

A stylized sun graphic with a central circle and radiating rays in shades of orange and red, positioned behind the main text.

Royal Mines of
Zacualpan
Mexico
500 Years of Mining
History

IMPACT SILVER CORP.

Brian V. Hall Behroz Behnam Karen J. Fox

AREAS OF DISCUSSION FOR THIS TALK

- **What is the Zacualpan Silver-Gold District**
- **Historical Significance**
- **The task at hand for the Data Compilation**
- **ArcView as a Data Viewer**
- **ArcView for Data Analysis and Interpretation**
- **ArcGIS as a Management Tool**



**WHAT IS THE
ROYAL MINES
OF ZACUALPAN
SILVER – GOLD
DISTRICT?**



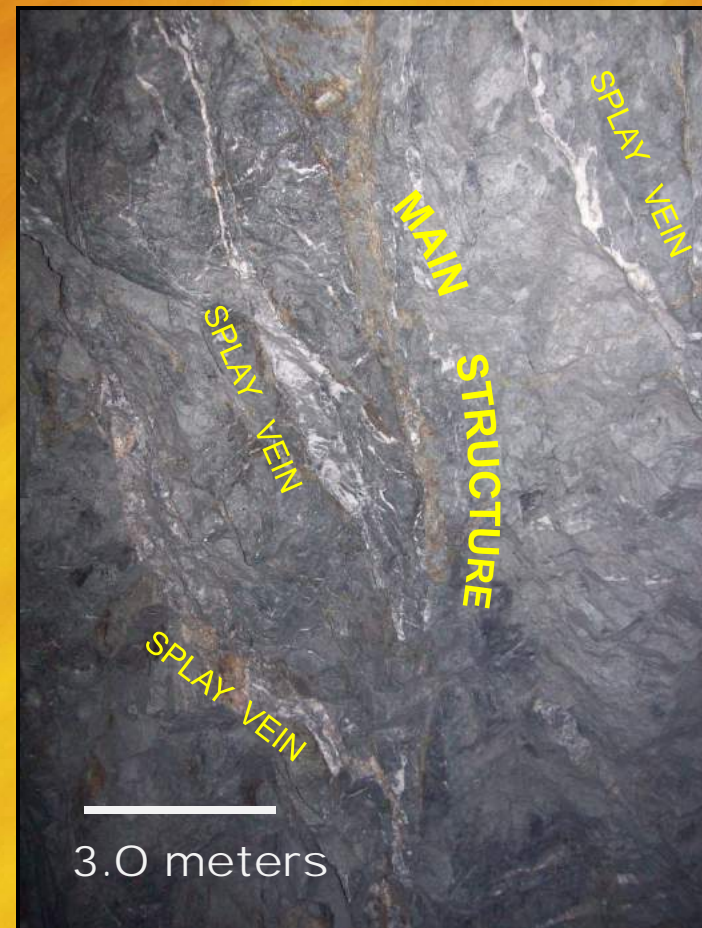
TYPES OF SILVER – GOLD VEINS ZACUALPAN DISTRICT



Silver-Lead-Zinc Vein



Gold-Silver-Copper Vein



Veins at the
Guadalupe Mine



A GOOGLE SEARCH FOR “SILVER, MEXICO”

Taxco Silver Capital of Mexico - Taxco City Guide - Taxco Tourist ...

Taxco is the place to buy **silver** in Mexico. It's also a picturesque colonial town with winding cobblestone streets and white-washed houses. gomexico.about.com/od/colonialcities/p/taxco.htm - 22k

Welcome to ShoreTrips® - TRAVEL TO TAXCO – THE SILVER CAPITAL OF ...

Acapulco shore excursions and activities by Shoretrips. We test all our Acapulco shore excursions and activities before we list them on our site so we know

...www.shoretrips.com/common/search4.asp?tcode=006254 - 30k -

Silver Jewelry From Taxco Mexico's Silver Capital

Taxco which is pronounced Tahs-ko, itself is located in the hills between Acapulco and Mexico City and is a city with a natural ambiance and charm with its www.articlesbase.com/jewelry-articles/silver-jewelry-from-taxco-mexicos-silver-capital-610465.html - 56k - [Cached](#) - [Similar pages](#)

Pilot Guides.com: Silver capital of the world: Taxco

Not only has **Taxco** been declared a National Historical Monument, but it's also widely regarded as the **silver capital** of the world. There are 6 working mines ...

www.pilotguides.com/destination_guide/north_america/mexico/taxco_silver.php - 31k -

Taxco, the silver capital of Mexico - a set on Flickr

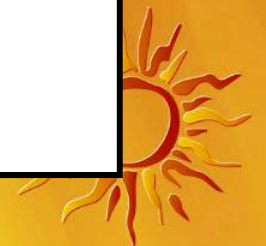
Flickr is almost certainly the best online photo management and sharing application in the world. Show off your favorite photos and videos to the world, ...

www.flickr.com/photos/myrmardan/sets/72157594397833711/ - 29k - [Cached](#) - [Similar pages](#)

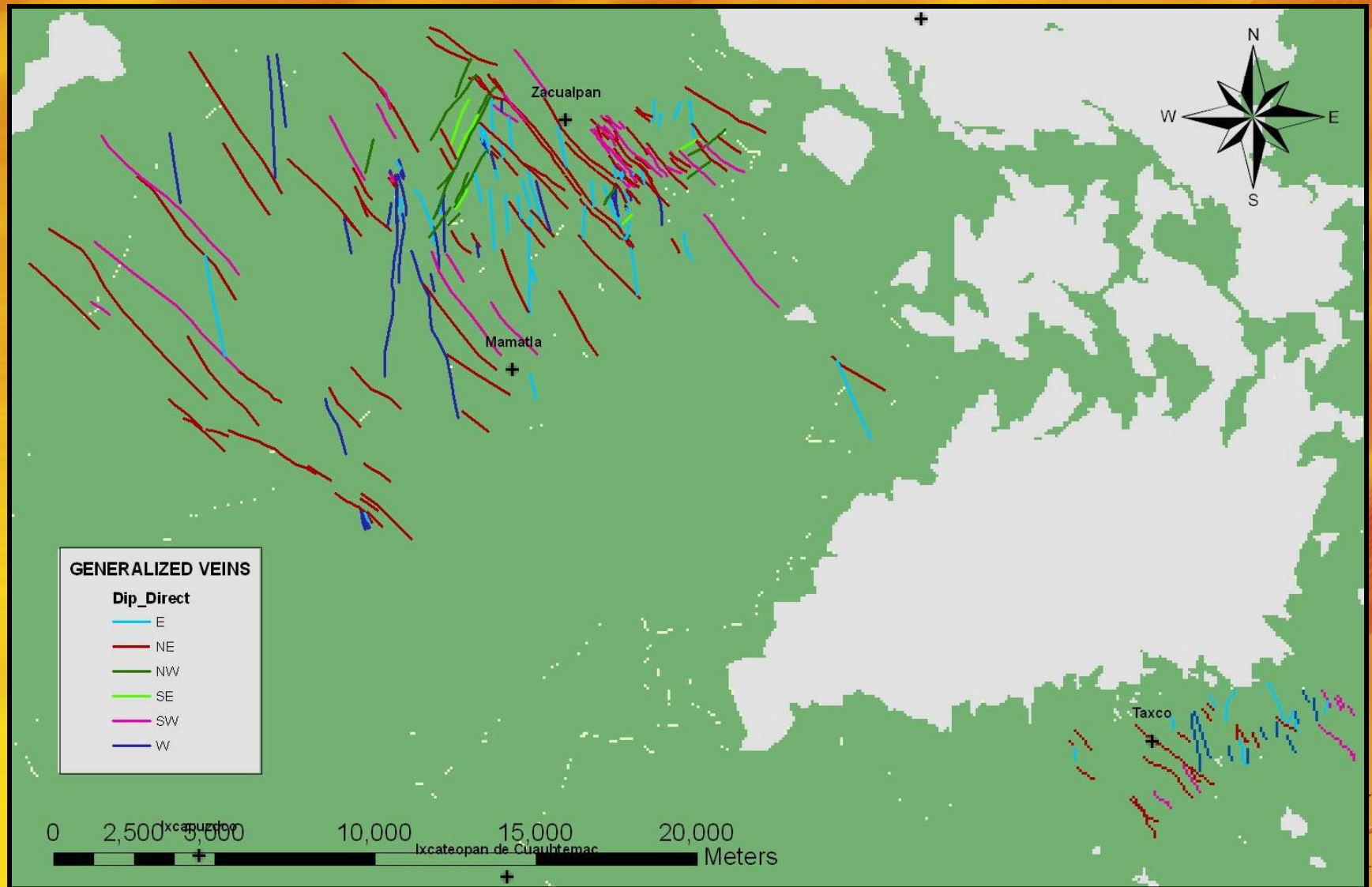
YouTube - The Silver Capital, Tasco, Taxco Mexico

the biggest **silver capital** in the world. ... is just not even trying for a lady on TV! **Taxco** is gorgeous!

LOCATION OF ROYAL MINES OF ZACUALPAN SILVER-GOLD DISTRICT



MAJOR SILVER-GOLD VEINS OF THE ZACUALPAN – TAXCO DISTRICTS



**ZACUALPAN'S
HISTORICAL
SIGNIFICANCE**

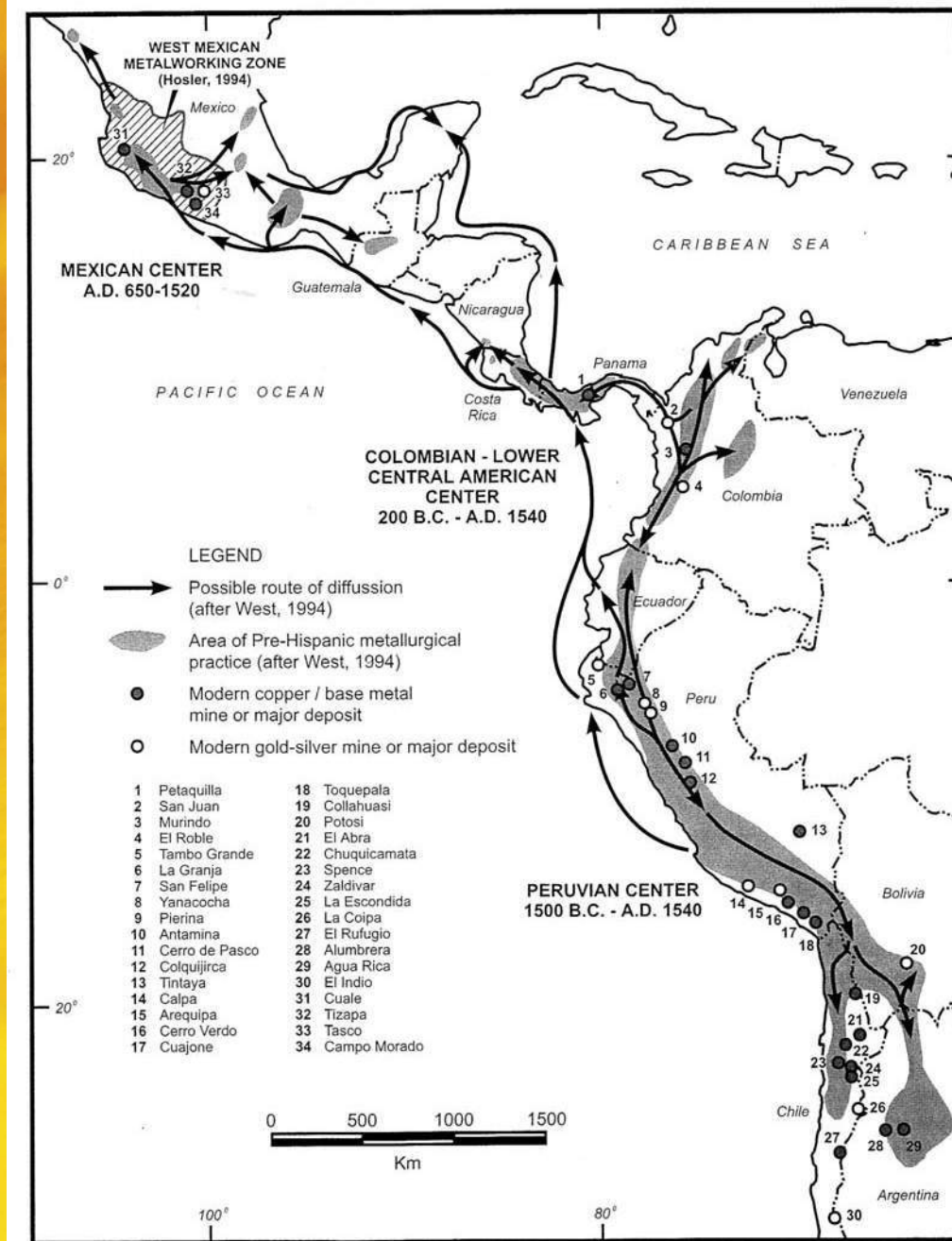


ZACUALPAN - 1890's AND NOW

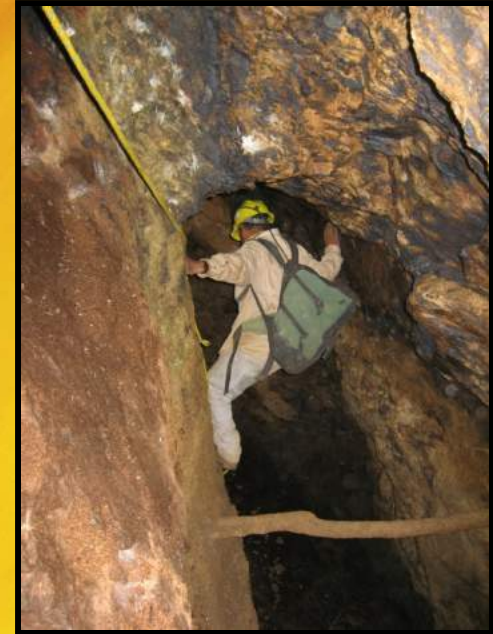


Pre-Hispanic Mining Centers in Latin America

(From Cathro, R. J., 2000)



OBRAS = OLD MINE WORKINGS



OLD MILLS AND SMELTERS



La Zorra



Guadalupe



El Calvario



Nombre de Dios



La Fortuna



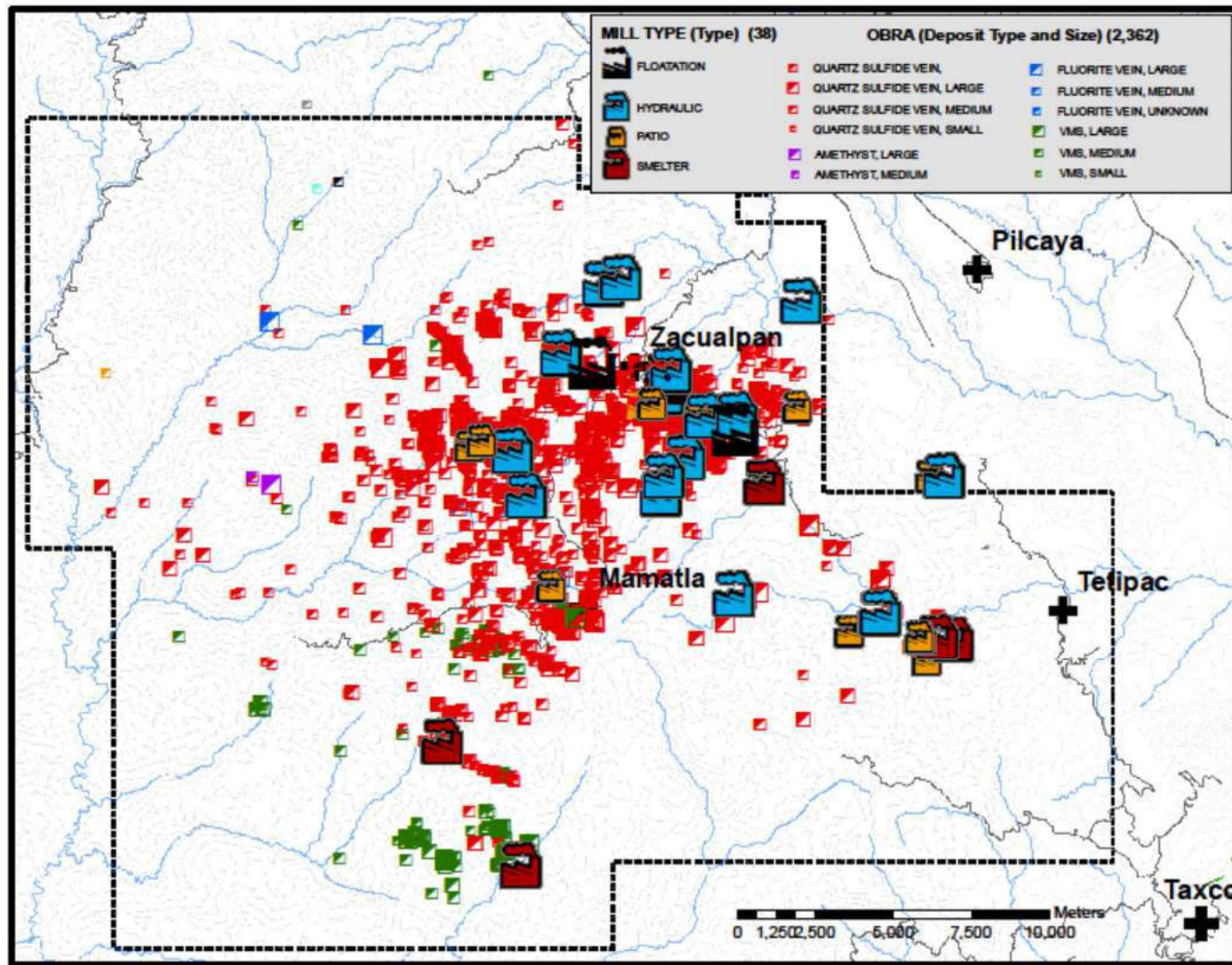
San Carlos



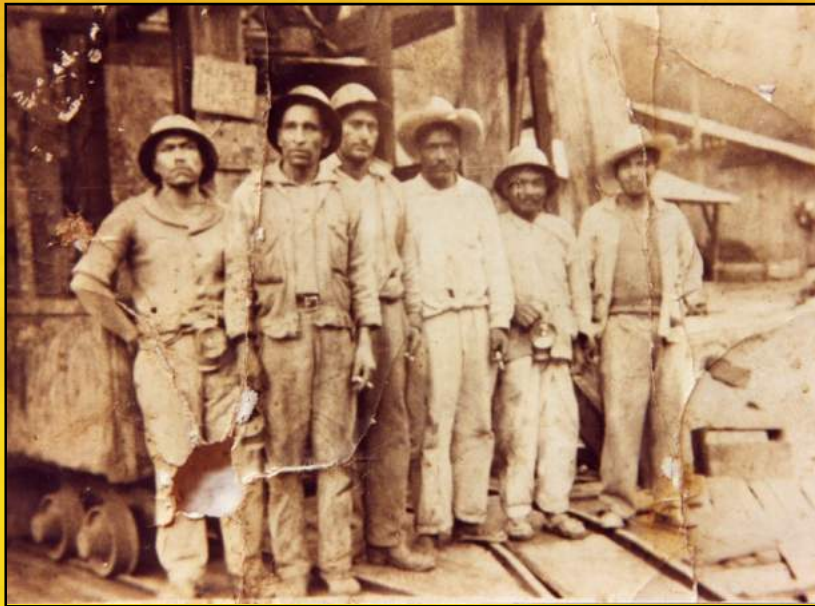
Santa Efige



MORE AN EXERCISE IN MINING ARCHEOLOGY THAN EXPLORATION



ZACUALPAN MINEROS (CIRCA 1890's)



THE TASK AT HAND...

**THREE SMALL HOUSES FILLED WITH
OLD MAPS AND DATA**

**COMPILE ALMOST 500 YEARS OF MINING
ACTIVITY INTO A USABLE DATABASE**

**FIND MORE MINES SUCH THAT THIS 500
YEAR LEGACY OF MINING CONTINUES**



SPREADSHEET STATISTICS

	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>
OLD WORKINGS	132	768	1,031	1,559	2,362
ROCK SAMPLES	4,064	6,730	11,558	15,558	20,877
SOIL SAMPLES	22	2,482	4,343	37,998	45,257
DRILL CORE ASSAY SAMPLES	1,247	3,586	7,516	12,516	23,827
STEAM SEDIMENT SAMPLES	0	0	714	714	1,011
DRILL HOLES	<u>40</u>	<u>97</u>	<u>1,244</u>	<u>2,200</u>	<u>3,725</u>
	5,505	13,663	26,406	70,845	97,059



REPRESENTING 7,376,000 CELLS OF INFORMATION

DATA COMPILATION STATISTICS

CELLS OF INFORMATION IN OTHER
SPREADSHEET = 5,324,358

5,000 RECTIFIED MAPS OF WHICH ONLY
ABOUT 1,000 HAVE BEEN DIGITIZED
INTO SHAPEFILES

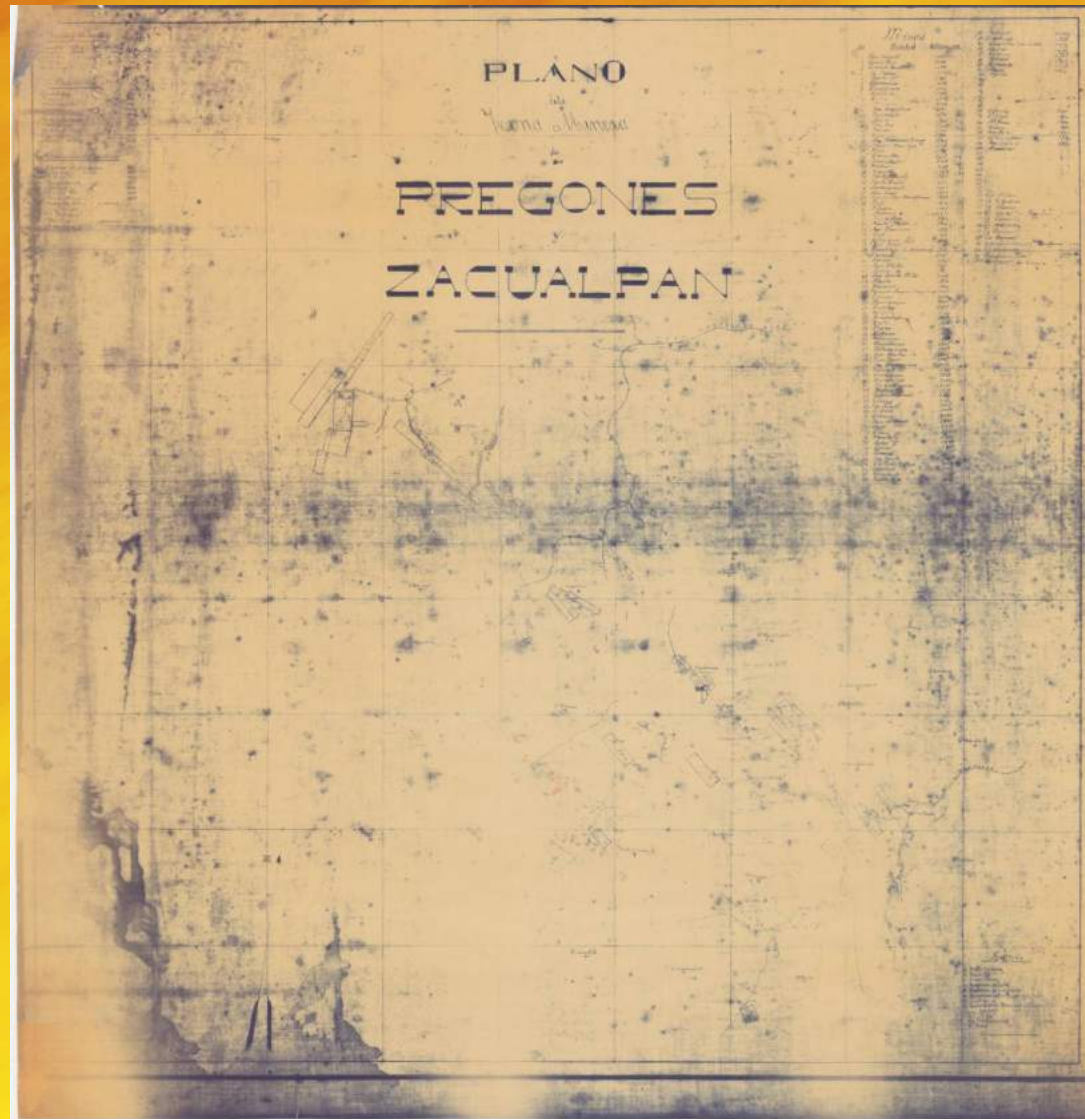
8,000 MAPS AWAITING RECTIFICATION

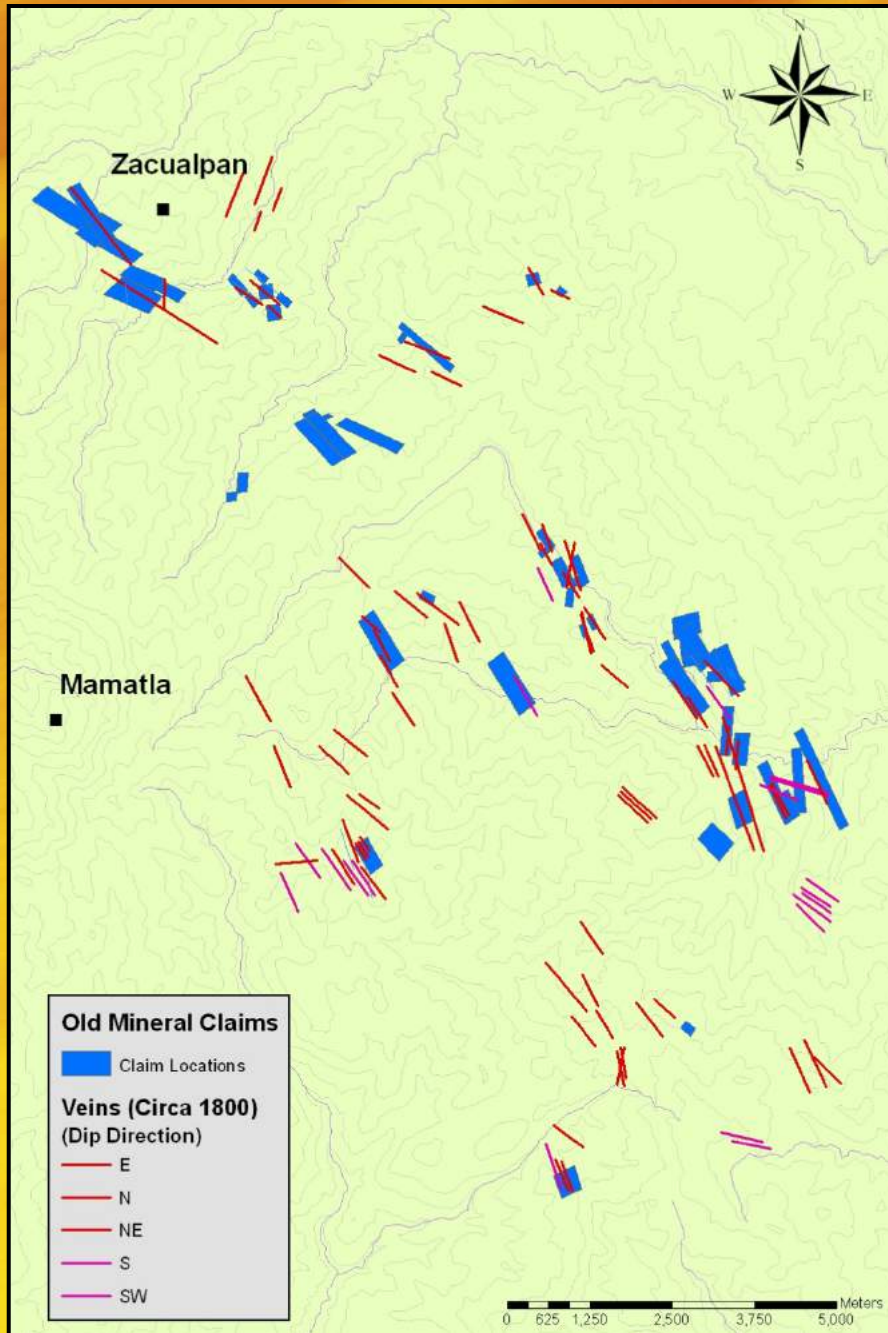
1,500 LAYER FILES WITHIN THE DATA
COMPILATION

ALL OF WHICH NEED TO BE ORGANIZED
INTO A GEODATABASE



AND THIS OLD MAP IS THOUGHT TO BE ABOUT 200+ YEARS OLD





PREVIOUS

MAP

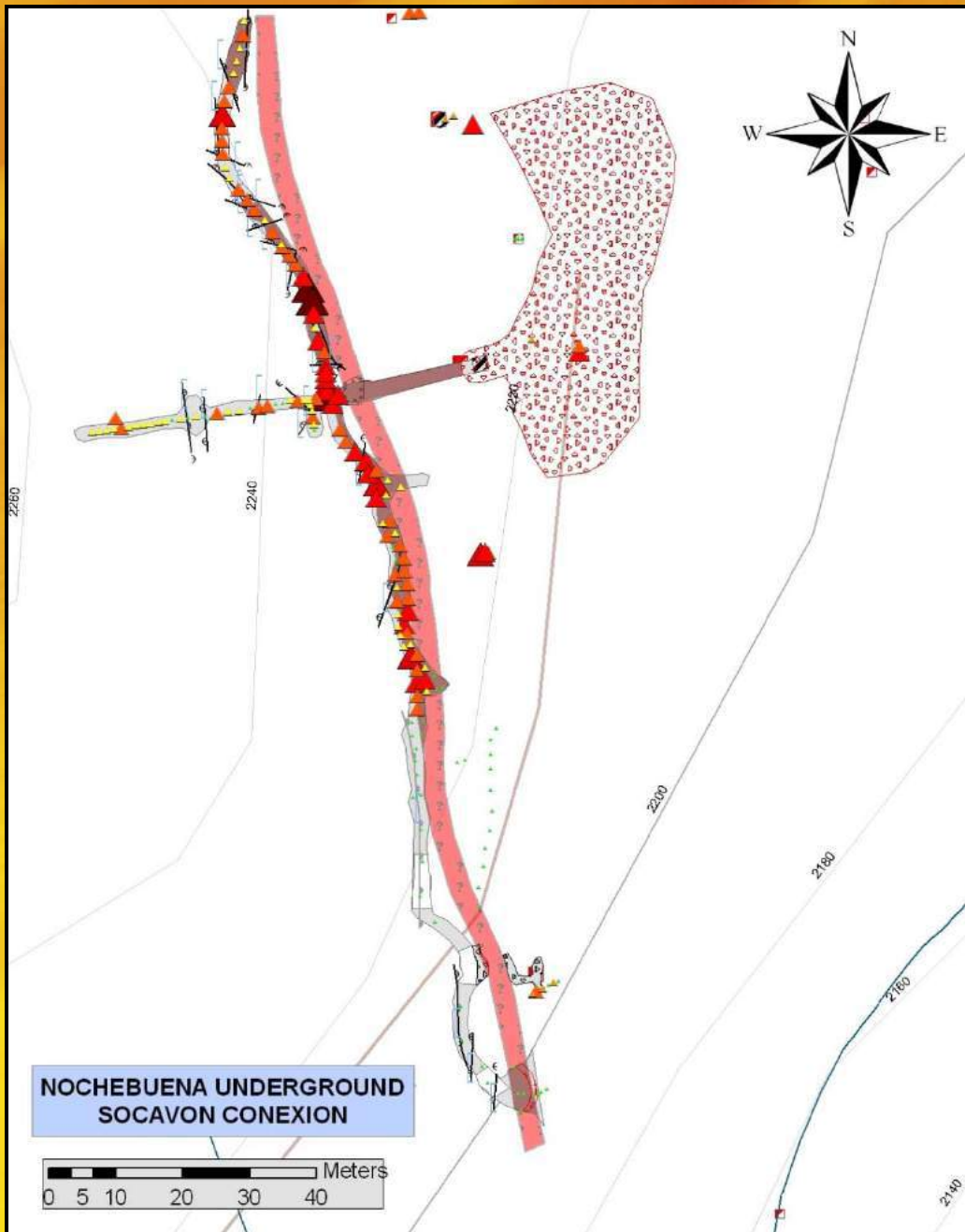
AFTER

DIGITIZING



ArcVIEW
AS A
DATA VIEWER

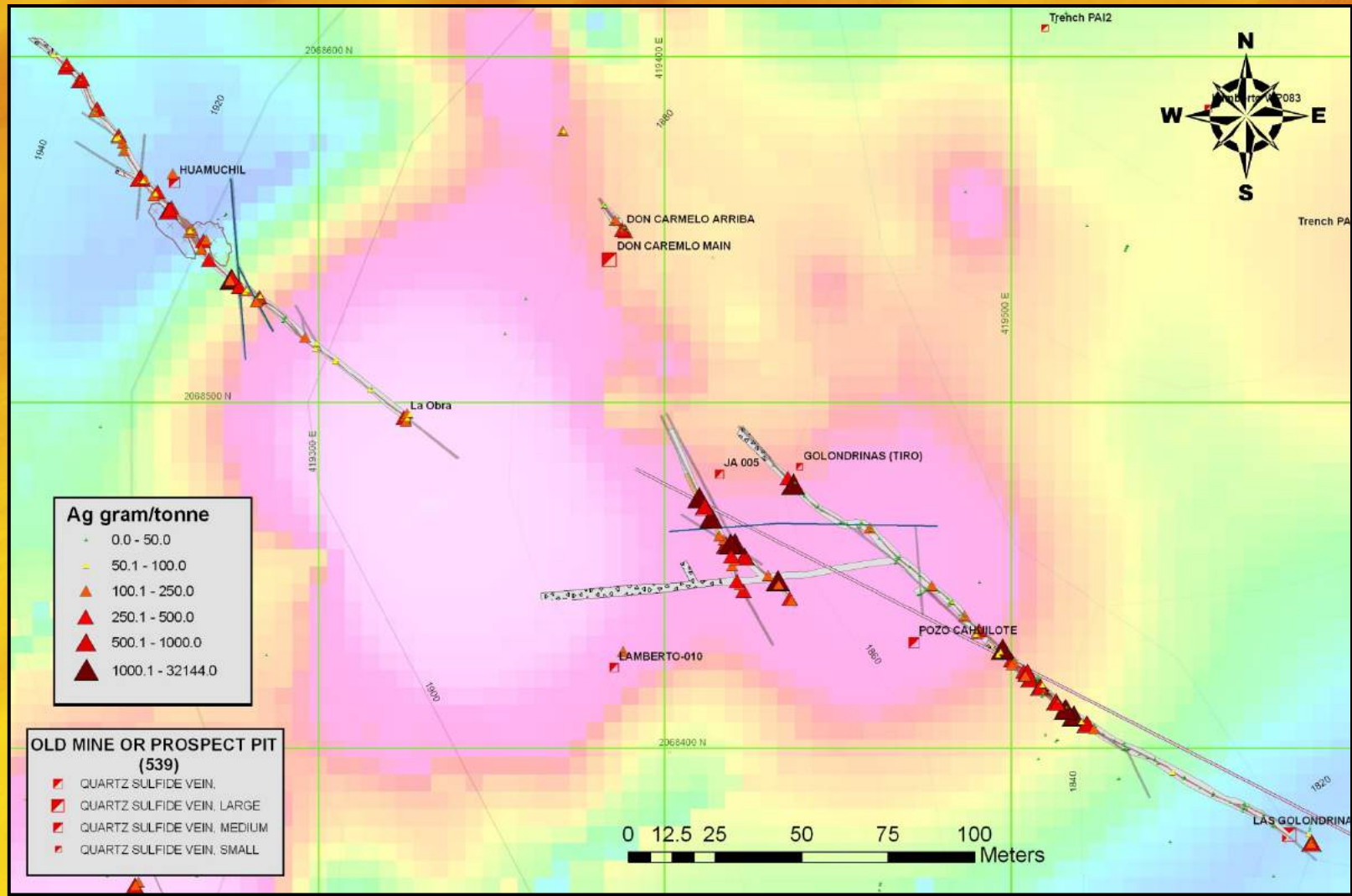




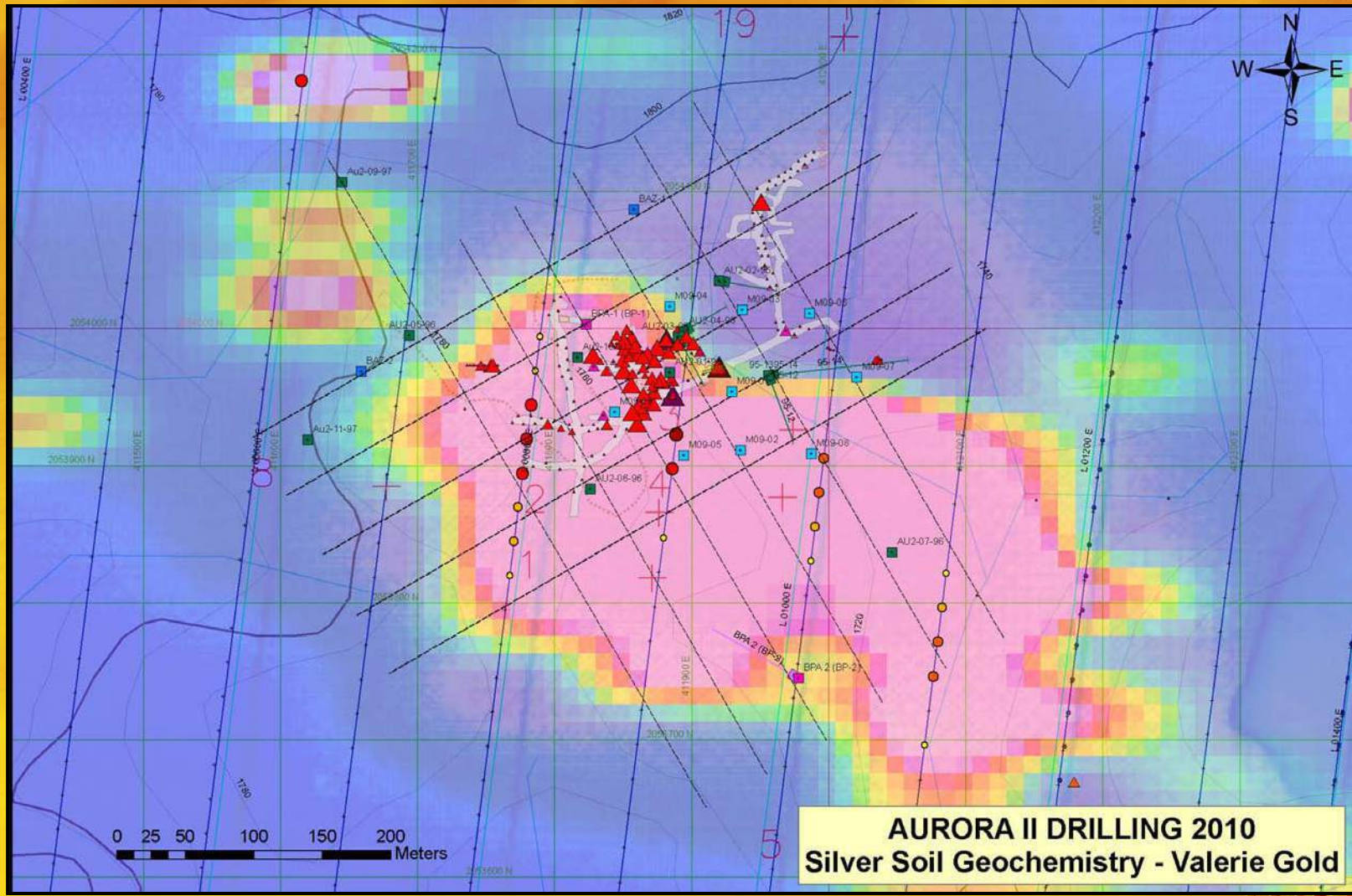
**SOCAVON
CONEXION
DETAILED
UNDERGROUND
SAMPLING
AND
MAPPING**



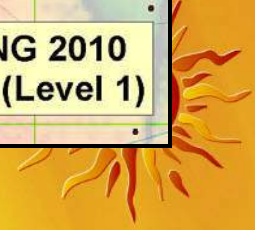
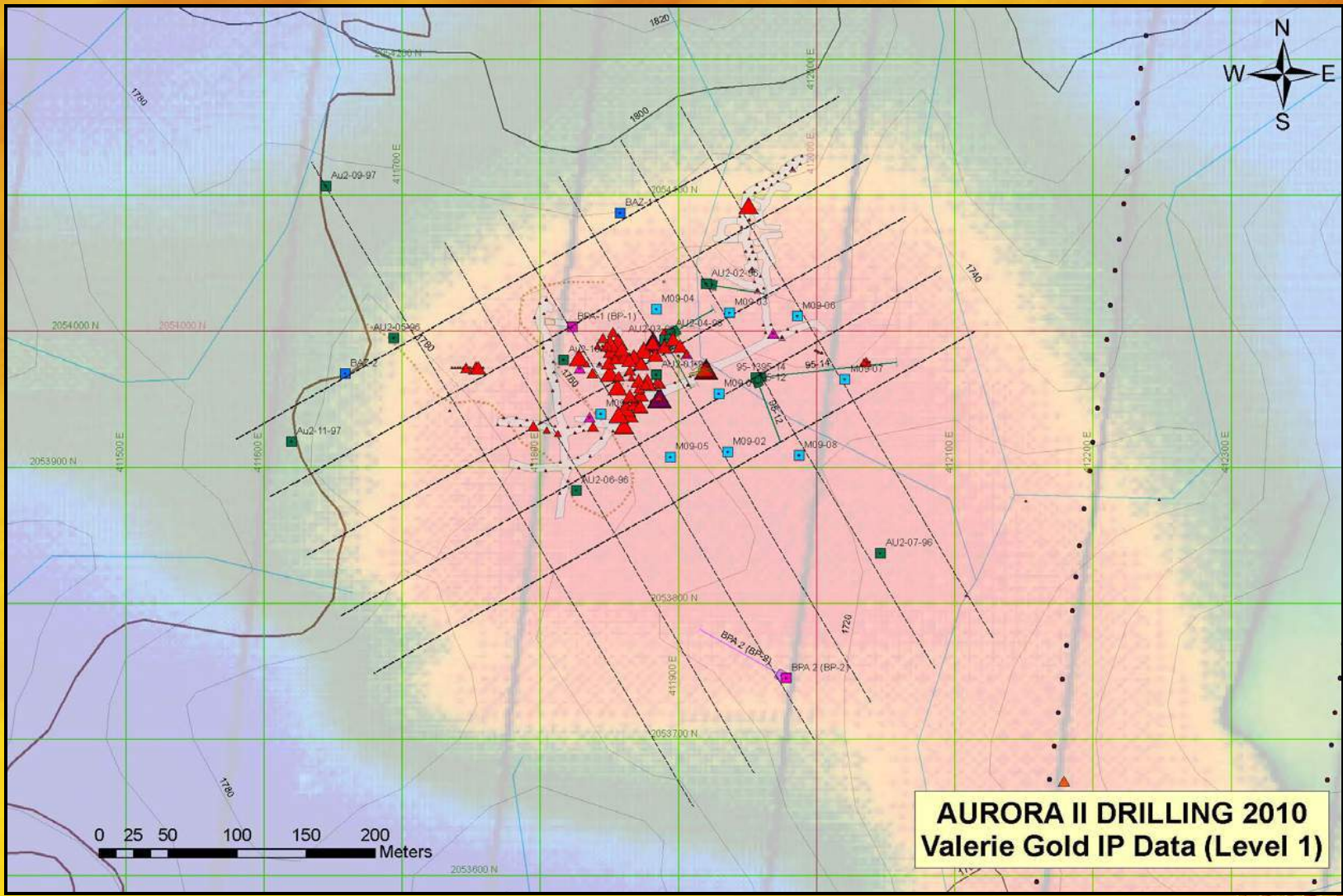
MULTIPLE UNDERGROUND WORKINGS GOLONDRINAS AREA



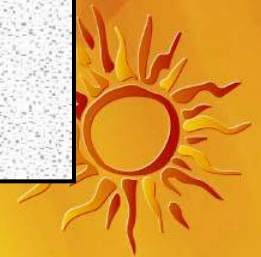
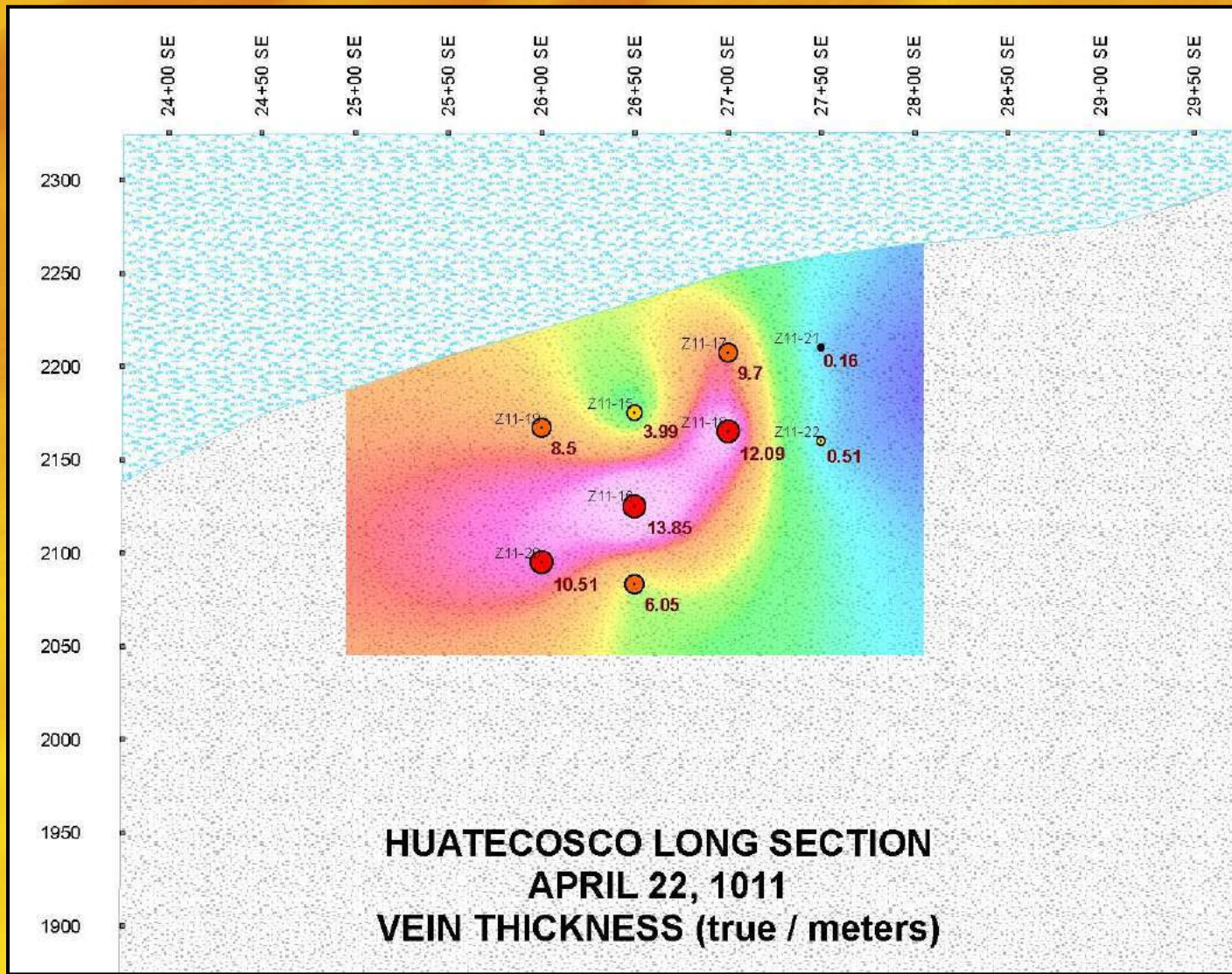
SOIL GEOCHEMISTRY, ROCK SAMPLES AURORA II PROSPECT



INDUCED POLARIZATION, ROCK SAMPLES AURORA II PROSPECT



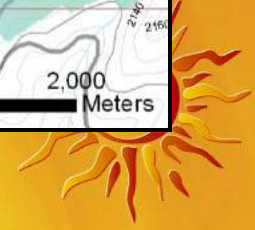
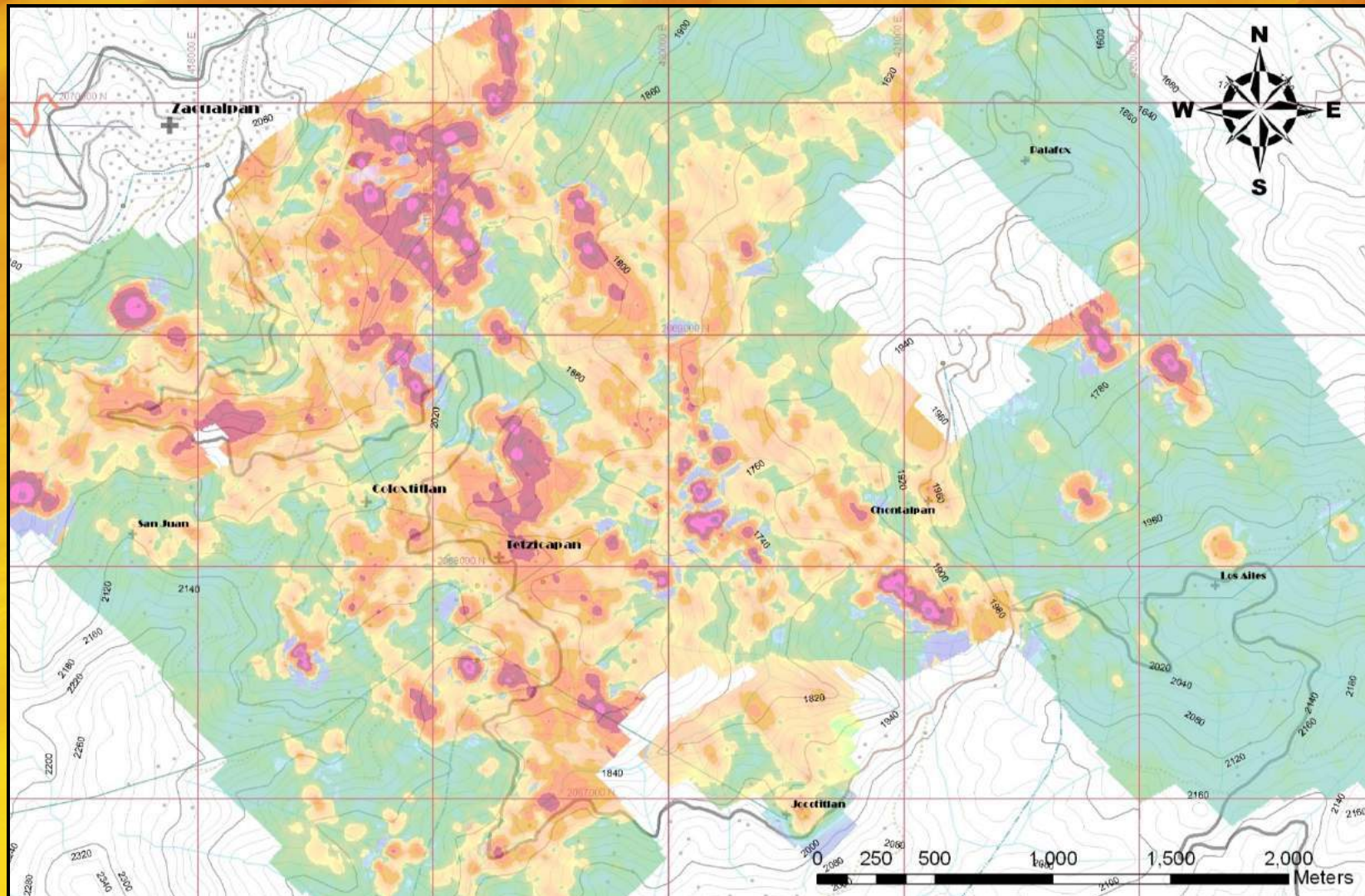
VEIN THICKNESS IN LONG SECTION HUATECOSCO PROSPECT



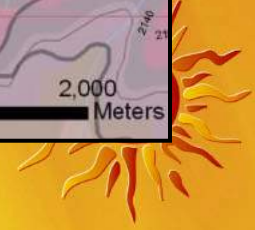
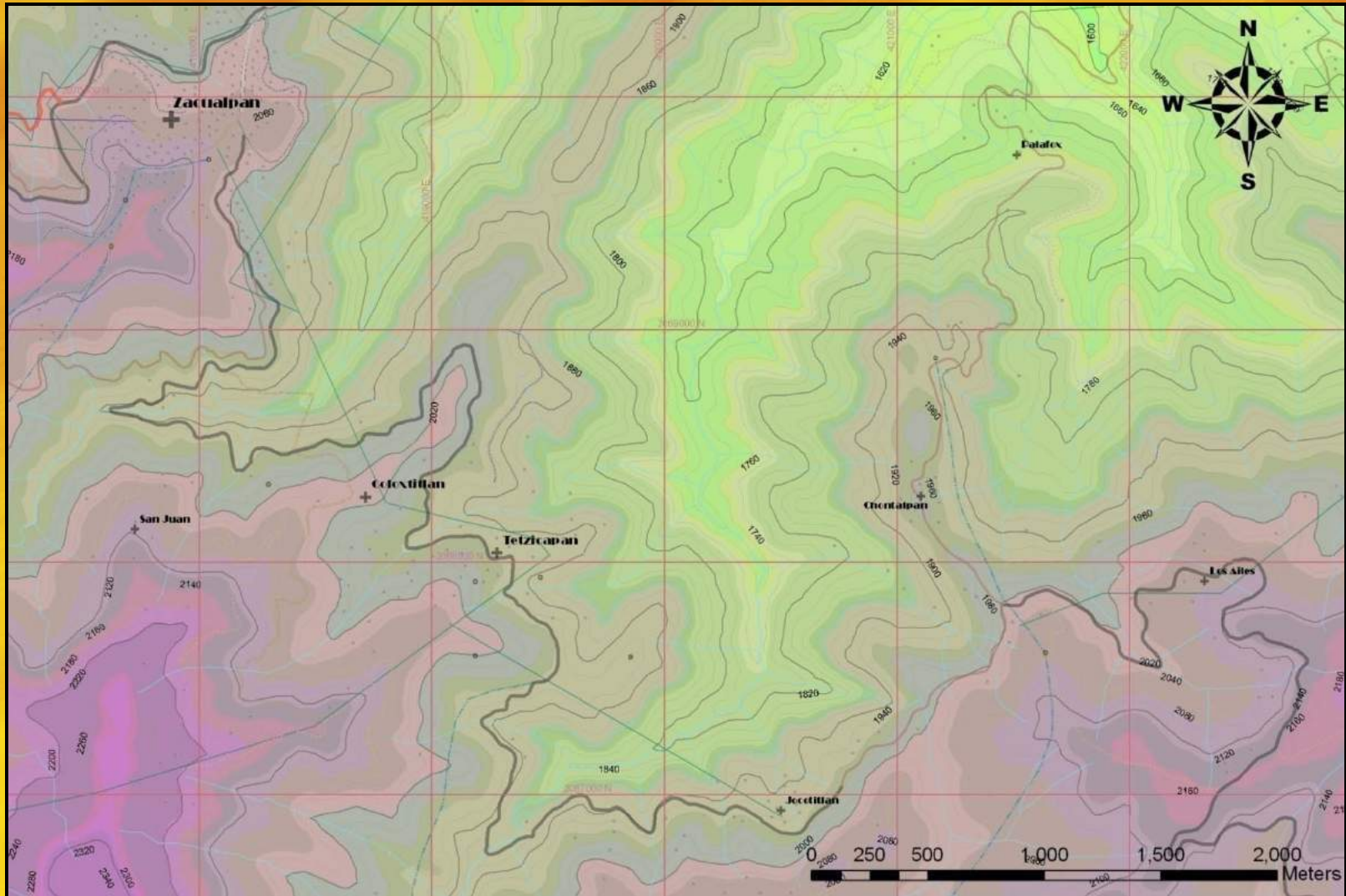
ArcVIEW
FOR
DATA ANALYSIS
AND
INTERPETATION



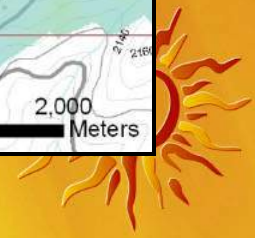
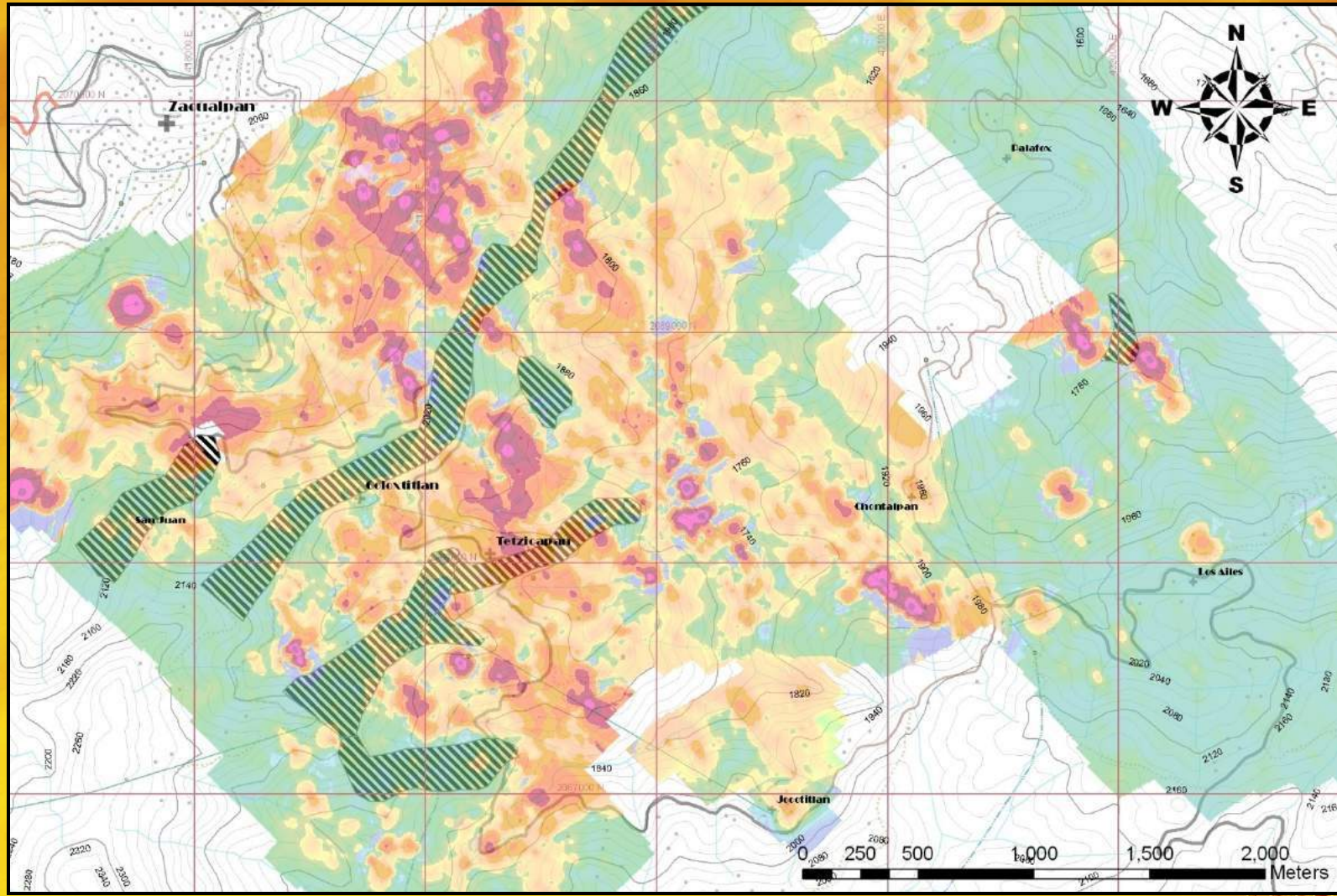
CONTOURED SILVER VALUES LA CADENA SOIL GEOCHEMISTRY GRID



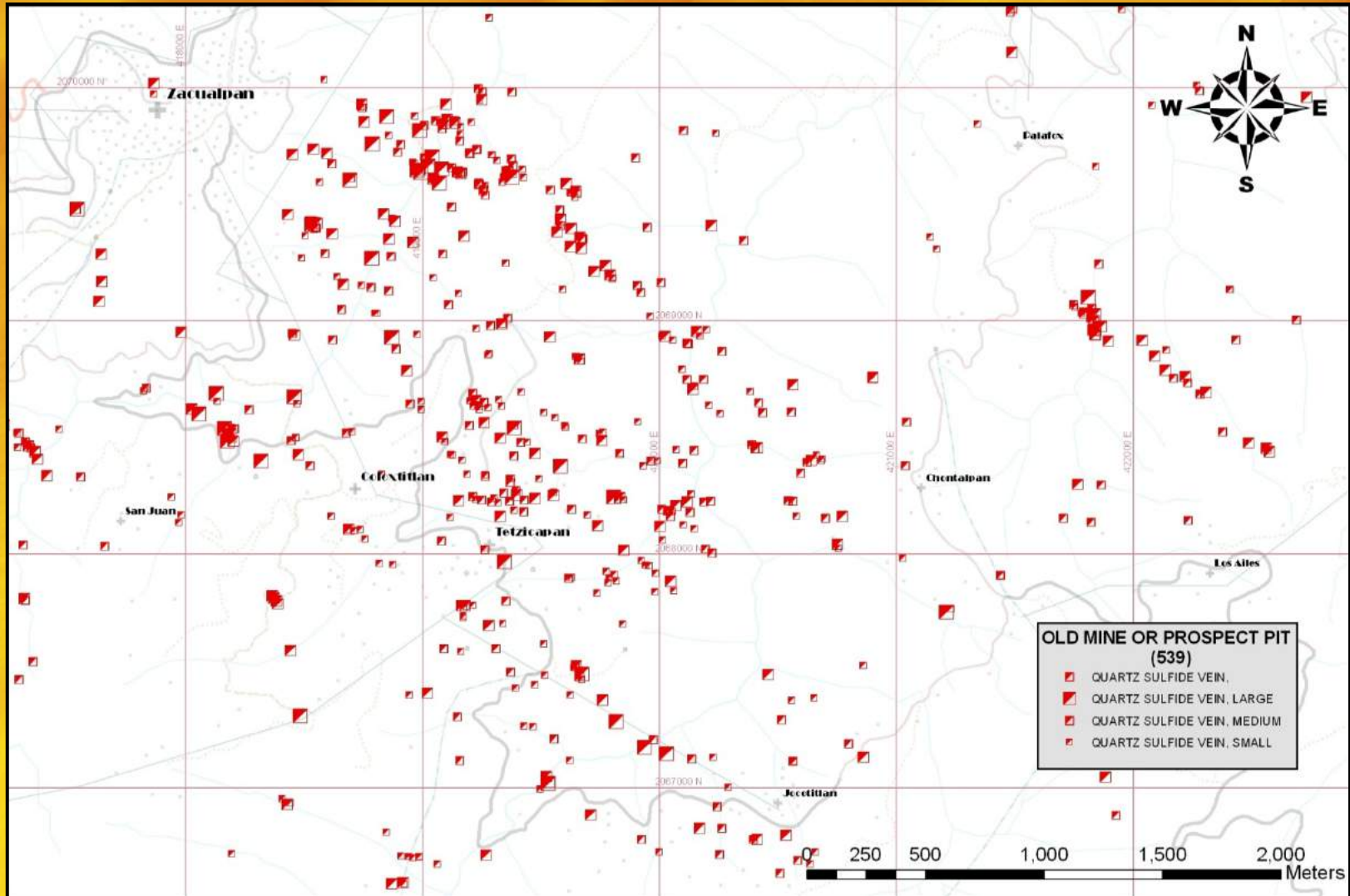
COLOURED ELEVATION DATA LA CADENA SOIL GRID



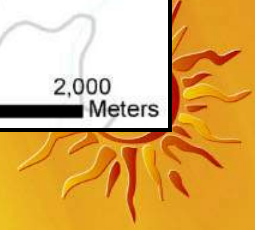
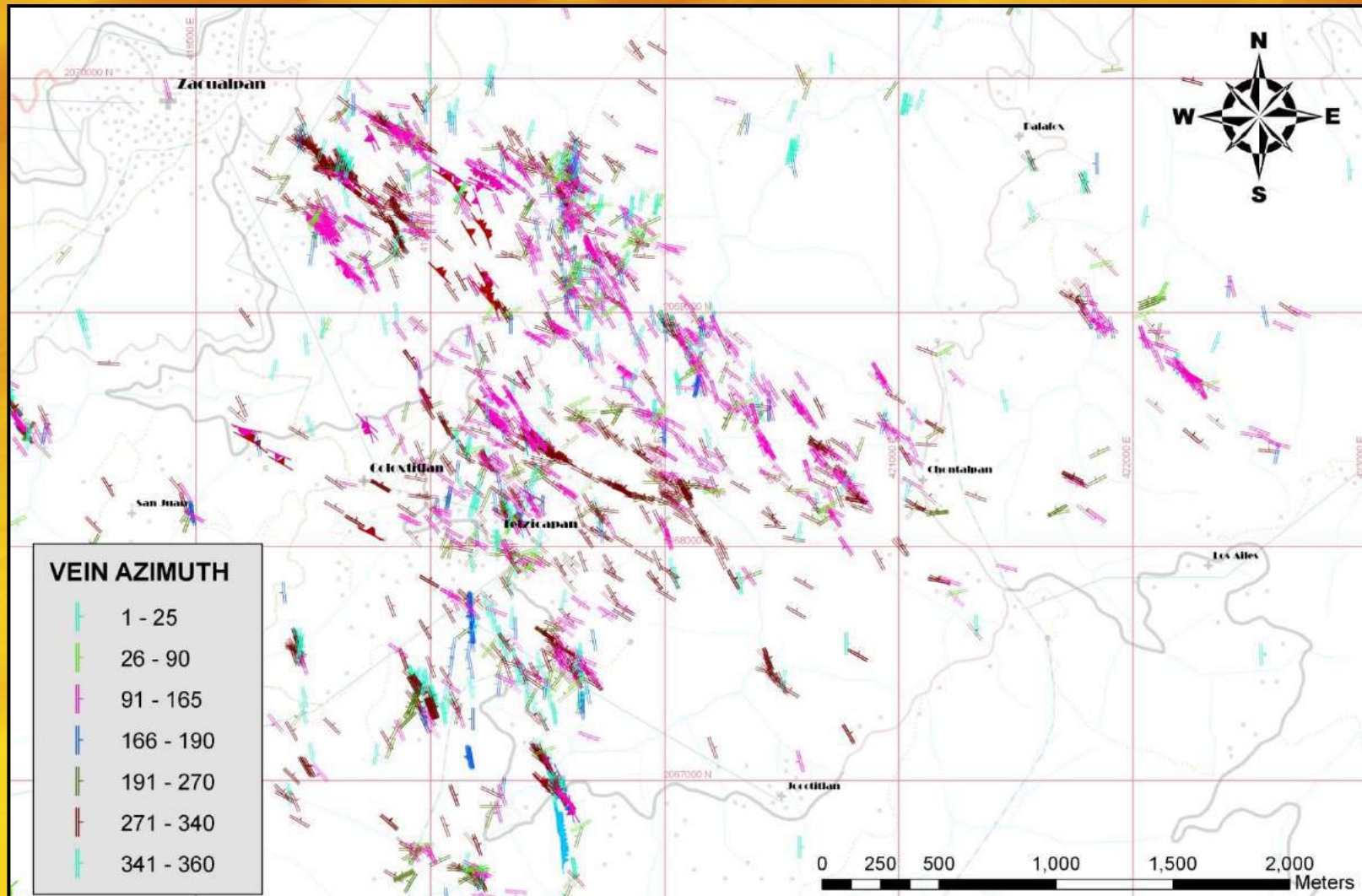
RIDGETOP AREAS SHOWN AND SILVER GEOCHEMISTRY - LA CADENA GRID



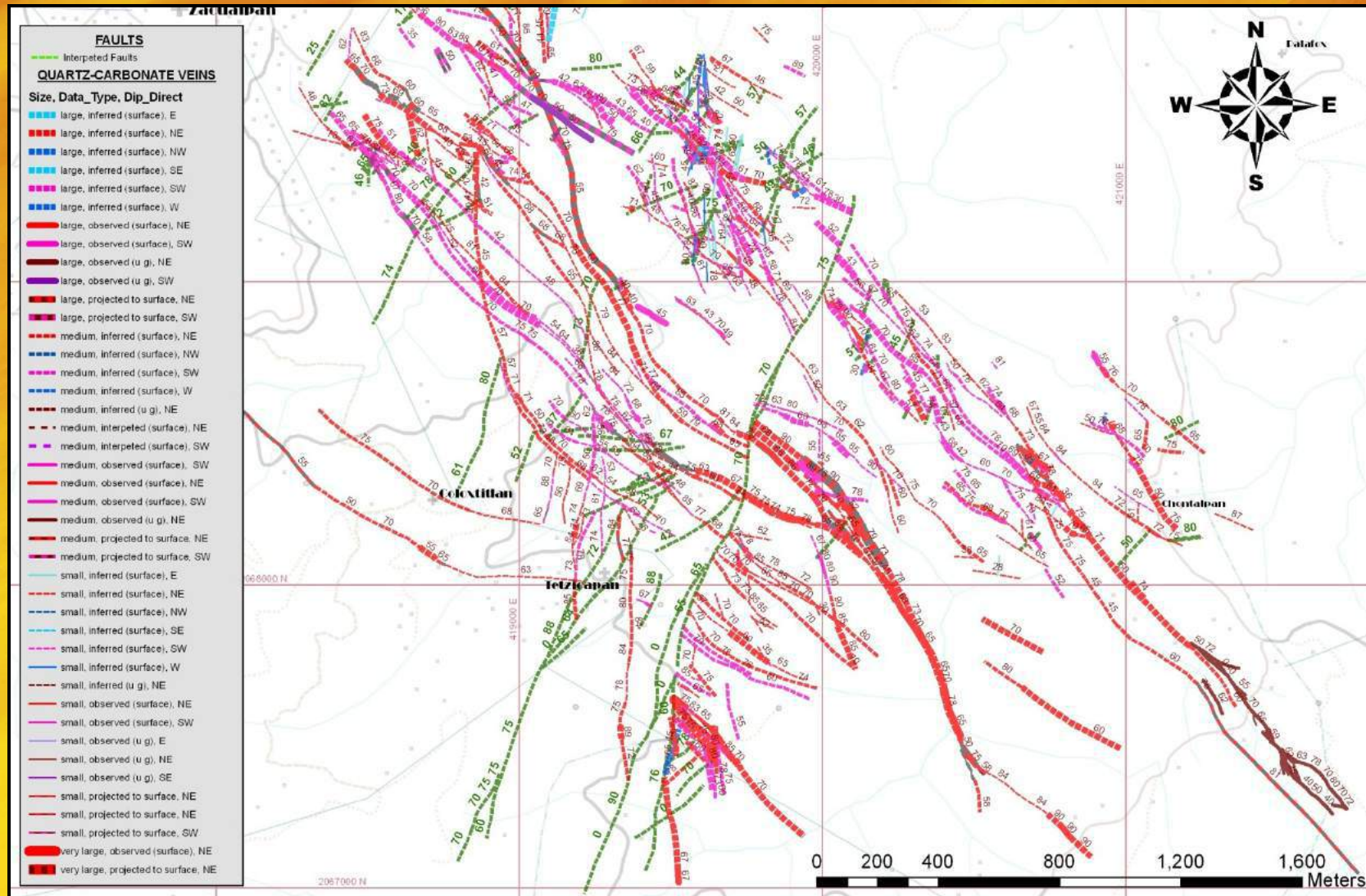
OLD MINE WORKINGS LA CADENA GRID



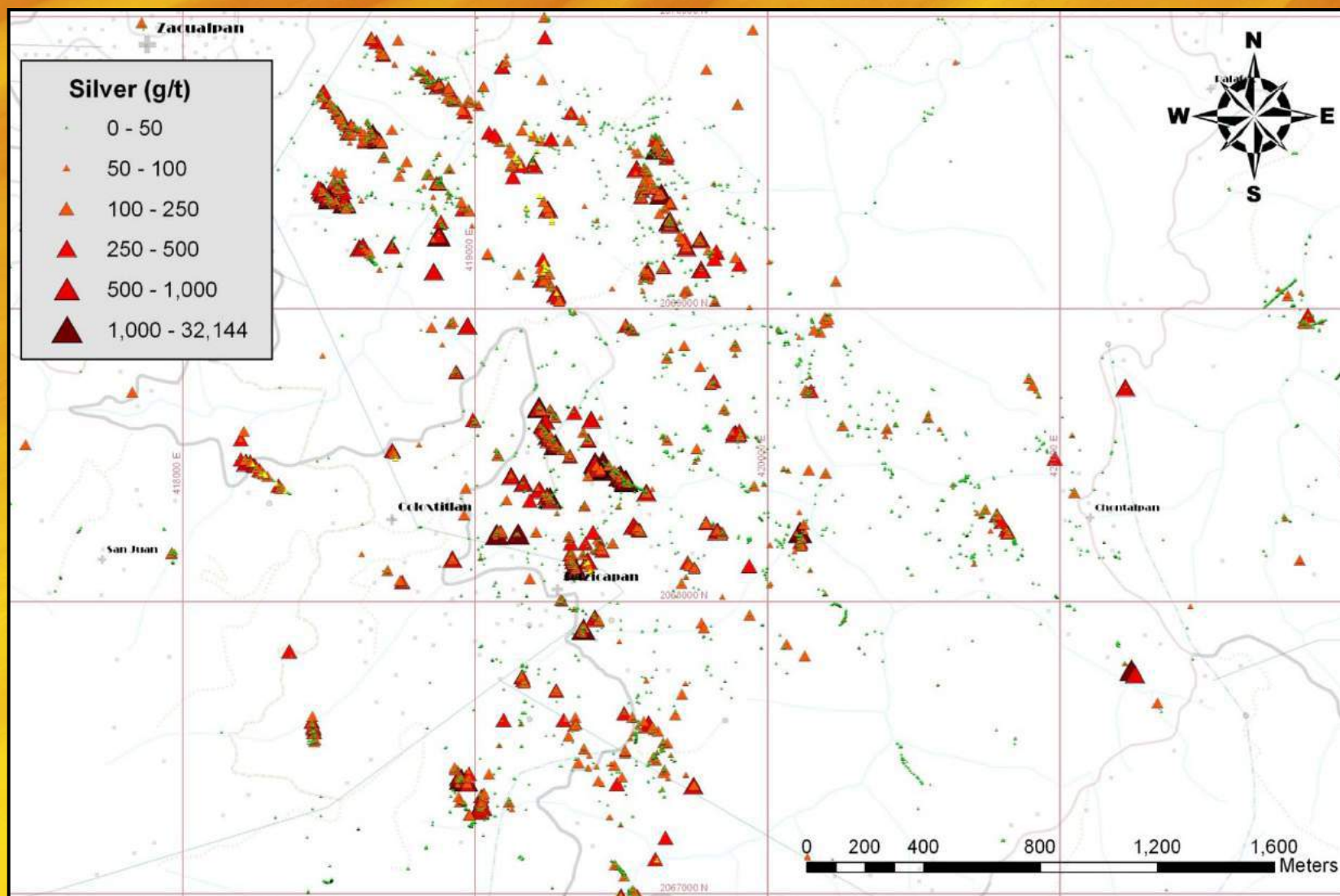
VEIN ORIENTATION MEASUREMENTS LA CADENA GRID



VEIN AND FAULT INTERPETATION LA CADENA GRID



ROCK SAMPLE ASSAYS – SILVER LA CADENA GRID



DRILLING SUCCESS RATE USING ArcVIEW

PREVIOUS SUCCESS RATE

31%

DATA BASE DRIVEN SUCCESS RATE

(as of 2009)

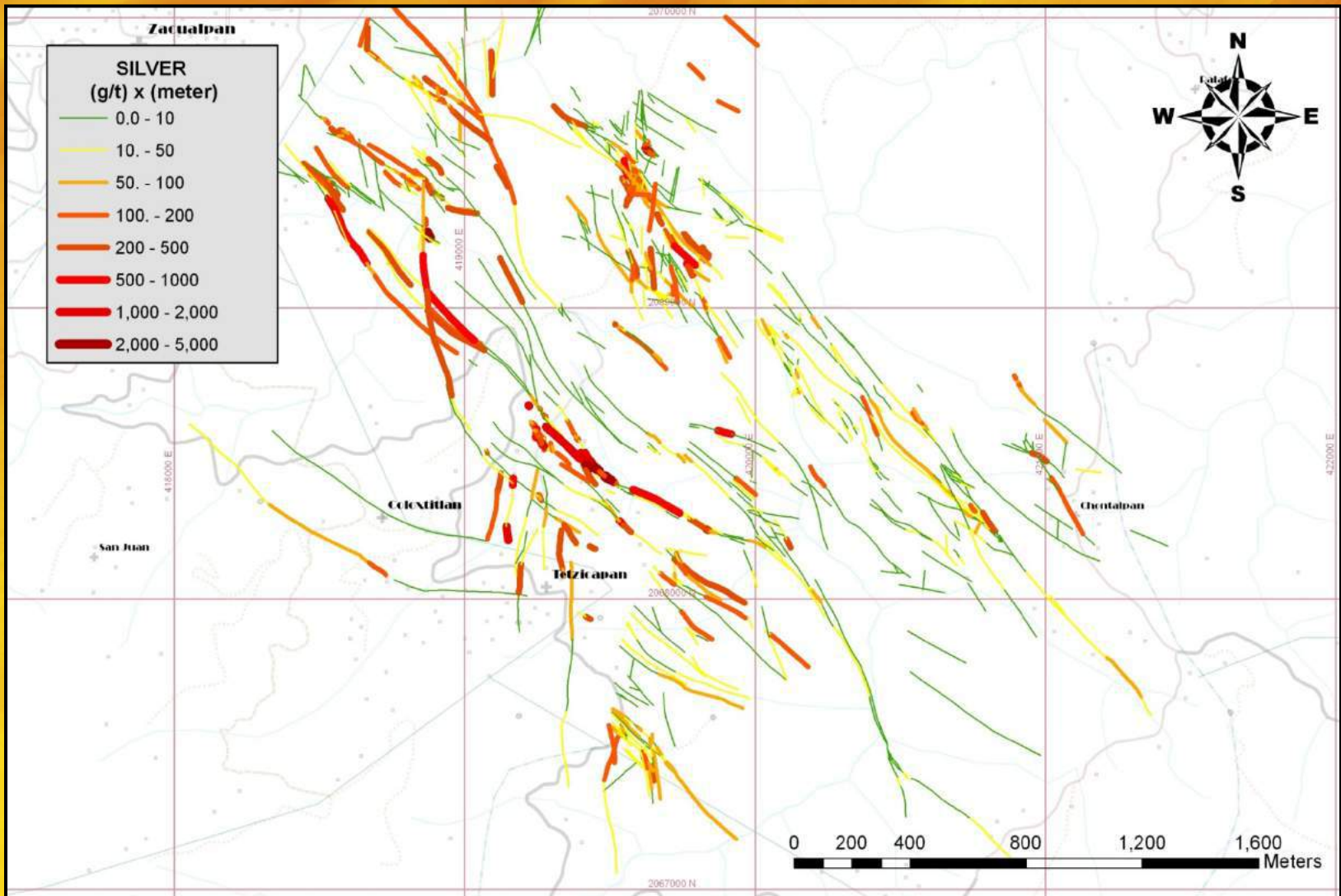
61%

ECONOMIC INTERSECTION DEFINED AS

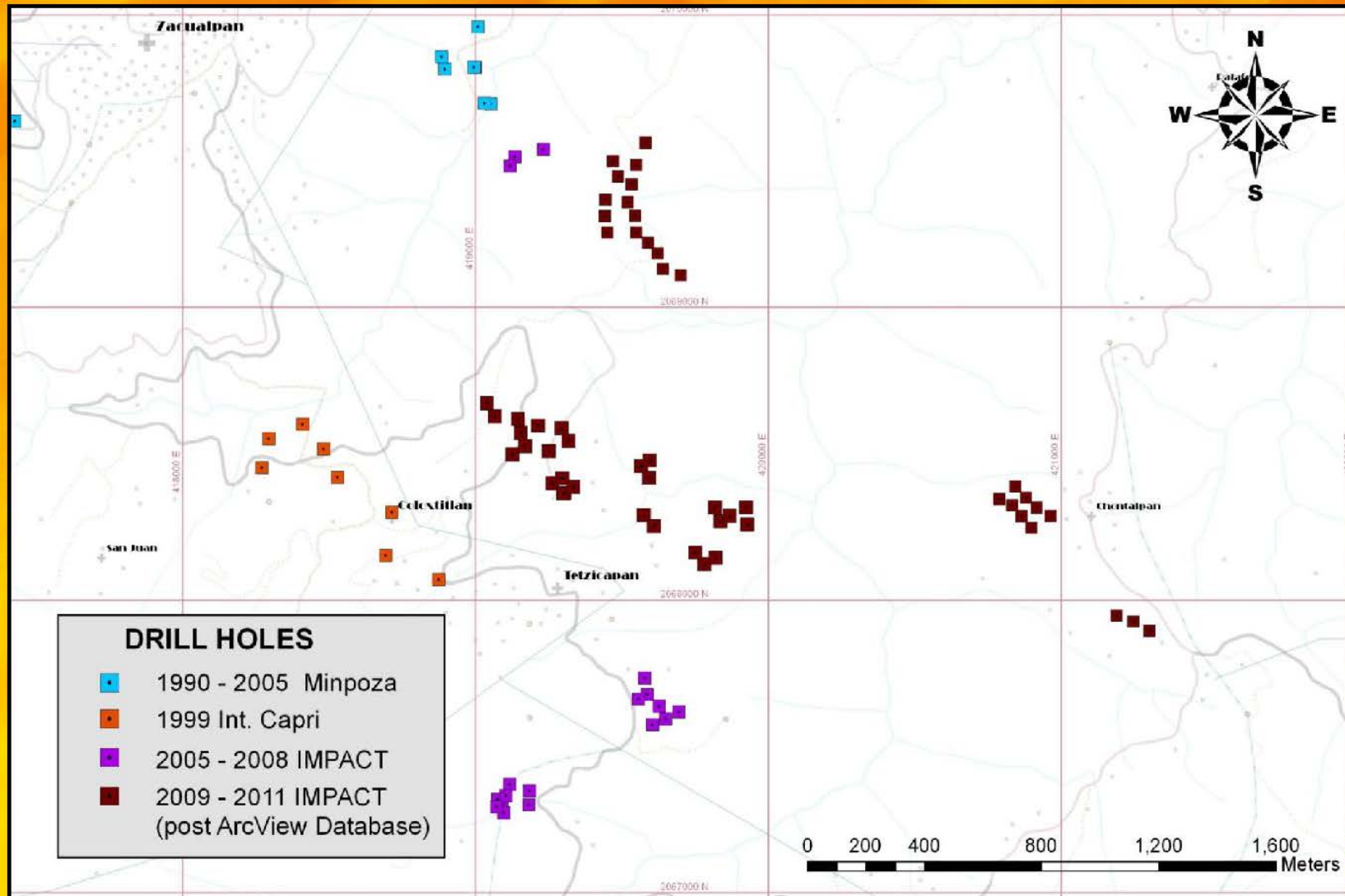
120 g/t Silver across 2.0 meters



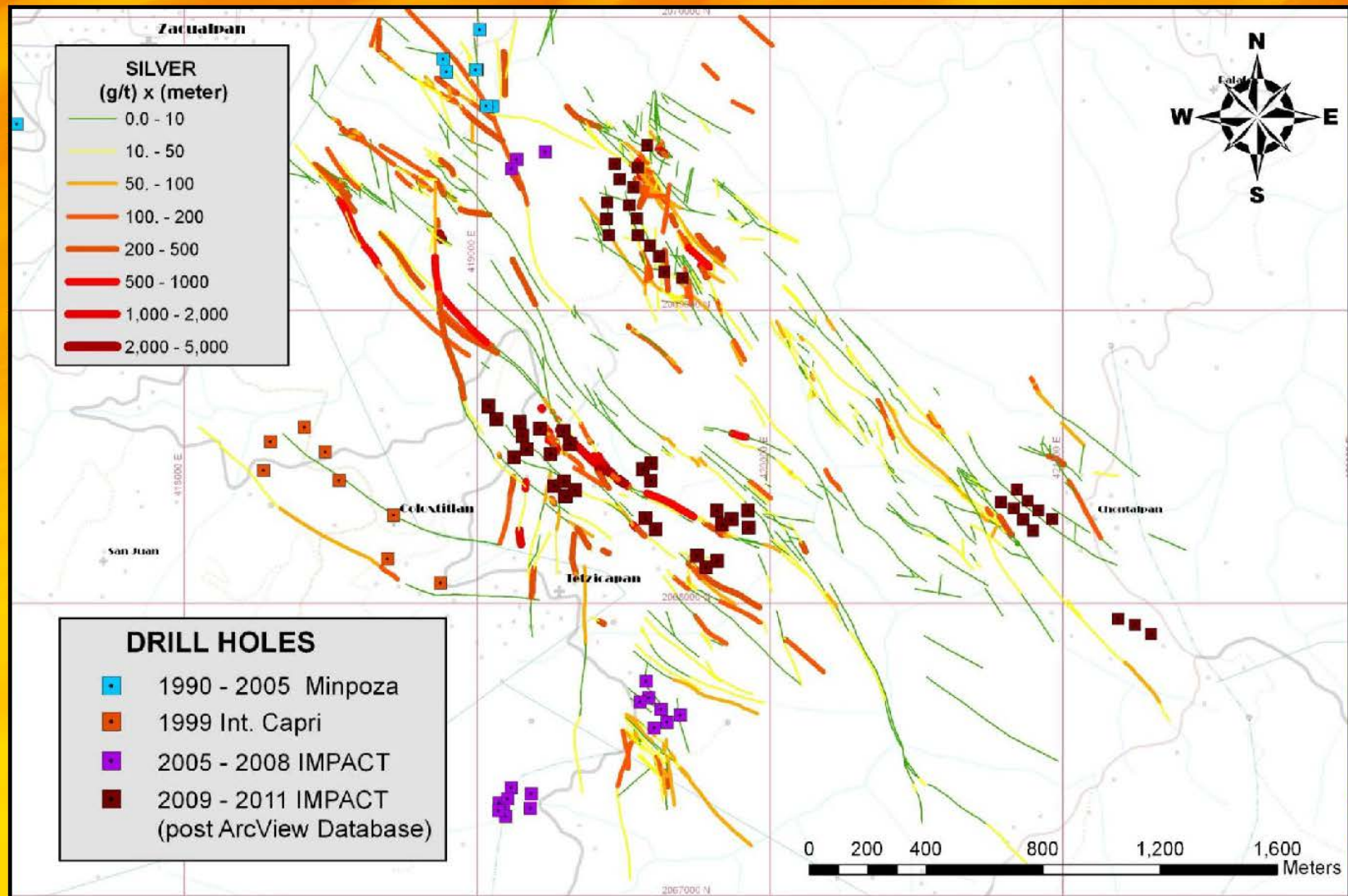
SILVER GRADES TIMES WIDTH FOR VEINS LA CADENA GRID



DRILL HOLES PRE AND POST DATABASE LA CADENA GRID



SILVER VEINS AND DRILL HOLES LA CADENA GRID



DRILL CORE FROM SILVER VEIN LA CADENA GRID



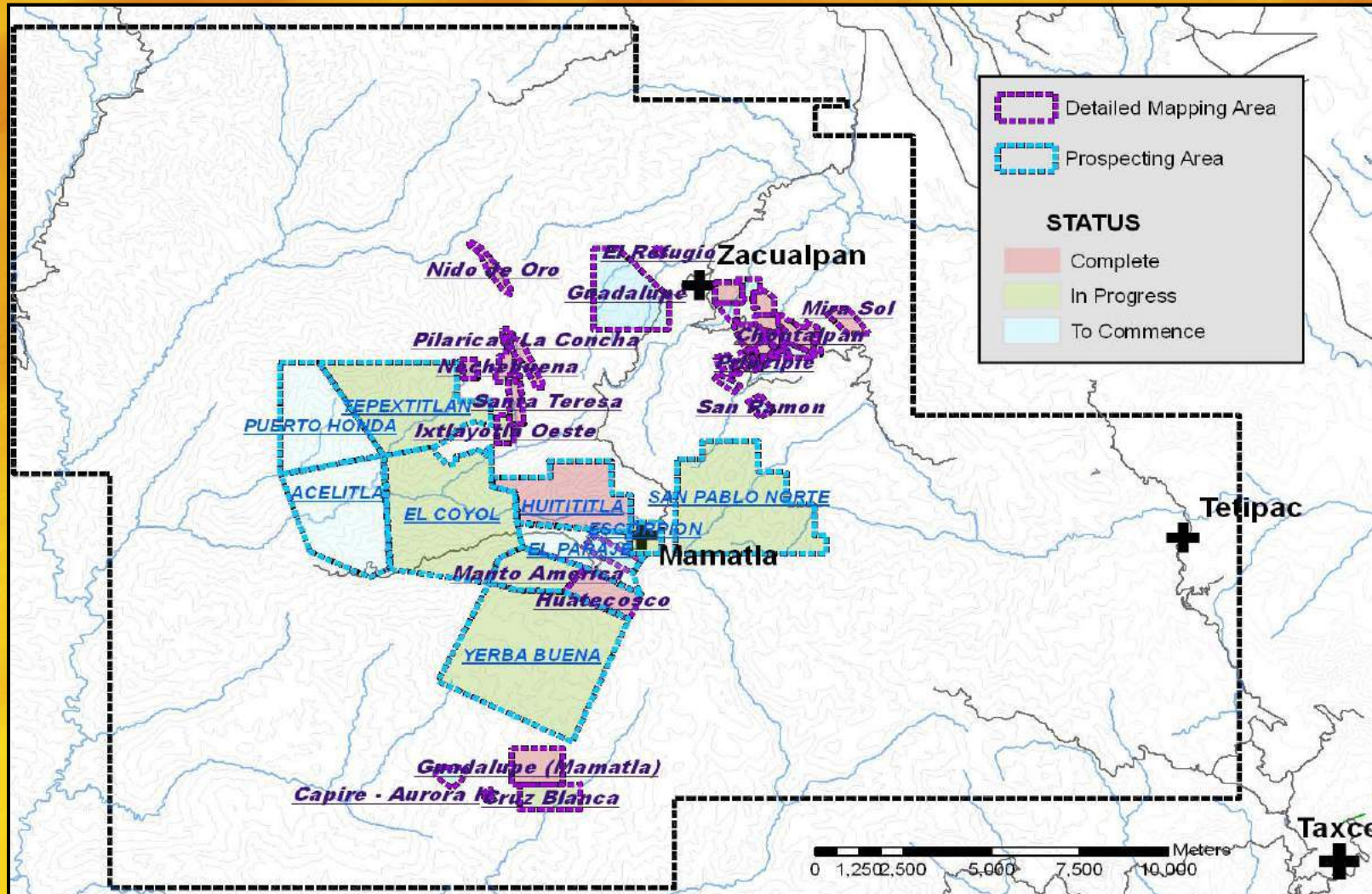
ArcVIEW

AS A

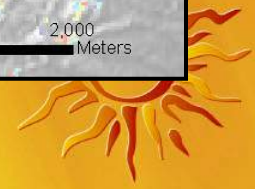
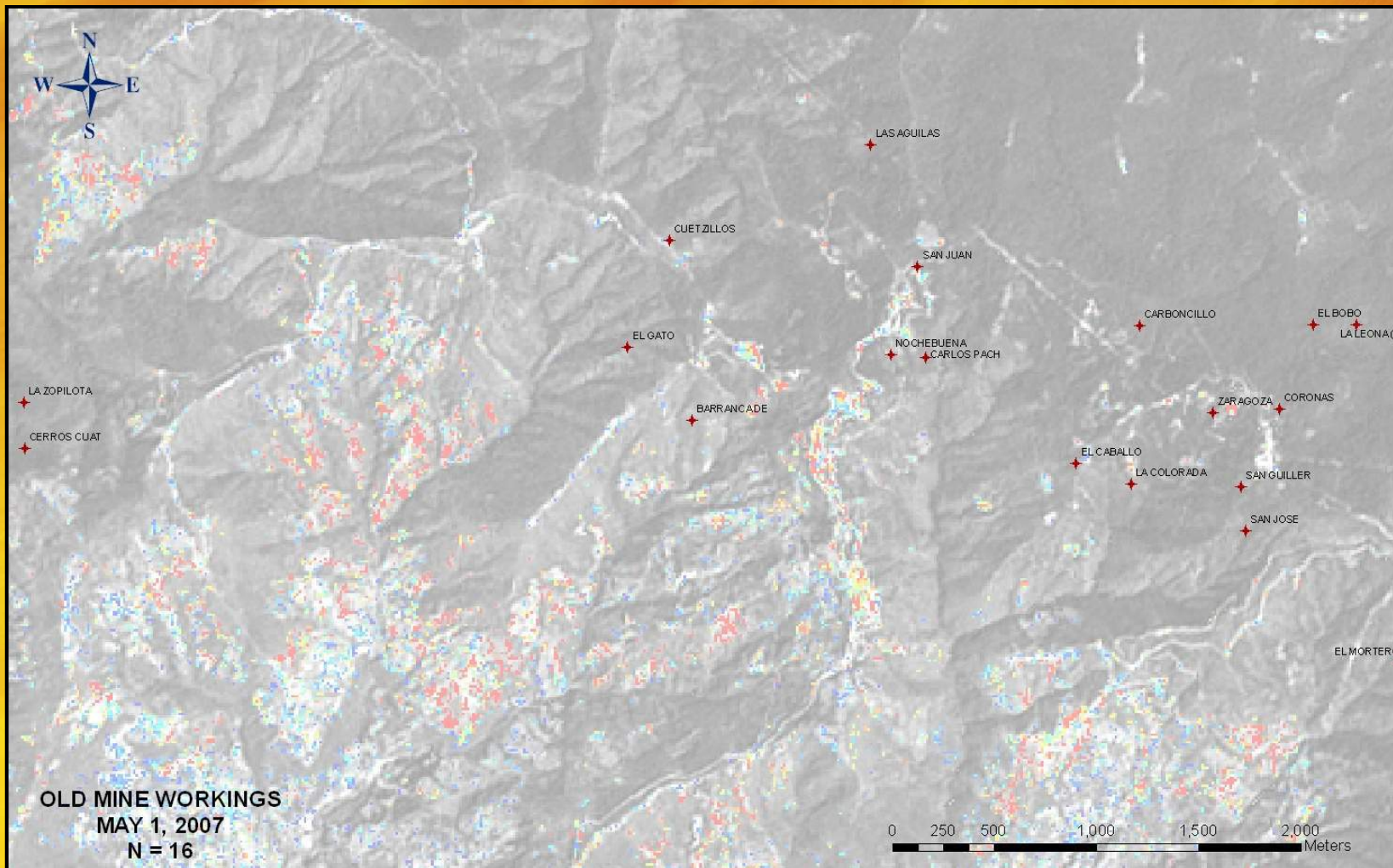
MANAGEMENT TOOL



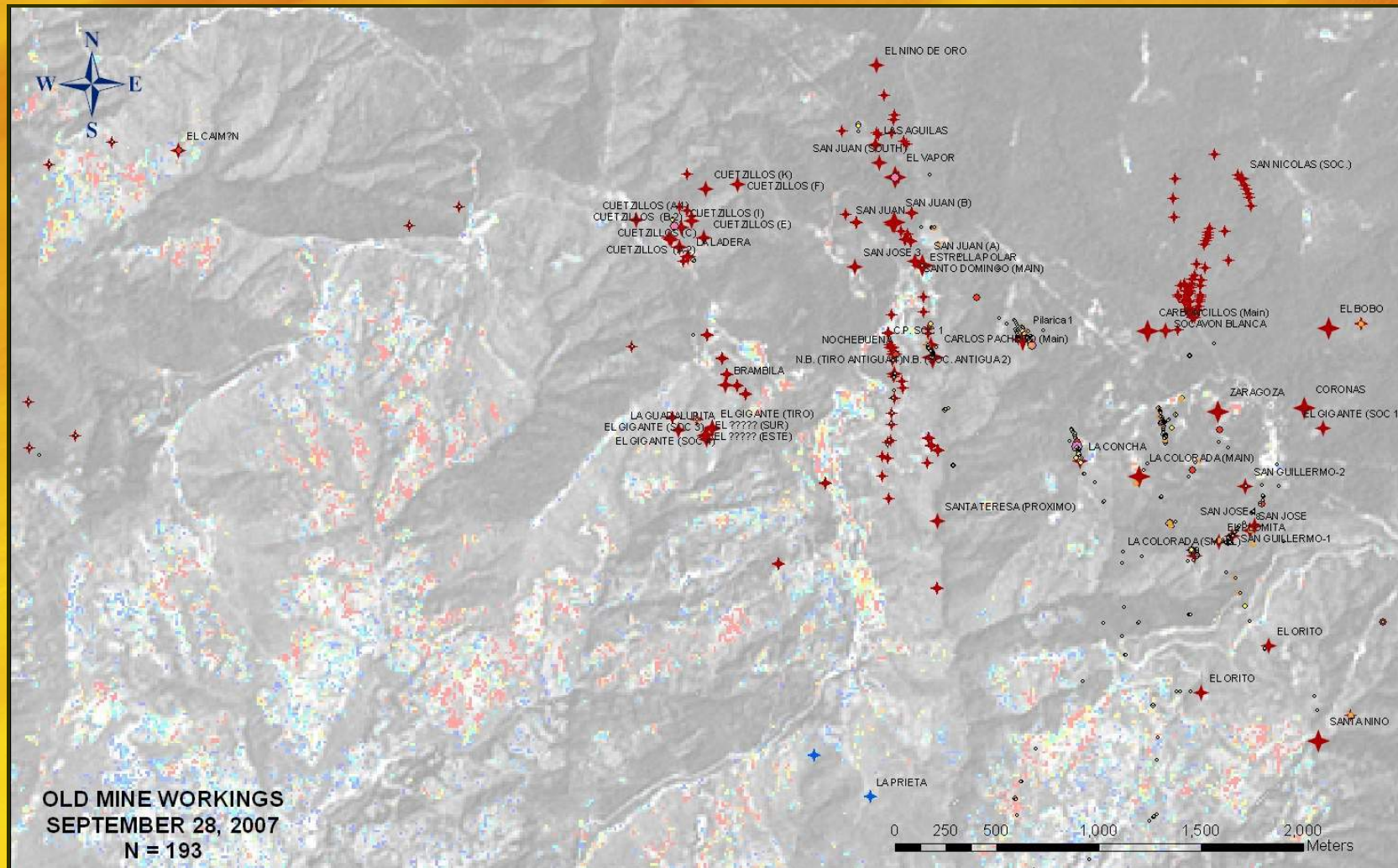
KEEPING ORDER, REPORTING, AND MONITORING PROGRESS



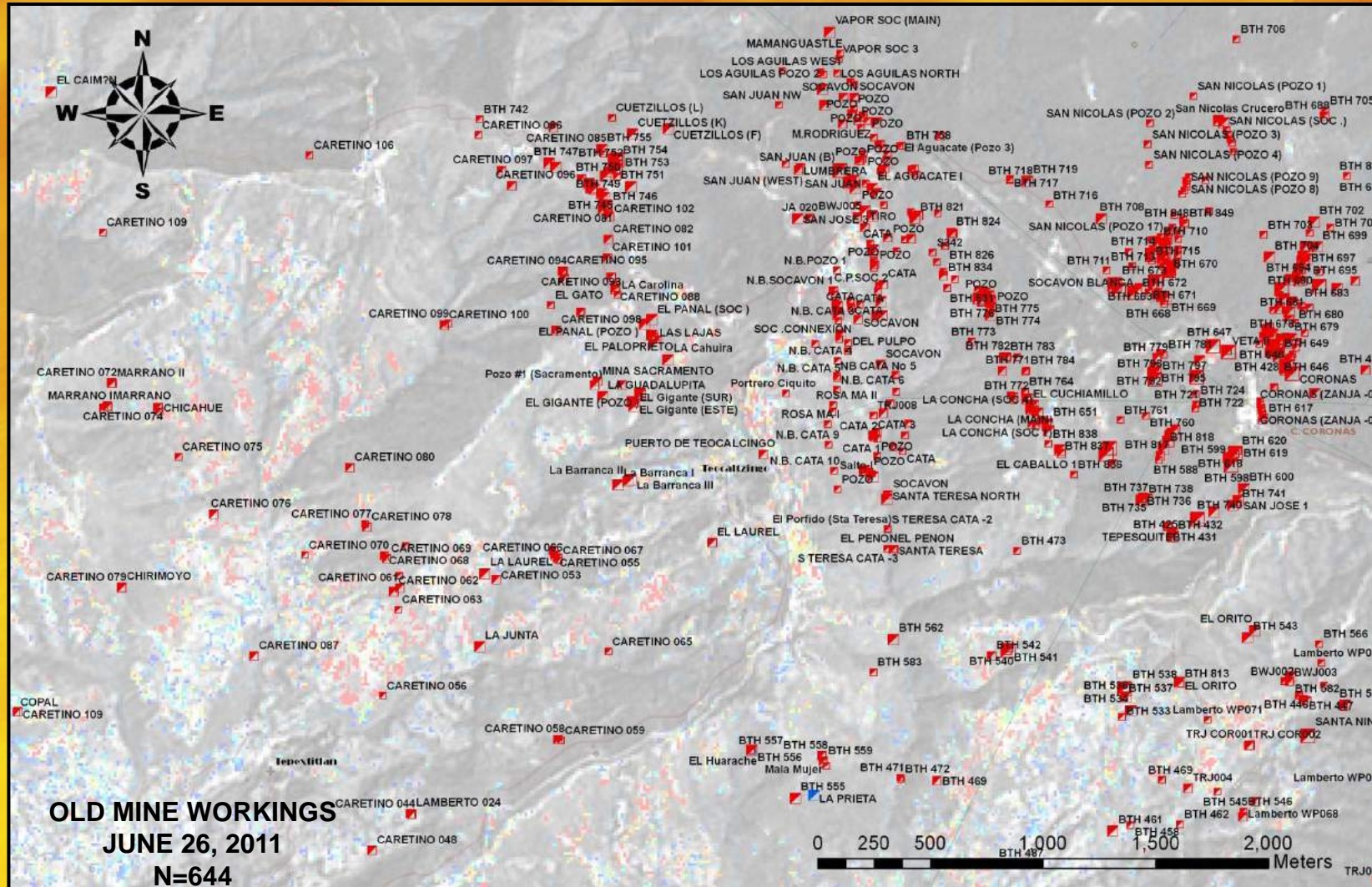
OBRA FINDING OVER TIME NOCHEBUENA – CERRO CUATES AREA



OBRA FINDING (AFTER 5 MONTHS) NOCHEBUENA – CERRO CUATES AREA



OBRA FINDING (AFTER 4 YEARS) NOCHEBUENA – CERRO CUATES AREA



BENEFITS TO DATE

IMPACT HAS BEEN SUCCESSFUL IN BRINGING A NEW MINE INTO PRODUCTION FOR EACH OF THE PAST FOUR YEARS

ANNUAL SAVINGS RESULTING IN BETTER TARGET SELECTION FOR DRILLING AVERAGE \$2.3 OUT OF A DRILLING BUDGET OF \$5.0

AS FOR THE THREE SMALL HOUSES THAT WERE USED FOR MAP STORAGE, MOST OF THIS DATA NOW RESIDES IN AN EXTERNAL HARD DRIVE

IN TERMS OF SAFETY OUR FIELD CREWS CAN NOW BETTER AVOID CONFLICTED AREAS



THE TASK AT HAND

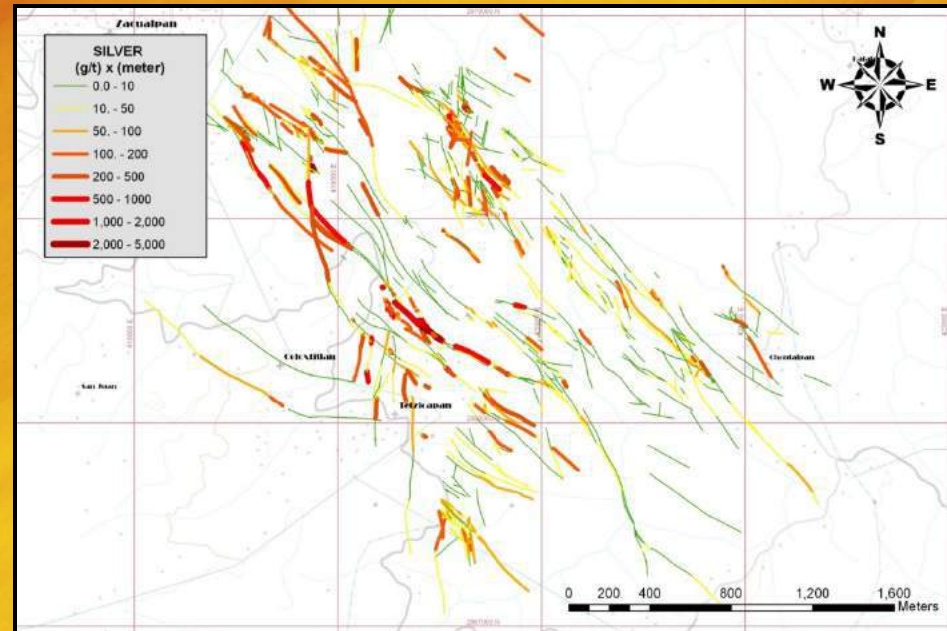
PREVIOUS SUCCESS
RATE

31%

DATA BASE DRIVEN
SUCCESS RATE

61%

Can we improve
upon this success
rate?



By using this sort of
approach



PREDICTIVE MODELLING

LOOK AT THE SHAPES OF THE HIGHER-GRADE VEIN SEGMENTS TO DETERMINE COMMON CHARACTERISTICS

CONTINUE TO BUILD AND REFINE THE STRUCTURAL MODEL FOR THE VEIN EVOLUTION

COMPILE AND STUDY THE GEOCHEMICAL TRENDS WITHIN VEINS, AND VEIN SETS IN ORDER TO BETTER PREDICT WHERE THE HIGHER GRADE SILVER AND GOLD ZONES MAY LIE

POSSIBLY MODEL THE DATA USING SPATIAL DATA MODELLER TO DETERMINE THE HIGHEST POTENTIAL AREAS



FUTURE PLANS

**COMPLETE THE PROCESS OF DIGITIZING DATA AND
MAPS INTO THE DATABASE**

**CONSTRUCT A GEODATABASE TO BRING ORDER TO
OUR DATA**

**PLACE OUR DATABASE ONTO A SERVER WITH A
NETWORK SYSTEM**

**FOCUS MORE ON DATA INTERPETATION AND
ANALYSIS**

**BEGIN THE PROCESS OF MODELLING OF OUR DATA
SUCH IT CAN BE USED IN A PREDICTIVE MANNER**



The End

