

PORPHYRY COPPER-MOLYBDENUM EXPLORATION POTENTIAL ON THE RUBY, MONTANA PROJECT



Drillhole 06C-1 in progress. The Ruby Mine Area is in the background.



Matrix Geotechnologies collecting geophysical data in the Kit Carson/North Target Areas

BY:
FESS FOSTER, PH.D., CPG
21 PAUL GULCH ROAD
WHITEHALL, MONTANA 59759
(406) 287-3261
fessfoster@earthlink.net

AUGUST 11TH, 2009

TABLE OF CONTENTS

	Page
<u>CERTIFICATE</u>	iv
<u>EXECUTIVE SUMMARY</u>	1
BACKGROUND	1
JUSTIFICATION FOR EXPLORATION.....	1
OVERVIEW OF THE RUBY PORPHYRY SYSTEM	2
THE NORTH AREA TARGET	2
THE DRY GULCH TARGET.....	3
<u>BACKGROUND</u>	4
INTRODUCTION	4
TERMINOLOGY	4
<u>LOCATION/LAND STATUS/PERMITTING</u>	5
<u>PUBLIC RELATIONS</u>	6
<u>PORPHYRY EXPLORATION HISTORY</u>	7
OVERVIEW	7
1960's AND 1970's WORK (ANACONDA AND MOLYCORP)	7
1980's AND 1990's WORK (O.T.).....	7
2001 TO PRESENT WORK (O.T.).....	8
2001:	8
2002:	8
2004:	8
2005:	8
2006:	8
2007-Present:	8
<u>LITHOLOGIES, STRUCTURE, AND ALTERATION</u>	9
GEOLOGY	9
<i>Regional Geology and Mineralization:</i>	9
<i>Project Geology:</i>	9
STRUCTURE	9
ALTERATION AND HOST ROCKS.....	10

<u>THE NORTH AREA TARGET</u>	12
SURFACE GEOCHEMISTRY	12
GEOPHYSICS	12
DRILLING.....	13
Overview:	13
OT Drill Hole Geochem:.....	14
Anaconda and Molycorp Drill Hole Geochem:	15
Summary:	16
<u>THE DRY GULCH TARGET</u>	17
DATA SOURCES	17
TARGET SUMMARY	17
QUANTEC TITAN 24 GEOPHYSICS.....	17
OTHER DATA SUPPORTING THE TITAN 24 RESULTS	18
FUGERO AIRBORNE SURVEY	19
<u>SIZE OF THE PORPHYRY SYSTEM</u>	20
<u>IMPLICATIONS OF THE NEARBY BUTTE PORPHYRY SYSTEM</u>	21
<u>COMPARISON OF RUBY TO GIANT PORPHYRY SYSTEMS</u>	22
<u>IMPORTANT ISSUES</u>	23
<u>RECOMMENDATIONS</u>	25
<u>REFERENCES</u>	28

TABLES

TABLE 1: Weighted Average of Cu in Cretaceous Rock in all Ruby Porphyry Holes	3
TABLE 2: Weighted Average of Cu in Cretaceous Rocks in O.T. Drill Holes	14
TABLE 3: Significant Cu Intercepts in Hole 05C-7	15
TABLE 4: Weighted Averages of Mo in Cretaceous Rocks in O.T. Hole 05C-7	15
TABLE 5: Weighted Average of Cu in Cretaceous Rocks in Anaconda/Molycorp Holes	15

FIGURES

FIGURE 1: Ruby Project location map	F-1
FIGURE 2: Ruby Project land status map	F-2
FIGURE 3: Explanation for Figure 4.....	F-3
FIGURE 4: Summary of all current and previously permitted O.T. activities	F-4
FIGURE 5: Presently permitted drill holes in the North and Dry Gulch Target Areas.....	F-5

FIGURE 6: Aeromagnetic anomalies in the northern Boulder Batholith.....	F-6
FIGURE 7: Regional Geology of the Ruby Property Vicinity	F-7
FIGURE 8: Geology and metallic mineral occurrences in western Montana	F-8
FIGURE 9: Geological map of the Ruby Project	F-9
FIGURE 10: Cross section through the North Area Anomaly showing drill holes.....	F-10
FIGURE 11: Strain ellipse orientated for the late Cretaceous in southwestern Montana.....	F-11
FIGURE 12: Map of porphyry alteration facies and various areas discussed in the text	F-12
FIGURE 13: Chargeability results from the 2006 North Area Target IP survey	F-13
FIGURE 14: Resistivity results from the 2006 North Area Target IP survey	F-14
FIGURE 15: Three dimensional model of the 2006 Matrix North Area Target IP	F-15
FIGURE 16: Comparison of the size and shape of the Butte District with the North Area	F-16
FIGURE 17: Previous drilling, IP, and MMI in the North and Dry Gl. Targets	F-17
FIGURE 18: Downhole Cu and Mo values in O.T. Hole NA04-6.....	F-18
FIGURE 19: Downhole Cu and Mo values in O.T. Hole 05C-6.....	F-19
FIGURE 20: Downhole Cu and Mo values in O.T. Hole 05C-7.....	F-20
FIGURE 21: Location and anomaly map for the Fugero and Titan 24 surveys.....	F-21
FIGURE 22: Quantec Titan 24 sharp IP chargeability cross sections	F-22
FIGURE 23: Fugero Airborne Automatic Gain Control Image	F-23
FIGURE 24: Fugero Total Magnetic Field Image in the Dry Gulch Target	F-24
FIGURE 25: Fugero Total Magnetic Field Image draped over Titan 24 lines and drilling	F-25
FIGURE 26: Planned O.T. Phase I drill holes for the North Anomaly	F-26

APPENDICES

APPENDIX A: Summary of Cu and Mo in Anaconda and Molycorp drill holes.....	A-1
APPENDIX B: Summaries of the Butte District and its underground production.....	A-5
<i>A primer on the Butte District and Implications for the Ruby Project:</i>	A-6
<i>Summary of Butte Underground Production:</i>	A-9
APPENDIX C: Quantec Titan 24 smooth IP chargeability plans.....	A-13
APPENDIX D: Quantec Titan 24 sharp IP chargeability cross sections.....	A-17
APPENDIX E: Quantec discussions of Kit Carson & North Area geophysical lines	A-25
APPENDIX F: Summary of porphyry systems with Butte Main Stage mineralization and a comparison with the Ruby Porphyry.....	A-33
APPENDIX G: Comparison of the Resolution deposit to the Butte and Ruby systems	A-38
APPENDIX H: Examples of low-level Cu around porphyries with Butte-style veining.....	A-46
APPENDIX I: Strip Logs of O.T. Holes NA04-6, 05C-6 and 05C-7.....	A-51
APPENDIX J: Recommended North Anomaly Phase I Drill Holes	A-55

CERTIFICATE

I, Don "Fess" Foster, of Whitehall, Montana do hereby certify that:

1. I am self-employed as a geological, environmental, and public/government relations consultant. My address is 21 Paul Gulch Road, Whitehall, Montana 59759;
2. I am a Certified Professional Geologist (CPG #10687) with the American Institute of Professional Geologists;
3. I am a 1983 graduate of the University of Montana with a Ph.D. in geology, and a 1978 graduate of Colorado State University with a Bachelor of Science in geology;
4. I have practiced my profession continuously since 1978;
5. I have written this report as an independent contractor;
6. As of the date of this certificate, I am not aware of any facts or changes with regard to the property that would make this report misleading;
7. I disclaim all liability for the underlying data. I do not accept responsibility for interpretations and representations made in this report that were a result of erroneous, false, or misrepresented data; and
8. I disclaim any and all liability for representations or warranties, expressed or implied, contained in, or for omissions from this report or any other written or oral communications transmitted or made available to any interested party when done without written permission, or when they are inconsistent with the conclusions and statements of the report.



Fess Foster

Fess Foster, Ph.D., CPG
August 11th, 2009
Whitehall, Montana

EXECUTIVE SUMMARY

BACKGROUND

The O.T. Mining Corp. (O.T.) owns 100% interest in the large Ruby exploration property in southwestern Montana. The company owns over 21 square miles of mineral rights (predominantly unpatented claims). The northern half of the property is underlain by a large copper-molybdenum porphyry system, which is the subject of this report. The southern half contains epithermal gold-silver mineralization hosted by younger volcanic stratigraphy.

O.T. is a small company, and is soliciting participation in exploration of the porphyry system for underground mineable mineralization. A comprehensive well-organized 1.6 gigabyte digital data package is available. The project is drill ready; 19 carefully-placed holes within the porphyry system have been permitted and bonded. A core logging and processing facility is nearby. The property is located in a very mining friendly part of Montana, and enjoys strong support from local officials.

JUSTIFICATION FOR EXPLORATION

In my opinion, **the most compelling justification for exploring the Ruby Porphyry is its striking similarity with the porphyry system at nearby Butte, Montana.** Butte is the world's fourth largest porphyry, and is located 15 miles southwest of the Ruby. **The Ruby Porphyry has potential for a very large, productive underground mine complex, similar to that at Butte.** O.T. has completed a considerable amount of research on Butte. The Ruby and Butte porphyries are cogenetic, and are closely related metallogenetically. They are similar with respect to age, magmatic affinity, structural setting, alteration, and overall shape. Both are hosted by the Butte Quartz Monzonite, and were emplaced along the axis of a major right lateral fault zone. Over 95% of the Butte metal production came from "Main Stage" vein mineralization. Most of that was mined by underground methods. Appendix B summarizes the Butte District. It also contains the most comprehensive summary of Butte production that I am aware of.

The Ruby Porphyry appears to be a Type 2 system. Type 2 systems contain hydrolytic (such as phyllic) alteration extending down into core potassic alteration. Many of the world's great porphyry Cu orebodies have base metal veins associated with such late hydrolytic alteration (including Butte, Resolution, Chiquicamata, Escondida, Rosario, and El Salvador). These late veins are commonly high sulfidation and Cu/Ag/Zn-rich. They postdate and crosscut the more typical "disseminated porphyry-type" mineralization. The late veins can contain substantial underground mineable ore, and host a considerable amount of the overall metal budget of the porphyry system.

The Ruby Porphyry system is poorly understood because it is largely blind, lying beneath 300 to 2,100 feet of post-mineral volcanic cover. For that same reason, it has not been well explored. O.T. has conducted geochemistry, geophysics, and limited drilling within the system. O.T.'s exploration plan for the Ruby Porphyry focuses on underground targets similar to the spectacular Main Stage vein mineralization at Butte. This includes both high-grade veins and intermediate-grade bulk-mineable zones.

OVERVIEW OF THE RUBY PORPHYRY SYSTEM

The Ruby Porphyry system is intact; Montana has not experienced extreme Tertiary structural dismemberment (such as in the Arizona porphyry belt). The late veins (associated with phyllic alteration overprinting potassic) drilled to date at Ruby have not been economic. However, **very few holes have been drilled, and all holes have been vertical.** A large mass of low-level copper mineralization occurs between the late veins. Similar low-level mineralization also occurs between late veins at a number of productive Type 2 porphyry systems (i.e. Butte, Resolution, and Escondida). **Angle holes are required** to test for Butte Main Stage-type veins at Ruby.

Two targets have been identified within the porphyry system; the **North Area** and the **Dry Gulch Targets**. The North Area Target is defined by geophysics and very limited drilling. The contiguous Dry Gulch Target is defined by limited geophysics, and has never been drilled. The North and Dry Gulch Targets are both part of the Ruby Porphyry system. They are distinguished by the type and amount of exploration done to date. Both targets are equally prospective.

THE NORTH AREA TARGET

O.T. has conducted surface geochemistry, geophysics, and limited drilling in the North Area Target. As a result, a very large area of low-grade copper enrichment with proximal alteration has become evident. **Current drill knowledge of the North Area Target is based on only nine (vertical) holes drilled into a 3 square-mile area of proximal alteration.** The target is covered by 700 to 1,200 feet of post-mineral volcanic rocks.

Based upon the sparse available data, **the North Area Target appears to contain about 16 billion tons of continuous low-level copper enrichment (in the 300-1,000 ppm range), associated with potassic alteration and a phyllic overprint. This mass is open to the east, west, and at depth. An IP chargeability anomaly has been defined within this larger body, constitutes on the order of 6 billion tons, and is also open in the same directions.**

A number of 50 to 1,600 foot intercepts of 0.1% to 0.13% Cu occurred in the nine holes. The highest grade narrow intercepts were on the order of 5 feet of 0.7% Cu. The weighted average copper grade through **all** Cretaceous rocks in the nine holes drilled into core alteration in the Ruby Porphyry that data are available for are shown in Table 1 below. Note that **most of these holes bottomed in mineralization.**

Table 1: Weighted Average of Copper in Cretaceous Rocks in all Ruby Porphyry Holes Drilled into Core (Potassic and Phyllic) Alteration (in feet).

Hole Number	Total Depth	From	To	Thickness (feet)	Cu (ppm)
NA04-6	3,215	585	3,215	2,630	313
05C-6	2,516	1,274	2,516	1,242	368
05C-7	2,735	975	2,735	1,760	785
A-1	1255	0	1255	1255	~900 ²
A-2	2425	811	2425	1614	~1000 ²
A-3	2274	200	1771	1571	~600 ²
L-1 ¹	2723				²
L-2 ¹	1985				²
L-3	3000	1540	3000	1460	~1000 ²

¹ No significant intersections of >0.05% Cu were reported in these holes.

² Cu in these drill holes were reported in %.

Molybdenum and silver geochem were also of consequence in these holes. **Note that copper, molybdenum, silver, and gold values from three O.T. drill holes drilled southwest of the North Area Anomaly all increase toward the anomaly.**

THE DRY GULCH TARGET

The Dry Gulch Target borders the North Area Target on the south. It is covered by 300 to 2,100 feet of post-mineral volcanic rocks, and has never been drilled. OT has conducted limited geophysics in the area (an airborne survey by Fugero, and a Titan 24 IP survey by Quantec). The Fugero survey showed a strong magnetic low in the center of the Dry Gulch Target, and several magnetic highs. The Quantec survey was deep penetrating. It defined an elongated saucer-shaped chargeability anomaly in the same Cretaceous rocks that host copper mineralization in the North Area Target. The anomaly becomes stronger to the north, towards the North Area Target. Two holes drilled along the edge of the anomaly verify that it consists of proximal porphyry alteration with continuous low-level Cu. **The Dry Gulch Target could be the core of the Ruby Porphyry system, and be as large as the North Area Target.**

BACKGROUND

INTRODUCTION

This report was prepared for the O.T. Mining Corporation, and describes the porphyry Cu-Mo exploration potential on O.T.'s Ruby, Montana property. O.T. is soliciting participation in exploration of the porphyry system for underground mineable mineralization. A comprehensive well-organized 1.6 gigabyte digital data package is also available.

Earlier summaries (43-101 reports) were completed by WGM (2003 and 2006).

TERMINOLOGY

The following areas are shown on Figure 12.

- The **Ruby Project** is named after the historic **Ruby Mine**, located in the southeastern portion of the project. This bonanza epithermal lode produced around 19,300 tons grading 2.44 opt Au and 38.66 opt Ag. This mineralization occurs in Tertiary volcanic rocks that postdate and overly the Ruby Porphyry System. O.T. has conducted Au-Ag exploration in the **Ruby Mine Area** in the past.
- Au-Ag exploration was also conducted in the **Kit Carson Area** in the past. This mineralization also occurs in Tertiary volcanic rocks that postdate and overly the Ruby Porphyry System
- The **Ruby Porphyry** refers to the overall porphyry system, including proximal (potassic and phyllic) and distal (propylitic) alteration facies. The Ruby Porphyry is situated north of the Ruby Mine and Kit Carson Areas.
- The **North Area and Dry Gulch Targets** occur between the distal alteration facies. They consist of proximal alteration, low-level copper mineralization, and appear to constitute the core of the Ruby Porphyry system.
 - The **North Area Target** refers to an area of proximal alteration, continuous low-level copper mineralization, and a chargeability high/resistivity low. These characteristics have been defined by surface geochemistry, geophysics and limited drilling.
 - The **Dry Gulch Target** is contiguous with and to the south of the North Area Target. It is defined only by limited geophysics.
- The **North Area Anomaly** refers to a chargeability high/resistivity low mass within the North Area Target. It was defined by Matrix Geotechnologies IP surveys in 2005 and 2006.

LOCATION/LAND STATUS/PERMITTING

The Ruby Project is located in Jefferson County, Montana (see Figure 1). The property consists of 681 unpatented and 13 patented claims totaling over 21 square miles (see Figure 2). These are 100% owned by O.T. The unpatented claims are on federal (U.S. Forest Service) lands. The Ruby Porphyry system occurs in the northern ½ of the property.

Fortunately, this portion of the Beaverhead-Deerlodge National Forest is heavily roaded and experiences a great deal of multiple use (logging, ATV/four wheeling, hunting, fishing, camping, etc.). It has also had a long history of mining and prospecting. The only restricted land on the property is the Bernice Research Natural Area located in the northwestern portion of the claim block (see Figure 4). This was apparently established due to the presence of old growth Douglas Fir trees. Local USFS officials had no problem with claims being staked in the area. However, they were unclear how difficult it would be to permit surface disturbances. This has not been an issue because no drill targets have been identified within the research natural area to date.

O.T. also owns the 18-acre Basin Mill near the town of Basin, 15 miles east of the property. The mill facilities have a very modern core logging/storage facility, an exploration office, and a large shop for heavy equipment maintenance.

The Ruby Project currently has 45 permitted drill holes and associated access roads on USFS lands (see Figures 3 and 4). About 14 of these holes are in the North Area Target (see Figure 5). These drill sites have been very carefully located to drill across structural, geochemical, and geophysical targets. Five holes have been permitted in the Dry Gulch Target. However, it is recommended that final Dry Gulch hole locations be sited after additional geophysical work is completed on this target.

Drilling activities are currently confined to the May 15th – December 1st period due to elk habitat. This has not been an issue because the winter and spring months are too snowy and/or muddy to drill.

All previous O.T. disturbances on the property have been fully reclaimed.

PUBLIC RELATIONS

Montana has in the recent past been considered a difficult state for permitting mines. Although permitting continues to be more complicated than in places like Nevada, the situation is improving. Montana's Mineral Policy increased from the 28th to the 51st percentile in the 2007 Fraser Institute world-wide mining survey. One large and one medium-sized new mine are being permitted, and exploration is on the upswing.

The Ruby Project enjoys very strong local support. Jefferson, Silver Bow, and Madison Counties are the heart of Montana's hardrock mining industry. Three large mines are producing within a 30 mile radius of the Ruby Project. County Commissioners, legislators, local development corporations, Chamber of Commerce's, and many businesses fully and vocally back the project. O.T. maintains a very good working relationship with the regulatory agencies (the USFS and Montana Department of Environmental Quality). The company has received accolades for the reclamation work it has done, and received the 2005 Entrepreneur of the Year award from the Jefferson Local Development Corporation.

PORPHYRY EXPLORATION HISTORY

OVERVIEW

Previous exploration for porphyry mineralization on the property is summarized below. O.T. has also explored for gold-silver targets in the southern portion of the property. Porphyry exploration here began in the 1960's and 1970's, but dwindled in the 1980's (as it did throughout the U.S.). In 2004, O.T. drilled one hole, obtained old Anaconda and Molycorp data on the Ruby Porphyry system, and discovered that the porphyry was much larger than previously known. Since that time, most of O.T.'s exploration efforts have focused on the porphyry system.

1960's AND 1970's WORK (ANACONDA AND MOLYCORP)

Johnson et. al. (1965) contains an aeromagnetic map of the Boulder Batholith area. It shows three pronounced lows along a NNE trend; the Butte, Ruby Mine, and Montana Tunnels areas (see Figure 6). Butte contains the fourth largest copper porphyry system in the world. Montana Tunnels is a large open pit mine that has produced 1,637,000 ounces of gold, 30,760,000 ounces of silver, 1,105,000,000 lbs. of zinc, and 409,100,000 lbs. of lead since 1987. The Ruby Mine is situated on a similar magnetic low between Butte and Montana Tunnels.

Publication of this map fueled interest for porphyry copper mineralization beneath younger volcanic cover in the Ruby area. The North Area Target was initially explored for copper porphyry mineralization in 1968-1977 by the Anaconda Company and Union Oil (Molycorp). Extensive searches have been done, and some of this old data has been located. However, the core is no longer available.

Anaconda defined a large IP anomaly (see the purple IP 800 and IP 3200 lines in Figure 17). They subsequently drilled 3 holes (A-1 through 3 on Figure 17), and data has been obtained for these. Molycorp later optioned the property and drilled six or seven holes. It appears that five of them reached the porphyry system, and data has been acquired for three of the five (L-1 through 3 on Figure 17). At the time, the system was considered too deep to be of interest. However, this view has changed in recent years. Deeper porphyry systems have become much more attractive. Underground mining techniques have improved, and underground mines have fewer environmental concerns and are less complicated to permit.

No further porphyry exploration was conducted on the property until O.T.'s recent efforts described below.

1980's AND 1990's WORK (O.T.)

O.T. initially acquired ground at the south end of the current holdings (in the Ruby Mine area) in the 1980's, and started exploring for bonanza epithermal Ag-Au veins here. O.T. staked additional claims to the north over the years as the ground was dropped by majors (Santa Fe, Hecla, and BHP-Utah International).

2001 TO PRESENT WORK (O.T.)

2001:

An airborne DIGHEM and magnetic survey was conducted (Fugero, 2001). A soil orientation survey was also conducted near the Molycorp drill holes, and MMI (Mobile Metal Ions) geochemistry was determined to be the most appropriate technique.

2002:

An MMI soil grid (462 samples) was run over one of the airborne geophysical anomalies in the North Area Target. This defined a coincident Zn-Cu-Co anomaly that was thought to reflect deep porphyry mineralization.

2004:

Early in the season, a Titan 24 MT-IP survey (Quantec, 2004) was completed. In late 2004, O.T. stepped out well to the north of its previous drilling, which had been for gold-silver. Hole NA04-6 was drilled into the above discussed MMI anomaly from the 2002 program to test for porphyry mineralization. The hole encountered potassic altered Boulder Batholith with copper mineralization at 687 feet.

Anaconda and Molycorp had been known to have encountered porphyry mineralization 1 to 2 miles to the NE. The O.T. hole effectively doubled the size of the porphyry. Additional claims were staked in what is now termed the North Area Target. A concerted effort was made to source all available Anaconda and Molycorp data.

2005:

A large MMI soil grid (3,585 samples) was run over the North Area Target to further delineate porphyry drill targets. Hole NA04-4 was deepened. Holes NA-05-6, 7, and 8 were drilled. Matrix Geotechnologies completed first-pass IP geophysical surveys in the North and Kit Carson areas. The North Area Target IP survey showed a pronounced chargeability high that was thought to be caused by sulfide-bearing porphyry mineralization within drillable depths (the North Area Anomaly).

It became apparent that the porphyry system was very large, within drillable depths, and contained proximal alteration and continuous copper mineralization. Additional claims were staked east and west of the open-ended IP anomaly, and to the north across the Boulder River.

2006:

Hole 06C-1 was drilled, roughly closing the proximal porphyry alteration to the south. Matrix completed a detailed infill IP survey in the North Area Target which further defined the North Area Anomaly.

2007-Present:

Budgets precluded any drilling. However, several carefully placed drill holes were developed for the North Area Anomaly. All necessary permits were obtained for additional drilling and geophysics.

LITHOLOGIES, STRUCTURE, AND ALTERATION

GEOLOGY

Regional Geology and Mineralization:

Figure 7 shows the general geology of the property. It is situated in the northern end of the Tertiary Lowland Creek Volcanic Field. In my opinion, the Lowland Creek Volcanics occupy a “hole” in the underlying Cretaceous Elkhorn Volcanics and Boulder Batholith. This hole may be a NE-trending cauldron complex (Foster, 1987). The porphyry systems at Ruby and nearby Butte were formed by late phases of the Butte Quartz Monzonite of the Boulder Batholith.

Figure 8 shows all metallic mineral occurrences in western Montana. Southwestern Montana contains the bulk of the state’s metal endowment (over 75%). In particular, the areas around four late Cretaceous batholiths (the Boulder, Phillipsburg, Tobacco Root, and East Pioneer Batholiths) contain over 50% of the state’s metal shows. **The Boulder Batholith in the Ruby Project vicinity is clearly heavily mineralized, and is an excellent host to explore within.**

Project Geology:

Figures 9 and 10 show the property geology in plan and section. Porphyry mineralization is hosted by Cretaceous rocks; both the Butte Quartz Monzonite and the Elkhorn Volcanics it intrudes. **Cretaceous rocks throughout most of the property (as well as both porphyry targets) are blind, and covered by the Tertiary Lowland Creek Volcanics.** The volcanic cover thins to zero in the northern portion of the property (north of the Boulder River).

Following is a chronological summary of the property geology.

1. The late Cretaceous (75-81 Ma) Elkhorn Mountains Volcanics were erupted from the epizonal Boulder Batholith magma chamber.
2. The (slightly) younger late Cretaceous (70-77 Ma) Butte Quartz Monzonite of the Boulder Batholith rose up into the Elkhorn Mountains Volcanics, intruding its own ejecta. The contact between the two is a complex metasomatized zone consisting of “hybrid” rocks.
3. After a period of erosion, the Eocene (48-50 Ma) Lowland Creek Volcanics were erupted onto a mountainous surface comprised of the Elkhorn Mountains Volcanics and Boulder Batholith. These Tertiary rocks are primarily fairly thick felsic ash-flow tuff sequences that appear to be intracauldron (Foster, 1987).
4. Younger Tertiary irregular high-level felsic bodies intruded the ash-flow tuffs.

STRUCTURE

The Great Falls Tectonic Zone (GFTZ) is an enormous continental-scale crustal flaw. It extends southwesterly across Nevada, and northeasterly across Canada to Hudson Bay. It has been recurrently active since the late Proterozoic (Foster and Childs, 1993).

The boundaries of the GFTZ, and the localization of Montana metal occurrences within it are shown on Figure 8. The strong local NE-NNE structural grain in the property can be seen in Figure 9. **The Butte, Montana Tunnels, and Ruby Project are all situated along the axis of the GFTZ.** The magnetic lows shown in Figure 6 were likely produced by hydrothermal alteration along this axis. Most of the late Cretaceous and early Tertiary volcanic and plutonic activity (and associated mineralization) in Montana and Idaho is localized within the GFTZ. It experienced dextral (right lateral) movement during the late Cretaceous (when the Ruby and Butte Porphyry systems formed). Figure 11 is a strain ellipse oriented for this sense of movement. This structural model has very important ramifications for the Ruby Porphyry as described below.

1. Almost all veins in the nearby Butte District are interpreted to have formed along the red-colored **ENE and WNW** (synthetic and antithetic) orientations in the strain ellipse. Subsequent clockwise rotation of these veins has resulted in an overall **E-W** orientation of the district (Foster, 2006).
2. Most significant veins throughout the Boulder Batholith trend **E-W** (Woodward, 1986).
3. The overall orientation of the Ruby Porphyry mineralization appears to be **E-W** (as described below).
4. **Therefore, it is very strongly recommended that future holes be oriented N-S (or S-N). This orientation would intersect all of the above three orientations at a reasonable angle.**

The Ruby Property is also cut by post mineral N- to NE-trending high-angle faults, and a WNW-trending fault along the Boulder River. The Lowland Creek tuffs dip shallowly (15 to 25°) to the northwest, causing the porphyry system to shallow to the east in the North Area Target (see Figure 10).

ALTERATION AND HOST ROCKS

Porphyry copper mineralization occurs in all three Cretaceous units (the Elkhorn Mountains Volcanics, hybrid rocks, and quartz monzonite; see Figure 10). Mineralization is associated with widespread potassic (K-feldspar and biotite) alteration that is overprinted by structurally-controlled phyllic alteration.

MolyCorp had the advantage of a strong geologic program (headed by Bob Leonardson), and access to all 9 or 10 Anaconda and MolyCorp holes (which were drilled over a large area). The one available report describes a complex series of quartz diorite and granodiorite porphyries and intrusion breccias, in addition to the quartz monzonite. Breccias were commonly associated with higher grades. The intrusive system is obviously more complicated than indicated by the 3 O.T. holes that are clustered at the southwest end of the area. Keep in mind that this was a very shallow near-surface intrusive complex.

The Ruby Porphyry system (as presently understood and inferred) occupies about 13 square miles in plan, and is open to the east and west (see Figure 12). The known and suspected portions of the porphyry are the red and green shaded areas on the figure.

- The North Area Target contains pervasive potassic alteration that is overprinted by structurally-controlled phyllic alteration. These rocks also contain pervasive low-level copper.
- The Dry Gulch Target is inferred to also contain proximal alteration and sulfide enrichment based on the following.
 - Holes NA04-6 and 05C-6 were drilled at the edge of the Dry Gulch Target. Both holes contained proximal alteration and low-level copper.
 - It (like the North Area Target) contains a chargeability high (as discussed below).
- Propylitic alteration borders the core potassic/phyllic alteration to the north. This alteration can be observed at the north end of the property, in exposures of Elkhorn Volcanics north of the Boulder River.
- Distal (argillic and propylitic) alteration also occurs to the south of the core alteration. However, this is based on only one datum; the buried Cretaceous rocks drilled in Hole 06C-1.

Porphyry alteration geometries and ore distributions are extremely variable. However, they do commonly begin with propylitic alteration surrounding a potassic core. Subsequent acidic hydrolytic (phyllic, argillic, and advanced argillic) alteration typically overprints the potassic zone, and can occur in a variety of geometries. The phyllic overprint in particular can have variable affects on copper protore in the potassic core. In some cases it can deplete the copper, in others it can enrich it. Ore can occur in the potassic core, phyllic overprint, or both.

It is presently unclear where the hydrothermal core of the Ruby Porphyry is. It has been argued that the curvilinear shape represents the northern portion of an idealized (aka Lowell and Gilbert) circular-shaped porphyry system. In my opinion, this is unlikely. If this were true, the arcs of the lines indicate that the porphyry would have to be on the order of 75 miles in diameter. **I feel that the porphyry is more likely to have an overall ENE to EW trend.** This is the geometry of the Butte porphyry system (discussed below). This geometry would also explain the propylitic alteration flanking the core alteration on the north and south.

THE NORTH AREA TARGET

SURFACE GEOCHEMISTRY

All MMI (mobile metal ions) soil sampling on the property has been done by Mark Fedikow, O.T.'s Vice President of Exploration, and an expert in the technique. The anomalies resulting from the large 2005 MMI program are shown on Figure 17. All occur within the North Area Anomaly chargeability high that is described below.

A number of the anomalies include zinc. This is significant because zinc occurs with copper in the Butte Main Stage Veins. Two WNW-trending Zn+Cu+Co anomalies in the eastern portion of the area have response ratios of up to 134 times background, and parallel the strike of the geophysical anomaly along its margins.

GEOPHYSICS

A detailed fill-in Quantitative Section IP survey was completed in the North Area Target in 2006 by Matrix GeoTechnologies Ltd. (Matrix, 2006). This defined a 12,000' E-W by 2,000' N-S area of predominantly high chargeability, termed the North Area Anomaly (see Figure 13). An area of predominantly low resistivity accompanies the high chargeability (see Figure 14). Figure 15 is a three dimensional model of this geophysical anomaly, showing that it has a mushroom shape.

This geophysical feature was vetted with hard geologic data. It compared very favorably, as follows.

- The Matrix and Anaconda anomalies are roughly coincident and replicate each other (see Figure 17).
- G. Caffery/O.T. compared the Matrix quantitative sections to the Anaconda/Molycorp drill data, and found that the anomaly coincides with known geologic features as described below.
 - The strong anomaly only occurs in Cretaceous rocks, and the top of the anomaly coincides with the top of the Cretaceous rocks.
 - The asymmetrical mushroom cap of the anomaly is localized within the Elkhorn Mountains Volcanics.
 - Increased chargeability correlates with higher sulfide contents in the old drill holes.
 - The anomaly is offset (as it should be) along three previously identified faults.
- The six Anaconda/Molycorp holes that data is available for (discussed below) were completed within the anomaly. The holes that contained lower copper (L-1 and L-2) were drilled in much weaker parts of the chargeability high (see Figure 17 and Table 1).
- Cu and Mo values in three O.T. holes increase towards the IP anomaly (see the *OT Drill Hole Geochem* section below for details).

The North Area chargeability anomaly is open to the east and at depth. The anomaly appears to become weaker and more diffuse to the west (see Figure 13). However, this is thought to be caused by it becoming deeper, and **the anomaly likely continues to the west. The North Area geophysical anomaly strongly resembles the overall shape of the nearby Butte District (see Figure 16).** Two E-W trending chargeability highs occur in the northern part of the grid. These geometries are similar to the E-W trending veins that occur north of the Butte District (again see Figure 16).

A second strong chargeability high occurs at the east end of the grid, immediately north of the North Area Anomaly (again see Figure 13). This anomaly is open ended, poorly defined, and appears to be merging with the North Area Anomaly eastward. It differs from the North Anomaly in that it is accompanied by a resistivity high (again see Figure 14). It may be strongly influenced by the WNW-trending Boulder River Fault.

Note that chargeability results from another Matrix IP grid south of the North Area Target are shown on Figure 17 and some subsequent figures. This grid was run to assess gold-silver targets in the Kit Carson Area, and did not reach deep enough to encounter Cretaceous rocks and/or porphyry mineralization.

DRILLING

Overview:

Porphyry mineralization in the North Area Target is very poorly understood for the following reasons.

- **The great majority of the porphyry system is blind, and occurs beneath post-mineral volcanic cover.** The system is covered by 700-900' of Lowland Creek Volcanics.
- Extensive searches have been done, and only some of the old Anaconda/Molycorp hard copy data has been located. None of the earlier drill core remains.
- O.T. has only drilled in the extreme southwestern portion of the system (holes NA04-6, 05C-6, and 05C-7 on Figure 17).
- All drilling to date has been **vertical**.

Only 11 holes are known to have been drilled into the 3 square mile area of proximal alteration in the North Area Target (3 by O.T. and 8 by Anaconda/Molycorp).

- Only O.T. Holes NA04-6, 05C-6, and 05C-7 were drilled into proximal alteration. O.T. Holes 05C-8 and 06C-1 were drilled well north and south of the proximal alteration, respectively. O.T. Holes NA04-4 and KC04-3, 4, and 5 tested shallow gold-silver targets in the overlying Lowland Creek Volcanics, and never encountered the porphyry system.
- O.T. has analytical data on 6 of the 8 Anaconda/Molycorp holes.

Figure 17 shows the 3 O.T. holes and the 6 Anaconda/Molycorp holes that analytical data is available for.

The downhole geochemistry of all 9 holes into the porphyry system is summarized below. I consider these results to be very positive.

- **Low-level (200-1000 ppm) Cu is pervasive and consistent throughout the Cretaceous rocks. Low-level Mo (20-50 ppm is also common).**
- **All holes bottomed in porphyry copper mineralization, and it remains open to depth, the east, and the west.**
- **Cu, Mo, Au, and Ag in the three O.T. holes increase from south to north, as they approach the Matrix North Area geophysical anomaly.**
- **A number of 50 to 1,500 foot intercepts in the 0.1% to 0.13% Cu range have been encountered as detailed below. This is about 10% of the minimum grade that would be required to be economic for a block cave operation, and the thickness of these intercepts are over mineable dimensions.**

OT Drill Hole Geochem:

Downhole Cu and Mo geochemistry for the three O.T. holes is given in Figures 18, 19, and 20. These three holes were drilled over a 2,600-foot horizontal distance with NA04-6 on the south, 05C-6 in the middle, and 05C-7 on the north (see Figure 17). **Cu, Mo, Au, and Ag all increase from south to north, as they approach the Matrix North Area geophysical anomaly.** Figures 18, 19, and 20 and Tables 2, 3, and 4 below document that:

1. **The Cretaceous rocks are continuously enriched with copper and contain potassic alteration with a structurally controlled phyllic overprint.**
2. **All holes bottomed in mineralization; the copper mineralization is open at depth.**
3. **Cu and Mo increase to the north, towards the Matrix IP anomaly (from NA04-6 to 05C-6 to 05C-7).**

The weighted average copper grade through **all** Cretaceous rocks for each O.T. hole is shown in Table 2 below.

Table 2: Weighted Average of Copper in Cretaceous Rocks in O.T. Drill Holes (in feet).

Hole Number	Total Depth	From	To	Thickness	Cu (ppm)
NA04-6 (southern hole)	3,215	585	3,215	2,630	313
05C-6 (middle hole)	2,516	1,274	2,516	1,242	368
05C-7 (northern hole)	2,735	975	2,735	1,760	785

The highest grade narrow copper intercepts (in drill thickness, not true thickness) were:

- 6.5 feet of 6,750 ppm (0.67%) Cu from 3015.0 to 3021.5 feet in hole NA04-6.
- 3.5 feet of 6,510 ppm (0.65%) Cu from 1,047.5 to 1,051 feet in hole 05C-7.

Hole 05C-7 (the northernmost hole) had several fairly thick intercepts of approximately 0.1% Cu as shown in Table 3 below.

Table 3: Significant Copper Intercepts in Hole 05C-7 (in feet).

From (feet)	To (feet)	Thickness (ft)	Cu (ppm)
975	1,065	90	1,217
1,435	1,497	62	929
1,580	1,635	55	1,063
2,035	2,100	65	982

Hole 05C-7 (the northernmost hole) also contained the most elevated Mo, and Mo values increased down the hole as shown in Table 4 below.

Table 4: Downhole Weighted Averages of Molybdenum in Cretaceous Rocks in O.T. Drill Hole 05C-7 (in feet).

From	To	Thickness	Mo (ppm)
975	1800	825	28
1800	2200	400	44
2200	2735	535	76

Au and Ag values also increase to the north, and are of interest. The 1,760 feet of Cretaceous rocks in hole 05C-7 had a weighted average of 0.85 ppm Ag (MRI recovers 2.2 ppm Ag at the Continental Pit Mine in Butte).

Anaconda and Molycorp Drill Hole Geochem:

Available data for the Anaconda and Molycorp holes indicate that they too carried consistent low-level copper, occasional molybdenum, and bottomed in mineralization (see Appendix A for a breakdown of these analyses).

Table 5: Weighted Average of Copper in Cretaceous Rocks in Anaconda and Molycorp Drill Holes (in feet).

Hole Number	Total Depth	From	To	Thickness	Cu (ppm)
A-1	1255	0	1255	1255	0.09%
A-2	2425	811 ¹	2425 ¹	1614	0.10%
A-3 ²	2274	200	1771	1571	0.06%
L-1 ³	2723				
L-2 ³	1985				
L-3	3000	1540	3000	1460	0.10%

¹ Assumes that the analyses were incorrectly posted as discussed in Appendix A.

² It appears that no analyses were done below 1771 feet.

³ No significant intersections of >0.05% Cu were reported in these holes.

Note that hole A-2 carried **1,109 feet of 0.13% Cu** from 811-1920 feet. The strongest Mo values occurred in L-3. It carried a number of 10-50 foot intercepts of 100-350 ppm Mo, and Mo increased downhole (see Appendix A).

Summary:

The O.T. and Anaconda/Molycorp data show a number of 50 to 1,500 foot intercepts in the 0.1% to 0.13% Cu range. **This is about 10% of the minimum grade that would be required to be economic, and these intercepts have mineable dimensions.**

THE DRY GULCH TARGET

DATA SOURCES

The Dry Gulch Target is defined by the 2001 Fugero airborne DIGHEM and magnetic survey (Fugero, 2001), and the 2004 Quantec Titan 24 MT-IP survey (Quantec, 2004). The Fugero airborne survey covers the entire target area. The Quantec Titan 24 survey covers the SW part of the target area. Note that the Matrix IP did not see deep enough to be of use in evaluating porphyry mineralization in the Dry Gulch Target.

TARGET SUMMARY

The Dry Gulch Target is contiguous with and south of the North Area Target, and centered on Dry Gulch. It could be about the same dimension and orientation as the North Area Matrix IP anomaly, as shown in Figure 12. However, **this is based on extremely limited data.** The target is Cretaceous porphyry mineralization in the Elkhorn Volcanics and Boulder Batholith, similar to in the North Area Target. **These rocks lie at 100 – 700 meter (typically 600 -700 meter) depths in the target area, and produce a strong Titan 24 chargeability high. Additional evidence suggests that this could be part of the core of the porphyry system.**

QUANTEC TITAN 24 GEOPHYSICS

The upper figure in Figure 21 shows the location and names of the Titan 24 lines. The lower figure shows some of the below discussed Titan 24 anomalies. Two lines were run in the North Area Target, five in the Kit Carson Area, and two in the Ruby Mine Area. **Remember that these lines were run prior to O.T.'s drilling in and the definition of the North Area Anomaly.** Figure 22 shows the sharp chargeability cross sections for these lines. **The Cretaceous rocks form a definite elongated saucer-shaped chargeability high. Also note how much stronger the chargeability becomes to the north (north of line K4).** These individual sections are shown in more detail in Appendix D, so depths can be determined.

Appendix C shows three level plans for the smooth chargeability. The 166 meter (500 feet) plan only sees the overlying Tertiary volcanic rocks, and no strong highs are present. Cretaceous rocks (chargeability highs) begin to show at the north end of the 500 meter (1,500 feet) plan. These occur along lines N1 and N2, near O.T. holes NA 04-6 and 05C-6. The 1000 meter (3,000 feet) plan shows the chargeability high expanding to the south at depth.

Quantec's initial interpretation of the data was that the chargeability highs were caused by the underlying Boulder Batholith. They were correct, except that the highs likely also include the Elkhorn Volcanics. Appendix E has Quantec's discussions of the Kit Carson and North Area Target geophysical lines, and key portions of their text are highlighted in yellow and red. The Cretaceous contacts are drawn on the associated sharp model IP chargeability sections with red lines.

Following are some thoughts on the saucer-shaped chargeability high caused by the Cretaceous rocks.

1. **The chargeability values consistently increase to the north in the sections.** However, they are only detecting overall sulfide content. Ore is not necessarily associated with the highest chargeability values.
2. Quantec points out that the chargeability highs in the North Area Target (lines N1 and N2) are associated with **low** resistivity, whereas the chargeability highs in the Kit Carson Area (lines K1-K5) are associated with **high** resistivity.
3. The western lip of the saucer appears to “curl up” in the sections for lines K1 through K5 (see Figure 22). This is probably caused by the NNE-trending Smedes Fault, which is up to the west.
4. The eastern lip of the saucer also appears to curl up. This may be caused by another subparallel fault. **This fault would parallel Lowland Ck, and be up to the east.**
5. If 3 and 4 above are correct, then the saucer may be a NNE- to NE-trending graben.
6. **This inferred graben axis coincides with Titan 24 resistivity highs AND with the NNE-trending mag low in the Fugero airborne survey** (discussed below).
7. The sections for lines K1 through K5 show the Cretaceous rocks to be shallow on the eastern lip of the saucer. This would be along Lowland Ck. (see Figure 21. This is not suggested as a drill target because the chargeability values are lower. However, it does have important ramifications for porphyry exploration to the north. **It appears that Cretaceous rocks could be just as shallow or even shallower on the east side of Lowland Ck., east of the Dry Gulch and North Area Targets.**

OTHER DATA SUPPORTING THE TITAN 24 RESULTS

The Titan 24 data vets well with O.T.’s 2005 and 2006 drilling. Holes NA 04-6 and 05C-6 encountered Cretaceous rocks at the depths predicted by Lines N1 and N2. These rocks carried sulfides, explaining the chargeability highs. Hole 06C-1 hit Cretaceous rocks at the depth predicted by Line K2. These rocks were only weakly (propylitically) altered, explaining why the chargeability values are not as high on this line. **The Titan 24 therefore appears to accomplish the following.**

1. **Distinguish Cretaceous rocks from overlying Tertiary ash-flow tuffs.**
2. **Discriminate between higher-sulfide proximal (potassic and phyllic) alteration versus lower-sulfide distal (propylitic) alteration.**

Several other data sources suggest that the Dry Gulch Target could be the core of the porphyry system.

1. **The North Area Matrix IP anomaly curves in plan, suggesting that the core of the system could be to the south** (see Figure 13). In other words, the North Area Anomaly could be a pyritic fringe to the system.
2. Surface sampling of Elkhorn Volcanics indicated higher Cu and less Co, Zn, Mn, and Mg south of the Boulder River. **This would give a vector to the south.**

FUGERO AIRBORNE SURVEY

The Fugero Airborne survey appears to provide some useful information when compared with the other Dry Gulch data. **However, I am not well versed in airborne geophysics, and the following discussion should be reviewed by someone who is.** This survey is also discussed by WGM (2003 and 2006). The Fugero anomalies are plotted on Figure 21.

Figure 23 is the Automatic Gain Control image from the Fugero survey. It shows the following.

1. A NNE-trending mag low appears to coincide with the axis of the Titan 24 chargeability saucer (i.e. possible graben) that was discussed above.
2. **A strong ovoid mag low occurs within the larger body. It is centered in the middle of the Dry Gl. target** (see Figure 21).
3. A strong N-trending mag high occurs along the western part of the survey (see Figure 21). This appears to reflect the shallow Cretaceous rocks on the west (upthrown) side of the Smedes Fault. **Note that this has a similar signature as the potassic and phyllically altered rocks in the North Area Target.**

Figure 24 shows the Total Magnetic Field image from the Fugero Survey. The strong mag low and mag high discussed in items 1 and 2 above are visible. Figure 25 is a three dimensional representation of the Total Magnetic Field data. In addition to the above two features, a strong mag high along the northern part of the survey is also evident. It appears to coincide with the North Area Anomaly.

SIZE OF THE PORPHYRY SYSTEM

The Ruby Porphyry appears to be a very large system, based upon the limited available data. It remains open to the east, west, and at depth. The following discussion is an attempt to approximate the possible size of the system. It is obviously a blue sky arm wave, because very limited data is available.

It can be argued that the proximal alteration is closed to the north and south, as described below.

- Elkhorn Volcanics north of the Boulder River are propylitically altered.
- Hole 06C-1 (see Figure 17) was a wide step-out hole O.T. cited on an Au-Ag target. It was deepened to evaluate the southern end of the porphyry system. Cretaceous rocks were encountered at 1857'. Approximately 130' of Elkhorn Volcanics overlay quartz monzonite porphyry of the Boulder Batholith. Only 450' of the quartz monzonite was drilled because it had only minor potassic and phyllic alteration. Most alteration was argillic and propylitic, and weakened down hole. Sulfide content was also not as strong as north of Dry Gulch. In order to conserve funds, only 18 samples of the strongest mineralized porphyry were analyzed. As expected, their geochemistry was flat.

There appears to be about 16 billion tons of potassic and phyllically altered porphyry with continuous low-level copper enrichment in the North Area Target. The North Area chargeability anomaly occurs within this mass, and appears to represent about 6 billion tons of material. Again, both of these masses are open to the east, west, and at depth. The basis for these calculations is as follows.

- Rock density is 12 ft³/ton
- The system is 3,000' vertical. (The deepest hole [NA04-6] drilled 2,630' of porphyry and never drilled out of it, so this is a reasonable guess.)
- Potassic alteration and low-level copper extend 2,000' south of the North Area Anomaly (as evidenced by holes NA04-6 and 05C-6).
- Potassic alteration and low-level copper extend 1,500' north of the chargeability high (1/2 of the distance between the northern edge of the chargeability high and 05C-8).
- This being the case, the potassic altered porphyry with low-level copper enrichment is 12,000' E-W by 5,500' N-S by 3,000' thick = **16 billion tons**
- The North Area chargeability high is 12,000' E-W by 2,000' N-S by 3,000' thick = **6 billion tons.**

The dimensions of the Dry Gulch Target are unclear. It could be the same approximate dimensions as the North Area Target. If so, **the total size of potassic and phyllically altered porphyry with low-level copper enrichment could be as much as 32 billion tons, and is open to the east, west, and at depth.**

IMPLICATIONS OF THE NEARBY BUTTE PORPHYRY SYSTEM

Most of the Ruby Porphyry is buried and blind. O.T. has studied the porphyry system at nearby Butte, Montana to help guide exploration in the North Area Target. **Butte is the fourth largest porphyry copper system in the world, and is the second largest silver district in the U.S. The Butte District contains two large open pits, 50 vertical miles of shafts, and 10,000 horizontal miles of level workings. Twenty-seven of the underground mines exceeded 3,000 feet in depth.** See Appendix B for an overview of Butte and its underground production.

Over 95% of the Butte metal production was from “Main Stage” vein mineralization. This consists of both high-grade veins and intermediate-grade/bulk underground mineable zones. The Main Stage mineralization postdates and crosscuts the “Pre-Main Stage” mineralization, which consists of low-grade disseminated and stockwork-controlled mineralization more typical of porphyry deposits.

The Ruby Porphyry is about 15 miles northeast of Butte, and the two are metallogenetic twins. Following are some of the important geological similarities between the Butte and Ruby Porphyry systems.

- They are both late Cretaceous, and hosted by the same phase of the Boulder Batholith (the Butte Quartz Monzonite).
- Most porphyry copper and molybdenum occurrences in Idaho and Montana occur along the northeast-trending Great Falls Tectonic Zone. It experienced dextral movement during the late Cretaceous. Both Butte and Ruby occur along the axis of the GFTZ. The two properties therefore have similar structural settings.
- Both are very large systems. Most of the underground workings in Butte were concentrated in a 7 square mile area, and were as deep as 5,000 feet. The North Area Target as presently understood is 3 square miles in plan and 2,600 feet deep. It is still open in 2 directions and at depth. The Dry Gulch Area Target could be about the same size.
- The two systems have a curved, arcuate shape in plan, with east-west trending linear features on the north side of the main system.
- Both contain potassic alteration (K-feldspar and biotite) overprinted by phyllic alteration.
- Both contain widespread low-level copper.

COMPARISON OF THE RUBY PORPHYRY TO GIANT PORPHYRY SYSTEMS

The Ruby Porphyry appears to be a Type 2 system (Seedorf et. al. 2005). They state that ***“many of the world’s great porphyry Cu orebodies have late base metal lodes displaying this configuration”***. **These include Butte, Resolution, Chiquicamata, Escondida, El Salvador, and Rosario.**

Type 2 systems contain late hydrolytic (such as phyllic) alteration extending down into core potassic alteration. The associated late veins are commonly high sulfidation, and Cu/Ag/Zn-rich. These veins are analogous to the “D Veins” described at El Salvador (Gustafson and Hunt, 1975). They crosscut the more typical “disseminated porphyry-type” mineralization (i.e. chalcopyrite, bornite, and molybdenite associated with potassic alteration). Hypogene chalcocite, enargite, covellite, digenite, tenantite, sphalerite, and galena are common in the late veins. They can contain substantial underground mineable ore, and host a considerable amount of the overall metal budget of the porphyry system.

The Butte Main Stage Veins are a Type 2 system. They consist of large late-stage phyllic veins that overprint the potassic cores of the Anaconda and Pittsmond domes. Phyllic alteration was key to producing the Main Stage Veins. **Phyllic alteration extends down into potassic at Ruby, and it therefore has a Type 2 configuration.**

The following appendices document the similarities of the Ruby Porphyry to giant Type 2 systems.

1. Appendix F discusses the similarities between Butte Main Stage and other Type 2 systems, and summarizes the grades and tons for some of the Type 2 ores. It also details the Type 2 characteristics that have been recognized in the Ruby Porphyry to date.
2. The Resolution, Arizona copper porphyry is an enormous (1.3 billion tons grading 1.5% Cu and 0.04% Mo) Type 2 system. It is being developed by a RTZ-BHP joint venture. The orebody lies 4,500-7,000 feet below surface, and would be mined by block caving. The planned operation is billed as the next generation of copper mines. Appendix G describes the dimensions of the Resolution deposit. The appendix also contains a series of overlays documenting that the Ruby Porphyry contains sufficient room for a similar large orebody, and that the previous wide-spaced drilling at Ruby could have missed such a deposit.
3. I feel that the large mass of continuous low-level copper mineralization in the Ruby Porphyry is significant. Appendix H describes similar masses between ore-bearing veins at other Type 2 systems.

IMPORTANT ISSUES

Following is a list of key topics that should be refined as more drilling is completed.

- *Does the North Area Target contain significant Main Stage-type mineralization?* This is likely the single most important issue to be resolved. The Main Stage mineralization at Butte postdates and cross cuts the Pre-Main Stage (lower grade disseminated and stockwork-controlled chalcopyrite and molybdenite) mineralization. Main Stage mineralization is associated with sericitic (phyllic) alteration, contains considerable sphalerite, and numerous copper species other than chalcopyrite. Most of the North Area Target rock drilled to date appears to be more like the Pre-Main Stage mineralization. However, **localized zones of Main Stage-type mineralization appear to have been encountered in the North Area Target** as described below.
 - Holes NA04-6 and 05C-6 contain at least two occurrences of young sphalerite associated with sericitic alteration in fault gouge. This sphalerite postdates the widespread chalcopyrite-molybdenum mineralization, and is darker colored than earlier sphalerite. The best intercept of this material was 0.66% Zn over 5 feet.
 - A 1977 MolyCorp report refers to late sphalerite-tennantite-tetrahedrite-galena mineralization in breccias that was probably the last period of mineralization in hole L-2.
 - WGM (2006) state that MolyCorp hole L-7 had chalcocite (in addition to chalcopyrite and molybdenite), but no analytical data are available.
- *What is the geometry and effect of the late phyllic overprint?* The overall geometry of the phyllic overprint in the Ruby Porphyry is presently unclear, as is the effect that the phyllic alteration had on copper protore (late phyllic alteration can deplete or enrich protore). The fact that phyllic alteration substantially enriches protore at Butte argues that it also does at Ruby. The fact that the strongest copper grades in the OT drilling are associated with phyllic alteration also argues for this. However, this issue can only be determined by additional drilling.
- *How deep should the system be explored?* The North Area Target appears to be at a higher level in the Boulder Batholith than Butte. This is because more Elkhorn Mountains Volcanics occur peripheral to and over the northern half of the batholith (see Figure 7). It can therefore be argued that the analog to Butte could be quite deep in the North Area Target. However, the Butte veins were exposed at surface, and it is unknown how much higher vertically they extended.

- *What is the primary structural orientation of the system?* The lack of surface exposures make structural analyses difficult. **The general orientation of the mineralized system appears to trend approximately E-W**, based upon the North Area geophysical anomaly. Other data supporting this orientation are as follows.
 - Veins north of the Boulder River in Cretaceous rocks trend E-W.
 - The overall Butte District (15 miles away) trends E-W.
 - Most veins of consequence throughout the Boulder Batholith trend E-W.

RECOMMENDATIONS

- The North Area Target has the advantage of detailed geophysics and some limited drill data relative to the Dry Gl. Area. These clearly justify additional exploration. However, **in my opinion, the North Area and Dry Gl. Targets are equally compelling at this early stage of exploration, and both justify additional exploration.**
- O.T. holes NA04-6, 05C-6, and 05C-7 are the southernmost holes into proximal alteration on the property, and are near the boundary between the North Area and Dry Gulch Targets (see Figure 12). Data from these three holes provides arguments for drilling **both** of the targets.
 - Appendix I has strip logs for O.T. Holes NA04-6, 05C-6, and 05C-7. Cu and Mo values are comparable in potassic and phyllic alteration in Holes 05C-7 and 05C-6. However, **higher** Cu and Mo values are associated with phyllic (versus potassic) alteration in Hole NA04-6. Hole NA04-6 is the southernmost hole into proximal alteration on the property. **It therefore can be argued that phyllic alteration is beginning to enrich Cu and Mo to the south (toward the Dry Gl. target).**
 - However, the **average** Cu and Mo values in Cretaceous rocks in these holes increases progressively to the north. **It can therefore also be argued that that overall Cu and Mo is increasing to the north (toward the Matrix IP anomaly).**
- A careful drill plan has been developed for first pass drilling in the North Area Anomaly. It consists of eight holes totaling approximately 27,500 feet. The holes are shown on Figure 26, including their drill traces. Appendix J describes the holes in some detail. They were carefully sited based upon geology, structure, geophysics, and geochemistry using the following criteria.
 - To drill as close to 0° or 180° bearings as possible in order to bisect the known regional orientations of veins in the Boulder Batholith (including at Butte).
 - To overlap one another, so as to constitute fences. The entire girth of the IP anomaly will be transected in the eastern, central, and western portion of the anomaly.
 - To drill the stronger Matrix IP anomalies and offsets of anomalies (i.e. likely faults).
 - To drill across the MMI anomalies.

The roads and drill sites have been permitted, and the program is drill ready.

- The North Area IP anomaly appears to weaken and become more diffuse to the west (see Figure 13). However, this may actually be caused by it becoming deeper to the west. Therefore, the western (apparently weaker) part of the anomaly may be as strong (or stronger) than the eastern portion. Note that the Main Stage Veins at Butte extend a considerable distance west of the Pre-Main Stage mineralization. It can be argued that Main Stage-type veins could be present in the western part of the anomaly. **The western (more diffuse) portion of the North Area chargeability anomaly should definitely be drilled.**
- **The Dry Gulch Target justifies considerable additional work.** Additional geophysics covering the entire target should be run prior to targeting costly drill holes. The geophysical grid is permitted.
- **The Titan 24 survey indicated that Cretaceous rocks could be just as shallow or even shallower on the east side of Lowland Ck., east of the Dry Gulch and North Area Targets. This area should not be dismissed.**
- **The area north of the Boulder River should not be dismissed.** Bedrock is Elkhorn Volcanics with propylitic alteration. Exposures are poor, and much of the terrain is covered by glacial debris. O.T. controls most of this ground, and the only work to date has been hole 05C-8 in the western portion of the area. The hole had to be terminated earlier than planned due to slow drilling and an early winter. The upper 1,117 feet of the hole encountered fine-grained intermediate-composition igneous rocks thought to be Elkhorn Mountains Volcanics. These rocks contained potassic alteration, widespread tourmaline, and traces of chalcopyrite. Butte quartz monzonite was encountered from 1,117 feet to the bottom of the hole at 1,386 feet. It also contained potassic alteration and traces of chalcopyrite and molybdenite. Although the copper and molybdenum contents were lower than in the other three O.T. holes to the south, the alteration and mineralization here should not be dismissed. This could be a higher level of the porphyry system, and significant mineralization might occur at depth. Geophysics and MMI should be considered for this area. The grid is permitted.
- Another deep hole should eventually be considered between NAO4-6 and 06C-1 to more accurately locate the southern edge of the core alteration.
- Due to the depth of post-mineral cover, **porphyry exploration should focus on Main Stage-type underground mineable targets.** These could be either discrete veins carrying several percent copper, or lower grade bulk-mineable zones carrying 1.5 percent or so copper.
- All holes drilled to date have been vertical; future holes should be **angled** if at all possible.
- The productive part of the system could be deep. Therefore, **holes should be drilled as deep as possible.**

- A structural model was developed for the Butte District, as part of O.T.'s research (Foster, 2006). Almost all Butte Main Stage Veins formed on WNW antithetic and ENE synthetic structures related to the GFTZ. Most significant veins in the Boulder Batholith trend E-W. The overall orientation of the North Area geophysical anomaly is E-W. **It very strongly recommended that future holes be oriented N-S (or S-N).** This orientation would intersect all of the above three orientations at a reasonable angle.
- Drilling N-S or S-N angle holes is prudent given the current state of knowledge about the system. However, the property-scale significance of NNE-trending faults is becoming apparent as more data is evaluated. The existence of the NNE-trending faults has been indicated for some time. P. Meistrick mapped some, they are recognizable in the Fugero, Quantec, and Matrix geophysics, and G. Caffery has identified them with his recent cross sections. These structures have obviously had post mineral movement. However, it is unclear whether they are older structures that were also present during emplacement of the porphyry system. Regional strain was rotated 90⁰ counterclockwise here during about the early Eocene. It would be expected to see new NNE postmineral (antithetic) faults form at this time. However, the possibility that they are also older structures that control porphyry mineralization needs to be considered.
- Downhole geophysics could be very useful, and should be investigated.
- Alteration zonation is a valuable tool that has been used at many porphyries worldwide. Studies of Ruby core focusing on alteration (XRD, XRF, and thin sections) would be relatively inexpensive and could provide very useful data.
- The entire Ruby Property would benefit from a new geological map. It would be critical for the mapper to be well-versed in ash-flow tuff stratigraphy.
- Additional review and compilation of data on Butte would be of value. This would include review of the older (pre 1950) data. In particular, a compilation of alteration and metal zonation would aid the exploration at Ruby. However, the imposing amount of data needs to be considered. Only summary reports should be examined so that the project does not become an endless research endeavor.
- Finally, and perhaps most importantly, it should be stressed that very little is known about the Ruby Porphyry system, and continued exploration here should keep an open mind. Thorough exploration will require considerable deep drilling and continued geophysics. It is a very large system with very limited drilling. The full extent (horizontally and vertically) is presently unknown. The existing geophysical, geochemical, and drill data have not closed the system. Is the North Area IP anomaly part of the core of the system? The potassic alteration overprinted by phyllic alteration argues that it may be. However, perhaps it is the distal fringe of the system, analogous to the western portion of the Butte District.

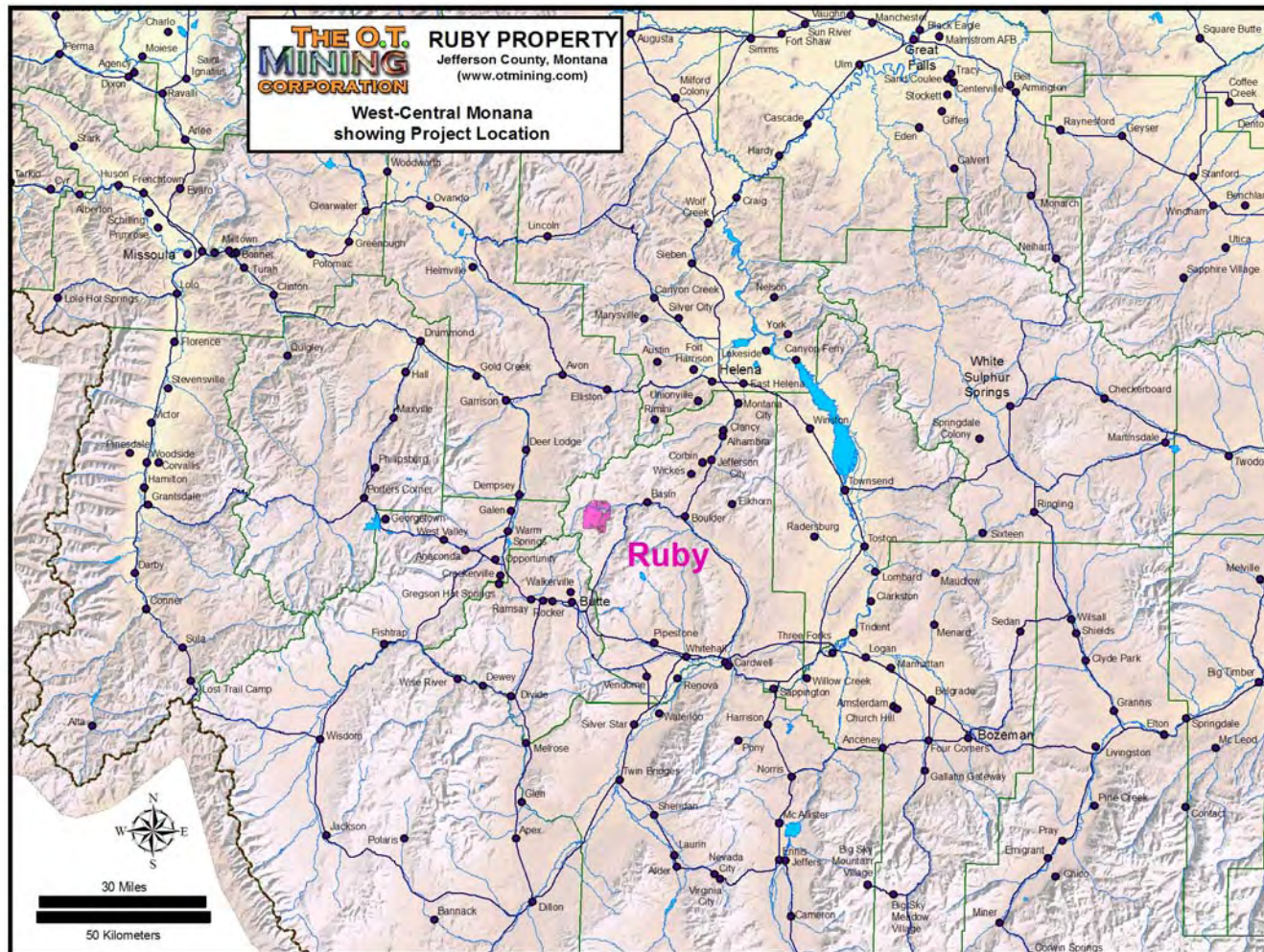
REFERENCES

- Foster, F., and Childs, J.F., 1993, An Overview of Significant Lode Gold Systems in Montana, and their Regional Geologic Setting: *Exploration and Mining Geology*, vol. 2, no. 3, p. 217-244
- Foster, F., 1987, Epithermal Precious-Metal Systems Associated with an Eocene Cauldron: Lowland Creek Volcanic Field, Southwestern Montana. In guidebook of the Helena area, west-central Montana. Edited by R.B. Berg and R.H. Breuninger. Montana Bureau of Mines and Geology Special Publication 95, p. 53-54.
- Foster, F., 2006, Structural Setting of the Main Stage Veins at Butte, Montana; Implications for the Ruby Exploration Project – Preliminary Report: Unpublished Report Prepared for the O.T. Mining Company, 27 p.
- Fugero Airborne Surveys, 2001, Dighem Survey for O.T. Mining Corporation Ruby Mine Property, Montana: Unpublished Report Prepared for the O.T. Mining Company, 102 p., (and associated maps and files).
- Gustafson, L.B. and Hunt, J.P., 1975, The Porphyry Copper Deposit at El Salvador, Chile: *Econ. Geol.*, v. 70, no. 5, pp. 857-912.
- Johnson, R.W., Henderson, J.R., and Tyson, N.S., 1965, Aeromagnetic Map of the Boulder Batholith Area, Southwestern Montana: USGS Map GP-538.
- Matrix Geotechnologies Inc., 2006, Interpretation Addendum Regarding the Induced Polarization/Resistivity Surveys at the Ruby Property – North Grid: Unpublished Report Prepared for the O.T. Mining Company, 102 p., (and associated maps and files).
- Miller, R. N., 1973, Guidebook for the Butte Field Meeting of the Society of Economic Geologists: 16 Sections.
- Quantec Geoscience, 2004, Geophysical Survey Interpretation Report on the Titan-24 MT and DCIP Surveys, Ruby Project, Jefferson County, Montana: Unpublished Report Prepared for the O.T. Mining Company, 115 p., (and associated maps and files).
- Seedorf, E., Dilles, J.H., Proffett, J., Einaudi, M.T., Zurcher, L., Stavast, W. J., Johnson, D. A., and Barton, M.D., 2005, Porphyry Deposits: Characteristics and Origin of Hypogene Features: *Econ. Geol.* 100th Anniversary Volume, pp. 251-298.

WGM, 2003, Report on the Ruby Property: 43-101 Report Prepared for the O.T. Mining Company, 121 p.

WGM, 2006, Technical Review of the Ruby Property, Montana: 43-101 Report Prepared for the O.T. Mining Company, 164 p.

Woodward, L. A., 1986, Tectonic Origin of Fractures for Fissure Vein Emplacement in the Boulder Batholith and Adjacent Rocks, Montana: Econ. Geol., Vol. 81, p. 1387-1395.

**Figure 1: Ruby Project location map**

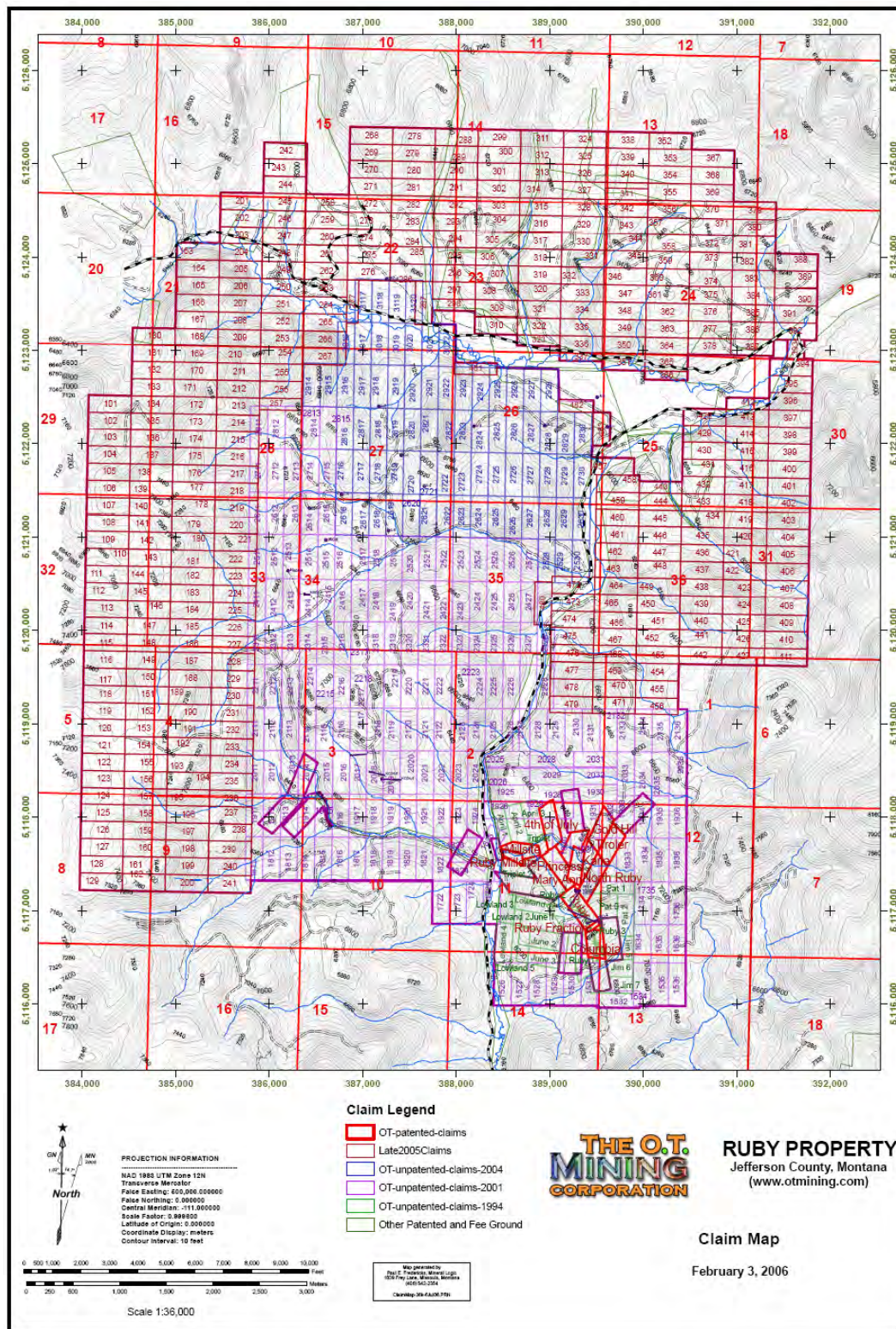


Figure 2: Ruby Project land status. OT owns the 681 unpatented claims shown, and the 13 patented claims outlined by the heavy red lines in the southeast portion of the property.

RECENTLY PERMITTED ACTIVITIES ON USFS LANDS

- **Green** holes and **green** and black roads are permitted and ready to drill.
- **Red** holes and roads have been drilled and are now fully reclaimed.
- **Grey** holes and roads were permitted previously, but have been dropped from the current permit.
- The one **blue** hole (06C-1) is reclaimed, and should be colored red.
- Previously permitted (and completed) Ruby Mine, Kit Carson, and North Area geophysical grids are outlined in **blue**.
- Currently permitted expanded geophysical grids in the North and Dry Gulch target areas are outlined in **purple**.

Figure 3: Explanation for Figure 4.

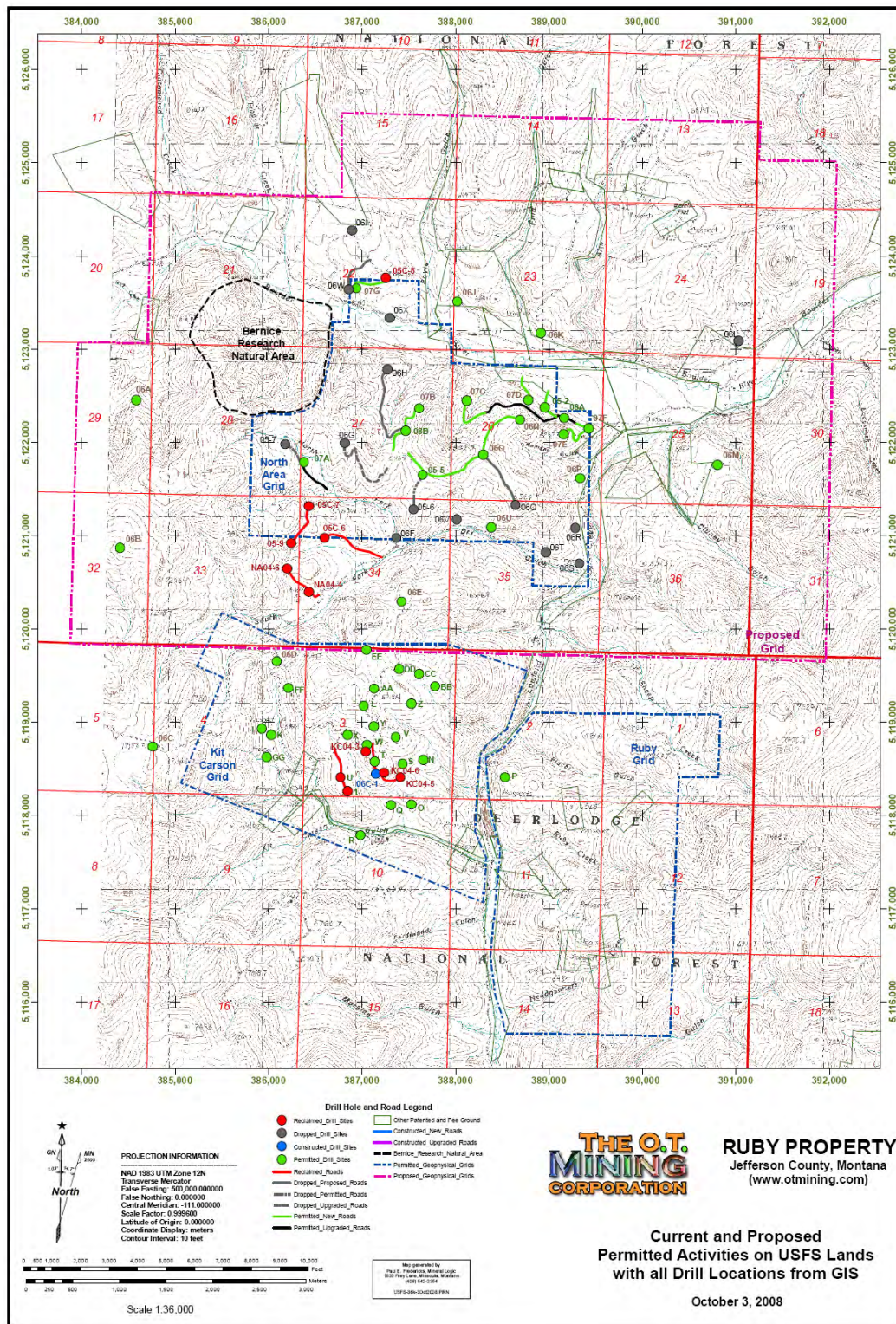


Figure 4: Summary of all current and previously permitted O.T. activities on USFS lands in the Ruby Porphyry area.

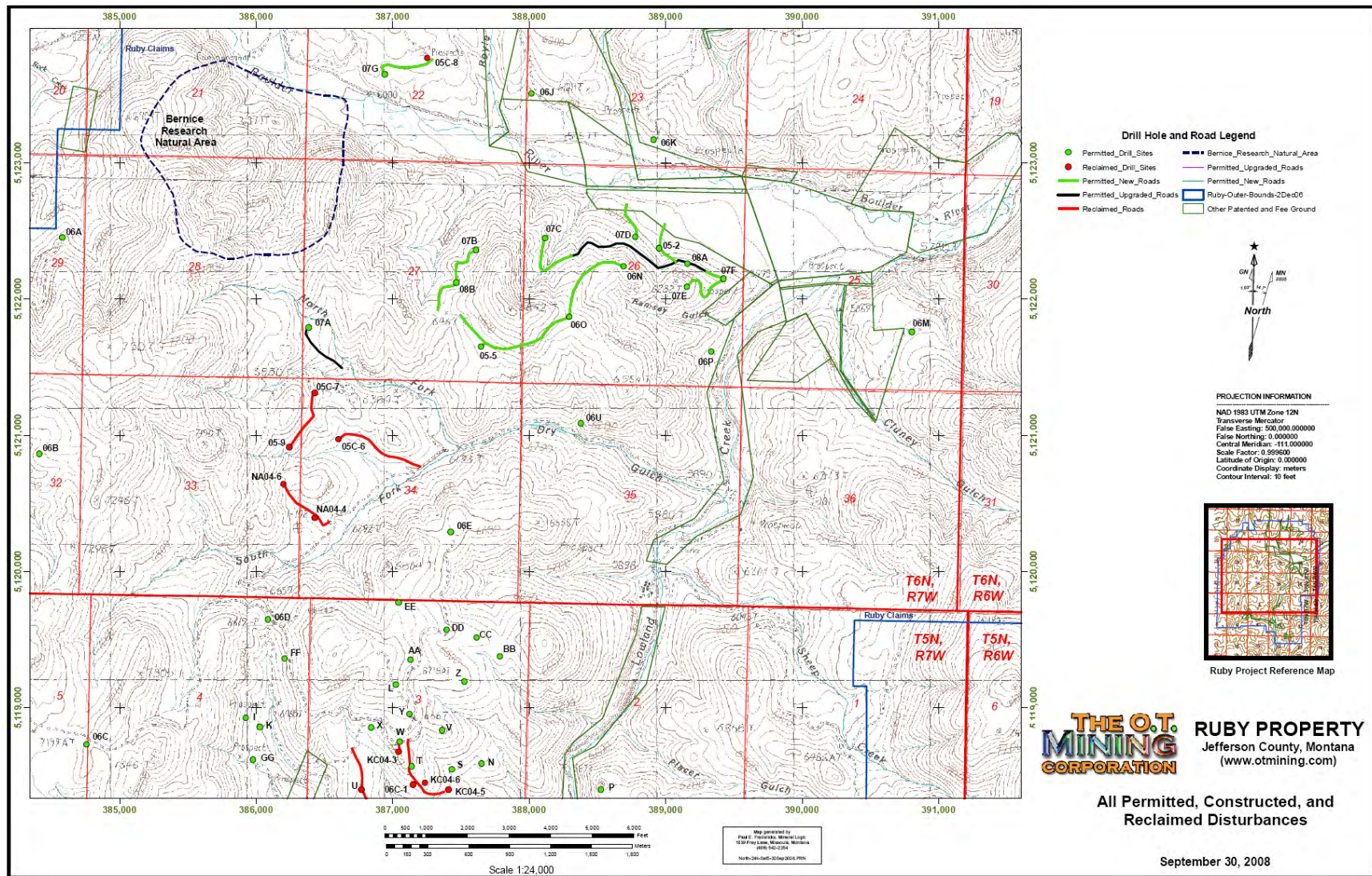


Figure 5: Presently permitted drill holes in the North and Dry Gl. porphyry target areas. The red pads and roads have been drilled and reclaimed. The green and black pads and roads are permitted and ready to drill.

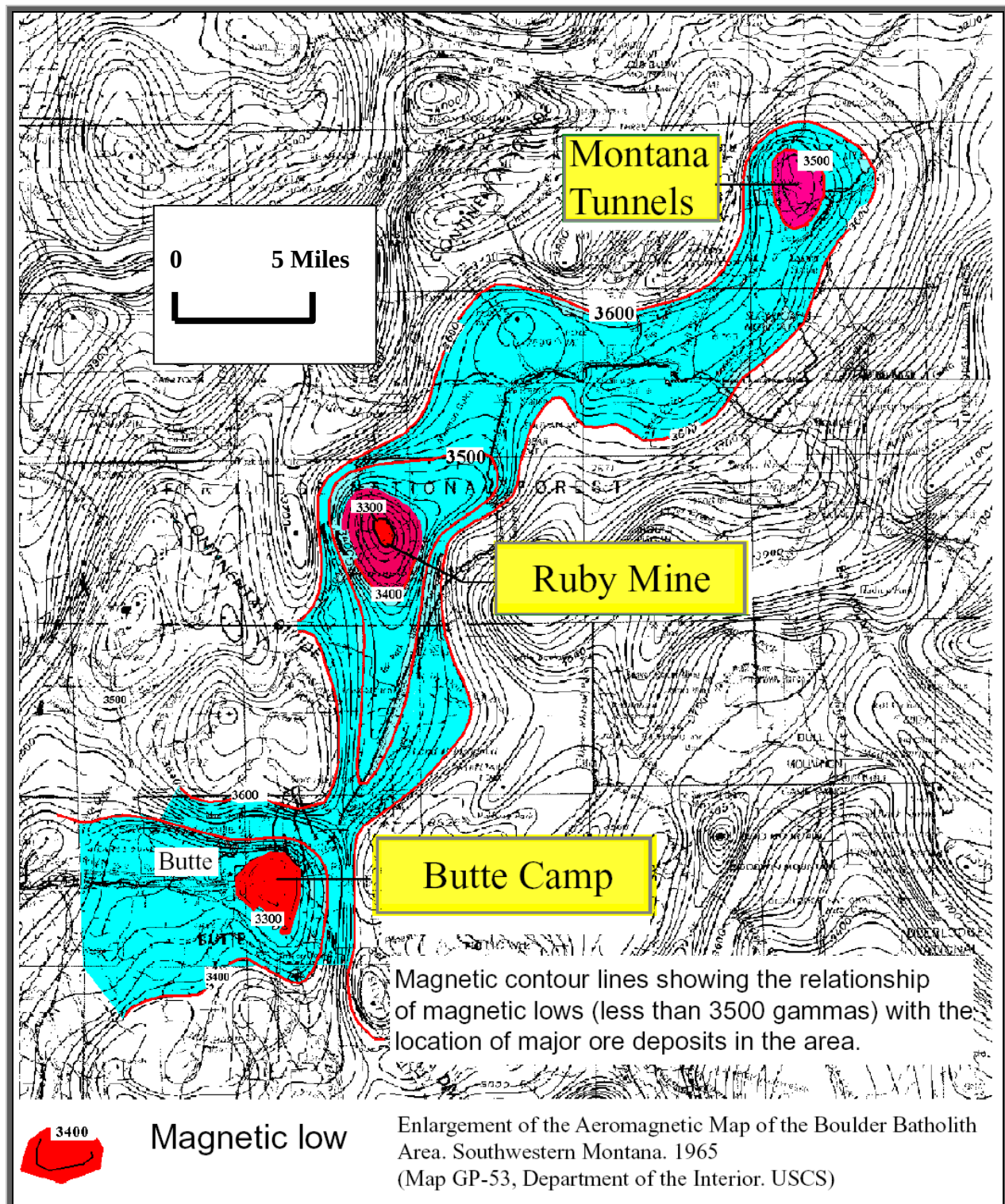


Figure 6: Aeromagnetic anomalies in the northern Boulder Batholith (modified from Johnson et. al., 1965). The NNE-trending magnetic low trough is blue, and the three contained strong lows are red.

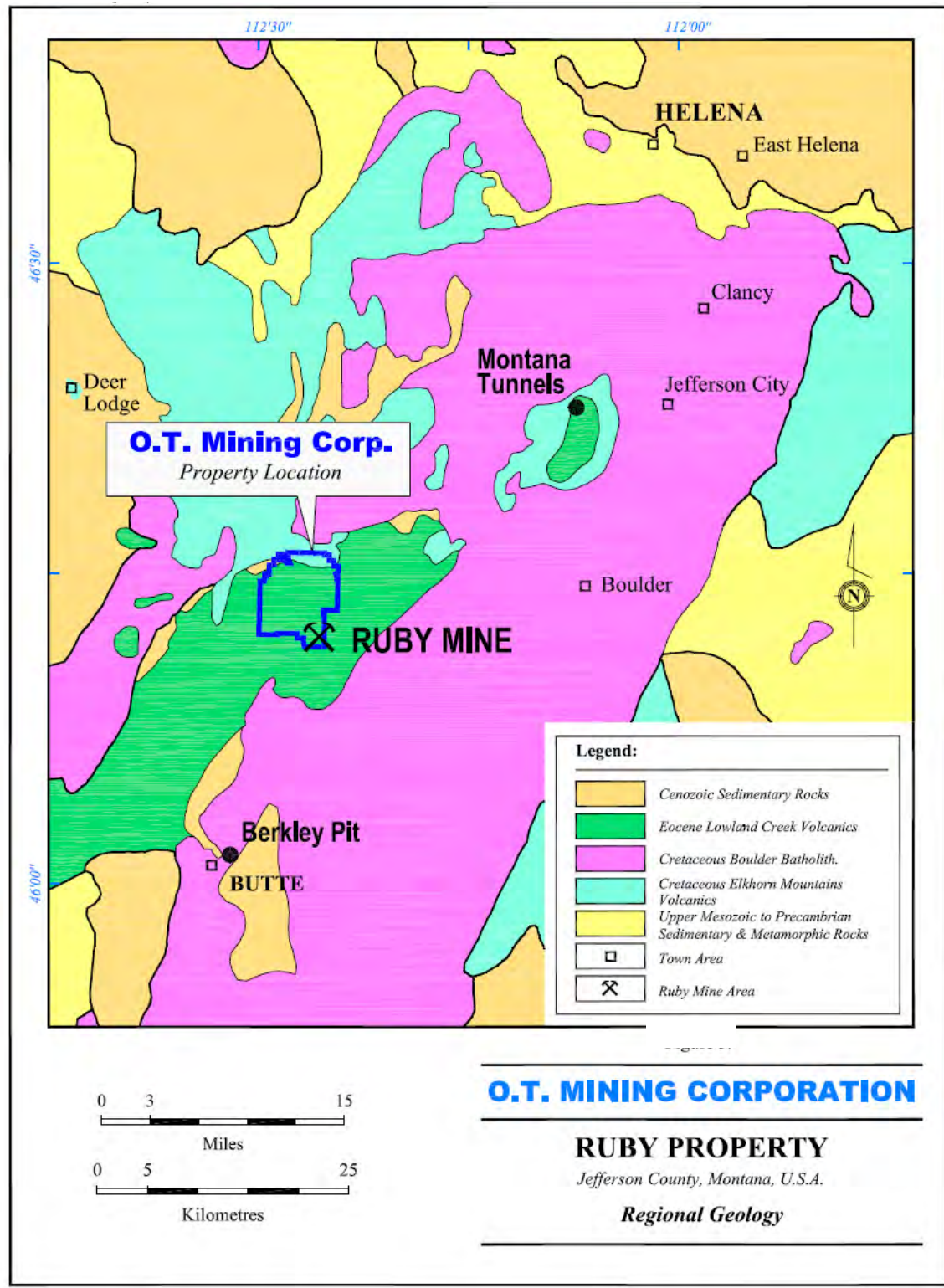


Figure 7: Regional geology of the Ruby Property Vicinity.

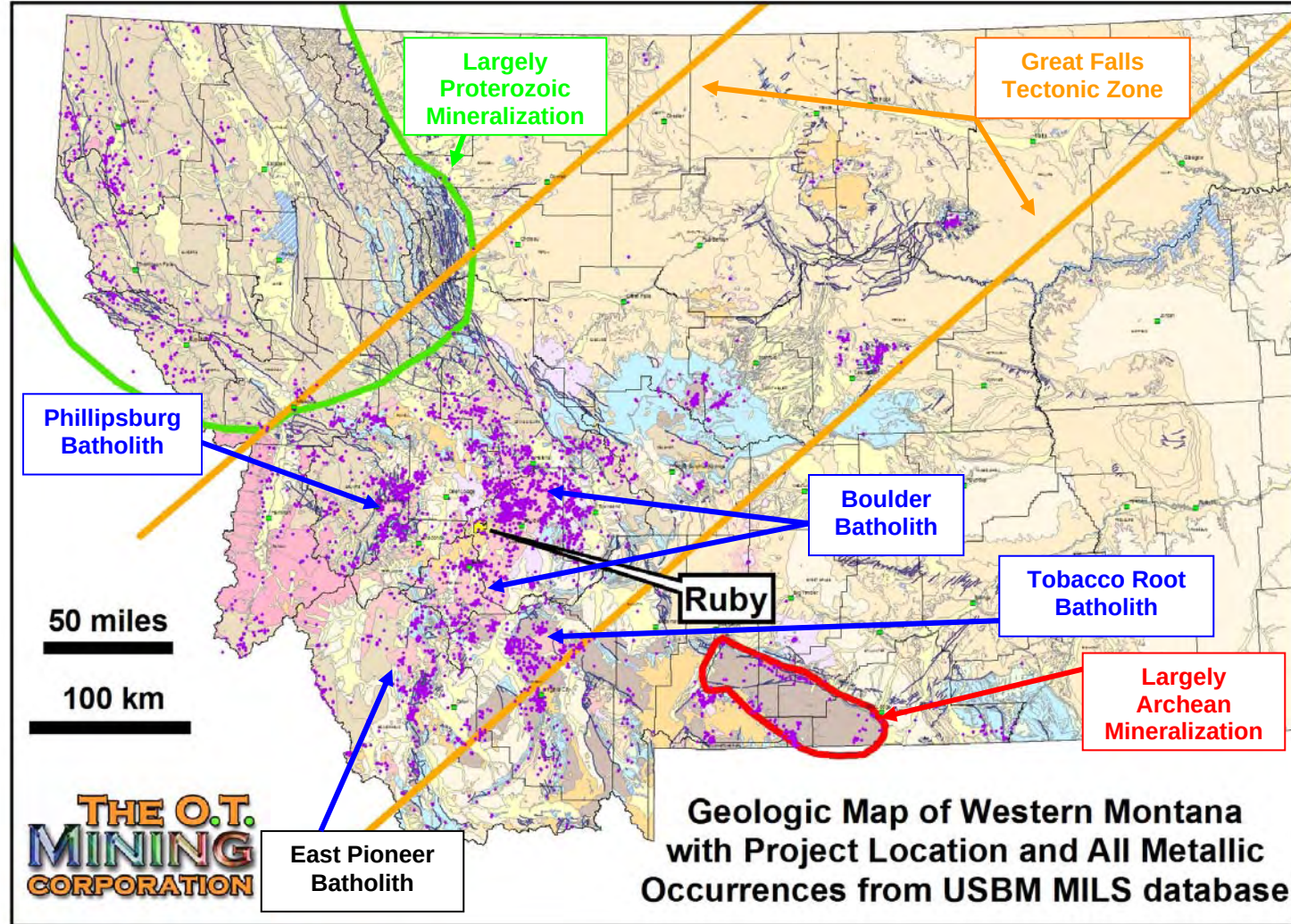


Figure 8: Geology and all metallic mineral occurrences (the purple dots) in western Montana. Over 50% of Montana's metal occurrences are associated with four Cretaceous batholiths (the labeled pink-colored units). The Great Falls Tectonic Zone (discussed in the text) is outlined by the orange lines.

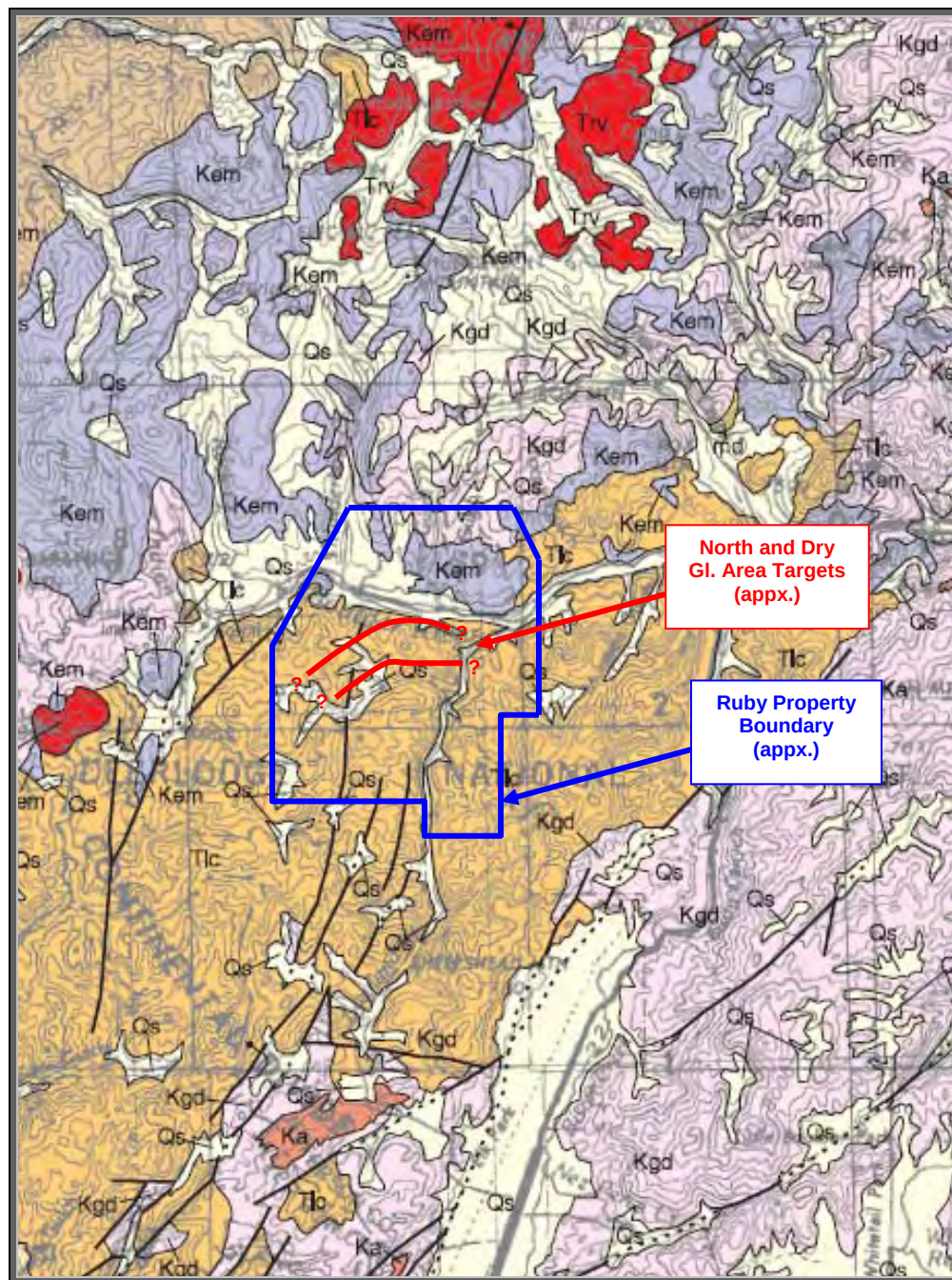


Figure 9: Geological map of the Ruby Project. The tan Tlc unit is the Tertiary Lowland Creek Volcanic Rocks. The purple Kem unit is the Elkhorn Mountains Volcanics. The pink Kgd unit is the Boulder Batholith.

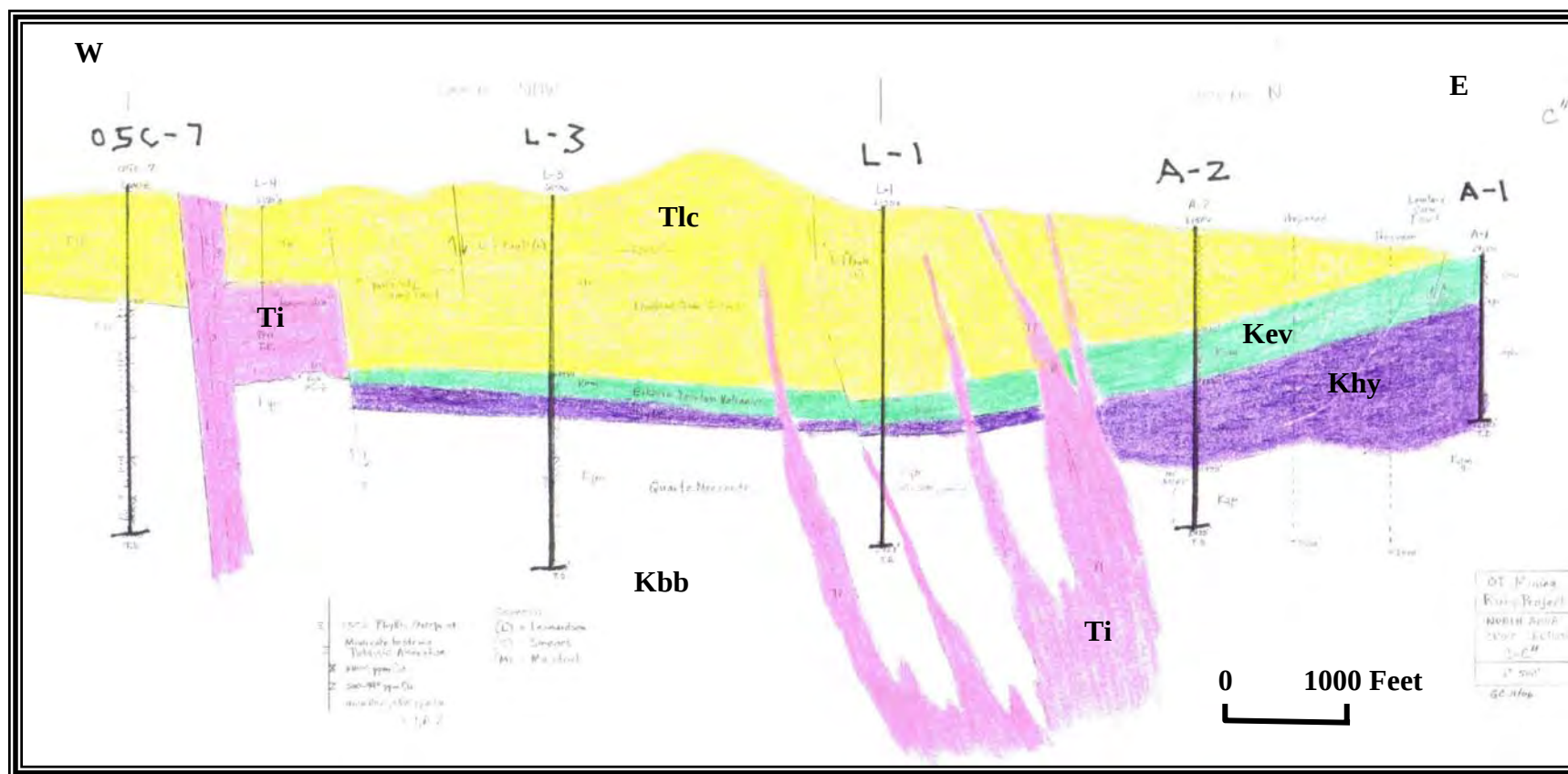


Figure 10: East-West Cross Section through the axis of the North Area Anomaly showing drill holes that pierced the porphyry system. This figure illustrates the stratigraphic relationships on the property. Tlc = Tertiary Lowland Creek Volcanics, primarily ash-flow tuffs. Ti = Tertiary intrusive rocks. Kev = Elkhorn Volcanic rocks. Khy = hybrid rocks. Kbb = Boulder Batholith, largely quartz monzonite. Note how the Cretaceous rocks shallow to the East.

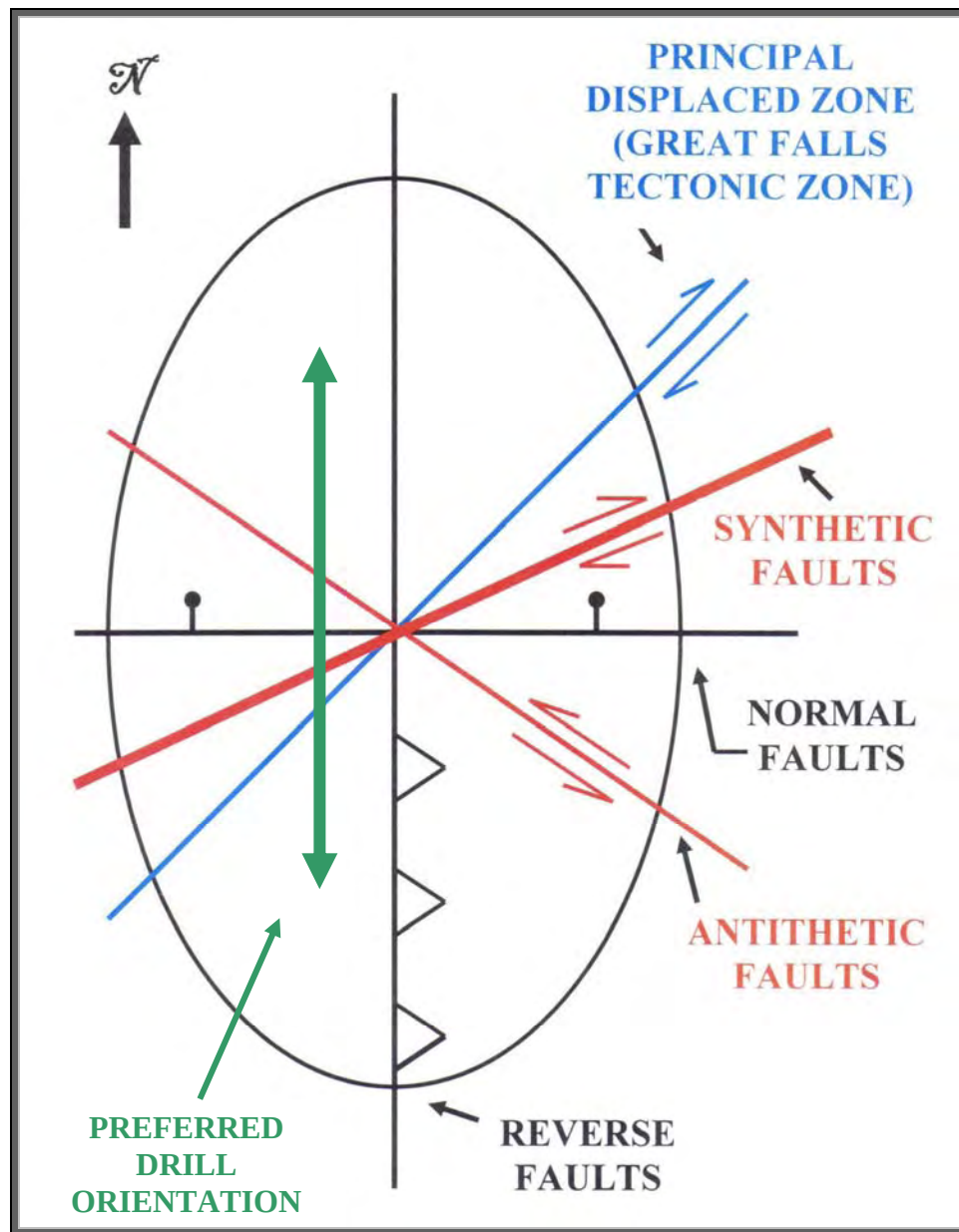


Figure 11: Strain ellipse orientated for the late Cretaceous in southwestern Montana. Almost every vein in the Butte District is either along a synthetic (the Anaconda Veins) or antithetic (the Blue and Horsetail Veins) orientation (Foster, 2006). Therefore, it is recommended that future drilling at Ruby be oriented approximately north-south, as shown by the green arrowed line. This orientation would approximately bisect the synthetic and antithetic trends

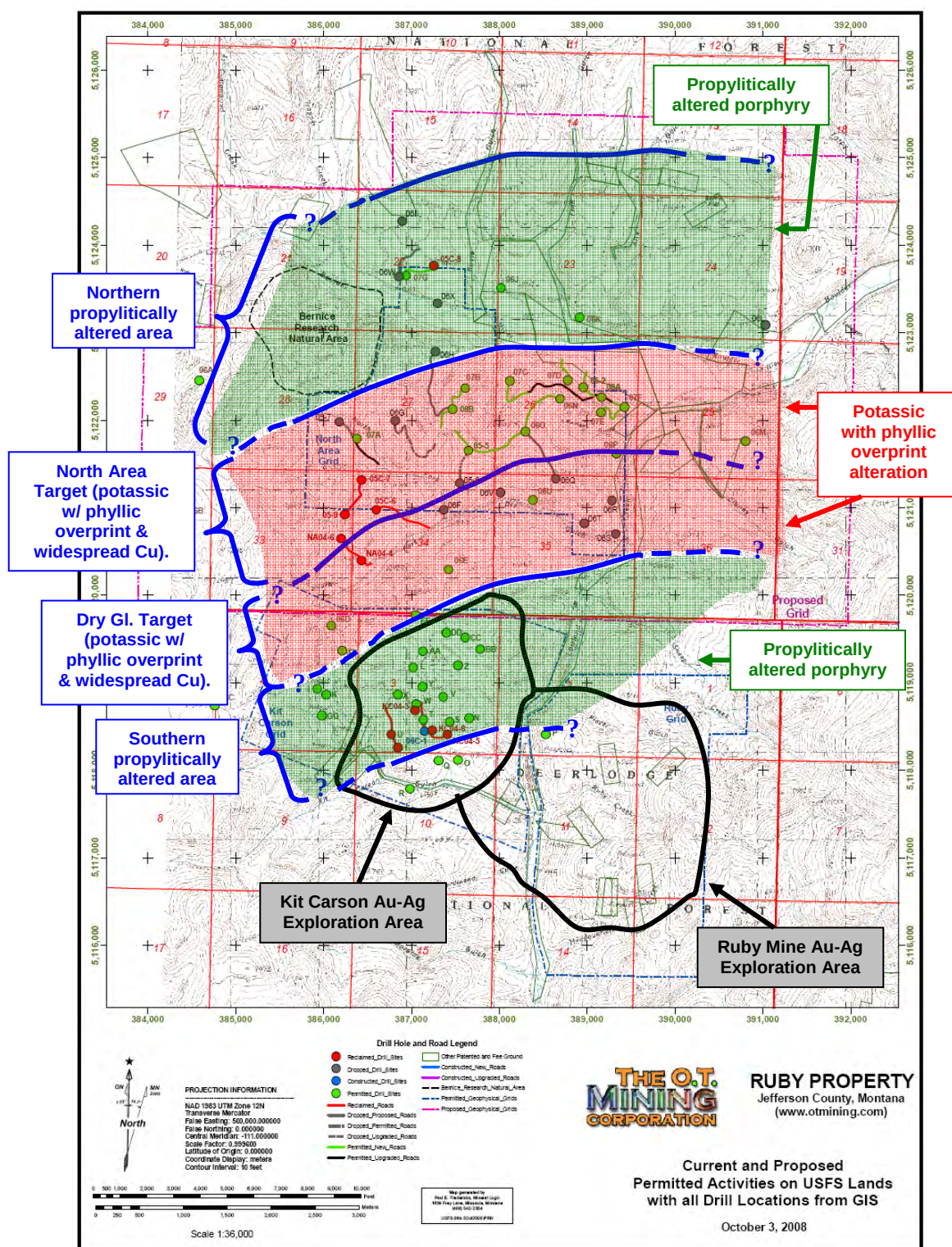
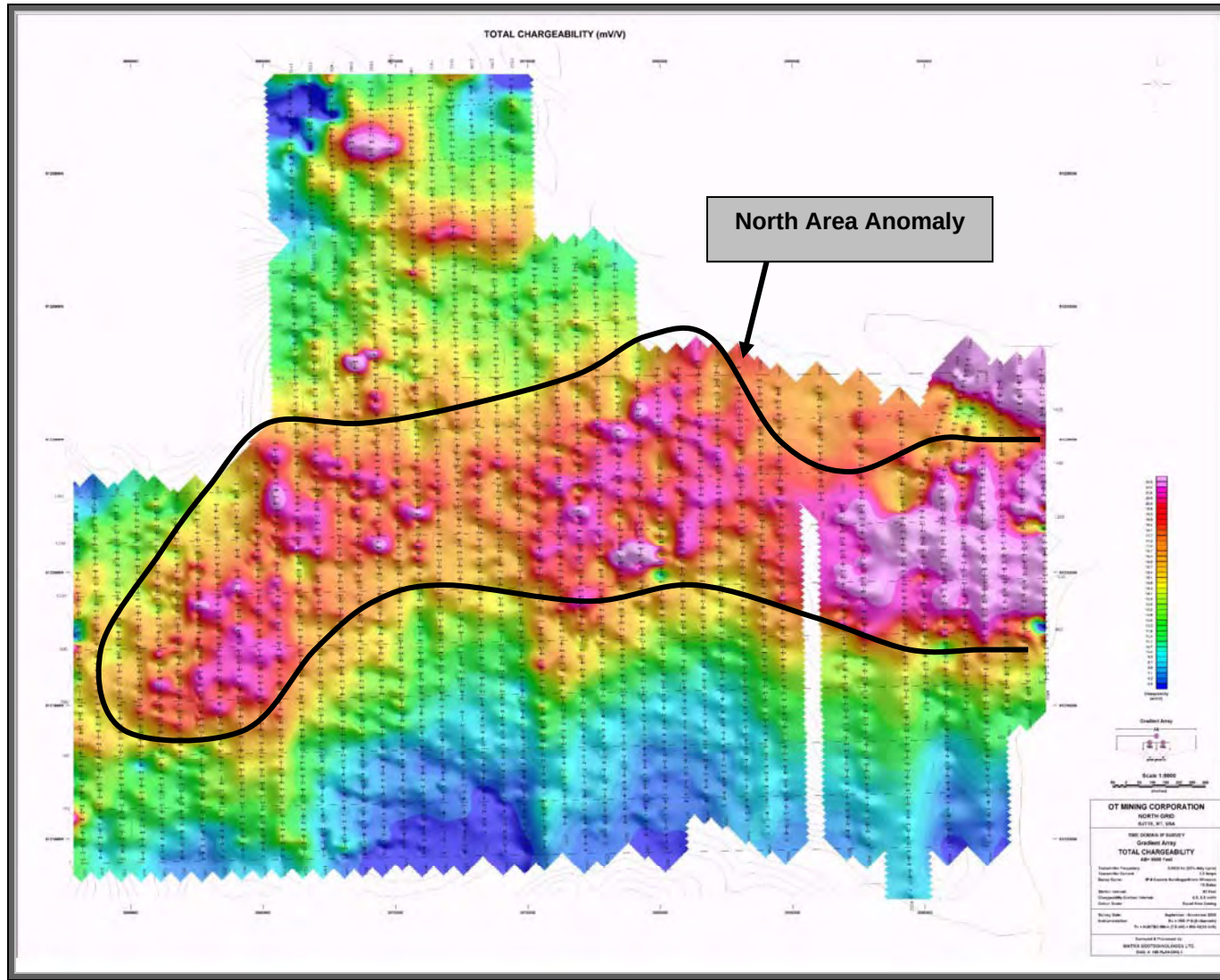


Figure 12: Map of the Ruby Project area showing porphyry alteration facies and various areas discussed in the text. The Ruby Mine and Kit Carson areas shown on the map occur in the overlying Lowland Creek Volcanic section, and contain epithermal Au-Ag targets.



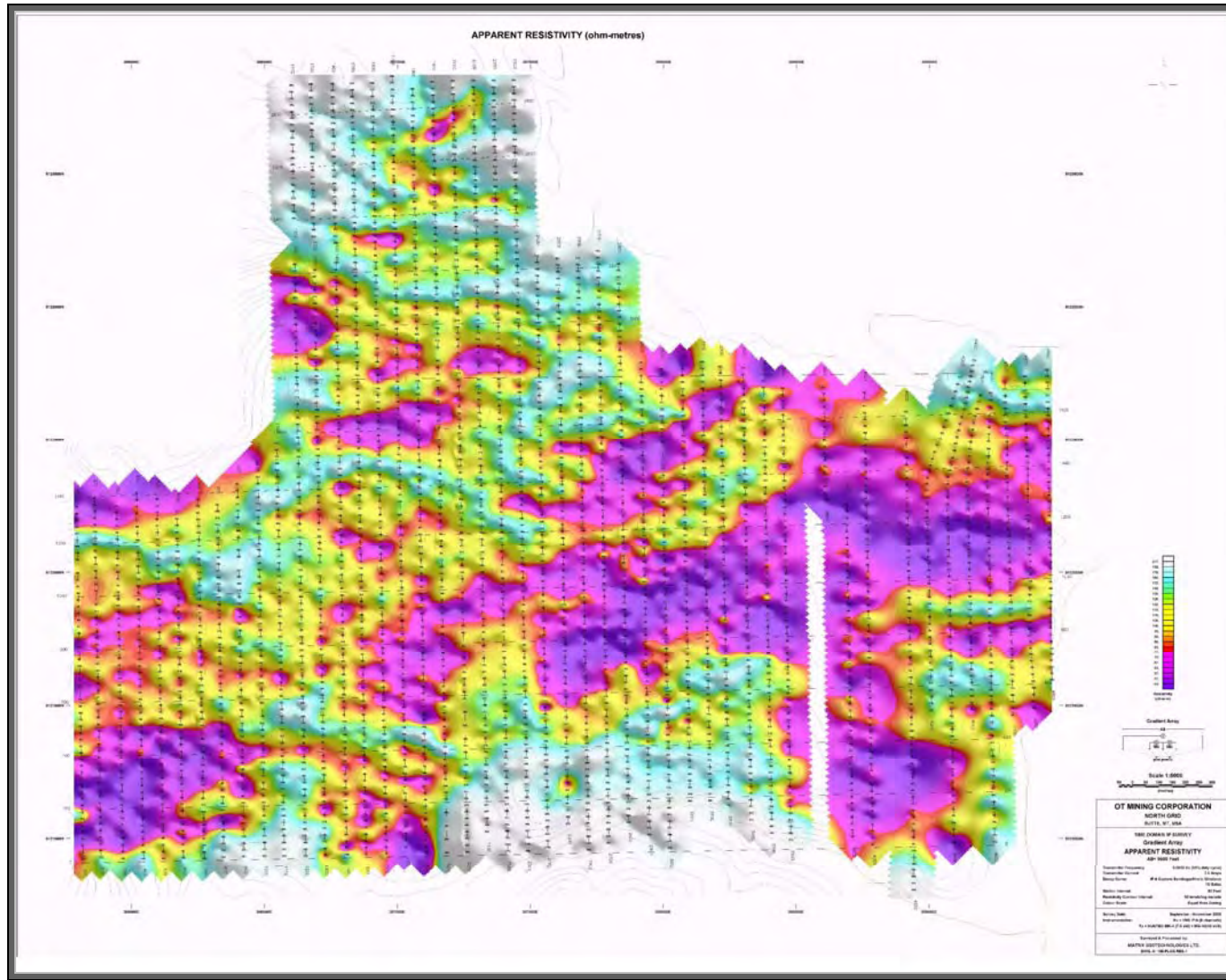


Figure 14: Resistivity results from 2006 North Area IP survey. The warmer colors are resistivity lows.

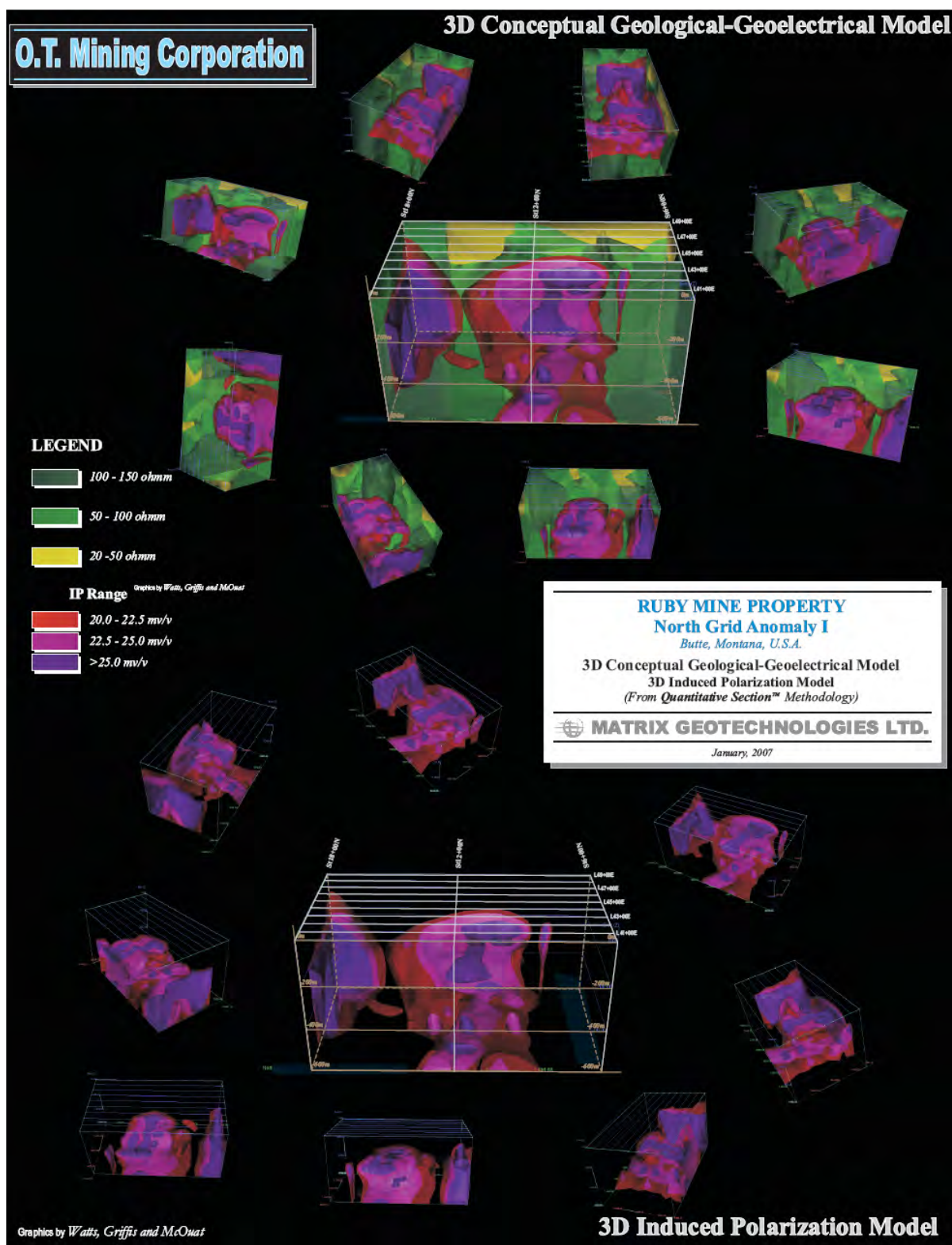
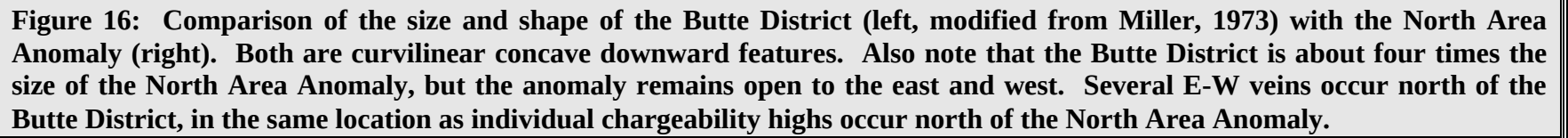


Figure 15: Three dimensional model of the 2006 Matrix North Area IP. The warmer colors (red, then magenta, then purple) represent higher chargeability values. The mushroom shape of the main anomaly is apparent.



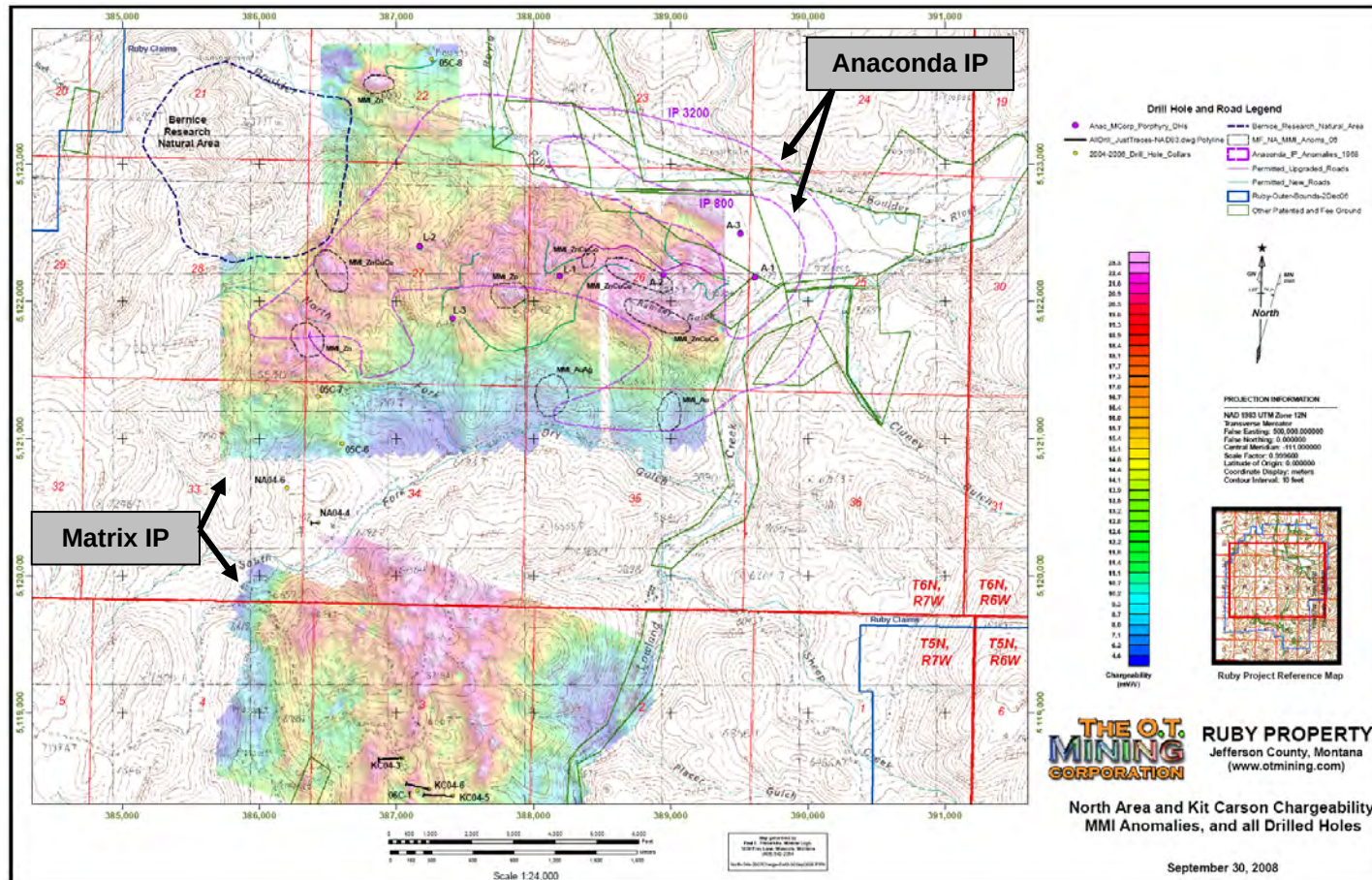


Figure 17: All previous drill holes in the North and Dry Gulch area are shown, along with the Anaconda and Matrix IP anomalies and MMI geochemical anomalies. The Anaconda and Molycorp holes are purple, and the O.T. holes are yellow. Note that OT holes NA04-4 and KC04, 5, and 6 were shallow holes evaluating Au-Ag mineralization, and did not encounter the porphyry system. Also note that chargeability results from another Matrix IP grid are shown south of the North Area Anomaly in this and some subsequent figures. This grid was run to assess gold-silver targets in the Kit Carson Area, and did not reach deep enough to encounter Cretaceous rocks and/or porphyry mineralization.

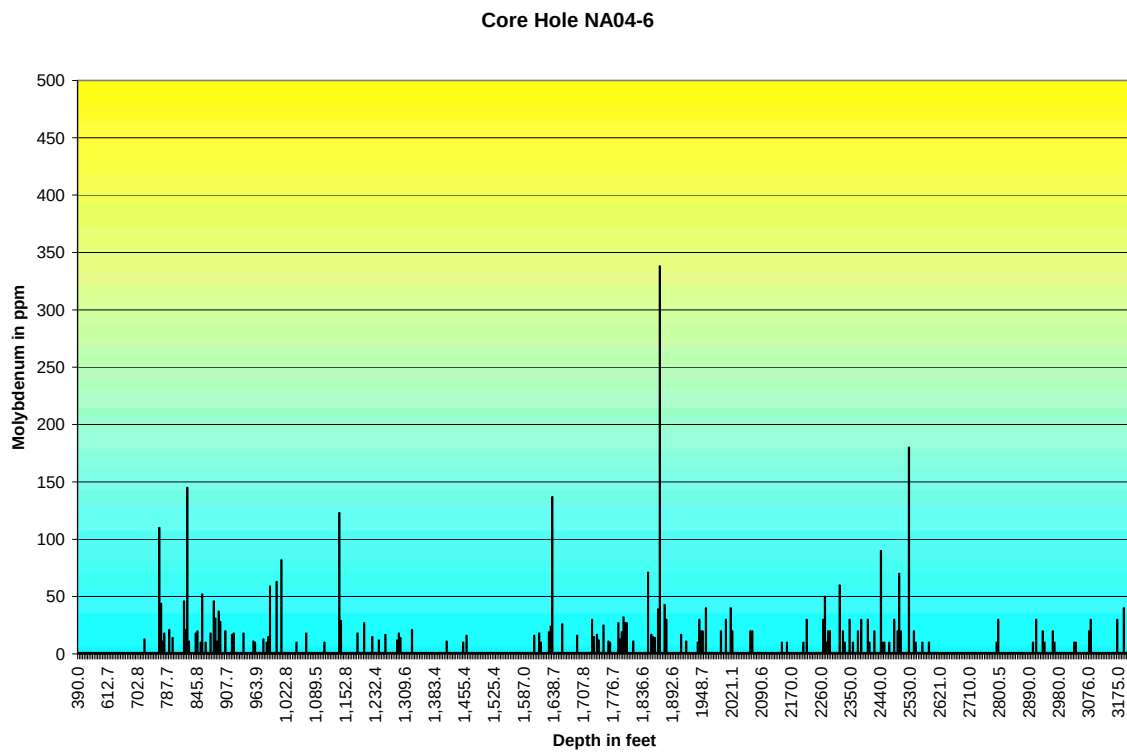
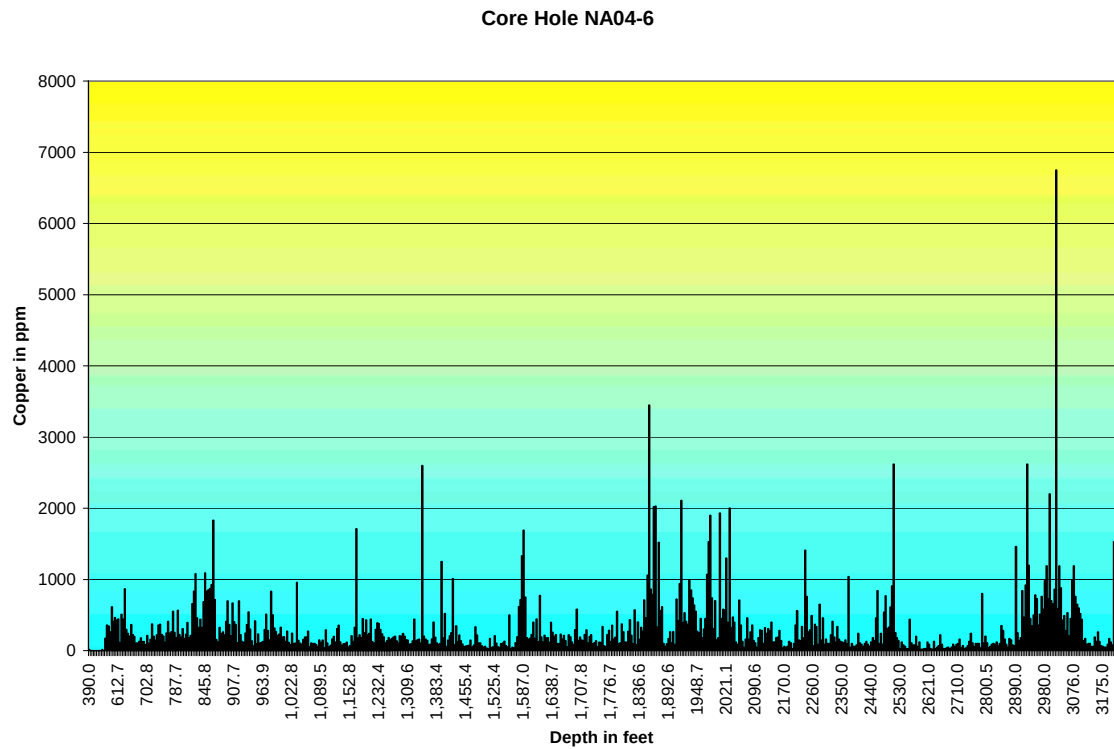


Figure 18: Downhole copper and molybdenum values in hole NA04-6. Copper mineralization begins at the top of the Cretaceous rocks (at 585 feet).

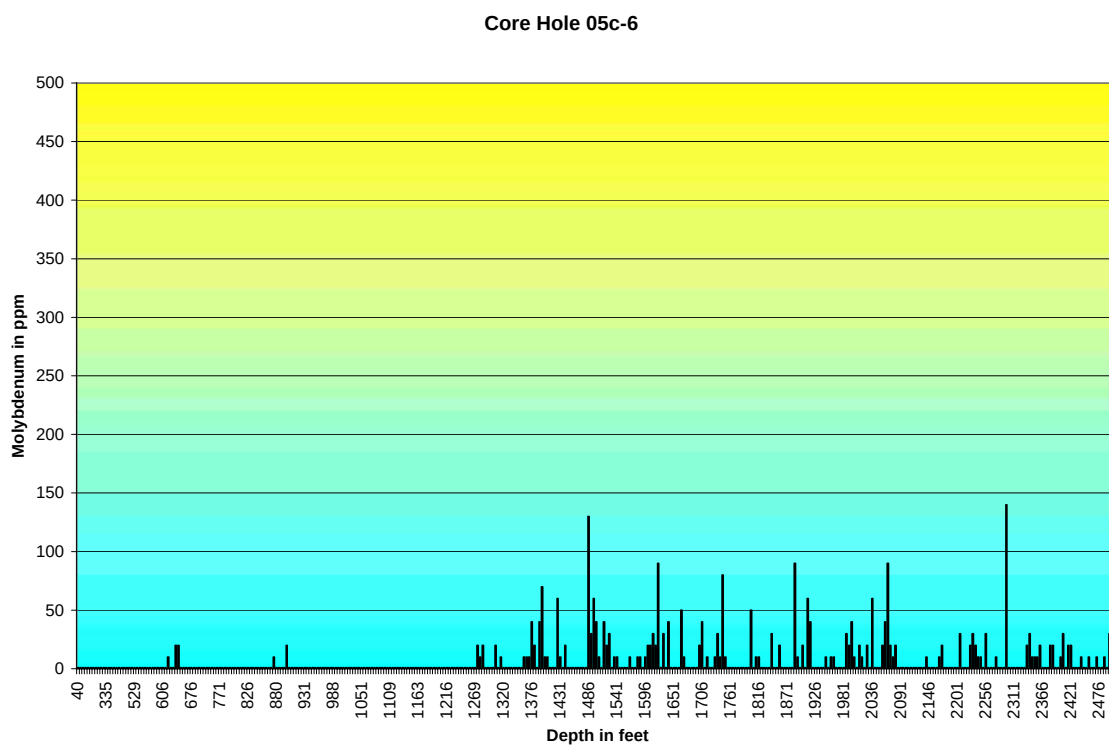
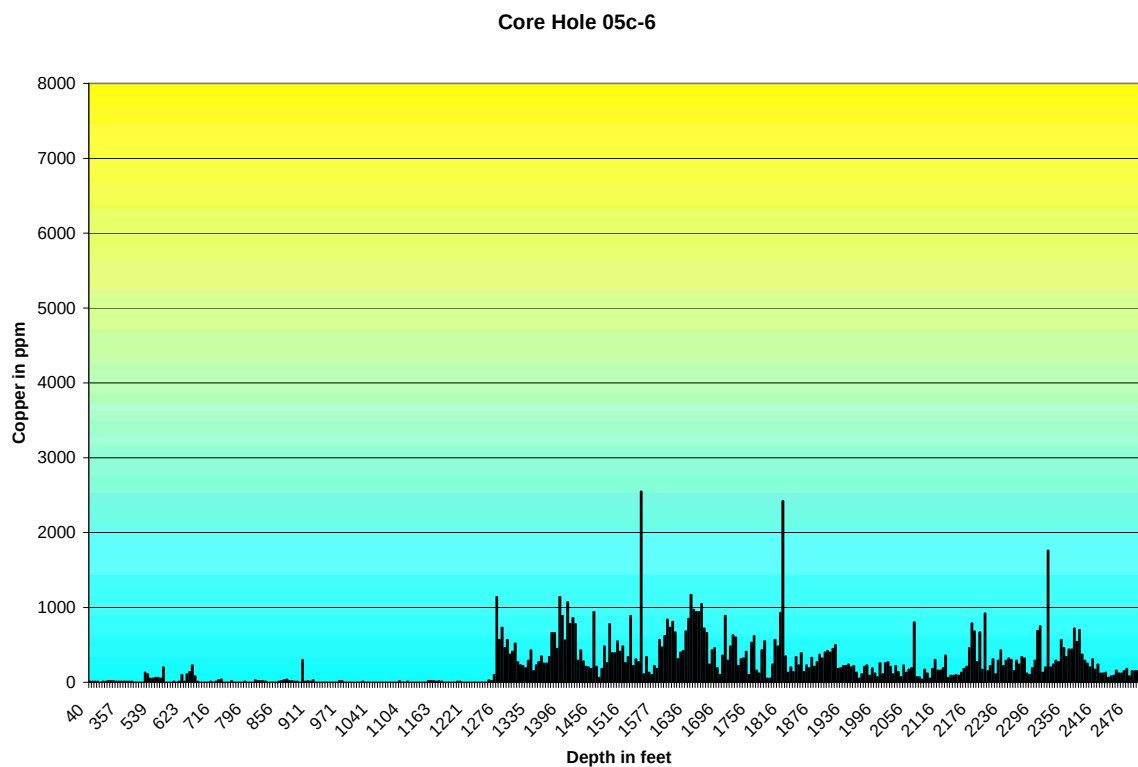


Figure 19: Downhole copper and molybdenum values in hole 05C-6. Copper mineralization begins at the top of the Cretaceous rocks (at 1283 feet).

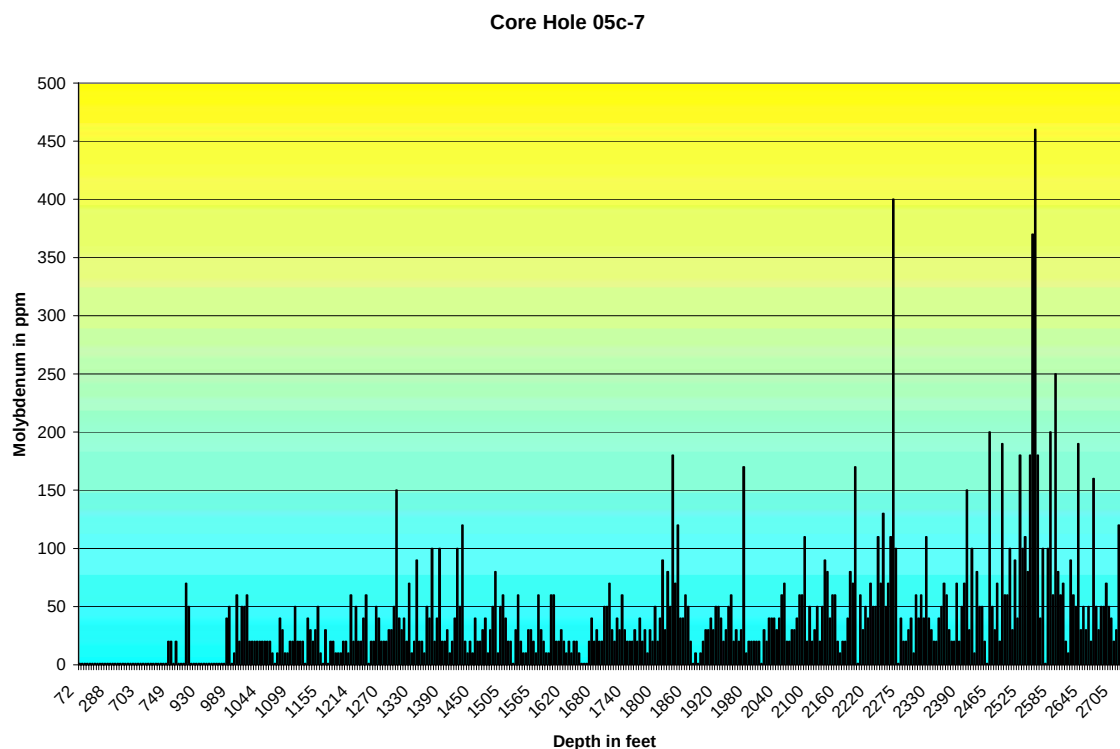
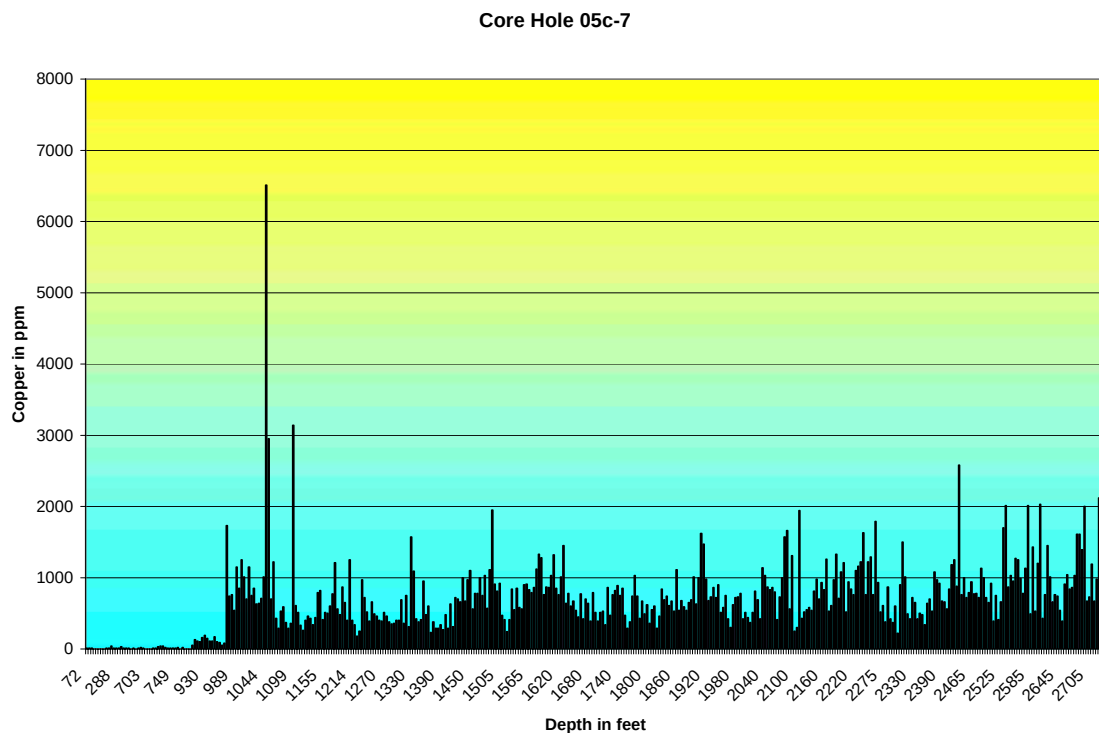


Figure 20: Downhole copper and molybdenum values in hole 05C-7. Copper mineralization begins at the top of the Cretaceous rocks (at 924 feet).

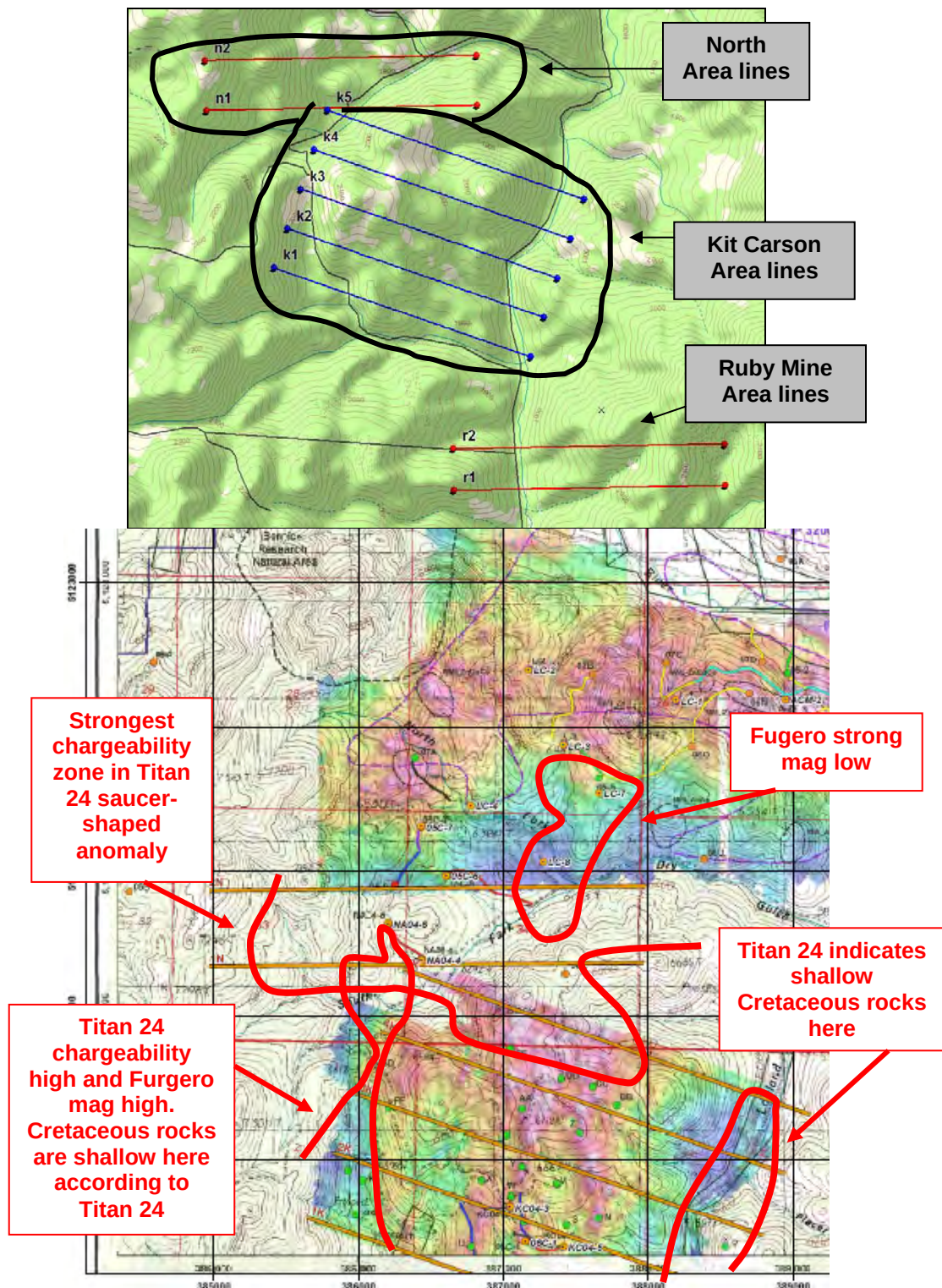


Figure 21: Location maps of the Titan 24 lines. The bottom figure also has the Matrix IP chargeability. The Fugero Airborne and Titan 24 anomalies discussed in the text are outlined in red on the bottom figure.

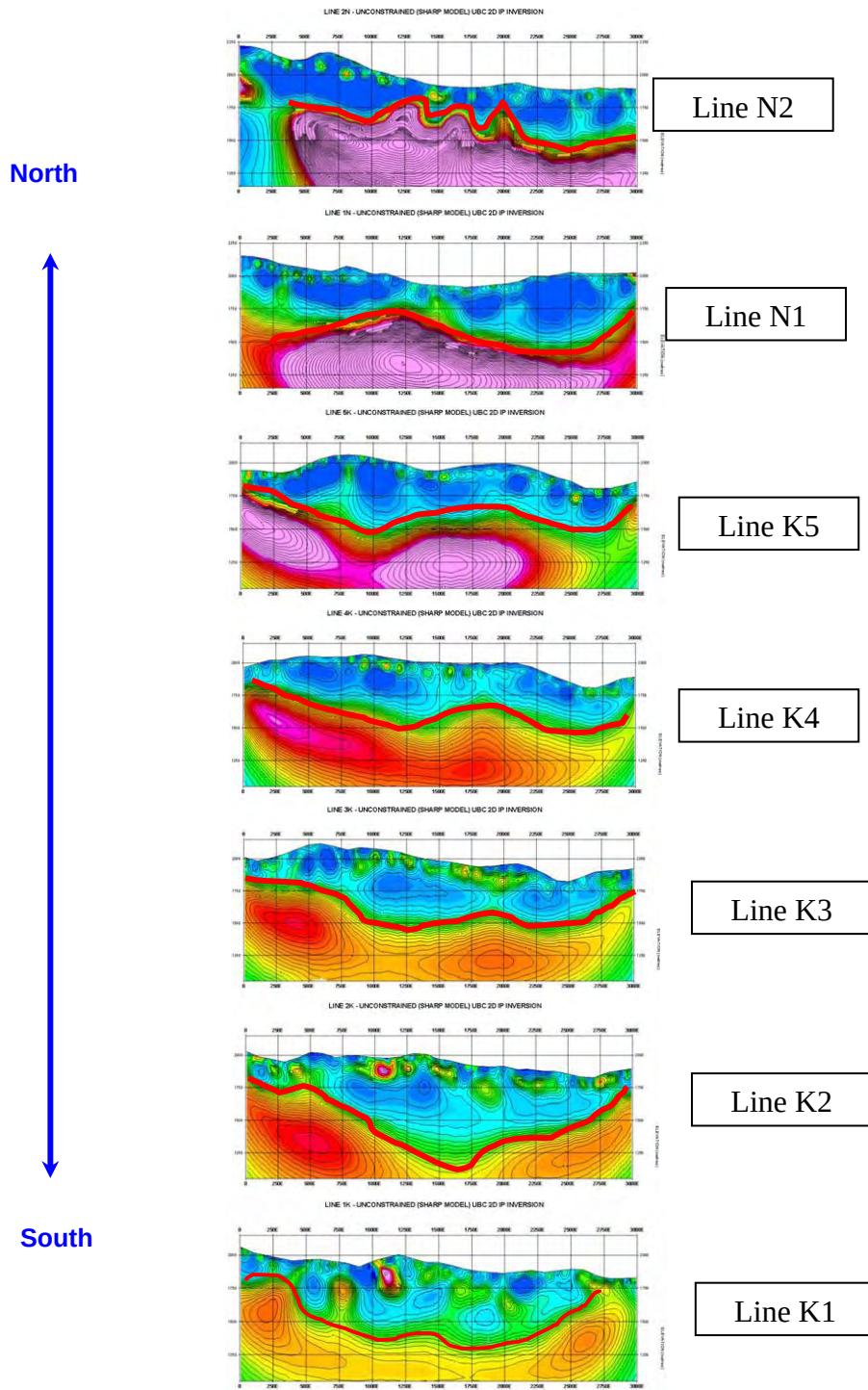


Figure 22: Quantec Titan 24 sharp IP chargeability cross sections from south to north. The top of the Cretaceous rocks are the red line. Note how much stronger the saucer-shaped chargeability anomaly becomes from south to north. The western upturned lip of the cup in the five K (Kit Carson) lines is likely caused by the NNE-trending Smedes Fault; (which is upthrown to the west). The eastern upturned lip could also be caused by faulting.

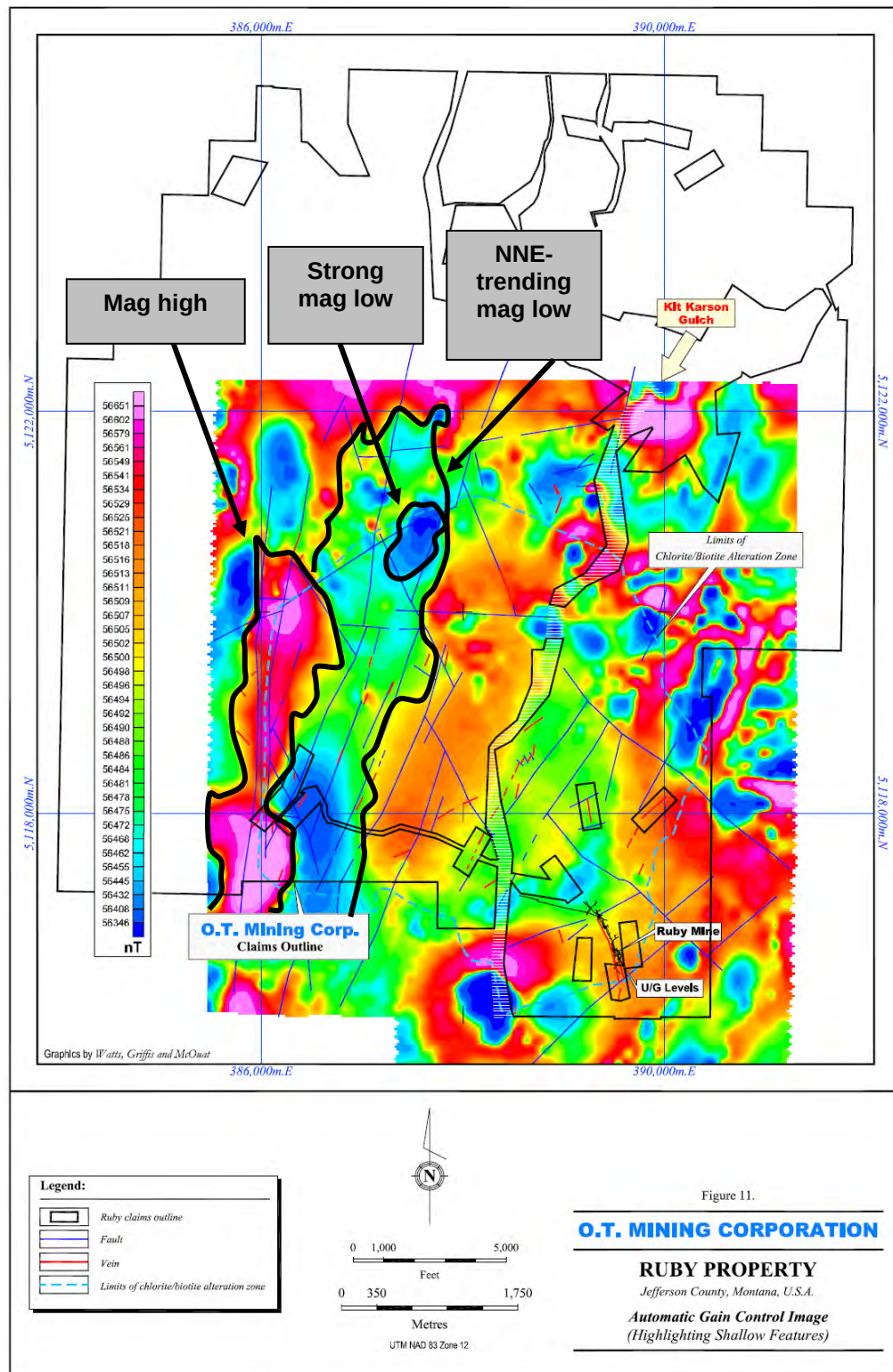


Figure 23: Automatic Gain Control Image from the Fugero Airborne Survey. Areas discussed in the text are labeled.

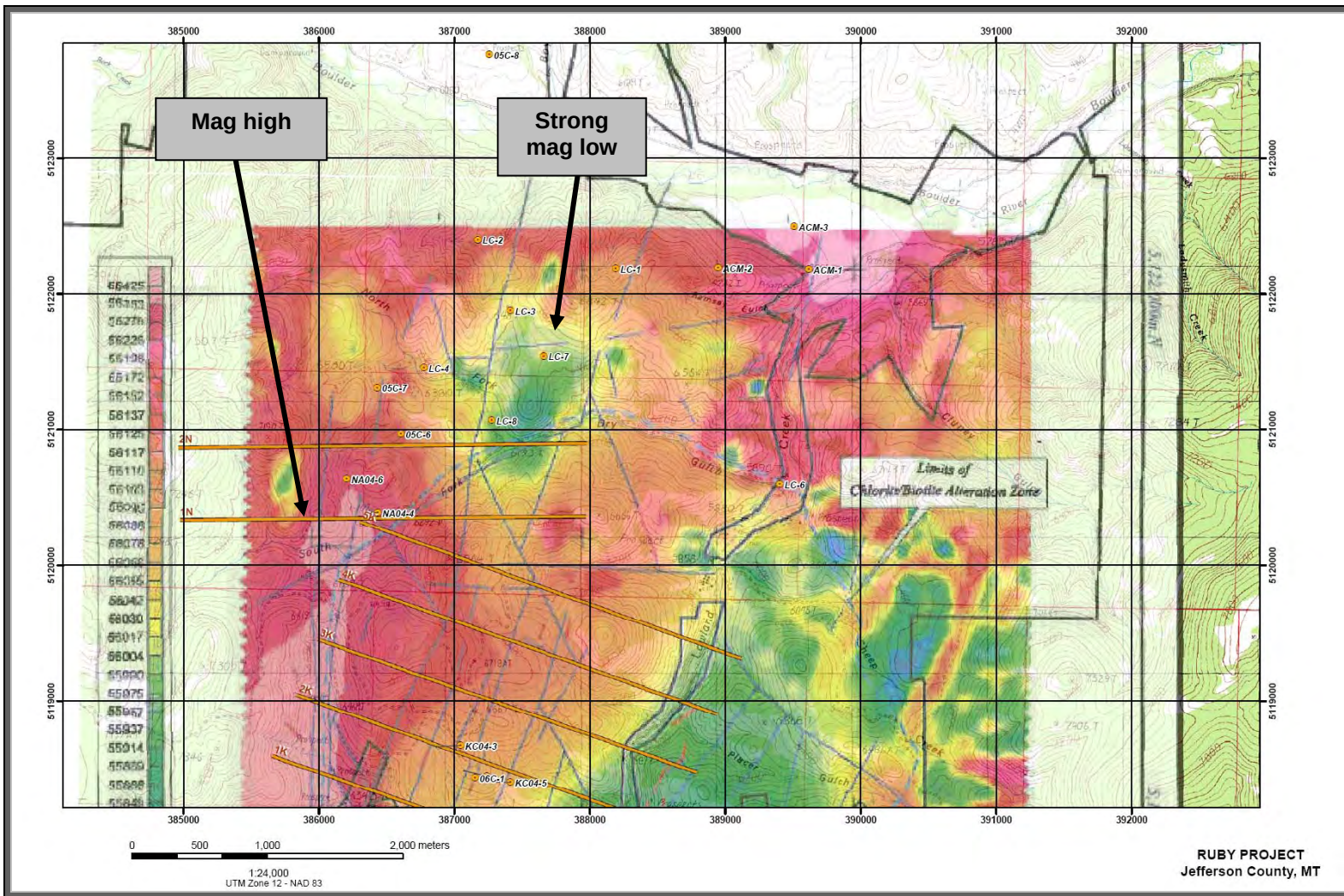


Figure 24: Total Magnetic Field Image from the northern portion of the Fugero Airborne survey, northern Titan 24 lines, and drill holes. Areas discussed in the text are labeled.

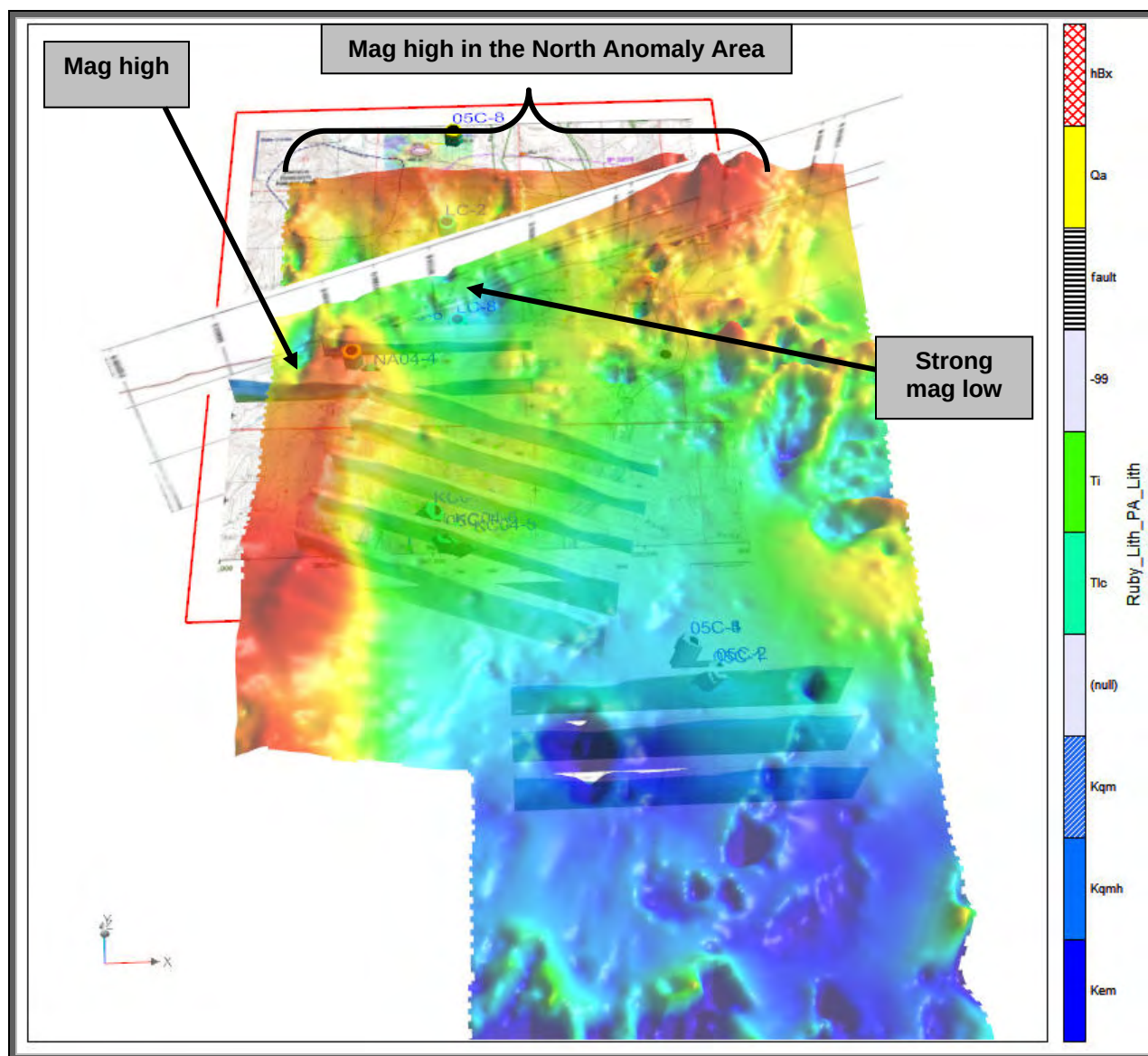


Figure 25: Three Dimensional total Magnetic Field Image from the entire Fugero Airborne survey, draped over all Titan 24 lines and drill holes. Areas discussed in the text are labeled.

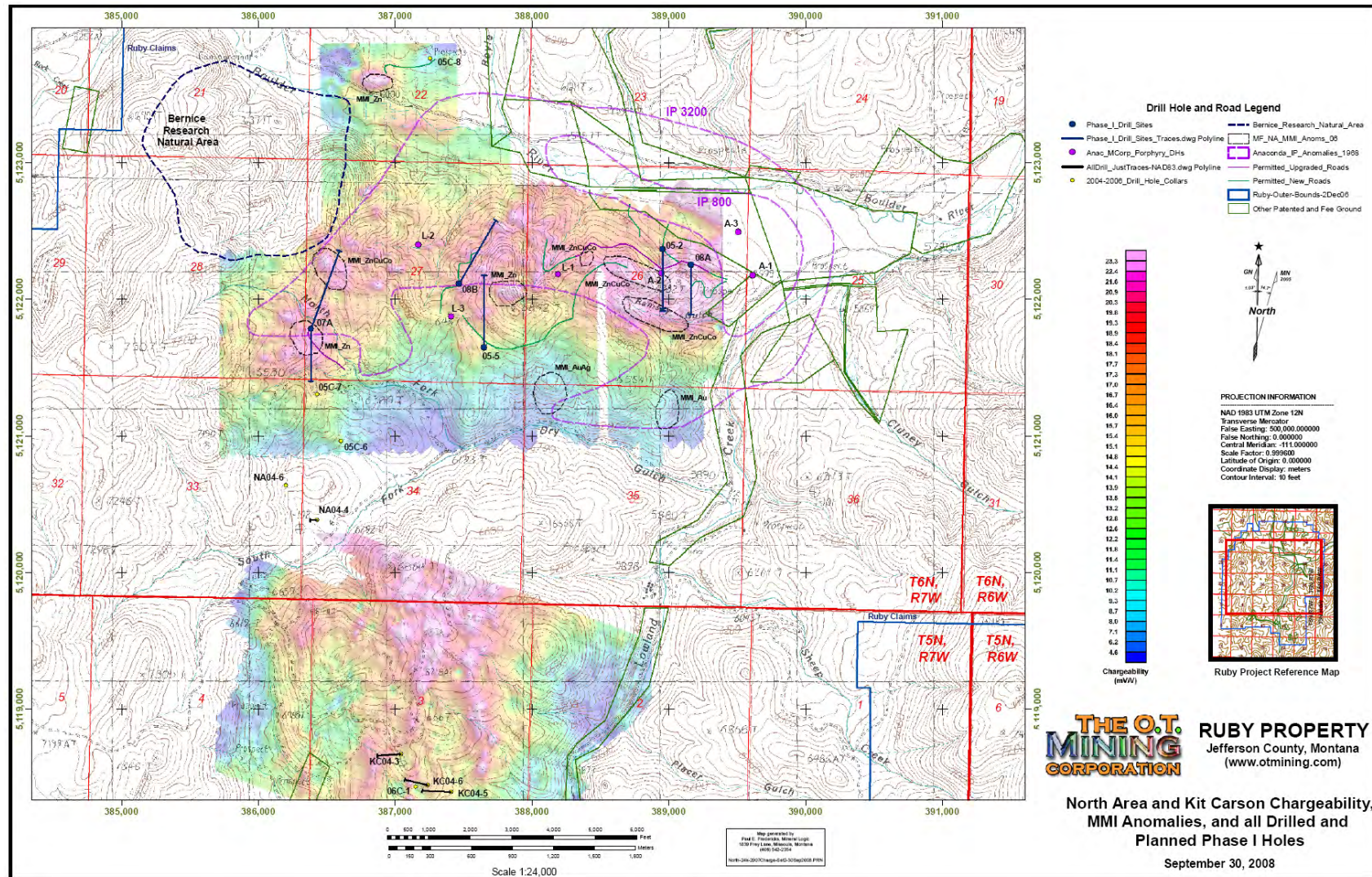


Figure 26: Same as Figure 17. In addition, the planned Phase I North Anomaly drill holes and traces are shown (in blue).

**Appendix A: Summary of all Available Anaconda and Molycorp Drill Hole Analyses for
Copper and Molybdenum**

Summary of all available Anaconda and Molycorp drill hole analyses for Cu and Mo. Individual assays were available for the Molycorp holes, but not the Anaconda holes. The Anaconda geochem was eyeballed from composite geochem on cross sections. Mo was not run on the Anaconda holes. In general, areas with > 0.05% Cu and > 0.01% Mo were compiled

From	To	Feet	% Cu
ACM-1			
0	35	35	0.13
60.4	162.2	101.8	0.06
162.2	229.7	67.5	0.21
229.7	1140	910.3	0.07
1140	1251	111	0.18
1251	1280 (TD)	29	0.04
ACM-2			
53	965.2	912.2	0.13
965.2	1161.8	196.6	0.16
1161.8	1666.7 (TD?)	504.9	0.03
Notes: Around 953' and 1557' ran 0.40-0.49 %. There were no analyses from 1666.7 to 2425 (the TD). However, they show copper mineralization in the top 750' of the hole, in unaltered Tertiary tuffs. It appears that these analyses were mistakenly plotted 758' up the hole from where they were actually taken.			
ACM-3			
200	721.6	521.6	0.02
721.6	807.6	86	0.23
807.6	1079.4	271.8	0.05
1079.4	1094.9	15.5	0.15
1094.9	1198.9	104	0.07
1198.9	1212.9	14	0.18
1212.9	1582.9	370	0.04
1582.9	1586.9	4	0.8
1586.9	1610.9	24	0.07
1610.9	1613.9	3	0.2
1613.9	1644.9	31	0.08
1644.9	1686.4	41.5	0.13
1686.4	1770.9	84.5	0.05
Notes: There were no analyses from 1770.9 to 2274 (TD). It is unclear whether the analyses were not taken or not posted.			

From	To	Feet	% Cu
LC-1			
1834	1837	3	0.088
1887	1903	16	0.055
2219	2223	4	0.053
Notes: There were scattered Mo values up to 45 ppm			
LC-2			
1221	1239	18	0.075
1291	1299	8	0.087
1311	1331	20	0.158
1382	1436	54	0.104
1474	1481	7	0.055
1508	1523	15	0.106
1554	1572	18	0.08
1586	1593	7	0.082
1619	1625	6	0.057
1643	1657	14	0.054
1665	1672	7	0.057
1860	1926 (TD)	66	0.066
Notes: There were sporadic Mo values all at or below 70 ppm			
LC-3			
1540	1564	24	0.028
1564	1594	30	0.122
1594	1683	89	0.063
1683	1703	20	0.091
1703	1744	41	0.129
1744	1794	50	0.08
1794	1903	109	0.057
1903	1961	58	0.154
1961	1969	8	0.49
1969	2020	51	0.106
2020	2038	18	0.37
2038	2062	24	0.115
2062	2089	27	0.062
2089	2113	24	0.115
2113	2131	18	0.288
2131	2149	18	0.134
2149	2254	105	0.063
2254	2264	10	0.12
2264	2354	90	0.054
2354	2394	40	0.067

From	To	Feet	% Cu
LC-3 Contd.			
2394	2444	50	0.078
2444	2453	9	0.022
2453	2486	33	0.147
2486	2513	27	0.057
2513	2547	34	0.099
2547	2589	42	0.054
2589	2608	19	0.267
2608	2622	14	0.084
2622	2631	9	0.235
2631	2662.5	31.5	0.024
2662.5	2669	6.5	0.23
2669	2713	44	0.016
2713	2740	27	0.245
2740	2766	26	0.094
2766	2807	41	0.045
2807	2826	19	0.114
2826	2839.5	13.5	0.062
2839.5	2862.5	23	0.347
2867.5	2891	23.5	0.025
2891	2911	20	0.074
2911	2951	40	0.057
2951	3000 (TD)	49	0.104

Summary of all Molycorp drill hole analyses for molybdenum in hole LC-3.

From	To	Feet	Mo (ppm)
1564	1574	10	140
2189	2214	25	340
2274	2301	27	153
2384	2394	10	115
2401	2418	17	215
2444	2453	9	135
2513	2524	11	195
2537	2556	19	109
2573	2598	25	329
2608	2616	8	135
2631	2639.8	8.8	130
2938	2990	52	226
Notes: Molybdenum values were 95 ppm and higher			

Appendix B: Summaries of the Butte District, and its Underground Potential

1. *A Primer on the Butte, Montana Mining District, and Its Implications for the Ruby Exploration Project*
2. *Summary of Butte Underground Production*

A PRIMER ON THE BUTTE, MONTANA MINING DISTRICT, AND ITS IMPLICATIONS FOR THE RUBY EXPLORATION PROJECT

(Fess Foster, January 2008)

SUMMARY

The Butte, Montana porphyry system is enormous. The O.T. Mining Corporation's (O.T.) Ruby project 15 miles to the NE of Butte is very similar metallogenetically. The Ruby system occurs beneath 700 to 900 feet of younger volcanic rocks, and is not exposed at surface. It has therefore experienced little previous exploration.

O.T. is conducting deep drilling for underground targets at Ruby. Butte is world renowned for its rich underground ores. O.T. is researching how the Butte veins formed, and is using this information to guide the exploration program at Ruby.

Following is a very brief overview of the Butte District, and a discussion of the implications for the Ruby Project.

BRIEF OVERVIEW OF THE BUTTE DISTRICT

Global Ranking:

The Butte District is truly a world class ore system. It is the **fourth largest copper porphyry deposit in the world.**

Past Production:

Butte has been in almost continuous production since 1884. Records were not kept in the early days, however, the production was very significant.

- Silver was the predominant metal mined in the 1860's and 1870's. Butte was the leading mining district in the youthful Montana Territory.
- Copper was discovered in 1882, and 25 companies were mining copper in the district by 1885. High-grade ore was hauled by ox cart to Utah, shipped by rail to the east coast, then by boat to Wales for smelting.
- Manganese and zinc were mined starting in about 1917. Butte was the largest manganese producer in the United States for many years.
- Open pit mining began at the Berkley Pit in 1955, and for a time it was the largest truck-operated pit in the U.S.
- Molybdenum production began in 1980 with the opening of the Continental Pit.

Recorded production from the Butte District totals approximately:

- 23 billion pounds of copper;
- 5 billion pounds of zinc;
- 4 billion pounds of manganese;
- 855 million pounds of lead;

- 327 million pounds of molybdenum;
- 725 million ounces of silver; and
- 3 million ounces of gold.

The total value of recorded production is about \$50 billion, using 2004 metal prices. At least half of the value was in copper. The copper produced from Butte could pave a 4 lane interstate highway 4 inches thick from Butte to Salt Lake City, Utah.

Remaining Reserves and Resources:

The Butte District is likely to continue production for many years to come.

- The Continental Pit has remaining reserves of 400 million tons of 0.35% Cu, 0.027% Mo, and 0.065 oz/ton Ag.
- A new open pit between the Berkley and Continental Pits is being developed. This will mine a 500 million ton orebody grading 0.5% Cu with a 2:1 strip ratio.
- A block cave resource of 130 million tons of >1% Cu, 0.345 oz/ton Ag, and 0.005 oz/ton Au remains.
- The Anaconda Company drilled 10 deep vertical holes into the core of the district (as deep as 7,000 feet) between 1978 and 1981. They encountered deep mineralization approximated at 5-6 **billion** tons of 0.6% Cu and 0.05% Mo.

Mining Methods:

Over 80% of the metal production from Butte was from underground mining. The Butte District contains approximately 50 miles of vertical shafts and approximately 10,000 miles of horizontal workings. Twenty-seven of the underground mines exceeded 3,000 feet in depth. The district encompasses approximately 15 square miles. Most of the underground workings were concentrated in a 7 square-mile area in the center of the district termed the “Butte Hill,” or the “Richest Hill on Earth.”

Most of the early production was from narrow underground vein mining. Block cave underground mining began in 1947. Open pit mining in the Berkley Pit began in 1955. The Continental Pit was started in 1980. Today, only the Continental Pit is in production.

Dimensions and Grades of Underground Orebodies:

Most Butte orebodies are veins, and they have been mined with both underground and open pit methods. **Over 95% of the Butte metal production was from veins.** The 3 most important vein types are summarized below.

- Some of the larger “Anaconda Veins” were over 2 miles long, and were described as being “generally almost continuously mineralized over long distances.” They were mined down 5,000 feet. Their average width was 20-30 feet, and ranged from 5 to over 100 feet wide. Grades were “up to tens of percent copper.” One vein shipped 37,000 tons of 45 percent copper from 1882-1884.
- The “Blue Veins” ore shoots were 1,000 to 2,400 feet long, and were mined over vertical distances of 600-1,800 feet. They ranged from 5-20 feet wide.
- The famous rich “horsetail orebodies” were hundreds of feet long, up to 2,000 feet vertical, and up to 200 feet wide.

IMPLICATIONS FOR THE RUBY PROJECT

The Ruby Project a very attractive target for Butte-type veins. It is only 15 miles away, and shares a number of geological characteristics with Butte. Following are some of the important geological similarities between the Butte and Ruby porphyry systems.

- They are both late Cretaceous, and associated with the same igneous phase of the Boulder Batholith (the Butte Quartz Monzonite).
- Most porphyry Cu and Mo occurrences in Idaho and Montana occur along the northeast-trending Great Falls Tectonic Zone (GFTZ). It is a deep-seated crustal flaw that has been periodically active since at least the Proterozoic. It experienced dextral movement during the late Cretaceous, and both Butte and Ruby occur along the axis of the GFTZ. The two properties therefore have similar structural settings.
- Both are very large systems. Most of the underground workings in Butte were concentrated in a 7 square mile area, and were as deep as 5,000 feet. The Ruby porphyry as presently understood is 3.5 square miles in plan and 2,600 feet deep. It is still open in 3 directions and at depth.
- The two systems have a curved, arcuate shape in plan, with east-west trending linear features on the north side of the main system.
- Both contain potassic alteration (K-feldspar and biotite) overprinted by phyllic alteration.
- Both contain widespread low-level copper.

FESS FOSTER, Ph.D., CPG
Geological & Environmental Consulting
21 Paul Gulch Road
Whitehall, Montana 59759

Work/Home: (406) 287-3261 Cell: (406) 570-1069 Email: fessfooster@earthlink.net

Date: January 31, 2007

Memo To: J. Hess, R. Christensen, M. Fedikow, O. Maki, T. Weitz

From: Fess Foster

Subject: Summary of Butte Underground Production

BACKGROUND

At long last, I was able to find some specific data regarding tonnage and grades for underground production at Butte. They cover the period 1875-1944 inclusive, and would therefore have all been underground production from Main Stage Veins. One table lists production data by mine, the other by company.

The tables were prepared by the Anaconda Company, and include data from old production reports, stope plans, long sections, etc. They therefore appear to be accurate and comprehensive.

This is the **first and only** reliable data on Butte underground production that I have been able to locate. Keep in mind that these tables only include data through 1944, and they do not include unrecorded production. **Therefore, the total Butte underground production is even greater than that given in these tables.**

Note that in addition to the production from the Main Stage Veins discussed in this report, **Butte also produced over 33 million tons at 1% Cu from underground block caving** in 1944 through 1962.

The tables were apparently done in about 1944, before the advent of calculators and word processing/spreadsheets; this must have been an immensely difficult task at the time. They are difficult to read, and too large for me to scan at home. I used the table with mine data for the following summary. If anyone would like copies of the tables, let me know and I will mail them to you.

SUMMARY OF PRODUCTION DATA FROM INDIVIDUAL MINES

I compared the data in the table listing production from individual mines to MBMG MC-19, which shows the location of **some** of the mines. To the extent possible, I broke out the data as per vein type. However, not all mines listed on the table were shown on the map. Also, I only totaled up production figures for mines that had produced over 1 million tons of ore.

In the end, I was able to find mine locations for about 84% of the production listed in the table. We only need reasonable estimates of grades and tonnages; this compilation should be sufficiently accurate for our purposes. The production data does not show a great deal of spikes; most production figures are relatively close to the averages given below.

Grade and Tonnage of Mines in the ENE-Trending Anaconda Vein Set:

- **14 mines produced over 1 million tons of ore each from the Anaconda Vein set, totaling over 72 million tons. Five of them mined over 5 million tons, and the largest tonnage (12.3 million tons) was from the Anaconda Mine.** Almost all of the production came from the copper dominant Central Zone, and the Cu-Zn ores of the Intermediate Zone. Lesser volumes (about 3% of the total) came from the Peripheral Zone Mn-Zn-Ag mineralization.
 - **The average grade for all of the copper dominant ores was 4-5% Cu and 5-6 opt Ag.** The grades of the individual mines ranged from 2 to 6% Cu and 1-7 opt Ag. Nine of these mines exceeded 1 million tons of ore production.
 - **The average grade for the Zn-rich ores was 12-13% Zn, and 5-6 opt Ag.** Four of these mines exceeded 1 million tons of ore.
 - **The average grade of the Peripheral Zone ores was about 24% Mn, 1.5% Zn, and 1 opt Ag.** One of these mines exceeded 1 million tons of ore.

Just How Big was an Individual Anaconda Vein?

- It appears that about 5 of the Anaconda Veins were the big, fat veins that made Butte famous. From north to south they were:
 - The Black Rock Vein.
 - The “Mountain Con” Vein.
 - The “Anselmo” Vein.
 - The Original-Anaconda Vein.
 - The Emma Vein.
- It is interesting to note that 2 or 3 of the larger underground **mines** (not veins) contain about the same amount of copper as a large open pit.
- The Original-Anaconda Vein appears to have been by far the largest. **It has workings along it for over 1 mile of strike length, and down to over 3000 feet deep. This one vein produced approximately 40 million tons of ore averaging about 4.5% Cu and 5 opt Ag.** This is approximately the same amount of copper as in a very large open pit.

Grade and Tonnage of Mines in the NW-Trending Blue Vein Set:

- **6 mines produced over 1 million tons of ore each from the Blue Vein set, totaling over 28 million tons. Three of them mined over 5 million tons, and the largest tonnage (8.7 million tons) was from the Bell-Diamond Mine.** All of the production came from the copper dominant Central Zone, and the Cu-Zn ores of the Intermediate Zone.

- The copper dominant ores were slightly lower grade than ores from the Anaconda Vein set. **Their average grade was about 4% Cu and 5 opt Ag.** The grades of the individual mines ranged from 3 to 6% Cu and 3-6 opt Ag. Six of these mines exceeded 1 million tons of production.
- None of the mines on the Blue Veins exceeded 1 million tons of production from Zn-rich ores.

Grade and Tonnage of Mines in the Horsetail Zone:

- **8 mines produced over 1 million tons of ore each from the Horsetail Zone, totaling over 52 million tons. Five of them mined over 5 million tons, and the largest tonnage (12.6 million tons) was from the Leonard Mine.** Most of the production came from the copper dominant Central Zone. Only minor production came from the Cu-Zn ores of the Intermediate Zone.
 - These ores had less Ag than ores from the Anaconda and Blue Vein Sets. **Their average grade was about 4.5% Cu and 1.5 opt Ag.** The grades of the individual mines ranged from 3 to 6% Cu and 3-6 opt Ag.
 - None of the mines on the Horsetail Zone exceeded 1 million tons of production from Zn-rich ores.

Production and Average Grade of the Entire Butte District:

The following total production figures were given for all of the mines, broken out by ore type.

- **A total of 162.6 million tons of copper ore averaging 4.4% Cu and 2.7 opt Ag.** Most of this production came from the Central and Intermediate Zones. This is about the equivalent copper to that produced from 5-7 large open pit mines.
- **A total of 14.5 million tons of zinc ore averaging 11.9% Zn and 5.6 opt Ag.** Most of this production came from the Intermediate Zone. However, most of these ores were mined at the extreme northern and southern portions of the Intermediate Zone (from the Black Rock and Emma Mine areas, respectively). The great majority of the mines in the Intermediate Zone mined primarily copper ore.
- **A total of 3.4 million tons of silver ore averaging 23.6 opt Ag.** Many of these mines were in the Peripheral Zone, but others were in the Central and Intermediate Zone. I suspect that all of these were mainly supergene silver occurring near the surface.
- **A total of 2 million tons of manganese ore averaging 24.5% Mn, 1.6 % Zn, and 0.91 opt Ag.** Most of this production came from the Peripheral Zone.

HOW MUCH BUTTE METAL PRODUCTION CAME FROM UNDERGROUND?

Note that above total 14.4 billion lbs Cu, 3.5 billion lbs Zn, and 607 million ounces Ag. These account for 63%, 70%, and 84%, respectively of the total Butte production to date for these metals given in MBMG MC-19. Underground mining continued in Butte for another 30 years after the date of these tables. Clearly, the great majority of Butte metal production came from underground.

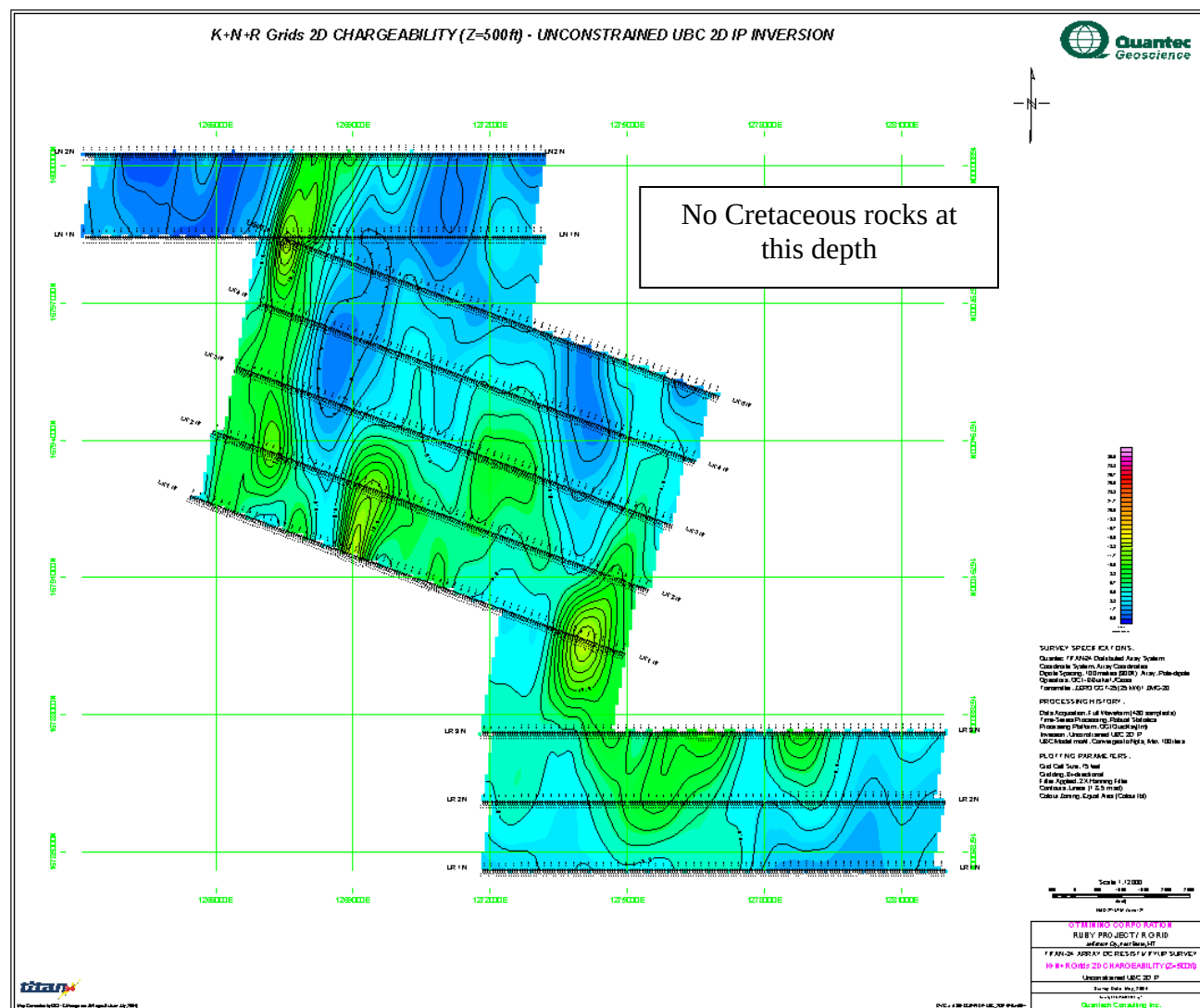
Figure F-1 in the 1973 SEG guidebook is a bar graph that includes underground copper production from 1945 through 1973. I added this to the above total for copper, and for the first time we have a reasonable estimate of the amount of copper that has been produced by the Butte underground mines. It is 17 billion lbs.

Approximately 74% of the copper produced from the Butte District came from underground mining. The percentages of Zn, Pb, Mn, and Ag mined from underground is even higher.

Fess Foster

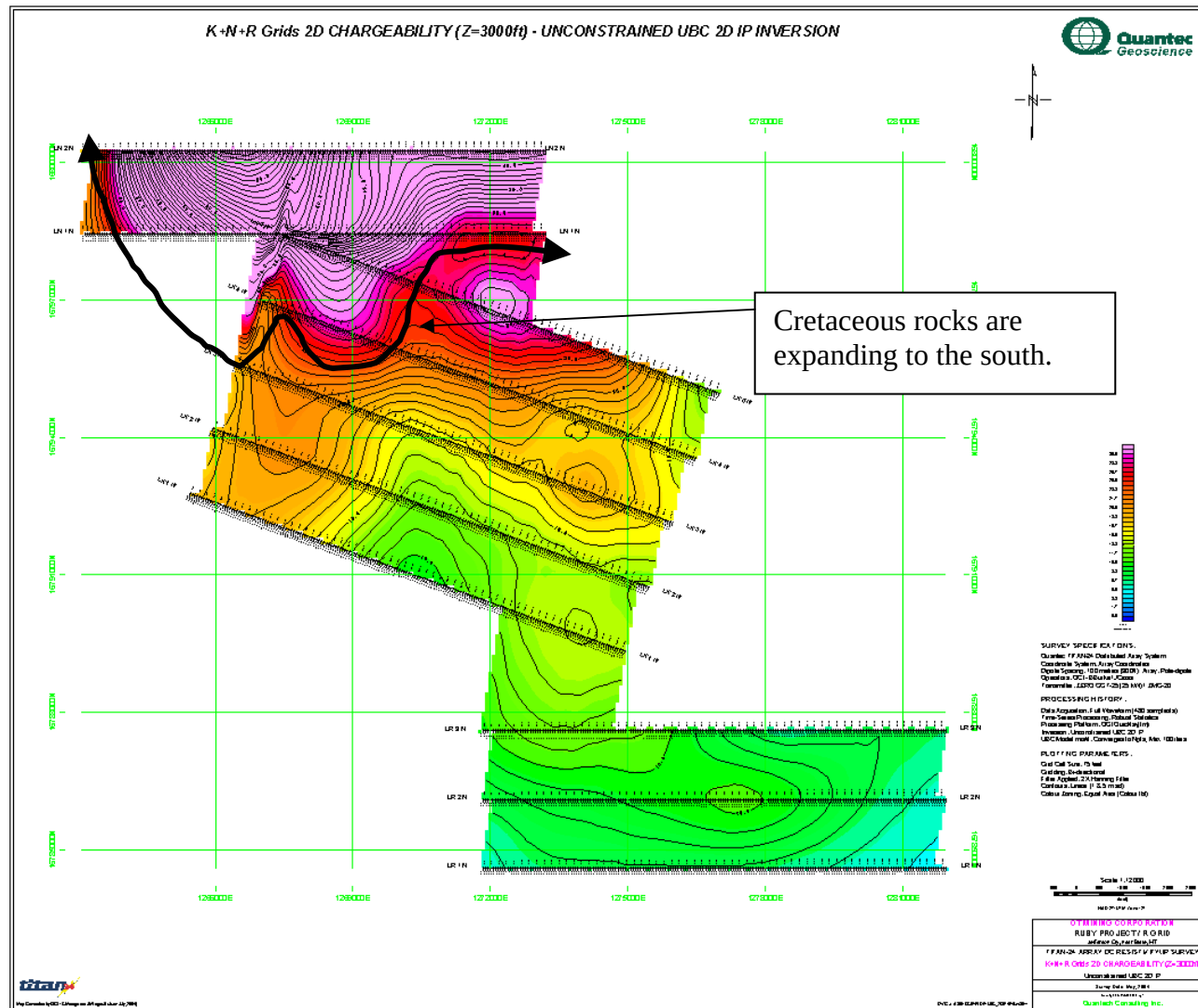
Fess Foster

Appendix C: Quantec Titan 24 Smooth IP Chargeability Plans (From Shallow to Deep).

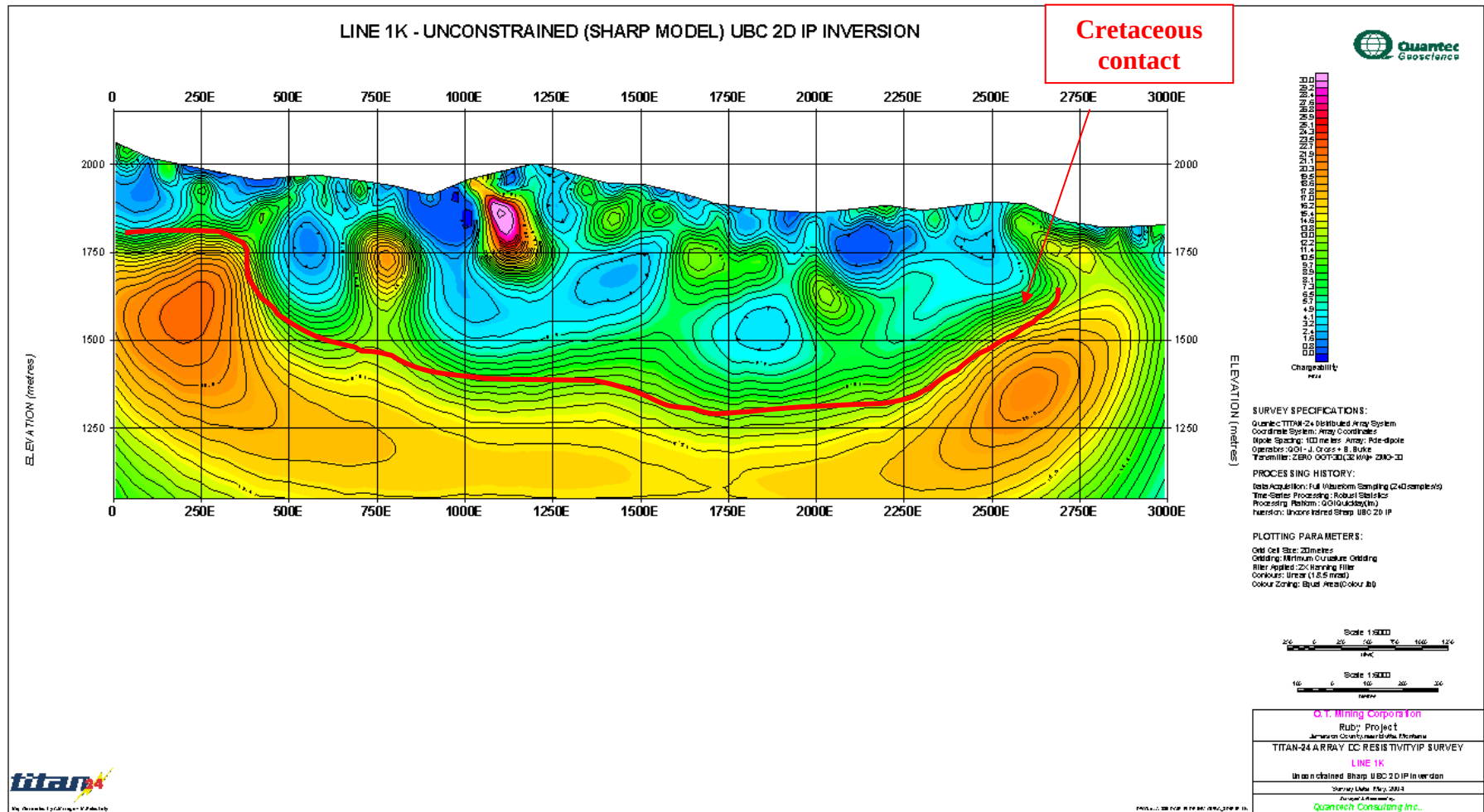


[illegible]

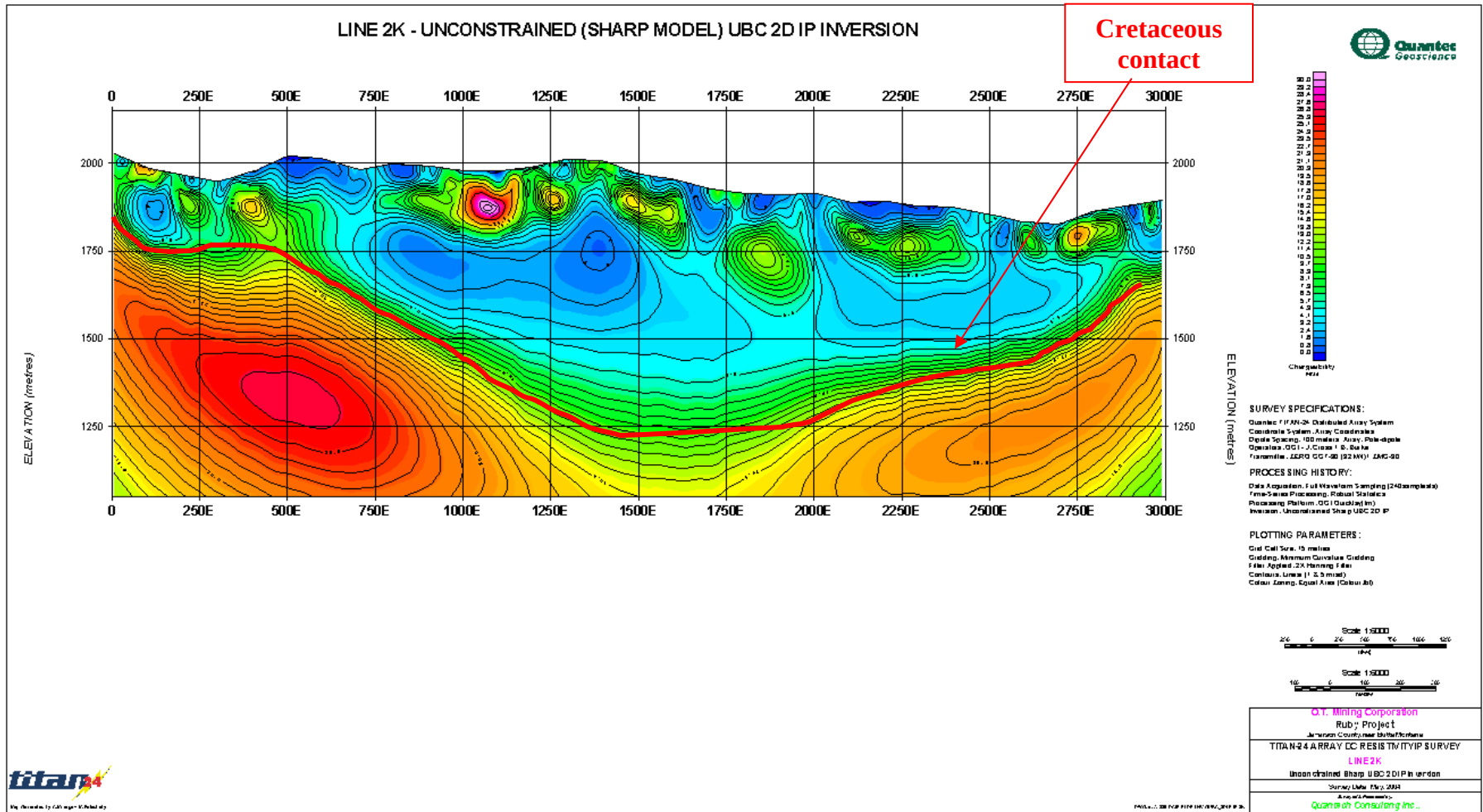
2D CHARGEABILITY PLAN (Z=3000 feet /Smooth Model) - UNCONSTRAINED UBC 2D IP INVERSION



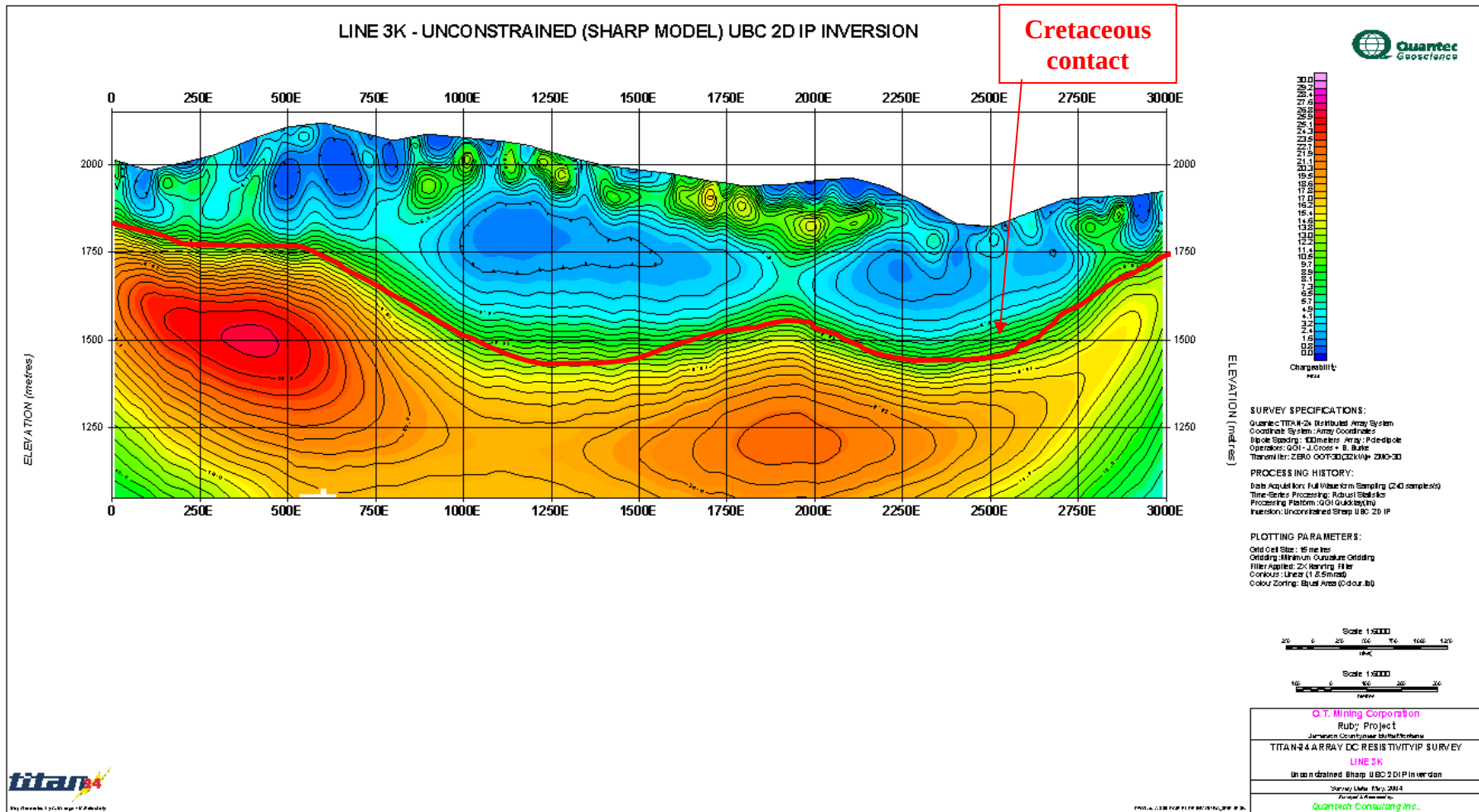
**Appendix D: Quantec Titan 24 Sharp IP Chargeability Cross Sections (From South to North).
The Cretaceous contacts are drawn with red lines.**

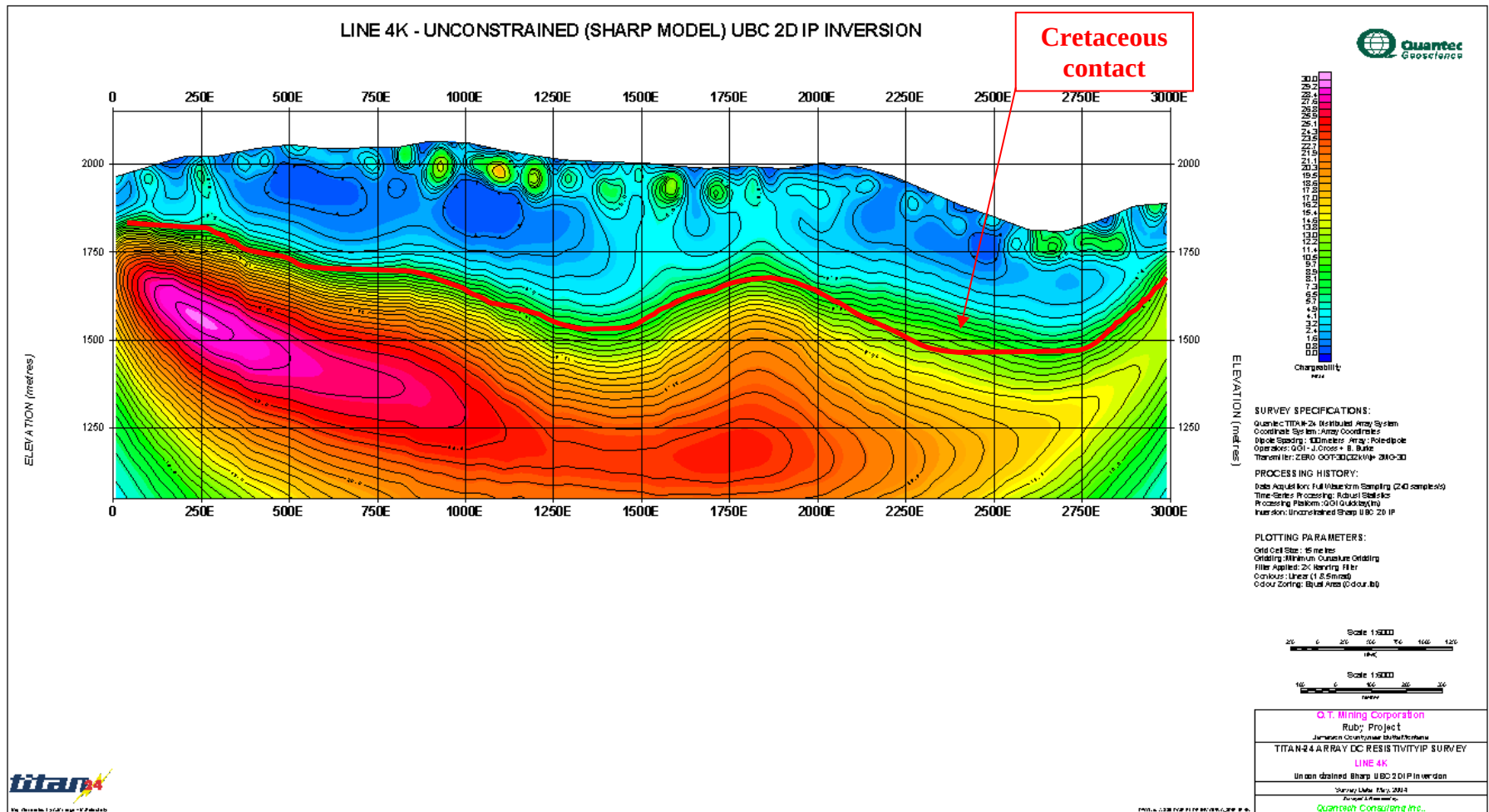
LINE K1 - UNCONSTRAINED UBC 2D CHARGEABILITY (sharp)

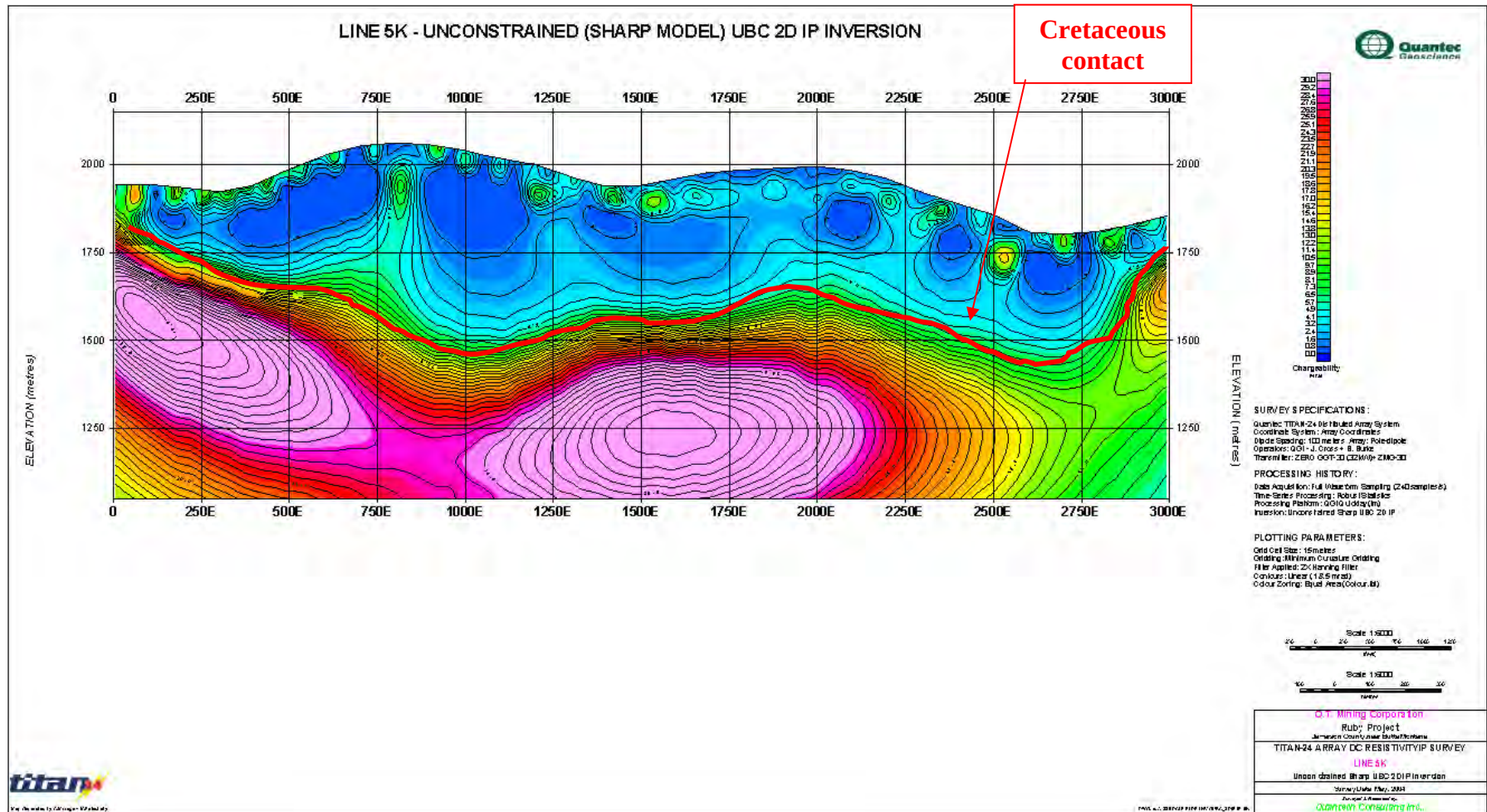
LINE K2 - UNCONSTRAINED UBC 2D CHARGEABILITY (sharp)

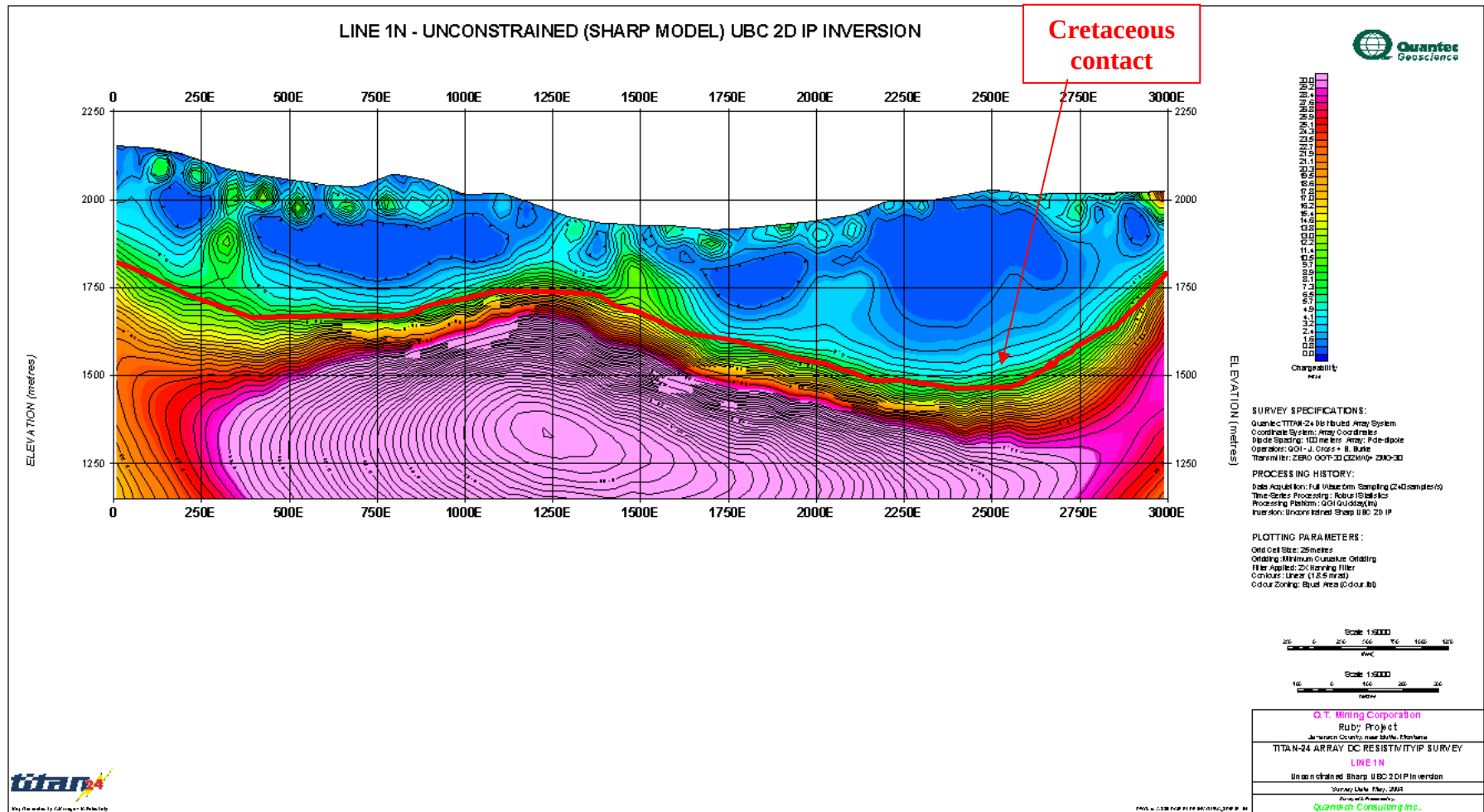


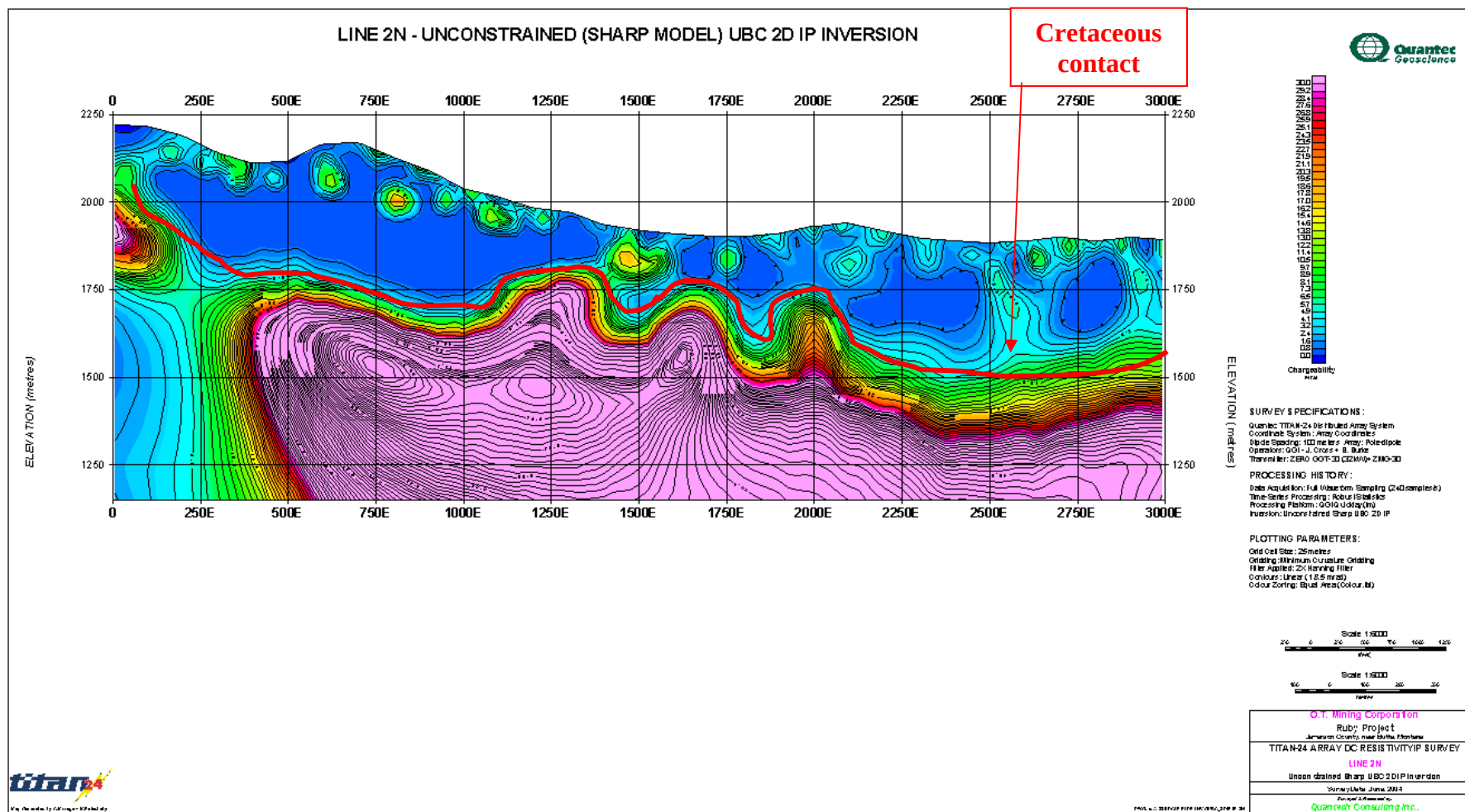
LINE K3 - UNCONSTRAINED UBC 2D CHARGEABILITY (sharp)



LINE K4 - UNCONSTRAINED UBC 2D CHARGEABILITY (sharp)

LINE K5 - UNCONSTRAINED UBC 2D CHARGEABILITY (sharp)

LINE N1 - UNCONSTRAINED UBC 2D CHARGEABILITY (sharp)

LINE N2 - UNCONSTRAINED UBC 2D CHARGEABILITY (sharp)

Appendix E: Quantec Discussions of Kit Carson and North Area Geophysical Lines (From South to North). Key portions of text are highlighted in yellow and red. The Cretaceous contacts are drawn on the sharp model IP chargeability sections with red lines.

Line 1K

Line 1K contains several suggested drill targets.

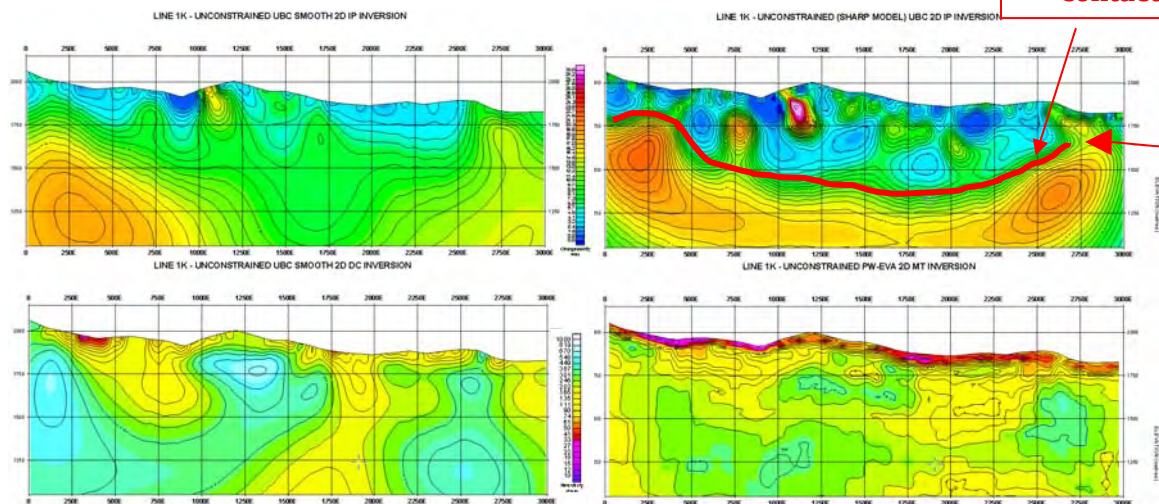
The resistivity inversions from the DC and MT data reveal the presence of three resistive zones with conductive features between them. This pattern carries through the entire Kit Carson grid and is evident on the plan maps. The three resistive zones lie between stations 0 and 250, 1000 through 1750, and between 2250 and 2750. The center, and most resistive, anomaly corresponds to the airborne magnetic low and may represent silicification of the Lowland Creek volcanics.

Several prominent IP anomalies are present on this line. The first IP anomaly lies between stations 1000 and 1250 at a depth of about 100 meters. This anomaly has a high IP response and lies on a resistivity change, indicating the presence of sulfide material, possibly associated with the fault bounding the west side of the resistive zone. The second anomaly of interest lies below station 750 at a depth of about 200 meters. This anomaly is located in a slightly conductive response and its nature is unclear. Both of these anomalies are suggested drill targets.

Two additional deep IP anomalies of interest are noted on either end of the line and both are associated with resistivity highs. The IP anomaly between stations 0 and 400 occurs at a depth of about 250 meters and may continue to depth. The anomaly may be caused by epithermal mineralization, but is more likely an expression of shallower **Boulder batholith intrusive rocks. This target is recommended for drilling.**

The deeper IP anomaly on the east end of the line occurs between stations 2600 and 2800. A shallow component of the IP response is located below station 2750. This anomaly is identified as a secondary target with an inclined hole suggested at station 2750, oriented slightly to the west, in order to intercept both the shallow and deeper parts of the IP anomaly.

Cretaceous contact



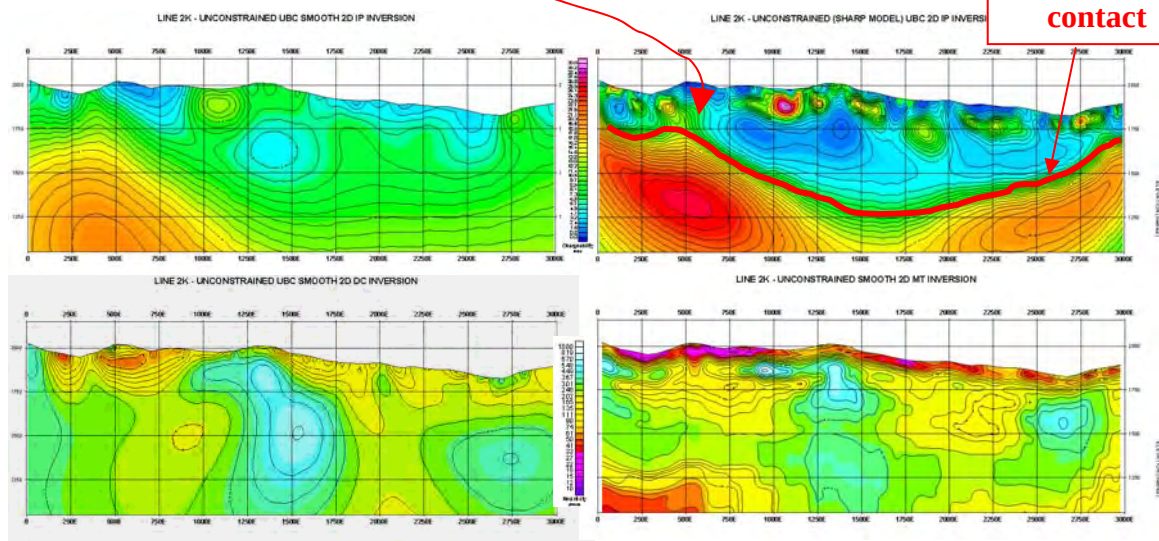
Multi-parameter Titan2D Cross-sections along Line 1K.

Line 2K

The DC resistivity and MT inversions from this line indicate the presence of conductive surface rocks from station 150 to about 1000. The thin surface conductor is also present from about stations 1400 to the east end of the line, although it is not quite as conductive on the eastern side of the line.

The resistivity data show the central resistive anomaly from stations 1000 to 1750 and a weaker, deeper resistive feature located between stations 2500 and 3000 at a depth of about 350 meters.

A high amplitude IP anomaly occurs between stations 1000 and 1200 at a depth of between 50 and 100 meters. The IP anomaly may indicate sulfide mineralization on structural control, as there is again a resistivity break at this location. Another shallow IP response is located at about station 400. The shallow IP anomaly may be related to the deeper IP high that is assumed to be the response of the Boulder batholith. Both of these IP anomalies are suggested drill targets.

**Multi-parameter Titan 2D Cross-sections along Line 2K.**

A secondary target is the moderate IP response located below station 1500 at a depth of about 100 meters. The IP response may also be due to sulfide mineralization along the east flank of the central resistivity feature and could be structurally controlled.

Line 3K

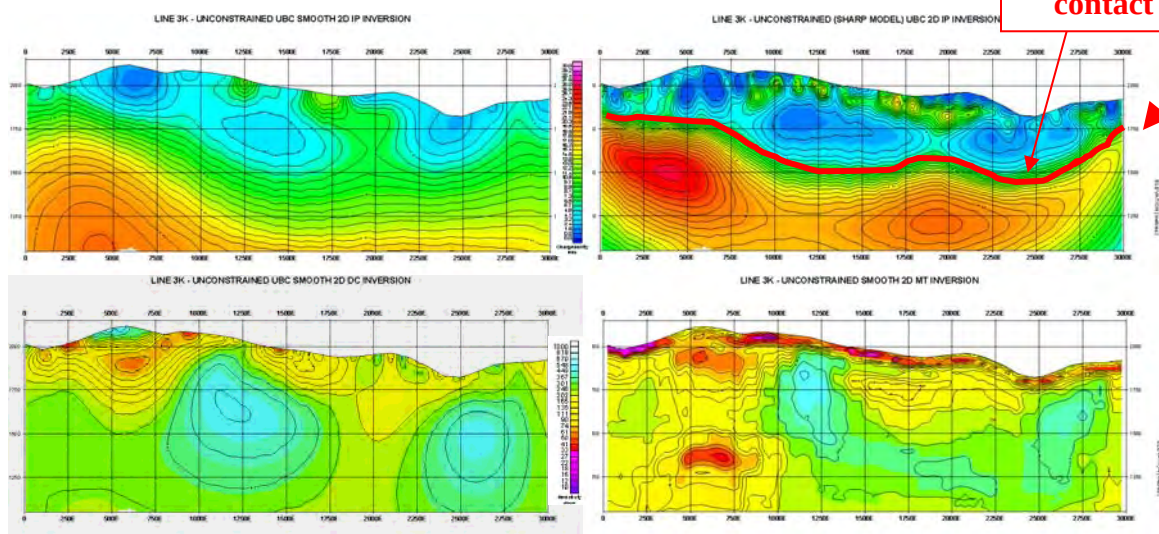
Line 3K contains one suggested drill target.

The DC resistivity and MT inversions indicate resistive anomaly areas between stations 1000 and 1500, and also between stations 2500 and 2750. The western anomaly between stations 1000 and 1500 is a continuation of the high resistivity feature that runs through the central portion of the Kit Carson grid and that correlates to the airborne magnetic low. To the west of the central resistive feature is a conductive layer that seems to be exposed at surface on either side of, but not on the top of, the hill located at station 500. The MT inversion shows a deep conductor between stations 500 and 750 that may be associated with the Boulder batholith rocks.

The IP response from this line again contains a deep IP high on the western end of the line. This anomaly is interpreted to be the response of the **Boulder batholith** intrusive rocks. The deep high to the east may also be response from the units underlying the Lowland Creek volcanic sequence. The shallow IP anomaly at station 1700 is associated with a moderate resistivity low and its source is unknown. This anomaly is suggested as a priority drill target.

Drilling the anomaly at station 1700 is recommended for the following reason. With the correlation of a resistivity low between stations 1750 and 2250, and what appears to be a connection between shallow and deeper IP responses in that same location, the shallow anomaly at station 1700 may represent the epithermal or upper part of a mineralized system that extends to depth. A feeder structure from the underlying Boulder batholith intrusive rocks may be present in the vicinity of station 1900. If mineralization in the upper part of the anomaly supports the hypothesis that it may have a deeper source, drill testing of the structural zone at about station 1900, or drilling of the deep anomaly should be considered.

**Cretaceous
contact**



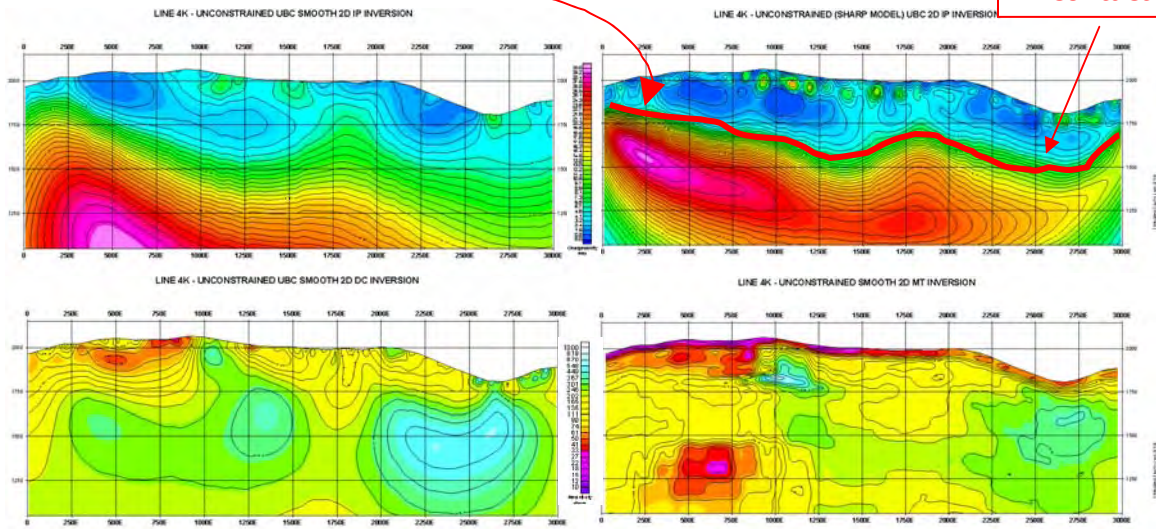
Multi-parameter Titan 2D Cross-sections along Line 3K.

Line 4K

Line 4K exhibits characteristics of resistivity distribution that are similar to line 3K. A surficial area of low resistivity is present between stations 250 and 1000. From station 1000 to approximately 1500, the central resistive area coincident with the Kit Carson aeromagnetic low is evident. Another deeper zone of high resistivity is apparent between stations 2000 and 2750. The MT inversion contains an additional deep conductive response between stations 500 and 750 at 600 meters depth, which may be associated with the rocks of the Boulder batholith.

The IP response from this line is dominated by the deep response of what is interpreted to be the intrusive rocks of the **Boulder batholith**. The deep IP anomaly comes closest to surface at the west end of the line and also between stations 1750 and 2000, although neither of these locations is suggested for drilling.

**Cretaceous
contact**



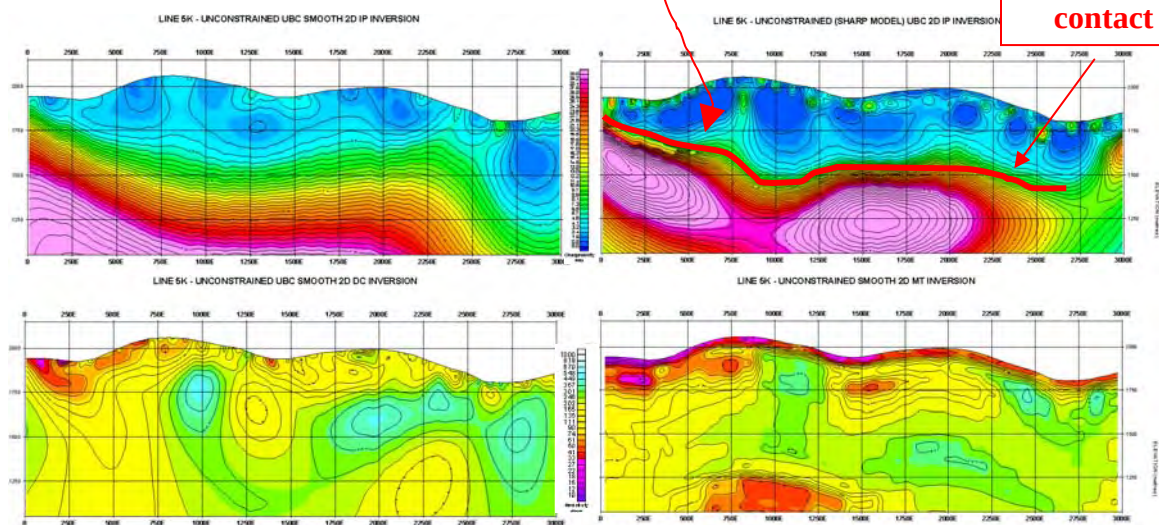
Multi-parameter Titan 2D Cross-sections along Line 4K.

Line 5K

The resistivity response from line 5K is showing the effects of the thinning Lowland Creek volcanic sequence and the transition from an epithermal target model to the south and porphyry type targets to the north. Low surficial resistivity response is present from the west end of the line to about station 1000. A high resistivity zone is located between approximately stations 1000 and 1250. The resistivity high corresponds to the aeromagnetic low. This response does not extend north of this line and the MT inversion results indicate that a deep conductor is now evident under this shallow resistivity high. Another high resistivity response at about 250 meters depth is located between station 1750 and continues to the east end of the line. This resistivity high appears to represent the response of the Lowland creek volcanic sequence with Boulder batholith rocks below.

The IP inversion results from this line are also dominated by the response from the deep IP sources interpreted to be the Boulder batholith. The extreme west end of the line is suggested as a priority drill target to test for the presence of the Boulder batholith intrusive rocks and sulfide mineralization associated with them. The deep IP response comes closest to surface at the west end of the line and is supported by inversion results from line 1N.

A secondary IP target is located at station 2500 and may be structurally controlled, as it is located on a shallow resistivity break.

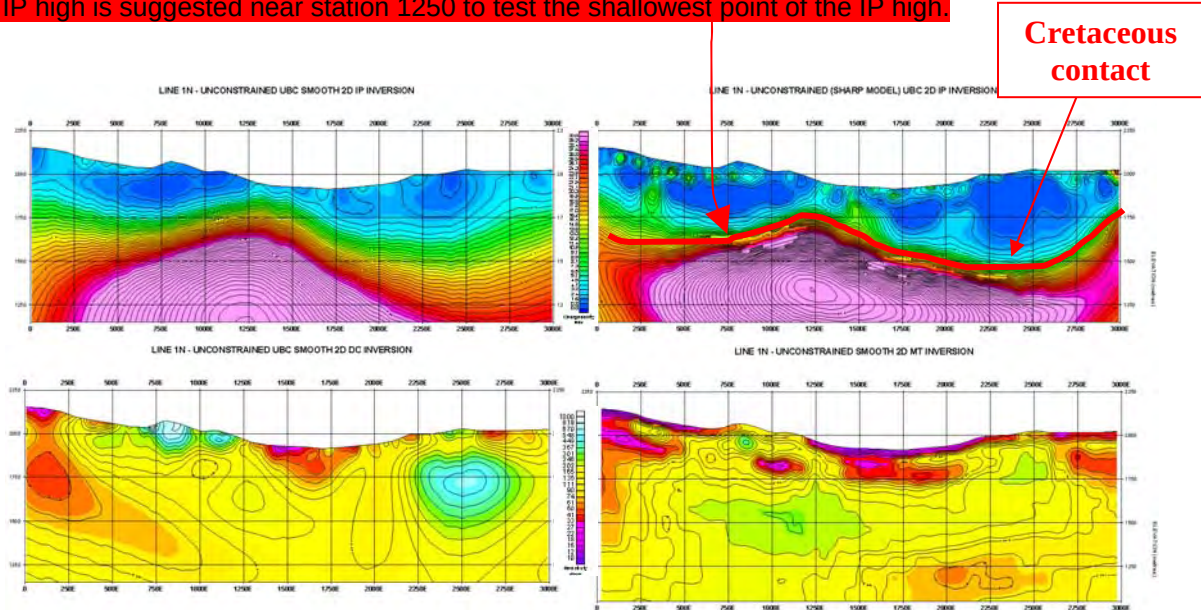


Multi-parameter Titan 2D Cross-sections along Line 5K.

Line 1N

The resistivity response for the North Area lines is much more homogeneous than the response to the south, with lower resistivity starting to dominate the overall character of the line. High resistivity areas are evident at the surface between stations 750 and 1250 and a deeper high resistivity zone is also present between stations 2250 and 2750. The DC resistivity and MT inversion results are generally correlative, but the resistivity response does not appear to be diagnostic for differentiating the contact between the upper volcanic cover rocks and the deeper intrusive ones.

The IP shows a deep highly chargeable response across the entirety of the profile. This response is interpreted to be the response of the Boulder batholith intrusives. A priority drill hole to test the source of the IP high is suggested near station 1250 to test the shallowest point of the IP high.

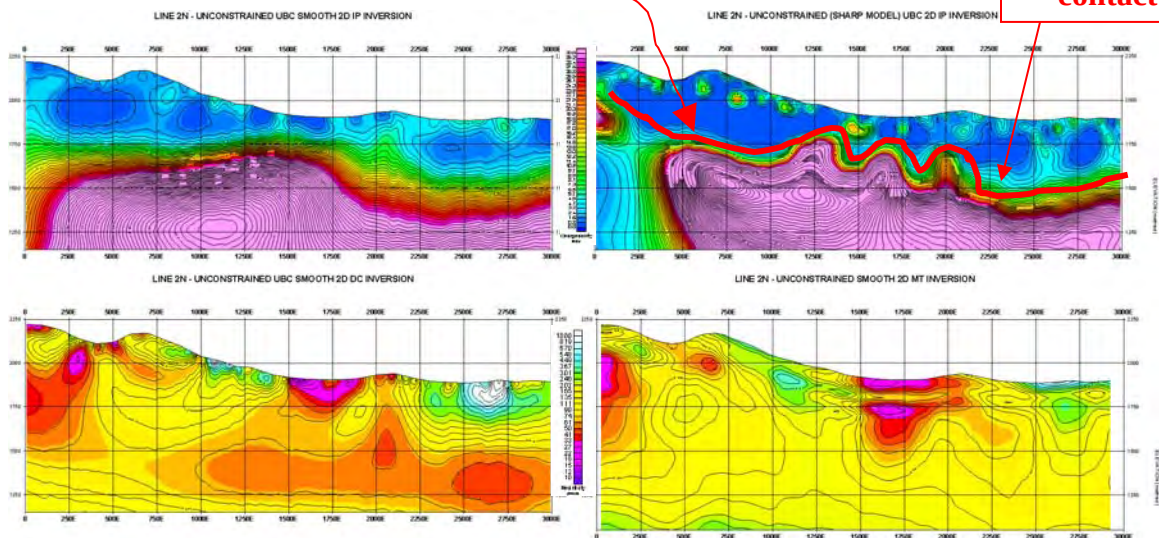


Multi-parameter Titan 2D Cross-sections along Line 1N.

Line 2N

The resistivity picture from line 2N is generally one of overall lower resistivity response than that of the entire rest of the Ruby project survey. The reason for this is not absolutely clear, but may be due to the fact that the majority of the line lies outside the “Ruby cauldron”. The east end of the line extends into the cauldron circular structure and the response from the Lowland Creek volcanics within the collapse structure is characterized by the shallower, high resistivity response to the east of station 2250. Again, the resistivity response is not clearly indicative of the location of the unconformity, although lower resistivity response seems to be present where the IP response increases.

The interpreted signature of the Boulder batholith rocks clearly dominates the IP response on this line. The shallowest area for the IP anomaly is located between stations 1250 and 1750 and a priority drill hole to test the target is suggested in this area. A hole anywhere in this area will likely intersect sulfide mineralization at about 1000 feet. The structural elements of the underlying batholith could vary considerably and possibly be quite complex.



Multi-parameter Titan 2D Cross-sections along Line N2.

Appendix F: A Summary of Porphyry Copper Systems with Butte Main Stage-Type Mineralization, and a Comparison with the Ruby Porphyry System

A SUMMARY OF PORPHYRY COPPER SYSTEMS WITH BUTTE MAIN STAGE-TYPE MINERALIZATION, AND A COMPARISON WITH THE RUBY PORPHYRY SYSTEM (Fess Foster 3/20/09)

DISCUSSION

“Reverse zoned” (Cooke and others, [2005] page 77 and 81) or Type 2 (Seedorf and others, [2005], page 252 and 278) porphyries contain hydrolytic alteration that postdates and extends down into core potassic alteration. Many of the world’s great porphyry copper orebodies have late stage veins associated with this hydrolytic alteration. These include Butte Mt., Resolution Az., Chiquicamata, Escondida, Rosario, and El Salvador. The latter four deposits occur within the 600 km-long Upper Eocene-Lower Oligocene Porphyry Copper Belt of northern Chile.

These late veins are commonly high sulfidation, Cu/Ag/Zn-rich, and associated with phyllic or advanced argillic alteration. They are analogous to the D Veins described at El Salvador by Gustafson and Hunt (1975), and crosscut the more typical “disseminated porphyry-type” mineralization (chalcopyrite, bornite, and molybdenite associated with potassic alteration). Hypogene chalcocite, enargite, covellite, digenite, tenantite, sphalerite, and galena are common in the late veins.

The late veins can contain substantial underground mineable ore, and host a considerable amount of the overall metal content of the porphyry system.

- Over 95% of the metal production from Butte was from the late (Main Stage) Veins. Underground production is estimated at over 7.7 million tonnes Cu and 21 million ounces Ag from veins averaging 4.4% Cu and 2.7 opt Ag (F. Foster, 2008 Unpublished Report).
- Masterman and others (2004, page 674) state that the late veins at Rosario account for 10 wt. % of the current reserve. The total reserve is estimated at 1.1 billion tonnes at 1% Cu, so these veins would contain 1.1 million tonnes Cu. Dick (1994, page 7) states that 300,000 tonnes at 30% Cu and 5 opt Ag was mined from nearby bornite-rich veins from 1896-1930. These were up to 5 meters wide.
- The Resolution discovery contains 1.3 billion tonnes at 1.5% Cu. The strongest mineralization occurs in areas with veins and veinlets containing chalcocite, digenite, and bornite. They are associated with intense argillic and phyllic alteration, and are said to “strongly resemble Butte”. The veins carry up to 38% Cu. Copper values distal to the veins drop to 0.15 to 0.2% (see Manske and Paul, [2002], pages 208, 214, and 217).
- The historic Magma underground mine near Resolution (including the vein and the associated carbonate replacement mantos) produced about 25 million tons at about 5% Cu (1.1 million tonnes Cu), and was mined for 85 years (see Manske and Paul, [2002], page 199).

- The late veins at Chiquicamata and Escondida are not well understood due to the deep oxidation, and the fact that most orebodies are supergene. Also, vein reserves are typically not separately calculated in open pit mine.
 - Chiquicamata contains a late hydrolytic alteration event with bornite, digenite, enargite, covellite, etc. It is termed “Main Stage”, and it is stated that in practically all respects it is analogous to the Butte Main Stage Veins. Chiquicamata’s similarity to Butte is what initially attracted Anaconda to the property. However, the endowment of the veins is not discussed (see Ossandon and others [2001], pages 262 and 266-268).
 - Escondida also has a late hydrolytic alteration event with veins of bornite, covellite, chalcocite, enargite, sphalerite, etc., similar to the Butte Main Stage mineralization. Again, the vein grades or dimensions are not discussed. However, it is stated that where present, these veins increase the overall grade from a background of 0.3 wt. % to over 1 wt. % Cu (see Garza and others [2001], pages 319-320 for details).

The late veins appear to postdate the earlier porphyry-type mineralization by 1-4 million years (Cooke and others, 2005; Lund and others, 2002). Recent research indicates that the late veins formed at very shallow (200-2000 meter) depths (Cooke and others, 2005; Rusk and others, 2008). This requires that the system was emplaced at a shallow depth, and/or a substantial amount of uplift and erosion over a several million year period before the late veins form.

In summary, recent literature has recognized that Type 2 or reverse zoned systems form very large deposits. The resulting late veining can add substantial metal endowment to the earlier “porphyry-style disseminated mineralization”, and produce underground grades over mineable widths. The veins also carry copper minerals with a higher wt. % Cu than chalcopyrite. The relative importance and degree of development of these late veins varies between systems.

COMPARISON WITH RUBY PORPHYRY

The Ruby porphyry appears to have a reverse zoned or Type 2 alteration configuration. The drilling to date has shown an earlier potassic core overprinted by structurally-controlled phyllic alteration.

The Ruby Porphyry system was emplaced at a very shallow depth, similar to the systems discussed above. The Boulder Batholith that hosts the Butte porphyry system is known to be a shallow epizonal body that intruded its own ejecta (the Elkhorn Mountains Volcanics). The Ruby porphyry system is hosted by the same shallow batholith. In fact **the top of the Ruby Porphyry was emplaced at a shallower depth than Butte.**

Localized zones of Main Stage-type mineralization appear to have been encountered in the Ruby Porphyry as described below. They occupy late structures and are associated with hydrolytic alteration.

- O.T.'s drilling has shown a number of higher grade Cu intercepts in phyllic altered late structures that crosscut the potassic alteration. The two highest grade narrow copper intercepts (in drill thickness, not true thickness) were:
 - 6.5 feet of 6,750 ppm (0.67%) Cu from 3015.0 to 3021.5 feet in hole NA04-6.
 - 3.5 feet of 6,510 ppm (0.65%) Cu from 1,047.5 to 1,051 feet in hole 05C-7.
- Holes NA04-6 and 05C-6 contain at least two occurrences of young sphalerite associated with sericitic alteration in fault gouge. This sphalerite postdates the widespread chalcopyrite-molybdenum mineralization, and is darker colored than earlier sphalerite. The best intercept of this material was 0.66% Zn over 5 feet.
- A 1977 Molycorp report refers to late sphalerite-tennantite-tetrahedrite-galena mineralization in breccias that was probably the last period of mineralization in hole L-2.
- The 2006 43-101 Ruby 43-101 report (page 22) states that Molycorp hole L-7 had chalcocite (in addition to chalcopyrite and molybdenite), but no analytical data are available.

The Main Stage-type structures encountered to date at Ruby are sporadic. However, very little drilling has been done. The potassic alteration (carrying pervasive 200-1,000 ppm Cu) with a phyllic overprint in the North Area appears to encompass about 16 billion tons. The Dry Gulch Target is of similar size. Data is available for only nine **vertical** holes into this 16-32 billion ton mass. The pervasive 200-1,000 ppm Cu could be similar to the background 1,500 to 2,000 ppm Cu described above at Resolution. Additional **angle** drilling is required to test for late high sulfidation Main Stage-type veins in the Ruby Porphyry.

REFERENCES

- Cooke, D.R., Masterman, G. J., Berry, R.F., Walshe, J.L., and Gow., P.A., 2005, Structural Controls on the Superposition of High Sulfidation Mineralization into Porphyry Copper-Molybdenum Deposits: Lessons Learned from Rosario, Northern Chile: in New Zealand Minerals and Mining Conference Proceedings, Crown Minerals, 7 p., (available at http://www.crownminerals.govt.nz/cms/pdf-library/minerals/conferences-1/077_papers_63.pdf).
- Dick, L.A., Chavez, W.X., Gonzales, A., and Bisso, B., 1994, Geologic Setting and Mineralogy of the Cu-Ag-(As) Rosario Vein System, Collahuasi District, Chile: Soc. Econ. Geol. Newsletter, no. 9, pp. 1, 6-11.
- Garza, R.A.P., Titley, S.A., and Pimentel, F., 2001, Geology of the Escondida Porphyry Copper Deposit, Antofagasta Region, Chile: Econ. Geol. V. 96, pp. 307-324.
- Gustafson, L.B. and Hunt, J.P., 1975, The Porphyry Copper Deposit at El Salvador, Chile: Econ. Geol., v. 70, no. 5, pp. 857-912.

- Lund, K., Aleinikoff, J.N., Kunk, J.J., Unruh, D.M., Zeihen, G.D., Hodges, W.C., du Bray, E.A., and O'Neill, L. M., 2002, SHRIMP U-Pb and $^{40}\text{Ar}/^{39}\text{Ar}$ Age Constraints for Relating Plutonism and Mineralization in the Boulder Batholith Region, Montana: *Econ. Geol.*, v. 97, pp. 241-267.
- Manske, S.L., and Paul, A.P., 2002, Geology of a Major New Porphyry Copper Center in the Superior (Pioneer) District, Arizona: *Econ. Geol.*, v 97, pp. 197-220.
- Masterman, G.J., Cooke, D.R., Berry, R.F., Clark, A.H., Archibald, D.A., Mathur, R., Walshe, J.L., and Duran, M., 2004, $^{40}\text{Ar}/^{39}\text{Ar}$ and Re-OS Geochronology of Porphyry Copper-Molybdenum Deposits and Related Copper-Silver Veins in the Collahuasi District, Northern Chile: *Econ. Geol.* Vol. 99, pp. 673-690.
- Ossandan, G., Freraut, R., Gustafson, L.B., Lindsay, D.D., and Zentilli, M., 2001, Geology of the Chuquicamata Mine: A Progress Report: *Econ. Geol.*, v. 96. pp. 249-270.
- Rusk, B. G., Reed, M. H., and Dilles, J. H., 2008, Fluid Inclusion Evidence for Magmatic Hydrothermal Fluid Evolution in the Porphyry Copper-Molybdenum Deposit at Butte, Montana: *Econ. Geol.*, v. 103, no. 2, pp. 307-334.
- Seedorf, E., Dilles, J.H., Proffett, J., Einaudi, M.T., Zurcher, L., Stavast, W. J., Johnson, D. A., and Barton, M.D., 2005, Porphyry Deposits: Characteristics and Origin of Hypogene Features: *Econ. Geol.* 100th Anniversary Volume, pp. 251-298.

**Appendix G: Comparison of the Resolution Copper Deposit to the Butte and Ruby
Montana Porphyry Systems**

COMPARISON OF THE RESOLUTION COPPER DEPOSIT TO THE BUTTE AND RUBY MONTANA PORPHYRY SYSTEMS

(9/2/08)

BACKGROUND

The Resolution copper deposit at Superior Az (1.3 billion tons @ 1.5% Cu and 0.04% Mo) has a Type 2 (Seedorf and others, 2005) alteration configuration. Type 2 configurations have hydrolytic alteration extending down into the potassic core, and include many of the world's most substantial porphyry systems (including Chuquicamata, Escondida, and Butte). Resolution is also very similar to Butte Main Stage mineralization in that it has advanced argillic alteration along the margins of massive sulfide (chalcocite-digenite-bornite) veins.

Ruby also has a Type 2 configuration. The following figures were compiled so that the alteration and grade boundaries at Resolution can be compared to the sparse knowledge of the Ruby system.

Figure 1 shows the hydrolytic (quartz-sericite-pyrite) alteration zones at Butte, Chuquicamata, and Resolution. Figure 2 shows the distribution of copper grades relative to hydrolytic alteration at Resolution. Figure 3 is a colored version of Figure 2. Figure 4 shows the outline of the Ruby Matrix North Area IP Anomaly and Dry Gl. target. Figure 5 shows the location of the nine (vertical) holes that have been drilled into the Ruby porphyry to date. Figures 3 through 5 are at the same scale (reduced from 1:24,000-scale, see scale bars for reference). **It is best to print Figures 4 and 5 on a clear acetate so that they can be overlain to Figure 3 (or use a light table).**

DISCUSSION

1. Figure 1 shows that the long dimensions of the quartz-sericite-pyrite (phyllitic) alteration are 1 to 1.5 km. Therefore, **0.5 to 1.0 km drill spacing along the strike of the primary ore controlling structures would appear to be a good first-pass exploration approach.**
2. Figure 2 shows large areas of low-grade (<0.5%) Cu between the higher grade veins. Manske and Paul state that *"Distal to major veins where veinlet density is low, copper grades commonly fall to weak disseminated values in the range 0.15 to 0.2 percent Cu"*. **Note that this sounds similar to what has been encountered in the Ruby North Area to date.**
3. When Figures 3 and 4 are overlain, it is obvious that the North Area and Dry Gl. targets each have room for two or 3 Resolution-sized orebodies.
4. When Figures 3 and 5 are overlain, it can be seen that the nine vertical holes in the North Area could have easily missed a Resolution-sized orebody (and the Dry Gl. target is completely untested at this point).

In summary, based up Resolution, it appears that:

- A. O.T.'s planned Phase I drill holes (on 1 to 1.5 km centers) are reasonable or perhaps too widely spaced.
- B. The mineralization encountered in the North Area (including 912' @ 0.13% Cu and 1460' @ 0.10% Cu) could be low-grade enrichment between high-grade veins.
- C. There is adequate room for a large orebody in the North Area and Dry Gl. targets.
- D. The existing nine vertical holes into the system could have missed a large structurally controlled orebody.

REFERENCES

Manske, S.L. and Paul, A.H., 2002, Geology of a Major New Porphyry Copper Center in the Superior (Pioneer) District, Arizona: *Economic Geology*, Vol. 97, No. 2, p. 197-220.

Seedorf, E. and others, 2005, Porphyry Deposits, Characteristics and Origin of Hypogene Features: *Economic Geology 100th Anniversary Volume*, p. 251-298.

Fess Foster

Fess Foster

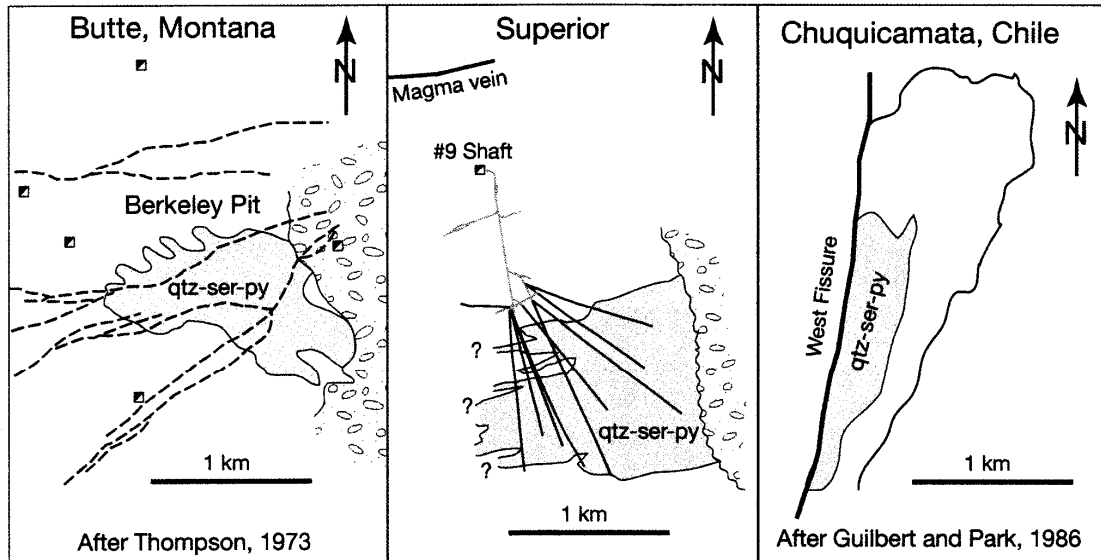
Figure 1: From Manske and Paul, 2002

FIG. 17. The porphyry center at Superior compared to two well-known giant copper systems: Butte, Montana, and Chuquicamata, Chile. Giant systems may be defined as those with over 3.1 Mt of contained copper metal (Clark, 1993), lying above the 90th percentile in metal content for all known copper deposits (Singer, 1995, p. 101). The shaded area in each panel represents the extent of quartz-sericite-pyrite alteration in the respective deposit, comprising surface views for Butte and Chuquicamata as compared to the sea-level datum at Superior (about 1,280 m underground). All three plans presented at the same scale.

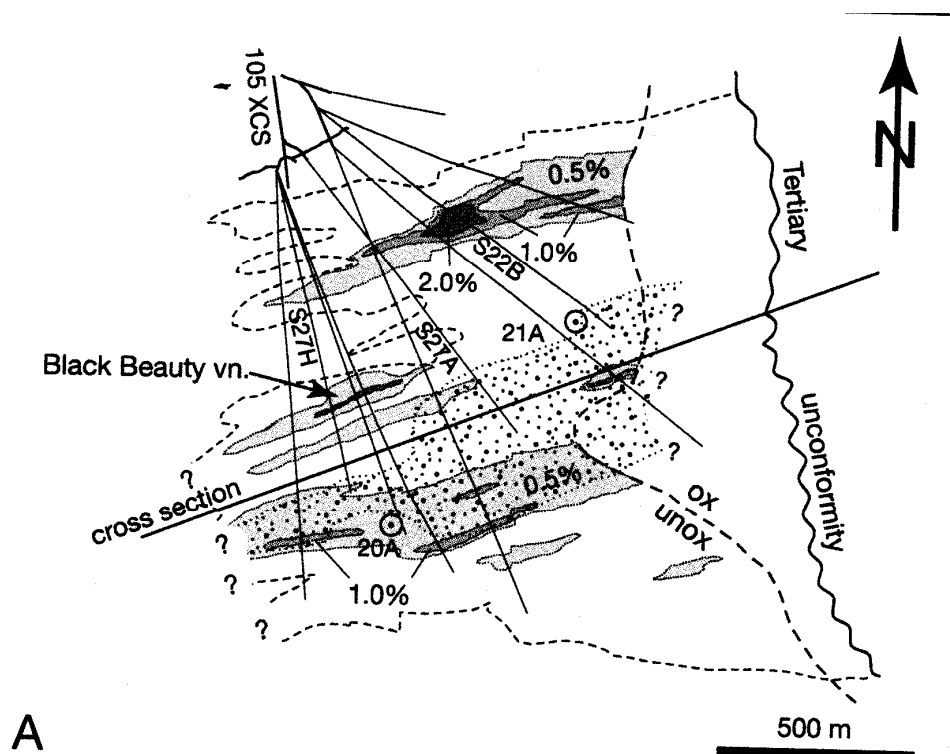
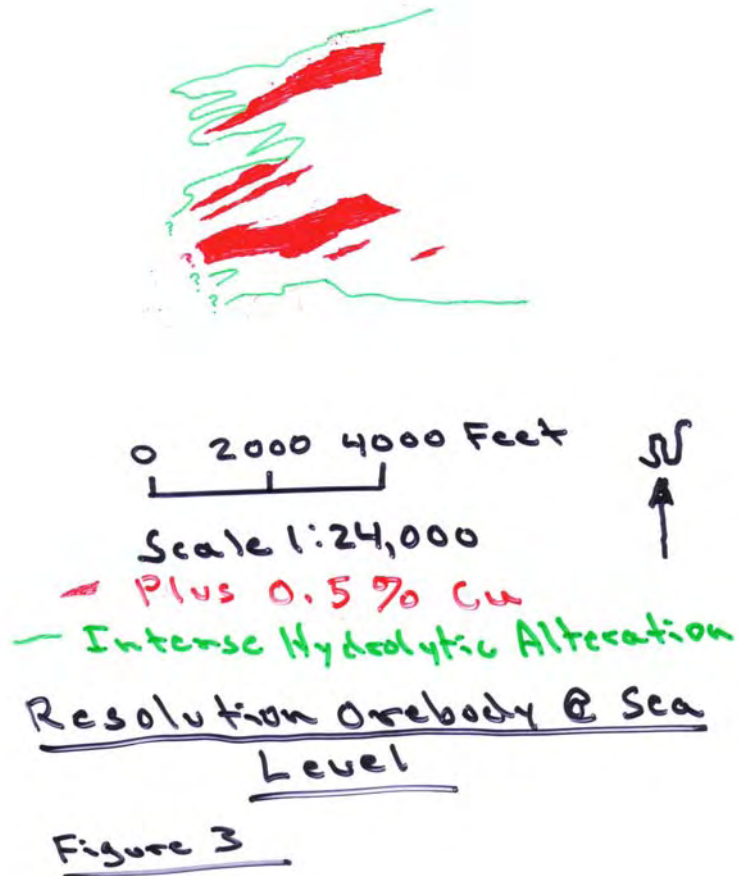
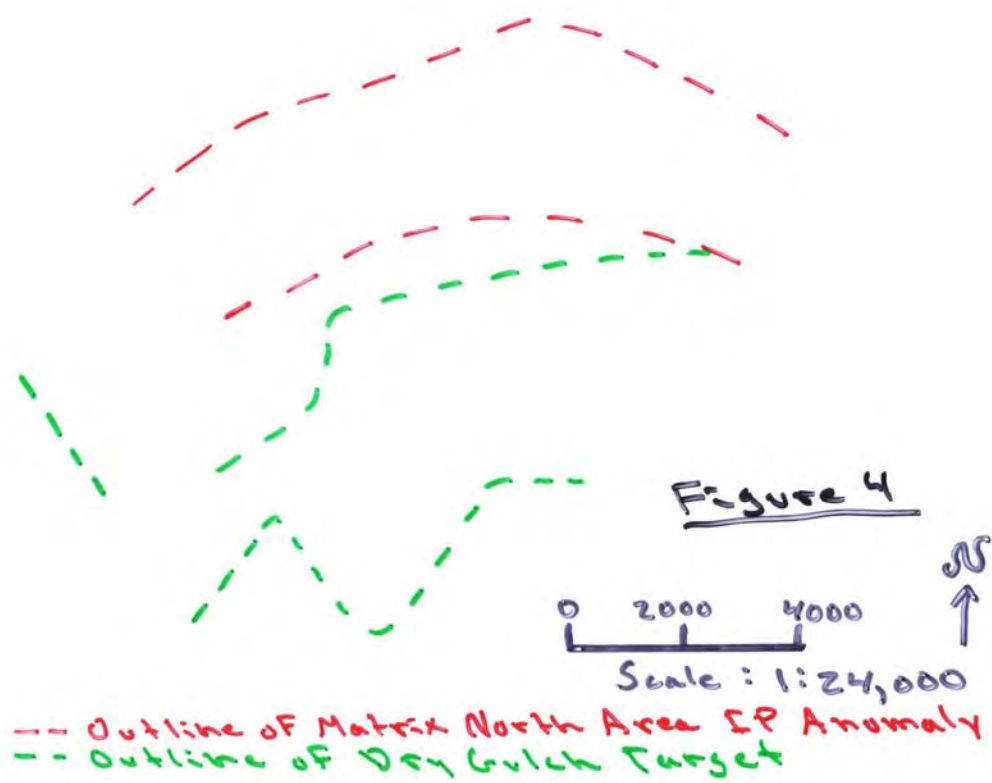
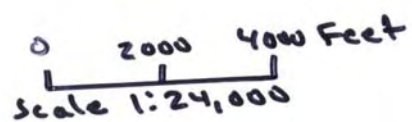


Figure 2: From Manske and Paul, 2002

FIG. 16. Distribution of hypogene copper grade. A. Grade of mineralized zones in plan view at sea level with bulk assay averages ≥ 0.5 , ≥ 1.0 , and ≥ 2.0 percent Cu, respectively (gray tones). The stipple pattern shows 1.0 percent Cu grade at the -300-m elevation, projected to sea level. Light dashed line marks the limit of intense hydrolytic alteration. Faults eliminated for clarity.







0 2000 4000 Feet
Scale 1:24,000

Figure 5
SK
↑

• All Drill Holes into porphyry

**Appendix H: Examples of Low-Level Cu Enrichment Around Porphyry Copper Systems
with Butte Main Stage-Type Veining**

EXAMPLES OF LOW-LEVEL CU ENRICHMENT AROUND PORPHYRY COPPER SYSTEMS WITH BUTTE MAIN STAGE-TYPE VEINING (Fess Foster 3/4/09)

BACKGROUND

“Reverse zoned” or Type 2 porphyries contain hydrolytic alteration that postdates and extends down into core potassic alteration. Many of the world’s great porphyry copper orebodies have late stage veins associated with this hydrolytic alteration. These include Butte Mt., Resolution Az., Chiquicamata, Escondida, Rosario, and El Salvador (the latter four are in northern Chile). The Ruby, Montana Cu-Mo porphyry also appears to be a large Type 2 reversed zoned system. The late veins drilled to date at Ruby have been weak. However, very few holes have been drilled. A large mass of low-level copper mineralization appears to occur between the late veins at Ruby. This correspondence documents that similar low-level mineralization also occurs between late veins at several “giant” porphyry systems that are being mined.

LOW-LEVEL CU ENRICHMENT AT RUBY

The Main Stage-type structures encountered to date within the Ruby porphyry have been sporadic, thin, and uneconomic. However, very little drilling has been done. Most of the porphyry drilled has contained potassic alteration (carrying **pervasive 300-1,000 ppm Cu**) with a phyllic overprint. There appears to be on the order of **16-32 billions tons** of this type of material present at Ruby.

The weighted average copper grade through **all** Cretaceous rocks for the nine holes into the core of the Ruby porphyry that data are available for are shown in Table 1. **All of these holes bottomed in mineralization.**

Table 1: Weighted Average of Copper in Cretaceous Rocks in all Ruby Porphyry Holes Drilled into Core Alteration (in feet).

Hole Number	Total Depth	From	To	Thickness	Cu (ppm)
NA04-6 (OT)	3,215	585	3,215	2,630	313
05C-6 (OT)	2,516	1,274	2,516	1,242	368
05C-7 (OT)	2,735	975	2,735	1,760	785
A-1 (Anaconda)	1255	0	1255	1255	~900 ²
A-2 (Anaconda)	2425	811	2425	1614	~1000 ²
A-3 (Anaconda)	2274	200	1771	1571	~600 ²
L-1 ¹ (Molycorp)	2723				²
L-2 ¹ (Molycorp)	1985				²
L-3 (Molycorp)	3000	1540	3000	1460	~1000 ²

¹ No significant intersections of >0.05% Cu were reported in these holes.

² Cu in the Anaconda and Molycorp drill holes were reported in %.

LOW-LEVEL COPPER ENRICHMENT IN OTHER PORPHRIES WITH MAIN STAGE -TYPE VEINING

Similar low-level copper enrichment appears to occur between the Main Stage-type veins at Butte, Resolution, and Escondida. These three systems appear to carry 500-3,000 ppm Cu between the late high sulfidation veins. I was unable to find data on material between the other three porphyry systems that are known to have similar late veins (El Salvador, Rosario, and Chiquicamata).

- Information on this topic for Butte that is described in Miller (1973) is scanned in the attached 2 pages. The map shows **argillic alteration and “fresh” Butte Quartz Monzonite adjacent to the Main Stage Veins in the Berkley Pit**. It is also stated that **large volumes of Butte Quartz Monzonite enclose the Berkley Pit ore that contain “assayable” (generally > 0.05% or 500 ppm Cu in those days) copper**.
- **Copper values distal to the late veins at the Resolution Az. deposit drop to 0.15 to 0.2% (Manske and Paul, 2002).**
- **Where present, the late veins at Escondida increase the overall grade from a background of 0.3 wt. % (Garza and others, 2001).**

SUMMARY

The Ruby porphyry appears to be a huge system, and data is available for only nine vertical holes. Sparse existing data suggests that there is perhaps 16-32 billion tons of 300-1000 ppm Cu. Weakly-developed late veins have been encountered in the limited drilling to date. Butte, Resolution, and Escondida appear to carry similar low-level (500-3,000 ppm between late high sulfidation veins). The fact that Ruby contains similar low-level mineralization does not oblige that the late veins at Ruby will become stronger in other parts of the system. However, it is encouraging that other Type 2 reversed zoned systems contain similar low-level mineralization between the late veins.

REFERENCES

- Garza, R.A.P., Titley, S.A., and Pimentel, F., 2001, Geology of the Escondida Porphyry Copper Deposit, Antofagasta Region, Chile: Econ. Geol. V. 96, pp. 307-324.
- Manske, S.L., and Paul, A.P., 2002, Geology of a Major New Porphyry Copper Center in the Superior (Pioneer) District, Arizona: Econ. Geol., v 97, pp. 197-220.
- Miller, R. N. (ed.), 1973, Guidebook for the Butte Field Meeting of the Society of Economic Geologists: 16 Sections.

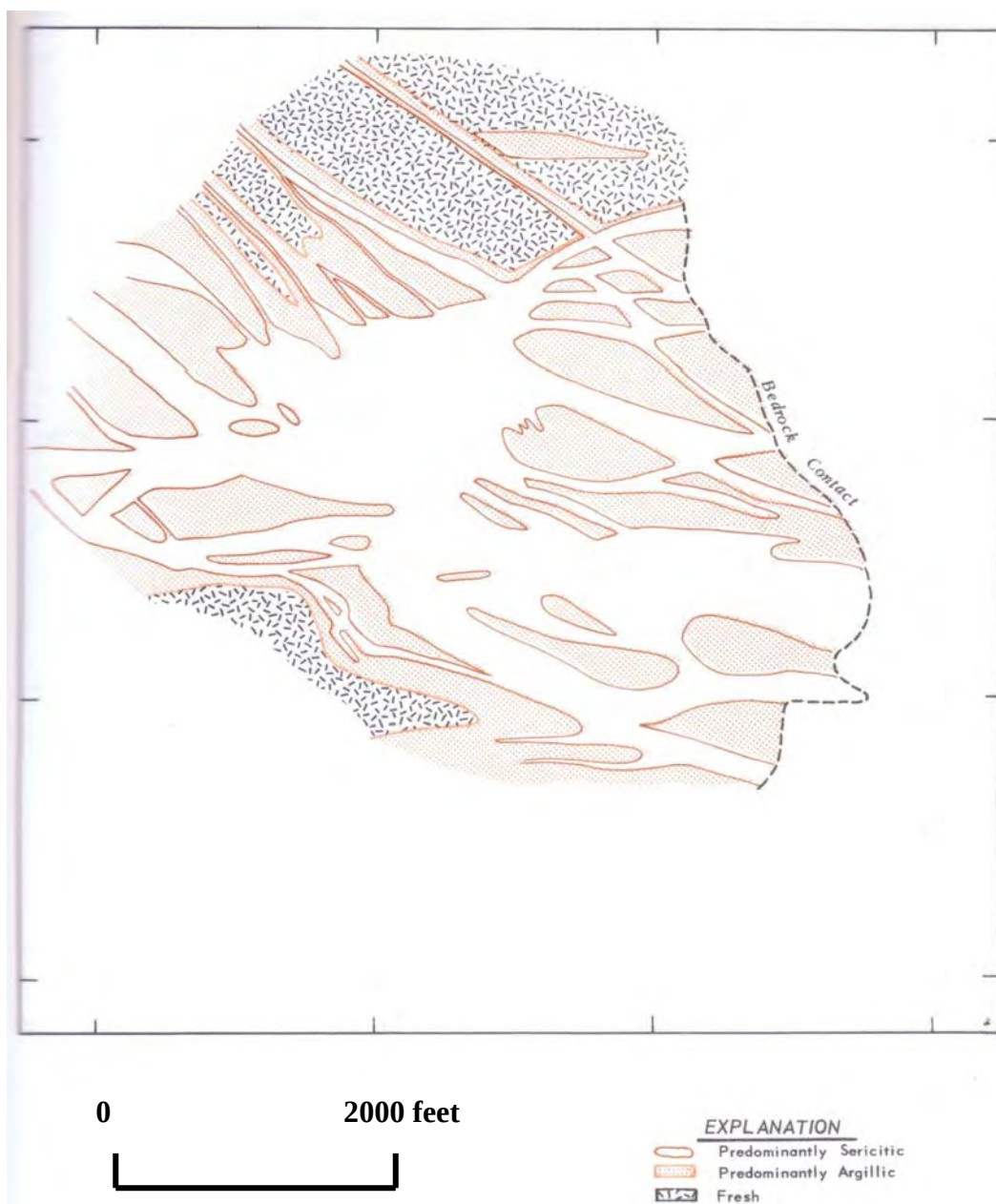


FIGURE L-1a. Map of alteration, Berkeley Pit.

A strong green coloration pervades typical background sericite-type alteration outward from the veins. The green sericite conversion of only plagioclase and K-feldspar leaves the general rock texture intact. Excessive magnesium and iron in the sericite lattice is believed responsible for the green color. Pyrite-chalcopyrite veinlets within this alteration assemblage do not appear to have white or gray sericite envelopes. Contemporaneous origin of this alteration phenomenon with sulfides under apparently different chemical conditions is indicated.

White Argillic Alteration

Outward from broad, pervasive sericitic zones, white argillic (kaolinitic) alteration is developed. The frequency of jointing has diminished, and available solution channelways are greatly reduced in number thus inhibiting intensity of solution penetration. The high disseminated sulfide content typical of sericitic zones is thus not developed in the argillic environment. However, copper mineralization in the form of chalcopyrite, bornite, and chalcocite blebs and seams in pyrite-quartz vein fillings, and as disseminated grains in narrow sericitic halos, is often equal to or stronger than that found in more pervasively sericitized zones. The existing joint and fracture patterns are usually filled with pyrite-quartz-chalcopyrite cores 1/64 to 1/2 inch in thickness, each bordered by rather uniform sericite halos. Sericite envelope widths vary from nil along some 1/2-inch to 2-inch thick pyrite veinlets in the low-angle sets, to an inch or more wide on each side of veinlets less than 1/4-inch thick in the high-angle sets.

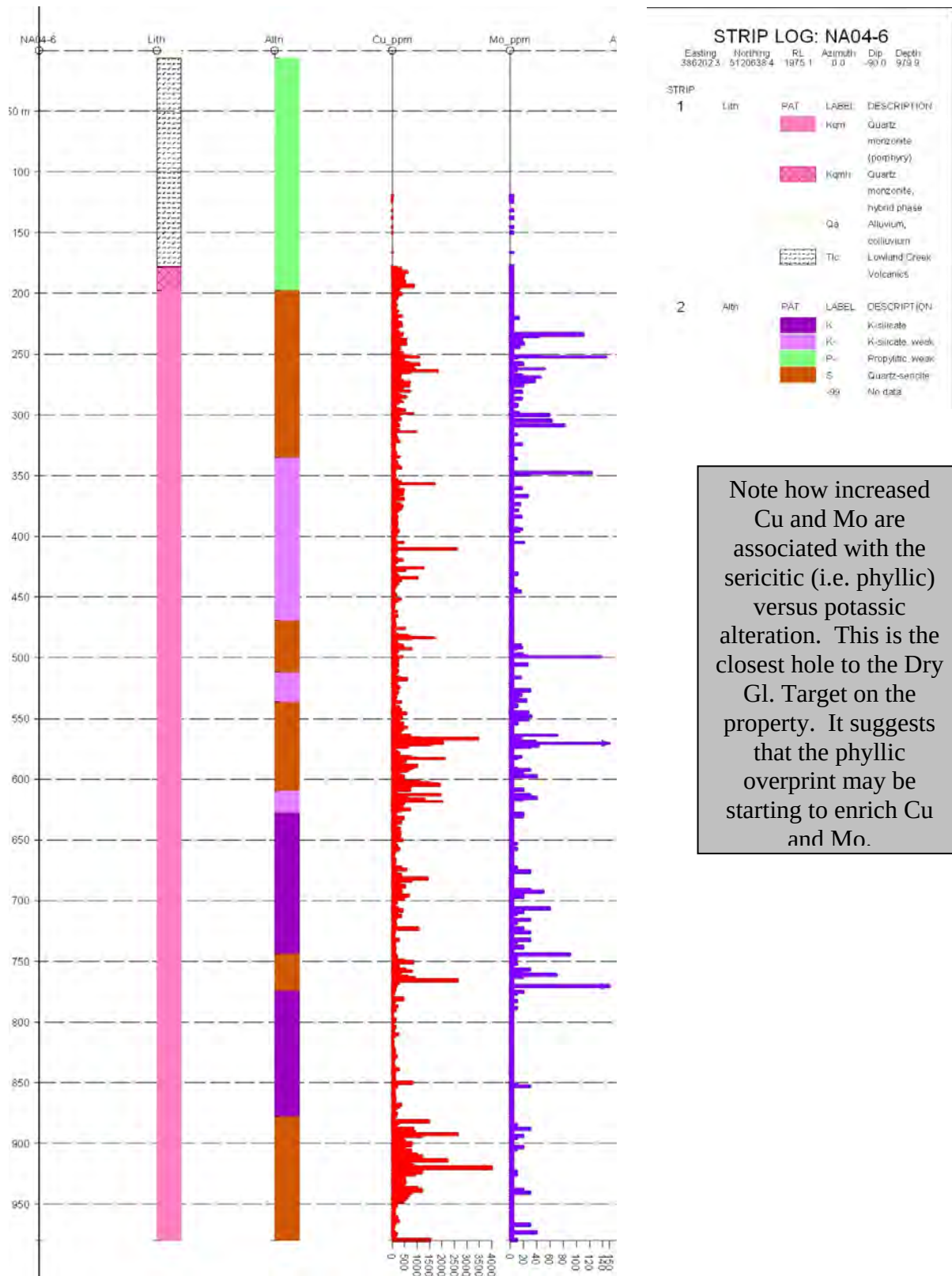
In relation to major vein systems, the zone of white argillic alteration of hypogene origin again appears to form an asymmetrical halo around the sericitic zone. The zone of argillization is narrow on the north side of the Anaconda system and variably-tongued on the south side along Northwest age vein intersections (see alteration overlays, Figs. L-1a and L-2a).

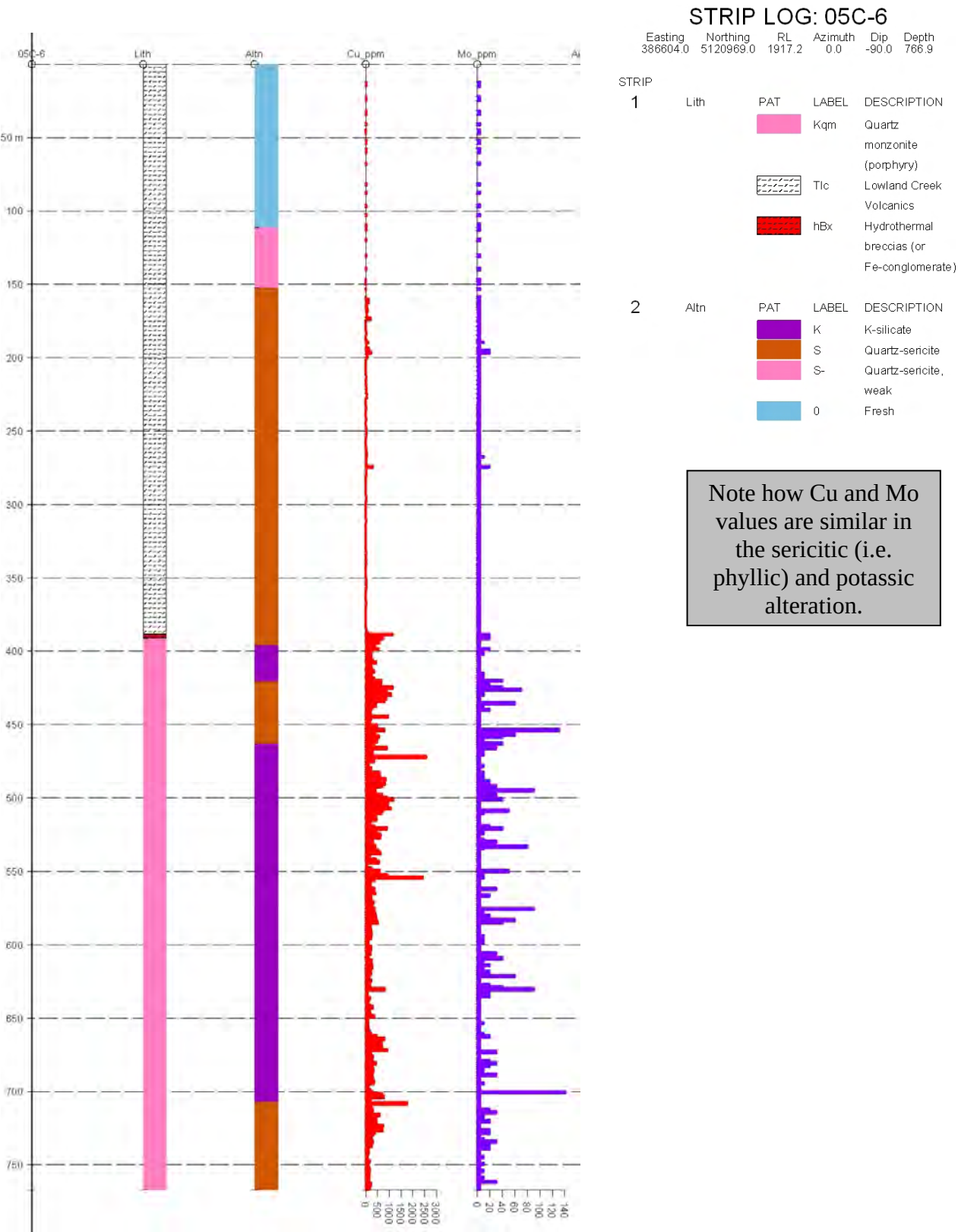
Green Montmorillonitic Zone

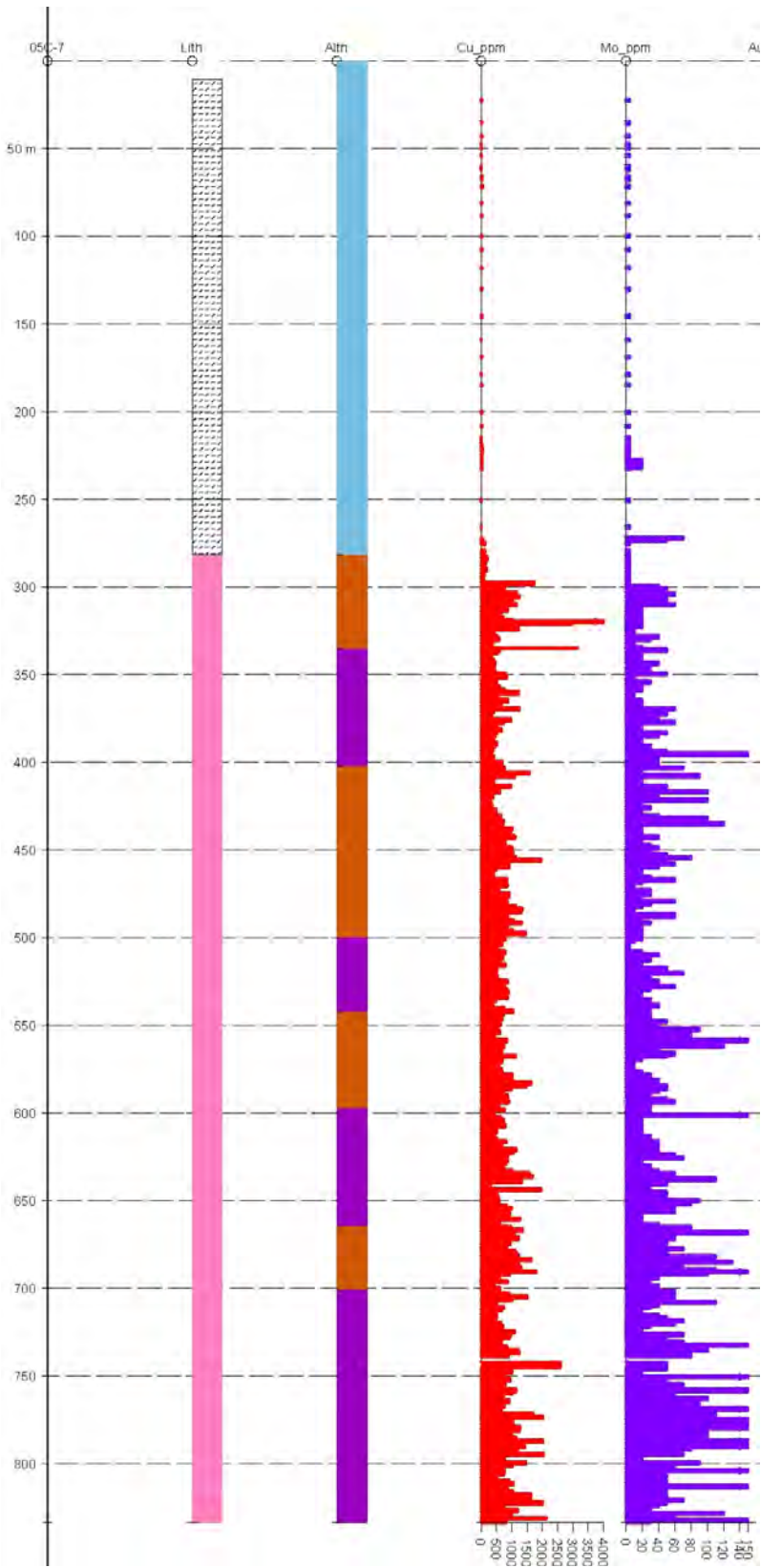
Green argillized or montmorillonitic alteration of the quartz monzonite occurs to a limited extent beyond zones of white argillic alteration. The true extent of montmorillonitic alteration cannot be accurately gauged because of the coincidence of shallow pit exposures with surface oxidation, which tend to mask or intensify evidence of weaker hydrothermal alteration. Zones of green argillic alteration may in large part be re-stabilized as white argillic alteration, due to deep supergene oxidation effects with formation of supergene clays.

Beyond alteration zones and ore grade copper mineralization, large volumes of fresh quartz monzonite enclose the Berkeley ore body. While the rock appears devoid of mineral value, it rarely fails to contain assayable copper. Large volumes of ground within and surrounding the proposed pit thus have sufficient copper content occurring both in veinlets and disseminated chalcopyrite to make potential leach-grade material.

Appendix I: Strip Logs of O.T. Holes NA04-6, 05C-6, and 05C-7 Showing Correlation Between Potassic and Sericitic (Phyllic) Alteration, and Cu and Mo. Note that NA04-6 was the southernmost hole, then 05C-6 in the middle, then 05C-7 is the northernmost hole (see Figure 17 for hole locations).







STRIP LOG: 05C-7

Easting 386429.0 Northing 5121310.0 RL 1984.3 Azimuth 0.0 Dip -90.0 Depth 833.6

STRIP	Lith	PAT	LABEL	DESCRIPTION
1			Kqm	Quartz monzonite (porphyry)
			Qa	Alluvium, colluvium
			Tlc	Lowland Creek Volcanics
2	Alt		K	K-silicate
			S	Quartz-sericite
			O	Fresh

Note how Cu and Mo values are similar in the sericitic (i.e. phyllic) and potassic alteration.

Appendix J: Recommended North Anomaly Phase I Drill Holes

RECOMMENDED NORTH ANOMALY PHASE I DRILL HOLES (Fess Foster 11/7/08)

BACKGROUND

Greg Caffery and I designed the following Phase I exploration program. It is designed as a first pass drill test for Butte Main Stage-type mineralization within the North Area IP anomaly. Main Stage mineralization includes both high-grade discrete veins, and also larger areas of intermediate-grade bulk underground mineralization.

DRILL HOLE LOCATIONS

Eight drill holes were designed as follows:

- To drill as close to 0° or 180° bearings as possible in order to bisect the known regional orientations of veins in the Boulder Batholith (including at Butte).
- To overlap one another, so as to constitute fences. The entire girth of the IP anomaly will be transected in the eastern, central, and western portion of the anomaly.
- To drill the stronger Matrix IP anomalies and offsets of anomalies (i.e. likely faults).
- To drill across MMI anomalies.

The eight holes are described in Table 1 below.

Table 1: North Area Phase I Drill Holes

Priority	Permit Site Name	Bearing	Inclination	Total Depth (feet)
1	05-2 ²	180°	-65°	3,500+
2	05-2	180°	-45°	2,000
3	08A ³	180°	-70°	3,500
4	07A ⁴	180°	-60°	2,500
? ¹	05-5	0°	-60°	3,500
? ¹	08B ⁵	30°	-60°	3,500
? ¹	07A	20°	-60°	4,000
? ¹	NA ⁶	?	?	5,000
Total Footage				27,500+

¹ The order in which these holes will be drilled will be determined after drilling the first four holes.

² This hole will be drilled first because (a) it is steeper and will give the drillers a feel for the rock, and (b) if results are negative, the shallower hole from this site may not be drilled.

³ This pad will need to be added by widening the road about 550' north of Site 07E.

⁴ The inclination of this hole was changed from its earlier -70° to -60° to better encounter an offset (fault?) in the chargeability Quantitative Section.

⁵ This pad will need to be added by widening the corner of the road about 800' NNE of Hole L3.

⁶ This will be a deep test. The exact location will be determined based upon the other drill hole results.

Note the following:

- Two holes will be drilled from Sites 05-2 and 07A. The deeper hole from 05-2 and the hole at 08A will be deep looks into the system (because they have deep TD's, and will be collared in the east end of the system where Cretaceous rocks are shallowest).
- A yet to be located 5,000' hole is planned to allow one other very deep look into the system. The exact location of this 8th hole will not be determined until the earlier holes have been evaluated.