

**TECHNICAL REPORT ON THE  
EMERALD ISLE COPPER DEPOSIT,  
ARIZONA, U.S.A.**

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**PREPARED FOR  
STE-GENEVIEVE RESOURCES LTD.**

**NI43-101 Report**

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# TABLE OF CONTENTS

|   | PAGE |
|---|------|
| 1 SUMMARY .....   | 1-1  |
| 1.1 Executive Summary .....   | 1-1  |
| 1.2 Technical Summary .....   | 1-3  |
| 2 INTRODUCTION AND TERMS OF REFERENCE .....   | 2-1  |
| 3 RELIANCE ON OTHER EXPERTS .....   | 3-1  |
| 4 PROPERTY LOCATION AND DESCRIPTION .....   | 4-1  |
| 5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE<br>AND PHYSIOGRAPHY ..... | 5-1  |
| 6 EXPLORATION AND MINING HISTORY .....  | 6-1  |
| 6.1 El Paso .....   | 6-2  |
| 6.2 USBM / El Paso Joint Venture .....  | 6-4  |
| 6.3 TSC / Arimetco .....  | 6-8  |
| 6.4 Historical Resource and Reserve Estimates .....                                 | 6-9  |
| 6.5 2001 to 2004 .....  | 6-10 |
| 7 GEOLOGICAL SETTING .....  | 7-1  |
| 7.1 Regional Geology .....  | 7-1  |
| 7.2 Property Geology .....  | 7-4  |
| 8 DEPOSIT TYPES .....   | 8-1  |
| 8.1 Types of Mineralization .....   | 8-1  |
| 8.2 Genetic Model .....   | 8-1  |
| 9 MINERALIZATION .....  | 9-1  |
| 10 DRILLING .....   | 10-1 |
| 10.1 Past Drilling .....  | 10-1 |
| 10.2 Recent Drilling .....  | 10-1 |
| 11 SAMPLING METHOD AND APPROACH .....   | 11-1 |
| 11.1 El Paso .....  | 11-1 |
| 11.2 Holcorp/MDA .....  | 11-1 |
| 11.3 SGV .....  | 11-2 |
| 12 SAMPLE PREPARATION, ANALYSIS AND SECURITY .....                                  | 12-1 |
| 12.1 El Paso .....  | 12-1 |
| 12.2 SGV .....  | 12-2 |
| 13 DATA VERIFICATION .....  | 13-1 |
| 13.1 Verification of Historical Data .....  | 13-1 |
| 13.2 Verification of Recent Data by SGV .....                                       | 13-3 |
| 13.3 SGV Check Assays .....   | 13-3 |

|      |   |       |
|------|---|-------|
| 13.4 | Independent Sampling by RPA.....  | 13-8  |
| 14   | MINERAL RESOURCES .....   | 14-1  |
| 14.1 | General Statement.....  | 14-1  |
| 14.2 | Database.....   | 14-1  |
| 14.3 | Density Measurements.....   | 14-1  |
| 14.4 | Geological Interpretation and 3D Solids.....  | 14-2  |
| 14.5 | Block Model and Validation.....   | 14-8  |
| 14.6 | Cut-off Grade.....  | 14-9  |
| 14.7 | Classification of Mineral Resources .....   | 14-10 |
| 15   | MINERAL PROCESSING AND METALLURGICAL TESTING.....   | 15-1  |
| 15.1 | Arimetco 1988 .....   | 15-1  |
| 15.2 | Arimetco 1994 .....   | 15-1  |
| 15.3 | SGV.....  | 15-2  |
| 15.4 | Discussion .....  | 15-3  |
| 16   | ADJACENT PROPERTIES .....   | 16-1  |
| 17   | INTERPRETATION AND CONCLUSIONS .....  | 17-1  |
| 17.1 | Exploration Potential .....   | 17-1  |
| 17.2 | Conclusions.....  | 17-1  |
| 18   | RECOMMENDATIONS.....  | 18-1  |
| 19   | REFERENCES .....  | 19-1  |
| 20   | SIGNATURE PAGE .....  | 20-1  |
| 21   | CERTIFICATE OF QUALIFICATIONS.....  | 21-1  |
| 21.1 | Hrayr Agnerian .....  | 21-1  |
| 21.2 | John Postle .....   | 21-3  |
| 22   | APPENDIX.....   | 22-1  |
|      | Emerald Isle Deposit, Significant Mineralized Intersections in El Paso Rotary<br>Drill Holes..... | 22-1  |

## LIST OF TABLES

|  | PAGE  |
|--|-------|
| Table 1-1 Recommended Work and Budget.....   | 1-3   |
| Table 1-2 RPA Mineral Resource Estimate.....   | 1-8   |
| Table 4-1 List of Mineral Claims.....  | 4-3   |
| Table 6-1 Assay Values of Phase I In-Situ Leaching (USBM, 1974) .....                    | 6-6   |
| Table 6-2 Assay Values for Phase II Preshot Core (USBM, 1974).....                       | 6-7   |
| Table 6-3 Production Record by Arimetco (1992-1993).....                                 | 6-9   |
| Table 12-1 Check Assay Results (1992).....   | 12-1  |
| Table 13-1 Comparison of El Paso and SGV RCD Drilling Results.....                       | 13-2  |
| Table 13-2 Comparison of SGV Reverse Circulation and Diamond Drilling Results<br>.....   | 13-2  |
| Table 13-3 Check Assay Results 2004-2005, MSRDI vs. American Assay Labs .                | 13-4  |
| Table 13-4 Check Assay Results 2004-2005, MSRDI vs. ACTLAB-Skyline<br>Laboratories ..... | 13-5  |
| Table 13-5 RPA Independent Sampling Results (June 2004) .....                            | 13-8  |
| Table 13-6 RPA Independent Sampling Results (December 2004) .....                        | 13-10 |
| Table 14-1 Density Determinations .....  | 14-2  |
| Table 14-2 Statistics of Drill Hole (10 ft.) Composites .....                            | 14-6  |
| Table 14-3 Comparison of Block Grades and Composite Grades .....                         | 14-9  |
| Table 14-4 RPA Mineral Resource Estimate.....  | 14-10 |
| Table 18-1 Recommended Work and Budget.....  | 18-1  |

## LIST OF FIGURES

|   | PAGE  |
|---|-------|
| Figure 2-1 Emerald Isle Project, Location Map.....  | 2-5   |
| Figure 4-1 Emerald Isle Project, Property Map.....  | 4-5   |
| Figure 6-1 Emerald Isle Property, Drill Hole Location Map.....  | 6-3   |
| Figure 7-1 Emerald Isle Area, Regional Geology .....  | 7-3   |
| Figure 7-2 Emerald Isle Project, Local Geology .....  | 7-5   |
| Figure 9-1 Emerald Isle Property, Plan View of Pre-stripping Copper Mineralization<br>.....                         | 9-2   |
| Figure 9-2 Emerald Isle Property, Generalized Vertical Longitudinal Section.....                                    | 9-3   |
| Figure 9-3 Emerald Isle Property, Vertical Cross Section 49+450E.....   | 9-4   |
| Figure 9-4 Emerald Isle Property, Vertical Cross Section 50+150E.....   | 9-5   |
| Figure 13-1 Correlation of MSRDI and American Assay Lab Results (2005).....   | 13-6  |
| Figure 13-2 Correlation of MSRDI and ACTLab Results (2005) .....  | 13-7  |
| Figure 13-3 Plot of SGV vs.RPA Results, Total Copper (%TCu) Values of<br>Independent Samples Collected by RPA ..... | 13-11 |
| Figure 14-1 3D View of the Emerald Isle Deposit .....   | 14-5  |
| Figure 14-2 Emerald Isle Deposit, Histogram of Composite Assay values .....   | 14-7  |

# 1 SUMMARY

## 1.1 EXECUTIVE SUMMARY

Roscoe Postle Associates Inc. (RPA) has been retained by Ste. Genevieve Resources Ltd. (SGV) to prepare a Technical Report and estimate the Mineral Resources of the Emerald Isle Copper Project, located near Kingman, in northwestern Arizona. The purpose of this report is to provide an independent estimate of the Mineral Resources of the Emerald Isle Project and, if warranted, to recommend further work on the property. The Technical Report is compliant with NI 43-101 Standards of Disclosure for Mineral Projects. RPA visited the property in May and December, 2004.

SGV is a Canadian reporting issuer with a corporate office in Montréal and another office in Toronto. It has interests in two copper projects in Arizona and another copper project in Haiti, and is currently conducting work to assess the economics of putting the Emerald Isle Project, a former copper producer in Arizona, back into production.

The Emerald Isle Copper Project comprises a mineral deposit and some infrastructure. In particular these include:

- A small open pit mine,
- A SX/EW plant,
- A leach pad with mineralized material for heap leaching,
- A pad with tailings from previous mining and processing,
- Three small low grade stockpiles, and
- Mine infrastructure including some buildings, office trailer and equipment, which may have to be repaired or replaced.

Recently, SGV has completed a definition drilling program and is assessing the potential economics of re-opening the Emerald Isle Mine.

## CONCLUSIONS

The Emerald Isle copper deposit is hosted by Late Tertiary conglomerates and, to a lesser extent, by Quaternary alluvium and Cretaceous granitic rocks. RPA has estimated the Mineral Resource from 135 previous rotary and reverse circulation drill holes. Based on our review of past and recent exploration data, RPA concludes that:

- The technical data generated from past as well as recent exploration on the property are acceptable for estimation of Mineral Resources.
- The 2004 SGV drilling program has been carried out in a systematic manner and is well documented.
- The new SGV drilling results have on an overall basis confirmed the previous drilling results, although there is considerable variability between individual twinned holes.
- RPA has estimated Mineral Resources of the Emerald Isle copper deposit using results of the previous drilling. At a total copper cut-off grade of 0.3% TCu and 10 ft. minimum vertical thickness, Indicated Mineral Resources are 2.22 million tons with an average grade of 0.62% TCu.
- In RPA's opinion, further work is warranted on the Emerald Isle property to advance it towards the prefeasibility stage.
- Past exploration (seismic survey by Arimetco) results suggest that a paleochannel similar to the one hosting the Emerald Isle deposit may be present south of the current open pit. RPA is of the opinion that this represents a valid exploration target.

## RECOMMENDATIONS

RPA is of the opinion that the Emerald Isle copper property contains a significant copper Mineral Resource and recommends a Scoping Study (Preliminary Assessment) to assess the economic potential of the project and advance it towards the prefeasibility stage. As part of the Scoping Study, further metallurgical testwork is recommended to determine the copper recovery in a conventional heap leaching operation. RPA also recommends drilling to test the paleochannel exploration target south of the open pit area. The estimated cost of the recommended work is C\$200,000 (Table 1-1).

| <b>TABLE 1-1 RECOMMENDED WORK AND BUDGET</b> |                             |
|--|-----------------------------|
| <b>SGV Emerald Isle Project, Arizona</b>     |                             |
| <b>Item</b>                                  | <b>Estimated Cost (C\$)</b> |
| Metallurgical testwork                       | 25,000                      |
| Scoping study                                | 100,000                     |
| Drilling of exploration targets              | 75,000                      |
| <b>Total Recommended Work</b>                | <b>200,000</b>              |

## 1.2 TECHNICAL SUMMARY

### **PROPERTY STATUS**

The Emerald Isle Project is located approximately 24 km northwest of the City of Kingman, Arizona and some 160 km (100 mi) southeast of Las Vegas, Nevada. The population of Kingman is about 10,000, and the city is situated close to US Interstate Highway 40 within Wallapai Mining District, Mohave County, Arizona.

The Emerald Isle copper deposit is situated within the Emerald Isle Property, which includes 37 Unpatented Lode Mining Claims and 14 Mill-site Claims, covering a total area of approximately 178 ha (440 acres). The registered owner of the 24 old (unpatented as well as Mill-site mining) claims is Western Consolidated Resources (Western), a company based in Tucson, Arizona. Recently, SGV has staked 27 new claims (total approximately 263 acres) surrounding the original 24 claims.

The mineral claims are in good standing until August 31, 2006. This information has been supplied by SGV. RPA has not searched or confirmed title to the Emerald Isle Property.

RPA understands that since the Emerald Isle Property is a former producer, environmental impact and hydrology studies have been carried out and new permitting is not required. Additional geotechnical studies, however, are required by the current operator of the project prior to the new development of the project. Included in the authorizations needed for the restart of mining at Emerald Isle are water permit and authorization from the Government of the State of Arizona.

***LOCATION AND ACCESS***

Access to the Emerald Isle Property is by paved roads, including US Interstate Highway 93, from Las Vegas, Nevada or Phoenix, Arizona. Logistical support, in terms of power and telephone lines, is available at Kingman, which is linked to the Arizona Power grid. Water is available from wells near the property and from the Mineral Park Mine nearby. Infrastructure is good for mining activities since the area has a history of gold and copper mining. Infrastructure for mining equipment and personnel also are available at Phoenix and near Tucson, in southern Arizona, where a number of open pit copper mines are located. A high voltage power line runs alongside Interstate Highway 40, about 2 km from the property.

***HISTORY OF EXPLORATION AND MINING***

Historic mining activities in the Wallapai district of northern Arizona date back to the early 1860s, mostly for silver and gold within oxidized portions of veins. With the turn of the 20<sup>th</sup> Century mining companies started to explore for base metals. From 1917 to 1943 the property was worked at various times. From 1944 to 1948 a 300 tpd copper leaching plant was in operation. About 55,000 tons of copper were reported to have been recovered. Results from this operation reportedly indicated leach recoveries in the order of 80% from “ore” with a head grade of 1% Cu. Acid consumption was in excess of 10 lbs. of acid per pound of copper produced.

During the past half-century a considerable amount of work was done by El Paso Natural Gas Company (El Paso), Arimetco, Inc. (Arimetco) and contractors. These include completion of some 17,200 ft. of drilling in 90 rotary drill holes. In addition, some 8,600 ft. of drilling in 45 reverse circulation drill (RCD) holes were also completed by Holcorp. Past work also included development of the present open pit, and reported production of some 1.4 million tons (1.27 million tonnes) of oxide material averaging about 1% Cu.

During the 1970s, El Paso also carried out blasting and in-situ leaching at the bottom of the open pit. This was done in conjunction with the United States Bureau of Mines (now the United States Geological Services). Results of this test, however, were not encouraging.



In 1980, TSC Enterprises, Inc. (TSC) acquired the Emerald Isle Property from El Paso, but the property remained inactive. In 1987, TSC was acquired by Arimetco, Inc. (Arimetco) and produced some 100,300 lbs. of cement copper (82% Cu) from the open pit. In 1992, TSC commissioned an 8,000 lbs./day SX-EW plant and reportedly produced 1,152,663 lbs. of copper from 162,565 tons with an average head grade of 0.57% total copper (TCu). These figures equate to a copper recovery of 62%. Due to the prevailing low copper price at that time, however, the plant was shut down in September 1993. In 2003, TSC changed its name to Western Consolidated Resources (Western).

***GEOLOGICAL SETTING AND MINERALIZATION***

The Emerald Isle Property is underlain by the Late Tertiary Gila Conglomerate and Cretaceous granitic rocks similar to those present at the nearby Mineral Park Mine. To the south, the area is covered by Quaternary alluvium.

There are three types of copper mineralization at Emerald Isle. The first type is primary fissure vein mineralization containing copper sulphides. This was the type of mineralization which was mined in 1917 and 1918, but which is no longer the target at the present time. The second (and the main) type is primary copper mineralization within the dark conglomerate reported to consist primarily of tenorite (CuO). The third type is secondary copper mineralization, in the form of copper staining, such as malachite (CuCO<sub>3</sub>·Cu(OH)<sub>2</sub>) and chrysocolla (CuO·SiO<sub>2</sub>·H<sub>2</sub>O), which are commonly observed on fracture planes as well as within the matrix of the dark conglomerate.

Copper mineralization at Emerald Isle is hosted by the Gila Conglomerate. The copper zone is in the form of a mineralized lens contained within a paleochannel some 2,500 ft long, 500 ft. to 750 ft. wide. The thickness ranges from 20 ft. to 300 ft., averaging about 100 ft. In places, the conglomerate is absent and in other places it is very thick, due to faulting.

The source of the copper at Emerald Isle is interpreted to be the low grade porphyry-type copper mineralization at Alum Wash, about 3.5 mi northeast of the

Emerald Isle deposit, and mineralization is characterized by dark blue to black rock. In this respect, the style of mineralization appears to be somewhat similar to the Exotica deposit, a satellite of the giant Chuquicamata copper deposit in Chile.

***PAST EXPLORATION***

The Emerald Isle deposit has been explored by some 25,800 ft. of drilling in 90 surface rotary holes drilled in the 1970s by El Paso and 45 reverse circulation holes drilled in the 1990s by another company. Systematic testing of the copper bearing zone was started by Arimetco in 1987 and continued until 1992.

***RECENT EXPLORATION***

During November and December 2004, SGV completed a program of confirmation drilling that totalled 5,530 ft. in 18 reverse circulation drill (RCD) holes. Fifteen of these holes twinned previous El Paso and Arimetco holes and ranged in depth from 235 ft. to 350 ft. Samples were analyzed for total copper as well as soluble copper and zinc. Due to variability in copper results between the original and twinned holes, SGV twinned four of the RCD holes by diamond drilling of four holes totalling 1,196 ft.

***HISTORICAL RESOURCE ESTIMATES***

There have been a number of resource and reserve estimates of the Emerald Isle copper deposit, as summarized below. RPA has not reviewed these historical estimates and is uncertain of the parameters and in some cases cut-off grades used.

- In March 1991, MPH estimated total “reserves” to be in the order of 1.8 million tons at 0.72% TCu.
- In March 1992, Mine Development Associates (MDA) Feasibility Study on behalf of Holcorp estimated Mineral Resources to total 2.81 million tons at 0.57% TCu of which in-pit resources totalled 1.52 million tons at 0.49% TCu, plus stockpiles estimated at 400,000 tons averaging 0.35% TCu.
- In 1992, Arimetco estimated the oxide copper resources at a 0.11% TCu cut-off grade and a waste-to-ore strip ratio of 0.8:1 as total proven and probable reserves of 1.95 million tons at 0.58% TCu plus 1.2 million tons of mill tailings averaging 0.22% TCu.

- In 1995, Arimetco considered a number of scenarios for the Emerald Isle deposit, but documentation is incomplete. One of these scenarios was a block model estimate with reported mineral resources of 980,000 tons, which could be mined at a strip ratio of 1:1. Later, Arimetco modified these resources to 475,000 tons averaging 0.61% TCu, at a strip ratio of 0.73:1.

RPA notes that all of the above resource and reserve estimates are historical in nature and are included for information purposes. They are not compliant with NI 43-101. Furthermore, RPA has not reviewed them and cannot comment on their reliability, relevance or classification, but notes that they are in the same order of magnitude as the RPA current estimate described below.

#### ***RPA INDEPENDENT SAMPLING***

RPA collected eighteen (18) samples of RC drill chips from the recent drilling and sent them to SGS Laboratories in Don Mills, Ontario for total copper (TCu), acid soluble copper (ASCu), total zinc (TZn) and acid soluble zinc (ASZn) determinations. In general, the RPA TCu assay values are higher than the SGV values, by 20% on average. The RPA ASCu values are also higher than the SGV values, by almost 50% on average. The RPA samples have an average ratio of ASCu to TCu of 86% compared to the SGV average of 69%. The RPA check sampling confirms the SGV drilling results in general and suggests that the SGV values may be on the low side: more check sampling is needed.

#### ***RPA ESTIMATE OF MINERAL RESOURCES***

RPA has estimated the Mineral Resources of the Emerald Isle deposit using data from the previous 135 rotary and RCD holes. The new SGV drilling results have on an overall basis confirmed the previous El Paso and Arimetco drilling results, although there is considerable variability between individual twinned holes. As part of its estimate, RPA carried out an interpretation of the geology and the mineralized zone, and developed a block model to estimate the Mineral Resources.

The copper mineralization was interpreted on drill sections into a single mineralized lens. Gemcom software was used to construct a 3D solid of the lens and grades were interpolated into blocks in the 3D solid using only the 10 ft. drill hole assay composites located within the solid using ordinary kriging. To validate the

block model resource estimate, RPA carried out a visual inspection and comparison of block grades with composite grades, as well as a statistical comparison of the composite and block grade distributions.

The RPA Mineral Resource estimate is shown in Table 1-2 at several TCu cut-off grades. A cut-off grade of 0.3% TCu is considered to be reasonable for reporting purposes and is based on the approximate operating costs of US\$6.98 per ton, a copper recovery of 75% and a copper price of US\$1.50 per pound. All of the Mineral Resources are classified as Indicated based on drill hole spacing and the range of the semi-variogram.

| <b>TABLE 1-2 RPA MINERAL RESOURCE ESTIMATE</b>                                 |                       |                             |
|--|-----------------------|-----------------------------|
| <b>SGV – Emerald Isle Deposit</b>  |                       |                             |
| <b>Indicated Mineral Resources</b>   |                       |                             |
| <b>Cut-off grade (% TCu)</b>   | <b>Tons (rounded)</b> | <b>Total Copper (% TCu)</b> |
| 0.8  | 420,000               | 1.00                        |
| 0.7  | 650,000               | 0.91                        |
| 0.6  | 940,000               | 0.83                        |
| 0.5  | 1,380,000             | 0.74                        |
| 0.4  | 1,870,000             | 0.66                        |
| <b>0.3</b>   | <b>2,220,000</b>      | <b>0.62</b>                 |
| 0.2  | 2,310,000             | 0.60                        |
| 0.1  | 2,330,000             | 0.60                        |
| <b>Note: Tonnage is estimated using a density factor of 13.54 cu. ft./ton.</b> |                       |                             |

The RPA resource estimate is in accordance with the Mineral Resource/Reserve Classification as recommended by the CIM Committee on Mineral Resources and Mineral Reserves.

**EXPLORATION POTENTIAL**

The Emerald Isle Project is a mineral property that contains a small oxide copper deposit hosted by a relatively flat lying conglomerate unit where it is crossed by a stream paleochannel. Past exploration work (seismic survey) by Arimetco has identified another possible paleochannel to the south of the known deposit. This represents a valid exploration target that warrants testing by drilling.

## 2 INTRODUCTION AND TERMS OF REFERENCE

Roscoe Postle Associates Inc. (RPA) has been retained by Ste. Genevieve Resources Ltd. (SGV) to prepare a Technical Report and estimate the Mineral Resources of the Emerald Isle Copper Project, located near Kingman, in northwestern Arizona (Figure 2-1). The purpose of this report is to provide an independent estimate of the Mineral Resources of the Emerald Isle Project and, if warranted, to recommend further work on the property. The Technical Report is compliant with NI 43-101 Standards of Disclosure for Mineral Projects.

SGV is a Canadian reporting issuer with a corporate office in Montréal and another office in Toronto. It has interests in two copper projects in Arizona and another copper project in Haiti, and is currently conducting work to assess the economics of putting the Emerald Isle Project, a former copper producer in Arizona, back into production.

In preparation of this report, Messrs. Hrayr Agnerian, M. Sc. (Applied), P. Geo., Consulting Geologist with RPA and John T. Postle, P. Eng., Independent Consulting Engineer and Associate with RPA, reviewed technical documents and reports on the Emerald Isle deposit supplied by SGV. The sources of information are listed at the end of this report.

This report is an update of an earlier RPA report prepared in June 13, 2005. RPA understands that, since that time no new work has been carried out on the Property.

The Qualified Persons for the Technical Report and their involvement are:

- Hrayr Agnerian, M.Sc. (Applied), P.Geo., Consulting Geologist with RPA. During his first site visit to the Emerald Isle property on May 31, 2004, Mr. Agnerian collected independent samples of mineralized rock from the pit walls and bottom and submitted them for assay at SGS Laboratories, a recognized assay laboratory in Toronto. During the recent drilling program, Mr. Agnerian visited the site again from December 18 to 20, 2004, reviewed the sampling and logging procedures and held discussions with site personnel. Mr.

Agnerian also collected eighteen (18) independent samples from current drilling and submitted them for assay at SGS Laboratories in Toronto. Mr. Agnerian is responsible for all sections, except for the mining aspects, of the Technical Report.

- John T. Postle, P.Eng., Consulting Mining Engineer with RPA, visited the Emerald Isle property on May 31, 2004, including the old open pit, heap leach area and the surface exposures of the Emerald Isle deposit. Mr. Postle is responsible for the mining section of the Technical Report.

For the resource estimate, RPA retained Mr. Nathan Eric Fier, P. Eng., of Vancouver, to construct the block model of the Emerald Isle deposit, in association with Mr. David W. Rennie, P. Eng., RPA Consulting Geological Engineer, under the supervision of Mr. Agnerian.

During the first site visit, Messrs. Agnerian and Postle held discussions with Mr. Bryan Wilson, President and CEO of SGV and Mr. Harold R. (Roy) Shipes of Western Consolidated Resources of Tucson, Arizona (the vendor of the Emerald Isle Property) regarding past work on the property. Mr. Shipes is also President of TSC Enterprises, Inc. (TSC). Subsequent to RPA's first site visit, Messrs Agnerian and Postle also held discussions with Mr. Wilson. During the second site visit Mr. Agnerian also held discussions with SGV Contractors and professionals knowledgeable on the project including:

- Mr. Joe Sawyer, Project Manager
- Mr. Gary Clifton, Project Geologist
- Mr. Robert Hamilton, Geologist

For the sake of consistency with old reports, Imperial units as well as metric units are used in this report, and costs are given in United States Dollars (US\$) as well as in Canadian Dollars (CAN\$).

On May 11, 2004, RPA was contacted by Mr. Bryan Wilson, to carry out a preliminary review of the Emerald Isle as well as the Zonia Project, another copper property and a former producer in southern Arizona. After RPA's initial review and

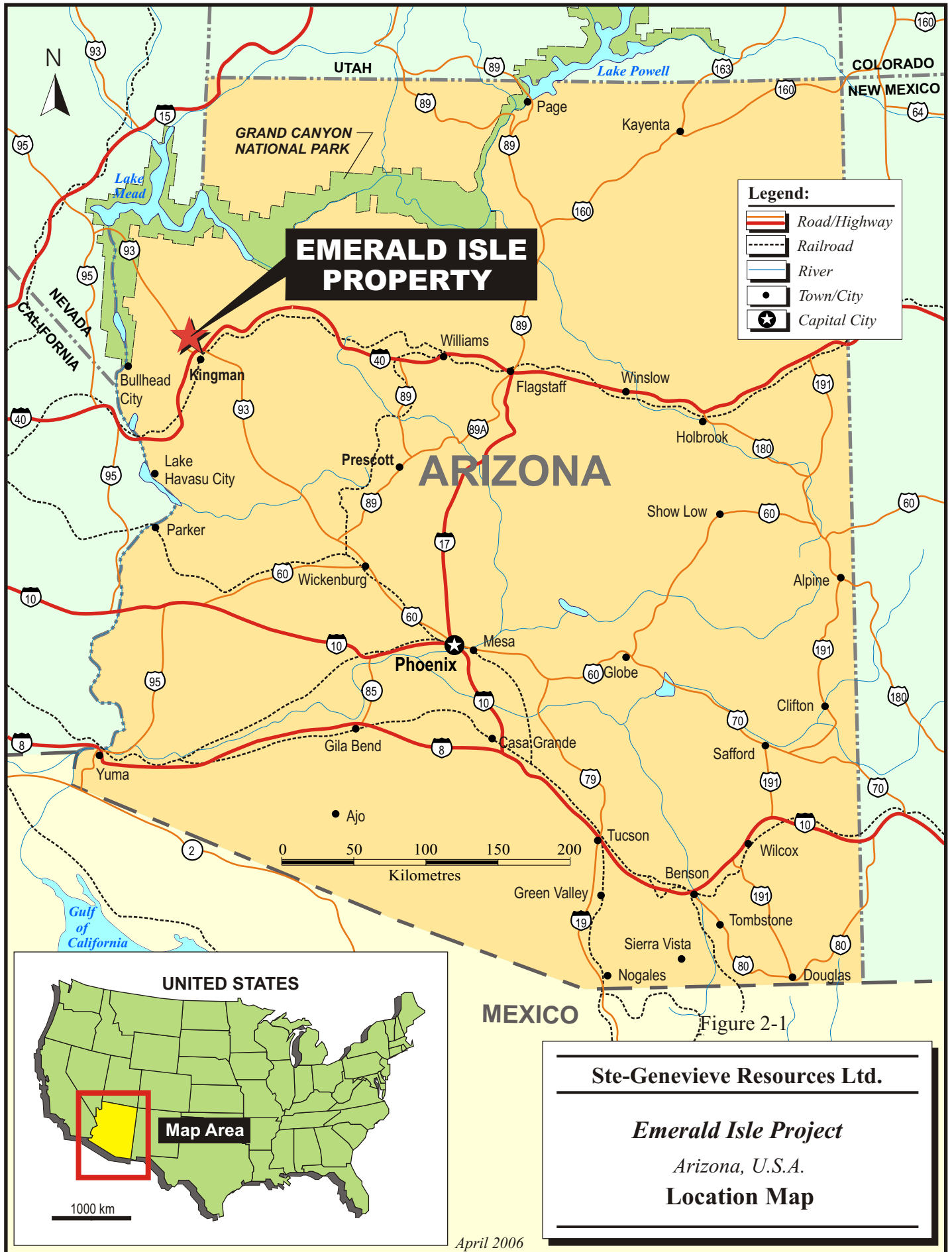
site visit, RPA was requested to carry out a resource estimate and prepare a NI 43-101 Technical Report on the Emerald Isle Project.

In this report, certain terms are used including total copper, acid soluble copper, and recovered copper. Total copper (TCu) is the assay value from conventional assaying for copper, acid soluble copper is the assay value obtained from dissolving the sample in a 5% solution of sulphuric acid, and recovered copper is the value obtained by dividing the recovered copper by the tonnage treated.

The abbreviations used in this report are listed below.

|                    |                             |                   |                                |
|--------------------|-----------------------------|-------------------|--------------------------------|
| μ                  | micron                      | km <sup>2</sup>   | square kilometre               |
| °C                 | degree Celsius              | kPa               | kilopascal                     |
| °F                 | degree Fahrenheit           | kVA               | kilovolt-amperes               |
| μg                 | microgram                   | kW                | kilowatt                       |
| A                  | Ampere                      | kWh               | kilowatt-hour                  |
| a                  | annum                       | l                 | liter                          |
| m <sup>3</sup> /h  | cubic metres per hour       | l/s               | litres per second              |
| CFM                | cubic metres per minute     | m                 | metre                          |
| bbl                | barrels                     | M                 | mega (million)                 |
| Btu                | British thermal units       | m <sup>2</sup>    | square metre                   |
| C\$                | Canadian dollars            | m <sup>3</sup>    | cubic metre                    |
| cal                | calorie                     | min               | minute                         |
| cm                 | centimetre                  | masl              | metres above sea level         |
| cm <sup>2</sup>    | square centimetre           | mm                | millimetre                     |
| d                  | day                         | mph               | mile per hour                  |
| dia.               | diameter                    | MVA               | megavolt-amperes               |
| dmt                | dry metric tonne            | MW                | megawatt                       |
| dwt                | dead-weight ton             | MWh               | megawatt-hour                  |
| ft                 | foot                        | m <sup>3</sup> /h | cubic metres per hour          |
| ft/s               | foot per second             | opt, oz/st        | ounce per short ton            |
| ft <sup>2</sup>    | square foot                 | oz                | troy ounce (31.1035g)          |
| ft <sup>3</sup>    | cubic foot                  | oz/dmt            | ounce per dry metric tonne     |
| g                  | gram                        | ppm               | part per million               |
| G                  | giga (billion)              | psia              | pound per square inch absolute |
| gal                | Imperial gallon             | psig              | pound per square inch gauge    |
| g/l                | gram per litre              | RL                | relative level                 |
| g/t                | gram per tonne              | s                 | second                         |
| gpm                | Imperial gallons per minute | st                | short ton                      |
| gr/ft <sup>3</sup> | grain per cubic foot        | stpa              | short ton per year             |
| gr/m <sup>3</sup>  | grain per cubic metre       | stpd              | short ton per day              |
| hr                 | hour                        | t                 | metric tonne                   |
| ha                 | hectare                     | tpa               | metric tonne per year          |
| hp                 | horsepower                  | tpd               | metric tonne per day           |
| in                 | inch                        | US\$              | United States dollar           |
| in <sup>2</sup>    | square inch                 | USg               | United States gallon           |
| J                  | Joule                       | USgpm             | US gallon per minute           |
| K                  | kilo (thousand)             | v                 | volt                           |
| kcal               | kilocalorie                 | w                 | watt                           |
| kg                 | kilogram                    | wmt               | wet metric tonne               |
| km                 | kilometre                   | yd <sup>3</sup>   | cubic yard                     |
| km/h               | kilometre per hour          | yr                | year                           |
| mi                 | mile                        | TCu               | Total copper                   |
| lbs                | pounds (weight)             | ASCu              | Acid soluble copper            |
| %                  | percent                     | TZn               | Total zinc                     |
| °                  | degree                      | ASZn              | Acid soluble zinc              |





### **3 RELIANCE ON OTHER EXPERTS**

This report has been prepared by RPA for Ste. Genevieve Resources Ltd. (SGV). The information, conclusions, opinions, and estimates contained herein are based on:

- Information available to RPA at the time of preparation of this report,
- Assumptions, conditions, and qualifications as set forth in this report, and
- Data, reports, and other information supplied by SGV.

For technical information on the Emerald Isle Property, RPA has relied on some reports by previous operators of the project as well as reports by other consultants (see References section). RPA has not verified the technical information in these reports, but has formed its opinions on the mineralized zones at Emerald Isle primarily on the basis of this technical information. RPA has visited the Emerald Isle Property and has taken independent samples.

RPA has not searched the title to the Emerald Isle property, but has relied on information supplied by SGV.

## 4 PROPERTY LOCATION AND DESCRIPTION

The Emerald Isle Project is located approximately 24 km northwest of the City of Kingman, Arizona, and some 160 km (100 mi) southeast of Las Vegas, Nevada, or 275 km (172 mi) northwest of Phoenix, Arizona (Figure 2-1). The population of Kingman is about 10,000, and the city is situated close to US Interstate Highway 40 and Arizona State Highway 93 within Wallapai Mining District, Mohave County, Arizona. The geographic coordinates of the property are 35° 21' N Latitude and 114° 10' W Longitude (T22 and 23 and R 18). Primary industries supporting the City of Kingman are ranching and tourism.

The Emerald Isle copper deposit is situated within the Emerald Isle Property, which includes 37 Unpatented Lode Mining Claims and 14 Mill-site Claims, covering a total area of approximately 178 ha (440 acres, Table 4-1 and Figure 4-1). The registered owner of the 24 old (unpatented as well as mill site) mining claims, total approximately 71 ha or 175 acres) is Western Consolidated Resources (Western), a company based in Tucson, Arizona. Recently, SGV has staked 27 new claims (total approximately 107 ha or 265 acres) surrounding the original 24 claims. RPA has not searched or confirmed title to the Emerald Isle Property.

On July 30, 2004, SGV through its wholly owned subsidiary, SGV Resources Inc., of Nevada, acquired a 100% interest in the Emerald Isle Property from Western, by agreeing to pay a total of US\$2.4 million in cash and shares (SGV, 2004b). The terms of the acquisition were as follows:

- Cash payments of US\$200,000 at the time of the closing of the agreement and a further US\$250,000 within 90 days of the initial closing date, and
- The issuance of 6.5 million shares of St. Genevieve Resources Ltd. at a deemed price of C\$0.40 per share, subject to regulatory approval. At the time of the agreement, the exchange rate was considered to be C\$1.00=US\$0.75.

There are no underlying royalties on the property.

The mineral claims are in good standing until at least August 31, 2006. RPA understands that SGV has paid the required fee of US\$125 per claim. **(Bryan to supply us with documentation Re claim renewal status).**

Since the Emerald Isle Property is a former copper producer, RPA understands that environmental impact and hydrologic studies have been carried out and new permitting is not required. Additional geotechnical studies, however, are required by the current operator of the project prior to the new development of the project. Included in the authorizations needed for the restart of mining at Emerald Isle, are water permit and authorization from the Government of the State of Arizona. In terms of permitting, the current property status is as follows:

- Aquifer Protection Permit No. P-101846: issued on June 4, 1993 for the life of the project.
- Air Quality Pending Class II Source (ADEQ): filed on December 5, 1995 and amended December 21, 1995.
- ADEQ-Mining Plan of Operations MPO 388-K-03: issued December 1988 for life of mine. Revised on October 15, 1993.
- Notice of Restart:
  - ADEQ Air Quality (Pending): December 5, 1995.
  - ADEQ APP: December 22, 1995.
  - BLM: December 5, 1995
  - NPDES storm water runoff discharge permit No. AZR00B094: issued on April 4, 1996 (US EPA).

Annual land holding costs are minimal (US\$6,500), and no State royalties exist on the property. However, the property is subject to a State Severance Tax. This tax is not a gross royalty tax, but rather a tax which is calculated on the basis of net revenue received from mining operations. “A severance tax of 2.5% is levied on metalliferous (sic) minerals. The severance is levied on a weighted mineral value calculated by multiplying mining costs by the gross value of production, dividing the results by the total production cost” (State of Arizona, Department of Revenue, 2005).

**TABLE 4-1 LIST OF MINERAL CLAIMS  
SGV - Emerald Isle Property**

| Claim Name                     | Approx.Area (ha) | AMC Number     | Remark     |
|--------------------------------|------------------|----------------|------------|
| Copper Hill Mill Site No. 1    | 1.4              | 105792         |            |
| Copper Hill Mill Site No. 2    | 1.4              | 105793         |            |
| Copper Hill Mill Site No. 3    | 1.4              | 105794         |            |
| Copper Hill Mill Site No. 4    | 1.4              | 105795         |            |
| Copper Hill Mill Site No. 5    | 1.4              | 105796         |            |
| Copper Hill Mill Site No. 6    | 1.4              | 105797         |            |
| Copper Hill Mill Site No. 7    | 1.4              | 105798         |            |
| Copper Hill Mill Site No. 8    | 1.4              | 105799         |            |
| Copper Hill Mill Site No. 10   | 1.4              | 105801         |            |
| Copper Hill Mill Site No. 11   | 1.4              | 105802         |            |
| Copper Hill Mill Site No. 12   | 1.4              | 105803         |            |
| Hermess Mill Site No. 13       | 1.4              | 105804         |            |
| Copper Hill No. 1 Mill Site 14 | 1.4              | 105805         |            |
| Copper Hill No. 1 Mill Site 15 | 1.4              | 105806         |            |
| Copper Hill No. 2              | 5.6              | 105785 6A55-56 |            |
| Hermes                         | 5.6              | 105786 6A62-64 |            |
| Hermes No. 2                   | 5.6              | 105787 6A63-64 |            |
| Jimtown Copper No. 1           | 5.5              | 105788         |            |
| Valley Copper No. 1            | 4.2              | 105789         | Overstaked |
| Valley Copper No. 2            | 5.6              | 105790         |            |
| Valley Copper No. 3            | 5.6              | 105791         |            |
| Emerald No. 1                  | 2.8              | 339597         | Overstaked |
| Emerald No. 2                  | 5.6              | 339598         |            |
| Franklin D. Roosevelt          | 5.6              | 90056          |            |
| <b>Subtotal Old Claims</b>     | <b>71.3</b>      |                |            |
| Emerald # 1A                   | 5.6              | 364261         |            |
| Emerald # 2A                   | 5.6              | 364262         |            |
| Emerald # 3                    | 5.6              | 364263         |            |
| Emerald # 4                    | 5.6              | 364264         |            |
| Emerald # 5                    | 5.6              | 364265         |            |
| Emerald # 6                    | 5.6              | 364266         |            |
| Emerald # 7                    | 5.6              | 364267         |            |
| Emerald # 8                    | 5.5              | 364268         |            |
| Emerald # 9                    | 5.6              | 364269         |            |
| Emerald # 10                   | 2.0              | 364270         | Overstaked |
| Emerald # 11                   | 4.9              | 364271         | Overstaked |
| Emerald # 12                   | 0.1              | 364272         | Overstaked |
| Emerald # 13                   | 5.5              | 364273         | Overstaked |
| Emerald # 14                   | 2.2              | 364274         | Overstaked |
| Emerald # 15                   | 5.6              | 364275         |            |
| Emerald # 16                   | 4.2              | 364276         | Overstaked |
| Emerald # 17                   | 5.6              | 364277         |            |
| Emerald # 18                   | 2.8              | 364278         | Overstaked |
| Emerald # 19                   | 5.6              | 364279         | Overstaked |
| Emerald # 20                   | 2.7              | 364280         | Overstaked |
| Emerald # 21                   | 5.5              | 364620         | Overstaked |
| Emerald # 22                   | 3.0              | 364621         | Overstaked |

|                            |              |        |            |
|----------------------------|--------------|--------|------------|
| Emerald # 30               | 0.1          | 364622 | Overstaked |
| Emerald # 31               | 5.0          | 364623 | Overstaked |
| Emerald # 43               | 1.4          | 364624 | Overstaked |
| Emerald # 44               | 0            | 364625 | Overstaked |
| Emerald # 45               | 0            | 364626 | Overstaked |
| <b>Subtotal New Claims</b> | <b>106.6</b> |        |            |
| <b>Total</b>               | <b>177.9</b> |        |            |
| <b>Source: SGV, 2005</b>   |              |        |            |

**Emerald Isle Property Boundary**

Approximate trace of Paleochannel

38° 22' 30"

Section Line

Road

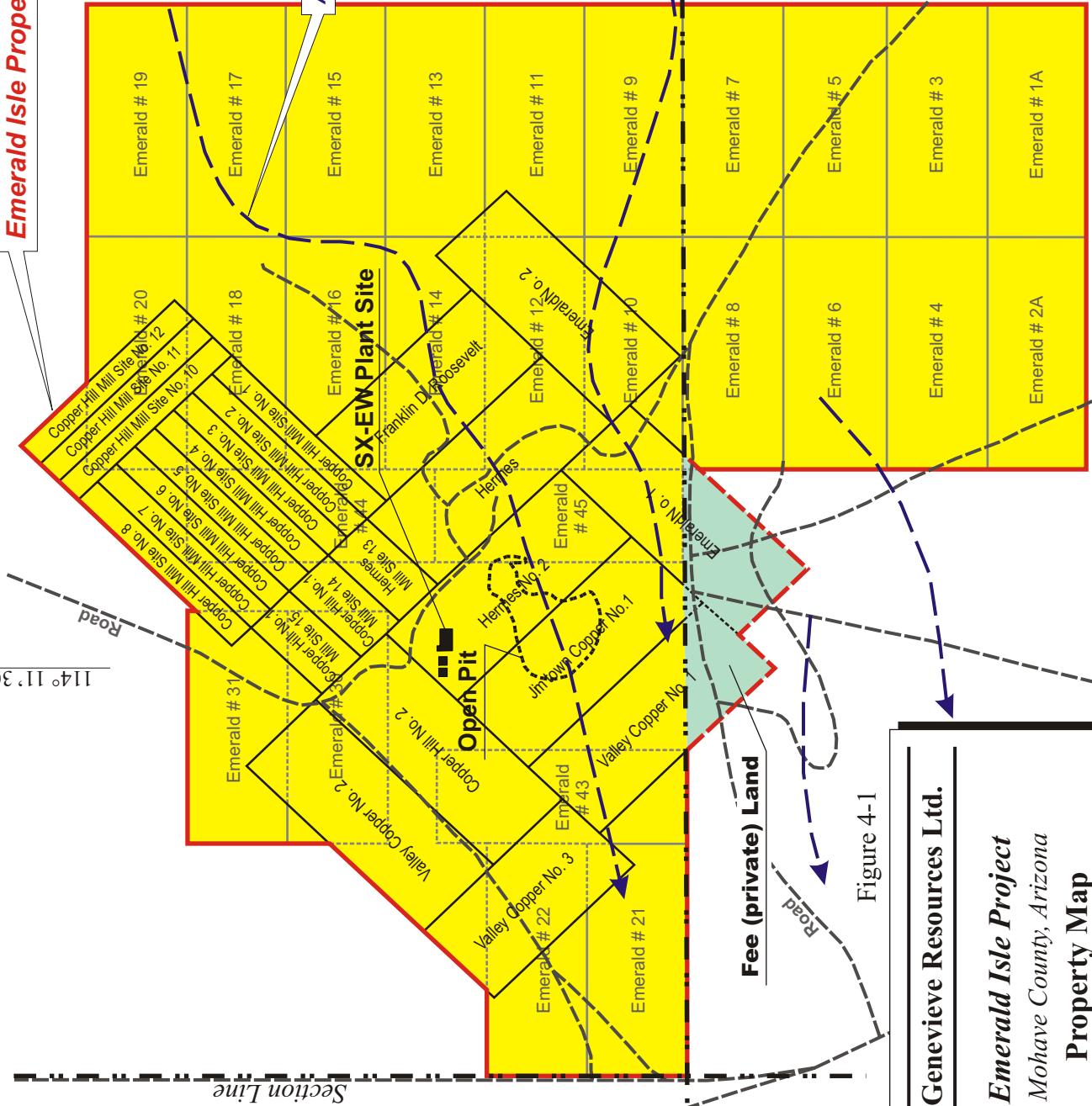


Figure 4-1

**Ste-Genevieve Resources Ltd.**  
**Emerald Isle Project**  
 Mohave County, Arizona  
**Property Map**

April 2006

## **5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY**

Access to the Emerald Isle Property is by paved roads from Phoenix, Arizona or Las Vegas, Nevada (Figure 2-1). Logistical support, in terms of power and telephone lines, is available at Kingman, which is linked to the Arizona Power grid. Water is available from wells at the Mineral Park Mine near the property. Infrastructure is good for mining activities since the area has a history of gold and copper mining. Infrastructure for mining equipment and personnel also are available at Phoenix and near Tucson, in southern Arizona, where a number of open pit copper mines are located. A high voltage power line runs alongside Arizona State Highway 93, about 2 km from the property.

The Emerald Isle Project lies in a mountainous and semi-arid area, with moderate to rugged topographic relief characterized by wide valleys and dry rocky hills. The general area is characterized by a peneplane forming a north-south strip about 25 km wide. It is backed to the east by the Cerbat Range, a mountainous area in the western part of Arizona, which is part of the Basin and Range region in Western United States, and extends north to Nevada, and another mountain range to the west. The peneplane slopes gently to the southwest from the foot of the mountains.

The land around Emerald Isle is not used for agriculture. The low rainfall and hot temperatures favour only growth of sagebrush and some species of cacti. Wildlife in the area includes jackals, rabbits, various migratory birds and various species of insects and snakes.

The area of the Emerald Isle Property has a hot desert-type climate with an average daily temperature of about 35° C in the summer and around 15° C in the winter, and annual precipitation is about 2 inches (PAHRUMP, 2004).



Outcrops are common in the mountainous areas but do not occur on the peneplane. Overburden thickness ranges from 3 ft. to 90 ft. with an average thickness of about 45 ft. Overburden consists of unconsolidated conglomerate with pebbles and boulders of sedimentary and granitic rocks in a matrix of limonitic sand and minor clay. The water table lies about 100 ft. below the surface at Emerald Isle.

## 6 EXPLORATION AND MINING HISTORY

Historic mining activities in the Wallapai district of northern Arizona date back to the early 1860s, mostly for silver and gold within oxidized portions of veins. With the turn of the 20<sup>th</sup> Century mining companies started to explore for base metals. The Emerald Isle mine appears to have been sporadically active from 1917 to 1999, with the greatest volume of ore being mined from 1917, 1943 to 1946, 1947 to 1948, 1955 to 1956, 1969, 1972, and 1976. Literature search by Donley et al (2001) indicates that the following companies have carried out work on the Emerald Isle Property:

- Arimetco, Inc./Arimetco International, Inc. (Arimetco) 1999
- Climax Molybdenum Company (Climax) 1950
- El Paso Mining and Milling Company (El Paso M & M) 1976
- El Paso Natural Gas Company (El Paso) 1966, 1969, 1972
- Emerald Isle Copper Company (Emerald) 1943-1946, 1952
- Lewin-Mathes Company (Lewin-Mathes) 1947-1948
- Mohave Enterprises, Inc. (Mohave) 1955
- Newmont Mining Corporation (Newmont) 1950
- C.G. Patterson (Patterson) 1956
- C.F. Weeks (Weeks) 1942

Of these, only Arimetco, Climax, El Paso, Mohave and Newmont have currently listed addresses (Donley et al., 2001).

From 1917 to 1956, the Emerald Isle property was worked at various times. Much of the early production was from underground operations. After 1943, work was almost entirely from the open pit. These included:

- 1917: 25,756 tons of ore being shipped to smelters. This material consisted of re-concentrated old tailings and 100 tons of oxidized copper ore were leached with sulphuric acid and the copper was precipitated by electrolysis (Donley et al, 2001).

- 1918 – 1919: Leaching operations continued and copper precipitate was produced at the property. In 1919, equipment at the mine included a 50-ton plant, containing crushers, an acid leaching plant, and an electrolytic precipitating plant. In February 1919, the mine was cleaned up and closed (Donley et al., 2001).
- 1943: Some 2,100 tons of direct shipping copper ore (carbonate material) was shipped to a smelter from the Emerald Isle Mine. During that year the Emerald Isle Copper Company began building a 300 ton leaching plant, and mining continued until June 1946 (Dings, 1951) and (U.S. Mines Register, 1952).
- 1947: Lewin-Mathes Company began operations at the mine and continued until June 1948. Some 55,000 tons of copper was recovered from the ores from 1943 to 1948, including about 5,000 tons by Emerald Isle Copper Company (Donley et al, 2001). Results from this operation reportedly indicated leach recoveries in the order of 80% from “ore” with a head grade of 1% TCu. Acid consumption was reported to be in excess of 10 lbs. of acid per pound of copper produced (Dunham, 2004).
- 1950: Climax and Newmont conducted geophysical surveys over the area of the Emerald Isle Mine, and detected disseminated sulphide mineralization.
- 1955 – 1956: Mohave Enterprises, Inc. and C.G. Patterson operated the mine, which had a reported output of over 500 tons of copper per year (Donley et al., 2001).

## 6.1 EL PASO

During the 1960s and 1970s, a considerable amount of work was done by El Paso Natural Gas Company (El Paso). El Paso acquired the property in the late 1960s and continued development work “using a process that leaches copper from chrysocolla (copper silicate), precipitates the copper by sponge iron, and concentrates the resulting cement copper by flotation” (Arizona Bureau of Mines, 1969). El Paso is completed 82 rotary drill holes in the 1970s, developed the present open pit, and produced some 1,773 tons of copper from 257,287 tons in 1972. These production figures indicate an average recovered grade of 0.69% Cu (Donley et al, 2001). Figure 6-1 shows the locations of the old El Paso as well as the 2004 SGV twinned drill holes.

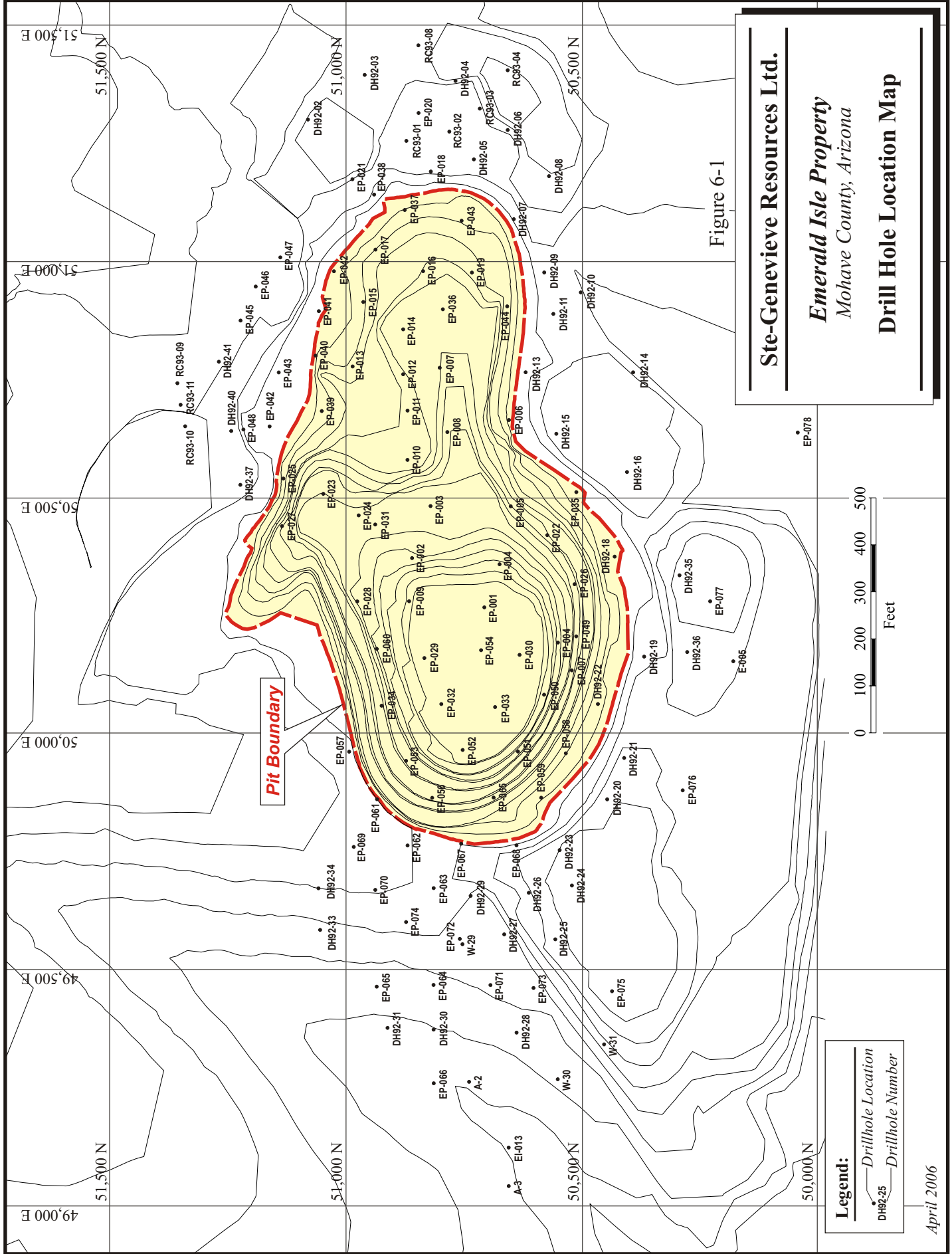


Figure 6-1

**Ste-Genevieve Resources Ltd.**  
***Emerald Isle Property***  
 Mohave County, Arizona  
**Drill Hole Location Map**

**Legend:**  
 — Drillhole Location  
 DH92-25 Drillhole Number

April 2006

## 6.2 USBM / EL PASO JOINT VENTURE

During the 1970s, El Paso also carried out blasting and in-situ leaching at the bottom of the open pit. This was done as a quasi-joint venture research program by the United States Bureau of Mines (USBM, now the United States Geological Services) and the mining division of El Paso. Results of this test, however, were not encouraging. The joint venture operated until 1973, when the USBM discontinued its interest in the project and assigned its interest to El Paso (D'Andrea et al., 1977, and D'Andrea and Runke, 1976). Details of the in-situ leaching program are as follows:

- Seven recovery wells, each 50 ft. deep and spaced 50 ft. apart.
- Flow rates: 115.9 gpm.
- Influent pH: 1.1
- Cu grade of effluent: 0.646 g/l.
- Copper production: 748 lbs./day.
- Total production: 142,000 lbs. Cu.

The objective of the El Paso/USBM research was to develop in-situ leaching methods for 200,000 tons of mineralized rock exposed at the bottom of the open pit and also some three million tons of mineralized rock reported to be present under about 200 ft. of overburden adjacent to and west of the pit. The research included core drilling for fragmentation analysis, in-place permeability testing, seismic surveys, blasting tests, blast vibration measurements, in-situ leaching and ground water monitoring (D'Andrea et al., 1977). USBM carried out in-situ leaching in an area known as Phase I and carried out drilling, blasting and fragmentation, also for in-situ leaching, in the western part of the deposit known as the Phase II area.

### 6.2.1 PHASE I LEACH TEST

A 15,000 ton test area in the open pit bottom was blasted and leached in-place for 117 days. This was followed by leaching 100,000 tons of unblasted pit bottom ore. Prior to leaching, USBM used the following procedures:

- Core drilling and sampling was done before blasting and after leaching.
- Rock quality designations (RQD) measured after the blasting. The Phase I post-leach drill core data indicated that significant rock fragmentation

occurred due to blasting. Since no core drilling was done between blasting and leaching, the exact effect of blasting was not determined.

- Permeability measurements before and after blasting in both test areas.
- Seismic studies in the Phase I area before and after blasting. Results on refraction studies showed that a low velocity layer near the surface extended 3 ft. to 8 ft. deep, probably caused by previous mining activity.

The Phase I leach test began in March 1977 and continued for 114 days. Leach solutions were distributed over the surface of the broken ore through perforated pipes and recovered in a well located on the east side of the blasted zone. The solutions were then pumped out of the pit to a recovery plant where cement copper was produced by precipitating the copper from the pregnant liquor with shredded iron in a cementation drum (D'Andrea et al., 1977). During this test some 29,000 lbs. of copper were produced. RPA notes, however, that given the amount of material that was leached, 15,000 tons at a reported average grade of 1% TCu (with contained 300,000 lbs. of total copper), this represents a recovery of copper at 9.7%.

Assay results on drill core before blasting and after leaching in the Phase I area show that the average values for the drill section for the two periods are similar, but with significant differences in the top and lower portion of the holes (Table 6-1). RPA notes that interpretation of these data must take into consideration core recovery, which averaged 86% for the preshot core, but only 35% for the post-leach core (D'Andrea, 1977).

| <b>TABLE 6-1 ASSAY VALUES OF PHASE I IN-SITU LEACHING (USBM, 1974)</b> |                      |             |              |                        |             |              |
|--|----------------------|-------------|--------------|------------------------|-------------|--------------|
| <b>SGV – Emerald Isle Property</b>                                     |                      |             |              |                        |             |              |
| <b>Depth (ft.)</b>   | <b>Pre-shot Core</b> |             |              | <b>Post-leach Core</b> |             |              |
|  | <b>% TCu</b>         | <b>% Fe</b> | <b>% S</b>   | <b>% TCu</b>           | <b>% Fe</b> | <b>% S</b>   |
| 0 – 10.0   | 0.34                 | 2.7         | 0.023        |                        |             |              |
| 10.0 – 15.0  | 0.65                 | 2.7         | 0.041        |                        |             |              |
| 15.0 – 20.0  | 0.62                 | 2.7         | 0.056        | 1.19                   | 4.6         | 0.140        |
| 20.0 – 25.0  | 0.68                 | 2.6         | 0.110        | 1.03                   | 4.2         | 0.140        |
| 25.0 – 30.0  | 0.91                 | 3.7         | 0.039        | 1.17                   | 4.1         | 0.110        |
| 30.0 – 35.0  | 0.95                 | 3.0         | 0.090        | 1.17                   | 4.1         | 0.110        |
| 35.0 – 40.0  | 0.87                 | 2.6         | 0.092        | 0.29                   | 4.5         | 0.100        |
| 40.0 – 45.0  | 0.60                 | 3.4         | 0.052        | 0.19                   | 4.0         | 0.029        |
| 45.0 – 50.0  | 0.32                 | 3.3         | 0.049        | 0.19                   | 4.0         | 0.029        |
| 50.0 – 55.0  | 0.25                 | 3.4         | 0.120        | 0.16                   | 3.9         | 0.037        |
| 55.0 – 60.0  | 0.16                 | 2.4         | 0.017        |                        |             |              |
| 60.0 – 65.0  | 0.31                 | 2.4         | 0.026        |                        |             |              |
| 65.0 – 68.7  | 0.13                 | 2.3         | 0.017        |                        |             |              |
| 55.0 – 62.0  |                      |             |              | 0.24                   | 4.4         | 0.210        |
| 62.0 – 70.3  |                      |             |              | 0.12                   | 5.1         | 0.056        |
| <b>Average</b>   | <b>0.52</b>          | <b>2.9</b>  | <b>0.056</b> | <b>0.53</b>            | <b>4.3</b>  | <b>0.098</b> |

**Source: D’Andrea et al., 1977.**

Results of laboratory acid leach tests on -0.5 inch material from the Phase I test area, conducted at the Salt Lake City Metallurgy Research Center, showed that best copper recoveries were obtained at a pH of 1.0 and acid consumption averaged about 6 lbs. of H<sub>2</sub>SO<sub>4</sub> per lb. of copper, and iron consumption averaged 1.3 lbs. per lb. of copper.

**6.2.2 PIT BOTTOM LEACHING**

During the pit bottom leaching program, some 142,000 lbs. of copper were produced. RPA notes, however, that given the amount of material that was leached, i.e., 200,000 tons at a reported average grade of 1% TCu (with contained 2,000,000 lbs. of total copper), this represents a recovery of copper at 7.1%.

**6.2.3 PHASE II TEST**

Three core holes and ten blast holes (seven first blast holes and three second blast holes) were drilled in the Phase II test area. These were 9-inch diameter holes and about 280 ft. deep. The recovery wells were drilled to 300-foot depths with 12-inch diameter tricone bits and cased with 10-inch diameter polyvinyl chloride (PVC) pipe

with the bottom 20 ft. perforated (D’Andrea et al., 1977). Assay values for the preshot core in the Phase II area are listed in Table 6-2. This core had a higher copper content than that in the Phase I area, with a high-grade zone between 230 ft. and 250 ft., which averaged 1.5% TCu.

| <b>TABLE 6-2 ASSAY VALUES FOR PHASE II PRESHOT CORE (USBM, 1974)</b> |              |             |              |
|--|--------------|-------------|--------------|
| <b>SGV - Emerald Isle Deposit</b>                                    |              |             |              |
| <b>Depth (ft.)</b>   | <b>% TCu</b> | <b>% Fe</b> | <b>% S</b>   |
| 206 to 210   | 0.69         | 3.08        | 0.160        |
| 210 to 216   | 0.46         | 3.03        | 0.080        |
| 216 to 220   | 0.54         | 3.30        | 0.088        |
| 220 to 225   | 0.37         | 2.81        | 0.055        |
| 225 to 230   | 0.34         | 3.39        | 0.062        |
| 230 to 235   | 1.69         | 2.90        | 0.054        |
| 235 to 240   | 1.47         | 2.76        | 0.084        |
| 240 to 245   | 1.70         | 2.90        | 0.130        |
| 245 to 250   | 1.07         | 2.53        | 0.150        |
| 250 to 255   | 0.40         | 2.85        | 0.064        |
| 255 to 260   | 0.59         | 2.22        | 0.022        |
| 260 to 265   | 0.46         | 3.62        | 0.110        |
| 265 to 270   | 0.40         | 2.85        | 0.024        |
| 270 to 275   | 0.41         | 3.30        | 0.064        |
| 275 to 280   | 0.48         | 3.03        | 0.058        |
| 280 to 285   | 0.21         | 2.17        | 0.045        |
| 285 to 290   | 0.44         | 4.62        | 0.026        |
| 290 to 294   | 0.32         | 5.70        | 0.028        |
| <b>Average</b>   | <b>0.67</b>  | <b>3.17</b> | <b>0.072</b> |

**Source: D’Andrea et al., 1997.**

Based on the blasting and assay results, a full-scale in-situ leaching system was designed to recover the majority of the remaining copper. Water circulation tests, however, revealed that in the Phase II test area the first blast did not create adequate breakage for leaching. A second blast did improve the fragmentation, but water circulation tests were not conducted because the mine was shut down. Consequently, the larger in-situ leaching program was not implemented.

In 1974, the project was shut down due to high costs associated with the production of copper precipitate and subsequent treatment and refining charges. At the termination of the joint venture, Arizona Bureau of Geology and Mineral Technology reported that from 1917 to 1973, some 22,166,000 lbs. of copper were



produced from 1.4 million tons of ore, indicating an recovered average grade of approximately about 0.7% Cu at Emerald Isle (Keith et al., 1986). Copper recovery was reported to be 80% (TSC, 1992?).

In 1976, Mining Geophysical Surveys (MGS) of Tucson, Arizona, carried out a review of induced polarization (IP) and resistivity data, and R.C. Peterson carried out a review of aeromagnetic data on the Emerald Isle Property. MGS concluded that IP results were inconclusive, except for a north-south fault interpreted to be present across the open pit area (Wieduwilt, 1976). In terms of the airborne results, Peterson concluded that the Emerald Isle deposit “appears to be spatially correlated with a very subtle low in the aeromagnetic data” but it was uncertain if there was a genetic relationship between the mineralization and the weak geophysical anomaly (Peterson, 1976).

### **6.3 TSC / ARIMETCO**

In 1980, TSC Enterprises, Inc. (TSC) acquired the Emerald Isle Property from El Paso, but the property remained inactive until 1987. In 1987, TSC was acquired by Arimetco, which produced some 100,300 lbs. of cement copper (82% Cu) from the open pit. In 1992, TSC completed 40 rotary drill holes in the general area, and commissioned an 8,000 lbs./day SX-EW plant, that produced 1,152,663 lbs. of copper from 162,565 tonnes of mineralized material Table 6-3). The indicated copper recovery was 62%. Due to the prevailing low copper price at that time, the plant was shut down in September 1993. In 2003, TSC changed its name to Western Consolidated Resources (Dunham, 2004).

| <b>TABLE 6-3 PRODUCTION RECORD BY ARIMETCO (1992-1993)</b> |                |              |                       |                        |                                |
|--|----------------|--------------|-----------------------|------------------------|--------------------------------|
| <b>SGV - Emerald Isle Project</b>                          |                |              |                       |                        |                                |
| <b>Month</b>   | <b>Tons</b>    | <b>% TCu</b> | <b>lbs. Cu to pad</b> | <b>lbs. Cu shipped</b> | <b>Cumulative recovery (%)</b> |
| Pre July 1992  | 33,365         | 0.43         | 286,939               |                        |                                |
| July 1992  | 0              | 0            | 0                     | 95,976                 | 33.4                           |
| August 1992  | 21,525         | 0.58         | 249,690               | 96,017                 | 35.8                           |
| Sept. 1992   | 19,775         | 0.58         | 229,904               | 144,066                | 42.9                           |
| Oct. 1992  | 10,795         | 0.56         | 120,904               | 48,058                 | 43.3                           |
| Nov. 1992  | 9,275          | 0.87         | 161,385               | 96,082                 | 45.8                           |
| Dec. 1992  | 0              | 0            | 0                     | 96,070                 | 55.0                           |
| Jan. 1993  | 945            | 0.69         | 13,041                | 0                      | 54.3                           |
| Feb. 1993  | 9,975          | 0.62         | 123,690               | 0                      | 48.6                           |
| March 1993   | 14,945         | 0.50         | 149,450               | 95,991                 | 50.4                           |
| April 1993   | 15,015         | 0.51         | 153,153               | 48,007                 | 48.4                           |
| May 1993   | 28,950         | 0.70         | 377,300               | 48,135                 | 41.2                           |
| June 1993  | 0              | 0            | 0                     | 144,052                | 48.9                           |
| July 1993  | 0              | 0            | 0                     | 96,025                 | 54.1                           |
| August 1993  | 0              | 0            | 0                     | 48,027                 | 56.6                           |
| Sept. 1993   | 0              | 0            | 0                     | 96,137                 | 61.8                           |
| <b>Total</b>   | <b>162,565</b> | <b>0.57</b>  | <b>1,864,942</b>      | <b>1,152,663</b>       |                                |
| <b>Average</b>   |                |              |                       |                        | <b>61.8</b>                    |

**Source: SGV, 2004.**  
**Note: Several versions of the above table were located by RPA. Although the figures differed somewhat, the reported copper production, in general, were in the same order of magnitude.**

## 6.4 HISTORICAL RESOURCE AND RESERVE ESTIMATES

There have been a number of resource and reserve estimates of the Emerald Isle copper deposit, as summarized below. RPA has not reviewed these historical estimates and is uncertain of the parameters and in some cases cut-off grades used.

- In March 1991, MPH estimated total “reserves” to be in the order of 1.8 million tons at 0.72% TCu.
- In March 1992, Mine Development Associates (MDA) Feasibility Study on behalf of Holcorp estimated Mineral Resources to total 2.81 million tons at 0.57% TCu of which in-pit resources totalled 1.52 million tons at 0.49% TCu, plus stockpiles estimated at 400,000 tons averaging 0.35% TCu.

- In 1992, Arimetco estimated the oxide copper resources at a 0.11% TCu cut-off grade and a waste-to-ore strip ratio of 0.8:1 as total proven and probable reserves of 1.95 million tons at 0.58% TCu plus 1.2 million tons of mill tailings averaging 0.22% TCu.
- In 1995, Arimetco considered a number of scenarios for the Emerald Isle deposit, but documentation is incomplete. One of these scenarios was a block model estimate with reported mineral resources of 980,000 tons, which could be mined at a strip ratio of 1:1. Later, Arimetco modified these resources to 475,000 tons averaging 0.61% TCu, at a strip ratio of 0.73:1.

RPA notes that all of the above resource and reserve estimates are historical in nature and are included for information purposes. They are not compliant with NI 43-101. Furthermore, RPA has not reviewed them and cannot comment on their reliability, relevance or classification, but notes that they are in the same order of magnitude as the RPA current estimate described below.

## **6.5 2001 TO 2004**

In 2001, the U.S. Department of the Interior, Bureau of Land Management (BLM) authorized Dynamac Corporation to develop a limited Potentially Responsible Party (PRP) Evaluation Search for the Emerald Isle Mine site. The PRP search activities were conducted under the guidance of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 and the Superfund Amendments and Reauthorization Act (SARA) of 1986. Dynamac concluded that the following parties may fulfill CERCLA's criteria as PRPs for the Emerald Isle Mine and Mill site:

- Arimetco, Inc. / Arimetco International, Inc.
- Climax Molybdenum Company
- El Paso Mining and Milling Company
- El Paso Natural Gas Company
- Emerald Isle Copper Company

- Lewin-Mathes Company
- Mohave Enterprises, Inc.
- Newmont Mining Corporation
- C.G. Patterson
- C.F. Weeks

Dynamac also concluded that it was not certain if any and all of these parties were financially viable. Furthermore, Dynamac reported that it was unable to obtain the current address for Emerald Isle Copper Company, El Paso Mining and Milling Company, Lewin-Mathes Company, Mohave Enterprises, Inc., C.G. Patterson and C.F. Weeks (Donley et al, 2001).

The Emerald Isle property has been dormant from 1993 to 2004, when SGV commenced the recent exploration program. This work is discussed under the Drilling section below.

## 7 GEOLOGICAL SETTING

### 7.1 REGIONAL GEOLOGY

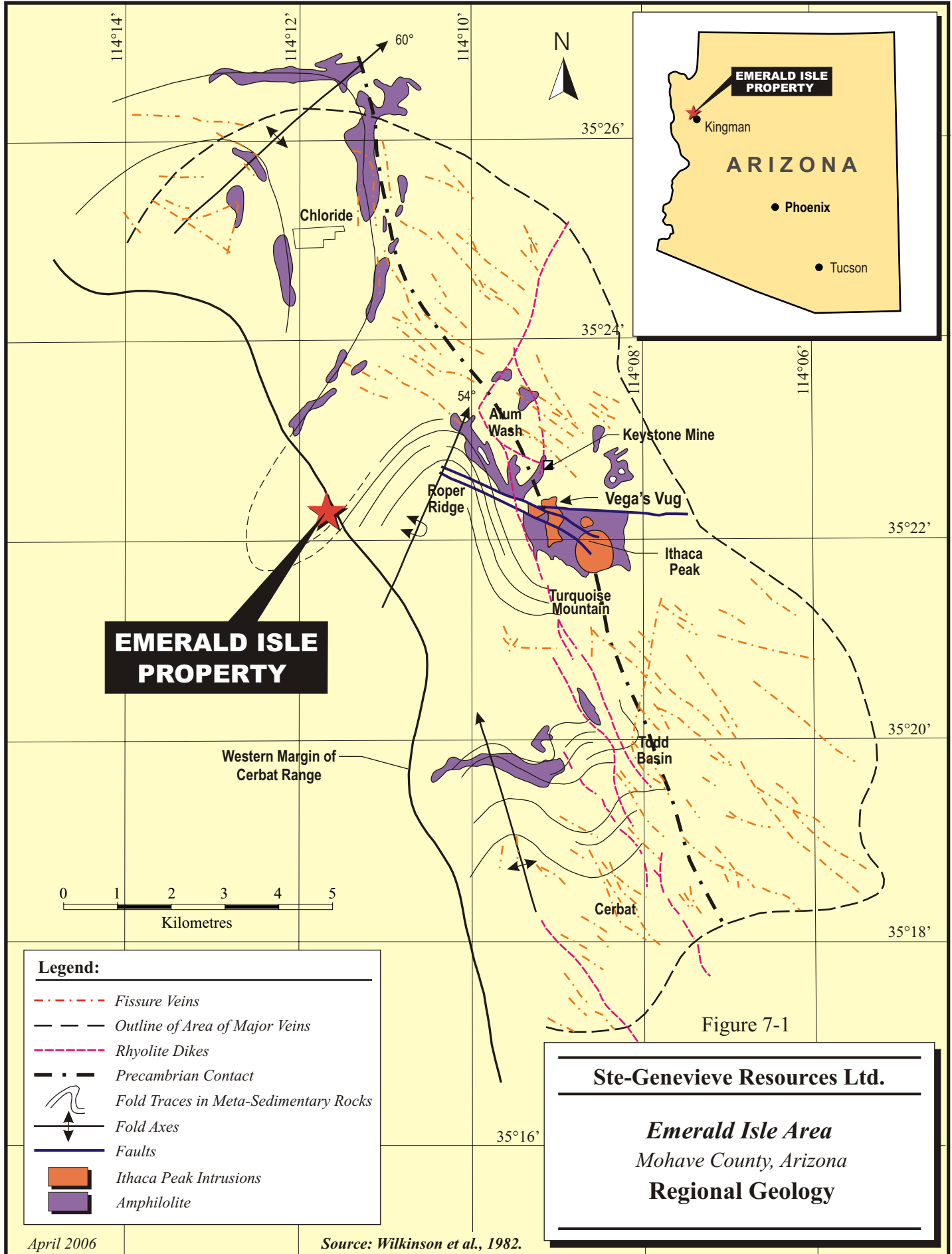
The Emerald Isle Property is situated near the eastern edge of the Basin and Range Province and close to the western margin of the Colorado Plateau. It is located near the Mineral Park porphyry copper-molybdenum deposit, within the Wallapai mining district. The Wallapai mining district is on the western flank of the Cerbat Mountains. The Cerbat Mountains trend north and are composed of a Precambrian basement intruded by Laramide quartz-monzonite porphyry. Tertiary extrusive rocks crop out on the flanks of the Cerbat Range (Eidel et al, 1968). The north trending Black or River Range west of the Cerbat Mountains consists of Cretaceous and Tertiary volcanic rocks overlying a poorly exposed basement (Figure 7-1).

The Wallapai mining district is approximately 6.5 km long wide and 18 km long and is defined by the known lateral extent of base and precious metal veining (Figure 7-1). Faults are abundant in the district, but the lack of good marker units makes offset and age relationships difficult to interpret (Wilkinson et al., 1982).

Several large N70°W trending faults are present in the area from Roper Ridge to Ithaca Peak and numerous smaller northwest trending faults exhibit intense fracturing and silicification (Figure 7-1). The geologic history of the Wallapai district is summarized as follows:

- A series of folded metasedimentary and metavolcanic rocks occur along the western flank of the Cerbat Mountains.
- The folded rocks were intruded by regionally northeast foliated granitic gneiss of batholithic proportions.
- The north-northwest trending contact between the folded rocks and the granitic gneisses was a major structural element in the district.
- Intrusion of the Ithaca Peak stocks at or near the intersection of this contact and the Turquoise Mountain fold.

- This contact was the locus for intrusion of rhyolite dikes and the formation of the major fault-veins of the district (Wilkinson et al, 1982).



## 7.2 PROPERTY GEOLOGY

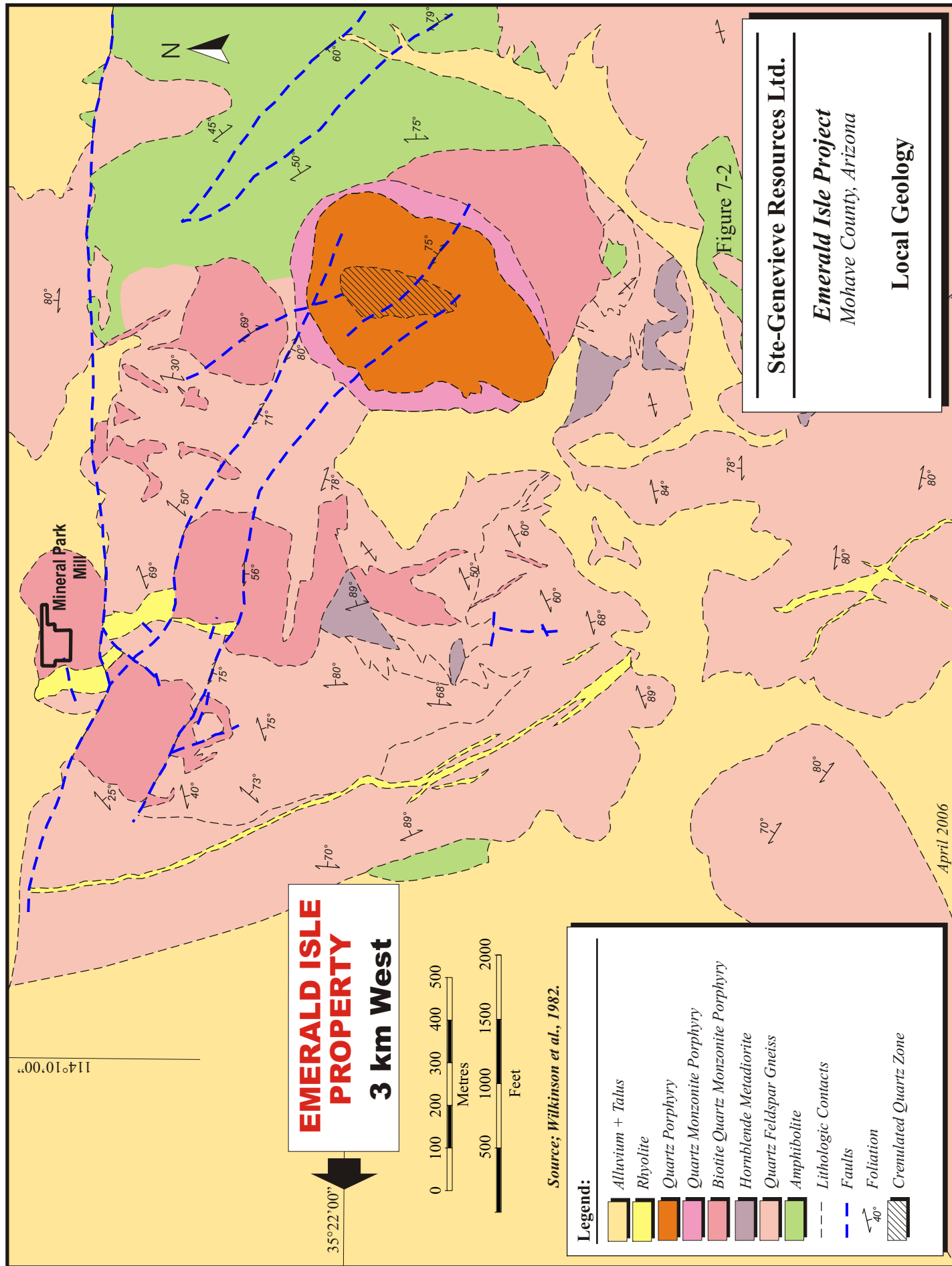
The Emerald Isle Property is located in the Sacramento Valley, about a mile from the west face of the Cerbat Range (Figure 7-1). Its geologic setting is an alluvium covered, gradually west sloping pediment and it is underlain by the Late Tertiary Gila Conglomerate and Cretaceous granitic rocks of the Ithaca Peak intrusive. The trace of fold axes in Figure 7-1 also suggests that the property area is at least partly underlain by northeast trending basement amphibolitic rocks. To the south, the area is covered by Quaternary alluvium (Figure 7-2). The relief is low and undulating due to protruding bedrock and erosional dissection. The alluvium in the vicinity of the old mine represents older alluvium, as does the bulk of the detrital apron flanking the range (TSC, 1992?).

The terrace beds and dissected portions of the pediment reveal poorly sorted, mixed deposits of angular to sub-angular sand, pebbles, cobbles and boulders (up to 15 ft.), representing all the rock units in the Cerbat Range. Crude stratification exists in some places, but the bulk of the apron flanking the range is largely mixed and unconsolidated.

The alluvial veneer at the Emerald Isle Property has been consolidated by mineralizing solutions to form the blanket of copper mineralization. Due to its proximity to the Mineral Park Cu-Mo deposit, the salts and clays eroded from the Ithaca Peak porphyry alteration halo likely have contributed to the bonding of the Gila Conglomerate.

The most obvious structural feature on the property is the Emerald Isle Fault. The fault is normal and has a vertical displacement of about 105 ft. and an unknown horizontal displacement, and is arcuate to the west. In the northeast corner of the pit, the strike is N60E, while on the south side of the pit near the old adit, the strike is N10E (Figure 7-3). The dip varies from -45° west to -70° west. The fault is young since both the pediment and overlying alluvium are faulted (TSC, 1992?).





## 8 DEPOSIT TYPES

### 8.1 TYPES OF MINERALIZATION

There are three types of copper mineralization at Emerald Isle, as follows:

- The first type is primary fissure vein mineralization containing copper sulphides (Thomas, 1949). This was the type of mineralization which was mined in 1917 and 1918, but is no longer the target at the present time.
- The second type is blanket type primary copper mineralization and has been the exploration target during the past twenty years. It occurs within the dark conglomerate and is reported to consist primarily of tenorite (CuO). This mineral is sometimes called copper pitch or melaconite and “much of it seems to be cryptocrystalline or amorphous” (Williams, 1992). It is the pitchy dark brown to black material which commonly occurs within the Gila Conglomerate.
- The third type of mineralization is represented by secondary copper minerals, in the form of copper staining, such as malachite ( $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$ ) and chrysocolla ( $\text{CuO} \cdot \text{SiO}_2 \cdot \text{H}_2\text{O}$ ). These minerals occur on fracture planes as well as within the matrix of the dark conglomerate. Minor cuprite ( $\text{Cu}_2\text{O}$ ) and diopside ( $\text{H}_2\text{CuSO}_4$ , a rare mineral of copper) have also been identified. Chrysocolla also occurs as a thin veneer around tenorite grains (Williams, 1992).

Manganese oxides are also commonly present with the first, second, and third type of copper mineralization at Emerald Isle.

### 8.2 GENETIC MODEL

Copper mineralization at Emerald Isle is hosted by the Gila Conglomerate and is structurally controlled. The copper mineralization is contained within a paleochannel some 2,500 ft. long, 500 ft. to 750 ft. wide and the thickness ranges from 20 ft. to 300 ft., averaging about 100 ft. in the form of a mineralized lens. In general, the conglomerate layer has a wedge-shaped profile, with a thin northern part and a much thicker southern part. In places, the conglomerate is absent and in other places it is very thick, due to faulting. The morphology of the conglomerate unit suggests that

source of the copper is the low grade porphyry-type copper mineralization at Alum Wash, and mineralization is characterized by dark blue to black rock, as noted above.

Early work by Thomas (1949) suggested that the chrysocolla may also be a primary mineral, because:

- “There are no relict grains of sulphides, or any minerals, which might have served as a primary source of the copper.
- The texture of chrysocolla, both in vein and blanket, is delicately banded and crustified, which suggests that formation was by open space filling and not replacement”.

Other workers disputed Thomas’ contention of the “vein” being the source of primary ore at Emerald Isle. Dings (1951) argued that the “vein” is one of a series of post-Gila faults that step down the pediment of the Cerbat Range and develop the graben of the Sacramento Valley, “where the Gila and other conglomerate is very deep. Several of these faults are parallel, and while only two are indicated by topography, seismic work discloses others, successfully stepping the bedrock down to the west and deepening the overburden on the basal layer”.

In a 1992 report by MDA, Wendt noted that there were at least two undeveloped (not mined) deposits with estimated resources in the range from 10 million to 20 million tons at an average grade in the order of +0.3% Cu in the vicinity of the Emerald Isle Property (Wendt, 1992). These were the Alum Wash and Vega’s Vug deposits adjacent to the Mineral Park Mine (Figure 7-1).

There are several copper deposits in Arizona and New Mexico which are interpreted to have geological attributes similar to those as at Emerald Isle. Some of these deposits include:

- Mineral Creek Deposit: Located within Ray Mineral District, Pinal County, Arizona, this alluvial-hosted (stream gravels) deposit extends some 500 ft. along strike and is 30 ft. thick, and is reported to contain approximately one million tons at an average grade of 0.5% Cu. It is situated at the base of a cliff just below the porphyry copper deposit on Ray Hill. The age of mineralization is estimated at 7,000 years and the mineral constituents are recognized as malachite, azurite, cuprite and tenorite (Clifton, 2004a).

- Copper Butte Deposit: Located 3 mi. west of Ray Mineral District, Pinal County, Arizona, the deposit is hosted by stream channels within the Oligocene Whitetail Conglomerate, and is reported to contain approximately 100,000 tons at an average grade of 3% Cu. The mineral constituents are recognized as chrysocolla and copper wad (Clifton, 2004a).
- Black Copper Area: Located some 1,000 ft. north of Inspiration porphyry copper deposit, Gila County, Arizona, this deposit is hosted by stream channels within the Oligocene Whitetail Conglomerate. It extends some 10,000 ft along strike, is 100 ft. wide, and is 75 ft. thick. Due to its proximity the source of mineralization is believed to be the Inspiration orebody (Clifton, 2004a).
- Tyrone Oxide Deposits: Located in Burro Mountain District, southwest New Mexico, this deposit is situated about one mile southwest of the Tyrone porphyry copper deposit, and interpreted to contain several bodies totalling some 100,000 tons at an average grade of 1% Cu. It is hosted by stream channels within the Miocene Mangas Conglomerate. The mineral constituents are recognized as chrysocolla, black copper silicates and oxides, and malachite. Due to its proximity the source of mineralization is believed to be the Tyrone porphyry copper deposit (Clifton, 2004a).

A number of other mineral deposits in Latin America are interpreted to exhibit geological environments similar to that as at Emerald Isle (Clifton, 2004a). These include:

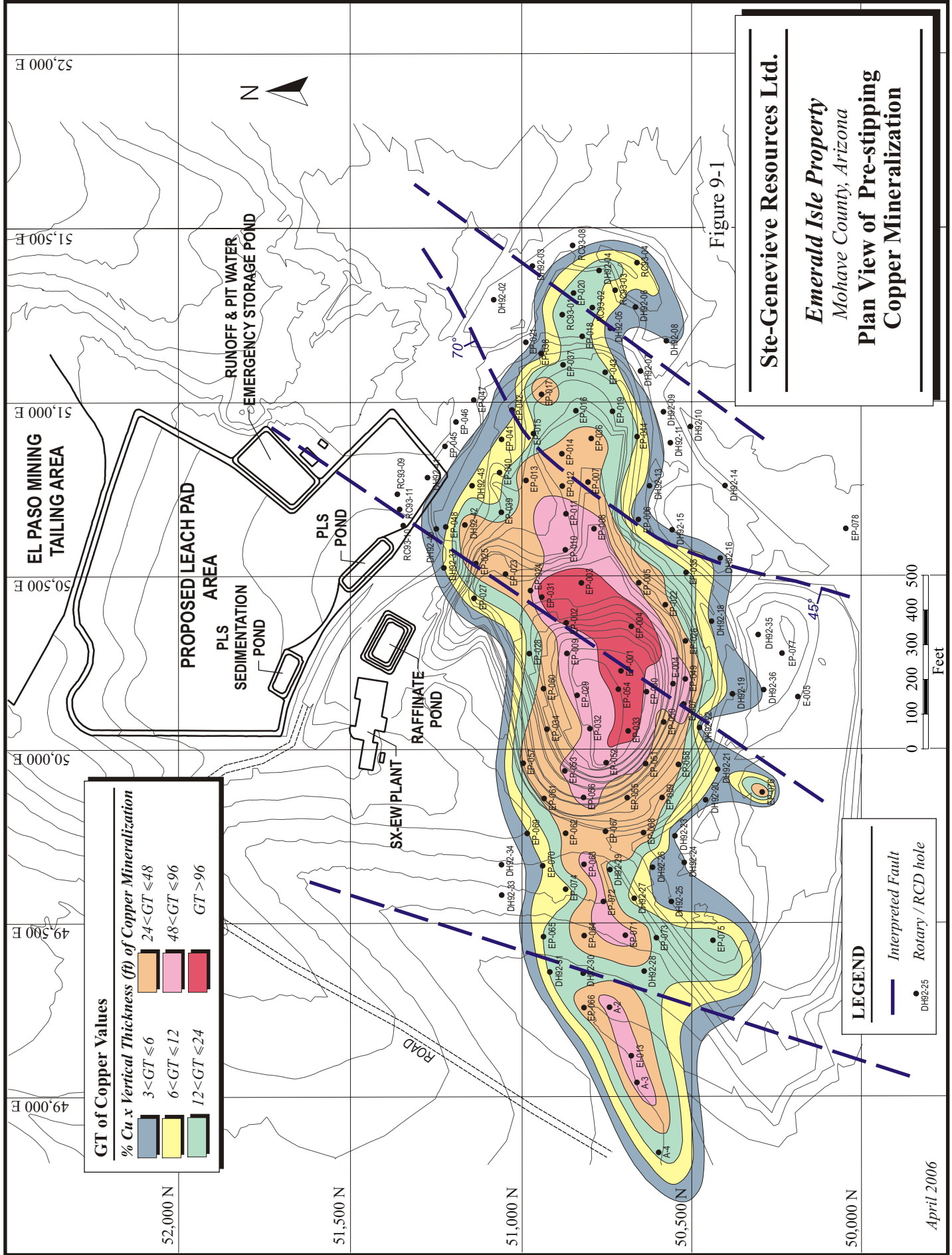
- El Pilar: Some 45 km northwest of Cananea, in Mexico, with reported Mineral Resources of 162 million tonnes at an average grade of 0.39% Cu.
- Several Chilean deposits, such as:
  - Exotica: Situated about 2 km south of Chuquicamata, with reported Mineral Resources of 160 million tonnes at an average grade of 1.86% Cu.
  - Radomiro Tomic: Situated just north of Chuquicamata, with reported Mineral Resources containing at least one billion lbs. of copper.
  - Damiana and Quebrada Turquesa: Situated near the El Salvador copper deposit, the Damiana deposit is reported to contain 2.4 billion to 7 billion lbs. of copper, and Quebrada Turquesa is reported to contain about 800 million lbs. of copper.
  - El Tesoro: Located near Antofagasta, no Mineral Resources are reported, but mineralization extends over an area 5 km by 2.5 km.

- Sagasca: Located approximately 100 km north of Chuquicamata, this deposit is 4 km long, 400 m wide and is 70 m thick, and the Mineral Resources are reported to total some 300 million to 800 million lbs. of copper.
- Huinquintipa: Located near Collahuasi, this deposit is 1 km long, 150 m wide and is 10 m thick, and the Mineral Resources are reported to total some 300 million to 800 million lbs. of copper.
- Ichuano and Lagarto: These deposits are situated 4 km east and 4km west of El Abra, respectively. The combined resources are reported to range from 300 million to 800 million lbs. of copper.

## 9 MINERALIZATION

Copper mineralization at Emerald Isle is hosted by units of dark blue to black east-northeast trending and gently to moderately south dipping unconsolidated Late Tertiary Gila Conglomerate in contact with a small silicified intrusive body. This is a polymict conglomerate with rounded fragments ( $\leq 1$  cm to 5 cm) of granitic as well as quartzitic and other material within a fine-grained matrix. Occasional larger boulders of granitic composition are also present. The contact with the central stock may be a fault contact which follows the outline of the central silicified intrusive.

The source of copper mineralization at Emerald Isle is the low grade porphyry type copper mineralization at the head of Alum Wash, 3.5 mi northeast of the deposit, close to the Mineral Park Mine (Figure 7-1) (Thomas, 1949 and 1951). Tenorite ( $\text{CuO}$ ) is common and minor cuprite ( $\text{Cu}_2\text{O}$ ), chrysocolla ( $\text{CuO}\cdot\text{SiO}_2\cdot\text{H}_2\text{O}$ ) and diopside ( $\text{H}_2\text{CuSO}_4$ , a rare mineral of copper) have been identified. The copper mineralization occurs in fractures and as interstitial cementing material within fine sand and clay. Oxides of iron and manganese are also frequently found in many fractures. All of the copper mineralization is secondary. Figure 9-1 shows a pre-stripping plan, Figure 9-2 is a generalized longitudinal section of the deposit, illustrating the flat-lying, tongue-like nature of the deposit, and Figures 9-3 and 9-4 are vertical (north-south) cross sections in the western and central parts of the deposit.



**GT of Copper Values**

| % Cu x Vertical Thickness (ft) of Copper Mineralization |              |
|---|--------------|
| 3 < GT ≤ 6  | 24 < GT ≤ 48 |
| 6 < GT ≤ 12   | 48 < GT ≤ 96 |
| 12 < GT ≤ 24  | GT > 96      |

**LEGEND**

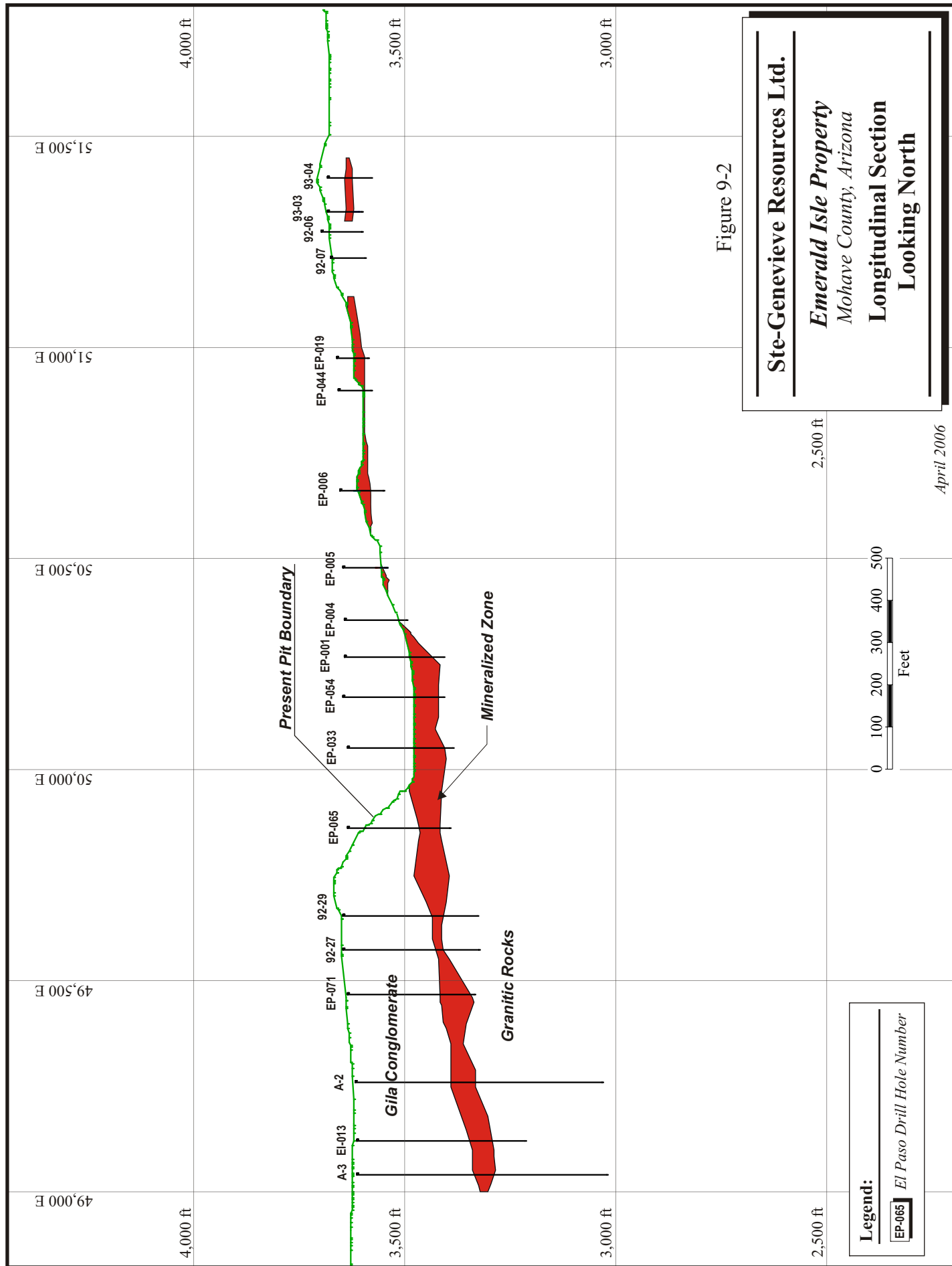
|  |                   |
|--|-------------------|
|  | Interpreted Fault |
|  | Rotary / RCD hole |

Figure 9-1

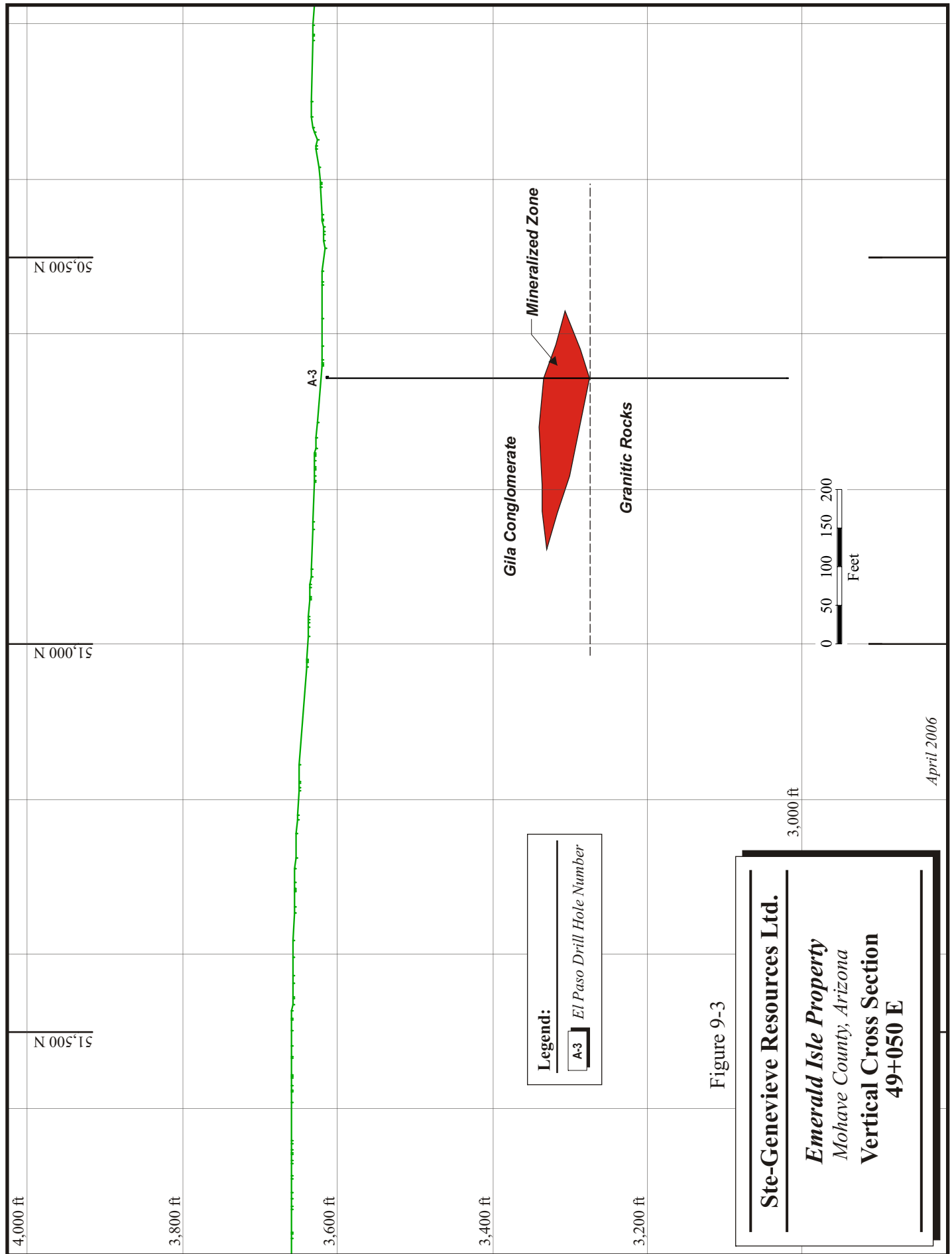
**Ste-Genevieve Resources Ltd.**  
*Emerald Isle Property*  
 Mohave County, Arizona  
**Plan View of Pre-stripping**  
**Copper Mineralization**

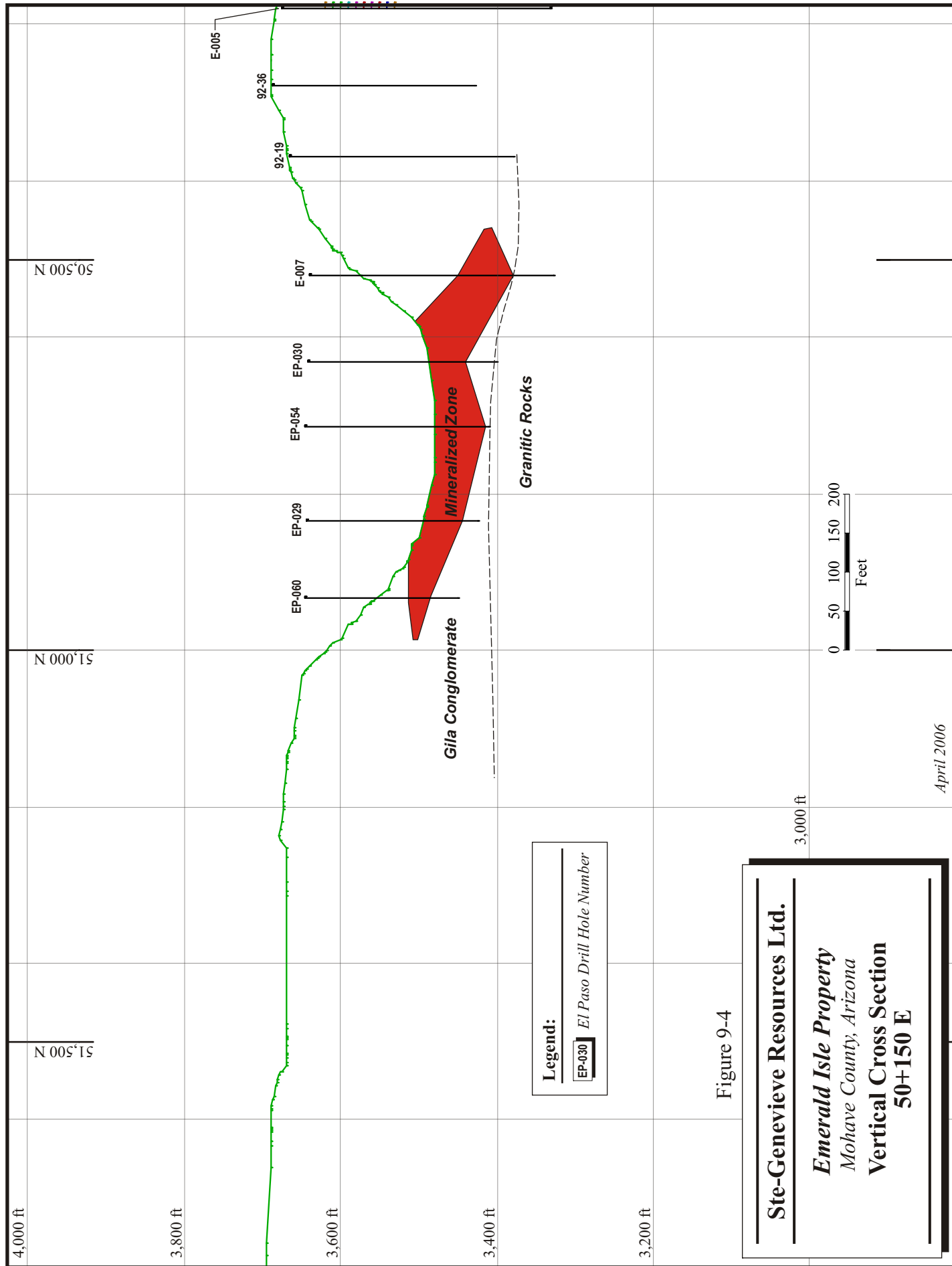
0 100 200 300 400 500  
 Feet

April 2006









April 2006

## **10 DRILLING**

### **10.1 PAST DRILLING**

In the 1970s, El Paso explored the Emerald Isle deposit by some 90 surface rotary holes totalling 17,170 ft. of drilling. The lengths of the drill holes ranged from 15 ft. to 610 ft. and averaged about 190 ft. Logging was done on drill chips.

In 1992, Mine Development Associates (MDA) of Reno drilled 37 RCD holes totalling 7,850 ft. on the Emerald Isle property on behalf of Holcorp, and in 1993, MDA completed a further 770 ft. of RC drilling in 8 holes. In total, past drilling comprised some 25,800 ft. of drilling in 135 rotary and RCD holes.

### **10.2 RECENT DRILLING**

During November and December 2004, SGV completed a program of confirmation drilling of 5,530 ft. in 18 reverse circulation drill holes (RCD). Fifteen of these holes were twins of the previous El Paso holes and ranged in depth from 235 ft. to 350 ft. in the western part of the copper deposit. These twinned holes were labelled with a "W" prefix added to the original numbers, e.g. WEP-071 for old EP-71. The drilling rig was an Ingersoll Rand TH60 truck-mounted machine and the drilling contractor was Layne Christensen Company of Fontana, Calif. Drill bits consisted of 5.25 in. diameter button-tipped tricones. Water was trucked from the Mineral Park Copper Mine of Mercator Minerals, approximately 4.5 mi. to the east.

Sampling of drill chips was done at 5-ft. intervals and logging was done by the SGV Project Geologist. Samples were sent to Mountain States Research and Development International, Inc. (MSRDI) of Vail, Arizona, for total as well as soluble copper and zinc determinations.

Due to the grade variability between the previous drilling results and the recent twinned SGV RCD results, SGV carried out a limited diamond drilling program to

confirm results of the SGV RCD holes. For this purpose, SGV twinned four holes with 1,196 ft. (392 m) of diamond drilling. The drilling contractor was Boart Longyear of Peoria, Arizona, and the drill was a truck mounted Longyear 38 machine. These twinned holes were labelled with a “C” prefix added to the original numbers, e.g. CEP-071 for old EP-71 or the RCD hole WEP-71. The holes started with a “P” size casing and drilling continued by reducing the drill rods to retrieve NQ size core. SGV elected to determine the copper content in the core by crushing and grinding the whole of the core and having assays done on 300 g aliquots of the samples at the MSRDI laboratories. MSRDI also prepared samples for metallurgical acid leach tests, but has not yet carried out these tests. Although standard industry practice is to split the core and send half to the lab for assays and keep the other half at the site, SGV wished to obtain larger samples for assay and metallurgical testwork.

Comparison of the SGV RCD results with the El Paso drilling and with the SGV core drilling is discussed in the section on Data Verification.

## 11 SAMPLING METHOD AND APPROACH

### 11.1 EL PASO

During the El Paso exploration programs in the 1970s, rotary drilling was completed by El Paso, as noted above. Drill chips were logged by company geologists. This included marking lithologic contacts, relative moisture and/or clay content and relative alteration of the rocks. RPA is uncertain about the methodology of sampling of the drill chips or about the procedures for sample preparation and copper assays.

### 11.2 HOLCORP/MDA

In February 1992, Mine Development Associates (MDA) was retained by Holcorp to carry out a definition drilling program and to review the drilling and sampling procedures with those of El Paso. The drilling contractor completed 7,850 ft. in 37 RCD holes, ranging in total depths from 40 ft. to 440 ft. The following is an account of the sampling procedures as reported by Easdon (1992).

- “The near surface intervals down to 15 ft. in depth were collected in pans located at the collar. Once the hole was properly collared, the cuttings were blown up through the dual wall tubing into a cyclone, and then discharged into a vibratory triple tier splitter.
- Samples were collected at 5-foot intervals beginning at the surface and to the bottom of the hole...the total volume of the sample taken was estimated. The volume of the sample in the collecting pan, after the triple split, provided a rough measure of the relative volume of material taken. Typically, more than 90% of the samples weighed at 11 lbs. to 15 lbs.”

Easdon concluded that the drilling and sampling techniques utilized in the program were properly executed (Easdon, 1992).

## 11.3 SGV

### 11.3.1 SAMPLE COLLECTION

The sample collection procedures during the recent RCD program were reported by Clifton (2004b), as follows:

- Drill cuttings were collected from an overhead cyclone, except the first 5 ft. of each hole, which were collected by placing splitter pans next to the collar. A 50 gallon drum was placed approximately 2.5 ft. beneath the cyclone and five-gallon plastic buckets were placed on the drum to collect the cuttings as they emerged from the overhead cyclone. Samples were collected every 5 ft. Five-foot intervals were marked on the drill pipe with chalk by the drillers and the exact footage was verified several times as the hole was drilled.
- All drill cuttings for each 5-ft. interval were passed through a 4-way stainless steel splitter with fixed one-inch chutes. The splitter consisted of 4 one-way splitters mounted in a steel frame, with 3 splitters directed to the back and the fourth directed to the front. All material was collected in large metal pans; only a small fraction was not caught and this material was not added to the samples. After all material from a 5-ft. interval was collected, the frame of the splitter assembly was rapped with a rubber mallet to dislodge loose material. The splitter was kept dry at all times and brushed clean when necessary. Damp or wet cuttings were left in the buckets and split by hand. A typical 5-foot interval yielded 60 lbs. to 80 lbs. of dry cuttings.
- All or part of the material exiting from the single splitter (25% by volume) was retained for analysis. The cuttings were mixed in the collection pan by running a hand back and fourth several times and emptied into several 8 in. by 12 in. heavy plastic polyethylene bags. Excess material from the pan was added to the other pans.
- Depending on sample depth in the hole, material not saved in plastic bags was either:
  - Dumped in piles near the drill hole, or
  - Poured into large rice bags and stored.
- Drill cuttings were collected from an overhead cyclone, except the first 5 ft. of each Based on previous drilling, the depth and thickness of the ore zone was known. Above the mineralized zone, 2 plastic bags, each containing 2 lbs.. 3 lbs.. of material, were collected. One bag was retained for analysis, the other placed in storage for backup. Beginning 15 ft. to 20 ft. above the mineralized zone, and continuing to the bottom of the hole, 100% of the material for each 5-foot interval was split and placed in large rice bags, except for a single

plastic bag that was retained for analysis. The rice bags were wired closed and placed in storage.

- On occasion, all or part of a 5-foot interval was damp from water added to stabilize the hole. In several holes, abundant water was encountered over 5-foot to 10-foot intervals. In each case, the sample buckets were placed next to the appropriate excess material or rice bags at the drill site and left to dry for several days. Clear water was decanted from the buckets every few hours. An appropriate amount of damp material was added to plastic bags to complete the sample. Intervals that contained buckets of very wet material, with or without a fraction of dry cuttings, were split by dumping all cuttings into a 30 gal. plastic tub. Enough water was added to turn the material into a slurry and the cuttings thoroughly mixed with a shovel. From this mixture, a single 5-gal. bucket was retained, dried, and split by hand to plastic bags. The remainder of the material from the bucket was discarded or stored in a rice bag, depending on depth.

### **11.3.2 SAMPLE MEASUREMENTS**

Various measurements were obtained on the samples at the drill site, as described below.

- For each 5-foot interval, 2 cups of cuttings were washed through a 12-mesh spaghetti strainer. The percentage of plus 12-mesh material remaining was estimated by pouring it back into the measuring cup and recording the amount to 10% (by volume).
- A fraction of the plus 12-mesh material was mounted on a chipboard for future logging.
- Recovery above the mineralized zone was estimated visually by examining the amount of excess material dumped in piles on the ground.
- Recovery just above the mineralized zone through the bottom of the hole was measured by weighing the rice bags for each sample interval.
- Recovery for intervals containing abundant water could not be measured; rather, the gallons of muddy material were recorded.

In RPA's view, the sampling procedures used by SGV for the RCD and core drilling are in keeping with industry practice.

## 12 SAMPLE PREPARATION, ANALYSIS AND SECURITY

### 12.1 EL PASO

Sample preparation and assaying procedures used by previous operators El Paso, Arimetco, and USBM are not available to RPA. Technical records available to RPA show that during 1992 assaying for Arimetco samples was done at Barringer Laboratories (Barringer), Golden, Colorado. Barringer’s QA/QC procedures included:

- Assaying the samples for total copper as well as for acid soluble copper.
- Sending twelve samples, as pulps, to three other laboratories for independent check assays. Results are presented in Table 12-1.

RPA is of the opinion that the quality control/quality assurance (QA/QC) measures, including sample handling, preparation and laboratory procedures by Barringer, were similar to other commercial laboratories in Canada and the United States at that time.

| <b>TABLE 12-1 CHECK ASSAY RESULTS (1992)</b> |                            |             |             |               |                |
|--|----------------------------|-------------|-------------|---------------|----------------|
| <b>SGV – Emerald Isle Project</b>            |                            |             |             |               |                |
|  | <b>% ASCu / Laboratory</b> |             |             |               |                |
| <b>Sample No.</b>                            | <b>Barringer</b>           | <b>RMGC</b> | <b>MPEL</b> | <b>CHEMEX</b> | <b>Average</b> |
| 92-028-210-215                               | 0.054                      | 0.065       | 0.055       | 0.050         | 0.056          |
| 92-028-220-225                               | 0.355                      | 0.430       | 0.391       | 0.340         | 0.379          |
| 92-028-230-235                               | 0.080                      | 0.098       | 0.088       | 0.050         | 0.079          |
| 92-028-255-260                               | 1.010                      | 1.380       | 1.070       | 1.500         | 1.240          |
| 92-028-285-290                               | 0.169                      | 0.180       | 0.173       | 0.100         | 0.156          |
| 92-026-0-5                                   | 0.147                      | 0.170       | 0.130       | 0.140         | 0.147          |
| 92-026-210-215                               | 0.101                      | 0.130       | 0.109       | 0.070         | 0.103          |
| 92-029-190-195                               | 0.080                      | 0.101       | 0.093       | 0.070         | 0.086          |
| 92-029-195-200                               | 0.310                      | 0.390       | 0.303       | 0.380         | 0.346          |
| 92-029-215-220                               | 0.822                      | 0.920       | 0.726       | 0.920         | 0.847          |
| 92-033-235-340                               | 0.074                      | 0.082       | 0.069       | 0.040         | 0.066          |
| 92-033-250-255                               | 0.141                      | 0.170       | 0.149       | 0.090         | 0.138          |
| <b>Source: Easdon, 1992.</b>                 |                            |             |             |               |                |



Table 12-1 indicates that results from the MPEL laboratory compared best with original Barringer results. RPA notes that similar values were obtained for total copper assays.

In comparing old El Paso values with the 1992 assay results from holes drilled by MDA for Holcorp close to El Paso holes, Easdon (1992) concluded that:

- El Paso assay results were only for total copper (% TCu).
- Initially, Barringer also reported assays for total copper. However, the El Paso and Barringer %TCu values differed significantly, which “indicated a major discrepancy in the values returned”.

## **12.2 SGV**

Sample preparation and assaying for the recently collected RCD chip samples are carried out at the Mountain States Research and Development International, Inc. (MSRDI) of Vail, Arizona. The following are the various protocols used at MSRDI.

### **12.2.1 ACID SOLUBLE COPPER FOR CHIP SAMPLES**

#### **12.2.1.1 REAGENTS**

Five percent (5%) Sulphuric Acid Solution is used. The solution is prepared by adding 50 ml concentrated sulphuric acid to 950 ml demineralized water in a water bath.

#### **12.2.1.2 SAMPLE**

|                    |                   |
|--------------------|-------------------|
| Copper Concentrate | 0.250 g           |
| Ores               | 0.500 g to 1.00 g |

#### **12.2.1.3 PROCEDURE**

Weigh samples into 150 ml beaker. Add 15 ml of 5% sulphuric acid leach solution. Place on rotary shaking table for one hour. Pour into 100 ml tube add 1 drop Superfloc. Dilute to the mark and mix well. The samples are now ready to read on the atomic absorption instrument.

## 12.2.2 ACID SOLUBLE COPPER FOR DIAMOND DRILL HOLE SAMPLES

Fifty-one buckets of diamond drill core were received at the MSRDI laboratory. Samples preparation and assay procedures are described below.

### 12.2.2.1 SAMPLE PREPARATION

Sample preparation procedures are described as follows:

- Weighing and recording each sample.
- Dry each sample.
- Crush all to nominal minus 3/4 inch. The machinery is set up with the first sample screened and all the others crushed at this setting.
- Blend and split out 1/4 of the crushed product for assay.
- Return the 3/4 to its original bag for storage pending column leach testing.
- Crush the 1/4 cut to nominal minus 10 mesh.
- Blend and split the sample to extract about 300 grams for assay.
- Pulverize and submit each sample for assay.
- Assay for TCu, A/SCu, TZn, ASZn.
- Initial Preparation of the leach facility.

## 12.2.3 ZINC ASSAYS

Prior to the 2004 RC drilling program SGV collected twenty (20) grab samples from various mineralized layers exposed at the western, northern and eastern wall of the open pit, and had them assayed for TCu, ASCu, TZn and ASZn at MSRDI. Assay results indicated >1% TCu values in thirteen samples and >1% TZn in nine of the samples collected. Seven of the samples with >1% TZn content also contain high copper (>1% TCu) values. SGV also collected a sample of a dried material (cake) at the edge of the raffinate pond, which is next to the existing heap leach pad. Assay results also showed that this sample contained >1% TCu and >1% TZn. Based on these results, SGV had the chip samples assayed for zinc for all of the RC holes completed in the recent program. Some of the new RCD holes had similar relatively high (>1% TZn) values.

RPA notes that the presence of zinc has not been recorded in any of the old technical documents reviewed to date. It is possible that this zinc content is due to the

presence of a zinc oxide mineral, although mineralogical studies have not been carried out to confirm this. RPA also notes that SGV is currently considering possible methods to recover the zinc from the mineralized rock at Emerald Isle. One method that is being considered is the acid purification unit (APU) technology used at the CEZinc plant in Valleyfield, Québec, where zinc is removed from sulphuric acid by electrowinning through the use of fine mesh resin (Sheedy, 1998). This, however, is at the conceptual stage and data are not yet available for review.

## 13 DATA VERIFICATION

### 13.1 VERIFICATION OF HISTORICAL DATA

During the Holcorp drilling campaign on the project area data verification and quality control was done by company personnel. RPA understands that assay values of TCu and ASCu available for a set of 68 samples show that both sets of values have similar frequency distribution and indicate almost 1:1 correlation (Arimetco, 1995). RPA, however, is uncertain about the locations of the samples provided by Arimetco.

The 2004 RCD drilling program was undertaken by SGV to confirm the results of earlier rotary drilling by El Paso. As noted in the Drilling section, fifteen El Paso holes were twinned by the SGV RCD holes. In addition, four of the SGV RCD holes were twinned by diamond drill core holes also drilled by SGV.

Results of the previous drilling are compared with the SGV RCD twinned holes in Table 13-1. Although there is considerable variability between the TCu grades in individual sets of twinned holes, the overall average grade of each dataset is within 15% (Table 13-1). In RPA's view, the recent SGV RCD holes confirm in general the results of the earlier drilling.

| <b>TABLE 13-1 COMPARISON OF EL PASO AND SGV RCD DRILLING RESULTS</b> |                            |                          |                               |                           |                            |                          |                               |
|--|----------------------------|--------------------------|-------------------------------|---------------------------|----------------------------|--------------------------|-------------------------------|
| <b>SGV - Emerald Isle Deposit</b>                                    |                            |                          |                               |                           |                            |                          |                               |
| <b>El Paso Drill Hole No.</b>  | <b>Min. Interval (ft.)</b> | <b>Avg. grade (%TCu)</b> | <b>Grade x Thickness (GT)</b> | <b>SGV Drill Hole No.</b> | <b>Min. Interval (ft.)</b> | <b>Avg. grade (%TCu)</b> | <b>Grade x Thickness (GT)</b> |
| EP-62  | 55                         | 0.58                     | 32.1                          | WEP-62                    | 55                         | 0.34                     | 18.9                          |
| EP-63  | 85                         | 0.63                     | 53.3                          | WEP-63                    | 85                         | 0.48                     | 41.0                          |
| EP-64  | 55                         | 0.60                     | 32.9                          | WEP-64                    | 55                         | 0.31                     | 17.3                          |
| EP-65  | 25                         | 0.27                     | 6.7                           | WEP-65                    | 25                         | 0.17                     | 4.1                           |
| EP-66  | 60                         | 0.46                     | 27.8                          | WEP-66                    | 60                         | 0.27                     | 16.0                          |
| EP-67  | 100                        | 0.44                     | 44.1                          | WEP-67                    | 100                        | 0.29                     | 29.2                          |
| EP-71  | 85                         | 0.67                     | 57.0                          | WEP-71                    | 85                         | 0.67                     | 57.0                          |
| EP-72  | 65                         | 0.75                     | 48.6                          | WEP-72                    | 65                         | 0.47                     | 30.3                          |
| EP-73  | 60                         | 0.35                     | 21.2                          | WEO-71                    | 60                         | 0.38                     | 21.8                          |
| EP-74  | 35                         | 0.30                     | 10.6                          | WEP-74                    | 35                         | 0.53                     | 18.7                          |
| 92-27  | 35                         | 0.22                     | 7.7                           | W92-27                    | 35                         | 0.45                     | 15.8                          |
| 92-28  | 45                         | 0.37                     | 16.6                          | W92-28                    | 45                         | 0.63                     | 28.6                          |
| 92-29  | 55                         | 0.33                     | 18.1                          | W92-29                    | 55                         | 0.50                     | 27.6                          |
| 92-30  | 45                         | 0.37                     | 16.5                          | W92-30                    | 45                         | 0.33                     | 14.8                          |
| 92-31  | 25                         | 0.30                     | 7.6                           | W92-31                    | 25                         | 0.30                     | 7.6                           |
| <b>Averages</b>  | <b>55</b>                  | <b>0.48</b>              | <b>26.7</b>                   |                           | <b>55</b>                  | <b>0.42</b>              | <b>23.2</b>                   |
| <b>Source: SGV, 2005.</b>  |                            |                          |                               |                           |                            |                          |                               |

The SGV 2004 RCD results are compared with the SGV twinned diamond core holes in Table 13-2. It can be seen that the diamond drill hole results confirm the 2004 RCD results, although there is some variation in individual sets of twinned holes.

| <b>TABLE 13-2 COMPARISON OF SGV REVERSE CIRCULATION AND DIAMOND DRILLING RESULTS</b> |                            |                          |                               |                                   |                            |                          |                               |
|--|----------------------------|--------------------------|-------------------------------|-----------------------------------|----------------------------|--------------------------|-------------------------------|
| <b>SGV - Emerald Isle Deposit</b>  |                            |                          |                               |                                   |                            |                          |                               |
| <b>SGV RCD Hole No.</b>  | <b>Min. Interval (ft.)</b> | <b>Avg. grade (%TCu)</b> | <b>Grade x Thickness (GT)</b> | <b>SGV Diamond Drill Hole No.</b> | <b>Min. Interval (ft.)</b> | <b>Avg. grade (%TCu)</b> | <b>Grade x Thickness (GT)</b> |
| WEP-62   | 55                         | 0.34                     | 18.9                          | CEP-62                            | 55                         | 0.49                     | 27.2                          |
| WEP-64   | 55                         | 0.31                     | 17.3                          | CEP-64                            | 55                         | 0.30                     | 16.5                          |
| WEP-71   | 85                         | 0.67                     | 57.0                          | CEP-71                            | 90                         | 0.60                     | 53.7                          |
| W-30   | 55                         | 0.34                     | 18.8                          | CW-30                             | 55                         | 0.37                     | 20.4                          |
| <b>Averages</b>  | <b>63</b>                  | <b>0.45</b>              | <b>28.0</b>                   |                                   | <b>64</b>                  | <b>0.46</b>              | <b>29.5</b>                   |
| <b>Source: SGV, 2005.</b>  |                            |                          |                               |                                   |                            |                          |                               |

## **13.2 VERIFICATION OF RECENT DATA BY SGV**

During the recent drilling program, data verification was done by Mr. Gary Clifton, Project Geologist with SGV. Mr Clifton also designed the logging and sampling procedures for the field crew as described under Sampling Methods and Approach. RPA is of the opinion that these procedures meet standard industry practice.

## **13.3 SGV CHECK ASSAYS**

As part of its 2004 exploration program, SGV selected thirty-six samples from three drill holes, and sent them to American Assay Laboratories (American), in Reno, Nevada, for check assays. These represent fourteen samples from Drill Hole No. WEP-67, ten samples from Drill Hole No. W-31, and twelve samples from Drill Hole No. WEP-62. Results are presented in Table 13-3 and Figure 13-1, and they show that there is very good correlation between the two sets of results, although the MSRDI values tend to be slightly higher.

SGV carried out further check assays by having a number of assays done at ACTLABS-Skyline laboratories. Results are presented in Table 13-4, Figures 13-1 and 13-2, and show a good correlation between the two sets of data for total copper. Acid soluble copper values show very good correlation between the two laboratories (Figure 13-2).

**TABLE 13-3 CHECK ASSAY RESULTS 2004-2005, MSRDI VS. AMERICAN ASSAY LABS**  
**SGV – Emerald Isle Project**

| Drill Hole No. | Sample No. |          | MSRDI Result | American Result |       |
|----------------|------------|----------|--------------|-----------------|-------|
|                | From (ft.) | To (ft.) | % TCu        | ppm Cu          | % TCu |
| WEP-67         | 130        | 135      | 0.005        | 48              | 0.005 |
| WEP-67         | 135        | 140      | 0.004        | 40              | 0.004 |
| WEP-67         | 140        | 145      | 0.003        | 45              | 0.005 |
| WEP-67         | 145        | 150      | 0.003        | 39              | 0.004 |
| WEP-67         | 150        | 155      | 0.002        | 35              | 0.004 |
| WEP-67         | 155        | 160      | 0.004        | 30              | 0.003 |
| WEP-67         | 160        | 165      | 0.004        | 84              | 0.008 |
| WEP-67         | 165        | 170      | 0.004        | 44              | 0.004 |
| WEP-67         | 170        | 175      | 0.005        | 74              | 0.007 |
| WEP-67         | 175        | 180      | 0.002        | 228             | 0.023 |
| WEP-67         | 240        | 240      | 0.417        | 3,990           | 0.399 |
| WEP-67         | 245        | 245      | 0.415        | 4,340           | 0.434 |
| WEP-67         | 250        | 250      | 0.375        | 3,250           | 0.325 |
| WEP-67         | 255        | 260      | 0.288        | 2,590           | 0.259 |
| W-31           | 260        | 265      | 0.162        | 1,250           | 0.125 |
| W-31           | 265        | 270      | 0.115        | 818             | 0.082 |
| W-31           | 270        | 275      | 0.136        | 1,110           | 0.111 |
| W-31           | 275        | 280      | 0.124        | 1,170           | 0.117 |
| W-31           | 280        | 285      | 0.310        | 2,090           | 0.209 |
| W-31           | 285        | 290      | 0.800        | 7,330           | 0.733 |
| W-31           | 290        | 295      | 0.620        | 4,800           | 0.480 |
| W-31           | 295        | 300      | 0.322        | 2,850           | 0.285 |
| W-31           | 300        | 305      | 0.142        | 1,080           | 0.108 |
| W-31           | 305        | 310      | 0.126        | 799             | 0.080 |
| WEP-62         | 170        | 175      | 0.029        | 343             | 0.034 |
| WEP-62         | 175        | 180      | 0.074        | 566             | 0.057 |
| WEP-62         | 180        | 185      | 0.105        | 1,160           | 0.116 |
| WEP-62         | 185        | 190      | 0.236        | 2,260           | 0.226 |
| WEP-62         | 190        | 195      | 0.453        | 5,810           | 0.581 |
| WEP-62         | 195        | 200      | 0.275        | 2,900           | 0.290 |
| WEP-62         | 200        | 205      | 0.238        | 2,060           | 0.206 |
| WEP-62         | 205        | 210      | 0.414        | 3,170           | 0.317 |
| WEP-62         | 210        | 215      | 0.690        | 9,860           | 0.987 |
| WEP-62         | 215        | 220      | 0.312        | 3,450           | 0.345 |
| WEP-62         | 220        | 225      | 0.237        | 3,310           | 0.331 |
| WEP-62         | 225        | 230      | 0.490        | 6,290           | 0.629 |

Source: SGV, 2005.

**Note:**

1. MSRDI assays by wet chemical method.
2. American assays by 69-element ICP-2A method.

| <b>TABLE 13-4 CHECK ASSAY RESULTS 2004-2005, MSRDI VS. ACTLAB-SKYLINE LABORATORIES</b> |                       |                   |                 |                    |                      |                     |                       |
|--|-----------------------|-------------------|-----------------|--------------------|----------------------|---------------------|-----------------------|
| <b>SGV – Emerald Isle Deposit</b>  |                       |                   |                 |                    |                      |                     |                       |
| <b>MSRDI No.</b>   | <b>Drill Hole No.</b> | <b>From (ft.)</b> | <b>To (ft.)</b> | <b>% TCu MSRDI</b> | <b>% TCu ACTLABS</b> | <b>% ASCu MSRDI</b> | <b>% ASCu ACTLABS</b> |
| 1612   | CW-30                 | 275               | 280             | 0.590              | 0.650                | 0.137               | 0.110                 |
| 1619   | CW-30                 | 310               | 312             | 0.040              | 0.040                | 0.012               | 0.010                 |
| 1661   | CEP-64                | 280               | 285             | 0.083              | 0.080                | 0.060               | 0.020                 |
| 1687   | CEP-71                | 240               | 245             | 1.260              | 1.270                | 1.240               | 1.160                 |
| 1688   | CEP-71                | 245               | 250             | 1.720              | 1.760                | 1.680               | 1.540                 |
| 1719   | CEP-62                | 245               | 251.5           | 0.316              | 0.330                | 0.263               | 0.250                 |
| <b>Averages</b>  |                       |                   |                 | <b>0.668</b>       | <b>0.688</b>         | <b>0.565</b>        | <b>0.515</b>          |
| <b>Source: MSRDI, 2005.</b>  |                       |                   |                 |                    |                      |                     |                       |



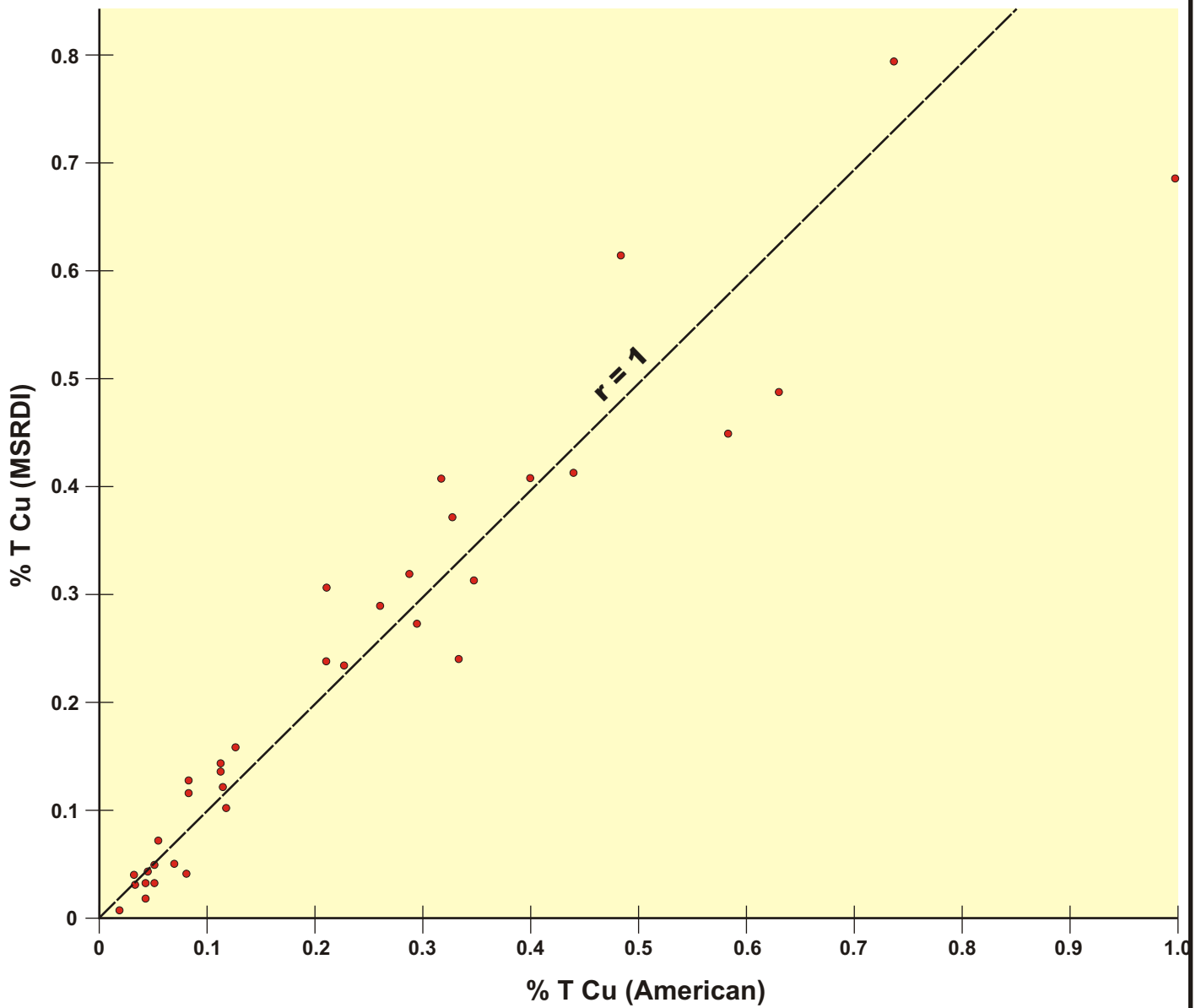


Figure 13-1

**Note:**

**MSRDI:** Mountain State Research and Development International Inc. Laboratories, Vail, Arizona.

**American:** American Assay Laboratories, Sponks, Nevada.

**Ste-Genevieve Resources Ltd.**  


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***Emerald Isle Copper Project***  
*Arizona, U.S.A.*  
**Check Assay Results**  
**Correlation of MSRDI and**  
**American Assay Lab Results (2005)**

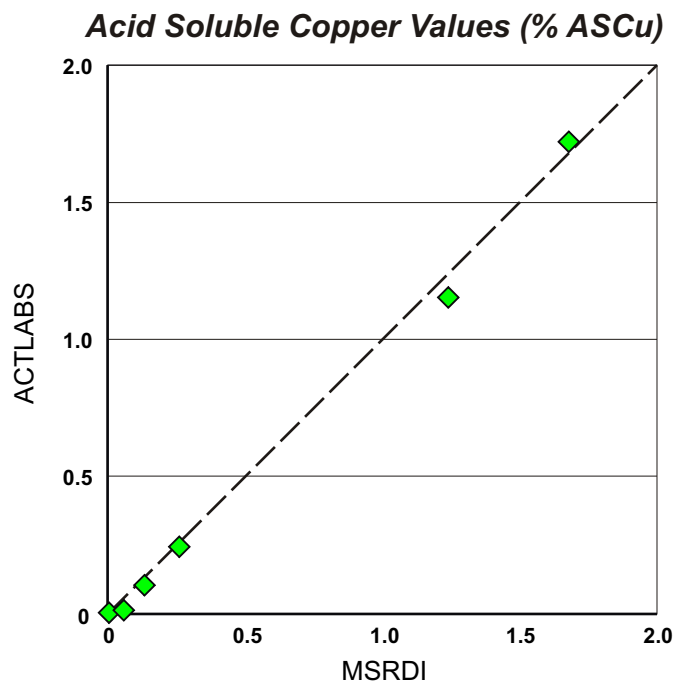
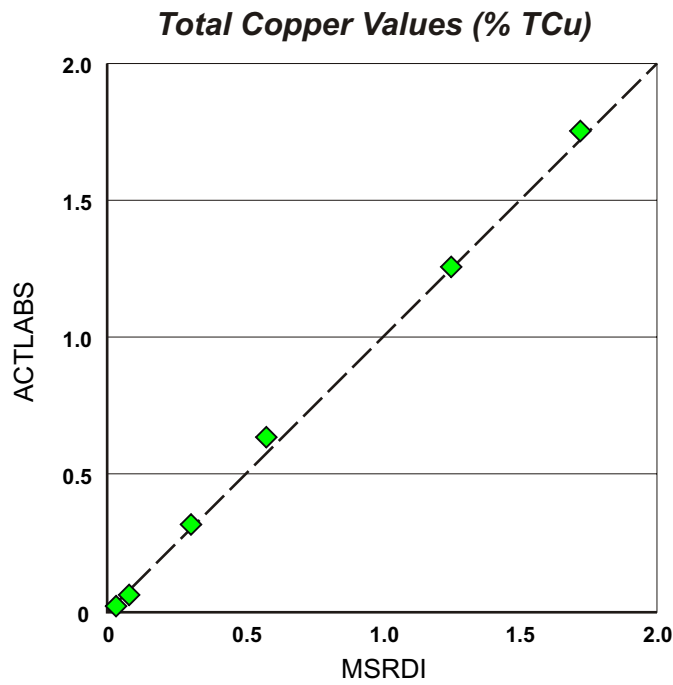


Figure 13-2

**Ste-Genevieve Resources Ltd.**

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***Emerald Isle Project***  
*Mohave County, Arizona*

**Check Assay Results**  
**MSRDI vs. ACTLABS (2005)**

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## 13.4 INDEPENDENT SAMPLING BY RPA

During the first site visit, RPA collected three grab samples from the Emerald Isle open pit, and sent them to SGS Laboratories in Don Mills, Ontario, for independent assays for total copper, soluble copper and gold. The total copper content was determined by the Induced Couple Plasma (ICP) method and the soluble copper content was determined by treating the sample with 5% sulphuric acid. Table 13-5 provides the sample description and assay results.

| <b>TABLE 13-5 RPA INDEPENDENT SAMPLING RESULTS (JUNE 2004)</b> |               |              |               |                       |  |
|--|---------------|--------------|---------------|-----------------------|--|
| <b>SGV – Emerald Isle Project</b>                              |               |              |               |                       |  |
| <b>Sample Number</b>   | <b>ppb Au</b> | <b>% TCu</b> | <b>% ASCu</b> | <b>Ratio ASCu/TCu</b> | <b>Description</b>   |
| A026357  | 7             | 0.94         | 0.30          | 32%                   | Grab sample of "Mineralized Unit". Dark conglomerate with Cu staining from wall of open pit.                             |
| A026390  | 18            | 0.43         | 0.30          | 70%                   | Grab sample with a core of dark mineral around organic stem and acicular crystals surrounding the core, at bottom of pit |
| EI-1   | <5            | 0.29         | 0.17          | 59%                   | Grab sample of dark rock along pit access road.  |

The above results, while not representative of the deposit, show soluble copper to total copper ratios ranging from 32% to 70%. All zinc assays were >1% TZn. Sample preparation and assay procedures at SGS are described below.

### 13.4.1 SAMPLE PREPARATION

Samples received are dried and crushed to –10-mesh. Samples ranging from 200 g to 300 g are split out for pulverizing. The remainder is re-bagged to return to the Client. The pulverized sample is blended and bagged for assay.

### 13.4.2 ASSAYING

#### 13.4.2.1 TOTAL COPPER DETERMINATIONS

The analytical method used for the determination of total copper at SGS was the ICA50 Method, which is used for the determinations of base metals (Co, Cu, Ni, Pb,

and Zn) by sodium peroxide fusion and ICP-OES. Details of the analytical procedures are as follows:

- Typical sample size: 0.20 g
- Type of sample applicable (media): Crushed and Pulverized rocks, soils and sediments
- Sample preparation technique used: Crushed and pulverized rock, soil and /or sediment samples are fused by Sodium peroxide in zirconium crucibles and dissolved using dilute HNO<sub>3</sub>.
- Method of analysis used: The digested sample solution is aspirated into the inductively coupled plasma Optical Emission Spectrometer (ICP-OES) where the atoms in the plasma emit light (photons) with characteristic wavelengths for each element. This light is recorded by optical spectrometers and when calibrated against standards the technique provides a quantitative analysis of the original sample.
- Data reduction by: The results are exported via computer, on line, data fed to the Laboratory Information Management System (LIMS CCLAS EL) with secure audit trail.
- Quality Control: The ICP-OES is calibrated with each work order. An instrument blank and calibration check is analyzed with each run. One preparation blank and reference material is analyzed every 46 samples, one duplicate every 12 samples. All QC samples are verified using LIMS. The acceptance criteria are statistically controlled and control charts are used to monitor accuracy and precision. Data that falls outside the control limits is investigated and repeated as necessary.

#### **13.4.2.2 ACID SOLUBLE COPPER DETERMINATIONS**

The reagent used for the determination of acid soluble copper in rock samples is 5% sulphuric acid solution. This is prepared by adding 50 ml concentrated sulphuric acid to 950 ml distilled water in a water bath. The sample sizes used for assays are 0.250 g for copper concentrate (regular samples) and ranging from 0.5 g to 1.0 g for ore samples. The procedure for assays is as follows:

- Weigh samples into 150 ml beaker.
- Add 15 ml of 5% sulphuric acid leach solution.
- Place on rotary shaking table for one hour.
- Pour into 100 ml tube add 1 drop Superfloc.
- Dilute to the mark and mix well.
- Determination of copper content by the atomic absorption (AA) method.

During the second site visit in December 2004, RPA collected eighteen samples of the SGV RCD chips from the stored rice bags, as described above, and sent them to SGS Laboratories in Don Mills, Ontario for TCu, ASCu, TZn and ASZn determinations. The sample preparation and assaying procedures were the same as for the first batch of independent samples collected during the first site visit.

Table 13-6 and Figure 13-3 compare the SGV and RPA assay results for TCu and ASCu values. In general, the RPA TCu assay values are higher than the SGV values, by 20% on average. The RPA ASCu values are also higher than the SGV values, by almost 50% on average. The average ratio of ASCu to TCu is 69% for the SGV samples and 86% for the RPA samples. The RPA check sampling confirms the SGV drilling results in general and suggests that the SGV values may be on the low side: more check sampling is needed.

| <b>TABLE 13-6 RPA INDEPENDENT SAMPLING RESULTS (DECEMBER 2004)</b> |                     |                  |                |                            |             |                             |             |
|--|---------------------|------------------|----------------|----------------------------|-------------|-----------------------------|-------------|
| <b>SGV – Emerald Isle Project</b>                                  |                     |                  |                |                            |             |                             |             |
| <b>RPA Sample No.</b>  | <b>SGV Hole No.</b> | <b>From (ft)</b> | <b>To (ft)</b> | <b>Assay Value (% TCu)</b> |             | <b>Assay Value (% ASCu)</b> |             |
|  |                     |                  |                | <b>SGV</b>                 | <b>RPA</b>  | <b>SGV</b>                  | <b>RPA</b>  |
| M619133  | WEP 67              | 195              | 200            | 0.41                       | 0.55        | 0.27                        | 0.51        |
| M619134  | WEP 67              | 200              | 205            | 0.21                       | 0.24        | 0.13                        | 0.17        |
| M619135  | WEP 67              | 205              | 210            | 0.24                       | 0.23        | 0.13                        | 0.15        |
| M619136  | WEP 67              | 210              | 215            | 0.16                       | 0.19        | 0.13                        | 0.12        |
| M619137  | WEP 67              | 215              | 220            | 0.26                       | 0.37        | 0.23                        | 0.39        |
| M619138  | WEP 67              | 220              | 225            | 0.31                       | 0.32        | 0.24                        | 0.27        |
| M619139  | WEP 67              | 225              | 230            | 0.36                       | 0.53        | 0.28                        | 0.43        |
| M619140  | WEP 72              | 190              | 195            | 0.05                       | 0.04        | 0.04                        | 0.04        |
| M619141  | WEP 72              | 195              | 200            | 0.04                       | 0.03        | 0.02                        | 0.04        |
| M619142  | WEP 72              | 205              | 210            | 0.10                       | 0.08        | 0.06                        | 0.08        |
| M619143  | WEP 72              | 210              | 215            | 0.15                       | 0.14        | 0.11                        | 0.16        |
| M619144  | WEP 72              | 215              | 220            | 0.18                       | 0.14        | 0.14                        | 0.16        |
| M619145  | W92-28              | 240              | 245            | 0.15                       | 0.32        | 0.05                        | 0.16        |
| M619146  | W92-28              | 245              | 250            | 0.33                       | 0.68        | 0.09                        | 0.54        |
| M619147  | W92-28              | 250              | 255            | 0.94                       | 1.13        | 0.87                        | 1.05        |
| M619148  | W92-28              | 255              | 260            | 0.91                       | 0.90        | 0.80                        | 0.74        |
| M619149  | W92-28              | 260              | 265            | 0.54                       | 0.61        | 0.25                        | 0.54        |
| M619150  | W92-28              | 265              | 270            | 0.57                       | 0.63        | 0.25                        | 0.55        |
| <b>Averages</b>  |                     |                  |                | <b>0.33</b>                | <b>0.40</b> | <b>0.23</b>                 | <b>0.34</b> |
| <b>Average ASCu/TCu Ratio</b>                                      |                     |                  |                |                            |             | <b>69%</b>                  | <b>86%</b>  |

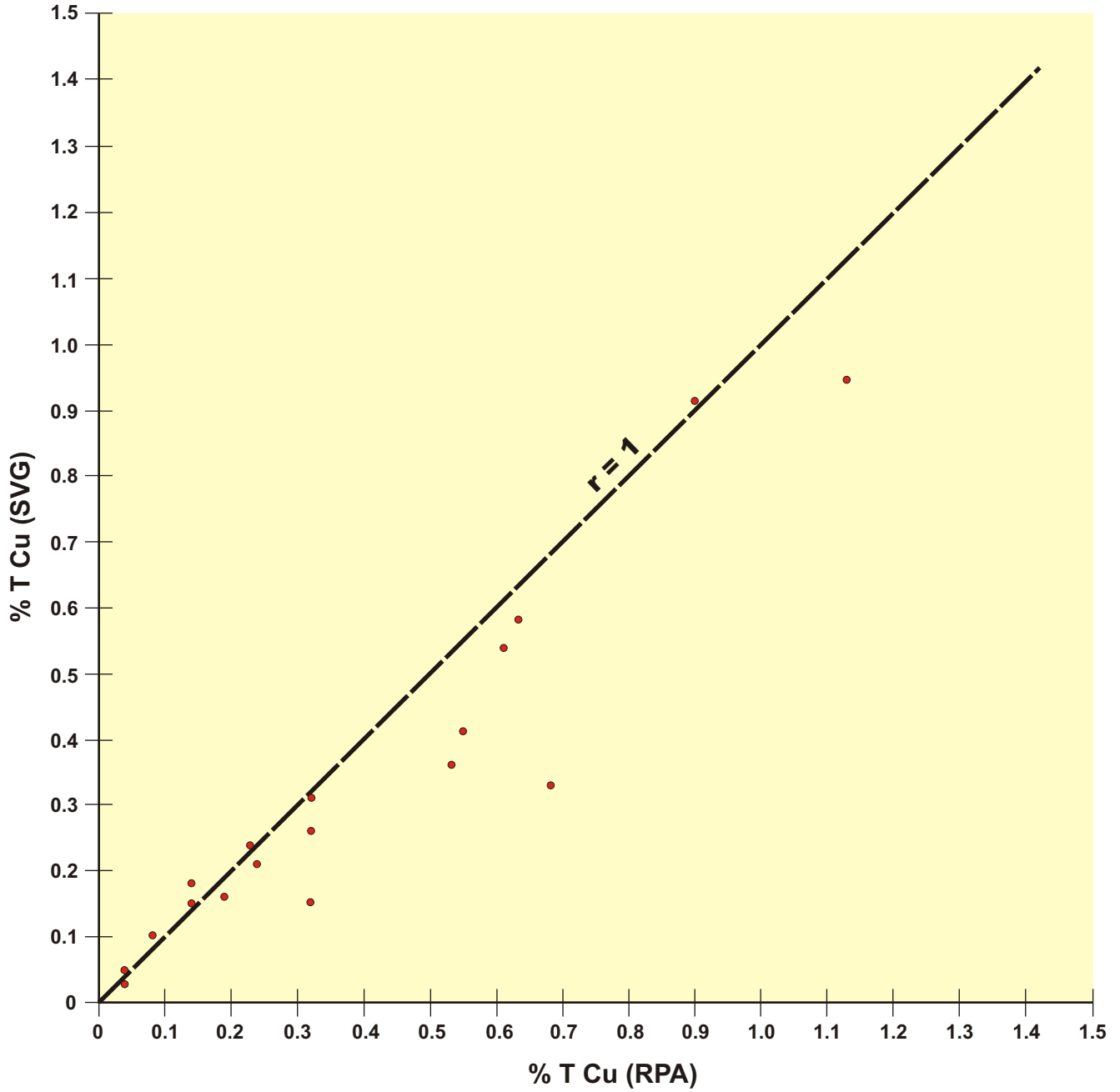


Figure 13-3

**Ste-Genevieve Resources Ltd.**  
*Emerald Isle Project*  
Arizona, U.S.A.  
**Plot of SVG vs. RPA Results**  
**Total Copper (% T Cu) Values of**  
**Independent Samples Collected by RPA**

## **14 MINERAL RESOURCES**

### **14.1 GENERAL STATEMENT**

RPA has estimated the Mineral Resources of the Emerald Isle deposit using the results of the previous rotary and RCD holes. As part of its estimate, RPA carried out a new interpretation of the geology and the mineralized zone and developed a block model of the copper deposit. The RPA resource estimate is in accordance with the Mineral Resource/Reserve Classification as recommended by the CIM Committee on Mineral Resources and Mineral Reserves.

### **14.2 DATABASE**

RPA has estimated the Mineral Resources of the Emerald Isle deposit, using the results of the previous 90 El Paso rotary holes and 45 Holcorp/MDA RCD holes. The results of the 2004 SGV RCD drill holes, although not used in the resource estimate, confirmed overall the results of the old holes that they twinned, as discussed under Data Verification.

RPA received a hard copy database of drill logs and assay results from the 135 previous drill holes and a number of cross sections also in hard copy form. RPA converted the drill hole database into digital format and loaded it into Gemcom software to enable interpretation of geology and mineralized units. RPA retained the geology codes as before for rock types. These were (2) for alluvium, (3) for the Gila Conglomerate, (4) for altered granite and (5) for fresh granite. RPA merged the recent SGV drill hole data with the older data to form a combined Gemcom drill hole database.

### **14.3 DENSITY MEASUREMENTS**

During the mine planning period in 1992, Arimetco had Kappes, Cassidy & Associates (Kappes Cassidy) of Sparks, Nevada, to carry out twenty density

measurements (duplicates) on ten samples of mineralized material from the Emerald Isle Mine. Kappes Cassidy used the Archimedes Principle to make the density determinations. Results indicated that the average density of the mineralized material was 2.38 g/cc or 13.54 cu. ft./ton (Table 14-1). RPA has used a density factor of 13.54 cu. ft./ton to convert volume to short tons in its Mineral Resource estimate.

| <b>TABLE 14-1 DENSITY DETERMINATIONS</b> |                        |                             |                         |                    |                                    |
|--|------------------------|-----------------------------|-------------------------|--------------------|------------------------------------|
| <b>SGV – Emerald Isle Project</b>        |                        |                             |                         |                    |                                    |
| <b>Sample</b>                            | <b>Dry weight (kg)</b> | <b>Displaced Water (cc)</b> | <b>Measured Density</b> |                    | <b>Remark</b>                      |
|  |                        |                             | <b>g/cc</b>             | <b>cu. ft./ton</b> |                                    |
| EI 1                                     | 5.68                   | 2,169.0                     | 2.619                   | 12.233             | Oxide weathered granite            |
| EI 1                                     | 5.68                   | 2,207.2                     | 2.573                   | 12.451             | Gila Congl. w/Cu-oxide             |
| EI 2                                     | 16.36                  | 6,387.6                     | 2.561                   | 12.510             | Gila Congl. w/Cu-oxide             |
| EI 2                                     | 16.36                  | 6,418.4                     | 2.549                   | 12.568             | Gila Congl. w/Cu-oxide             |
| EI 3                                     | 8.30                   | 3,523.7                     | 2.355                   | 13.604             | Gila Congl. w/Cu-oxide             |
| EI 3                                     | 8.30                   | 3,503.9                     | 2.369                   | 13.523             | Gila Congl. w/Cu-oxide             |
| EI 4                                     | 13.66                  | 6,465.1                     | 2.113                   | 15.162             | Gila Congl. w/Cu-oxide             |
| EI 4                                     | 13.66                  | 6,480.3                     | 2.108                   | 15.198             | Gila Congl. w/Cu-oxide             |
| EI 5                                     | 13.26                  | 5,026.6                     | 2.638                   | 12.144             | Gila Congl. w/Cu-oxide             |
| EI 5                                     | 13.26                  | 4,941.3                     | 2.684                   | 11.936             | Gila Congl. w/Cu-oxide             |
| EI 6                                     | 9.90                   | 3,681.0                     | 2.689                   | 11.914             | Very weathered granite + Cu oxide  |
| EI 6                                     | 9.90                   | 3,676.2                     | 2.693                   | 11.896             | Very weathered granite + Cu oxide  |
| EI 7                                     | 8.68                   | 4,242.7                     | 2.046                   | 15.658             | Weathered/frac. Granite + Cu oxide |
| EI 7                                     | 8.68                   | 4,263.3                     | 2.036                   | 15.735             | Weathered/frac. Granite + Cu oxide |
| EI 8                                     | 1.32                   | 553.4                       | 2.385                   | 13.433             | Gila Conglomerate                  |
| EI 8                                     | 1.32                   | 559.7                       | 2.358                   | 13.587             | Gila Conglomerate                  |
| EI 9                                     | 9.42                   | 3,980.2                     | 2.367                   | 13.535             | Gila Congl. + cobbly Cu oxide      |
| EI 9                                     | 9.42                   | 4,008.8                     | 2.350                   | 13.633             | Gila Congl. + cobbly Cu oxide      |
| EI 10                                    | 17.66                  | 7,161.3                     | 2.466                   | 12.991             | Gila Congl. + cobbly Cu oxide      |
| EI 10                                    | 17.66                  | 7,057.2                     | 2.502                   | 12.805             | Gila Congl. + cobbly Cu oxide      |
| EI 11                                    | 34.56                  | 15,120.0                    | 2.286                   | 14.014             | Gila Congl. + cobbly Cu oxide      |
| EI 11                                    | 34.56                  | 15,900.0                    | 2.174                   | 14.736             | Gila Congl. + cobbly Cu oxide      |
| <b>Average</b>                           |                        |                             | <b>2.380</b>            | <b>13.540</b>      |                                    |

**Source: Albert, 1992.**

## 14.4 GEOLOGICAL INTERPRETATION AND 3D SOLIDS

The drill holes in the Emerald Isle database were plotted on drill sections oriented at grid north-south looking west at 100 ft. intervals, and on horizontal level plans 50 ft. intervals. RPA interpreted the higher grade mineralized unit based on Cu assays with a threshold of approximately 0.3% TCu.



RPA carried out an interpretation of drill hole assay data generated prior to the mining activities at Emerald Isle. These data show that copper mineralization occurs primarily within the Late Tertiary Gila Conglomerate. Copper mineralization is also present in the underlying granitic rocks and occasionally in the overlying Quaternary alluvial material, and even in waste dumps. RPA notes, however, that the copper mineralization reported in the underlying granite may be due at least in part to contamination from the overlying Gila conglomerate during the drilling. In the resource area, the conglomerate fills an elongate and west trending oval-shaped fluvial basin, 2,500 ft. by 1,000 ft., which may have been controlled or affected by some structures, in particular by a set of northeast and northwest trending faults. These features are indicated by:

- The thickness of overburden: Quaternary alluvium is generally thicker on the south side of the pit than on the north side. This indicates a slope to the south, due to tilting(?) after the deposition of the Gila Conglomerate.
- The trend of the vertical thickness of the host conglomerate: this unit is generally relatively flat lying with undulating upper contact with the overlying alluvial gravel and lower contact with granitic rocks. In the eastern part of the pit the thickness of the conglomerate increases gradually (from 0 to 75 ft.) in a west-southwesterly direction. In the southwestern part of the pit, however, the conglomerate is up to 275 ft. thick, but the thickness decreases abruptly south of the current pit wall. This abrupt change in thickness, hence the pre-deposition of the conglomerate, is caused by northwest and northeast faults, in RPA's opinion. Structural thickening of the conglomerate may also have been caused by northwest trending dikes(?) unit 6 marked on TSC's sections.
- Copper mineralization which is similar to a "roll front" feature, i.e. higher grade copper ( $>0.5\%$  TCu) is commonly present in the central portions of the conglomerate unit with relatively lower-grade (0.2% TCu to 0.35% TCu) to medium-grade (0.35% TCu to 0.5% TCu) material associated with the bottom and top parts. At the 0.2% TCu cut-off grade, the mineralized layer ranges in thickness from 50 ft. to 100 ft. These features may indicate different pulses of copper mineralization. Furthermore, in the upper parts of the conglomerate, the low-grade and medium-grade units are interlayered, whereas, in the bottom part only a thin layer of low-grade material is present. RPA further notes that the source of copper mineralization was from the east, because of:
  - Higher-grade copper ( $\geq 0.5\%$  TCu to 5% TCu) is associated with the central part of the fluvial channel (conglomerate), whereas relatively lower-grade copper mineralization (0.2% TCu to 0.5% TCu) is associated with the northern and southern flanks of the fluvial channel.

- A sharp contact between the high-grade and low-grade layers in the eastern part of the pit.
- In general, the granitic rocks intersected in drill holes in the southern part of the pit are relatively fresh, whereas altered granite is intersected in the northern and eastern parts of the pit.
- Grade x thickness contours of pre-stripping copper mineralization, using cut-off values of 0.2% TCu and 15 ft. thickness, indicate a general east-west orientation of the mineralization with secondary northeasterly trends. Only low copper values, however, are associated with the thickest (western) part of the conglomerate (Figure 9-3).

RPA developed a 3D solid using Gemcom software from the mineralized lens outlines on the cross sections. RPA constructed a 3D wireframe model using 3D wobbly polylines that were snapped on to the drill hole intervals. Polylines were created both on cross sections and on level plans. The polylines were joined together using tie lines. At model extremities, polylines were extrapolated for approximately 50 ft. beyond the last drill hole intercept or terminated at the intersections with interpreted faults cutting the lens. All wireframes were clipped at the overburden surface, or the topography surface of the open pit, and all solids were validated. Figure 14-1 shows the 3D view of the old pit and the mineralized zone.

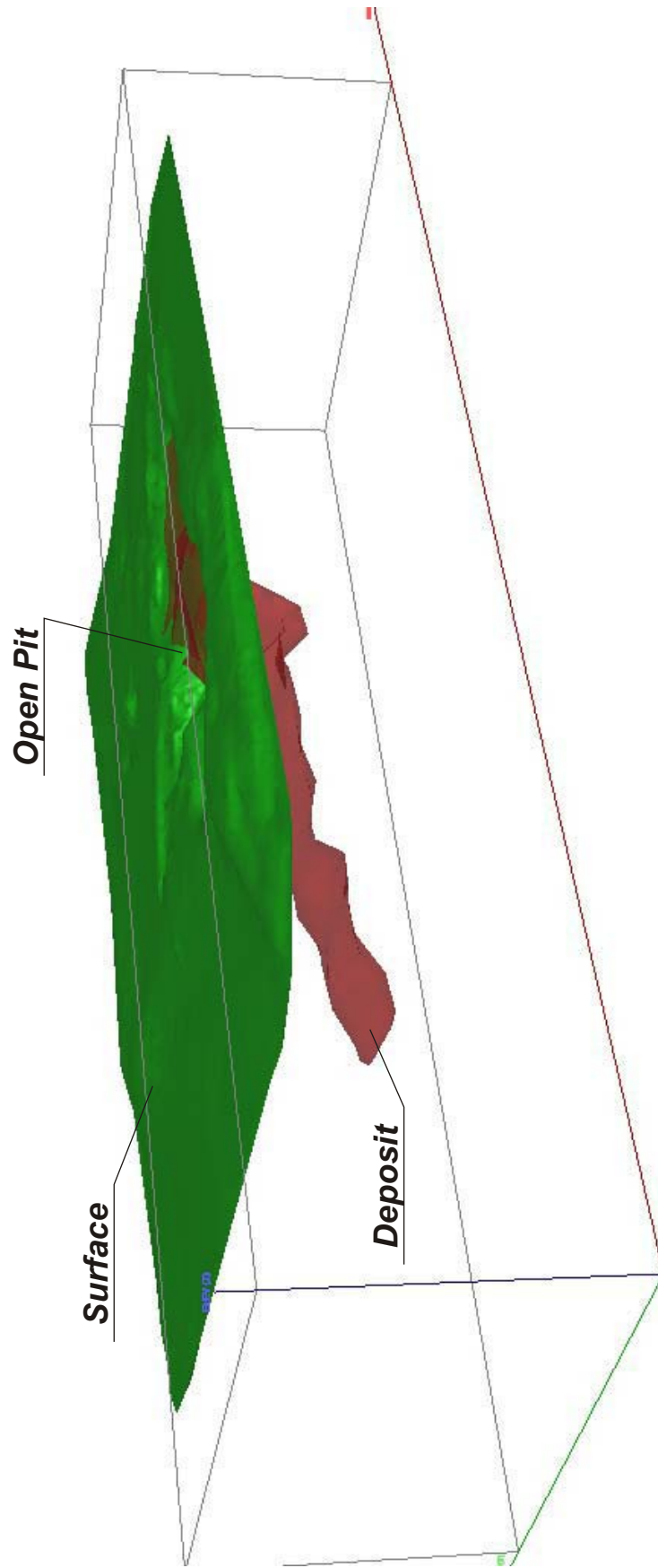


Figure 14-1

**Ste-Genevieve Resources Ltd.**

***Emerald Isle Property***  
*Mohave County, Arizona*

**3D View of the  
Emerald Isle Deposit**

**14.5 COMPOSITING AND STATISTICS**

Of the total number of copper assays (2,496) 420 assays were inside the 3D solid and were used in the block model. RPA composited assays into 10 ft. intervals down hole, for intervals inside the mineralized lens. Composites less than 2 ft. long were excluded from the composite database. Assay values were not capped (cut) in calculating composite values. There are a total of 207 drill hole composites within the mineralized conglomerate. Statistics for the drill hole composites are shown in Table 14-2 and Figure 14-2.

| <b>TABLE 14-2 STATISTICS OF DRILL HOLE (10 FT.) COMPOSITES</b> |              |
|--|--------------|
| <b>SGV – Emerald Isle Deposit</b>                              |              |
| <b>Statistic</b>   | <b>% TCu</b> |
| Mean   | 0.58         |
| Median   | 0.48         |
| Max. Value   | 3.34         |
| Standard Deviation   | 0.41         |
| Coefficient of Variance  | 0.70         |
| Total number   | 360          |

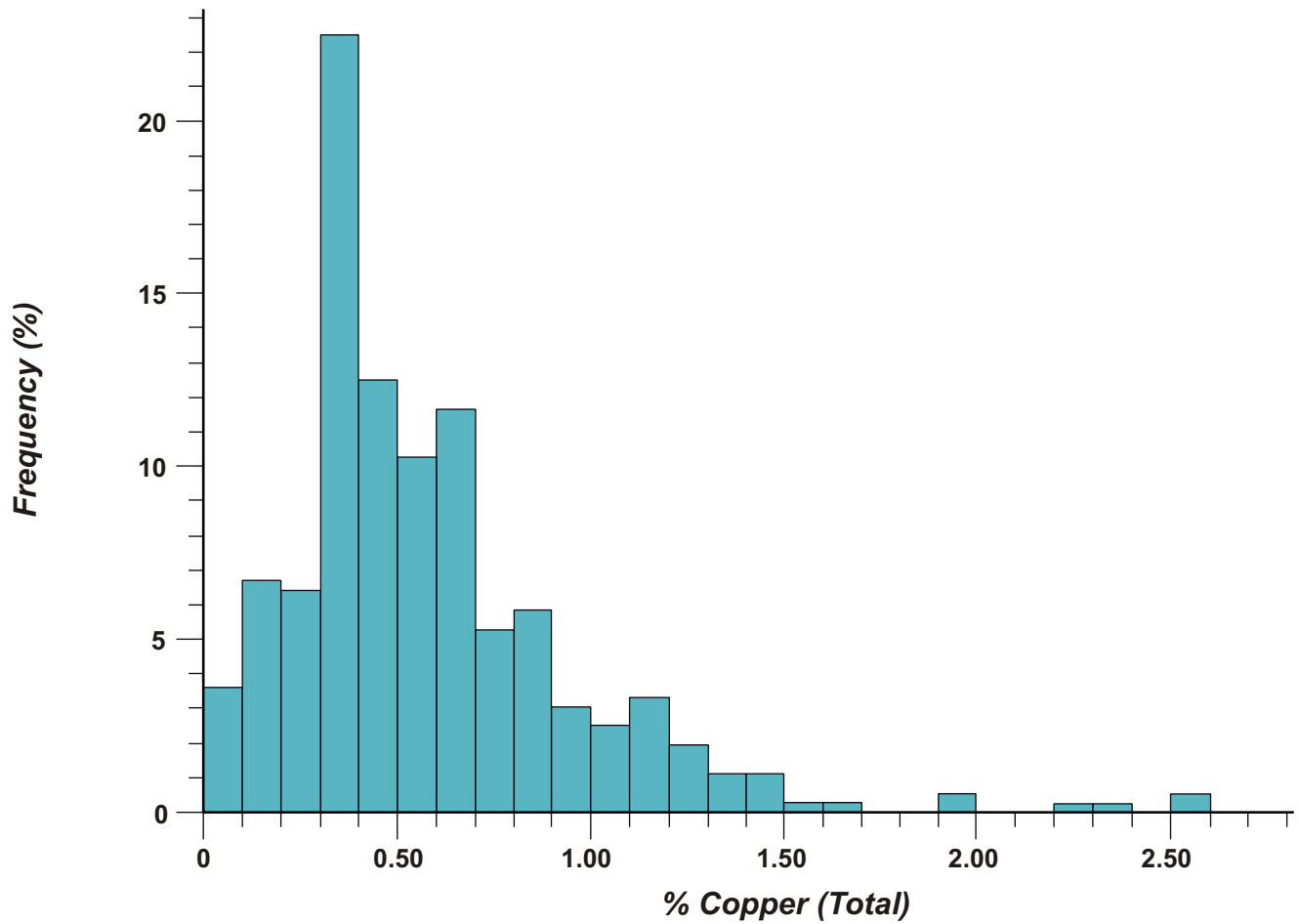


Figure 14-2

**Ste-Genevieve Resources Ltd.**  
*Emerald Isle Deposit*  
*Mohave County, Arizona*  
**Histogram of Composite Assay Values**

## 14.5 BLOCK MODEL AND VALIDATION

A 3D block model was constructed in Gemcom based on the co-ordinate system used for the Emerald Isle property. The block size is 20 ft. (E-W) by 20 ft. (N-S) by 10 ft. (vertical). The blocks were coded as to “ore” or waste or air, based on the location of the centroid of the block relative to the 3D solids of the mineralized zone.

Grades were interpolated into the mineralized lens using only composites within the lens using ordinary kriging. RPA constructed variograms to test grade continuity in a number of different orientations. The horizontal variograms have a range in the order of 300 ft. and the vertical variogram has a range of about 50 ft. RPA found that orienting the along strike variogram search at grid north with an average dip of  $-10^{\circ}$  to West was best for modelling the mineralized zones. The axes of the search ellipse were 300 ft. (east-west), 300 ft. (north-south) and 50 ft. vertically. The search ellipse was oriented almost flat with a low angle dip to the west to match the orientation of the mineralized zone. A minimum of two and a maximum to 30 composites were required for interpolation, with a maximum of 2 composites for any drill hole.

RPA used two methods to check and validate the block model. These were:

- Visual inspection and comparison of block grades with composite grades.
- Statistical comparison of composite and block grade distributions.

The visual inspection appeared reasonable. The block and composite grade statistics compare reasonably well (Table 14-3). In RPA’s view the Emerald Isle deposit block model is valid, reasonable and appropriate for Mineral Resource estimation.

| <b>TABLE 14-3 COMPARISON OF BLOCK GRADES AND COMPOSITE GRADES</b> |                             |                                 |
|---|-----------------------------|---------------------------------|
| <b>SGV - Emerald Isle Deposit</b>                                 |                             |                                 |
| <b>Statistic</b>  | <b>Block Grades (% TCu)</b> | <b>Composite Grades (% TCu)</b> |
| Mean  | 0.58                        | 0.58                            |
| Median  | 0.52                        | 0.48                            |
| Standard Deviation  | 0.26                        | 0.41                            |
| Maximum   | 2.64                        | 3.34                            |
| Coefficient of Variation  | 0.45                        | 0.71                            |
| Number  | 12,331                      | 360                             |

## 14.6 CUT-OFF GRADE

For the purposes of reporting the Mineral Resource, RPA has estimated a cut-off grade based on the approximate average copper price, operating costs and expected copper recovery using data provided by SGV.

- Copper price assumed to be US\$1.50 per lb. as a long term price.
- Operating costs US\$6.98 per ton provided by SGV, based on an overall strip ratio of 3:1 from a Western States Engineering 2004 study.
- Copper recovery of 75% based on 62% recovery during Arimetco 1992 operation and available testwork that indicated 75% recovery if leaching had continued.

$$\text{Cut-off} = \text{cost} / (\text{price} * \text{recovery}) = \text{US}\$6.98 / (\text{US}\$1.50 * 0.75) = 6.2 \text{ lb/ton} = 0.31\% \text{ TCu.}$$

RPA recommends that a cut-off grade of 0.3% TCu be used to report Mineral Resources. RPA notes that the data provided by SGV are preliminary at this time and that the cut-off grade may be refined as more work is done on the Emerald Isle project.

Cut-off grade is inversely proportional to copper price. Currently copper price is significantly higher than the US\$1.50 per lb. As noted in the next section, however, the Mineral resource is almost the same at lower cut-off grades.

## 14.7 CLASSIFICATION OF MINERAL RESOURCES

All of the Mineral Resources are classified as Indicated Mineral Resources because of the good apparent continuity of mineralization and the drill hole spacing relative to the semi-variogram range. Drill hole spacing is in the order of 100 ft. and the semi-variogram range is 300 ft. in the horizontal plane. In RPA’s view, none of the resources can be classified as Measured at this time because of the variability in twinned drill hole results, as discussed under Data Verification. Table 14-4 lists the Emerald Isle Indicated Mineral Resources at a range of cut-off grades. As noted above, RPA recommends reporting the Mineral Resources at the 0.3% TCu cut-off.

RPA notes that almost all of the blocks in the Emerald Isle wireframe are above the 0.3% TCu cut-off grade, and that the Mineral Resource changes little at lower cut-off grades.

| <b>TABLE 14-4 RPA MINERAL RESOURCE ESTIMATE</b>                                |                       |                             |
|--|-----------------------|-----------------------------|
| <b>SGV – Emerald Isle Deposit</b>  |                       |                             |
| <b>Indicated Mineral Resources</b>   |                       |                             |
| <b>Cut-off grade (% TCu)</b>   | <b>Tons (rounded)</b> | <b>Total Copper (% TCu)</b> |
| 0.8  | 420,000               | 1.00                        |
| 0.7  | 650,000               | 0.91                        |
| 0.6  | 940,000               | 0.83                        |
| 0.5  | 1,380,000             | 0.74                        |
| 0.4  | 1,870,000             | 0.66                        |
| <b>0.3</b>   | <b>2,220,000</b>      | <b>0.62</b>                 |
| 0.2  | 2,310,000             | 0.60                        |
| 0.1  | 2,330,000             | 0.60                        |
| <b>Note: Tonnage is estimated using a density factor of 13.54 cu. ft./ton.</b> |                       |                             |



## **15 MINERAL PROCESSING AND METALLURGICAL TESTING**

### **15.1 ARIMETCO 1988**

Previous metallurgical testwork on the Emerald Isle deposit was done by MSRDI and at Cyprus Baghdad's laboratory at Baghdad, Arizona. In January 1988, Arimetco collected samples of ore and tailings from Emerald Isle for leaching at Cyprus Baghdad's laboratory. This was done as part of a feasibility study by Arimetco. A 55 gal drum of "high-grade ore" was mixed and split to obtain 50 lbs. of sample for analysis and leaching evaluation. The head grades were; 1.20% TCu and 1.15% ASCu (Arimetco, 1988).

Portions of the sample material were crushed to -3 mm and 10 g increments were leached in bottles with sulphuric acid solutions ranging from 5 g/l to 15 g/l. Acid consumption ranged from 5.8 g to 6.0 g of sulphuric acid per gram of copper recovered.

In a second set of tests, three columns 80 mm in diameter were charged with 3 kg of -10 mm "ore". Two columns were leached with weak sulphuric acid solutions containing 7.9 g/l and 14.9 g/l acid. The third column was leached with acidified Mineral Park pregnant leach solution assaying 0.57 g/l Cu, 1.5 g/l Fe, and 8.2 g/l free sulphuric acid. Acid consumption ranged from 5.7 g/l to 5.9 g of sulphuric acid per gram of copper recovered. Recovery rates increased with higher acid content in the leach solution.

### **15.2 ARIMETCO 1994**

In a 1994 test, results on tailings showed that the average value of the samples was 0.163% TCu and the average value for soluble copper was 0.068%. MSRDI performed two acid consumption tests, which averaged 37.7 lb acid/ton of ore, and the

average recovery for the samples was 50.9% of acid soluble copper and 24.5% of the total copper (Shipes, 1994).

### 15.3 SGV

In October 2004, one sample of mineralized material from the Emerald Isle open pit and two samples of tailings were sent to MSRDI for metallurgical testwork Roman and Bhappu (2004). A screen assay test was run on each sample to determine the different chemical phases of copper and zinc. In addition, bottle-roll leach tests using sulphuric acid and ammonia were run on each sample to assess the leachability of the copper and zinc in the samples. Physical separation of the copper and zinc was evaluated through flotation and gravity concentration for the samples of tailings.

The pit sample weighed 129 kg and the head grade was 0.65% TCu and 1.31% Zn. Based on mineralogical assay and leach tests as described, MSRDI concluded that:

- Some 80% of the (Total copper or AS copper) copper and 96% of the zinc are soluble under typical heap leaching conditions.
- Copper recovery after four days of leaching the crushed ore passing -3/4 in. was 58.1%.
- Zinc recovery after four days of leaching the crushed ore passing -3/4 in. was 78.6%.
- Acid consumption was 9.74 lbs. of acid/lb. Cu dissolved, with no credit for the zinc dissolved.
- In the ammonia bottle roll leach test negligible copper and zinc were dissolved.

The head grade of the first tailings sample weighing 25.8 kg was 3.21% TCu and 0.156% Zn. The reason for such a high grade for a “tailing” is that the +20 mesh fraction of this sample “contained particles which resembled bbs”. Based on mineralogical assay and leach tests as described, MSRDI concluded that:

- Almost 100% of the copper and 91% of the zinc is soluble under typical heap leaching conditions.
- The copper is almost entirely contained within the +20 mesh size bb-shaped particles, and can be easily recovered by screening. A concentrate grade of more than 40% Cu and a recovery of 84% of the copper were achieved.
- Zinc is not recoverable by screening.

- Flotation tests did not result in a high recovery of the copper. This is probably because of the coarse size of the bbs. Zinc recovery was poor also, probably because it is present as an oxide (acid soluble) mineral.
- Gravity concentration tests did not result in a high recovery of the copper, although the larger bbs reported to the concentrate.
- Copper recovery after four days of leaching the disaggregated tailings through a half-inch screen was 41.1%.
- Zinc recovery after four days of leaching the disaggregated tailings through a half-inch screen was 53.7%.
- Acid consumption was 3.07 lbs. of acid/lb. Cu dissolved, with no credit for the zinc.
- In the ammonia bottle roll test negligible copper and zinc were dissolved.

The second tailings sample weighed 15.9 kg and the head grade was 0.171% TCu and 0.121% Zn. Based on mineralogical assay and leach tests as described, MSRDI concluded that:

- Almost 67% of the copper and 64% of the zinc is soluble under typical heap leaching conditions.
- Flotation tests did not result in a high recovery of the copper. This is probably because of the low grade of the tailings and that the copper is present as an oxide (acid soluble). Zinc recovery was poor, probably because it is also present as an oxide (acid soluble) mineral.
- Gravity concentration tests did not result in a high recovery of the copper or the zinc in the concentrate.
- Copper recovery after four days of leaching the disaggregated tailings through a half-inch screen was 52.1%.
- Zinc recovery after four days of leaching the disaggregated tailings through a half-inch screen was 54.2%.
- Acid consumption was 15.4 lbs. of acid/lb. Cu dissolved, with no credit for the zinc.
- In the ammonia bottle roll test negligible copper and zinc were dissolved.

## 15.4 DISCUSSION

The testwork indicates that copper and zinc can be recovered by leaching the sampled materials. The recovery for copper will be verified by further leach testing. Zinc recovery will require more development work to ensure that a technically and economically process can be established, and SGV is pursuing this work.

## 16 ADJACENT PROPERTIES

Mineral Concessions situated close to the Emerald Isle Property belong to other parties. A quarter section to the south of the open pit belongs to Santa Fe Mining Company (Santa Fe) and another quarter section is held by private parties. RPA is not aware of any exploration work currently being carried out on these properties, or any significant results from past work (Wilson, 2004).

The Mineral Park Mine is situated approximately 4 mi. east of the Emerald Isle Property, as noted above, and produces approximately 6 million lbs. of copper per year by heap leaching with solvent extraction and electrowinning (SX/EW). The mine is owned by Mercator Minerals Ltd. (Mercator, a TSX Venture listed company) and the Cu-Mo deposit is reported to contain Proven and Probable Mineral Reserves totalling some 84.6 million tons at an average grade of 0.24% Cu. Current plans by Mercator are to increase production by expanding the SX/EW plant capacity to approximately 15 million lbs. per year (Surratt, 2005).

## 17 INTERPRETATION AND CONCLUSIONS

### 17.1 EXPLORATION POTENTIAL

The Emerald Isle Project is a mineral property that contains a small copper deposit hosted by a relatively flat lying conglomerate unit. Mineralization occurs as an oxide facies in the conglomerate, but narrow zones of copper mineralization are also present in the overlying Quaternary alluvium as well as the underlying granitic rocks.

Results of RCD drilling completed in 2004 indicate that the trend of copper mineralization continues along strike to the west. New targets are reported to be situated just south and adjacent to the Emerald Isle Property. These targets were detected by past seismic surveys, and may indicate the presence of paleochannels, which could represent geological environments similar to the one at Emerald Isle (Figure 4-1). RPA recommends a program of drilling to test these new targets: in the order of 3,000 ft. should be sufficient for an initial program.

### 17.2 CONCLUSIONS

The Emerald Isle copper deposit is hosted by Late Tertiary conglomerates and, to a lesser extent, by Quaternary alluvium and Cretaceous granitic rocks. RPA has estimated the Mineral Resource from 135 previous rotary and reverse circulation drill holes. Based on our review of past and recent exploration data, RPA concludes that:

- The technical data generated from past as well as recent exploration on the property are acceptable for estimation of Mineral Resources.
- The 2004 SGV drilling program has been carried out in a systematic manner and is well documented.
- The new SGV drilling results have on an overall basis confirmed the previous drilling results, although there is considerable variability between individual twinned holes.
- RPA has estimated Mineral Resources of the Emerald Isle copper deposit using results of the previous drilling. At a total copper cut-off grade of 0.3%

TCu and 10 ft. minimum vertical thickness, Indicated Mineral Resources are 2.22 million tons with an average grade of 0.62% TCu.

- In RPA's opinion, further work is warranted on the Emerald Isle property to advance it towards the prefeasibility stage.
- Past exploration (seismic survey by Arimetco) results suggest that a paleochannel similar to the one hosting the Emerald Isle deposit may be present south of the current open pit. RPA is of the opinion that this represents a valid exploration target.

## 18 RECOMMENDATIONS

RPA is of the opinion that the Emerald Isle copper property contains a significant copper Mineral Resource and recommends a Scoping Study (Preliminary Assessment) to assess the economic potential of the project and advance it towards the prefeasibility stage. As part of the Scoping Study, further metallurgical testwork is recommended to determine the copper recovery in a conventional heap leaching operation. RPA also recommends drilling to test the paleochannel exploration target south of the open pit area. The estimated cost of the recommended work is C\$200,000 (Table 18-1).

| <b>TABLE 18-1 RECOMMENDED WORK AND BUDGET</b> |                             |
|---|-----------------------------|
| <b>SGV Emerald Isle Project, Arizona</b>      |                             |
| <b>Item</b>                                   | <b>Estimated Cost (C\$)</b> |
| Metallurgical testwork                        | 25,000                      |
| Scoping study                                 | 100,000                     |
| Drilling of exploration targets               | 75,000                      |
| <b>Total Recommended Work</b>                 | <b>200,000</b>              |

## 19 REFERENCES

- Albert, T.E., 1992, Letter to James Golden of Mine Development Associates Re Density Measurements on Emerald Isle Samples: Kappes, Cassidy & Associates, Sparks, Nevada, March 16, 1992.
- Arimetco, 1988, Emerald Isle Ore Leach Study: Interoffice Memorandum, March 1, 1988.
- Arimetco, Inc., 1996, Miscellaneous Cross Sections and Level Plans.
- Arimetco, Inc., 1995, Miscellaneous Notes on Mineral Resource and Mineral Reserve Estimates and open Pit Design, December 4, 1995.
- Arizona Bureau of Mines, 1969, Mineral and Water Resources of Arizona: The Arizona Bureau of Mines Bulletin 180, University of Arizona, Tucson, 1969.
- Canada Stockwatch, 2004, August 9, 2004 Issue.
- Clifton, G., 2004a, Summary of Exotic Copper Occurrences (Unpublished): Personal Communication, December, 2004.
- Clifton, G., 2004b, Description of Sampling of Chips from the Reverse Circulation Program, Emerald Isle Project, Arizona; SGV Internal Company Memorandum, December 2004.
- D'Andrea, D.V., Larsen, W.C., Fletcher, L.R., Chamberlain, P.G. and Englemann, W.H., 1977, In Situ Leaching Research in a Copper Deposit at the Emerald Isle Mine: United States Department of the Interior, Bureau of Mines, Report of Investigations 8236, 1977.
- D'Andrea, D.V. and Runke, S.M., 1976, In Situ Copper Leaching Research at the Emerald Isle Mine (Chapter 24): United States Department of the Interior, Bureau of Mines Internal Report on World Mining and Metals Technology, pp. 409-419, 1976.
- Dings, M.G., 1951, The Wallapai Mining District, Cerbat Mountains, Mohave County, Arizona: U.S. Geological Survey Bulletin 978-E, Contributions to Economic Geology, pp. 124-153, U.S. Government Printing Office, Washington, D.C., 1951.
- Donley, E., Lamb, A. and Sykes, T., 2001, Potentially Responsible Party Evaluation Search, Emerald Isle Mine Site, Mohave County, Arizona: Draft Report Prepared by Dynamac Corporation for the U.S. Department of the Interior, Bureau of Land Management, Germantown, MD, November 2001.



- Dunham, H.E., 2004, Valuation of Emerald Isle Property: Fairness Opinion Document Prepared for Atlas Minerals, Inc., Denver, Colorado, by H.E. Dunham and Associates, Tucson, Arizona, March 2, 2004.
- Easdon, M., 1992, Emerald Isle, Mohave County, AZ, 1992 Drilling Program Report: Report by Mine Development Associates, April 2, 1992.
- Eidel, J.J., Frost, J.E. and Clippinger, D.M., Copper-Molybdenum Mineralization at Mineral Park, Mohave County, Arizona *in* Ore Deposits of the United States, 1933-1967, The Graton-Sales Volume, John D. Ridge, (Ed.): The American Institute of Mining, Metallurgical, and Petroleum Engineers, Inc., New York, 1968, pp. 1258-1281.
- Keith, S.B., Gest, D.E., DeWitt, E., Woode Toll, N. and Everson, B.A., 1986, Metallic Mineral Districts and Production in Arizona: Arizona Bureau of Geology and Mineral Technology, Geological Survey Branch Bulletin 194, p. 26, 1986.
- Mountain States Research & Development International Inc. (MSRDI), 2005, Check Assay Results on Total Copper, Acid Soluble Copper, Total Zinc and Acid Soluble Zinc Values on Samples Assayed at MSRDI and ACTLAB-Skyline Laboratories, May, 2005.
- Mine Development Associates, 1992, Emerald Isle Copper Mines Feasibility Report: Report Prepared for Holcorp Mines Limited, March 1992.
- Roman J.R., and Bhappu, R.B., 2004, Evaluation of Ore and Tailings From Emerald Isle Mine: Report by Mountain States Research and Development International Inc., Vail, Arizona, December 1, 2004.
- PAHRUMP, 2004, Nevada, 30 Year Daily Temperature and Precipitation Summary: The Internet, October 2004.
- Peterson, R.C., 1976, Review of Aeromagnetic Data over the Emerald Isle Prospect: Report Prepared for Mine Development Associates, 1976.
- Sheedy, M., 1998, Recoflo® Ion Exchange Technology: Paper on Behalf of Prosep Technologies Inc., a Subsidiary of Eco-Tec Ltd., Proceedings of the TMS Annual Meeting, San Antonio, Texas, 13 pp.
- Shipes, M.H., 1994, EIM Tailings Tests: Arimetco Interoffice Memorandum to Roy Shipps, July 14, 1994.
- State of Arizona, 2005, Department of Revenue: Information on State Severance Tax.
- St-Genevieve Resources Ltd., 2004a, Miscellaneous Correspondence and Technical Data.

- Ste-Genevieve Resources Ltd., 2004b, Property Purchase Agreement between SGV Resources Inc. and Western Consolidated Resources Inc.: SGV Internal Document, July 30, 2004.
- Ste-Genevieve Resources Ltd., 2005, Miscellaneous Correspondence and Technical Data.
- Surratt, M.L., 2005, Mercator Announces Plans to Maximize Copper Production at its Mineral Park Mine in Arizona: Mercator Minerals Ltd. Press Release, March 14, 2005.
- The Toronto Stock Exchange, 1990, Excerpts from Listing No. 3735 of Arimetco International Inc.
- Thomas, B.E., 1951, The Emerald Isle Copper Deposit, Discussion: Econ. Geol. Vol. 46, pp. 231-233, 1951.
- Thomas, B.E., 1949, Ore Deposits of the Wallapai District, Arizona: Econ. Geol. Vol. 44, pp. 700-703, December 1949.
- TSC Enterprises, Inc., 1992?, Emerald Isle Mine, Arizona: Internal Company Report.
- U.S. Mines Register, 1952,: U.S. Bureau of Mines, Mines Register, (Successor to The Mines Handbook and The Copper Handbook) Vol. XXIV, pp. 158-159.
- Wendt, C.J., 1992, Exploration Potential, Emerald Isle Mine: Report for Mine Development Associates, February 10, 1992.
- Wieduwilt, W.G., 1976, Review of Induced Polarization and Resistivity Data, Emerald Isle Area, Mohave County, Arizona: Report Prepared for Perry, Knox, Kaufman, Inc., Project 0620, Tucson, June 6, 1976.
- Wilkinson Jr., W.H., Vega, L. and Titley, S.R., 1982, Geology and Ore Deposits at Mineral Park, Mohave County, Arizona, *in* Advances in Geology of the Porphyry Copper Deposits, Southwestern North America, Spencer R. Titley, (Ed.): University of Arizona Press, Tucson, Arizona, pp. 523-541.
- Williams, S.A., 1992, Correspondence with M. Easdon of Holcorp Mines Ltd. Re. Preliminary Mineralogical Analysis of Samples from the Emerald Isle Mine: Globo de Plomo Enterprises, Douglas, Ariz., March 5, 1992.
- Wilson, B., 2004, Personal Communication.
- Wilson, B., 2005, Personal Communication.

## 20 SIGNATURE PAGE

This report titled “Technical Report on the Emerald Isle Copper Deposit Prepared for Ste-Genevieve Resources Ltd.” and dated June 13, 2005 was prepared and signed by the author:

**(Signed and Sealed)**

Dated at Toronto, Ontario  
March 10, 2006

Hrayr Agnerian, M.Sc.(Applied), P.Geo.  
Consulting Geologist  
Roscoe Postle Associates Inc.

**(Signed and Sealed)**

Dated at Toronto, Ontario  
March 10, 2006

John T. Postle, M.Sc., P.Eng.  
Consulting Mining Engineer  
Roscoe Postle Associates Inc.

## 21 CERTIFICATE OF QUALIFICATIONS

### 21.1 HRAYR AGNERIAN

I, Hrayr Agnerian, M.Sc.(Applied), P.Geo., as an author of this report entitled “Technical Report on the Emerald Isle Copper Deposit, Arizona”, prepared for Ste. Genevieve Resources Ltd. and dated March 10, 2006, do hereby certify that:

1. I am a Consulting Geologist with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave Toronto, ON, M5J 2H7.
2. I am a graduate of the American University of Beirut, Lebanon in 1966 with a Bachelor of Science degree in Geology, of the International Centre for Aerial Surveys and Earth Sciences, Delft, the Netherlands, in 1967 with a diploma in Mineral Exploration, and of McGill University, Montréal, Québec, Canada, in 1972 with a Masters of Science degree in Geological Engineering.
3. I am registered as a Professional Geoscientist in the Provinces of Ontario (Reg.# 0757) and Saskatchewan (Reg.# 4305), and as a Professional Geologist in the Province of Québec (Reg.# 302). I have worked as a geologist for a total of 35 years since my graduation. My relevant experience for the purpose of the Technical Report is:
  - Review and report as a consultant on more than seventy mining operations and Projects around the world for due diligence and regulatory requirements, including:
    - Estimate of the Mineral Resources of the Anoki deposit and Anoki South Zone in the Kirkland Lake area, for Queenston Mining Inc.
    - Preparation of a Technical Report on the Salave Gold Project, Spain for Rio Narcea Gold Mines Ltd.
    - Preparation of a Technical Report on the Volta Grande Gold Project for Verena Minerals Corporation.
    - Audit of the Mineral Resources of the Boston, Doris and Madrid areas of the Hope Bay Gold Project, Nunavut Territory, for BHP Minerals Canada.
    - Audit of the Mineral Resources of the Joe Mann Mine, Québec, for Campbell Resources Inc.
    - Mineral resource estimate of the Randell-Jackman and Hammerdown gold deposits, Newfoundland, for Major General Resources Ltd.
    - Mineral Resource estimate of the Holloway Zone, Kirkland Lake area, for Freewest Resources Ltd.
    - Audit of the Mineral Resources of the Huampar Mine, Peru, for Oroperu Resources.
    - Audit of the Mineral Resources of the Berezitovoye gold deposit, Amur Oblast (Siberia) Russia, for High River Gold Mines Ltd.
  - District Geologist for Canadian mining company
  - Project/Exploration Geologist for several Canadian exploration companies.

4. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI43-101") and certify that by reason of my education, 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 NI43-101.
5. I visited the Emerald Isle Project on May 31, 2004, and a second time from December 18 to 20, 2004.
6. I am responsible for overall preparation of the Technical Report, including all sections.
7. I am independent of the Issuer applying the test set out in Section 1.4 of National Instrument 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read National Instrument 43-101F1, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.
10. 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.

Dated 10<sup>th</sup> day of March, 2006

**(Signed and Sealed)**

Hrayr Agnerian, M.Sc.(Applied), P.Geo

## 21.2 JOHN POSTLE

I, John T. Postle, M.Sc., P.Eng., as an author of this report entitled Technical Report on the Emerald Isle Copper Deposit, Arizona”, prepared for Ste. Genevieve Resources Ltd. and dated March 10, 2006, do hereby certify that:

1. I am a Consulting Mining Engineer with Roscoe Postle Associates Inc. of Suite 501, 55 University Ave Toronto, ON, M5J 2H7.
2. I am a graduate of the University of British Columbia, Canada, in 1965 with a Bachelor of Science (Applied) degree in Mining Engineering and Stanford University, Stanford, California, in 1968 with a Master Degree in Earth Sciences.
3. I am registered as a Professional Engineer in the Provinces of Ontario (Reg.# ) and British Columbia (Reg.# ). I have worked as a professional mining engineer for a total of 38 years since my graduation. My relevant experience for the purpose of the Technical Report is:
  - Planning and management of mining projects in various parts of Canada
  - Variety of assignments including valuations of mineral projects, review of feasibility studies, monitoring of mine construction, estimation and confirmation of operating and capital costs, conceptual mine design, and cash flow modelling.
4. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI43-101") and certify that by reason of my education, 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 NI43-101.
5. I visited the Emerald Isle Project on May 31, 2004.
6. I am responsible for the section dealing with mining aspects of the Technical Report.
7. I am independent of the Issuer applying the test set out in Section 1.4 of National Instrument 43-101.
8. I have had no prior involvement with the property that is the subject of the Technical Report.
9. I have read National Instrument 43-101F1, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.

10. 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.

Dated 10<sup>th</sup> day of March, 2006

**(Signed and Sealed)**

John T. Postle, M.Sc., P.Eng.

## 22 APPENDIX

### EMERALD ISLE DEPOSIT, SIGNIFICANT MINERALIZED INTERSECTIONS IN EL PASO ROTARY DRILL HOLES

| Hole #  | From   | To     | Length (ft) | % TCu |
|---------|--------|--------|-------------|-------|
| A-2     | 220.00 | 290.00 | 70.00       | 0.68  |
| A-3     | 281.00 | 361.00 | 80.00       | 1.02  |
| A-4     | 509.00 | 517.00 | 8.00        | 0.51  |
| DH92-04 | 40.00  | 60.00  | 20.00       | 0.50  |
| DH92-27 | 230.00 | 235.00 | 5.00        | 0.43  |
| DH92-28 | 245.00 | 260.00 | 15.00       | 0.72  |
| DH92-29 | 215.00 | 235.00 | 20.00       | 0.47  |
| DH92-30 | 242.00 | 252.00 | 10.00       | 0.87  |
| DH92-31 | 245.00 | 250.00 | 5.00        | 0.65  |
| DH92-42 | 0.00   | 55.00  | 55.00       | 0.82  |
| DH92-43 | 5.00   | 10.00  | 5.00        | 0.63  |
| E-004   | 130.00 | 135.00 | 5.00        | 0.40  |
| E-004   | 200.00 | 245.00 | 45.00       | 0.87  |
| E-005   | 88.00  | 128.00 | 40.00       | 0.96  |
| E-007   | 190.00 | 256.00 | 66.00       | 0.75  |
| EI-013  | 290.00 | 330.00 | 40.00       | 0.85  |
| EP-001  | 73.00  | 223.50 | 150.50      | 0.94  |
| EP-002  | 73.00  | 143.00 | 70.00       | 1.61  |
| EP-003  | 24.00  | 85.50  | 61.50       | 1.83  |
| EP-004  | 46.00  | 121.00 | 75.00       | 1.93  |
| EP-005  | 44.00  | 89.00  | 45.00       | 0.94  |
| EP-007  | 44.00  | 74.00  | 30.00       | 1.18  |
| EP-008  | 47.00  | 89.00  | 42.00       | 1.21  |
| EP-009  | 109.00 | 185.90 | 76.90       | 0.77  |
| EP-010  | 0.00   | 44.00  | 44.00       | 1.81  |
| EP-011  | 24.00  | 59.00  | 35.00       | 1.97  |
| EP-012  | 21.00  | 54.00  | 33.00       | 0.92  |
| EP-013  | 9.00   | 49.00  | 40.00       | 0.87  |
| EP-014  | 24.00  | 74.00  | 50.00       | 0.88  |
| EP-015  | 19.00  | 49.00  | 30.00       | 0.57  |
| EP-016  | 9.00   | 44.00  | 35.00       | 0.47  |
| EP-017  | 3.00   | 39.00  | 36.00       | 1.29  |
| EP-018  | 24.00  | 39.00  | 15.00       | 0.60  |
| EP-019  | 29.00  | 64.00  | 35.00       | 0.53  |
| EP-020  | 3.00   | 19.00  | 16.00       | 0.92  |
| EP-022  | 44.00  | 89.00  | 45.00       | 0.56  |
| EP-023  | 44.00  | 120.00 | 76.00       | 0.61  |
| EP-024  | 10.00  | 110.00 | 100.00      | 0.81  |
| EP-025  | 95.00  | 160.00 | 65.00       | 0.50  |
| EP-026  | 50.00  | 100.00 | 50.00       | 0.52  |
| EP-027  | 120.00 | 125.00 | 5.00        | 0.42  |
| EP-028  | 120.00 | 145.00 | 25.00       | 0.42  |



|         |        |        |        |      |
|---------|--------|--------|--------|------|
| EP-029  | 130.00 | 200.00 | 70.00  | 0.85 |
| EP-030  | 95.00  | 220.00 | 125.00 | 0.70 |
| EP-031  | 20.00  | 120.00 | 100.00 | 1.22 |
| EP-032  | 135.00 | 200.00 | 65.00  | 0.67 |
| EP-033  | 85.00  | 90.00  | 5.00   | 0.43 |
| EP-033  | 150.00 | 240.00 | 90.00  | 0.90 |
| EP-034  | 145.00 | 185.00 | 40.00  | 0.63 |
| EP-035  | 40.00  | 75.00  | 35.00  | 0.40 |
| EP-036  | 20.00  | 70.00  | 50.00  | 0.63 |
| EP-037  | 20.00  | 40.00  | 20.00  | 0.71 |
| EP-039  | 0.00   | 5.00   | 5.00   | 0.79 |
| EP-040  | 0.00   | 15.00  | 15.00  | 0.85 |
| EP-041  | 0.00   | 15.00  | 15.00  | 0.64 |
| EP-042  | 0.00   | 10.00  | 10.00  | 0.63 |
| EP-043  | 20.00  | 40.00  | 20.00  | 0.71 |
| EP-044  | 30.00  | 55.00  | 25.00  | 0.49 |
| EP-045  | 15.00  | 20.00  | 5.00   | 0.43 |
| EP-047  | 0.00   | 15.00  | 15.00  | 0.72 |
| EP-049  | 130.00 | 135.00 | 5.00   | 0.42 |
| EP-049  | 190.00 | 215.00 | 25.00  | 1.10 |
| EP-050  | 140.00 | 165.00 | 25.00  | 0.47 |
| EP-051  | 160.00 | 210.00 | 50.00  | 0.69 |
| EP-052  | 160.00 | 220.00 | 60.00  | 1.11 |
| EP-053  | 155.00 | 225.00 | 70.00  | 0.66 |
| EP-054  | 20.00  | 40.00  | 20.00  | 0.40 |
| EP-054  | 110.00 | 225.00 | 115.00 | 0.83 |
| EP-055  | 175.00 | 220.00 | 45.00  | 0.63 |
| EP-056  | 180.00 | 230.00 | 50.00  | 0.96 |
| EP-057  | 190.00 | 225.00 | 35.00  | 0.33 |
| EP-058  | 145.00 | 175.00 | 30.00  | 0.38 |
| EP-059  | 185.00 | 190.00 | 5.00   | 0.43 |
| EP-059  | 250.00 | 255.00 | 5.00   | 0.42 |
| EP-060  | 125.00 | 155.00 | 30.00  | 0.63 |
| EP-061  | 185.00 | 240.00 | 55.00  | 0.49 |
| EP-062  | 180.00 | 225.00 | 45.00  | 0.66 |
| EP-063  | 195.00 | 270.00 | 75.00  | 0.67 |
| EP-064  | 215.00 | 260.00 | 45.00  | 0.69 |
| EP-066  | 220.00 | 300.00 | 80.00  | 0.49 |
| EP-067  | 160.00 | 250.00 | 90.00  | 0.45 |
| EP-068  | 135.00 | 220.00 | 85.00  | 0.44 |
| EP-070  | 215.00 | 220.00 | 5.00   | 0.41 |
| EP-071  | 225.00 | 300.00 | 75.00  | 0.78 |
| EP-072  | 215.00 | 290.00 | 75.00  | 0.68 |
| EP-073  | 250.00 | 270.00 | 20.00  | 0.58 |
| EP-074  | 205.00 | 220.00 | 15.00  | 0.44 |
| EP-075  | 250.00 | 280.00 | 30.00  | 0.41 |
| EP-076  | 220.00 | 260.00 | 40.00  | 0.51 |
| RC93-01 | 20.00  | 50.00  | 30.00  | 0.78 |
| RC93-02 | 30.00  | 60.00  | 30.00  | 0.47 |
| RC93-03 | 40.00  | 50.00  | 10.00  | 0.59 |

**Source: SGV, 2004.**