones and tuffaceous rocks are moderately clay altered and stained with limonite. The attitudes of these sediments range from 120/20NE to 120/45NE.

A massive 15 metre thick and sitic agglomerate overlies the bedded sediments and forms a cliff that extends for 300 m up the ridge from the railway grade. The agglomerate is exposed in rock cuts for 100 metres along the railway grade and along the old road above the railway grade.

The agglomerate is comprised of a mix of andesitic clasts from 0.5 to 15 cm within a matrix of 20% tuff.

The agglomerate is moderately clay altered and stained with limonite from the lake to the top of the ridge 300 metres west. At the railway cut, the clay alteration and limonite staining decrease to the north, and the northern 40 metres of the outcrop are not altered or stained.

## Eocene White Lake Formation continued

The thick agglomerate unit is overlain by interbedded tuff and lesser agglomerates to the north along the old road over a distance of 100 metres. Most of these units are limonitic and moderately clay altered.

A sequence of thin bedded, siltstones, sandstones, tuffaceous sandstones and tuffaceous conglomerates overlies the agglomerates and tuffs on bluffs above the old road for 200 metres north of the main agglomerate unit.

A very thick lahar unit overlies the thin bedded sediments. The lahar unit underlies much of the northwestern side of the Vault 7 mineral claim. The rock is well exposed in 350 metres of rock cuts at the railway grade and at the road above the railway grade. The lahar is also well exposed on the steep ridges which rise 300 metres to the west of Skaha Lake.

The lahar is generally a green massive unit comprised of a mix of andesitic clasts. The clasts are subangular to subrounded and range from 3 to 30 cm. Many of the clasts are comprised of porphyritic andesites, but other andesites are also represented. The lahar is chloritic and locally stained with hematite, but there is no evidence of the passage of epithermal solutions.

Local sandstone lenses of 20 to 30 cm are common within the massive lahar and attitudes ranging from 65/40SE to 75/43SE have been measured in the railway and road rock cuts.

Although over 90% of the lahar unit is massive and highly indurated, there are local zones within it which are poorly indurated and highly fractured. The fracture zones often have attitudes parallel the sediments and the fracturing may be related to rock units that were well broken originally (possibly talus). In spite of the high degree of fracturing, there is no evidence of epithermal alteration or mineralization in these local brecciated zones.

## Structural Geology and Faulting

The structural geology on the Vault Claim Group is complex. As stated previously, the Eocene rocks west of Highway 97 on the central portion of the property are folded into asymmetrical anticlines and synclines which plunge east to northeast. Late north-south and east-west block faults segment the folds, sometimes with large displacements.

The structural forces that have disrupted the Eocene rocks west of the highway have had an equal effect on the Eocene rocks just west of Skaha Lake and a syncline occurs near the centre of the current map area. The syncline is represented by the attitudes of the sediments which on the southern portion of the map area strike southeast and dip northeast, and on the northern portion of the map area strike northwest and dip southeast. The precise location of the axis of the syncline is unknown, but it may cross the map area in a northeasterly direction 250 to 350 metres north of the main andesitic agglomerate unit on Map V-03-1. The syncline plunges to the northeast.

The dacitic ridge 800 metres south of the axis of the syncline may represent an anticline which also plunges to the northeast.

It is believed that the syncline may represent the eastern extension of the syncline mapped on the Vault 1 mineral claim west of Highway 97, and that the anticline may represent the eastern extension of the anticline mapped on the Vault 4 mineral claim west of the highway. If the synclines and anticlines are the same, then the folds adjacent Skaha Lake have been offset a full 900 metres to the south of the folds west of the highway.

The displacement of the folds has probably occurred across the northwest striking Highway Fault and/or Powerline Fault, but the amount of displacement along each fault is unknown (see Map V-03-1).

## **Structural Geology and Faulting**

The names Highway Fault and Powerline Fault are used in this report to identify two subparallel faults located 500 metres apart that cross the Vault Claim Group in a northwesterly direction. These faults were first illustrated on Church's geological map (see Figure 6).

A highly disrupted dacite which forms a cliff near Highway 97 on the eastern side of the Vault 4 mineral claim is believed to mark the trace of the Powerline Fault. Both the Powerline Fault and the Highway Fault cross areas covered with deep overburden in the current map area. Flat hayfields lie between the two faults.

#### **Mineralization and Alteration**

The alteration of Eocene rocks on the east side of the Vault Claim Group is variable and it appears to result from epithermal solutions percolating through the most permeable of the rock units.

In general, the tuffaceous sediments and agglomerates are the most altered, while the dacitic flows and the andesitic lahars are the least altered. Some of the conglomerates are altered locally.

The alteration usually consists of limonite staining and clay replacement of fine grained minerals. In some of the more altered tuffaceous rocks and agglomerates, limonite equals 1-3%. The clays are chalky white (kaolinite).

The expected source of the epithermal solutions appears to be from the east - possibly from a conduit underlying Skaha Lake. The lower Marama conglomerates near the railway grade are

#### Mineralization and Alteration continued

altered along bedding contacts that dip towards the lake. In fact, most of the units mapped on the east side of the property dip towards the lake, and the tuffaceous sandstones, conglomerates and agglomerates which lie in a 350 m zone between the Upper Marama dacite and the White Lake lahars are moderately clay altered and limonite stained.

Although the White Lake Formation lahars also dip towards the lake and have local zones with good permeability, they are unaltered. Either the lahars are located too far from the source of the epithermal solutions, or the fracturing occurred after the epithermal event.

No chalcedony or quartz veins or zones of silica replacement were found on the eastern side of the Vault Claim Group and no samples were collected for analyses.

## **DISCUSSION**

A summary of the observations described under the previous title "Mineralization and Alteration" indicates (a) that there is evidence of the passage of only low temperature epithermal solutions through the most permeable of the Eocene rocks which dip eastward towards Skaha Lake (i.e. the rocks are replaced by limonite and clay minerals, but there are no quartz veins or silica replacement zones which represent higher temperature epithermal solutions), and (b) that the source of the epithermal solutions probably lies under Skaha Lake.

It is concluded that if precious metal deposits do occur on the eastern side of the Vault Claim Group, they are either deeply buried and/or they are under Skaha Lake.

The current mapping program suggests that there are greater prospects for finding economic precious metal deposits 500 to 1500 metres west of Skaha Lake under the hectares of hayfields just east of Highway 97.

As mentioned under the title "Structural Geology and Faulting", it is suspected that the syncline mapped on the eastern portion of the property is the same syncline that underlies the Vault 1 mineral claim west of Highway 97 and that a 900 metre displacement to the south has occurred. However, as mentioned earlier, it is not known how much of the displacement has occurred across the Highway Fault and how much has occurred across the Powerline Fault, both of which separate the central portion of the property from the eastern portion.

In order to locate possible eastern extensions of the Central Zone, East Zone or North Vein east of the highway, it is important to know the displacement across each fault. Further regional mapping will be required to determine the lateral and vertical components of displacement across each of the faults prior to the selection of drill targets.

#### CONCLUSIONS AND RECOMMENDATIONS

The technical work programs conducted on the Vault Claim Group between August, 2002 and January, 2003 yielded mixed results.

The experimental biogeochemical survey conducted over the North Vein on the Vault 2 claim showed some promise. Although the gold and silver content of the samples was variable and demonstrated little correlation with the North Vein, manganese values did show a good correlation with the vein on all four lines sampled. The survey, however was small (27 samples) and further surveys will be required to prove the effectiveness of the survey technique.

The reconnaissance geological mapping and prospecting program conducted on the east side of the property did not yield any obvious or immediate exploration targets. Although there is ample evidence that low temperature epithermal solutions have passed through the tuffaceous rocks and agglomerates of the White Lake Formation, there are no quartz veins or silica replacement zones that are considered to be more indicative of higher temperature auriferous epithermal solutions.

Much of the alteration is believed to have resulted from epithermal solutions that have ascended the permeable rock units up dip a considerable distance from a source which may underlie Skaha Lake. The alteration which is representative of low temperature solutions consists of 1-3% limonite and white clay (kaolinite) replacement of fine mineral grains.

If economic gold deposits do occur on the eastern side of the property, they are expected to lie at a considerable depth below the surface and/or under Skaha Lake.

The most interesting feature on the eastern side of the property is a large syncline. It is thought that the syncline may represent an offset continuation of the syncline mapped on the

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## CONCLUSIONS AND RECOMMENDATIONS continued

Vault 1 mineral claim. The offset, 900 metres to the south, is believed to have occurred across two northwest striking faults (i.e. Highway Fault and Powerline Fault).

The displacement of the syncline across the faults is significant in that the important precious metal deposits discovered west of Highway 97 on the central portion of the property (i.e. Central Zone, East Zone and North Vein) may extend under the hayfields east of the highway in areas not yet explored.

Further regional geological mapping is recommended to determine the exact lateral and vertical components of displacement across each of the northwest striking faults. Once the movement along the faults has been determined, further drilling could be considered.

June 1, 2003. Kelowna, B.C.

Murray Morrison, B.Sc., Geology

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\* Assessment Reports on file with the Ministry of Energy and Mines of British Columbia.

## **APPENDIX** A

## STATEMENT OF QUALIFICATIONS

I, Murray Morrison, of the City of Kelowna, in the Province of British Columbia, do hereby state that:

- 1. I graduated from the University of British Columbia in 1969 with a B.Sc. Degree in Geology.
- 2. I have been working in all phases of mining exploration in Canada for the past thirty-three years.
- 3. During the past thirty-three years, I have intermittently held responsible positions as a geologist with various mineral exploration companies in Canada.
- 4. I have conducted several geological, geochemical, and geophysical surveys on mineral properties in Southern British Columbia during the past thirty-three years.
- 5. I conducted the Geological Mapping Program and the Biogeochemical Surveys outlined in this report.
- 6. I own a 4.8% Net Profit Interest in the Vault Claim Group.

June 1, 2003 Kelowna, B.C.

Murray Morrison - B.Sc.

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## APPENDIX B

## STATEMENT OF EXPENDITURES - ON THE VAULT CLAIM GROUP

Statement of Expenditures in connection with a drill site reclamation program, an experimental biogeochemical survey and a geological mapping program conducted on the Vault Claim Group, located immediately northwest of Okanagan Falls, B.C. (N.T.S. Map 82-E-5E) between August, 2002 and January, 2003.

## **RECLAMATION PROGRAM (October, 2001 Drill Sites)**

Case 580 Turbo 4x4 Tractor with t including Operator and mobilization Penticton, B.C. (A & R Excavating 1989 of Pentic	n and demobilization from			
	4 hrs. @ \$75.00/hr. plus \$21.00 G.S.	T.	\$	321.
M. Morrison, geologist	2 days @ \$300.00/day			600.
(work included tractor supervision, shovel clean up of the drill sites af work)	-			
pick-up truck (including insurance)	) 2 days @ \$50.00/day			100.
gasoline				44.
Meals and lodging	no charge			-
grass seed				60.
fertilizer				<u>    18.</u>
	:	Sub-total	<b>\$</b> 1	1,143.

## **BIOGEOCHEMICAL SURVEY (675 metres)**

M. Morrison, geologist	2 days @ \$300.00/day		600.
automobile (including insurance)	2 days @ \$45.00/day		90.
gasoline			26.
Meals and lodging	no charge		-
sample bags			5.
bus express samples to lab			11.
ICP-MS analyses for 35 elements	27 samples @ 14.28 each		<u>386.</u>
		Sub-total	\$ 1,118.

45

## APPENDIX B continued

<b>GEOLOGICAL MAPPING (150</b>	hectares)		
M. Morrison, geologist	13 days @ \$300.00/day		3,900.
automobile (including insurance)	13 days @ \$45.00/day		585.
gasoline			169.
meals and lodging	no charge		
		Sub-total	\$ 4,654.
REPORT PREPARATION COS	<u>TS</u>		
M. Morrison, geologist	6 days @ \$300.00/day		\$ 1,800.

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drafting			170.
typing			87.
copying maps and reports			40.
		Sub-total	\$ 2,097.

## GRAND TOTAL

<u>\$9,012.</u>

I hereby certify that the preceding statement is a true statement of monies expended in connection with the drill site reclamation program, the biogeochemical survey and the geological mapping program carried out between August 30, 2002 and January 7, 2003.

Murray Morrison, Geologist

June 1, 2003 Kelowna, B.C.

21	852 East Hastings, Phone: (	CAL LABORATORIES LTD. , Vancouver, B.C., CANADA V6A 1R6 604) 253-3158 Fax: (604) 253-1716 GST # 100035377 RT		<b>AA</b>
	MORRISON, M.S. 684 Balsam Road Kelowna, BC V1W 1B9		inv.#: <b>A</b> Date: J	<b>300207</b> an 31 2003
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# APPENDIX C CERTIFICATE OF ANALYSES

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SAMPLE#		Cu ppm		Zn ppm			Co ppm	Mn ppm	Fe	As	<u></u>		Th	Sr	Cd	Sb	Bi	۷	Submi Ca %	1	by: ! La ppm	1.S. Cr ppm	Mg	ison g Ba g ppm		B ppm	A1 %	Na %			Hg S pm pp	-		S Ga % ppm		Sample gm
L0+35W 3+50N L0+35W 3+25N L0+35W 3+00N L0+35W 2+75N L0+35W 2+50N	5.5 16 5.2 18 3.7 12 3.5 16 4.9 17	2.53 4.42 9.31	77.1 26.9 31.7	2899 1520 2850	6.8 2.7 1.4	25.5 14.7 13.1	18.4 9.0 9.8	5049 2610 3549	1.67 1.08 .98	13.2 13.1 10.9	1.3 .8 .6	5.3 5.1 4.9	4.8 2.5 1.8	1874 1770 2282	22.0 15.3 15.3	3.3 2.2 1.6	.5 .3 .3	40 27 22	18.95 27.11 23.40	1.212 .894 1.356	21 12 12	27.0 16.5 17.4	3.02 1.88 3.77	2 307 3 488 7 626	.071 .050 .047	386 1 301 453	L.19 .74 .74	.330 .272 .181	3.42 3.04 4.00	1.2<. .8<. .8<.	01 3. 01 2. 01 1.	0. 2. 5.	1 1.2 2 1.0 2 .9 2 .8 3 1.1	7 4 2 3 4 3	1.66 1.59 2.80 2.19 1.97	199 201 202 196 201
L0+35W 2+25N L0+35W 2+00N L3+00E 3+50N L3+00E 3+25N L3+00E 3+00N	7.9 18 7.7 14 6.2 14 4.1 11 3.4 10	3.04 7.35 892	17.9 63.0 77.3	2516 1395 1718	6.3 2.3 5.4	26.1 24.9 19.5	14.7 14.4 12.0	3269 2416 3481	1.94 2.12 1.22	14.9 15.0 13.4	1.4 1.8 1.0	23.7 10.5 5.8	4.9 5.5 3.8	1423 1005 1664	13.1 12.8 9.2	3.4 4.2 2.6	.5 .6 .4	44 51 31	14.45 11.39 22.31	1.251 1.021 .841	19 25 15	30.9 29.6 19.6	1.92 1.86 2.08	2 313 5 473 3 444	.070 .084 .053	295 1 266 1 303	1.40 1.58 .95	.279 .621 .384	3.29 3.85 2.55	1.3 . 1.4 . 1.2<.	01 3. 01 3. 01 2.	3. 6. 1.	2.9	7 5 3 5 2 3	5 1.64 5 1.35 5 2.77 3 2.39 3 2.91	200 199 197 201 198
L3+00E 2+75N L3+00E 2+50N L3+00E 2+25N L3+00E 2+25N L3+00E 2+00N L4+00E 3+50N	3.2 12 3.9 10 5.2 13 5.7 13 6.0 14	9.42 6.23 463	05.5 18.2 89.7	2976 2451 1846	9.8 6.9 3.1	18.8 25.9 26.5	10.7 16.1 15.2	2955 3166 3074	1.55 1.77 1.93	18.7 14.9 15.9	.8 1.2 1.3	14.9 36.8 16.3	3.2 4.9 4.9	1924 2022 3644	10.0 18.9 15.0	2.1 3.0 3.9	.5 .5 .6	36 43 46	18.23 16.29 14.45	.949 1.142 1.082	15 20 19	26.3 35.2 34.4	2.28 2.52 2.99	2 408	.062 .071 .077	264 1 353 1 340 1	1.19 1.39 1.57	.231 .307 .321	1.85 2.63 2.69	1.2<. 1.3<. 1.5<.	01 2. 01 3. 01 3.	7. 2. 4.	2 1.1	7 4 9 5 0 5	3 2.72 4 1.57 5 1.21 5 1.49 7 2.25	197 198
L4+00E 3+25N L4+00E 3+00N RE L4+00E 3+00N L4+00E 2+75N L4+00E 2+50N	4.6 11 3.5 10 3.4 10 4.4 10 2.7 8	4.82 8.32 313	45.4	2019 2173 1887	7.2 7.3 72	14.6 16.0 21.5	8.6 10.0 12.9	3533 3869 2689	1.12 1.17 1.76	7.6 9.1 12.3	.9 .9 1.2	4.2 5.2 8.5	2.6 2.8 3.9	1669 1857 1357	14.0 14.6 13.4	1.6 1.6 2.6	.3 .3 .5	26 26 39	19.74 21.22 14.62	.71( .74) .87!	5 11 7 12 5 16	20.3 21.5 28.3	2.51 2.61 1.63	1 519 1 576 3 315	.051 .052 .073	303 325 225 1	.85 .90 1.37	.226 .228 .299	2.07 2.12 2.10	.8<. .8<. .>0.	01 1. 01 1. 01 3.	7. 9. 2.	1.7 1.7	4 3 7 3 9 4	5 1.83 3 1.70 3 - 4 2.05 2 4.11	184 200
L4+00E 2+25N L5+00E 3+50N L5+00E 3+25N L5+00E 3+00N L5+00E 2+75N	4.6 13 3.6 8 3.9 10 4.2 10 5.1 13	0.7 2 1.9 2 7 7 3	83.5 02.1 34 6	1488 2379 1823	4.1 4.5 3.5	14.1 16.5 20.8	8.7 11.6 11.2	2600 3779 3380	1.21 1.21 1.66	7.4 10.5 10.8	.7 .9 1.1	7.6 9.5 14.6	2.5 2.8 3.8	1538 1674 1136	9.9 11.6 16.2	1.6 2.2 2.6	.2 .3 .4	27 28 39	23.66 19.97 13.97	. 69! . 86: . 96!	5 11 12 15	22.1 27.0 28.2	1.61 2.25 2.05	1 518 5 219 5 479	.051 .056 .066	212 339 1 305 1	.87 1.05 1.35	.204 .256 .341	1.55 2.09 2.54	1.1<. 1.0<. 1.3<.	01 1. 01 2. 01 3.	8. 1. 1.	2 1.2 1 .6 2 1.1 2 .7 5 1.0	3 3 3 3 9 5	3 1.96 3 2.58 3 1.40 5 2.19 5 1.97	+
L5+00E 2+50N L5+00E 2+25N L5+00E 2+00N STANDARD DS4	4.9 9 4.6 12 4.1 11 6.4 12	3.5 2 9.7 2	98.6 70.0	1832 2292	5.5 4.2	18.7 21.4	11.7 13.2	2690	1.24 1.27	14.0	$1.1 \\ 1.1$	13.6 20.8	3.7 3.7	1609 1780	11.4 16.6	2.9 3.0	.4 .5	34 35	20.35 17.88	1.01	13 13	26.6 29.4	1.76	5 406	.051 .052	312 J 367 J	1.08 1.15	.304 .432	2.48	1.1<.	01 2. 01 2.	4. 5.	2 .8 1 .9 2 1.2 1 < .0	5 3 3 3	4 2.22 3 1.68 3 1.61 5 -	199

GROUP 1DX - 0.50 GM SAMPLE LEACHED WITH 3 ML 2-2-2 HCL-HN03-H2O AT 95 DEG. C FOR ONE HOUR, DILUTED TO 10 ML, ANALYSED BY ICP-MS. UPPER LIMITS - AG, AU, HG, W = 100 PPM; MO, CO, CD, SB, BI, TH, U & B = 2,000 PPM; CU, PB, ZN, NI, MN, AS, V, LA, CR = 10,000 PPM. - SAMPLE TYPE: Wood VA80 <u>Samples beginning 'RE' are Reruns and 'RRE' are Reject Reruns.</u>

DATE REPORT MAILED: JAM 31/2003 SIGNED BY J. ... D. TOYE, C.LEONG, J. WANG; CERTIFIED B.C. ASSAYERS DATE RECEIVED: JAN 24 2003

All results are considered the confidential property of the client. Acme assumes the liabilities for actual cost of the analysis only.

Data\_\_\_\_F







Magnetic declination 19°00'



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# GEOLOGICAL SURVEY BRANCH ASSESSMENT REPORT

Copied from Government Mineral Titles Reference Map.



# AQUA REGIA MINERALS INC

VAULT CLAIM GROUP OKANAGAN FALLS AREA, OSOYOOS M.D., B.C.

# **MINERAL CLAIMS**

Drawn By: M.M.	N.T.S. 82-E-5E
June 2003	FIGURE 4

