



Lake Rosebery EL 41/2010

PARTIAL RELINQUISHMENT REPORT

Reporting Period from 2/06/2011 to 1/06/2018

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CONTENTS

1	Summary	3
2	Introduction	3
3	Tenure	4
4	Geology	5
	4.1 Regional Geology	5
	4.2 Local Geology	7
5	Work Completed on relinquished portion	10
	5.2 Farm Creek Grid	10
6	Environmental Rehabilitation	14
7	Conclusions and Recommendations	14
8	References	15

LIST OF FIGURES

Figure 1.	Location of EL41/2010
Figure 2.	Area of EL 41/2010 to be relinquished
Figure 3.	Land Tenure
Figure 4.	MRT 250k Geology of EL41/2010
Figure 5.	Farm Creek C-Horizon Soil Zn %
Figure 6.	Farm Creek C-Horizon Soil As ppm
Figure 7.	Farm Creek C-Horizon Soil Ag ppm
Figure 8.	Farm Creek C-Horizon Soil Tl ppm

1. SUMMARY

This report is the final report for a portion of EL41/2010 that MMG is relinquishing.

2. INTRODUCTION

This report details exploration activities undertaken on the relinquished portion of EL 41/2010 Lake Rosebery during the period June 2011 to May 2018. Minimal work was done in this area with a grid and soil samples collected in the Farm Creek area.

The total tenement area for EL 41/2010 area is shown in Figure 1. The relinquished area is shown in Figure 2.

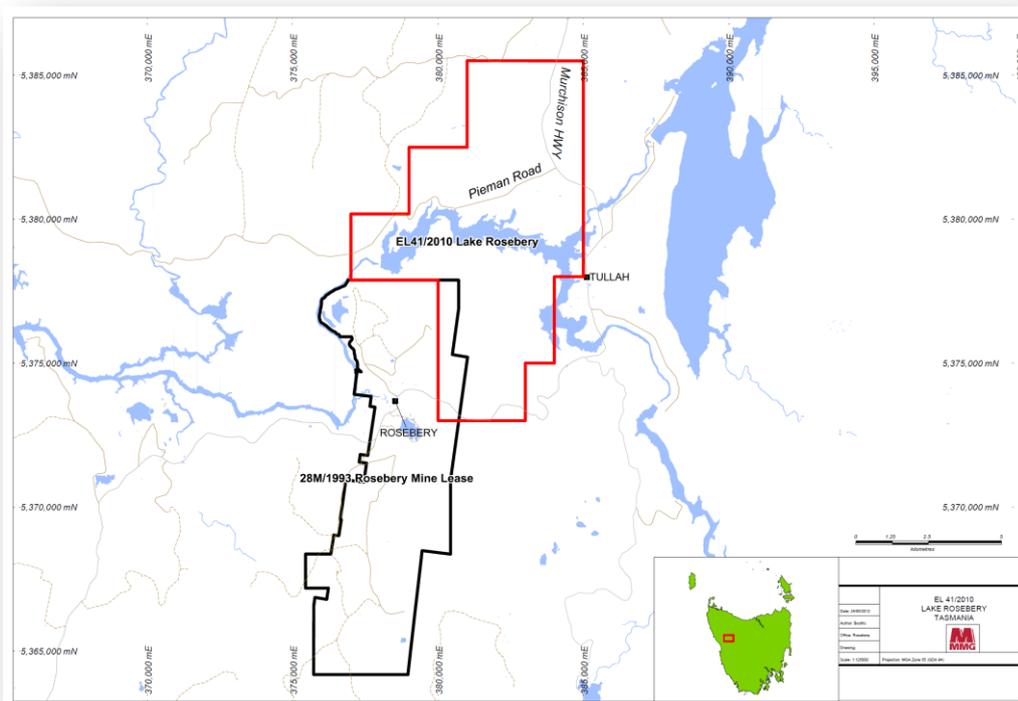


Figure 1. Location of EL41/2010 Lake Rosebery

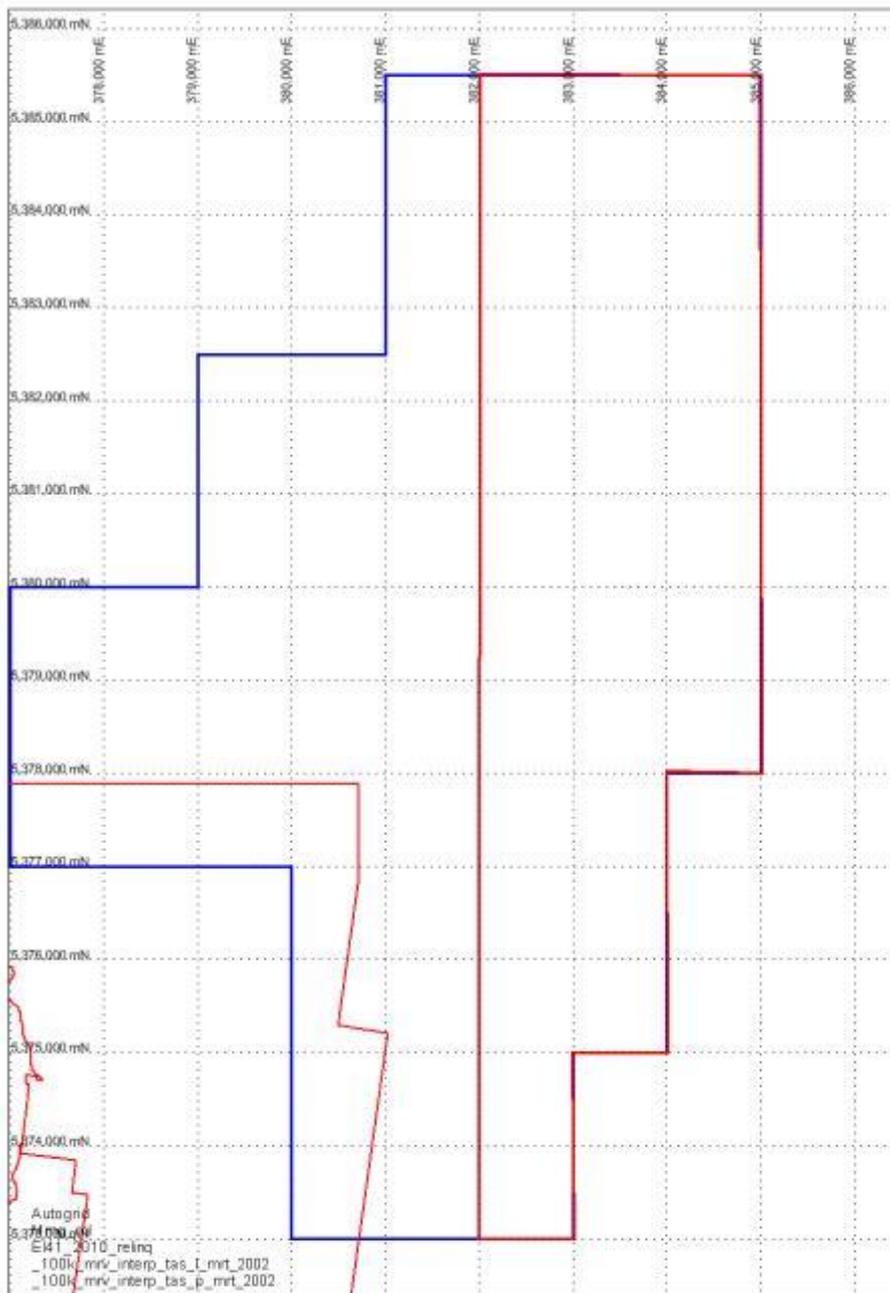


Figure 2: Area of EL41/2010 to be relinquished (RHS).

3. LAND TENURE

EL 41/2010 Lake Rosebery (58 sq. km- Figure 3) was granted to MMG Exploration Pty. Ltd in 2011 for a period of 5 years. EL 41/2010 is contiguous with the northern boundary of the Rosebery Mine Lease 28M/1993.

Land covered by EL 41/2010 is crown land designated as State Forest or informal reserves including parts of the Boco Creek and Mackintosh Forest Reserve areas. A small section of the Murchison Regional Reserve lies in the South of the tenement. All of the area contained within the tenement boundary is available for exploration under the Mineral Resources Development Act, 1995.

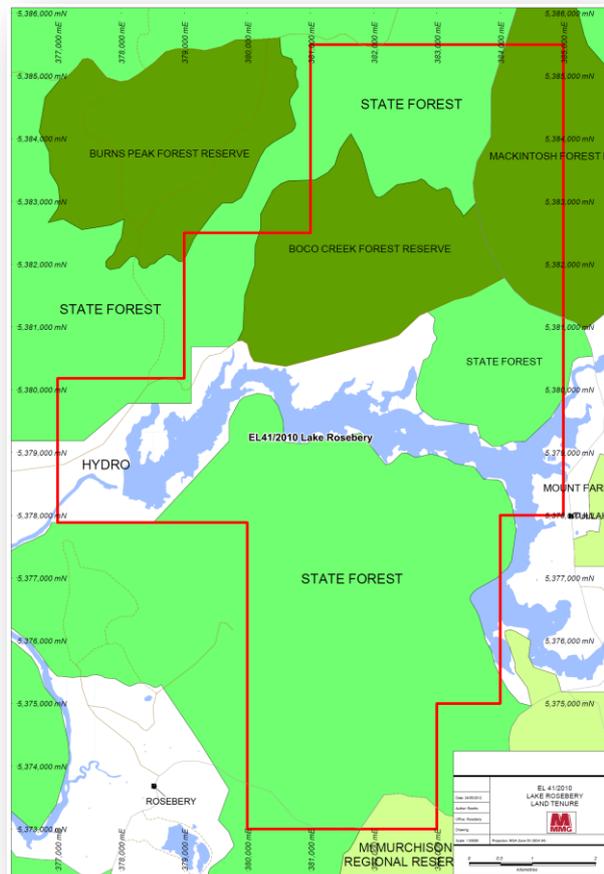


Figure 3. Land Tenure EL41/2010 Lake Rosebery

4. GEOLOGY

4.1 REGIONAL GEOLOGY

Western Tasmania has been subject to complex deformation, igneous activity and sedimentation from the Late Proterozoic to the present. The Dundas Trough exerted a major control on the pre-Carboniferous geology of Western Tasmania.

Around 700Ma a shallow rift basin developed between the northwest and eastern basement blocks of dominantly Proterozoic meta-sediments. Early basin infill consisted of the Oonah Formation and Success Creek Formation siliciclastic and carbonate sediments. Continued rifting in the Late Proterozoic-Early Cambrian (580-550Ma) resulted in the deposition of a thick sequence (>5km) of tholeiitic volcanics and associated sediments of the Crimson Creek Formation.

During the Middle Cambrian (515-510Ma) a sequence of mafic-ultramafic complexes were emplaced into the western margin of the Dundas Trough. Ultramafic detritus in clastic rocks suggests they were emplaced towards the top of or above the Crimson Creek Formation and were subject to Middle Cambrian erosion (Corbett, 1989). Berry and Crawford, (1988) proposed an obduction model for the emplacement of the mafic-ultramafic complexes and associated sedimentary sequences where a fore arc terrain was thrust over a passive continental margin.

Post collision extensional tectonics produced troughs into which the Cambrian Dundas Group and Mt Read Volcanics (MRV) were deposited. The Dundas Group forms a complex sequence of locally derived sediments and volcanics along the western margin of the Dundas Trough.

The MRV form a 200km long by 20km wide broadly north-south trending belt adjacent to and in some areas on-lapping and intruding Proterozoic basement rocks on the eastern margin of the Dundas Trough. The volcanics include dominantly calc-alkaline intermediate to felsic lavas, sub-volcanic porphyries and granites, volcanoclastics and basement-derived sedimentary rocks. The MRV is one of the most mineral rich areas in the world, hosting the Rosebery and Hellyer world class volcanic hosted massive sulphide (VHMS) deposits as well as several other smaller VHMS deposits (Que River and Hercules). The MRV also host volcanogenic gold and copper deposits including the Mt Lyell Field and the Henty Gold Mine. Several regional fault structures subdivide the MRV including the Rosebery and Henty Faults.

The Late Cambrian Delamerian orogeny resulted in localised uplift and erosion of the Tyennan Block and subsidence of the Dundas Trough, forming structural and erosional basins that were subsequently filled with Late Cambrian to Devonian Wurawina Supergroup sedimentary rocks.

In the Rosebery region, the MRV are overlain by a late Cambrian – early Ordovician marine and fluviatile sequence of quartzwacke, polymict sandstones, siltstones, shales and polymict conglomerates (Rosebery Group/Stitt Quartzite to the west of the MRV and Owen Group to the east; Corbett, 2002).

The Middle Devonian Tabberabberan Orogeny encompassed polyphase deformation (Williams, 1978). The development of folding, cleavage and regional thrusts in lower Palaeozoic rocks were associated with this event. Several small to medium sized post tectonic I and S type granites intrude the early lithologies at shallow levels. A number of styles of mineralization are associated with the Devonian granites including tin-tungsten and lead-zinc-silver. The carbonate replacement and skarn Sn mineralisation at Renison Bell, Mount Bischoff and Mt Lindsay, the Pb Zn Ag vein deposits of Zeehan and, possibly, the Tullah Fields are associated with the Devonian granites.

In the Quaternary extensive unconsolidated glacial and fluvioglacial deposits up to >100m thick accumulated (Augustinius and Nichol, 1999). These deposits now obscure parts of the Palaeozoic geology.

4.2 LOCAL GEOLOGY

The Lake Rosebery licence is located along strike immediately north of the Rosebery Mine and is mapped as containing the northern continuation of the Rosebery stratigraphy (Figure 4). The Rosebery deposit is hosted within the upper Central Volcanic Complex (CVC) of the MRV. The CVC at Rosebery has been subdivided into three main stratigraphic units: the footwall pumice breccia, the host rocks and a fault bounded sequence of dominantly coherent rhyolitic volcanics (Mt Black Volcanics). The younger White Spur Formation unconformably overlies the CVC.

The MRV architecture is controlled by major N-S trending fault zones including the Rosebery Fault which separates the MRV from the underlying Rosebery Group, and the Mt Black Fault which has thrust the older Mt Black Volcanics over the host sequence and White Spur Formation. The Henty Fault dissects the MRV in the east of the licence area. The CVC is strongly foliated, with the foliation and bedding essentially parallel, striking north-south and dipping moderately east at approximately 40-50 degrees.

Central Volcanic Complex

The CVC is dominated by proximal volcanic rocks (rhyolite and dacite flows, domes and cryptodomes and massive pumice breccias) and andesite and rare basalt (lavas, hyaloclastites and intrusive rocks) deposited in a shallow marine environment (Seymour et al., 2006). Specific stratigraphic/volcanic sequences of the CVC relevant to Rosebery are discussed below.

The Footwall Pumice Breccia (CVC)

The Footwall pumice breccia consists of a massive, uniform sequence of feldspar porphyritic pumice lithic and crystal vitric mass flows which lie below the ore horizon at both the Rosebery and Hercules deposits (Smith & Huston, 1992). The Footwall pumice breccia is intensely sericite altered and strongly foliated.

The Host Rocks (CVC)

The host sequence at Rosebery and Hercules consist predominantly of dacitic to rhyolitic pumice lithic mass flow breccias, grading into vitric siltstone and quartz crystal sandstone. Localised small, quartz-feldspar and feldspar phyric porphyries intrude the host sequence in the Rosebery Mine. A discontinuous black shale horizon marks the top of the Rosebery Host Sequence.

Basaltic to andesitic volcanics become more prevalent north of the Rosebery Mine Lease on the Lakeside EL increasing in frequency northwards towards the Que-Hellyer Deposits.

White Spur Formation

The White Spur Formation disconformably overlies the host sequence and consists of several black shale horizons and graded, polymict mass flow breccias and medium grained crystalline volcaniclastics and quartz-feldspar rhyolite intrusives.

The Mt Black Volcanics

The older Mt Black Volcanics are located east of the CVC and White Spur Formation, thrust over the western volcanics and Mineralised sequence by the east dipping Mt Black Fault. The Mt Black Volcanics consist of massive to brecciated lavas of dacitic to andesitic composition with interstitial volcaniclastic units.

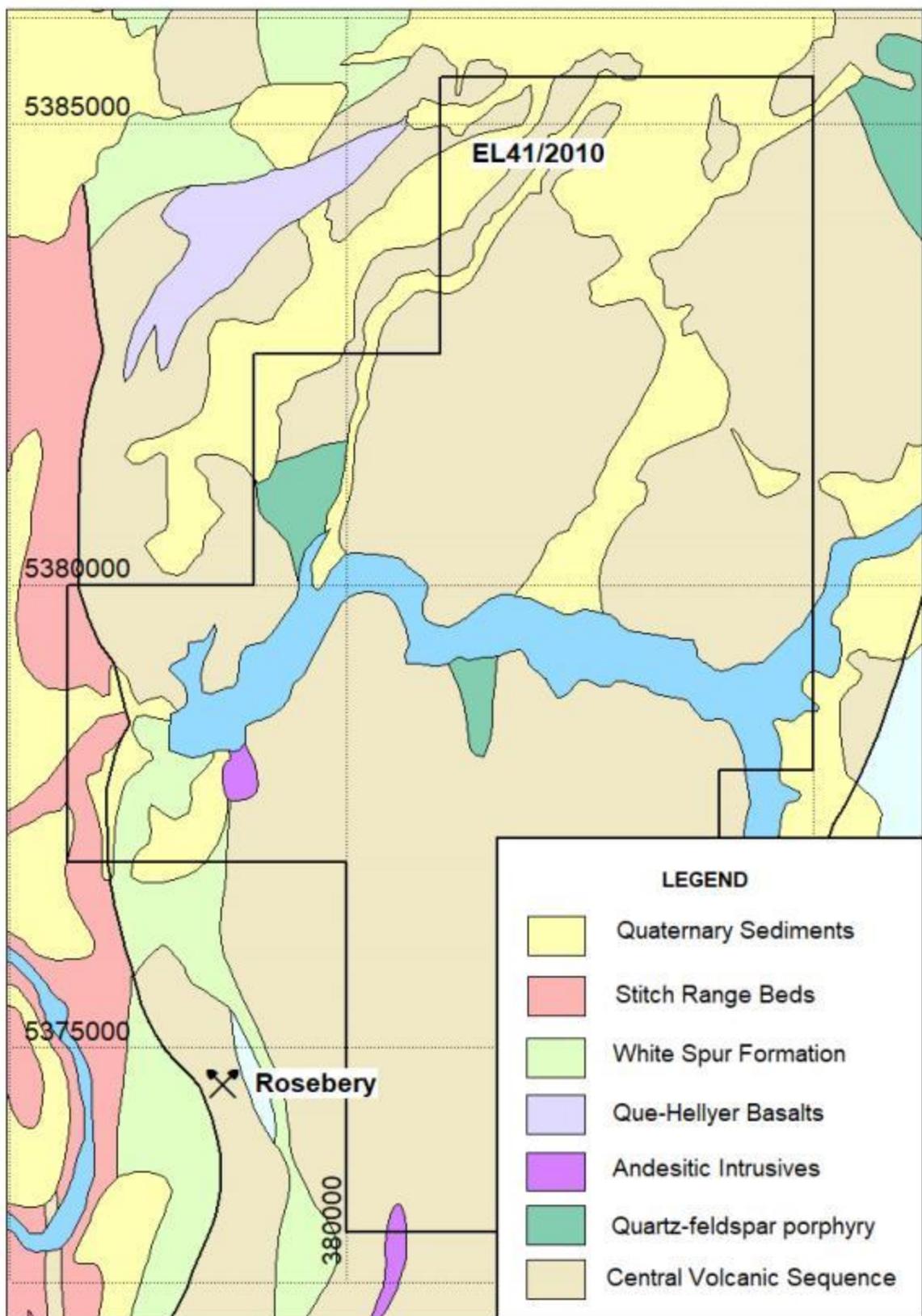


Figure 4. MRT 250k Geology of EL41/2010 Lake Rosebery

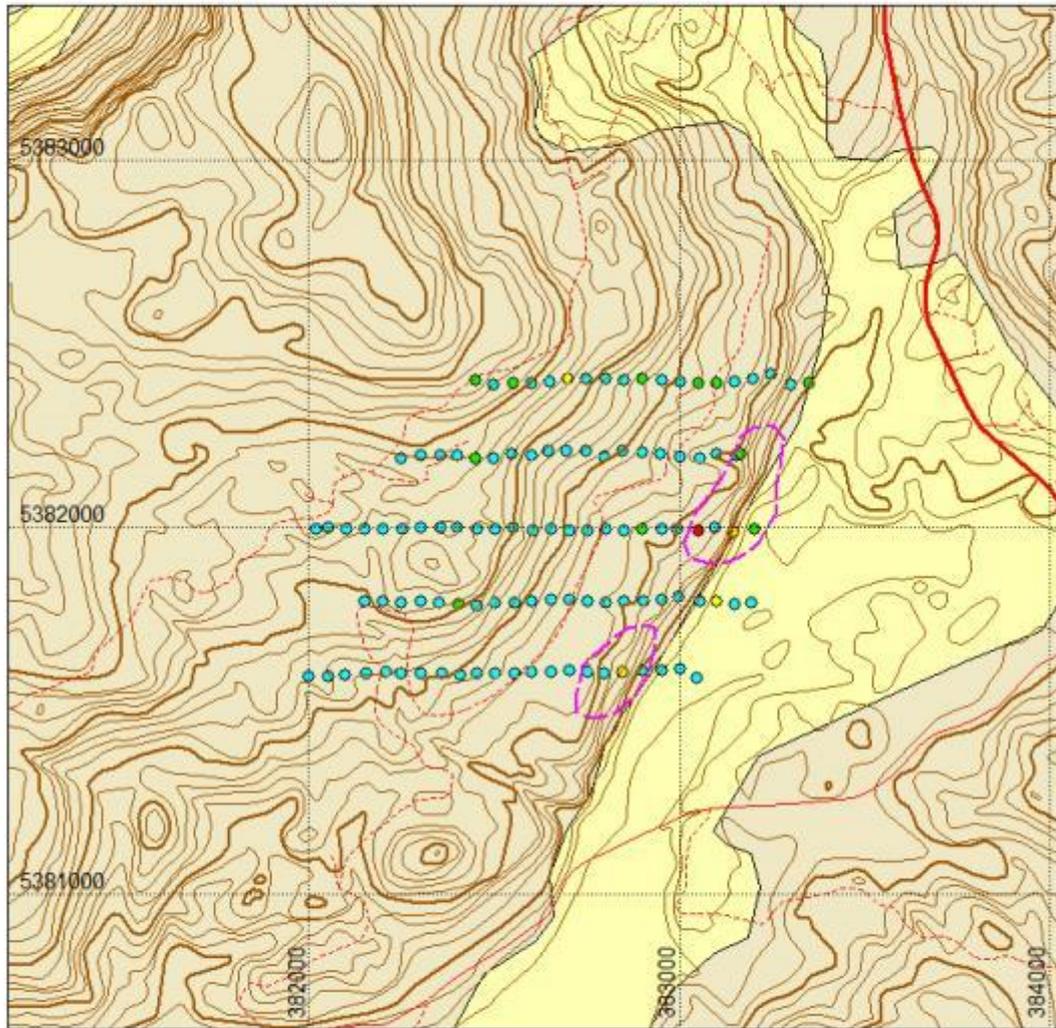
5. WORK COMPLETED ON RELINQUISHED PORTION.

4.1 FARM CREEK GRID

The Farm Creek Grid is located in the northeast corner of the Lake Rosebery EL. The Grid covers the Cambrian Mt Black Volcanics, situated several kilometres east of the Rosebery Host Horizon and Que-Hellyer volcanics.

The Farm Creek grid consists of 5.3 kilometres of grid on 200 metre spaced lines. In 2016, 108 samples were collected at 50 metre intervals. Assay results were received and reviewed in the 2017-2018 year.

The Farm Creek Grid has weakly anomalous C Horizon Soil Zn with associated As, Ag, W and Tl on the eastern edge of the grid (Figures 5-8, Appendix 2). The weakly anomalous C horizon soil geochemistry is associated with a topographic linear dropping dramatically eastwards into a valley filled with Quaternary glacial sediments. It is possible that the topographic linear may represent a faulted alteration margin, with possibly more intensely altered volcanics forming the topographic low to the east of the grid.

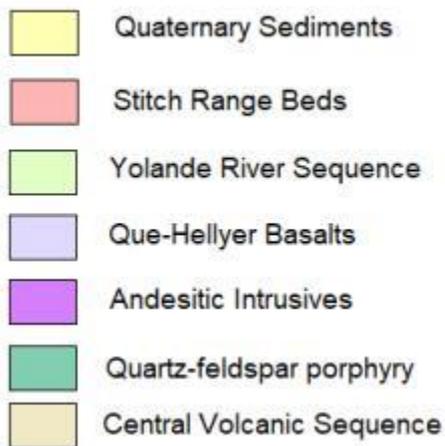
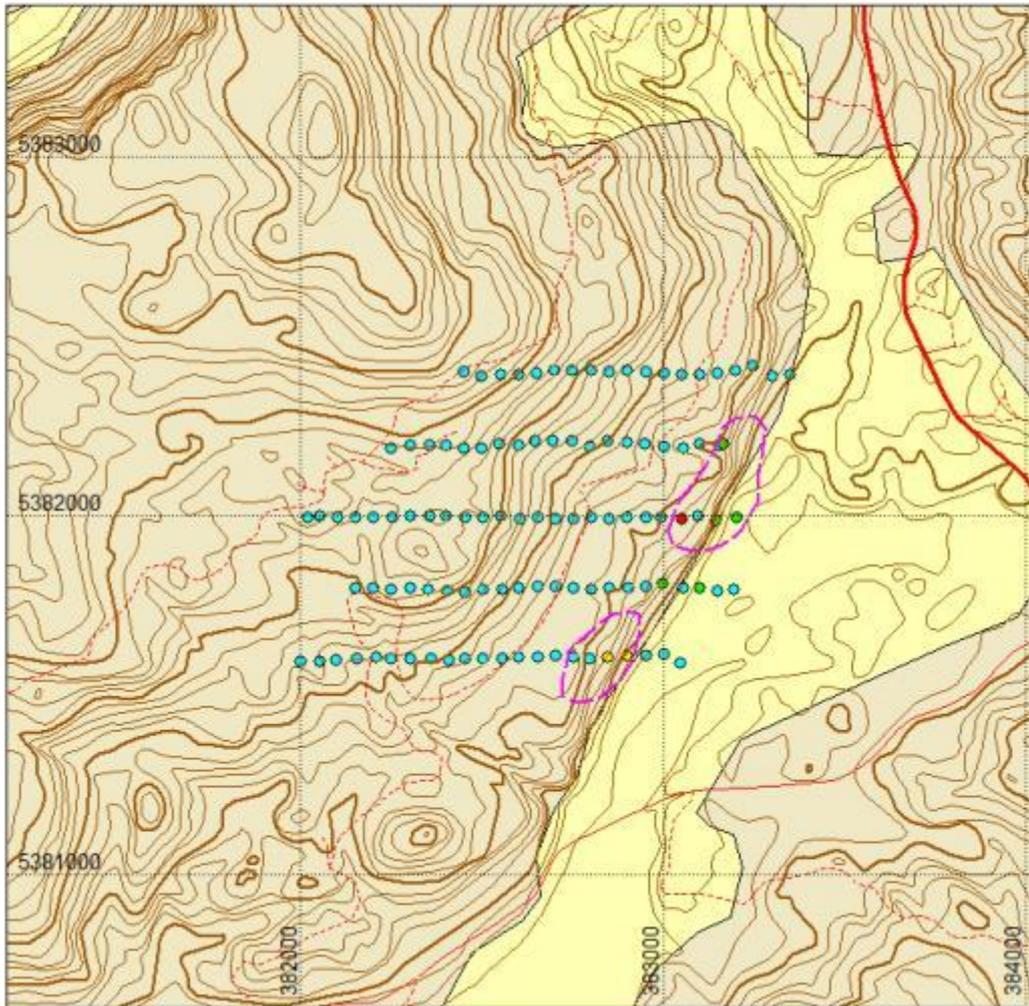


- Quaternary Sediments
- Stitch Range Beds
- Yolande River Sequence
- Que-Hellyer Basalts
- Andesitic Intrusives
- Quartz-feldspar porphyry
- Central Volcanic Sequence

Soils Zn pct

grid_samples by Zn_pctpref	
● 0.018 to 0.042	(4)
● 0.007 to 0.018	(13)
● 0.003 to 0.007	(29)
● 0.002 to 0.003	(54)
● 0 to 0.002	(186)

Figure 5. Farm Creek C-Horizon Soil Zn %



Soils As ppm

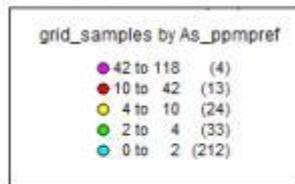
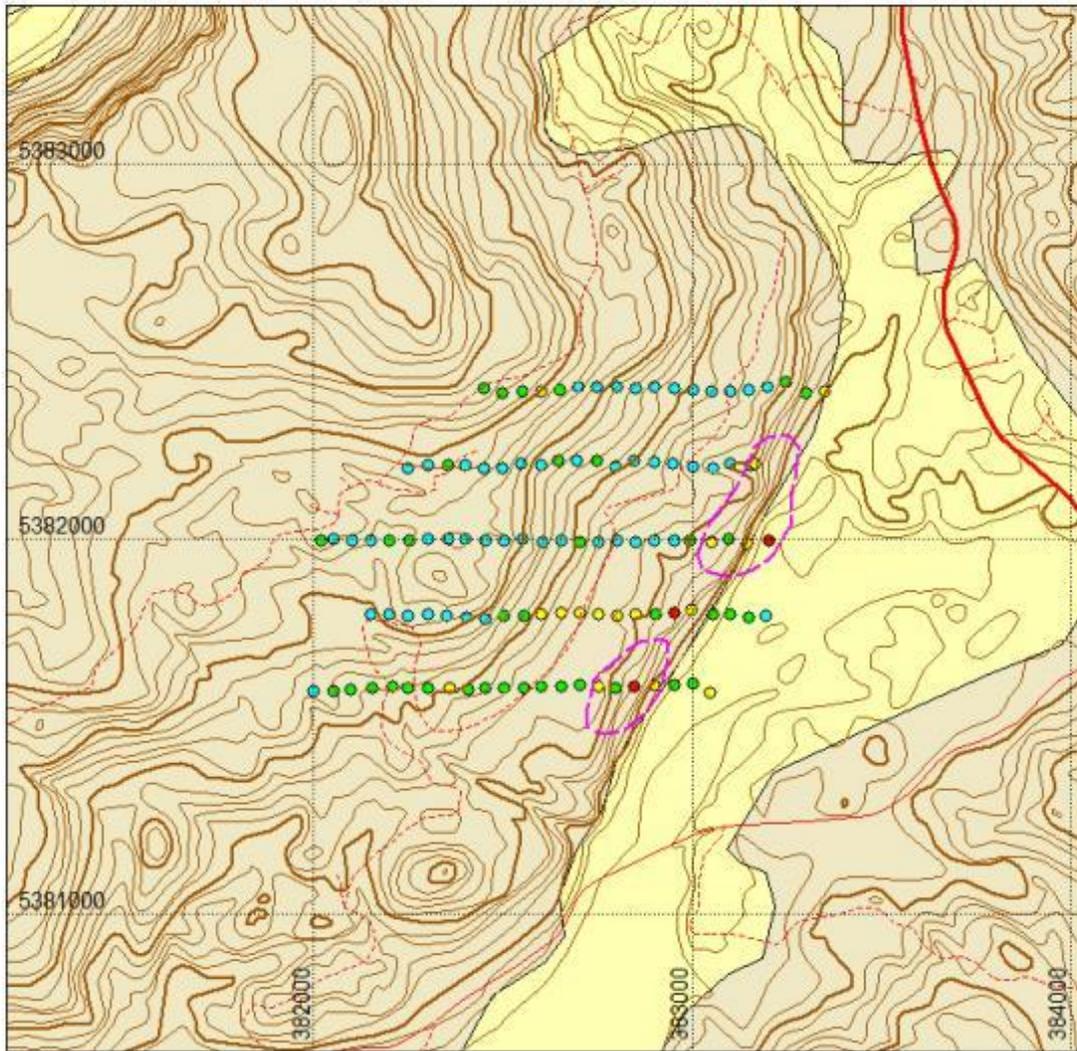


Figure 6. Farm Creek C-Horizon Soil As ppm



Soils Ag ppm

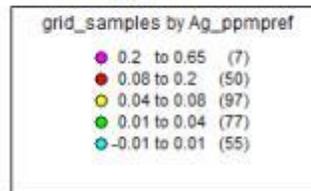
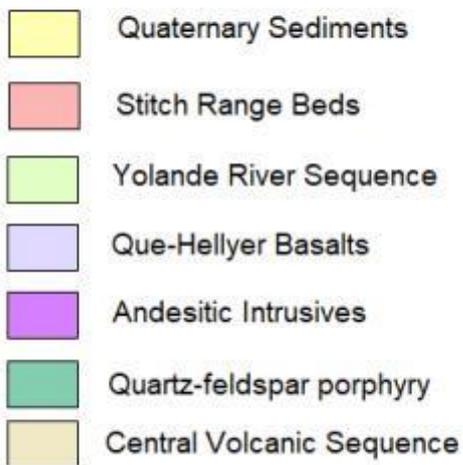
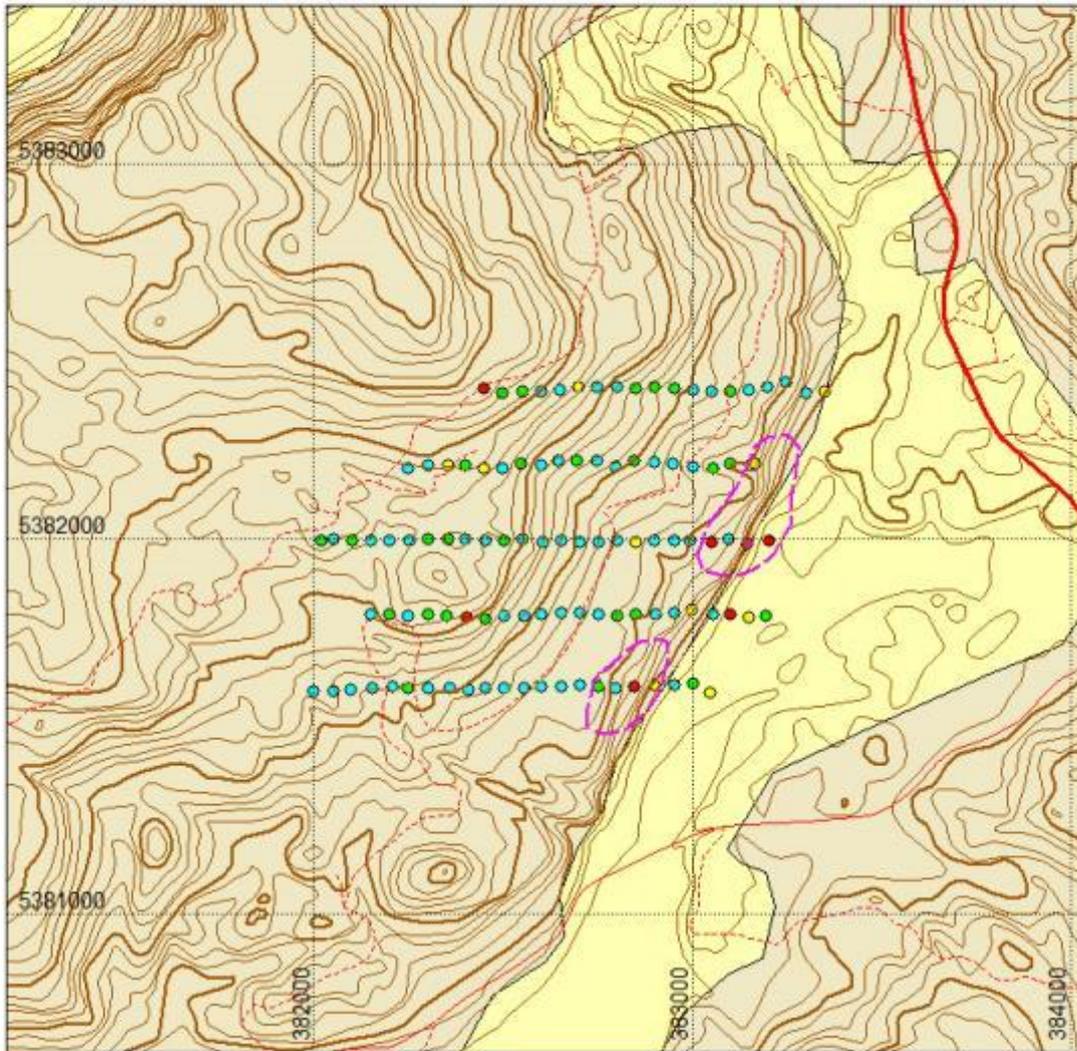


Figure 7. Farm Creek C-Horizon Soil Ag ppm



Soils TI ppm

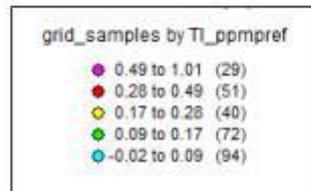


Figure 8. Farm Creek C-Horizon Soil TI ppm

6. ENVIRONMENTAL

There was no environmental or rehabilitation activities required in the relinquished area.

7. CONCLUSIONS AND RECOMMENDATIONS

It is recommended to concentrate exploration on the northern extensions of the Rosebery mineralisation that occurs in the western portion of this tenement and to relinquish the rest of the tenement.

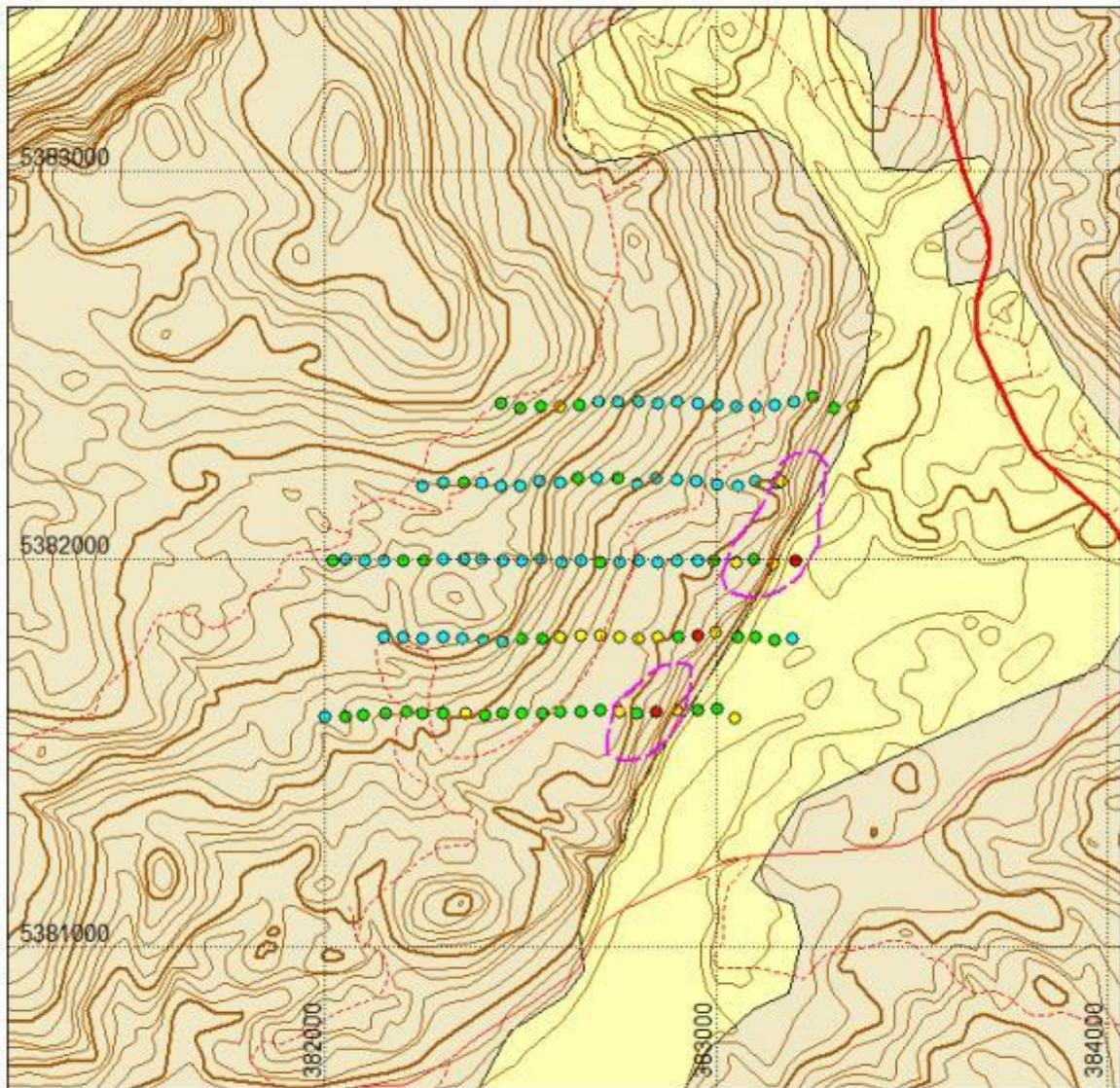
8. REFERENCES

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- Smith, R.N. & Huston, D.L., 1992. Distribution and association of selected trace elements at the Rosebery deposit, Tasmania. *Economic Geology*, Vol 87, pages 706-719.
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Appendix 1.

Farm Creek Grid

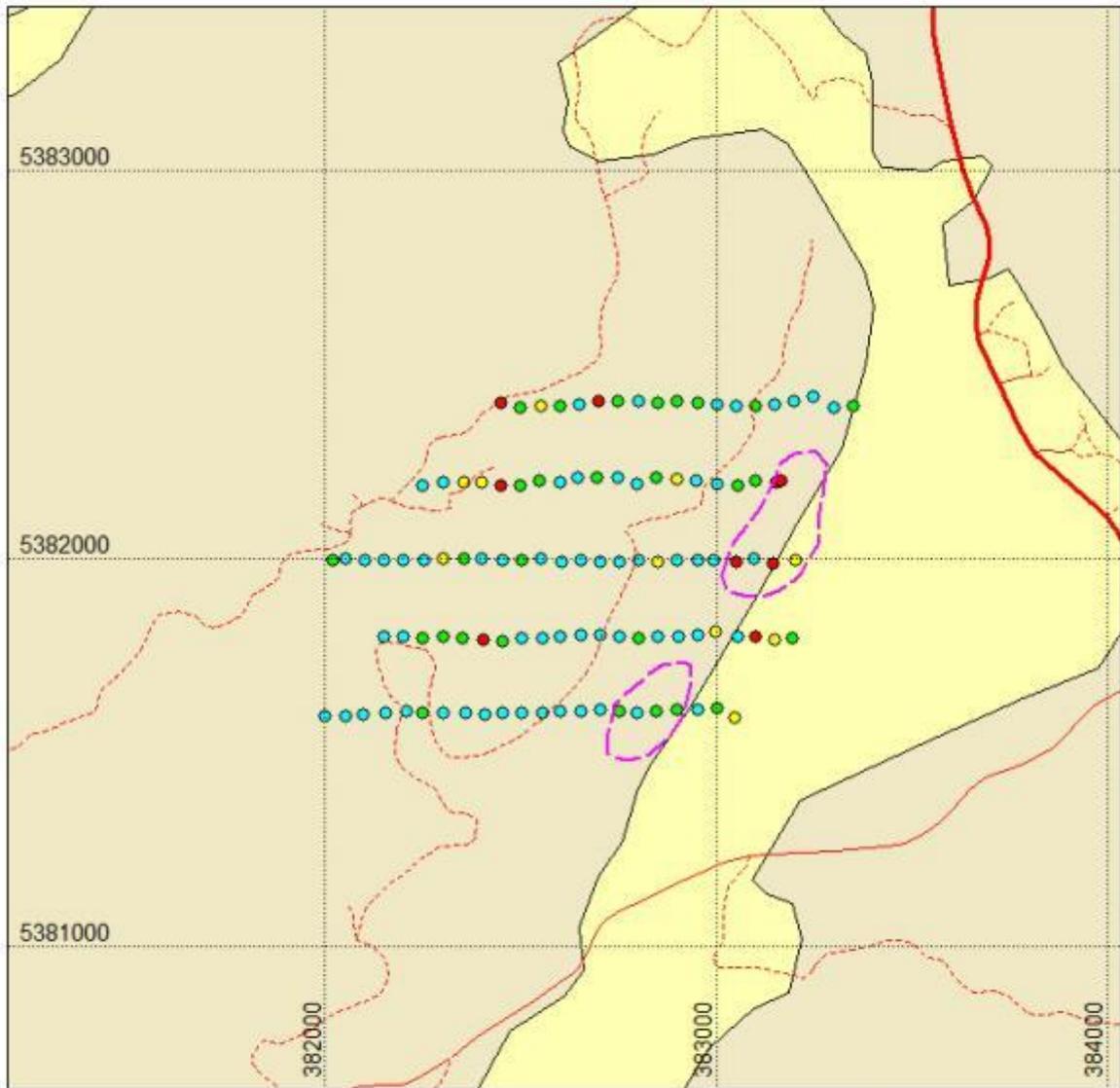
C Horizon Soil Geochemistry Images



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Soils Ag ppm

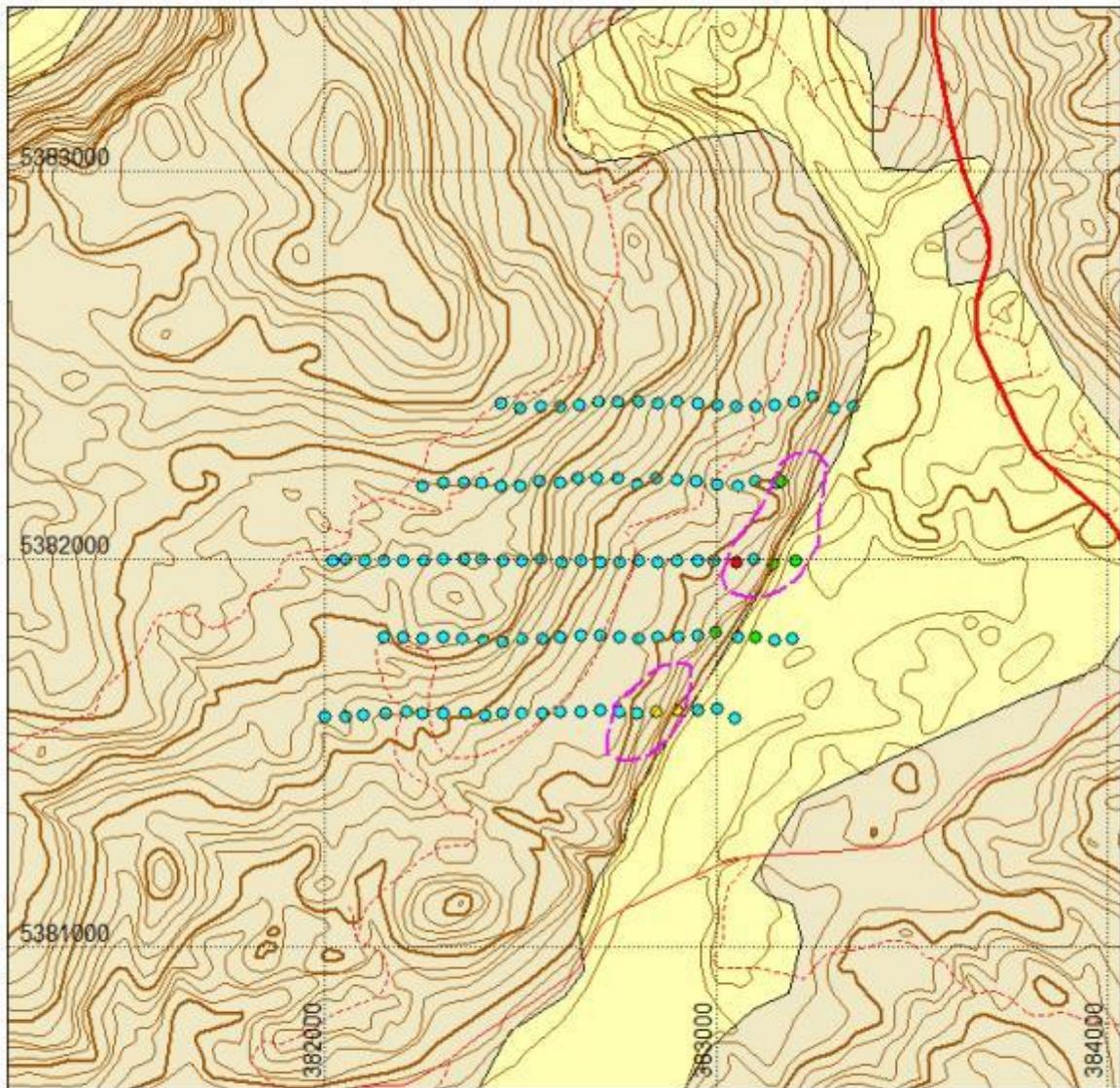
grid_samples by Ag_ppmpref	
● (purple)	0.2 to 0.65 (7)
● (red)	0.08 to 0.2 (50)
● (yellow)	0.04 to 0.08 (97)
● (green)	0.01 to 0.04 (77)
● (cyan)	-0.01 to 0.01 (55)



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Soils Ba ppm

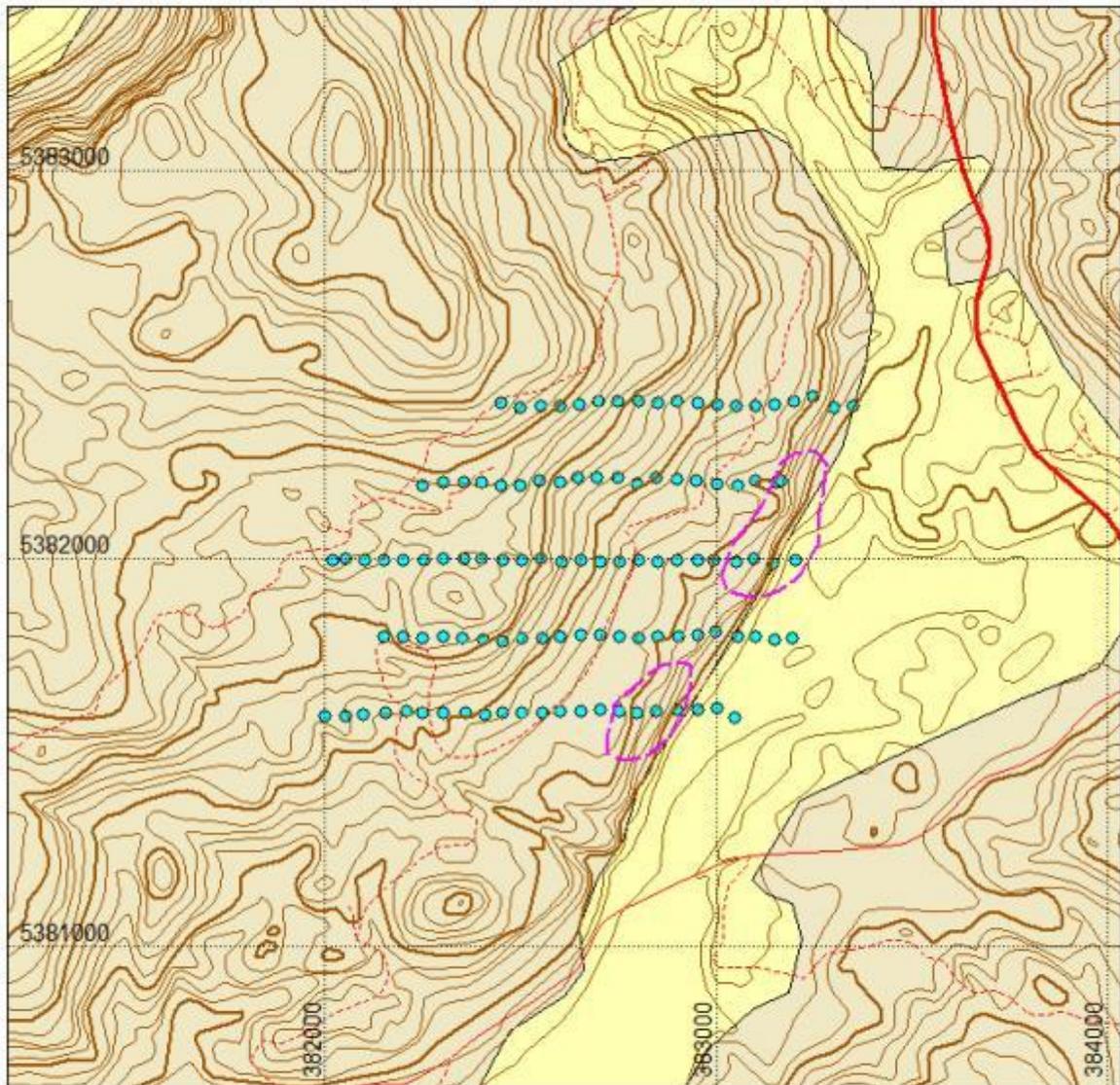
grid_samples by Ba_ppmpref	
● 680 to 2,930	(20)
● 300 to 680	(53)
● 170 to 300	(59)
● 90 to 170	(73)
● 10 to 90	(81)



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Soils As ppm

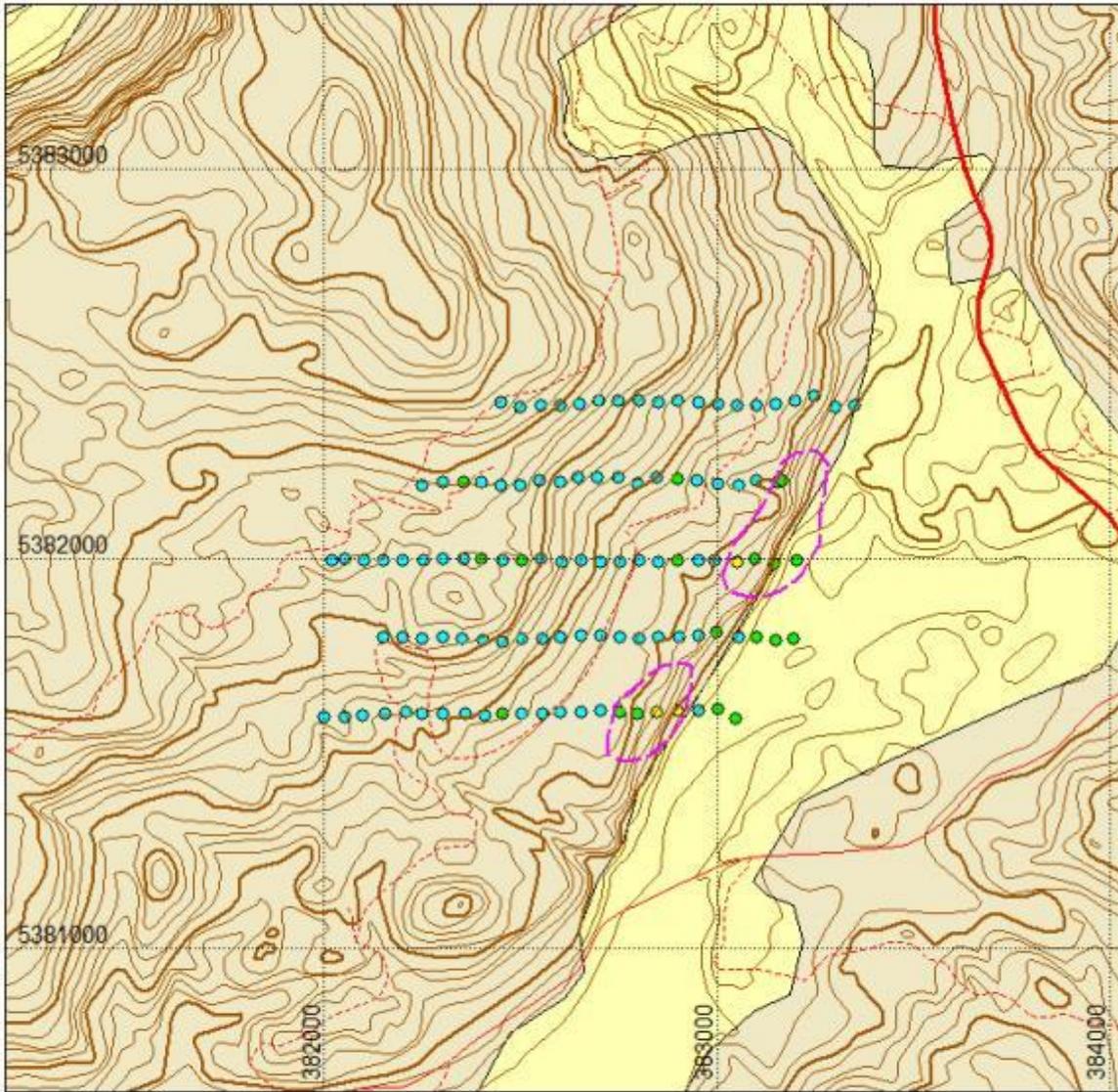
grid_samples by As_ppmpref	
● 42 to 118	(4)
● 10 to 42	(13)
● 4 to 10	(24)
● 2 to 4	(33)
● 0 to 2	(212)



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Soils Cu pct

grid_samples by Cu_pctpref	
● 0.049 to 0.049	(1)
● 0.009 to 0.049	(3)
● 0.002 to 0.009	(9)
● 0.001 to 0.002	(16)
● 0 to 0.001	(257)

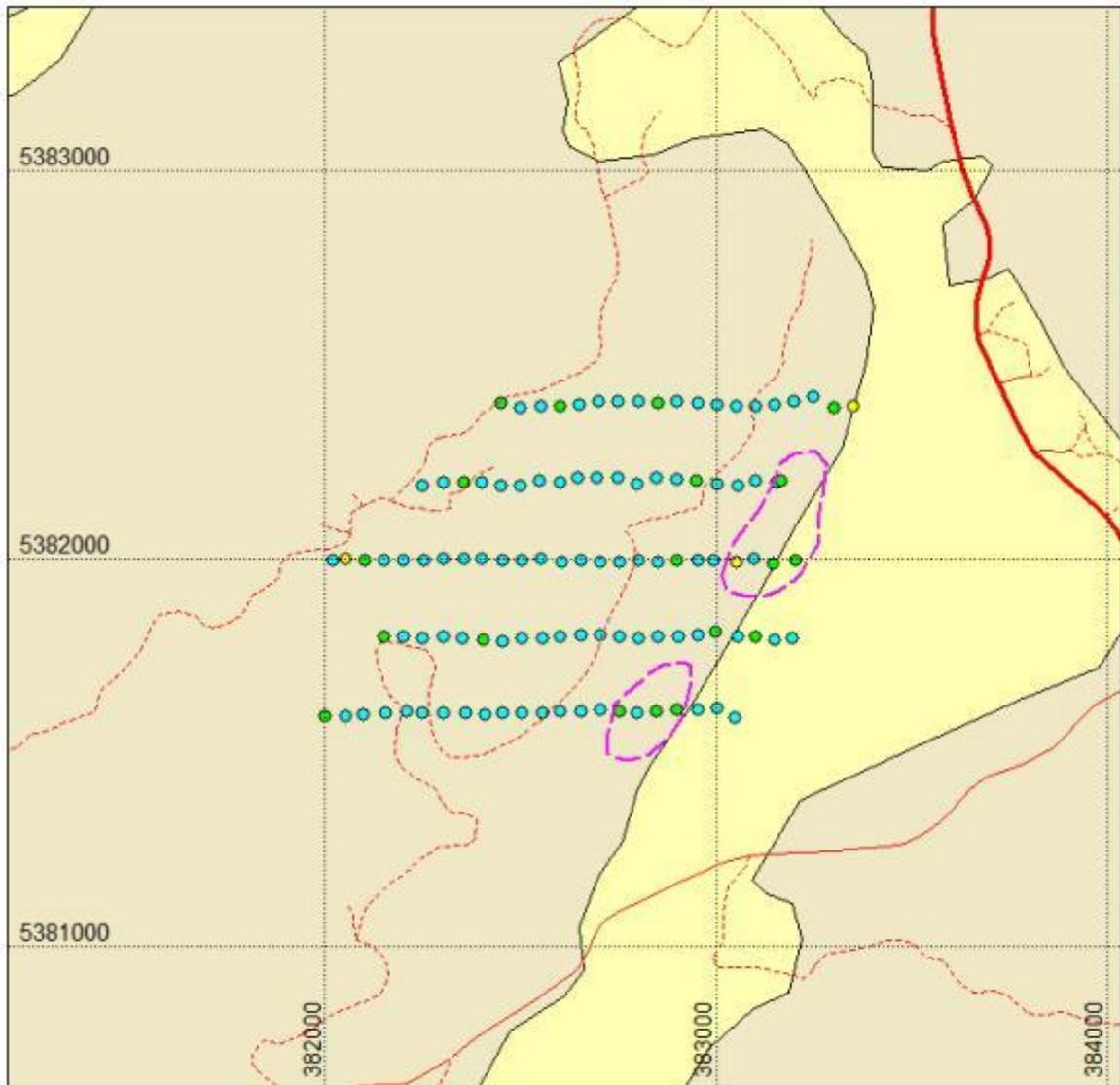


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Soils Pb pct

grid_samples by Pb_pctpref	
●	0.009 to 0.015 (3)
●	0.003 to 0.009 (10)
●	0.002 to 0.003 (20)
●	0.001 to 0.002 (115)
●	0 to 0.001 (138)

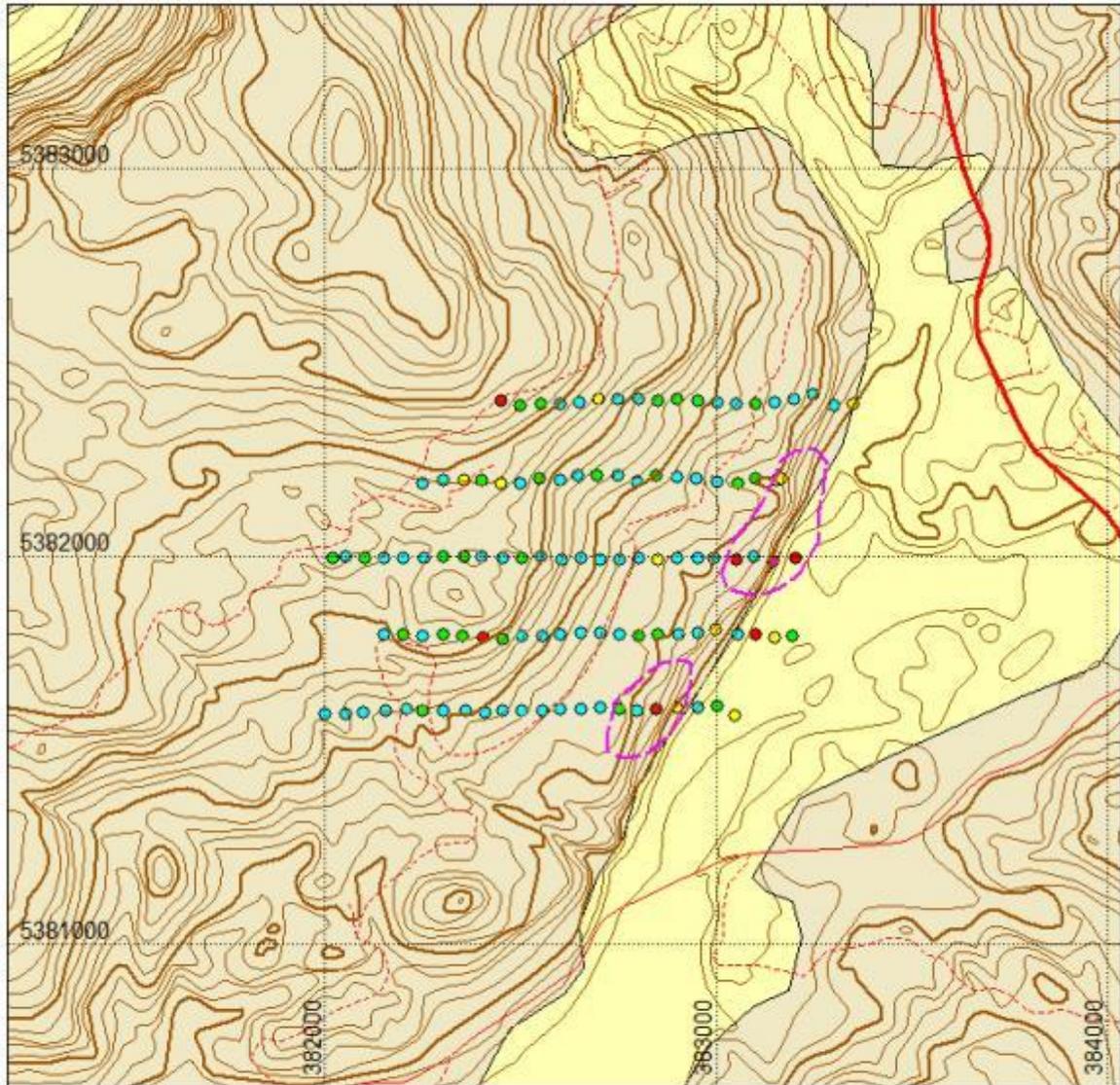
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Soils Sb ppm

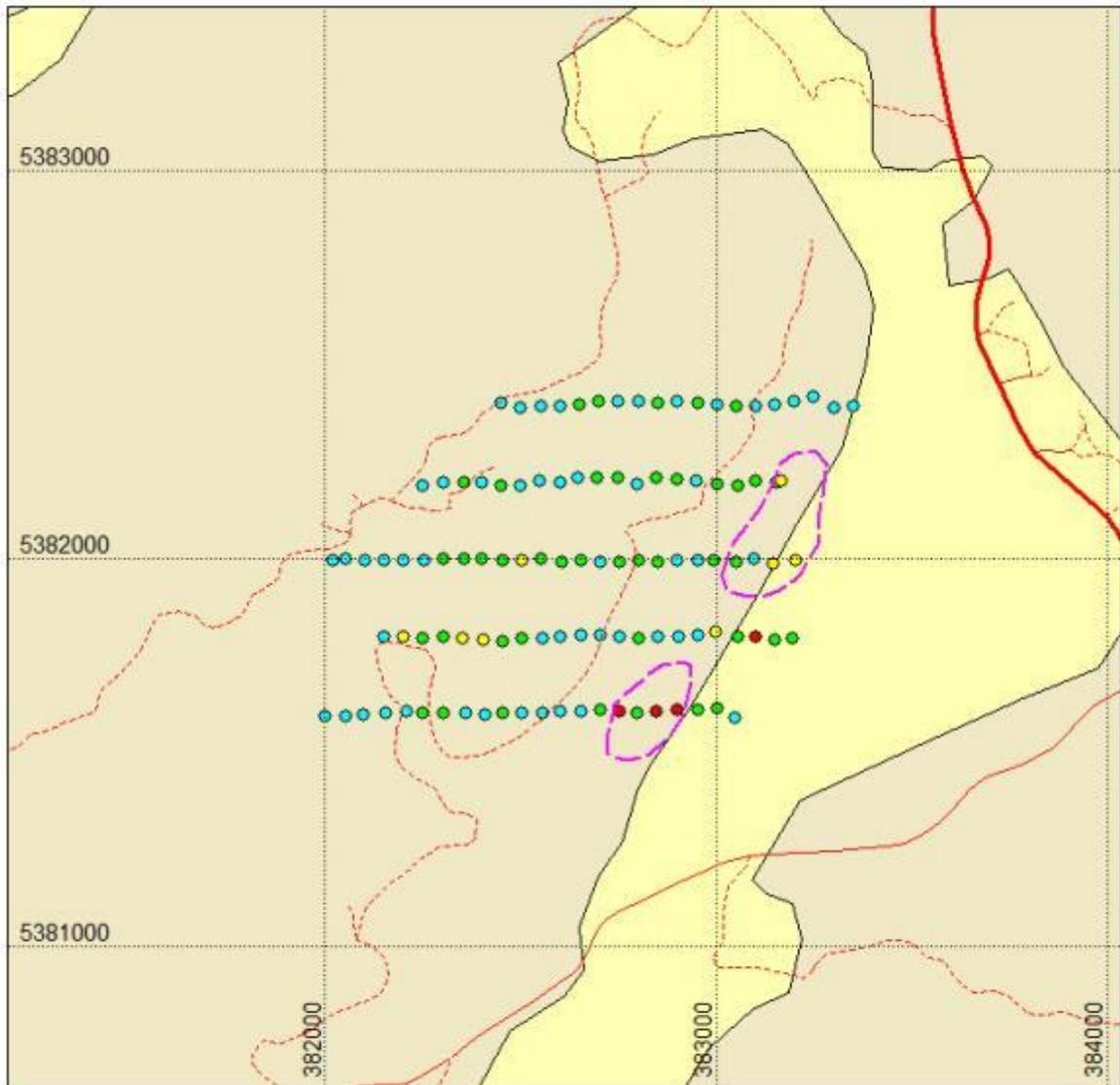
grid_samples by Sb_ppmpref	
● 57.3 to 57.3	(1)
● 4.2 to 57.3	(7)
● 1.4 to 4.2	(67)
● 0.7 to 1.4	(114)
● 0.3 to 0.7	(97)



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Soils TI ppm

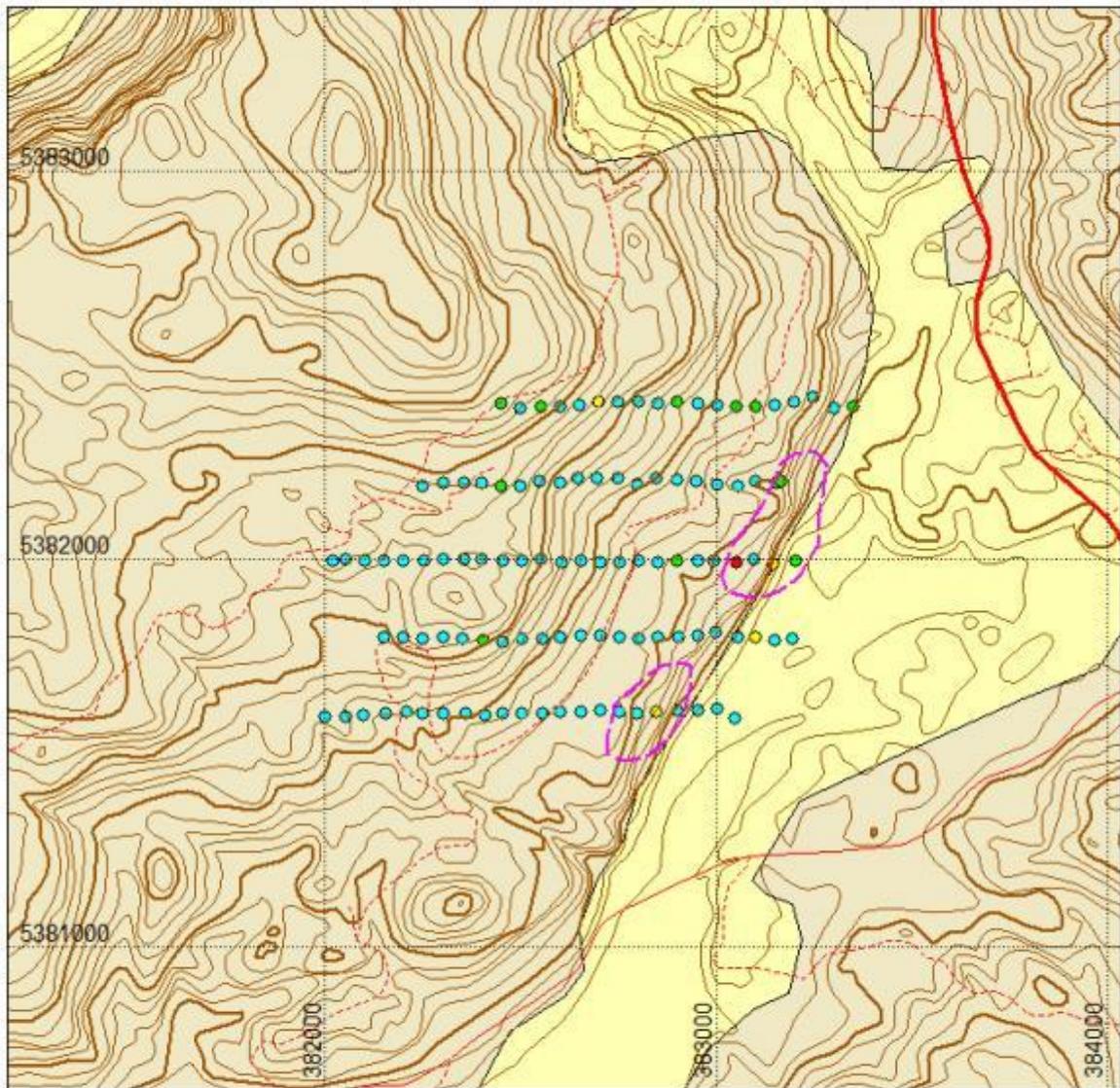
grid_samples by TI_ppmpref	
●	0.49 to 1.01 (29)
●	0.28 to 0.49 (51)
●	0.17 to 0.28 (40)
●	0.09 to 0.17 (72)
●	-0.02 to 0.09 (94)



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Soils W ppm

grid_samples by W_ppmpref	
● 3.7 to 8.6	(26)
● 2 to 3.7	(30)
● 1.3 to 2	(48)
● 1 to 1.3	(84)
● 0.4 to 1	(98)



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grid_samples by Zn_pctpref	
● 0.018 to 0.042	(4)
● 0.007 to 0.018	(13)
● 0.003 to 0.007	(29)
● 0.002 to 0.003	(54)
● 0 to 0.002	(186)