

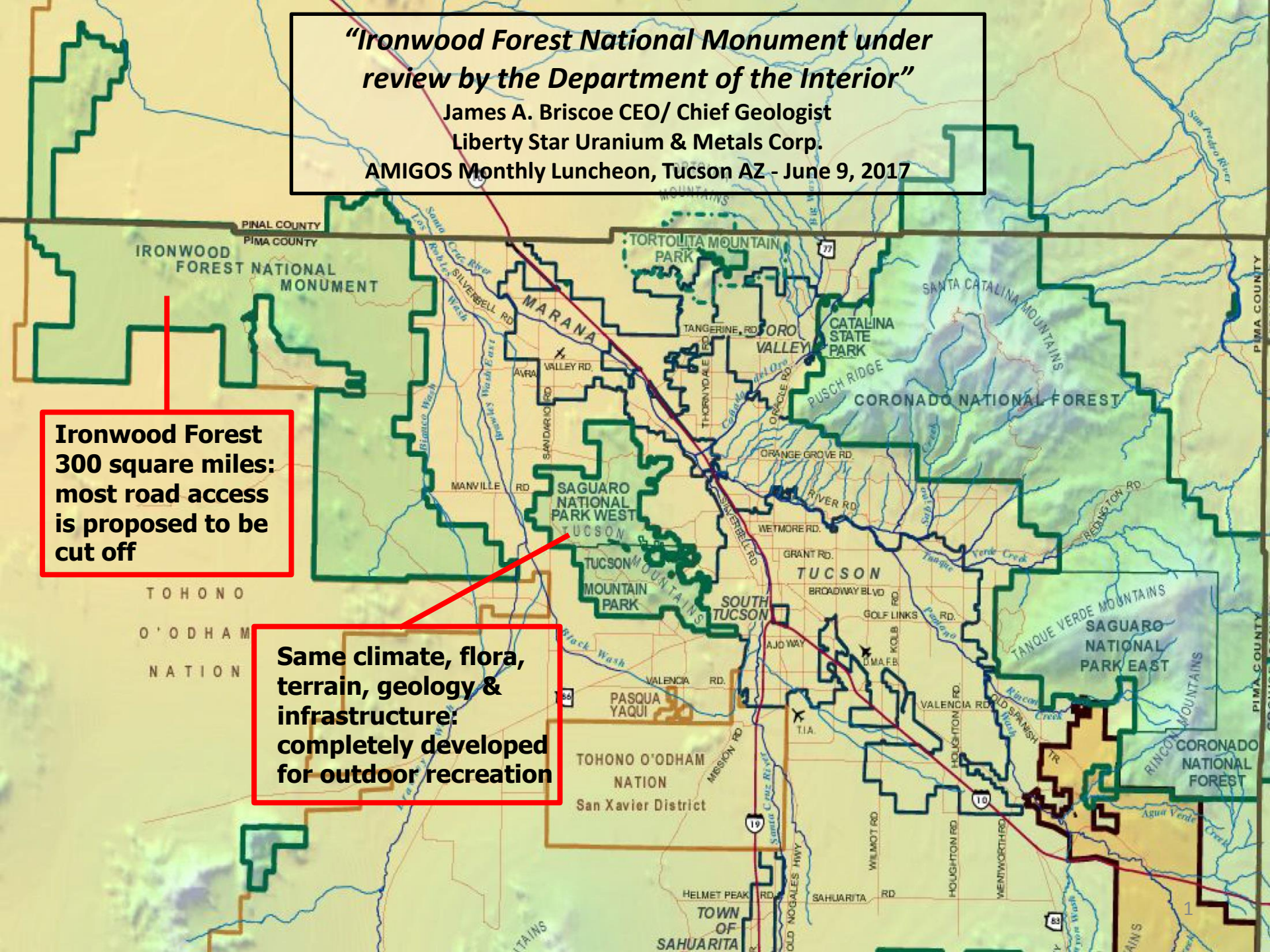
***“Ironwood Forest National Monument under review by the Department of the Interior”***

**James A. Briscoe CEO/ Chief Geologist  
Liberty Star Uranium & Metals Corp.**

**AMIGOS Monthly Luncheon, Tucson AZ - June 9, 2017**

**Ironwood Forest  
300 square miles:  
most road access  
is proposed to be  
cut off**

**Same climate, flora,  
terrain, geology &  
infrastructure:  
completely developed  
for outdoor recreation**



## Geology & Cultural History of Ironwood Forest National Monument-IFNM, Southern Arizona

### INFM Parameters

- *Established* 9 June 2000 - Exe. Order President W.J. Clinton
- *Land Mangement*: Bureau of Land Management
- *Footprint*: 188,619 acres (includes 59,922 acres non-federal lands, chiefly State Trust lands, and minor private holdings)
- *Cultural features*: 200+ Hohokam sites; historical mine-related sites
- *Current Uses*: Recreation, cattle grazing, mining on pre-existing mine sites
- *Threatened Species*: Ferruginous pygmy owl, desert bighorn sheep, lesser long-nosed bat, turk's head cactus

### Physiographic Features

Basin & Range Province, Roskruge Mtns., Samaniego Hills, Sawtooth Mtns., Silver Bell Mtns., Sonoran Desert, Western Silver Bell Mtns.

### Mining History

- Predominantly in the Silver Bell Mtns.
- Major Ore Deposit(s) type: porphyry copper
- Ore: copper, lead, zinc, molybdenum, gold

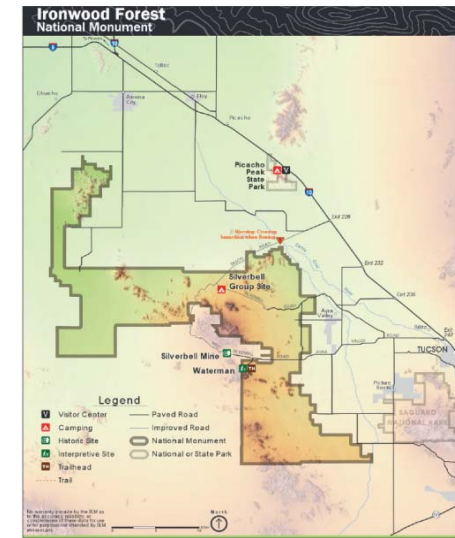
The IFNM surrounds and partially encompasses the Silver Bell metallic mineral district and either covers parts of or encompasses the Waterman, Magonigal and the Roskruge mineral districts. The most productive area has been the Silver Bell Mining District, where active mining continues to this day, immediately southwest of the monument, and by grandfather clause, on the the monument proper.

The Silver Bell Mining District evolved from a collection of intermittent, poorly financed and managed underground mining operations in the late 1800s to mid-1900s struggling to make a profit from high grade ores; to a small but profitable producer, deploying innovative mining practices and advancements in technology to successfully develop the district's large, low-grade copper resource (D. Briggs, 2017).

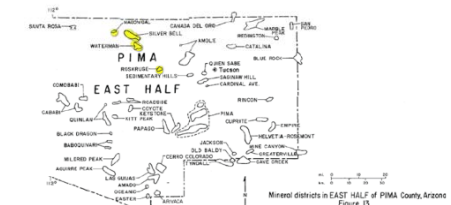
### Production in the Silver Bell Mining District (Briggs, 2017)

Over the past 130 years, the Silver Bell mining district yielded approximately 2.27 billion pounds of copper, 6.6 million pounds of molybdenum, 3.7 million pounds of lead, 40.8 million pounds of zinc, 2,100 ounces of gold and 5.95 million ounces of silver. Copper mining adjacent to the IFNM continues today, with minor production of Mo, Pb, Zn, Au, and Ag.

Establishing what percent of production stems from the IFNM requires: 1) precise footprinting of mines; 2) assigning production values to properties on IFNM land.



Map of the Ironwood Forest National Monument (BLM).



Mineral Districts of eastern Pima County. Yellow highlighted districts are incorporated in part or entirely in IFNM (AZGS B-196, 1985).

The presence of gold ore in the Ragged Top Wilderness Study Area (WSA) of the Silver Bell Mountains was first announced by the US Geological Survey in Oct. 1988 (Spencer and Sawyer, 1988). A small gold rush ensued with 45 new lode mining claims.

**Concluding Statement:** With the creation of IFNP in 2000, exploration for additional copper mineralization was discontinued on the monument. Exploration continues to this day on mining claims on BLM lands in the Silver Bell Mtns.

## NOT TRUE

The Ironwood Forest National Monument is a prohibition on mineral exploration activity on BLM lands. That is the only reason there is no exploration going on right now.



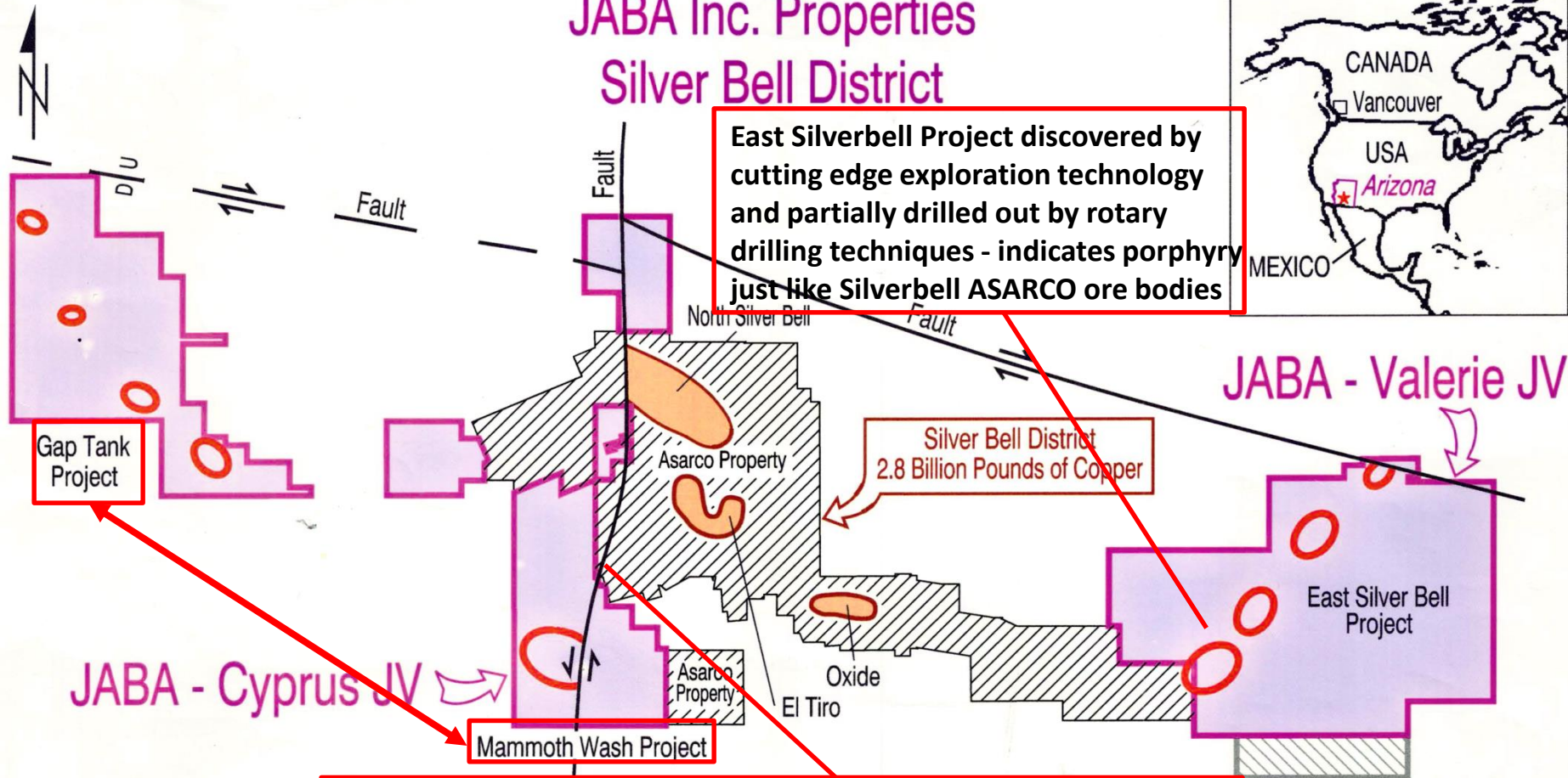
# Potential for \$80 billion in mineral wealth

- Between *Gap Tank* and the *Mammoth Wash* [see next slide, red arrow at left] there are 8 porphyry centers, including targets 3 or more on the Tohono O'Odham Reservation
- Recent very good compilation of past metal production spanning 130 years of the Silverbell mining district allow comparison of the value per porphyry center now known from discoveries from the J.H.Courtright/K. Richard Exploration Geology team. These allow a projection of what might be drilled out from the Briscoe-Guilbert-Smith JABA Inc. (Liberty Star) discoveries using cutting edge exploration technology. Thus it is estimated that the Briscoe team anomalies shown on the following maps in general terms total \$80B in potential mineral value of copper, molybdenum, silver, lead, zinc, gold and other metals that with new location techniques might be byproducts or co-products within these geochemically indicated targets of the Silverbell Porphyry Copper Project. However all mining projects have spin off monies from jobs, services, and infrastructure needs, resulting in well-known multiplier factors. For large metal mines this factor is a 7x multiplier. Thus for mine economic production of \$80 billion X 7 then a lifetime cash flow to surrounding communities of \$560 billion over the lifetime of projected mines results.
- It is quite likely that additional mineral discovery using similar methods that we applied here or even better techniques with better technology in future years, within the boundaries of what is the Ironwood withdrawal area.
- The Silverbell Project known and projected alteration is about 25 miles long and 5 miles wide. It is along the fault disrupted south margin of the Silverbell caldera first recognized in 1988. I think I know where the north half of the circular caldera is but more study will be required to confirm my idea. We are interested now in the shallowly buried remainder of the south half.
- According to geochemist Shea Clark Smith, we mounted one of the largest geochemical if not the largest, geochemical sampling campaigns of the time in North America, or perhaps the world exclusive of Australia."
- All the geochemistry was tested (our sample control) at the ASARCO North Silverbell porphyry copper ore body with ASARCO's blessing and permission., At the time of testing the North Silverbell orebody had been drilled out, but not mined and had no disturbed areas. These control samples showed the same anomalies as the sampling over the target areas. The North Silverbell porphyry center is now mined out.
- The buried indicated targets resulting from our work are depicted in the following slides

# JABA Inc. Properties Silver Bell District



East Silverbell Project discovered by cutting edge exploration technology and partially drilled out by rotary drilling techniques - indicates porphyry just like Silverbell ASARCO ore bodies



JABA - Cyprus JV

3.5 mile left lateral fault offsets the Silverbell caldera identified in the North Silverbell Mtns. Associated with porphyry copper mineralization to the south in the West Silverbell Mtns. Located by sophisticated geology, geophysics & geochemistry. Porphyry copper centers shown in approximate

JABA Properties

Asarco Properties

Cap II Property, J. David Lowell

Copper Porphyry Targets

Operating Asarco Copper Porphyry Mines

JABA - Valerie JV





**Friends of JABA & Liberty Star**

Trent Franks,  
Republican Representative  
Arizona

Mardee Briscoe,  
Jim's Wife

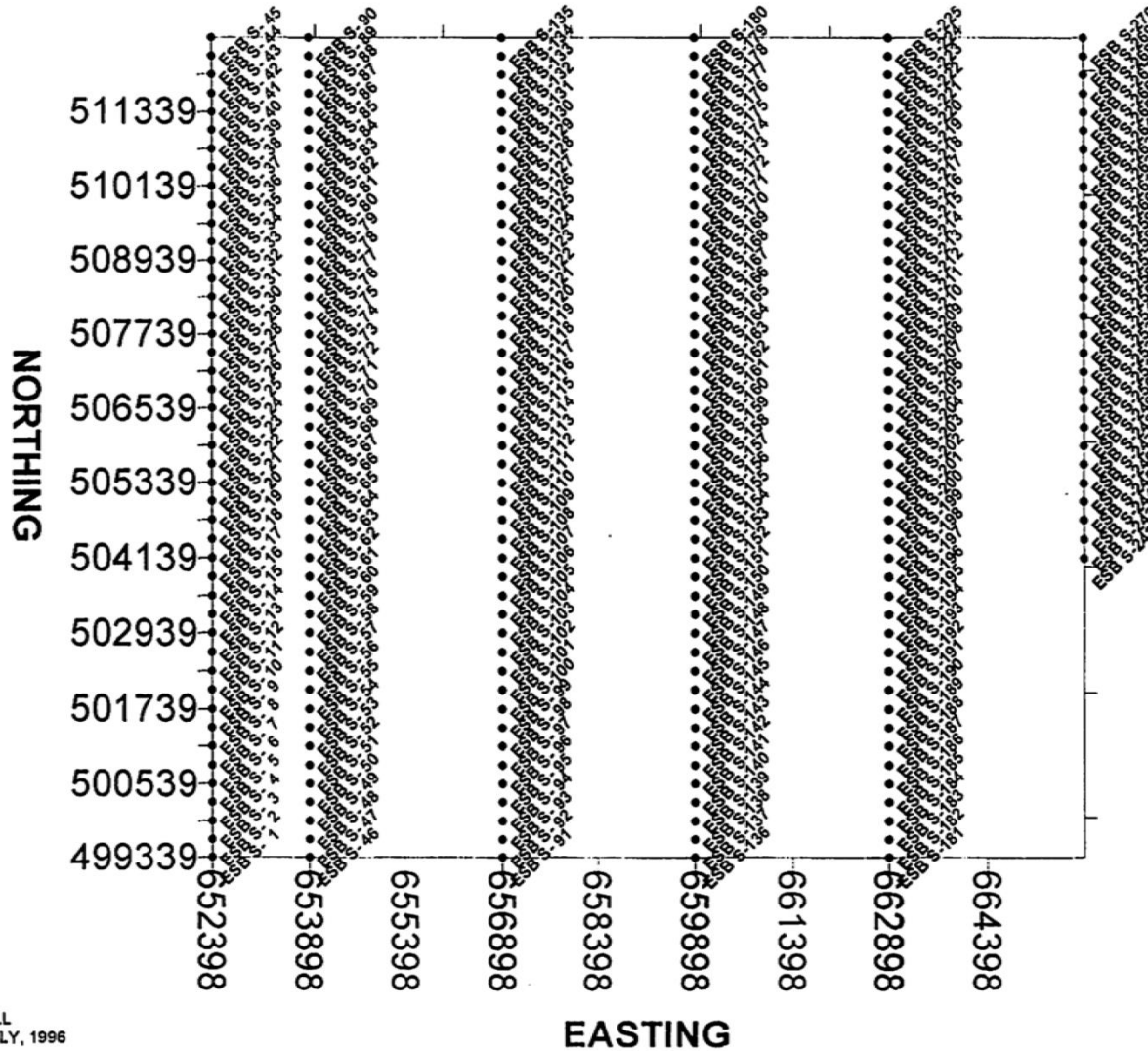
Jim Briscoe

V.P. Mike Pence

254 Soil Samples Collected  
Analyzed for 15 elements

# SAMPLE LOCATION

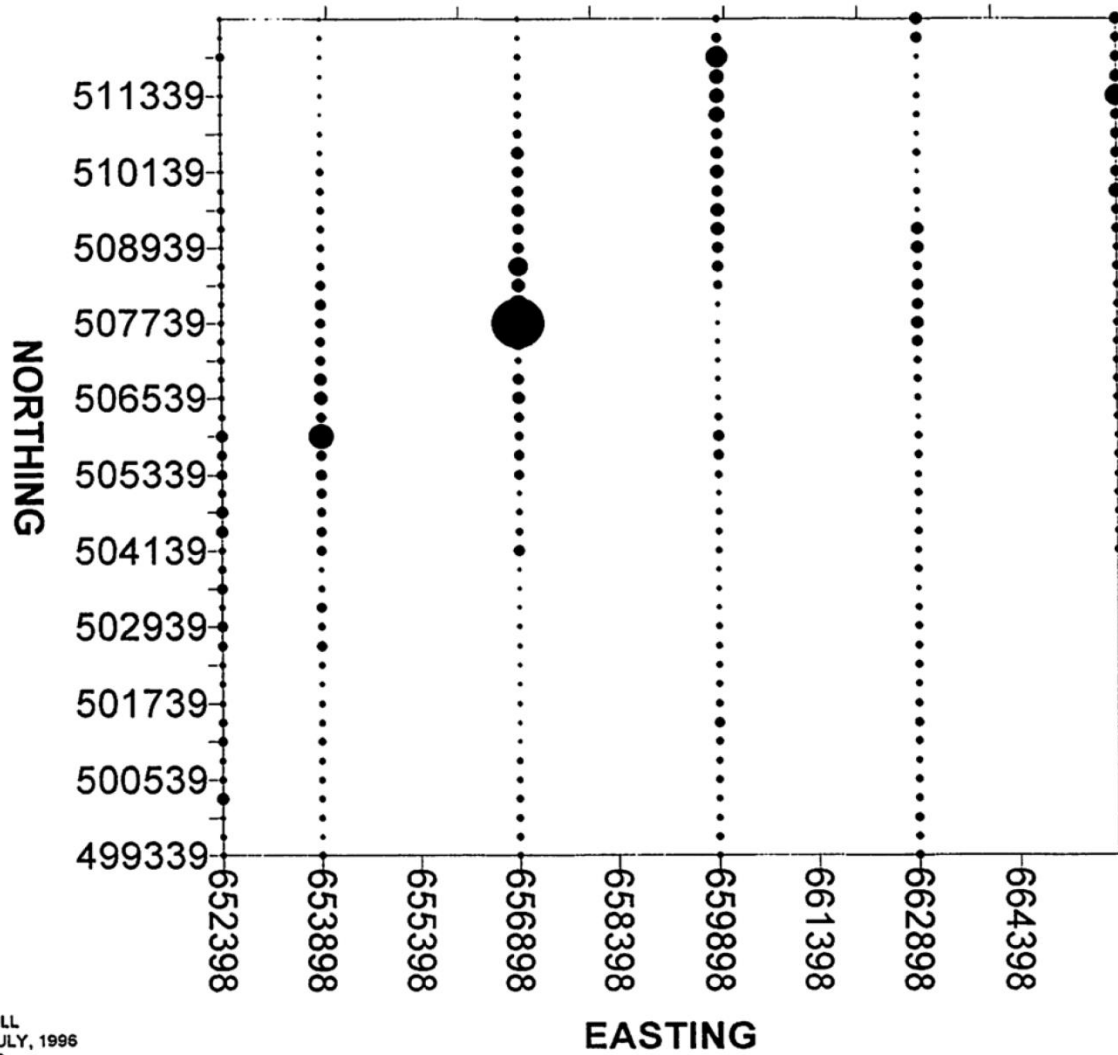
EAST SILVER BELL



Soil samples taken under the direction of Geochemist *Shea Clark Smith, M.S.* Each sample was analyzed by a Certified Assay Lab and samples will be presented as isometric computer plots.

# MOLYBDENUM IN SOIL

## EAST SILVER BELL



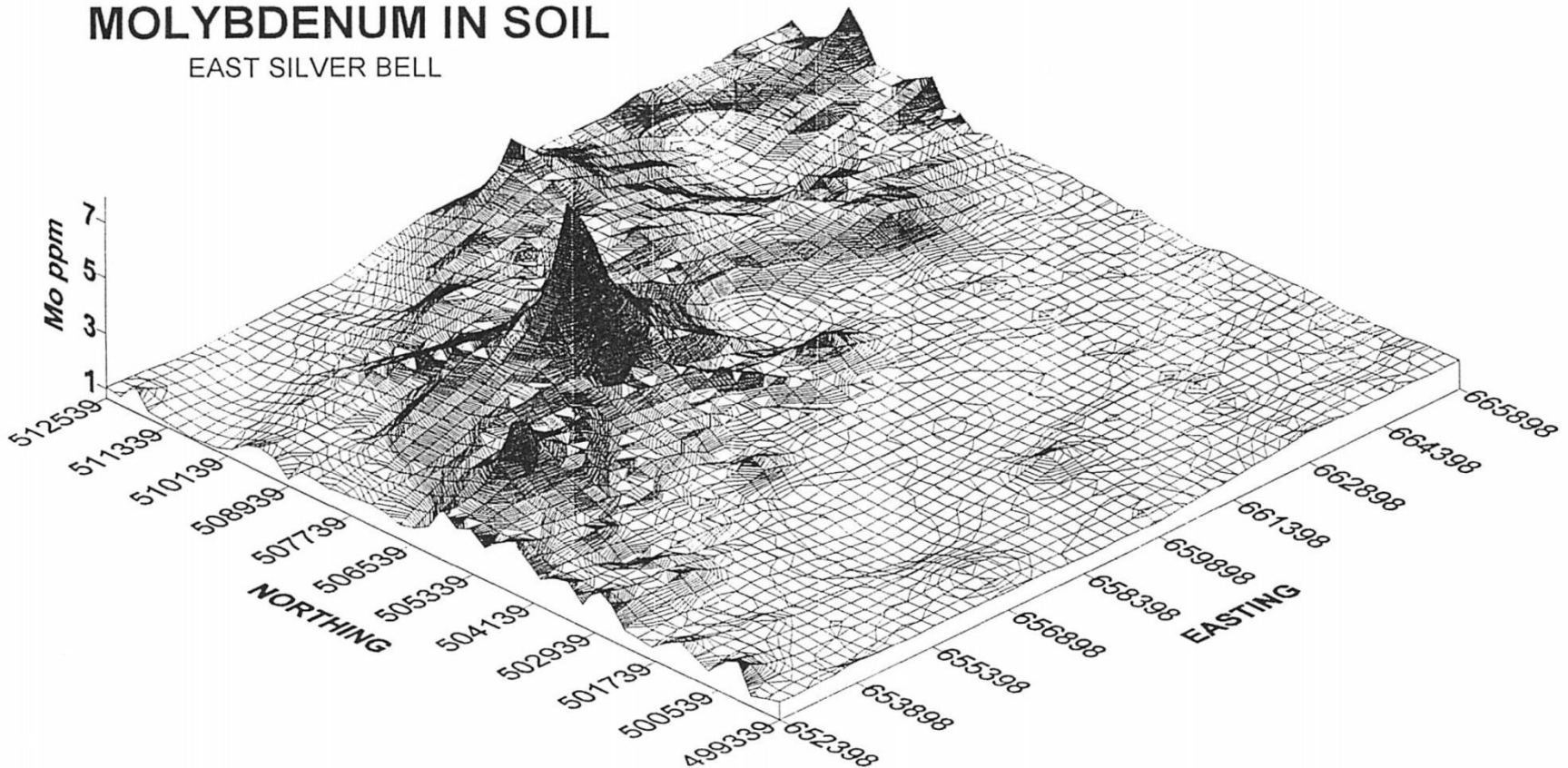
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EAST SILVER BELL  
SOIL SURVEY: JULY, 1996  
AUGUST 26, 1996  
SHEA CLARK SMITH



The ensuing plots [slide 9 – 15] of various metals include molybdenum, copper, lead, zinc, silver, gold, and other less well known metals. As shown, these plots are characteristic of all porphyry copper systems at Silverbell, and world wide probably mineable by appropriate methods, potentially including in situ, open pit, or underground. IT IS CLEAR THAT THIS AND OTHER ANOMALIES PRESENTED HERE ARE PORPHYRY COPPER SYSTEMS.

## MOLYBDENUM IN SOIL

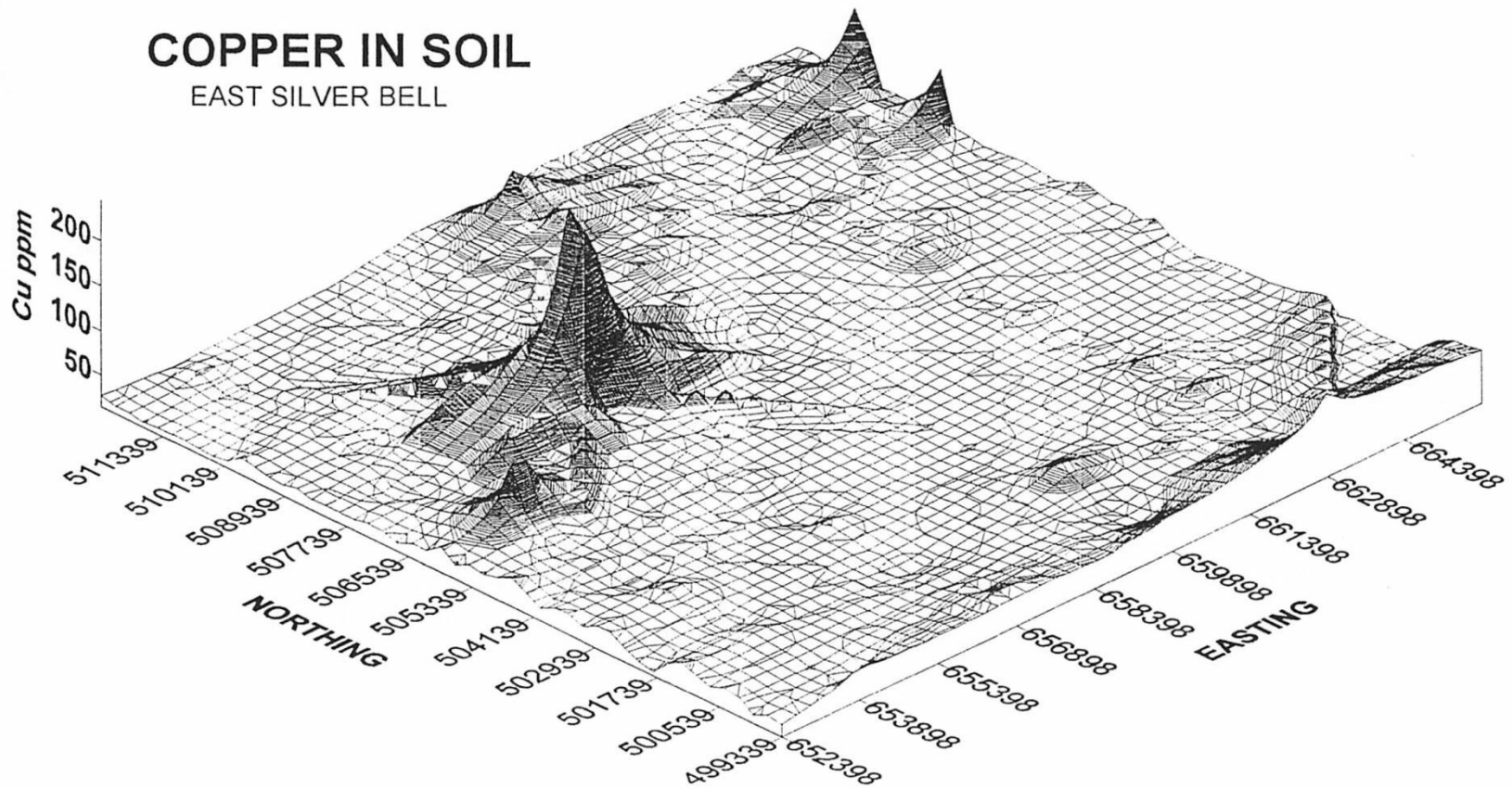
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# COPPER IN SOIL

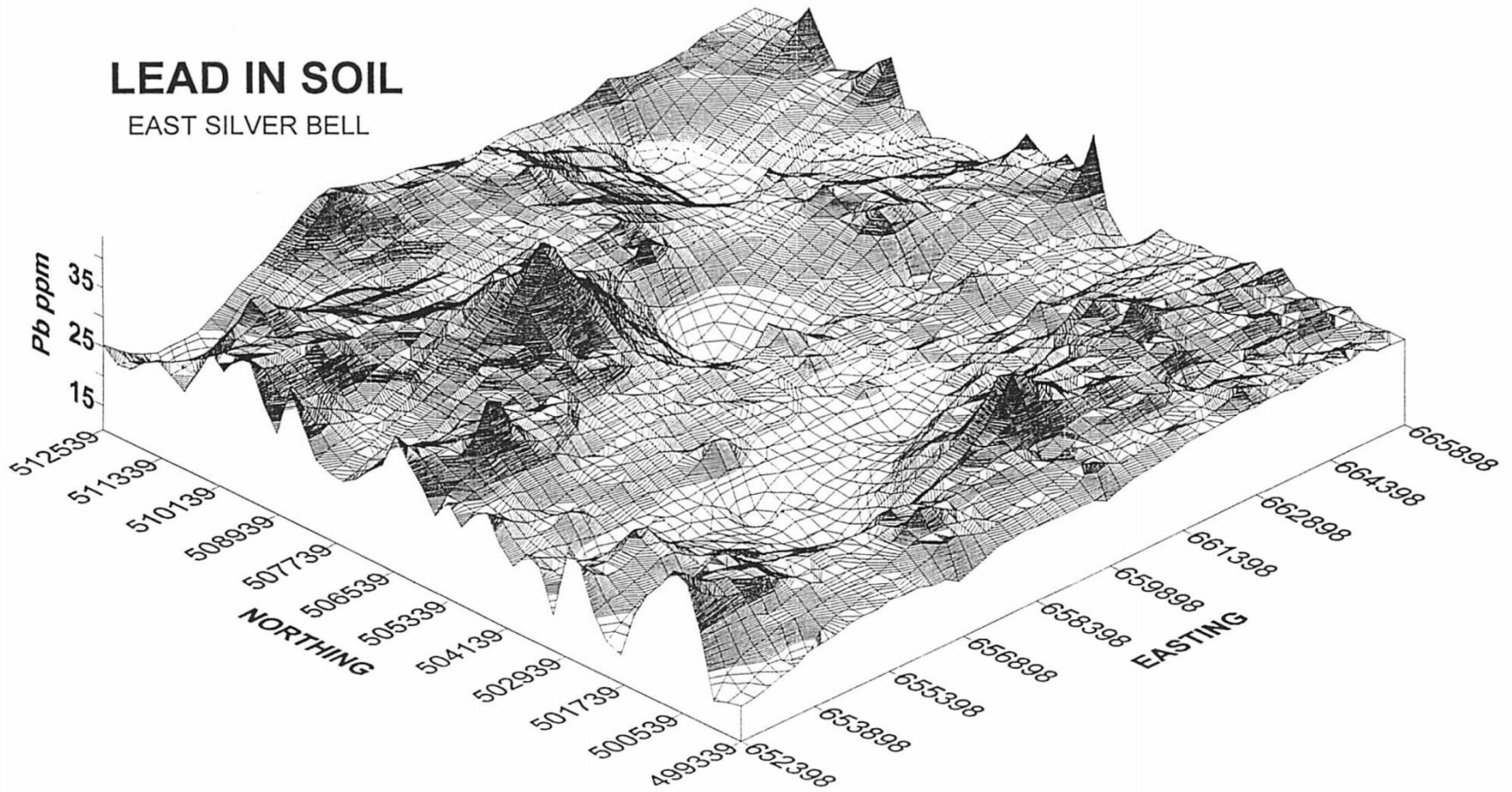
## EAST SILVER BELL



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# LEAD IN SOIL

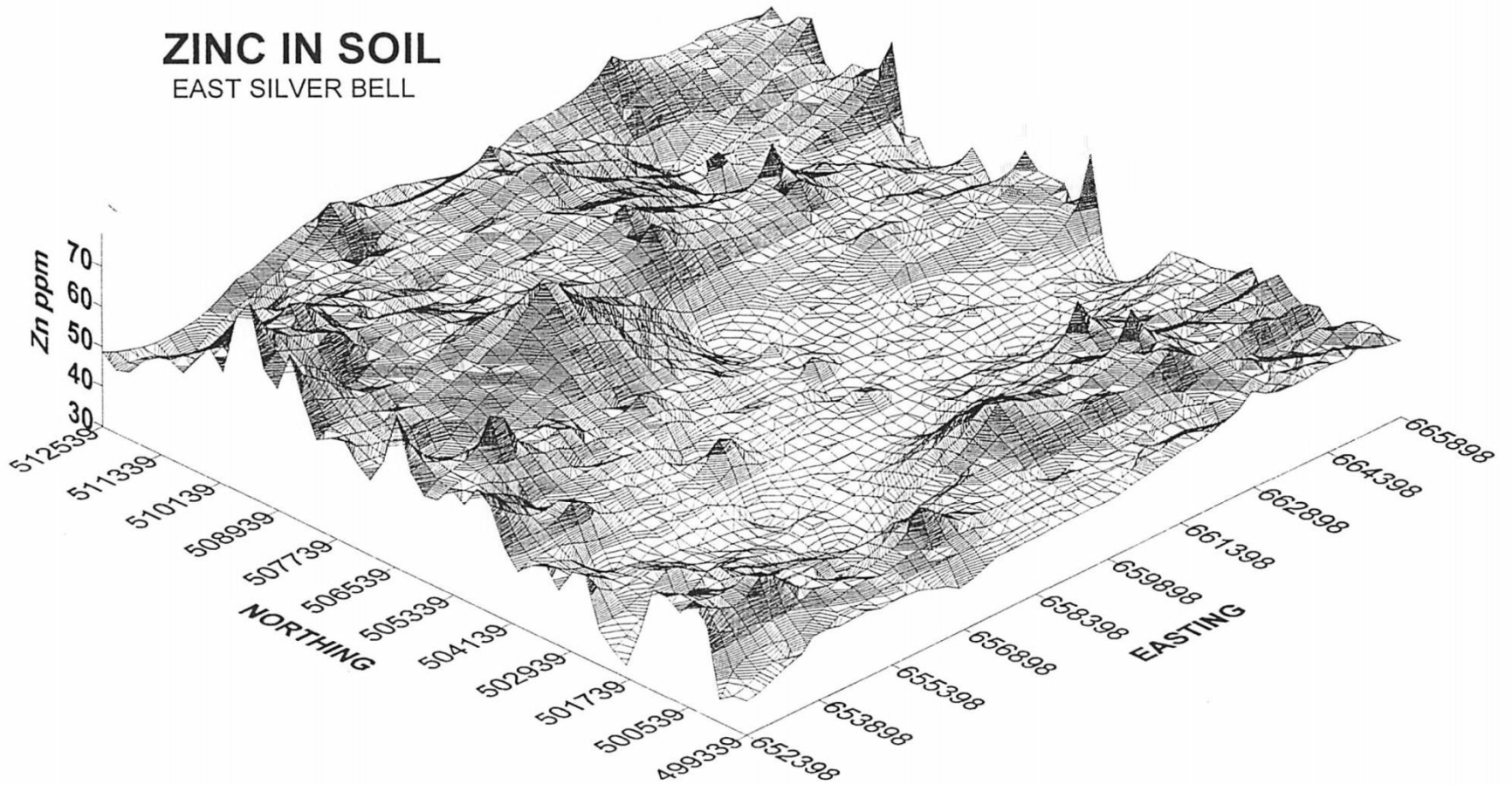
## EAST SILVER BELL



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SOIL SURVEY: JULY, 1996  
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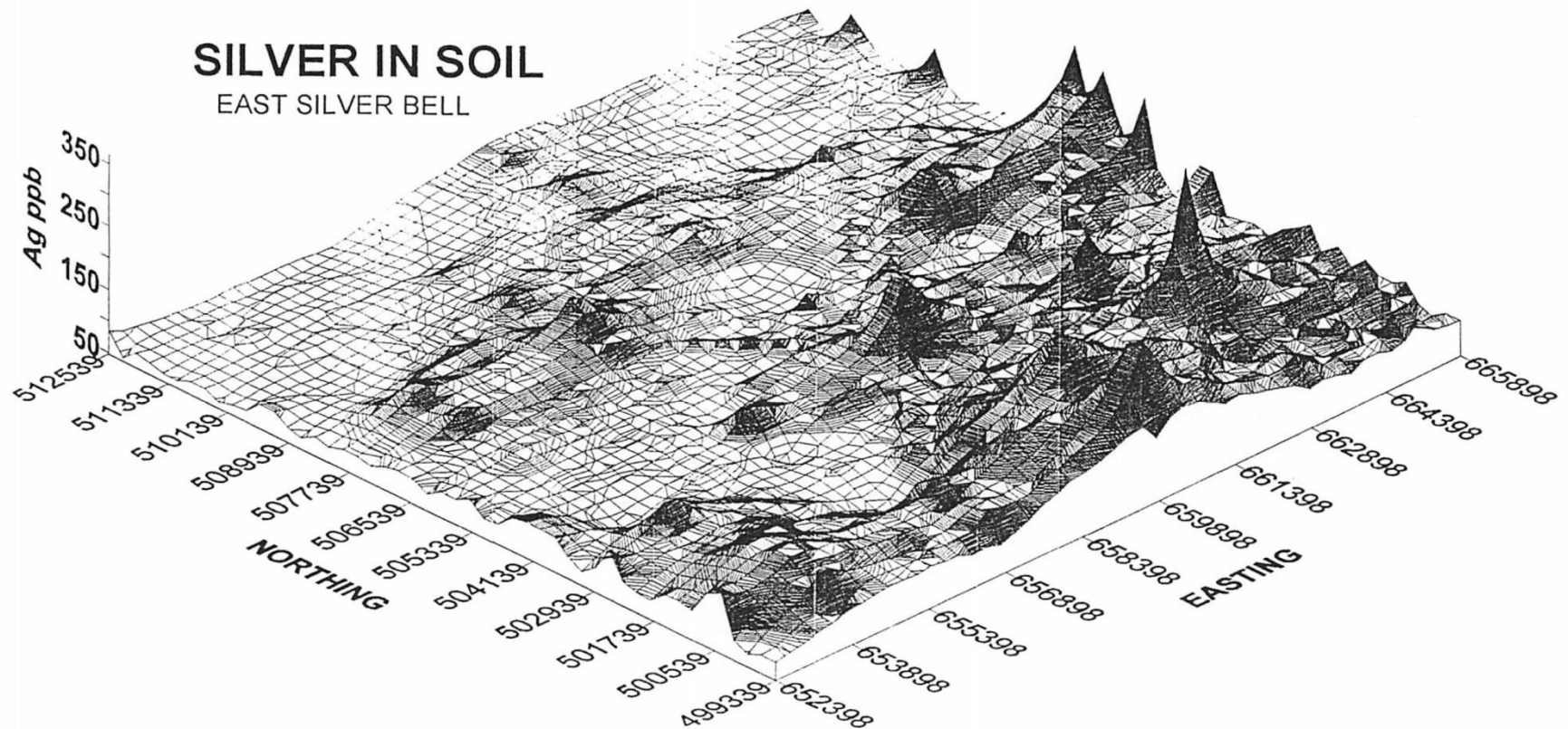
# ZINC IN SOIL

## EAST SILVER BELL



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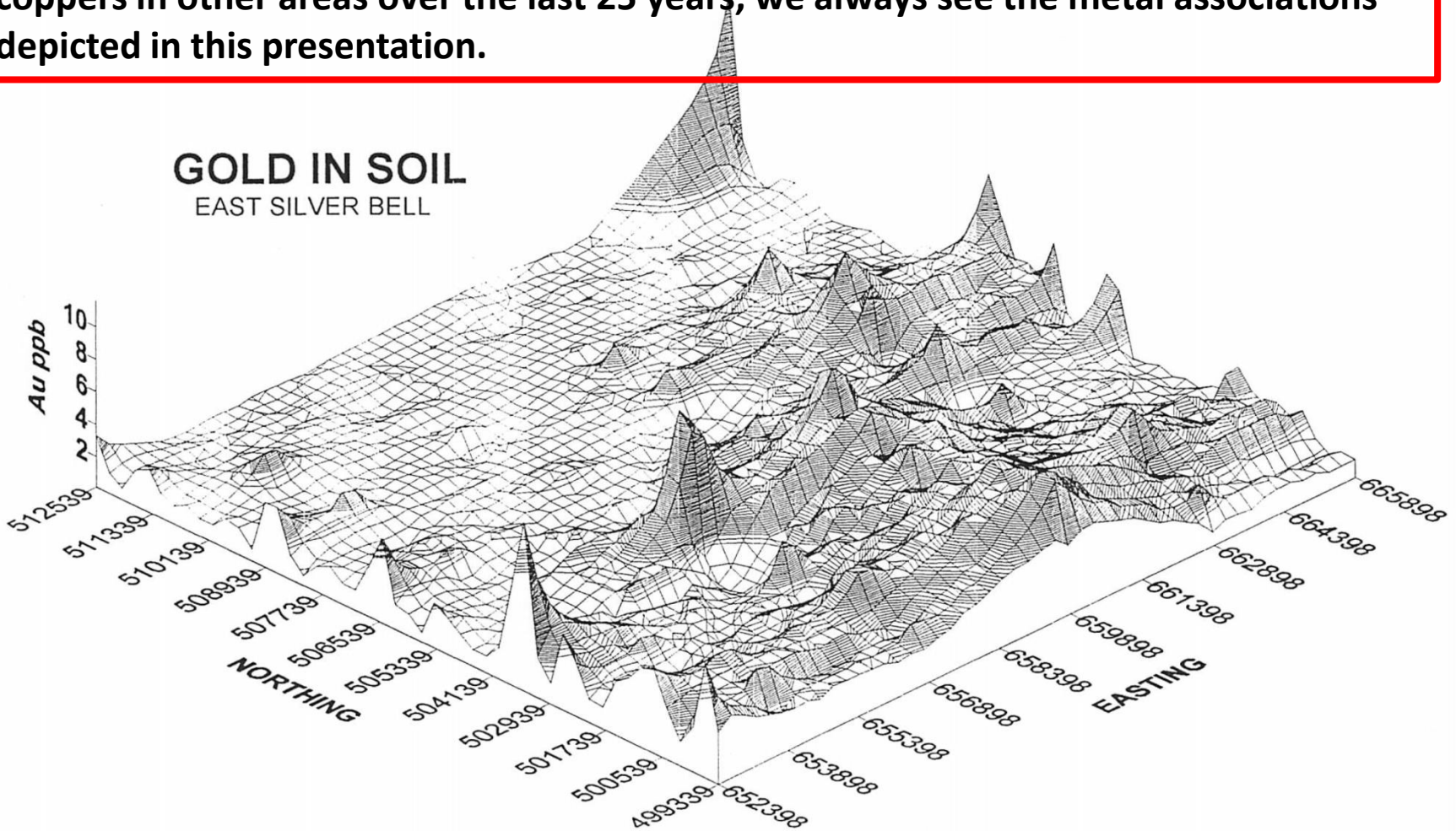
Before this survey, silver was not expected in a different position than copper, but related to control surveys, over the north Silverbell ore body as well as the Lowell/Guilbert porphyry model, this should be expected.



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SOIL SURVEY: JULY, 1996  
AUGUST 26, 1996  
SHEA CLARK SMITH

A gold zone is present and shown and in all anomalies within all JABA/LBSR discoveries. Gallium [see next slide] is associated with gold as shown in control samples from the north Silverbell ore body. In our experience in testing porphyry coppers in other areas over the last 25 years, we always see the metal associations depicted in this presentation.

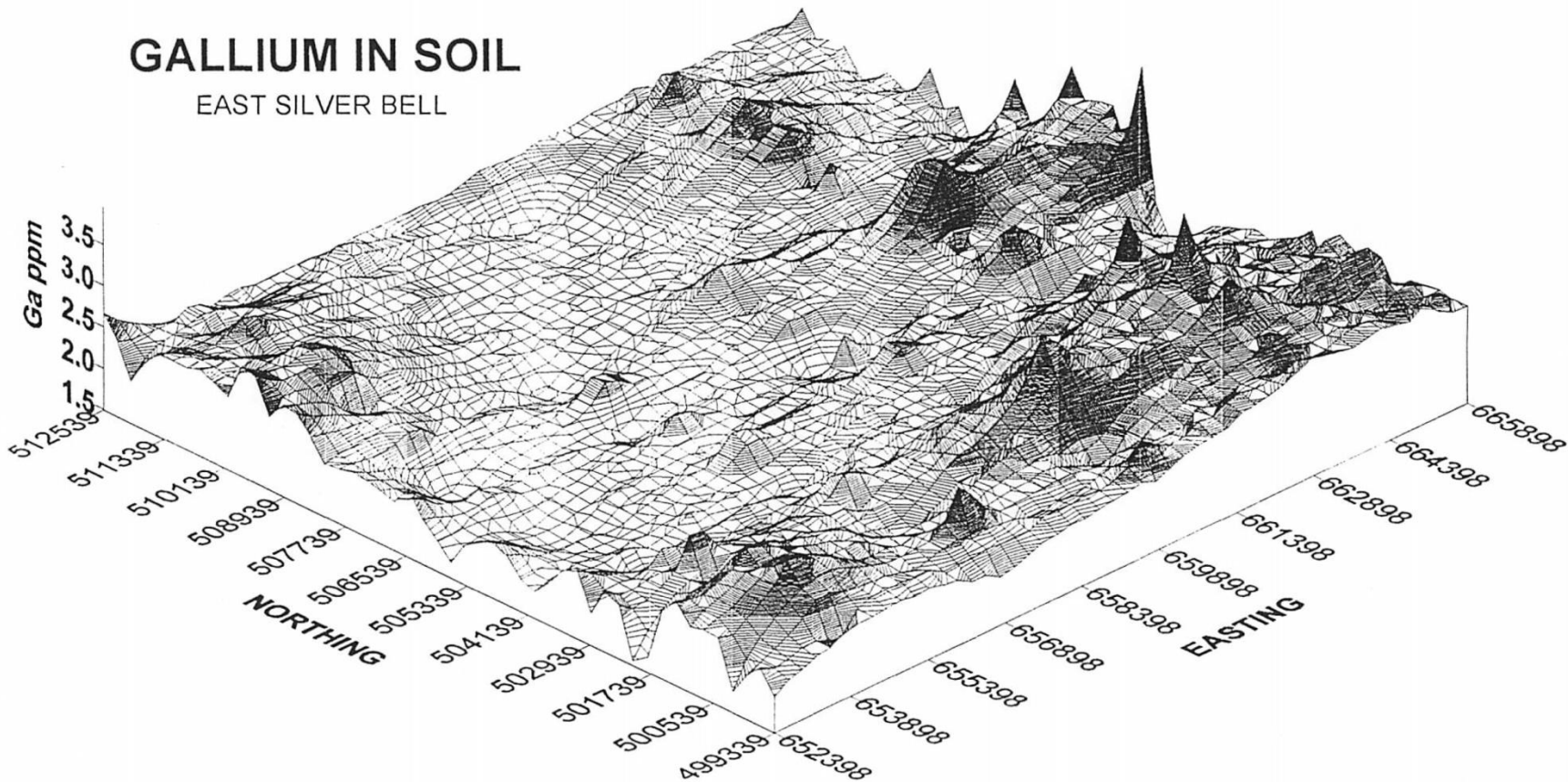
## GOLD IN SOIL EAST SILVER BELL



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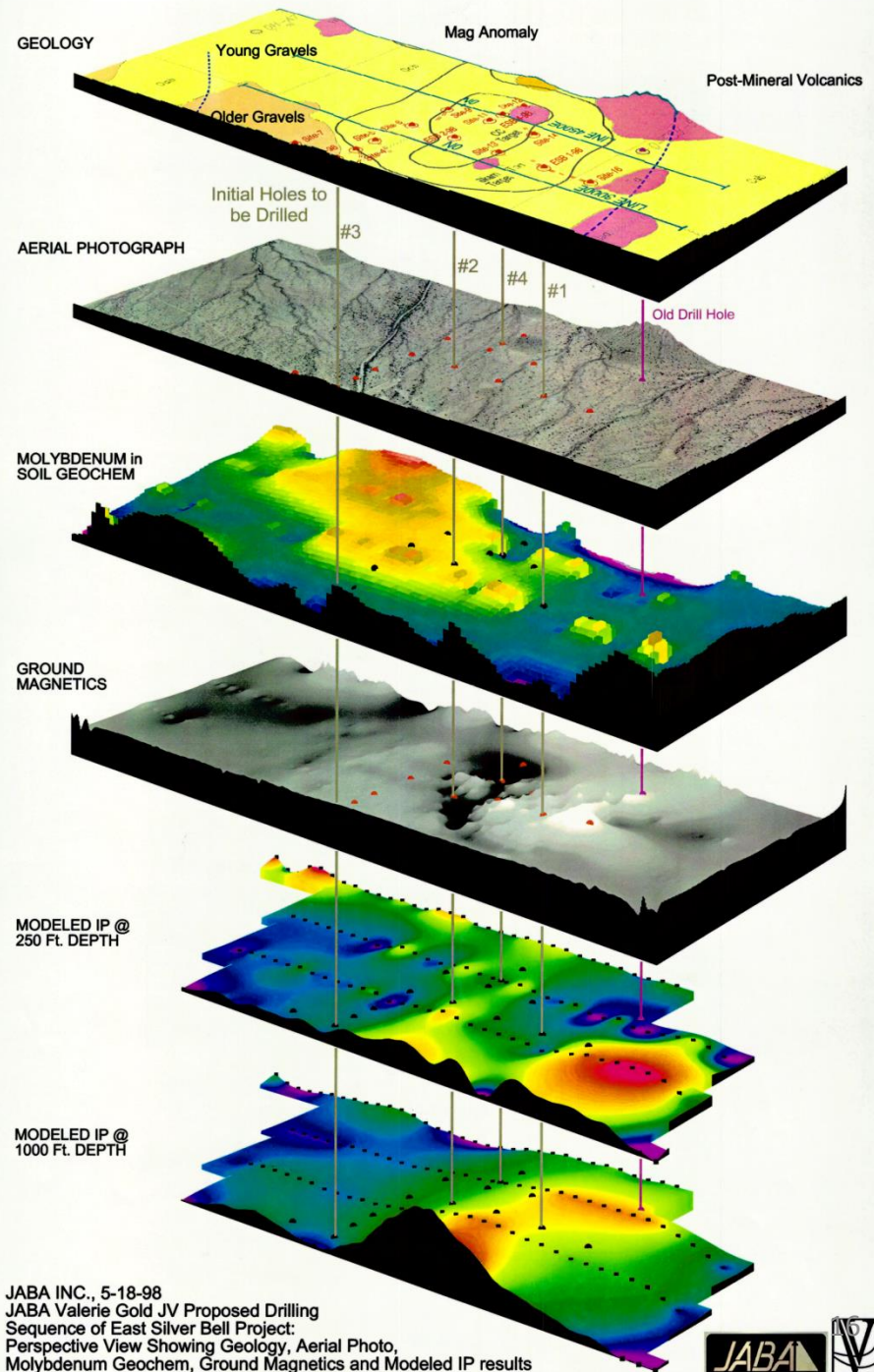
# GALLIUM IN SOIL

EAST SILVER BELL



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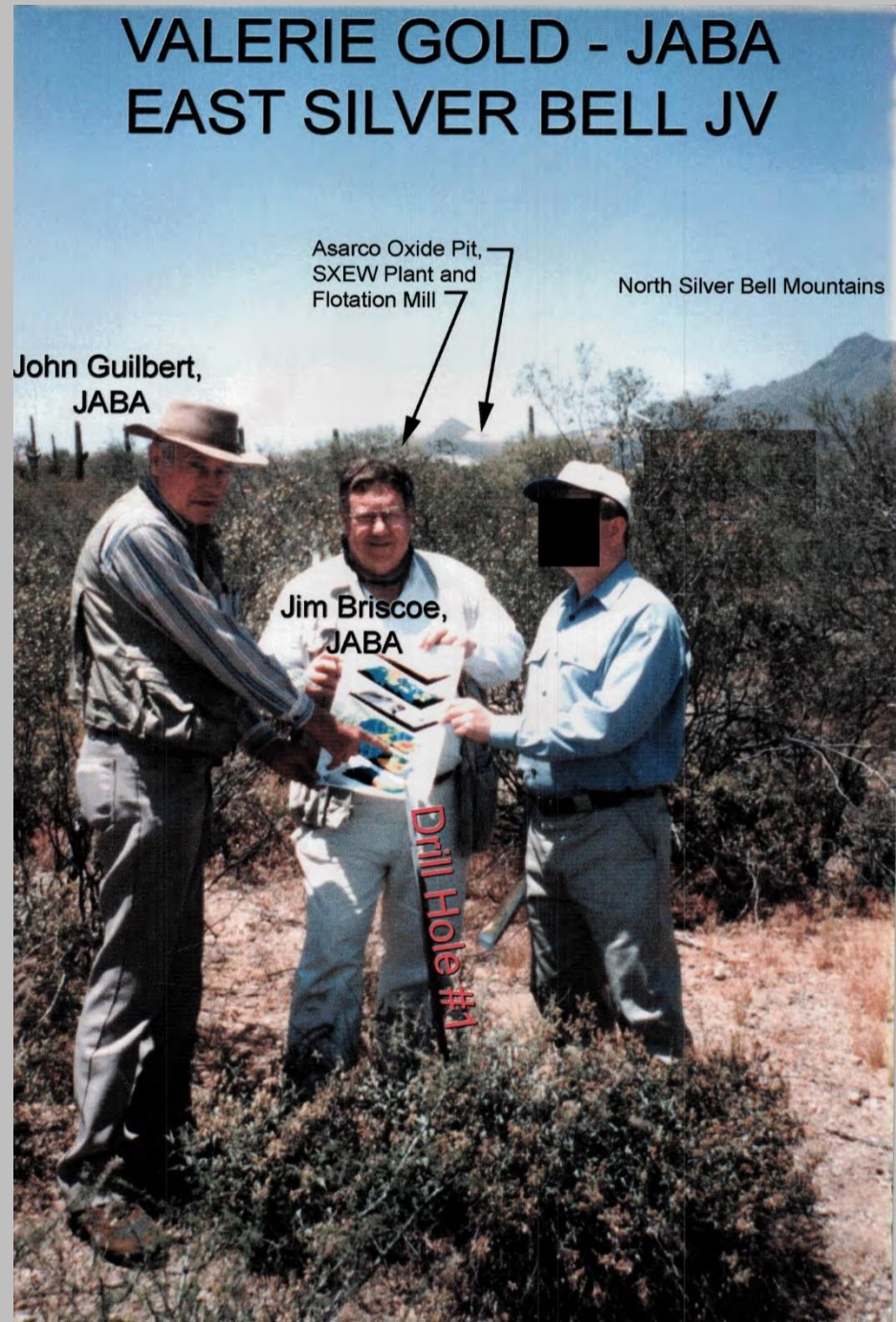
This is a stacked series of 3 dimensional isometric diagrams of the East Silverbell porphyry copper exploration area that shows the graphic representation of the various scientific exploration tools used to pinpoint the porphyry copper center and proposed or completed rotary drill holes.





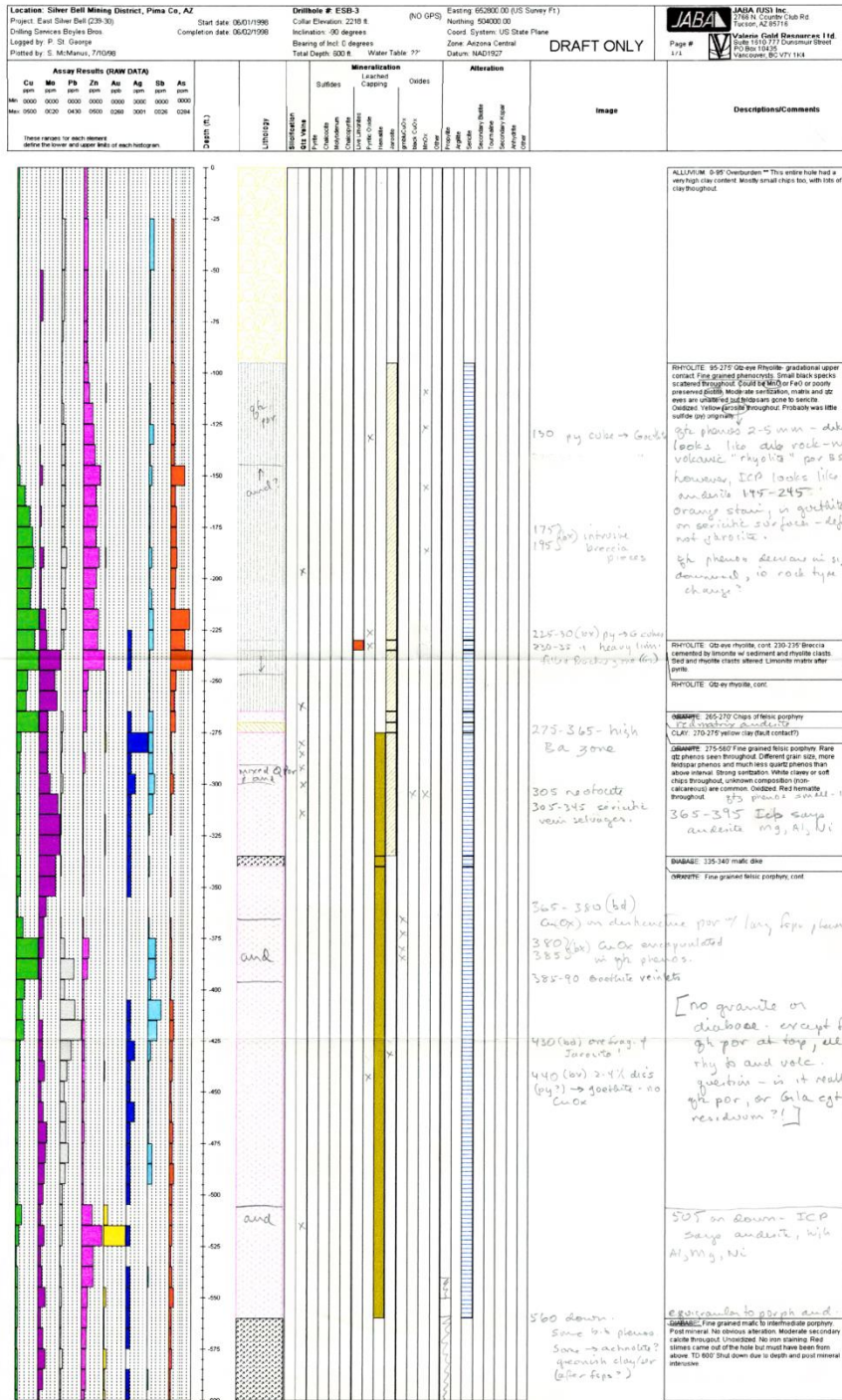
Dr. John Guilbert working with J. David Lowell co-developed the *Lowell/Guilbert Porphyry Copper Model*, still the scientific standard in mining. Dr. Guilbert is the recipient of mining's two most prestigious awards, the R. A. F. Penrose Medal (1998) and the D. C. Jackling Award (2001).

Pictured here:  
Dr. Guilbert, Jim Briscoe, and client, at the location of the first drill hole.



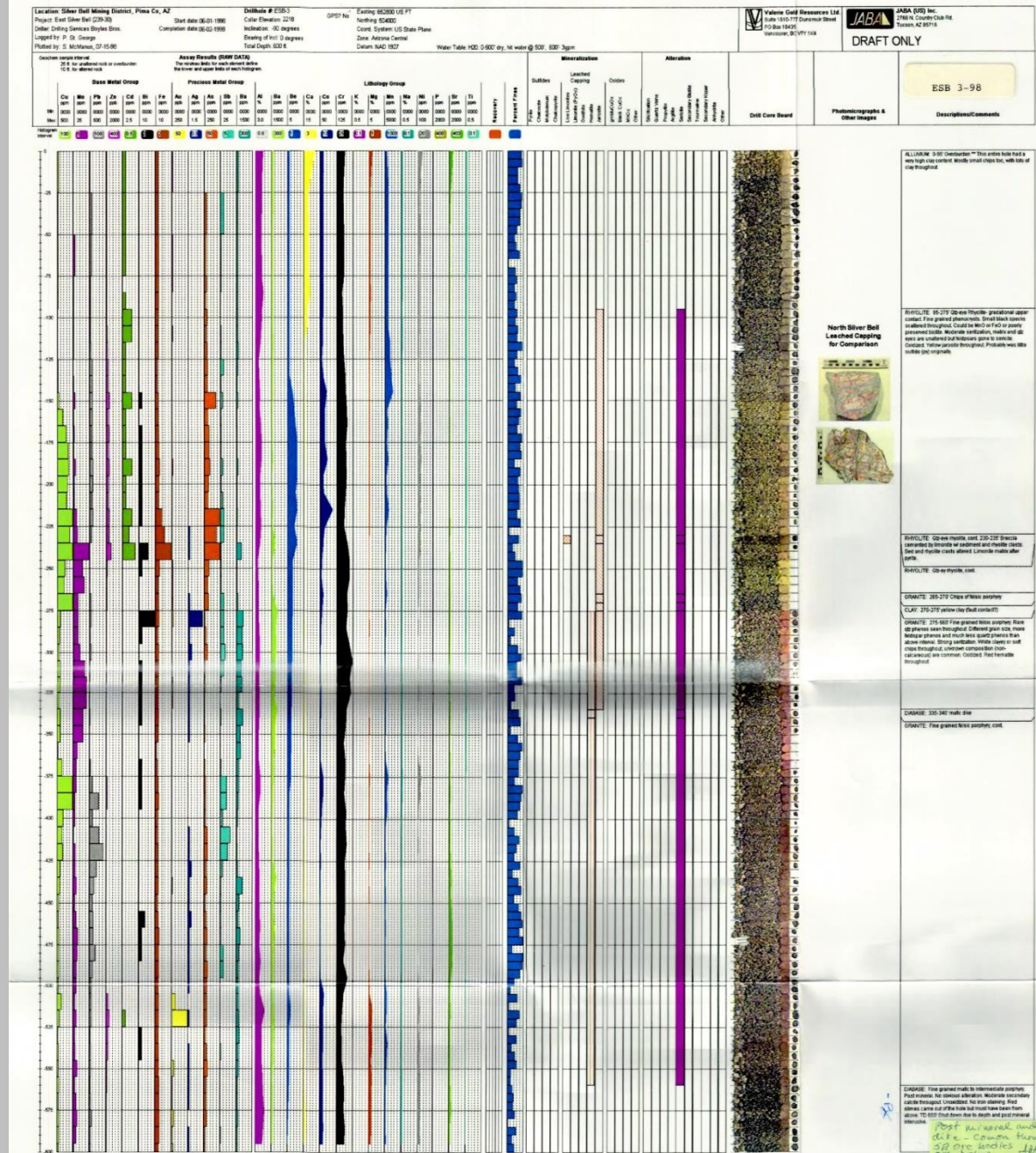
These are graphic drill logs with each element represented quantitatively by color and width. The green color is copper as Cu<sub>2</sub>S: the mineral chalcocite undergoing enrichment and destruction to be deposited again below as a richer blanket. The purple element to its right is molybdenum, then lead - white and then zinc in lighter purple, then gold, then silver in dark blue, antimony in light blue, and arsenic in orange. All of these elements appear to be undergoing leaching and enrichment.

Unfortunately rotary drilling is subject to poor sample quality for a variety of reasons, so these analyses may suggest a lower quantity of metals than actually present; further exploration is required.



This hole shows similarities to the last. Because the geologist (inexperienced) logged all intervals as oxidized we must assume that the chalcocite zone (Cu) is undergoing destruction to be enriched at a lower level. Again, most metals show enrichment.

At the far right is a *Core Board* in which cuttings including a coarse fraction and a fine fraction and a gold-pan concentrated fraction are glued to a board giving the geologist an overall view of what the rotary drill is cutting. This was invented by J. Harold Courtright and Kenyon Richard - the discoverers of Silverbell, and long time geologists - world wide for ASARCO.



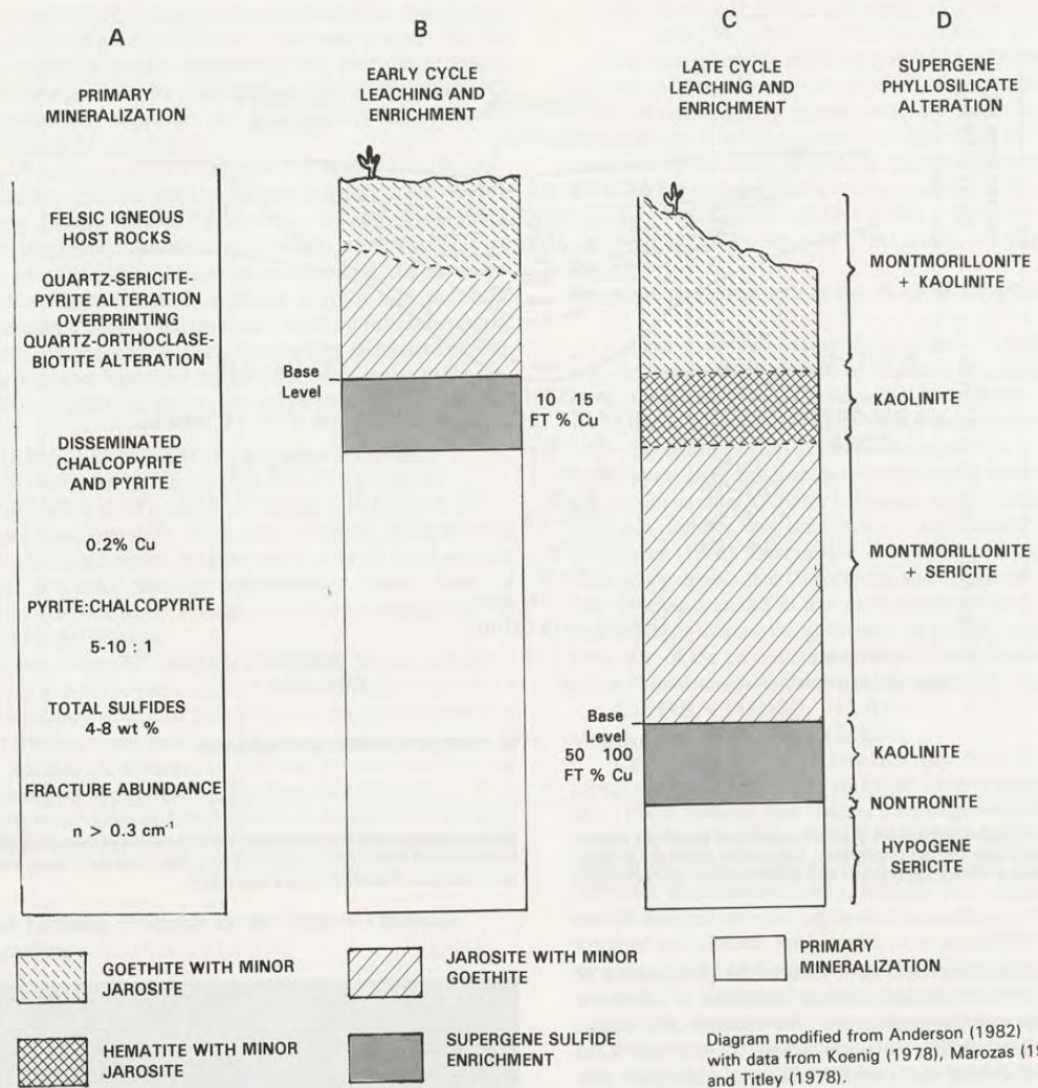


Figure 1. Generalized vertical sections showing relevant characteristics of: (A) a hypogene profile through quartz-sericite-pyrite altered felsic igneous rocks; (B) early stage weathering and development of early cycle enrichment; and (C) late cycle enrichment. Column D shows locations of principal phyllosilicate alteration phases across the profiles. Profiles B and C show the

position of early and late supergene blankets with weathering of the first. Data are generalized from the authors' observations, mineralogical data of Koenig (1980), a study at North San Xavier deposit, and the study of Marozas (1982) at Silver Bell. No specific vertical scale is implied. Such profiles may range from 50 meters to several hundreds of meters in thickness.

Diagram modified from Anderson (1982) with data from Koenig (1978), Marozas (1982) and Titley (1978).

Illustration presented by Dr. Spencer Titley and some of his students. This principle of chalcocite enrichment has been known for many decades, but apparently not by all; a good illustration of what is going on at the East Silverbell Project. A large diameter diamond core drilling project will clarify inconsistencies present in the rotary drilling, which indicate copper blanket enrichment but with problematic accuracy.

If we can get rid of the Ironwood Forest National Monument, we can go back to proving exploitable copper deposits by modern means, in the Silverbell mineral zone, and perhaps elsewhere in the current national monument boundary.



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***RISK FACTORS FOR OUR COMPANY ARE SET OUT IN OUR 10-K AND OTHER PERIODIC FILINGS FILED WITH THE SEC ON EDGAR.***

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June 20, 2017

Secretary of the Interior Ryan Zinke

**RE: April 26, 2017 Executive Order instructing Interior Secretary Ryan Zinke to review any national monument created since Jan. 1, 1996, specifically The Ironwood Forest National Monument, Arizona**

Dear Secretary Zinke:

My name is James A. Briscoe. I am a voter, taxpayer and the CEO/Chief Geologist of an emerging mineral exploration company based in Tucson, Arizona. I, like the majority of Americans, want to see our national economy grow by fostering domestic industries. I would like to offer my support to the rescinding of the National Monument designation conferred on the Ironwood Forest National Monument in southeast Arizona.

Let me phrase the issue as a question; what if there was no Ironwood Forest National Monument? So, what? What would change if the protective national monument designation was removed from that area? The answer: nothing.

1. The preservation of the endangered *ferruginous dessert pygmy owl* that started the whole thing, the outcry for a protected area in the late 1990's, is a non-issue now. Even when the monument was founded, the little owls' status as endangered was based on a pillar of false and bad science. But today, and for several years now, the pygmy owl is not endangered, and never was. The two species under protection of the Endangered Species Act were declared no longer Endangered by the 9<sup>th</sup> Circuit court of Appeals in 2006. Without the National Monument designation that population is fine.
2. The preservation of the endangered *lesser long-nosed bat*: of which one specimen was found some time ago and are regarded as migratory and not settled to the area. Without the national Monument designation, that situation doesn't change.
3. *Bighorn sheep*. What would change without the national Monument designation? A small herd has thrived in the North Silverbell mountains for about 60 years of my personal experience and they interact with humans and their habitat is enhanced by the active mines: once they thrived all over Pinal and Pima County but with hunting pressure they declined and have been absent from most of the area for decades. The national Monument designation didn't change things. Recently, hunting organizations and the State Game and Fish have tried to introduce new herds around the Tucson foothills and mountains without much success but around the mines the Bighorn sheep have thrived.
4. Another endangered species: the Nichols Turk's Head cactus. Those don't naturally persist near ironwoods in the 1<sup>st</sup> place, only living on Silurian limestones (I learned about these cacti while out on a field visit with science contractors from the Arizona – Sonora Desert Museum). There are minimal Silurian limestone rocks in the Ironwood Forest National Monument, ergo few Turk's Head cacti. It is generally regarded that there may be more on the Silurian

limestone on the Tohono O'odham lands outside but adjacent to the Ironwood Monument. They grow elsewhere where there is a rock friendly environment for them.

What would happen then if the protective designation ended for the endangered flora and fauna just mentioned? They will be fine. For southern Arizonans? What changes is the ability for local vendors and workers to work at copper mines. Because of scientific exploration methods costing millions, we have defined 10 to 12 porphyry copper and multi-metal mineral deposits and partially defined one of these by drilling. There are 10 or more targets in the area, in addition to the 4-mine operation currently running under ASARCO.

IF THESE PORPHYRIES PROVE AS PRODUCTIVE AS THE CURRENTLY KNOWN ORE BODIES THEN THE POTENTIAL IS FOR \$80 BILLION IN COPPER AND CO-PRODUCT METALS OF MOLY, LEAD, ZINC, SILVER, GOLD AND OTHER BYPRODUCT METALS.

BUT THIS CAN ONLY HAPPEN IF THE IRONWOOD FOREST NATIONAL MONUMENT DESIGNATION IS REJECTED.

This is the 21<sup>st</sup> Century and my company and other exploration and mining companies aim to bring the technological advances in our industry to the area currently banned from exploration and development.

My ideas, presented to the Nuclear Regulatory Commission in Denver [2008] envision modern mines that will not emit sound, dust, light, or contaminated water. Slopes will be revegetated immediately on construction of perimeter berms within which all mining will be contained. Slopes will be revegetated immediately; all mining facilities will be concentrated interior to the berm and all evidence of the mine will disappear. All mine overburden, if any, will be placed inside the exterior walls as will the crushed, cleaned, rock-CCR (previously referred to as dry stack tailings) will be consolidated as back fill or sold as a valuable byproduct. On exhaustion of economic mineral reserves, all mining equipment will be removed, perhaps to another location, nearby or far far away, and any remaining industrial facilities will be conserved and/or repurposed for future use. These practices are coming off the drawing boards and some are in use at the newest mines.

The above described operation(s) will have a very small footprint. Animal life and typical vegetation will be enhanced and the terrain will go back to the way it was, and multiple uses such as cattle grazing, hunting, outdoor recreation will continue as before, with no evidence of mining except for connecting road work which will be concealed by natural vegetation and colorization.

The communities of Arizona and greater Tucson, Pima County, Maricopa County, and Pinal County will benefit from tax revenue, jobs, and other economic benefits from these mines which could last 100 years or more in total.

For our company, the exploration would be a continuation of the work halted in 2000 when the Ironwood Forest National Monument was declared. Before the termination of exploration, JABA Inc., a Canadian public company, under the leadership of myself and Dr. John Guilbert, a Mining Hall of Fame inductee, had discovered an enriched copper blanket typical of porphyry copper deposits and particularly the Silverbell porphyry, verified by drilling of rotary drill holes. We were stopped dead in our tracks before we could get an accurate measure of the true grade of the copper mineralization and rock alteration by the enactment of the Ironwood Forest National Monument.

Our project, the East Silverbell Porphyry Copper Project, has a complete record of exploration data, including soil geochemistry, geophysics, high resolution color aerial photography, and drill logs. We will release the data soon and we invite inspection of it as evidence that withholding this land from development is a chokehold on the local economy for reasons that are no longer, or never were, compelling.

The stated reason for the reviewing of 27 national monuments, mostly in the western states, is to roll back unnecessary and unfair withdrawals of public lands from becoming productive. Reconsidering and abolishing the national monument status of the so-called Ironwood Forest with this reason in mind, to give land back to the people so they can make it productive, should make for a quick and easy decision to repeal. Yet, there are loud cries from preservationist calling for the retention of the protected status for biological imperatives that simply do not exist.

Because of a long string of victories based on specious science and emotional appeals in previous administrations, I worry about the repeal of the Ironwood Forest National Monument not happening. Local and national environmental groups are very good at getting their loyal cadres in front of politicians. We in the mining industry have not performed as effectively, but I believe that a clear-eyed analysis of this terrain by competent personnel could only yield one decision: repeal. There is no need to specially designate this area as hands off to the mining industry, an enduring cornerstone of Arizona's economy.

As a result of the imposition of the mineral exploration ban caused by the declaration of the Ironwood Forest National Monument, our investors, mainly Canadian citizens, lost all of their investment and vowed never to invest in anything in Arizona again. That vow may fade with the years, but it still leaves a stigma on the State of Arizona, as the development ban was promoted by the Pima County Board of Supervisors, several of whom are still in office, including the County Administrator.

Sincerely,

*James A. Briscoe*

James A. Briscoe | Registered Professional Geologist AZ, CA  
CEO/Chief Geologist  
Liberty Star Uranium & Metals Corp.