ORIGIN AND MINERAL RESOURCE POTENTIAL OF ROSEDALE DISTRICT, SOCORRO COUNTY, NEW MEXICO

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OUTLINE

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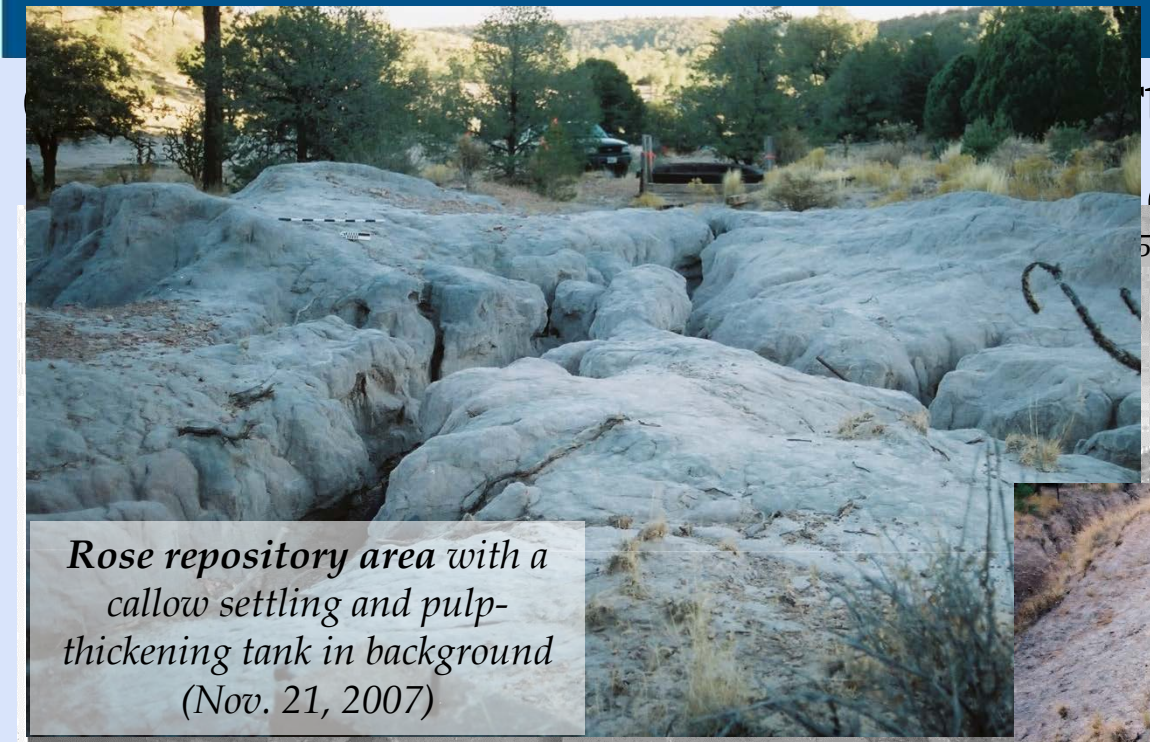
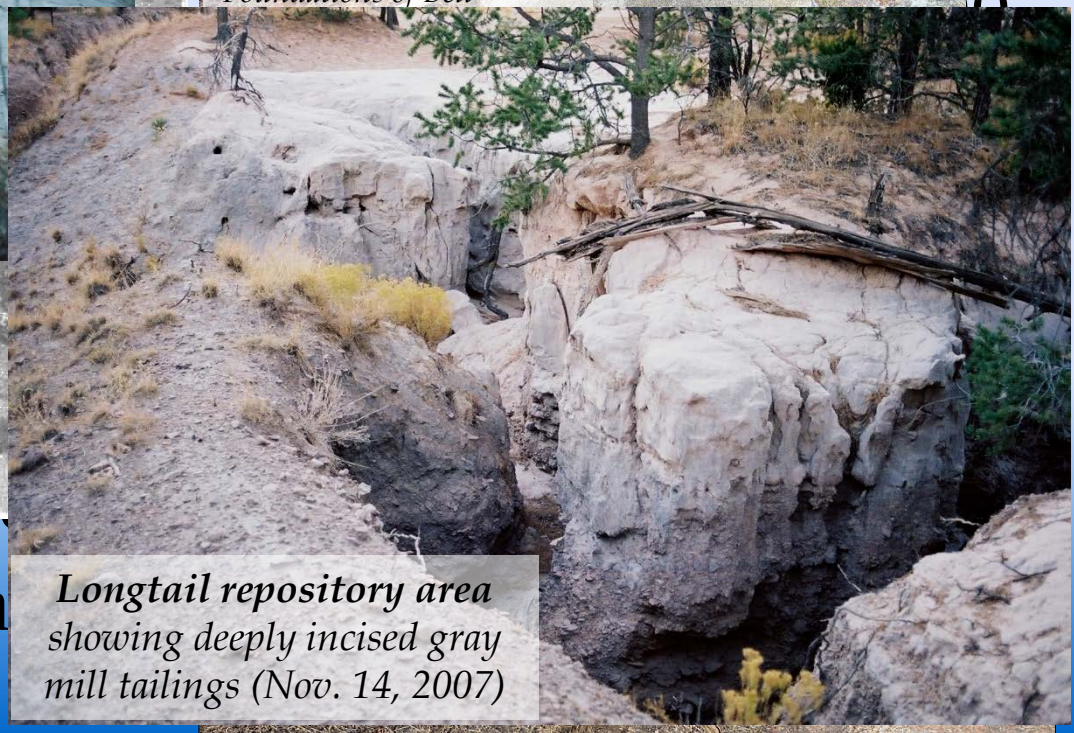
BACKGROUND



Rose repository area *with a callow settling and pulp-thickening tank in background (Nov. 21, 2007)*

Foundations of Bell

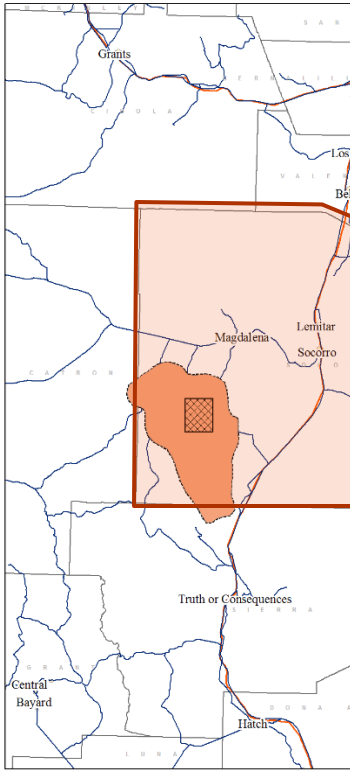


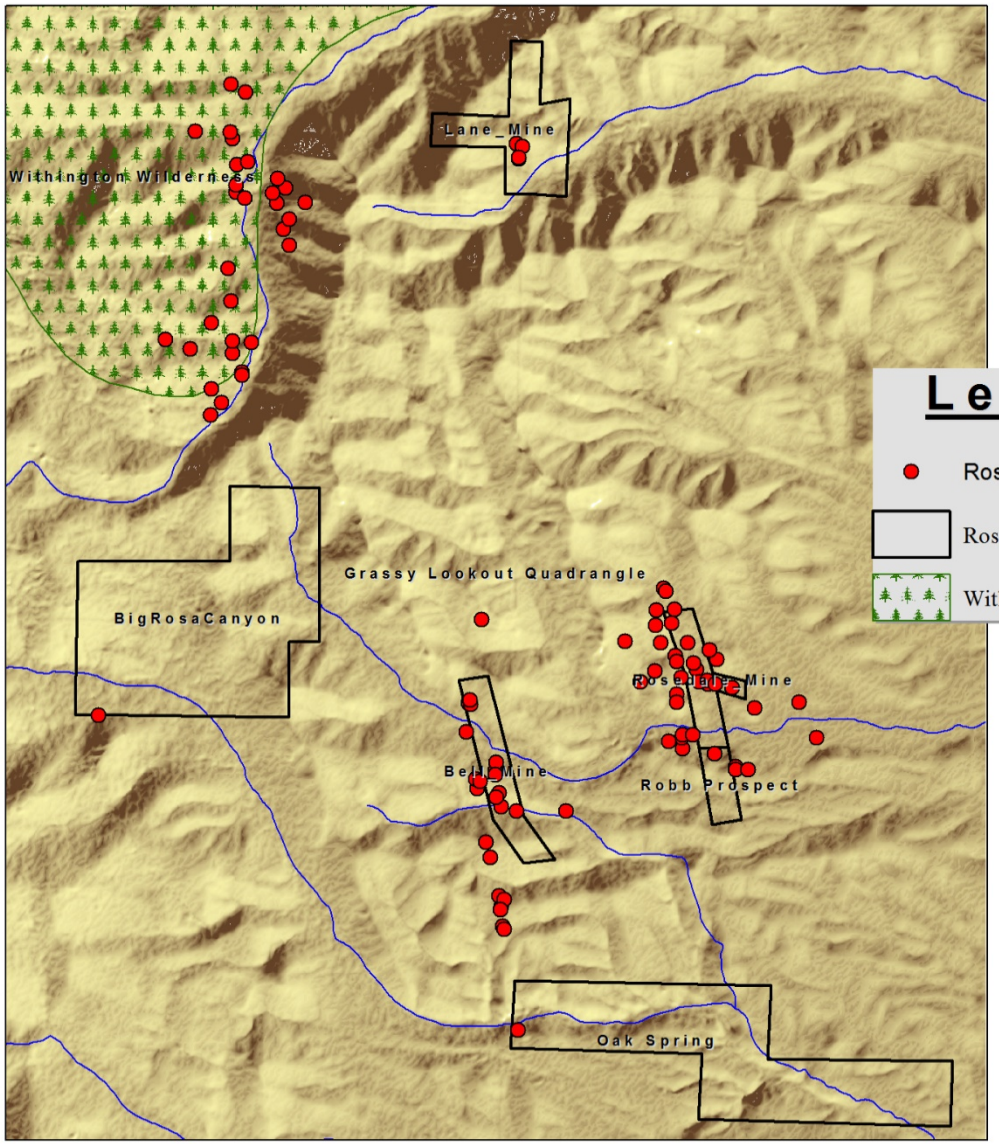
Longtail repository area *showing deeply incised gray mill tailings (Nov. 14, 2007)*

- Bell Mine (Golden Bell) pa
  some metals in 1900's

STUDY AREA

Located in Socorro County, New Mexico and nc
the San Mateo
25 miles south
about 30 mil
Marcial



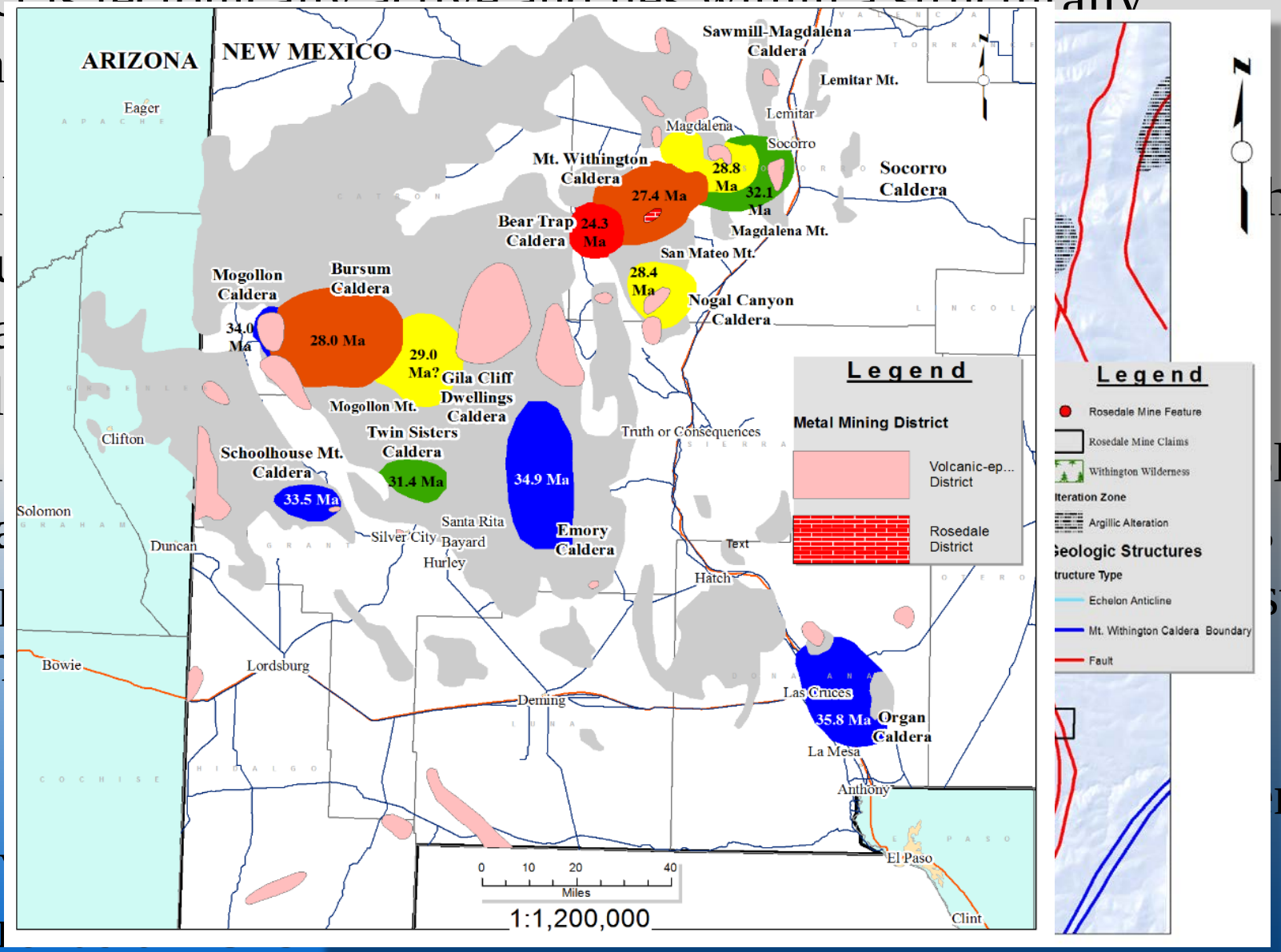


METHODOLOGY

- Interpretation of available historical data
- Waste rock pile mapping and sampling
- Laboratory analysis
  - Geochemistry (ICP & XRF)
  - Petrographic studies
  - X-Ray Diffraction (XRD)
  - Electron Microprobe (EMP)
- Evaluation of the mineral-resource potential
- Characterization of the waste rock piles

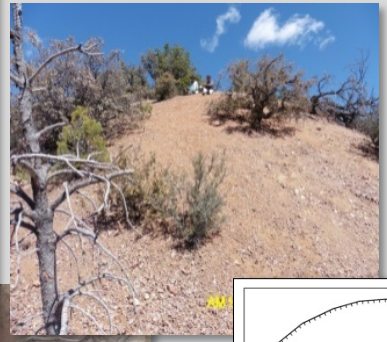
GEOLOGIC SETTING

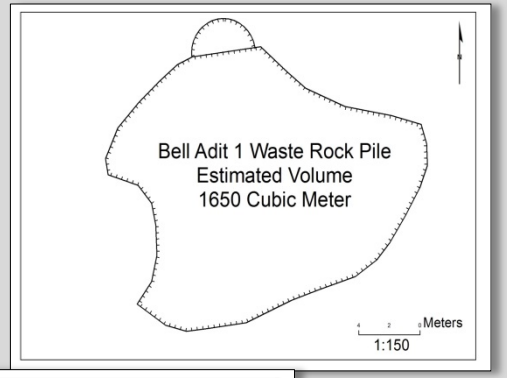
- The district is tectonically active and lies within a structurally complex a
- Timing of was proba Canyon Tu
- Mineraliza brecciated
- Mineral A
- Rosedale a related to
- Argillic ar zones
- Structural boundary anticline t

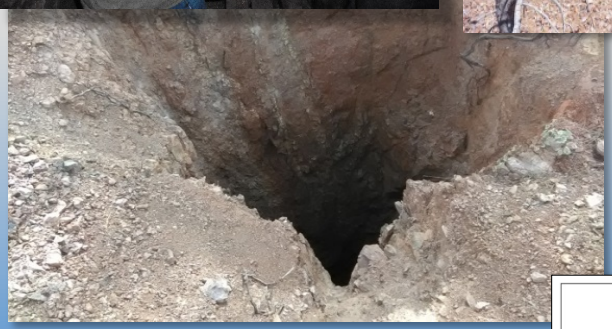


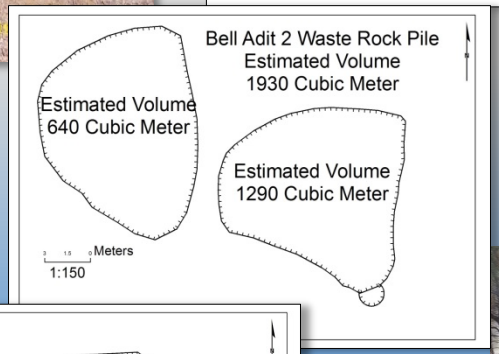
RESOURCE STUDY

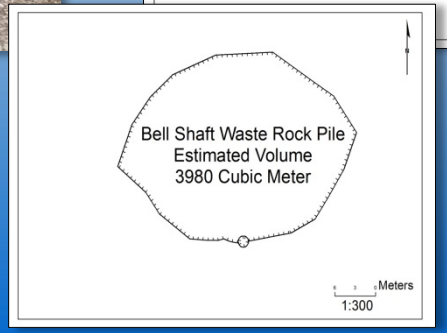
- Mapping and sampling of waste rock piles, prospect pits, short adits and shafts











FIELD OBSERVATIONS

Mine Area	# Mine Features	Mine Feature	Depth of workings (ft)
Rosedale	28	Shafts (14 levels), Pits, Adit, Tailings, Mill Foundations, Trenches	2-732
Bell	16	Tailings, Shafts, Adit, Mill foundations, Pits	2 - >50
Bell South	7	Adit, Shafts, Pits	3 - >10
Big Rosa Canyon	33	Shafts, Adit, Pits, Trenches	2 - >30
Robb Mine	10	Adit, Shaft	3 - 20
Lane Mine	4	Shafts, Pits, Trenches	2 - >30
Oak Spring	1	Drillhole	-

PETROGRAPHY

- Petrographic studies -15 rock chip fragments analyzed under reflected light indicated the presences of the following:
  - ❖ Pervasive argillic and silicic alteration
  - ❖ Moderate amount of Fe_2O_3 and MnO_2 stringers confined to veins and fractures
  - ❖ Dominant quartz (±crystals) and plagioclase groundmass
  - ❖ Quartz veins usually has glassy to milky massive textures
  - ❖ Vesicular quartz veins with leached-out mineral

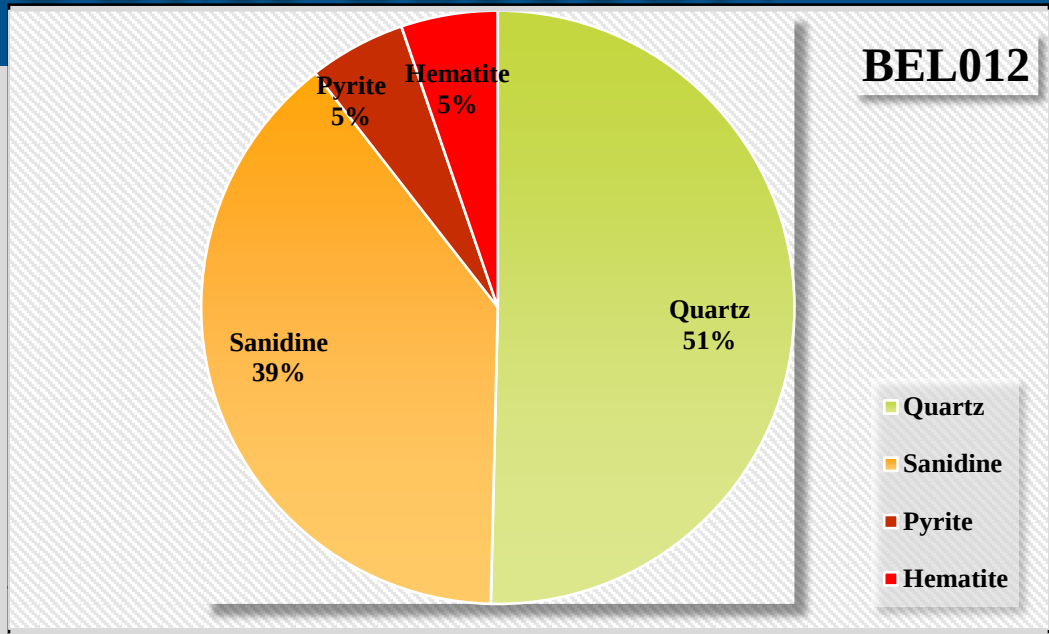
GEOCHEMISTRY

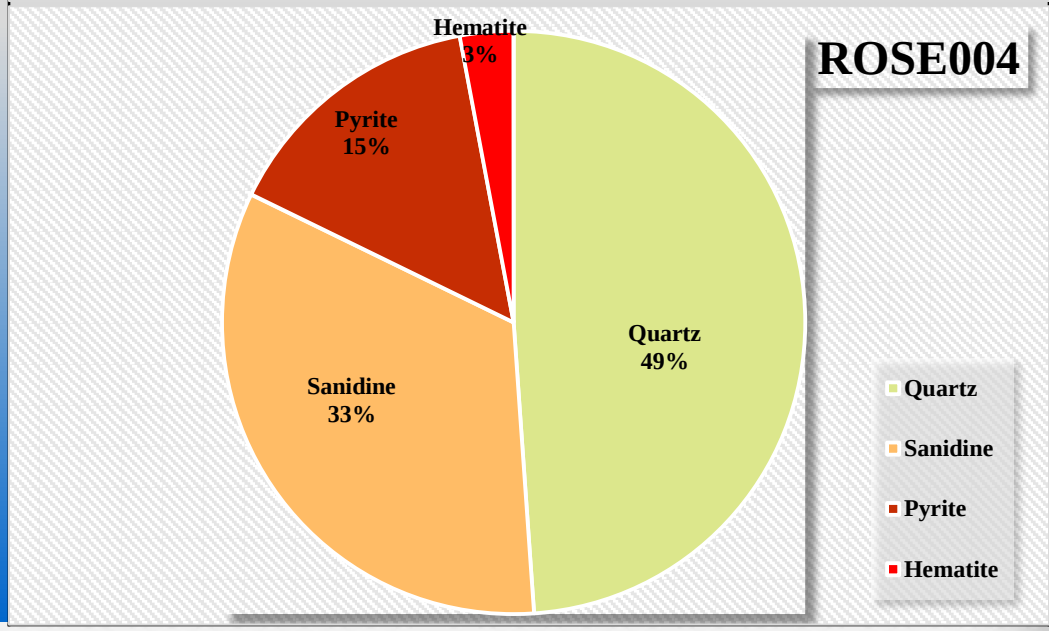
- Results from **22** samples showed elevated concentration of Au averaging about **1.21 ppm** at Rosedale Mine and **0.23 ppm** at Bell Mine for waste rock pile material.
- Au showed a positive correlation with Ag and Mn however, presented no correlation between K, Na, and the base metals.
- Evaluation of the chemical relationships between Au and Ag, and Mn, which appears to correlate well indicates:
  - Average Au:Ag concentration of samples from Rosedale Mine area is **low (0.05)** whereas Au:Ag ratio of samples from Bell Mine area is also **low (0.03)**
  - Average Au:Mn concentration of sample from Rosedale and Bell mine area is **0.003**
- Ratio of average Au:Ag for Rosedale and Bell is expected to differ but constant ratio of Au:Mn for both areas is possible

XRD MINERAL COMPOSITION

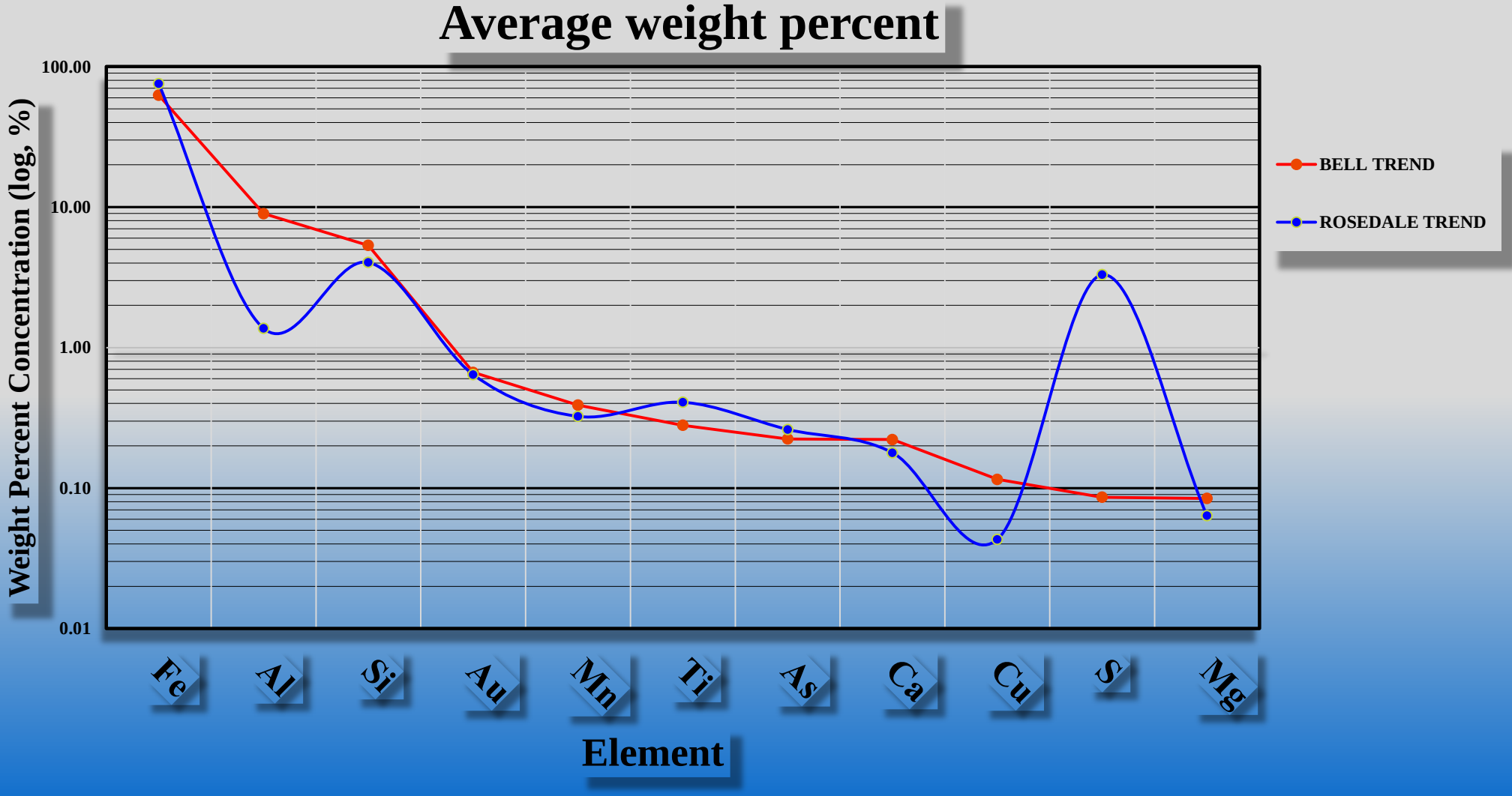
- **16** samples analyzed showed similar patterns: high percent concentration in **quartz**, high in **sanidine** or **microcline**, and trace amount of **pyrite** and **hematite**

- Moderate concentration of **pyrite** in Rosedale samples





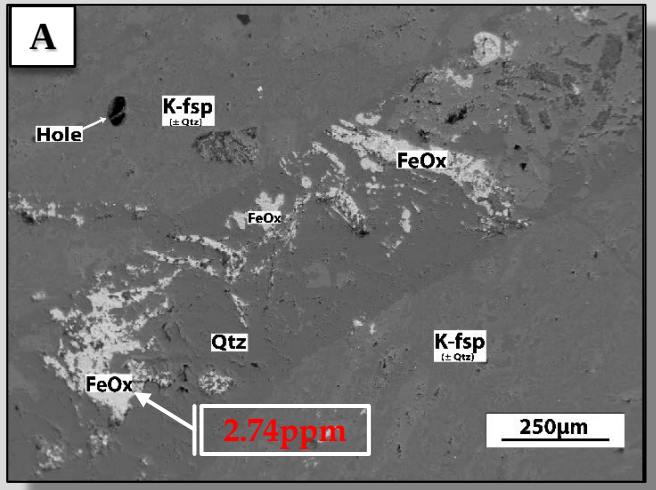
EMP ANALYSIS

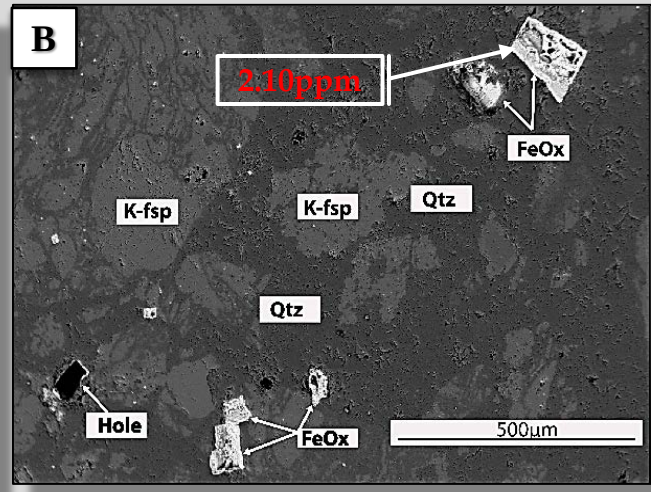


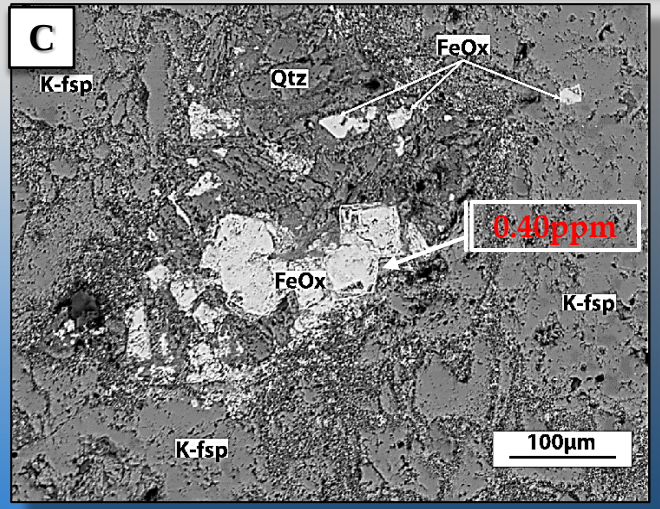
Sample element with asterisk (*) showed pyrite phase but the analysis was conducted on oxides phase. ** Ag below detection limit

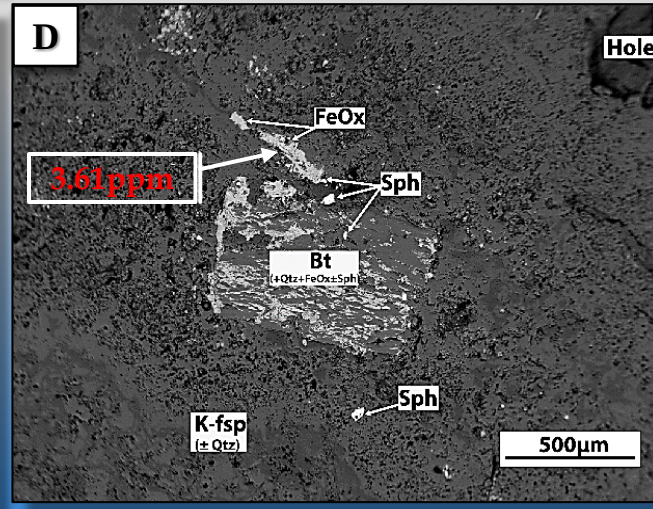
EMP ANALYSIS (con't)

- Hematite from oxidized pyrite (A-D BSE images)
- Fe_2O_3 alteration confined to quartz vein (A-B)
- Altered biotite by Fe_2O_3 and quartz. FeS_2 intergrowned with and minor (Zn,Fe)S replaced by Fe_2O_3 and quartz (D)









CONCLUSION

- Mineralization occurs in structurally controlled veins and field evidence indicates high potential of Au±Ag deposit in the district
- Geochemistry showed elevated Au values. However, Rosedale area showed a more consistent pattern vital for further investigation.
- Au showed some correlation with Ag and Mn for geochemistry, however average ratio concentration is low
- Noticeable amount of pyrite phase in Rosedale samples
- Pyrite and Sphalerite phases are completely altered to hematite.
- Cu phase observed in EMP analysis is another base metal sulfide in trace amount
- Waste rock piles are suitable as backfill of unprotected mine features
- Mine features can be used for exploration target definition within the district

RECOMMENDATION

- Investigation of cross and/or parallel structures on mineral deposition
- Representative number of mineralogical analysis required to draw meaningful correlation between all element associated with mineralization in the district.
- Subsurface investigation to determine depth of oxidation
- Potential for placer deposit in Rosedale district.

FUTURE WORK

- Geological field mapping – alteration zones, structural and lithological controls on mineralization
- More detailed interpretation of petrographic, mineralogical and geochemical data
- Geologic map modeling and interpretation in ArcGIS
- Geologic model for Rosedale district

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QUESTIONS

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