Biogeochemical expression of base metal mineralisation in the northwestern Flinders Ranges.

Thesis submitted in accordance with the requirements of the University of Adelaide for an Honours Degree in Environmental Geoscience.

Paige Courtney Honor

October 2012

THE UNIVERSITY of ADELAIDE

TITLE

Biogeochemical expression of base metal mineralisation in the northwestern Flinders Ranges.

RUNNING TITLE

Biogeochemical expression of base metal mineralisation.

ABSTRACT

The northwestern Flinders Ranges hosts a variety of Pb/Zn/Cu/Ag mineralised sites. It is, therefore, an ideal setting to investigate the plant biogeochemical expression of proximal base metal mineralisation in bedrock geochemistry. Twigs and leaves from *Eremophila freelingii* along with bedrock collected from traverses across four sites of known and background mineralisation have been analysed to show this expression in biogeochemistry as well as disparities in this expression throughout plant organs. Increased concentrations of Ni, As, Mo, and Cd in bedrock and to an extent in plant biogeochemistry are associated with the distribution of the commodity elements, Pb, Zn, Cu, and Ag. This corresponds with a decrease in the concentration of Na, Ca, Al, Fe, and Y in the vicinity of the mineralisation.

Plant biogeochemistry results are able to identify a discriminatory signature for different geological settings and display the effects of regolith – landform settings on the distribution of elemental concentrations in the landscape and also display different sized geochemical dispersion halos for each commodity element. Biogeochemistry analytical results have also shown that concentrations of most selected elements vary between leaf and twig organs from the same plant, with concentrations generally lower in twigs. An implication of this study is that *Eremophila freelingii* leaf biogeochemistry would be a suitable sampling medium for geochemical exploration for base metal mineralisation in areas of shallow transported cover. Its advantages over bedrock sampling are that once regolith-landform settings are accounted for, samples are reasonably representative of underlying geological substrate, light weight (assisting field transport) and have negligible long-term environmental impact to the sample site.

KEYWORDS

Biogeochemistry, Copper, Emu Bush, Eremophila freelingii, geochemistry, Lead, North

Flinders Ranges, Silver, Zinc.

CONTENTS

LIST OF FIGURES AND TABLES

INTRODUCTION

The northwestern Flinders Ranges hosts an abundance and diversity of mineral exploration prospects and historical mining activity, however, most areas of known mineralisation were found due to surface exposure. Considering that most of this landscape is covered by regolith, then the discovery of buried mineralisation has unrealised potential. To address this, there is a need for a range of robust mineral exploration techniques that can express the geochemical prospectivity of buried bedrock. Although drilling through the transported cover is an effective and ultimate requirement for effective exploration, the identification of drilling targets and regional prospectivity would benefit from a more cost effective and low impact (in time as well as environmental and cultural impact) exploration technique. Geophysical techniques are widely adopted, but are limited in their direct expression of the 'chemical fertility' of exploration targets. Soil and stream sediment sampling and analysis have also been widely used but are limited in their application to areas where the surface materials have undergone complex transport or are more recently disturbed by anthropogenic activities (Garman *et al.* 1970).

Biogeochemical surveys have demonstrated an ability to express buried mineralisation of different types and in different landscape settings from this region as well as from around the world (Hill & Hill 2003, Hill 2004, Overall & Parry 2004, Neimanis & Hill 2006, Tucker 2006, Dunn 2007, VanderHoek 2007, Reid *et al.* 2008, Hill 2009, Dunn *et al.* 2010, Reid & Hill 2010, Tanti 2011). Previous studies of the expression of base metal mineral systems in this region has been limited. To address these limitations, this study investigates the expression of proximal bedrock geochemistry in *Eremophila freelingii* at

areas of known base metal mineralisation in the northwestern Flinders Ranges, South Australia.

Known base metal mineralisation in this area is predominately Pb/Zn/Cu/Ag, such as that occurring at the Billy Springs, Avondale, Ooloo, and Gilead P Beck prospects. In recent years, minimal research work and exploration has been directed toward base metal mineralisation in the northwestern Flinders Ranges and in general it is poorly understood. Recent stratigraphic work has been undertaken by Wade *et. al* (2012) which has defined previously unrecognised sedimentary and volcanic rock packages. Lead-isotope studies have been conducted by Harkins *et. al*. (2008) which concluded that there are two distinct centres of radiogenic Pb in the area. This may be a consequence of the depth to basement, where the more radiogenic Pb is at the shallower edges of the basin. Harkins *et. al*. also correlated the size of the deposit with the Pb isotope composition which showed that the larger deposits had the most radiogenic Pb.

Biogeochemical surveys have previously demonstrated the ability to display a signature related to underlying mineralisation of different types, in particular U (Overall & Parry 2004, Neimanis & Hill 2006, VanderHoek 2007) and Au mineralisation (Reid *et al.* 2008, Reid & Hill 2010). Extensive studies have also been conducted on base metal mineralisation in British Colombia (Dunn *et al.* 2010) and Broken Hill (Hill & Hill 2003, Hill 2004).

Many previous studies centre on areas of known mineralisation and its immediate surrounds (Hill 2004, VanderHoek 2007, Dunn *et al.* 2010, Reid & Hill 2010, Tanti 2011). This is because many of these surveys focussed on trialling different approaches

of survey methods and establishing chemical characteristics of different sampling media (Hill 2004). They also required a well constrained bedrock source for surficial geochemical survey results. An example of this is the survey conducted by Reid & Hill in the Tanami Gold Province, northern Australia (Reid & Hill 2010). The Tanami Gold Province is a highly prospective area; however, exploration is hindered by transported cover. Despite this, the study was able to identify mineralisation at each site using plant biogeochemistry.

With regards to prospectivity and depth of transported cover, the northwestern Flinders Ranges is similar to the Tanami Gold Province. Most existing prospects in the Flinders Ranges have been found due to surface outcrop (Coats & Blissett 1971). It is known that not all mineralisation in South Australia has a distinct surface expression, an example of this is from Olympic Dam, approximately 150km to the west of the study area and buried by 200-300m of cover. The northwestern Flinders Ranges presents an ideal field laboratory to conduct a biogeochemical survey, as the *E. freelingii* plants are abundant (Brandle 1998), as are mineralised sites. *E. freelingii* have previously proven their suitability for biogeochemical surveys in their ability to chemically characterise underlying geology (VanderHoek 2007).

This study presents results and interpretation from a plant biogeochemical survey in the northwestern Flinders Ranges around several areas of known mineralisation (Billy Springs, Avondale, Ooloo, and Gilead P Beck). This region has previously not been explored using plant biogeochemical methods, so surveying will also encompass areas of background settings as well as areas of mineralisation. Bedrock samples will also be

collected in the proximity of the *E. freelingii* samples in order to better constrain bedrock contributions to the plant biogeochemistry. These will also be assessed in the context of regolith-landform mapping undertaken in the sample areas, that will help to further constrain other contributions to the landscape geochemistry of the samples. Additionally, different plant organs will be sampled in order to identify the effectiveness of different tissues in providing a biogeochemical signature.

PHYSICAL SETTING

Climate

The closest weather observation site for the arid northwestern Flinders Ranges is Marree (Farina) (Specht 1972, Moore 2005, BoM 2012) which is approximately 60 km to the south west. Historically, the highest mean maximum daily temperature is 35.5°C. The mean annual rainfall is 165.0 mm, and the highest rainfall period within a year is typically in February, with wind directions prevailing from the south (BoM 2012).

Regional Vegetation and Land Use

The northwestern Flinders Ranges is in an arid environment with a history of sheep and cattle grazing (Specht 1972). The landscape is dominated by low shrub land that includes various species of *Acacia*, *Eremophila*, *Eucalyptus*, saltbush and grasses (Specht 1972, Brandle 1998).

Eremophila freelingii, also known as emubush has been targeted for this survey. These shrubs are endemic to Australia (Holliday & Hill 1975, Moore 2005) and have been

observed growing on a wide variety of substrates throughout central South Australia, south east Queensland, and Western Australia (Brandle 1998, Moore 2005).

Regional Geology and Geomorphology

The Flinders Ranges extends northwards from approximately 400 km north of Adelaide, South Australia, and encompass an area approximately 600 km long by 50 to 200 km wide (Marshak & Flottmann 1996). The Flinders Ranges are a low mountain range with the highest peak in the central ranges, St Marys Peak, with an elevation of 1171m above sea level.

The geology of this area consists of Neoproterozoic to Cambrian shallow marine to terrestrial sediments (Powell *et al.* 1994, Marshak & Flottmann 1996, Harkins *et al.* 2008) deposited as part of the Adelaide Geosyncline. This basin was formed during intermittent periods of extension due to the breakup of the Rodinian Supercontinent which was initiated approximately 700 Ma (Powell *et al.* 1994, Betts & Giles 2006, Harkins *et al.* 2008). Deposition was terminated by the onset of the Delamerian Orogeny during the Late Cambrian-Early Ordovician due to convergence along the eastern margin of Australia (Powell *et al.* 1994, Betts *et al.* 2002).

The oldest sediments in the Flinders Ranges are the Callana Group (historically named the Callana Beds) (Coats & Blissett 1971). This group is cross cut stratigraphically within diapirs that have formed from the carbonate, clastic and evaporitic horizons (Coats & Blissett 1971, Dyson 2001, Groves *et al.* 2003). The remainder of the bedrock stratigraphy is shown in figure 1 (Harkins *et al.* 2008)

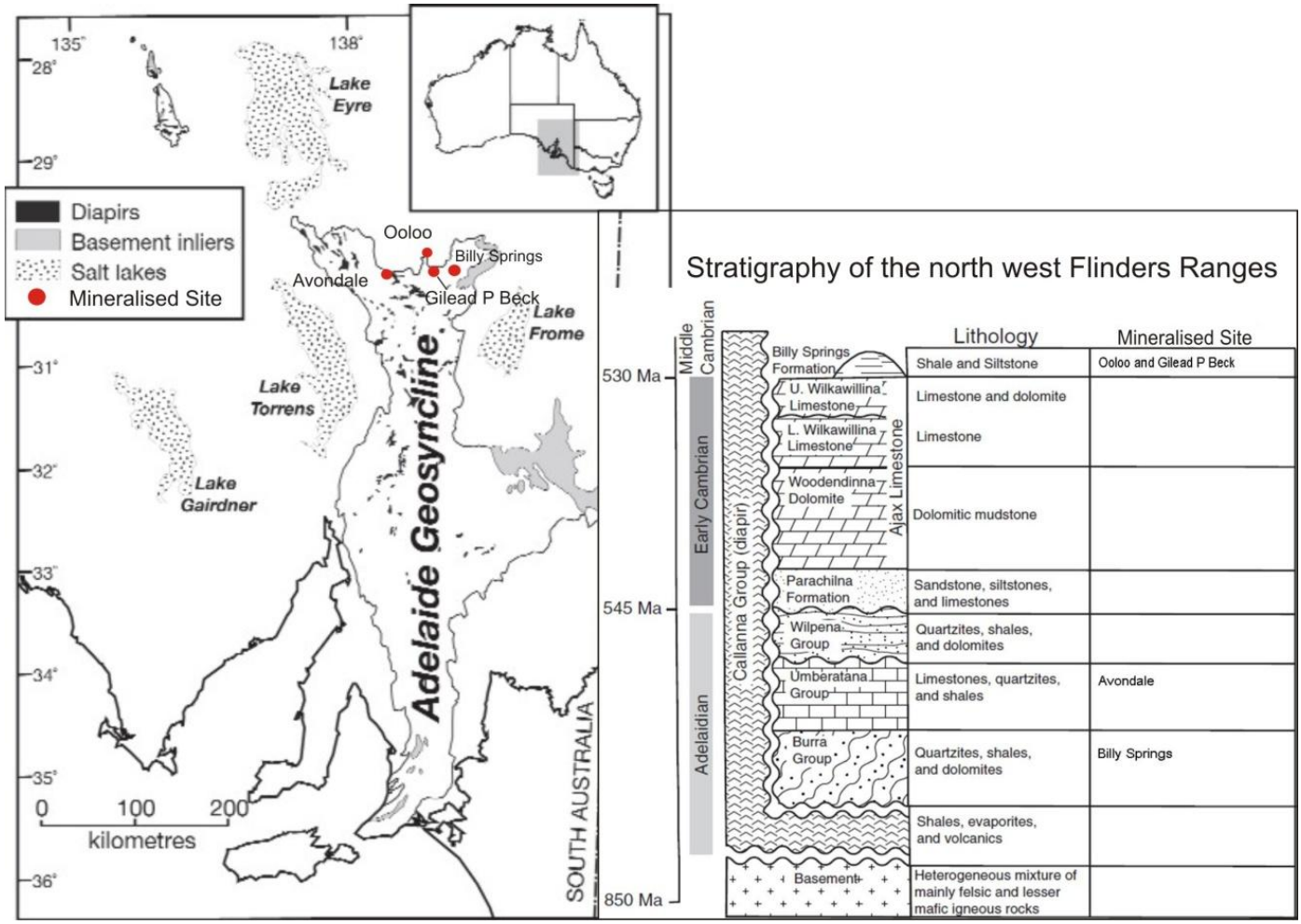


Figure 1: Location map showing the mineralised sites and stratigraphy of the northwestern Flinders Ranges. Modified after (Brugger et al. 2003, Harkins et al. 2008).

Four mineralised survey sites in the northwestern Flinders Ranges were chosen in this study; Billy Springs, Avondale, Ooloo and Gilead P Beck (figures 2, 3, 4, and 5). These were chosen because of their accessibility, mineralisation and the colonisation of suitable plant species.

OOLOO

This mineralised site is in the calcareous shales and siltstones of the Billy Springs Beds (Coats & Blissett 1971) at the northern most extent of this study area on a prominent low hill surrounded by Quaternary alluvium and Mesozoic, Eromanga Basin Sediments.

There are two lodes, the North and South Lodes over which sampling took place. Ooloo was a Pb-Zn-Cu mine during 1923 to 1937 (Coats & Blissett 1971), with the ore minerals being galena and cerussite. At the North Lode 2-3 tons of high grade galena was extracted, and at the South Lode 7 tons was extracted averaging 70% Pb and 70oz of Ag per ton (Coats & Blissett 1971).

GILEAD P BECK

Gilead P Beck is hosted stratigraphically above the Wonoka Formation and the Pound Quartzite (Coats & Blissett 1971), which in more recent nomenclature is equivalent to the Billy Springs Beds. This mine consists of one lode that is host to open cuts and shafts that were active intermittently between 1888 and 1915 (Coats & Blissett 1971). The beds hosting Pb-Zn mineralisation, as the mineral galena, form part of the north limb of the Billy Springs Syncline, see figure 3.

BILLY SPRINGS

Billy Springs is hosted along the axis of a syncline in the Umberatana Group, shown in figure 4. The main workings in this site are in in an open cut that is approximately 30m long, a shaft and numerous costeans cut along strike. Billy Springs was intermittently mined for its Pb-Zn-Cu mineralisation during 1887 to 1938, which includes galena, azurite, chalcocite, malachite, cerussite and smithsonite (Coats & Blissett 1971). The ore is almost completely oxidised to 30 m, after which primary ore minerals become Zn-tetrahedrite, argentiferous galena, chalcopyrite, pyrite and possible sphalerite (Coats & Blissett 1971). Field work at this site was conducted in a transect perpendicular to the line of lode and also up the adjacent hill to the east.

AVONDALE

The Avondale Mine consists of three main lodes shown in the bedrock geology map in Figure 5; the Western; Middle; and, Eastern Lodes. These include numerous open cuts and shafts that were active before 1880 and until 1927. The mineralisation is near the contact between the Tapley's Hill Formation (subdivision of the Umberatana Group) and diapirs formed from the carbonate, clastic and evaporitic sediments of the Callana Group (Coats & Blissett 1971, Dyson 2001). Historical company reports (Ridgway 1948 and references therein.) show that grades of 50-75% Pb were recovered. Reports show that Zn, Cu and Ag minerals were also mined here (Coats & Blissett 1971). The ore minerals include sphalerite, cerussite, and galena. During fieldwork it was evident that in recent years the various costeans have been bulldozed and recently explored.

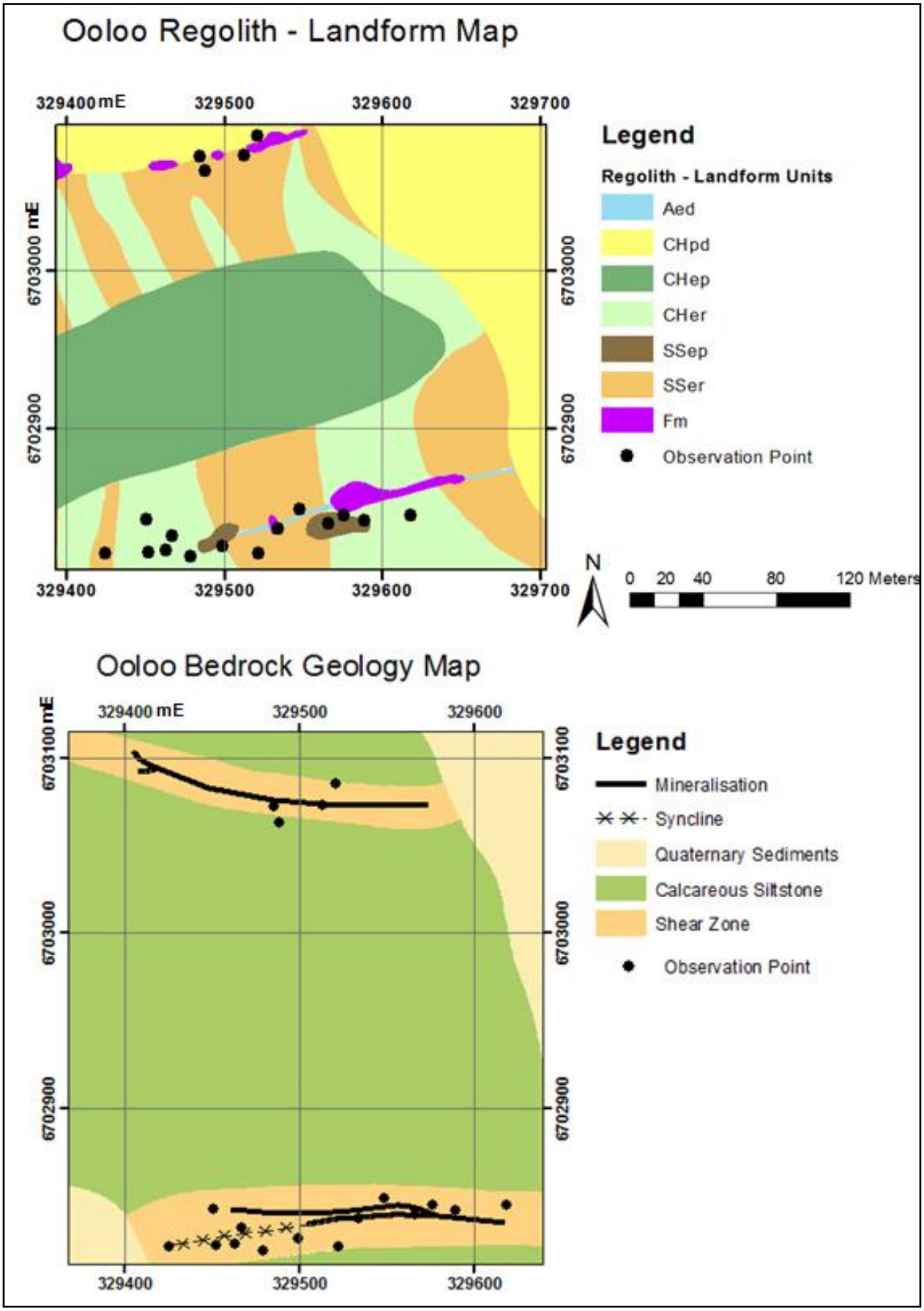


Figure 2: Regolith - Landform and Geology map of Ooloo.

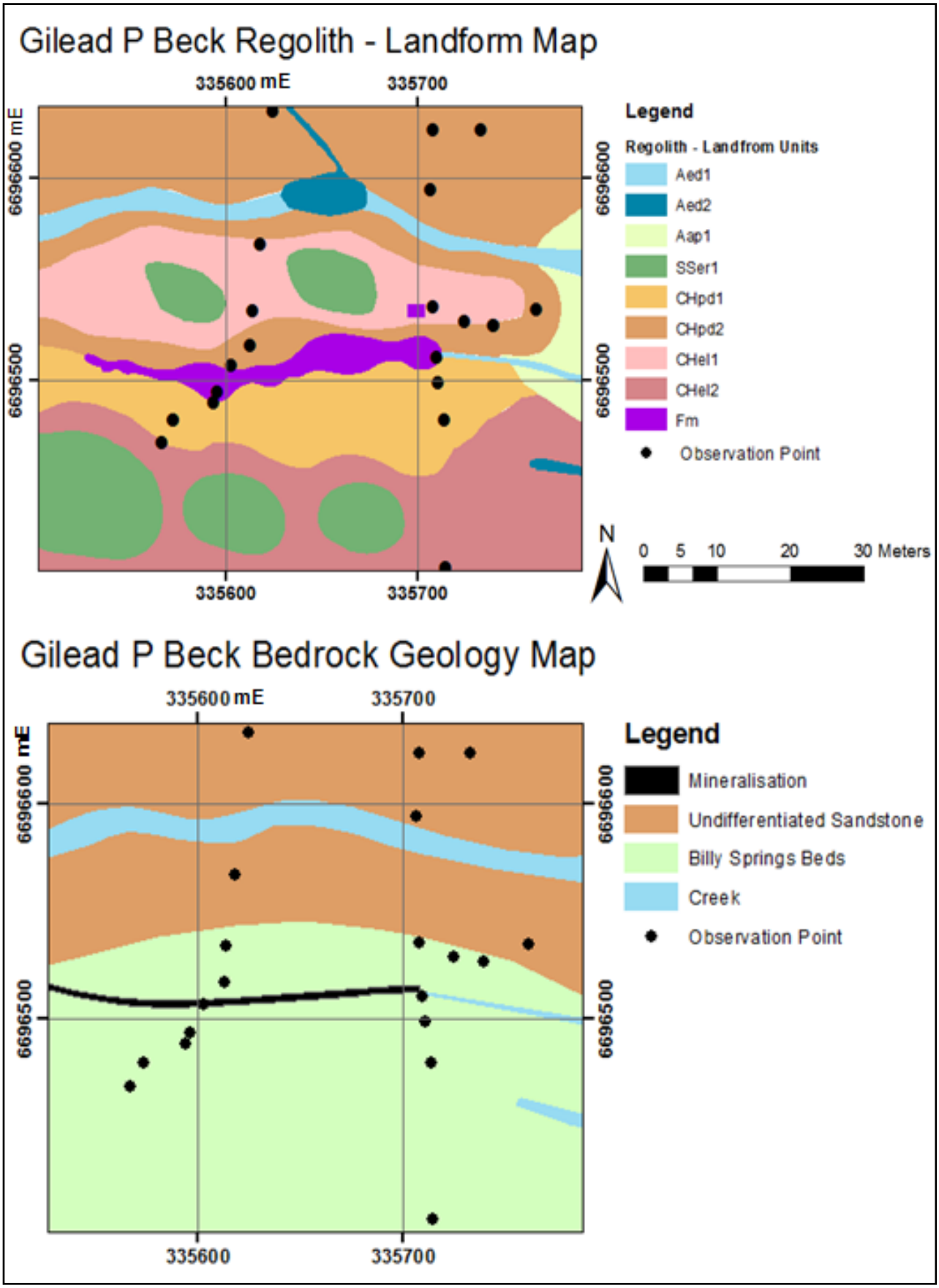


Figure 3: Regolith-Landform and Geology maps of Gilead P Beck.

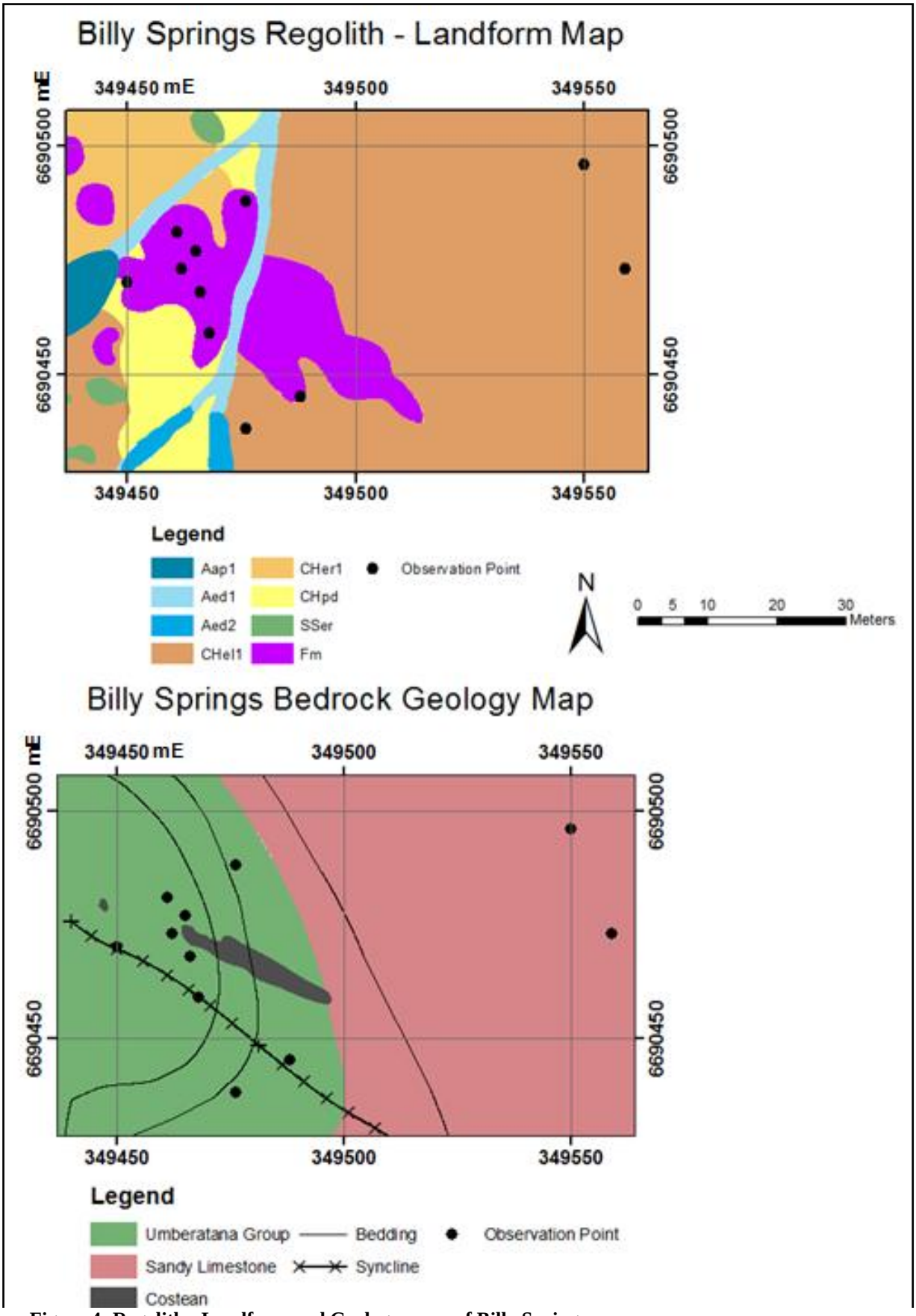


Figure 4: Regolith - Landform and Geology maps of Billy Springs.

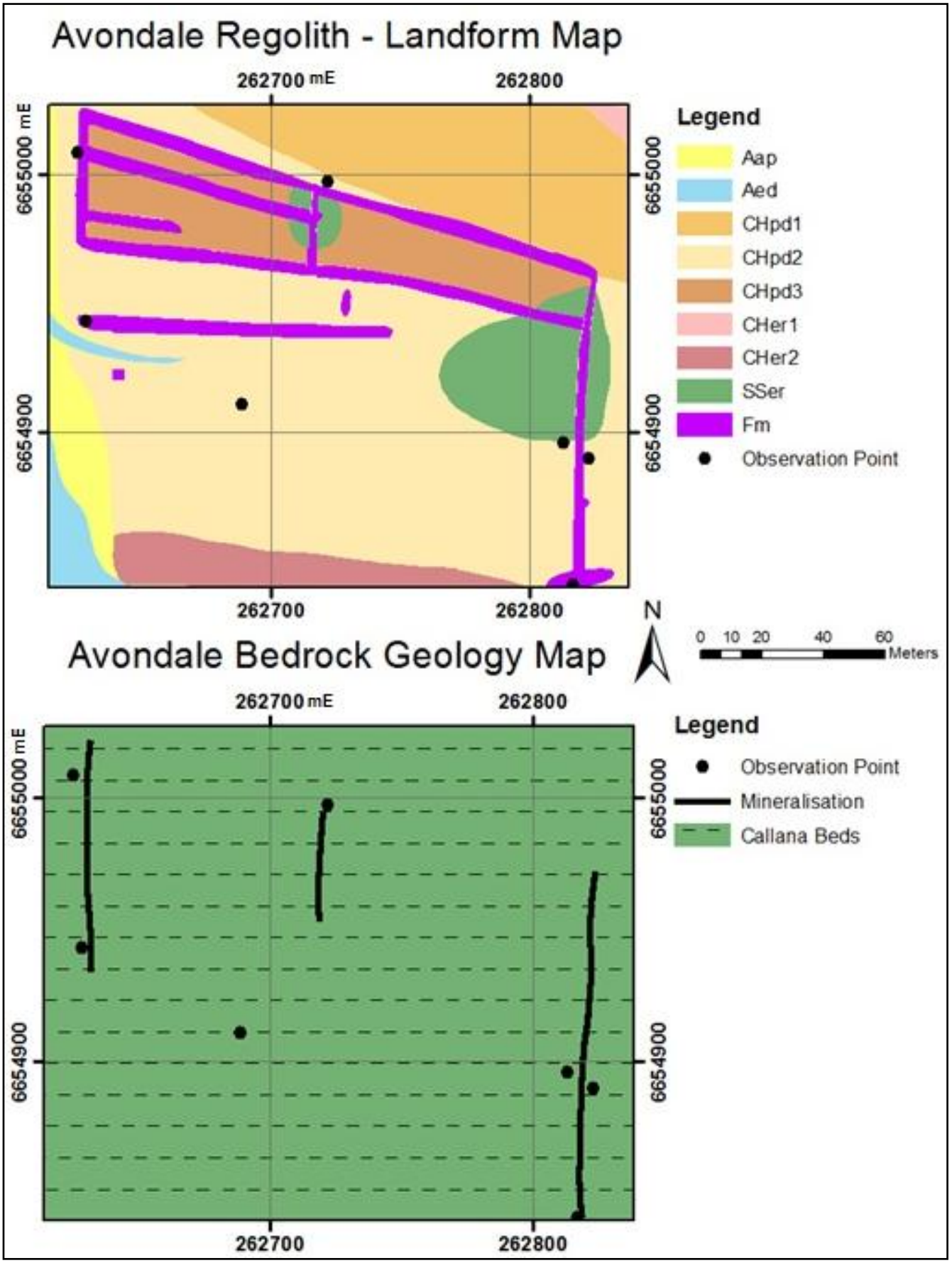


Figure 5: Regolith - Landform and Geology maps of Avondale

METHODS

Survey Design

Sampling was conducted within a 5 day period during mid April 2012 in the northwestern Flinders Ranges. Field work was conducted using the guidelines suggested by Neimanis & Hill (2006), Dunn (2007), and Hill (2009). Sampling occurred over documented mineralised sites; Avondale, Ooloo, Gilead P Beck, and the Billy Springs historical mines (Ridgway 1948, Coats & Blissett 1971). Sample spacing and pattern depended upon the size of each prospect, the shape of the costeans cut during production, and the distribution of the *E. freelingii* bushes. Sampling was typically conducted opportunistically (due to plant distribution) along a transect that included the indentified mineralisation area and extended into the surrounding bedrock.

Sampling Media

E. freelingii were targeted because of previous successes in the Flinders Ranges (VanderHoek 2007) and the widespread distribution of the species. Two organs (twigs and leaves) of the *E. freelingii* were sampled in order to identify which better characterises the bedrock geochemistry. This species was distinctive in the field due to the bright green colour of the new growth and small purple flowers. Flowers or fruit were deemed unsuitable for collection and subsequent analysis due to their low abundance.

Twigs and leaves of a similar age were collected to reduce variability in sample media. This was aided by the nature of the *E. freelingii* growth as recent growth occurs at the terminus of the branch, with older growth dying off to leave rough branches. Nearly all

of the *E. freelingii* sampled were in excellent health, which is most likely due to a substantial wet season in the previous summer.

Bedrock samples were also collected for analysis in order to compare the relationships between the plant biogeochemistry and the rock geochemistry. Bedrock was collected at most of the locations that *E. freelingii* were observed to be growing directly on, or adjacent to exposed bedrock.

Sampling Procedure

The spatial coordinates were recorded at each bush and/or bedrock sample location with a Garmin GPSMAP 60 and spatial datum was Geodetic Datum Australia 1994 (GDA 94). Additional information that may assist in the interpretation of results, such as regolith-landform setting and possible anthropogenic disturbance were also recorded at each site.

Clean, jewellery-free hands were used to collect each sample. Plant matter was placed into calico bags that were labelled with an assigned sample name (such as MTF ER 001) using a permanent marker. Bedrock samples were placed into plastic snap-lock bags labelled with a name assigned to each sample (e.g. MTF BR 001), using a permanent marker.

Storage and Preparation

Samples were stored in large poly-weave bags, in a well ventilated and protected area until they could be oven dried. The samples were divided into two batches. One batch was placed in an oven for 48 hours at 60°C and the other batch was stored in a well

ventilated and protected area for this duration. After 48 hours the first batch was removed from the ovens and replaced with the second batch to undergo the same process. Only 1gram of sample is used for analysis, however, processing a larger sample (a few hundred grams) minimises the effect of heterogeneities in the plant sample. Where both leaf and twig samples were collected in the field these were separated after drying with clean jewellery free hands and labelled appropriately.

Bedrock samples were prepared for geochemical analysis by taking an approximately 150 gram sub-sample and placing it into a labelled plastic snap lock bag.

The prepared samples were sent to Acme Analytical Laboratories Canada. Bedrock was analysed by inductively coupled plasma mass spectroscopy (ICP-MS) and X-ray Flouresence (XRF). Vegetation was prepared for analysis using the method 1VE, which involves processing 1 g of analytical pulp of each sample by leaching it using HNO_3/multi-acid digest before undergoing ICP-MS analysis for a 53 element suite. The results of these analyses are displayed in appendices C, D, and E. The lower analytical detection limits are outlined in Table 1 and Table 2.

Table 1: Lower detection limits for bedrock geochemical analysis by ICP-MS.

Element	Lower Detection Limit	Element	Lower Detection Limit	Element	Lower Detection Limit
Al	0.01%	Gd	0.05 ppm	Se	0.5 ppm
Ag	0.1 ppm	Hg	0.01 ppm	Sm	0.05 ppm
As	0.5 ppm	Hf	0.1 ppm	Sn	1 ppm
Au	0.5 ppb	Ho	0.02 ppm	Sr	0.5 ppm
Ba	1 ppm	K	0.01%	Ta	0.1 ppm
Be	1 ppm	La	0.1 ppm	Tb	0.01 ppm
Bi	0.1 ppm	Lu	0.01 ppm	Th	0.2 ppm
Ca	0.01%	Mg	0.01%	Ti	0.01%
Cd	0.1 ppm	Mn	0.01%	Tl	0.1 ppm
Ce	0.1 ppm	Mo	0.1 ppm	Tm	0.01 ppm
Co	0.2 ppm	Na	0.01%	U	0.1 ppm
Cr	0.00%	Nb	0.1 ppm	V	8ppm

Cs	0.1 ppm	Nd	0.3 ppm	W	8 ppm
Cu	0.1 ppm	Ni	0.1 ppm	Y	0.1 ppm
Dy	0.05 ppm	P	0.01%	Yb	0.05 ppm
Eu	0.02 ppm	Pb	0.1 ppm	Zn	1 ppm
Er	0.03 ppm	Pr	0.02 ppm	Zr	0.1 ppm
Fe	0.03%	Rb	0.1 ppm		
Ga	0.5 ppm	Sb	0.1 ppm		

Table 2: Lower detection limits for biogeochemical analysis by 1VE.

Element	Lower Detection Limit	Element	Lower Detection Limit	Element	Lower Detection Limit
Mo	0.01 ppm	Ca	0.01%	Ga	0.1 ppm
Cu	0.01 ppm	P	0.00%	Cs	0.005 ppm
Pb	0.01 ppm	La	0.01 ppm	Ge	0.01 ppm
Zn	0.1 ppm	Cr	0.1	Hf	0.001 ppm
Ag	2 ppb	Mg	0.00%	Nb	0.01 ppm
Ni	0.1 ppm	Ba	0.1 ppm	Rb	0.1 ppm
Co	0.1 ppm	Ti	1 ppm	Sn	0.02 ppm
Mn	1 ppm	B	1 ppm	Ta	0.001 ppm
Fe	0.00%	Al	0.01%	Zr	0.01 ppm
As	0.1 ppm	Na	0.00%	Y	0.001 ppm
U	0.01 ppm	K	0.01%	Ce	0.01 ppm
Au	0.2ppb	W	0.1 ppm	In	0.02 ppm
Th	0.01 ppm	Sc	0.1 ppm	Re	1 ppb
Sr	0.5ppm	Tl	0.02 ppm	Be	0.1 ppm
Cd	0.01 ppm	S	0.01%	Li	0.01 ppm
Sb	0.01 ppm	Hg	1 ppb	Pd	2 ppb
Bi	0.02 ppm	Se	0.1 ppm	Pt	1 ppb
V	0.02 ppm	Te	0.02 ppm		

One sample in every 10 of both plant and bedrock samples was duplicated for QA/QC purposes. The recommended levels of precision for ICP-MS of 1g of dry vegetation are outlined by Dunn (2007) and are as follows;

- < 2 times DL +/- 100 %,
- 2-5 times DL +/- 50 %,
- 5-10 times DL +/- 25 %,
- > 10 times DL approximately +/- 10-15 % .

Out of the 10 field duplicates submitted for biogeochemical analysis, the average variation between original and duplicate for Cu is 2.61%, Pb is 7.53%, Zn is 4.75%, and Ag is 8.06%.

From the 3 field duplicates submitted for whole-rock geochemical analysis the average variation between original and duplicate for Cu is 2.77%, Pb is 9.76, and Zn is 8.69%. The average variation for Ag is not applicable as each result is below the lower detection limit.

Additionally, 16 analytical standard samples, and 8 control blanks were inserted to ensure repeatability and accuracy. The analytical errors have been calculated and are included in the summary statistics associated with the atlas maps.

Potential Contamination

Care was taken to reduce potential contamination of plant and rock samples. Vegetation samples were collected above the base of the bushes to reduce contamination by dust and soil. Plant matter with animal droppings or insect matter was also avoided, to reduce the risk of contamination. Another possible source of contamination was the presence of a mining sorting table or drill holes in the vicinity of some samples at Avondale, Ooloo, and Billy Springs. This was recorded and taken into account when interpreting the results.

Statistical Methods

Analytical results from ACME Laboratories were imported into IoGAS (version 4.4) for statistical analysis. IoGAS was used to produce ‘box and whisker plots’, statistical

summaries, probability plots, and split probability plots. The information was then overlain onto regolith-landform and geology maps of the four mineralised sites, which was done using ArcGIS (version 10.4). Microsoft Excel (2010) was used to calculate the X-Y plots and analytical errors. IBM SPSS (version 19) was used to generate dendrogram cluster analyses. This cluster analysis is done using Ward's method as this method uses analysis of variance between groups rather than other methods which assume a normal distribution.

Geology and Regolith-Landform Mapping

Regolith-landform and geology atlas maps (Appendix A) were created for all four mineralised sites, at detailed, but variable scales. These have been used to determine the distribution and concentration of the selected elements throughout the landscape. The detailed legend for the regolith – landform units is shown in Appendix B. These were produced by remotely sensed data interpretation along with fieldwork and maps produced by the South Australian Geological Survey and company exploration (Coats & Blissett 1971). The remotely sensed data and Bulletin 43 (Coats & Blissett 1971) were used as a base map for all of the regolith landform and geology. Remotely sensed imagery was obtained from Google Earth. The map grids conform to the Australian Map Grid (AMG) using the GDA 1994 Datum and UTM Zone 54.

RESULTS

For the outline of results here, elements that are mostly below analytical detection limits have been removed (e.g. Ba, Mg, P, Co, Cs, Hf, Zr, Pr, Sm, Eu, Gd, Tb, Dy, Ho, Hg, Sb, W, Au, U, Tl, Te, Ga, Nb, In, Re, B, and Pt). Initially, the entire suite of detectable elements for each sampling medium is considered as part of a dendrogram analysis in figures 6, 7, and 8 which efficiently shows the groups or associations of the elements. The following results are then shown for a suite of the elements, and these elements have been chosen to represent important trends as well as being part of each of the following groups:

- *Commodity elements* associated with the primary mineralisation assemblage; Ag, Cu, Pb, and Zn.
- *Pathfinder elements* associated with the area of primary mineralisation and alteration halo; As, Ce, Cd, La, Mo, and Y.
- *Landscape/Host/Control elements* associated with landscape features or elements which are typically found to be host to commodity elements; Al, Ca, Fe, K, Mn, Na, and Rb.
- *Other elements* including those that are above lower analytical limits and not associated with the previous groups but of interest; Cr, Ni, and Sr.

The results for each of these elements are presented as the total populations for each of the sampling media, and then shown on a site by site basis for each medium and chosen element as atlas maps (Appendix A).

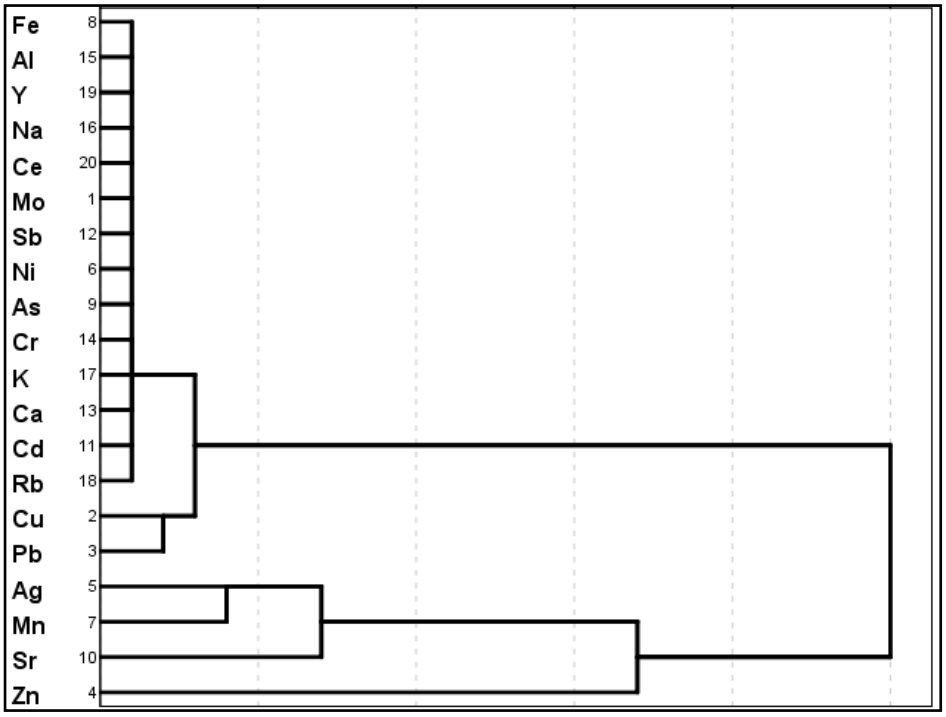


Figure 6: Dendrogram of Eremophila freelingii leaf elemental analysis using Ward Linkage.

This method of cluster analysis divides the *E. freelingii* leaf biogeochemistry data into four main clusters graphically by long stems (figure 6). The first cluster consists of Fe, Al, Y, Na, Ce, Mo, Sb, Ni, As, Cr, K, Ca, Cd, and Rb. This is a relatively large cluster and contains elements from all groups other than the commodity elements group. It is inherent that this larger cluster will show less similarity within the group than for the other smaller groups.

The next group consists of the commodity elements Cu and Pb which show a close association in this dendrogram. Silver, Mn, and Sr form one cluster, where Ag is a commodity element, Mn a host/control and Sr is in the 'other' category. Lastly, Zn is placed in a cluster of its own as it is separated from the previous group by a relatively long branch. This long branch also indicates that Zn is quite different from the other elements in *E. freelingii* leaves.

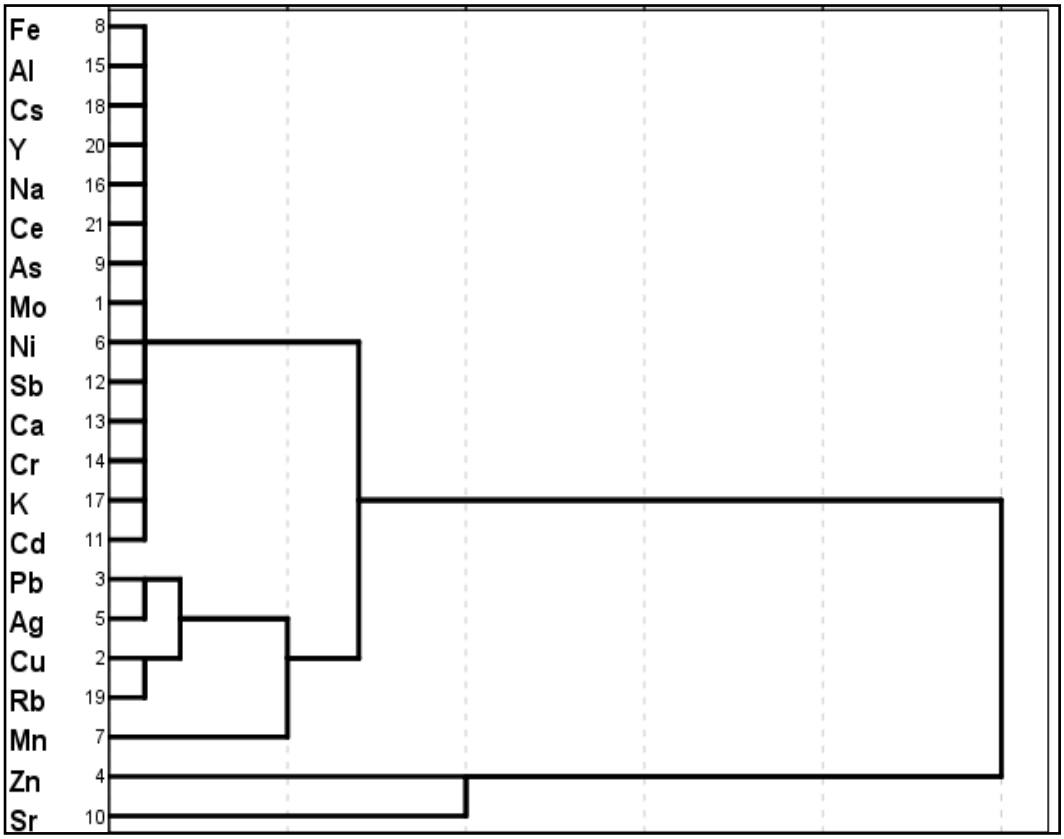


Figure 7: Dendrogram of Eremophila freelingii twig elemental analysis using Ward Linkage.

In figure 7 cluster analysis for the *E. freelingii* twig elemental analysis shows that, similar to the leaf dendrograms in figure 6, the data are divided into four distinct clusters. The first cluster consists of the elements Fe, Al, Ce, Y, Na, Ce, As, Mo, Ni, Sb, Ca, Cr, K, and Cd. As this is a comparatively large cluster the elements contained in it have a lesser degree of similarity than those of the smaller groups. This group includes elements from all groups excepts for commodity elements. The next cluster contains Cu and Rb as well as Pb and Ag. Rubidium is a host/control element whilst Ag, Pb, and Cu are commodity elements. Manganese is separated into a cluster of its own and is a host/control element. The final group consists of Zn and Sr, which are a commodity and other element.

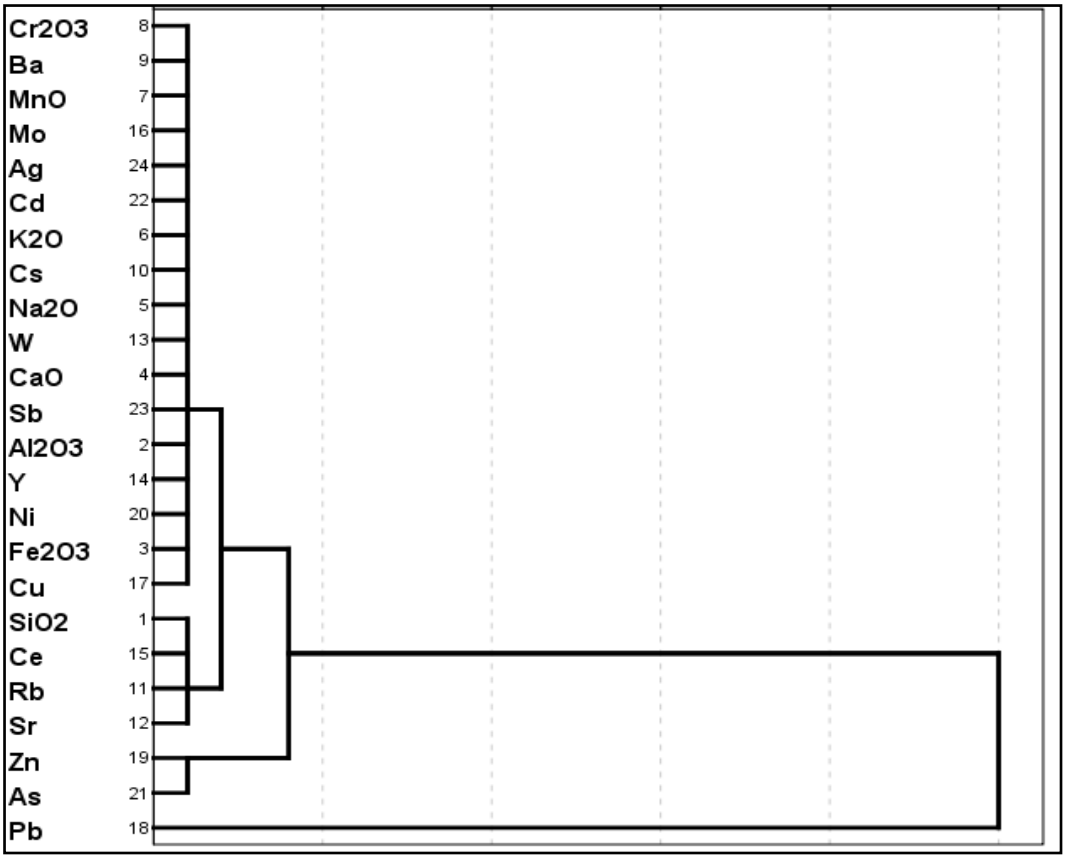


Figure 8: Dendrogram of bedrock elemental analysis using Wards Linkage.

Cluster analysis for the bedrock elemental results that the bedrock element analysis forms four distinct clusters (figure 8). The first cluster is the largest and; consists of Cr_2O_3, Ba, MnO, Mo, Ag, Cd, K_2O, Cs, Na_2O, W, CaO, Sb, Al_2O_3, Y, Ni, Fe_2O_3, and Cu. As there are a relatively large number of elements in this cluster it is inherent that the elements in this group will show less similarity to each other than elements in a smaller group. The next cluster consists of SiO_2, Ce, Rb, and Sr. This cluster contains elements from all but the commodity elements group. Zinc and As form the next cluster which are commodity and trace elements respectively. Lead has been assigned to a cluster of its own, and it is also the first cluster to diverge, having the longest branch therefore indicating that it is highly independent of the other clusters.

Split probability plots for each element were produced from the biogeochemical analysis results for each element in the selected suite, see figure 9 The data are split into the landscape settings identified (depositional plain, anthropogenic influence, rise, saprolite exposure, and drainage depression) at the mineralised sites in order to enable a comparison between the abundance and behaviour of the elements in each landscape setting.

The commodity elements show most high values in areas affected by anthropogenic activity, with the addition of high concentrations (>150 ppb) of Ag in plants sampled over areas of saprolite exposure, and the addition of high concentrations of Pb in plants sampled on depositional plains. It is possible that some areas of depositional plain have been contaminated by anthropogenic activities, which has contributed to the relatively high Pb values. In all commodity element plots, erosional rises show the lowest concentrations. Additionally, natural breaks in the curves show relatively higher values, which delineate background from outlier values associated with the mineralisation.

The pathfinder elements show the highest concentrations on depositional plains (Ce, Cd, La, and Y) and in areas of anthropogenic activity (As, Cd, and Mo). Whereas relatively low concentrations of pathfinder elements are consistently in plants growing on erosional rises.

The distribution of landscape/host/control elements are varied throughout the landscape settings identified. In general, high concentrations of the landscape/host/control elements are on the plains, rises and units where saprolite is exposed and low concentrations are in

drainage depressions. The Al plot shows ‘data striping’ which is indicative of data close to the lower detection limit and analytical resolution.

The other elements Cr, and Ni show ‘data striping’ which indicates that analyses are close to the lower detection limit. Concentrations of Sr are distinctly higher (up to 50ppm) in plants growing on exposed saprolite rather than in other landscape settings.

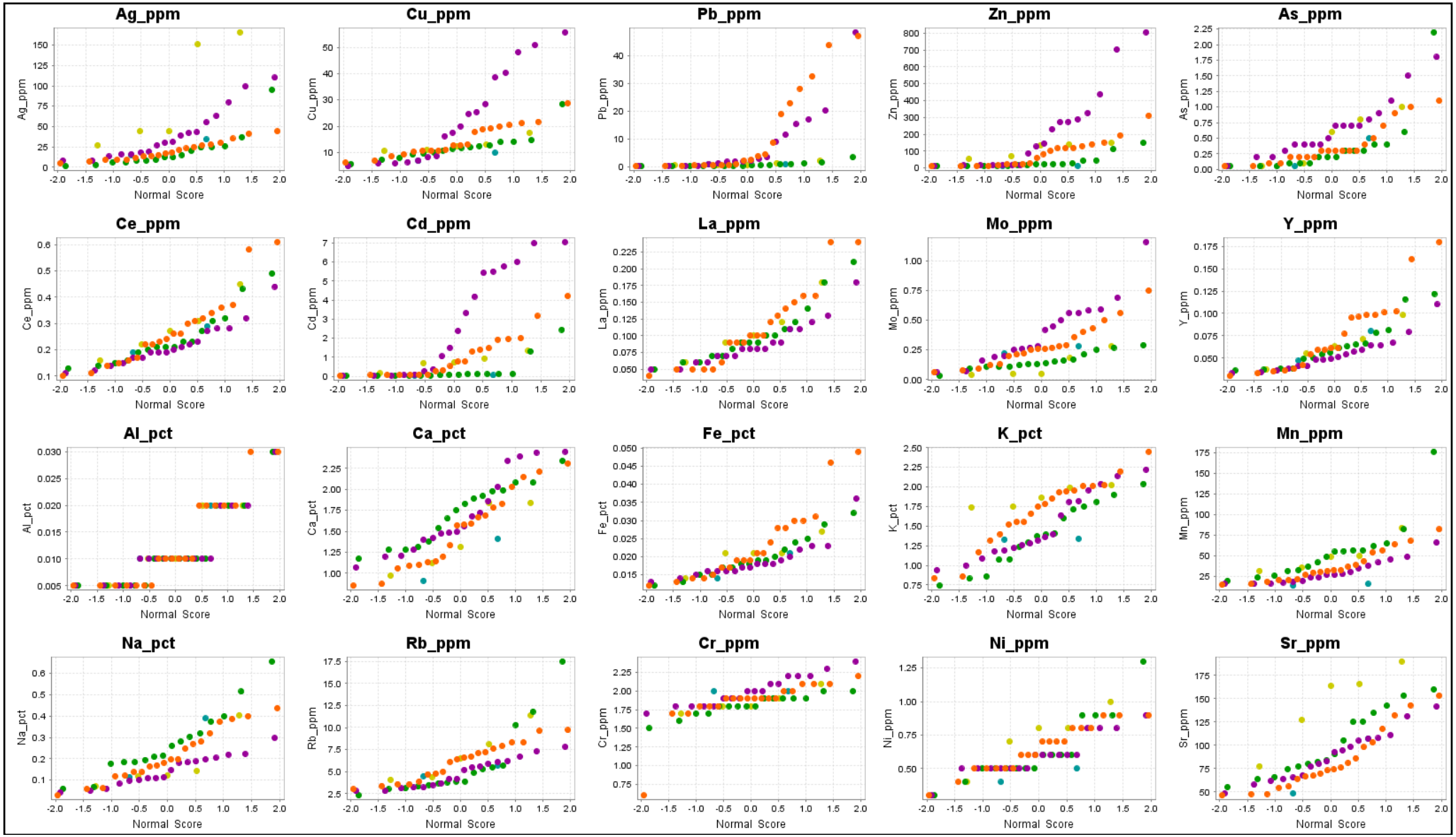


Figure 9: Split probability plots of the selected element suite showing regolith-landform units.

Bedrock geochemistry vs. leaf biogeochemistry X-Y plots for paired samples (figure 10) illustrate how the proximal bedrock geochemistry is characterised by the *E. freelingii* biogeochemistry. In general, the elements form two groups, either showing no association (data points form a cloud) or a positive linear association. Normally each element in leaf biogeochemistry occurs in lower concentrations than the concentrations in bedrock geochemistry. The exception to this is the commodity element Ag, which, in leaf biogeochemistry, occurs in concentrations up to 20x higher than the concentrations for paired samples in bedrock geochemistry.

The commodity elements Cu, Pb and Zn show a weak positive linear association within leaf biogeochemistry and bedrock geochemistry. Silver does not show this pattern which is possibly a product of little variance within the bedrock geochemistry for Ag.

The pathfinder elements Cd, Y, and Mo show positive linear associations between the concentration of elements in leaf geochemistry and bedrock geochemistry. Cerium and La do not exhibit this pattern; however, these two graphs are quite similar to each other suggesting that they have a similar expression in leaf biogeochemistry.

It appears that the landscape/host/control elements show less variance in leaf biogeochemistry than bedrock geochemistry as the data are scattered in a horizontal linear shape.

Nickel and Sr show a moderate association between leaf biogeochemistry and bedrock geochemistry, however limited mid range values are present which weakens this

association. Chromium values show little variance in plant biogeochemistry which has contributed to the linear horizontal form of this plot.

The twig vs. leaf biogeochemistry X-Y (figure 11) plot for paired elements compare the differences in the concentration of different elements between the different plant organs. A visual comparison of the graph indicates that, aside from generally lower concentrations in twig biogeochemistry, there is a weak positive linear trend in the relationship. Therefore the distribution of elements in the landscape and proximal bedrock geochemistry is reflected similarly in both twig and leaf biogeochemistry. The plots for the elements As, Fe, K, Na, Cr, Ni, and Sr indicate that the concentration of these elements in one organ is not indicative of the concentration of these elements in another organ. The elements Y and Rb lack mid range values which, if present, would make the observations more reliable.

A comparison of the twig biogeochemistry vs. bedrock geochemistry and leaf biogeochemistry vs. geochemistry X-Y plots for paired elements in figures 11 and 12 compares and contrasts the characterisation of the proximal bedrock geochemistry between different plant organs. This indicates if one plant organ better characterises the proximal bedrock geochemistry. Generally, most of the elements display relatively similar X-Y plots when compared between twig and leaf biogeochemistry vs. bedrock geochemistry, although the twig biogeochemistry generally occurs in lower concentrations and within a slightly more diffuse relationship. The commodity elements Ag and Zn show quite different plots when compared; twig biogeochemistry shows more scatter than leaf biogeochemistry. This difference indicates that the concentration of

these elements varies significantly throughout various plant organs. Lanthanum also differs between the leaf and twig comparison with bedrock, the concentration of La in twig biogeochemistry better reflects the proximal bedrock geochemistry. The plot in figure 11 illustrates a moderately positive trend, unlike the trendless data for La in figure 12. More leaf and bedrock paired samples were collected than twig and bedrock paired samples during field work. This could affect the apparent distribution of the data, making the twig biogeochemistry plots appear more diffuse.

.

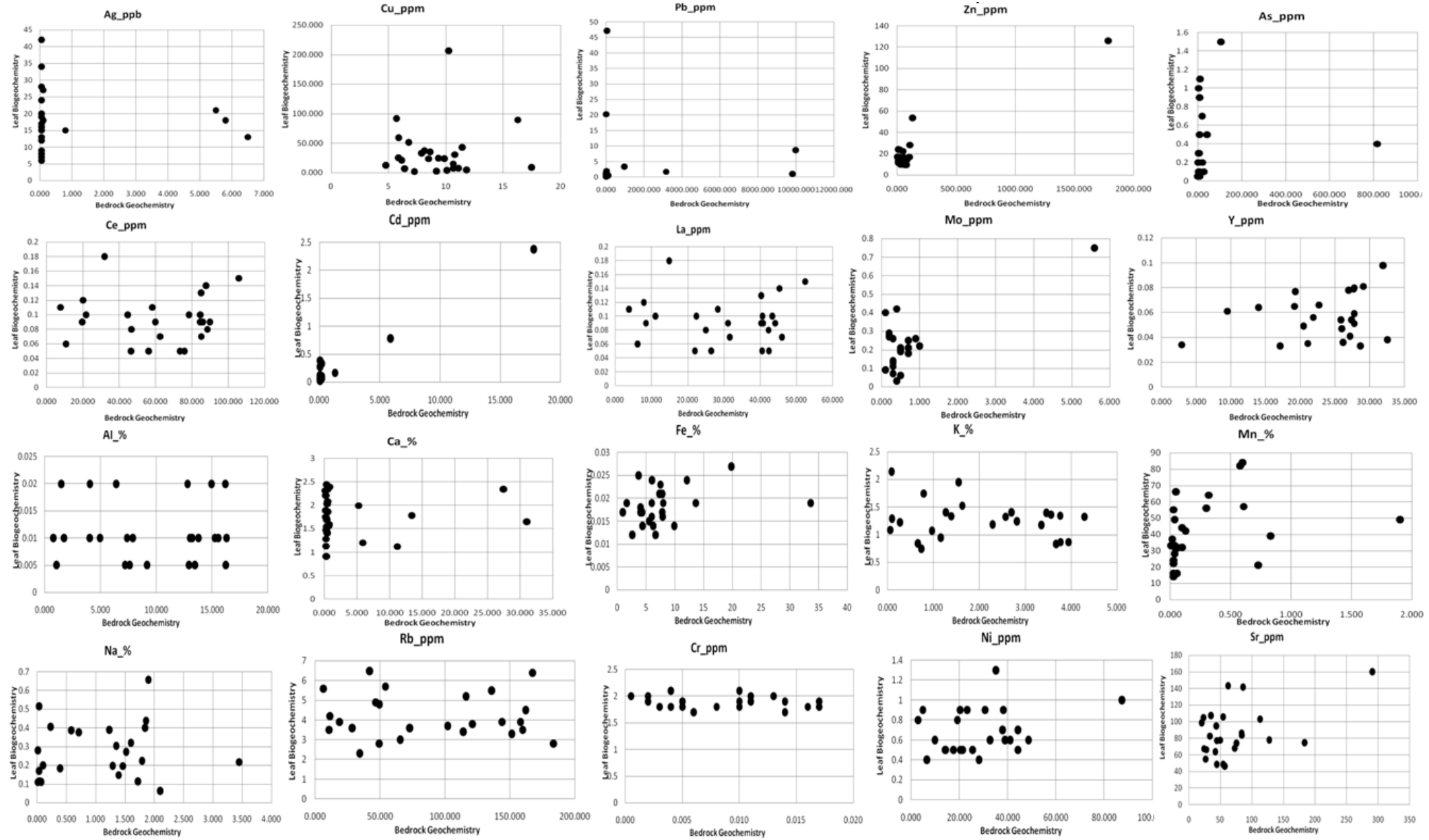


Figure 10: X-Y plots of bedrock geochemistry vs. leaf biogeochemistry for the selected element suite.

.

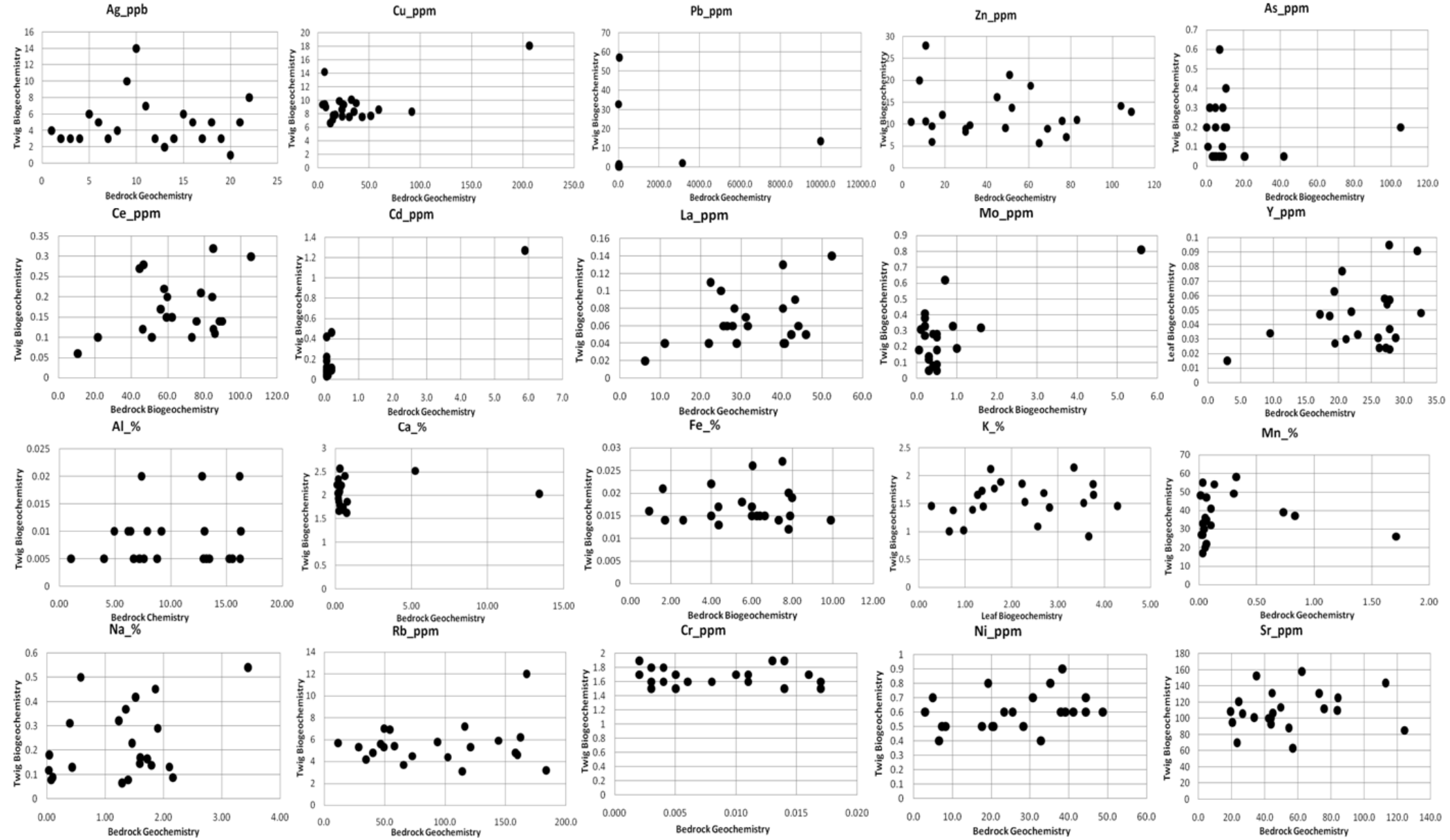


Figure 11: X-Y plots of twig biogeochemistry vs. bedrock geochemistry for the selected suite of elements.

.

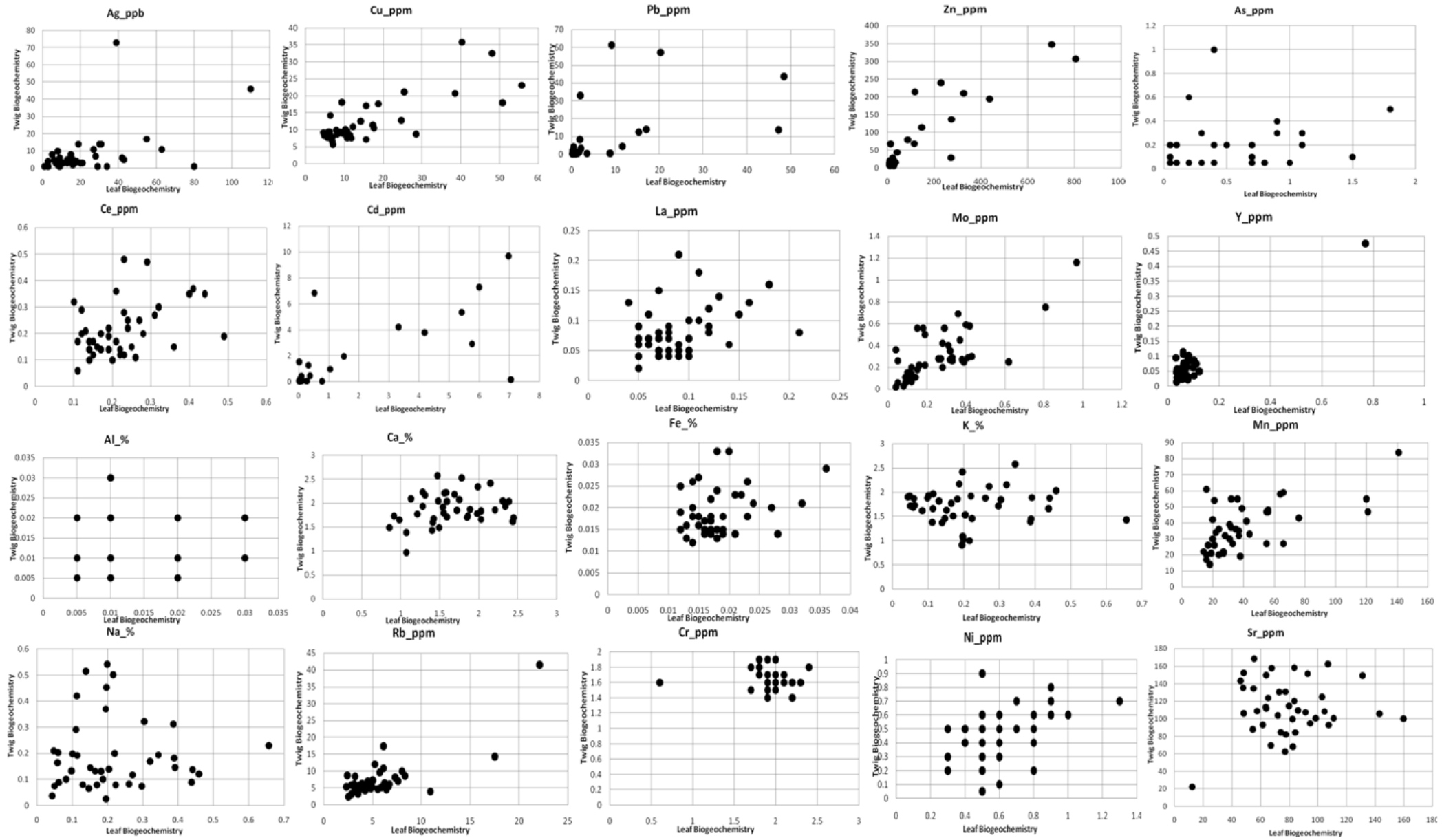


Figure 12: X-Y plots of leaf biogeochemistry vs. twig biogeochemistry for the selected suite of elements.

Biogeochemical Results

COMMODITY

Ag

At all mineralised sites the highest Ag concentrations (>30 ppm) in leaf and twig biogeochemistry are generally from bushes growing on or adjacent to the mineralisation, however, these concentrations decrease markedly (e.g. below DL) within meters of the mineralisation.

Cu

The distribution of Cu in the biogeochemical results is closely associated with proximity to mineralisation and anthropogenic activity in both leaf and twig biogeochemistry. For example, elevated concentrations (10.63 ppm) also occur in samples from drainage depressions particularly at Gilead P Beck.

Pb

Elevated Pb levels (up to 43.54 ppm) are closely associated with mineralisation and anthropogenic activity (e.g. sorting tables and costeans at Billy Springs) in both leaf and twig biogeochemistry. Lead concentrations are not closely associated with landscape setting, for example at Billy Springs where all elevated samples are contained to the area of anthropogenic activity.

Zn

The highest concentrations of Zn (>24.5 ppm) appear down slope and downstream from the mineralisation in both the twig and leaf biogeochemistry throughout the landscapes. Examples of this are at Gilead P Beck where concentrations of >16.8 ppm Zn occurs on depositional plains.

PATHFINDER

As

At all mineralised sites, except for Avondale, the highest biogeochemical concentrations of As (1.1 ppm) are close to the mineralisation with concentrations decreasing markedly within metres of the mineralisation. At Avondale the highest concentration of As is in *E. freelingii* growing in the bedrock surrounding mineralisation. In twig and leaf biogeochemistry at Gilead P Beck and Ooloo many of the concentrations are low or below detection limit (0.01 ppm) making associations difficult and unreliable to identify.

Ce

The highest concentration of Ce (0.31 ppm) in both leaf and twig analyses occurs adjacent to anthropogenic activity and where saprolite is exposed (SSer). There appears to be little control from geological settings on the distribution of Ce.

Cd

Moderate concentrations of Cd (0.7 – 0.38 ppm) occur close to drainage depressions and near to the anthropogenic units. At Avondale, high concentrations (approximately 1.96 ppm) occur on a sheet wash erosional plain. At Ooloo similar concentrations of Cd are clustered throughout the landscape.

La

The highest concentration of La occurs adjacent to drainage depressions, anthropogenic activity, and where bedrock is exposed. The levels of La in biogeochemistry are poorly constrained with regards to geology. Landscape settings appear to have a major control on the concentration of La in biogeochemistry as at Ooloo, concentrations are greater (e.g. 0.14 ppm) where saprolite is exposed.

Mo

The highest biogeochemical concentration of Mo in biogeochemistry (approximately 0.50 ppm) occurs on plain landform settings. Apart from this, there appears to be a geological control on the distribution of Mo, with a higher concentration (0.22-0.42 ppm) in the north at Gilead P Beck, where the unnamed sandstone has been mapped. At Billy Springs, the highest concentration of > 0.69 ppm is in the Billy Springs beds. In both leaf and twig biogeochemistry, Mo exhibits a moderate association with the mineralised area.

Y

Yttrium does not appear to be associated with the mineralised area in either leaf or twig biogeochemistry. The highest values occur adjacent to drainage depressions and a mining sorting table at Gilead P Beck. The biogeochemical response is quite different between leaf and twig analyses such as the samples in the east at Billy Springs which have the highest concentrations of Y in leaf analyses, but the lowest in twig analyses.

LANDSCAPE/HOST/CONTROL

Al

There is a minor variation in the concentration of Al biogeochemistry as concentrations in leaf and twig biogeochemistry being generally close to the lower detection limit. The leaf biogeochemistry weakly follows changes in the geological setting, and to a lesser extent so does the twig biogeochemistry. Associations are difficult to make as the Al probability plot naturally splits into only three groups.

Ca

In both leaf and twig biogeochemistry it appears that Ca has an association with the calcareous beds of the Umberatana Formation and the Billy Springs Beds. This association is more ubiquitous than the effects of the landscape setting. Such an association is not possible at Ooloo as sampling was conducted over only one rock type. At Avondale, the highest concentration of Ca (1.57%) is in *E. freelingii* growing on the surrounding sheet wash plains.

Fe

The abundance of Fe in both leaf and twig analyses is generally greater in bushes growing in the Adelaidean bedrock near former anthropogenic activity. The distribution of Fe in the landscape, however, does not appear to be very closely associated with the geological setting, and instead more closely follows the regolith-landform setting. At Ooloo, the highest values of Fe (0.27%) are in *E. freelingii* growing in units that have exposed saprolite.

K

In general, the concentrations of K in biogeochemistry are spatially related to the underlying geology. Another high concentration (>1.55%), in both leaf and twig analysis, occurs down slope from the sorting table at Gilead P Beck, where contamination is likely. At Ooloo, unlike most other elements, the concentrations of K are higher in *E. freelingii* growing over the North Lode.

Mn

In leaf biogeochemistry, the highest concentration of Mn (64.0 pct) occurs close to the mineralised area and adjacent to previous anthropogenic activity. Usually, only the higher concentrations are systematically reflected in twig biogeochemistry. Geological control is reflected in biogeochemistry, as higher concentrations of Mn

occur southwards, into the Umberatana Formation at Gilead P Beck and in the Billy Springs beds at Billy Springs (more calcareous beds). This association is less obvious at Ooloo and Avondale, where the highest Mn concentration occurs in *E. freelingii* growing on the surrounding bedrock.

Na

In biogeochemistry, Na does not appear to be well constrained with regards to the regolith – landform or geological settings. Concentrations in leaves and twigs have a very similar distribution, except for leaf concentrations being generally lower than twigs. Concentrations of Na are generally highest closest to anthropogenic formations, although this is quite variable.

Rb

In both twig and leaf biogeochemistry geology and regolith – landscape controls are poorly constrained with regards to Rb concentrations at Gilead P Beck and Avondale. At Billy Springs, however, Rb has a strong association with the calcareous Billy Springs Beds, where the highest concentration of Rb (8.3 ppm) is obtained. At Ooloo higher concentrations of Rb appear in *E. freelingii* growing directly on exposed saprolite.

OTHER

Cr

Throughout the biogeochemical landscape, the concentration of Cr in leaf and twig matter is quite different. High concentrations of Cr are closely related to the mineralisation in both media. At Ooloo, the concentration of Cr in biogeochemistry is highest (2.0 ppm) where saprolite is exposed. At Avondale, the highest concentration of Cr is from in *E. freelingii* bushes growing on plains (2.0 ppm).

Ni

Throughout the landscape the concentration of Ni in leaves and twigs is similar. Generally, high concentrations are adjacent to anthropogenic activity and where saprolite is exposed. Geological settings appear to play a lesser role in the distribution of Ni in biogeochemistry.

Sr

The distribution of Sr is poorly constrained with regards to bedrock and regolith – landform associations in regards to both leaf and twig biogeochemistry. The highest concentrations in both leaf and twig matter at the mineralised sites occur adjacent to drainage depressions and anthropogenic activity. However, at Avondale, the highest concentration of Sr (81.2 ppm) is from *E. freelingii* growing on a sheet wash plain (CHep).

Whole Rock Geochemistry

COMMODITY

Ag

The concentration of Ag varies moderately in the bedrock sampled at the mineralised sites (between below detection limit and 5.5 ppb). The high concentrations occur on or within metres of the area of mineralisation. At Ooloo, the concentration of Ag is greatest in bedrock sampled at the North Lode of 0.8 ppb, compared to below detection limits at the South lode.

Cu

Copper occurs at high concentrations in bedrock at the mineralisation site. At Ooloo, the concentration of Cu (206.3 ppm) is highest in bedrock sampled from the North Lode.

Pb

Concentrations of Pb vary greatly between each of the mineralised sites. High concentrations of Pb occur consistently over the area of mineralisation. These values then decrease to <10 ppm within a few metres of mineralisation.

Zn

Concentrations of Zn are highest in the vicinity of mineralisation and higher in the bedrock to the east at Gilead P Beck (up to 104.0 ppm). At Ooloo, the concentration of Zn is highest at the North Lode (up to132.0 ppm).

PATHFINDER

As

The concentration of As in the bedrock sampled is closely related to the mineralisation sites. At Ooloo, the concentration of As is highest in bedrock sampled from the North Lode (28.1 ppm).

Ce

No trend is obvious in the distribution of Ce concentrations from Gilead P Beck. At Ooloo, Ce is distributed in concentrations inversely proportional to that of the commodity elements; where the commodity elements are in high concentrations, the concentration of Ce is low. The highest concentration at Ooloo is 84.6 ppm.

Cd

High concentrations of Cd (up to 0.38 ppm) consistently occur in bedrock sampled from adjacent to the mineralised sites.

La

At Ooloo, La shows the same pattern in concentration as the commodity elements at both the North and South Lodes. This is inconsistent at Gilead P Beck, where the

distribution is generally opposite to this trend, where the concentration of La is lowest near the mineralisation.

Mo

The concentration of Mo is varied in bedrock. In general, the concentration of Mo is lowest at the furthest distances from mineralisation ranging from below detection limit up to 0.1 ppm at Gilead P Beck.

Y

No trend is obvious in Y at Gilead P Beck, however, at Ooloo the distribution of concentrations of Y is inversely proportional to the commodity elements; where the commodity elements are in high concentrations, the concentration of Y is low, but this association is not reliable.

HOST/CONTROL/LANDSCAPE

Al

The lowest concentration of Al is hosted by rock sampled from the vicinity of the mineralised site at Gilead P Beck (2.9 ppm). At Ooloo the concentration of Al is lowest where the concentration of the commodity elements is highest, such as along the North Lode.

Ca

The concentration of Ca does not appear to be associated with mineralisation at either Gilead P Beck or Ooloo. The calcareous beds at Gilead P Beck are associated with a higher concentration of Ca.

Fe

The concentration of Fe is quite variable throughout the study sites. However, at Ooloo, the concentration of Fe is similar to that of the commodity elements and is the most concentrated along the North Lode, up to 33.65%.

K

At Gilead P Beck and Ooloo, the concentration of K does not appear to be consistently associated with mineralisation. This is because both the highest (4.29%) and lowest (0.1%) values occur directly on the site of mineralisation.

Mn

The highest concentrations of Mn (up to 4.29%) appear close to the area of mineralisation at both Gilead P Beck and Ooloo, otherwise, no obvious associations are evident.

Na

The concentration of Na is highest (2.16%) with increasing distance from the mineralised site with the lowest values occurring adjacent to the lode at both Gilead P Beck and Ooloo.

Rb

The concentration of Rb does not appear to be associated with the mineralised sites as both high and low concentrations occur from adjacent to the area of mineralisation.

OTHER

Cr

The concentration of Cr in the rock samples analysed does not appear to have an association with the sites of mineralisation. However, at Gilead P Beck there is generally a higher concentration (0.01%) of Cr in the unnamed sandstone.

Ni

High concentrations (up to21.4ppm) of Ni are recorded in the vicinity of the mineralised sites. Although, at Gilead P Beck the concentration of Ni is greatest towards the eastern area.

Sr

Strontium does not appear to have an association with the rock sampled from the mineralised sites. However, at Gilead P Beck, Sr appears to be in a greater concentration (greter than 62.5 ppm) in the formation which is host to the mineralisation.

DISCUSSION

Plant Organs (Leaves vs. Twigs)

In general, *E. freelingii* twig biogeochemistry has lower concentrations than the corresponding leaf biogeochemistry for the elemental suite (figure 10). This was also seen in a study by Tanti (2011). Despite this, the X-Y plots (figures 11 and 12) showing leaf and twig biogeochemistry vs. bedrock geochemistry show that proximal bedrock geochemistry is expressed similarly in each plant organ. The exception to this includes the commodity elements Ag, Zn, and La. The expression of Ag and Zn bedrock geochemistry is poorly constrained in twig biogeochemistry, whereas La is the only bedrock geochemistry element that is more accurately characterised in twig biogeochemistry than leaf biogeochemistry. The similarity between leaf and twig biogeochemistry is supported by the atlas maps and dendrograms. These methods show that the distribution and behaviour of elements in twig biogeochemistry is similar to that of leaf biogeochemistry throughout the landscape.

Biogeochemistry vs. Bedrock

In general the selected suite of elements display a lower concentration in biogeochemistry than bedrock geochemistry, but overall reflecting the same levels of concentrations observed in geochemistry. An exception to this is Ag, where the concentration in biogeochemistry has a concentration from up to a magnitude greater in twigs and up to 20x greater in leaf biogeochemistry. This is possibly caused by the *E. freelingii* continuously taking up and storing the element in leaf and twig matter as typically it has no biological use (Kabata-Pendias 2011).

The mineralised area shows a distinct biogeochemical signature in *E. freelingii* within the landscape, seen in both the split probability plots (figure 9) and atlas maps. The elements K, Na, Rb, and Al appear to decrease in concentration in this zone, whereas, in general the commodity and trace element concentrations increase. This pattern is also predominant in the bedrock analyses where the concentrations of Na, Ca, Al, Fe, Ce and Y become lower and Ni, As, Mo, and Cd become increased. These trends are also observable in biogeochemistry, but to a slightly lesser extent due to the effects of metabolic function and regolith-landform associations.

In bedrock geochemistry at Gilead P Beck there is a major difference between the concentrations of some elements in the eastern and western sides of the study area. On the eastern side Zn, Cd, Ca, and Ni are higher in concentration than the western side. This phenomenon is not clearly correlated with geology or regolith-landform associations, but could be due to interactions between element mobility and groundwater movement, as a major channel (The Macdonnell River) lies to the east or perhaps a structural zone associated with it (but buried beneath the alluvium).

Some bedrock lithological associations appear to be expressed in biogeochemistry, however, it is likely that biogeochemistry is influenced by metabolic function (Kabata-Pendias 2011) and regolith-landform associations, as shown in the split probability plots (figure 9), so as to somewhat obscure associations with the geological substrate. Despite these influences, some associations are apparent in *E. freelingii* growing on bedrock such as the calcareous Billy Springs Beds and Umberatana Group that have a higher Ca content. The geological substrates which have higher sandstone content are also associated with the elements Y, Al, K, and Fe. Molybdenum shows associations with the geological substrate as well, however the association is not consistent from site to site and is likely to be associated with different types of bedrock. These associations lack a large number of paired samples in each bedrock type, so a larger group of samples would make the identification of these associations more reliable.

Regolith-Landform Associations

Regolith-landform associations appear to have a pervasive effect on *E. freelingii* leaf biogeochemistry, which is illustrated in the split probability plots shown in figure 9. Commodity elements (Ag, Cu, Pb, and Zn) show high concentrations in areas of anthropogenic activity, with the addition of high concentrations of Ag in *E. freelingii* sampled over areas of saprolite exposure. The pathfinder elements (As, Cd, and Mo) are also found in high concentrations in areas of anthropogenic activity, as well on depositional plains (Ce, Cd, La, and Y). The distribution of landscape/host/control elements throughout the landscape is not as well constrained with regards to different regolith-landform settings, in general, these elements are found in the highest

concentrations in *E. freelingii* growing on plains, rises and units where saprolite is exposed. The 'other elements' do not show any association with a particular regolith-landform setting, excepts for Sr, which is distinctly higher in plants growing on exposed saprolite. The associations made by the split probability plots may be limited by the number of samples pertaining to each regolith-landform unit.

Mineral Exploration Implications

Biogeochemical surveys in the northwestern Flinders Ranges have confirmed sites of known mineralisation in various geological settings. When conducting a biogeochemical survey using *E.freelingii* in this area, leaf biogeochemistry is an ideal sample medium. Leaf collection is easier than twigs, and in general, leaf biogeochemistry shows a better defined response to the underlying geological setting than twig biogeochemistry. Leaf biogeochemistry values show more variation with different geological settings, and therefore show better definition and resolution for exploration than twig biogeochemistry. Biogeochemistry was also able to distinguish between areas where saprolite is exposed or near surface rather than more deeply buried.

Bedrock geochemistry and *E. freelingii* biogeochemistry show that locations which contain relatively high concentrations of Ni, As, Mo, and Cd are associated with mineralisation and an associated hypogene and landscape dispersion halo. This indicates that these elements could possibly be used as pathfinder elements when conducting biogeochemical surveys in this area, the elements and their background and elevated concentrations associated with the mineralisation in *E. freelingii* leaf biogeochemistry are summarised in Table 3. However, variation from site to site due

to differences in local lithology affects these concentrations, so the values have been averaged. Additionally, the decrease in concentration of Na, Ca, Al, Fe, Ce, and Y occurs in the vicinity of the mineralisation.

Table 3: Summary of elements associated with the mineralisation in *Eremophila freelingii* leaf biogeochemistry and their respective background and elevated concentrations.

Element	Background Concentration	Elevated Concentration
Nickel	Approximately <0.5 ppm	Approximately >0.6 ppm
Arsenic	Approximately <0.3 ppm	Approximately >0.4 ppm
Molybdenum	Approximately <0.25 ppm	Approximately >0.26 ppm
Cadmium	Approximately <0.10 ppm	Approximately >0.11 ppm

The atlas maps illustrate the nature and differences of the geochemical dispersion footprints reflected detected by *E. freelingii* leaf biogeochemistry for each commodity element over the mineralised site. These geochemical dispersion footprints are shown conceptually in figure 12. The size of the dispersion footprint which can be observed most prominently at Gilead P Beck is Zn>Cu>Pb>Ag. The differences in these geochemical dispersion haloes are an important aspect of exploration as the exploration target increases or decreases in conjunction with dispersion footprint size. Knowledge of this is an important factor in the spacing of sampling in a biogeochemical survey. Additionally, as these footprints do not completely overlap, exploration using correlation statistics, such as dendrograms or correlation coefficients, will be undermined by this, and any correlations made will be weakened.

Lastly, this study shows that regolith – landform settings should be taken into account when interpreting the concentration of certain elements in biogeochemistry as different landforms can influence the concentration and distribution of the commodity and pathfinder elements.

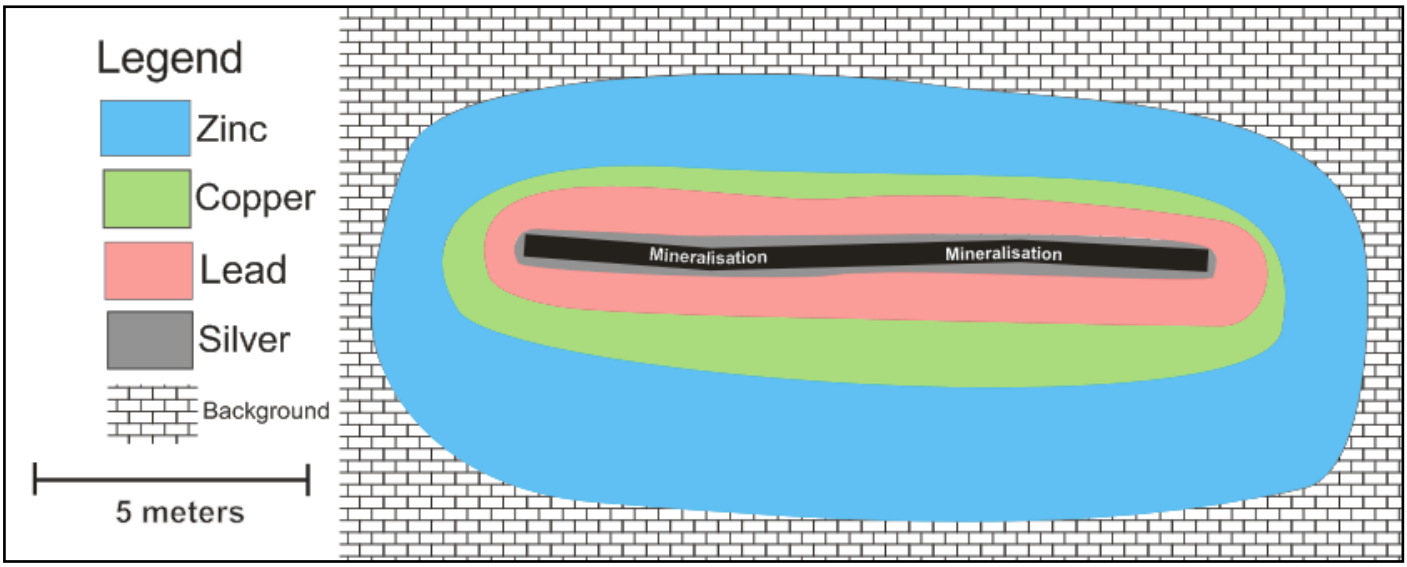


Figure 13: Conceptual diagram of the geochemical dispersion footprint characterised in *Eremophila freelingii* biogeochemistry.

CONCLUSIONS

Eremophila freelingii plants are well suited for biogeochemical exploration in the northwestern Flinders Ranges due to their widespread distribution and biogeochemical properties. Specifically *E. freelingii* has been able to;

- Characterise the geochemistry of base metal mineralisation in areas of known mineralisation;
- Compare internal (leaf and twig) plant organ biogeochemistry to discern differences in abundance of elements throughout an *E. freelingii* bush;
- Identify a biogeochemical signature for different underlying geological settings;
- Identify an alteration halo and trace elements associated with the known mineralisation (As, Cd, Mo, and Ni) which can be used to effectively enlarge the target during exploration;
- Display the effects of regolith – landform settings on the distribution of elements in the landscape; and

- Identify a geochemical dispersion footprint using *E. freelingii* leaf biogeochemistry and the relative size of this footprint for the commodity elements; Zn>Cu>Pb>Ag.

This study has shown that *E. freelingii* is an effective indicator of base metal mineralisation in the northwestern Flinders Ranges. *E. freelingii* are also able to distinguish a halo associated with the expression of the base metal mineralisation which consists of the elements of Ni, As, Mo, Cd, and La. This study has also shown that the concentration of elements in plant organs (leaf and twig) differ in detectable and significant amounts between each organ.

ACKNOWLEDGMENTS

I would like to thank Dr. Steven Hill, as without his supervision and guidance I would not have been able to accomplish this work. Stephen Hore, whose knowledge and experience in this area is invaluable, as was his assistance in the field. I would also like to thank Farid Shahin, for his assistance with field work, as well as the remainder of the 2012 Honours cohort for their support and friendship throughout this year.

REFERENCES

BETTS P. G. & GILES D. 2006. The 1800–1100 Ma tectonic evolution of Australia. *Precambrian Research* **144**, 92-125.

BETTS P. G., GILES D., LISTER G. S. & FRICK L. R. 2002. Evolution of the Australian lithosphere. *Australian Journal of Earth Sciences* **49**, 661-695.

BOM 2012. Climate statistics for Australian locations - Marree (Farina)(retrieved 23/04 2012).

BRANDLE R. 1998. A biological survey of the North West Flinders Ranges, South Australia, Dec-1997. *Biological Survey and Research, Department for Environment Heritage and Aboriginal Affairs, South Australia*.

COATS R. & BLISSETT A. 1971. *Regional and economic geology of the Mount Painter province* (Geological Survey of South Australia, Bulletin 43). A.B. James, Government Printer, Adelaide.

DUNN C., THOMPSON R. & ANDERSON R. 2010. Reconnaissance and detailed surveys in Southern British Coloumbia using Biogeochemical Methods.

DUNN C. E. 2007. Biogeochemistry in mineral exploration. *Handbook of Exploration and Environmental Geochemistry* **9**, xiii-460.

DYSON I. 2001. The diapir - base metal association in the northern Flinders Ranges. *MESA Journal* **22**, 37-43.

GARMAN M., WILSON R., JONES W., DONOVAN P. & FIDLER R. 1970. Env 01228-Billy Springs and Mount Livingstone - Progress and final reports to license expiry/renewal for the period 1/7/1969 to 19/11/1970. Submitted by North Flinders Mines NL.

GROVES I. M., CARMAN C. E. & DUNLAP W. J. 2003. Geology of the Beltana willemite deposit, Flinders Ranges, south Australia. *Economic Geology* **98**, 797-818.

HARKINS S. A., APPOLD M. S., NELSON B. K., BREWER A. M. & GROVES I. M. 2008. Lead isotope constraints on the origin of nonsulfide zinc and sulfide zinc-lead deposits in the Flinders Ranges, South Australia. *Economic Geology* **103**, 353-364.

HILL S. 2004. Biogeochemical sampling media for regional-to prospect-scale mineral exploration in regolith-dominated terrains of the Curnamona province and adjacent areas in western NSW and eastern SA. *Regolith 2004 - CRC LEME*, 128-133.

HILL S. & HILL L. 2003. Some important characteristics and assay overviews for biogeochemical surveys in western New South Wales. *Advances in Regolith*.

HILL S. M. 2009. Vegetation sampling in the Gawler Craton. *CRC LEME - Publication Guides*.

HOLLIDAY I. & HILL R. 1975. *Plants of the Flinders Ranges*. Rigby Limited.

KABATA-PENDIAS A. 2011. *Trace Elements in Soils and Plants* (4 edition). CRC Press - Taylor & Francis Group.

MARSHAK S. & FLOTTMANN T. 1996. Structure and origin of the Fleurieu and Nackara arcs in the Adelaide fold-thrust belt, south Australia: Salient and recess development in the Delamerian Orogen. *Journal of Structural Geology* **18**, 891-908.

MOORE P. 2005. Emubushes and Poverty Bushes. *In*, *A guide to plants of inland Australia.*, Reed New Holland.

NEIMANIS M. & HILL S. 2006. Plant biogeochemical expression of uranium mineralisation in Australia: research outline and preliminary results. *Regolith 2006-Consolidation and dispersion of ideas*, 256-259.

OVERALL R. A. & PARRY D. L. 2004. The uptake of uranium by Eleocharis dulcis (Chinese water chestnut) in the Ranger Uranium Mine constructed wetland filter. *Environmental Pollution* **132**, 307-320.

POWELL C. M. A., PREISS W., GATEHOUSE C., KRAPEZ B. & LI Z. 1994. South Australian record of a Rodinian epicontinental basin and its mid-Neoproterozoic breakup (700 Ma) to form the Palaeo-Pacific Ocean. *Tectonophysics* **237**, 113-140.

REID N., HILL S. & LEWIS D. 2008. Spinifex biogeochemical expressions of buried gold mineralisation: The great mineral exploration penetrator of transported regolith. *Applied Geochemistry* **23**, 76-84.

REID N. & HILL S. M. 2010. Biogeochemical sampling for mineral exploration in arid terrains: Tanami Gold Province, Australia. *Journal of Geochemical Exploration* **104**, 105-117.

RIDGWAY J. 1948. Avondale Mine - Report Book 24/15. *Department of Mines South Australia*.

SPECHT R. 1972. *The Vegetation of South Australia* (2nd edition). A.B. James, Government Printer.

TANTI D. 2011. Bioegeochemical and Regolith expressio of buried non-ferrous mineralisation in the Northern Middleback Ranges, Iron Knob. Bachelor of Science (Honours) thesis, Earth and Environmental Sciences, The University of Adelaide, Adelaide (unpubl.).

TUCKER L. 2006. Biogeochemical residence and dispersion of trace metals in the New Bendigo Inlier and marins, Northwest NSW. Earth and Environmental Sciences, The University of Adelaide (unpubl.).

VANDERHOEK B. 2007. Biogeochemical expression of uranium mineralisation by Eremophila shrubs in the northern Flinders Ranges - western Lake Frome Plains, South Australia. Bachelor of Science (Honours) thesis, School of Earth and Environmental Sciences, The University of Adelaide, Adelaide (unpubl.).

WADE C., SHEARD M., REID A. & JAGODZINSKI E. 2012. Ooloo Hill Formation: a newly recognised mid-Devonian sedimentary and basaltic sequence adjacent to NW Flinders Ranges (poster). *Unlocking SA's mineral wealth technical forum.*

Appendices

Appendix A: Atlas Maps.
Appendix B: Regolith – Landform Unit Legend.
Appendix C: *Eremophila freelingii* leaf biogeochemistry results.
Appendix D: *Eremophila freelingii* twig biogeochemistry results.
Appendix E: Bedrock geology geochemistry results.

Appendix A: Atlas Maps.

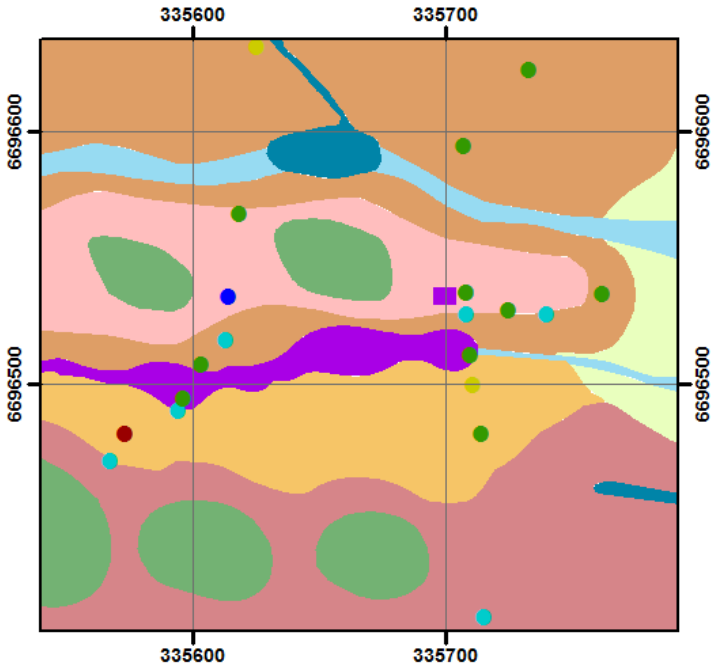
Gilead P Beck

***Eremophila freelingii* leaf**

Ag(ppb)

Commodity

Regolith - Landform

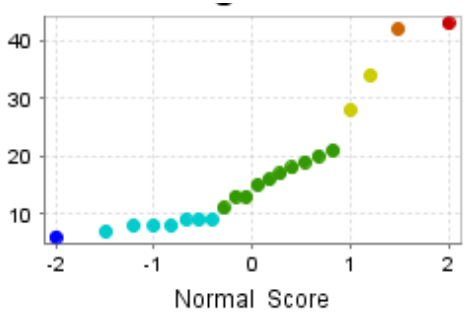


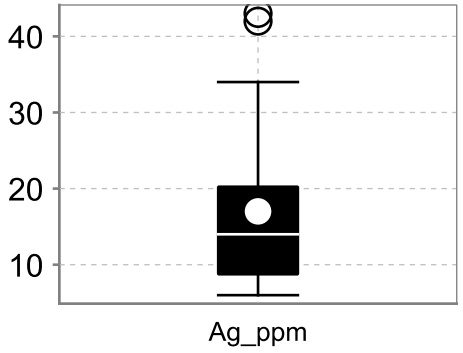
Legend

- <6.0 ppm
- 6.0 - 9.0 ppm
- 9.0 - 21.0 ppm
- 21.0 - 34.0 ppm
- 34.0 - 42.0 ppm
- >42.0 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 2

Below Detection Limit = 0

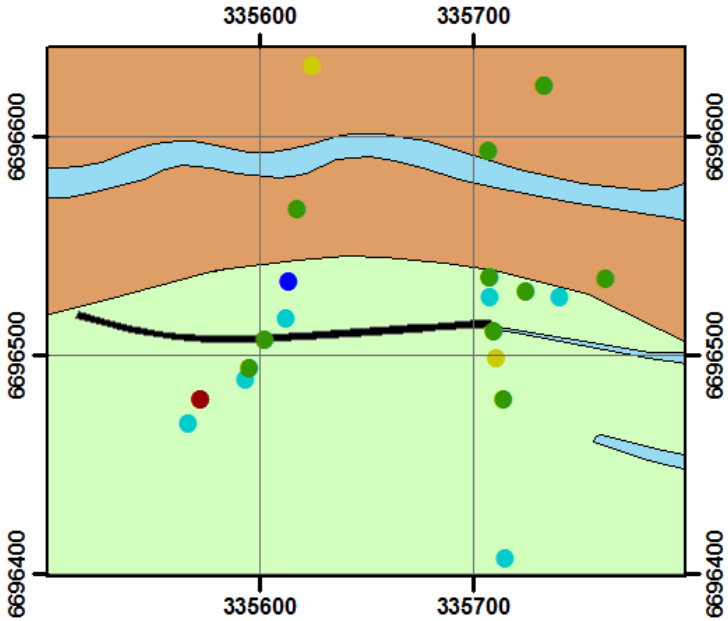
Median = 14

Mean = 17

Standard Deviation = 10.84

Error = ±4.81

Bedrock Geology



Legend

- <6.0 ppm
- 6.0 - 9.0 ppm
- 9.0 - 21.0 ppm
- 21.0 - 34.0 ppm
- 34.0 - 42.0 ppm
- >42.0 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

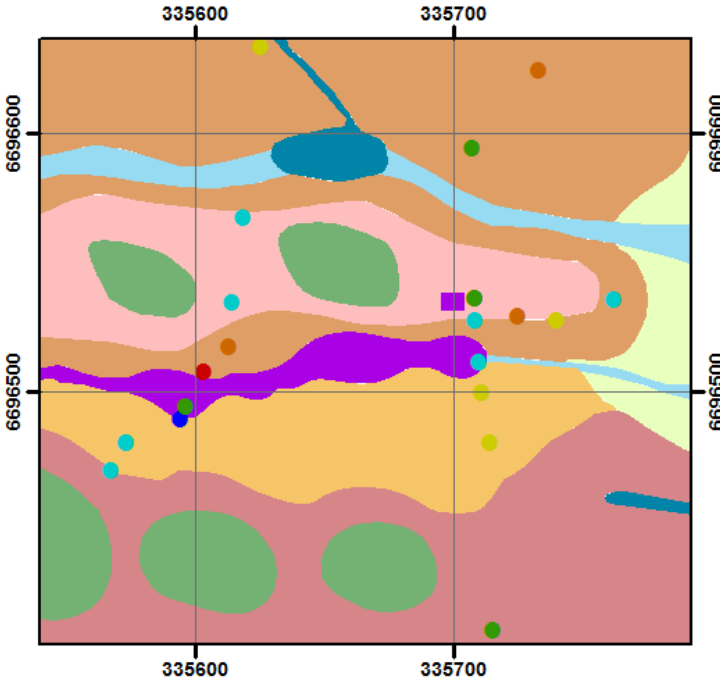
Gilead P Beck

***Eremophila freelingii* leaf**

Cu(ppm)

Commodity

Regolith - Landform



Legend

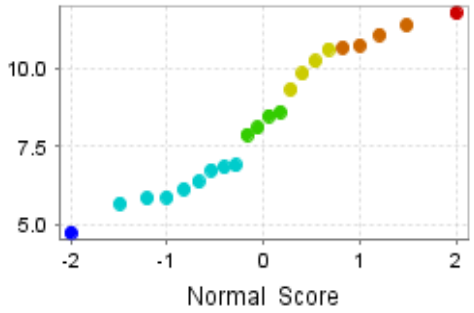
- <5.0 ppm
- 5.0 - 6.9 ppm
- 6.9 - 8.61 ppm
- 8.61 - 10.63 ppm
- 10.63 - 11.4 ppm
- >11.4 ppm

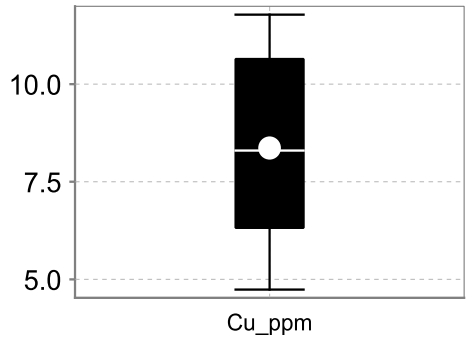
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1

- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

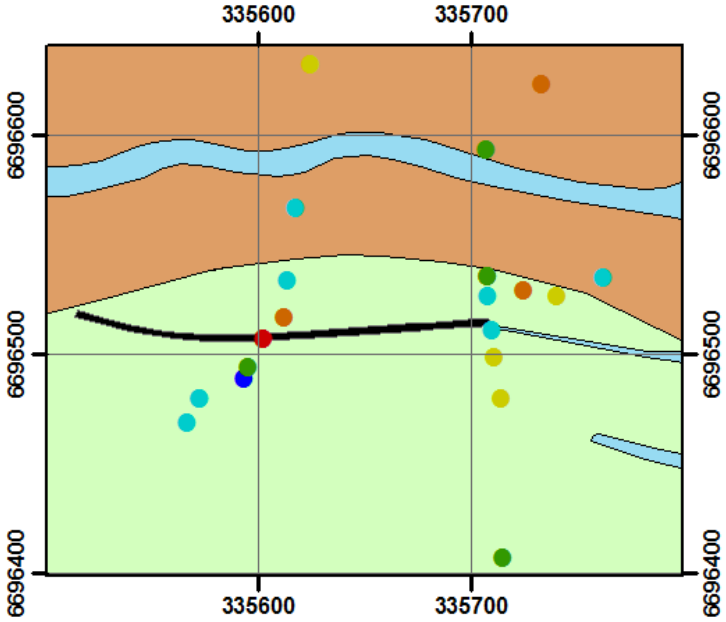
Median = 8.36

Mean = 8.3

Standard Deviation = 10.61

Error = ± 4.71

Bedrock Geology



Legend

- <5.0 ppm
- 5.0 - 6.9 ppm
- 6.9 - 8.61 ppm
- 8.61 - 10.63
- 10.63 - 11.4 ppm
- >11.4 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

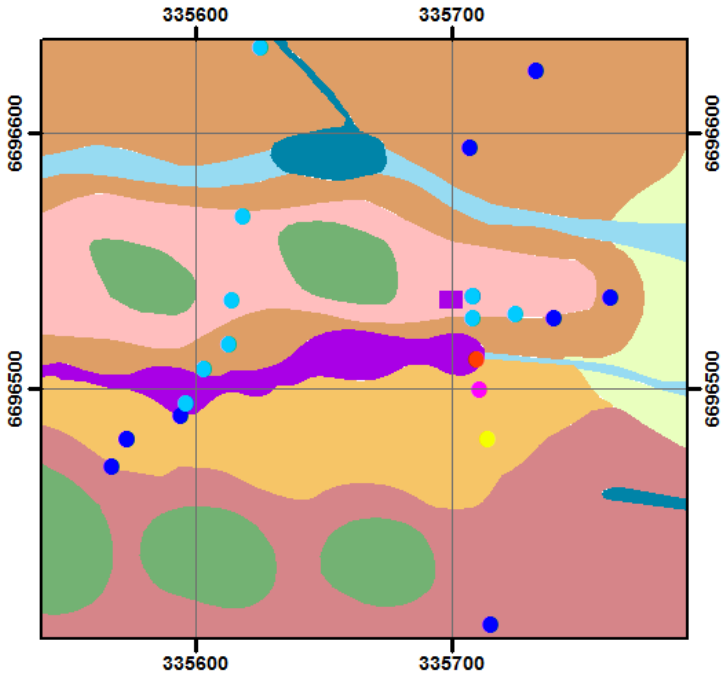
Gilead P Beck

***Eremophila freelingii* leaf**

Pb(ppm)

Commodity

Regolith - Landform



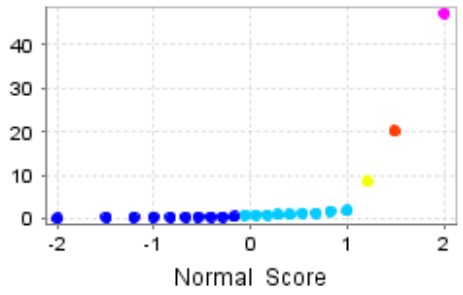
Legend

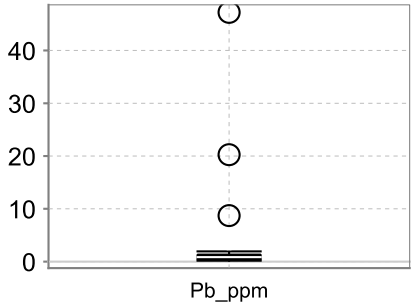
- <0.76 ppm
- 0.76 - 4.33 ppm
- 4.33 - 13.86 ppm
- 13.86 - 43.54 ppm
- >43.54 ppm

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

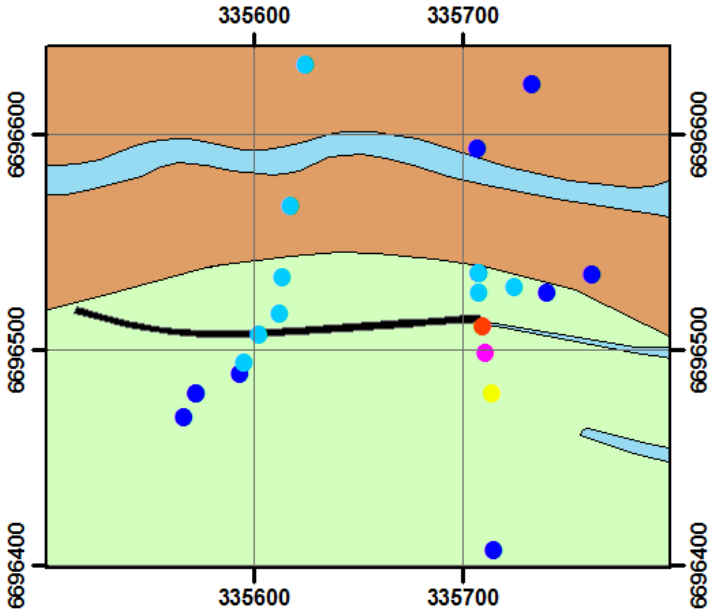
Median = 0.85

Mean = 4.10

Standard Deviation = 10.61

Error = ± 4.7

Bedrock Geology



Legend

- <0.76 ppm
- 4.33 - 0.76 ppm
- 0.76 - 13.86 ppm
- 13.86 - 43.56 ppm
- >43.54 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

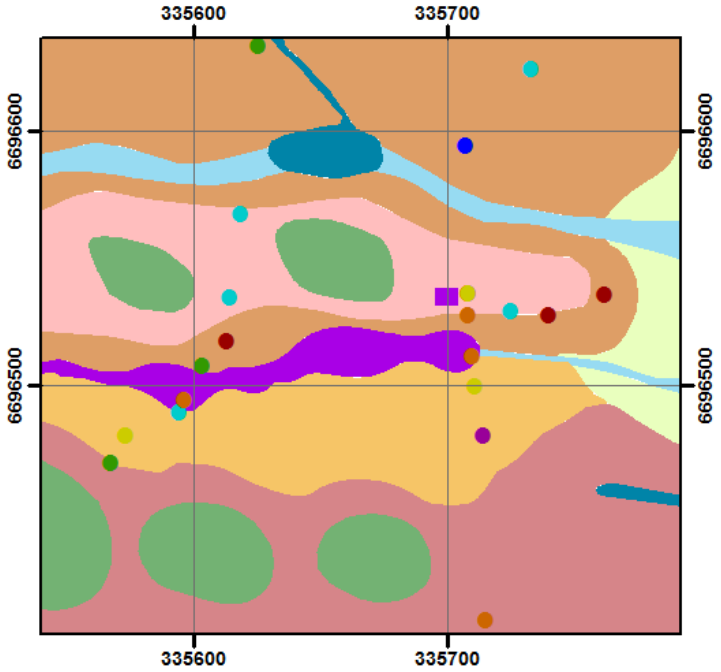
Gilead P Beck

***Eremophila freelingii* leaf**

$Zn_{(ppm)}$

Commodity

Regolith - Landform



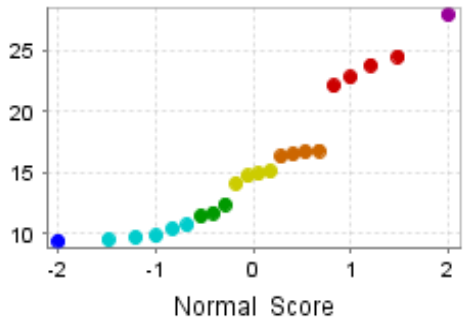
Legend

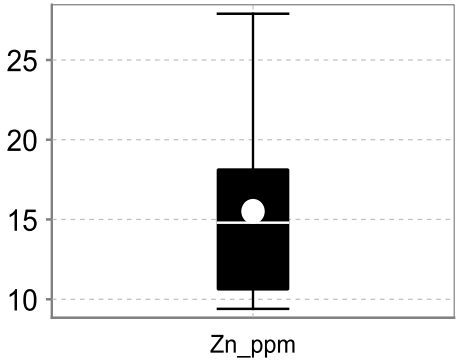
- <9.4 ppm
- 9.4 - 10.7 ppm
- 10.7 - 12.4 ppm
- 12.4 - 15.1 ppm
- 15.1 - 16.8 ppm
- 16.8 - 24.5 ppm
- >24.5 ppm

- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.1

Below Detection Limit = 0

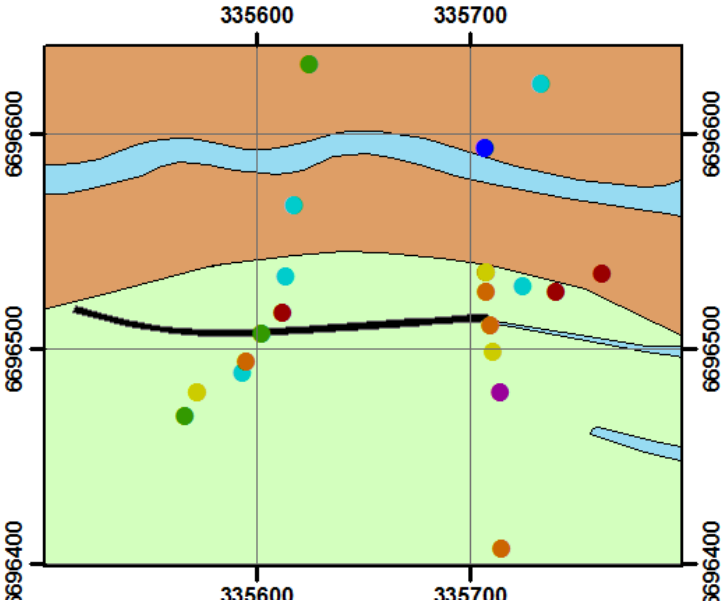
Median = 14.8

Mean = 15.51

Standard Deviation = 5.51

Error = ±2.44

Bedrock Geology



Legend

gpb_zn

- <9.4 ppm
- 9.4 - 10.7 ppm
- 10.7 - 12.4 ppm
- 12.4 - 15.1 ppm
- 15.1 - 16.8 ppm
- 16.8 - 24.5 ppm
- >24.5 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

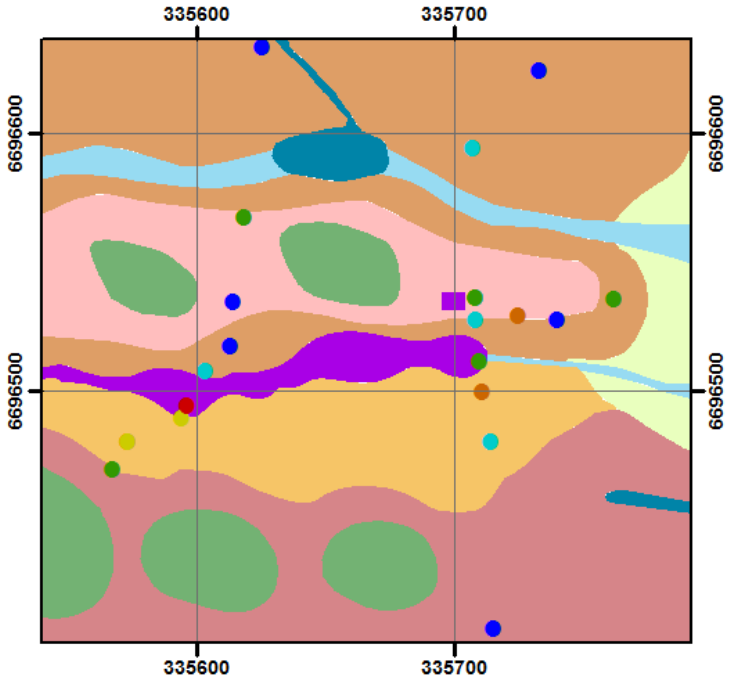
Gilead P Beck

***Eremophila freelingii* leaf**

As(ppm)

Pathfinder

Regolith - Landform



Legend

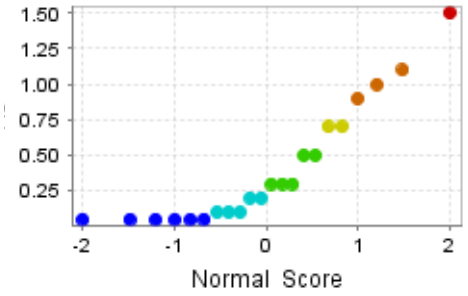
- <0.05 ppm
- 0.05 - 0.2 ppm
- 0.2 - 0.5 ppm
- 0.5 - 0.7 ppm
- 0.7 - 1.1 ppm
- >1.1 ppm

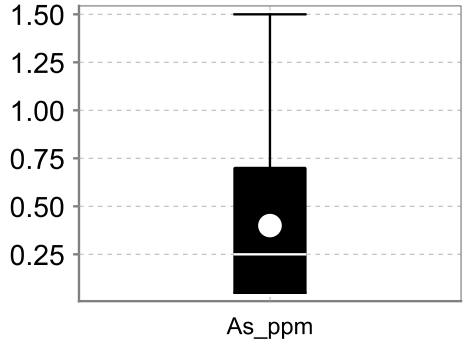
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1

- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.1

Below Detection Limit = 6

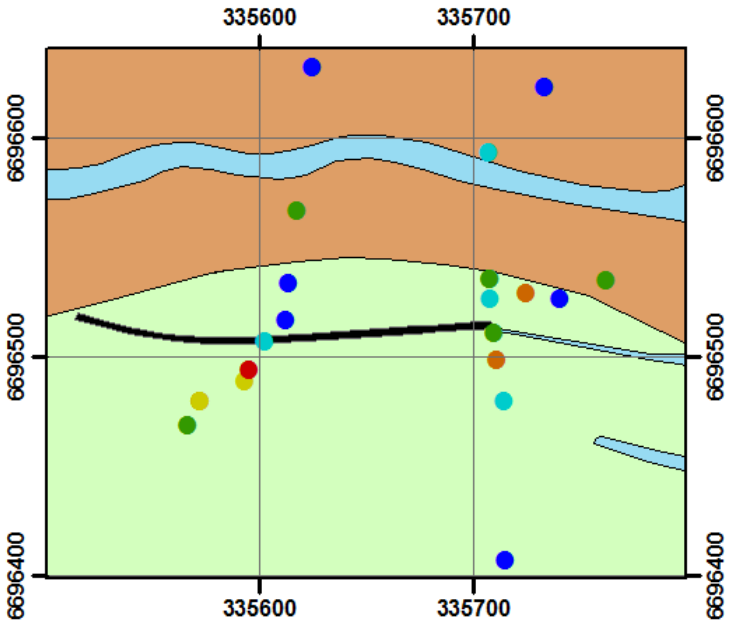
Median = 0.25

Mean = 0.4

Standard Deviation = 0.42

Error = ± 0.24

Bedrock Geology



Legend

- <0.05 ppm
- 0.05 - 0.2 ppm
- 0.2 - 0.5 ppm
- 0.5 - 0.7 ppm
- 0.7 - 1.1 ppm
- >1.1 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

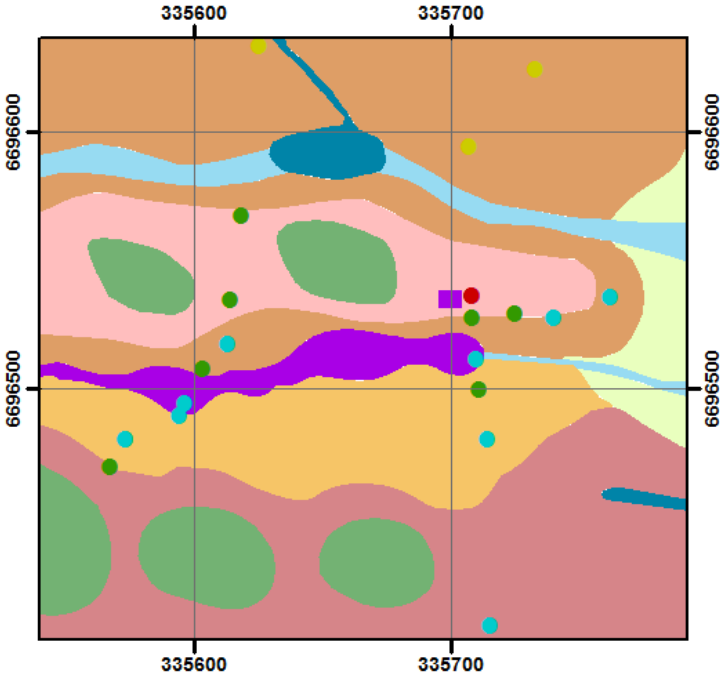
Gilead P Beck

***Eremophila freelingii* leaf**

$Ce_{(ppm)}$

Other

Regolith - Landform



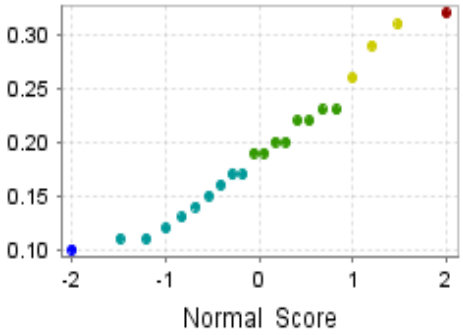
Legend

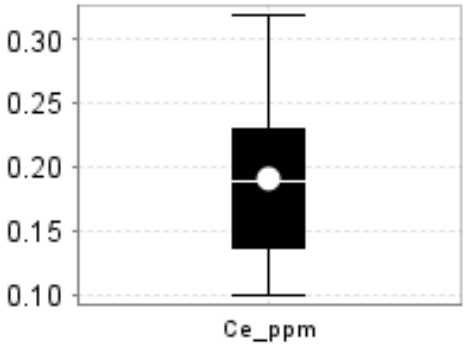
- <0.1 ppm
- 0.1 - 0.17 ppm
- 0.17 - 0.23 ppm
- 0.23 - 0.31 ppm
- >0.31 ppm

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

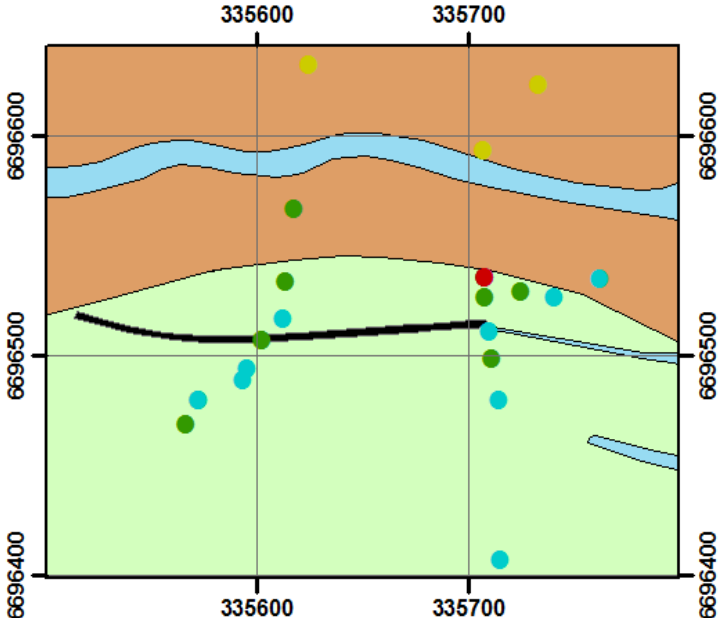
Median = 0.19

Mean = 0.192

Standard Deviation = 0.064

Error = ±0.03

Bedrock Geology



Legend

- <0.1 ppm
- 0.1 - 0.17 ppm
- 0.17 - 0.23 ppm
- 0.23 - 0.31 ppm
- >0.31 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

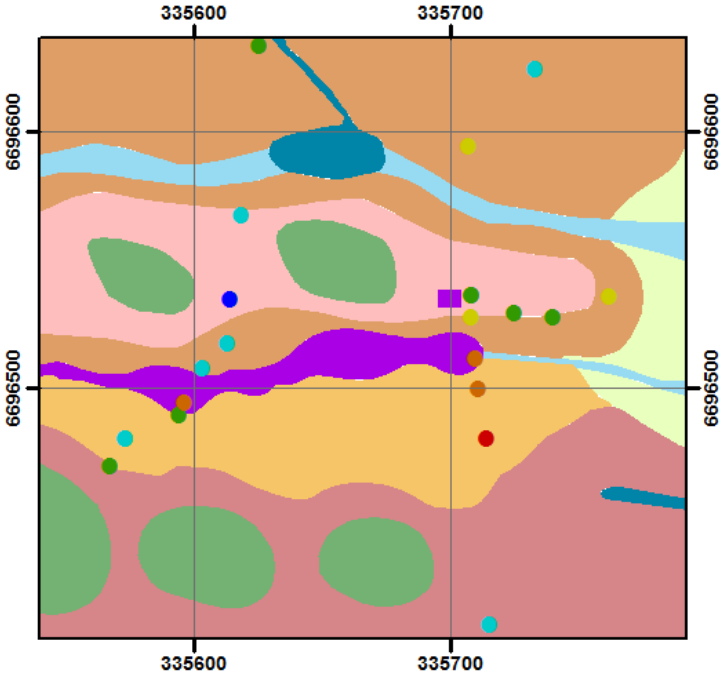
Gilead P Beck

***Eremophila freelingii* leaf**

$Cd_{(ppm)}$

Pathfinder

Regolith - Landform



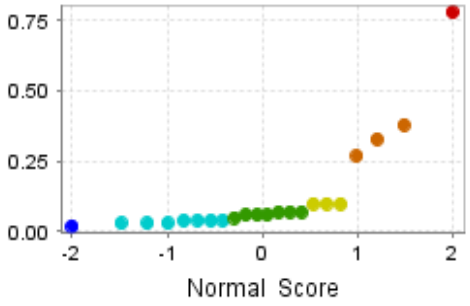
Legend

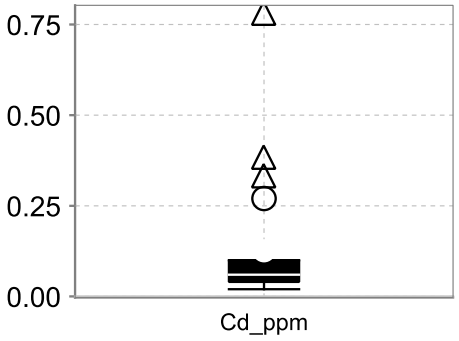
- <0.02 ppm
- 0.02 - 0.04 ppm
- 0.01 - 0.07 ppm
- 0.07 - 0.1 ppm
- 0.1 - 0.38 ppm
- >0.38 ppm

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

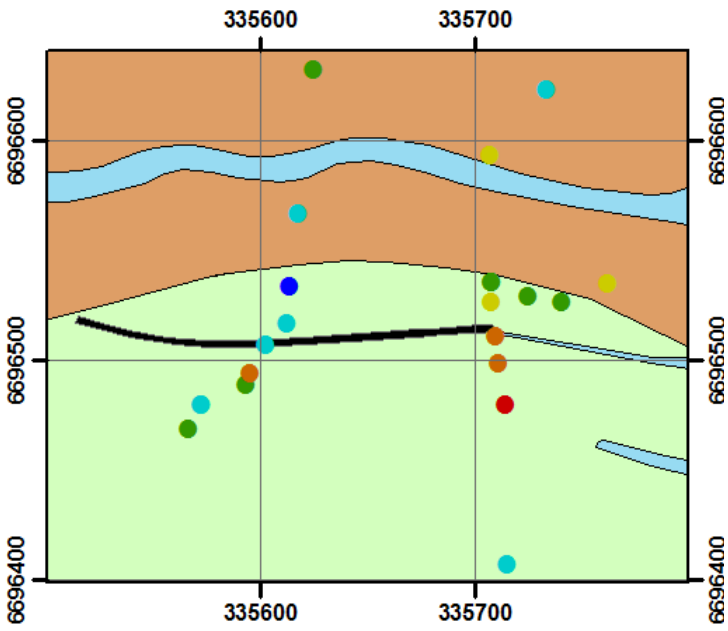
Median = 0.06

Mean = 0.126

Standard Deviation = 0.176

Error = ±0.07

Bedrock Geology



Legend

- <0.02 ppm
- 0.02 - 0.04 ppm
- 0.04 - 0.07 ppm
- 0.07 - 0.1 ppm
- 0.1 - 0.38 ppm
- >0.38 pm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

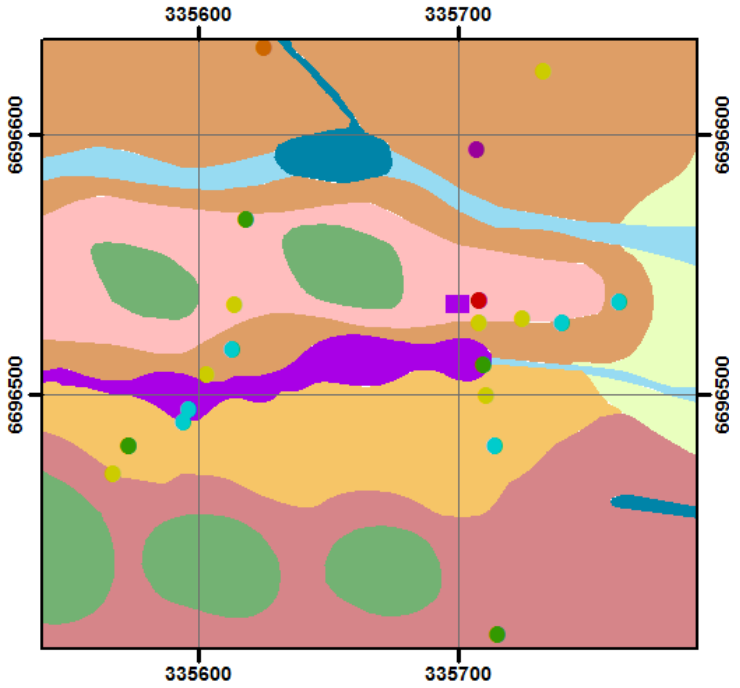
Gilead P Beck

***Eremophila freelingii* leaf**

La(ppm)

Pathfinder

Regolith - Landform



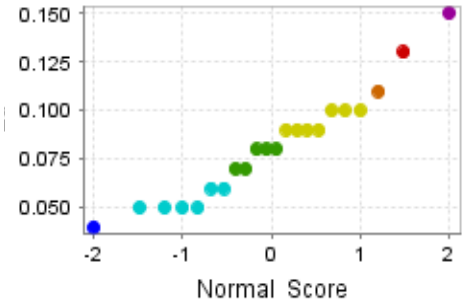
Legend

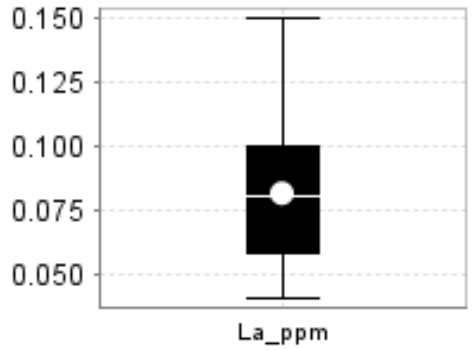
- <0.04 ppm
- 0.04 - 0.06 ppm
- 0.06 - 0.08 ppm
- 0.08 - 01 ppm
- 0.1 - 0.11 ppm
- 0.11 - 0.13 ppm
- >0.13 ppm

- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

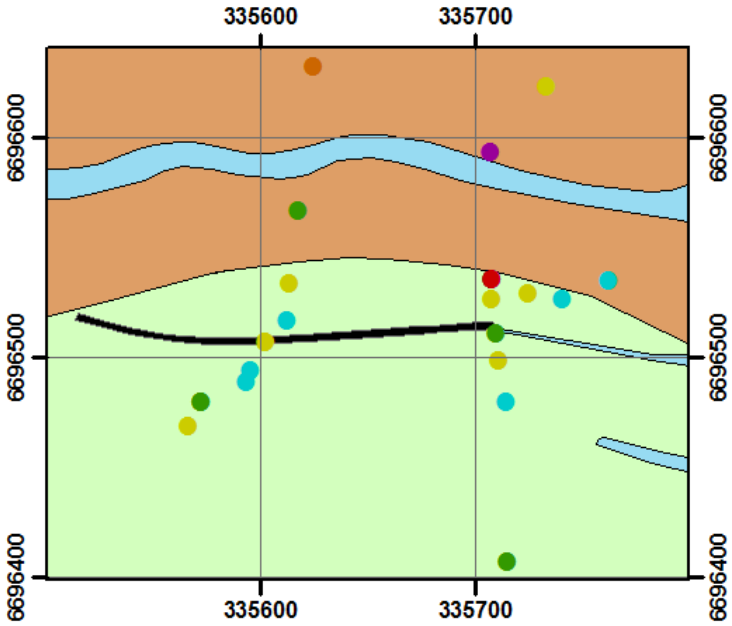
Median = 0.08

Mean = 0.081

Standard Deviation = 0.028

Error = ±0.01

Bedrock Geology



Legend

- <0.04 ppm
- 0.04 - 0.06 ppm
- 0.06 - 0.08 ppm
- 0.08 - 0.01 ppm
- 0.1 - 0.11 ppm
- 0.11 - 0.13 ppm
- >0.13 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

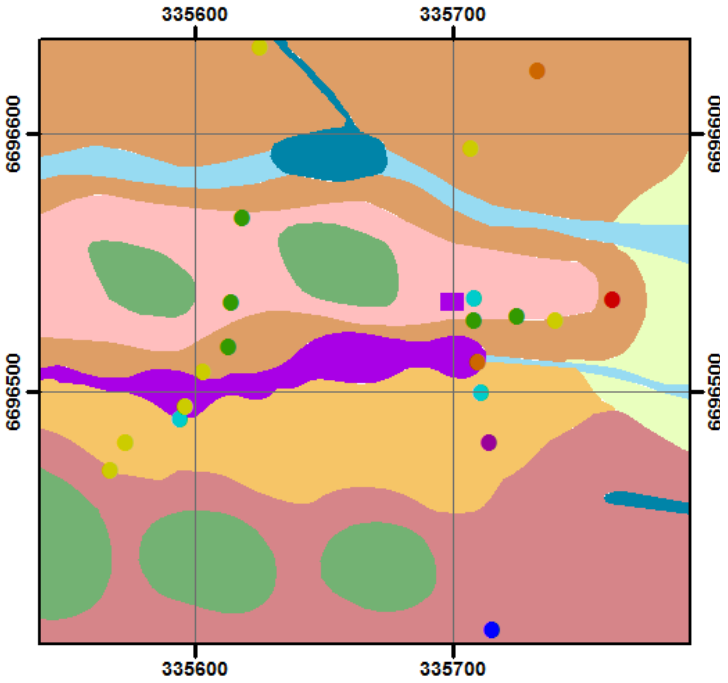
Gilead P Beck

***Eremophila freelingii* leaf**

Mo(ppm)

Pathfinder

Regolith - Landform



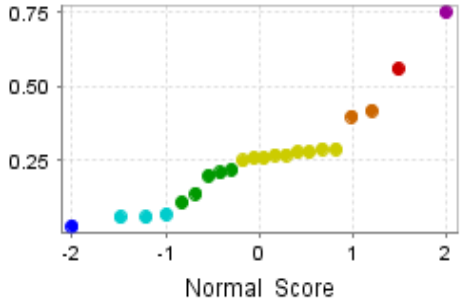
Legend

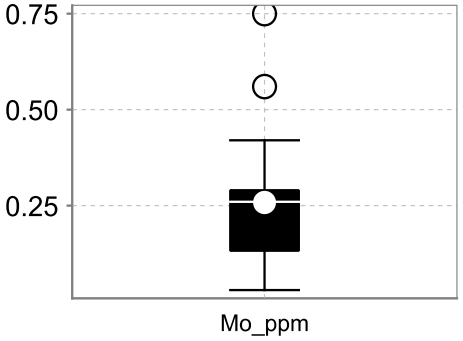
- <0.03 ppm
- 0.03 - 0.07 ppm
- 0.07 - 0.22 ppm
- 0.22 - 0.29 ppm
- 0.29 - 0.42 ppm
- 0.42 - 0.56 ppm
- >0.56 ppm

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

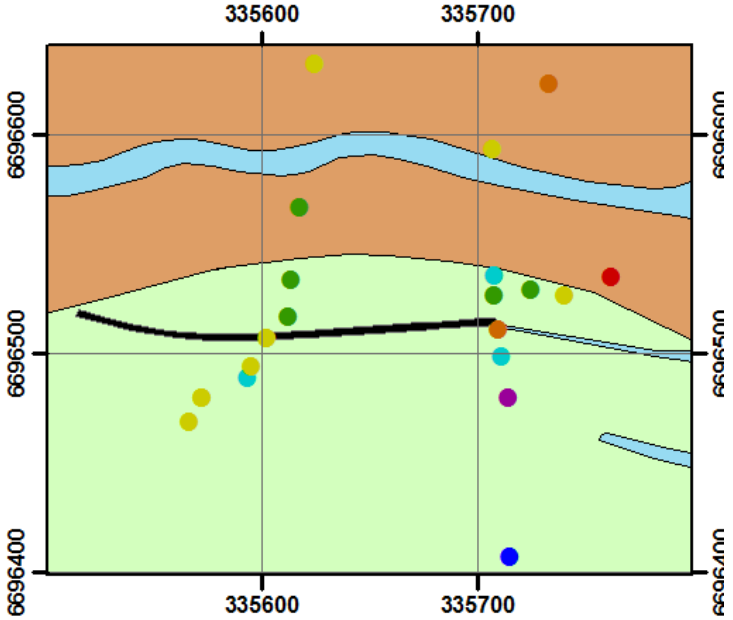
Median = 0.26

Mean = 0.258

Standard Deviation = 0.168

Error = ±0.07

Bedrock Geology



Legend

- <0.03 ppm
- 0.03 - 0.07 ppm
- 0.07 - 0.22
- 0.22 - 0.029 ppm
- 0.29 - 0.42 ppm
- 0.42 - 0.56 ppm
- >0.56 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

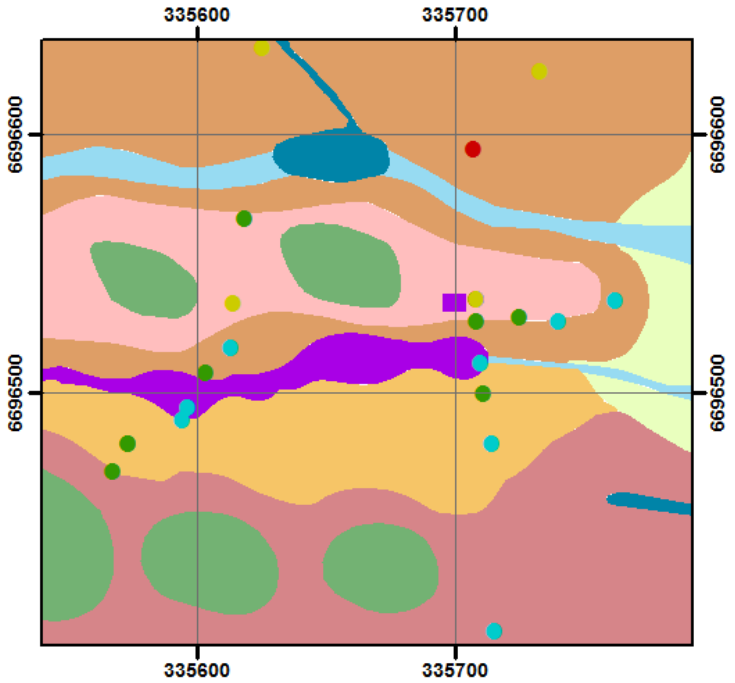
Gilead P Beck

***Eremophila freelingii* leaf**

Y (ppm)

Pathfinder

Regolith - Landform



Legend

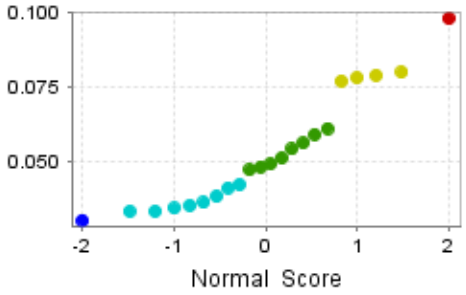
- <0.03 ppm
- 0.03 - 0.042 ppm
- 0.042 - 0.061 ppm
- 0.061 - 0.08 ppm
- >0.08 ppm

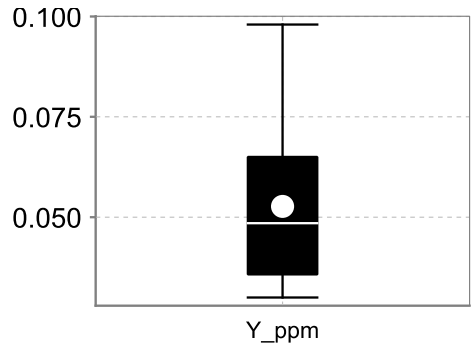
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1

- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





<u>Summary Statistics</u>

N = 22

Lower Detection Limit= 0.001

Below Detection Limit = 0

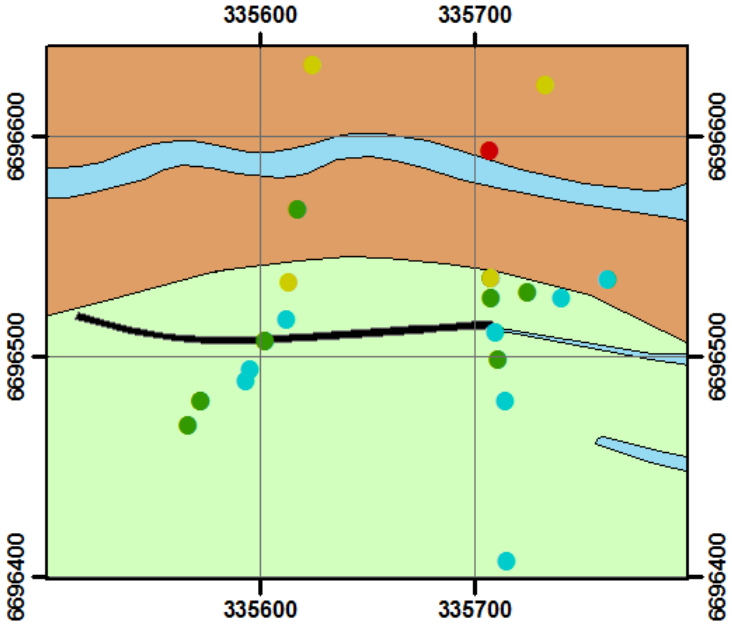
Median = 0.048

Mean = 0.0523

Standard Deviation = 0.0190

Error = ±0.01

Bedrock Geology



Legend

- <0.03 ppm
- 0.03 - 0.042 ppm
- 0.042 - 0.061 ppm
- 0.061 - 0.08 ppm
- >0.08 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

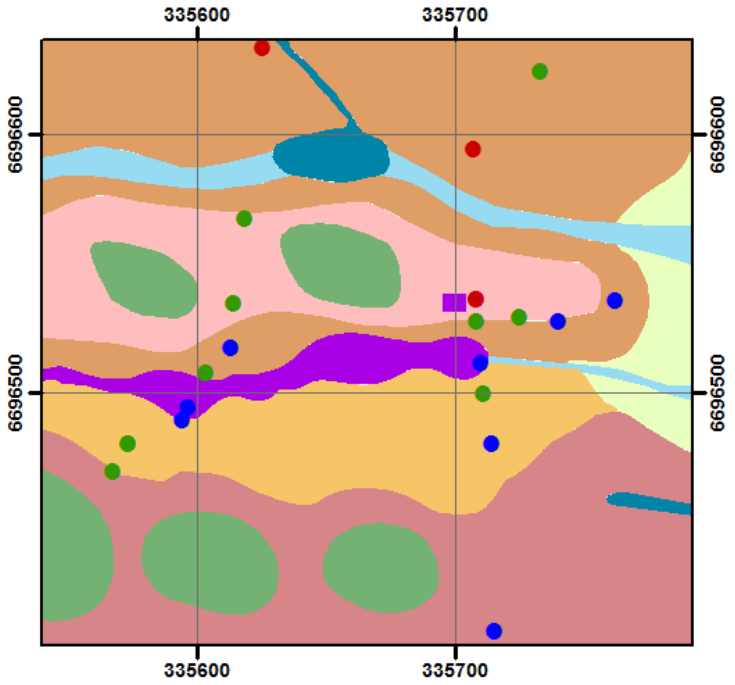
Gilead P Beck

***Eremophila freelingii* leaf**

Al(%)

Host/Control

Regolith - Landform



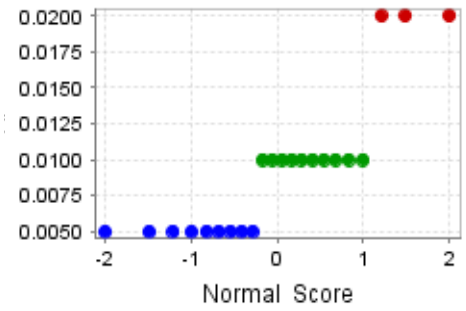
Legend

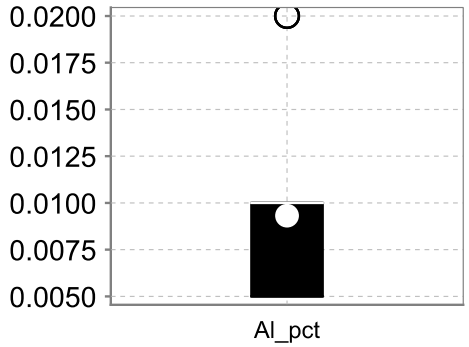
- <0.005 pct
- 0.005 - 0.01 pct
- >0.1 pct

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 9

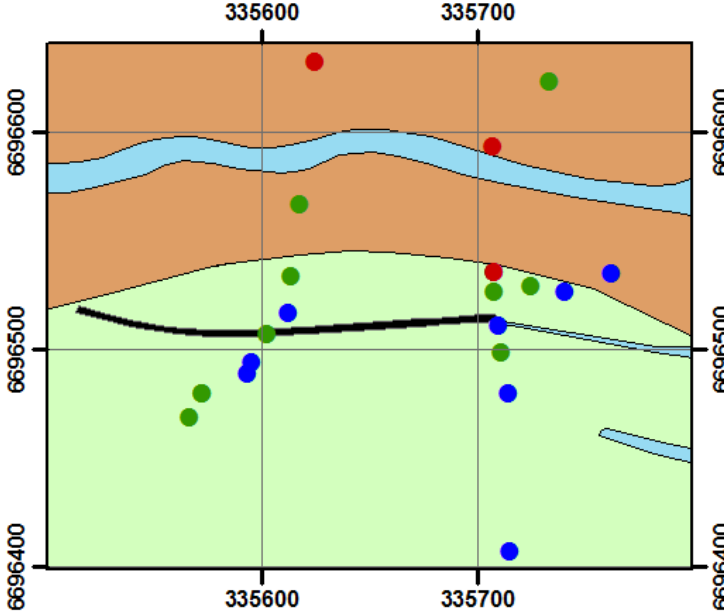
Median = 0.01

Mean = 0.009

Standard Deviation = 0.005

Error = ±0.002

Bedrock Geology



Legend

- <0.0050 pct
- 0.0050 - 0.01 pct
- >0.01 pct

N

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

0 5 10 20 30 Meters

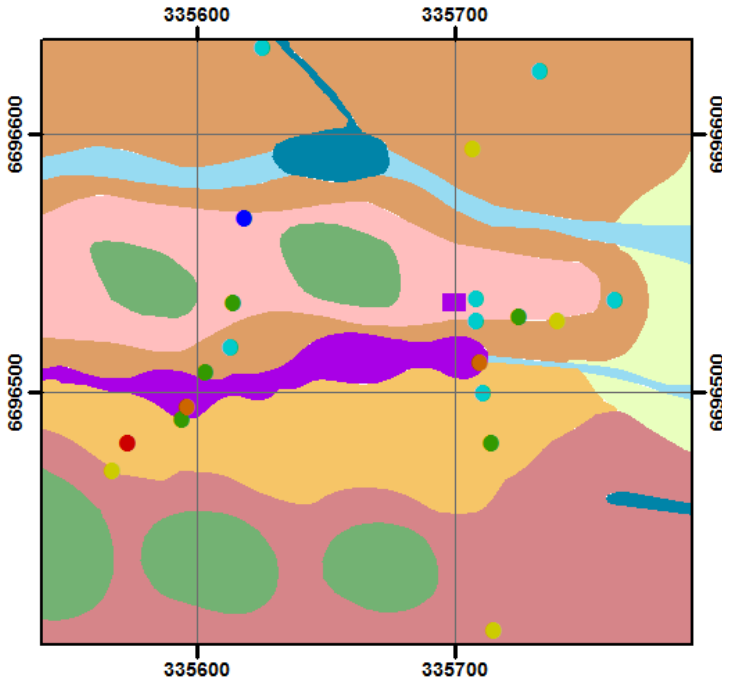
Gilead P Beck

***Eremophila freelingii* leaf**

Ca(%)

Landscape

Regolith - Landform



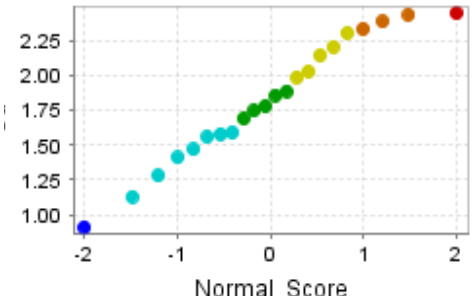
Legend

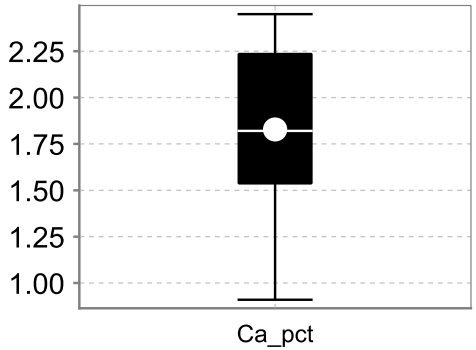
- <0.91 pct
- 0.91 - 1.59 pct
- 1.59 - 1.89 pct
- 1.89 - 2.31 pct
- 2.31 - 2.44 pct
- >2.44 pct

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

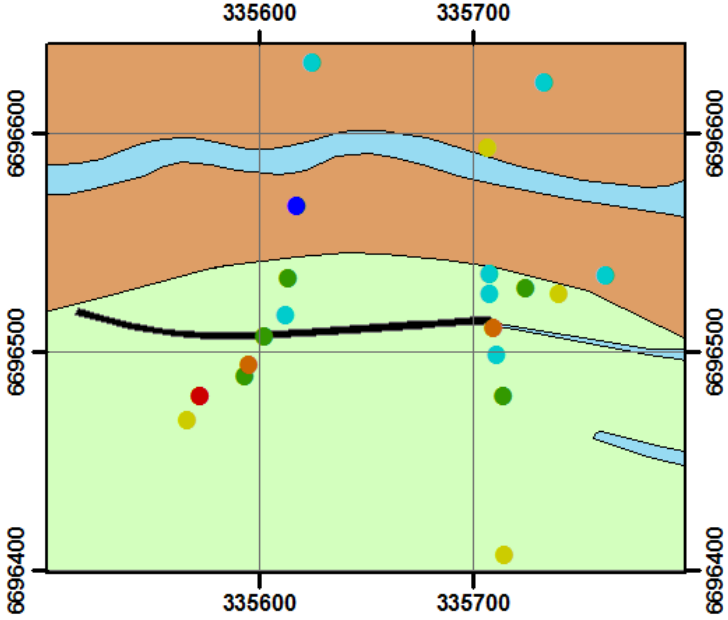
Median = 1.82

Mean = 1.828

Standard Deviation = 0.439

Error = ±0.19

Bedrock Geology



Legend

- <0.091 pct
- 0.91 - 1.59 pct
- 1.59 - 1.89 pct
- 1.89 - 2.31 pct
- 2.31 - 2.44 pct
- >2.44 pct

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

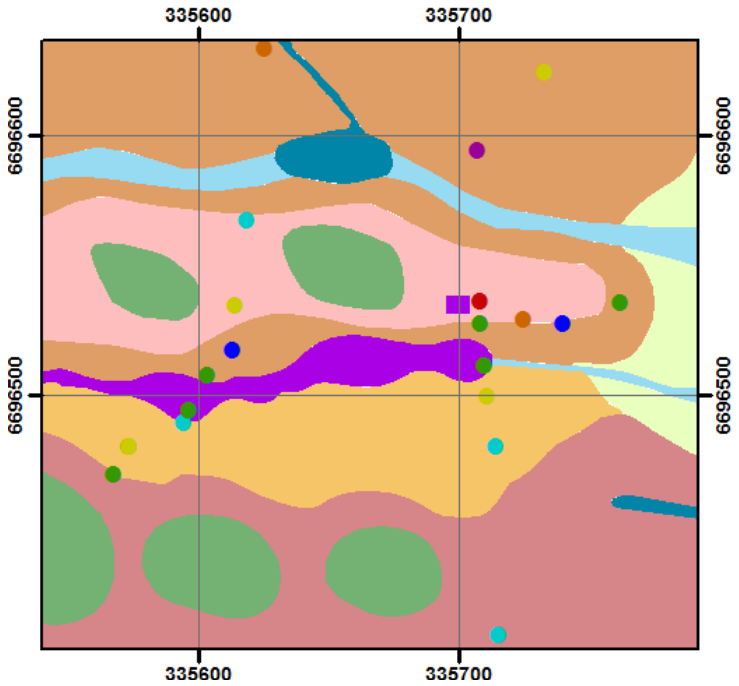
Gilead P Beck

***Eremophila freelingii* leaf**

Fe(%)

Host/Control/Landscape

Regolith - Landform



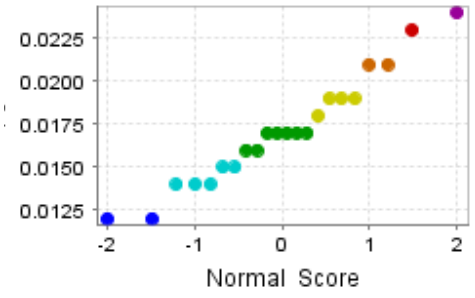
Legend

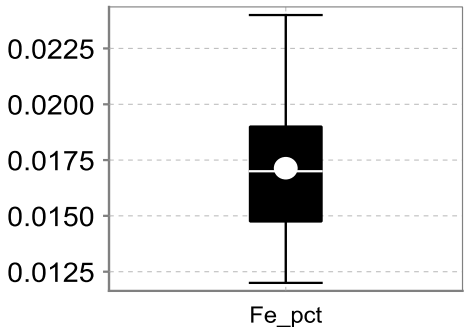
- <0.012 pct
- 0.012 - 0.015 pct
- 0.015 - 0.017 pct
- 0.017 - 0.019 pct
- 0.019 - 0.021 pct
- 0.021 - 0.023 pct
- >0.023 pct

- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.001

Below Detection Limit = 0

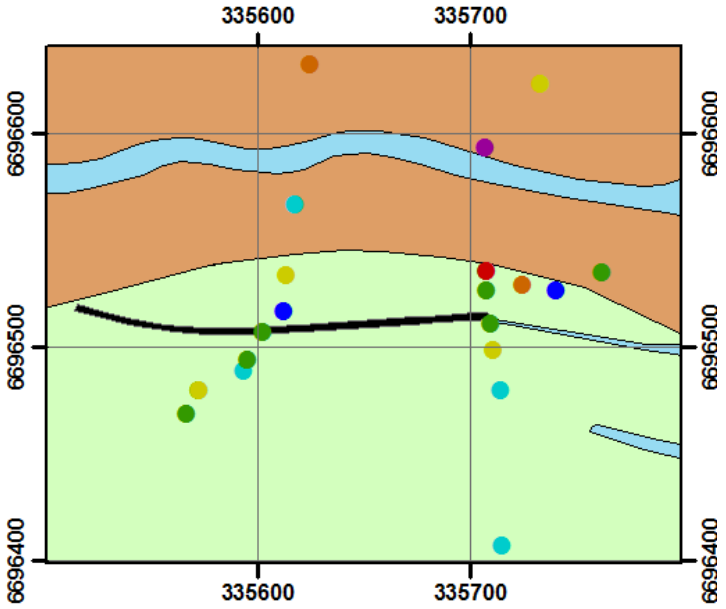
Median = 0.017

Mean = 0.0171

Standard Deviation = 0.003

Error = ±0.001

Bedrock Geology



Legend

- <0.012 pct
- 0.012 - 0.015 pct
- 0.015 - 0.017 pct
- 0.015 - 0.019 pct
- 0.019 - 0.021 pct
- 0.021 - 0.023 pct
- >0.023 pct

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

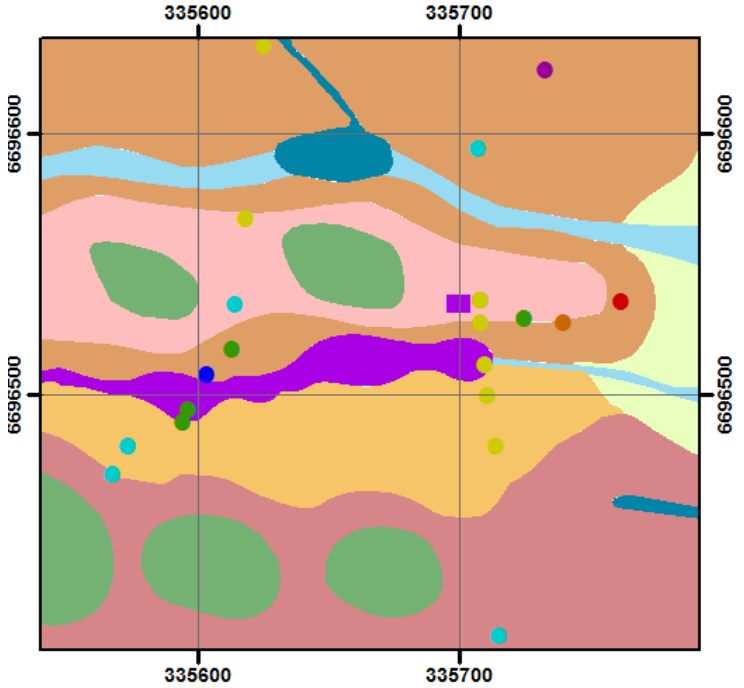
Gilead P Beck

***Eremophila freelingii* leaf**

K(%)

Landscape

Regolith - Landform



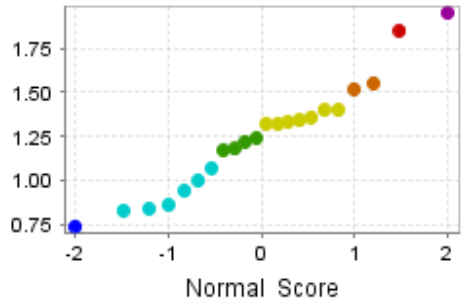
Legend

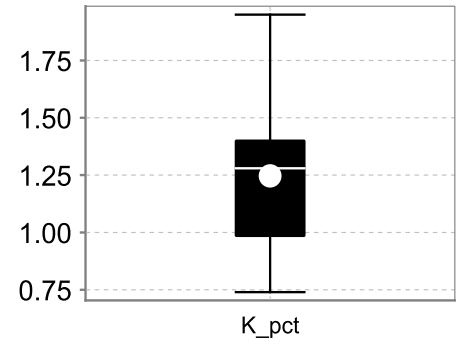
- <0.74 pct
- 0.74 - 1.07 pct
- 1.07 - 1.24 pct
- 1.24 - 1.4 pct
- 1.4 - 1.55 pct
- 1.55 - 1.85 pct
- >1.85 pct

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

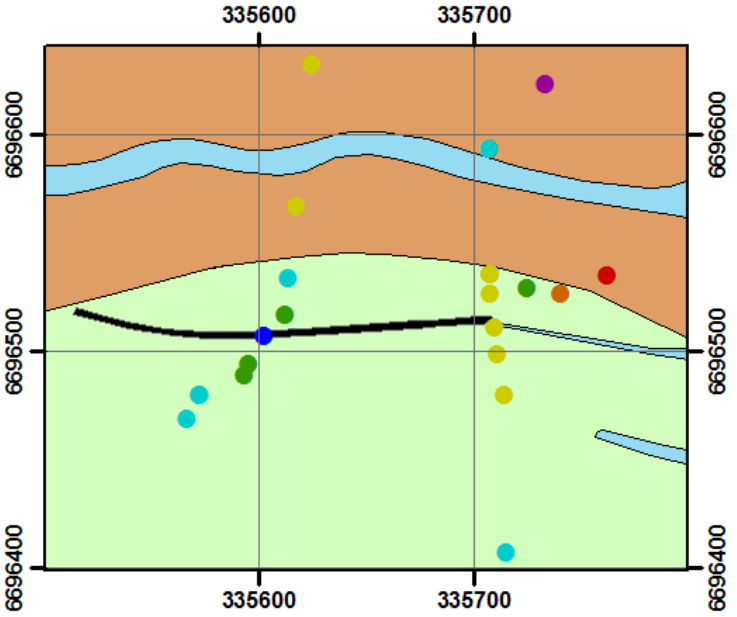
Median = 1.28

Mean = 1.247

Standard Deviation = 0.313

Error = ±0.14

Bedrock Geology



Legend

- <0.74 pct
- 0.74 - 1.07 pct
- 1.07 - 1.24 pct
- 1.24 - 1.4 pct
- 1.4 - 1.55 pct
- 1.55 - 1.85 pct
- >1.85 pct

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

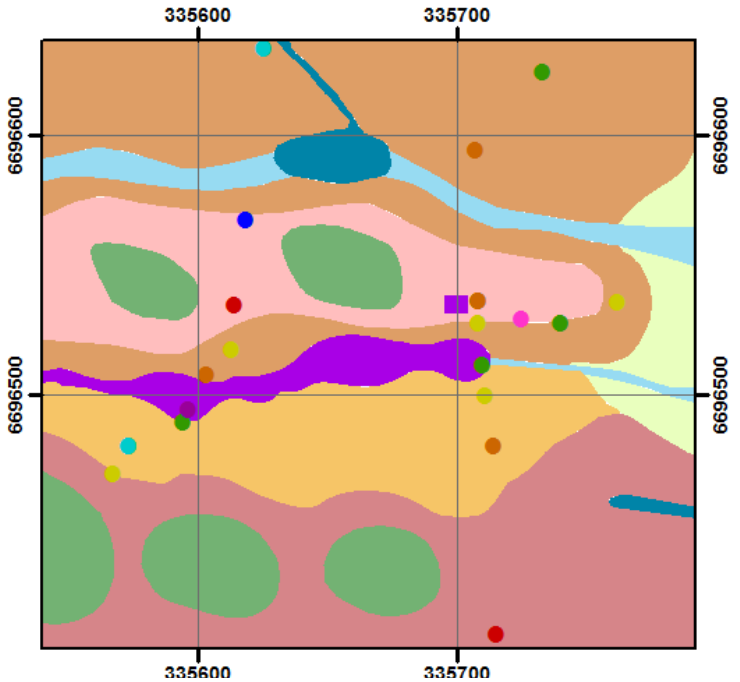
Gilead P Beck

***Eremophila freelingii* leaf**

Mn(ppm)

Host/Control

Regolith - Landform



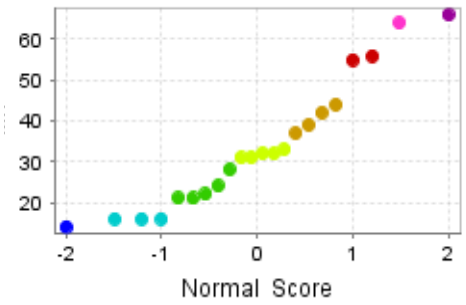
Legend

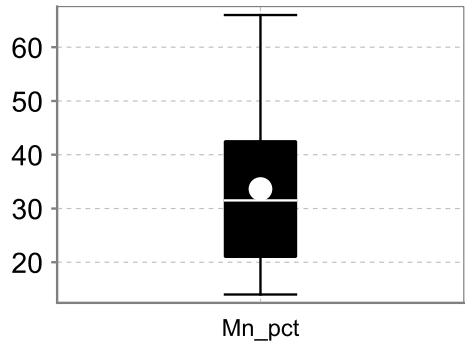
- <14.0 pct
- 14.0 - 16.0 pct
- 16.0 - 28.0 pct
- 28.0 - 33.0 pct
- 33.0 - 44.0 pct
- 44.0 - 56.0 pct
- 56.0 - 64.0 pct
- >64.0 pct

- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 1

Below Detection Limit = 0

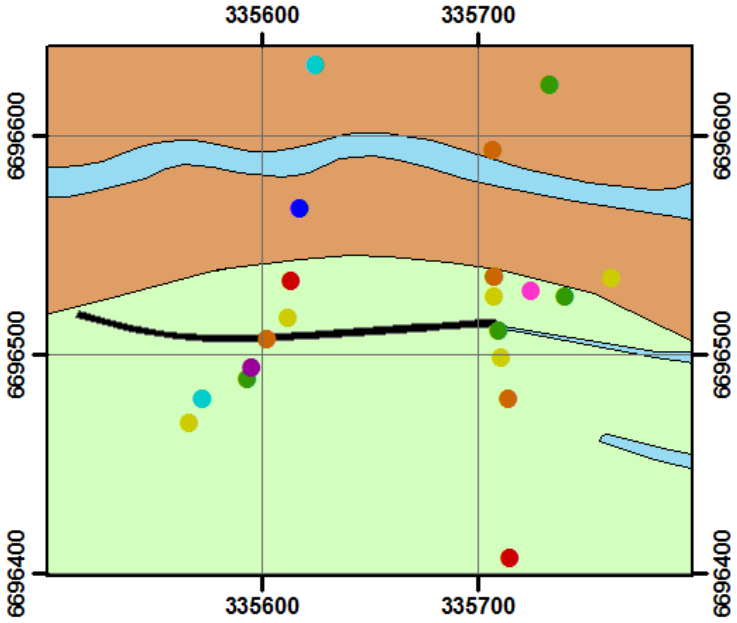
Median = 0.017

Mean = 0.0113

Standard Deviation = 0.028

Error = ±0.01

Bedrock Geology



Legend

- <14.0 pct
- 14.0 - 16.0 pct
- 16.0 - 28.0 pct
- 28.0 - 33.0 pct
- 33.0 - 44.0 pct
- 44.0 - 56.0 pct
- 56.0 - 64.0 pct
- >64.0 pct

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

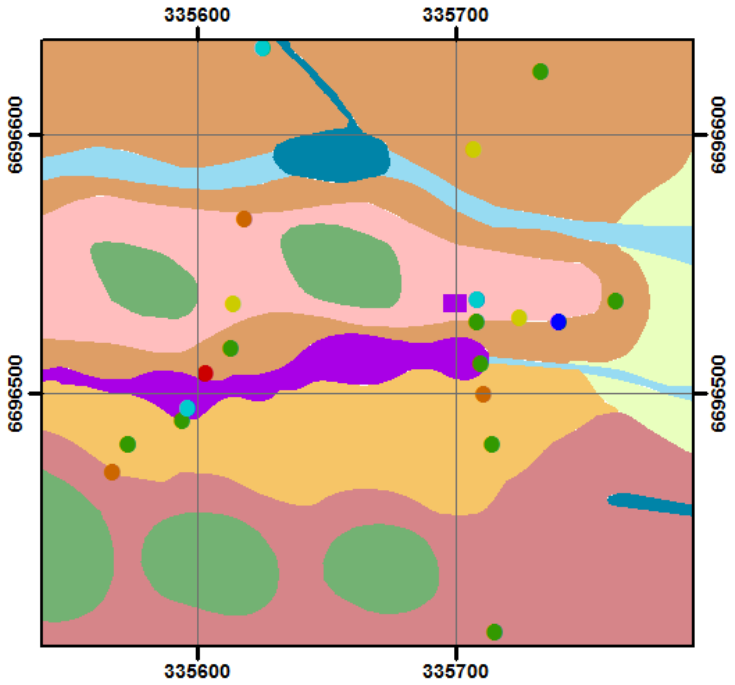
Gilead P Beck

***Eremophila freelingii* leaf**

Na(%)

Landscape

Regolith - Landform



Legend

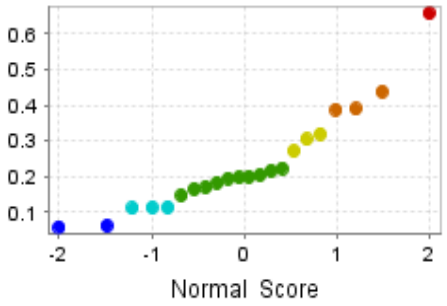
- <0.062 pct
- 0.062 - 0.114 pct
- 0.114 - 0.223 pct
- 0.223 - 0.32 pct
- 0.32 - 0.438 pct
- >0.438 pct

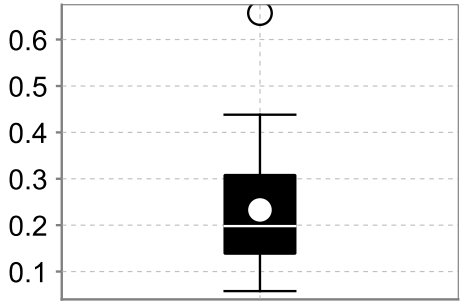
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1

- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.001

Below Detection Limit = 0

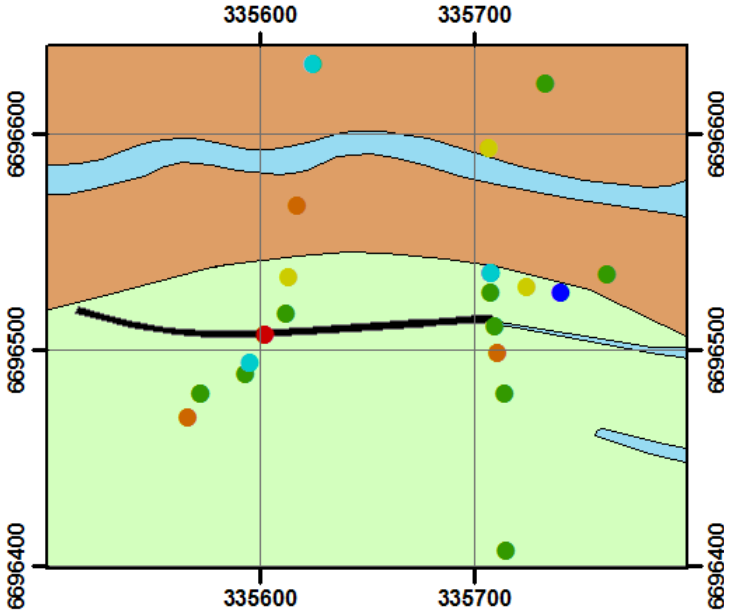
Median = 0.0198

Mean = 0.233

Standard Deviation = 0.140

Error = ±0.06

Bedrock Geology



Legend

- <0.062 pct
- 0.062 - 0.114 pct
- 0.114 - 0.223 pct
- 0.223 - 0.32 pct
- 0.32 - 0.435 pct
- >0.435 pct

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

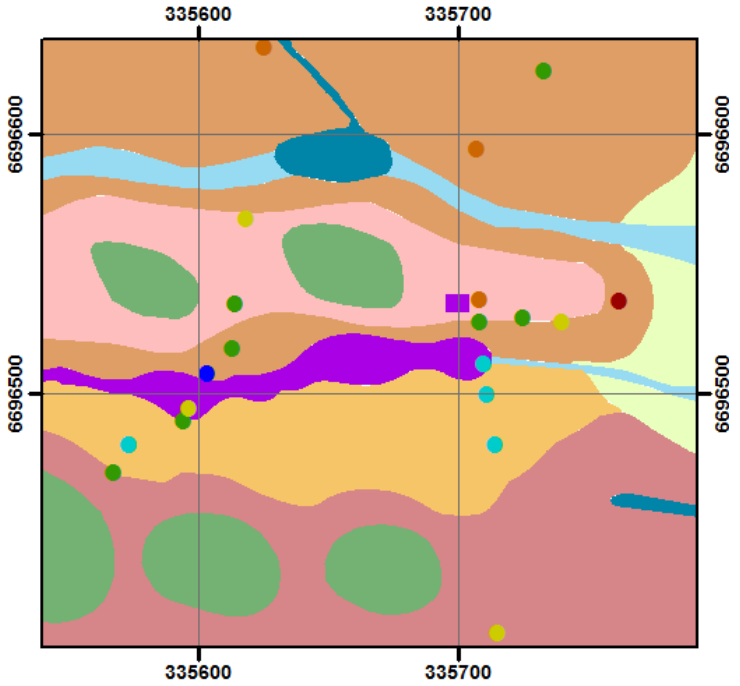
Gilead P Beck

***Eremophila freelingii* leaf**

$Rb_{(ppm)}$

Host/Control

Regolith - Landform

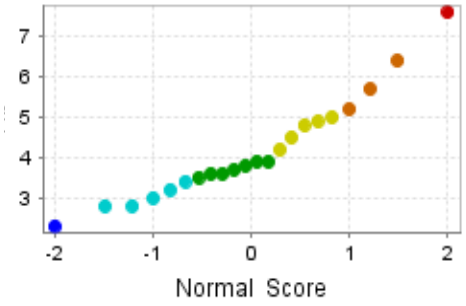


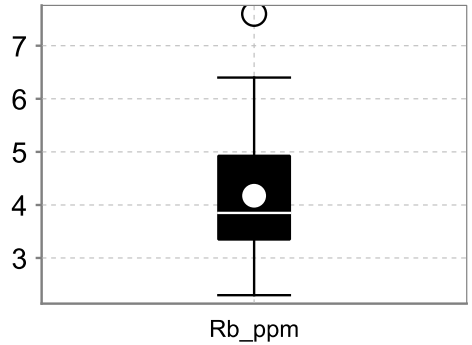
Legend

- <2.3 ppm
- 2.3 - 3.4 ppm
- 3.4 - 3.9 ppm
- 3.9 - 5.0 ppm
- 5.0 - 6.4 ppm
- >6.4 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.1

Below Detection Limit = 0

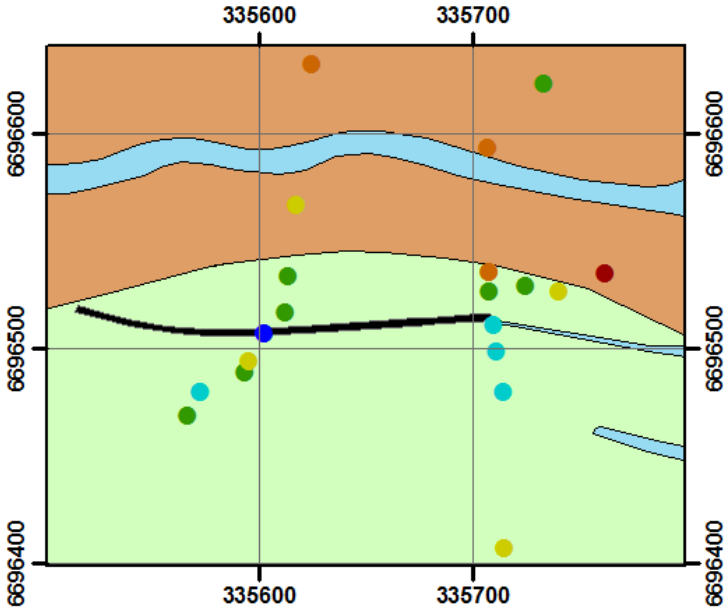
Median = 3.85

Mean = 4.17

Standard Deviation = 1.26

Error = ±0.56

Bedrock Geology



Legend

- <2.3 ppm
- 2.3 - 3.4 ppm
- 3.4 - 3.9 ppm
- 3.9 - 5.0 ppm
- 5.0 - 6.4 ppm
- >6.4 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

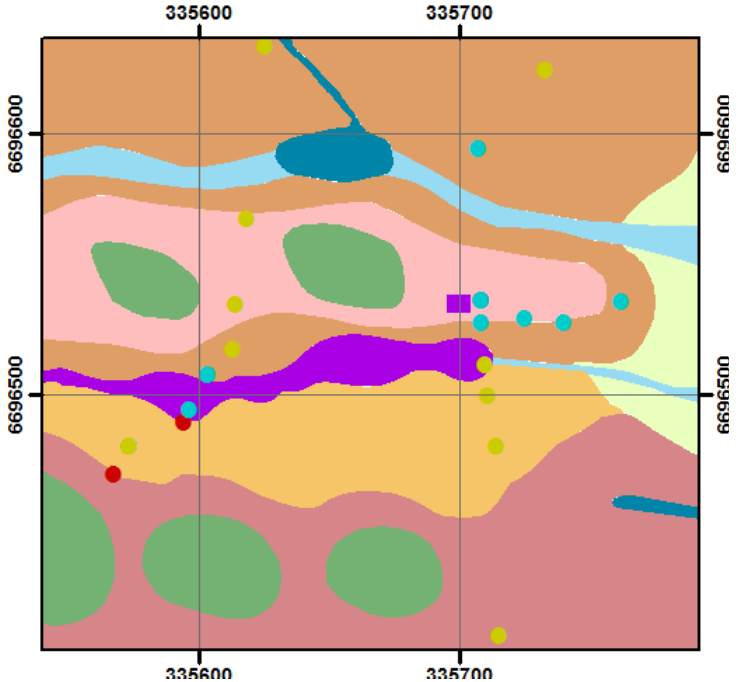
Gilead P Beck

***Eremophila freelingii* leaf**

$Cr_{(ppm)}$

Other

Regolith - Landform



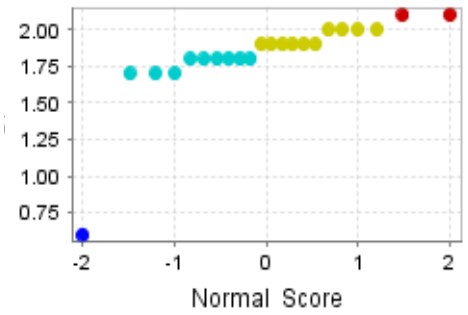
Legend

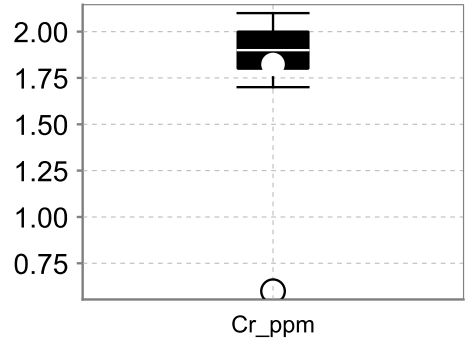
- <0.6 ppm
- 0.6 - 1.8 ppm
- 1.8 - 2.0 ppm
- >2.0 ppm

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.1

Below Detection Limit = 0

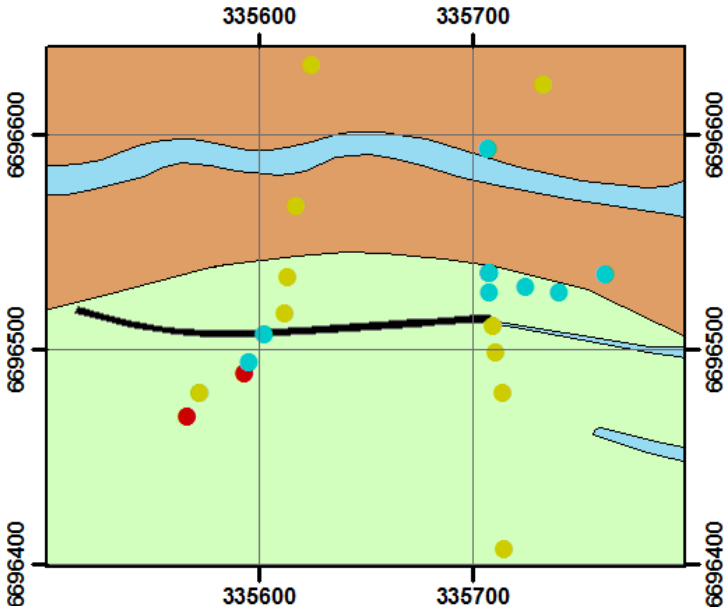
Median = 1.9

Mean = 0.181

Standard Deviation = 0.297

Error = ±0.13

Bedrock Geology



Legend

- <0.6 ppm
- 0.6 - 1.8 ppm
- 1.8 - 2.0 ppm
- >2.0 ppm

N

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

0 5 10 20 30 Meters

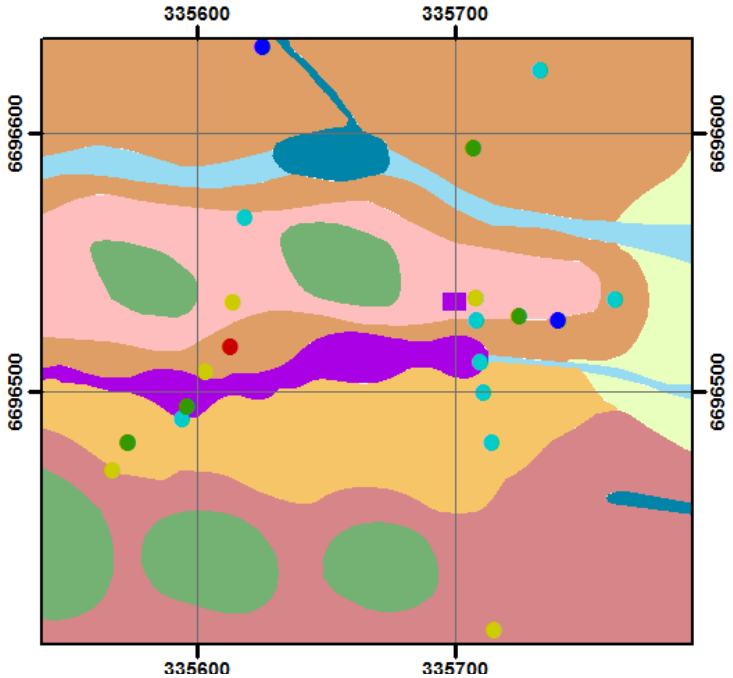
Gilead P Beck

***Eremophila freelingii* leaf**

$Ni_{(ppm)}$

Other

Regolith - Landform



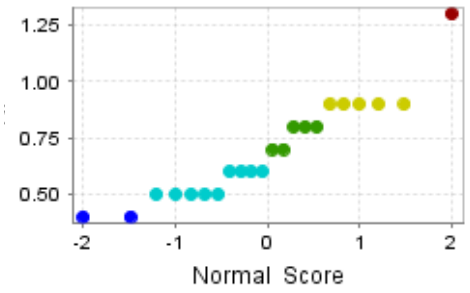
Legend

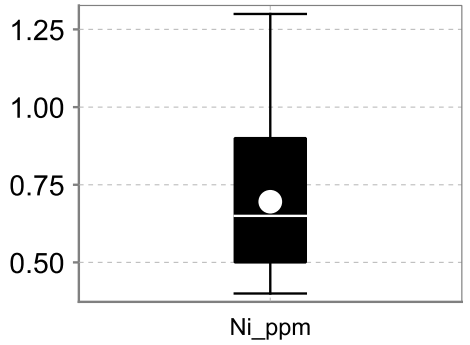
- <0.4 ppm
- 0.4 - 0.6 ppm
- 0.6 - 0.8 ppm
- 0.8 - 0.9 ppm
- <0.9 ppm

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.1

Below Detection Limit = 0

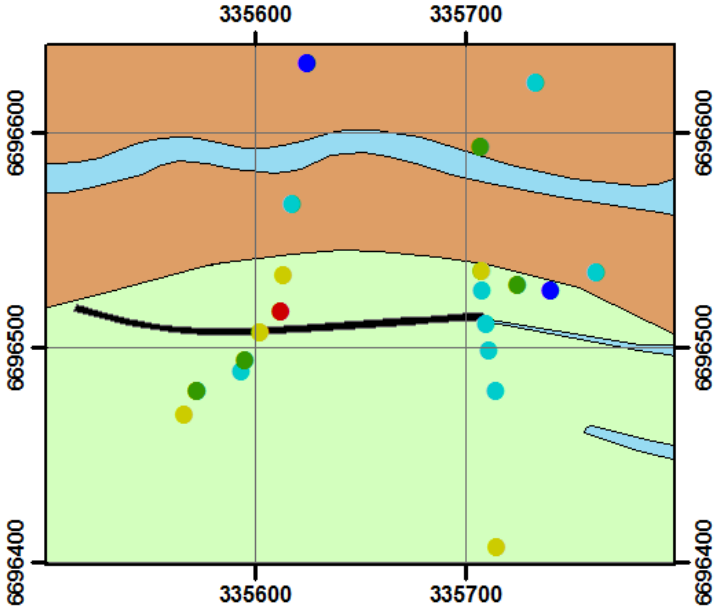
Median = 0.065

Mean = 0.0695

Standard Deviation = 0.219

Error = ±0.1

Bedrock Geology



Legend

- <0.4 ppm
- 0.4 - 0.6 ppm
- 0.6 - 0.8 ppm
- 0.8 - 0.9 ppm
- >0.9 ppm

N

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

0 5 10 20 30 Meters

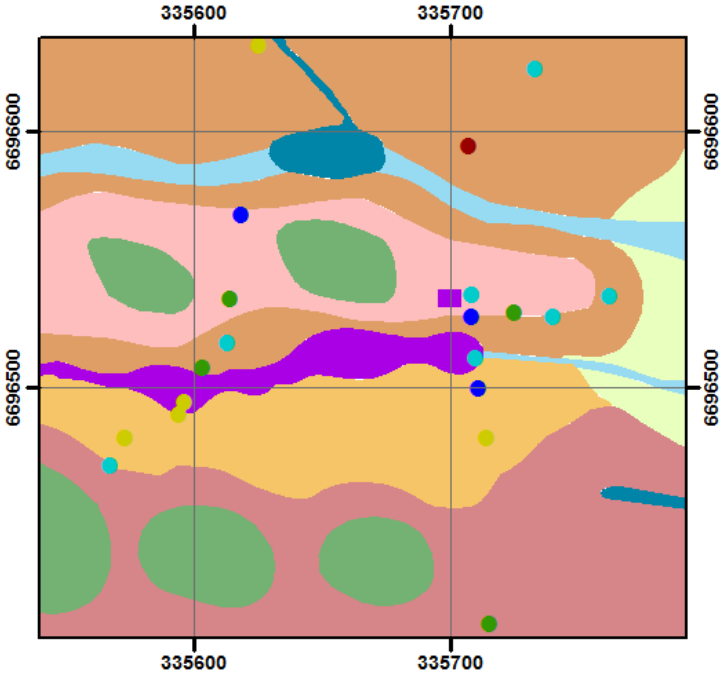
Gilead P Beck

***Eremophila freelingii* leaf**

$Sr_{(ppm)}$

Other

Regolith - Landform



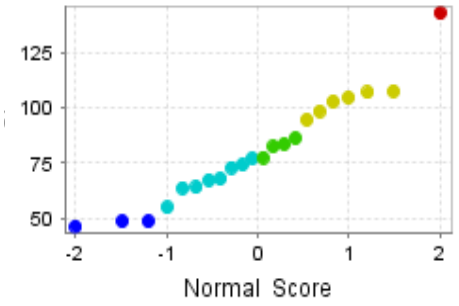
Legend

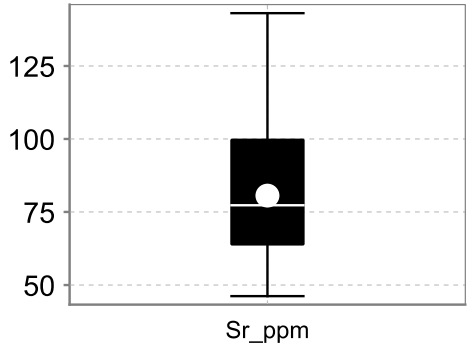
- <48.4 ppm
- 48.4 - 77.1 ppm
- 77.1 - 86.3 ppm
- 86.3 - 107.7 ppm
- >107.7 ppm

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.5

Below Detection Limit = 0

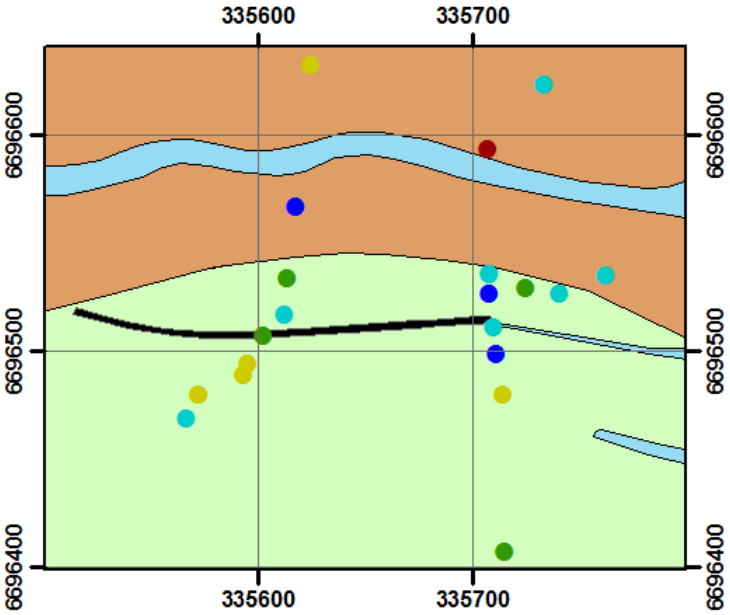
Median = 77.3

Mean = 80.62

Standard Deviation = 0.42

Error = ±0.18

Bedrock Geology



Legend

- <48.4 ppm
- 48.4 - 77.1 ppm
- 77.1 - 86.3 ppm
- 86.3 - 107.7 ppm
- >107.7 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

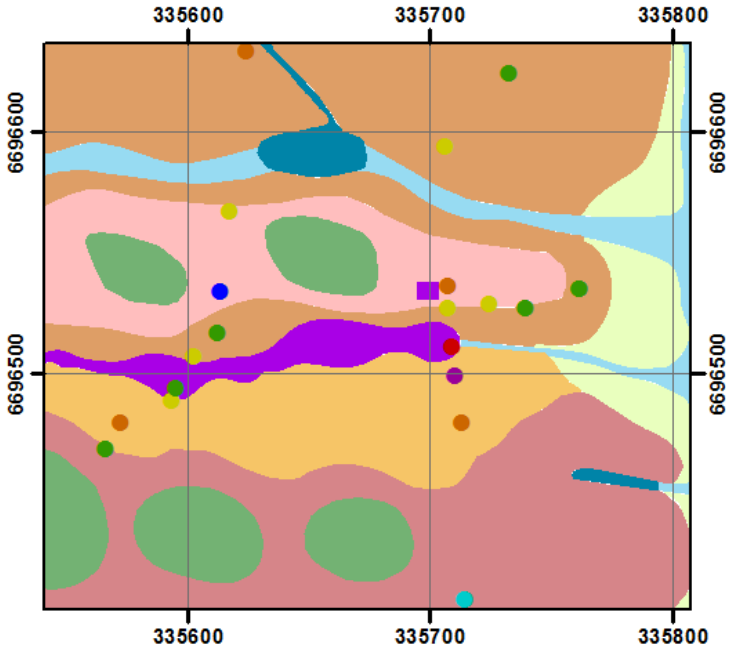
Gilead P Beck

***Eremophila freelingii* twig**

$Ag_{(ppb)}$

Commodity

Regolith - Landform

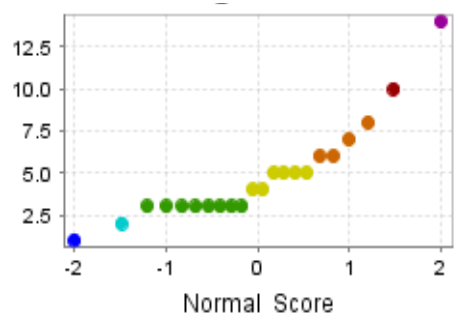


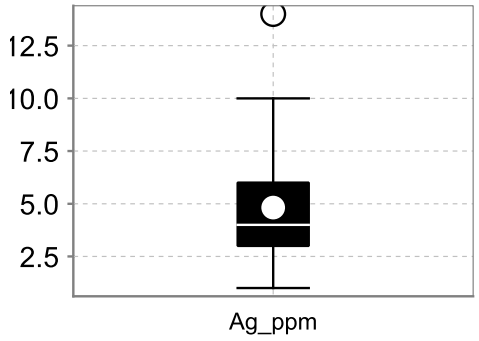
Legend

- <1.0 ppm
- 1.0 - 2.0 ppm
- 2.0 - 3.0 ppm
- 3.0 - 5.0 ppm
- 5.0 - 8.0 ppm
- 8.0 - 10.0 ppm
- >10.0 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 2

Below Detection Limit = 1

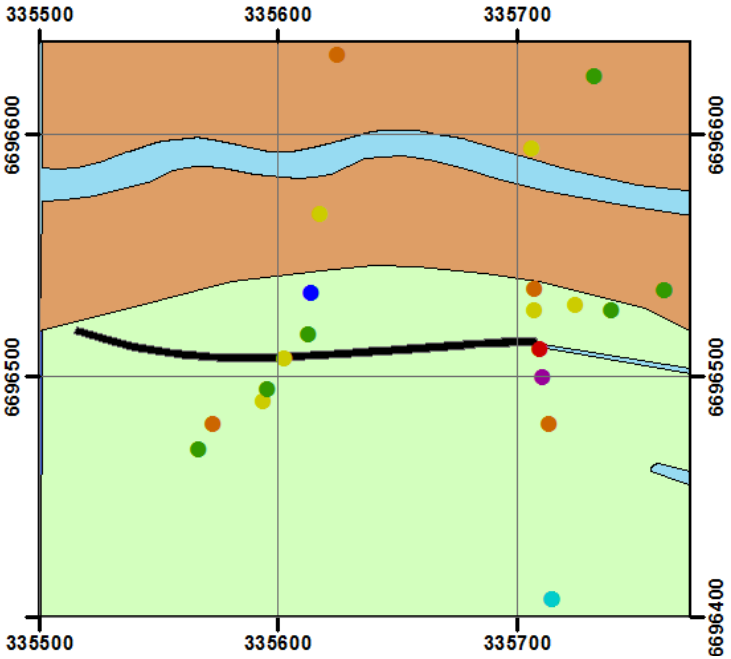
Median = 4

Mean = 4.82

Standard Deviation = 2.92

Error = ±1.3

Bedrock Geology



Legend

- <1.0 ppm
- 1.0 - 2.0 ppm
- 2.0 - 3.0 ppm
- 3.0 - 5.0 ppm
- 5.0 - 8.0 ppm
- 8.0 - 10.0 ppm
- >10.0 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

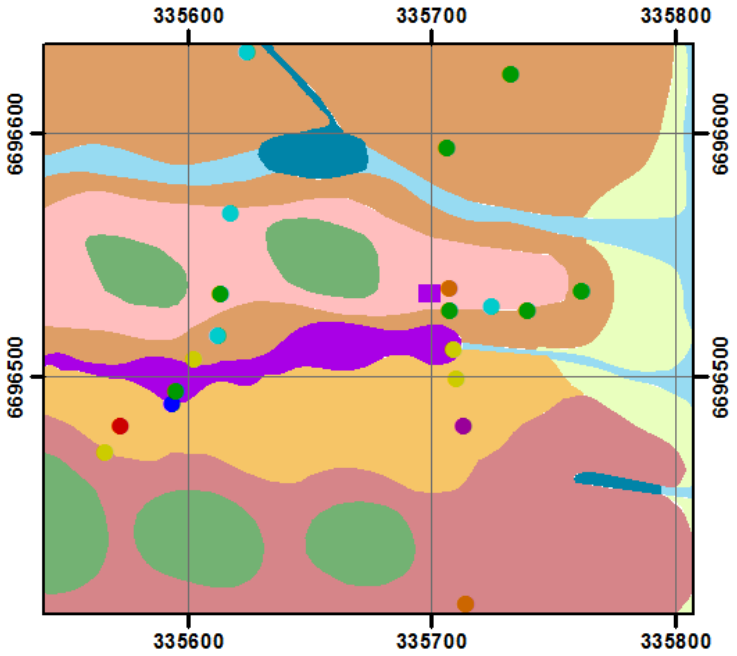
Gilead P Beck

***Eremophila freelingii* twig**

Cu(ppm)

Commodity

Regolith - Landform

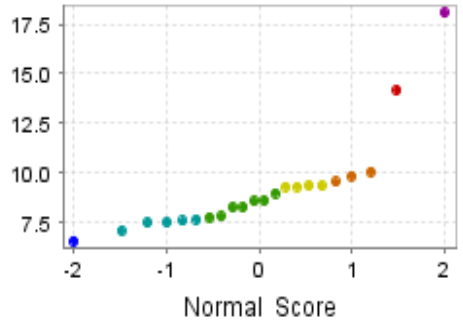


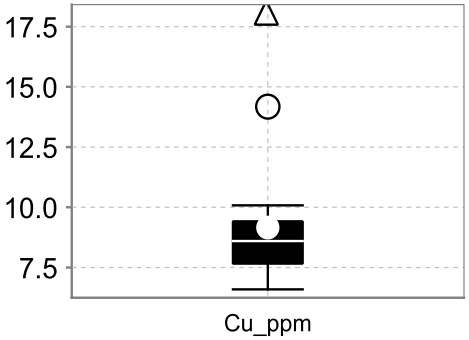
Legend

- <6.59 ppm
- 6.59 - 7.69 ppm
- 7.69 - 9.0 ppm
- 9.0 - 9.37 ppm
- 9.37 - 10.08 ppm
- 10.08 - 14.18 ppm
- >14.18 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

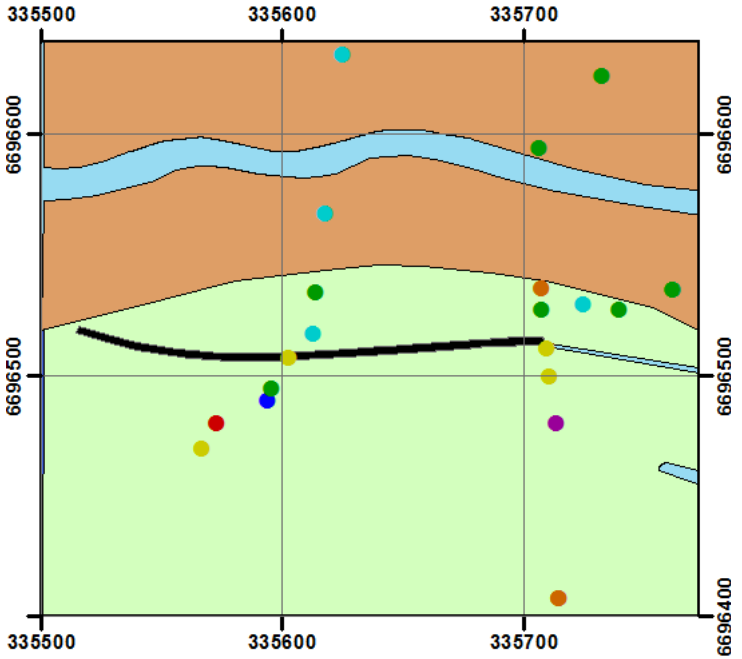
Median = 8.6

Mean = 9.16

Standard Deviation = 0.18

Error = ±0.08

Bedrock Geology



Legend

- <6.59 ppm
- 6.59 - 7.69 ppm
- 7.69 - 9.0 ppm
- 9.0 - 9.37 ppm
- 9.37 - 10.08 ppm
- 10.08 - 14.18 ppm
- >14.18 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

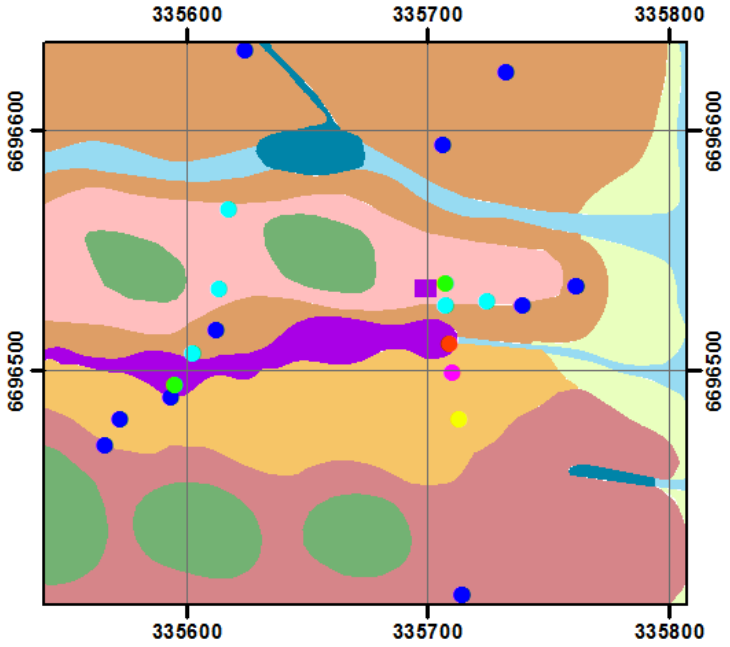
Gilead P Beck

***Eremophila freelingii* twig**

Pb(ppm)

Commodity

Regolith - Landform

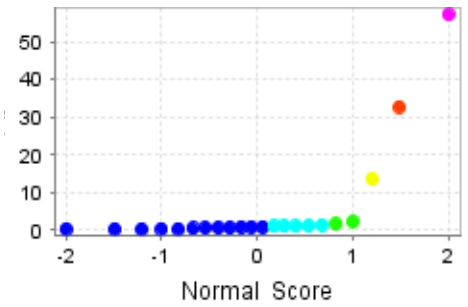


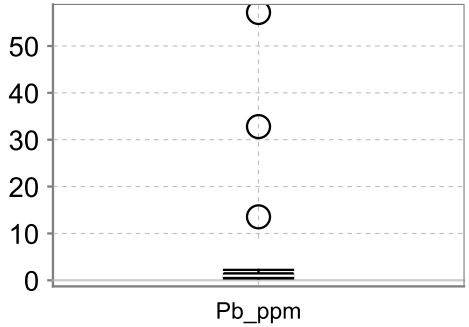
Legend

- <0.99 ppm
- 0.99 - 1.43 ppm
- 1.43 - 2.22 ppm
- 2.22 - 13.54 ppm
- 13.54 - 32.8 ppm
- >32.8 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

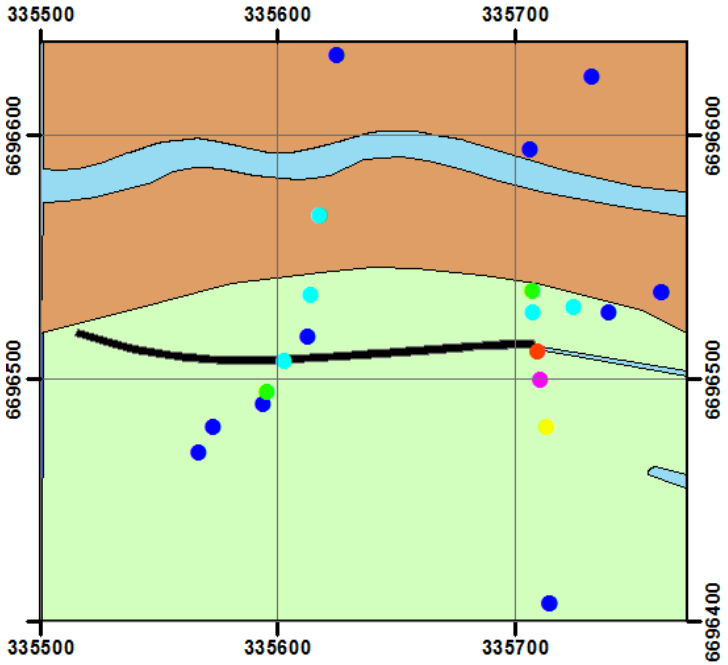
Median = 0.98

Mean = 5.49

Standard Deviation = 13.60

Error = ±6.03

Bedrock Geology



Legend

- <0.99 ppm
- 0.99 - 1.43 ppm
- 1.43 - 2.22 ppm
- 2.22 - 13.54 ppm
- 13.54 - 32.8 ppm
- >32.8 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

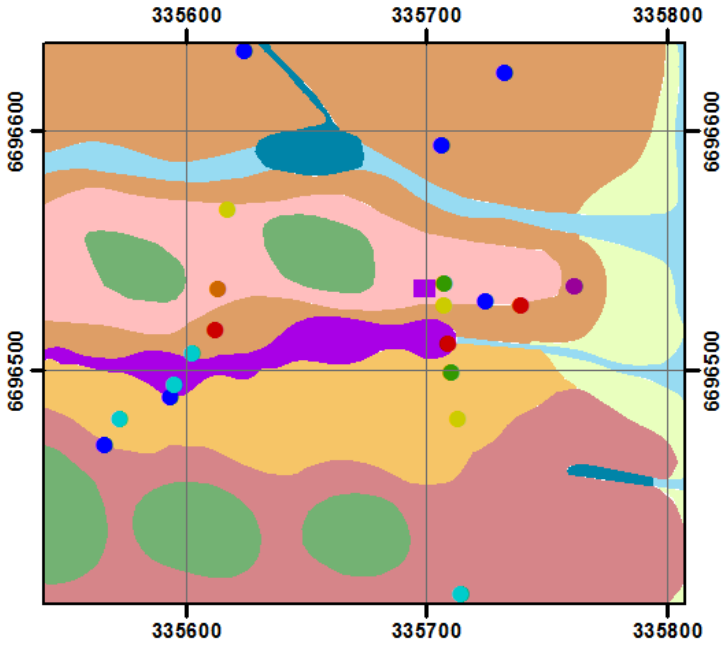
Gilead P Beck

***Eremophila freelingii* twig**

$Zn_{(ppm)}$

Commodity

Regolith - Landform

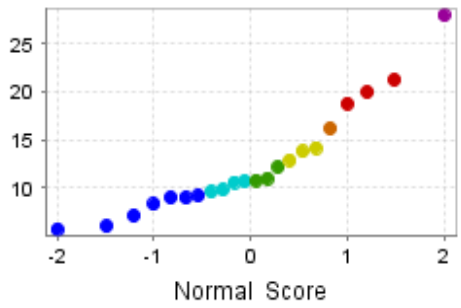


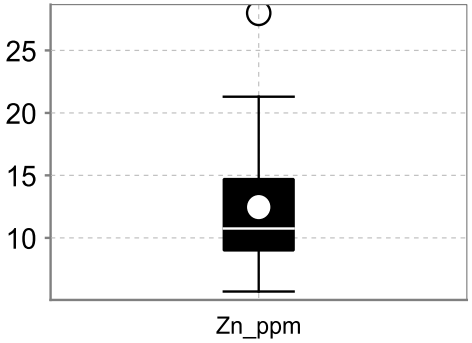
Legend

- <9.4 ppm
- 9.4 - 10.7 ppm
- 10.7 - 12.4 ppm
- 12.4 - 15.1 ppm
- 15.1 - 16.8 ppm
- 16.8 - 24.5 ppm
- >24.5 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.1

Below Detection Limit = 0

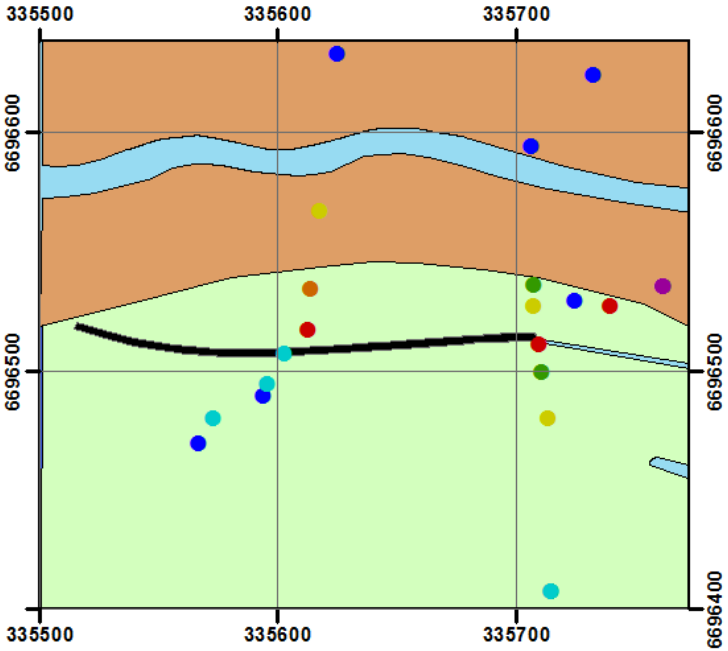
Median = 10.75

Mean = 12.46

Standard Deviation = 5.48

Error = ±2.43

Bedrock Geology



Legend

- <9.4 ppm
- 9.4 - 10.7 ppm
- 10.7 - 12.4 ppm
- 12.4 - 15.1 ppm
- 15.1 - 16.8 ppm
- 16.8 - 24.5 ppm
- >24.5 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

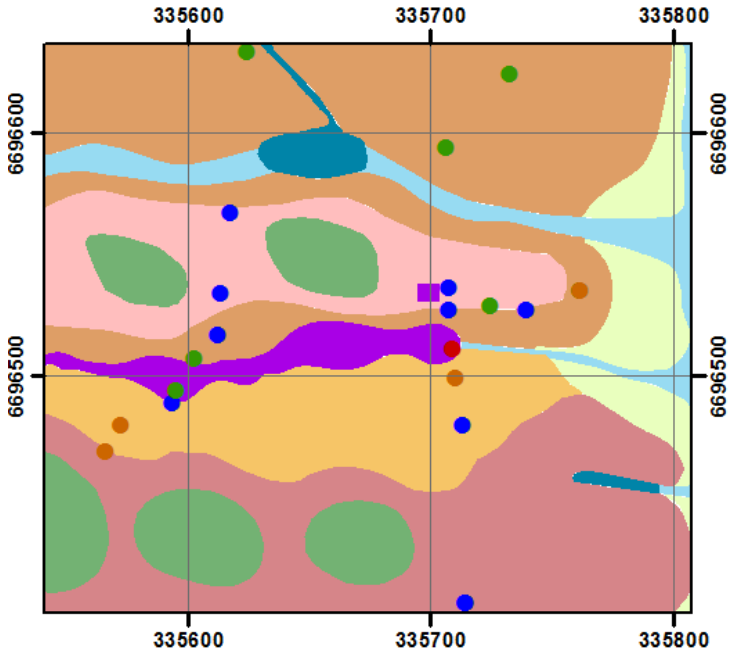
Gilead P Beck

***Eremophila freelingii* twig**

As(ppm)

Pathfinder

Regolith - Landform



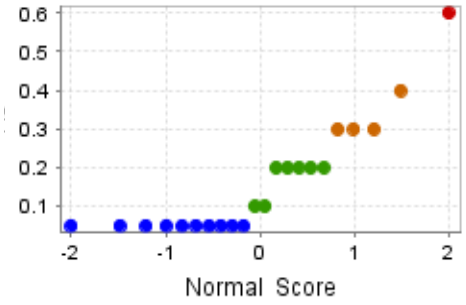
Legend

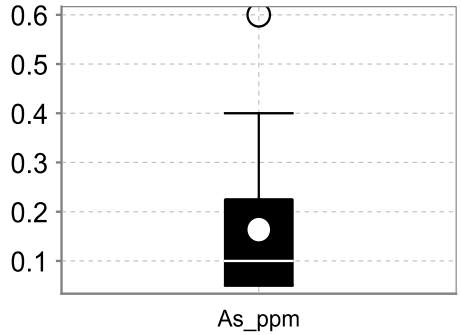
- <0.05 ppm
- 0.05 - 0.2 ppm
- 0.2 - 0.5 ppm
- >0.5 ppm

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.1

Below Detection Limit = 8

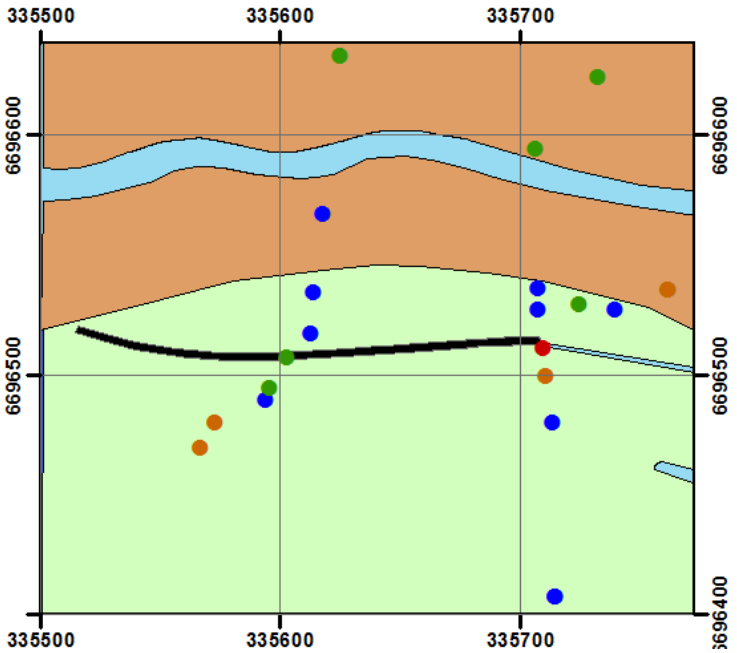
Median = 0.1

Mean = 0.164

Standard Deviation = 0.004

Error = ±0.001

Bedrock Geology



Legend

- <0.05 ppm
- 0.05 - 0.2 ppm
- 0.2 - 0.5 ppm
- >0.5 ppm

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

N

0 5 10 20 30 Meters

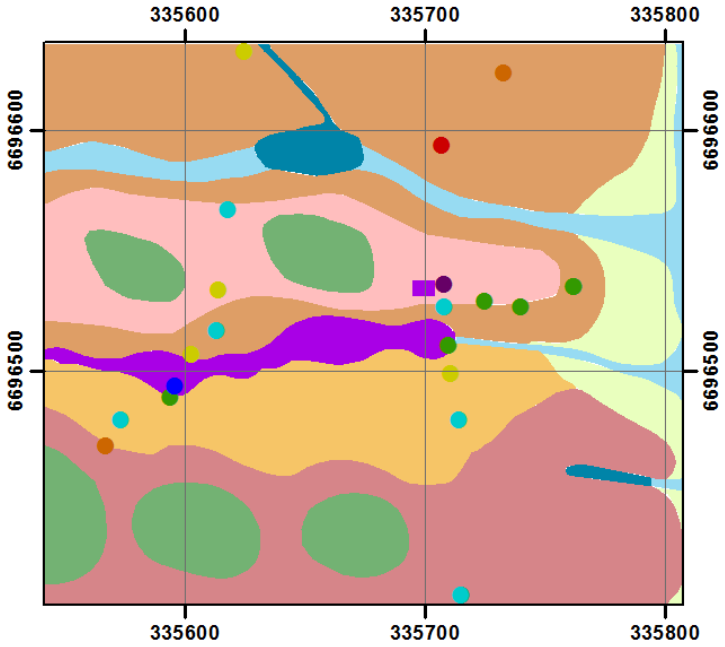
Gilead P Beck

***Eremophila freelingii* twig**

$Ce_{(ppm)}$

Pathfinder

Regolith - Landform



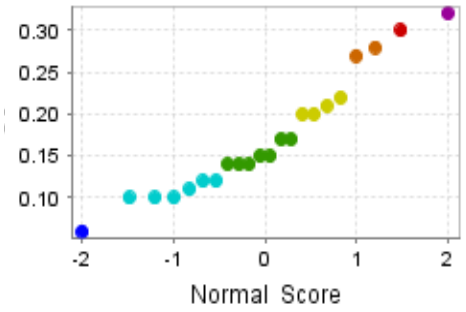
Legend

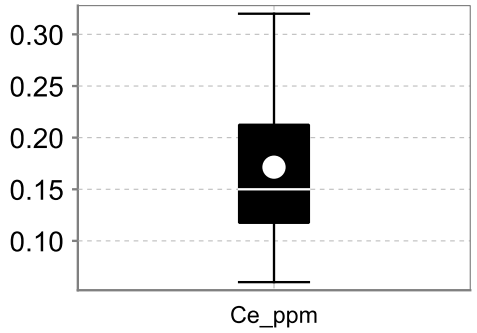
- <0.06 ppm
- 0.06 - 0.12 ppm
- 0.12 - 0.17 ppm
- 0.17 - 0.22 ppm
- 0.22 - 0.28 ppm
- 0.28 - 0.3 ppm
- >0.3 ppm

- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

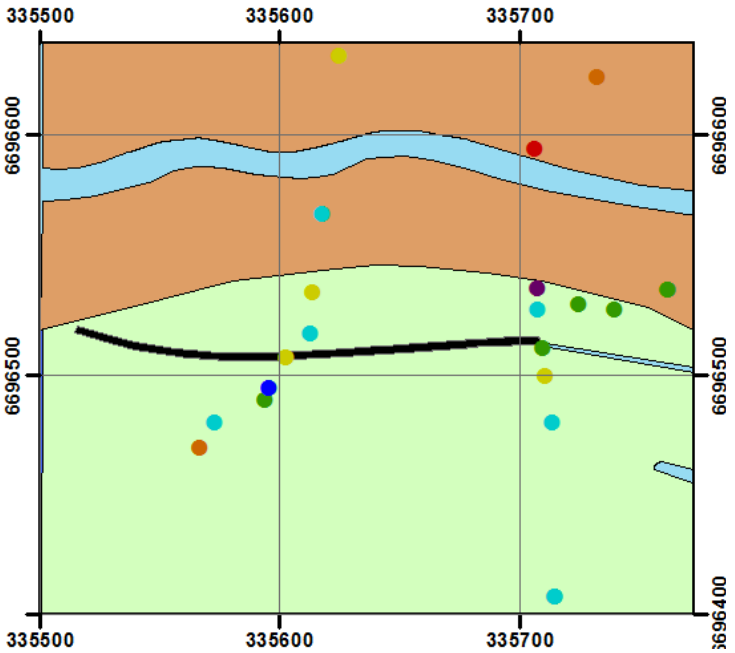
Median = 0.004

Mean = 0.006

Standard Deviation = 0.003

Error = ±0.001

Bedrock Geology



Legend

- <0.06 ppm
- 0.06 - 0.12 ppm
- 0.12 - 0.17 ppm
- 0.17 - 0.22 ppm
- 0.22 - 0.28 ppm
- 0.28 - 0.3 ppm
- >0.3 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

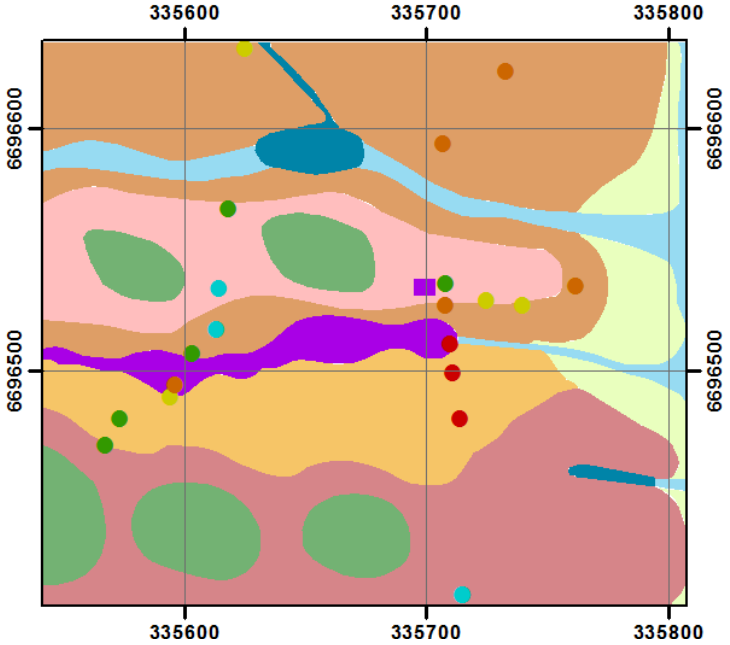
Gilead P Beck

***Eremophila freelingii* twig**

Cd(ppm)

Pathfinder

Regolith - Landform

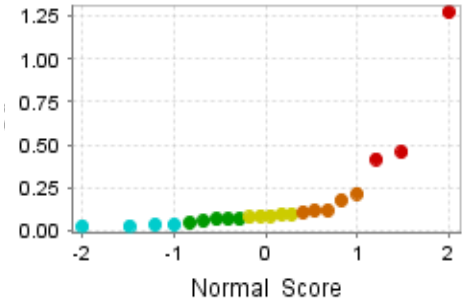


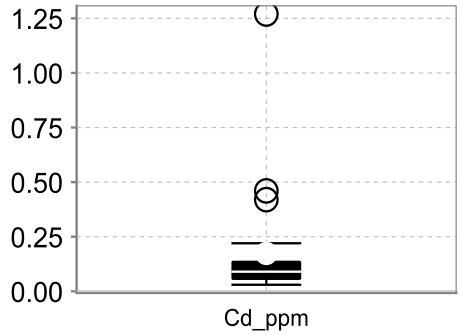
Legend

- <0.04 ppm
- 0.04 - 0.07 ppm
- 0.07 - 0.1 ppm
- 0.1 - 0.38 ppm
- >0.38 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

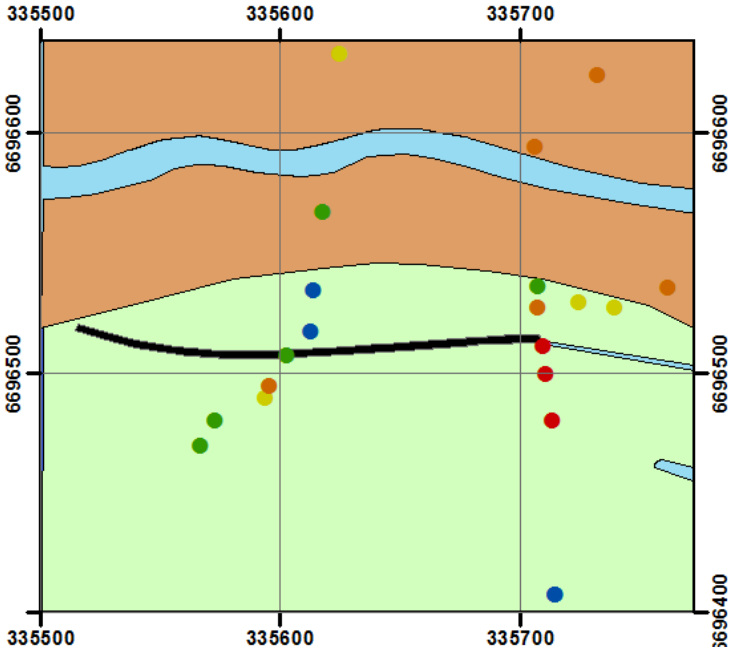
Median = 0.09

Mean = 0.17

Standard Deviation = 0.27

Error = ±0.12

Bedrock Geology



Legend

- <0.04 ppm
- 0.04 - 0.07 ppm
- 0.04 - 0.1 ppm
- 0.1 - 0.38 ppm
- >0.38 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

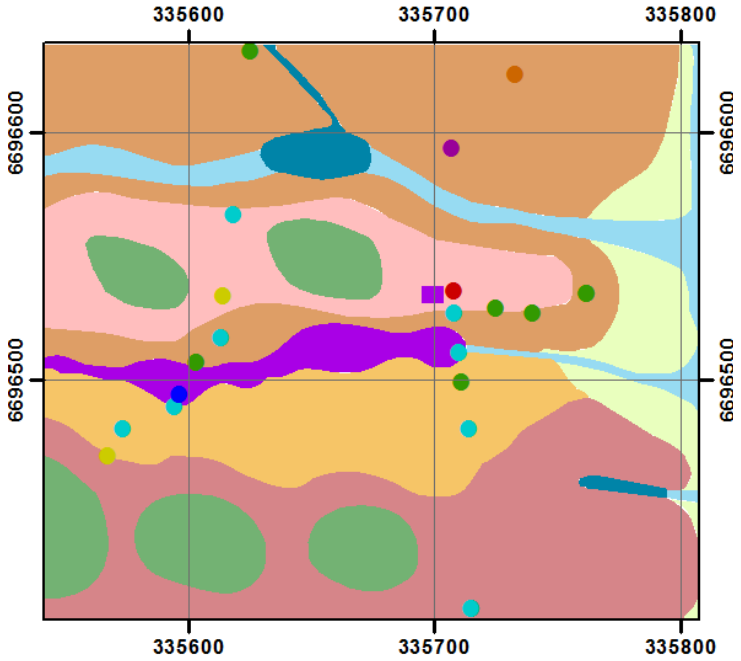
Gilead P Beck

***Eremophila freelingii* twig**

La(ppm)

Pathfinder

Regolith - Landform

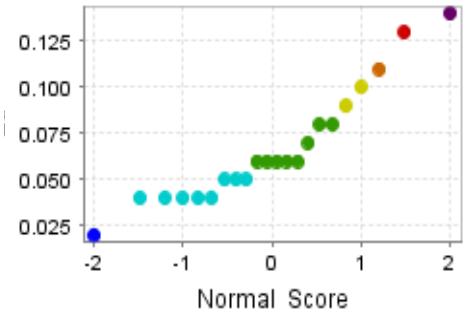


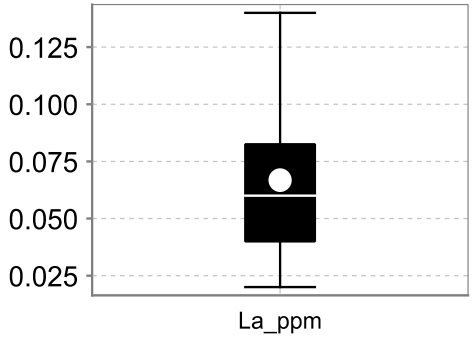
Legend

- <0.02 ppm
- 0.02 - 0.05 ppm
- 0.05 - 0.08 ppm
- 0.08 - 0.1 ppm
- 0.1 - 0.11 ppm
- 0.11 - 0.13 ppm
- >0.13 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

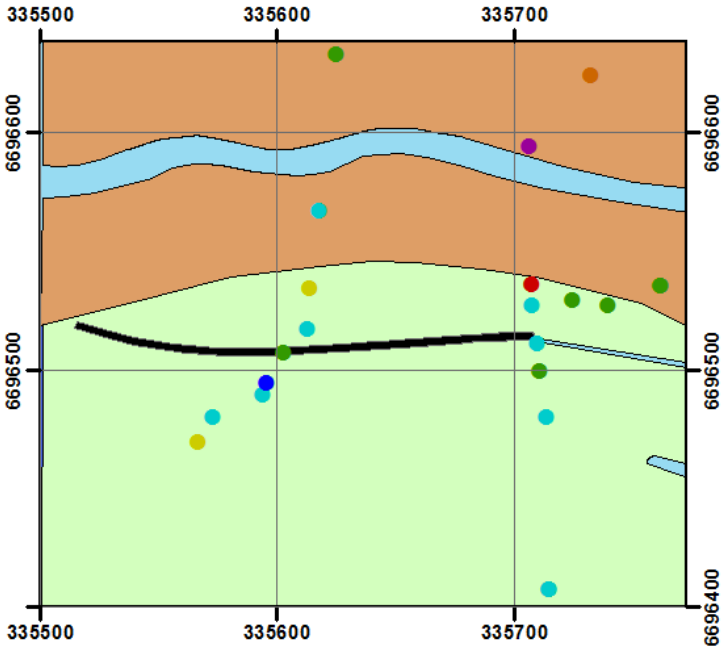
Median = 0.06

Mean = 0.07

Standard Deviation = 0.03

Error = ±0.01

Bedrock Geology



Legend

- <0.02 ppm
- 0.02 - 0.05 ppm
- 0.05 - 0.08 ppm
- 0.08 - 0.1 ppm
- 0.1 - 0.11 ppm
- 0.11 - 0.13 ppm
- >0.13 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

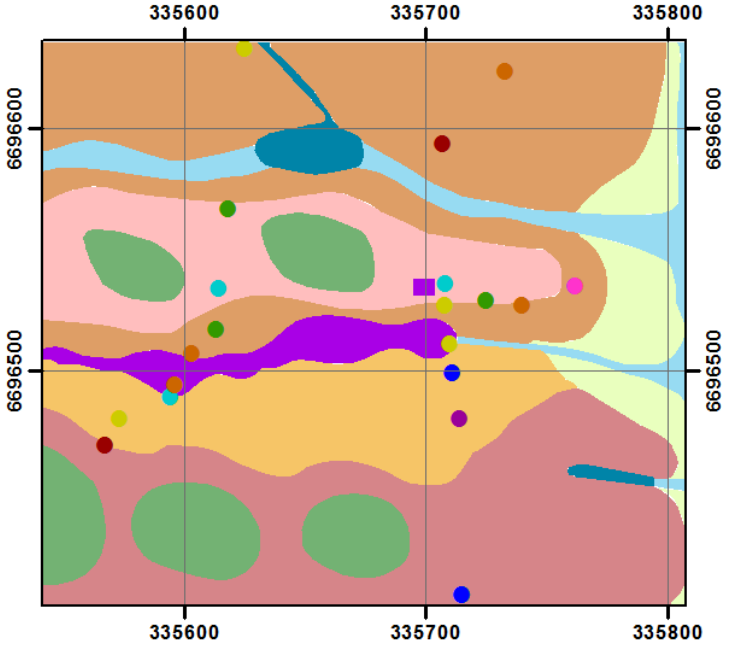
Gilead P Beck

***Eremophila freelingii* twig**

Mo(ppm)

Pathfinder

Regolith - Landform



Legend

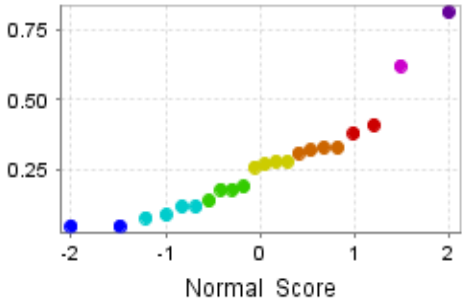
- <0.05 ppm
- 0.05 - 0.12 ppm
- 0.12 - 0.19 ppm
- 0.19 - 0.28 ppm
- 0.28 - 0.33 ppm
- 0.33 - 0.41 ppm
- 0.41 - 0.62 ppm
- >0.62 ppm

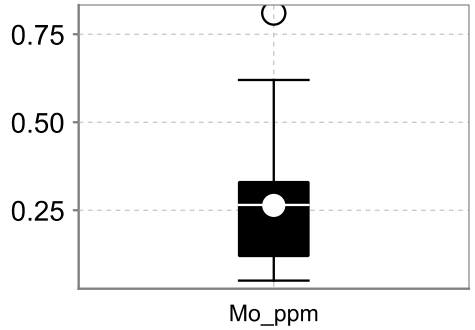
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1

- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

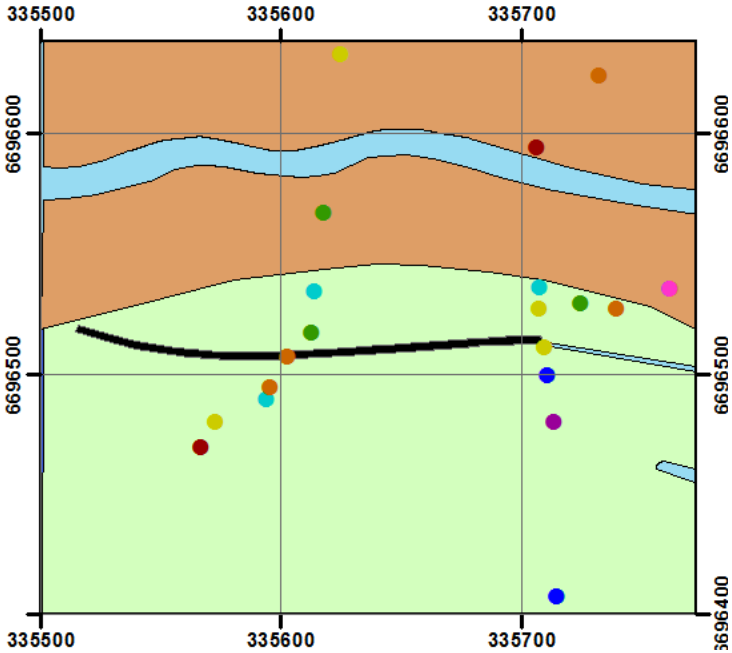
Median = 0.26

Mean = 0.26

Standard Deviation = 0.18

Error = ±0.08

Bedrock Geology



Legend

- <0.05 ppm
- 0.05 - 0.12 ppm
- 0.12 - 0.19 ppm
- 0.19 - 0.28 ppm
- 0.29 - 0.33 ppm
- 0.33 - 0.41 ppm
- 0.41 - 0.62 ppm
- >0.62 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

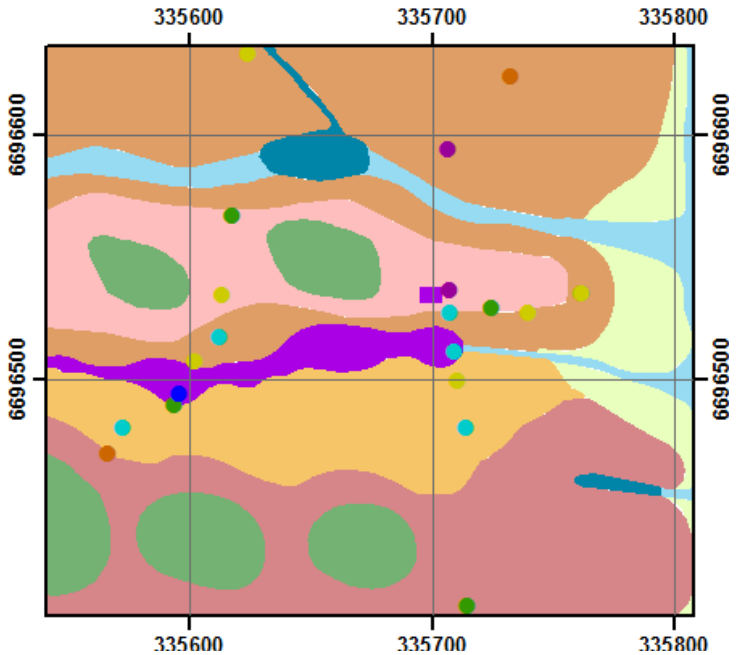
Gilead P Beck

***Eremophila freelingii* twig**

Y (ppm)

Pathfinder

Regolith - Landform



Legend

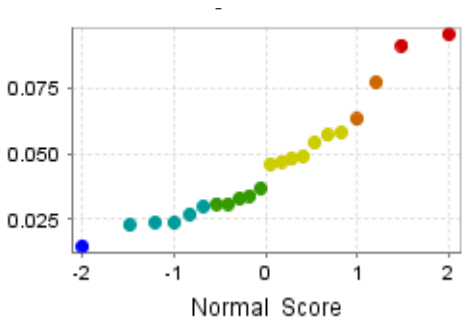
- <0.015 ppm
- 0.015 - 0.03 ppm
- 0.03 - 0.042 ppm
- 0.042 - 0.061 ppm
- 0.061 - 0.08 ppm
- >0.08 ppm

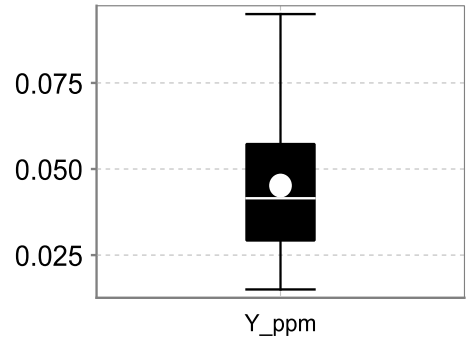
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1

- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.001

Below Detection Limit = 0

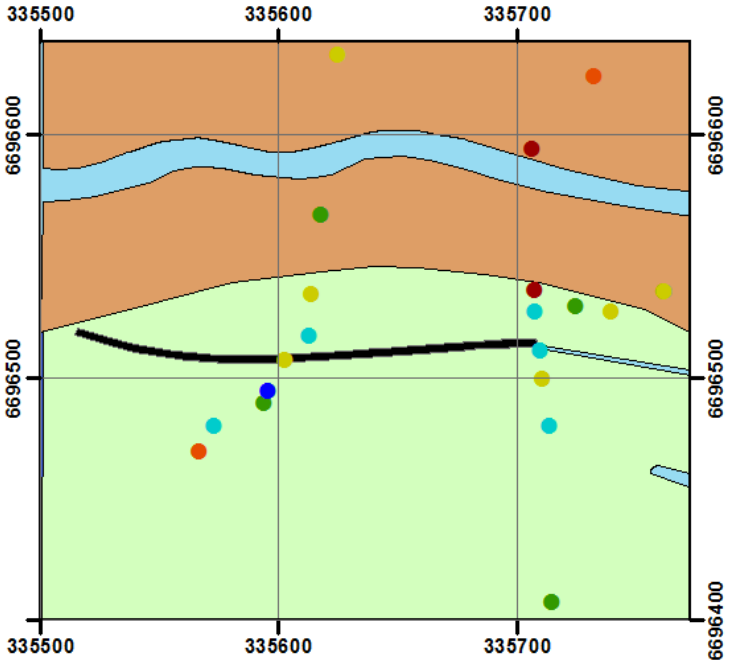
Median = 0.042

Mean = 0.045

Standard Deviation = 0.022

Error = ±0.01

Bedrock Geology



Legend

- <0.015 ppm
- 0.015 - 0.03 ppm
- 0.03 - 0.042 ppm
- 0.042 - 0.061 ppm
- 0.061 - 0.08 ppm
- >0.08 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

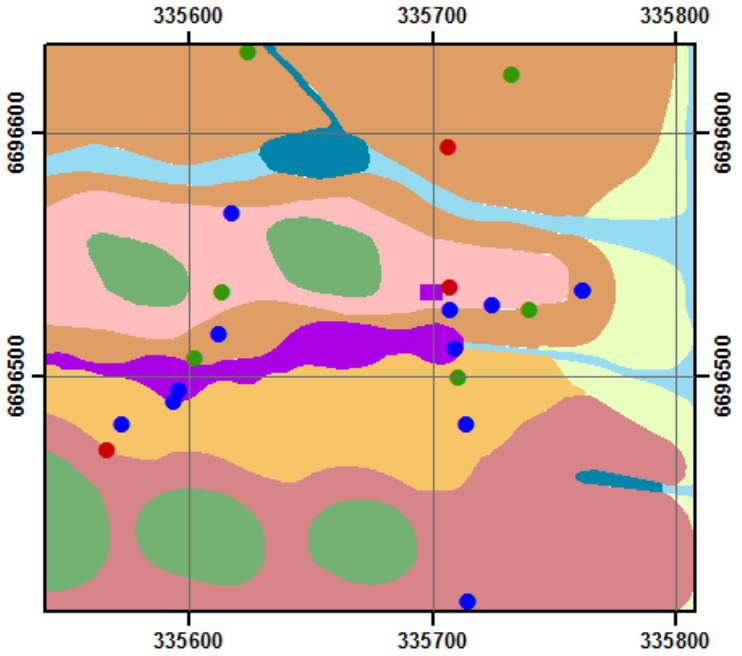
Gilead P Beck

***Eremophila freelingii* twig**

Al(%)

Host/control/landscape

Regolith - Landform

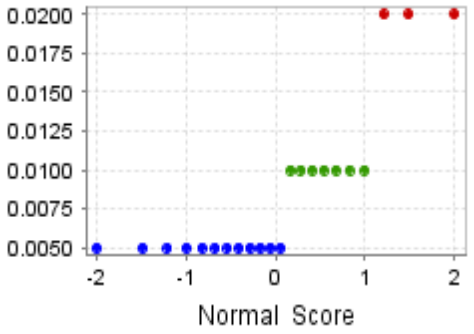


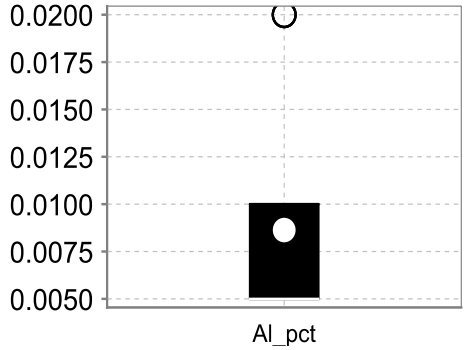
Legend

- <0.005 pct
- 0.005 - 0.01 pct
- >0.01 pct
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

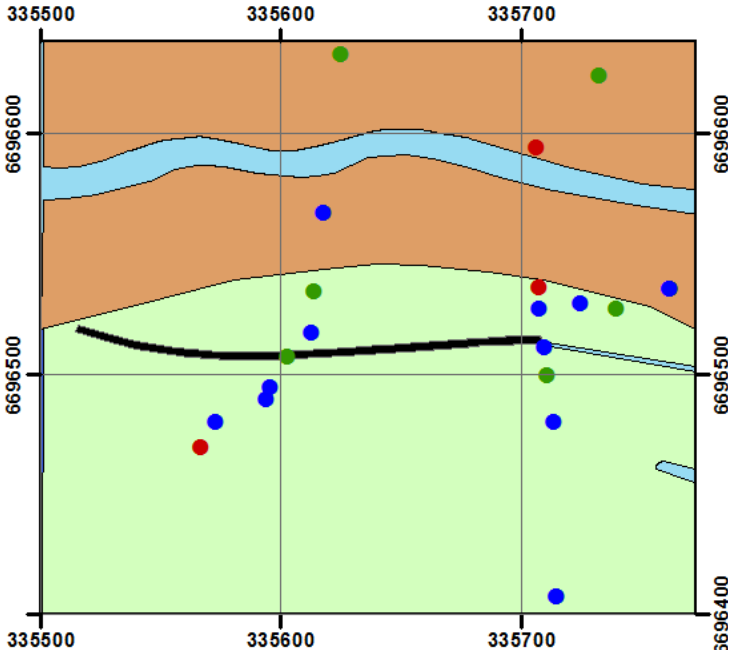
Median = 0.005

Mean = 0.009

Standard Deviation = 0.005

Error = ±0.002

Bedrock Geology



Legend

- <0.005 pct
- 0.005 - 0.01 pct
- >0.01 pct

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

N

0 5 10 20 30 Meters

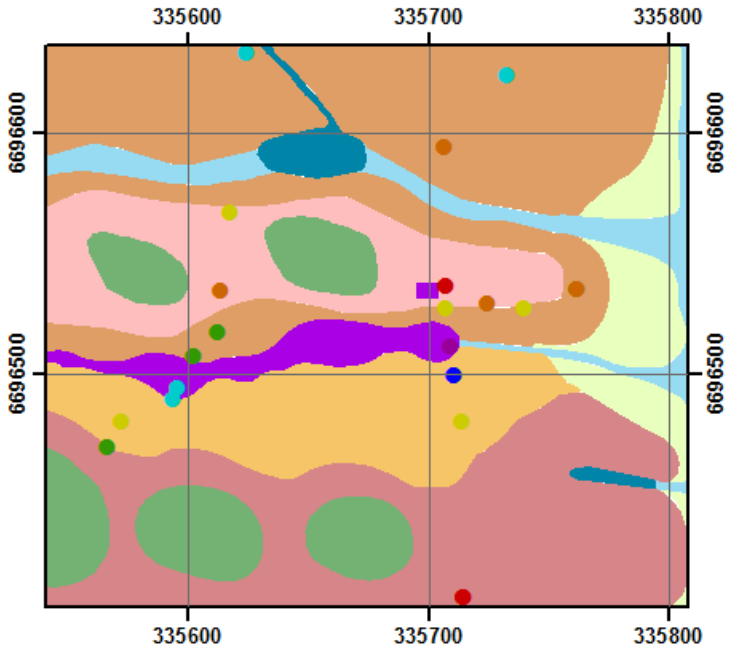
Gilead P Beck

***Eremophila freelingii* twig**

Ca(%)

Landscape

Regolith - Landform



Legend

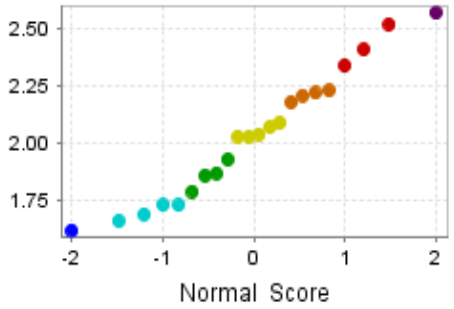
- <1.62 pct
- 1.62 - 1.73 pct
- 1.73 - 1.93 pct
- 1.93 - 2.09 pct
- 2.09 - 2.23 pct
- 2.23 - 2.52 pct
- >2.52 pct

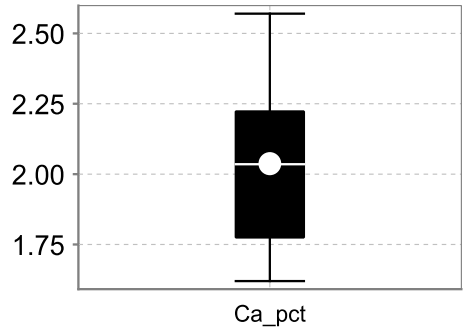
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1

- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

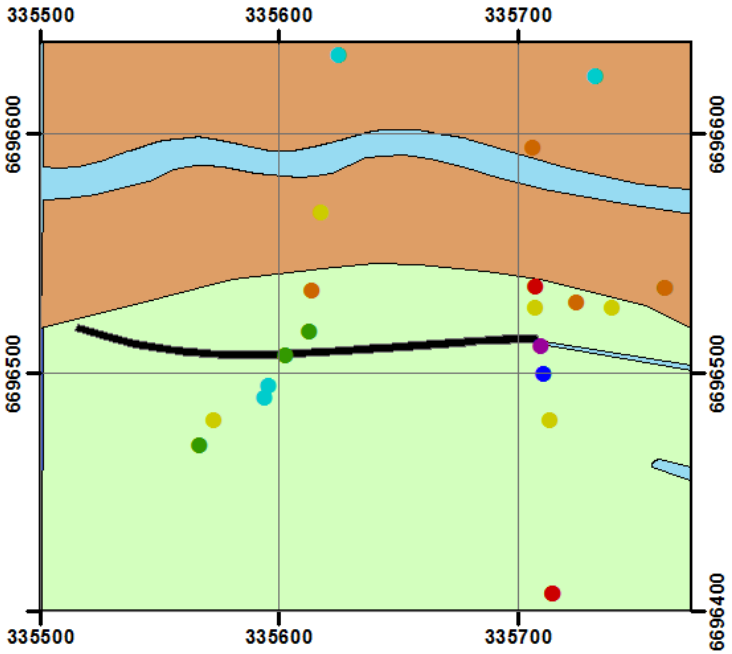
Median = 2.04

Mean = 2.04

Standard Deviation = 0.28

Error = ±0.13

Bedrock Geology



Legend

- <1.62 pct
- 1.62 - 1.73 pct
- 1.73 - 1.93 pct
- 1.93 - 2.09 pct
- 2.09 - 2.23 pct
- 2.23 - 2.52 pct
- >2.52 pct

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

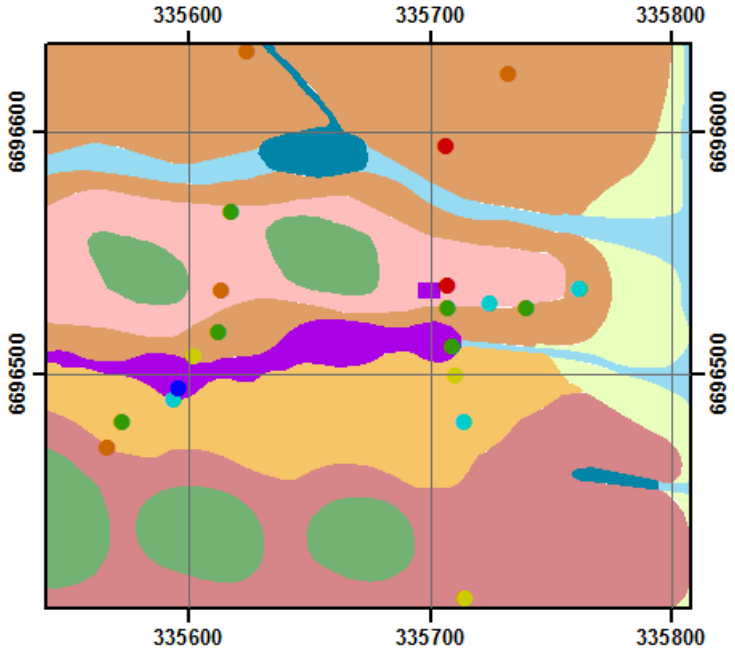
Gilead P Beck

***Eremophila freelingii* twig**

Fe(%)

Other

Regolith - Landform

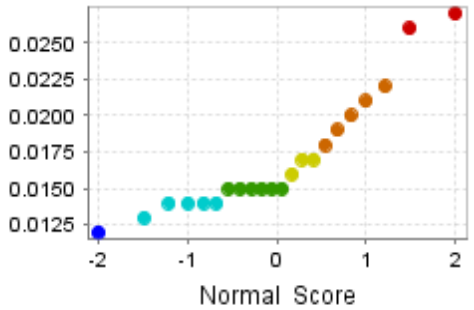


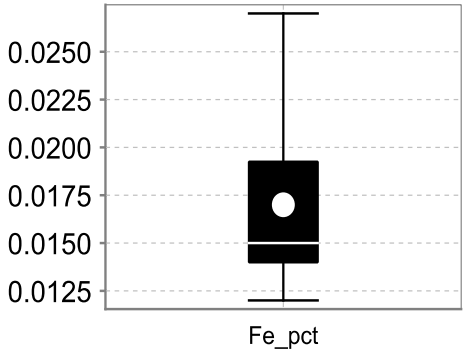
Legend

- <0.012 pct
- 0.012 - 0.014 pct
- 0.014 - 0.015 pct
- 0.015 - 0.017 pct
- 0.017 - 0.022 pct
- >0.022 pct
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.001

Below Detection Limit = 0

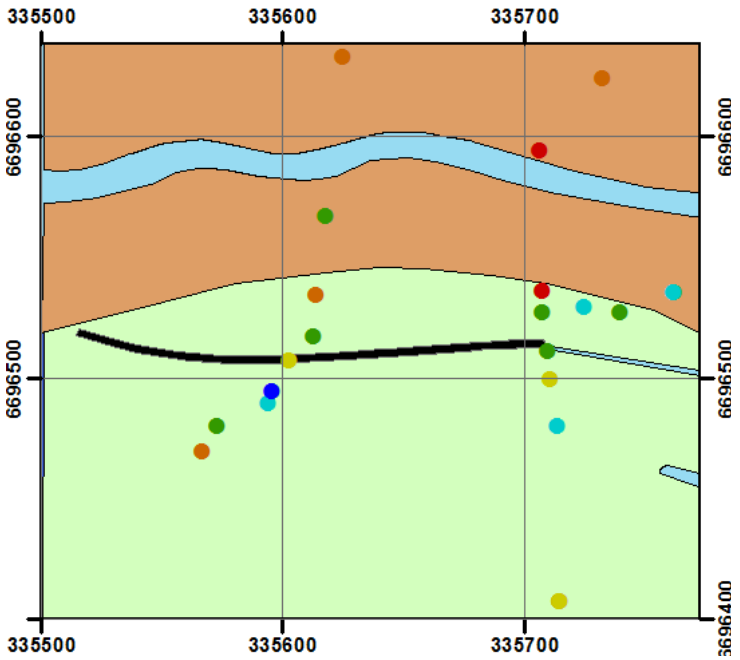
Median = 0.015

Mean = 0.017

Standard Deviation = 0.004

Error = ±0.001

Bedrock Geology



Legend

- <0.012 pct
- 0.012 - 0.014 pct
- 0.014 - 0.015 pct
- 0.015 - 0.017 pct
- 0.017 - 0.022 pct
- >0.0222 pct

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

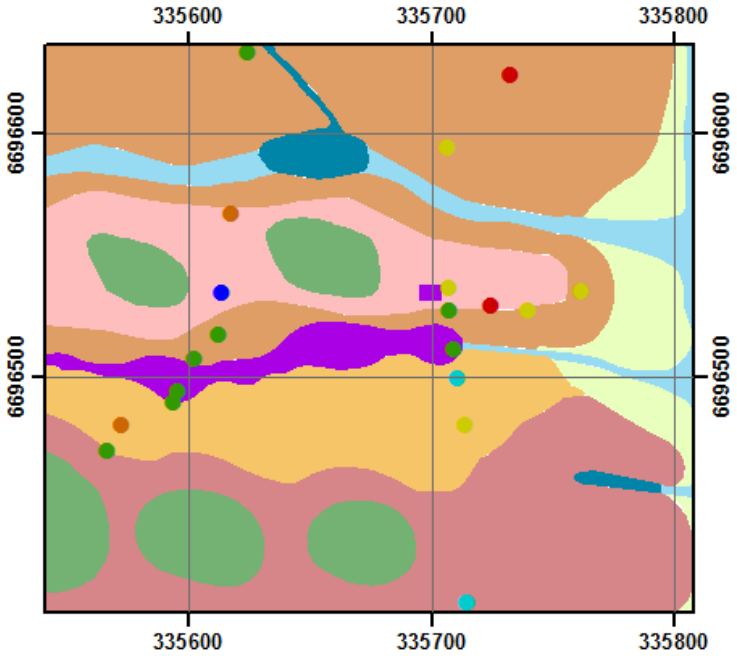
Gilead P Beck

***Eremophila freelingii* twig**

K(%)

Landscape

Regolith - Landform



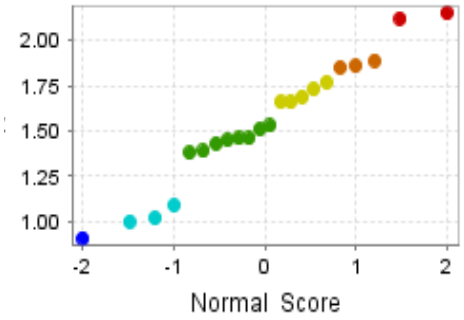
Legend

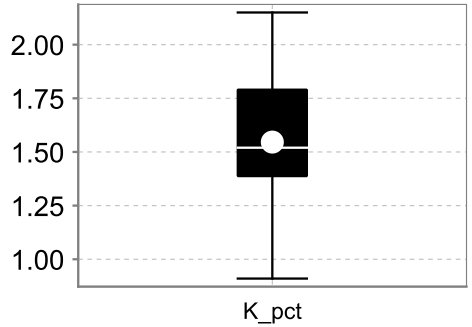
- <0.91 pct
- 0.91 - 1.09 pct
- 1.09 - 1.53 pct
- 1.53 - 1.77 pct
- 1.77 - 1.89 pct
- >1.89 pct

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

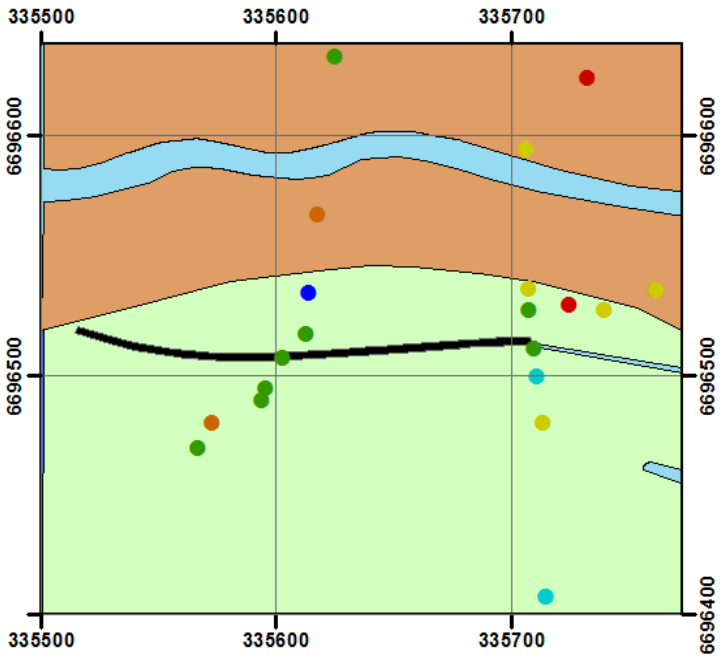
Median = 1.52

Mean = 1.55

Standard Deviation = 0.15

Error = ±0.07

Bedrock Geology



Legend

- <0.91 pct
- 0.91 - 1.09 pct
- 1.09 - 1.53 pct
- 1.53 - 1.77 pct
- 1.77 - 1.89 pct
- >1.89 pct

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

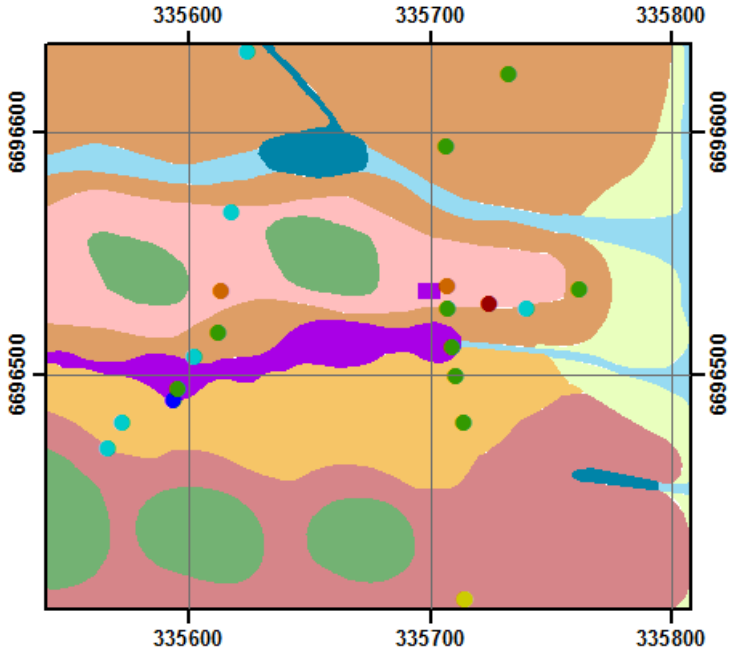
Gilead P Beck

***Eremophila freelingii* twig**

Mn(ppm)

Host/control

Regolith - Landform

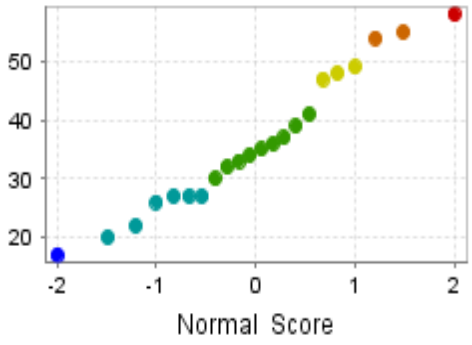


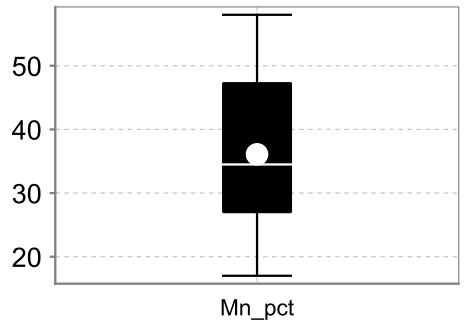
Legend

- <17.0 pct
- 17.0 - 27.0 pct
- 27.0 - 41.0 pct
- 41.0 - 49.0 pct
- 49.0 - 55.0 pct
- >55.0 pct
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 1

Below Detection Limit = 0

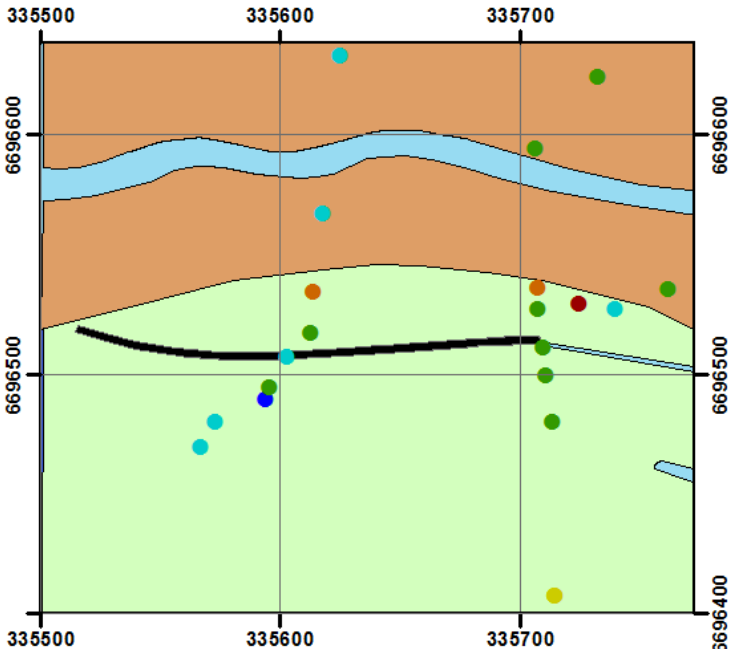
Median = 34.5

Mean = 36.09

Standard Deviation = 11.67

Error = ±5.17

Bedrock Geology



Legend

- <17.0 pct
- 17.0 - 27.0 pct
- 27.0 - 41.0 pct
- 41.0 - 49.0 pct
- 49.0 - 55.0 pct
- >55.0 pct

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

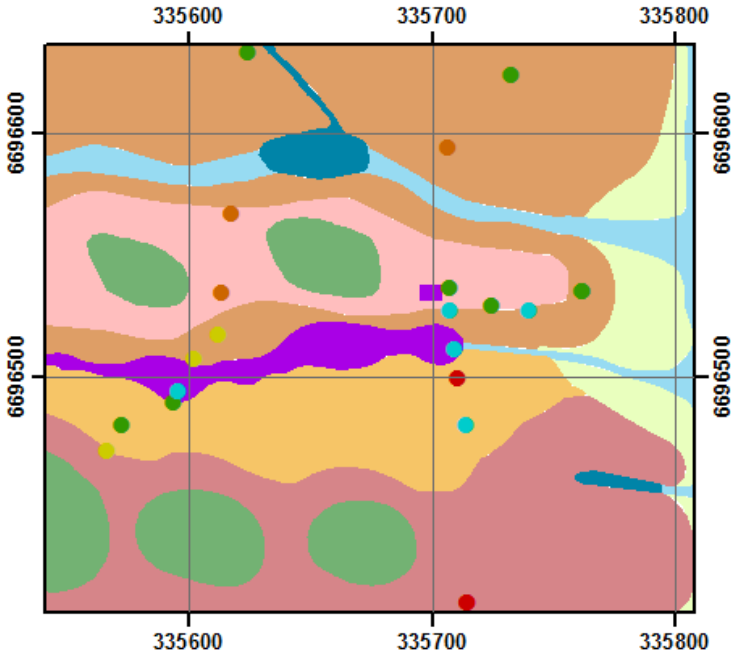
Gilead P Beck

***Eremophila freelingii* twig**

Na(%)

Landscape

Regolith - Landform

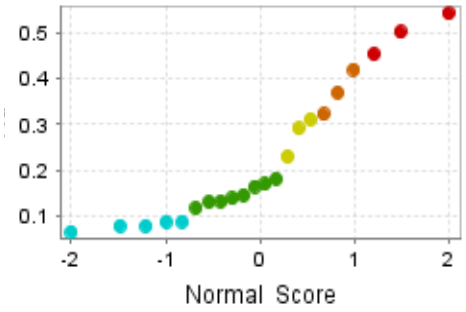


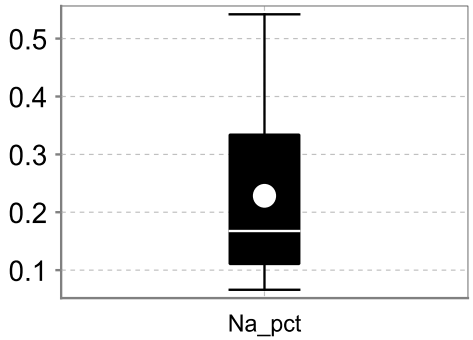
Legend

- 0.114 pct
- 0.114 - 0.223 pct
- 0.223 - 0.32 pct
- 0.32 - 0.438 pct
- >0.438 pct
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.001

Below Detection Limit = 0

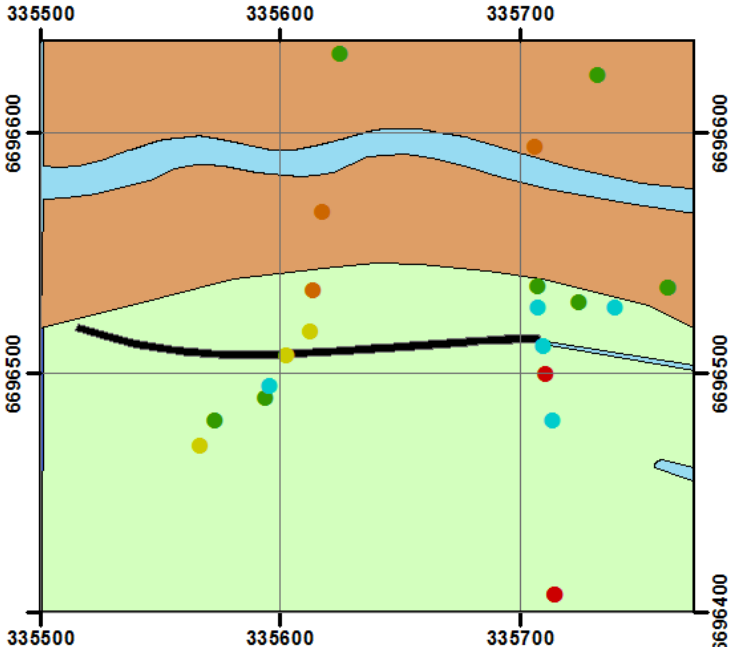
Median = 0.168

Mean = 0.009

Standard Deviation = 0.005

Error = ±0.002

Bedrock Geology



Legend

- <0.114 pct
- 0.114 - 0.223 pct
- 0.223 - 0.32 pct
- 0.32 - 0.438 pct
- >0.438 pct

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

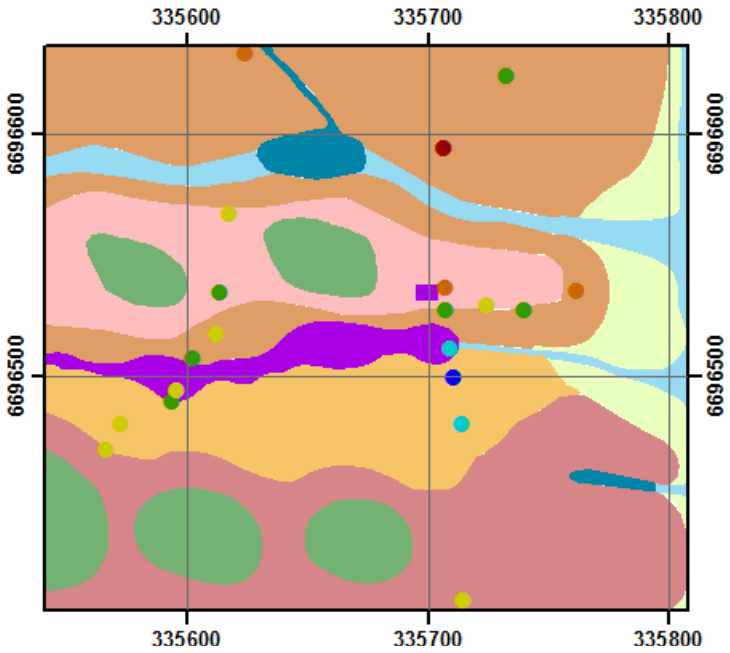
Gilead P Beck

***Eremophila freelingii* twig**

Rb(ppm)

Landscape

Regolith - Landform



Legend

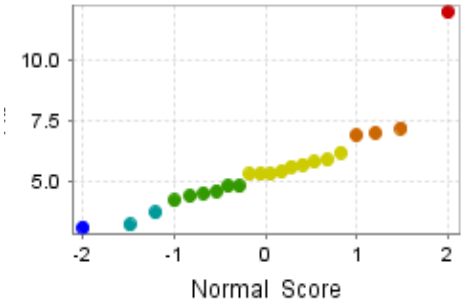
- <3.1 ppm
- 3.1 - 3.7 ppm
- 3.7 - 4.8 ppm
- 4.8 - 6.2 ppm
- 6.2 - 7.2 ppm
- >7.2 ppm

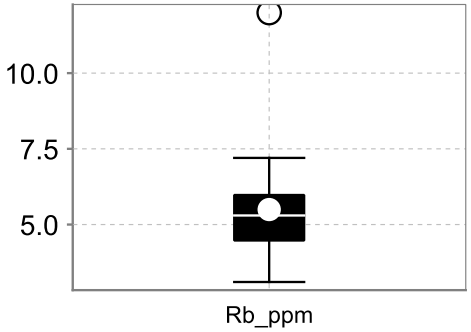
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1

- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.1

Below Detection Limit = 0

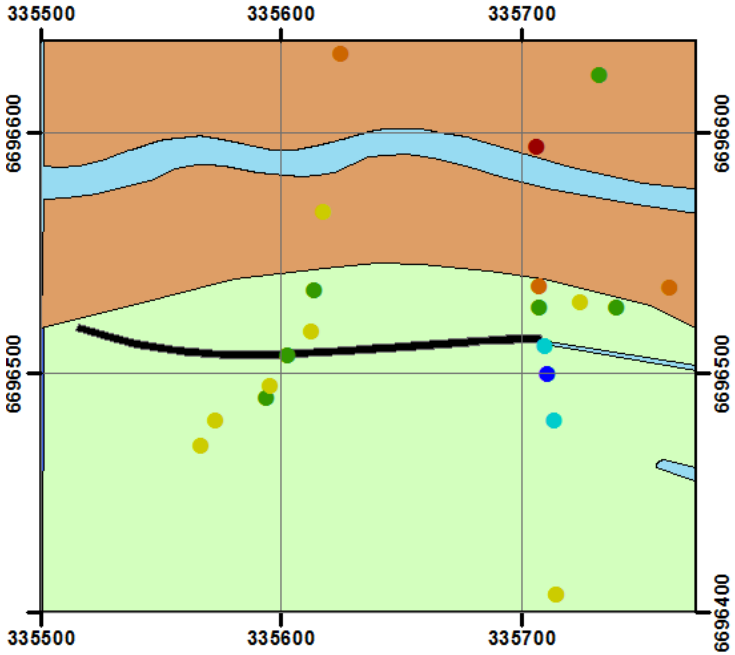
Median = 5.3

Mean = 5.495

Standard Deviation = 1.829

Error = ±0.8

Bedrock Geology



Legend

- <3.1 ppm
- 3.1 - 3.7 ppm
- 3.7 - 4.8 ppm
- 4.8 - 6.2 ppm
- 6.2 - 7.2 ppm
- >7.2 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

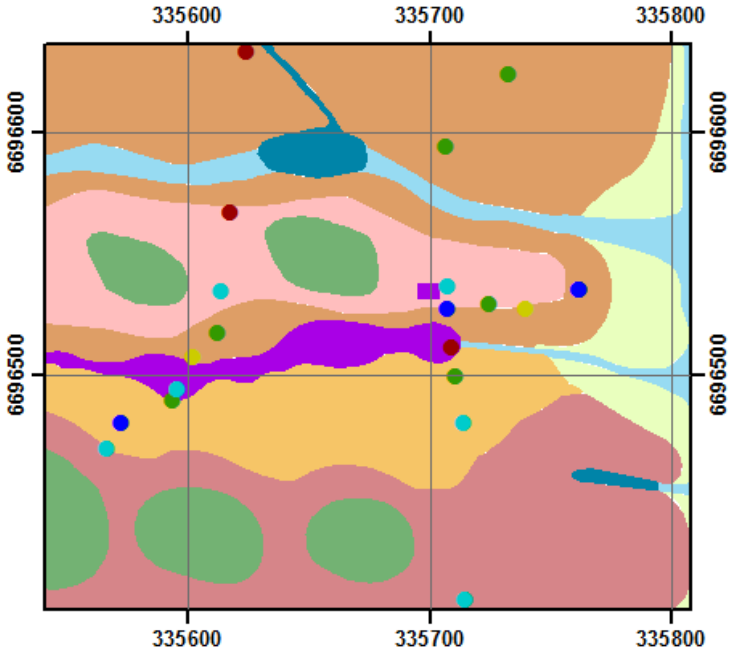
Gilead P Beck

***Eremophila freelingii* twig**

$Cr_{(ppm)}$

Other

Regolith - Landform

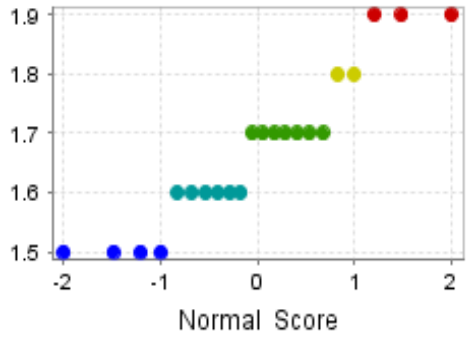


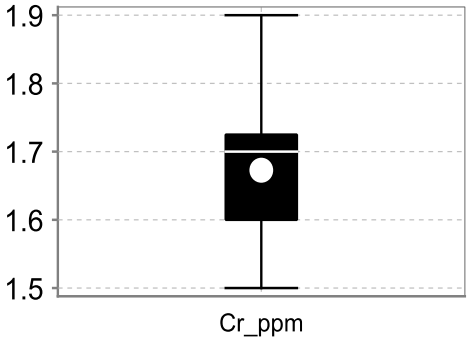
Legend

- <1.5 ppm
- 1.5 - 1.6 ppm
- 1.6 - 1.7 ppm
- 1.7 - 1.8 ppm
- >1.8 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.001

Below Detection Limit = 0

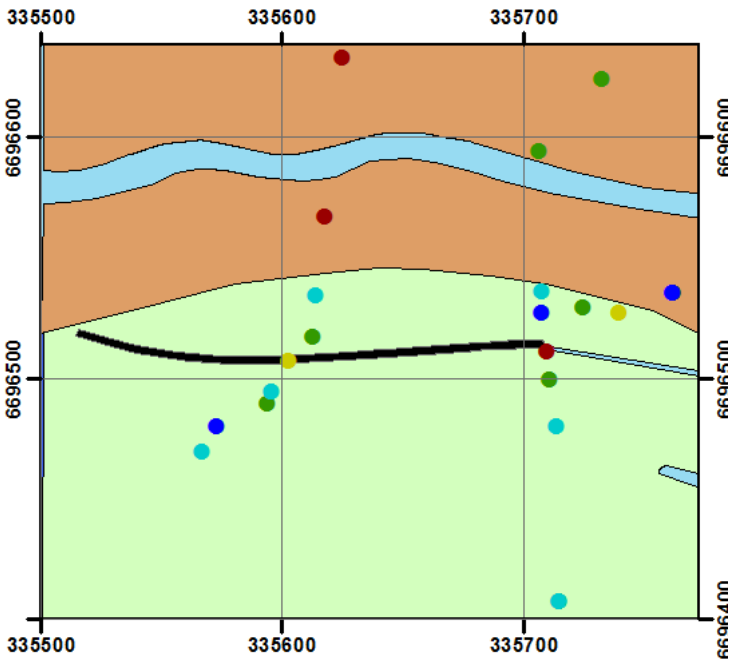
Median = 1.7

Mean = 1.673

Standard Deviation = 0.128

Error = ±0.06

Bedrock Geology



Legend

- <1.5 ppm
- 1.5 - 1.6 ppm
- 1.6 - 1.7 ppm
- 1.7 - 1.8 ppm
- >1.8 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

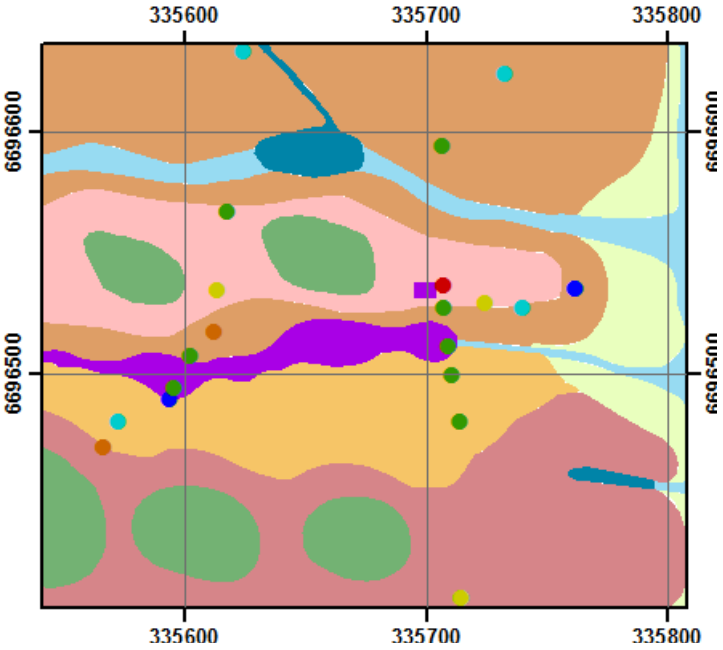
Gilead P Beck

***Eremophila freelingii* twig**

$Ni_{(ppm)}$

Other

Regolith - Landform



Legend

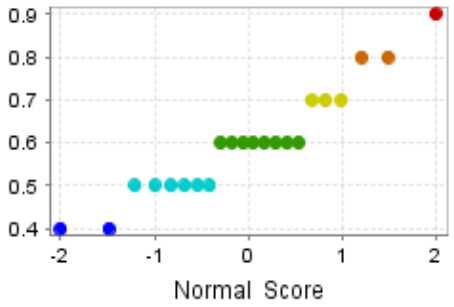
- <0.4 ppm
- 0.4 - 0.5 ppm
- 0.5 - 0.6 ppm
- 0.5 - 0.7 ppm
- 0.7 - 0.8 ppm
- >0.8 ppm

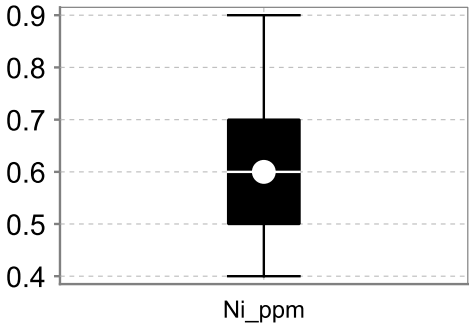
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1

- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.1

Below Detection Limit = 0

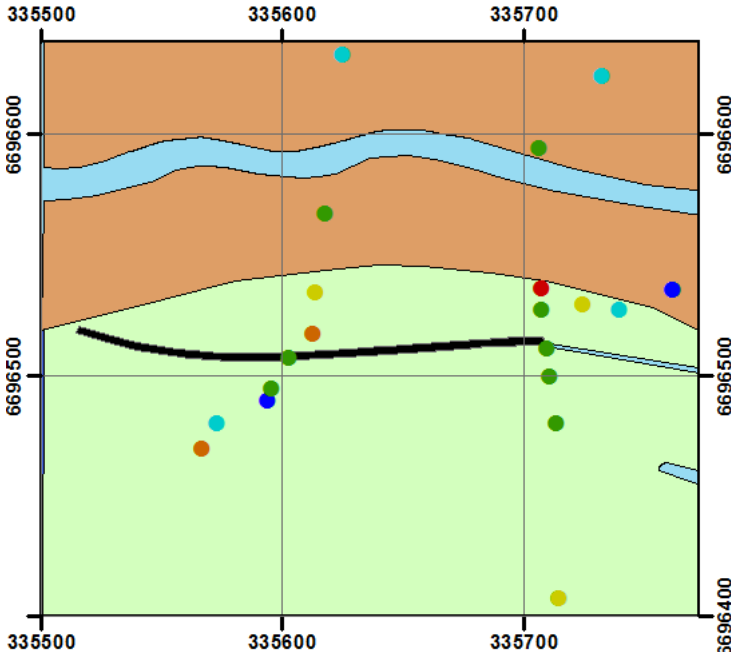
Median = 0.6

Mean = 0.6

Standard Deviation = 0.127

Error = ±0.056

Bedrock Geology



Legend

- <0.4 ppm
- 0.4 - 0.5 ppm
- 0.5 - 0.6 ppm
- 0.6 - 0.7 ppm
- 0.7 - 0.8 ppm
- >0.8 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

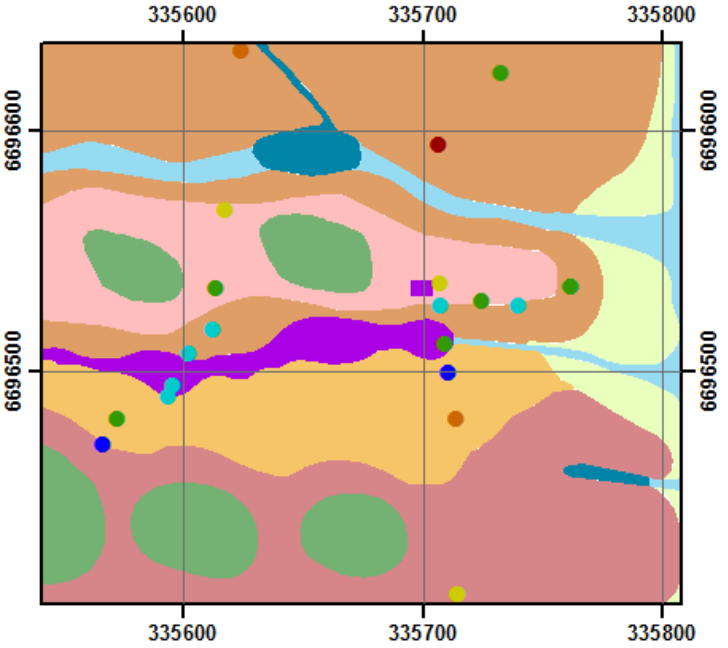
Gilead P Beck

***Eremophila freelingii* twig**

$Sr_{(ppm)}$

Other

Regolith - Landform



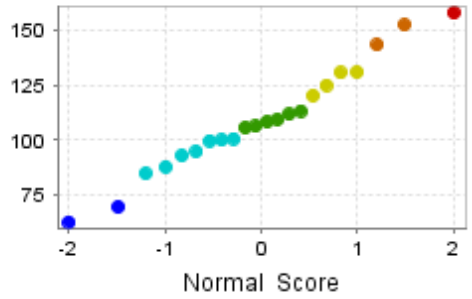
Legend

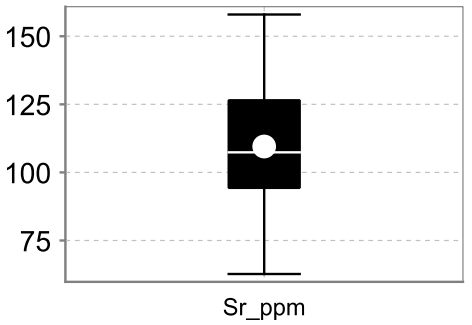
- <69.6 ppm
- 69.9 - 100.8 ppm
- 100.8 - 113.5 ppm
- 113.5 - 131.0 ppm
- 131.0 - 152.5 ppm
- >152.5 ppm

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.5

Below Detection Limit = 0

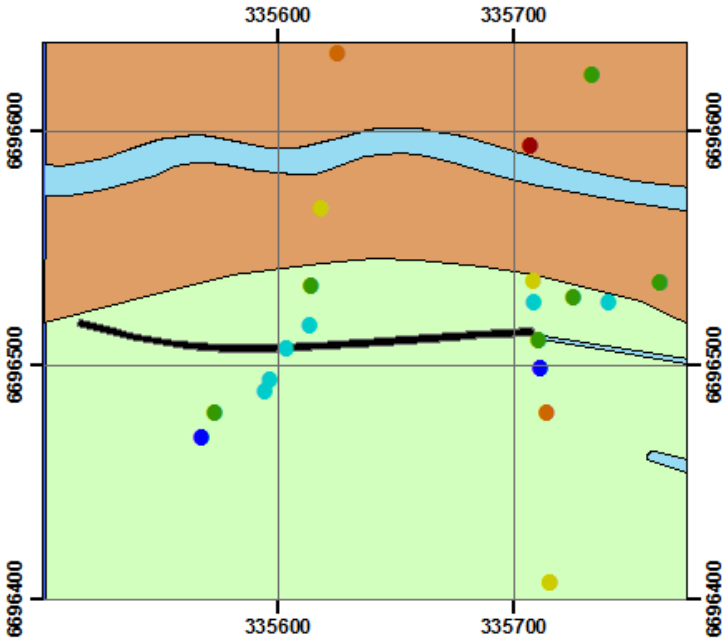
Median = 107.4

Mean = 104.55

Standard Deviation = 24.19

Error = ±10.73

Bedrock Geology



Legend

- <69.6 ppm
- 69.6 - 100.8 ppm
- 100.8 - 113.5 ppm
- 113.5 - 131.0 ppm
- 131.0 - 152.5 ppm
- >152.5 ppm

N

0 5 10 20 30 Meters

Geology

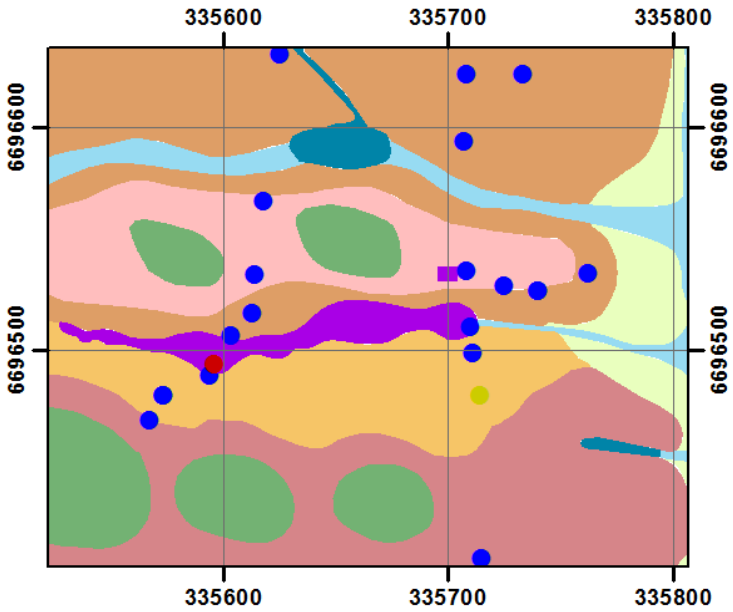
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

Ag(ppm)

Commodity

Regolith - Landform

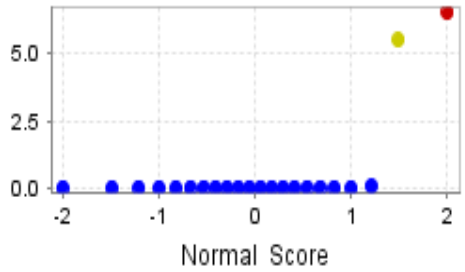


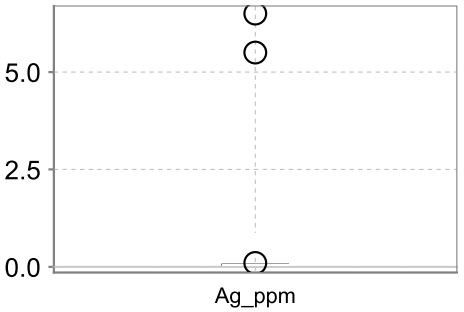
Legend

- <0.5 ppm
- 0.5 - 5.5 ppm
- >5.5 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.1

Below Detection Limit = 20

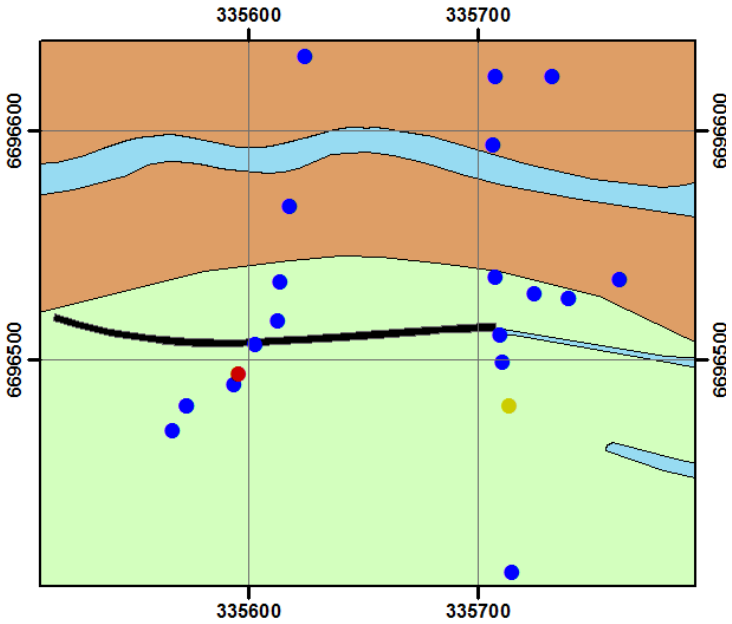
Median = 0.05

Mean = 0.59

Standard Deviation = 0.052

Error = ±0.02

Bedrock Geology



Legend

- <0.05 ppb
- 0.05 - 5.5 ppb
- >5.5ppb

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

N

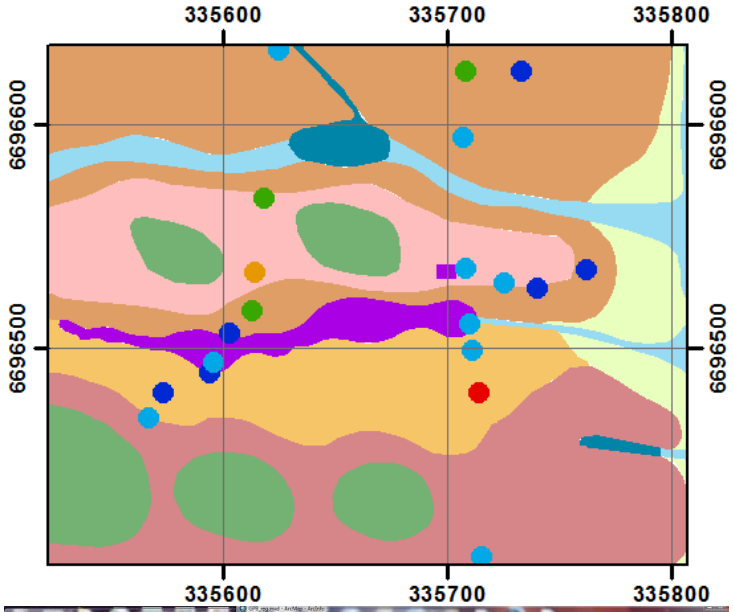
0 5 10 20 30 Meters

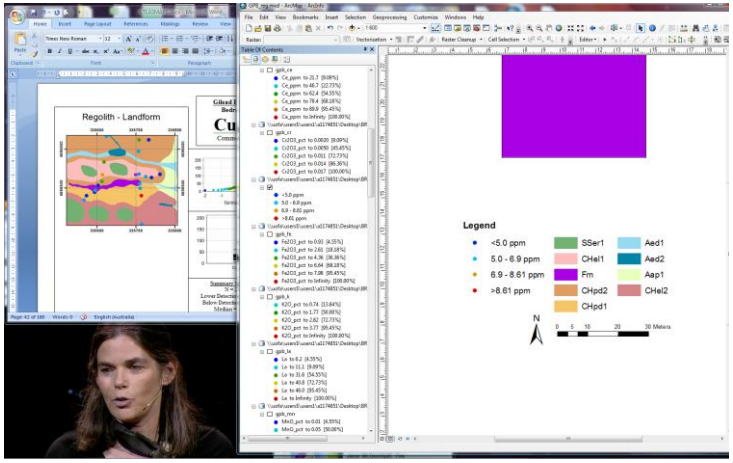
Gilead P Beck
Bedrock

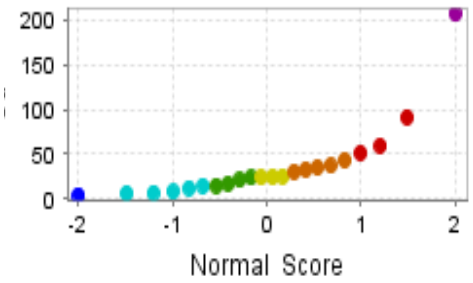
$Cu_{(ppm)}$

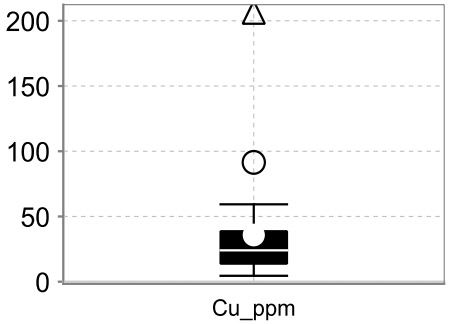
Commodity

Regolith - Landform





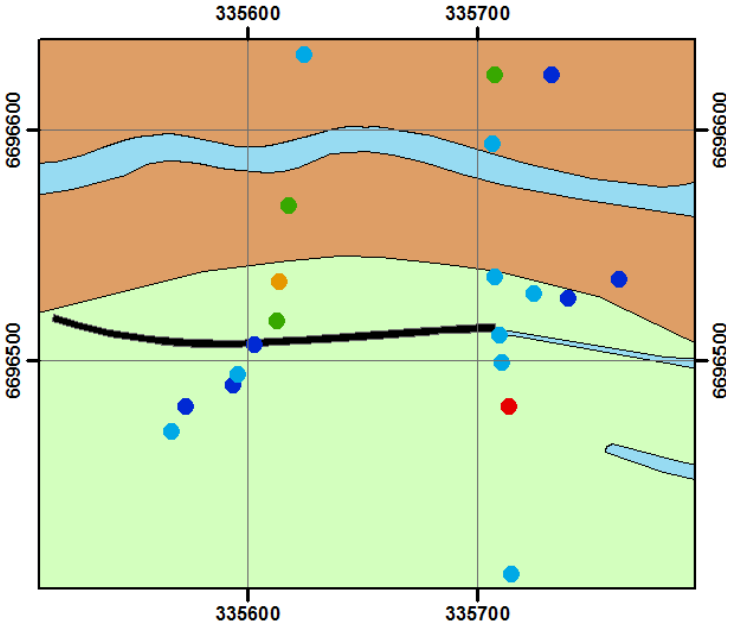




Summary Statistics

N = 22
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 24.05
Mean = 35.84
Standard Deviation = 43.16
Error = ±19.13

Bedrock Geology



Legend

- <16.9 ppm
- 16.9 - 37.2 ppm
- 37.2 - 59.3 ppm
- 59.3 - 91.5 ppm
- 91.5 - 206.3 ppm

N

0 5 10 20 30
Meters

Geology

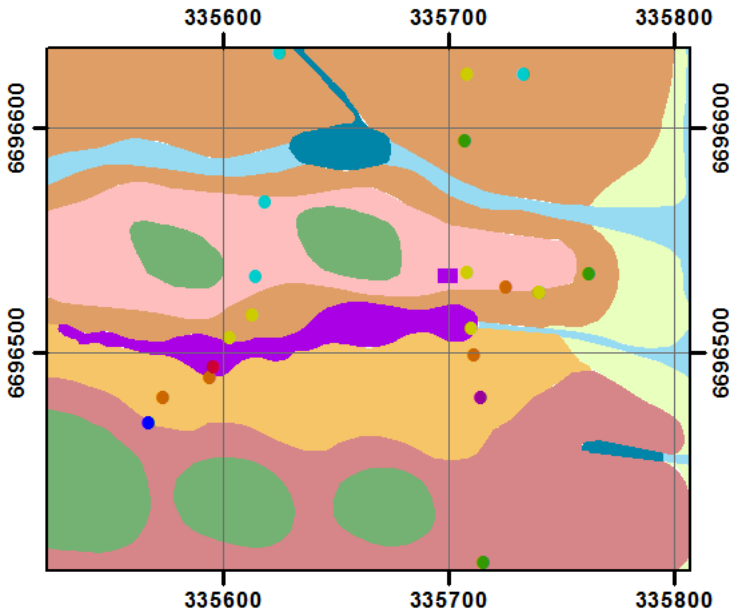
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

Pb(ppm)

Commodity

Regolith - Landform



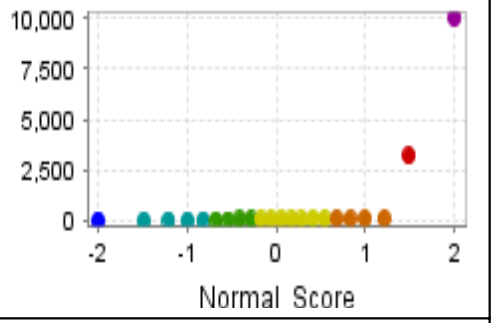
Legend

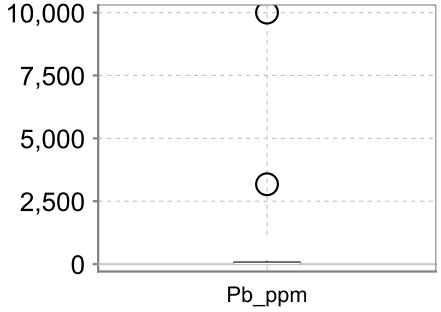
- <5.2 ppm
- 5.2 - 9.2 ppm
- 9.2 - 12.8 ppm
- 12.8 - 31.9 ppm
- 31.9 - 57.6 ppm
- 57.6 - 3173.5 ppm
- >3173.5 ppm

- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

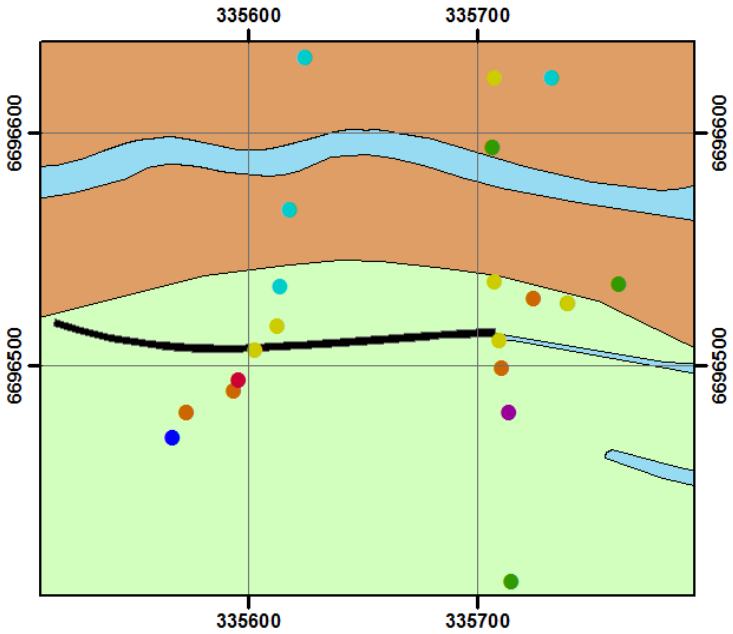
0 5 10 20 30 Meters





Summary Statistics
N = 22
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 14.85
Mean = 617.905
Standard Deviation = 2 200.491
Error = ±975.643

Bedrock Geology



Legend

- <5.2 ppm
- 5.2 - 9.2 ppm
- 9.2 - 12.8 ppm
- 12.8 - 31.9 ppm
- 31.9 - 57.6 ppm
- 57.6 - 3173.5 ppm
- >3173.5 ppm

N

0 5 10 20 30 Meters

Geology

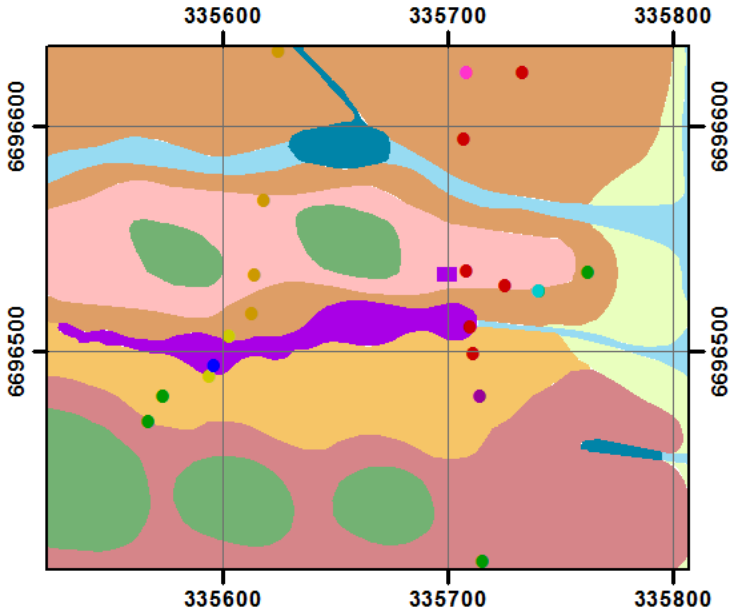
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

Zn(ppm)

Commodity

Regolith - Landform



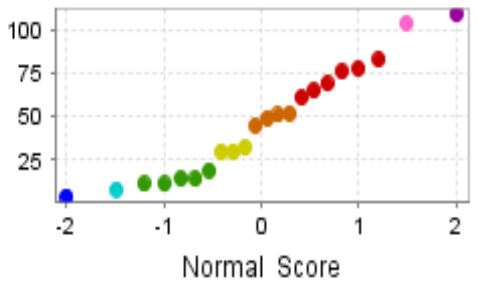
Legend

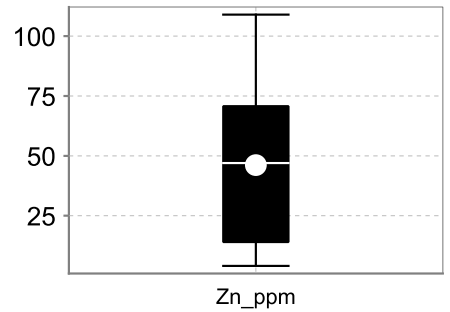
- <4.0 ppm
- 4.0 - 8.0 ppm
- 8.0 - 19.0 ppm
- 19.0 - 32.0 ppm
- 32.0 - 52.0 ppm
- 52.0 - 83.0 ppm
- 83.0 - 104.0 ppm
- >104.0 ppm

- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 1

Below Detection Limit = 0

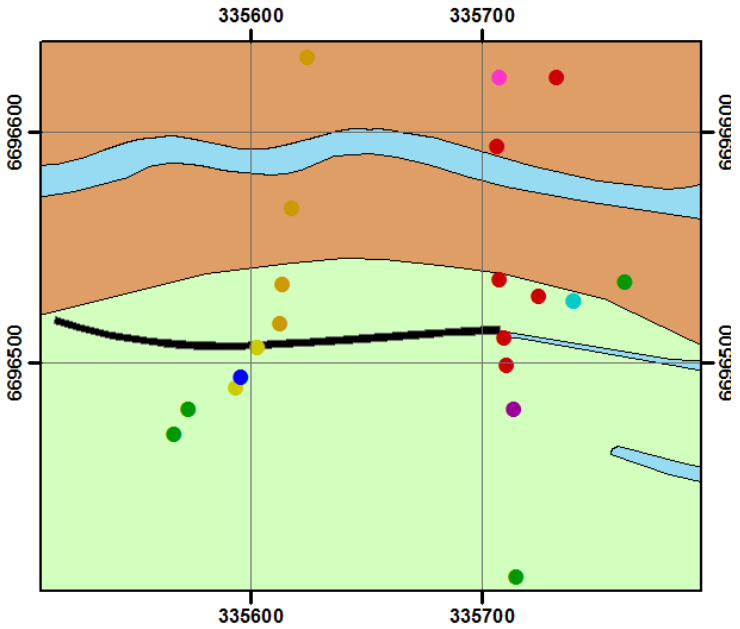
Median = 14.85

Mean = 617.90

Standard Deviation = 31.59

Error = ±14.01

Bedrock Geology



Legend

- <4.0 ppm
- 4.0 - 8.0 ppm
- 8.0 - 19.0 ppm
- 19.0 - 32.0 ppm
- 32.0 - 52.0 ppm
- 52.0 - 83.0 ppm
- 83.0 - 104.0 ppm
- >104.0 ppm

N

0 5 10 20 30 Meters

Geology

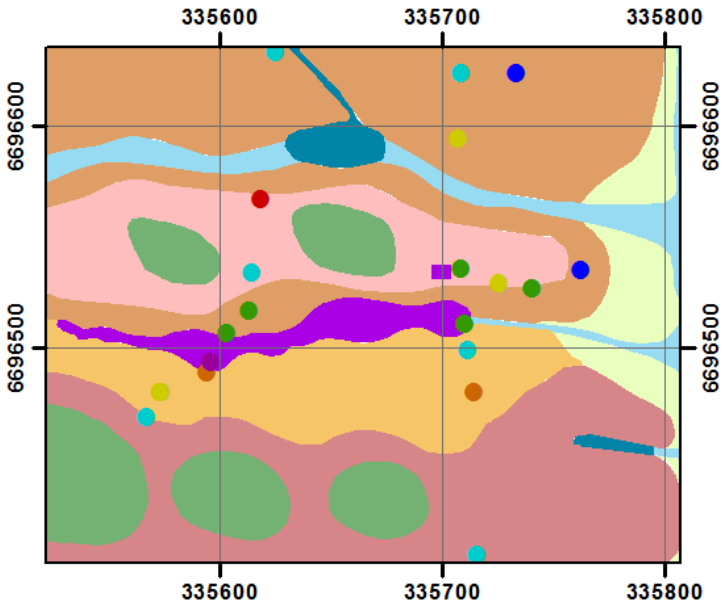
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

As(ppm)

Pathfinder

Regolith - Landform



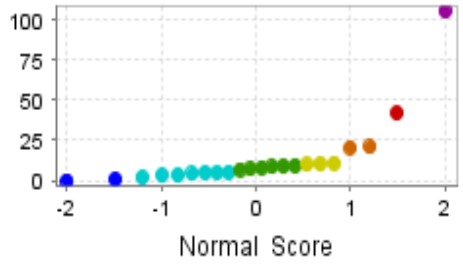
Legend

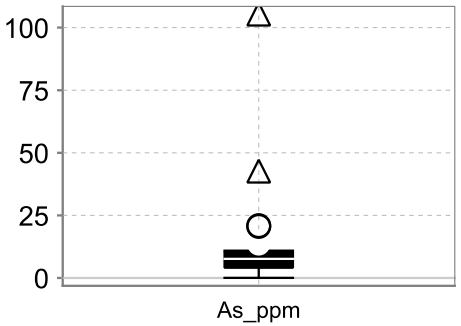
- <0.8 ppm
- 0.8 - 5.1 ppm
- 5.1 - 9.2 ppm
- 9.2 - 10.9 ppm
- 10.9 - 20.9 ppm
- 20.9 - 41.9 ppm
- >41.9 ppm

- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

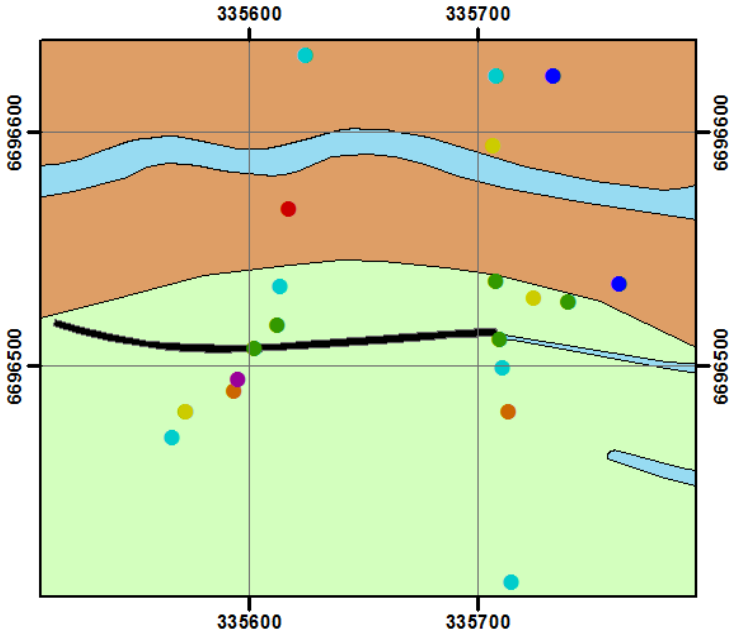
0 5 10 20 30 Meters





Summary Statistics
N = 22
Lower Detection Limit= 0.5
Below Detection Limit = 0
Median = 7.65
Mean = 13.506
Standard Deviation = 22.400
Error = ±9.93

Bedrock Geology



Legend

- <0.8 ppm
- 0.8 - 5.1 ppm
- 5.1 - 9.2 ppm
- 9.2 - 10.9 ppm
- 10.9 - 20.9 ppm
- 20.9 - 41.9 ppm
- >41.9 ppm

N

0 5 10 20 30 Meters

Geology

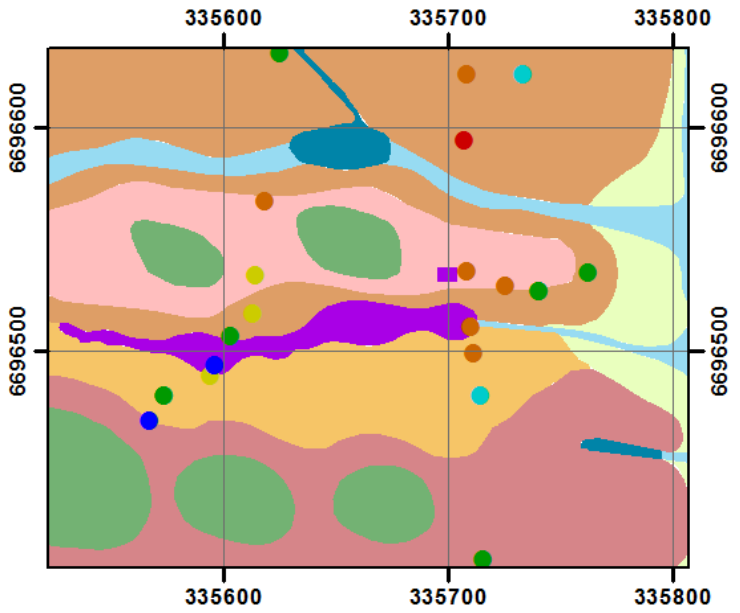
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

$Ce_{(ppm)}$

Other

Regolith - Landform

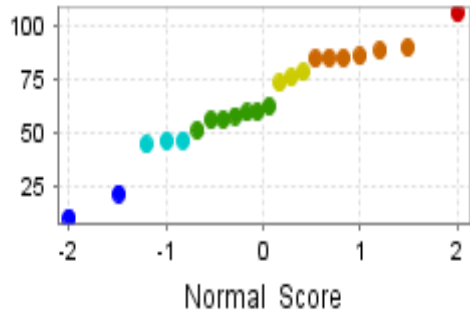


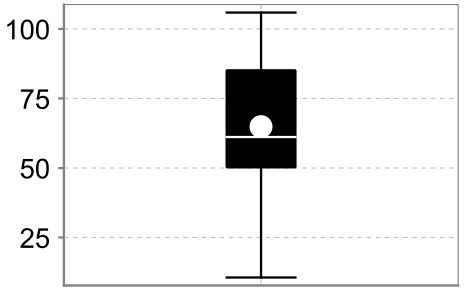
Legend

- <21.7 ppm
- 21.7 - 46.7 ppm
- 46.7 - 62.4 ppm
- 62.4 - 78.4 ppm
- 78.4 - 89.9 ppm
- >89.9 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

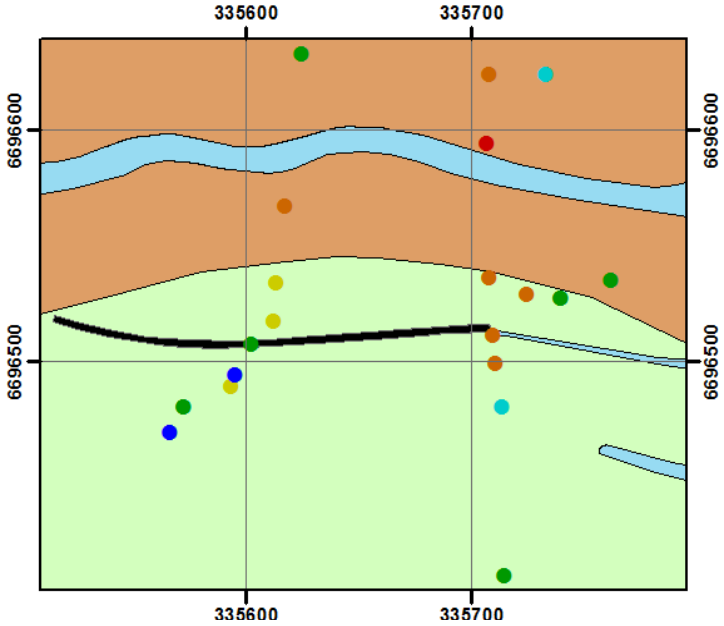
0 5 10 20 30 Meters





Summary Statistics
N = 22
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 61.15
Mean = 64.86
Standard Deviation = 23.13
Error = ±10.25

Bedrock Geology



Legend

- <21.7 ppm
- 21.7 - 46.7 ppm
- 46.7 - 62.4 ppm
- 62.4 - 78.4 ppm
- 78.4 - 89.9 ppm
- >89.9 ppm

N

0 5 10 20 30 Meters

Geology

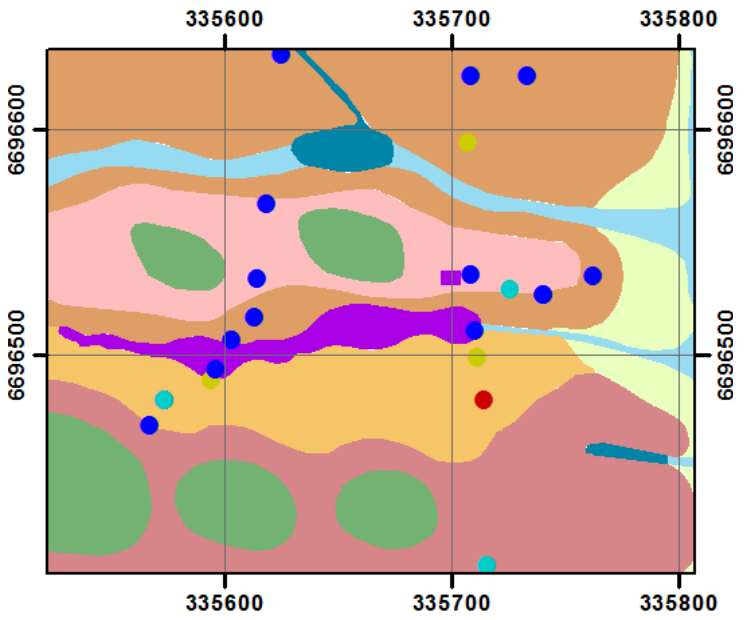
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

Cd(ppm)

Pathfinder

Regolith - Landform



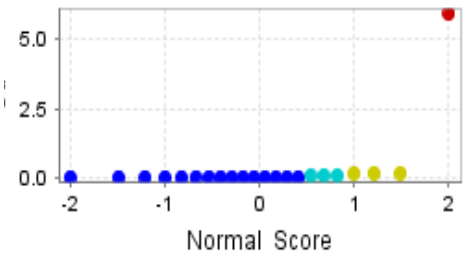
Legend

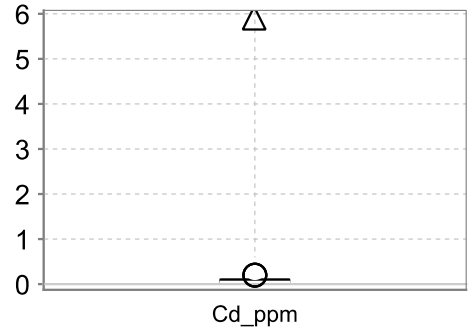
- <0.05 ppm
- 0.05 - 0.1 ppm
- 0.1 - 0.2 ppm
- >0.2 ppm

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

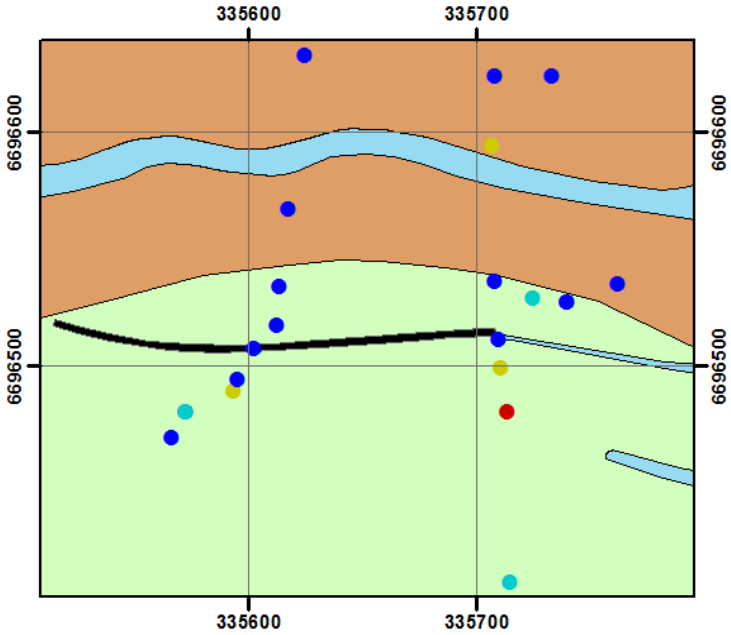
0 5 10 20 30 Meters





Summary Statistics
N = 22
Lower Detection Limit= 0.1
Below Detection Limit = 19
Median = 0.05
Mean = 0.343
Standard Deviation = 1.242
Error = ±0.55

Bedrock Geology



Legend

- <0.05 ppm
- 0.05 - 0.1 ppm
- 0.1 - 0.2 ppm
- >0.2 ppm

N

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

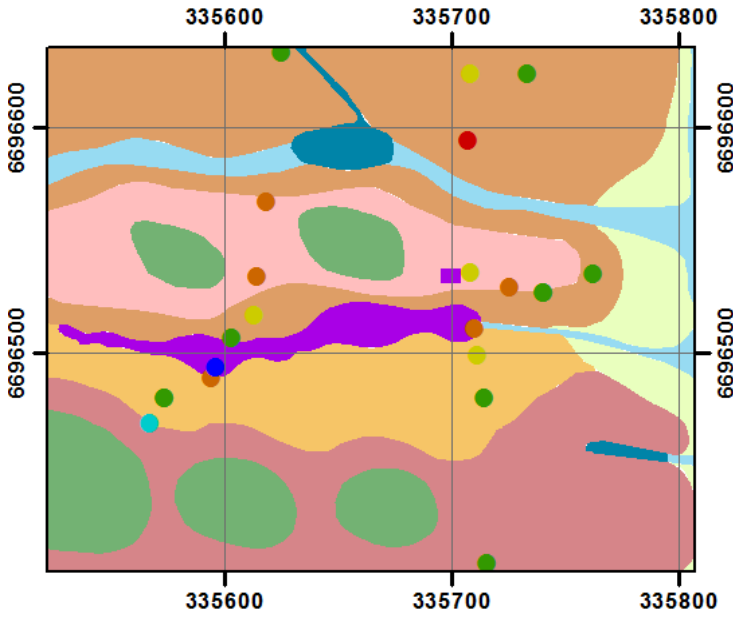
0 5 10 20 30 Meters

Gilead P Beck
Bedrock

La(ppm)

Pathfinder

Regolith - Landform

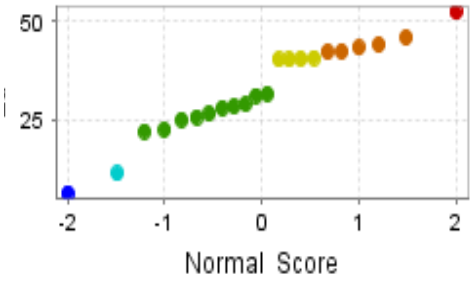


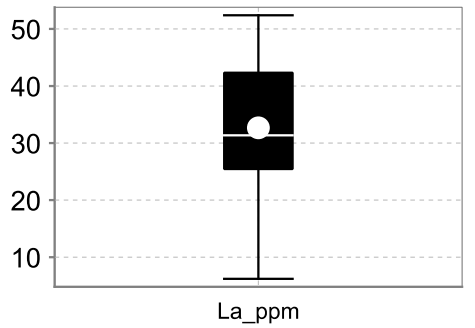
Legend

- <6.2 ppm
- 6.2 - 11.1 ppm
- 11.1 - 31.6 ppm
- 31.6 - 40.8 ppm
- 40.8 - 46.0 ppm
- >46.0 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

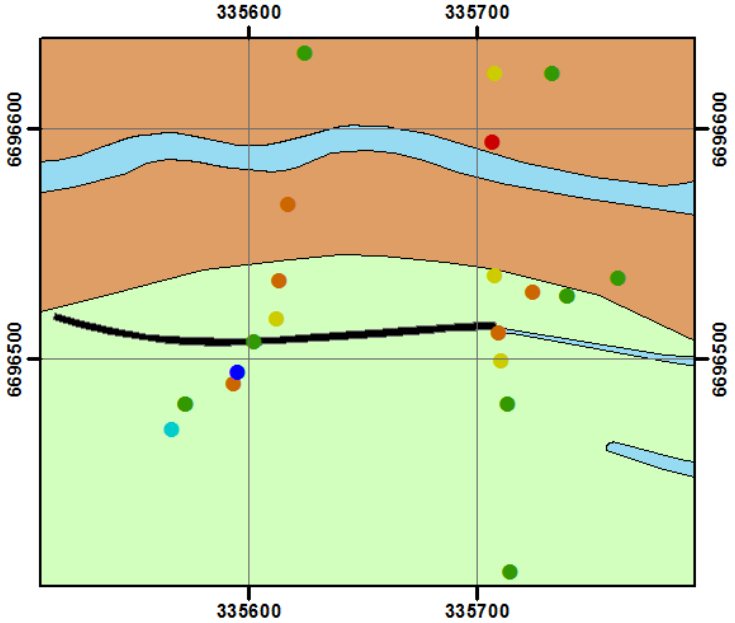
0 5 10 20 30 Meters





Summary Statistics
N = 22
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 31.35
Mean = 32.68
Standard Deviation = 11.62
Error = ±5.15

Bedrock Geology



Legend

- <6.2 ppm
- 6.2 - 11.1 ppm
- 11.1 - 31.6 ppm
- 31.6 - 40.8 ppm
- 40.8 - 46.0 ppm
- >46.0 ppm

N

0 5 10 20 30 Meters

Geology

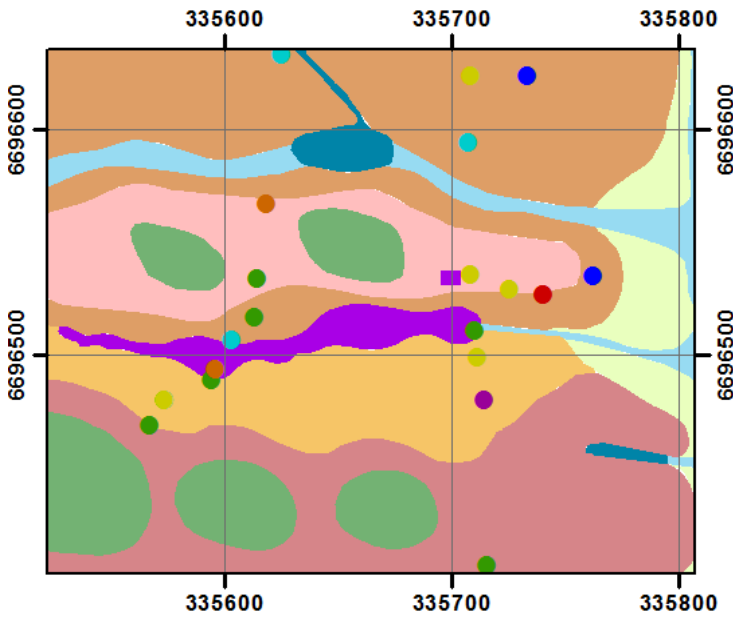
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

Mo(ppm)

Pathfinder

Regolith - Landform



Legend

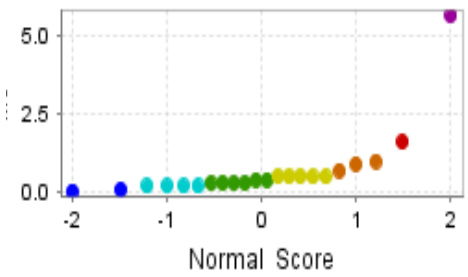
- <0.1 ppm
- 0.1 - 0.2 ppm
- 0.2 - 0.4 ppm
- 0.4 - 0.5 ppm
- 0.5 - 1.0 ppm
- 1.0 - 1.6 ppm
- >1.6 ppm

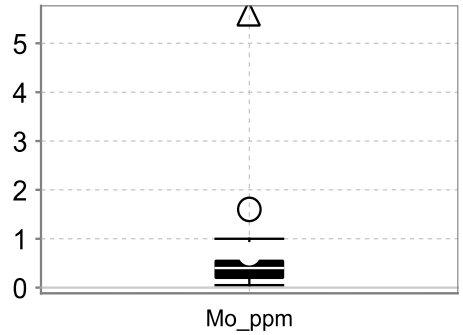
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1

- Aed1
- Aed2
- Aap1
- CHel2

N

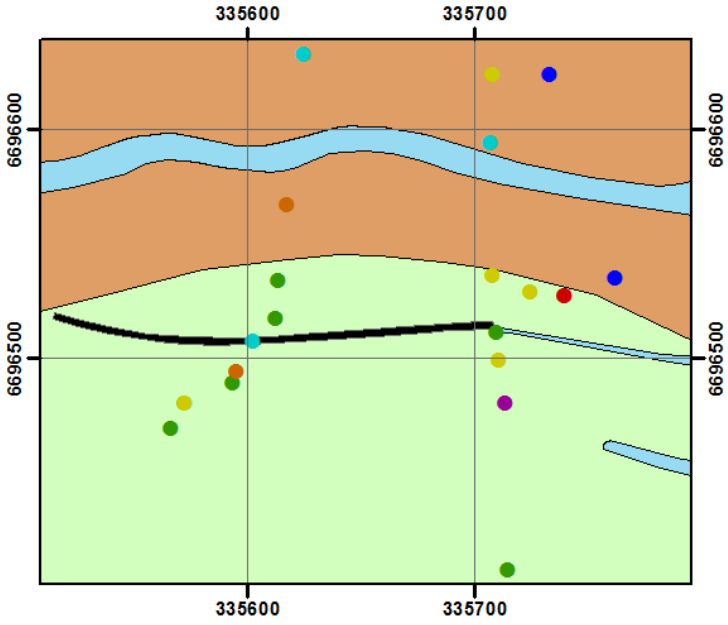
0 5 10 20 30 Meter





Summary Statistics
N = 22
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 0.4
Mean = 0.693
Standard Deviation = 1.150
Error = ±0.51

Bedrock Geology



Legend

- <0.1 ppm
- 0.1 - 0.2 ppm
- 0.2 - 0.4 ppm
- 0.4 - 0.5 ppm
- 0.5 - 1.0 ppm
- 1.0 - 1.6 ppm
- >1.6 ppm

N

0 5 10 20 30 Meters

Geology

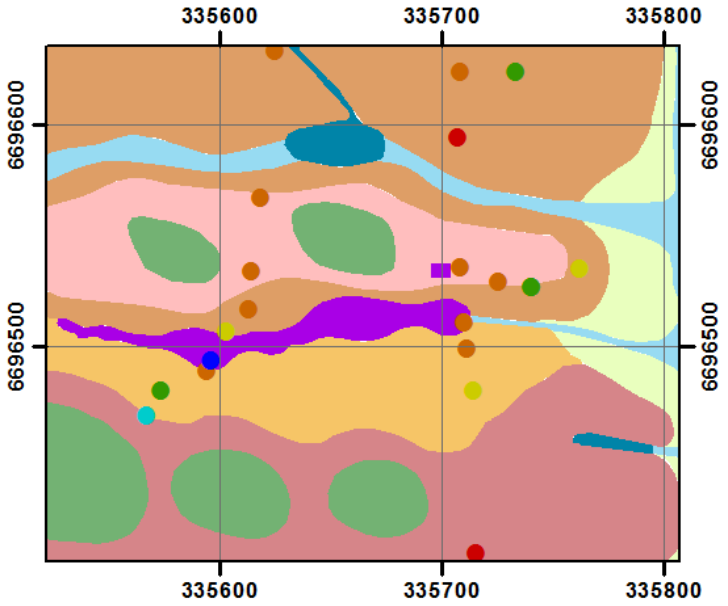
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

Y (ppm)

Pathfinder

Regolith - Landform

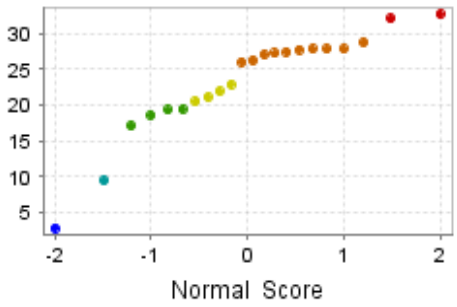


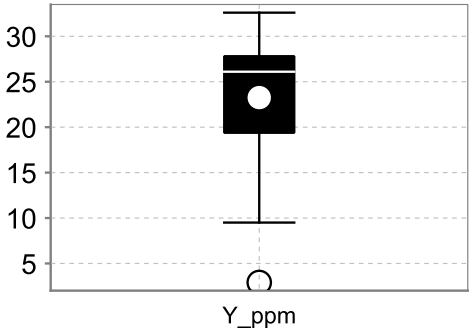
Legend

- <2.9 ppm
- 2.9 - 9.5 ppm
- 9.5 - 19.4 ppm
- 19.4 - 22.9 ppm
- 22.9 - 29.7 ppm
- >29.7 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.1

Below Detection Limit = 0

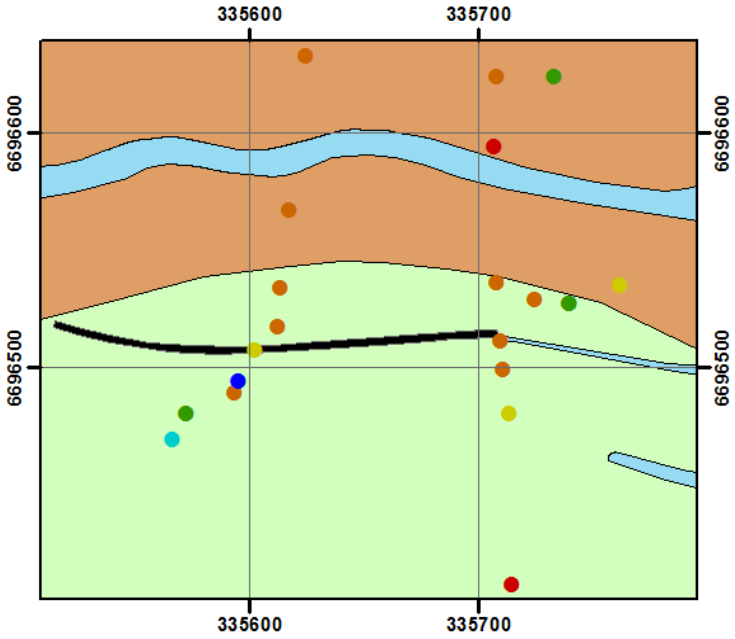
Median = 26.1

Mean = 23.25

Standard Deviation = 7.057

Error = ±3.13

Bedrock Geology



Legend

- <2.9 ppm
- 2.9 - 9.5 ppm
- 9.5 - 19.4 ppm
- 19.4 - 22.9 ppm
- 22.9 - 29.7 ppm
- <29.7 ppm

N

0 5 10 20 30 Meters

Geology

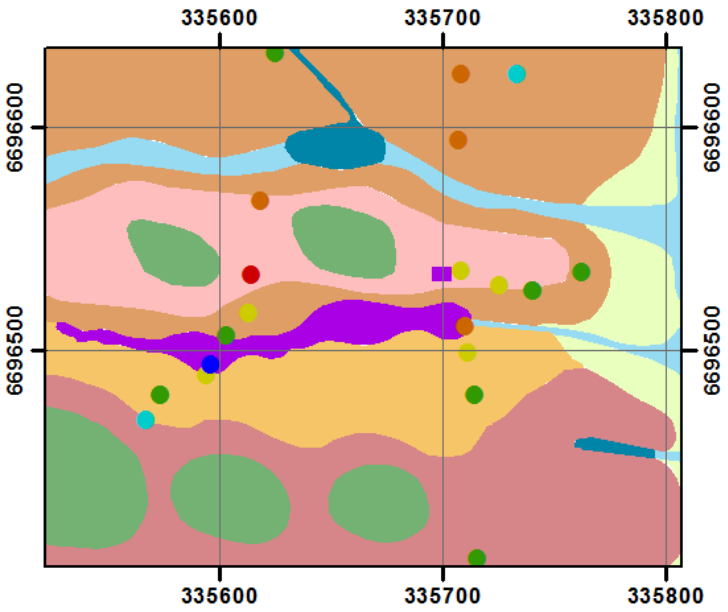
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

$Al_2O_{3(\%)}$

Landscape/Host/Control

Regolith - Landform

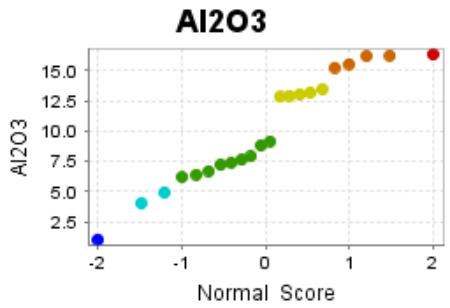


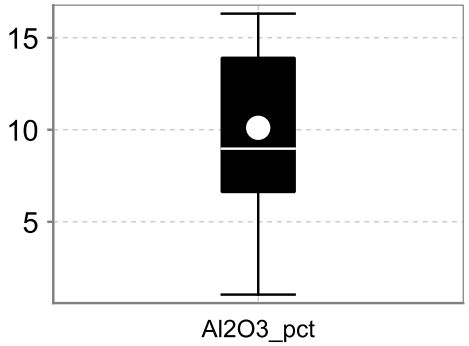
Legend

- <1.04 ppm
- 1.04 - 4.94 ppm
- 4.94 - 9.17 ppm
- 9.17 - 13.46 ppm
- 13.46 - 16.24 ppm
- >16.24 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

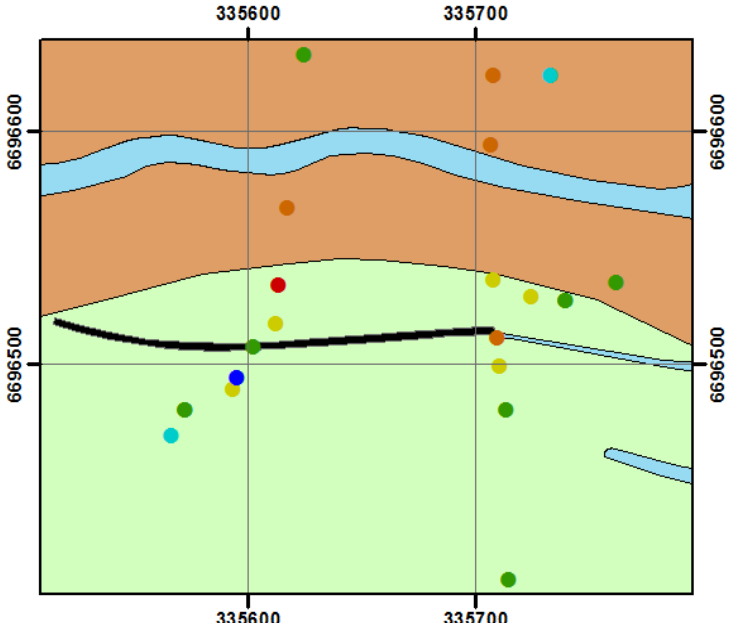
Median = 8.975

Mean = 10.105

Standard Deviation = 4.528

Error = ±2.01

Bedrock Geology



Legend

- <1.04 ppm
- 1.04 - 4.94 ppm
- 4.94 - 9.17 ppm
- 9.17 - 13.46 ppm
- 13.46 - 16.24 ppm
- >16.24 ppm

N

0 5 10 20 30 Meters

Geology

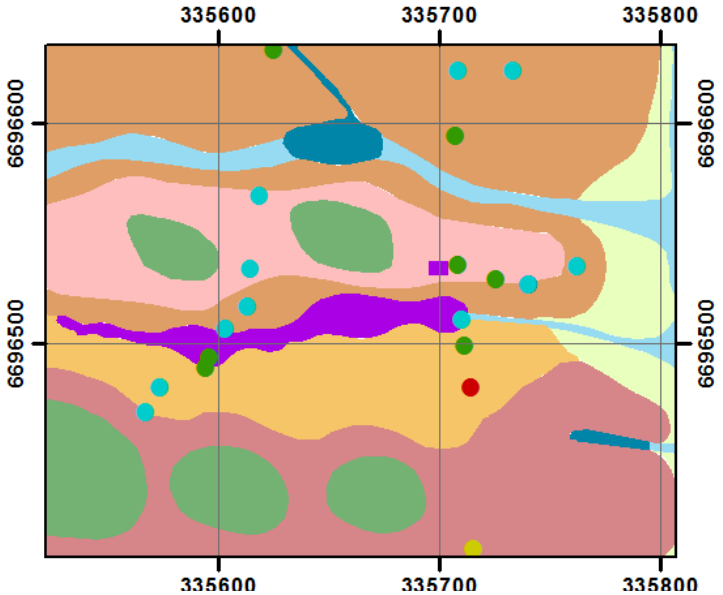
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

$CaO_{(\%)}$

Landscape

Regolith - Landform

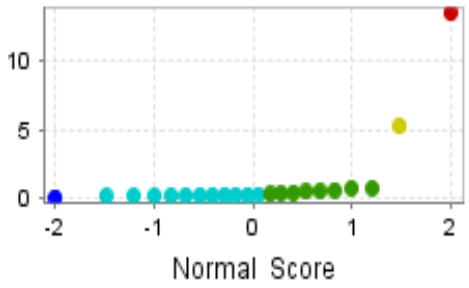


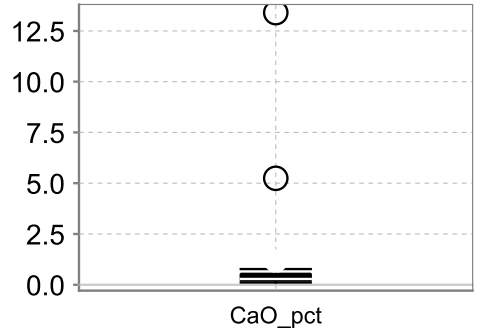
Legend

- <0.11 pct
- 0.11 - 0.29 pct
- 0.29 - 0.77 pct
- 0.77 - 5.25 pct
- >5.25 pct
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

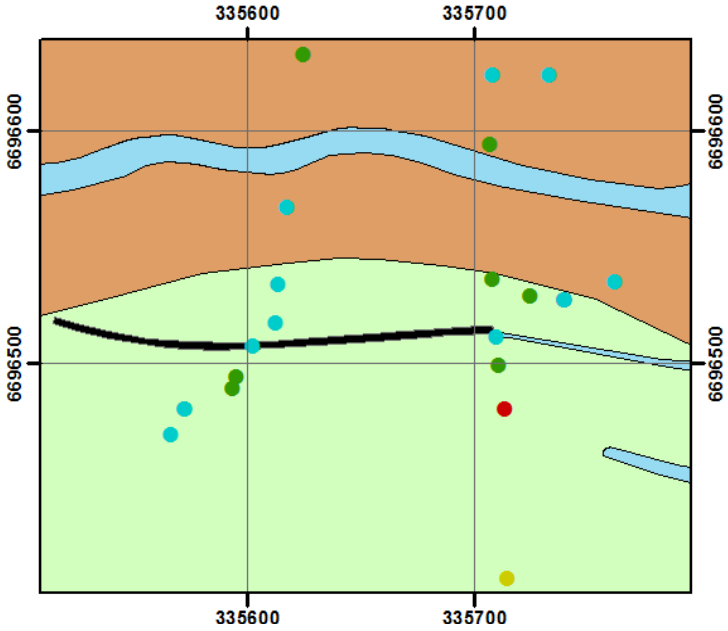
0 5 10 20 30 Meters





Summary Statistics
N = 22
Lower Detection Limit= 0.01
Below Detection Limit = 0
Median = 0.285
Mean = 1.161
Standard Deviation = 2.931
Error = ±1.3

Bedrock Geology



Legend

- <0.11 ppm
- 0.11 - 0.29 ppm
- 0.29 - 0.77 ppm
- 0.77 - 5.24 ppm
- >5.24 ppm

N

0 5 10 20 30 Meters

Geology

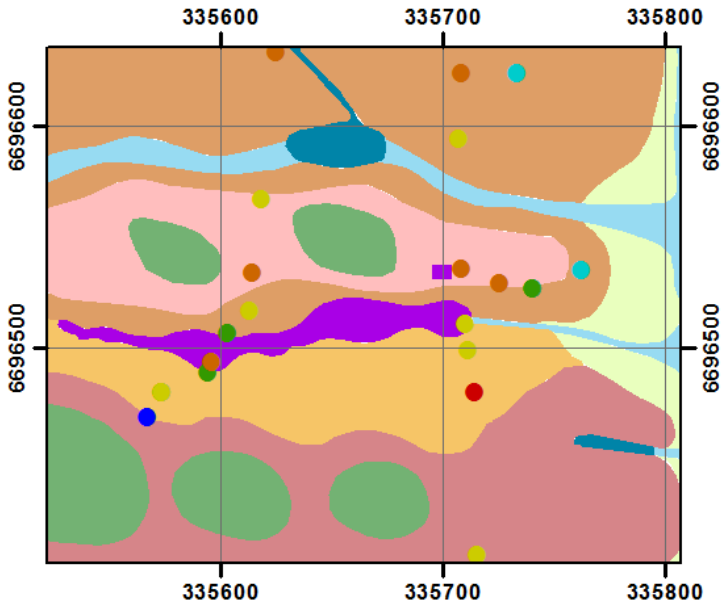
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

Fe_2O_3(ppm)

Landscape/Host/Control

Regolith - Landform



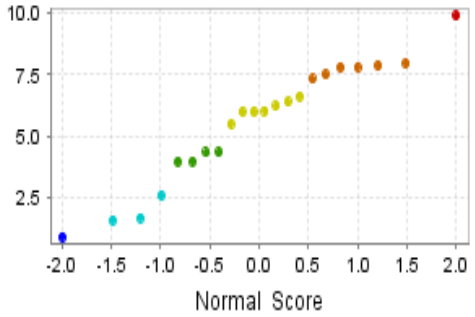
Legend

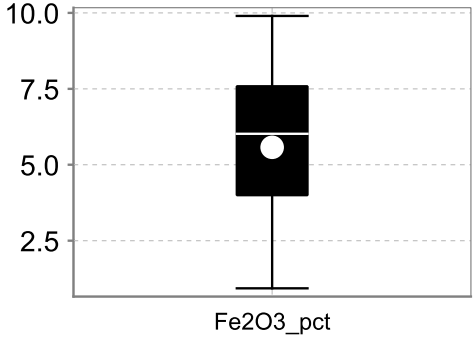
- <0.93 pct
- 0.93 - 2.61 pct
- 2.61 - 4.36 pct
- 4.36 - 6.64 pct
- 6.64 - 7.98 pct
- >7.98 pct

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

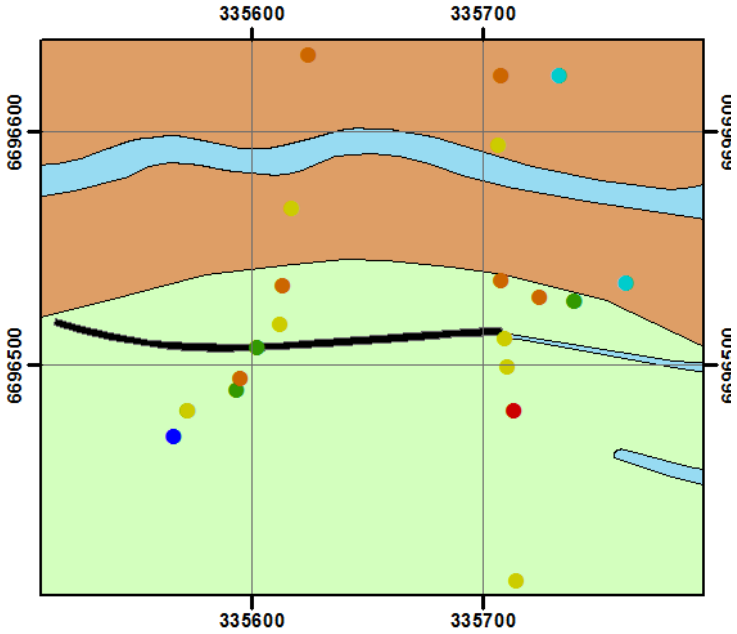
0 5 10 20 30 Meters





Summary Statistics
N = 22
Lower Detection Limit= 0.01
Below Detection Limit = 0
Median = 6.02
Mean = 10.10
Standard Deviation = 4.528
Error = ±2.0

Bedrock Geology



Legend

- <0.93 pct
- 0.93 - 2.61 pct
- 2.61 - 4.36 pct
- 4.36 - 6.64 pct
- 6.64 - 7.98 pct
- >7.98 pct

N

0 5 10 20 30 Meters

Geology

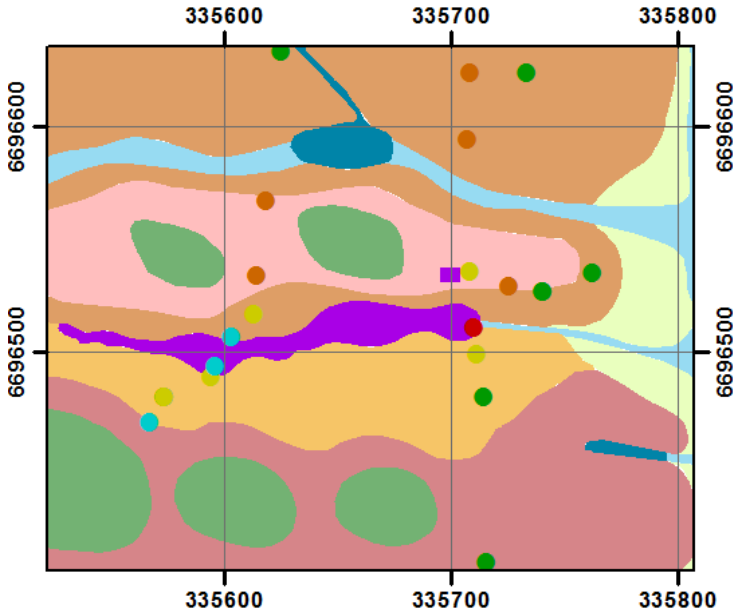
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

$K_2O_{(\%)}$

Landscape/Host/Control

Regolith - Landform

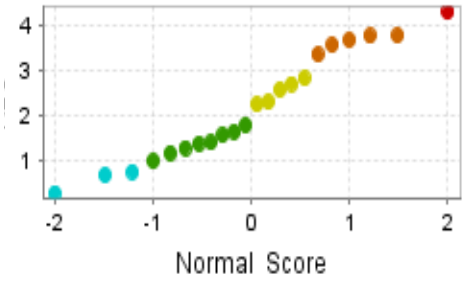


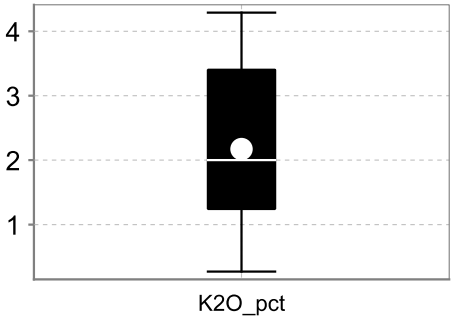
Legend

- <0.74 pct
- 0.74 - 1.77 pct
- 1.77 - 2.82 pct
- 2.82 - 3.77 pct
- <3.77 pct
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

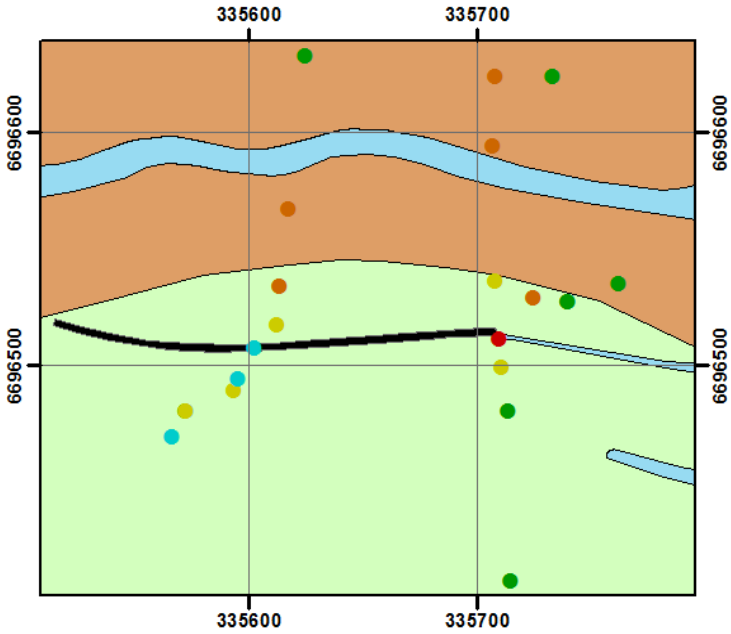
0 5 10 20 30 Meters





Summary Statistics
N = 22
Lower Detection Limit= 0.01
Below Detection Limit = 0
Median = 2
Mean = 2.172
Standard Deviation = 1.182
Error = ±0.53

Bedrock Geology



Legend

- <0.74 pct
- 0.74 - 1.77 pct
- 1.77 - 2.82 pct
- 2.82 - 3.77 pct
- >3.77 pct

N

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

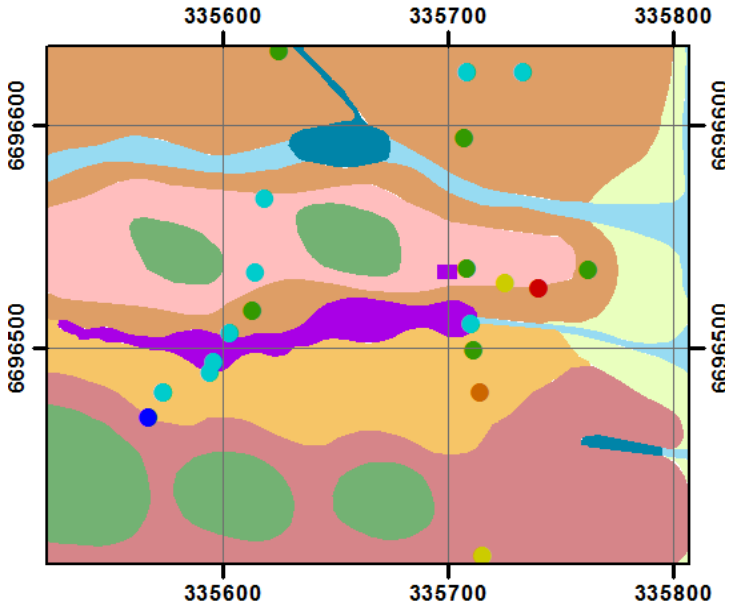
0 5 10 20 30 Meters

Gilead P Beck
Bedrock

MnO(%)

Landscape/Host/Control

Regolith - Landform

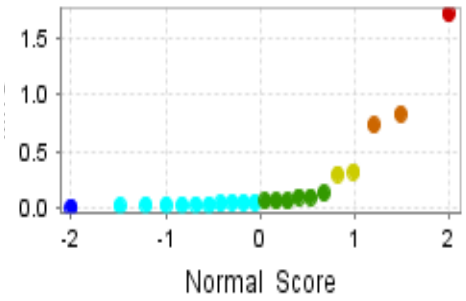


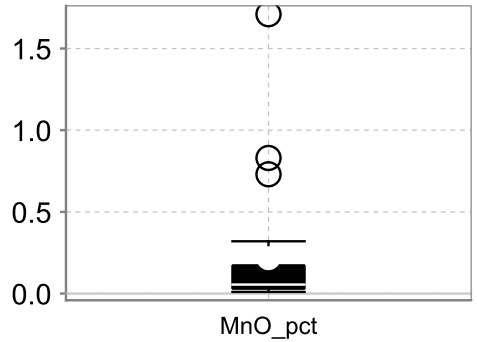
Legend

- <0.01 pct
- 0.01 - 0.05 pct
- 0.05 - 0.13 pct
- 0.13 - 0.32 pct
- 0.32 - 0.83 pct
- >0.83 pct
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

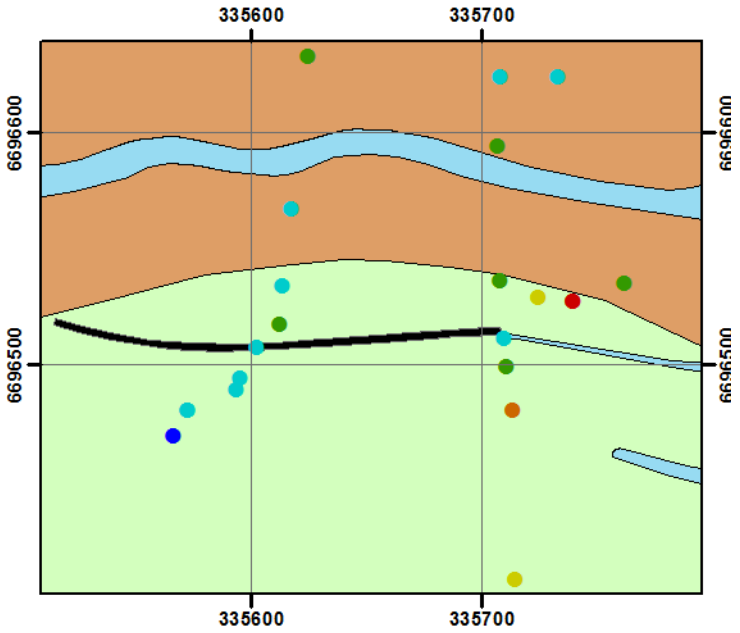
0 5 10 20 30 Meters





Summary Statistics
N = 22
Lower Detection Limit= 0.01
Below Detection Limit = 0
Median = 0.06
Mean = 0.22
Standard Deviation = 0.400
Error = ± 0.18

Bedrock Geology



Legend

- <0.01 pct
- 0.01 - 0.05 pct
- 0.05 - 0.13 pct
- 0.13 - 0.32 pct
- 0.32 - 0.83 pct
- >0.83 pct

N

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

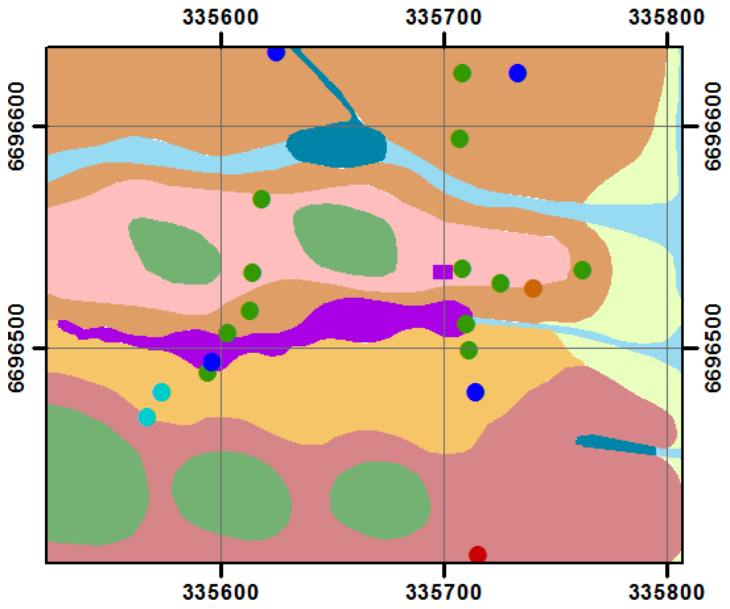
0 5 10 20 30 Meters

Gilead P Beck
Bedrock

Na_2O(%)

Landscape/host/control

Regolith - Landform



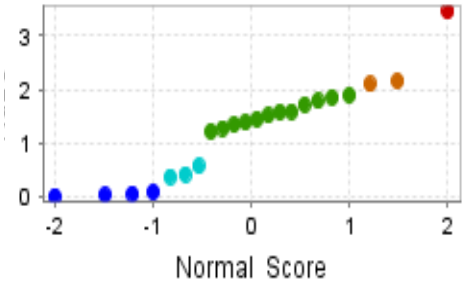
Legend

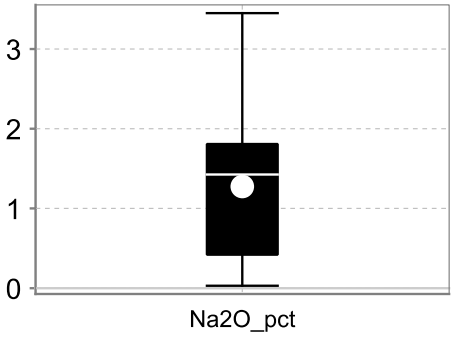
- <0.1 pct
- 0.1 - 0.58 pct
- 0.58 - 1.9 pct
- 1.9 - 2.16 pct
- >2.16 pct

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

0 5 10 20 30 Meters





Summary Statistics

N = 22

Lower Detection Limit= 0.01

Below Detection Limit = 0

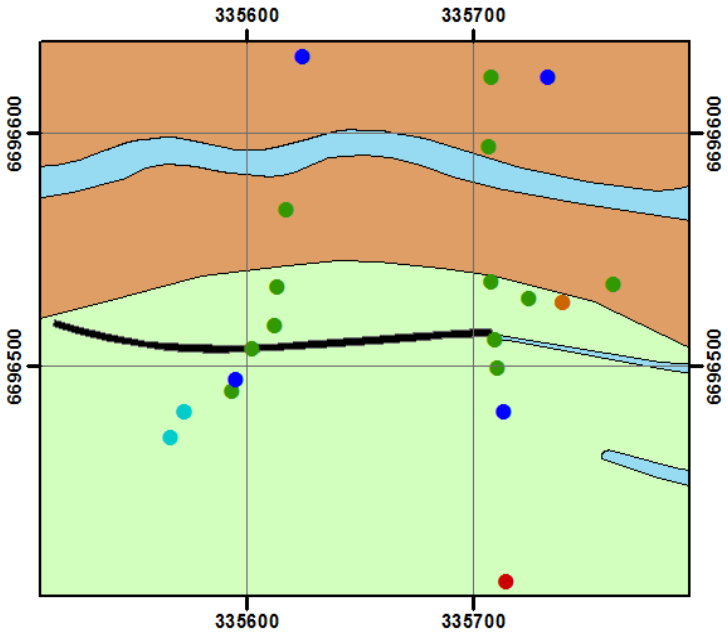
Median = 2

Mean = 2.17

Standard Deviation = 1.18

Error = ± 0.52

Bedrock Geology



Legend

- <0.1 pcr
- 0.1 - 0.58 pct
- 0.58 - 1.9 pct
- 1.9 - 2.16 pct
- >2.16 pct

N

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

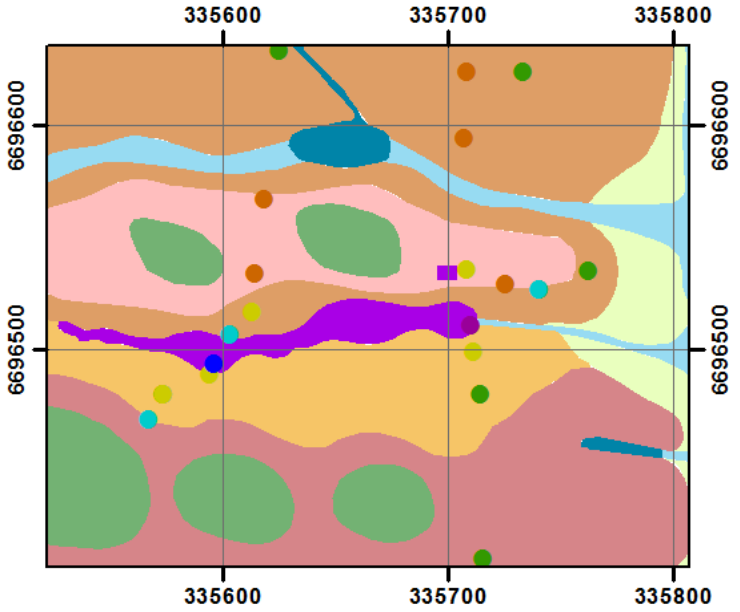
0 5 10 20 30 Meters

Gilead P Beck
Bedrock

Rb(ppm)

Landscape/host/control

Regolith - Landform



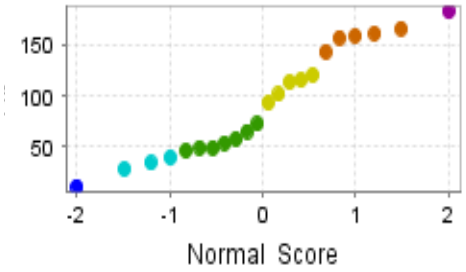
Legend

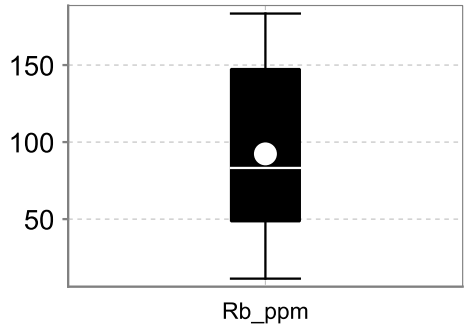
- <11.3 ppm
- 11.3 - 40.1 ppm
- 40.1 - 72.7 ppm
- 72.7 - 121.0 ppm
- 121.0 - 167.3 ppm
- >167.3 ppm

- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

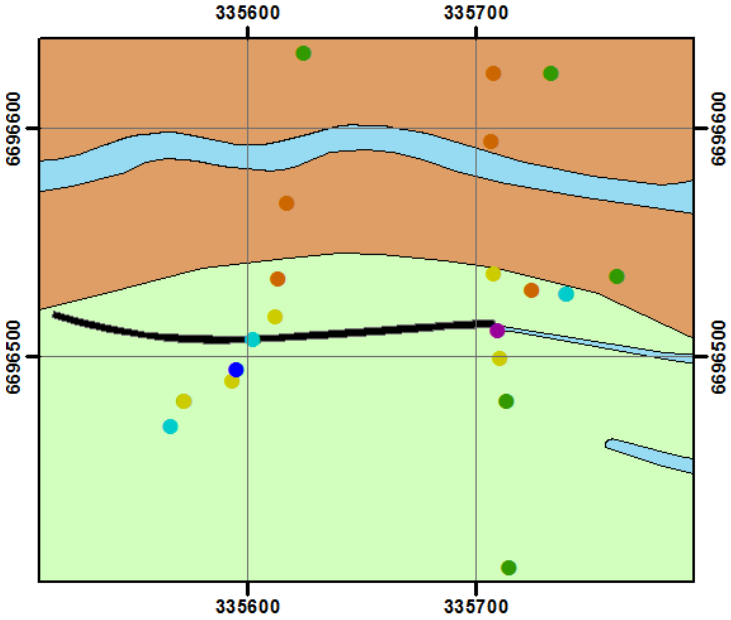
0 5 10 20 30 Meters





Summary Statistics
N = 22
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 83.2
Mean = 92.35
Standard Deviation = 52.81
Error = ±23.41

Bedrock Geology



Legend

- <11.3 ppm
- 11.3 - 40.1 ppm
- 40.1 - 72.7 ppm
- 72.7 - 121.0 ppm
- 121.0 - 167.3 ppm
- >167.3 ppm

N

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

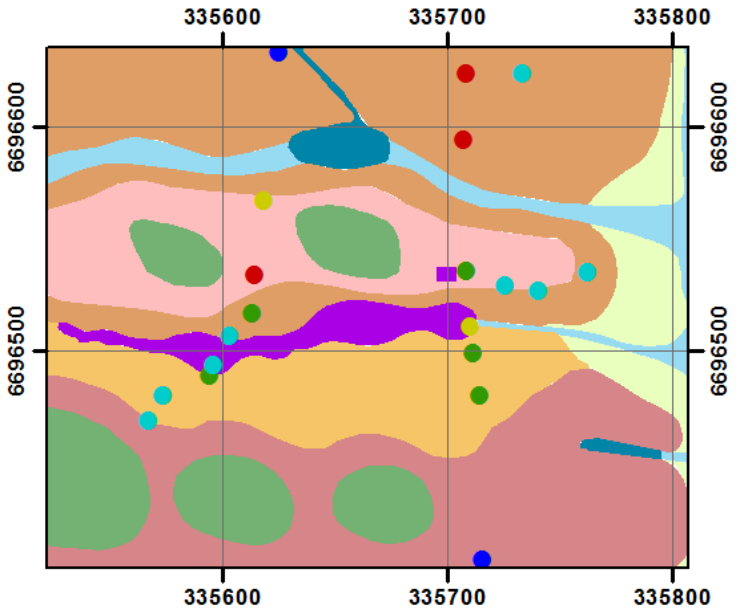
0 5 10 20 30 Meters

Gilead P Beck
Bedrock

Cr_2O_3(%)

Other

Regolith - Landform



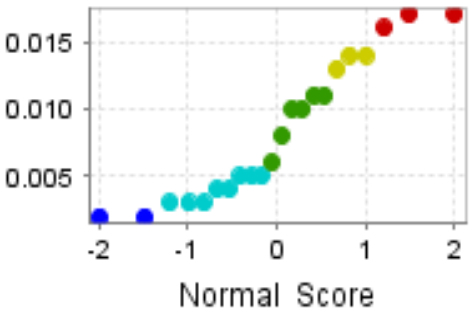
Legend

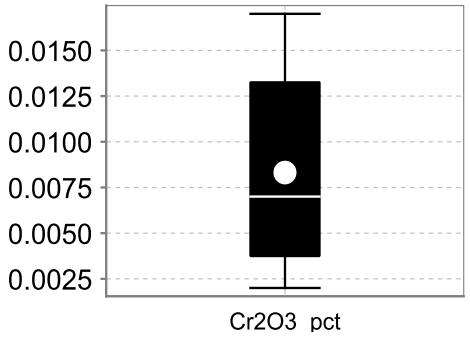
- <0.002 pct
- 0.002 - 0.005 pct
- 0.005 - 0.011 pct
- 0.011 - 0.014 pct
- >0.014 pct

SSer1, CHel1, Fm, CHpd2, CHpd1, Aed1, Aed2, Aap1, CHel2

N

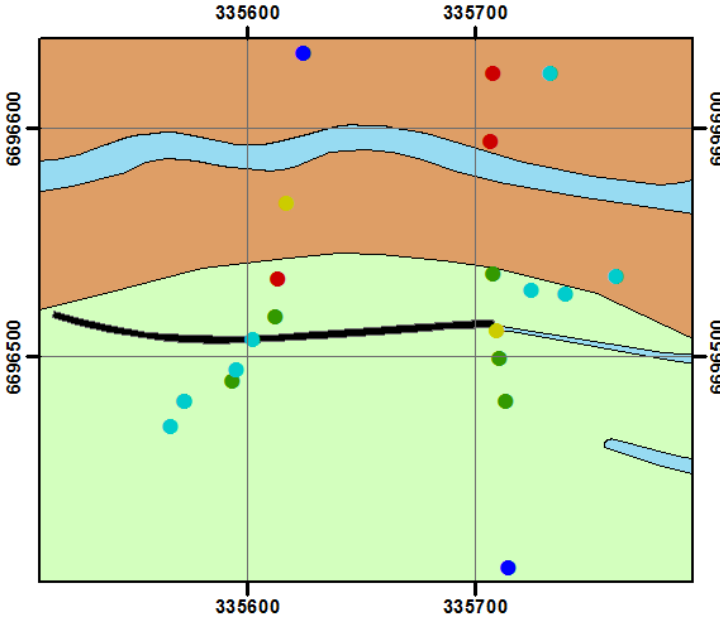
0 5 10 20 30 Meters





Summary Statistics
N = 22
Lower Detection Limit= 0.001
Below Detection Limit = 0
Median = 0.007
Mean = 0.008
Standard Deviation = 0.005
Error = ± 0.002

Bedrock Geology



Legend

- <0.002 pct
- 0.002 - 0.005 pct
- 0.005 - 0.011 pct
- 0.011 - 0.014 pct
- >0.014 pct

N

0 5 10 20 30 Meter

Geology

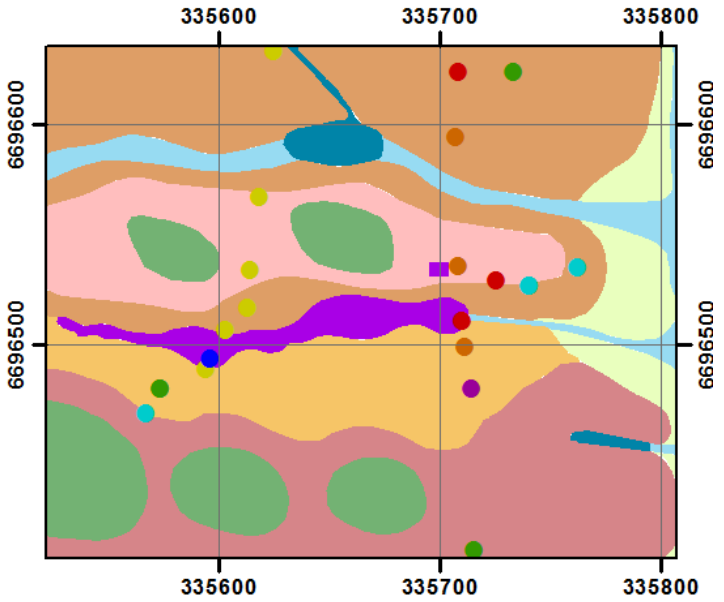
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

$Ni_{(ppm)}$

Other

Regolith - Landform

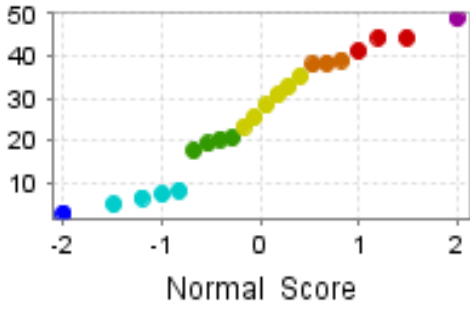


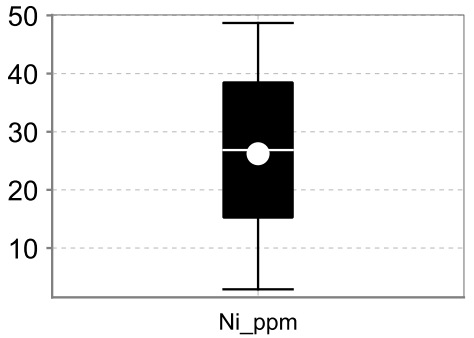
Legend

- <2.9 ppm
- 2.9 - 8.2 ppm
- 8.2 - 20.6 ppm
- 20.6 - 35.2 ppm
- 35.2 - 39.0 ppm
- 39.0 - 44.3 ppm
- >44.3 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

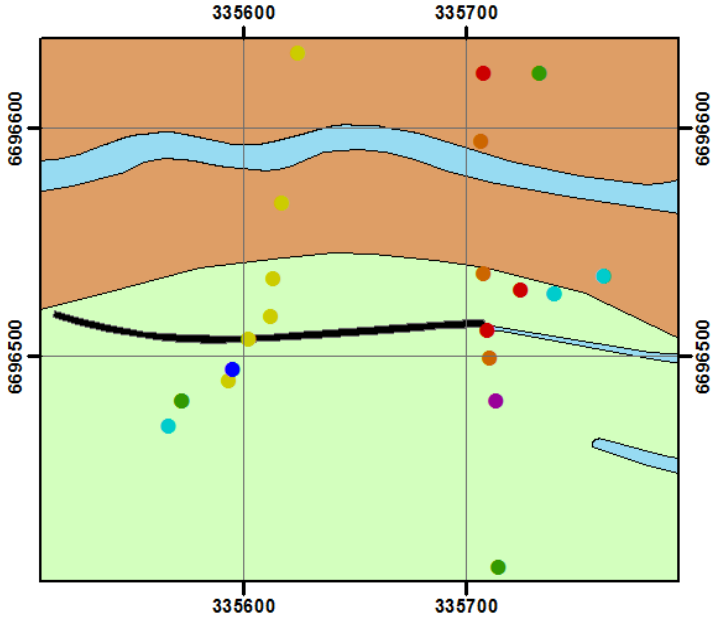
0 5 10 20 30 Meters





Summary Statistics
N = 22
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 26.85
Mean = 26.214
Standard Deviation = 14.213
Error = ± 6.3

Bedrock Geology



Legend

- <2.9 ppm
- 2.9 - 8.2 ppm
- 8.2 - 20.6 ppm
- 20.6 - 35.2 ppm
- 35.2 - 39.0 ppm
- 39.0 - 44.3 ppm
- >44.3 ppm

N

0 5 10 20 30 Meters

Geology

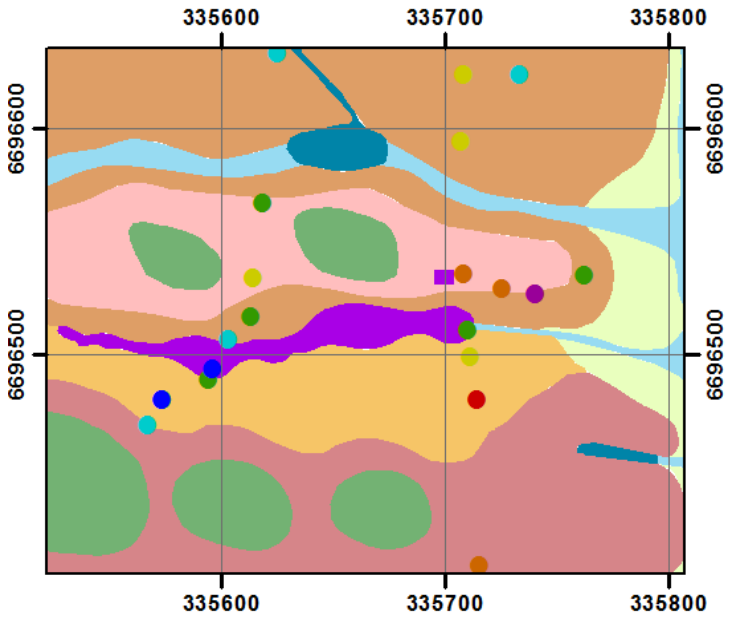
- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

Gilead P Beck
Bedrock

Sr (ppm)

Other

Regolith - Landform

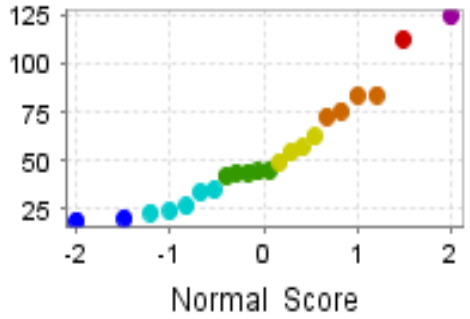


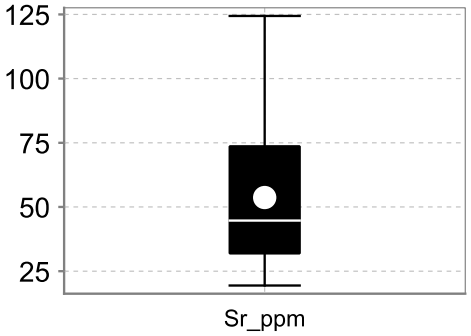
Legend

- <20.6 ppm
- 20.6 - 35.1 ppm
- 35.1 - 44.9 ppm
- 44.9 - 62.5 ppm
- 62.5 - 84.2 ppm
- 84.2 - 113.0 ppm
- >113.0 ppm
- SSer1
- CHel1
- Fm
- CHpd2
- CHpd1
- Aed1
- Aed2
- Aap1
- CHel2

N

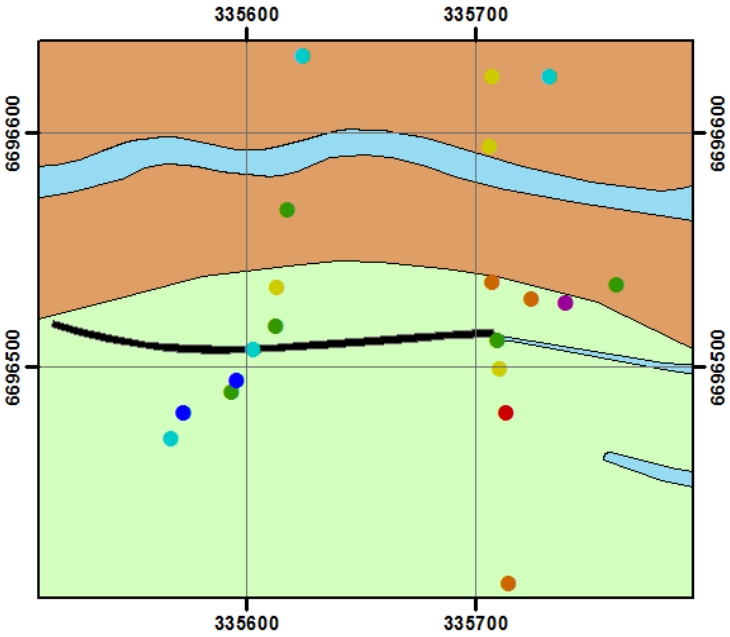
0 5 10 20 30 Meters





Summary Statistics
N = 22
Lower Detection Limit= 0.05
Below Detection Limit = 0
Median = 44.7
Mean = 53.67
Standard Deviation = 52.81
Error = ±23.41

Bedrock Geology



Legend

- <20.6 ppm
- 20.6 - 35.1 ppm
- 35.1 - 44.9 ppm
- 44.9 - 62.5 ppm
- 62.5 - 84.2 ppm
- 84.2 - 113.0 ppm
- >113.0 ppm

N

0 5 10 20 30 Meters

Geology

- Mineralisation
- Undifferentiated Sandstone
- Billy Springs Beds
- Creek

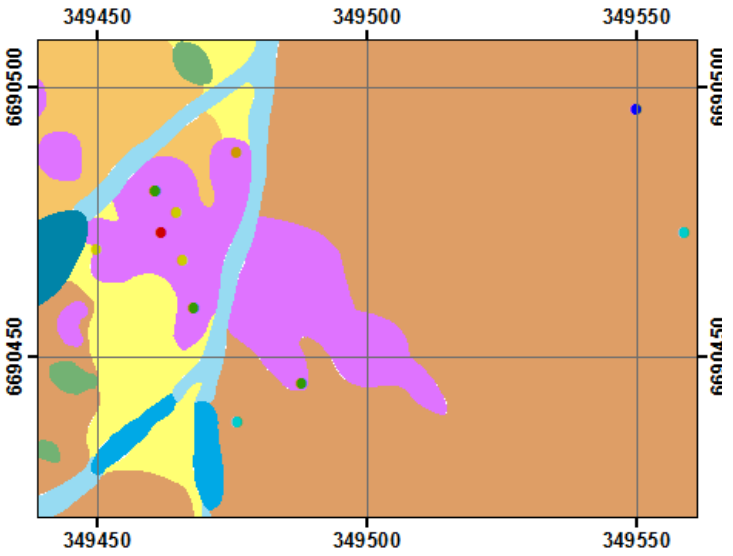
Billy Springs

***Eremophila freelingii* leaf**

Ag(ppb)

Commodity

Regolith - Landform

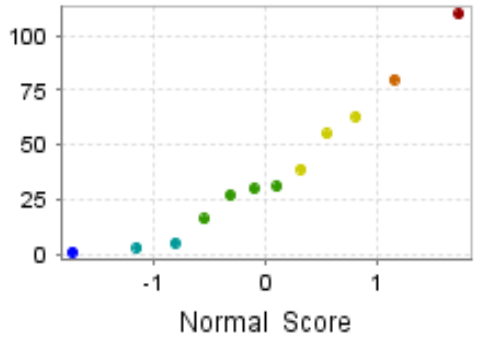


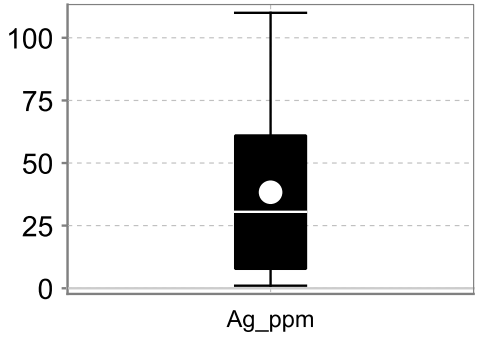
Legend

- <1.0 ppm
- 1.0 - 5.0 ppm
- 5.0 - 31.0 ppm
- 31.0 - 63.0 ppm
- 63.0 - 80.0 ppm
- >80.0 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 2

Below Detection Limit = 1

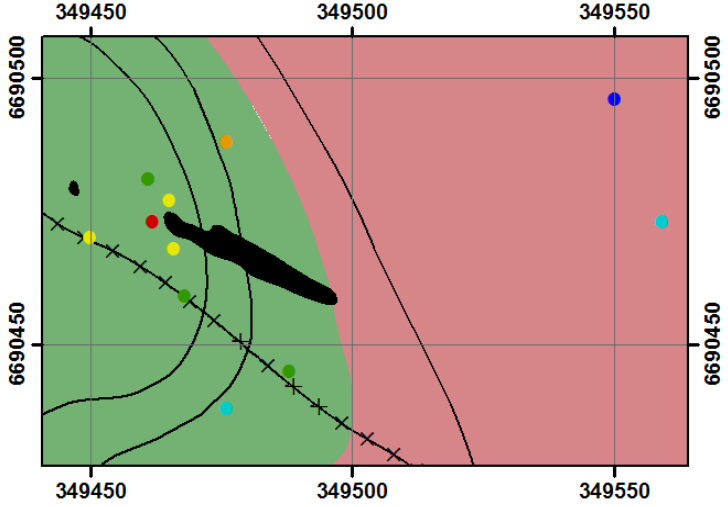
Median = 30.5

Mean = 38.33

Standard Deviation = 38.38

Error = ±24.39

Bedrock Geology



Legend

- <1.0 ppm
- 1.0 - 5.0 ppm
- 5.0 - 31.0 ppm
- 31.0 - 63.0 ppm
- 63.0 - 80.0 ppm
- >80.0 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

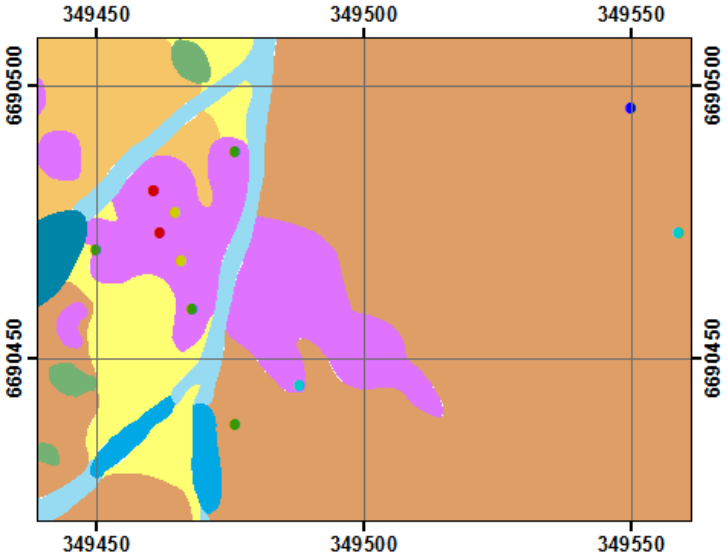
Billy Springs

***Eremophila freelingii* leaf**

Cu(ppm)

Commodity

Regolith - Landform

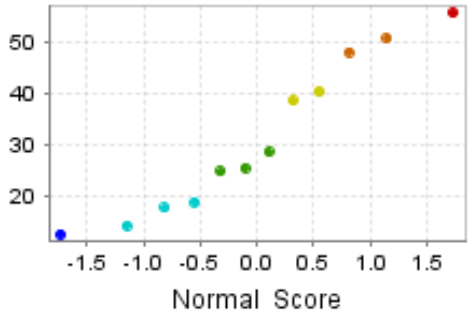


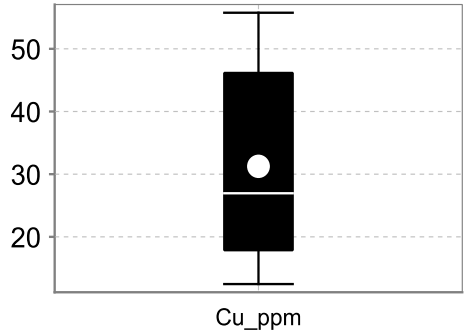
Legend

- <12.46 ppm
- 12.46 - 18.47 ppm
- 18.47 - 28.48 ppm
- 28.48 - 40.3 ppm
- >40.3 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

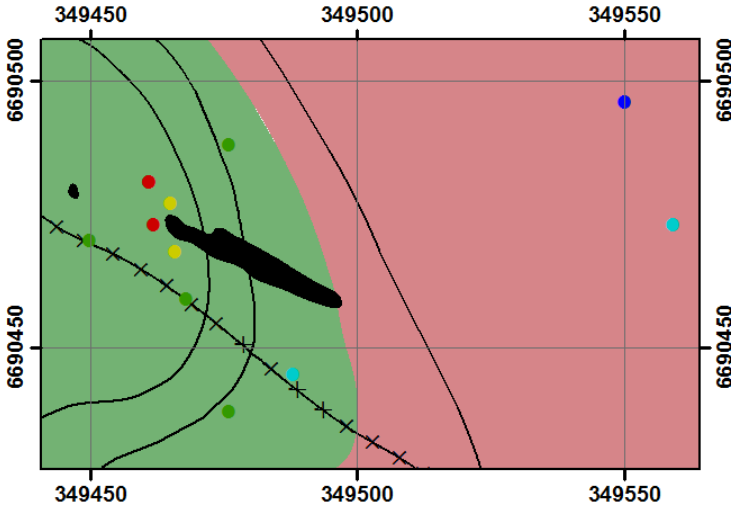
Median = 26.94

Mean = 31.25

Standard Deviation = 14.99

Error = ±9.53

Bedrock Geology



Legend

- <12.46 ppm
- 12.46 - 18.47 ppm
- 18.47 - 28.48 ppm
- 28.48 - 40.3 ppm
- >40.3 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

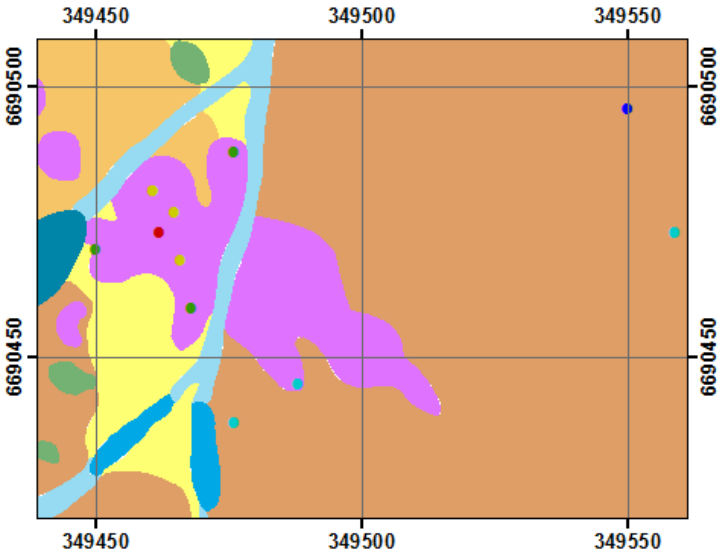
Billy Springs

***Eremophila freelingii* leaf**

Pb(ppm)

Commodity

Regolith - Landform



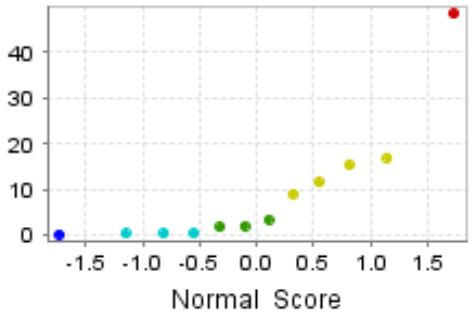
Legend

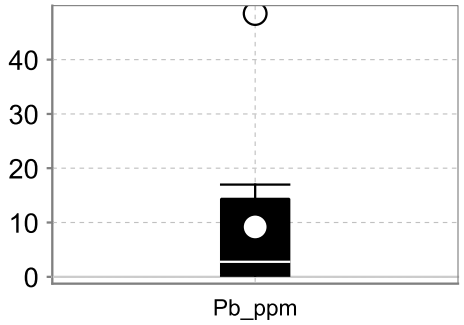
- <0.19 ppm
- 0.19 - 0.45 ppm
- 0.45 - 3.46 ppm
- 3.46 - 16.99 ppm
- >16.99 ppm

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





<u>Summary Statistics</u>

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

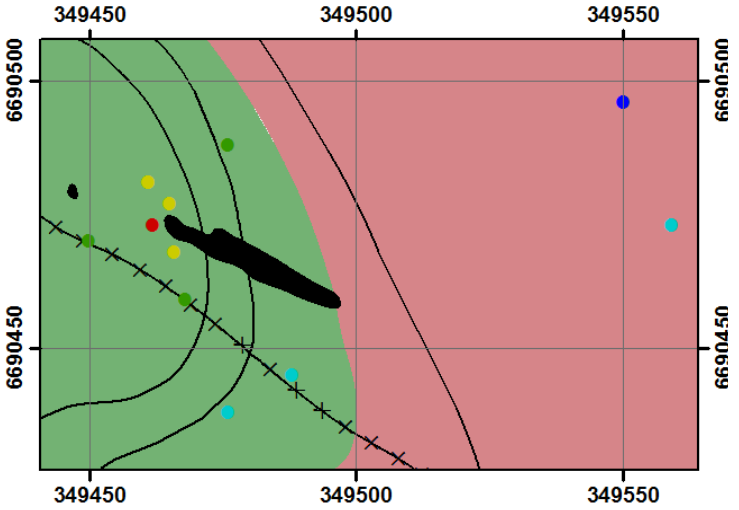
Median = 2.76

Mean = 9.18

Standard Deviation = 14.99

Error = ±9.52

Bedrock Geology



Legend

- <0.19 ppm
- 0.19 - 0.45 ppm
- 0.45 - 3.46 ppm
- 3.46 - 16.99 ppm
- >16.99 ppm

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

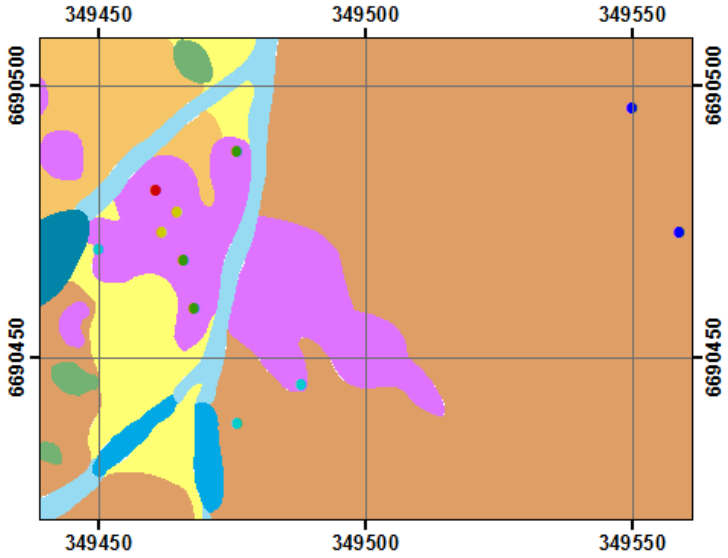
Billy Springs

***Eremophila freelingii* leaf**

Zn(ppm)

Commodity

Regolith - Landform

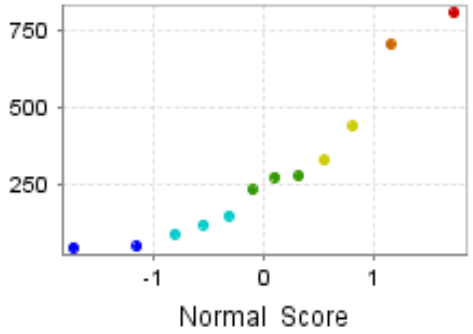


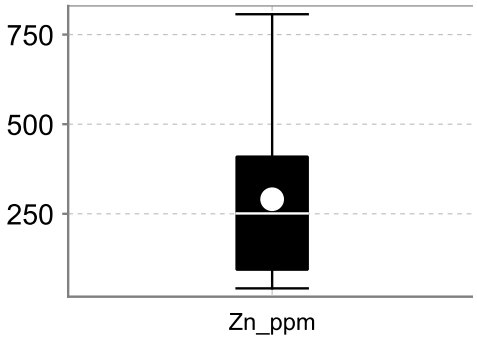
Legend

- <45.3 ppm
- 45.3 - 146.0 ppm
- 146.0 - 273.9 ppm
- 273.9 - 437.3 ppm
- 437.3 - 703.9 ppm
- >703.9 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.1

Below Detection Limit = 0

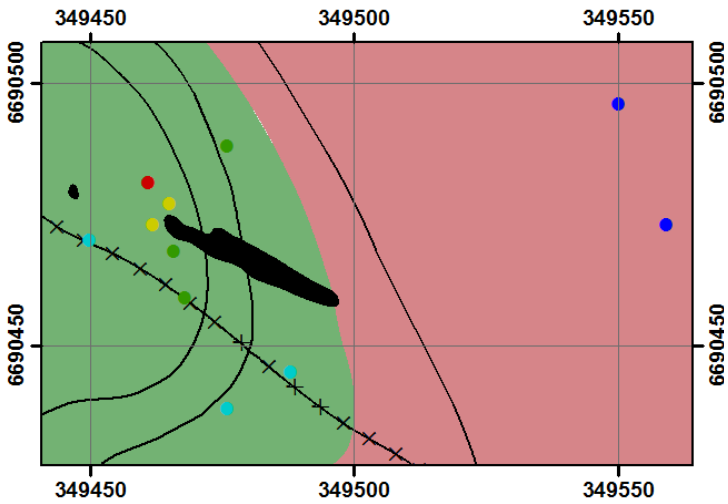
Median = 250.70

Mean = 290.47

Standard Deviation = 248.52

Error = ± 157.90

Bedrock Geology



Legend

- <45.3 ppm
- 45.3 - 146.0 ppm
- 146.0 - 273.9 ppm
- 273.9 - 437.3 ppm
- >437.3 - 703.9 ppm
- >703.9 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

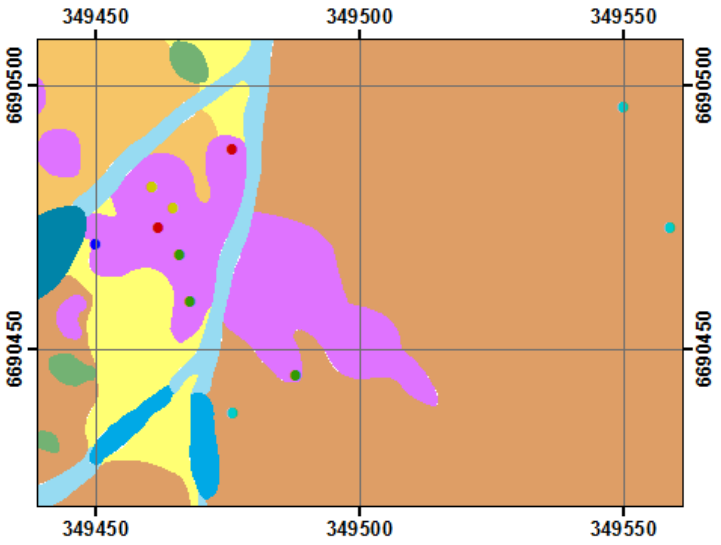
Billy Springs

***Eremophila freelingii* leaf**

As(ppm)

Commodity/Pathfinder

Regolith - Landform



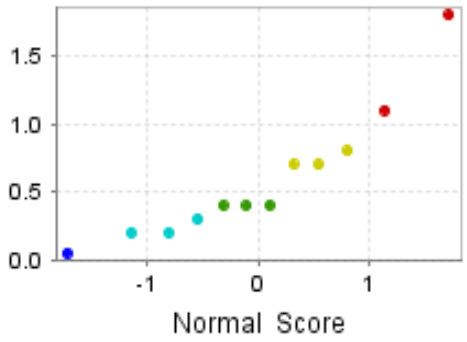
Legend

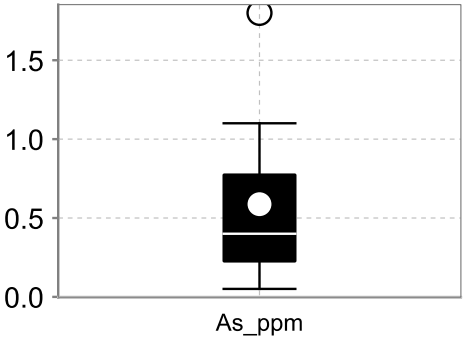
- <0.05 ppm
- 0.05 - 0.3 ppm
- 0.3 - 0.4 ppm
- 0.4 - 0.8 ppm
- >0.8 ppm

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.1

Below Detection Limit = 1

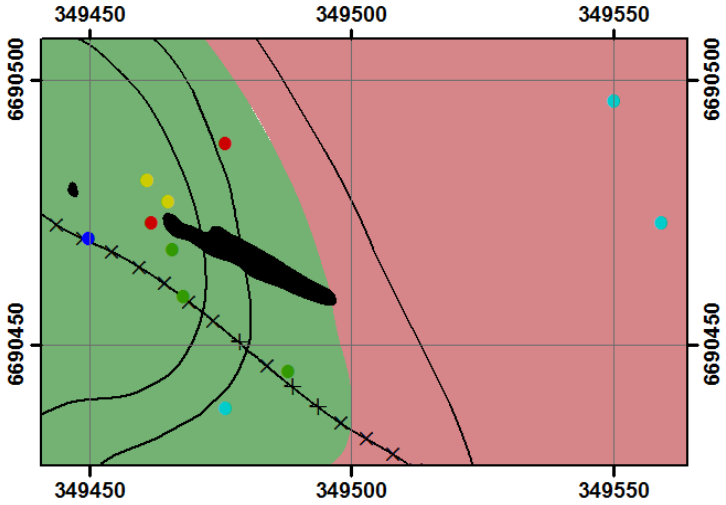
Median = 0.40

Mean = 0.58

Standard Deviation = 0.48

Error = ±0.31

Bedrock Geology



Legend

- <0.05 ppm
- 0.05 - 0.3 ppm
- 0.3 - 0.4 ppm
- 0.4 - 0.8 ppm
- >0.8 ppm

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

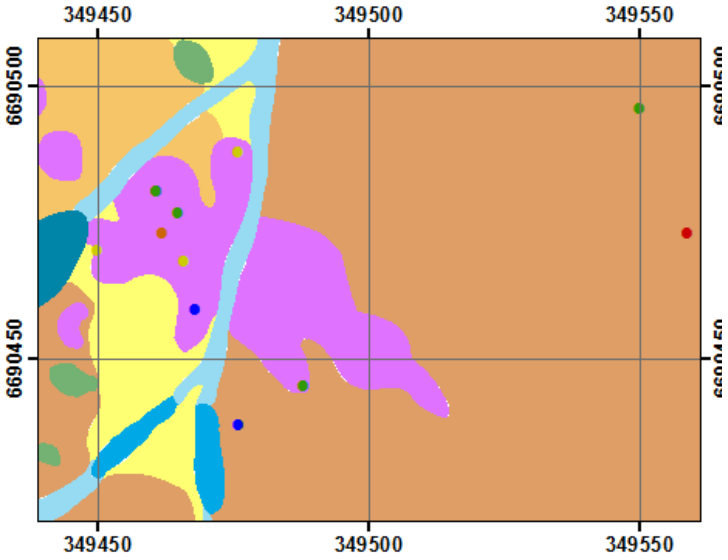
Billy Springs

***Eremophila freelingii* leaf**

$Ce_{(ppm)}$

Other

Regolith - Landform

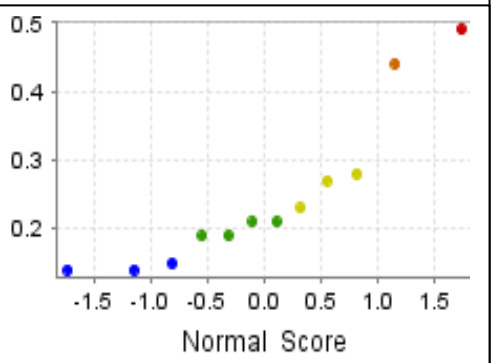


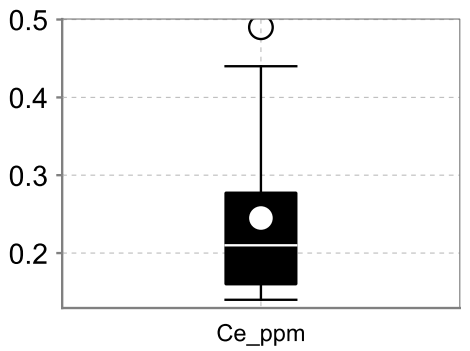
Legend

- <0.15 ppm
- 0.15 - 0.21 ppm
- 0.21 - 0.28 ppm
- 0.28 - 0.44 ppm
- >0.44 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

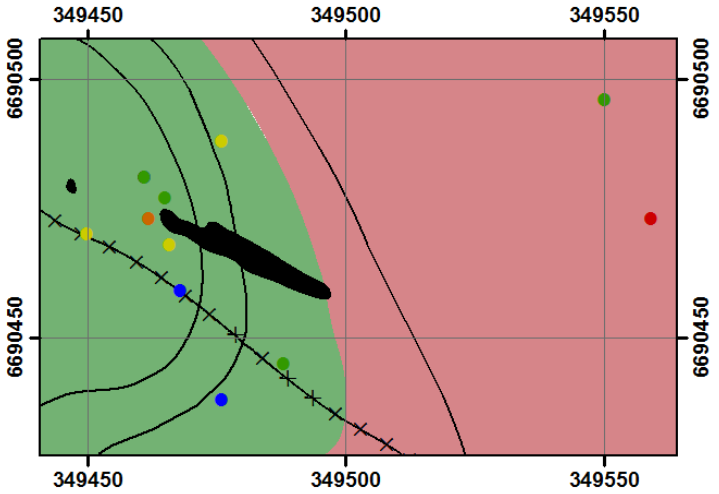
Median = 0.21

Mean = 0.25

Standard Deviation = 0.11

Error = ±0.7

Bedrock Geology



Legend

- <0.15 ppm
- 0.15 - 0.21 ppm
- 0.21 - 0.28 ppm
- 0.28 - 0.44 ppm
- >0.44 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

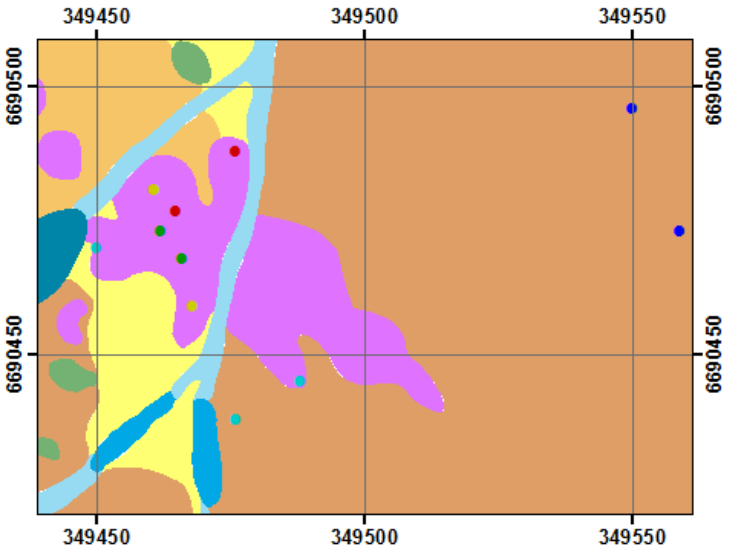
Billy Springs

***Eremophila freelingii* leaf**

$Cd_{(ppm)}$

Pathfinder

Regolith - Landform

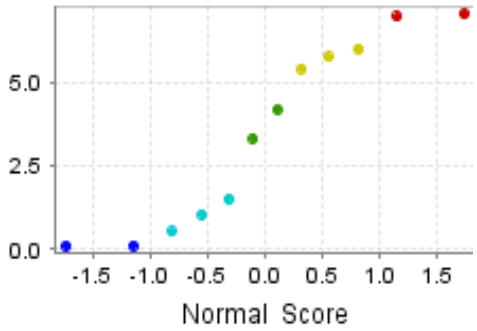


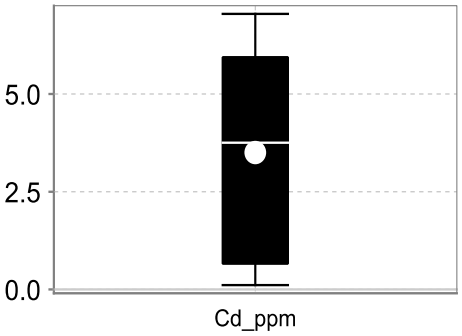
Legend

- <0.12 ppm
- 0.12 - 1.51 ppm
- 1.51 - 4.19 ppm
- 4.19 - 6.0 ppm
- >6.0 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





<u>Summary Statistics</u>

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

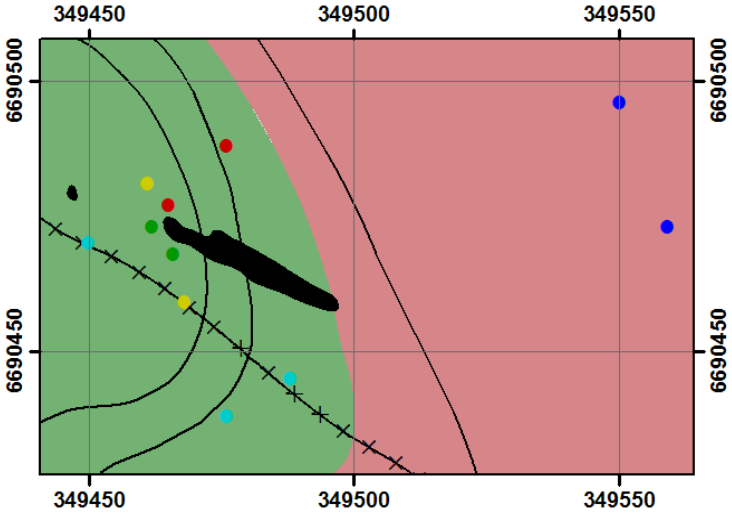
Median = 3.75

Mean = 3.51

Standard Deviation = 2.73

Error = ±1.74

Bedrock Geology



Legend

- <0.12 ppm
- 0.12 - 1.51 ppm
- 1.51 - 4.19 ppm
- 4.19 - 6.0 ppm
- >6.0 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

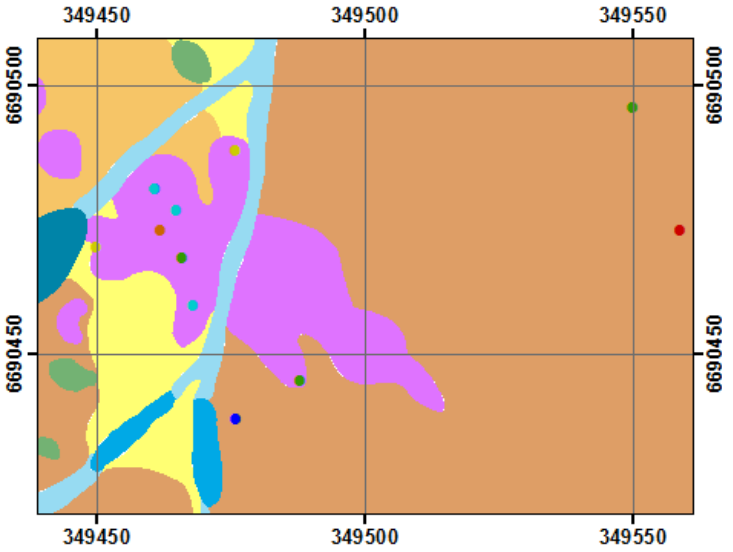
Billy Springs

***Eremophila freelingii* leaf**

La(ppm)

Pathfinder

Regolith - Landform



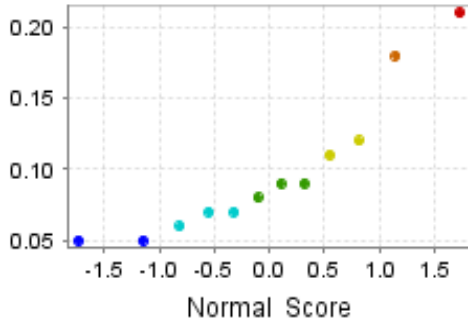
Legend

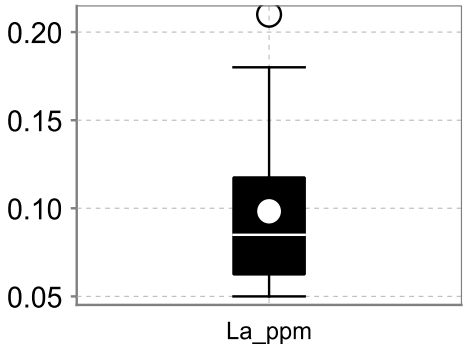
- <0.05 ppm
- 0.05 - 0.07 ppm
- 0.07 - 0.09 ppm
- 0.09 - 0.12 ppm
- 0.12 - 0.18 ppm
- >0.18 ppm

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters

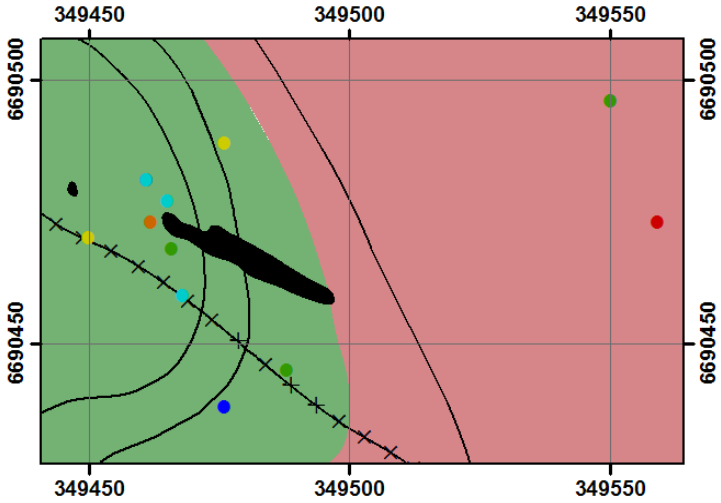




<u>Summary Statistics</u>

N = 12
Lower Detection Limit= 0.01
Below Detection Limit = 0
Median = 0.085
Mean = 0.098
Standard Deviation = 0.05
Error = ±0.03

Bedrock Geology



Legend

- <0.05 ppm
- 0.05 - 0.07 ppm
- 0.07 - 0.09 ppm
- 0.09 - 0.12 ppm
- 0.12 - 0.19 ppm
- >0.19 ppm

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

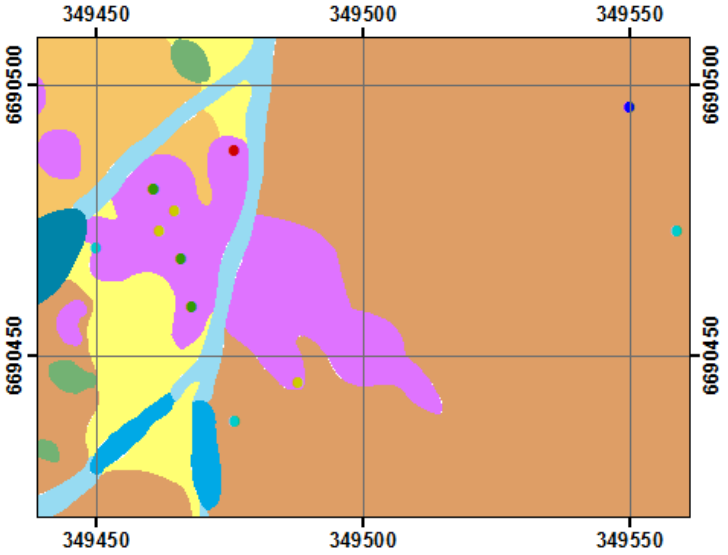
Billy Springs

***Eremophila freelingii* leaf**

Mo(ppm)

Pathfinder

Regolith - Landform

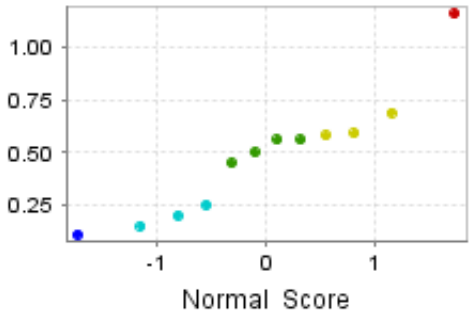


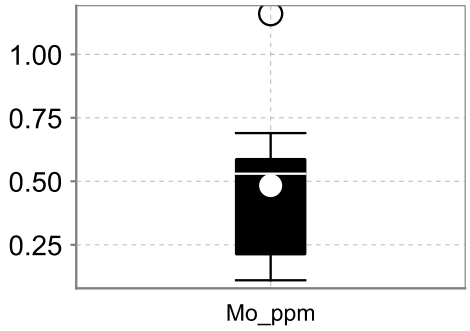
Legend

- <0.11 ppm
- 0.11 - 0.25 ppm
- 0.25 - 0.56 ppm
- 0.56 - 0.69 ppm
- >0.69 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

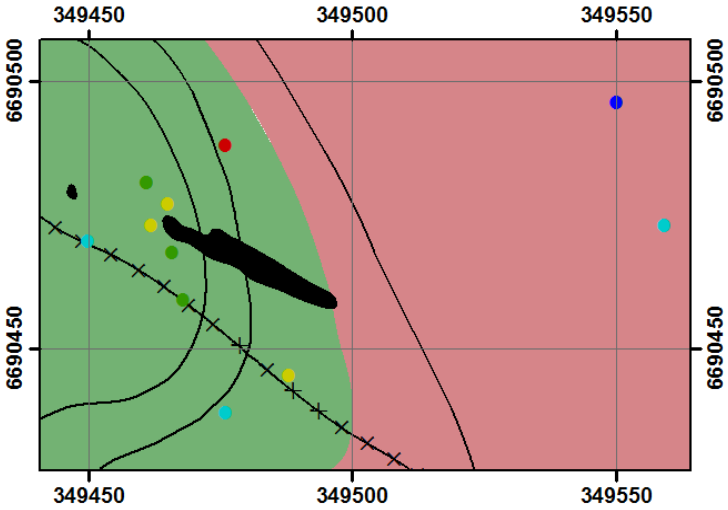
Median = 0.53

Mean = 0.48

Standard Deviation = 0.29

Error = ±0.18

Bedrock Geology



Legend

- <0.11 ppm
- 0.11 - 0.25 ppm
- 0.25 - 0.56 ppm
- 0.56 - 0.69 ppm
- >0.69 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

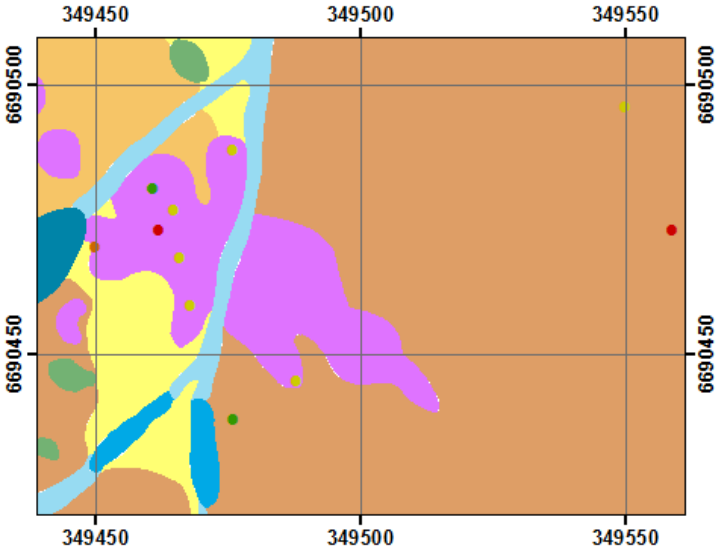
Billy Springs

***Eremophila freelingii* leaf**

Y (ppm)

Pathfinder

Regolith - Landform

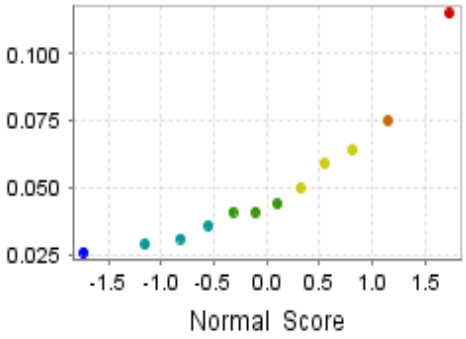


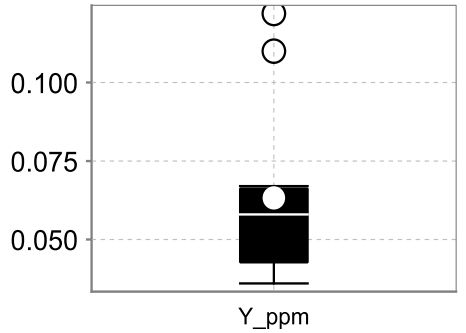
Legend

- <0.036 ppm
- 0.036 - 0.044 ppm
- 0.044 - 0.064 ppm
- 0.064 - 0.075 ppm
- >0.075 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.001

Below Detection Limit = 0

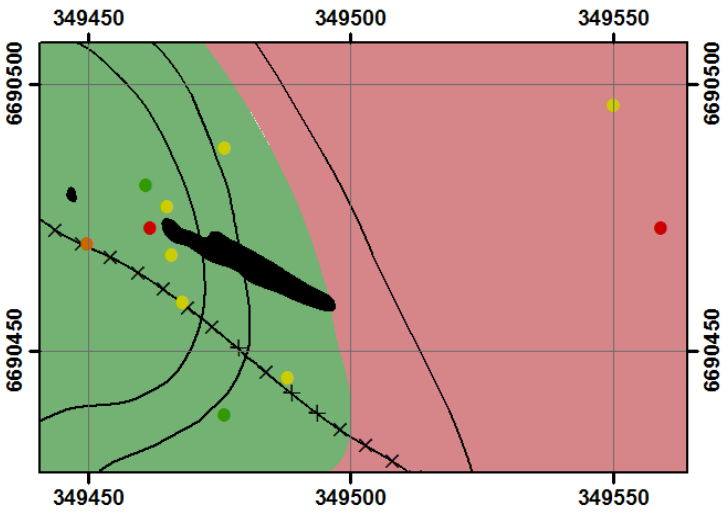
Median = 0.043

Mean = 0.05

Standard Deviation = 0.025

Error = ±0.02

Bedrock Geology



Legend

- <0.036 ppm
- 0.036 - 0.044 ppm
- 0.044 - 0.064 ppm
- 0.064 - 0.075 ppm
- >0.075 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

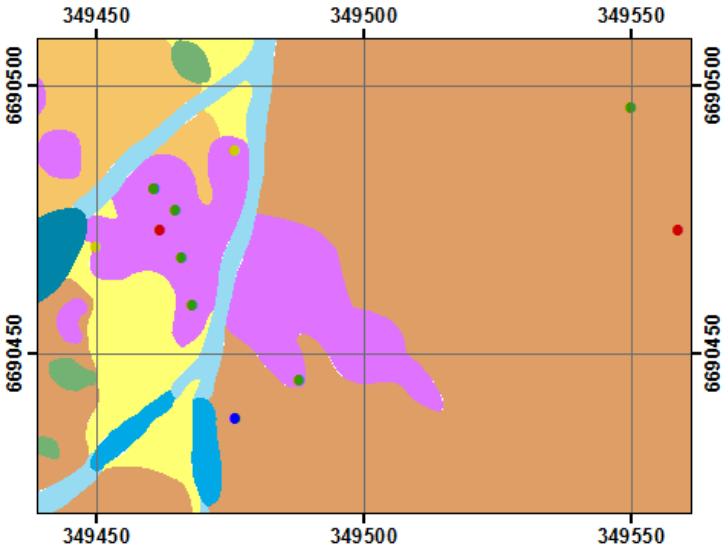
Billy Springs

***Eremophila freelingii* leaf**

Al(%)

Host/Control

Regolith - Landform



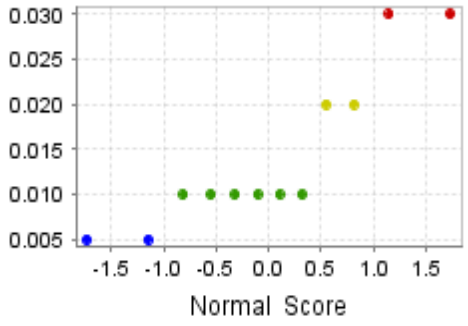
Legend

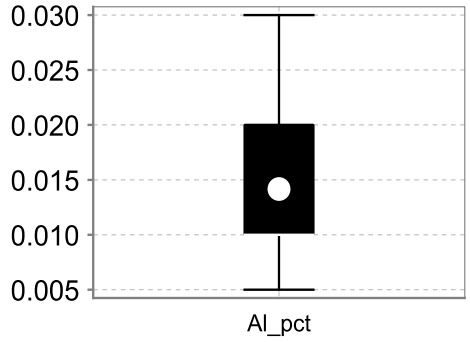
- <0.005 pct
- 0.005 - 0.01 pct
- 0.01 - 0.02 pct
- >0.02 pct

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters

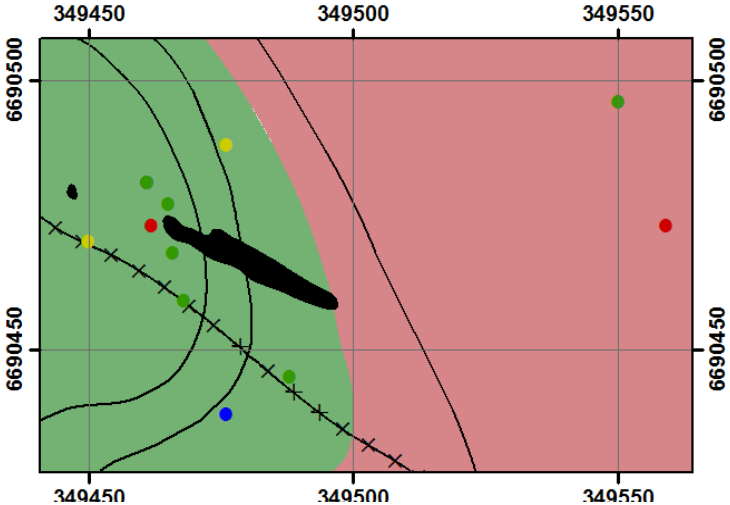




<u>Summary Statistics</u>

N = 12
Lower Detection Limit= 0.01
Below Detection Limit = 2
Median = 0.01
Mean = 0.014
Standard Deviation = 3.74
Error = ±2.68

Bedrock Geology



Legend

- <0.005 pct
- 0.005 - 0.01 pct
- 0.01 - 0.02 pct
- >0.02 pct

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

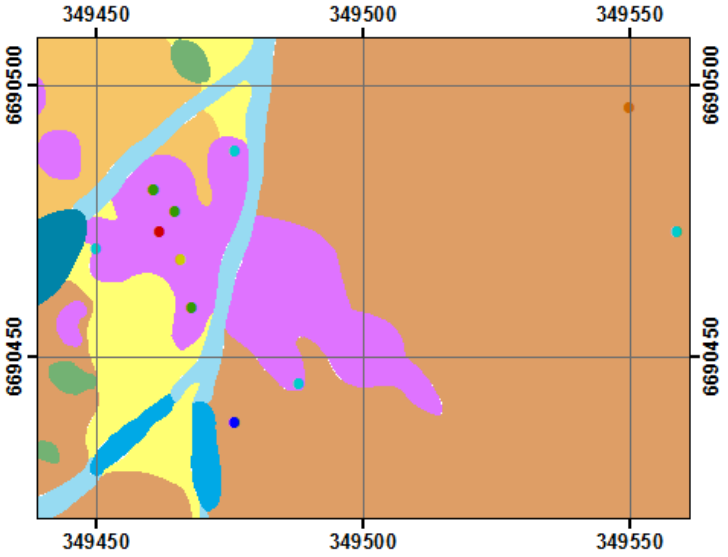
Billy Springs

***Eremophila freelingii* leaf**

Ca(%)

Landscape

Regolith - Landform



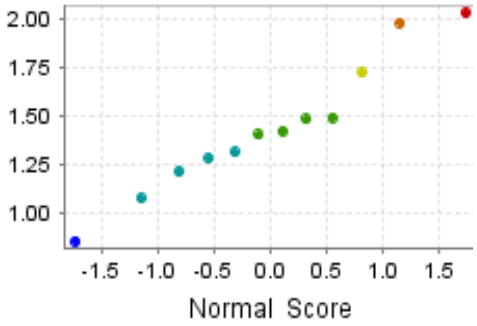
Legend

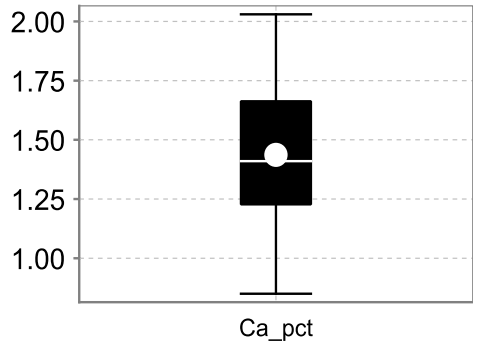
- <0.85 pct
- 0.85 - 1.31 pct
- 1.31 - 1.49 pct
- 1.49 - 1.72 pct
- 1.72 - 1.98 pct
- >1.98 pct

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

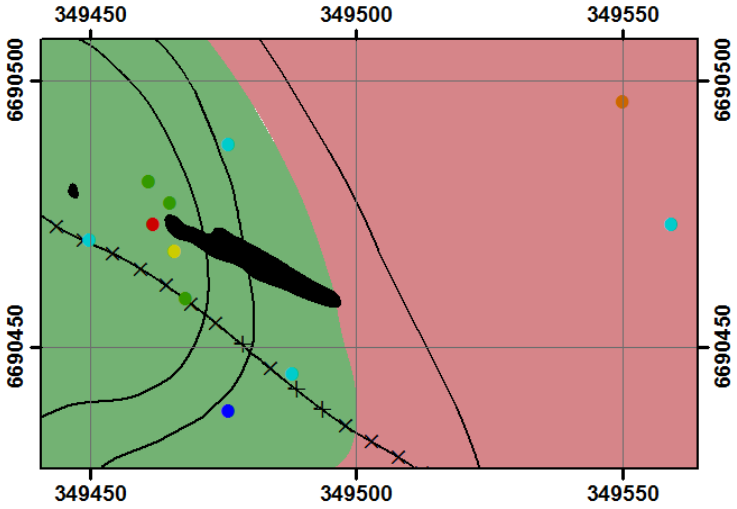
Median = 1.41

Mean = 1.437

Standard Deviation = 0.344

Error = ±0.22

Bedrock Geology



Legend

- <0.86 pct
- 0.85 - 1.31 pct
- 1.31 - 1.49 pct
- 1.49 - 1.72 pct
- 1.72 - 1.98 pct
- >1.98 pct

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

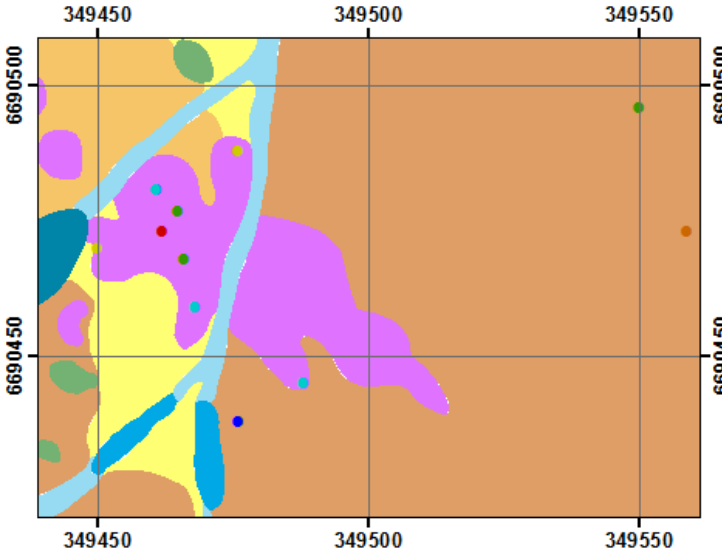
Billy Springs

***Eremophila freelingii* leaf**

$Fe_{(\%)}$

Host/Control

Regolith - Landform



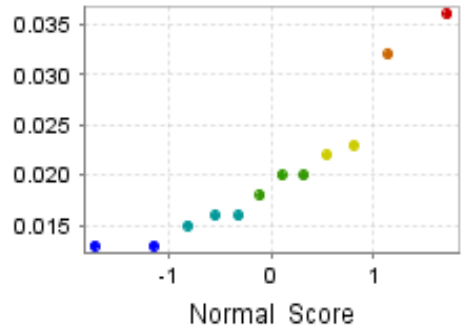
Legend

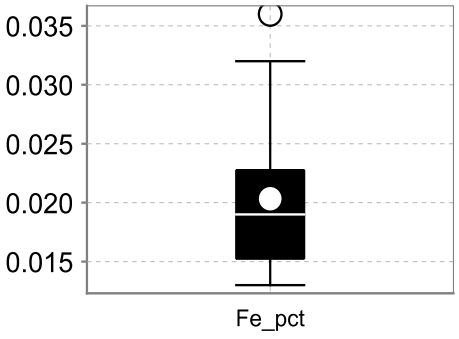
- <0.013 pct
- 0.013 - 0.016 pct
- 0.016 - 0.02 pct
- 0.02 - 0.023 pct
- 0.023 - 0.032 pct
- >0.032 pct

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.001

Below Detection Limit = 0

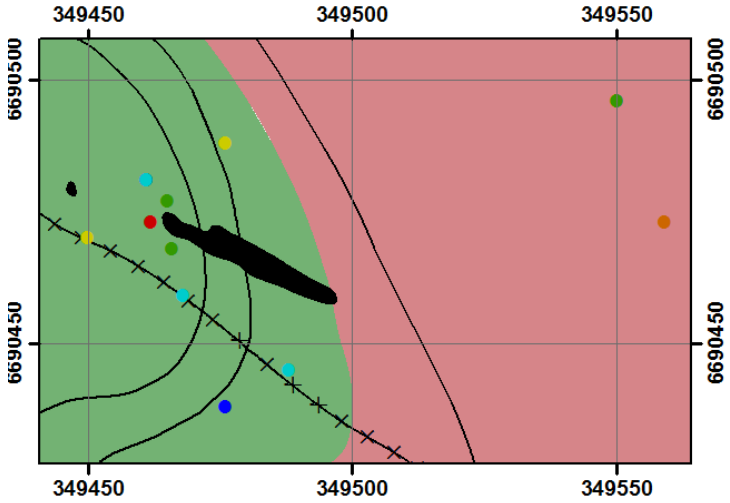
Median = 0.02

Mean = 0.02

Standard Deviation = 0.007

Error = ±0.005

Bedrock Geology



Legend

- <0.013 pct
- 0.013 - 0.016 pct
- 0.016 - 0.02 pct
- 0.02 - 0.023 pct
- 0.023 - 0.032 pct
- >0.032 pct

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

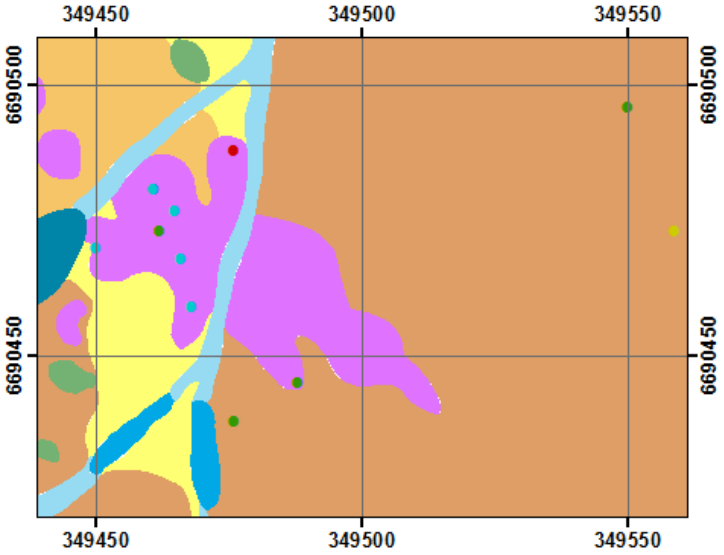
Billy Springs

***Eremophila freelingii* leaf**

K$_{(ppm)}$

Landscape

Regolith - Landform



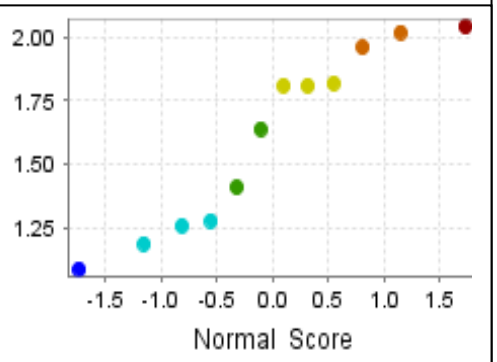
Legend

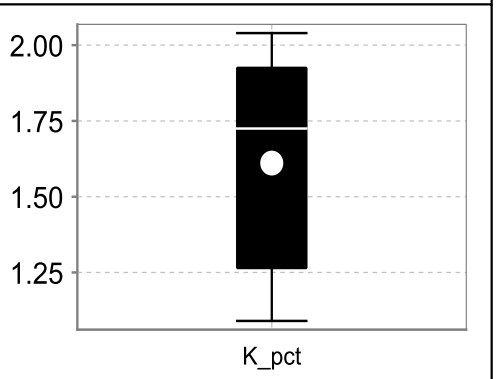
- <0.043 pct
- 0.043 - 0.101 pct
- 0.101 - 0.22 pct
- 0.2.2 - 0.261 pct
- >0.261 pct

Fm, CHel1, CHer2, Aap1, Aed1, Aed2, SSer, CHpd

N

0 5 10 20 30 Meters





<u>Summary Statistics</u>

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

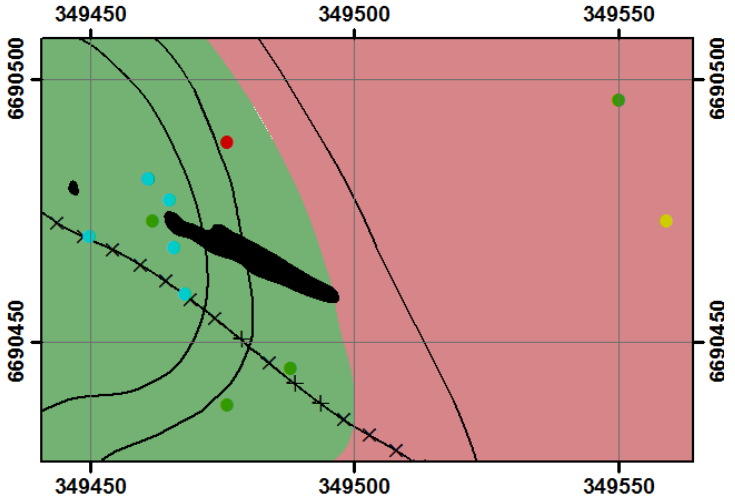
Median = 1.725

Mean = 1.611

Standard Deviation = 0.346

Error = ±0.22

Bedrock Geology



Legend

- <0.043 pct
- 0.043 - 0.101 pct
- 0.101 - 0.22 pct
- 0.22 - 0.261 pct
- >0.261 pct

Umberatana Group, Sandy Limestone, Costean, Bedding, Syncline

N

0 5 10 20 30 Meters

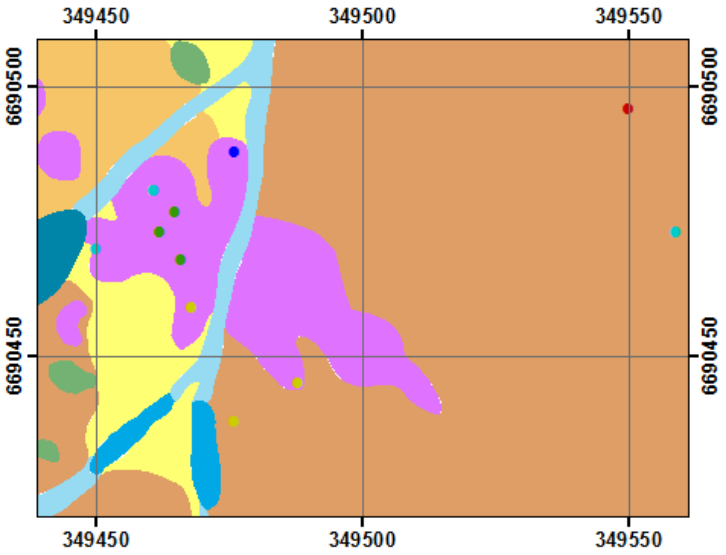
Billy Springs

***Eremophila freelingii* leaf**

Mn(ppm)

Landscape

Regolith - Landform

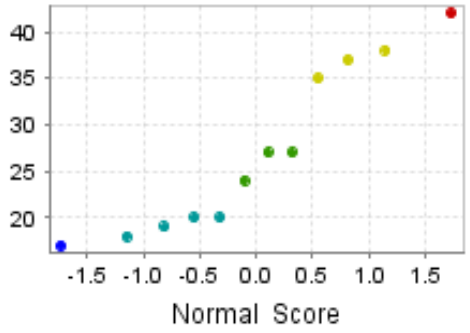


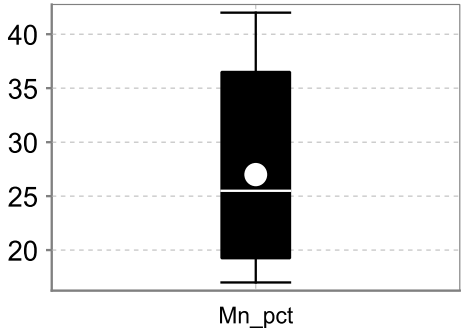
Legend

- <17.0 pct
- 17.0 - 20.0 pct
- 20.0 - 27.0 pct
- 27.0 - 38.0 pct
- >38.0 pct
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 1

Below Detection Limit = 0

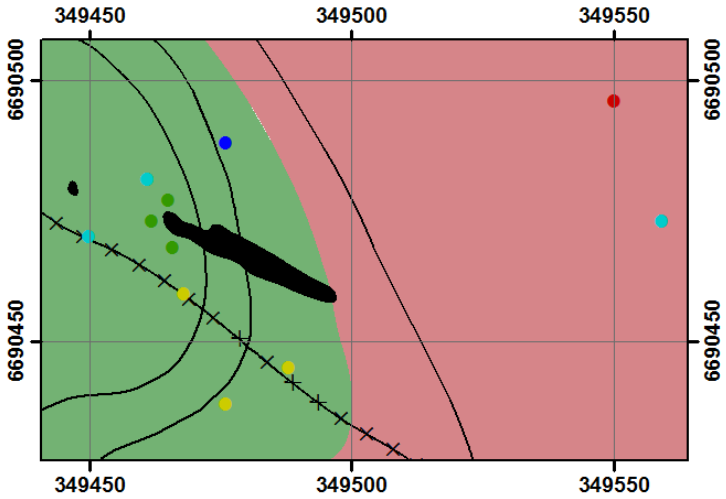
Median = 25.5

Mean = 27

Standard Deviation = 8.85

Error = ±5.6

Bedrock Geology



Legend

- <17.0 pct
- 17.0 - 20.0 pct
- 20.0 - 27.0 pct
- 27.0 - 38.0 pct
- >38.0 pct
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

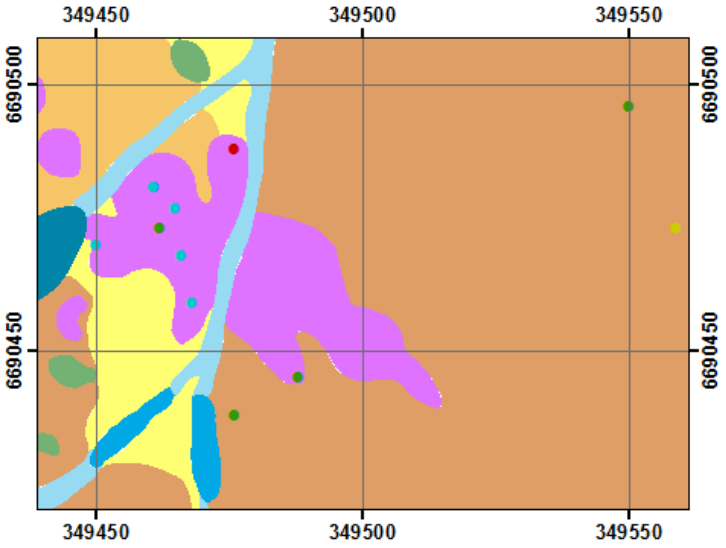
Billy Springs

***Eremophila freelingii* leaf**

Na(%)

Landscape

Regolith - Landform



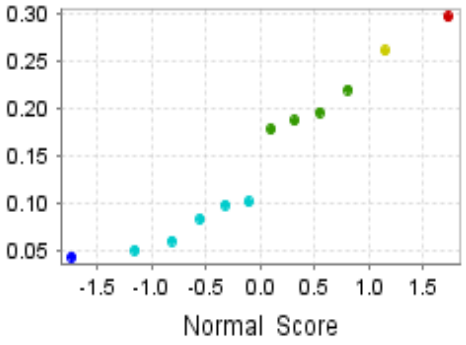
Legend

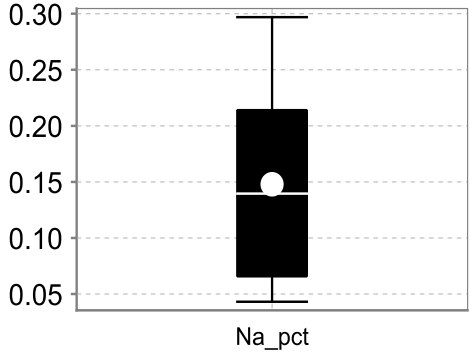
- <0.043 pct
- 0.043 - 0.101 pct
- 0.101 - 0.22 pct
- 0.22 - 0.261 pct
- >0.261 pct

Fm, CHel1, CHer2, Aap1, Aed1, Aed2, SSer, CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.001

Below Detection Limit = 0

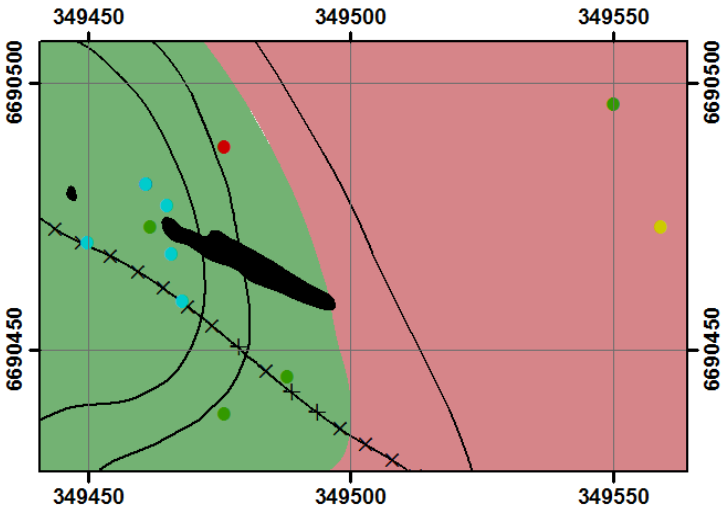
Median = 0.140

Mean = 0.148

Standard Deviation = 0.086

Error = ±0.055

Bedrock Geology



Legend

- <0.043 pct
- 0.043 - 0.101 pct
- 0.101 - 0.22 pct
- 0.22 - 0.261 pct
- >0.261 pct

Umberatana Group, Sandy Limestone, Costean, Bedding, Syncline

N

0 5 10 20 30 Meters

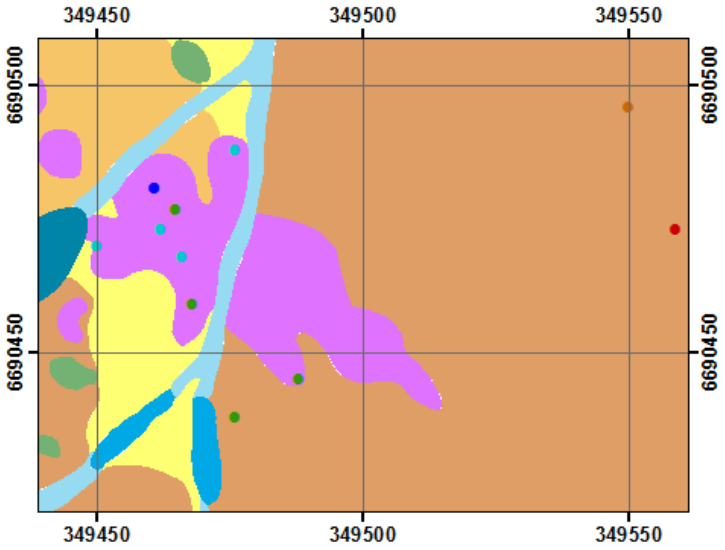
Billy Springs

***Eremophila freelingii* leaf**

Rb(ppm)

Landscape

Regolith - Landform

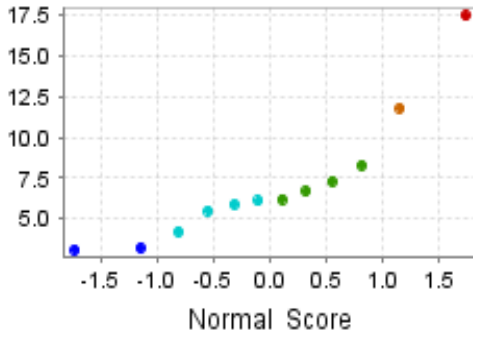


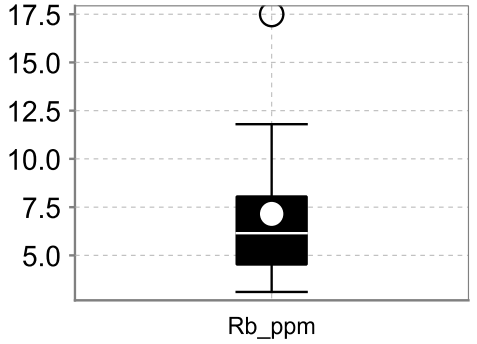
Legend

- <3.2 ppm
- 3.2 - 6.1 ppm
- 6.1 - 8.3 ppm
- 8.3 - 11.8 ppm
- >11.8 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.1

Below Detection Limit = 0

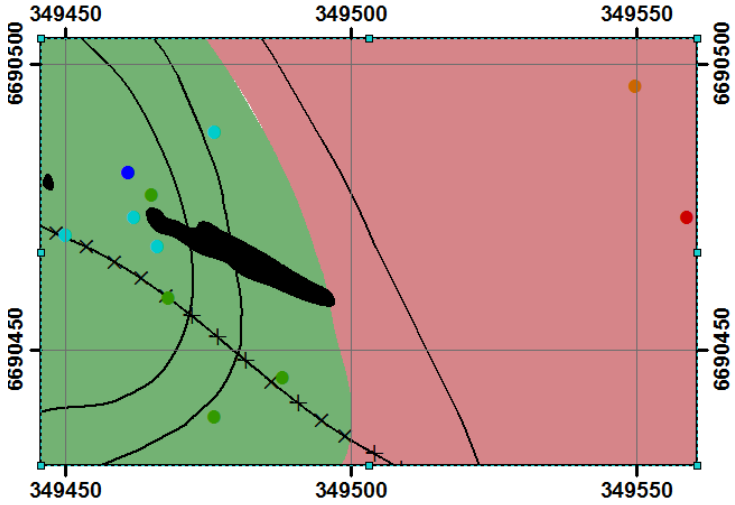
Median = 6.15

Mean = 7.15

Standard Deviation = 0.006

Error = ±0.003

Bedrock Geology



Legend

- <3.2 ppm
- 3.2 - 6.1 ppm
- 6.1 - 8.3 ppm
- 8.3 - 11.8 ppm
- >11.8 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

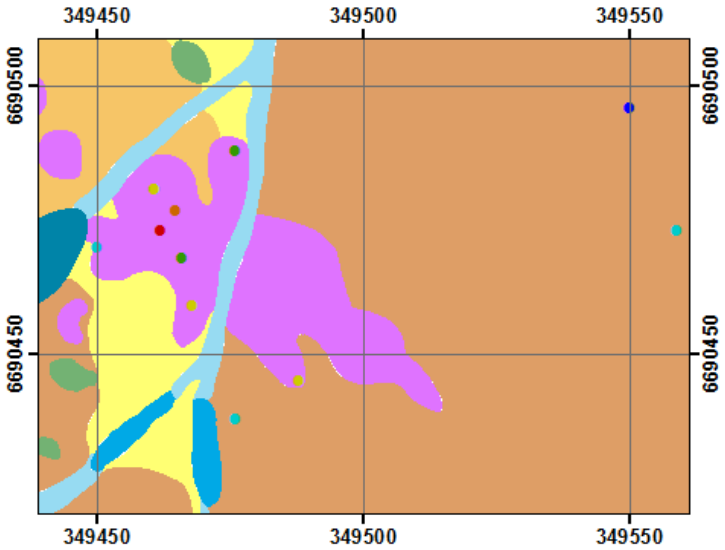
Billy Springs

***Eremophila freelingii* leaf**

$Cr_{(ppm)}$

Other

Regolith - Landform



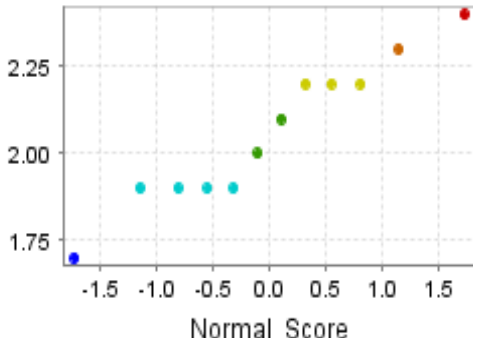
Legend

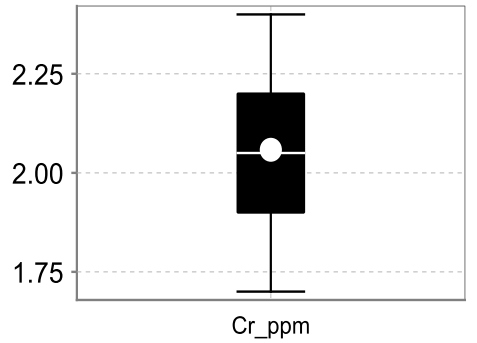
- <1.7 ppm
- 1.7 - 1.9 ppm
- 1.9 - 2.1 ppm
- 2.1 - 2.2 ppm
- 2.2 - 2.3 ppm
- >2.3 ppm

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.1

Below Detection Limit = 0

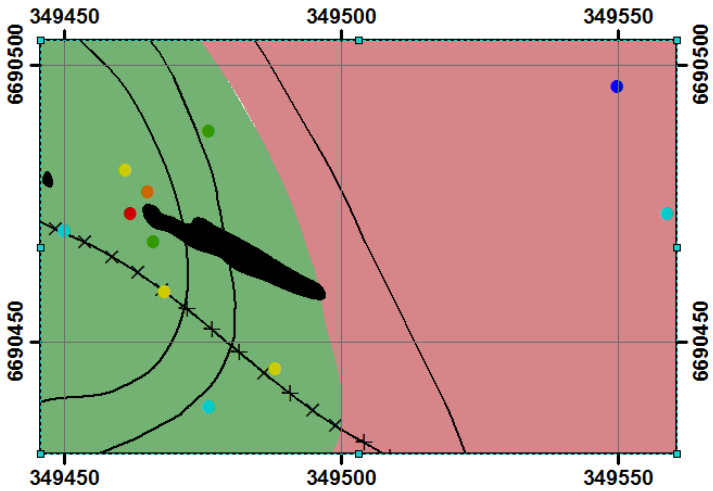
Median = 2.05

Mean = 2.06

Standard Deviation = 0.21

Error = ±0.13

Bedrock Geology



Legend

- <1.7 ppm
- 1.7 - 1.9 ppm
- 1.9 - 2.1 ppm
- 2.1 - 2.2 ppm
- 2.2 - 2.3 ppm
- >2.3 ppm

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

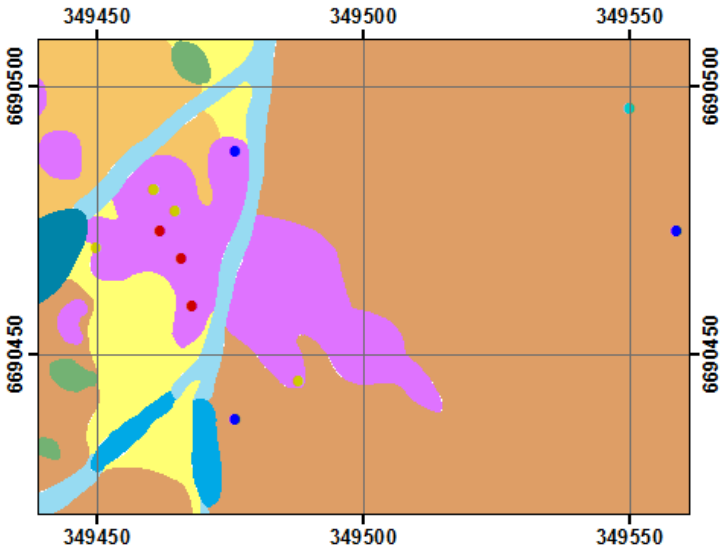
Billy Springs

***Eremophila freelingii* leaf**

$Ni_{(ppm)}$

Other

Regolith - Landform

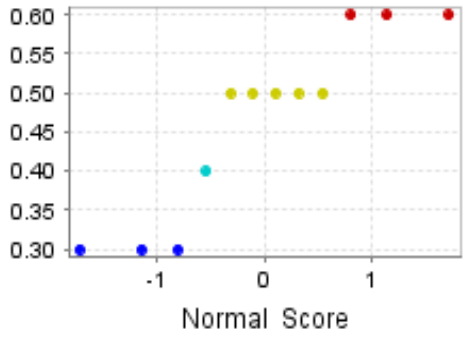


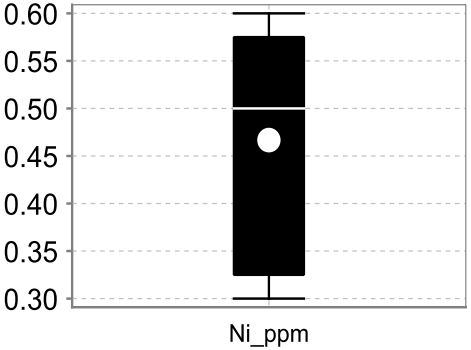
Legend

- <0.3 ppm
- 0.3 - 0.4 ppm
- 0.4 - 0.5 ppm
- >0.5 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.1

Below Detection Limit = 0

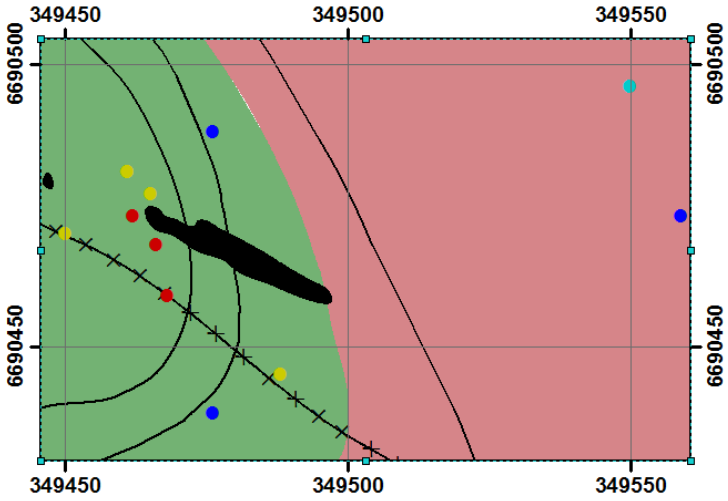
Median = 0.5

Mean = 0.47

Standard Deviation = 0.12

Error = ± 0.008

Bedrock Geology



Legend

- <0.3 ppm
- 0.3 - 0.4 ppm
- 0.4 - 0.5 ppm
- >0.5 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

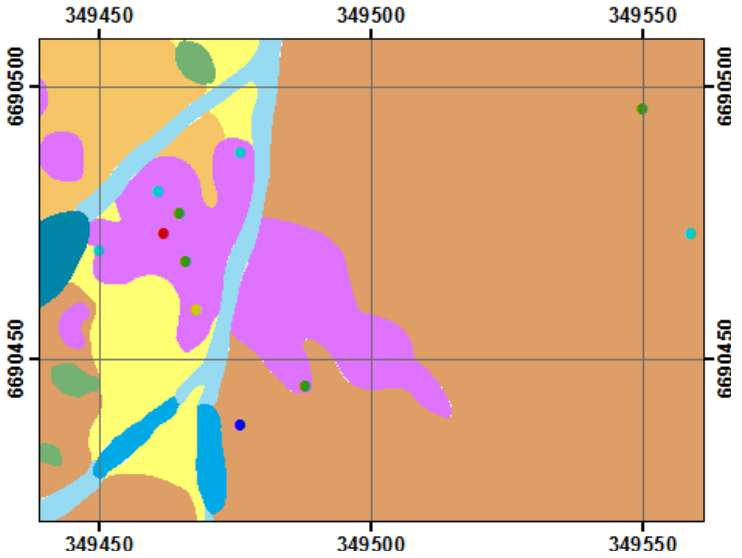
Billy Springs

***Eremophila freelingii* leaf**

$Sr_{(ppm)}$

Other

Regolith - Landform

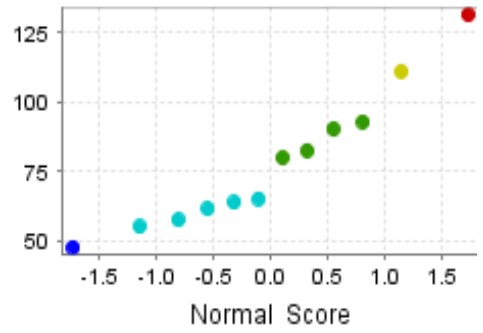


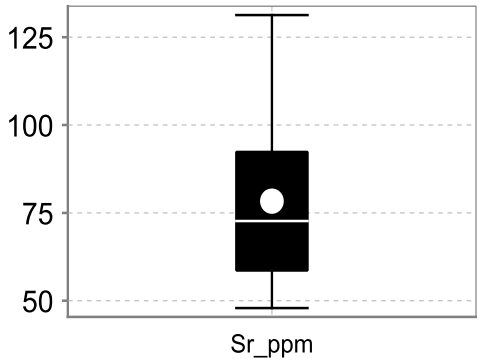
Legend

- <47.9 pppm
- 47.9 - 65.4 ppm
- 65.4 - 93.0 ppm
- 93.0 - 111.1 ppm
- >111.1 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.5

Below Detection Limit = 0

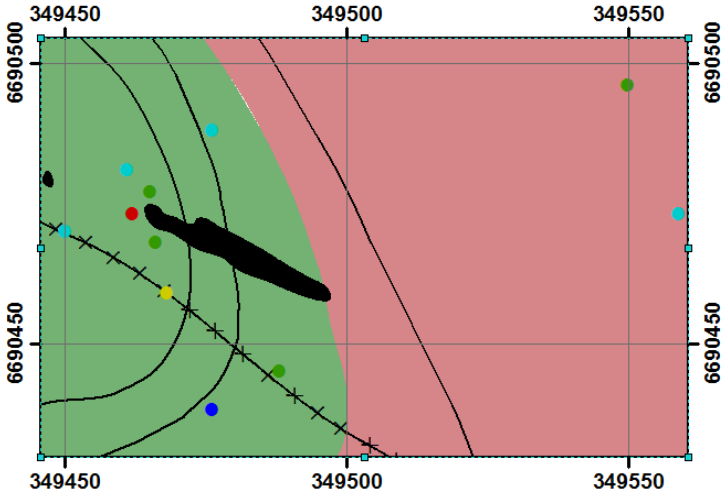
Median = 72.7

Mean = 78.35

Standard Deviation = 24.87

Error = ±15.8

Bedrock Geology



Legend

- <47.9 ppm
- 47.9 - 65.4 ppm
- 65.4 - 93.0 ppm
- 93.0 - 111.1 ppm
- >111.1 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

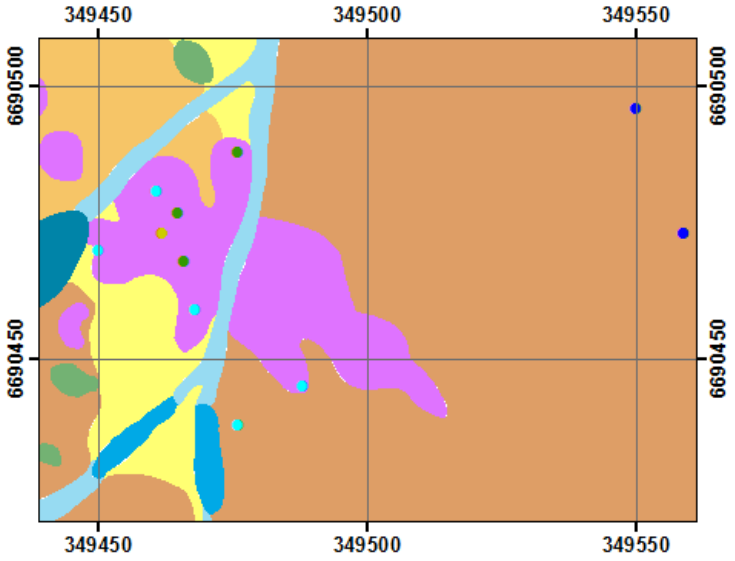
Billy Springs

***Eremophila freelingii* twig**

Ag(ppb)

Commodity

Regolith - Landform

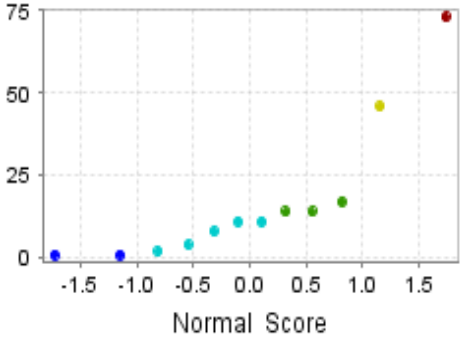


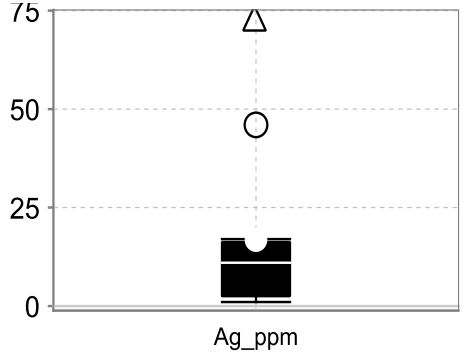
Legend

- <1.0 ppm
- 1.0 - 11.0 ppm
- 11.0 - 17.0 ppm
- 17.0 - 46.0 ppm
- >46.0 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 2

Below Detection Limit = 2

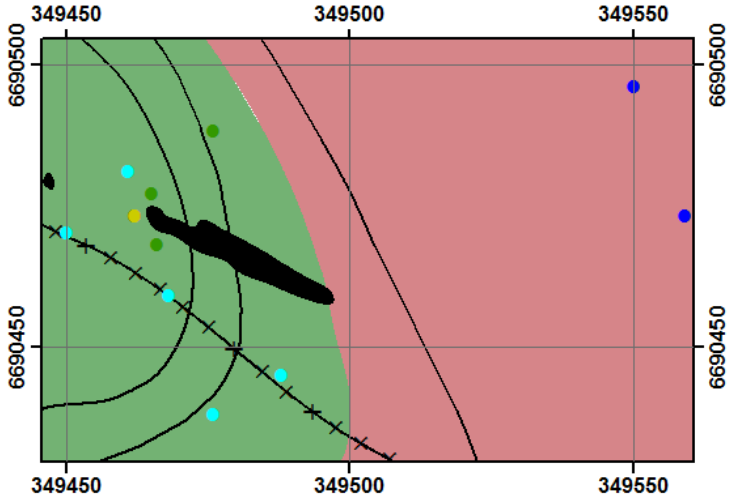
Median = 11

Mean = 16.83

Standard Deviation = 21.43

Error = ±13.62

Bedrock Geology



Legend

- <1.0 ppm
- 1.0 - 11.0 ppm
- 11.0 - 17.0 ppm
- 17.0 - 46.0 ppm
- >46.0 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

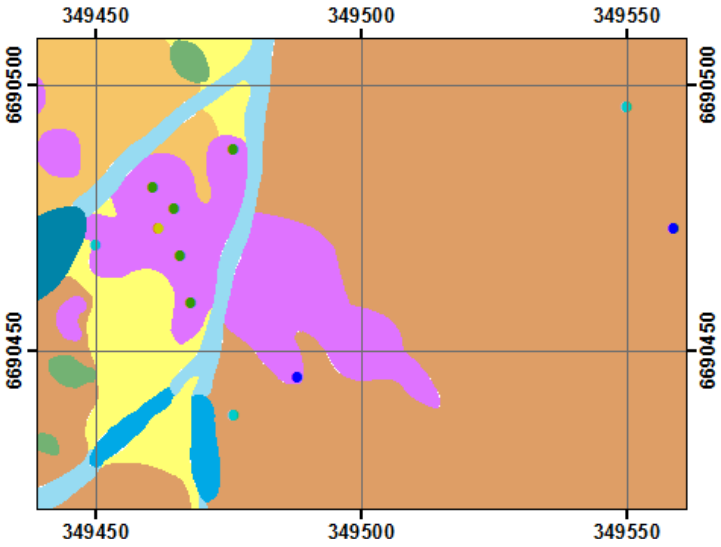
Billy Springs

***Eremophila freelingii* twig**

Cu(ppm)

Commodity

Regolith - Landform

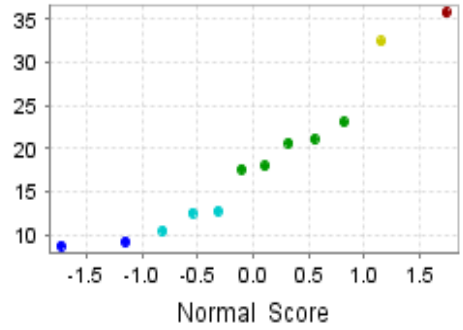


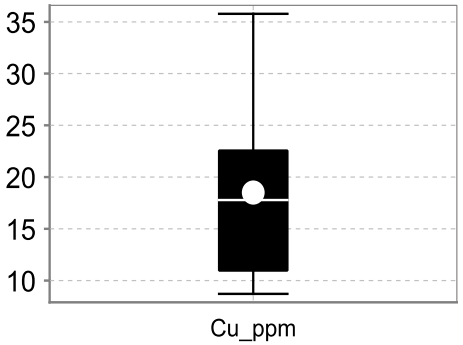
Legend

- <9.15 ppm
- 9.15 - 12.73 ppm
- 12.73 - 23.06 ppm
- 23.06 - 32.43 ppm
- >32.43 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





<u>Summary Statistics</u>

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

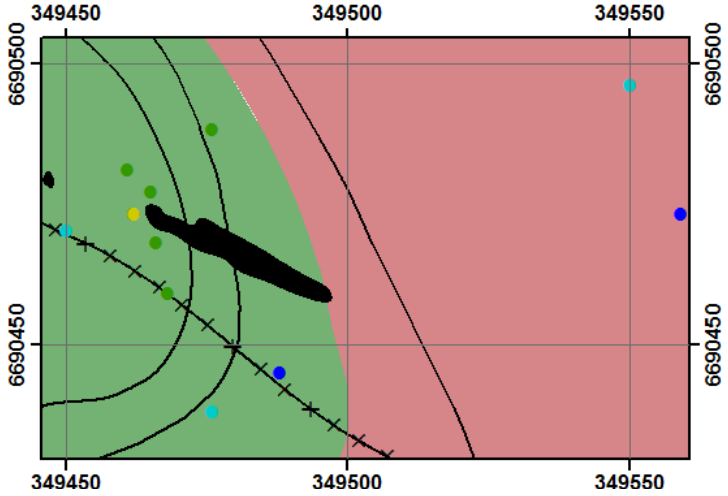
Median = 14.78

Mean = 18.51

Standard Deviation = 8.75

Error = ±5.56

Bedrock Geology



Legend

- <9.15 ppm
- 9.15 - 12.73 ppm
- 12.73 - 23.06 ppm
- 23.06 - 32.43 ppm
- >32.43 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

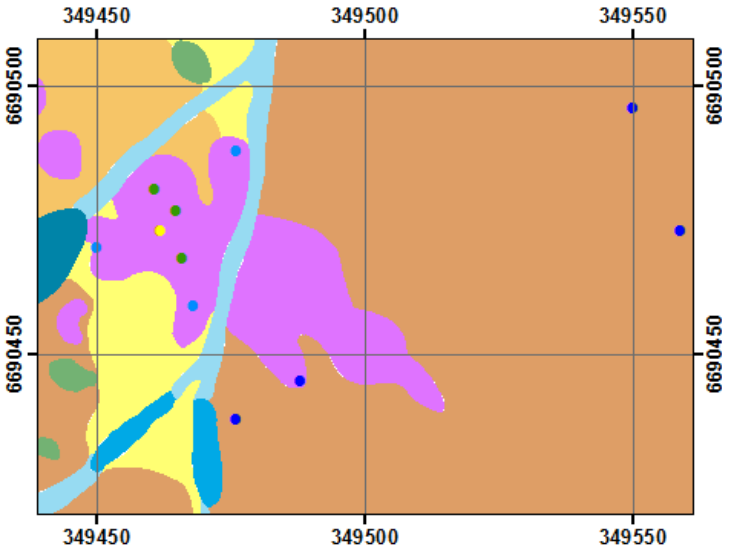
Billy Springs

***Eremophila freelingii* twig**

Pb(ppm)

Commodity

Regolith - Landform

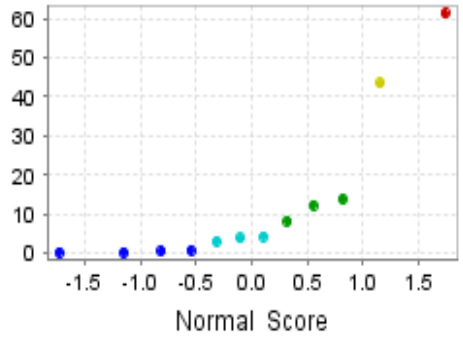


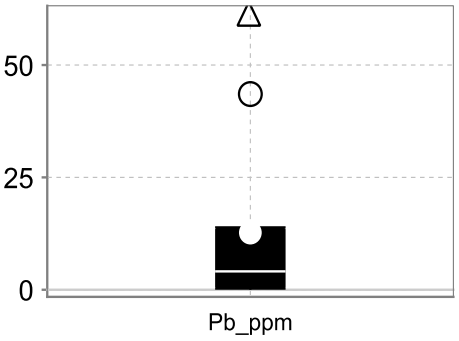
Legend

- <0.76 ppm
- 0.76 - 4.33 ppm
- 4.33 - 13.86 ppm
- 13.86 - 43.54 ppm
- >43.54 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

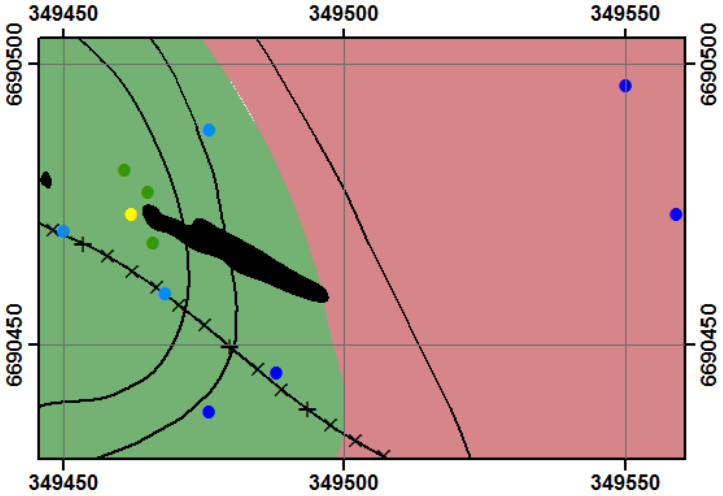
Median = 4.09

Mean = 12.71

Standard Deviation = 19.49

Error = ±12.38

Bedrock Geology



Legend

- <0.76 ppm
- 0.76 - 4.33 ppm
- 4.33 - 13.86 ppm
- 13.86 - 43.54 ppm
- >43.54 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

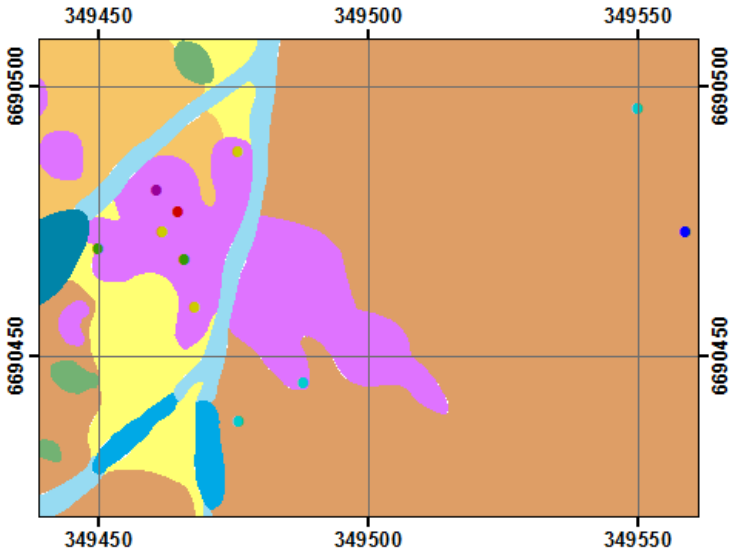
Billy Springs

***Eremophila freelingii* twig**

Zn(ppm)

Commodity

Regolith - Landform



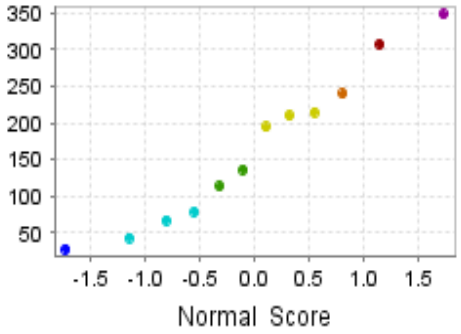
Legend

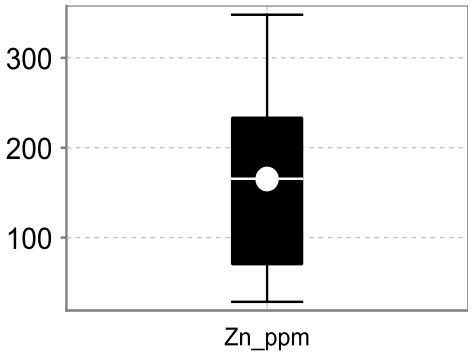
- <28.5 ppm
- 28.5 - 79.2 ppm
- 78.2 - 136.6 ppm
- 136.6 - 214.4 ppm
- 214.4 - 239.9 ppm
- 239.9 - 307.4 ppm
- >307.4 ppm

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.1

Below Detection Limit = 0

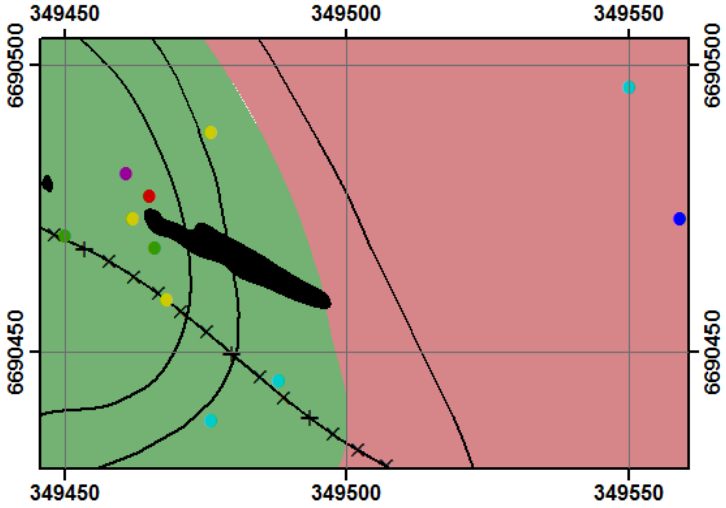
Median = 165.50

Mean = 165.32

Standard Deviation = 103.72

Error = ±65.90

Bedrock Geology



Legend

- <28.5 ppm
- 28.5 - 79.2 ppm
- 79.2 - 136.6 ppm
- 136.6 - 214.4 ppm
- 214.4 - 239.8 ppm
- 239.8 - 307.4 ppm
- >307.4 ppm

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

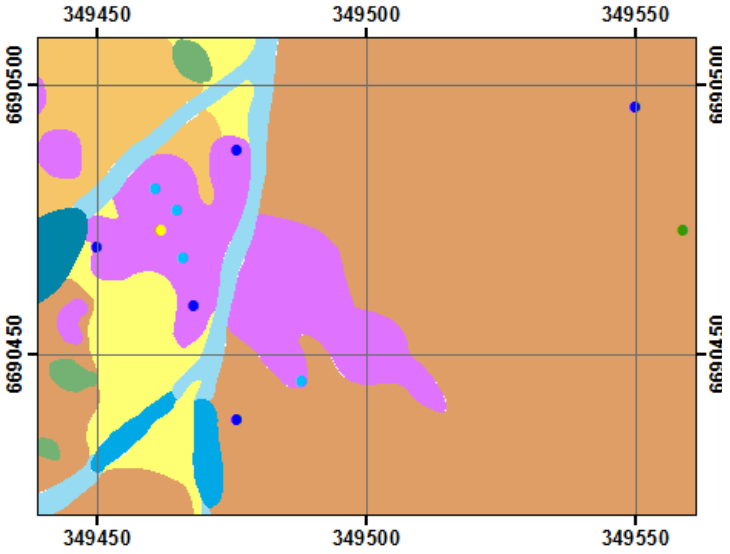
Billy Springs

***Eremophila freelingii* twig**

$As_{(ppm)}$

Pathfinder

Regolith - Landform

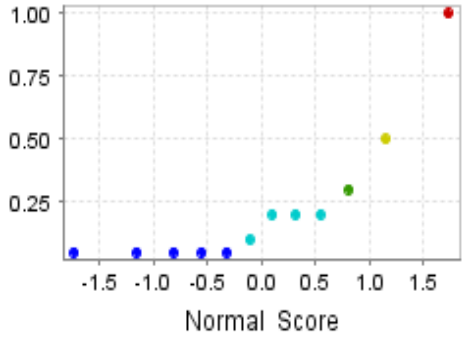


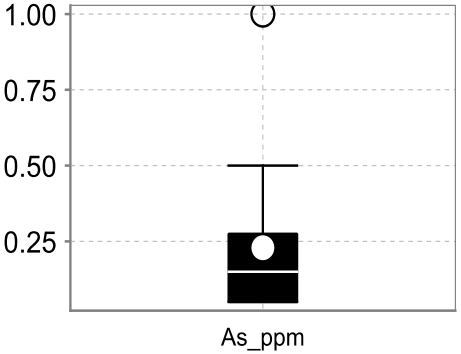
Legend

- <0.05 ppm
- 0.05 - 0.21 ppm
- 0.2 - 0.3 ppm
- 0.3 - 0.5 ppm
- >0.5 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters

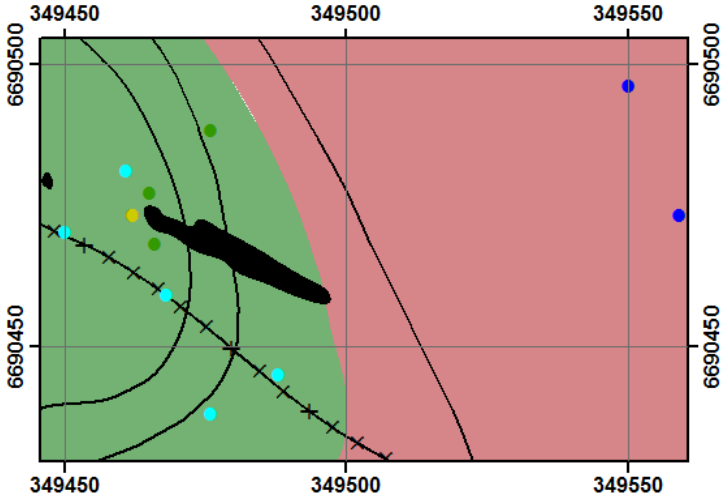




<u>Summary Statistics</u>

N = 12
Lower Detection Limit= 0.1
Below Detection Limit = 5
Median = 0.15
Mean = 0.23
Standard Deviation = 0.28
Error = ±0.2

Bedrock Geology



Legend

- <0.05 ppm
- 0.05 - 0.2 ppm
- 0.2 - 0.3 ppm
- 0.3 - 0.5 ppm
- >0.5 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

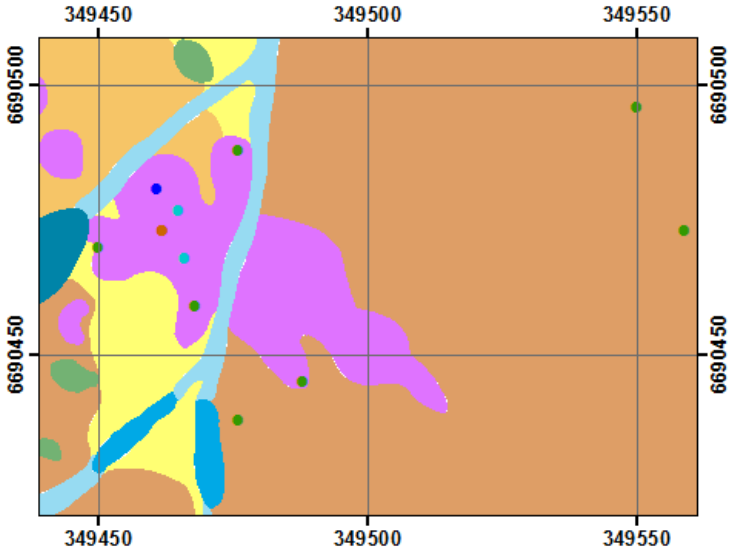
Billy Springs

***Eremophila freelingii* twig**

$Ce_{(ppm)}$

Pathfinder

Regolith - Landform



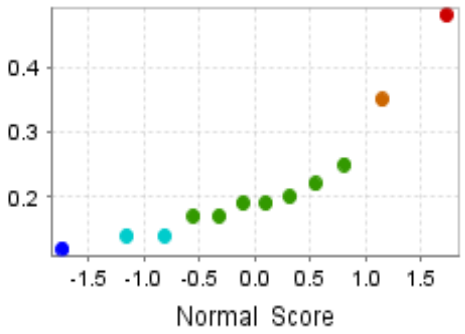
Legend

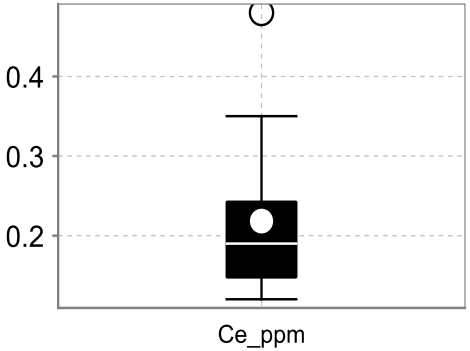
- <0.12 ppm
- 0.12 - 0.14 ppm
- 0.14 - 0.25 ppm
- 0.25 - 0.35 ppm
- >0.35 ppm

Fm, CHel1, CHer2, Aap1, Aed1, Aed2, SSer, CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

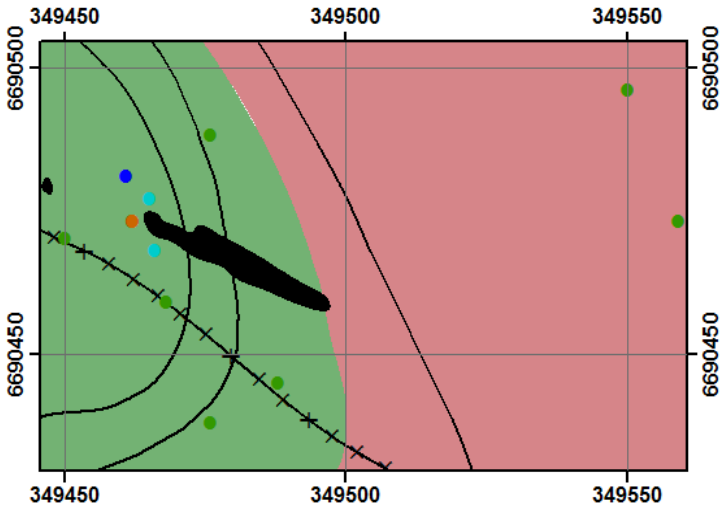
Median = 0.19

Mean = 0.218

Standard Deviation = 0.102

Error = ±0.06

Bedrock Geology



Legend

- <0.12 ppm
- 0.12 - 0.14 ppm
- 0.14 - 0.25 ppm
- 0.25 - 0.35 ppm
- >0.35 ppm

Umberatana Group, Sandy Limestone, Costean, Bedding, Syncline

N

0 5 10 20 30 Meters

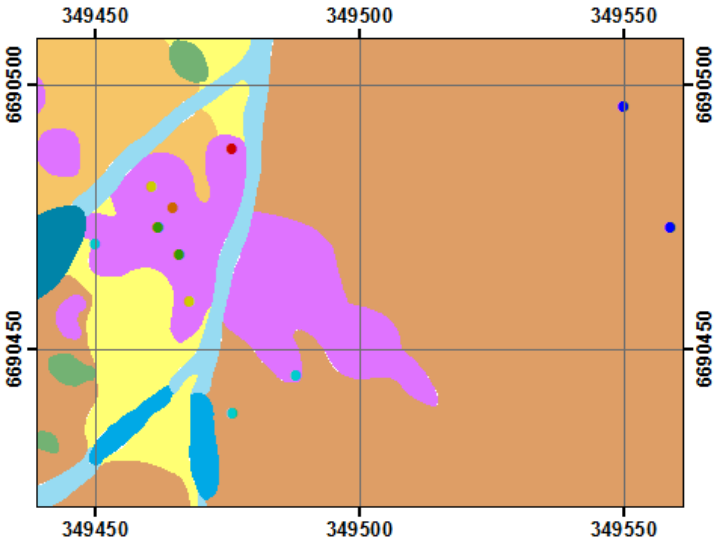
Billy Springs

***Eremophila freelingii* twig**

$Cd_{(ppm)}$

Pathfinder

Regolith - Landform



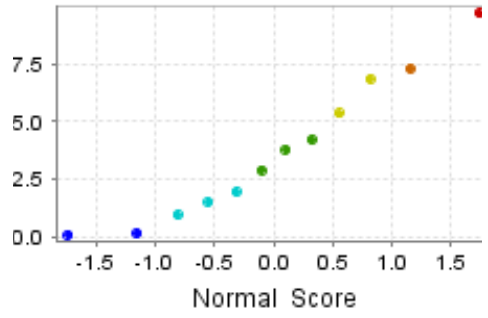
Legend

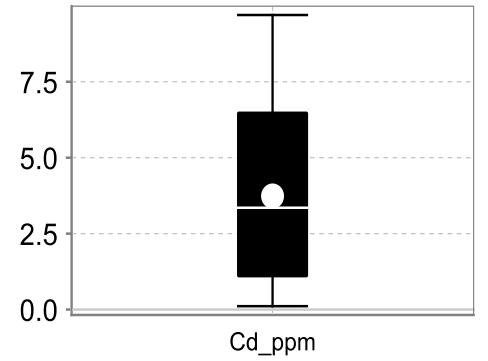
- <0.17 ppm
- 0.17 - 1.95 ppm
- 1.95 - 4.22 ppm
- 4.22 - 6.85 ppm
- 6.85 - 7.29 ppm
- >7.29 ppm

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





<u>Summary Statistics</u>

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

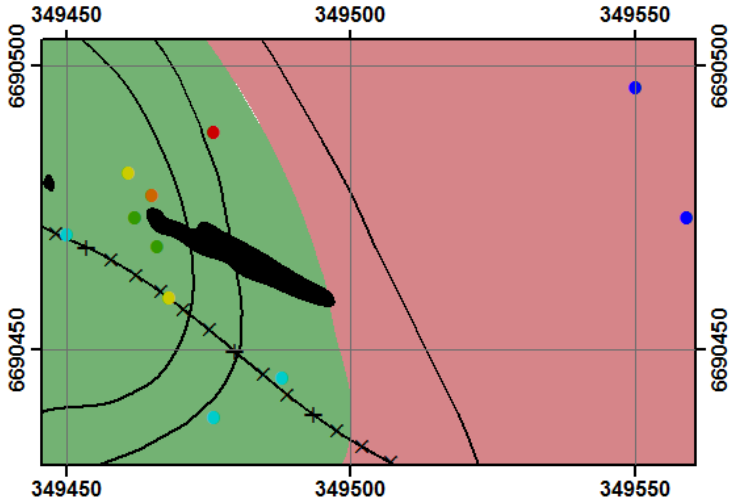
Median = 3.355

Mean = 3.737

Standard Deviation = 3.062

Error = ±1.94

Bedrock Geology



Legend

- <0.17 ppm
- 0.17 - 1.95 ppm
- 1.95 - 4.22 ppm
- 4.22 - 6.85 ppm
- 6.85 - 7.29 ppm
- >7.29 ppm

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

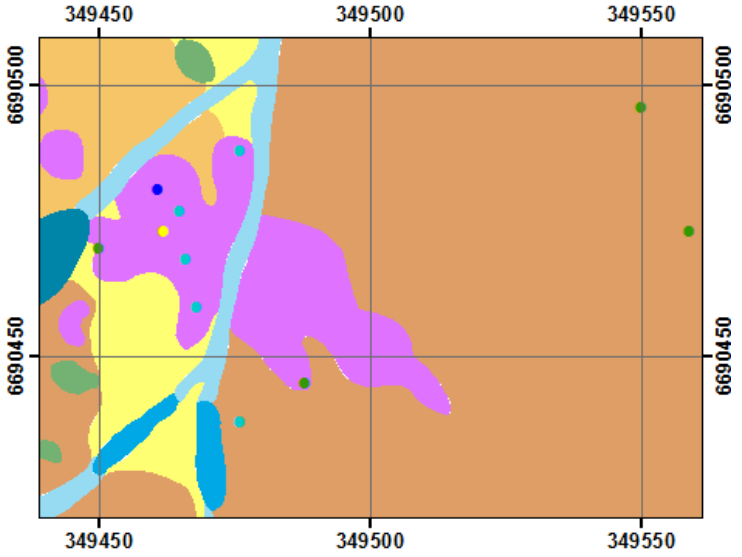
Billy Springs

***Eremophila freelingii* twig**

La(ppm)

Pathfinder

Regolith - Landform

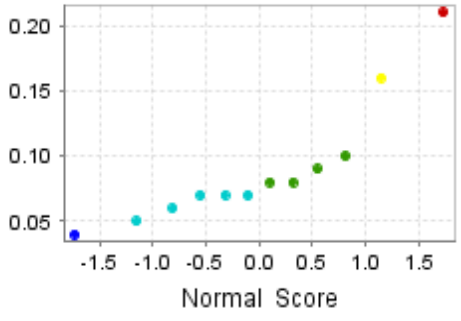


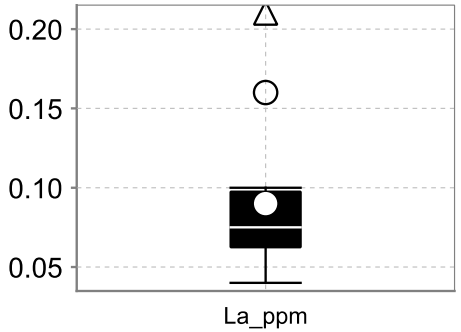
Legend

- <0.04 ppm
- 0.04 - 0.07 ppm
- 0.07 - 0.1 ppm
- 0.1 - 0.16 ppm
- >0.16 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

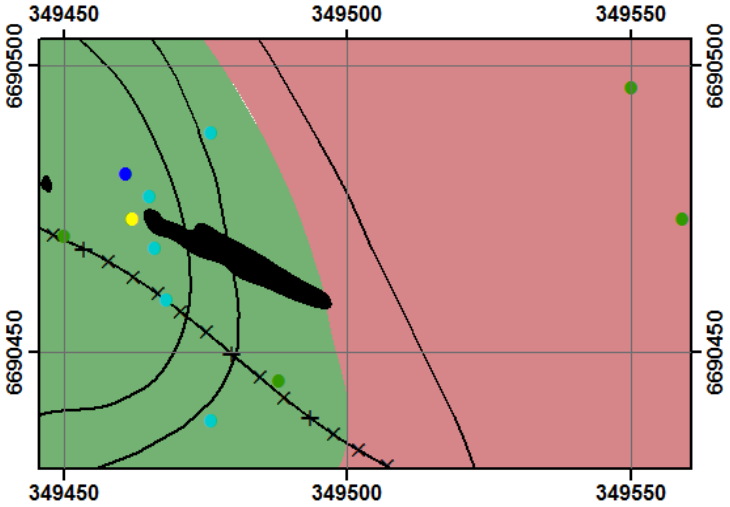
Median = 0.07

Mean = 0.09

Standard Deviation = 0.048

Error = ±0.03

Bedrock Geology



Legend

- <0.04 ppm
- 0.04 - 0.07 ppm
- 0.07 - 0.1 ppm
- 0.1 - 0.16 ppm
- >0.16 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

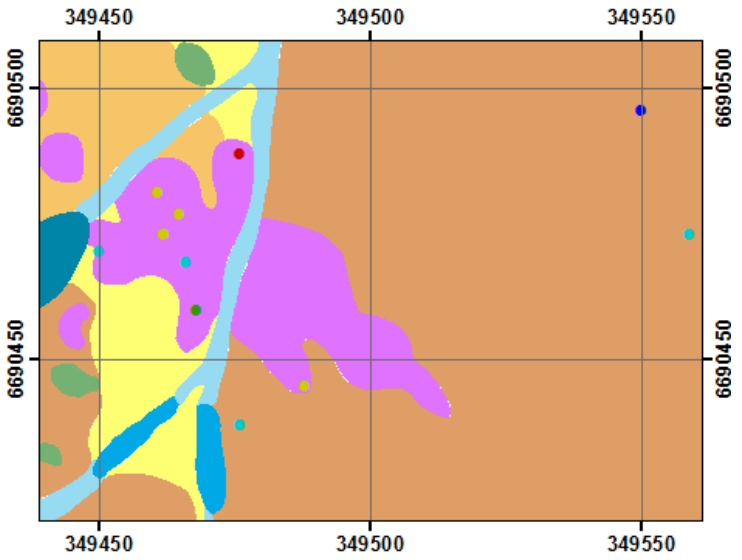
Billy Springs

***Eremophila freelingii* twig**

Mo(ppm)

Commodity

Regolith - Landform



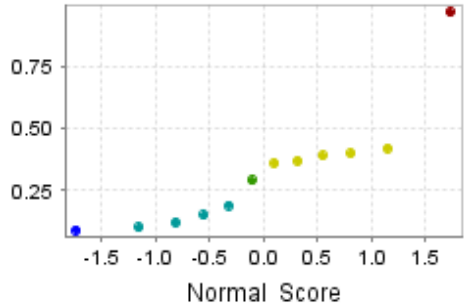
Legend

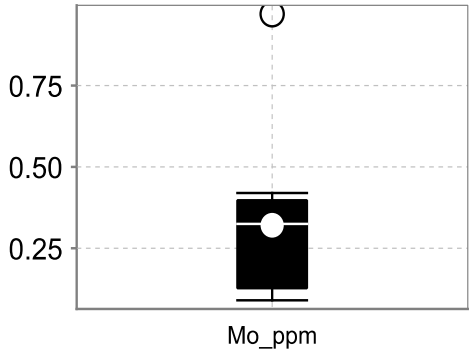
- <0.09 ppm
- 0.09 - 0.19 ppm
- 0.19 - 0.29 ppm
- 0.29 - 0.42 ppm
- >0.42 ppm

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





<u>Summary Statistics</u>

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

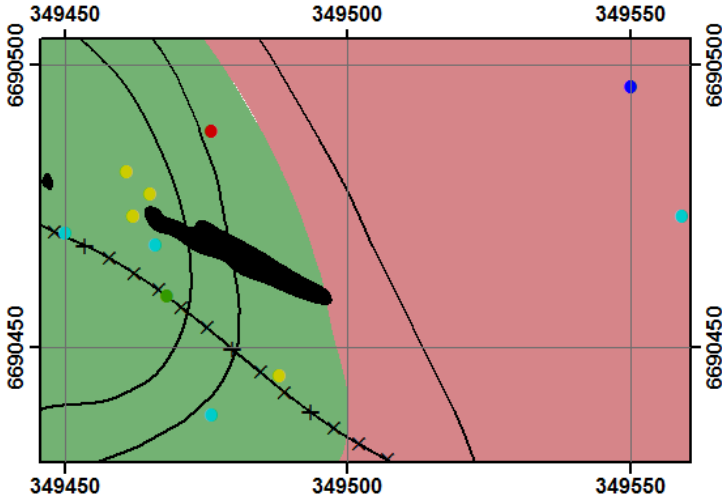
Median = 0.33

Mean = 0.32

Standard Deviation = 0.24

Error = ±0.15

Bedrock Geology



Legend

- <0.09 ppm
- 0.09 - 0.19 ppm
- 0.19 - 0.29 ppm
- 0.29 - 0.42 ppm
- >0.42 ppm

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

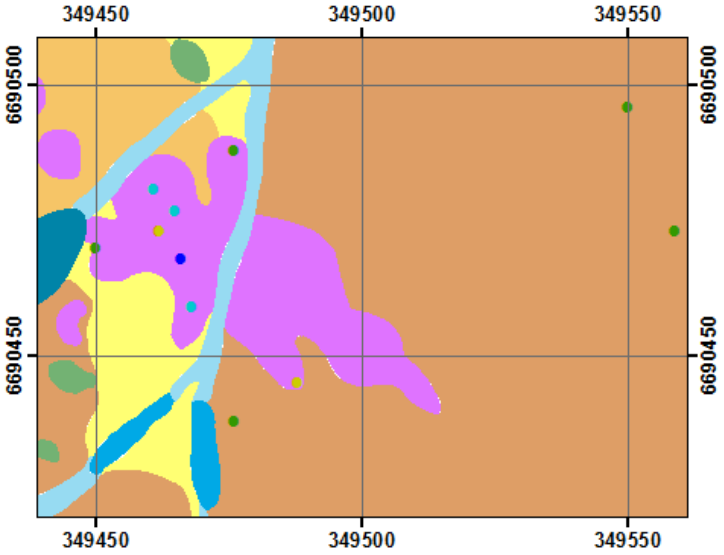
Billy Springs

***Eremophila freelingii* twig**

Y (ppm)

Pathfinder

Regolith - Landform



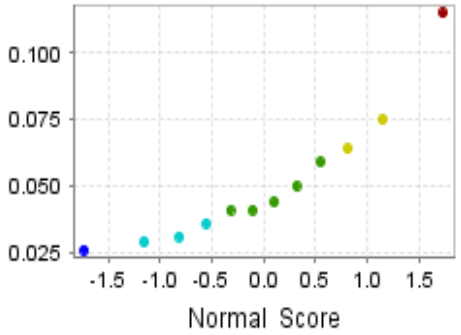
Legend

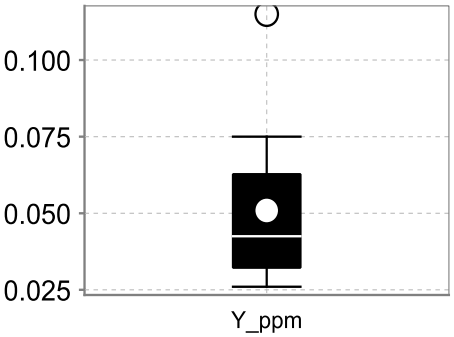
- <0.026 ppm
- 0.026 - 0.036 ppm
- 0.036 - 0.059 ppm
- 0.059 - 0.075 ppm
- >0.075 ppm

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.001

Below Detection Limit = 0

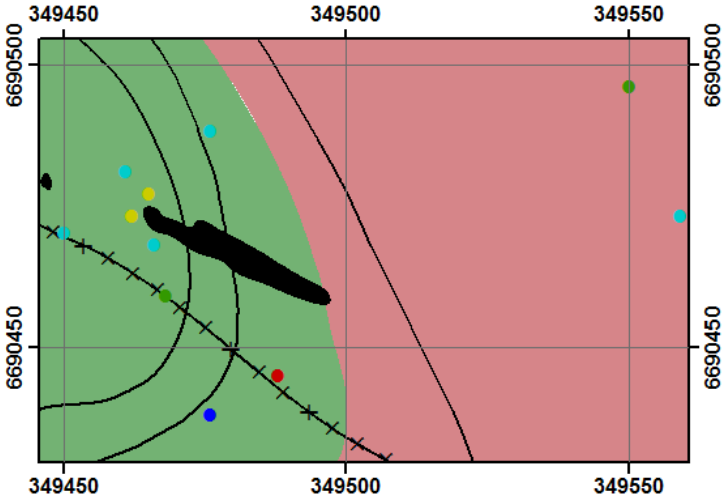
Median = 0.04

Mean = 0.05

Standard Deviation = 0.03

Error = ±0.02

Bedrock Geology



Legend

- <0.026 ppm
- 0.026 - 0.036 ppm
- 0.036 - 0.059 ppm
- 0.059 - 0.075 ppm
- >0.075 ppm

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

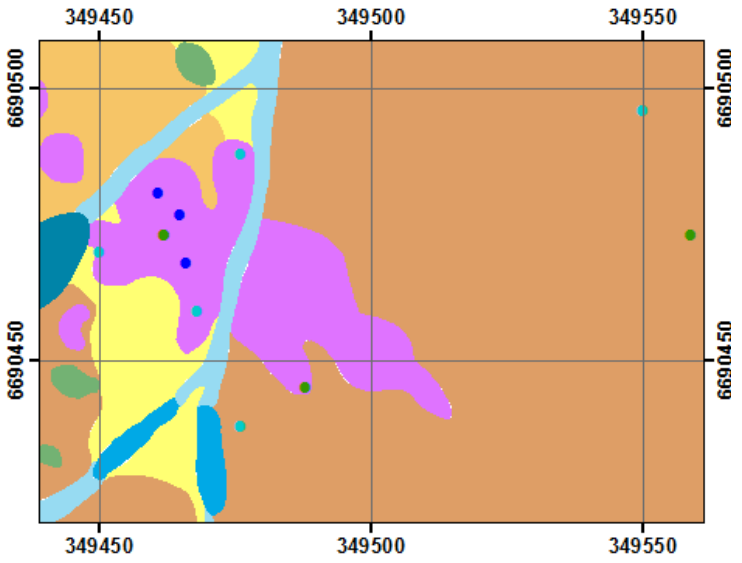
Billy Springs

***Eremophila freelingii* twig**

Al(%)

Landscape/host

Regolith - Landform



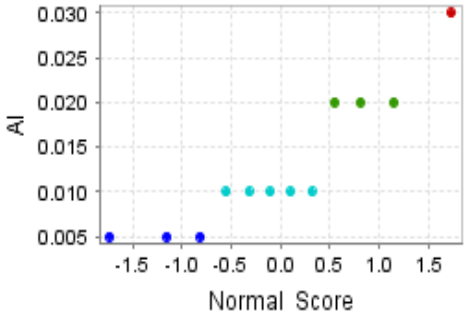
Legend

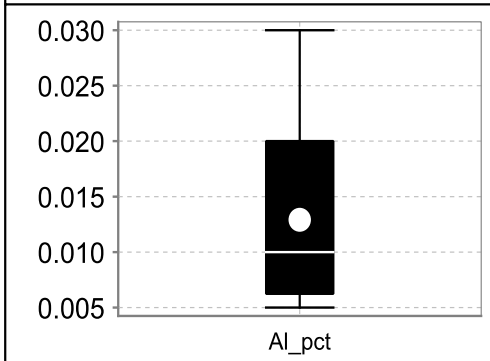
- <0.0005 pct
- 0.005 - 0.01 pct
- 0.01 - 0.02 pct
- >0.02 pct

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 3

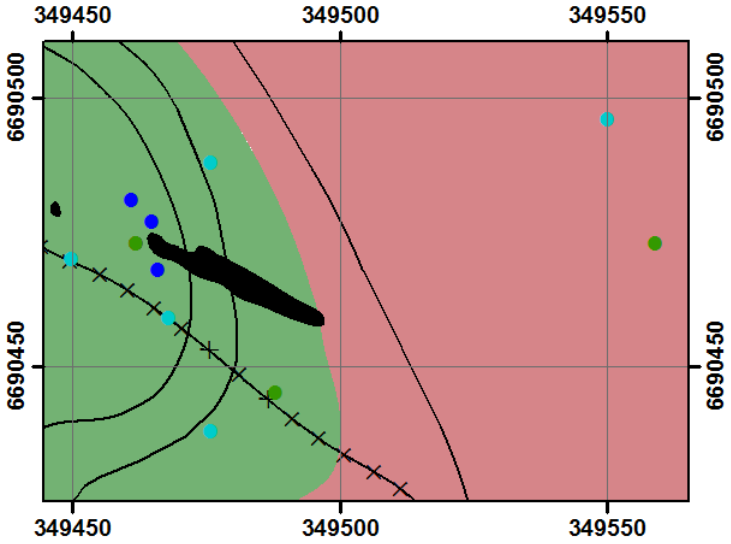
Median = 0.01

Mean = 0.01

Standard Deviation = 0.01

Error = ±0.006

Bedrock Geology



Legend

- <0.005 pct
- 0.005 - 0.01 pct
- 0.01 - 0.02 pct
- >0.02 pct

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

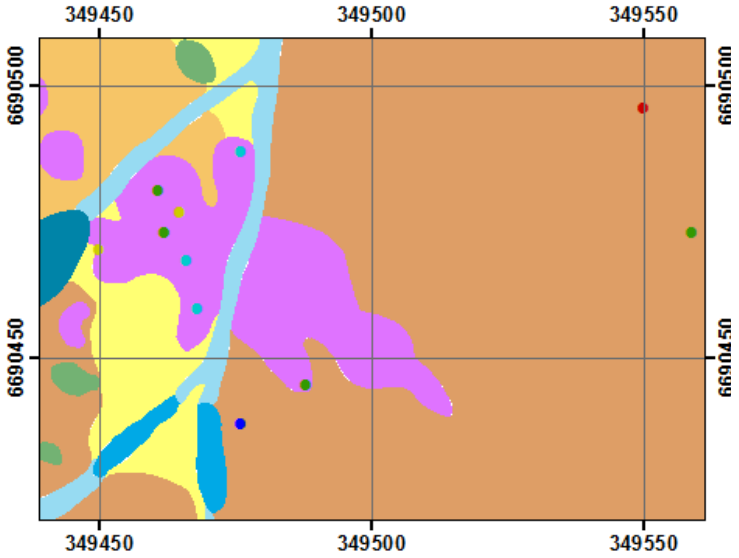
Billy Springs

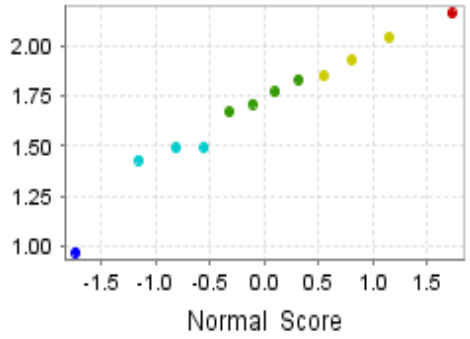
***Eremophila freelingii* twig**

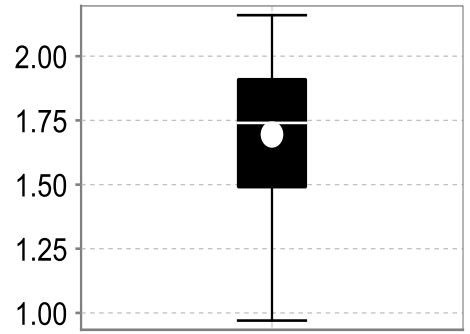
Ca(%)

Landscape

Regolith - Landform







Summary Statistics

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

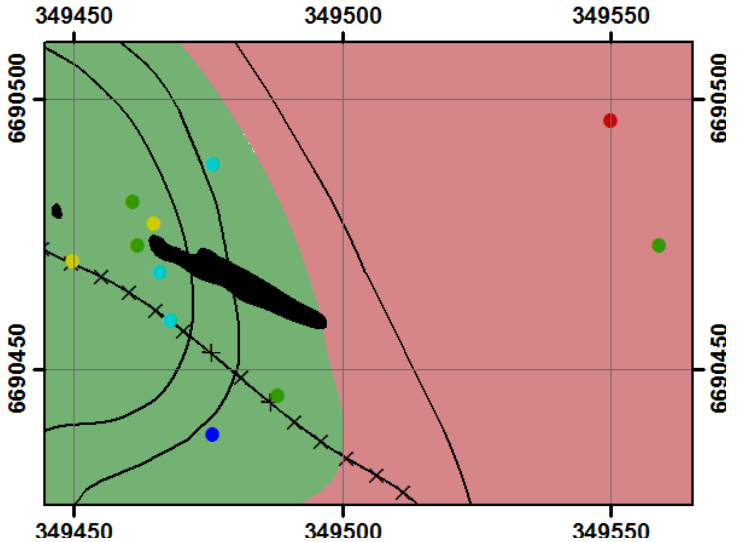
Median = 1.74

Mean = 1.69

Standard Deviation = 0.32

Error = ±0.2

Bedrock Geology



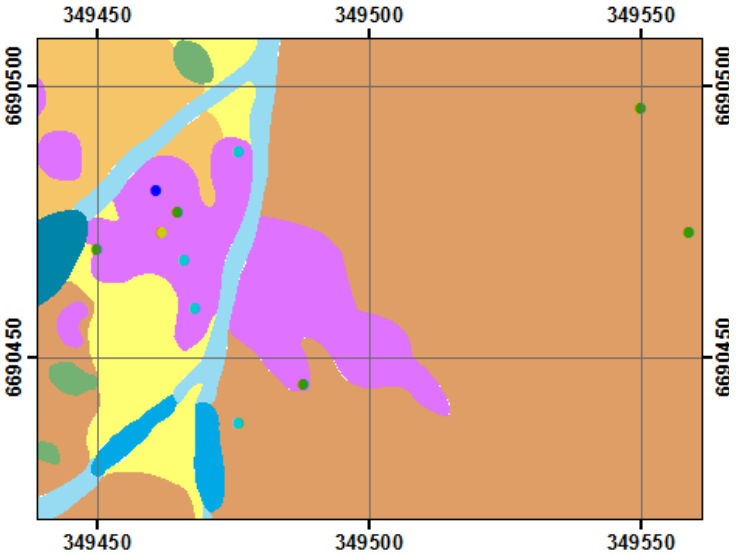
Billy Springs

***Eremophila freelingii* twig**

$Fe_{(\%)}$

Host/control/landscape

Regolith - Landform



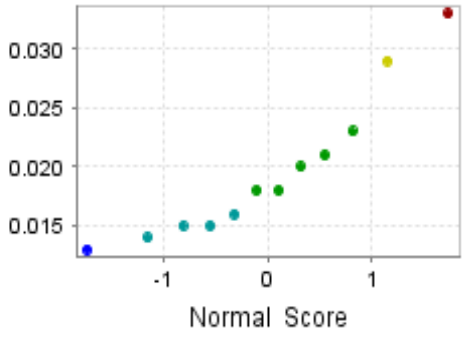
Legend

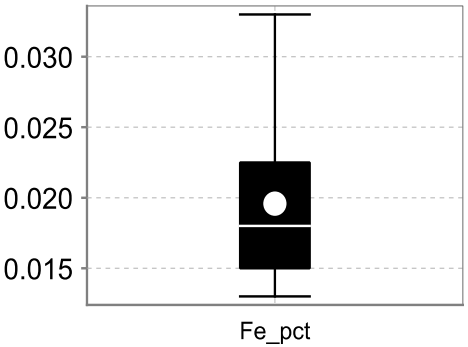
- <0.013 pct
- 0.013 - 0.016 pct
- 0.016 - 0.023 pct
- 0.023 - 0.029 pct
- >0.029 pct

Fm, CHel1, CHer2, Aap1, Aed1, Aed2, SSer, CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.001

Below Detection Limit = 0

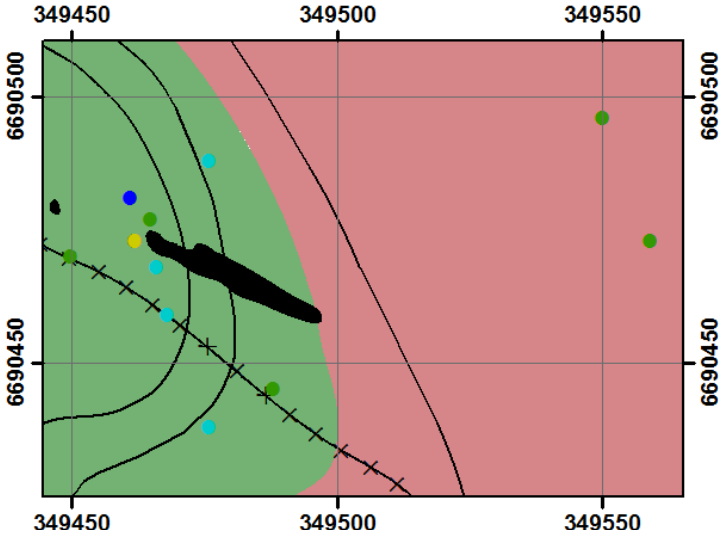
Median = 0.018

Mean = 0.02

Standard Deviation = 0.006

Error = ± 0.004

Bedrock Geology



Legend

- <0.013 pct
- 0.013 - 0.016 pct
- 0.016 - 0.023 pct
- 0.023 - 0.029 pct
- >0.029 pct

Umberatana Group, Sandy Limestone, Costean, Bedding, Syncline

N

0 5 10 20 30 Meters

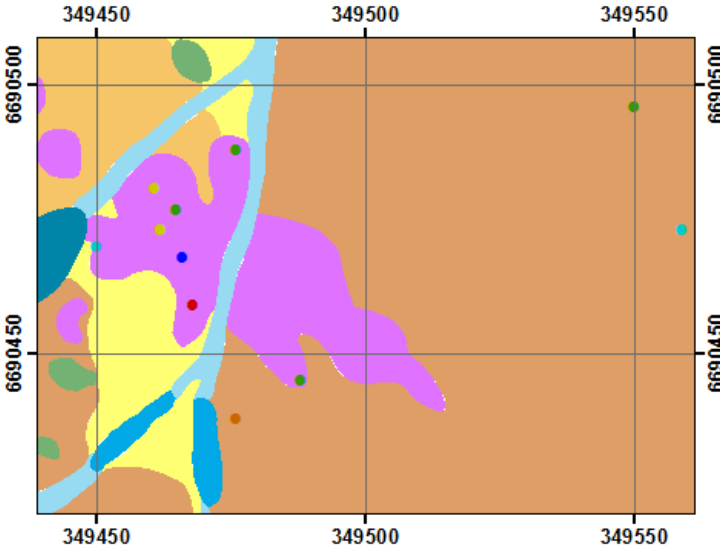
Billy Springs

***Eremophila freelingii* twig**

K(%)

Landscape

Regolith - Landform



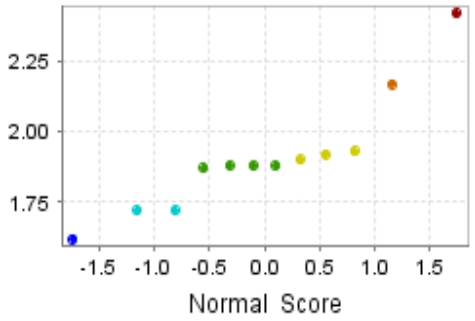
Legend

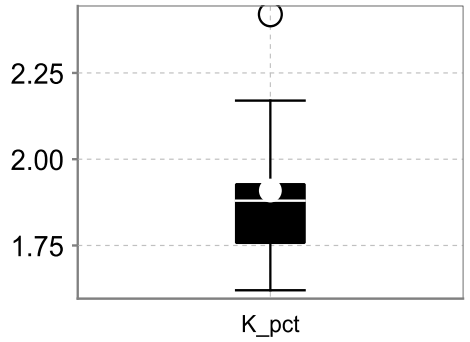
- <1.62 ppm
- 1.62 - 1.72 ppm
- 1.72 - 1.88 ppm
- 1.88 - 1.93 ppm
- 1.93 - 2.17 ppm
- >2.17 ppm

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.01

Below Detection Limit = 0

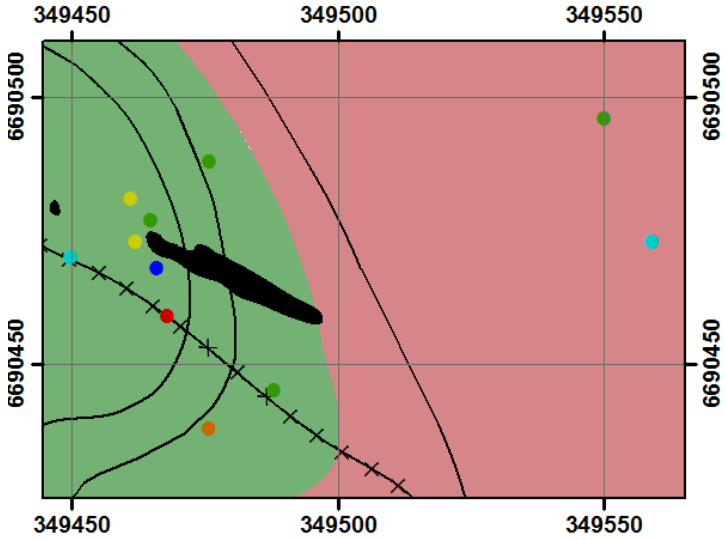
Median = 1.88

Mean = 0.11

Standard Deviation = 0.21

Error = ±0.13

Bedrock Geology



Legend

- <1.62 pct
- 1.62 - 1.72 pct
- 1.72 - 1.88 pct
- 1.88 - 1.93 pct
- 1.93 - 2.17 pct
- >2.17 pct

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

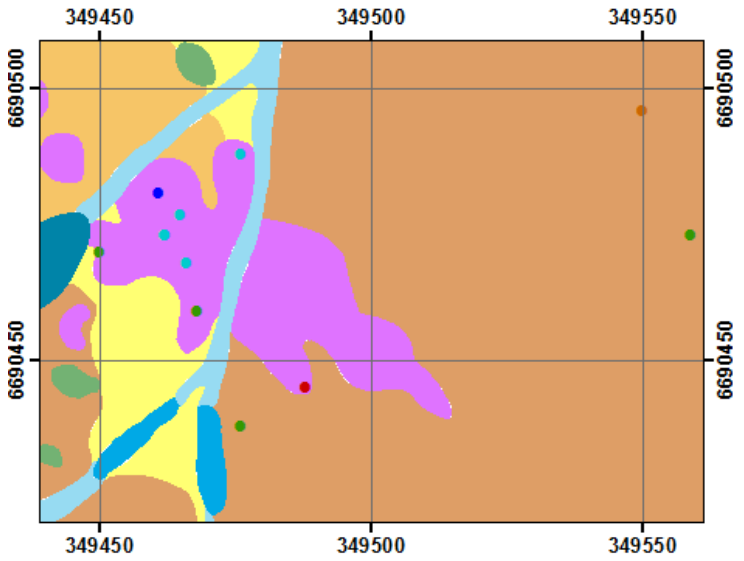
Billy Springs

***Eremophila freelingii* twig**

Mn(ppm)

Host/control/landscape

Regolith - Landform

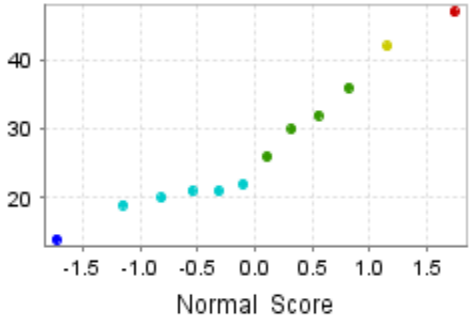


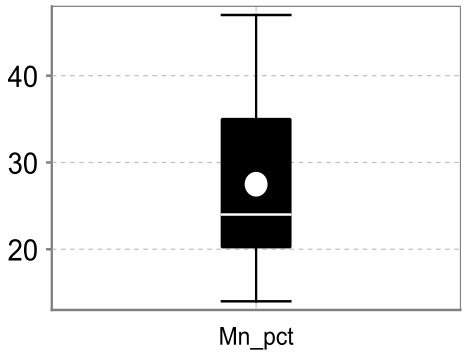
Legend

- <14.0 ppm
- 14.0 - 22.0 ppm
- 22.0 - 36.0 ppm
- 36.0 - 42.0 ppm
- >42.0 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 1

Below Detection Limit = 0

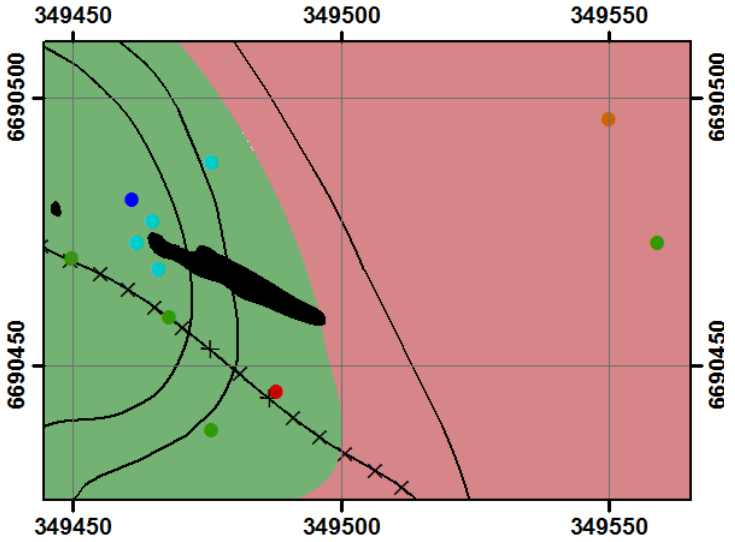
Median = 24

Mean = 27.5

Standard Deviation = 0.038

Error = ± 0.002

Bedrock Geology



Legend

- <14.0 pct
- 14.0 - 22.0 pct
- 22.0 - 36.0 pct
- 36.0 - 42.0 pct
- >42.0 pct
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

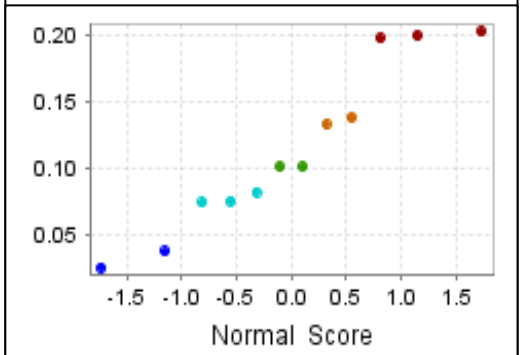
0 5 10 20 30 Meters

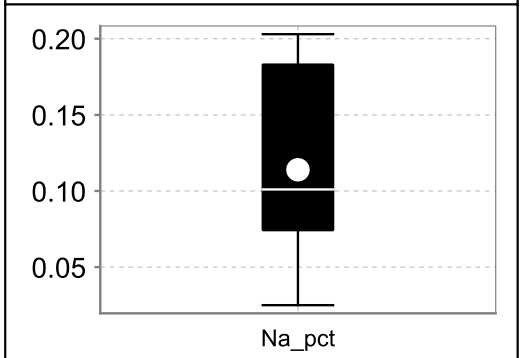
Billy Springs

***Eremophila freelingii* twig**

Na(%)

Host/control/Landscape





Summary Statistics

N = 12

Lower Detection Limit= 0.001

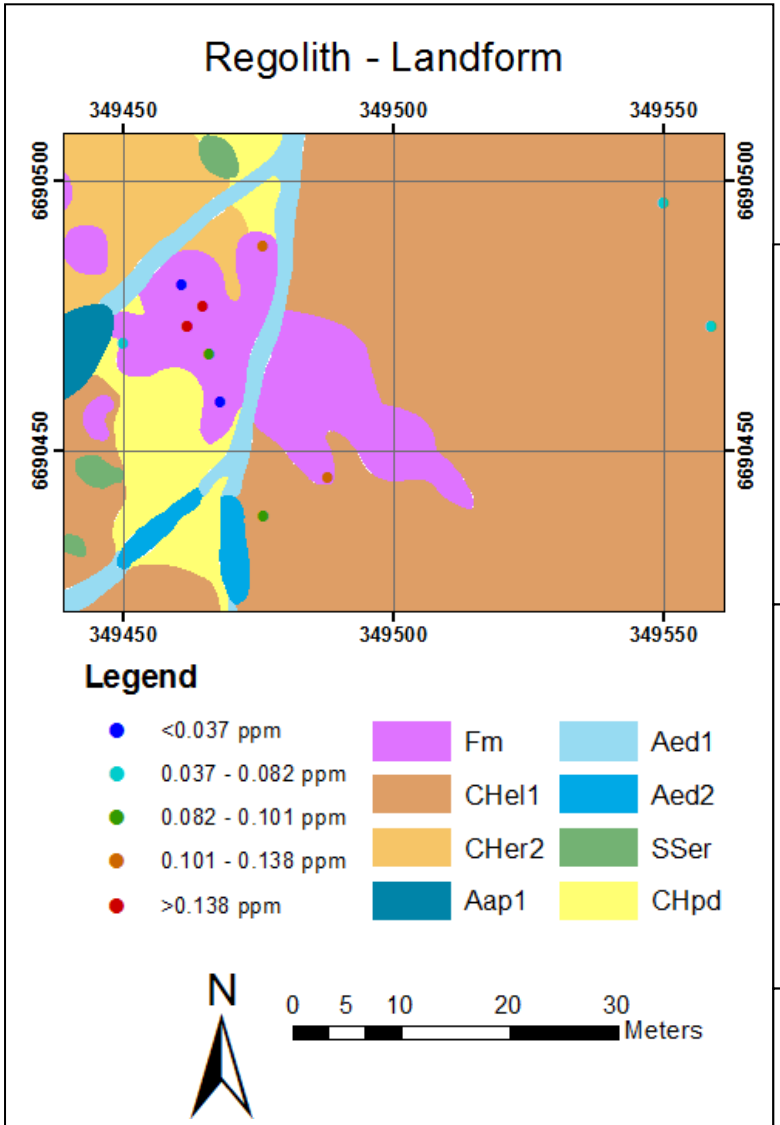
Below Detection Limit = 0

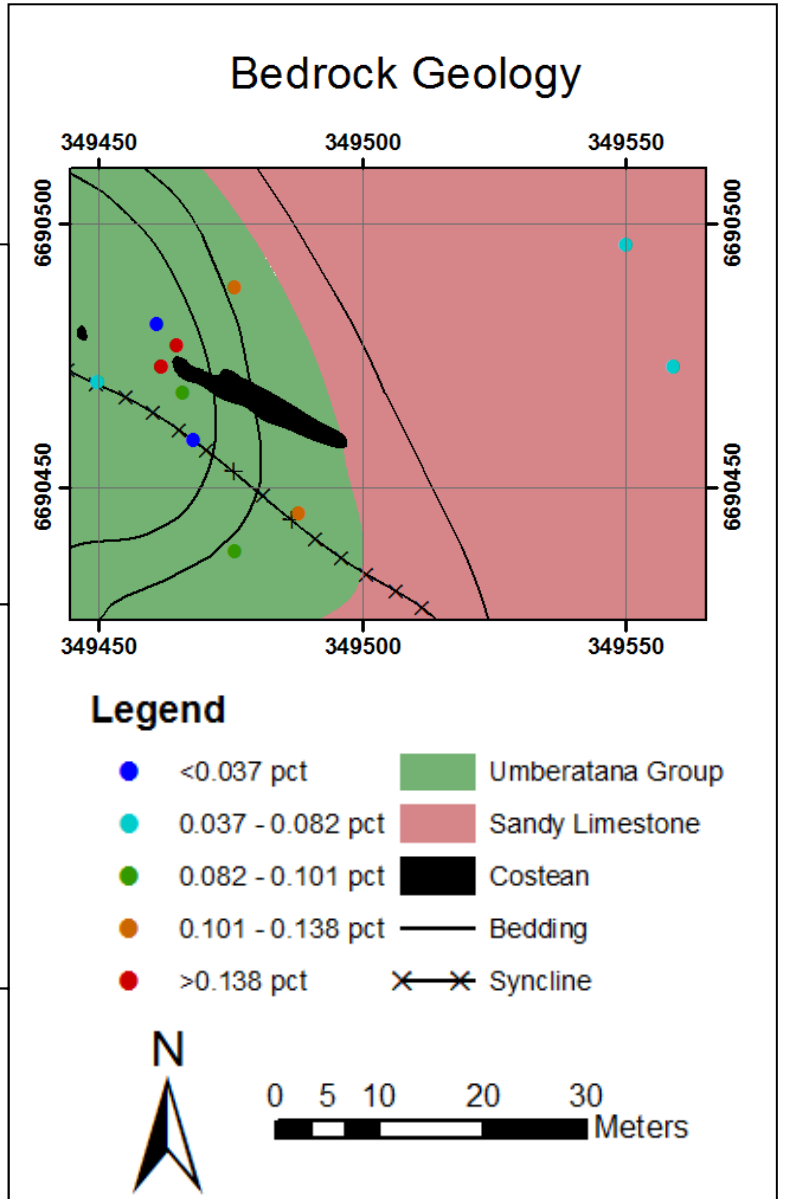
Median = 0.10

Mean = 0.11

Standard Deviation = 0.06

Error = ±0.04





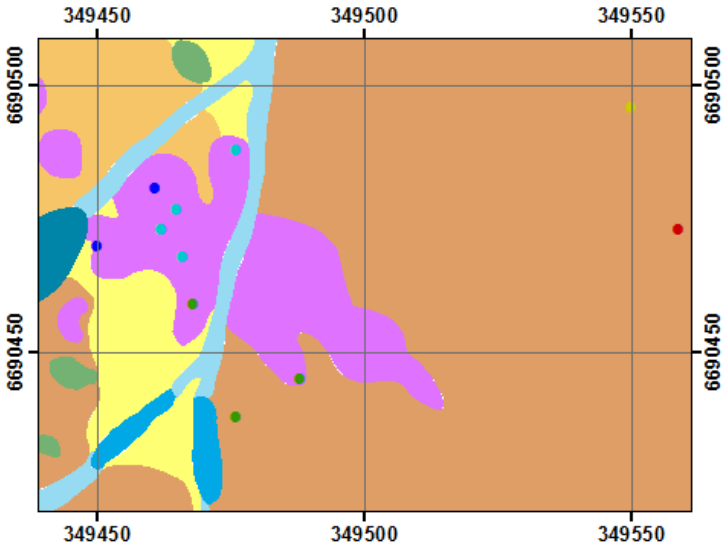
Billy Springs

***Eremophila freelingii* twig**

Rb(ppm)

Landscape

Regolith - Landform



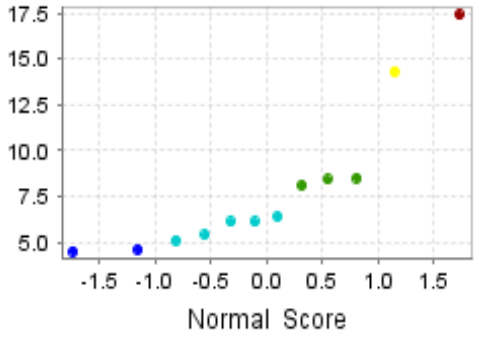
Legend

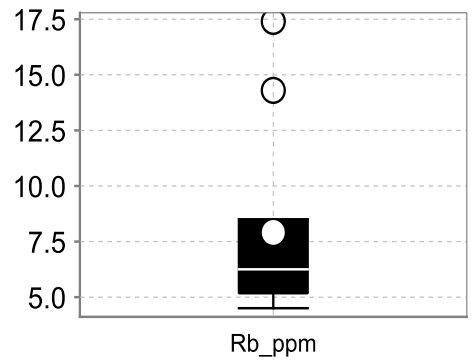
- <4.6 ppm
- 4.6 - 6.4 ppm
- 6.4 - 8.5 ppm
- 8.5 - 14.3 ppm
- >14.3 ppm

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





<u>Summary Statistics</u>

N = 12

Lower Detection Limit= 0.1

Below Detection Limit = 0

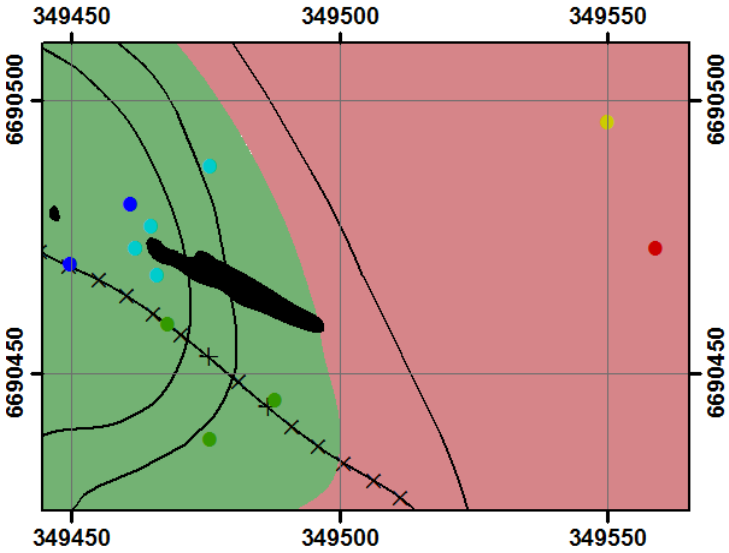
Median = 6.25

Mean = 7.910

Standard Deviation = 4.013

Error = ± 2.54

Bedrock Geology



Legend

- <4.6 ppm
- 4.6 - 6.4 ppm
- 6.4 - 8.5 ppm
- 8.5 - 14.3 ppm
- >4.3 ppm

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

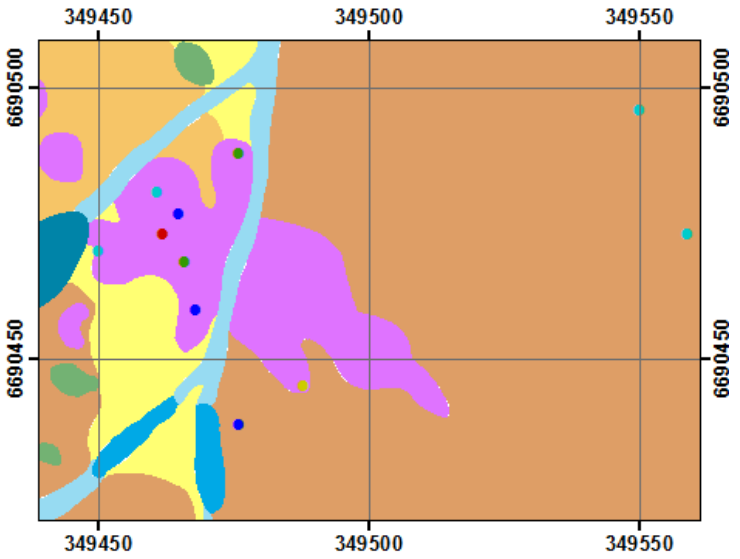
Billy Springs

***Eremophila freelingii* twig**

$Cr_{(ppm)}$

Other

Regolith - Landform



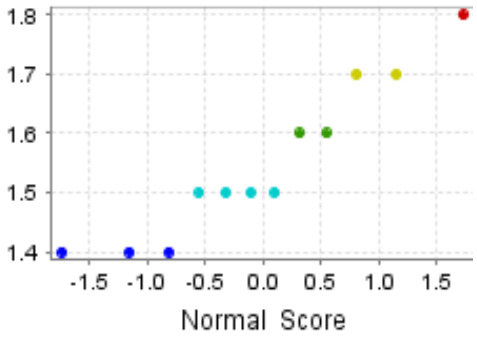
Legend

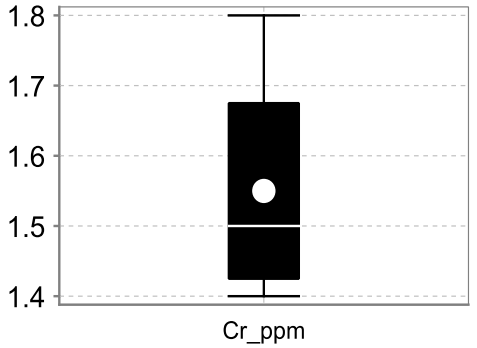
- <1.4 ppm
- 1.4 - 1.5 ppm
- 1.5 - 1.6 ppm
- 1.6 - 1.7 ppm
- >1.7 ppm

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters

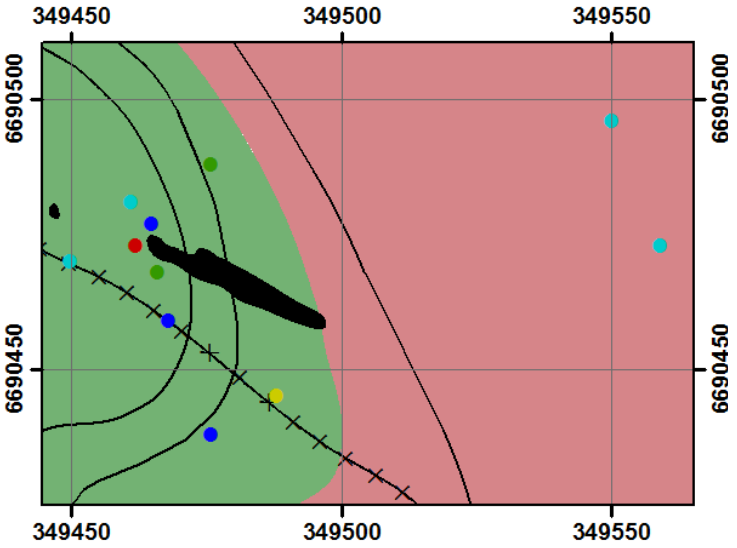




<u>Summary Statistics</u>

N = 12
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 1.5
Mean = 1.55
Standard Deviation = 0.13
Error = ±0.08

Bedrock Geology



Legend

- <1.4 ppm
- 1.4 - 1.5 ppm
- 1.5 - 1.6 ppm
- 1.6 - 1.7 ppm
- >1.7 ppm

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

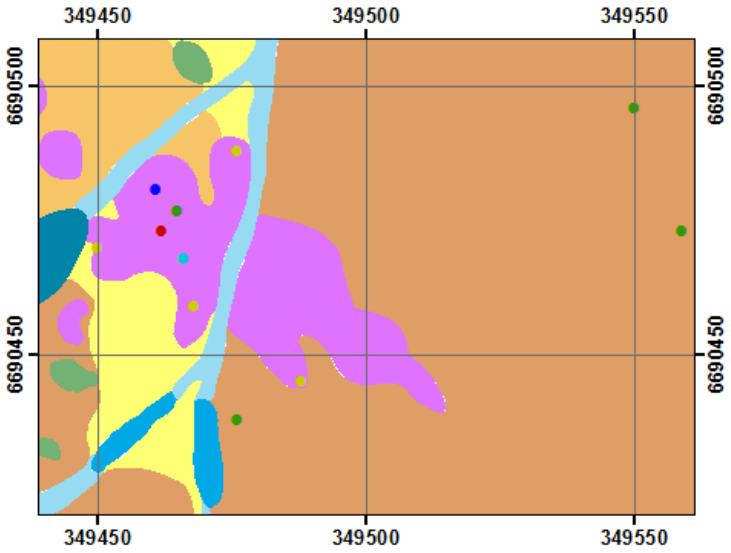
Billy Springs

***Eremophila freelingii* twig**

$Ni_{(ppm)}$

Other

Regolith - Landform



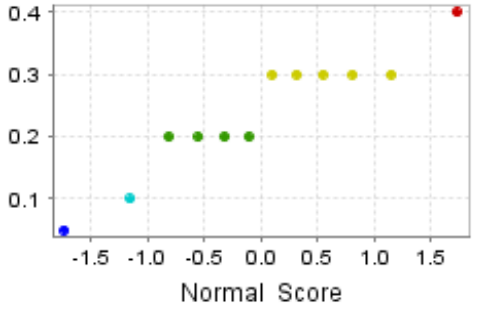
Legend

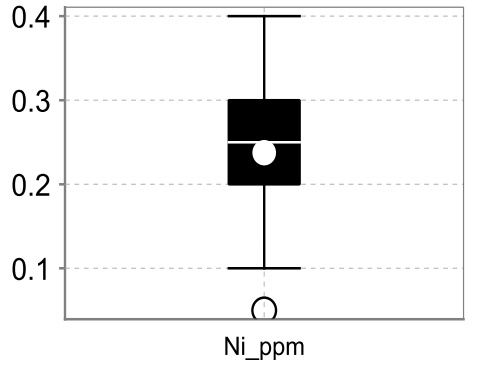
- <0.05 ppm
- 0.05 - 0.1 ppm
- 0.1 - 0.2 ppm
- 0.2 - 0.3 ppm
- >0.3 ppm

- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





<u>Summary Statistics</u>

N = 12

Lower Detection Limit= 0.1

Below Detection Limit = 1

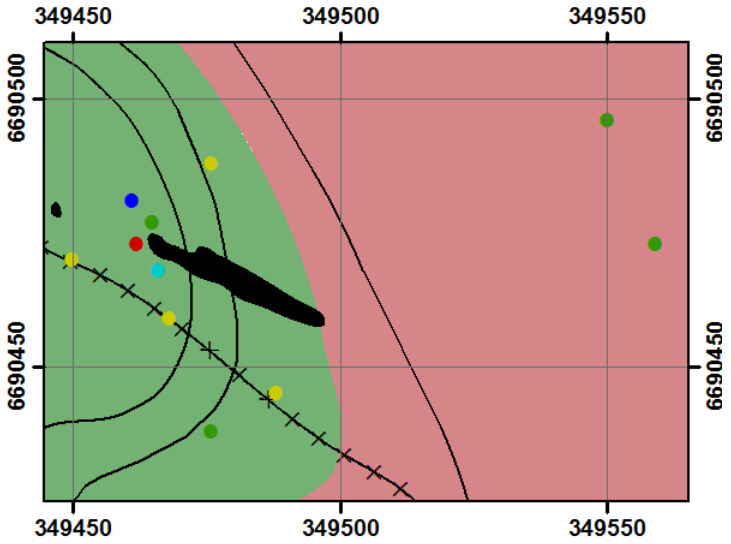
Median = 0.25

Mean = 0.24

Standard Deviation = 0.098

Error = ±0.06

Bedrock Geology



Legend

- <0.05 ppm
- 0.05 - 0.1 ppm
- 0.1 - 0.2 ppm
- 0.2 - 0.3 ppm
- >0.3 ppm

- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

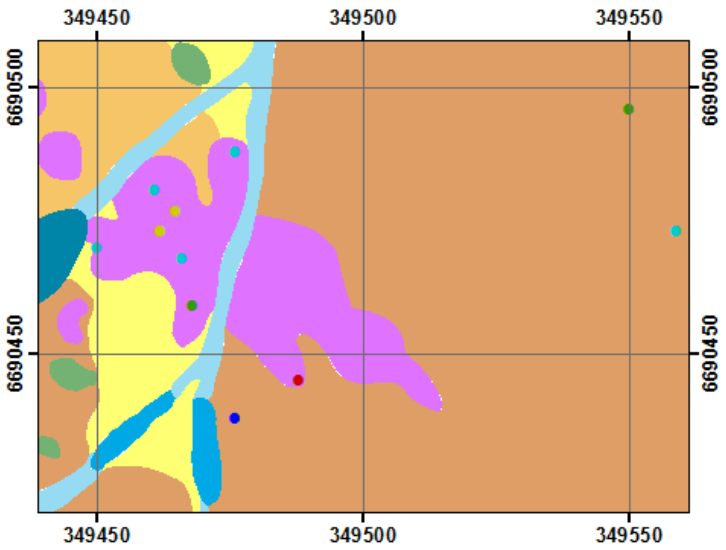
Billy Springs

***Eremophila freelingii* twig**

$Sr_{(ppm)}$

Pathfinder

Regolith - Landform

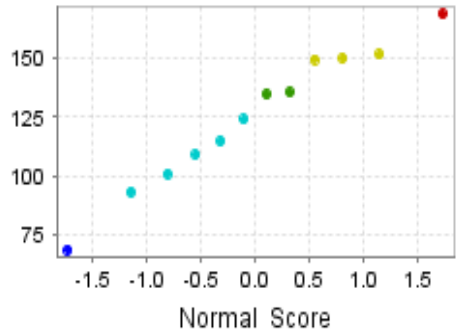


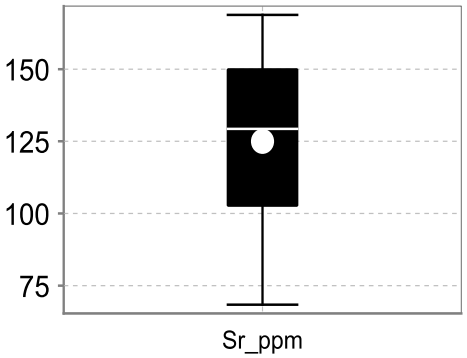
Legend

- <68.4 ppm
- 68.4 - 123.9 ppm
- 123.9 - 135.5 ppm
- 135.5 - 151.6 ppm
- >151.6 ppm
- Fm
- CHel1
- CHer2
- Aap1
- Aed1
- Aed2
- SSer
- CHpd

N

0 5 10 20 30 Meters





Summary Statistics

N = 12

Lower Detection Limit= 0.5

Below Detection Limit = 0

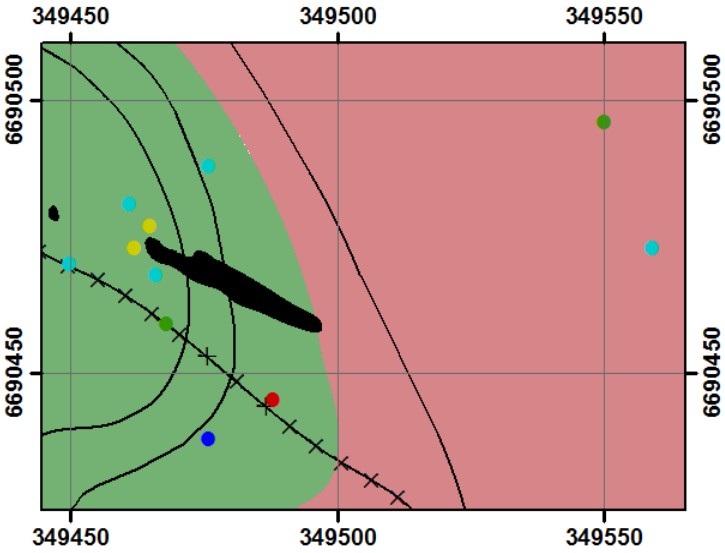
Median = 129.3

Mean = 124.98

Standard Deviation = 28.89

Error = ±18.36

Bedrock Geology



Legend

- <68.4 ppm
- 68.4 - 123.9 ppm
- 123.9 - 135.5 ppm
- 135.5 - 151.6 ppm
- >151.6 ppm
- Umberatana Group
- Sandy Limestone
- Costean
- Bedding
- Syncline

N

0 5 10 20 30 Meters

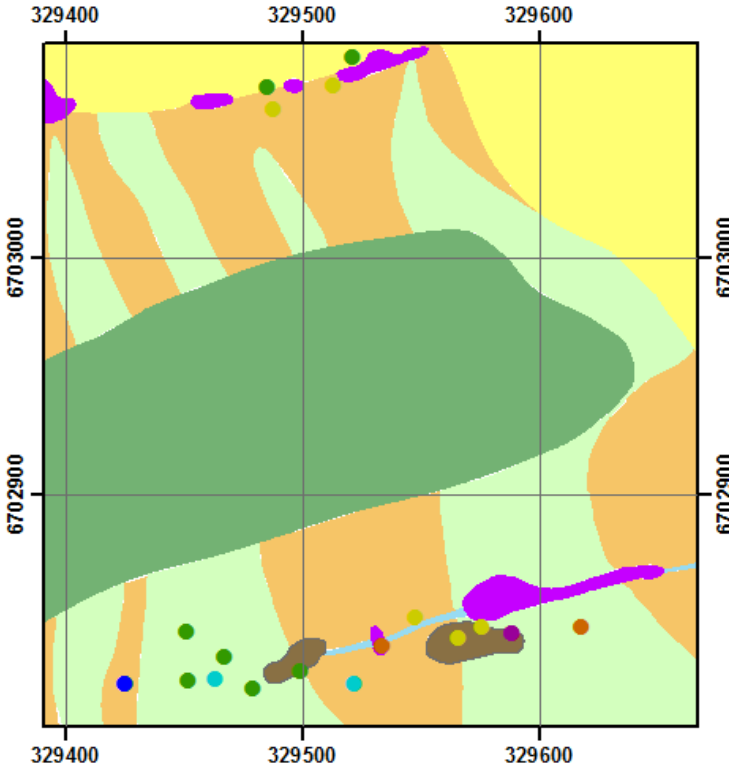
Ooloo

***Eremophila freelingii* leaf**

Ag(ppb)

Commodity

Regolith - Landform

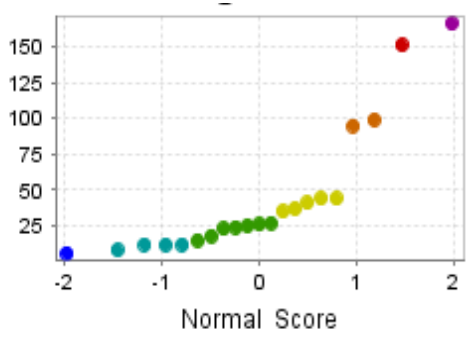


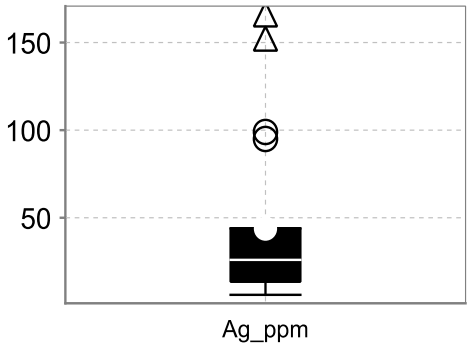
Legend

<6.0 ppb	Aed
6.0 - 12.0 ppb	CHpd
12.0 - 27.0 ppb	CHer
27.0 - 44.0 ppb	CHep
44.0 - 99.0 ppb	SSer
99.0 - 151.0 ppb	SSep
>151.0 ppb	Fm

N

60 30 0 60 120 Meters





Summary Statistics

N = 21

Lower Detection Limit= 2

Below Detection Limit = 0

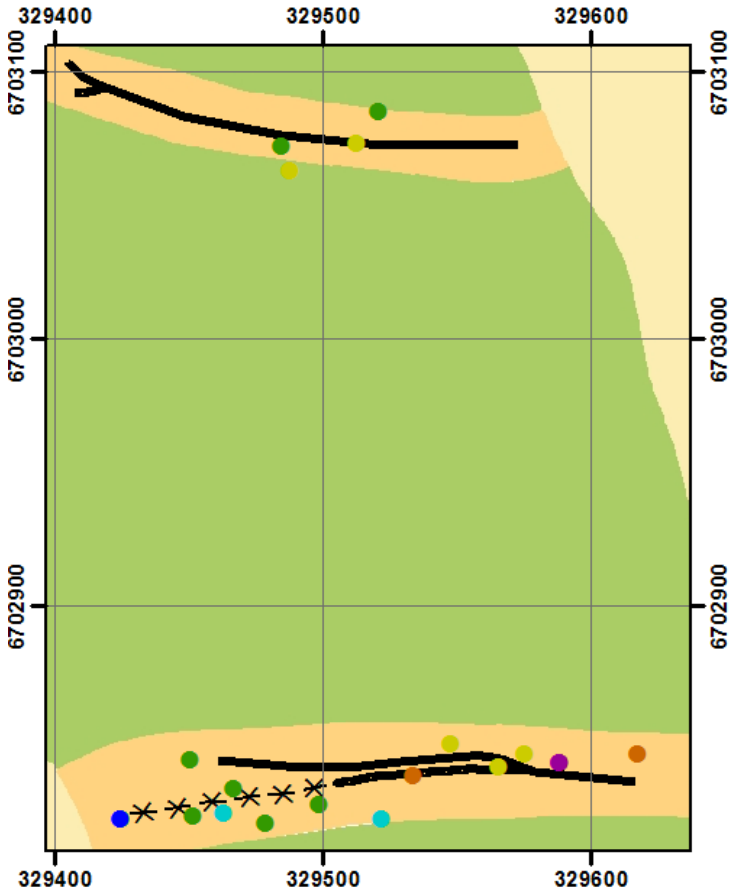
Median = 26

Mean = 43.81

Standard Deviation = 45.50

Error = ±20.71

Bedrock Geology



Legend

<6.0 ppb	Mineralisation
6.0 - 12.0 ppb	Syncline
12.0 - 27.0 ppb	Quaternary Sediments
27.0 - 44.0 ppb	Calcareous Siltstone
44.0 - 99.0 ppb	Shear Zone
99.0 - 151.0 ppb	
>151.0 ppb	

N

0 20 40 80 120 Meters

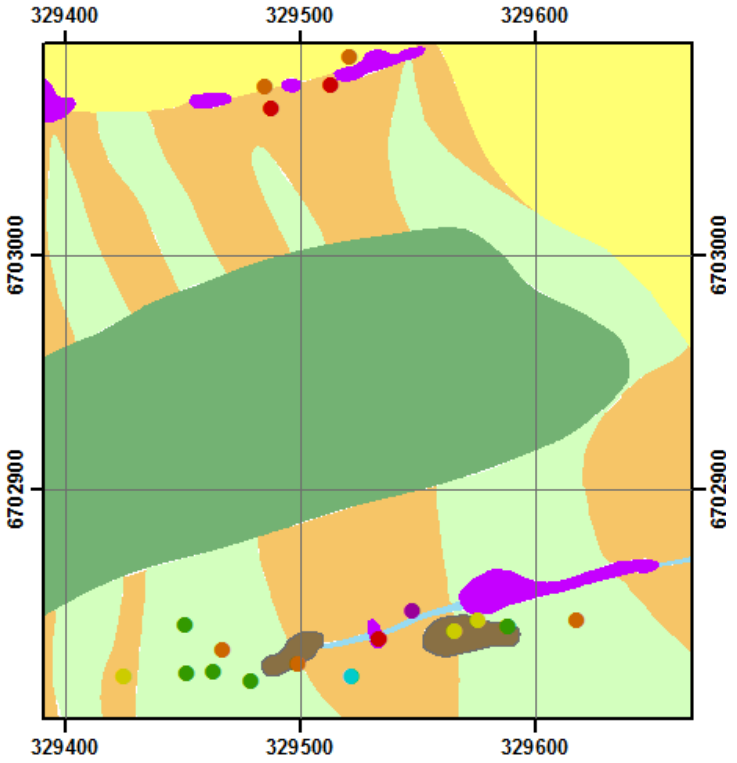
Ooloo

***Eremophila freelingii* leaf**

$Cu_{(ppm)}$

Commodity

Regolith - Landform

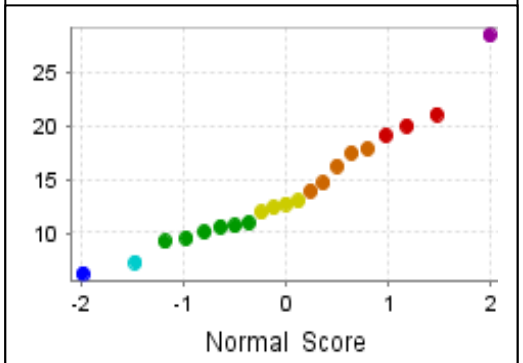


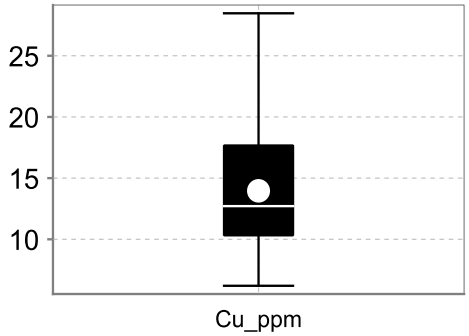
Legend

- <7.24 ppm
- 7.24 - 10.93 ppm
- 10.93 - 12.96 ppm
- 12.96 - 17.86 ppm
- 17.86 - 21.08 ppm
- >21.08 ppm
- Aed
- CHpd
- CHer
- CHep
- SSer
- SSep
- Fm

N

60 30 0 60 120 Meters





Summary Statistics

N = 21

Lower Detection Limit= 0.01

Below Detection Limit = 0

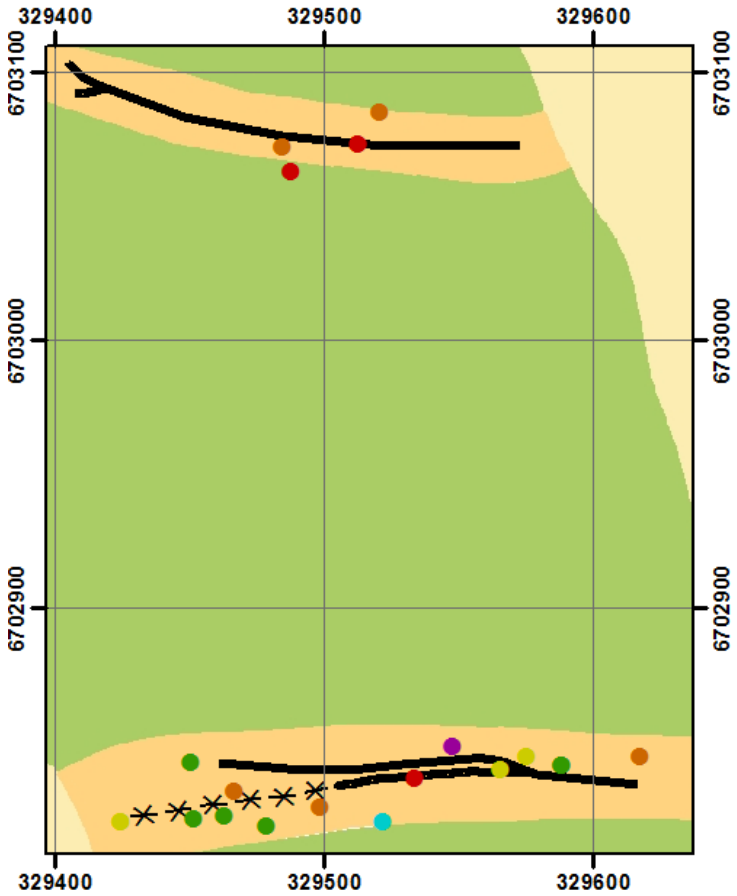
Median = 12.71

Mean = 13.96

Standard Deviation = 5.30

Error = ±2.41

Bedrock Geology



Legend

- <7.24 ppm
- 7.24 - 10.93 ppm
- 10.93 - 12.96 ppm
- 12.96 - 17.86 ppm
- 17.86 - 21.08 ppm
- >21.08 ppm
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

N

0 20 40 80 120 Meters

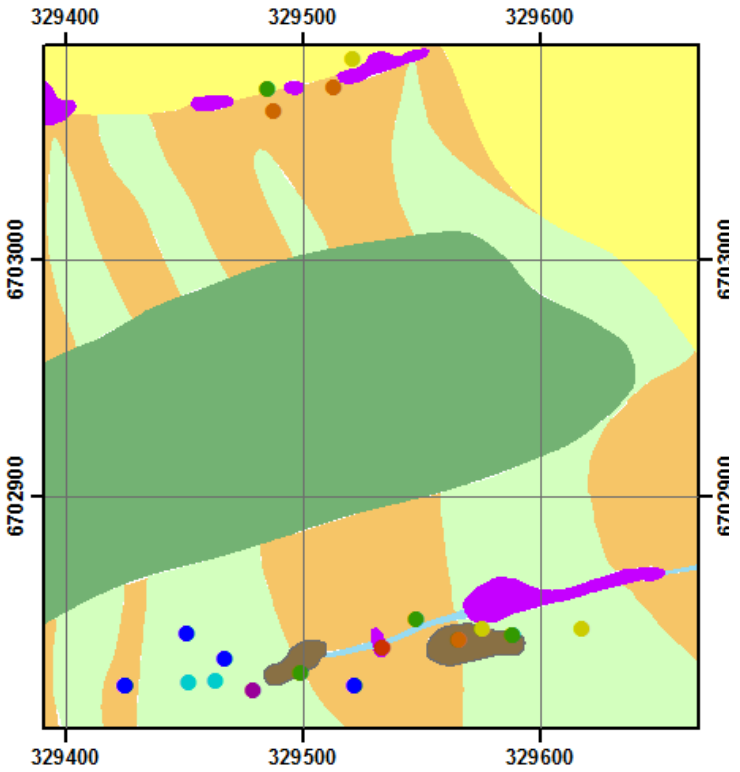
Ooloo

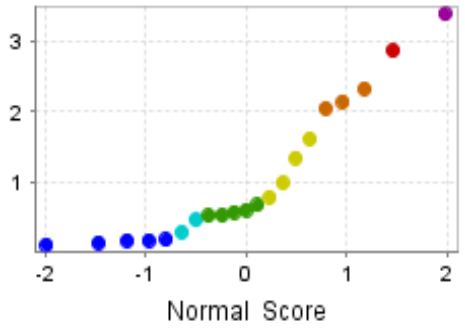
***Eremophila freelingii* leaf**

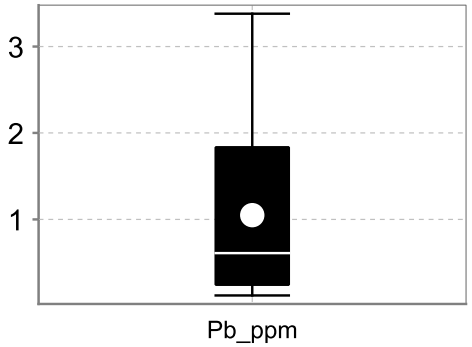
Pb(ppm)

Commodity

Regolith - Landform







<u>Summary Statistics</u>

N = 21

Lower Detection Limit= 0.01

Below Detection Limit = 0

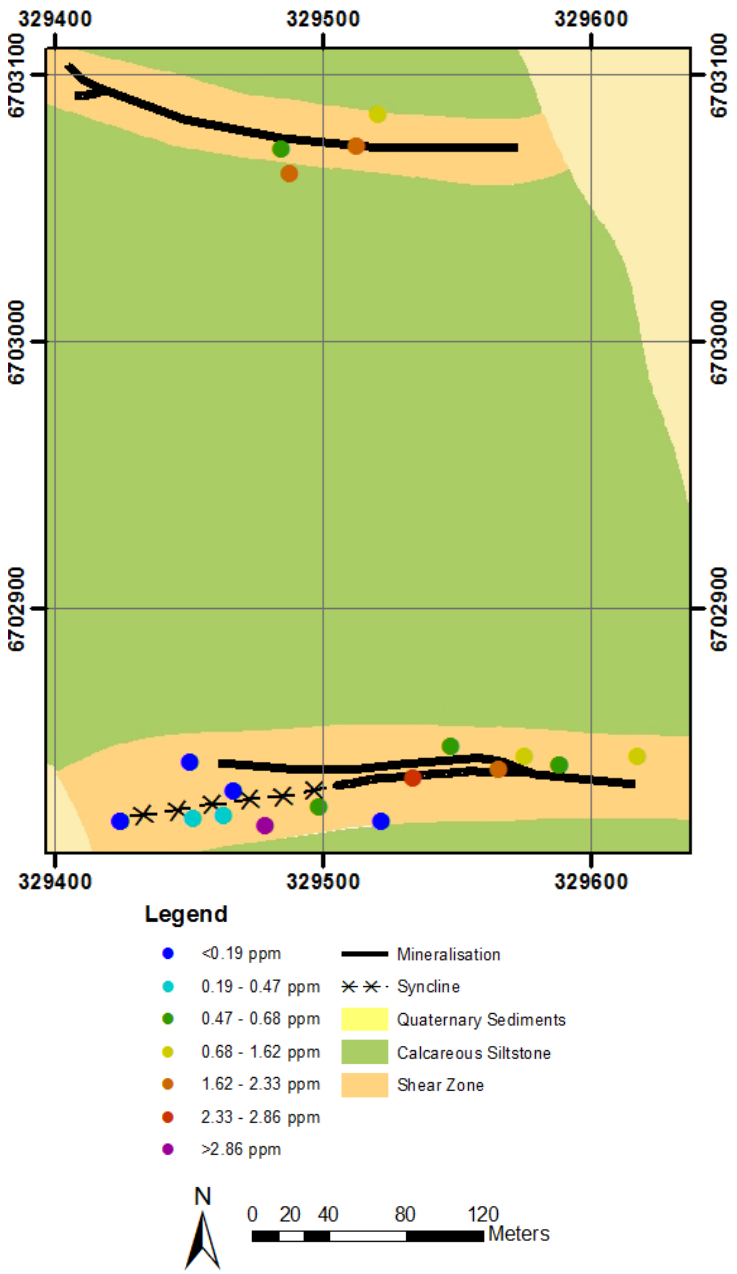
Median = 0.61

Mean = 1.05

Standard Deviation = 0.97

Error = ±0.4

Bedrock Geology



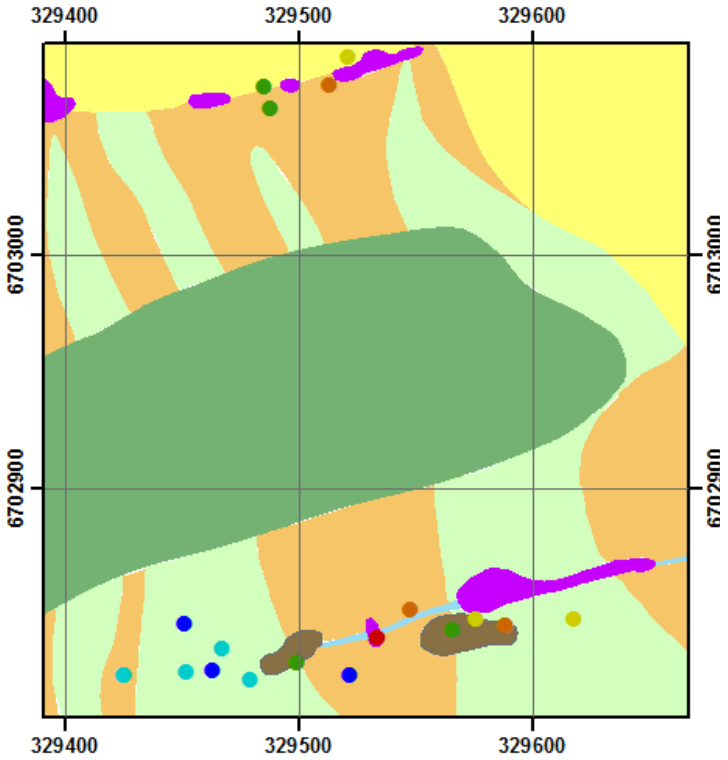
Ooloo

***Eremophila freelingii* leaf**

$Zn_{(ppm)}$

Commodity

Regolith - Landform

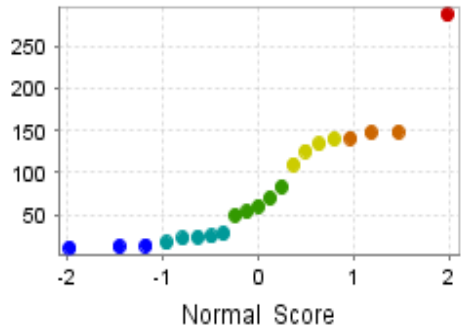


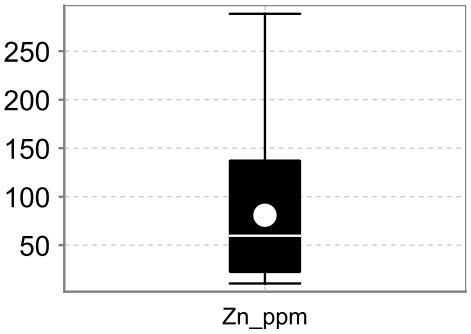
Legend

- <13.2 ppm
- 13.2 - 27.7 ppm
- 27.7 - 83.1 ppm
- 83.1 - 140.2 ppm
- 140.2 - 148.6 ppm
- >148.6 ppm
- Aed
- CHpd
- CHer
- CHep
- SSer
- SSep
- Fm

N

60 30 0 60 120 Meters





Summary Statistics

N = 21

Lower Detection Limit= 0.1

Below Detection Limit = 0

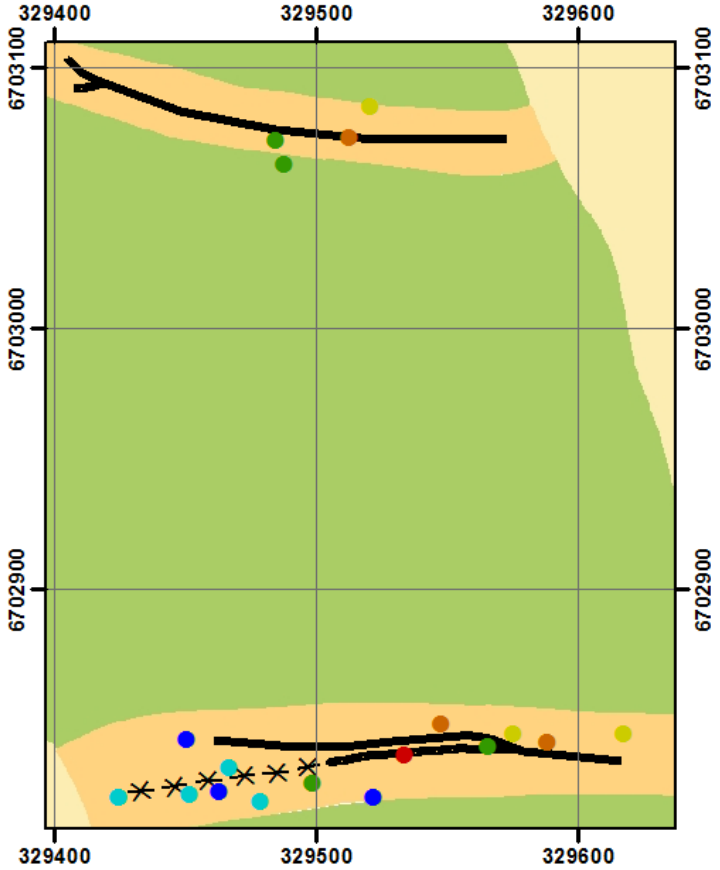
Median = 59.8

Mean = 1.05

Standard Deviation = 70.32

Error = ±32.01

Bedrock Geology



Legend

- <13.2 ppm
- 13.2 - 27.7 ppm
- 27.7 - 83.1 ppm
- 83.1 - 140.2 ppm
- 140.2 - 148.6 ppm
- >148.6 ppm
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

N

0 20 40 80 120 Meters

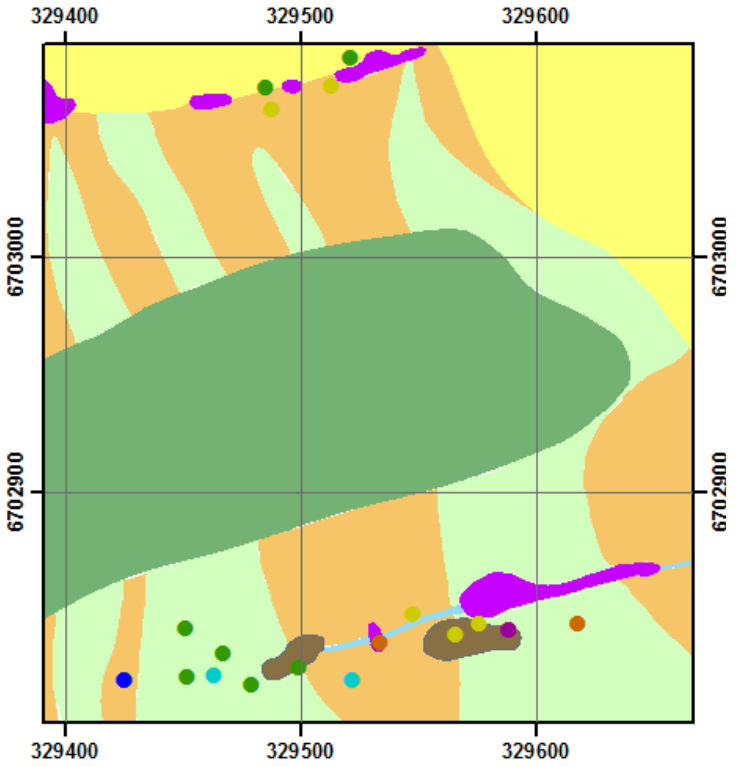
Ooloo

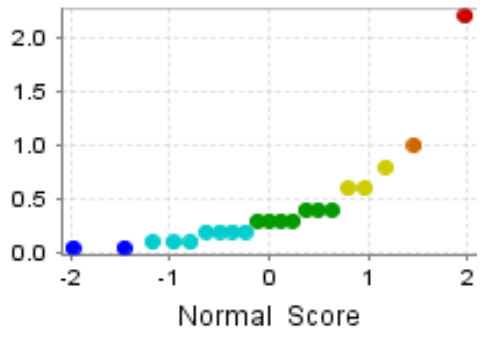
***Eremophila freelingii* leaf**

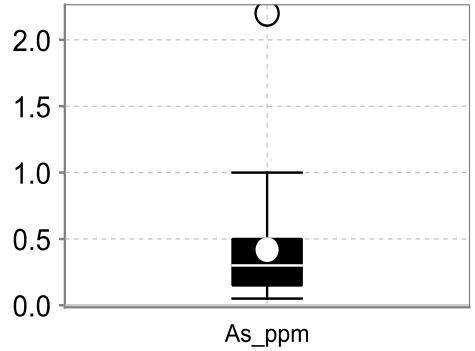
As(ppm)

Pathfinder

Regolith - Landform

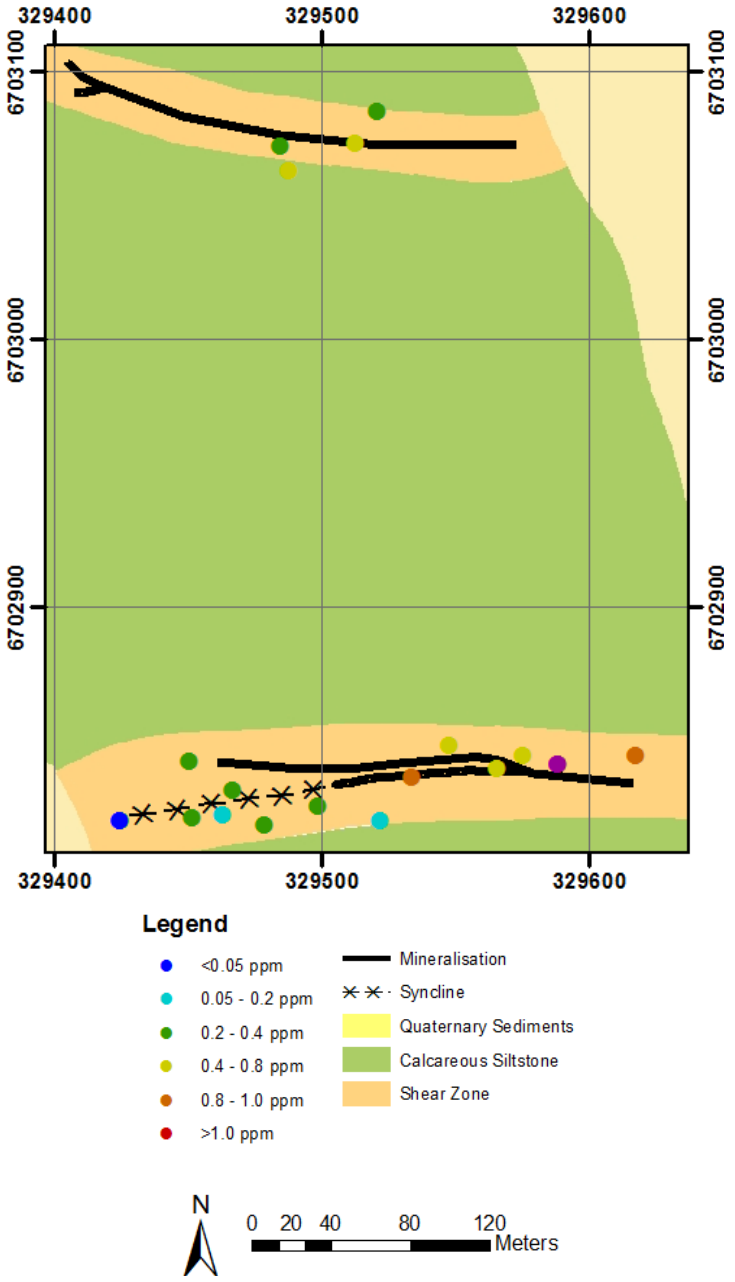






Summary Statistics
N = 21
Lower Detection Limit= 0.1
Below Detection Limit = 2
Median = 0.3
Mean = 0.020
Standard Deviation = 0.004
Error = ±0.002

Bedrock Geology



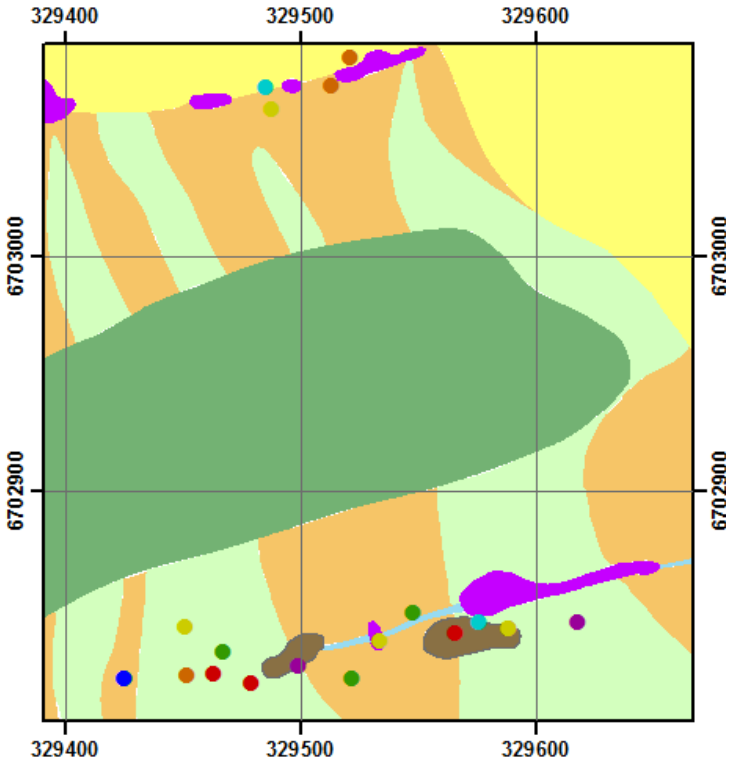
Ooloo

***Eremophila freelingii* leaf**

$Ce_{(ppm)}$

Pathfinder

Regolith - Landform

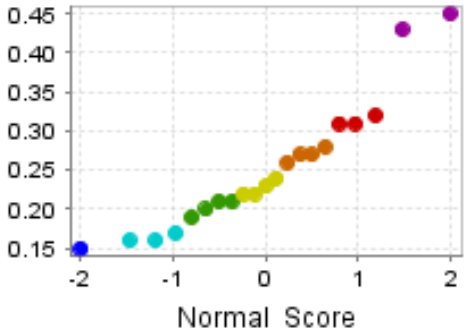


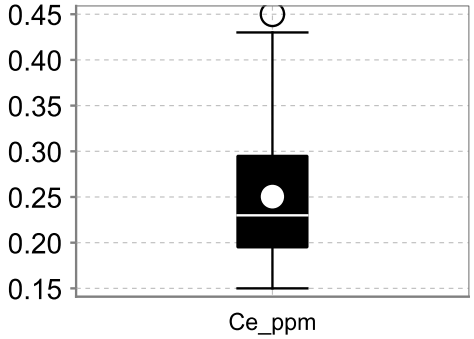
Legend

<0.15 ppm	Aed
0.15 - 0.17 ppm	CHpd
0.17 - 0.21 ppm	CHer
0.21 - 0.24 ppm	CHep
0.24 - 0.28 ppm	SSer
0.28 - 0.32 ppm	SSep
>0.32 ppm	Fm

N

60 30 0 60 120 Meters





<u>Summary Statistics</u>

N = 21

Lower Detection Limit= 0.01

Below Detection Limit = 0

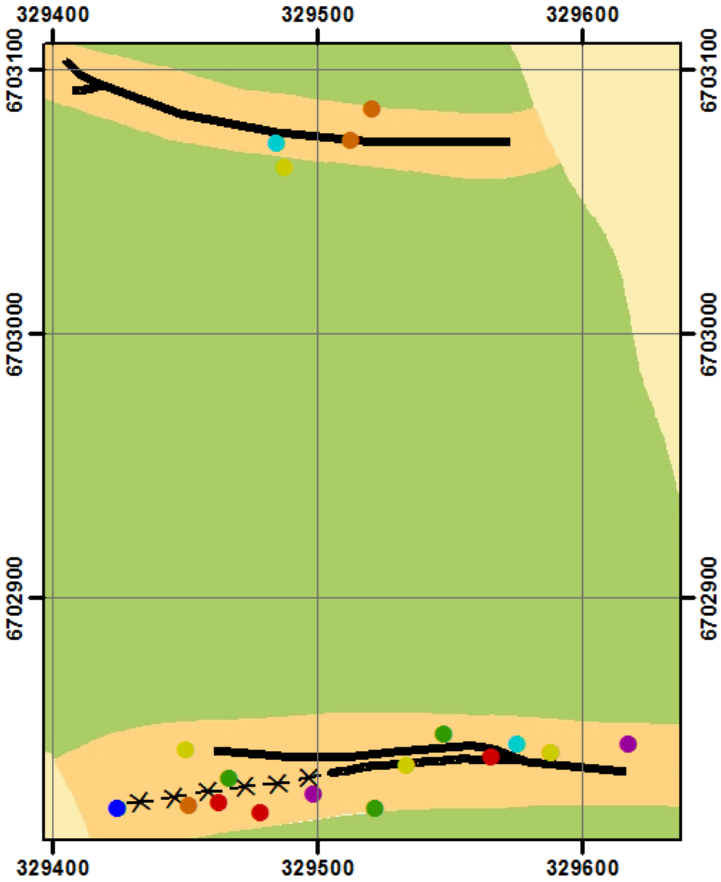
Median = 0.023

Mean = 0.250

Standard Deviation = 0.081

Error = ±0.037

Bedrock Geology



Legend

<0.15 ppm	Mineralisation
0.15 - 0.17 ppm	Syncline
0.17 - 0.21 ppm	Quaternary Sediments
0.21 - 0.24 ppm	Calcareous Siltstone
0.24 - 0.28 ppm	Shear Zone
0.28 - 0.32 ppm	
>0.32 ppm	

N

0 20 40 80 120 Meters

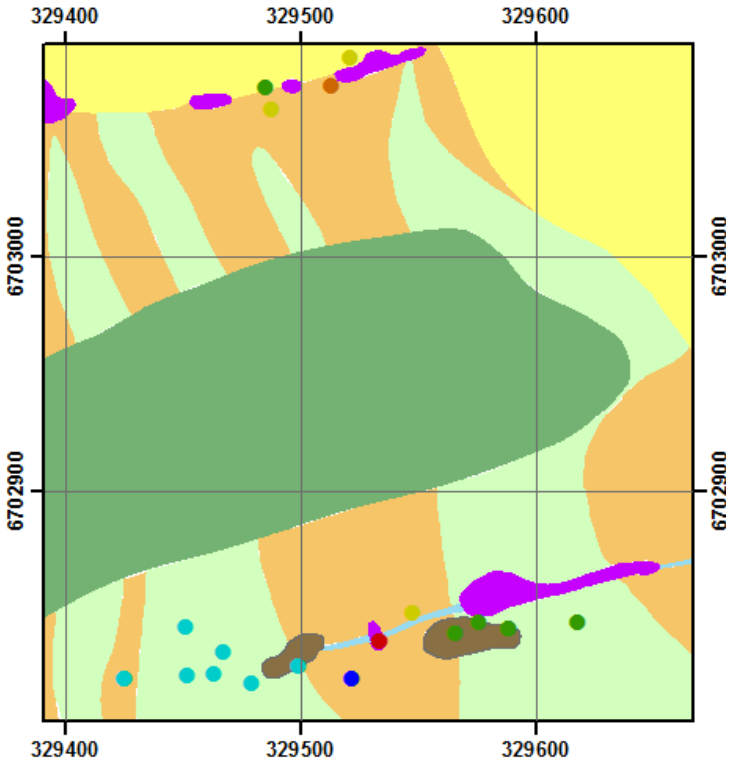
Ooloo

***Eremophila freelingii* leaf**

$Cd_{(ppm)}$

Pathfinder

Regolith - Landform

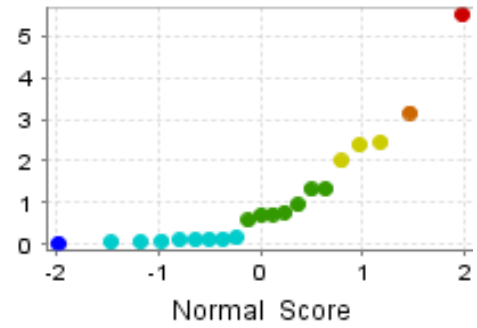


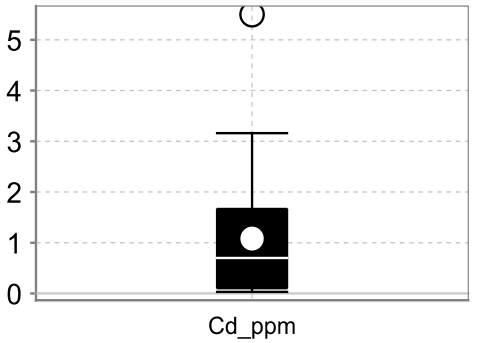
Legend

<0.03 ppm	Aed
0.03 - 0.16 ppm	CHpd
0.16 - 1.33 ppm	CHer
1.33 - 2.45 ppm	CHep
2.45 - 3.16 ppm	SSer
>3.16 ppm	SSep
	Fm

N

60 30 0 60 120 Meters





Summary Statistics

N = 21

Lower Detection Limit= 0.01

Below Detection Limit = 0

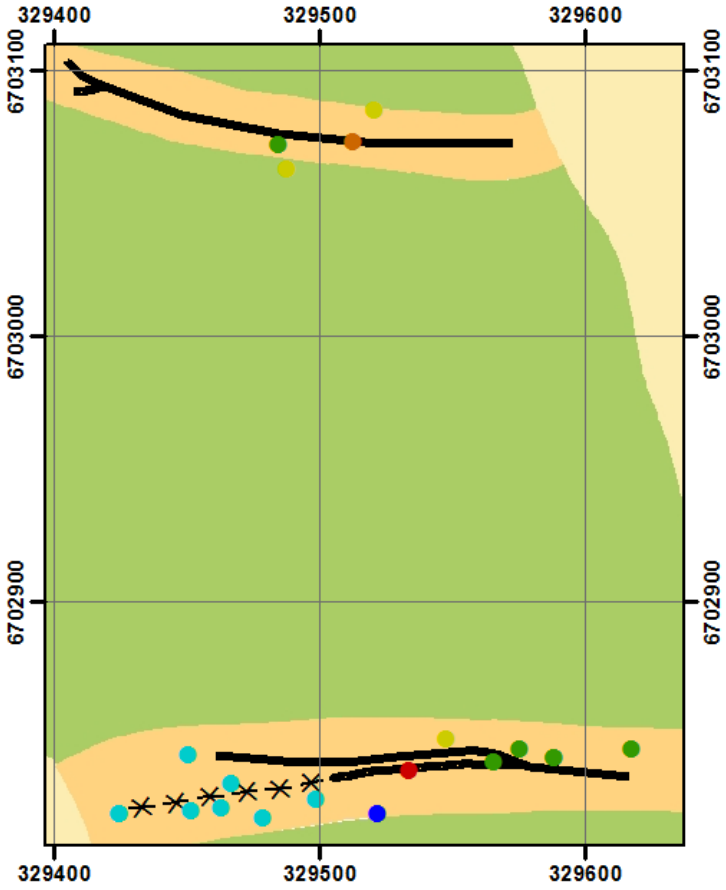
Median = 0.7

Mean = 1.08

Standard Deviation = 1.38

Error = ±0.63

Bedrock Geology



Legend

<0.03 ppm	Mineralisation
0.03 - 0.16 ppm	Syncline
0.16 - 1.33 ppm	Quaternary Sediments
1.33 - 2.45 ppm	Calcareous Siltstone
2.45 - 3.16 ppm	Shear Zone
>3.16 ppm	

N

0 20 40 80 120 Meters

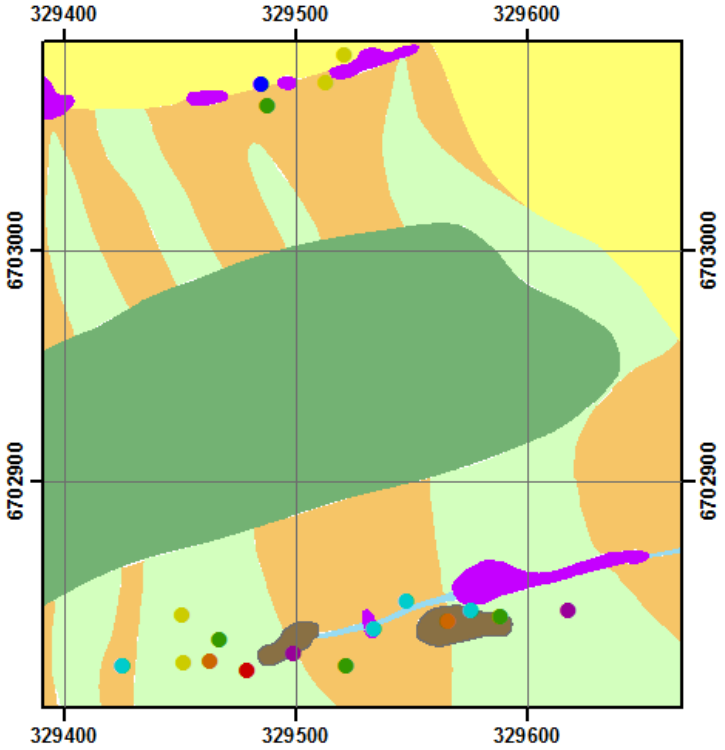
Ooloo

***Eremophila freelingii* leaf**

La(ppm)

Pathfinder

Regolith - Landform

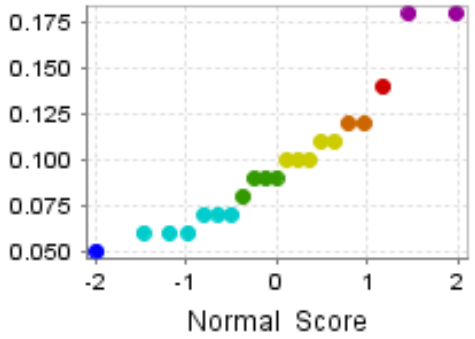


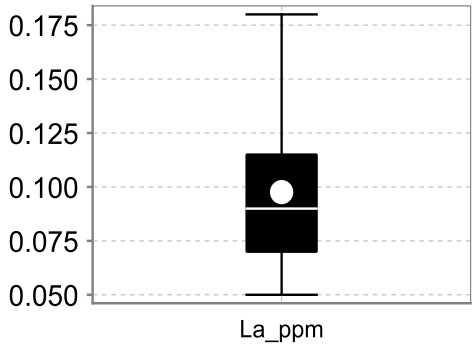
Legend

<0.05 ppm	Aed
0.05 - 0.07 ppm	CHpd
0.07 - 0.09 ppm	CHer
0.09 - 0.11 ppm	CHep
0.11 - 0.12 ppm	SSer
0.12 - 0.14 ppm	SSep
>0.14 ppm	Fm

N

60 30 0 60 120 Meters





Summary Statistics

N = 21

Lower Detection Limit= 0.01

Below Detection Limit = 0

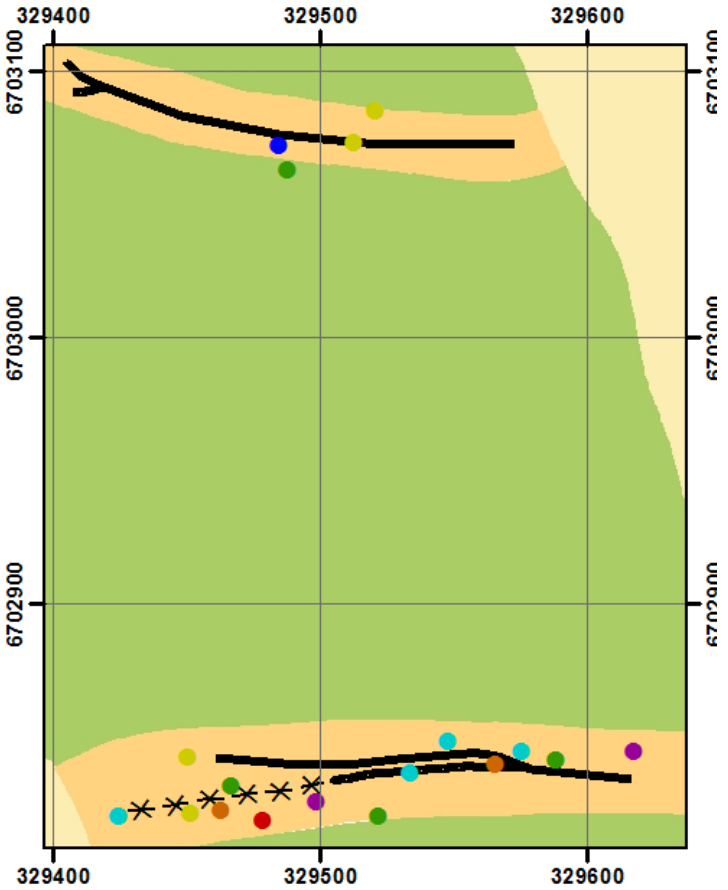
Median = 0.100

Mean = 0.100

Standard Deviation = 0.036

Error = ±0.016

Bedrock Geology



Legend

<0.05 ppm	Mineralisation
0.05 - 0.07 ppm	Syncline
0.07 - 0.09 ppm	Quaternary Sediments
0.09 - 0.11 ppm	Calcareous Siltstone
0.11 - 0.12 ppm	Shear Zone
0.12 - 0.14 ppm	
>0.14 ppm	

N

0 20 40 80 120 Meters

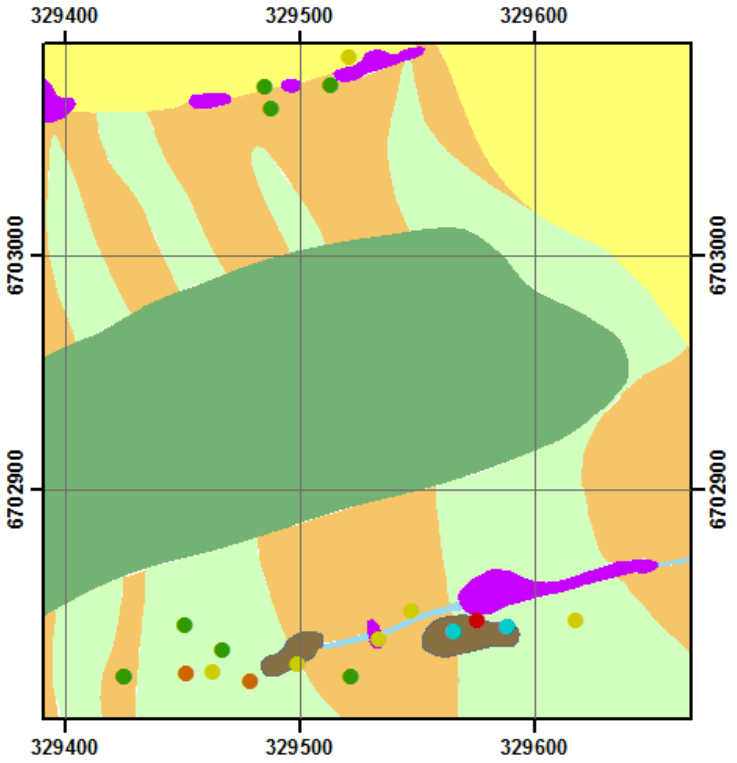
Ooloo

***Eremophila freelingii* leaf**

Mo(ppm)

Pathfinder

Regolith - Landform

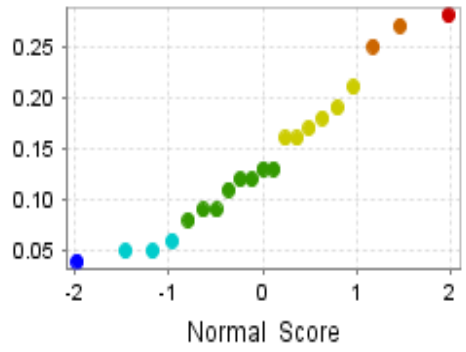


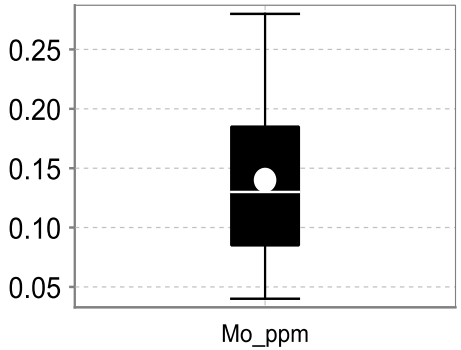
Legend

<0.04 ppm	Aed
0.04 - 0.06 ppm	CHpd
0.06 - 0.13 ppm	CHer
0.13 - 0.21 ppm	CHep
0.21 - 0.27 ppm	SSer
>0.27 ppm	SSep
	Fm

N

60 30 0 60 120 Meters

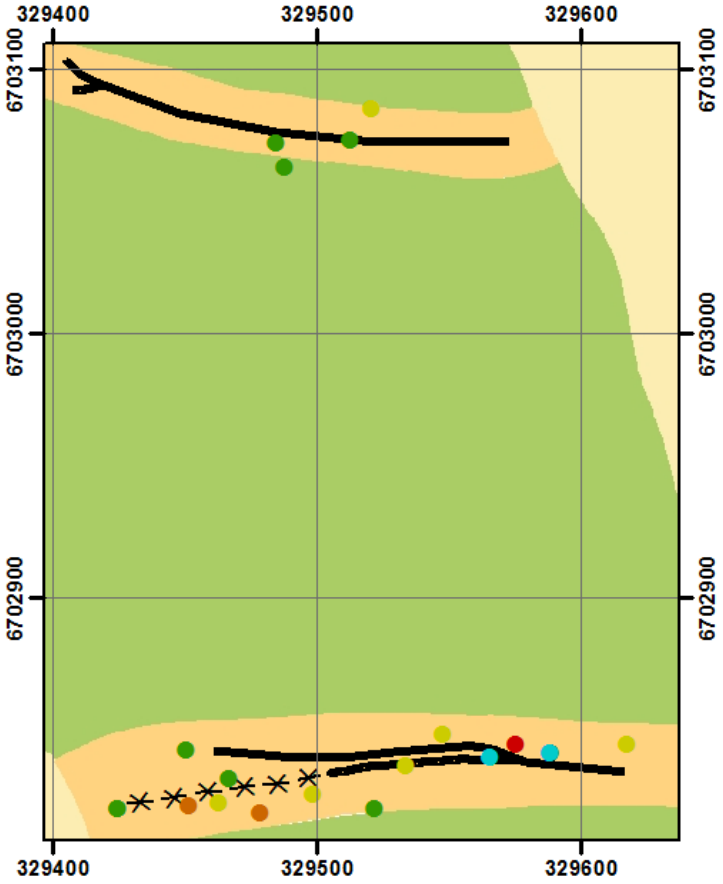




Summary Statistics

N = 21
Lower Detection Limit= 0.01
Below Detection Limit = 0
Median = 0.13
Mean = 0.14
Standard Deviation = 0.07
Error = ± 0.032

Bedrock Geology



Legend

<0.04 ppm	Mineralisation
0.04 - 0.06 ppm	Syncline
0.06 - 0.13 ppm	Quaternary Sediments
0.13 - 0.21 ppm	Calcareous Siltstone
0.21 - 0.27 ppm	Shear Zone
>0.27 ppm	

N

0 20 40 80 120 Meters

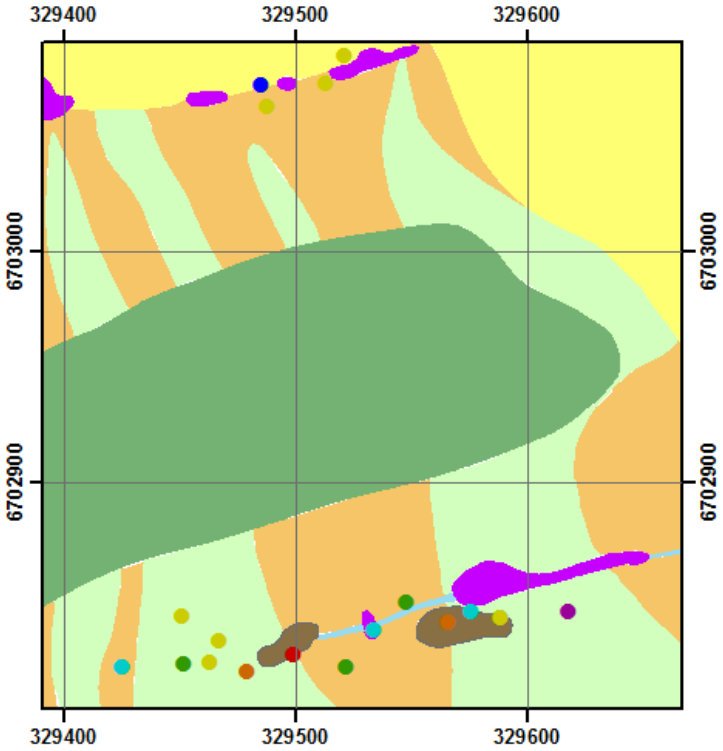
Ooloo

***Eremophila freelingii* leaf**

Y (ppm)

Pathfinder

Regolith - Landform

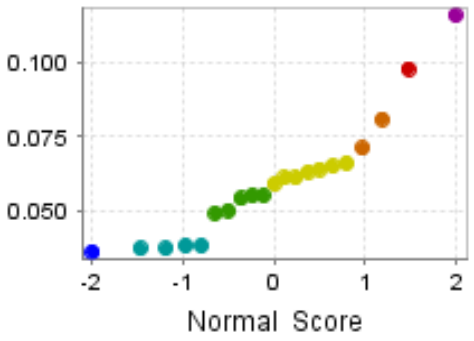


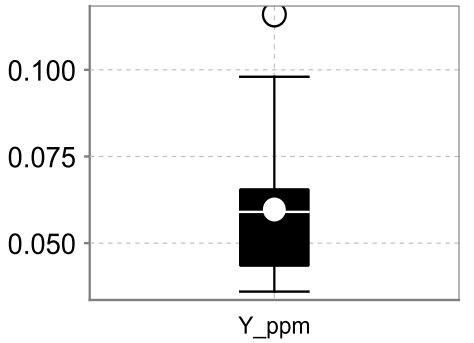
Legend

<0.036 ppm	Aed
0.036 - 0.038 ppm	CHpd
0.038 - 0.055 ppm	CHer
0.055 - 0.066 ppm	CHep
0.066 - 0.081 ppm	SSer
0.081 - 0.098 ppm	SSep
>0.098 ppm	Fm

N

60 30 0 60 120 Meters





Summary Statistics

N = 21

Lower Detection Limit= 0.001

Below Detection Limit = 0

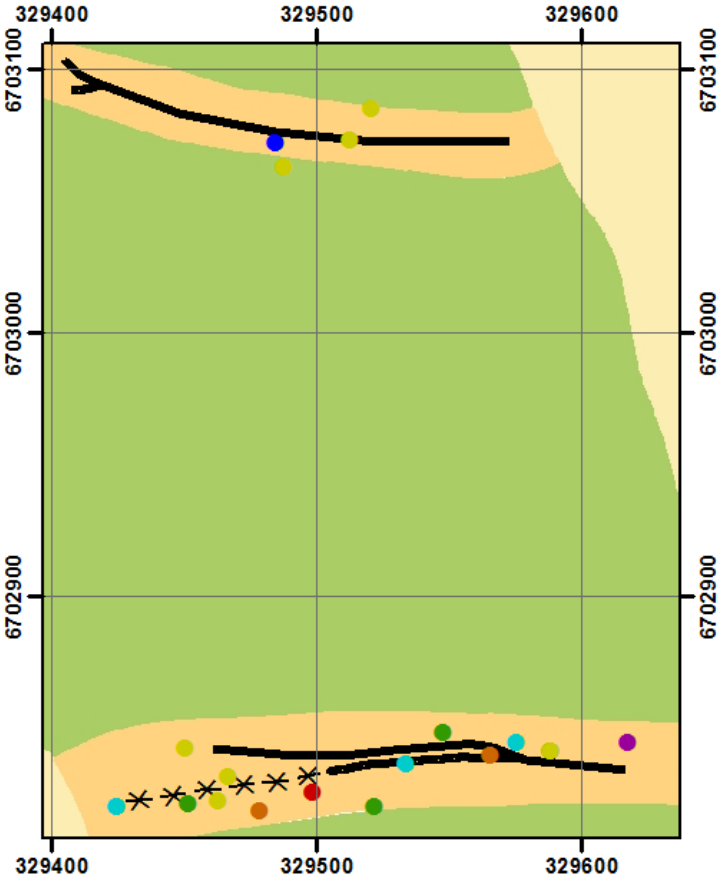
Median = 0.06

Mean = 0.06

Standard Deviation = 0.02

Error = ± 0.01

Bedrock Geology



Legend

<0.036 pct	Mineralisation
0.036 - 0.038 pct	Syncline
0.038 - 0.055 pct	Quaternary Sediments
0.055 - 0.066 pct	Calcareous Siltstone
0.066 - 0.081 pct	Shear Zone
0.081 - 0.098 pct	
>0.098 pct	

N

0 20 40 80 120 Meters

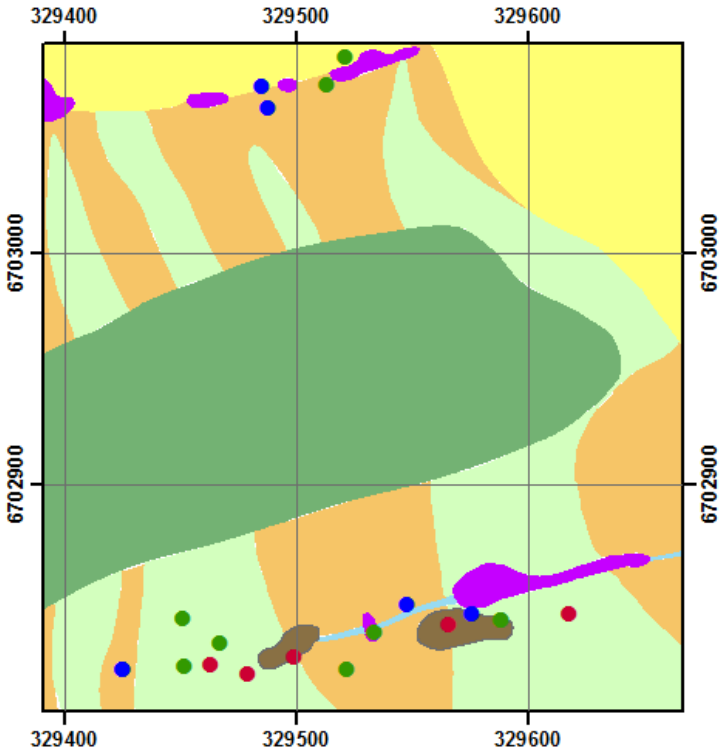
Ooloo

***Eremophila freelingii* leaf**

Al(%)

Host/control/landscape

Regolith - Landform

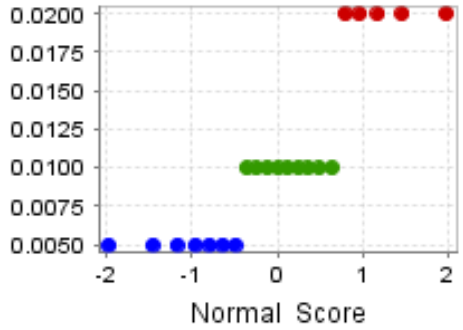


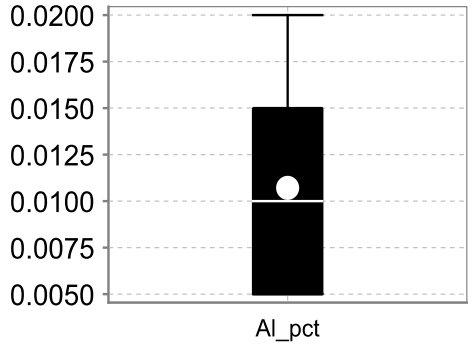
Legend

- <0.005 pct
- 0.005 - 0.01 pct
- >0.01 pct
- Aed
- CHpd
- CHer
- CHep
- SSer
- SSep
- Fm

N

60 30 0 60 120 Meters





Summary Statistics

N = 21

Lower Detection Limit= 0.01

Below Detection Limit = 7

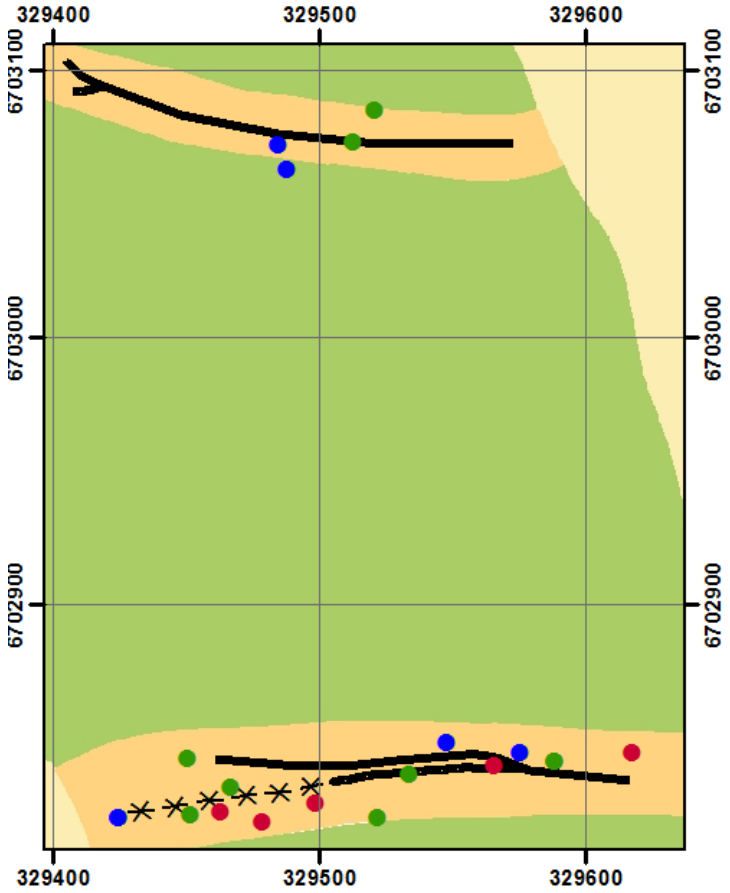
Median = 0.01

Mean = 0.011

Standard Deviation = 0.006

Error = ±0.003

Bedrock Geology



Legend

- <0.0050 pct
- 0.005 - 0.01 pct
- >0.01 pct
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

N

0 20 40 80 120 Meters

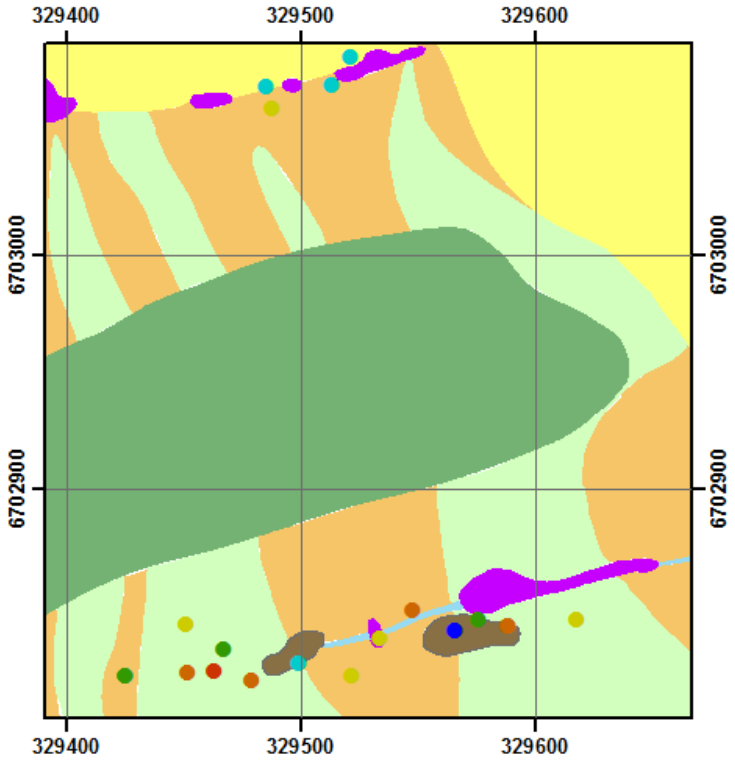
Ooloo

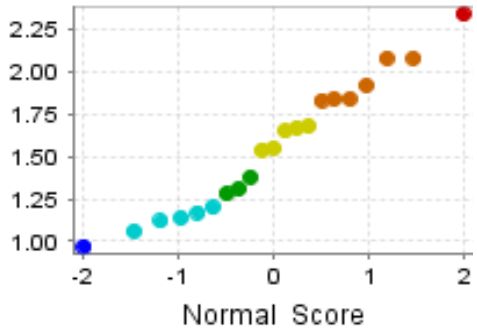
***Eremophila freelingii* leaf**

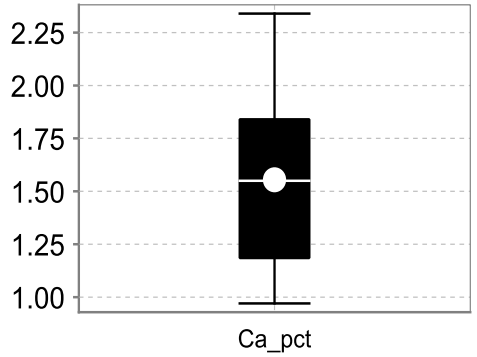
Ca(%)

Landscape

Regolith - Landform







Summary Statistics

N = 21

Lower Detection Limit= 0.01

Below Detection Limit = 0

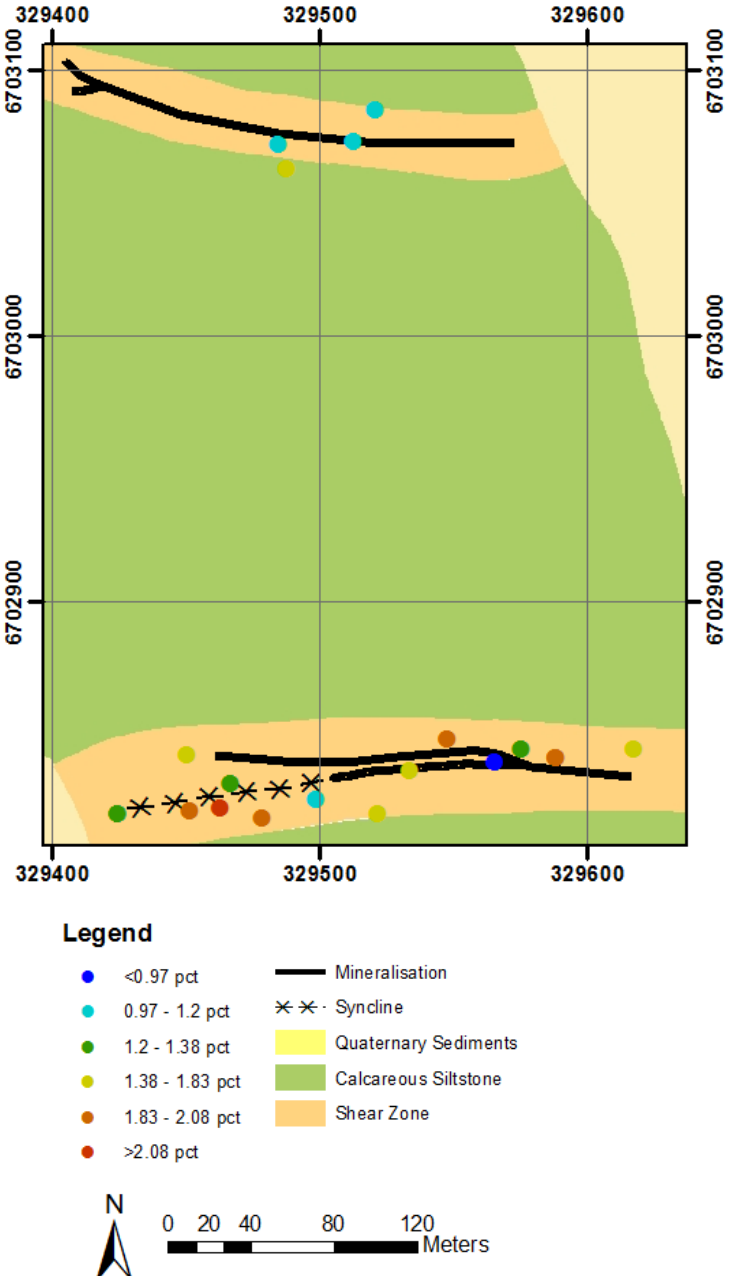
Median = 1.55

Mean = 1.55

Standard Deviation = 0.39

Error = ± 0.18

Bedrock Geology



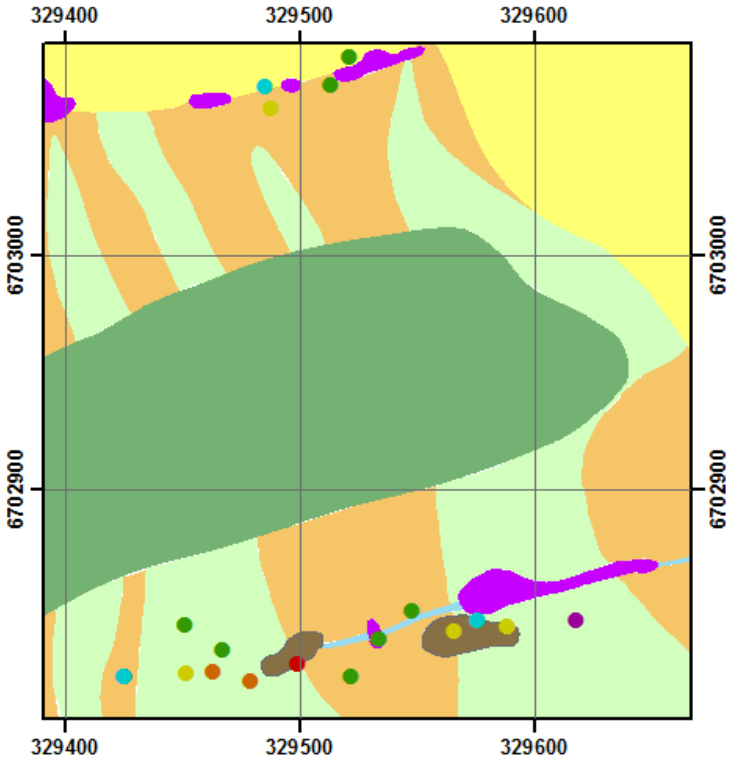
Ooloo

***Eremophila freelingii* leaf**

$Fe_{(\%)}$

Host/control/landscape

Regolith - Landform

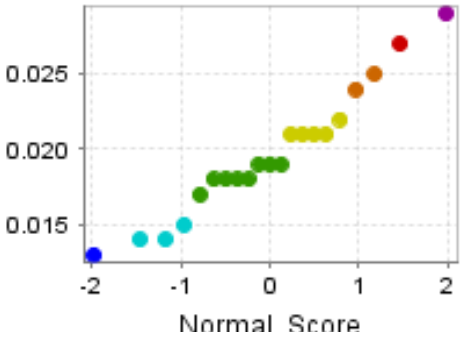


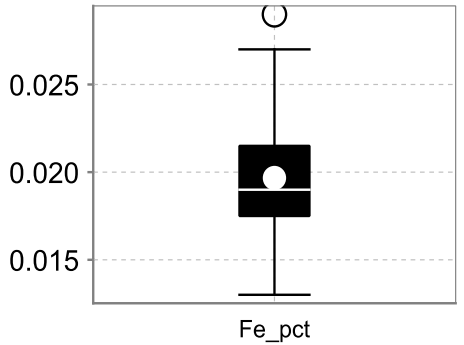
Legend

<0.013 pct	Aed
0.013 - 0.015 pct	CHpd
0.015 - 0.019 pct	CHer
0.019 - 0.022 pct	CHep
0.022 - 0.025 pct	SSer
0.025 - 0.027 pct	SSep
>0.027 pct	Fm

N

60 30 0 60 120 Meters





Summary Statistics

N = 21

Lower Detection Limit= 0.001

Below Detection Limit = 0

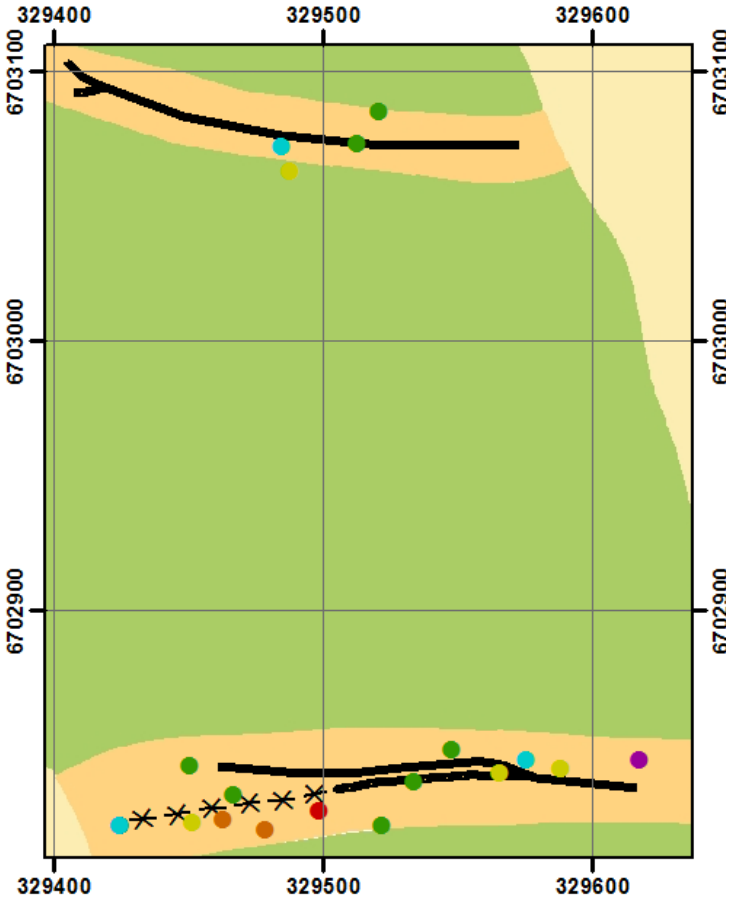
Median = 0.02

Mean = 0.02

Standard Deviation = 0.004

Error = ± 0.002

Bedrock Geology



Legend

<0.013 pct	Mineralisation
0.013 - 0.015 pct	Syncline
0.015 - 0.019 pct	Quaternary Sediments
0.019 - 0.022 pct	Calcareous Siltstone
0.022 - 0.025 pct	Shear Zone
0.025 - 0.027 pct	
>0.027 pct	

N

0 20 40 80 120 Meters

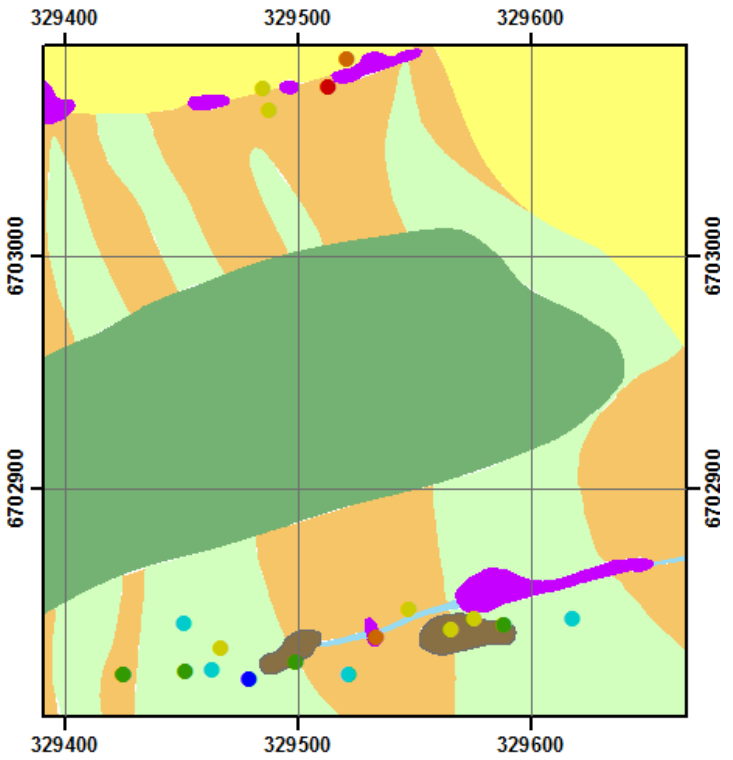
Ooloo

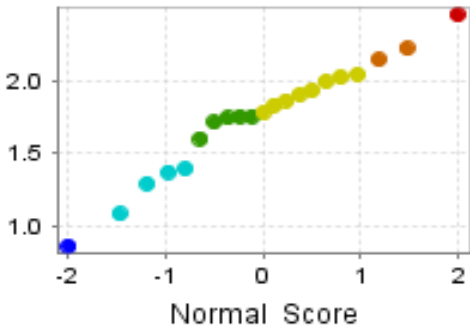
***Eremophila freelingii* leaf**

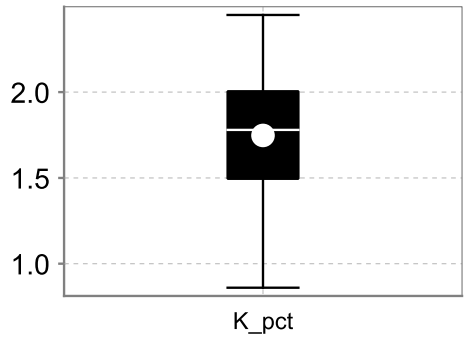
K(%)

Landscape

Regolith - Landform







<u>Summary Statistics</u>

N = 21

Lower Detection Limit= 0.01

Below Detection Limit = 0

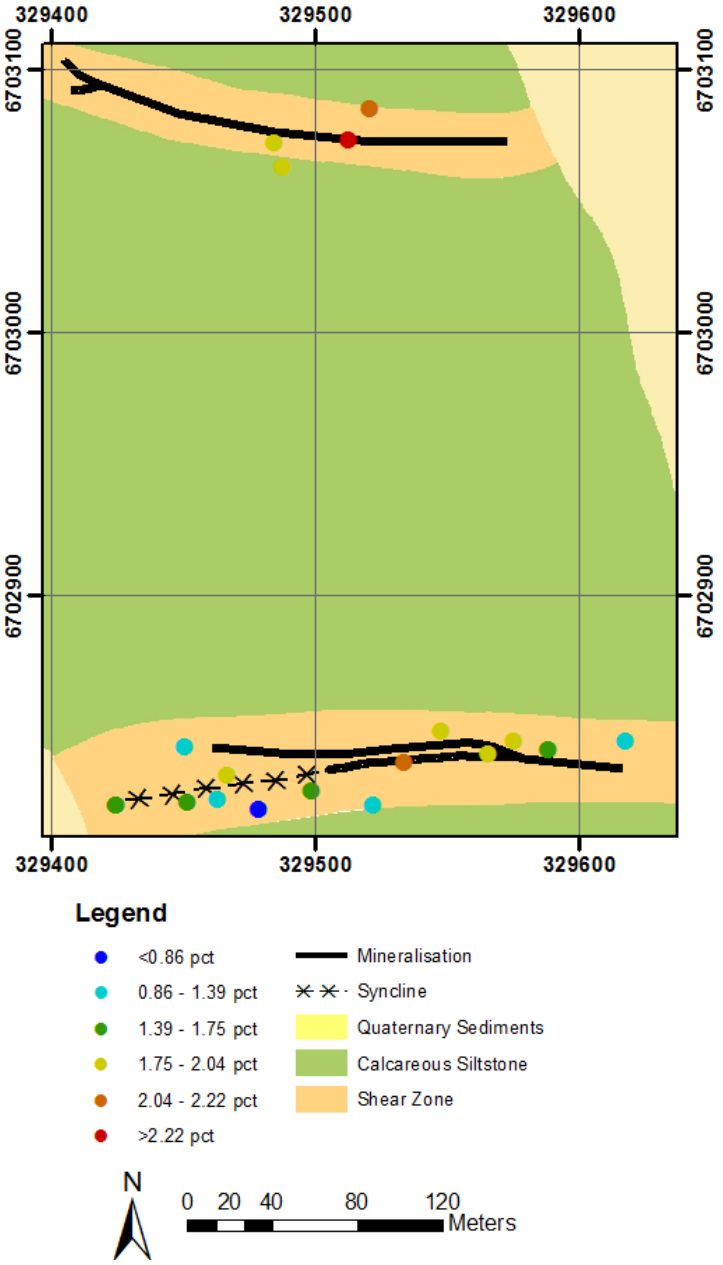
Median = 1.78

Mean = 1.75

Standard Deviation = 0.38

Error = ±0.17

Bedrock Geology



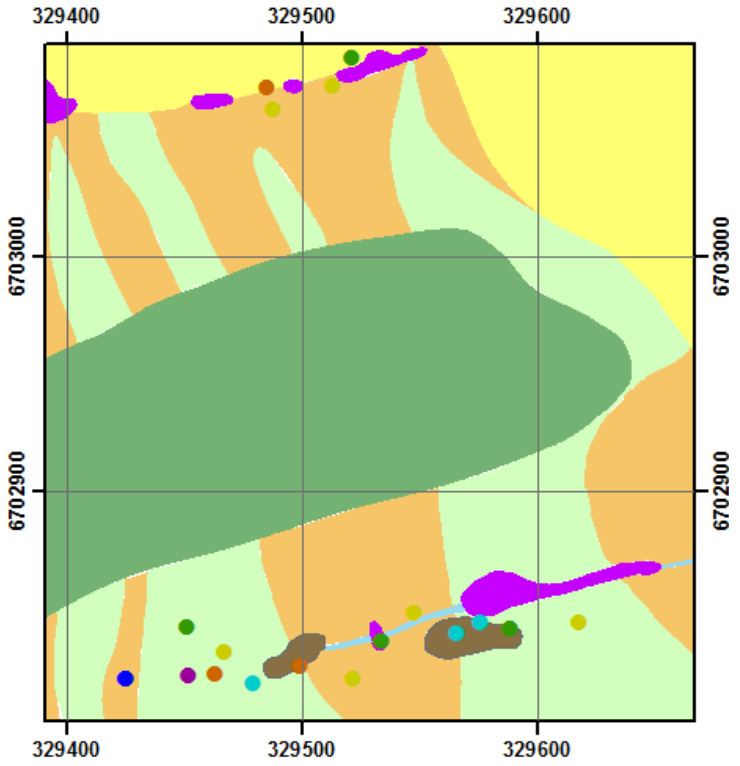
Ooloo

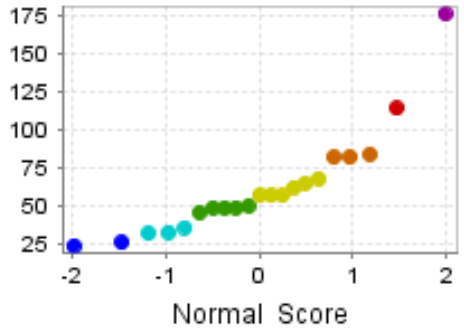
***Eremophila freelingii* leaf**

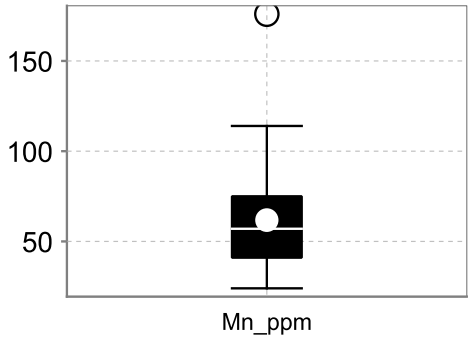
Mn(ppm)

Host/control/landscape

Regolith - Landform







<u>Summary Statistics</u>

N = 21

Lower Detection Limit= 1

Below Detection Limit = 0

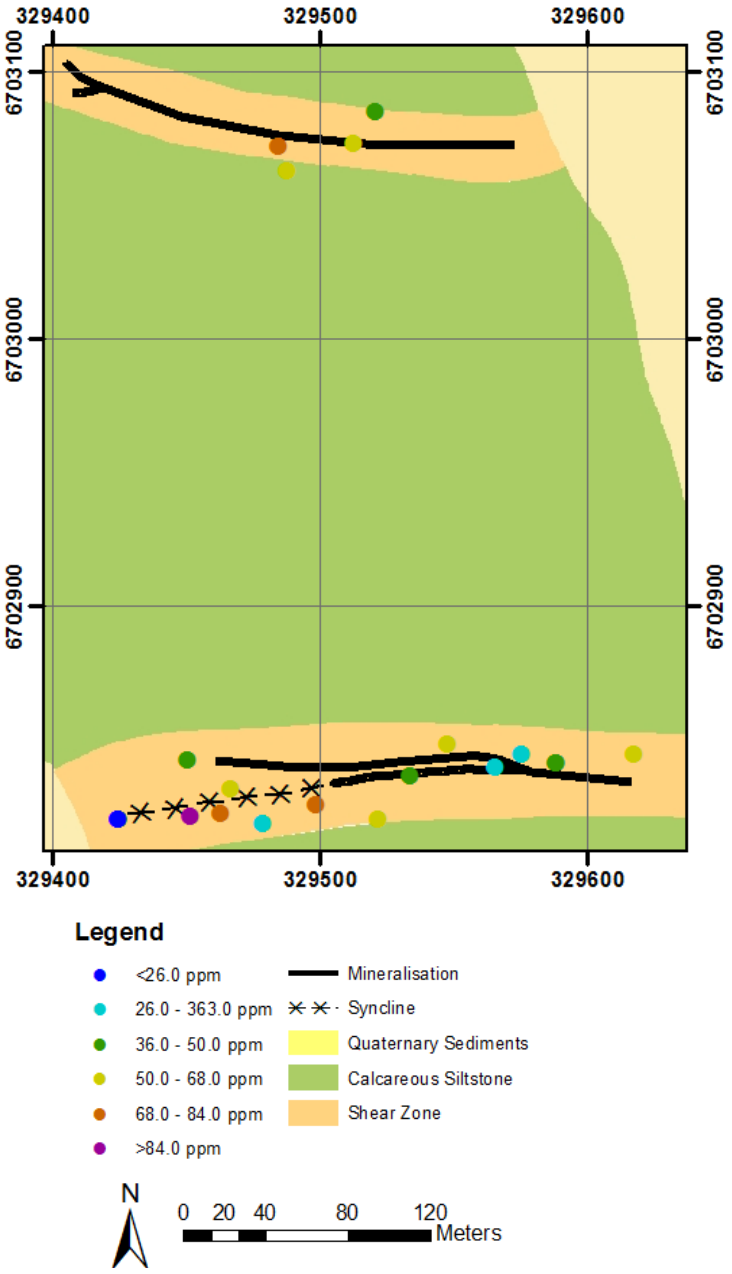
Median = 57

Mean = 61.81

Standard Deviation = 34.04

Error = ±15.93

Bedrock Geology



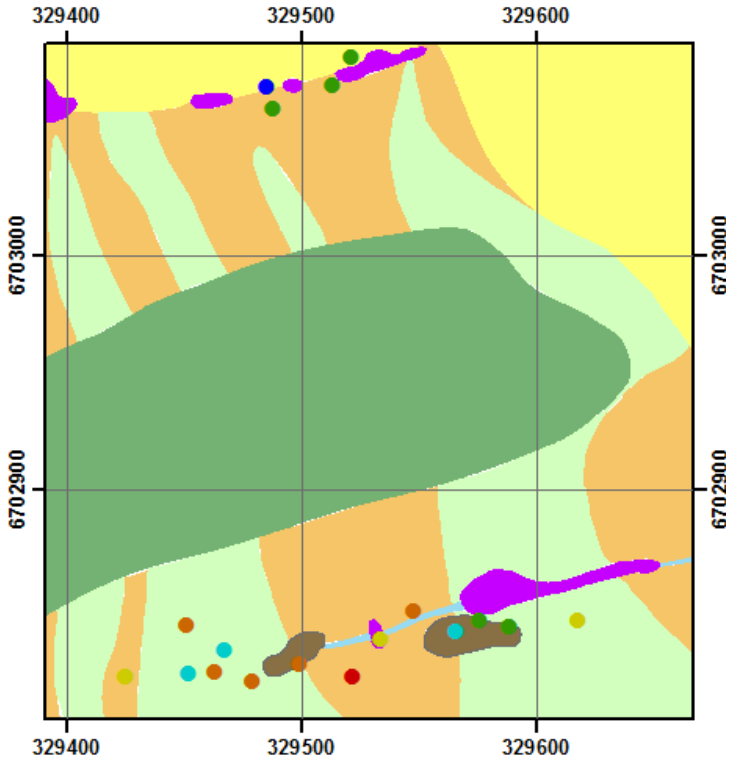
Ooloo

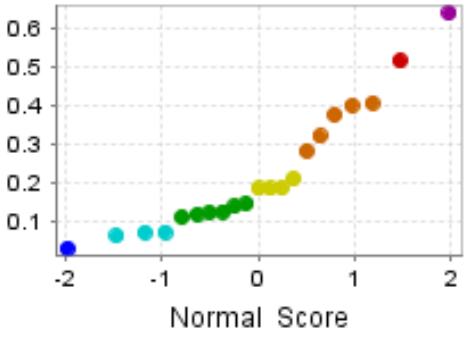
***Eremophila freelingii* leaf**

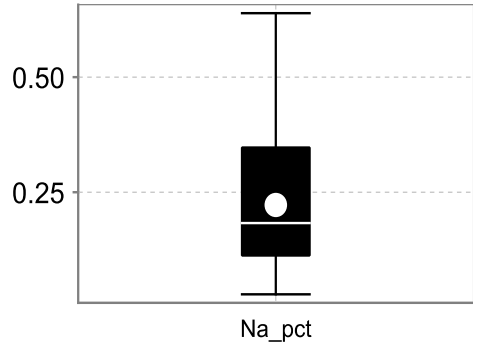
Na(%)

Landscape

Regolith - Landform







<u>Summary Statistics</u>

N = 21

Lower Detection Limit= 0.001

Below Detection Limit = 0

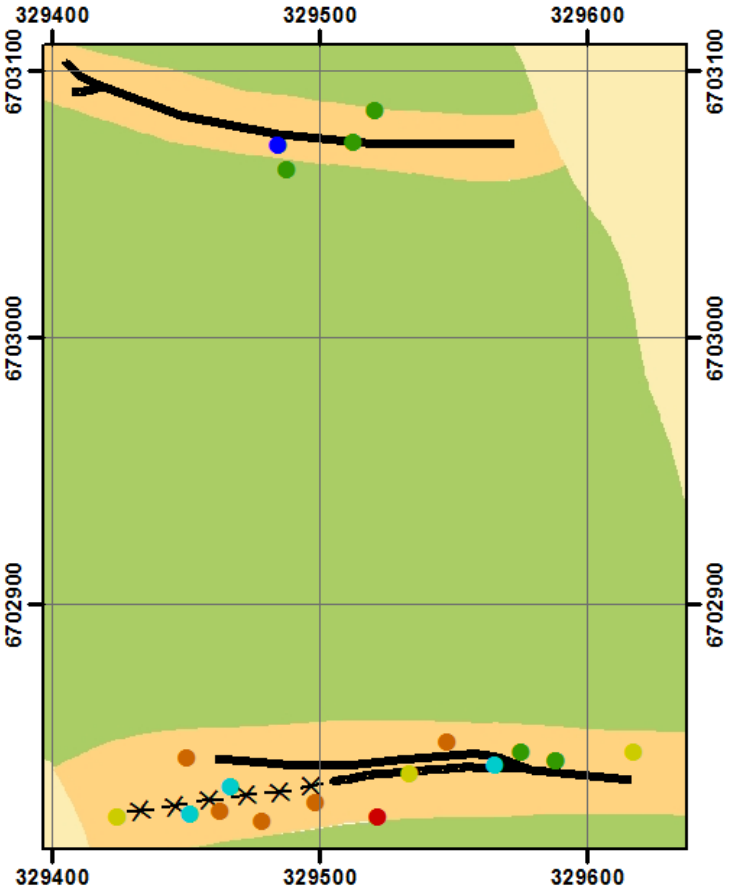
Median = 0.08

Mean = 0.02

Standard Deviation = 0.16

Error = ±0.07

Bedrock Geology



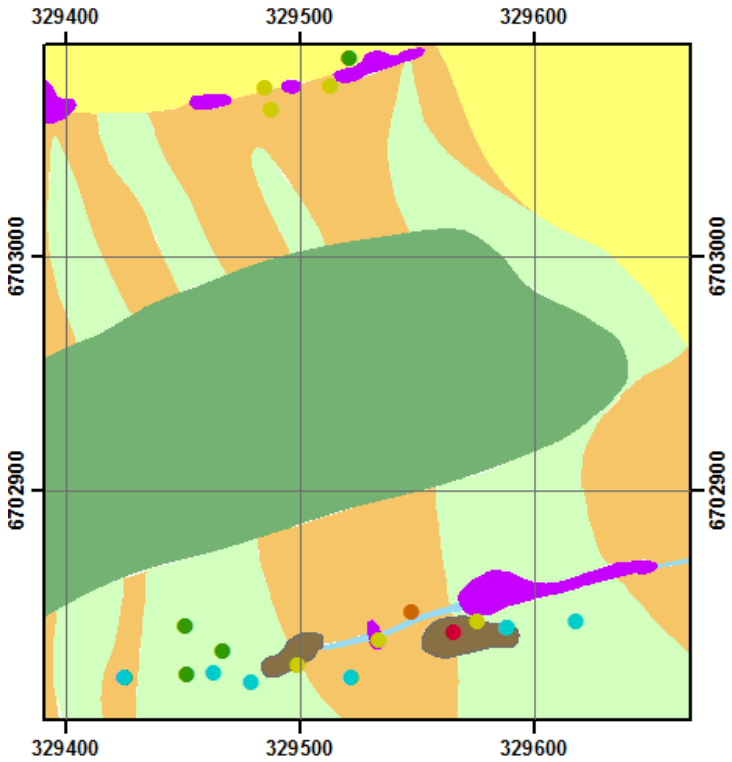
Ooloo

***Eremophila freelingii* leaf**

Rb(ppm)

Landscape

Regolith - Landform

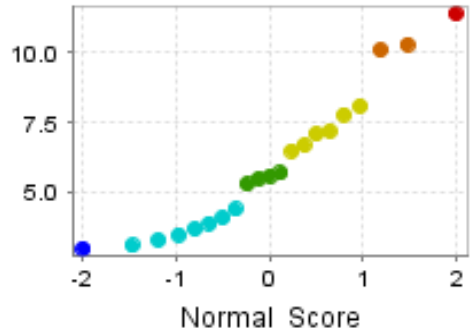


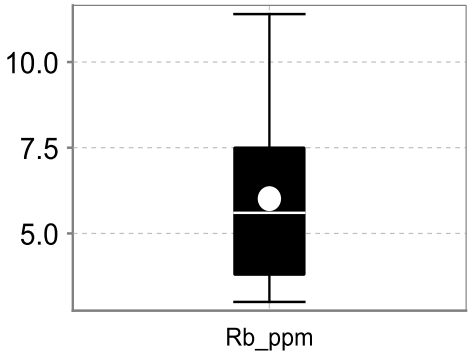
Legend

<3.0 ppm	Aed
3.0 - 4.4 ppm	CHpd
4.0 - 5.7 ppm	CHer
5.7 - 8.1 ppm	CHep
8.1 - 10.3 ppm	SSer
>10.3 ppm	SSep
	Fm

N

60 30 0 60 120 Meters





Summary Statistics

N = 21

Lower Detection Limit= 0.1

Below Detection Limit = 0

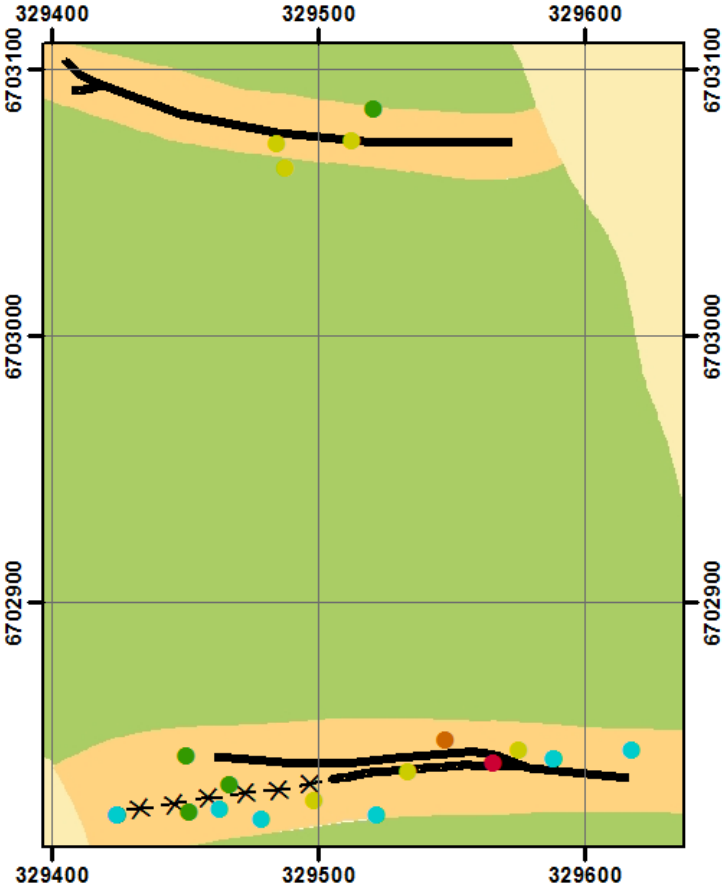
Median = 5.6

Mean = 6.01

Standard Deviation = 2.48

Error = ±1.13

Bedrock Geology



Legend

<3.0 ppm	Mineralisation
3.0 - 4.4 ppm	Syncline
4.4 - 5.7 ppm	Quaternary Sediments
5.7 - 8.1 ppm	Calcareous Siltstone
8.1 - 10.3 ppm	Shear Zone
>10.3 ppm	

N

0 20 40 80 120 Meters

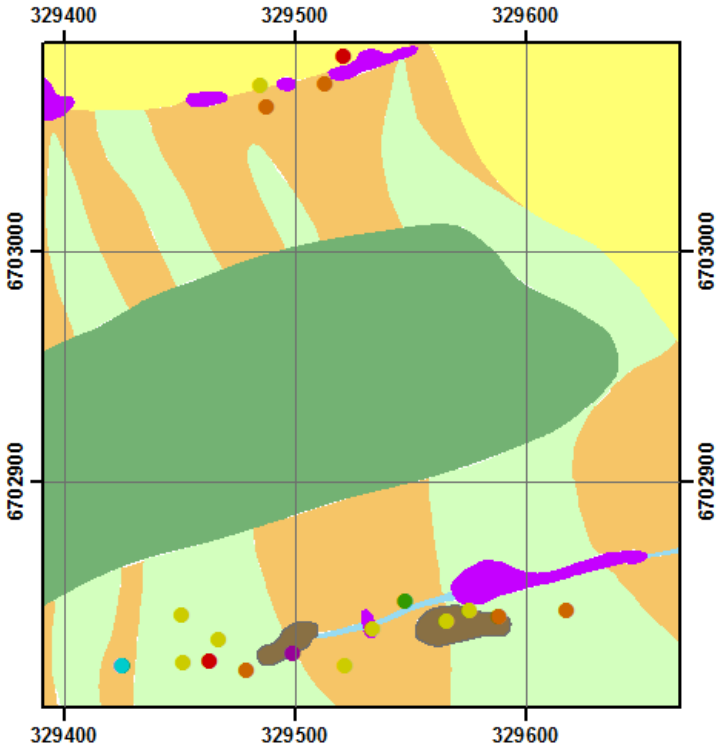
Ooloo

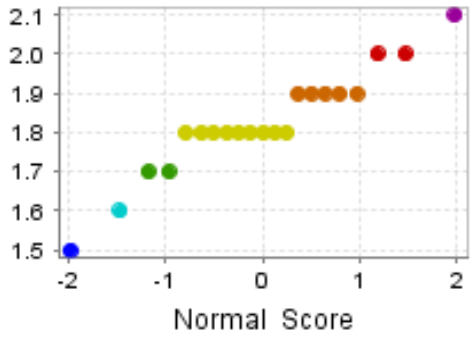
***Eremophila freelingii* leaf**

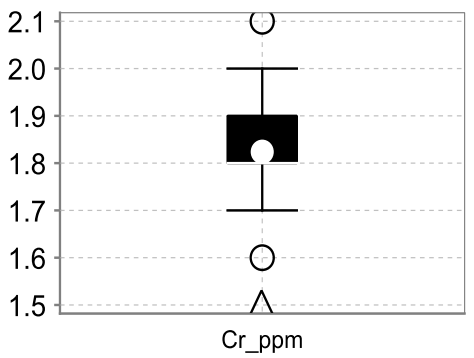
Cr$_{(ppm)}$

Pathfinder

Regolith - Landform







<u>Summary Statistics</u>

N = 21

Lower Detection Limit= 0.1

Below Detection Limit = 0

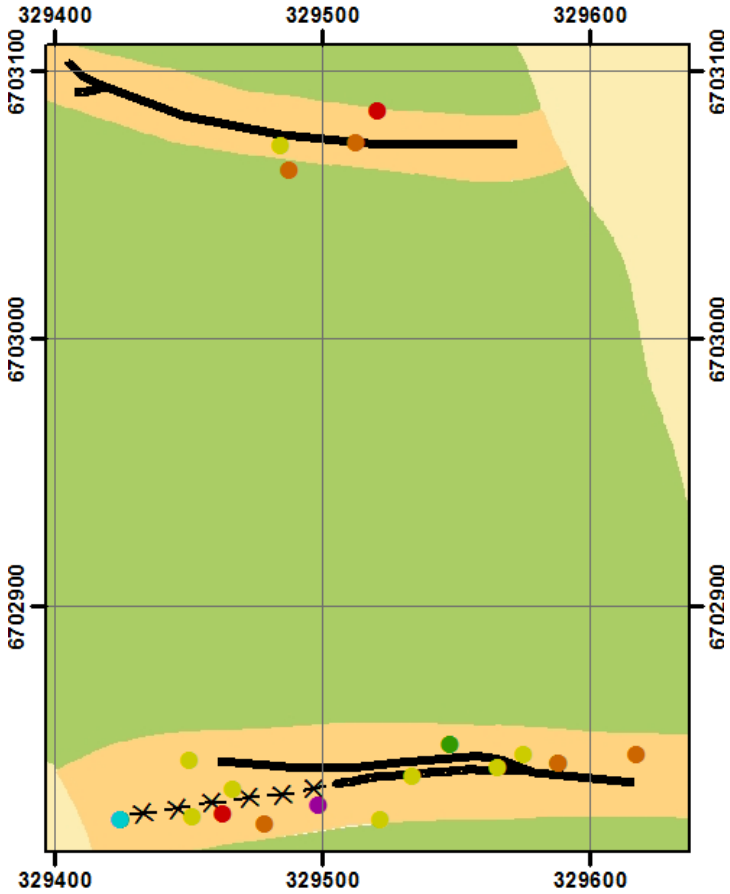
Median = 1.8

Mean = 1.8

Standard Deviation = 0.13

Error = ± 0.06

Bedrock Geology



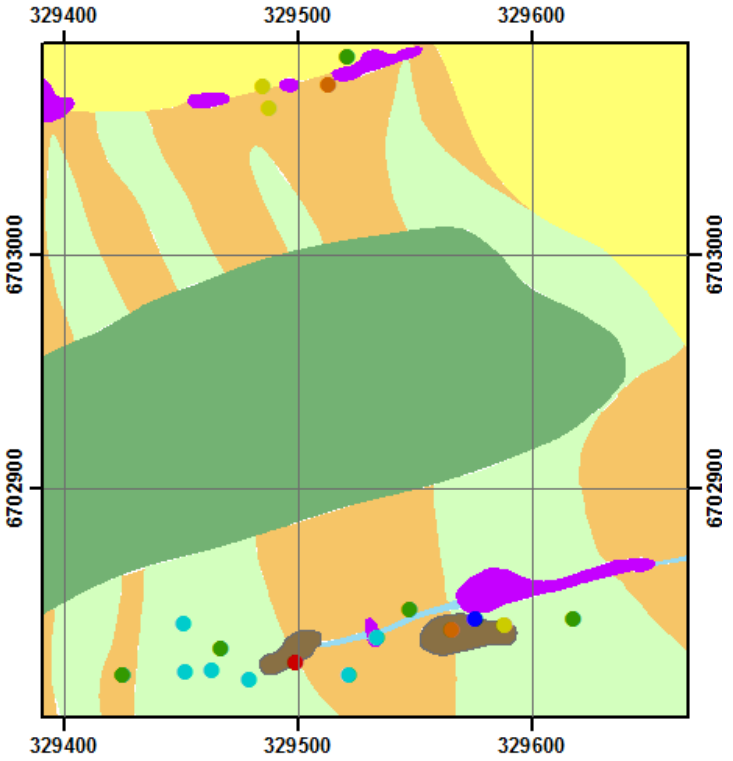
Ooloo

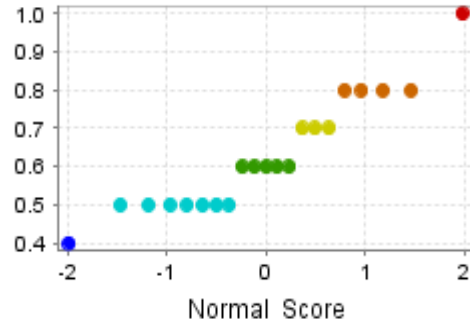
***Eremophila freelingii* leaf**

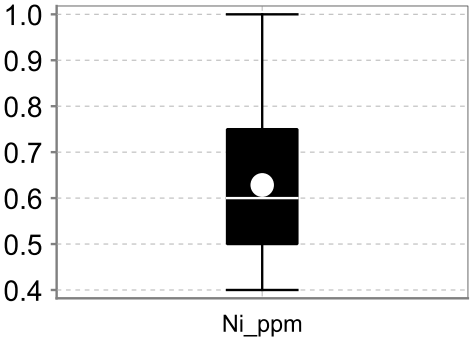
Ni$_{(ppm)}$

Other

Regolith - Landform







Summary Statistics

N = 21

Lower Detection Limit= 0.1

Below Detection Limit = 0

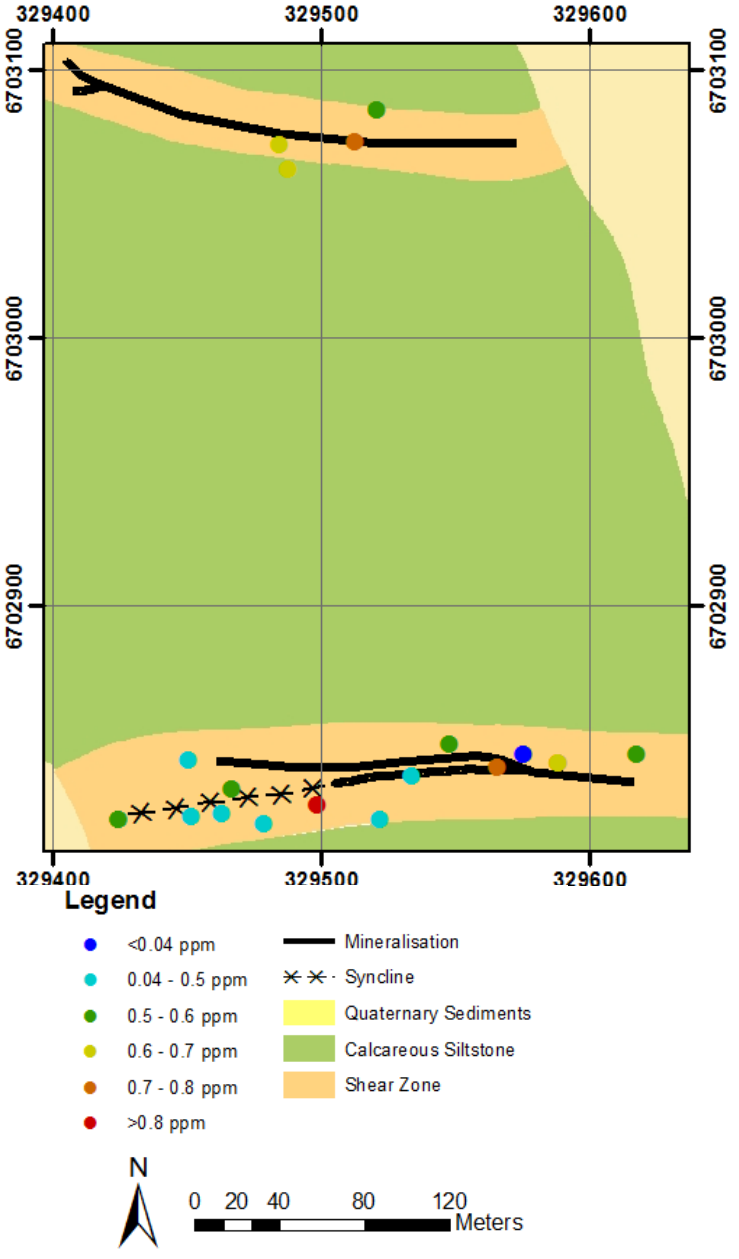
Median = 0.6

Mean = 0.63

Standard Deviation = 0.15

Error = ±0.07

Bedrock Geology



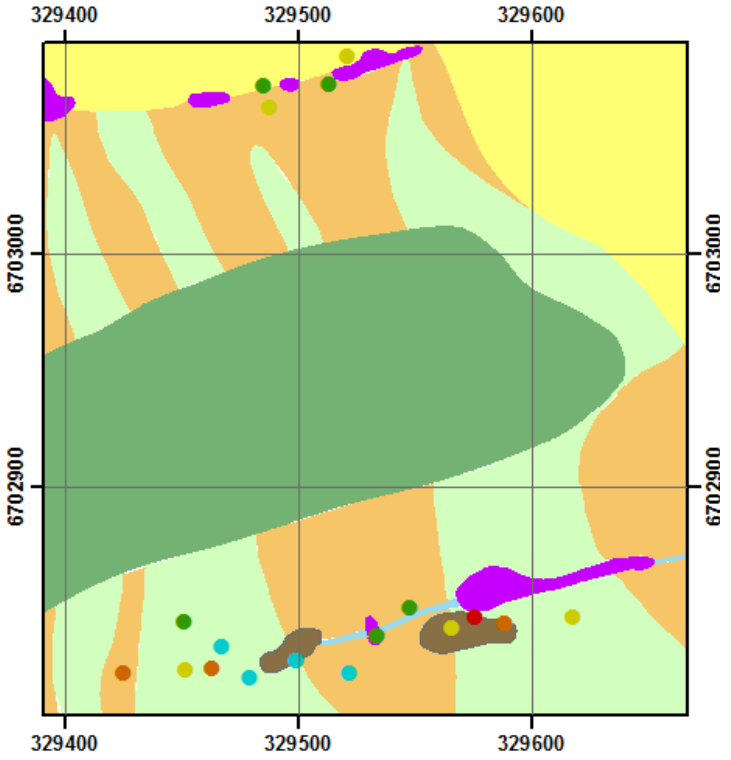
Ooloo

***Eremophila freelingii* leaf**

$Sr_{(ppm)}$

Pathfinder

Regolith - Landform

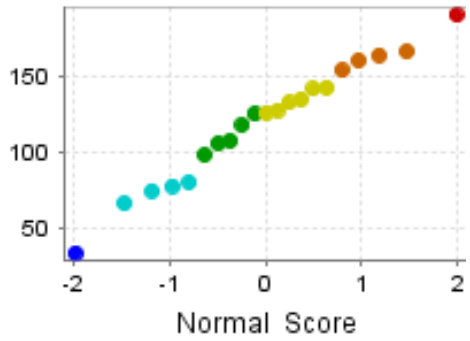


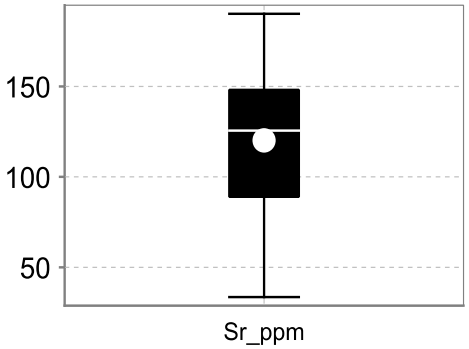
Legend

<0.4 ppm	Aed
0.4 - 0.5 ppm	CHpd
0.5 - 0.6 ppm	CHer
0.6 - 0.7 ppm	CHep
0.7 - 0.8 ppm	SSer
>0.8 ppm	SSep
	Fm

N

60 30 0 60 120 Meters

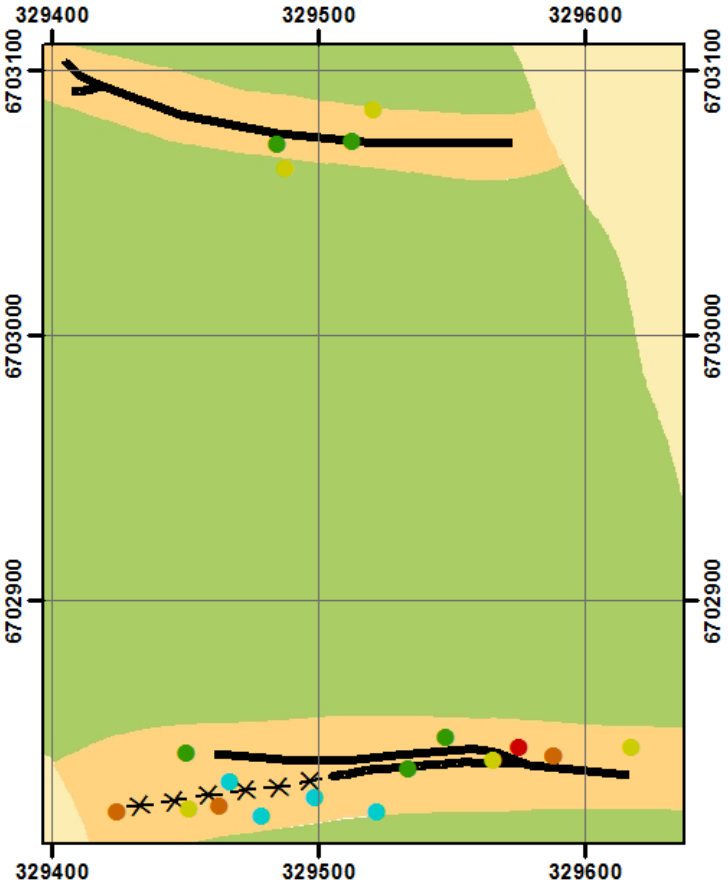




<u>Summary Statistics</u>

N = 21
Lower Detection Limit= 0.5
Below Detection Limit = 0
Median = 125.60
Mean = 120.17
Standard Deviation = 38.64
Error = ± 17.59

Bedrock Geology



Legend

<80.0 ppm	Mineralisation
80.0 - 125.0 ppm	Syncline
125.0 - 142.5 ppm	Quaternary Sediments
142.5 - 166.0 ppm	Calcareous Siltstone
>166.0 ppm	Shear Zone

N

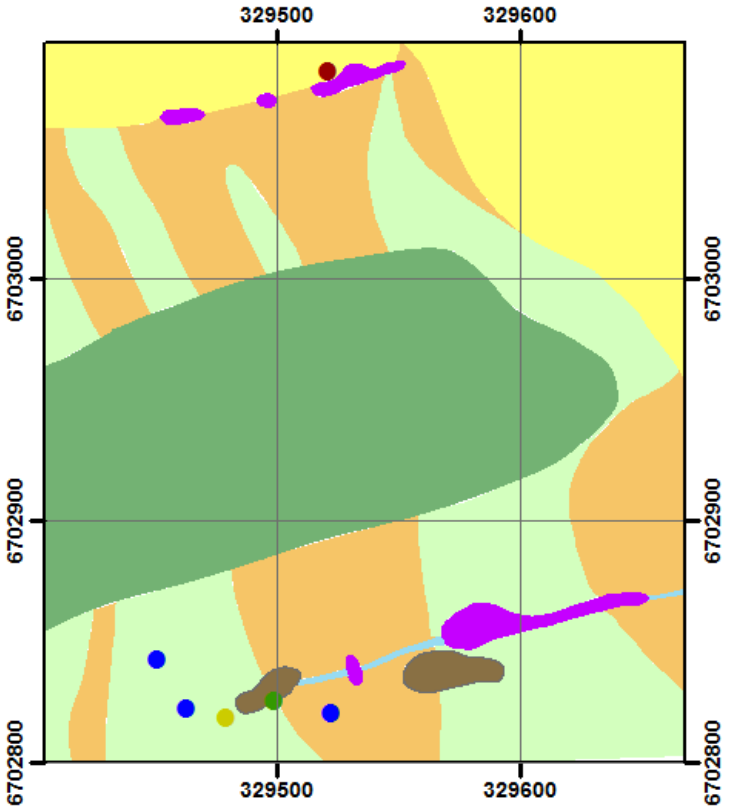
0 20 40 80 120 Meters

Ooloo
Bedrock

Ag(ppm)

Commodity

Regolith - Landform

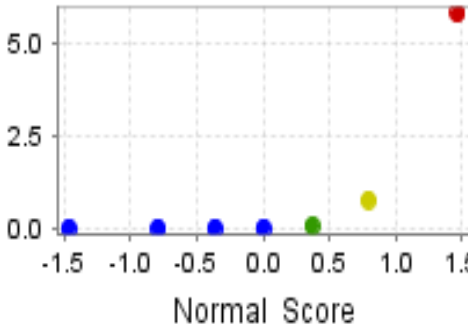


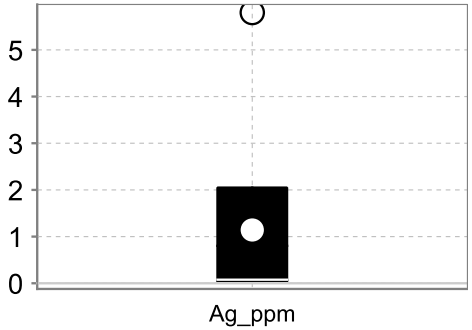
Legend

- <0.05 ppm
- 0.05 - 0.1 ppm
- 0.1 - 0.8 ppm
- >0.8 ppm
- Aed
- Fm
- SSer
- CHpd
- CHer
- CHep
- SSep

N

60 30 0 60 120 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.1

Below Detection Limit = 4

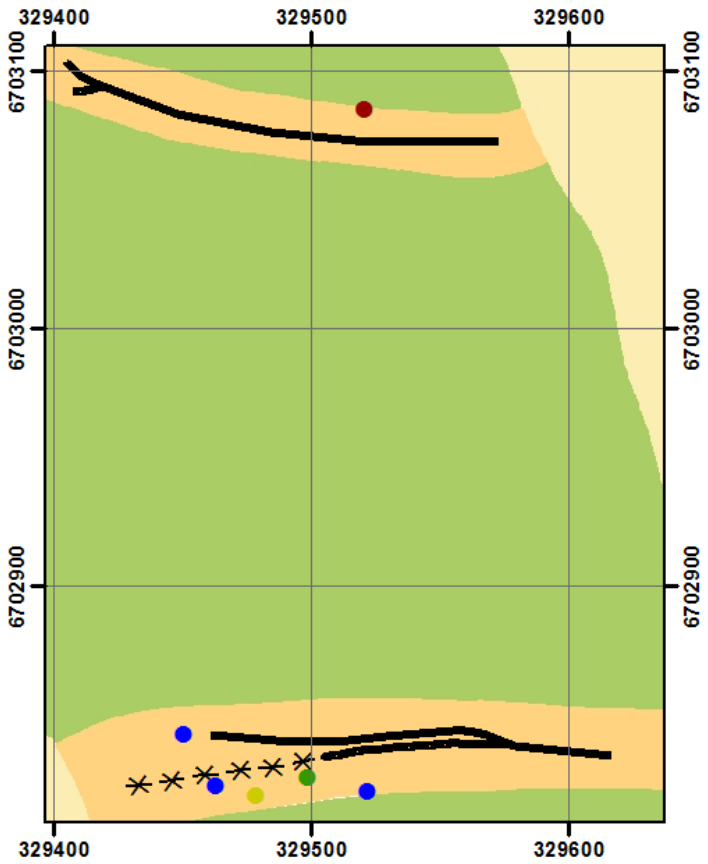
Median = 0.05

Mean = 0.99

Standard Deviation = 2.14

Error = ± 5.32

Bedrock Geology



Legend

- <0.05 ppm
- 0.05 - 0.1 ppm
- 0.1 - 0.8 ppm
- >0.8 ppm
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

N

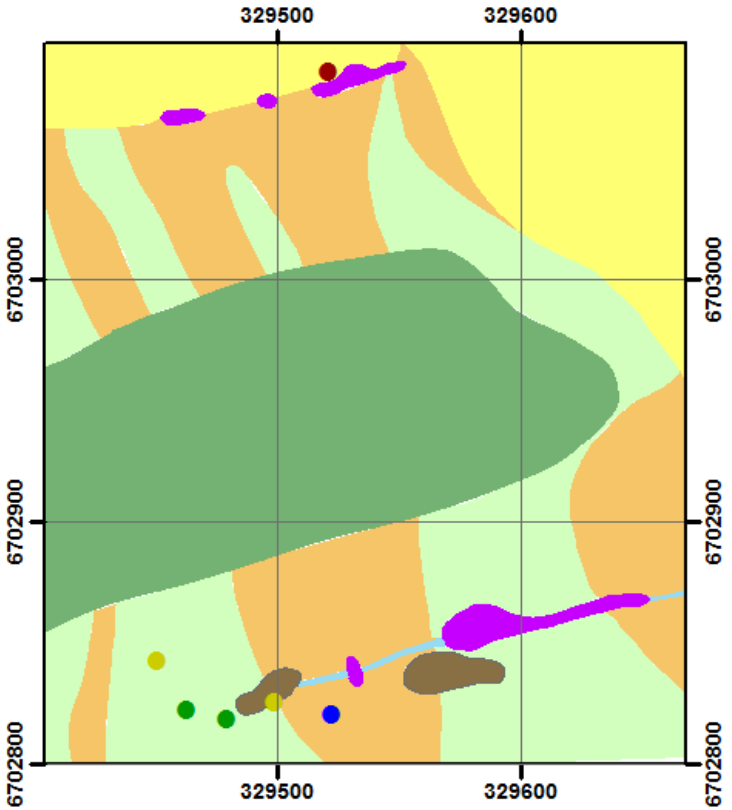
0 20 40 80 120 Meters

Ooloo
Bedrock

$Cu_{(ppm)}$

Commodity

Regolith - Landform

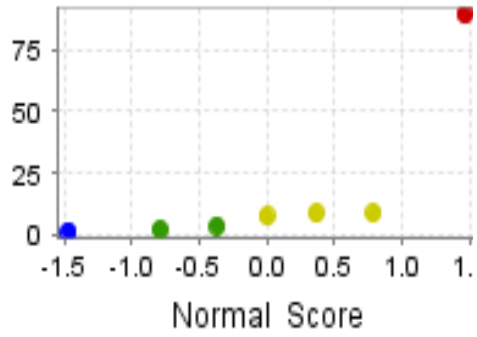


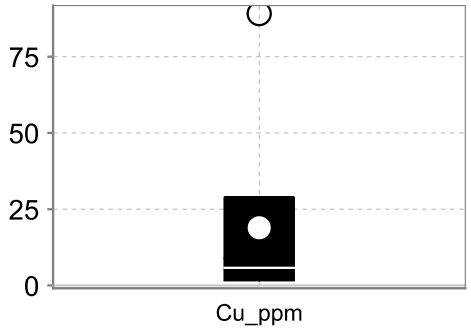
Legend

- <5.0 ppm
- 5.0 - 6.9 ppm
- 6.9 - 8.61 ppm
- 8.61 - 10.63 ppm
- 10.63 - 11.4 ppm
- >11.4 ppm
- Aed
- Fm
- SSer
- CHpd
- CHer
- CHep
- SSep

N

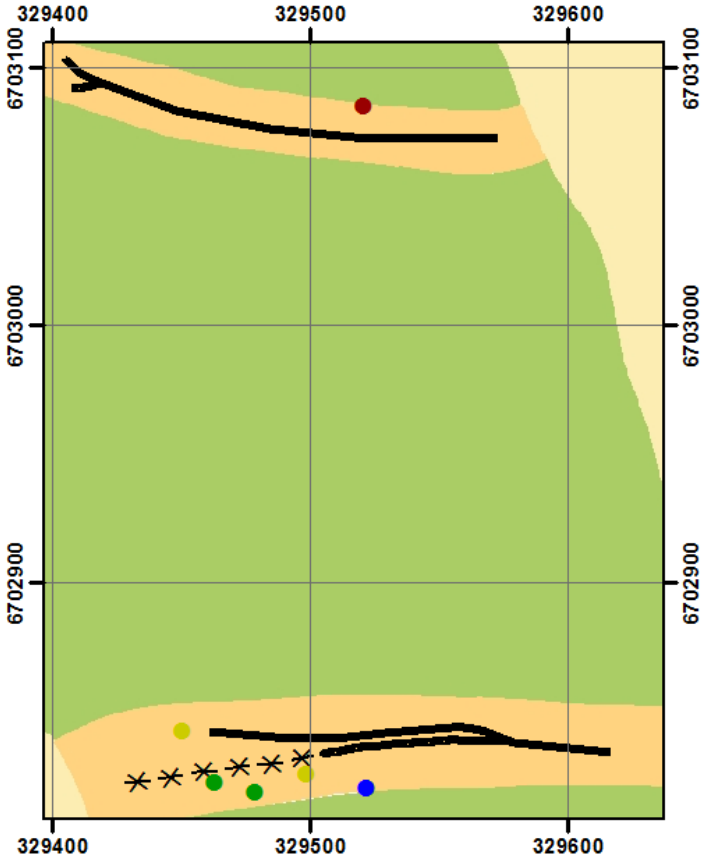
60 30 0 60 120 Meters





Summary Statistics
N = 7
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 7.7
Mean = 17.48
Standard Deviation = 0.24
Error = ± 0.22

Bedrock Geology



Legend

- <5.0 ppm
- 5.0 - 6.9 ppm
- 6.9 - 8.61 ppm
- 8.61 - 10.63 ppm
- 10.63 - 11.4 ppm
- >11.4 ppm
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

N

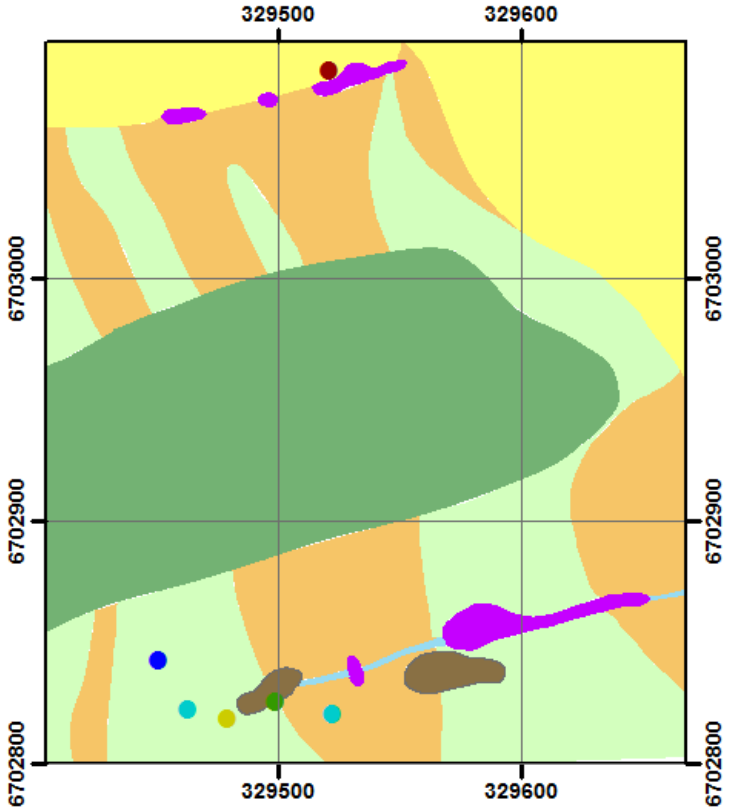
0 20 40 80 120 Meters

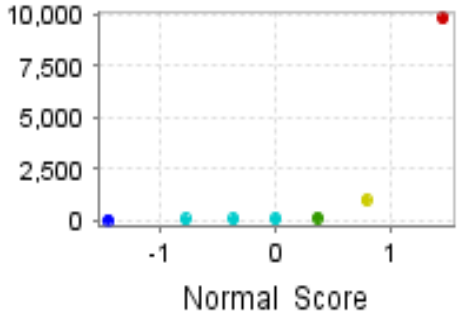
Ooloo
Bedrock

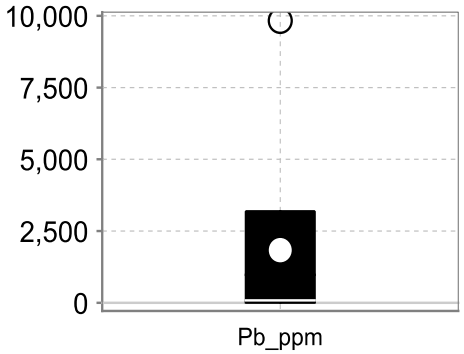
Pb(ppm)

Commodity

Regolith - Landform

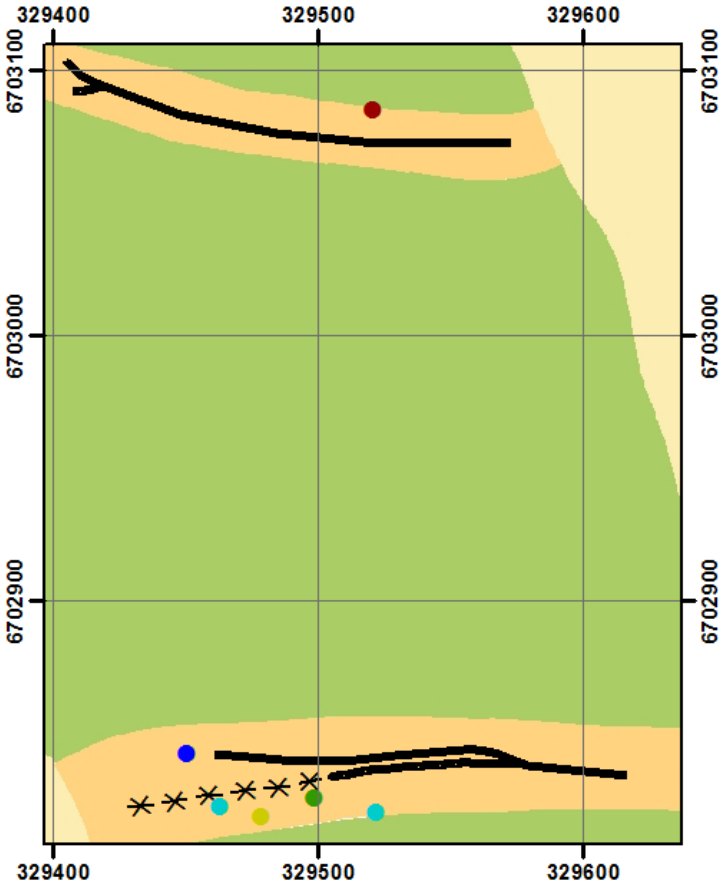






Summary Statistics
N = 7
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 56.2
Mean = 1 576.686
Standard Deviation = 3 655.882
Error = ± 3381.127

Bedrock Geology

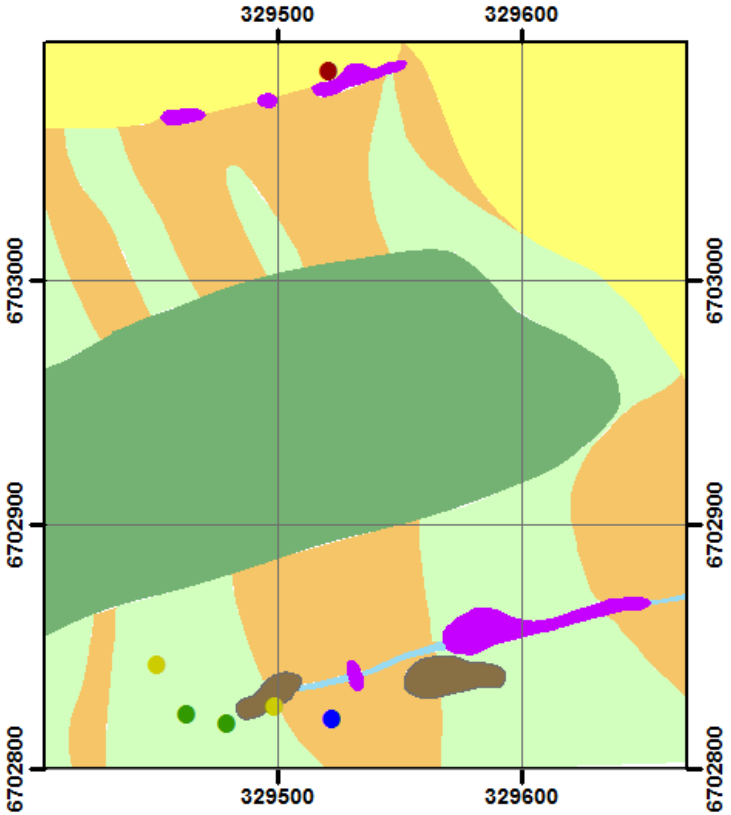


Ooloo
Bedrock

$Zn_{(ppm)}$

Commodity

Regolith - Landform

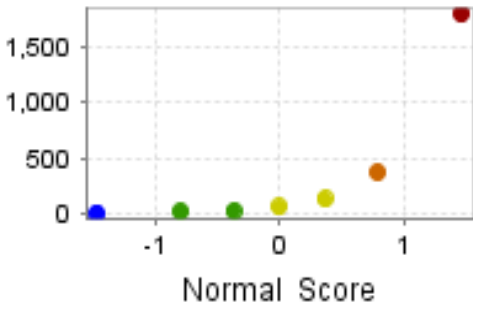


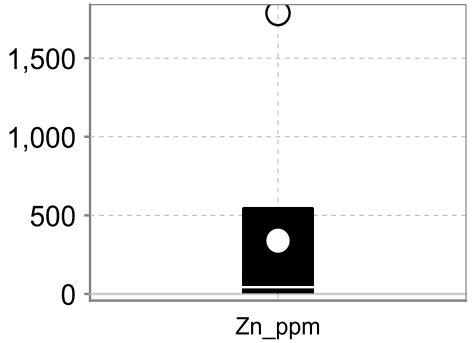
Legend

- <11.0 ppm
- 11.0 - 26.0 ppm
- 26.0 - 132.0 ppm
- >132.0 ppm
- Aed
- Fm
- SSer
- CHpd
- CHer
- CHep
- SSep

N

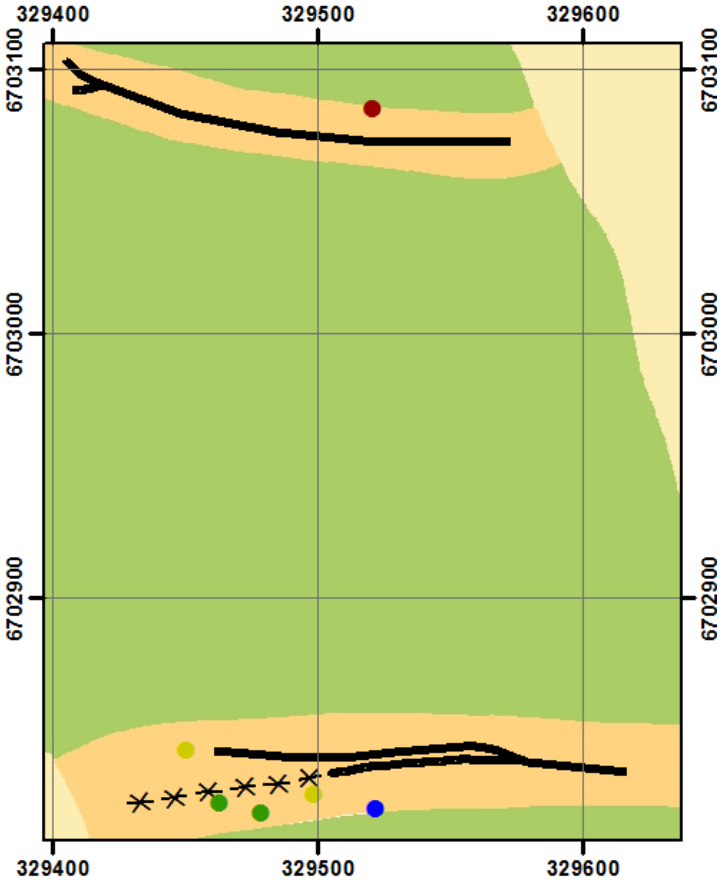
60 30 0 60 120 Meters





Summary Statistics
N = 7
Lower Detection Limit= 1
Below Detection Limit = 0
Median = 59
Mean = 343.14
Standard Deviation = 679.11
Error = ± 628.07

Bedrock Geology



Legend

- <11.0 ppm
- 11.0 - 26.0 ppm
- 26.0 - 132.0 ppm
- >132.0 ppm
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

N

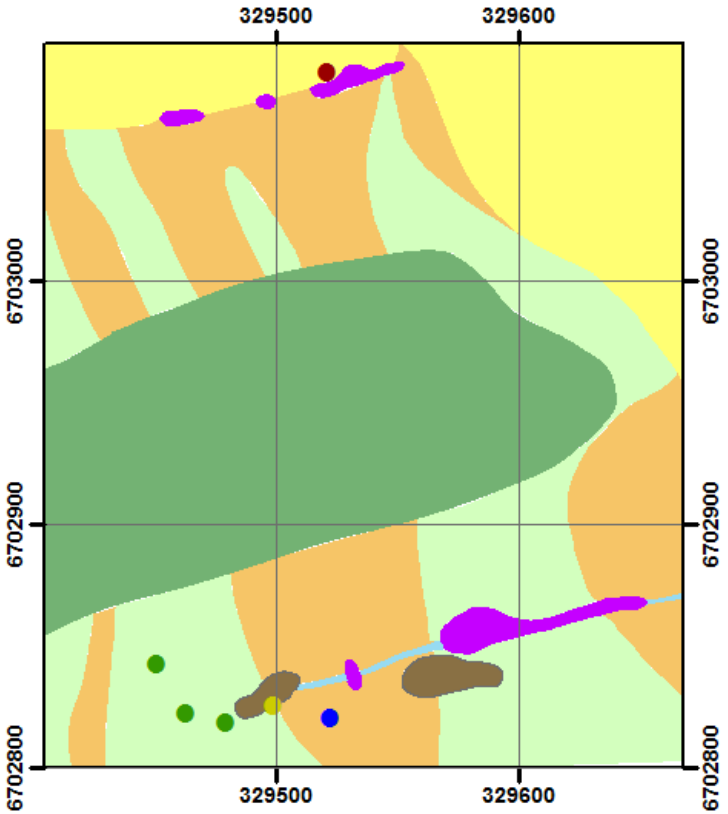
0 20 40 80 120 Meters

Ooloo
Bedrock

$As_{(ppm)}$

Pathfinder

Regolith - Landform

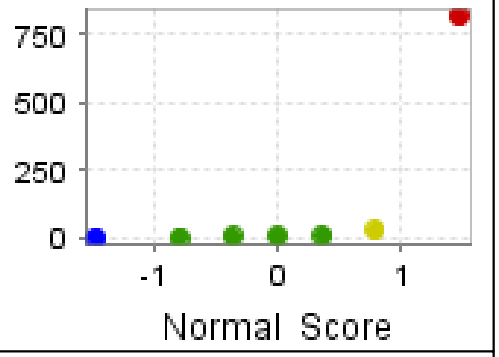


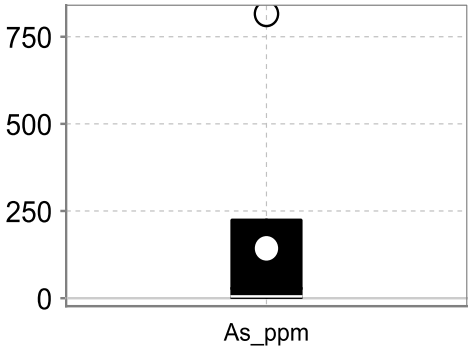
Legend

- <1.6 ppm
- 1.6 - 8.6 ppm
- 8.6 - 28.1 ppm
- >28.1 ppm
- Aed
- Fm
- SSer
- CHpd
- CHer
- CHep
- SSep

N

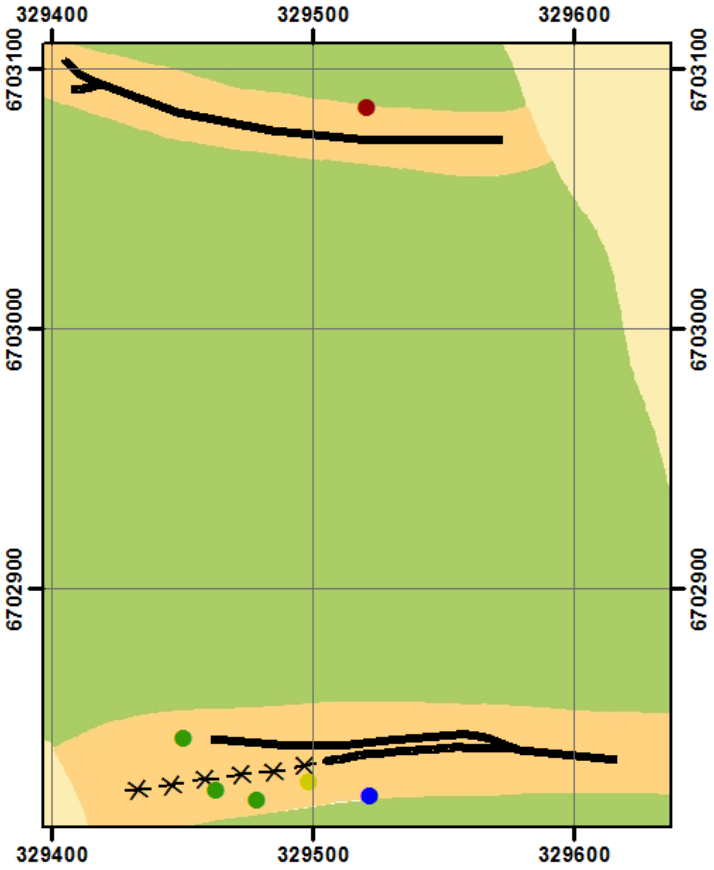
60 30 0 60 120 Meters





Summary Statistics
N = 7
Lower Detection Limit= 0.5
Below Detection Limit = 0
Median = 5.8
Mean = 123.87
Standard Deviation = 305.16
Error = ± 282.223

Bedrock Geology



Legend

- <1.6 ppm
- 1.6 - 8.6 ppm
- 8.6 - 28.1 ppm
- >28.1 ppm
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

N

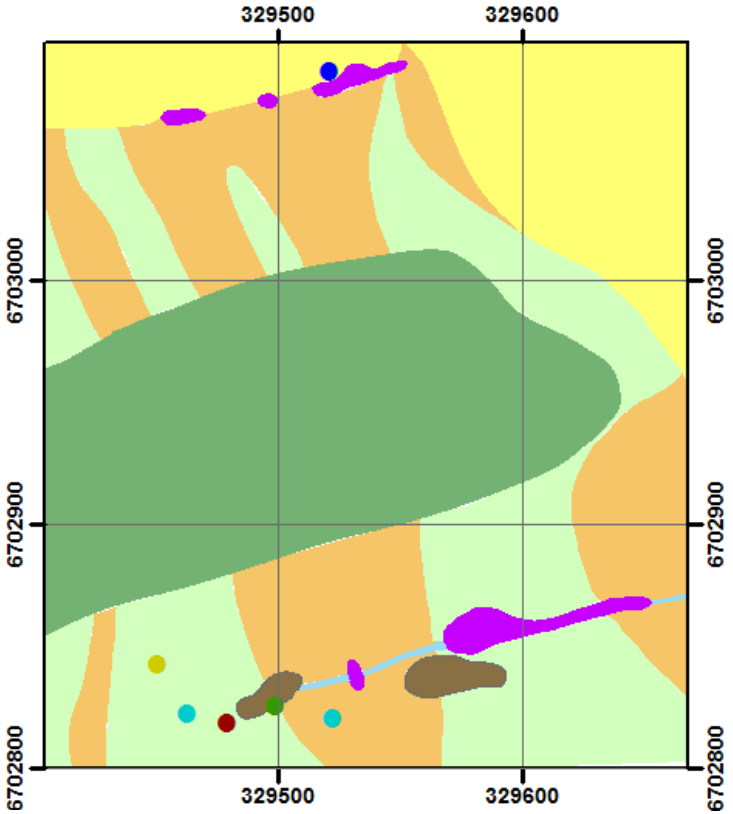
0 20 40 80 120 Meters

Ooloo
Bedrock

$Ce_{(ppm)}$

Pathfinder

Regolith - Landform

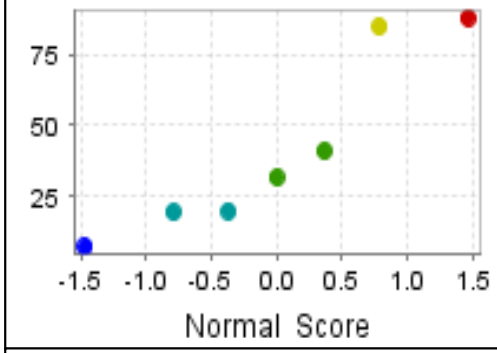


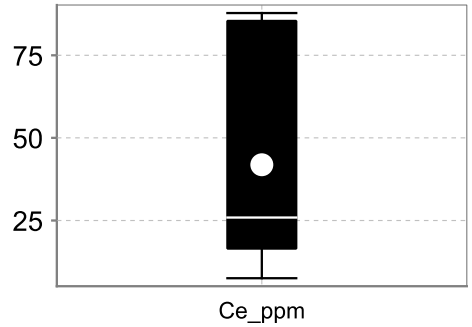
Legend

- <7.5 ppm
- 7.5 - 20.0 ppm
- 20.0 - 41.0 pp,
- 41.0 - 84.6 ppm
- >84.6 ppm
- Aed
- Fm
- SSer
- CHpd
- CHer
- CHep
- SSep

N

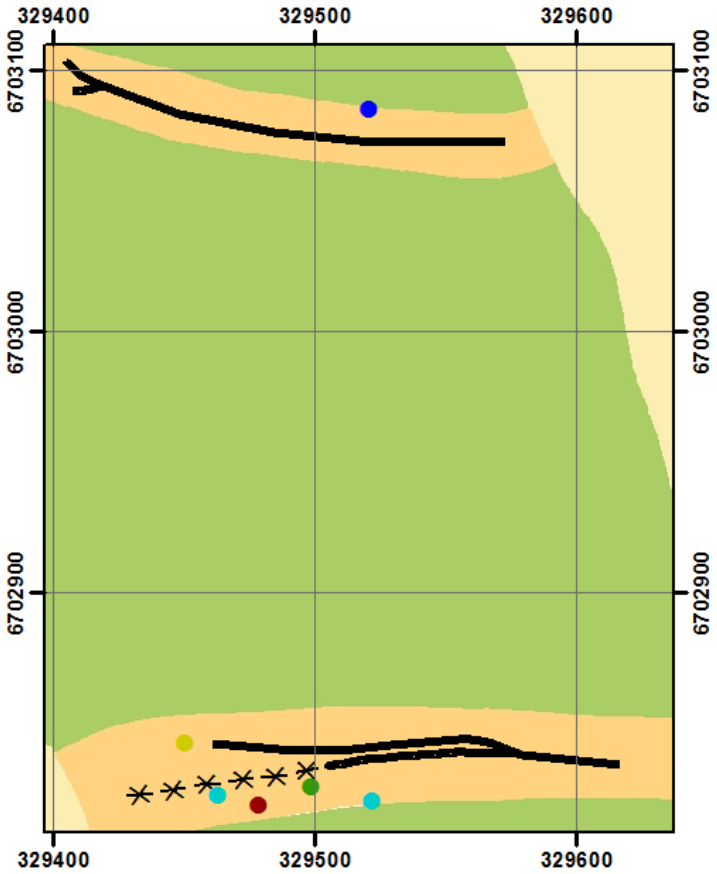
60 30 0 60 120 Meters





Summary Statistics
N = 7
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 31.8
Mean = 41.74
Standard Deviation = 32.14
Error = ± 29.72

Bedrock Geology



Legend

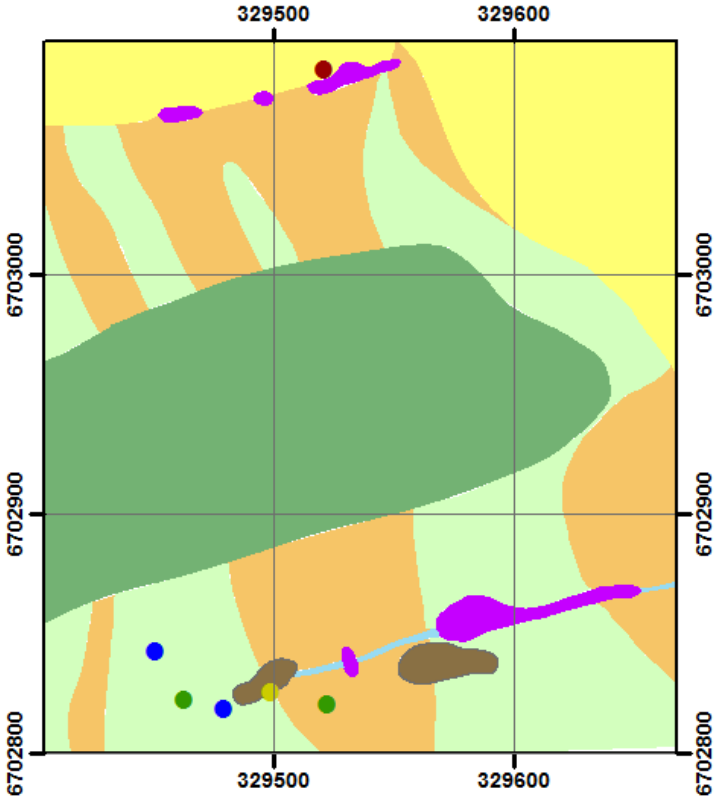
- <7.5 ppm
- 7.5 - 20.0 ppm
- 20.0 - 41.0 pp,
- 41.0 - 84.6 ppm
- >84.6 ppm
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

N

0 20 40 80 120 Meters

Ooloo
Bedrock
$Cd_{(ppm)}$
Pathfinder

Regolith - Landform

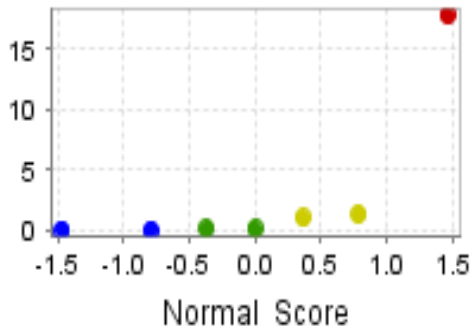


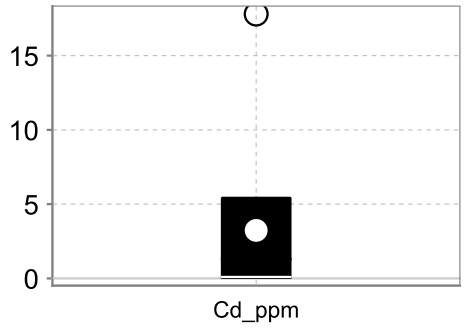
Legend

- <0.05 ppm
- 0.05 - 0.1 ppm
- 0.1 - 1.3 ppm
- >1.3 ppm
- Aed
- Fm
- SSer
- CHpd
- CHer
- CHep
- SSep

N

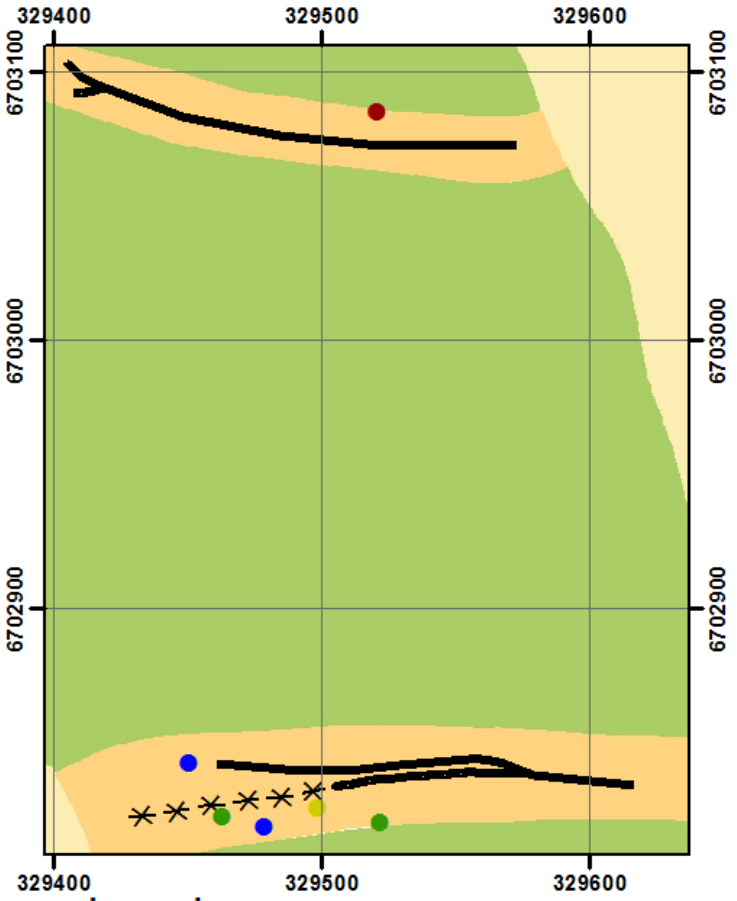
60 30 0 60 120 Meters





Summary Statistics
N = 7
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 0.1
Mean = 2.91
Standard Deviation = 6.58
Error = ±6.08

Bedrock Geology



Legend

- <0.05 ppm
- 0.05 - 0.1 ppm
- 0.1 - 1.3 ppm
- >1.3 ppm
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

N

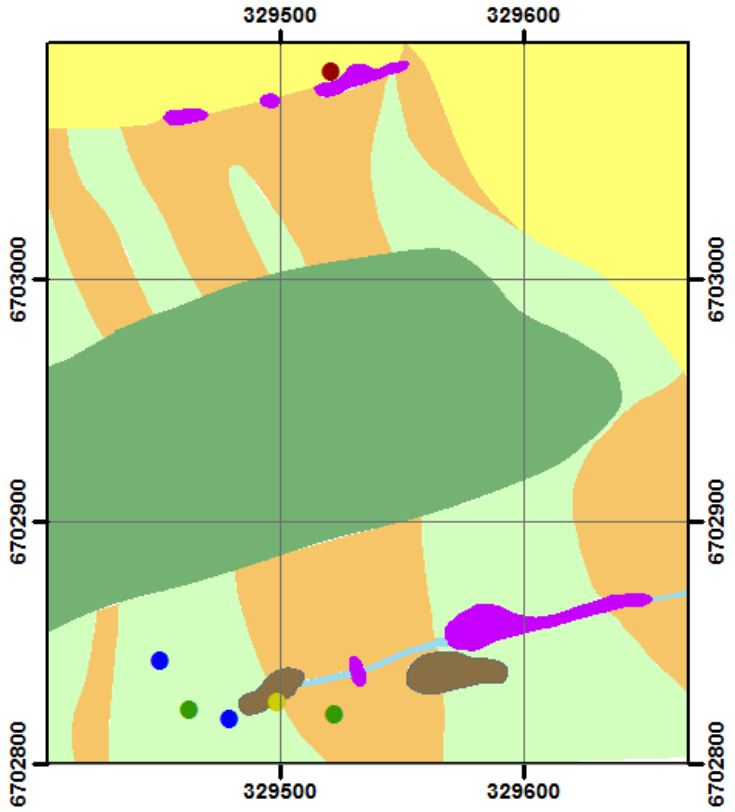
0 20 40 80 120 Meters

Ooloo
Bedrock

La(ppm)

Pathfinder

Regolith - Landform

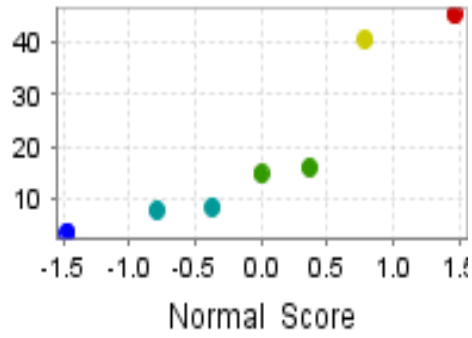


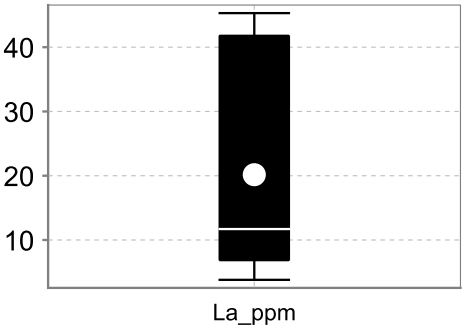
Legend

- <0.05 ppm
- 0.05 - 0.1 ppm
- 0.1 - 1.3 ppm
- >1.3 ppm
- Aed
- Fm
- SSer
- CHpd
- CHer
- CHep
- SSep

N

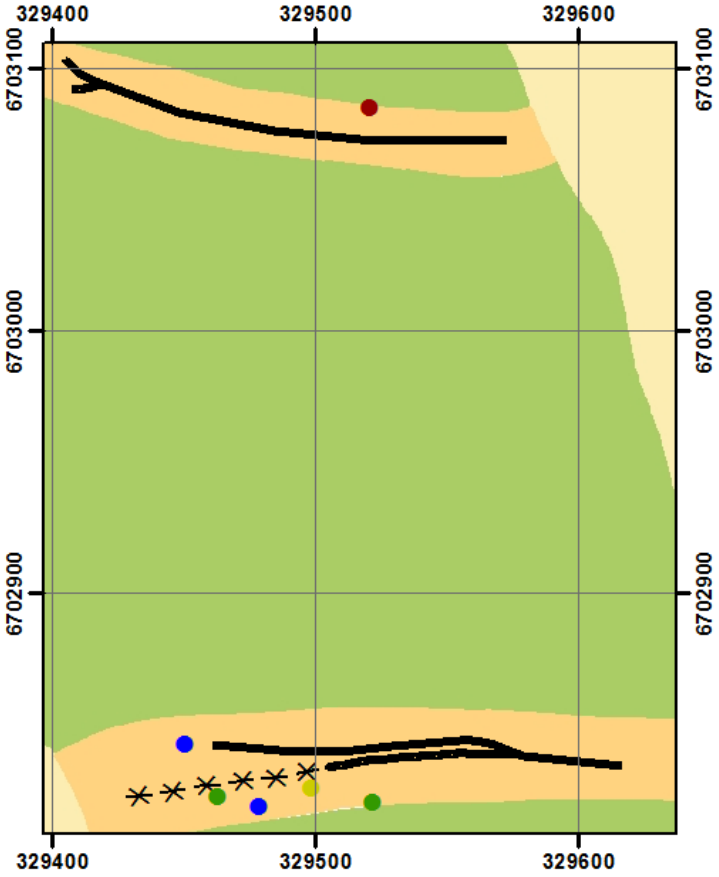
60 30 0 60 120 Meters





Summary Statistics
N = 7
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 14.9
Mean = 19.58
Standard Deviation = 16.56
Error = ± 15.32

Bedrock Geology



Legend

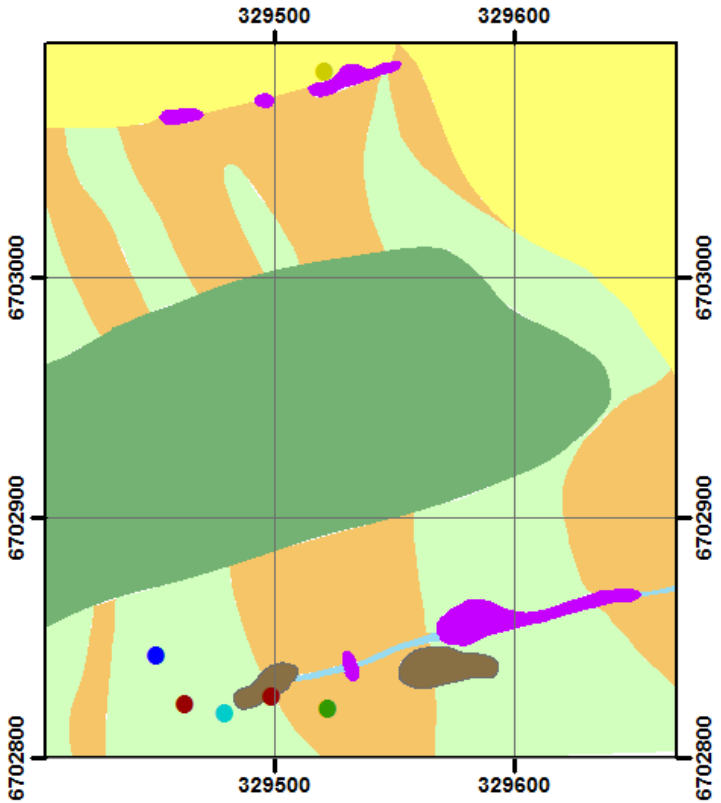
- <0.05 ppm
- 0.05 - 0.1 ppm
- 0.1 - 1.3 ppm
- >1.3 ppm
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

N

0 20 40 80 120 Meters

Ooloo
Bedrock
Mo(ppm)
Pathfinder

Regolith - Landform

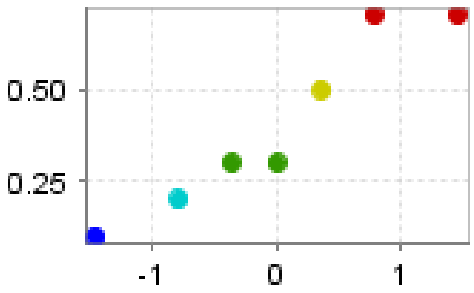


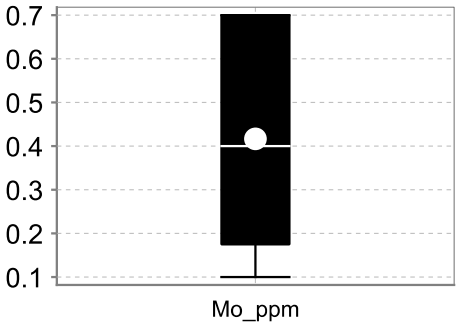
Legend

- <0.1 ppm
- 0.1 - 0.2 ppm
- 0.2 - 0.3 ppm
- 0.3 - 0.5 ppm
- >0.5 ppm
- Aed
- Fm
- SSer
- CHpd
- CHer
- CHep
- SSep

N

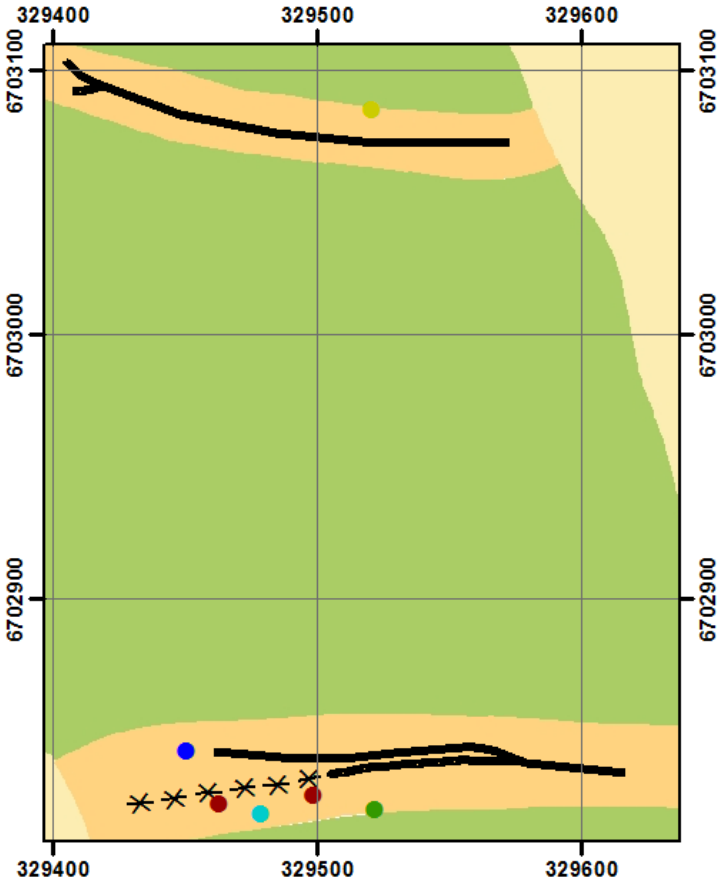
60 30 0 60 120 Meters





Summary Statistics
N = 7
Lower Detection Limit= 0.1
Below Detection Limit = 1
Median = 0.3
Mean = 0.4
Standard Deviation = 0.24
Error = ±0.25

Bedrock Geology



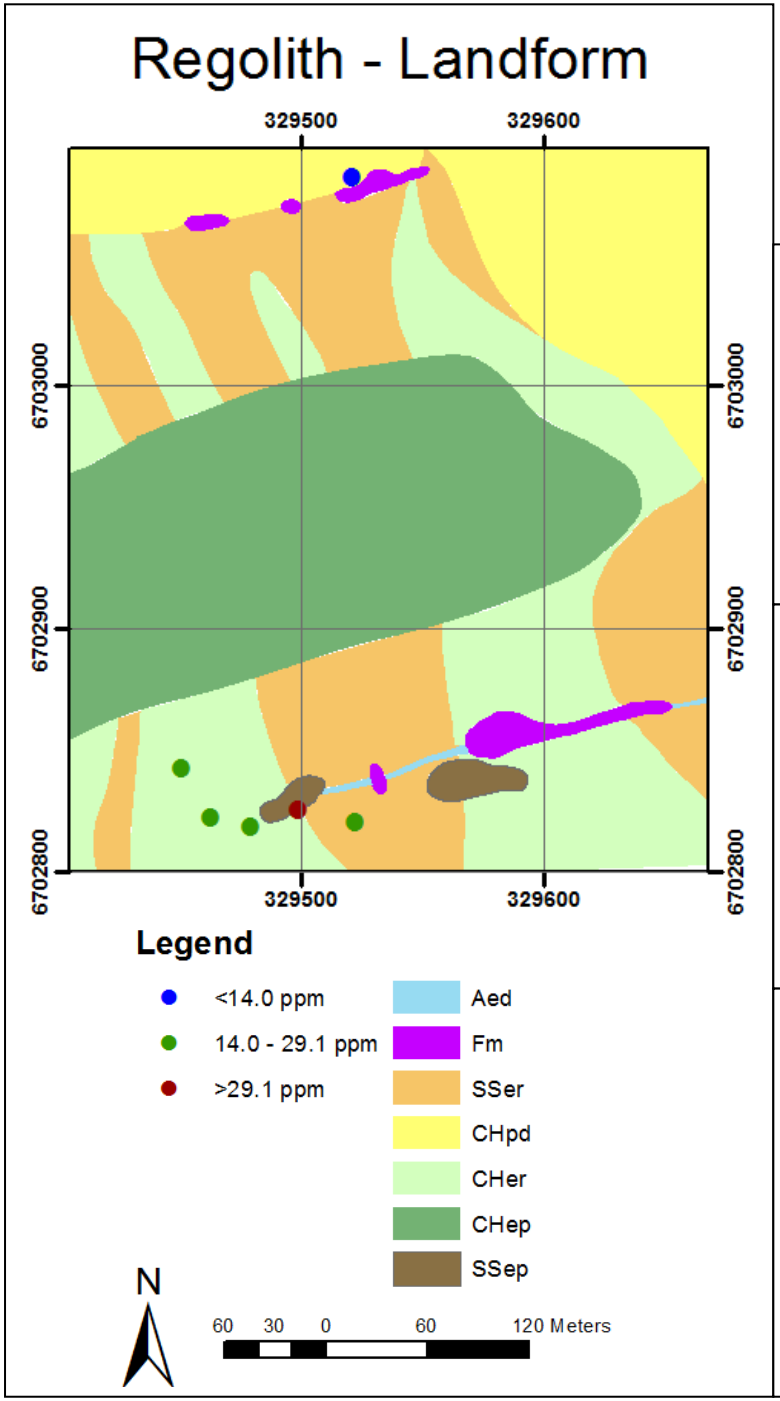
Legend

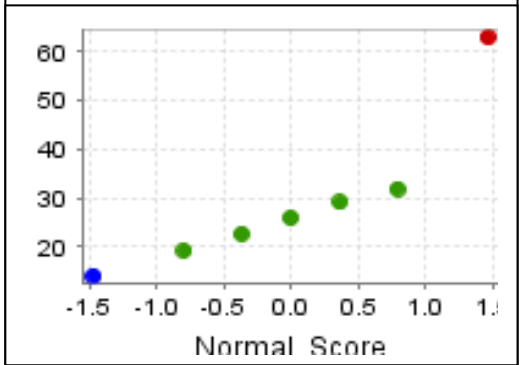
- <0.1 ppm
- 0.1 - 0.2 ppm
- 0.2 - 0.3 ppm
- 0.3 - 0.5 ppm
- >0.5 ppm
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

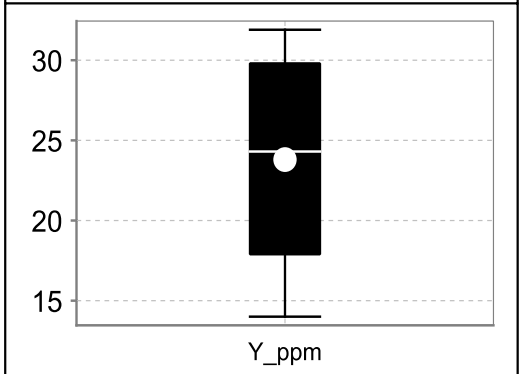
N

0 20 40 80 120 Meters

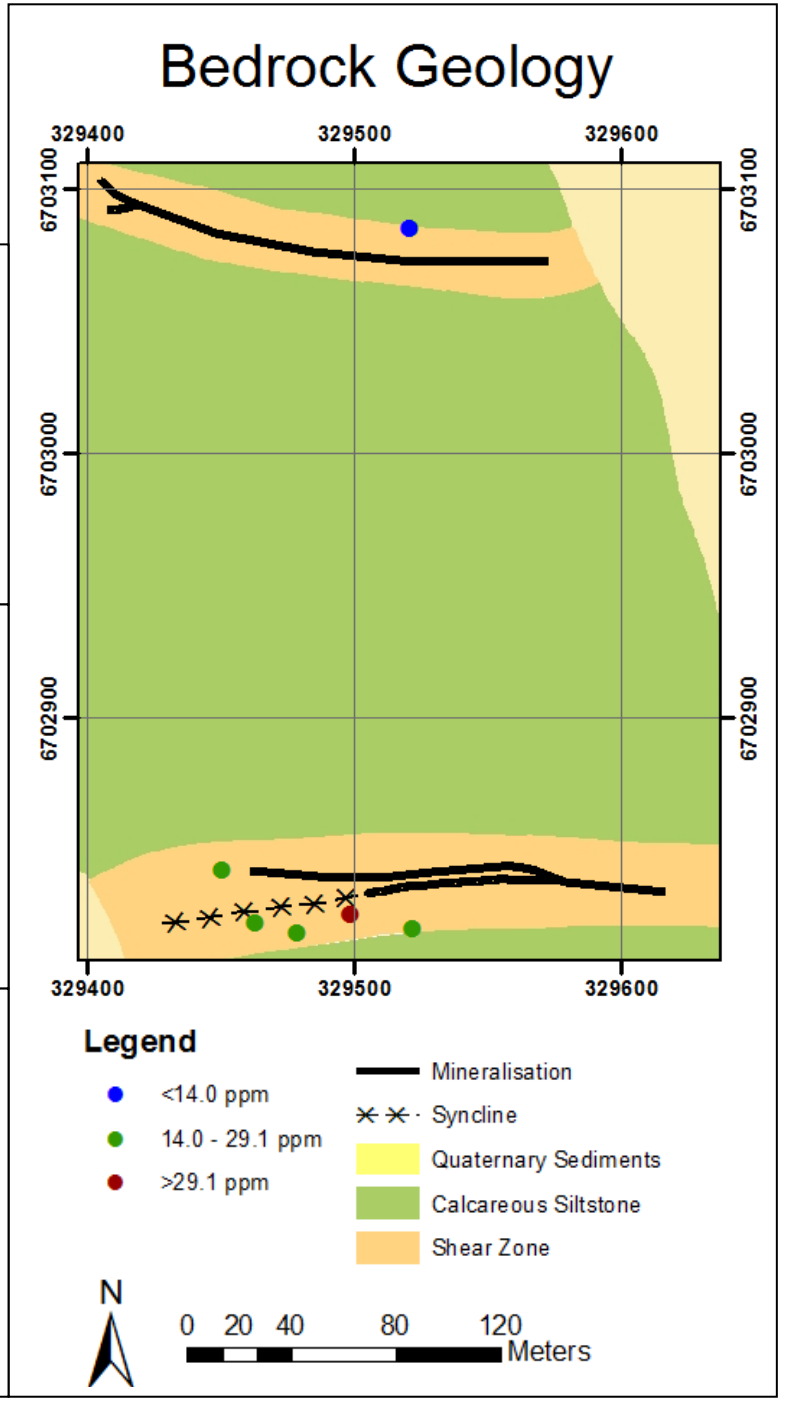
Ooloo
Bedrock
Y (ppm)
Pathfinder



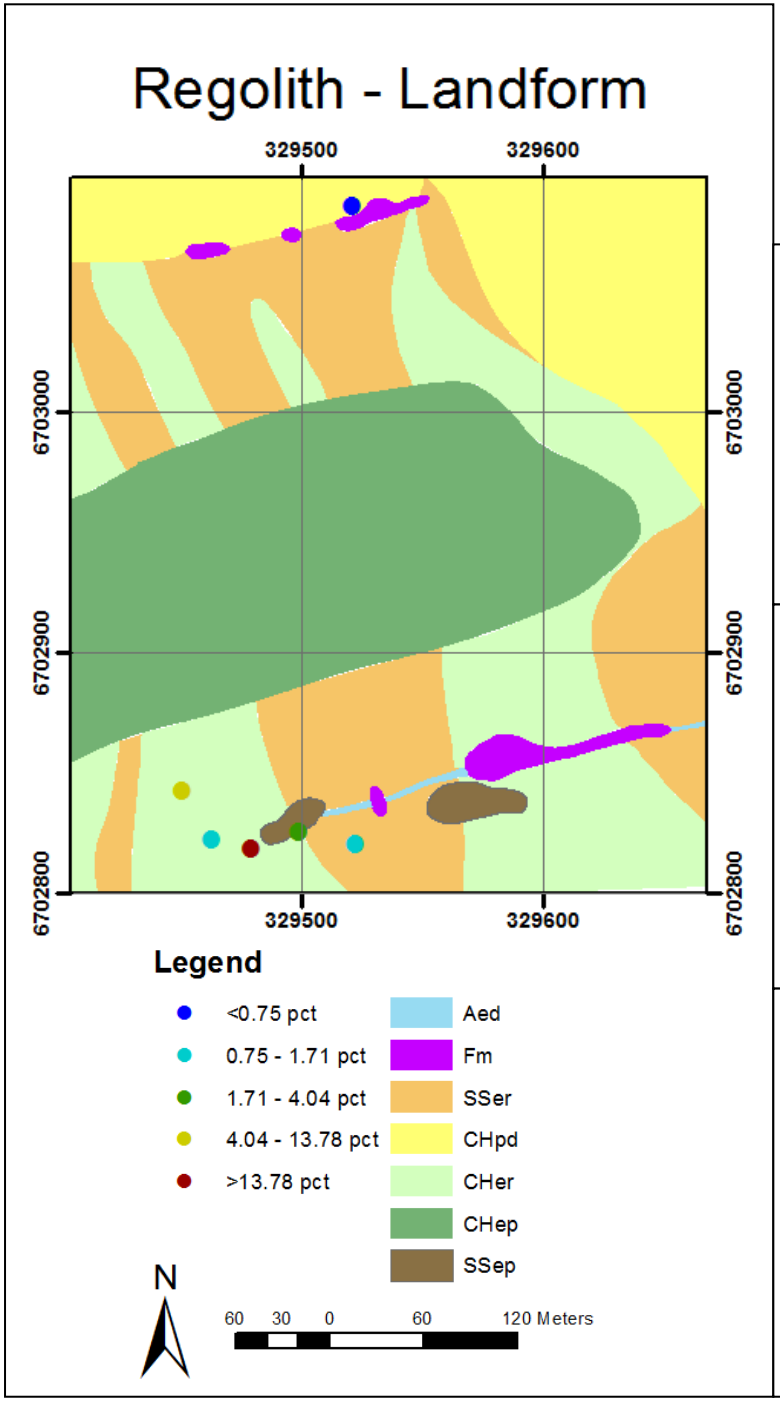


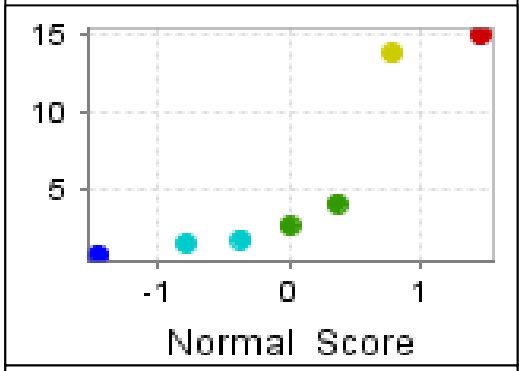


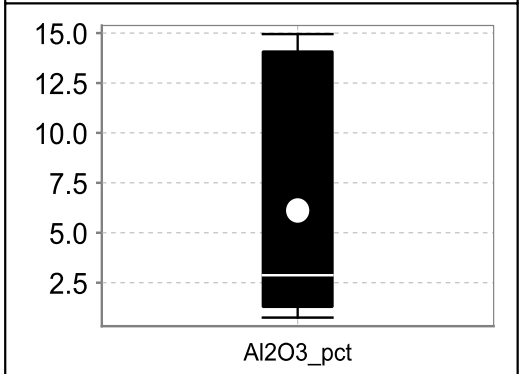
Summary Statistics
N = 7
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 25.9
Mean = 29.4
Standard Deviation = 15.9
Error = ±14.71



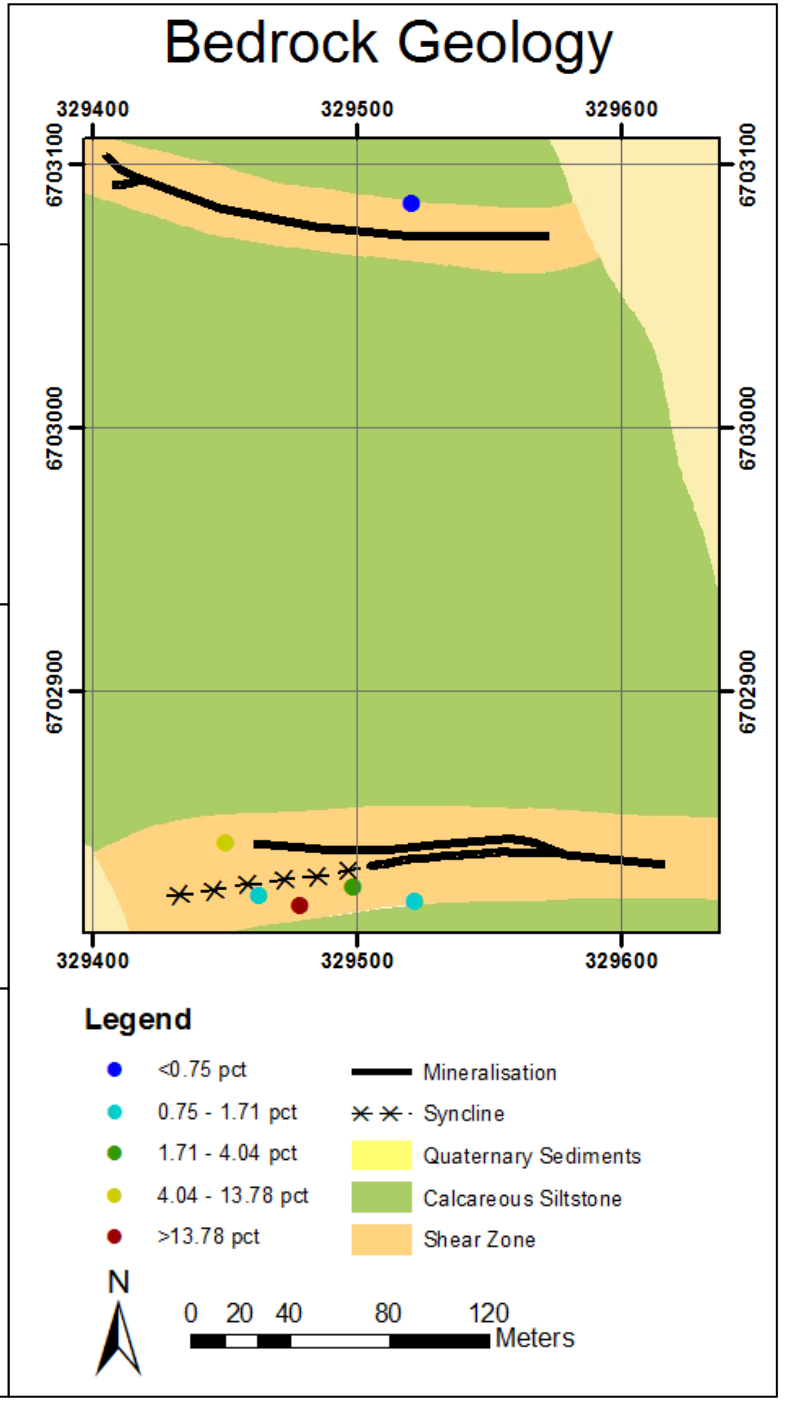
Ooloo
Bedrock
Al_2O_3(%)
Host/control



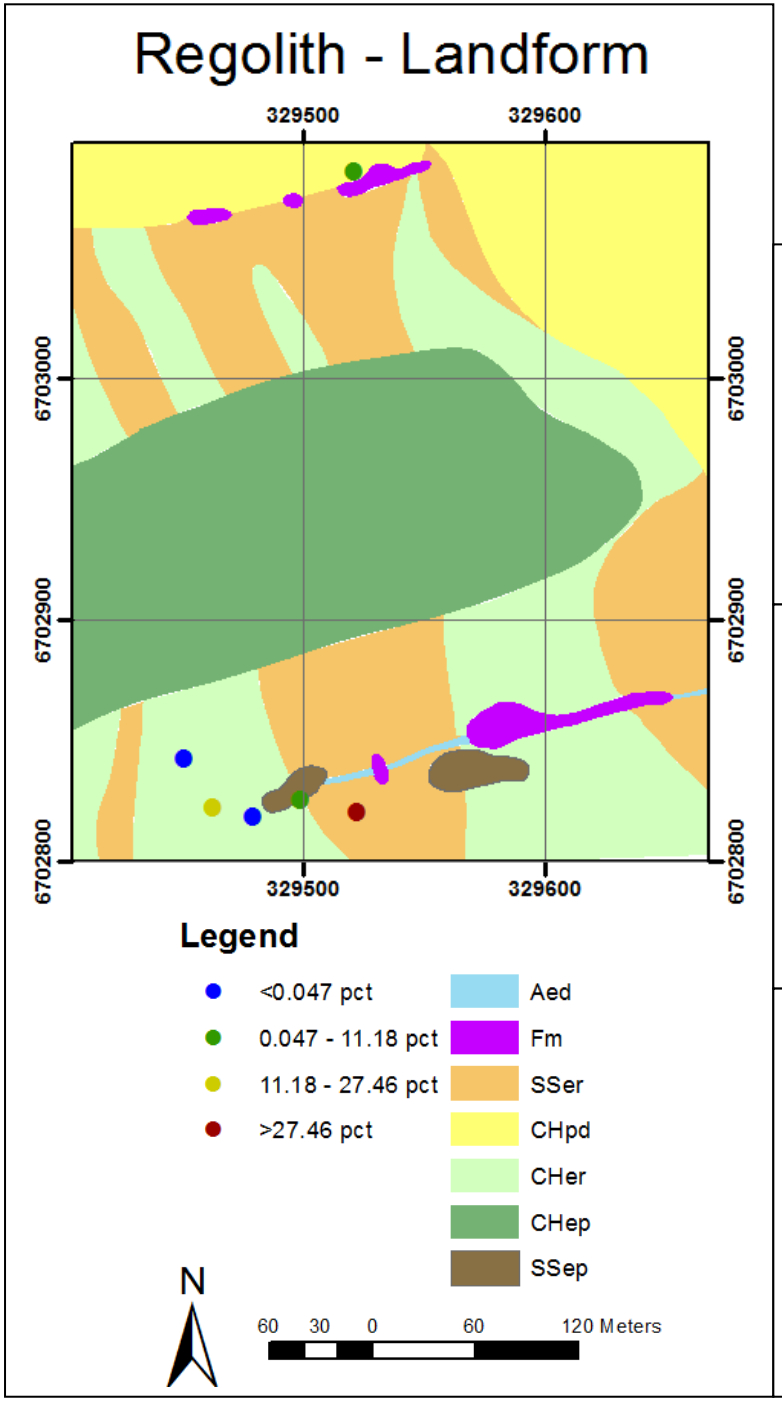


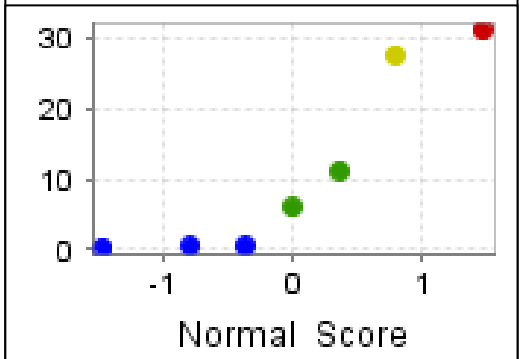


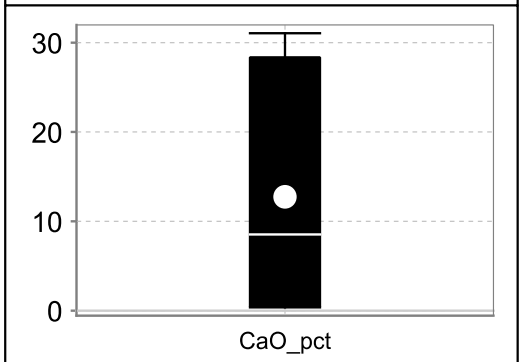
Summary Statistics
N = 7
Lower Detection Limit= 0.01
Below Detection Limit = 0
Median = 2.58
Mean = 5.61
Standard Deviation = 6.08
Error = ± 5.62



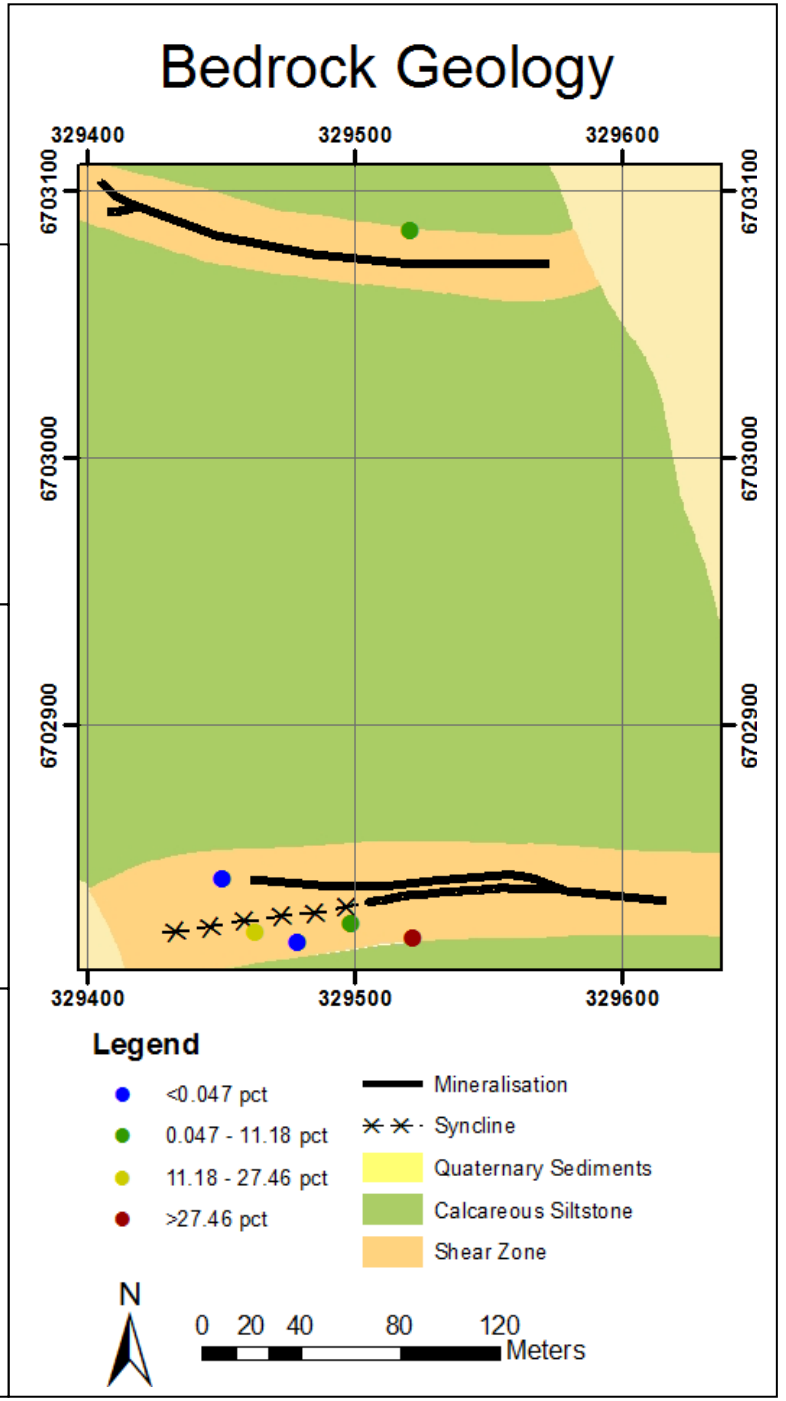
Ooloo
Bedrock
$CaO_{(\%)}$
Host/control/landscape







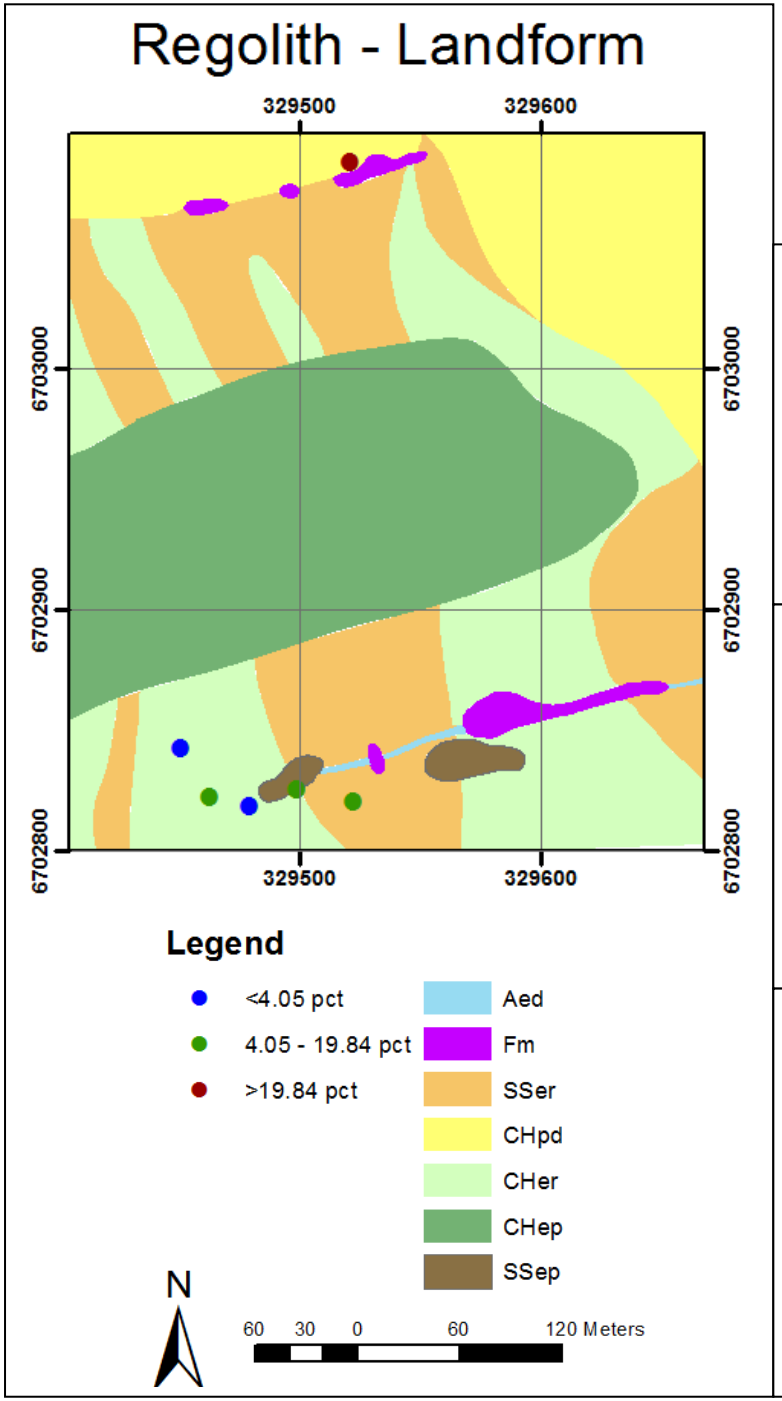
Summary Statistics
N = 7
Lower Detection Limit= 0.01
Below Detection Limit = 0
Median = 5.89
Mean = 10.98
Standard Deviation = 13.13
Error = ± 12.14

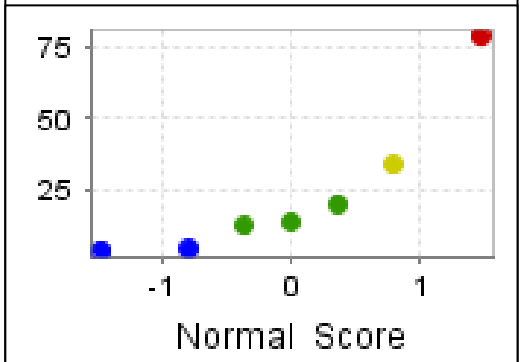


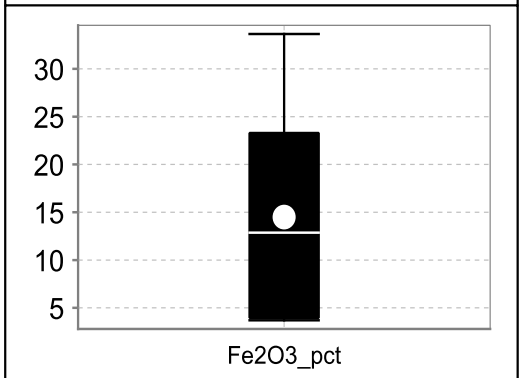
Ooloo
Bedrock

$Fe_2O_{3(\%)}$

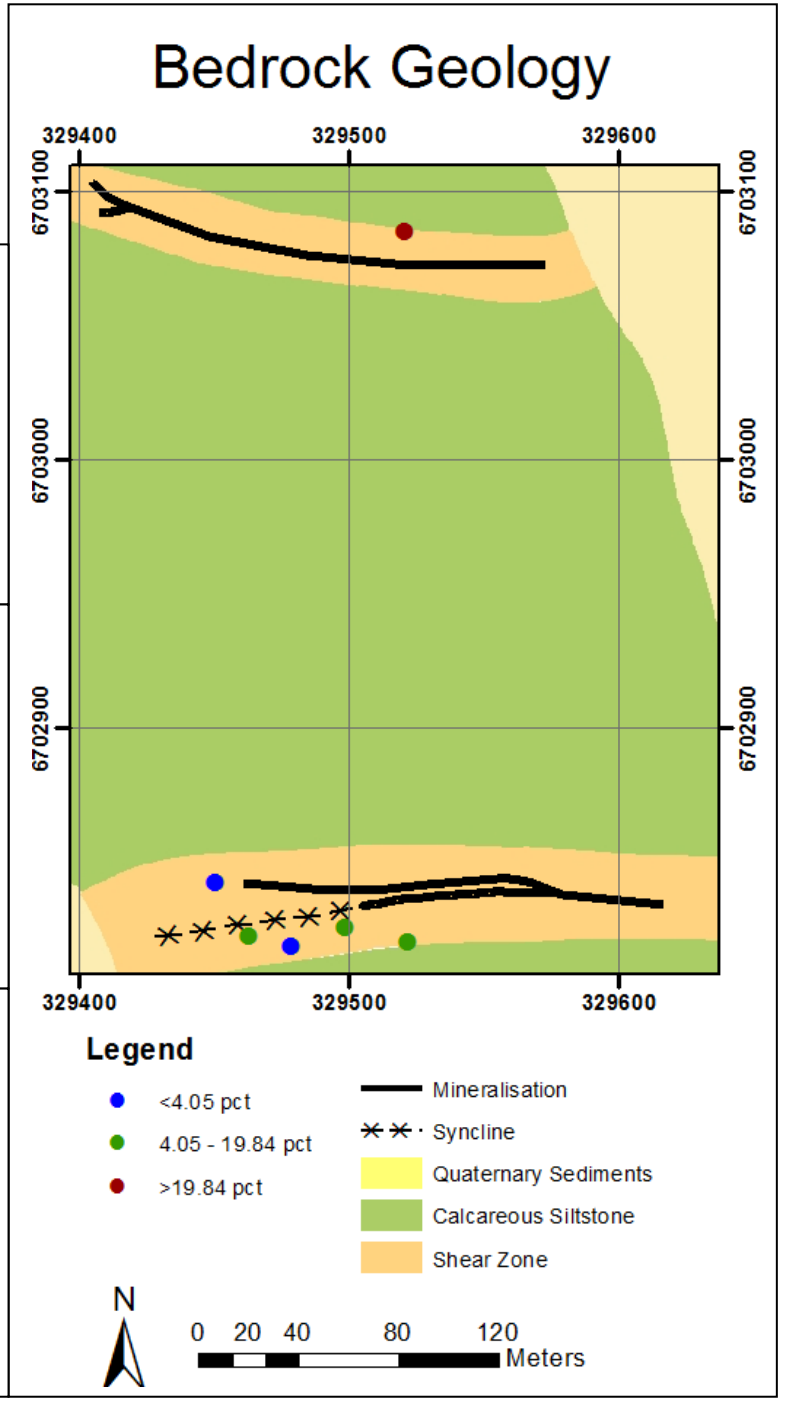
Host/control/landscape



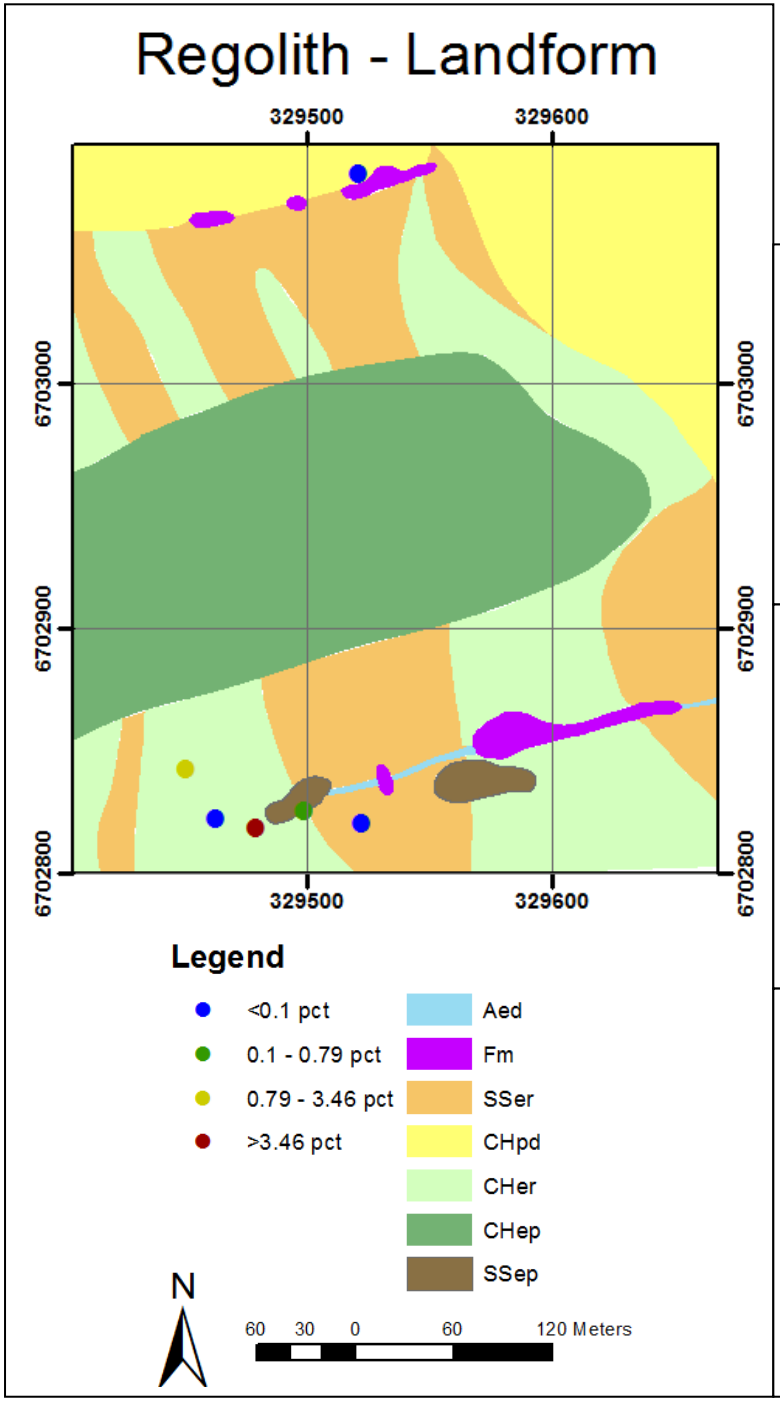


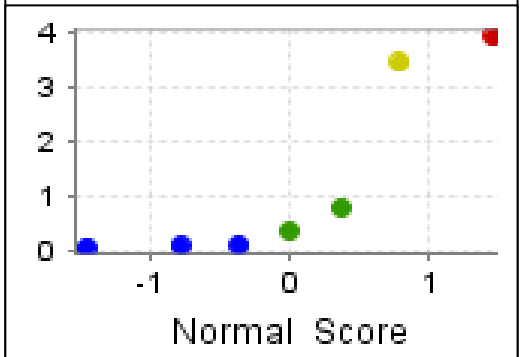


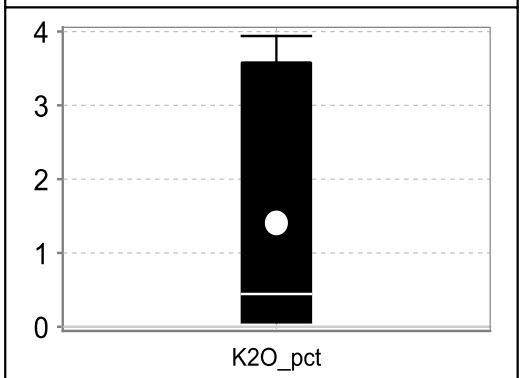
Summary Statistics
N = 7
Lower Detection Limit= 0.01
Below Detection Limit = 0
Median = 13.63
Mean = 23.65
Standard Deviation = 26.30
Error = ± 24.32



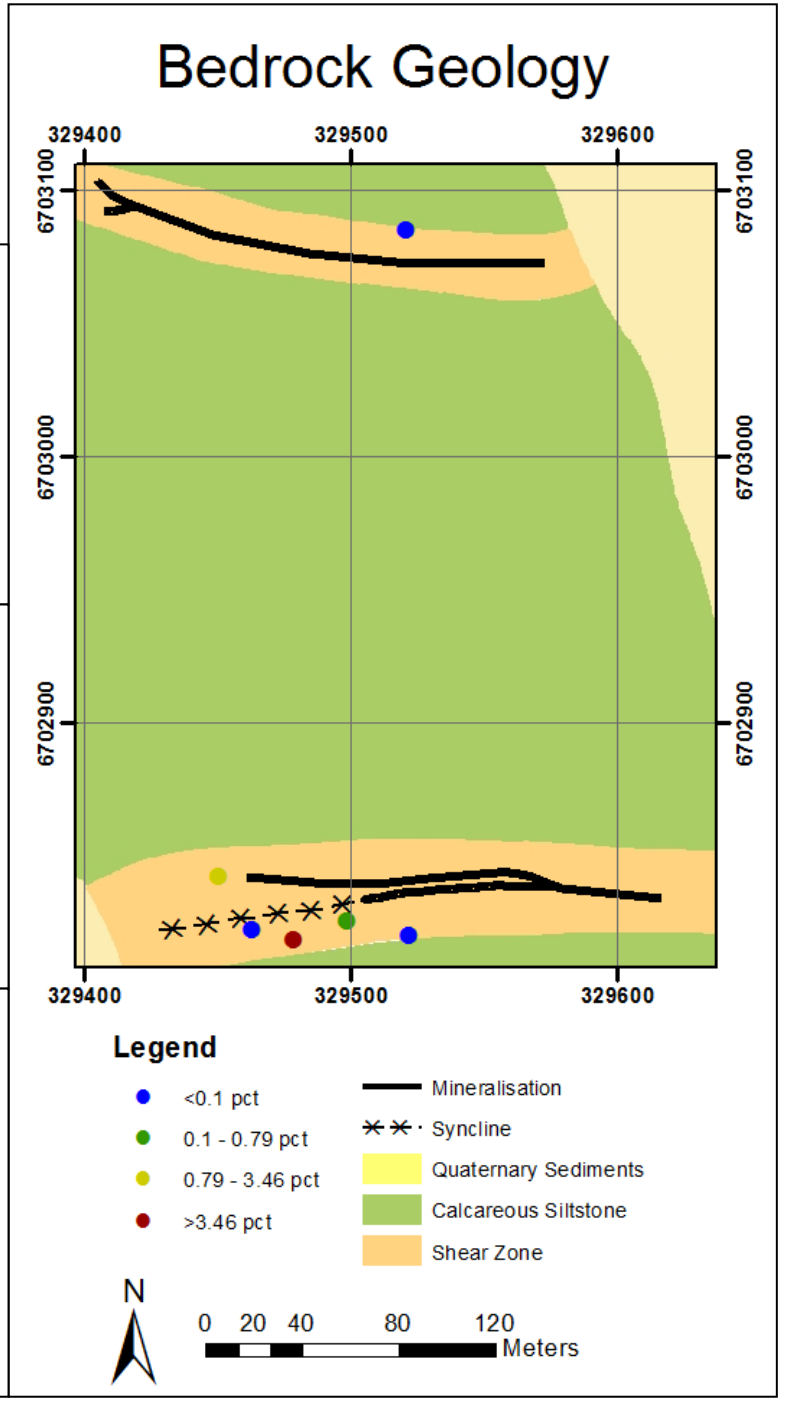
Ooloo
Bedrock
K_2O (%)
Host/control





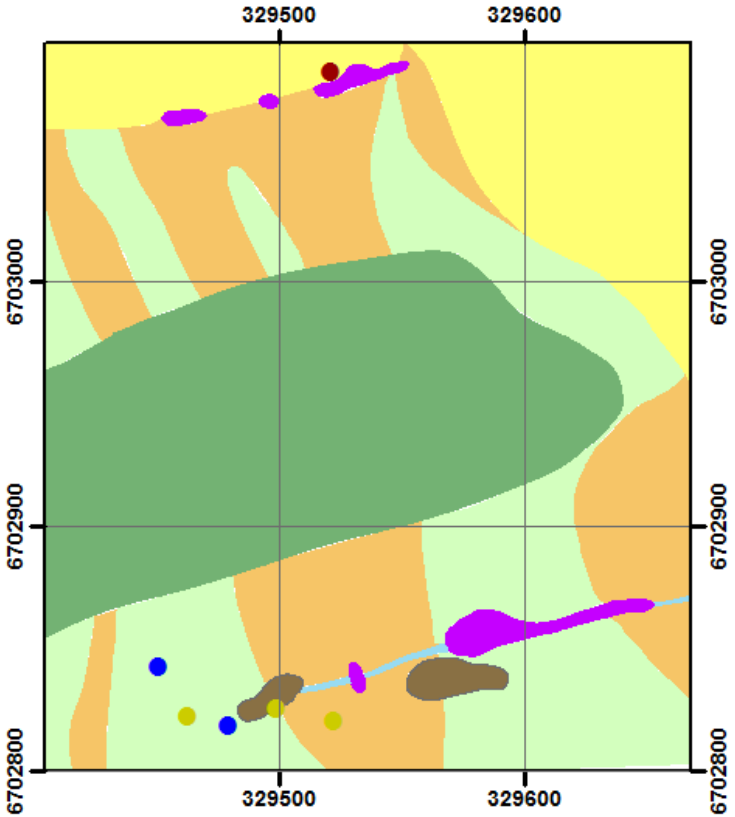


Summary Statistics
N = 7
Lower Detection Limit= 0.01
Below Detection Limit = 0
Median = 0.35
Mean = 1.26
Standard Deviation = 1.69
Error = ± 1.56



Ooloo
Bedrock
MnO(%)
Host/control

Regolith - Landform

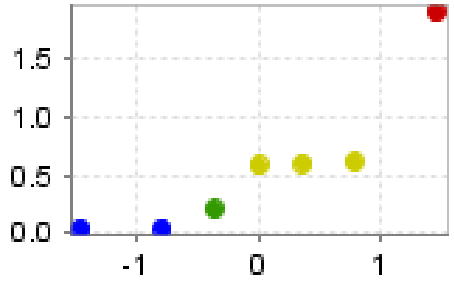


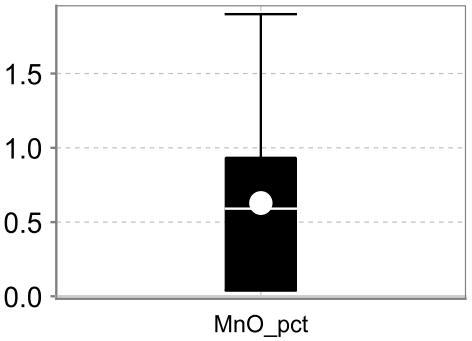
Legend

- <0.04 pct
- 0.04 - 0.61 pct
- >0.61 pct
- Aed
- Fm
- SSer
- CHpd
- CHer
- CHep
- SSep

N

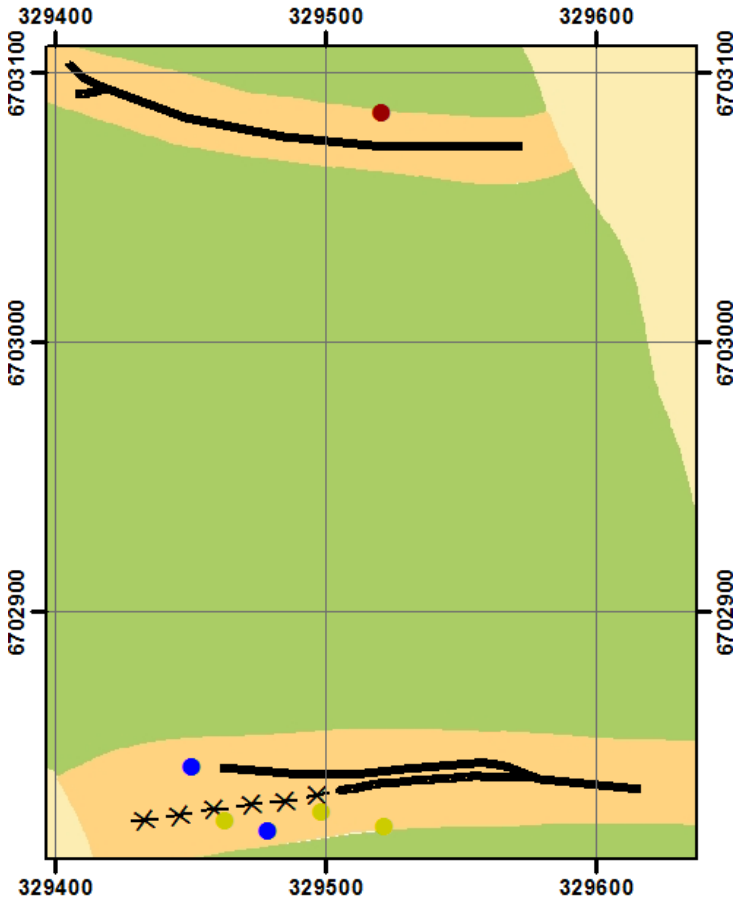
60 30 0 60 120 Meters





Summary Statistics
N = 7
Lower Detection Limit= 0.01
Below Detection Limit = 0
Median = 0.58
Mean = 0.57
Standard Deviation = 0.64
Error = ±0.59

Bedrock Geology



Legend

- <0.04 pct
- 0.04 - 0.61 pct
- >0.61 pct
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

N

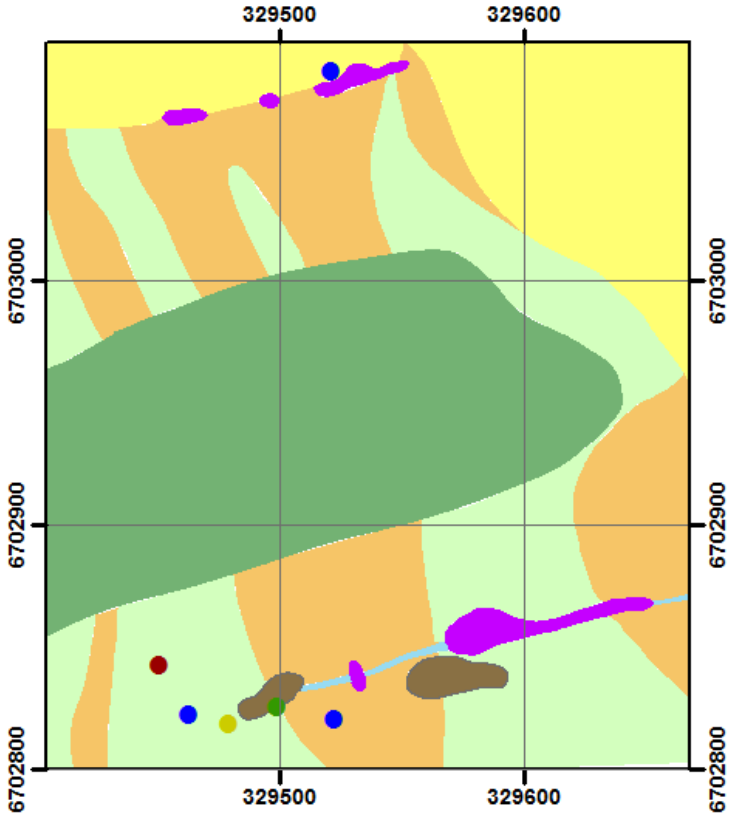
0 20 40 80 120 Meters

Ooloo
Bedrock

Na_2O (%)

Host/control/landscape

Regolith - Landform

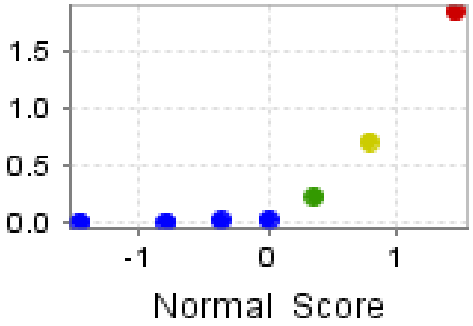


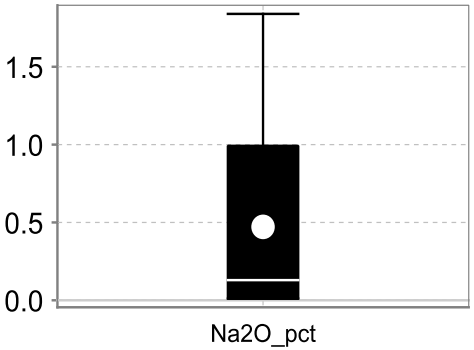
Legend

- <0.03 pct
- 0.03 - 0.23 pct
- 0.23 - 0.71 pct
- >0.71 pct
- Aed
- Fm
- SSer
- CHpd
- CHer
- CHep
- SSep

N

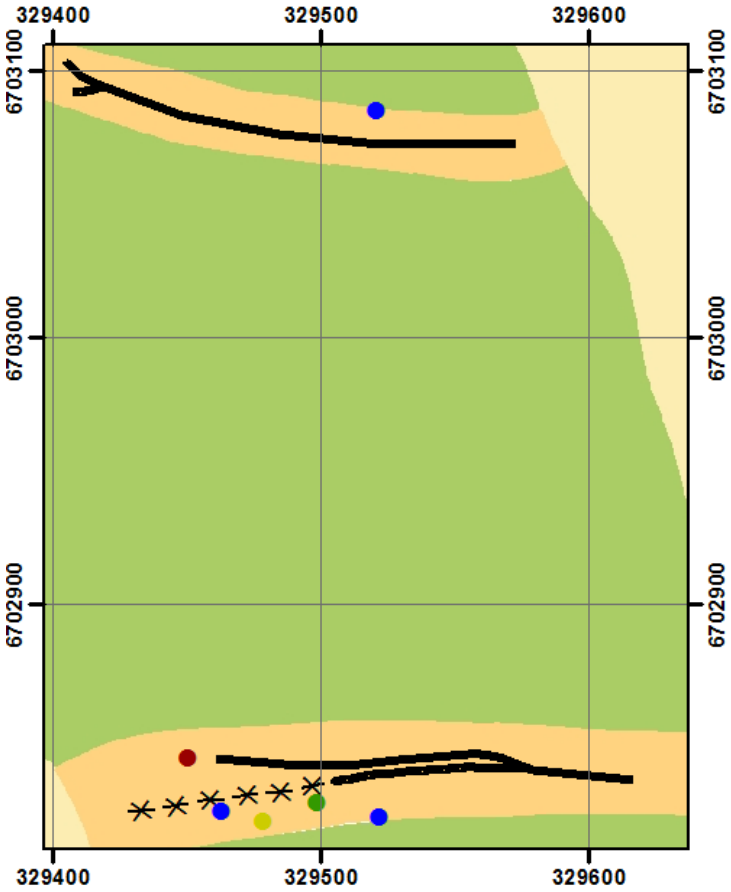
60 30 0 60 120 Meters





Summary Statistics
N = 7
Lower Detection Limit= 0.01
Below Detection Limit = 0
Median = 0.03
Mean = 0.41
Standard Deviation = 0.68
Error = ±0.63

Bedrock Geology



Legend

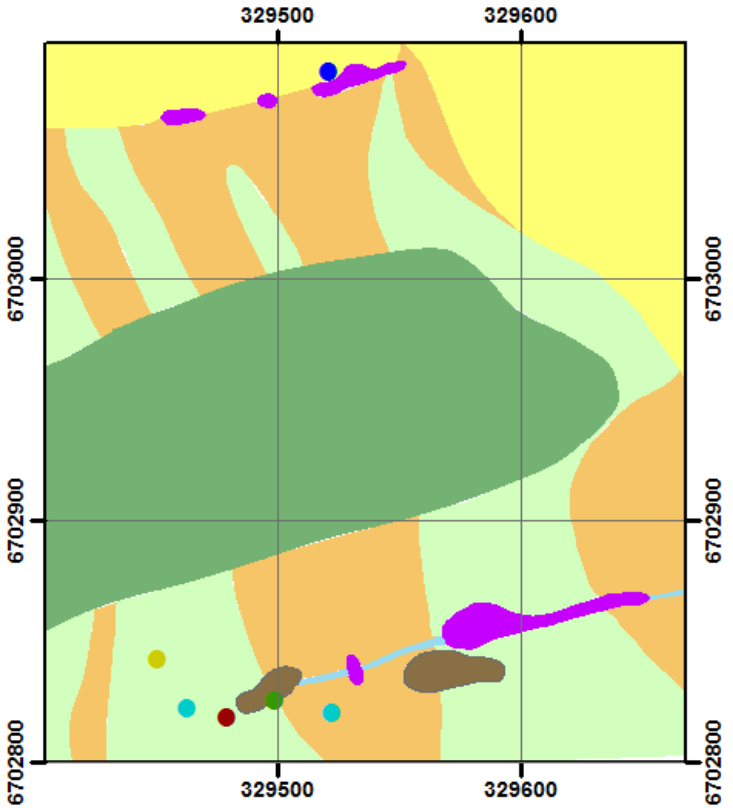
- <0.03 pct
- 0.03 - 0.23 pct
- 0.23 - 0.71 pct
- >0.71 pct
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

N

0 20 40 80 120 Meters

Ooloo
Bedrock
Rb(ppm)
Host/control/landscape

Regolith - Landform

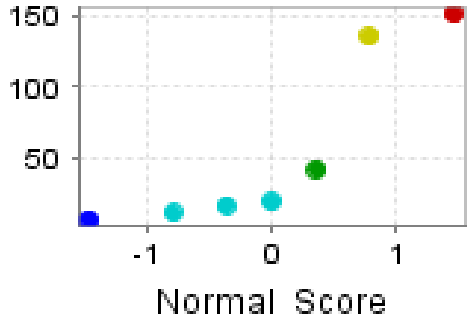


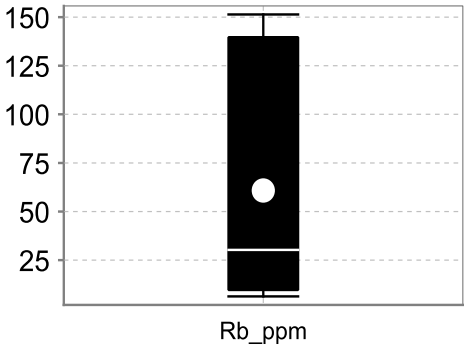
Legend

- <6.3 ppm
- 6.3 - 18.7 ppm
- 18.7 - 41.8 ppm
- 41.8 - 135.8 ppm
- >135.8 ppm
- Aed
- Fm
- SSer
- CHpd
- CHer
- CHep
- SSep

N

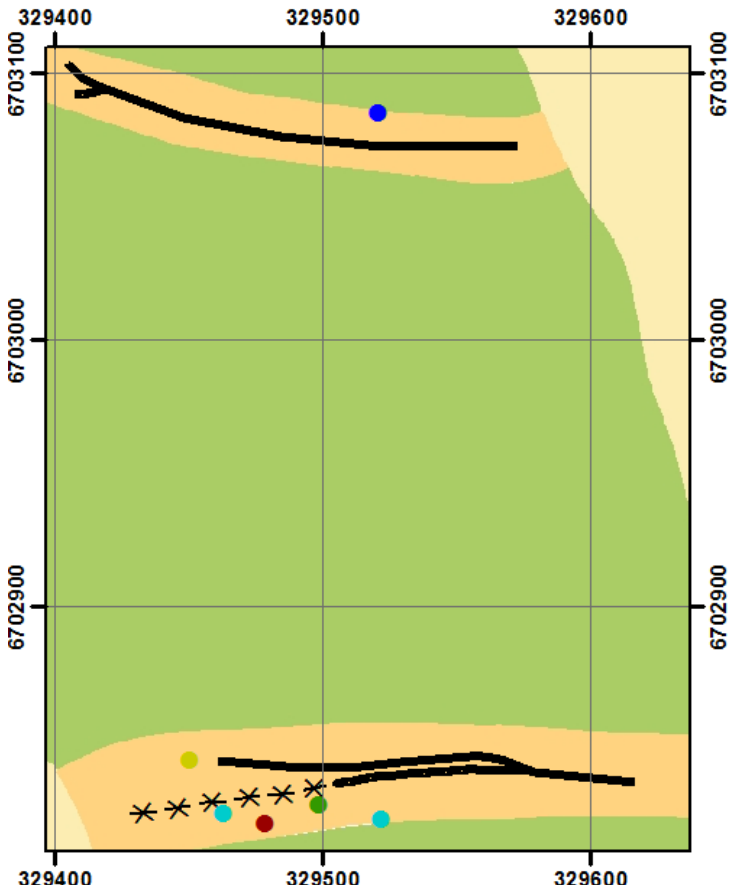
60 30 0 60 120 Meters





Summary Statistics
N = 7
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 18.7
Mean = 54.41
Standard Deviation = 62.12
Error = ± 29.71

Bedrock Geology



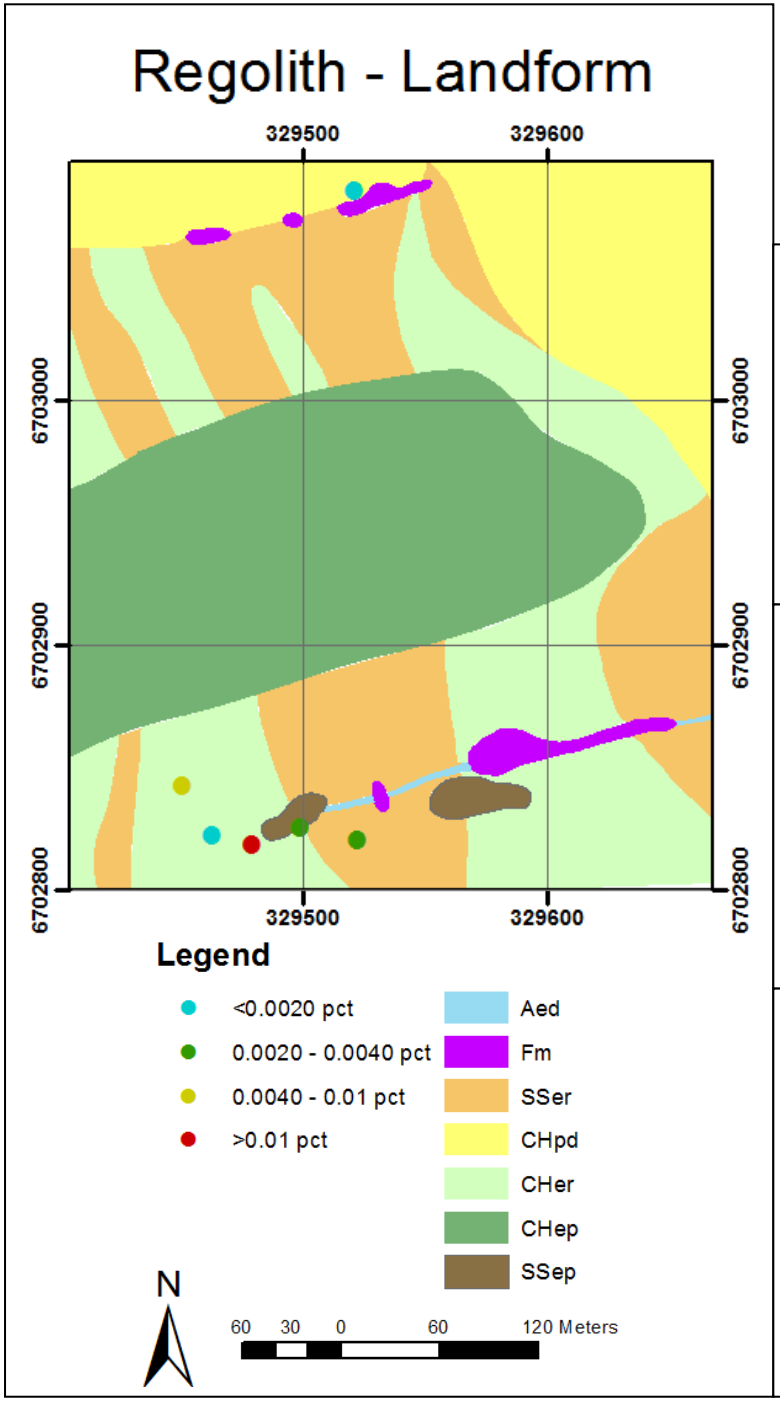
Legend

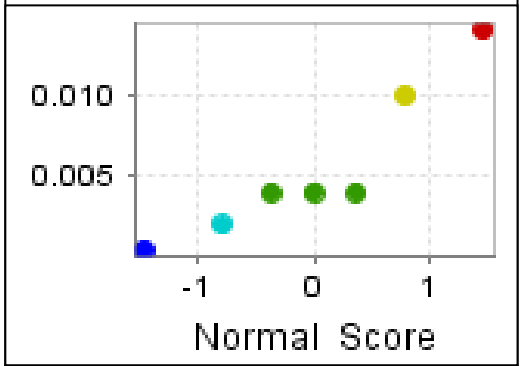
- <6.3 ppm
- 6.3 - 18.7 ppm
- 18.7 - 41.8 ppm
- 41.8 - 135.8 ppm
- >135.8 ppm
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

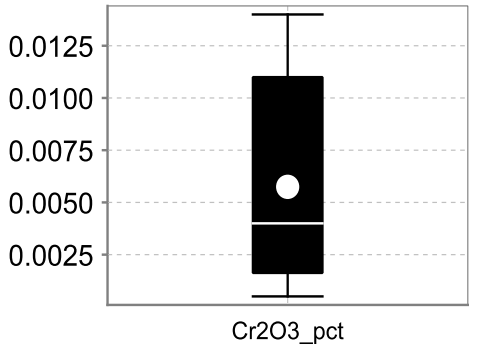
N

0 20 40 80 120 Meters

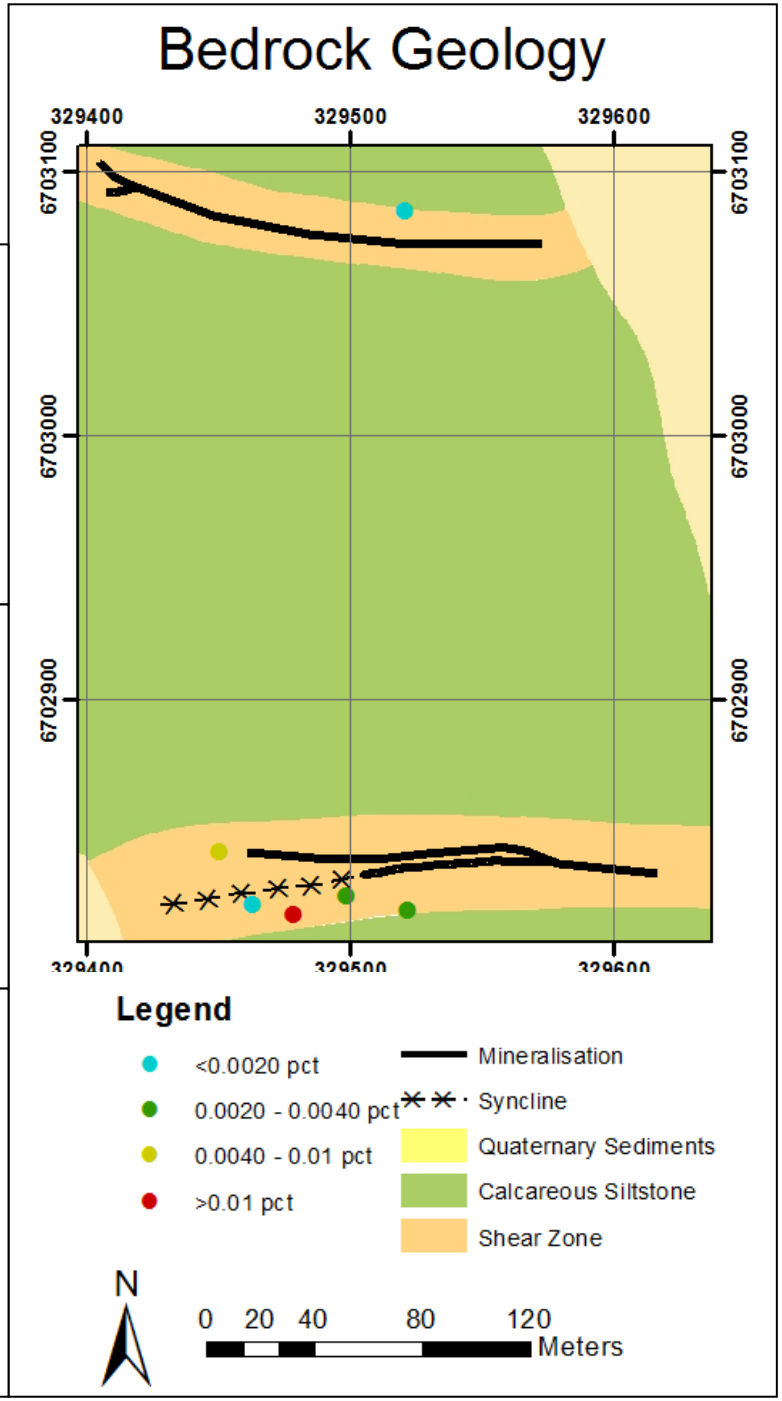
Ooloo
Bedrock
$Cr_2O_{3(\%)}$
Other





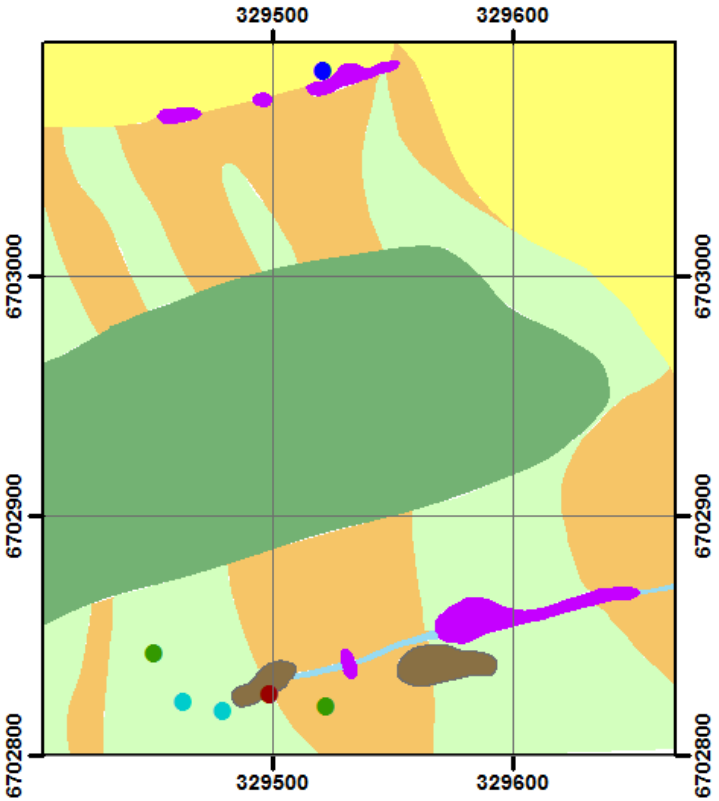


Summary Statistics
N = 7
Lower Detection Limit=0.001
Below Detection Limit = 0
Median = 0.004
Mean = 0.005
Standard Deviation = 0.005
Error = ±0.005



Ooloo
Bedrock
$Ni_{(ppm)}$
Host/control

Regolith - Landform

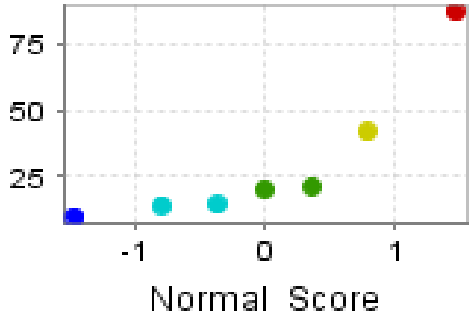


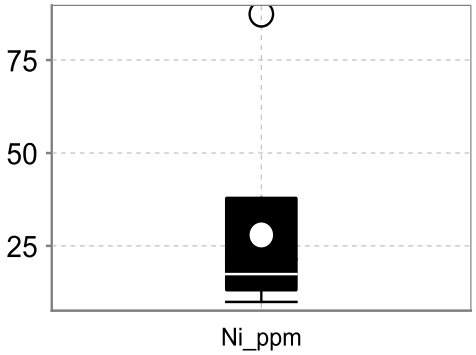
Legend

- <9.9 ppm
- 9.9 - 14.4 ppm
- 14.4 - 21.4 ppm
- <21.4 ppm
- Aed
- Fm
- SSer
- CHpd
- CHer
- CHep
- SSep

N

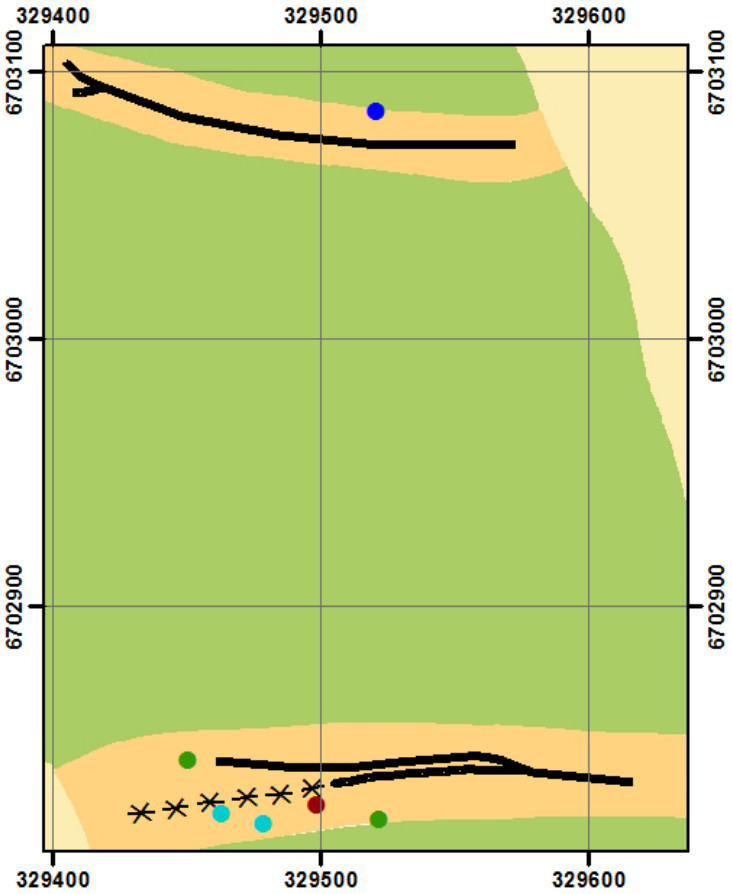
60 30 0 60 120 Meters





Summary Statistics
N = 7
Lower Detection Limit= 0.1
Below Detection Limit = 0
Median = 20.4
Mean = 29.93
Standard Deviation = 27.39
Error = ± 25.33

Bedrock Geology



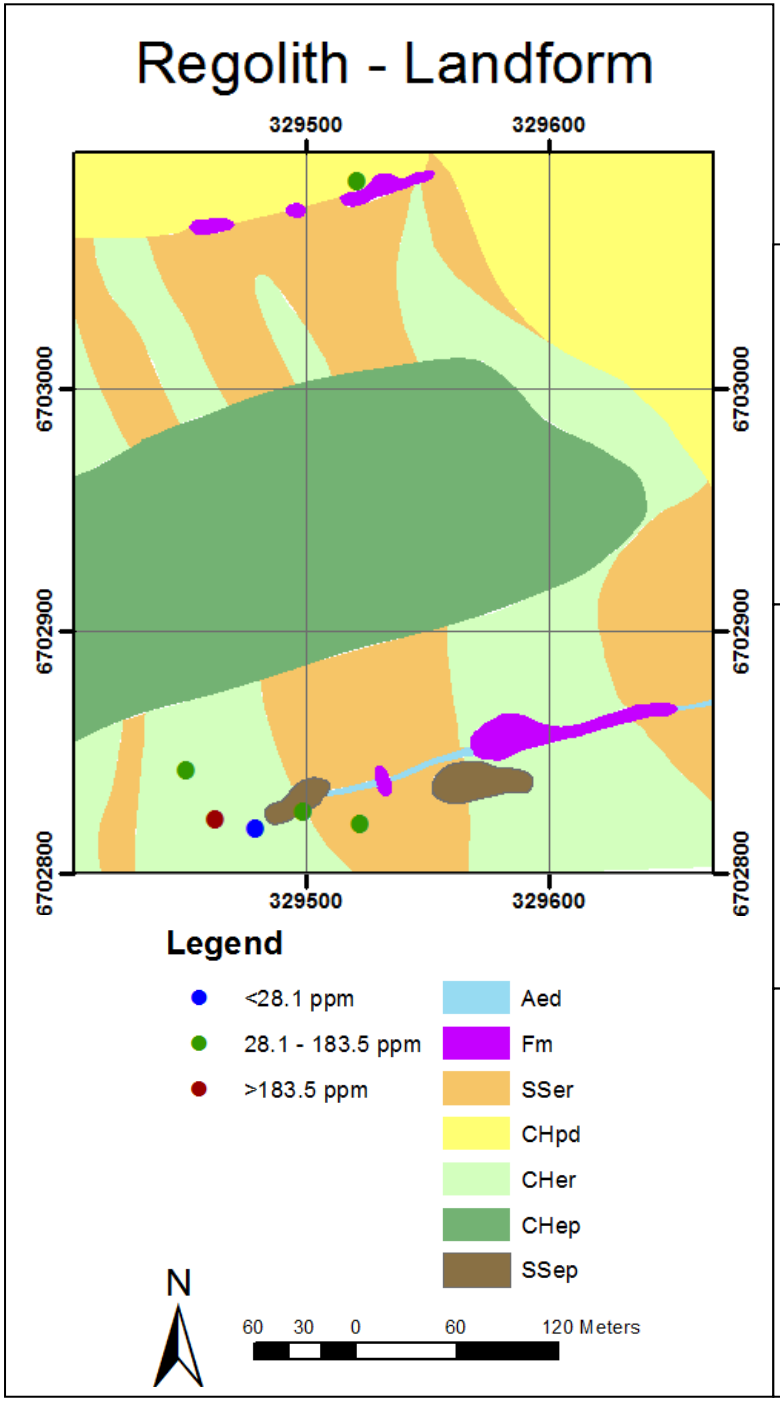
Legend

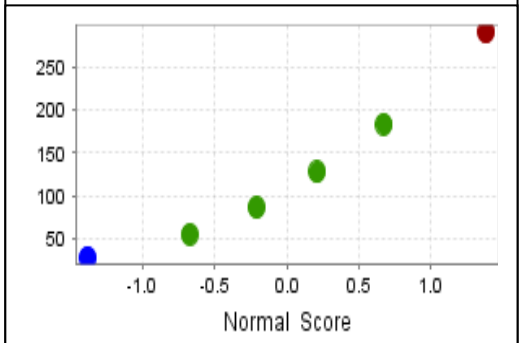
- <9.9 ppm
- 9.9 - 14.4 ppm
- 14.4 - 21.4 ppm
- <21.4 ppm
- Mineralisation
- Syncline
- Quaternary Sediments
- Calcareous Siltstone
- Shear Zone

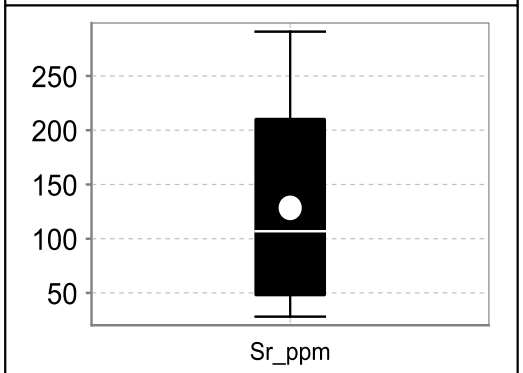
N

0 20 40 80 120 Meters

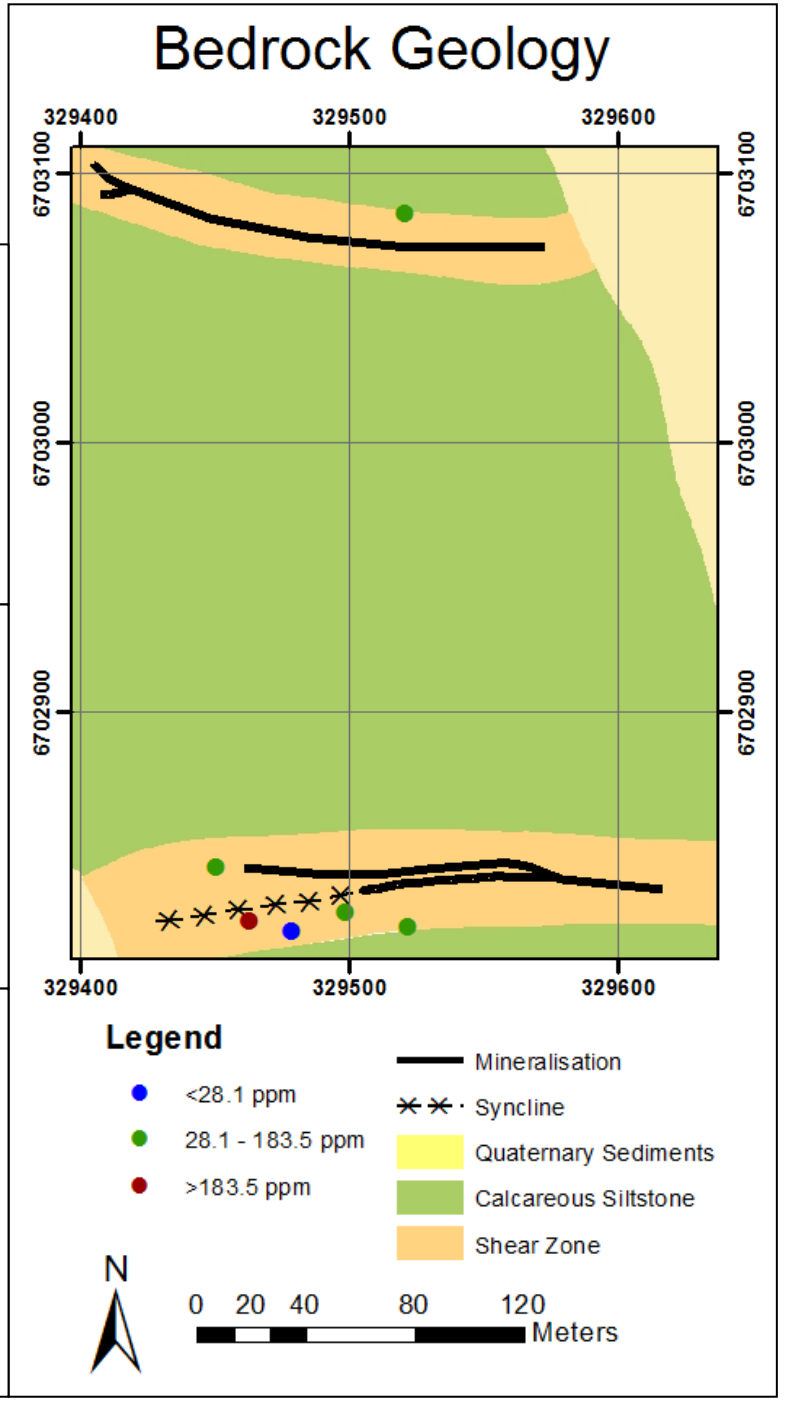
Ooloo
Bedrock
$Sr_{(ppm)}$
Other







Summary Statistics
N = 7
Lower Detection Limit= 0.5
Below Detection Limit = 0
Median = 86.1
Mean = 114.83
Standard Deviation = 95.37
Error = ±88.2



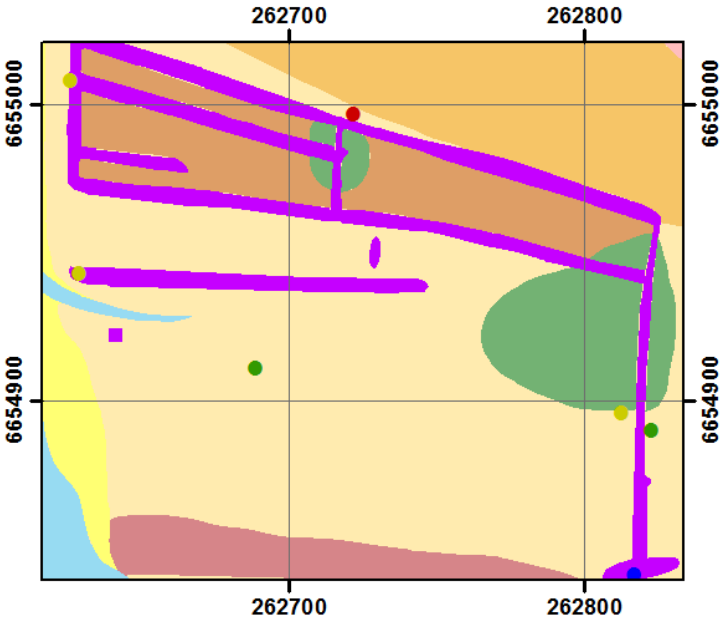
Avondale

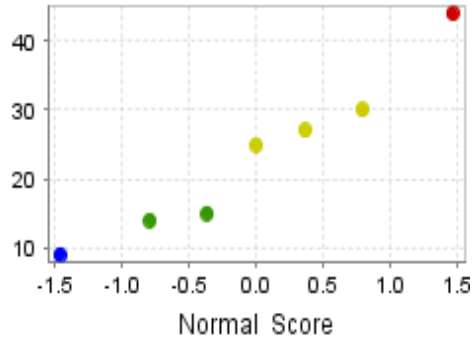
***Eremophila freelingii* leaf**

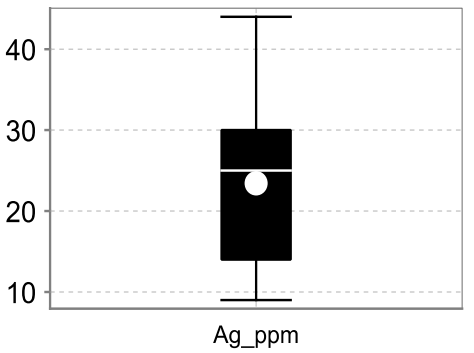
Ag(ppb)

Commodity

Regolith - Landform







Summary Statistics

N = 7

Lower Detection Limit= 2

Below Detection Limit = 0

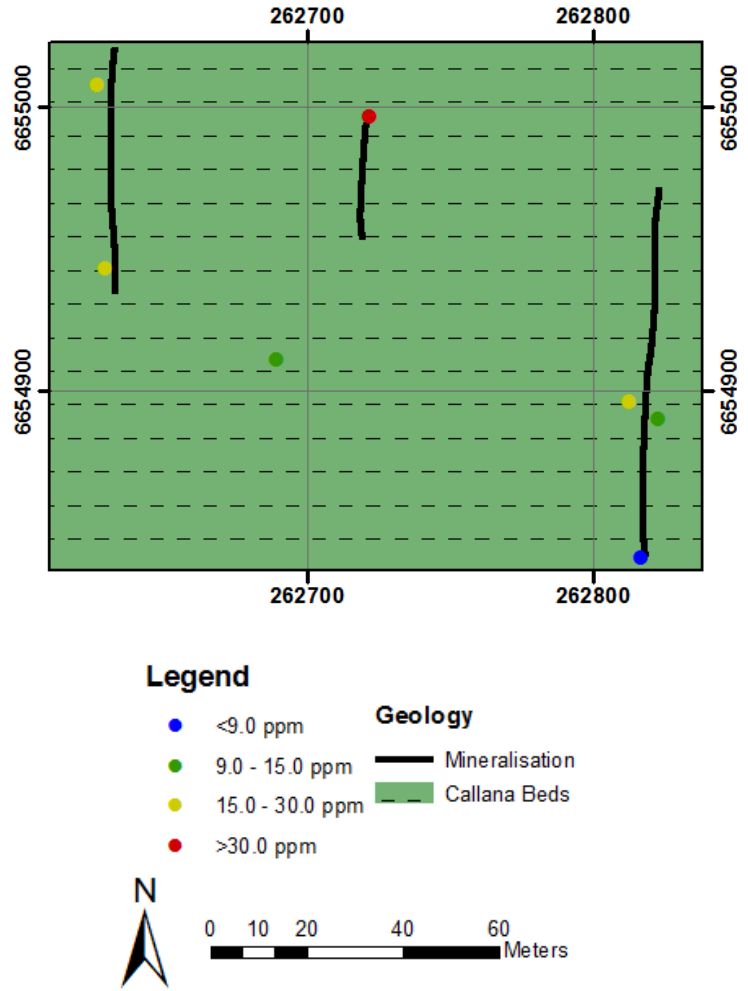
Median = 25

Mean = 23.43

Standard Deviation = 11.90

Error = ± 14.78

Bedrock Geology



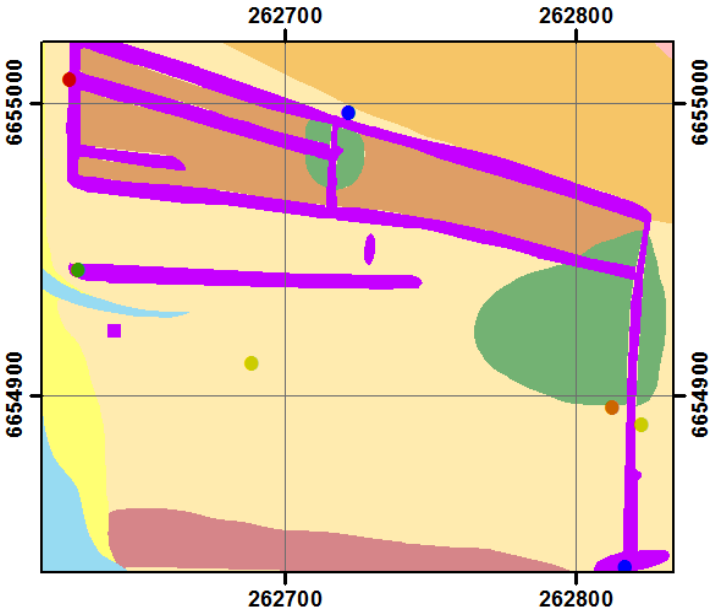
Avondale

***Eremophila freelingii* leaf**

Cu(ppm)

Commodity

Regolith - Landform



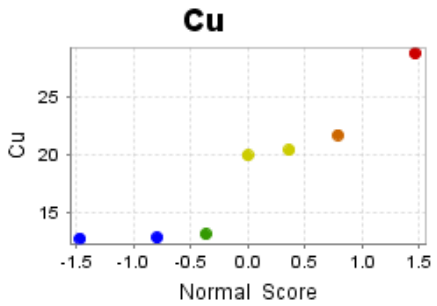
Legend

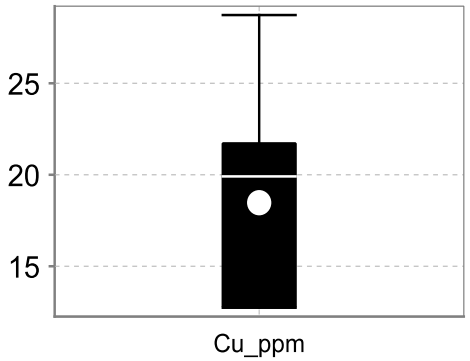
Regolith - Landform Units

<12.78 ppm	Aed
12.78 - 13.08 ppm	Aap
13.08 - 20.37 ppm	CHpd1
20.37 - 21.71 ppm	CHpd2
>21.71 ppm	CHpd3
	CHer1
	CHer2
	SSer
	Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.01

Below Detection Limit = 0

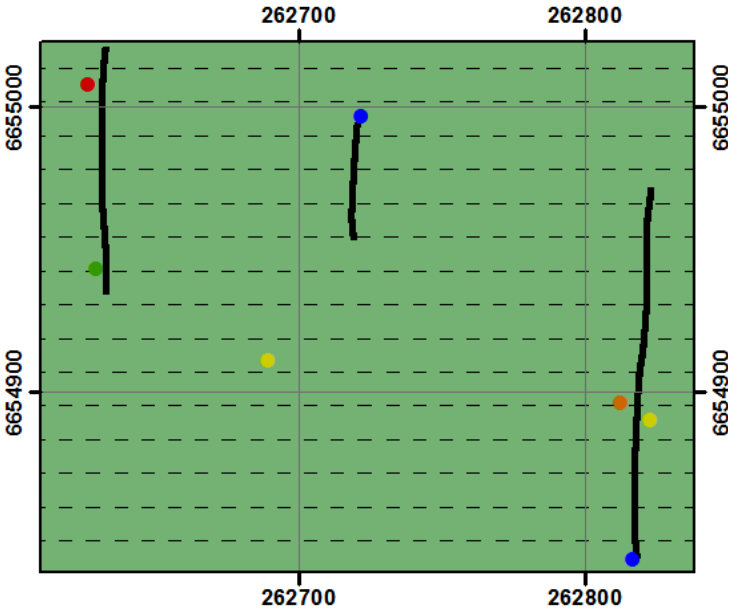
Median = 19.91

Mean = 18.47

Standard Deviation = 5.99

Error = ± 5.54

Bedrock Geology



Legend

<12.78 ppm	**Geology**
12.78 - 13.08 ppm	Mineralisation
13.08 - 20.37 ppm	Callana Beds
20.37 - 21.71 ppm	
>21.71 ppm	

N

0 10 20 40 60 Meters

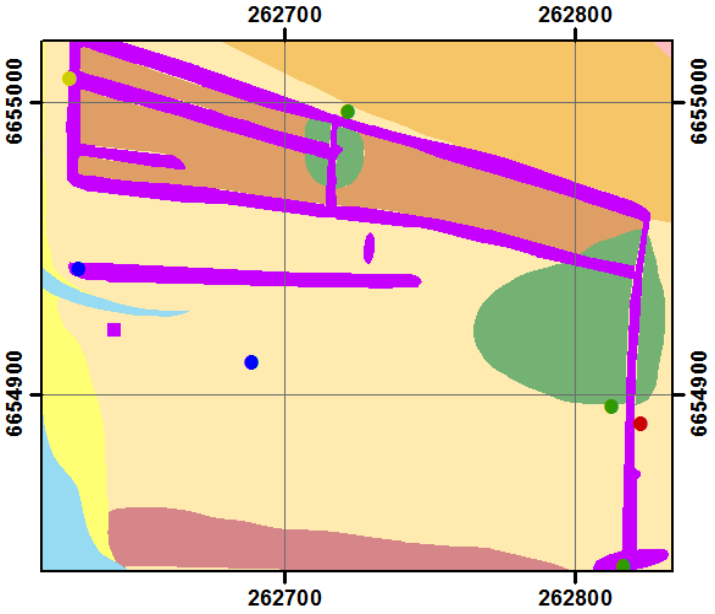
Avondale

***Eremophila freelingii* leaf**

Pb(ppm)

Commodity

Regolith - Landform



Legend

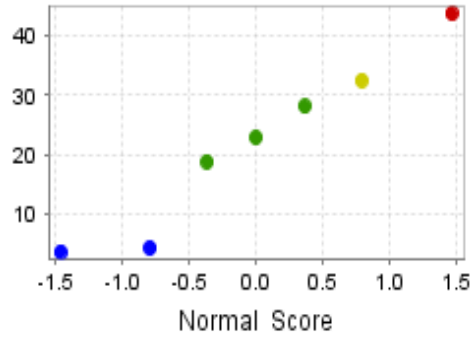
Regolith - Landform Units

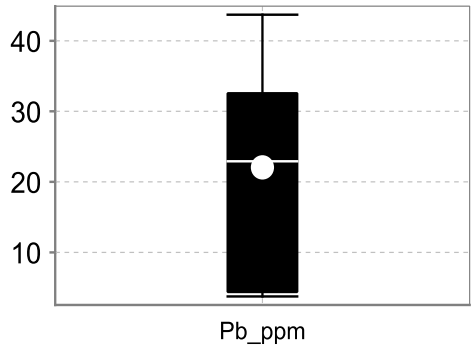
- <4.39 ppm
- 4.39 - 28.13 ppm
- 28.13 - 32.56 ppm
- >32.56 ppm

Aed, Aap, CHpd1, CHpd2, CHpd3, CHer1, CHer2, SSer, Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.01

Below Detection Limit = 0

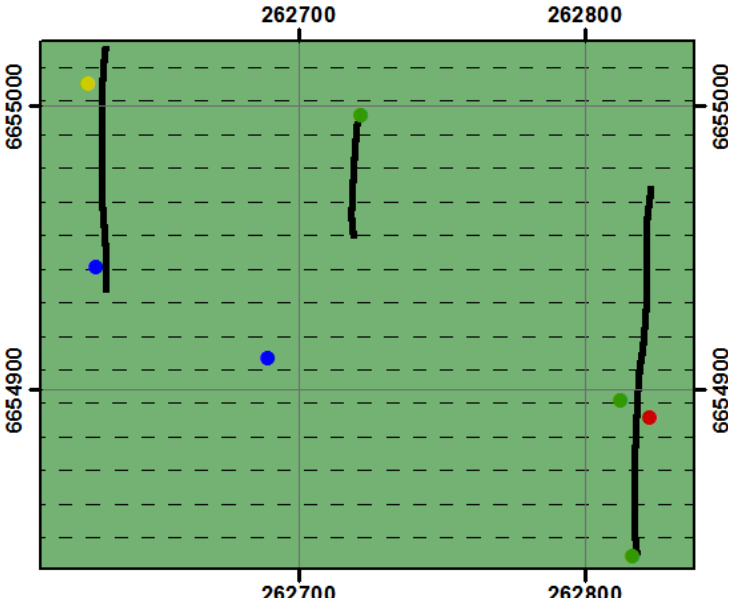
Median = 22.92

Mean = 22.05

Standard Deviation = 14.57

Error = ± 13.48

Bedrock Geology



Legend

- <4.39 ppm
- 4.39 - 28.13 ppm
- 28.13 - 32.56 ppm
- >32.56 ppm

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

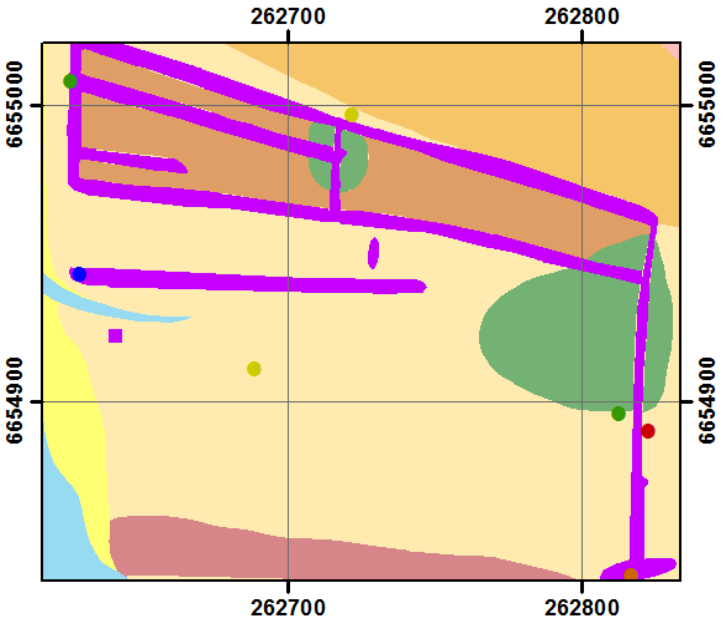
Avondale

***Eremophila freelingii* leaf**

Zn(ppm)

Commodity

Regolith - Landform



Legend

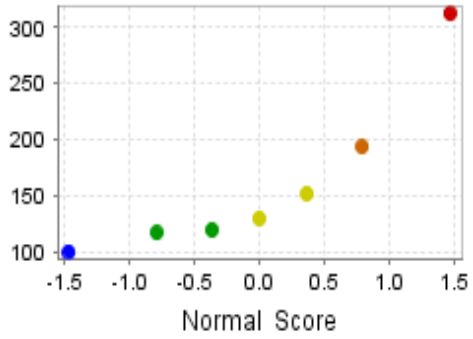
Regolith - Landform Units

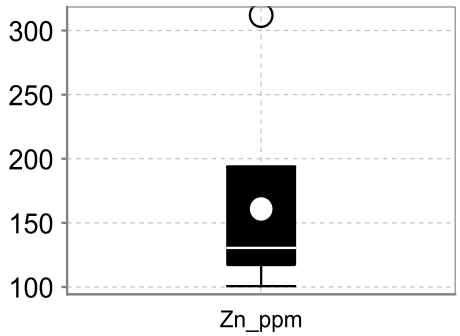
- <100.6 ppm
- 100.6 - 120.0 ppm
- 120.0 - 152.0 ppm
- 152.0 - 193.8 ppm
- >193.8 ppm

- Aed
- Aap
- CHpd1
- CHpd2
- CHpd3
- CHer1
- CHer2
- SSer
- Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.1

Below Detection Limit = 0

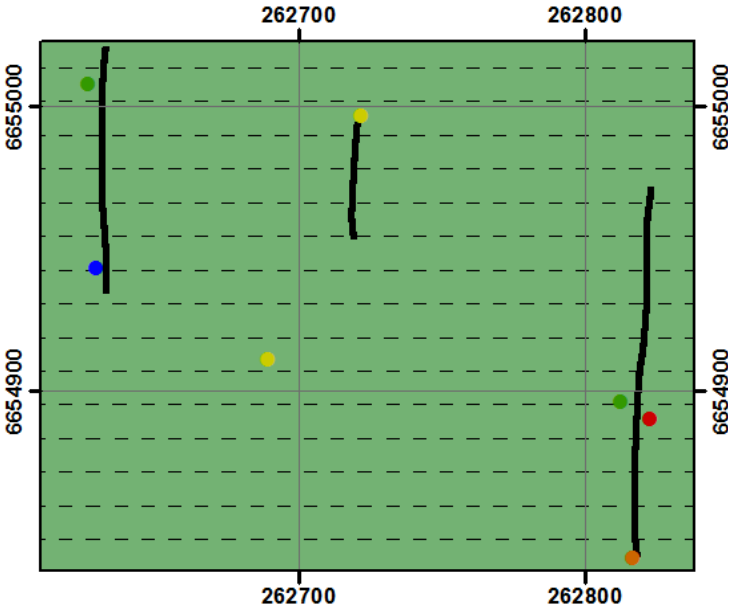
Median = 130.5

Mean = 160.871

Standard Deviation = 73.184

Error = ± 67.68

Bedrock Geology



Legend

- <100.6 ppm
- 100.6 - 120.0 ppm
- 120.0 - 152.0 ppm
- 152.0 - 193.8 ppm
- >193.8 ppm

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

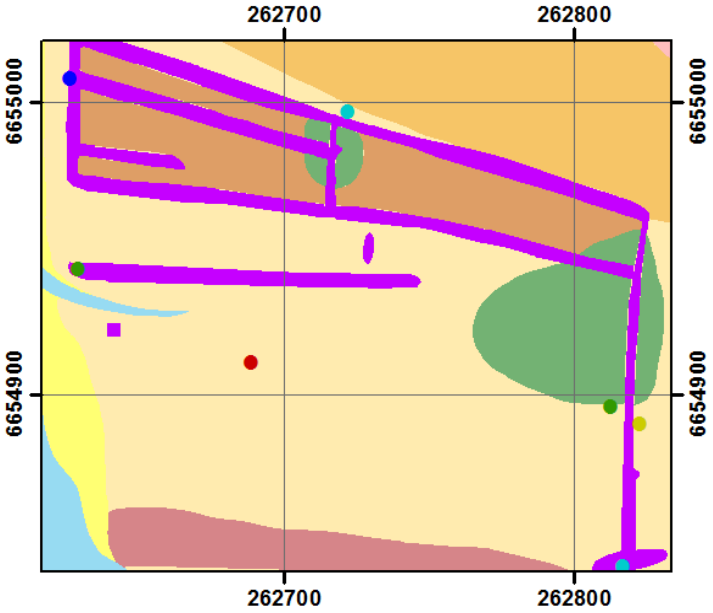
Avondale

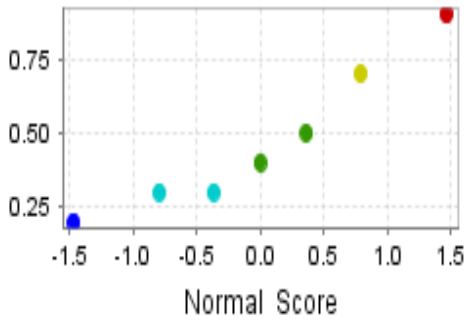
***Eremophila freelingii* leaf**

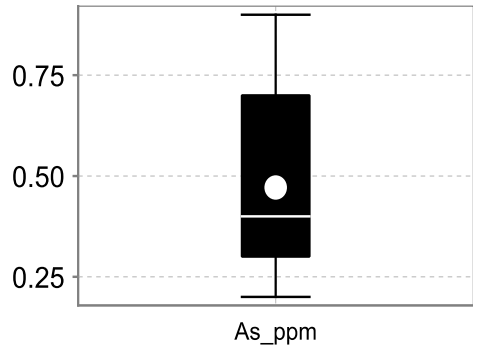
As(ppm)

Pathfinder

Regolith - Landform







Summary Statistics

N = 7

Lower Detection Limit= 0.1

Below Detection Limit = 0

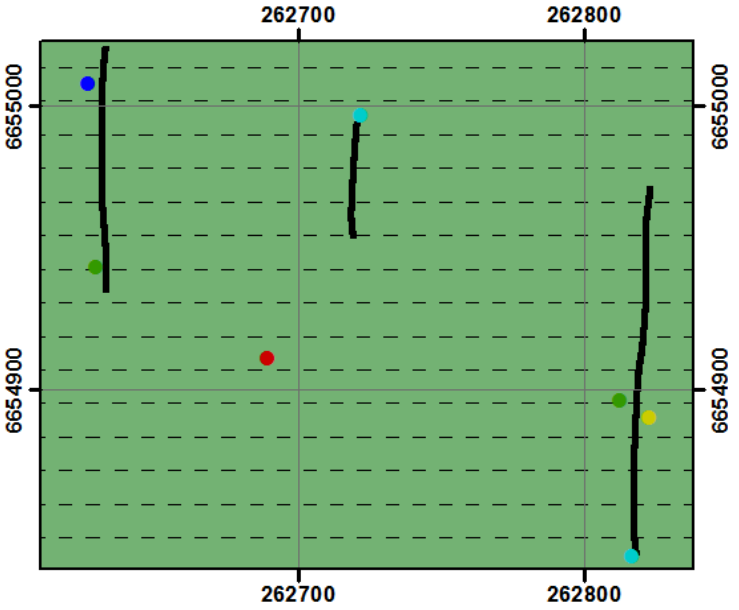
Median = 0.4

Mean = 0.47

Standard Deviation = 0.25

Error = ± 0.23

Bedrock Geology



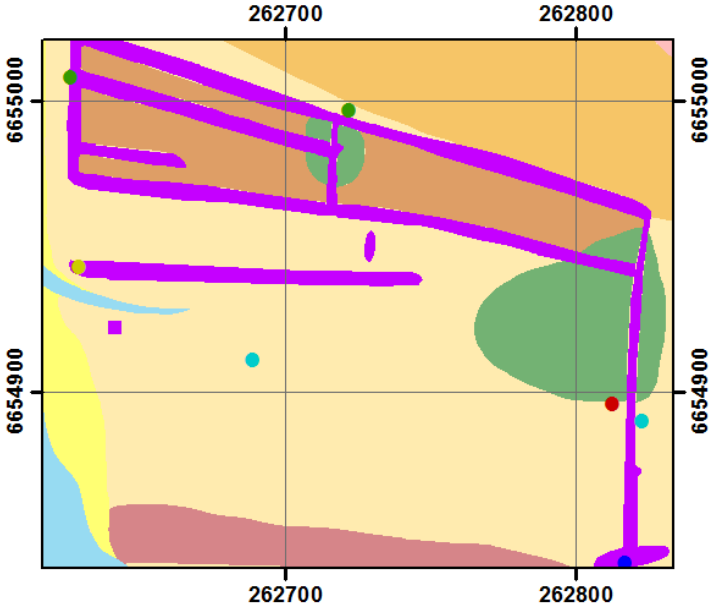
Avondale

***Eremophila freelingii* leaf**

$Ce_{(ppm)}$

Pathfinder

Regolith - Landform



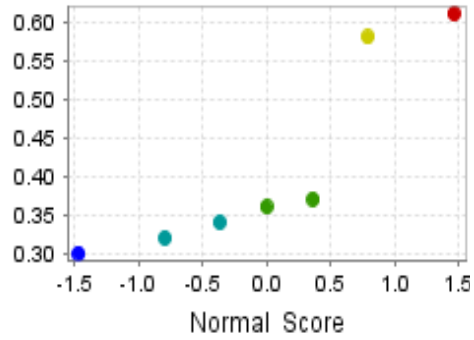
Legend

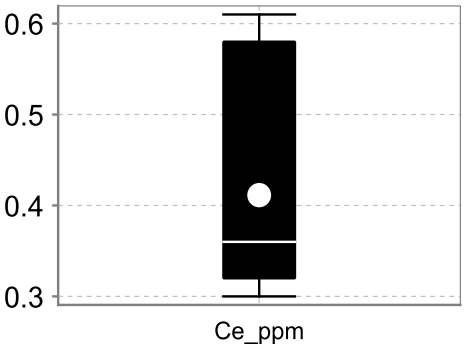
Regolith - Landform Units

<0.3 ppm	Aed	CHer1	
0.3 - 0.34 ppm	Aap	CHer2	
0.34 - 0.37 ppm	CHpd1	SSer	
0.37 - 0.58 ppm	CHpd2	Fm	
>0.58 ppm	CHpd3		

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.01

Below Detection Limit = 0

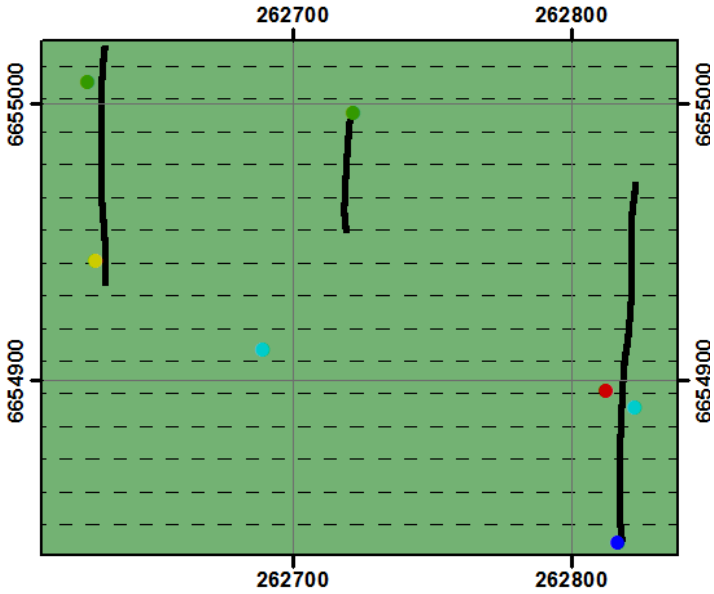
Median = 0.36

Mean = 0.41

Standard Deviation = 0.036

Error = ± 0.03

Bedrock Geology



Legend

<0.3 ppm	**Geology**
0.3 - 0.34 ppm	Mineralisation
0.34 - 0.37 ppm	Callana Beds
0.37 - 0.58 ppm	
>0.58 ppm	

N

0 10 20 40 60 Meters

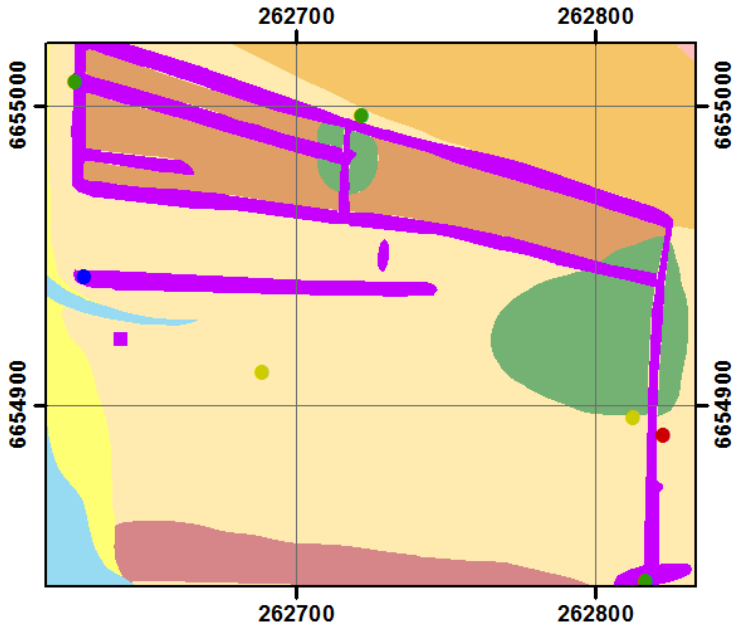
Avondale

***Eremophila freelingii* leaf**

$Cd_{(ppm)}$

Pathfinder

Regolith - Landform



Legend

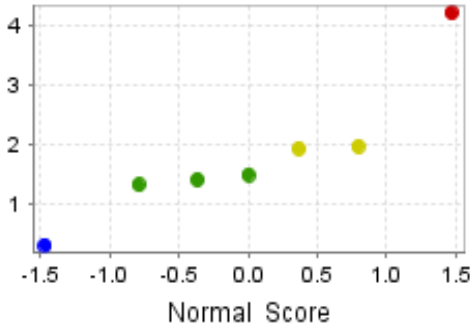
- <0.29 ppm
- 0.29 - 1.48 ppm
- 1.48 - 1.96 ppm
- >1.96 ppm

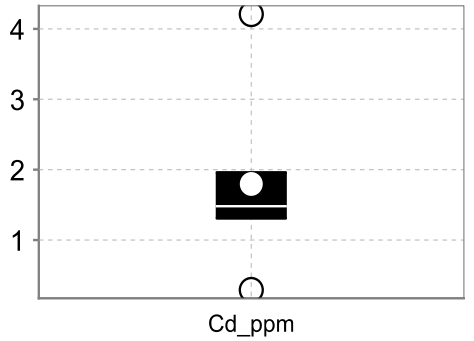
Regolith - Landform Units

Aed, Aap, CHpd1, CHpd2, CHpd3, CHer1, CHer2, SSer, Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.01

Below Detection Limit = 0

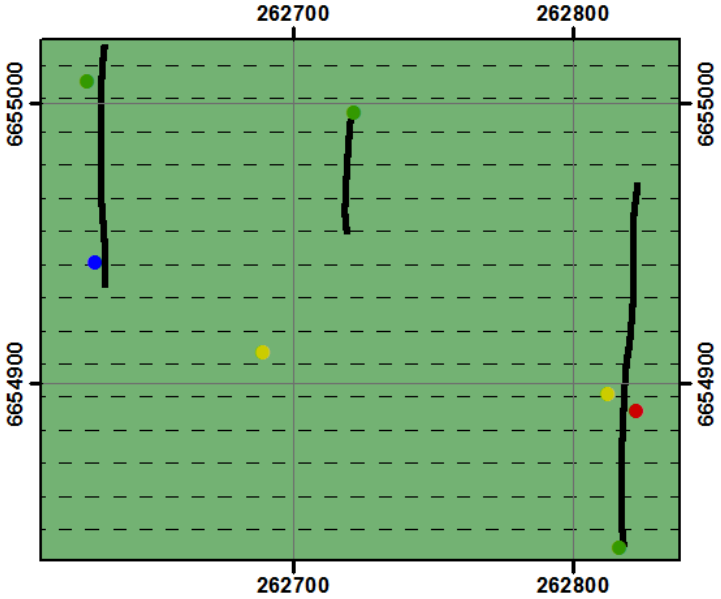
Median = 1.48

Mean = 1.79

Standard Deviation = 1.19

Error = ± 1.1

Bedrock Geology



Legend

- <0.29 ppm
- 0.29 - 1.48 ppm
- 1.48 - 1.96 ppm
- >1.96 ppm

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

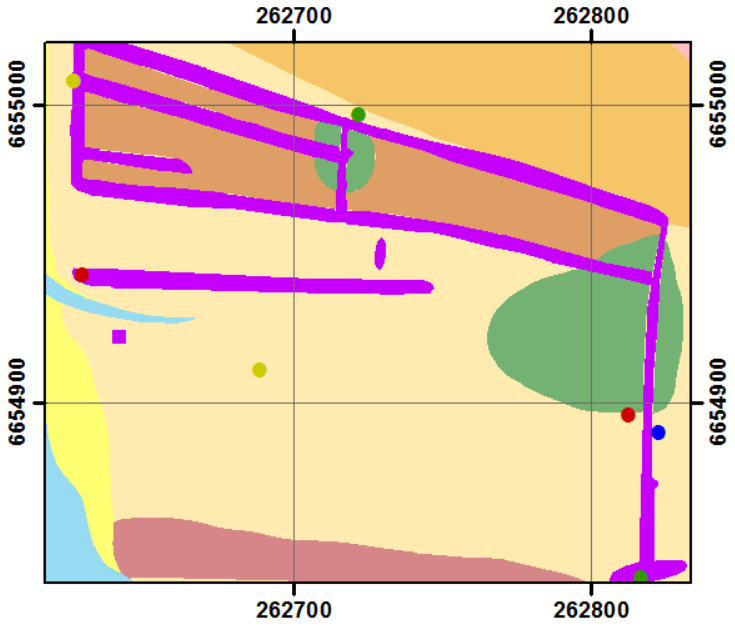
Avondale

***Eremophila freelingii* leaf**

La(ppm)

Pathfinder

Regolith - Landform



Legend

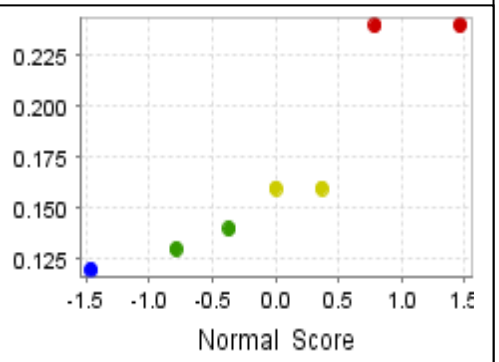
Regolith - Landform Units

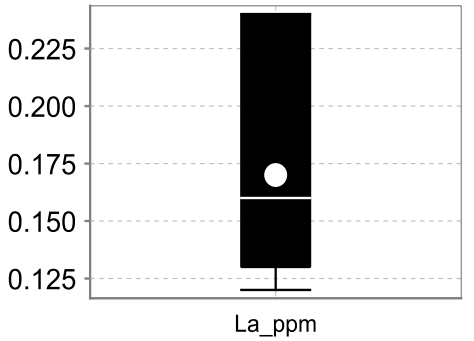
- <0.12 ppm
- 0.12 - 0.14 ppm
- 0.14 - 0.16 ppm
- >0.16 ppm

Aed, Aap, CHpd1, CHpd2, CHpd3, CHer1, CHer2, SSer, Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.01

Below Detection Limit = 0

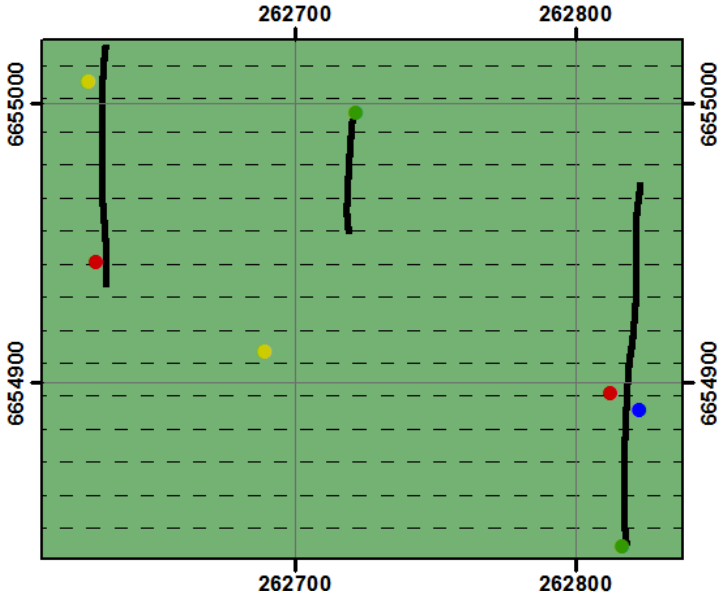
Median = 0.16

Mean = 0.17

Standard Deviation = 0.05

Error = ± 0.046

Bedrock Geology



Legend

- <0.12 ppm
- 0.12 - 0.14 ppm
- 0.14 - 0.16 ppm
- >0.16 ppm

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

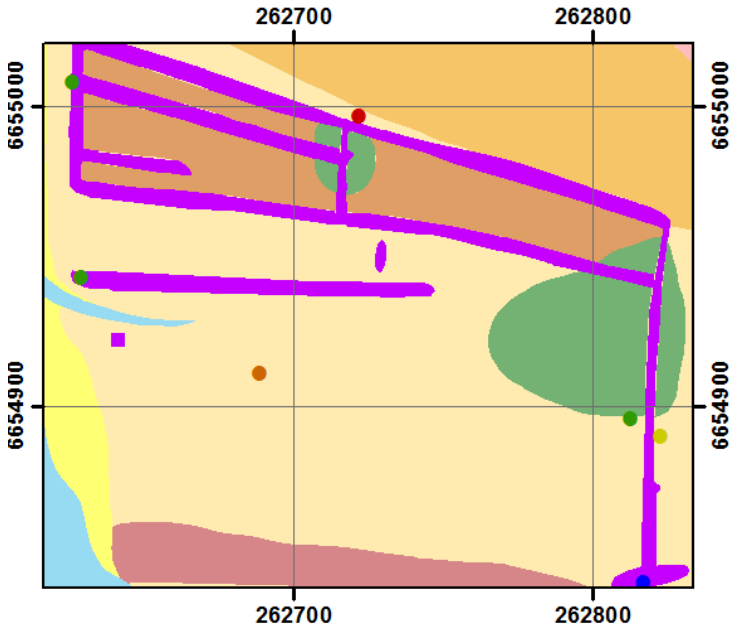
Avondale

***Eremophila freelingii* leaf**

Mo(ppm)

Pathfinder

Regolith - Landform



Legend

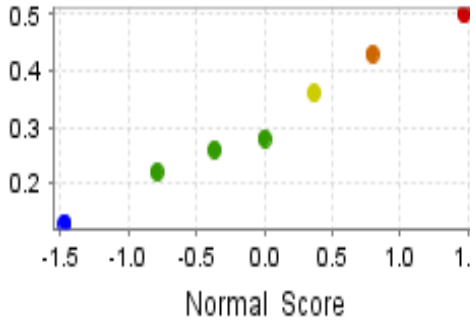
Regolith - Landform Units

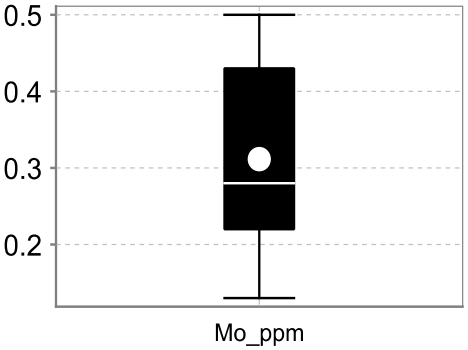
- <0.13 ppm
- 0.13 - 0.28 ppm
- 0.28 - 0.36 ppm
- 0.36 - 0.43 ppm
- >0.46 ppm

Aed, Aap, CHpd1, CHpd2, CHpd3, CHer1, CHer2, SSer, Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.01

Below Detection Limit = 0

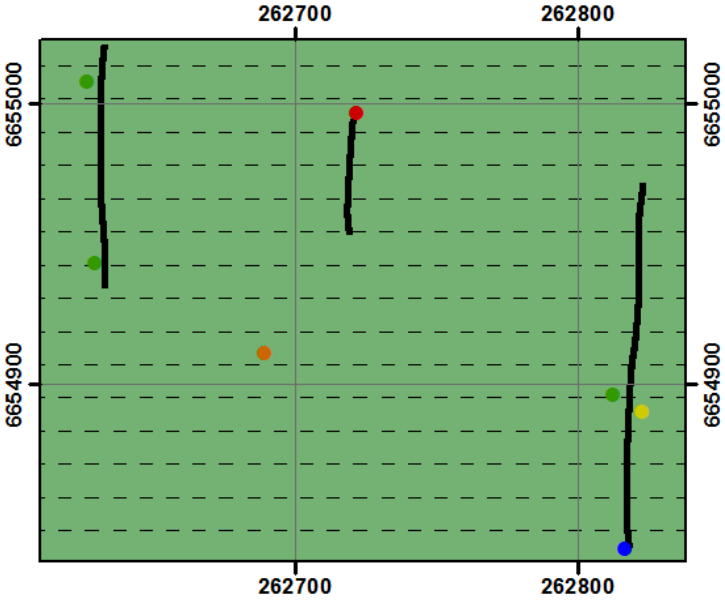
Median = 0.28

Mean = 0.31

Standard Deviation = 0.13

Error = ± 0.12

Bedrock Geology



Legend

- <0.13 ppm
- 0.13 - 0.28 ppm
- 0.28 - 0.36 ppm
- 0.36 - 0.43 ppm
- >0.46 ppm

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

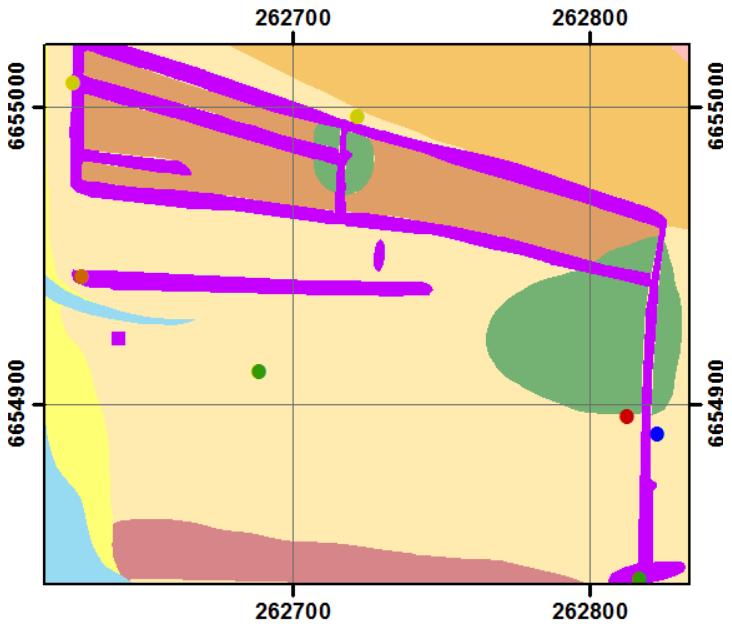
Avondale

***Eremophila freelingii* leaf**

Y (ppm)

Pathfinder

Regolith - Landform



Legend

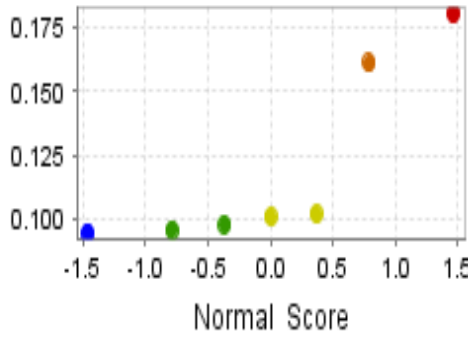
Regolith - Landform Units

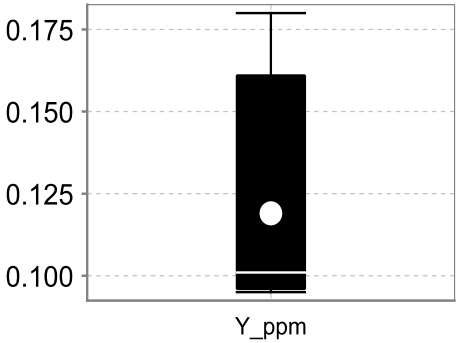
- <0.095 ppm
- 0.095 - 0.098 ppm
- 0.098 - 0.102 ppm
- 0.102 - 0.161 ppm
- >0.161 ppm

Aed, Aap, CHpd1, CHpd2, CHpd3, CHer1, CHer2, SSer, Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.001

Below Detection Limit = 0

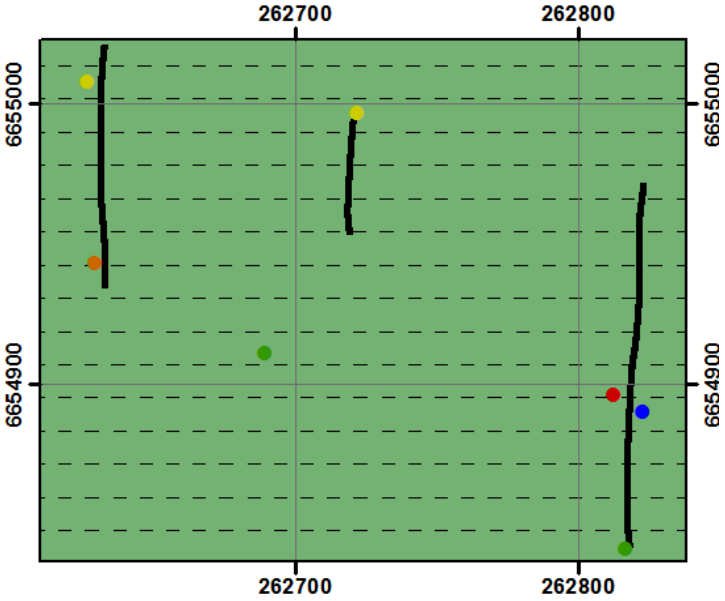
Median = 0.10

Mean = 0.12

Standard Deviation = 0.04

Error = ±0.04

Bedrock Geology



Legend

- <0.095 ppm
- 0.095 - 0.098 ppm
- 0.098 - 0.102 ppm
- 0.102 - 0.161 ppm
- >0.161 ppm

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

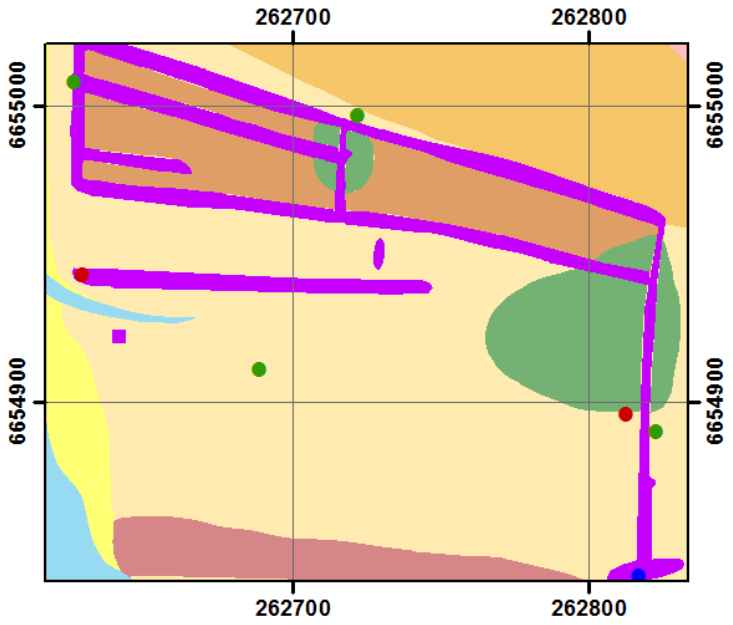
Avondale

***Eremophila freelingii* leaf**

Al(%)

Other

Regolith - Landform



Legend

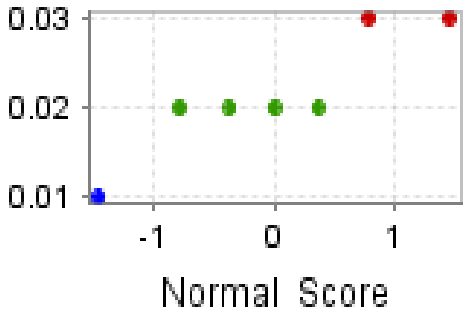
- <0.01 pct
- 0.01 - 0.02 pct
- >0.02 pct

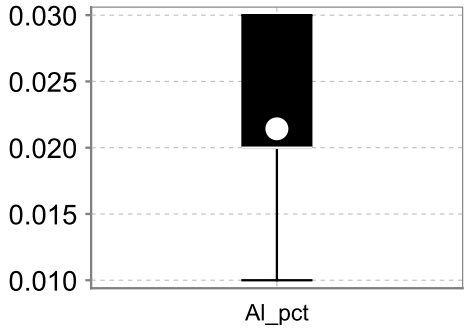
Regolith - Landform Units

- Aed
- Aap
- CHpd1
- CHpd2
- CHpd3
- CHer1
- CHer2
- SSer
- Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.01

Below Detection Limit = 0

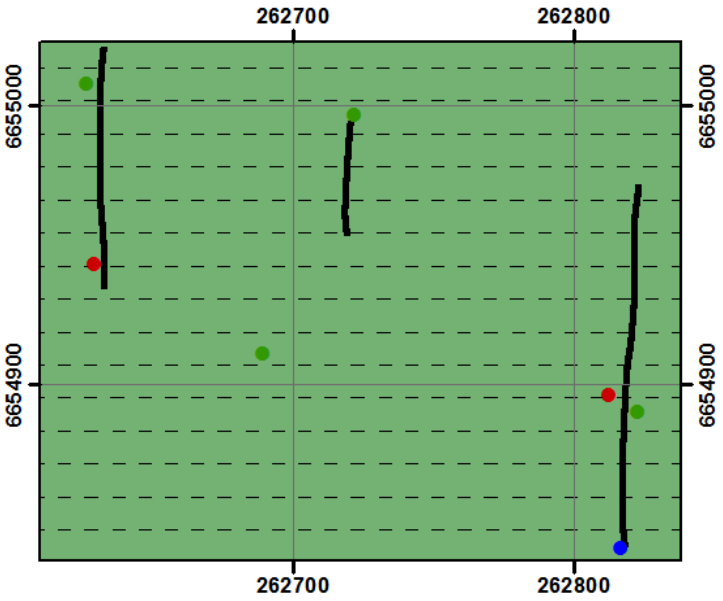
Median = 0.02

Mean = 0.021

Standard Deviation = 0.007

Error = ±0.006

Bedrock Geology



Legend

- <0.01 pct
- 0.01 - 0.02 pct
- >0.02 pct

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

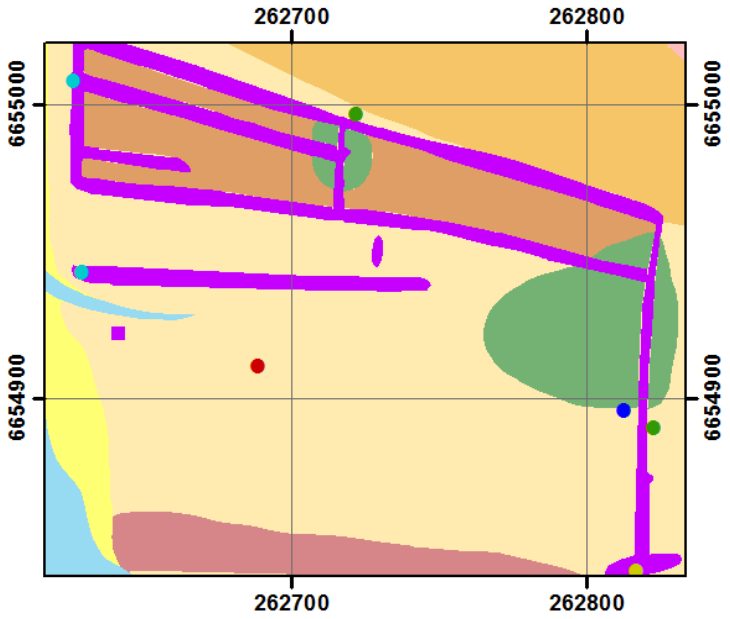
Avondale

***Eremophila freelingii* leaf**

Ca(%)

Host/control/landscape

Regolith - Landform



Legend

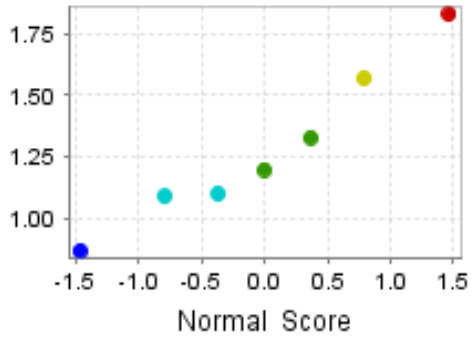
Regolith - Landform Units

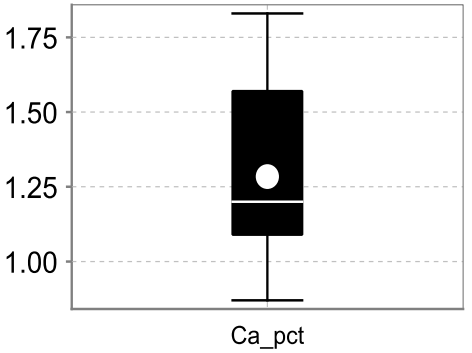
- <0.87 pct
- 0.87 - 1.1 pct
- 1.1 - 1.33 pct
- 1.33 - 1.57 pct
- >1.57 pct

- Aed
- Aap
- CHpd1
- CHpd2
- CHpd3
- CHer1
- CHer2
- SSer
- Fm

N

0 10 20 40 60 Meters





<u>Summary Statistics</u>

N = 7

Lower Detection Limit= 0.001

Below Detection Limit = 0

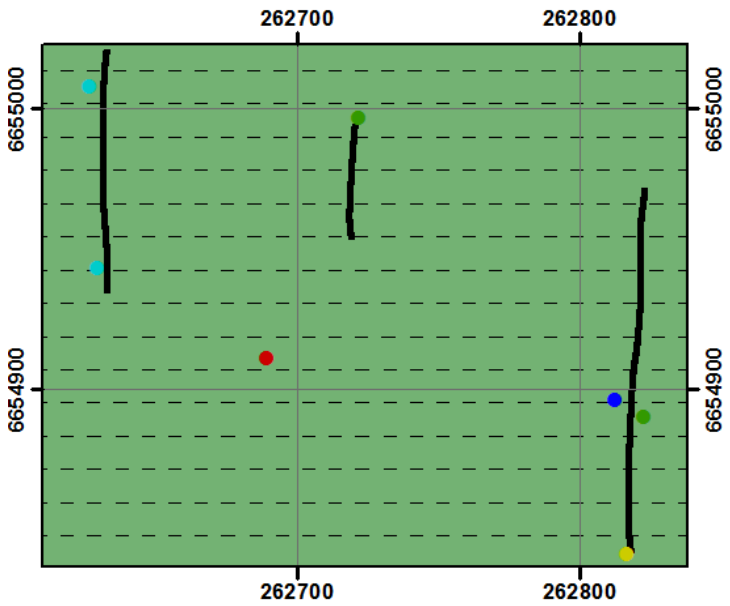
Median = 1.2

Mean = 1.28

Standard Deviation = 0.33

Error = ±0.31

Bedrock Geology



Legend

- <0.87 pct
- 0.87 - 1.1 pct
- 1.1 - 1.33 pct
- 1.33 - 1.57 pct
- >1.57 pct

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

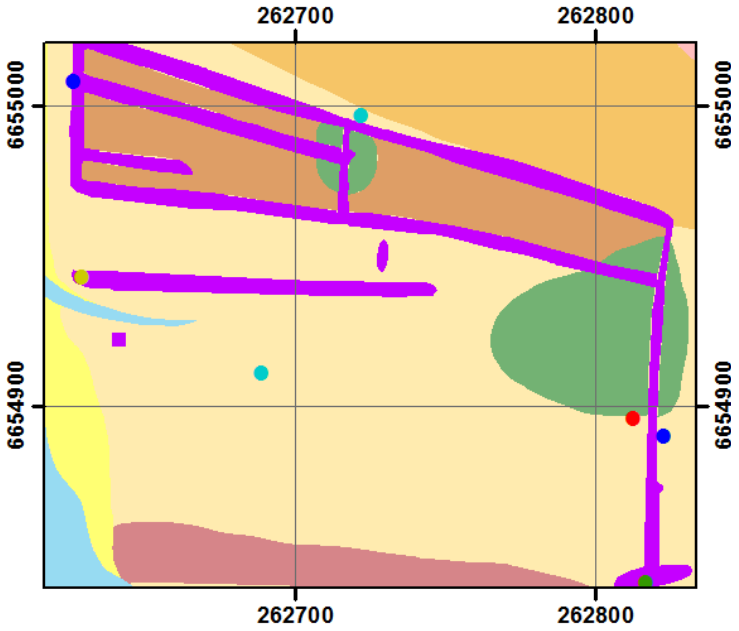
Avondale

***Eremophila freelingii* leaf**

Fe(%)

Host/control/landscape

Regolith - Landform



Legend

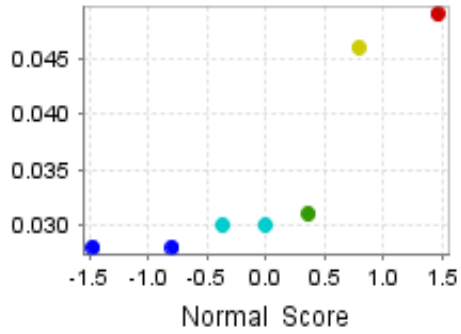
Regolith - Landform Units

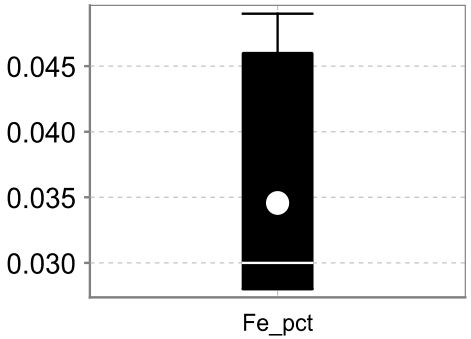
- <0.028 pct
- 0.028 - 0.03 pct
- 0.03 - 0.031 pct
- 0.031 - 0.046 pct
- >0.146 pct

- Aed
- Aap
- CHpd1
- CHpd2
- CHpd3
- CHer1
- CHer2
- SSer
- Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.001

Below Detection Limit = 0

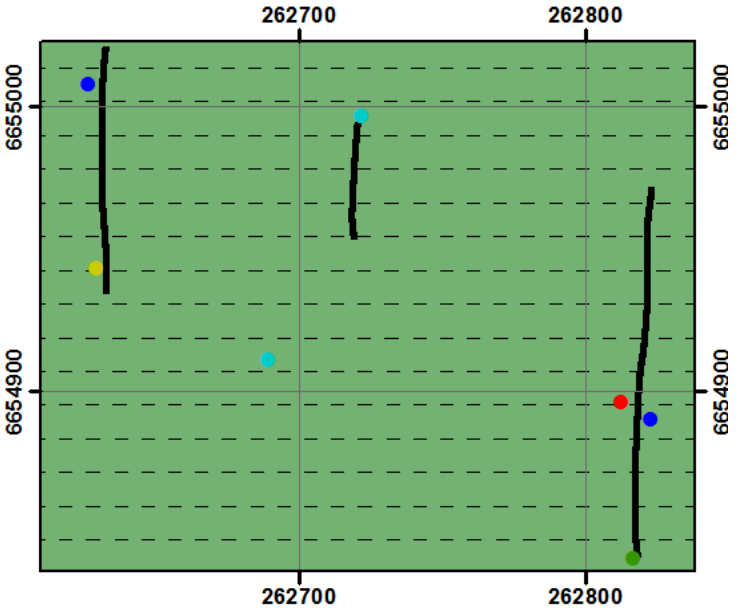
Median = 0.03

Mean = 0.035

Standard Deviation = 0.009

Error = ±0.008

Bedrock Geology



Legend

- <0.028 pct
- 0.028 - 0.03 pct
- 0.03 - 0.031 pct
- 0.031 - 0.046 pct
- >0.146 pct

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

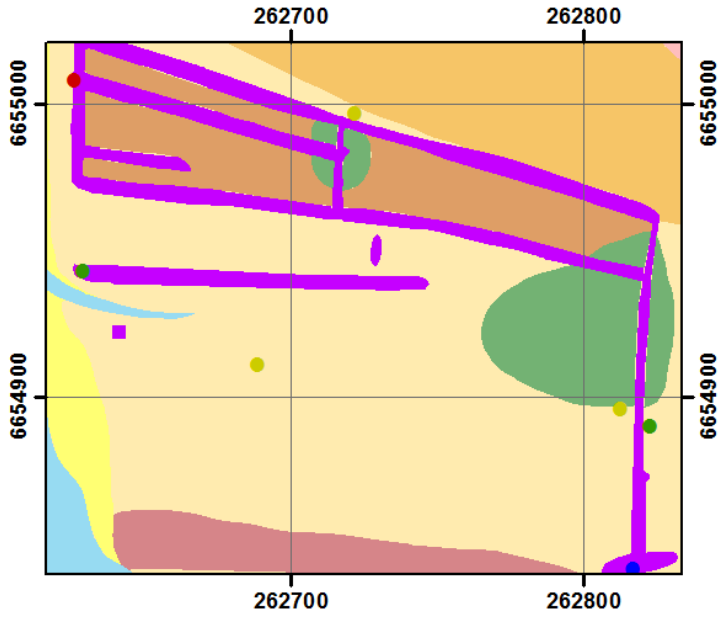
Avondale

***Eremophila freelingii* leaf**

K(%)

Host/control/landscape

Regolith - Landform



Legend

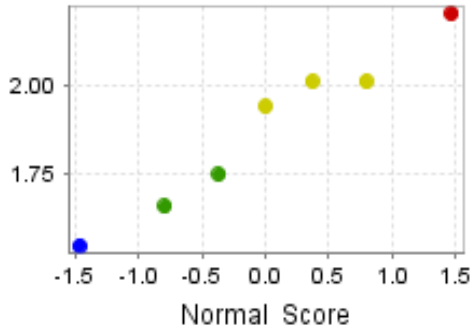
Regolith - Landform Units

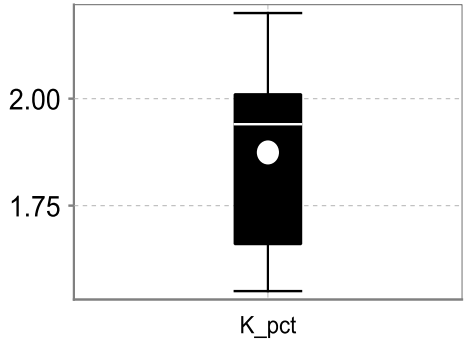
- <1.55 pct
- 1.55 - 1.75 pct
- 1.75 - 2.01 pct
- >2.01 pct

Aed, Aap, CHpd1, CHpd2, CHpd3, CHer1, CHer2, SSer, Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit=0.01

Below Detection Limit = 0

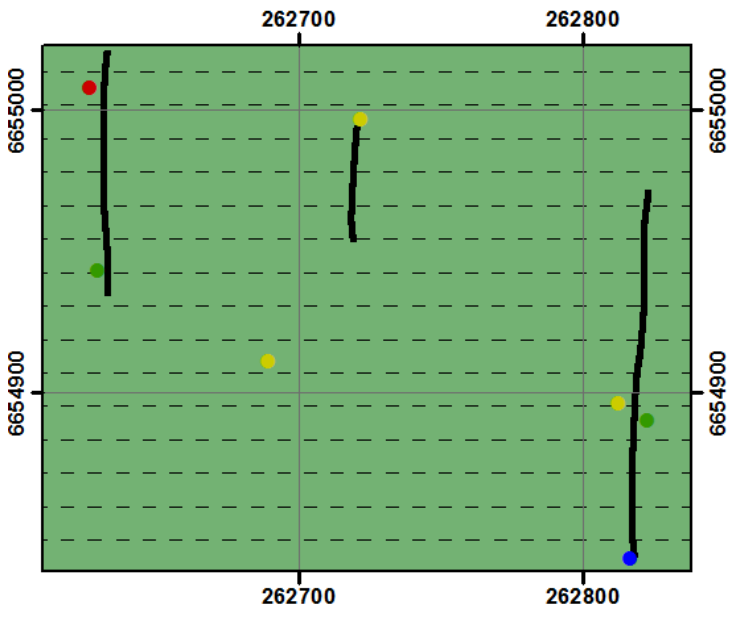
Median = 1.94

Mean = 1.87

Standard Deviation = 0.23

Error = ± 0.21

Bedrock Geology



Legend

- <1.55 pct
- 1.55 - 1.75 pct
- 1.75 - 2.01 pct
- >2.01 pct

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

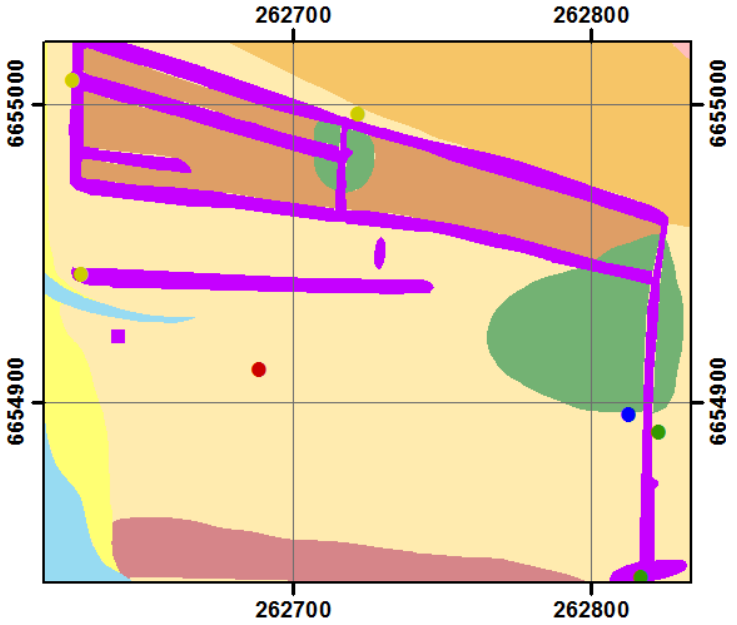
Avondale

***Eremophila freelingii* leaf**

Mn(ppm)

Host/control

Regolith - Landform



Legend

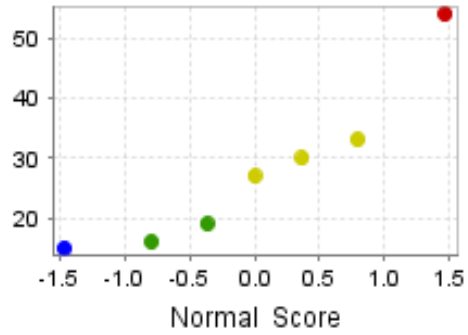
Regolith - Landform Units

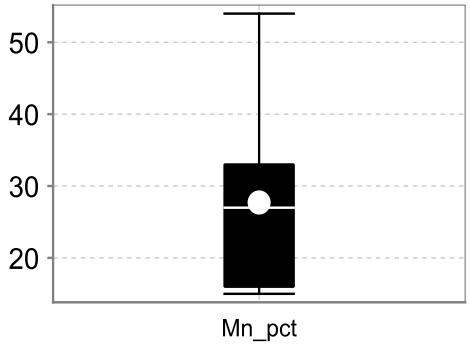
- <15.0 pct
- 15.0 - 19.0 pct
- 19.0 - 33.0 pct
- >33.0 pct

Aed, Aap, CHpd1, CHpd2, CHpd3, CHer1, CHer2, SSer, Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 1

Below Detection Limit = 0

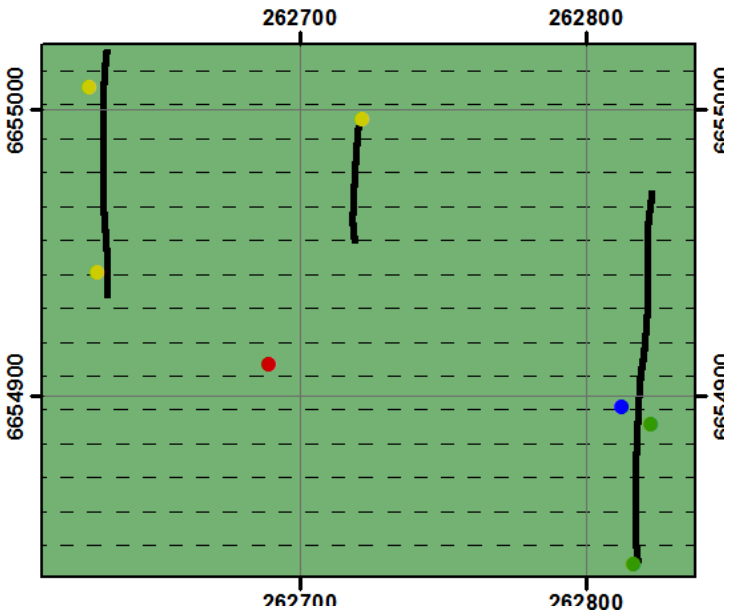
Median = 27

Mean = 27.71

Standard Deviation = 13.54

Error = ± 12.52

Bedrock Geology



Legend

- <15.0 pct
- 15.0 - 19.0 pct
- 19.0 - 33.0 pct
- >33.0 pct

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

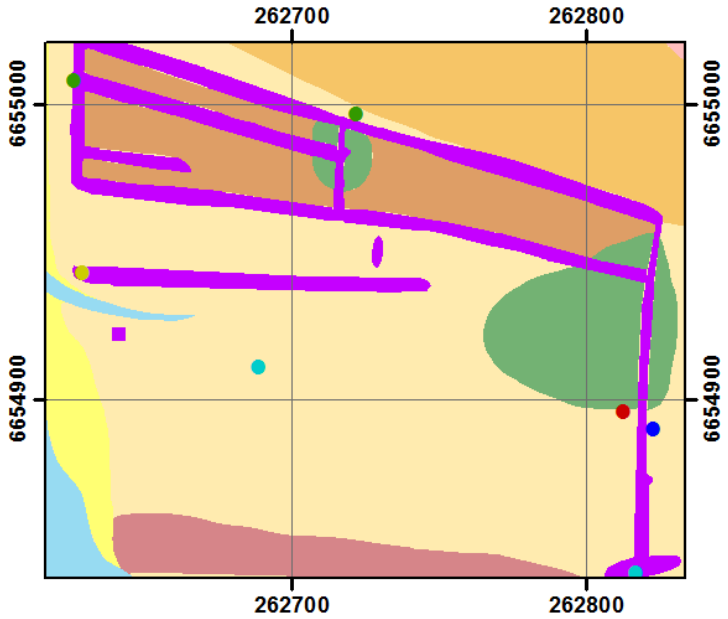
Avondale

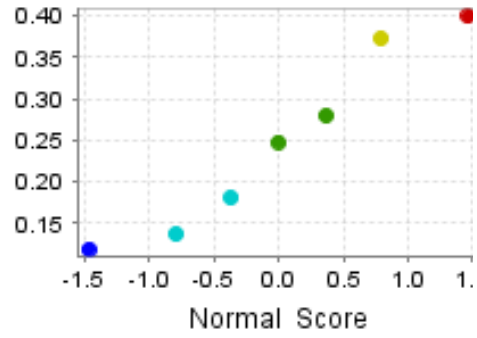
***Eremophila freelingii* leaf**

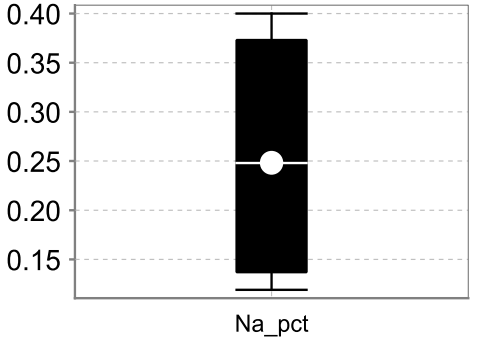
Na(%)

Host/control/landscape

Regolith - Landform







Summary Statistics

N = 7

Lower Detection Limit= 0.001

Below Detection Limit = 0

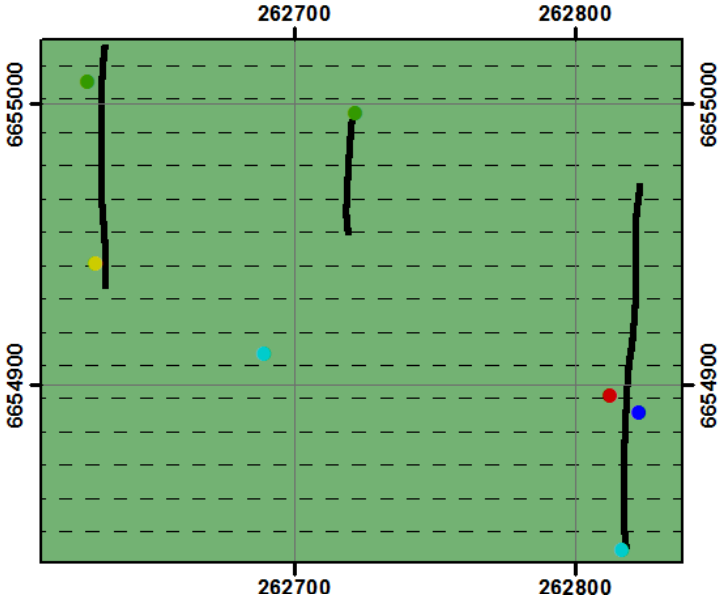
Median = 0.25

Mean = 0.25

Standard Deviation = 0.007

Error = ± 0.006

Bedrock Geology



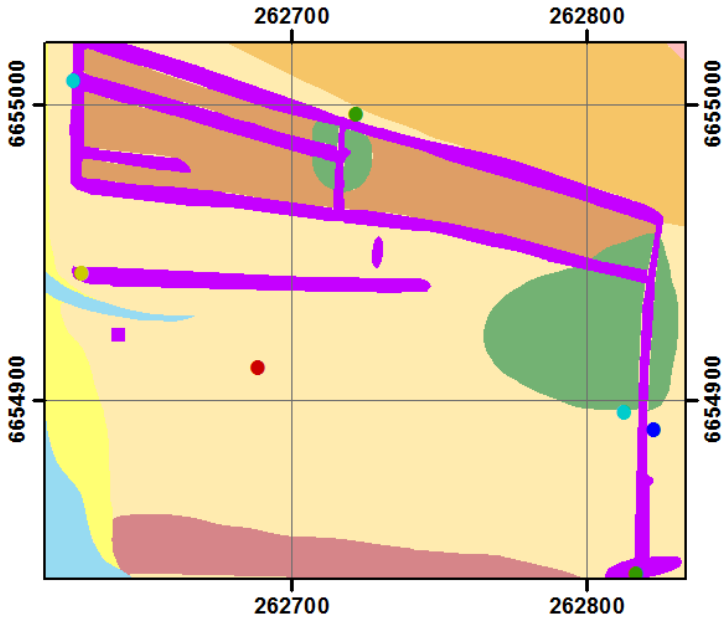
Avondale

***Eremophila freelingii* leaf**

$Rb_{(ppm)}$

Host/control/landscape

Regolith - Landform



Legend

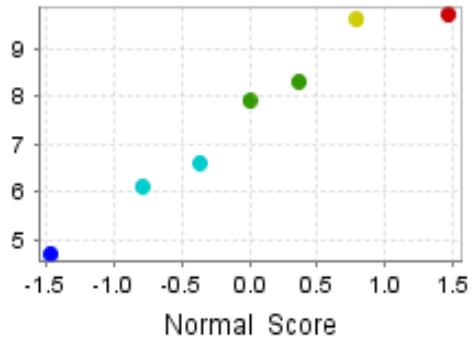
Regolith - Landform Units

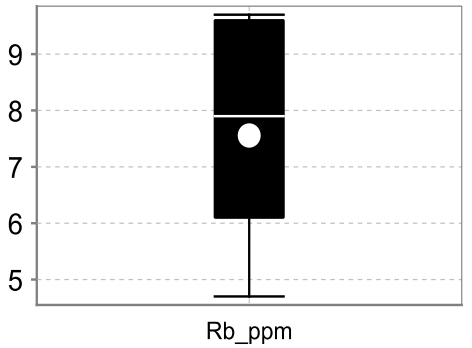
- <4.7 ppm
- 4.7 - 6.6 ppm
- 6.6 - 8.3 ppm
- 8.3 - 9.6 ppm
- >9.6 ppm

- Aed
- Aap
- CHpd1
- CHpd2
- CHpd3
- CHer1
- CHer2
- SSer
- Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.1

Below Detection Limit = 0

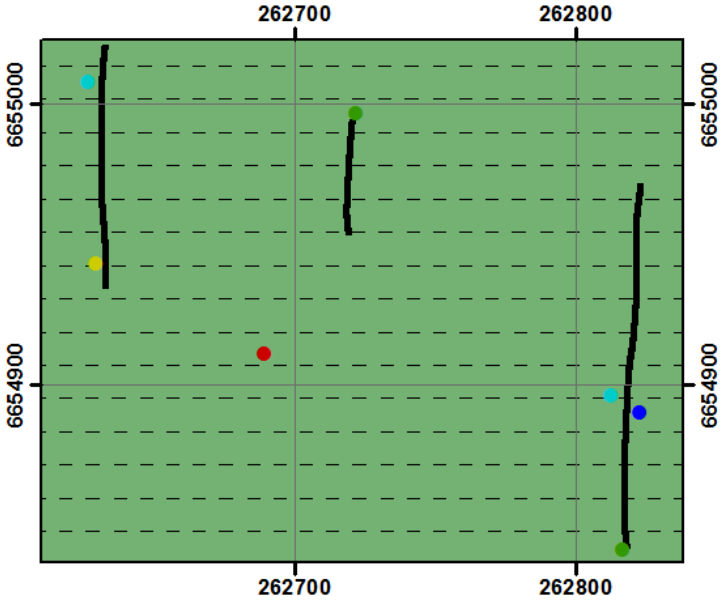
Median = 7.9

Mean = 7.56

Standard Deviation = 1.86

Error = ± 1.72

Bedrock Geology



Legend

- <4.7 ppm
- 4.7 - 6.6 ppm
- 6.6 - 8.3 ppm
- 8.3 - 9.6 ppm
- >9.6 ppm

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

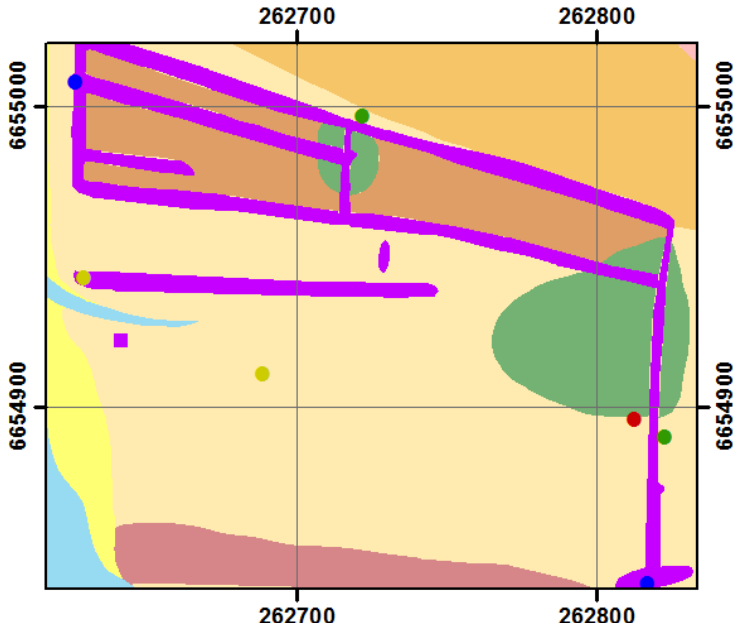
Avondale

***Eremophila freelingii* leaf**

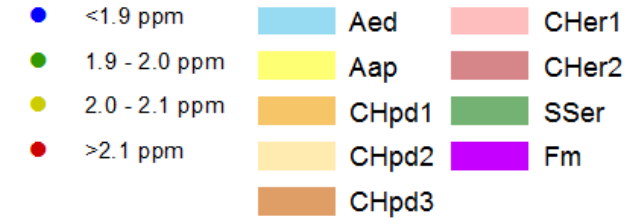
Cr$_{(ppm)}$

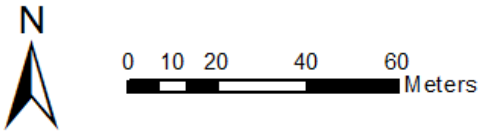
Other

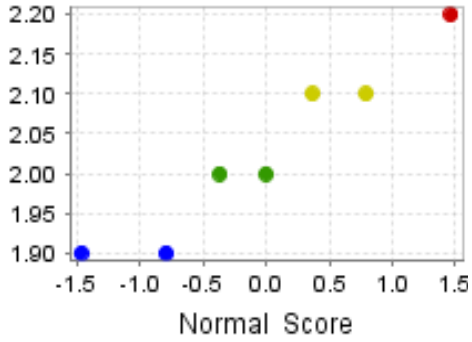
Regolith - Landform

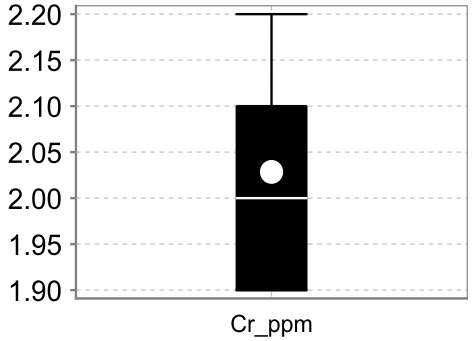


Legend









Summary Statistics

N = 7

Lower Detection Limit= 0.1

Below Detection Limit = 0

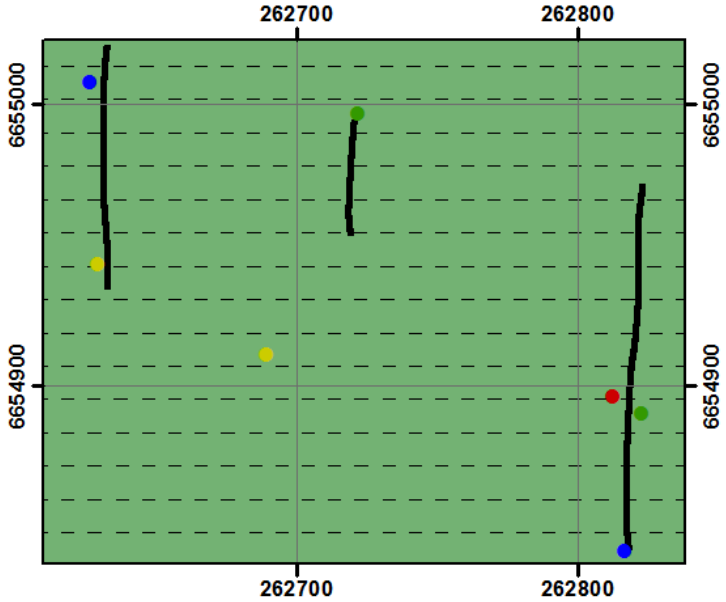
Median = 2

Mean = 2.03

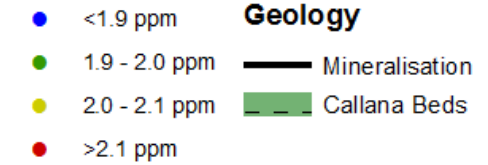
Standard Deviation = 0.11

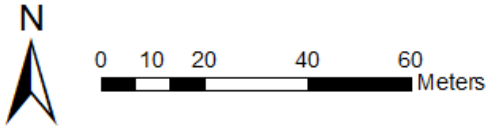
Error = ±0.1

Bedrock Geology



Legend





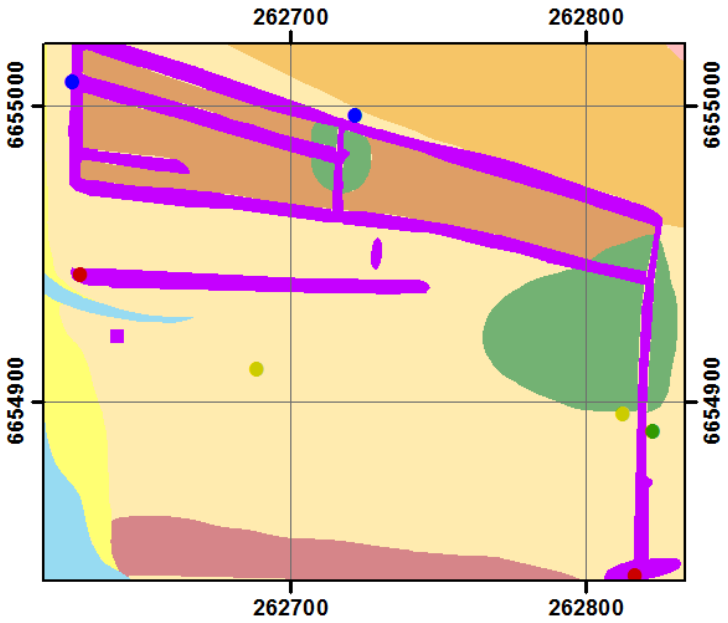
Avondale

***Eremophila freelingii* leaf**

Ni(ppm)

Other

Regolith - Landform



Legend

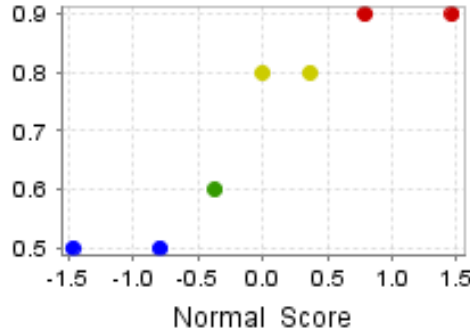
Regolith - Landform Units

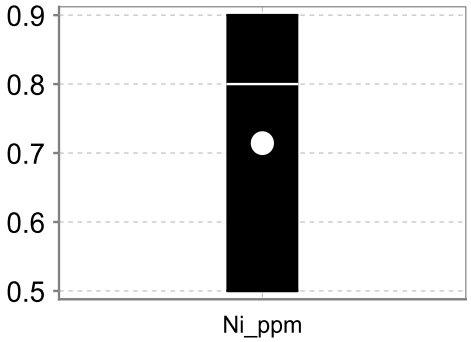
- <0.5 ppm
- 0.5 - 0.6 ppm
- 0.6 - 0.8 ppm
- >0.8 ppm

Aed, Aap, CHpd1, CHpd2, CHpd3, CHer1, CHer2, SSer, Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.1

Below Detection Limit = 0

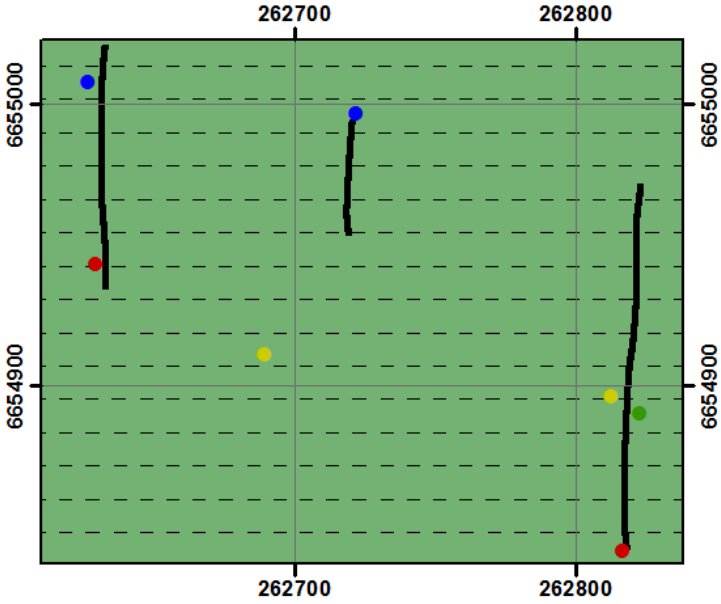
Median = 0.26

Mean = 0.71

Standard Deviation = 0.17

Error = ±0.16

Bedrock Geology



Legend

- <0.5 ppm
- 0.5 - 0.6 ppm
- 0.6 - 0.8 ppm
- >0.8 ppm

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

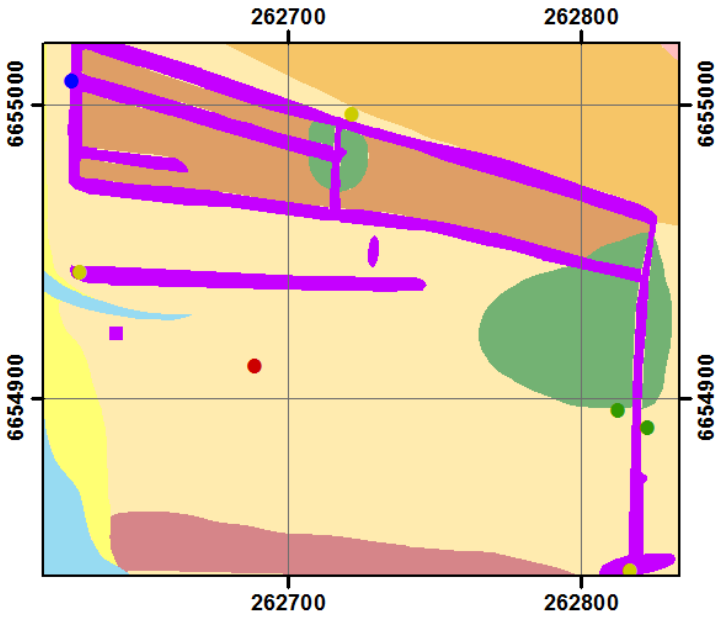
Avondale

***Eremophila freelingii* leaf**

$Sr_{(ppm)}$

Other

Regolith - Landform



Legend

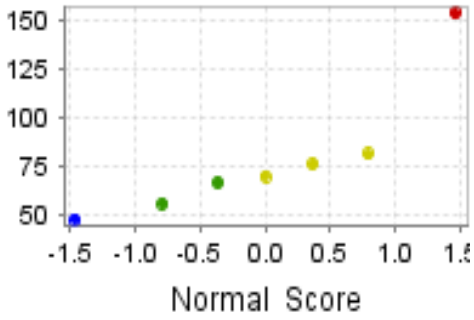
Regolith - Landform Units

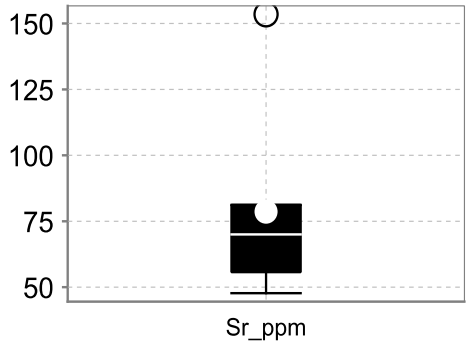
- <47.7 ppm
- 47.7 - 66.5 ppm
- 66.5 - 81.2 ppm
- >81.2 ppm

Aed, Aap, CHpd1, CHpd2, CHpd3, CHer1, CHer2, SSer, Fm

N

0 10 20 40 60 Meters





Summary Statistics

N = 7

Lower Detection Limit= 0.5

Below Detection Limit = 0

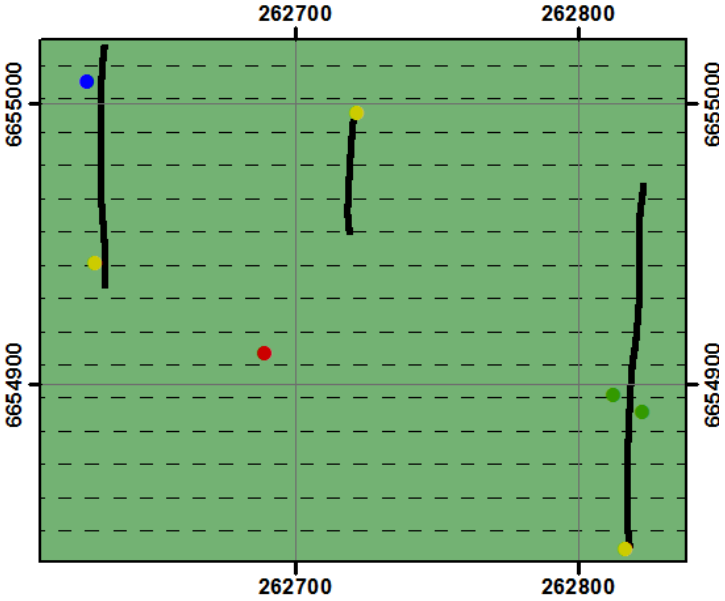
Median = 70

Mean = 78.66

Standard Deviation = 34.94

Error = ±32.31

Bedrock Geology



Legend

- <47.7 ppm
- 47.7 - 66.5 ppm
- 66.5 - 81.2 ppm
- >81.2 ppm

Geology

- Mineralisation
- Callana Beds

N

0 10 20 40 60 Meters

Appendix B: Regolith – Landform Unit Legend.

Regolith-Landform Unit Legend

ALLUVIAL SEDIMENTS

Aap_1

Minor channels in areas of low relief, locally variable surface lag consisting of large sub angular clasts and sand-silt sized fragments. Vegetation consists of open wood land, species include *E. freelingii*, various *Eucalyptus spp.*, various chenopods and grasses. Appears green-grey on aerial photography.

Aed_1

Minor narrow drainage depression locally variable surface lag mostly consisting of varying sizes of sub angular local and transported clasts. Spatial distribution is constrained by local topography. Vegetation consists of very open chenopod shrub land and grasses. Appears cream on aerial photography.

Aed_2

Minor narrow drainage depression with locally variable surface lag and abundant outcrop. Vegetation is characterised by very sparse chenopod shrub land and few large dead trees.

CHANNEL DEPOSITS

$ACar_1$

McDonnell creek. Major ephemeral channel approximately 30m wide with occasional levees and braids. Vegetation dominated by open woodland including River Red Gum (*Eucalyptus camaldulensis*).

SAPROCK

$SSer_1$

Erosional rise formed from slightly weathered saprolite. Characterised by folded quartz veins in sandstone and producing quartz lag down slope, but locally variable (unique to Gilead P Beck, quartz absent at Ooloo). Colonised by grass lands.

$SSer_2$

Erosional rise formed from slightly weathered saprolite. Characterised by calcareous saproplite and dense grasslands. Bedding creates distinctive ridges in landscape.

SSep

Erosional plain formed from slightly weathered saprolite. Characterised by unfolded quartz rich and carbonate beds producing quartz and carbonate lag down slope. Colonised by sparse grass land.

SHEET FLOW DEPOSITS

$CHel_1$

Sheet flow sediments deposited on an erosional low rise formed in calcareous beds. Lag produced is green-grey, sub angular flags with pitted weathering patterns. Colonised by dense grasses and very sparse chenopod shrub land, dominant species include *E. freelingii.*

$CHel_2$

Sheet flow sediments deposited on an erosional low rise formed of sandstone outcrop of which is common. Regolith consists of large angular clasts, angular pebble sized clasts and a small sand sized fraction. Densely populated by grass lands and to a lesser extent chenopod shrub land.

$CHpd_1$

Sheet flow sediments deposited on a plain characterised by locally variable sub angular surface lag and common vein quartz fragments (unique to Gilead P Beck). Vegetation consists of sparse woodland, chenopod shrub land and grass land. Appears light brown in aerial photography.

$CHpd_2$
Sheet flow sediments deposited on a plain characterised by locally variable sub angular surface lag and sparse vein quartz fragments. Vegetation consists of dense grasses and sparse chenopod shrub land. Appears dark brown in aerial photography.

$CHpd_3$
consists of pebble sized angular lithic fragments and abundant sand to silt sized regolith. Landscape surface shows iron staining. Densely populated with grass land and occasional shrubs.

$CHer_1$
Sheet flow sediments deposited on an erosional rise formed in sandstones. Red-brown sub angular clasts of sandstone with fine sand sized grains dominate the regolith. Some iron-oxide staining on the surface of clasts. Vegetation is dominated by grasses and extremely sparse chenopod shrub land.

$CHer_2$
Sheet flow sediments deposited on an erosional rise formed in calcareous siltstones. Surface lag consists of calcareous, pebble sized angular clasts of brown siltstone. Appears medium brown in aerial photography. Colonised by short grass land.

FILL
Fm
Man-made features including open pits, costeans, shafts, and sorting tables. Shrub land and small trees usually associated with these features. Vegetation species include *E. Freelingii*, Mulga (*Acacia aneura*), and grasses.

Appendix C: *Eremophila freelingii* leaf biogeochemistry results.

Appendix C: *Eremophila freelingii* leaf biogeochemistry results.

Sample	Easting	Northing	Mo_ppm	Cu_ppm	Pb_ppm	Zn_ppm	Ag_ppm	Ni_ppm	Co_ppm	Mn_ppm	Fe_pct	As_ppm	U_ppm	Au_ppb	Th_ppm	Sr_ppm
MTF ERL 001	262817	6654841	0.13	12.73	22.92	193.8	9	0.9	0.26	19	0.031	0.3	0.02	0.1	0.05	81.2
MTF ERL 002	262689	6654911	0.43	19.91	4.39	152	14	0.8	0.38	54	0.03	0.9	0.01	0.1	0.05	153.5
MTF ERL 003	262629	6654943	0.26	13.08	3.74	100.6	25	0.9	0.33	27	0.046	0.5	0.02	0.1	0.09	76
MTF ERL 004	262626	6655008	0.22	28.73	32.56	120	30	0.5	0.16	30	0.028	0.2	0.02	0.1	0.05	47.7
MTF ERL 005	262722	6654997	0.5	12.78	18.89	130.5	44	0.5	0.22	33	0.03	0.3	0.04	0.1	0.05	70
MTF ERL 006	262813	6654896	0.28	21.71	28.13	117.2	27	0.8	0.26	15	0.049	0.4	0.04	0.3	0.1	55.7
MTF ERL 007	262823	6654890	0.36	20.37	43.71	312	15	0.6	0.21	16	0.028	0.7	0.03	0.1	0.05	66.5
MTF ERL 008	324602	6692513	0.06	6.2	0.79	49.2	12	0.8	0.22	114	0.018	0.05	0.005	0.3	0.02	33.5
MTF ERL 009	329618	6702844	0.16	14.67	1.62	110.1	95	0.6	0.15	62	0.029	2.2	0.005	0.2	0.06	142.5
MTF ERL 010	329589	6702841	0.04	10.93	0.54	140.2	151	0.8	0.15	49	0.021	0.8	0.005	0.1	0.03	163.9
MTF ERL 010R	329589	6702841	0.05	10.58	0.58	147.9	166	0.7	0.16	50	0.021	1	0.005	0.1	0.02	166
MTF ERL 011	329576	6702844	0.28	12.96	1.35	134.3	44	0.4	0.13	32	0.014	0.6	0.005	0.1	0.02	190.2
MTF ERL 012	329566	6702839	0.05	12.36	2.05	69.8	44	0.8	0.12	36	0.021	0.05	0.005	0.1	0.03	127.4
MTF ERL 013	329548	6702848	0.17	28.47	0.61	148.6	37	0.6	0.2	65	0.017	0.4	0.005	0.1	0.02	125
MTF ERL 014	329534	6702836	0.16	20.01	2.86	288.6	99	0.5	0.11	46	0.018	0.2	0.005	0.5	0.03	107.5
MTF ERL 015	329522	6702820	0.13	7.24	0.19	13.2	12	0.5	0.08	57	0.019	0.2	0.005	0.1	0.03	74.5
MTF ERL 016	329499	6702825	0.18	17.47	0.53	53.4	27	1	0.25	84	0.027	0.1	0.005	0.1	0.06	77.7
MTF ERL 017	329479	6702818	0.27	10.07	3.38	23.3	15	0.5	0.17	33	0.025	0.1	0.005	0.1	0.04	66.1
MTF ERL 018	329463	6702822	0.21	9.17	0.3	11.8	12	0.5	0.09	82	0.024	0.2	0.005	0.1	0.04	160.1
MTF ERL 019	329452	6702821	0.25	9.49	0.47	16.1	25	0.5	0.11	176	0.022	0.1	0.005	0.1	0.03	125.6
MTF ERL 020	329425	6702820	0.12	11.92	0.15	24.1	8	0.5	0.12	24	0.013	0.4	0.005	0.3	0.02	134.7
MTF ERL 020R	329425	6702820	0.13	12.71	0.18	27.2	6	0.6	0.15	26	0.015	0.3	0.005	0.2	0.02	153.7
MTF ERL 021	329451	6702842	0.09	10.65	0.12	10.5	24	0.5	0.13	49	0.018	0.3	0.005	0.1	0.02	105.5
MTF ERL 022	329467	6702831	0.11	13.92	0.18	21.6	26	0.6	0.2	57	0.018	0.6	0.005	0.3	0.03	80
MTF ERL 023	329521	6703085	0.19	16.26	0.99	125.9	18	0.6	0.16	49	0.019	0.4	0.005	0.1	0.03	141.5
MTF ERL 024	329513	6703073	0.08	21.08	2.33	141.4	41	0.8	0.19	68	0.019	0.2	0.005	0.1	0.03	98
MTF ERL 025	329485	6703072	0.12	17.86	0.68	59.8	23	0.7	0.13	82	0.014	0.3	0.005	0.1	0.02	117.8
MTF ERL 026	329488	6703063	0.09	19.1	2.14	83.1	35	0.7	0.11	57	0.021	0.3	0.005	0.1	0.02	132.4
MTF ERL 027	335725	6696529	0.21	10.75	0.98	10.7	18	0.7	0.13	64	0.021	1.1	0.005	0.1	0.03	86.3
MTF ERL 028	336013	6696515	0.3	15.61	0.22	27.2	13	0.5	0.19	56	0.028	0.05	0.01	0.3	0.04	159.9
MTF ERL 029	335762	6696535	0.56	6.9	0.4	22.8	11	0.5	0.09	31	0.017	0.3	0.005	0.1	0.02	64
MTF ERL 030	335740	6696527	0.25	10.63	0.42	23.8	9	0.4	0.11	21	0.012	0.05	0.005	0.1	0.005	74.2

Appendix C: *Eremophila freelingii* leaf biogeochemistry results.

Sample	Easting	Northing	Cd_ppm	Sb_ppm	Bi_ppm	V_ppm	Ca_pct	P_pct	La_ppm	Cr_ppm	Mg_pct	Ba_ppm	Ti_pct	B_ppm	Al_pct	Na_pct	K_pct
MTF ERL 001	262817	6654841	1.4	0.03	0.02	1	1.57	0.122	0.13	1.9	0.163	2.3	9	31	0.01	0.137	1.55
MTF ERL 002	262689	6654911	1.96	0.001	0.001	1	1.83	0.221	0.16	2.1	0.192	5.6	15	22	0.02	0.181	2.01
MTF ERL 003	262629	6654943	0.29	0.001	0.001	1	1.1	0.171	0.24	2.1	0.173	8.2	13	22	0.03	0.373	1.75
MTF ERL 004	262626	6655008	1.31	0.001	0.001	1	1.09	0.121	0.16	1.9	0.157	1.1	9	17	0.02	0.248	2.2
MTF ERL 005	262722	6654997	1.48	0.001	0.001	1	1.33	0.104	0.14	2	0.15	1.3	8	19	0.02	0.28	1.94
MTF ERL 006	262813	6654896	1.93	0.02	0.001	1	0.87	0.159	0.24	2.2	0.185	3.4	12	23	0.03	0.4	2.01
MTF ERL 007	262823	6654890	4.21	0.001	0.001	1	1.2	0.126	0.12	2	0.173	1.9	9	17	0.02	0.119	1.66
MTF ERL 008	324602	6692513	0.58	0.001	0.001	1	1.55	0.193	0.07	1.8	0.329	0.7	12	16	0.005	0.639	1.83
MTF ERL 009	329618	6702844	1.32	0.001	0.001	1	1.83	0.142	0.18	1.9	0.214	3.9	11	17	0.02	0.184	1.37
MTF ERL 010	329589	6702841	0.7	0.001	0.001	1	1.84	0.253	0.1	1.7	0.34	3.1	16	20	0.01	0.116	1.86
MTF ERL 010R	329589	6702841	0.72	0.001	0.001	1	1.84	0.263	0.09	1.9	0.348	2.8	16	20	0.01	0.123	1.75
MTF ERL 011	329576	6702844	1.33	0.001	0.001	1	1.31	0.329	0.06	1.8	0.34	7.6	20	17	0.005	0.144	2.02
MTF ERL 012	329566	6702839	0.95	0.001	0.001	1	0.97	0.332	0.12	1.8	0.183	2.5	20	25	0.02	0.07	1.99
MTF ERL 013	329548	6702848	2.45	0.001	0.001	1	2.08	0.333	0.07	1.7	0.305	2.2	19	23	0.005	0.319	2.04
MTF ERL 014	329534	6702836	5.5	0.03	0.001	1	1.68	0.234	0.07	1.8	0.238	1.9	15	25	0.01	0.183	2.22
MTF ERL 015	329522	6702820	0.03	0.001	0.001	1	1.65	0.218	0.09	1.8	0.24	1	14	15	0.01	0.515	1.29
MTF ERL 016	329499	6702825	0.16	0.001	0.001	1	1.12	0.2	0.18	2.1	0.17	2.5	14	20	0.02	0.405	1.74
MTF ERL 017	329479	6702818	0.12	0.001	0.001	1	2.08	0.15	0.14	1.9	0.162	4	11	20	0.02	0.375	0.86
MTF ERL 018	329463	6702822	0.05	0.001	0.001	1	2.34	0.127	0.12	2	0.542	1.7	9	16	0.02	0.28	1.08
MTF ERL 019	329452	6702821	0.06	0.001	0.001	1	1.92	0.17	0.11	1.8	0.366	1	11	14	0.01	0.069	1.75
MTF ERL 020	329425	6702820	0.1	0.001	0.001	1	1.17	0.203	0.06	1.5	0.141	1.8	12	17	0.005	0.183	1.6
MTF ERL 020R	329425	6702820	0.11	0.001	0.001	1	1.28	0.226	0.06	1.6	0.151	2.1	13	19	0.005	0.208	1.71
MTF ERL 021	329451	6702842	0.09	0.001	0.001	1	1.54	0.148	0.1	1.8	0.178	3.4	10	10	0.01	0.399	1.39
MTF ERL 022	329467	6702831	0.13	0.001	0.001	1	1.38	0.147	0.08	1.8	0.173	6.1	10	23	0.01	0.06	1.9
MTF ERL 023	329521	6703085	2.38	0.001	0.001	1	1.2	0.226	0.11	2	0.317	1.5	14	25	0.01	0.109	2.14
MTF ERL 024	329513	6703073	3.16	0.001	0.001	1	1.06	0.184	0.1	1.9	0.289	1.4	12	19	0.01	0.121	2.45
MTF ERL 025	329485	6703072	0.77	0.03	0.001	1	1.14	0.154	0.05	1.8	0.166	1.3	9	21	0.005	0.028	1.93
MTF ERL 026	329488	6703063	2	0.001	0.001	1	1.67	0.136	0.09	1.9	0.23	1	9	21	0.005	0.137	1.78
MTF ERL 027	335725	6696529	0.07	0.001	0.001	1	1.69	0.128	0.09	1.8	0.163	3.8	9	21	0.01	0.32	1.17
MTF ERL 028	336013	6696515	0.05	0.001	0.001	1	1.55	0.504	0.14	1.9	0.17	4.4	29	18	0.02	0.391	1.97
MTF ERL 029	335762	6696535	0.1	0.001	0.001	1	1.58	0.152	0.06	1.7	0.095	2.7	10	17	0.005	0.165	1.85
MTF ERL 030	335740	6696527	0.07	0.001	0.001	1	2.31	0.233	0.05	1.7	0.141	5.3	14	19	0.005	0.062	1.52

Appendix C: *Eremophila freelingii* leaf biogeochemistry results.

Sample	Easting	Northing	W_ppm	Sc_ppm	Tl_ppm	S_pct	Hg_ppm	Se_ppm	Te_ppm	Ga_ppm	Cs_ppm	Ge_ppm	Hf_ppm	Nb_ppm	Rb_ppm	Sn_ppm
MTF ERL 001	262817	6654841	0.05	0.5	0.001	0.2	16	0.2	0.001	0.05	0.069	0.04	0.004	0.005	7.9	0.11
MTF ERL 002	262689	6654911	0.05	0.4	0.001	0.22	10	0.3	0.001	0.05	0.035	0.07	0.009	0.01	9.7	0.03
MTF ERL 003	262629	6654943	0.05	0.4	0.001	0.18	17	0.6	0.001	0.1	0.055	0.05	0.018	0.005	9.6	0.04
MTF ERL 004	262626	6655008	0.05	0.4	0.001	0.26	7	0.5	0.03	0.05	0.034	0.04	0.01	0.005	6.1	0.04
MTF ERL 005	262722	6654997	0.05	0.4	0.001	0.2	24	0.3	0.001	0.1	0.089	0.04	0.011	0.005	8.3	0.04
MTF ERL 006	262813	6654896	0.05	0.5	0.001	0.27	18	0.6	0.001	0.1	0.054	0.1	0.011	0.01	6.6	0.06
MTF ERL 007	262823	6654890	0.05	0.5	0.001	0.26	16	1.6	0.001	0.05	0.035	0.03	0.0005	0.005	4.7	0.05
MTF ERL 008	324602	6692513	0.05	0.3	0.001	0.19	14	0.2	0.001	0.05	0.145	0.04	0.0005	0.005	10.1	0.001
MTF ERL 009	329618	6702844	0.05	0.4	0.001	0.26	14	0.4	0.001	0.05	0.08	0.005	0.006	0.01	3.7	0.03
MTF ERL 010	329589	6702841	0.05	0.4	0.001	0.3	14	0.4	0.001	0.05	0.12	0.09	0.003	0.01	4.4	0.001
MTF ERL 010R	329589	6702841	0.05	0.5	0.001	0.31	19	0.4	0.001	0.05	0.119	0.09	0.005	0.005	4.1	0.02
MTF ERL 011	329576	6702844	0.05	0.4	0.001	0.2	10	0.2	0.001	0.05	0.136	0.02	0.004	0.005	8.1	0.03
MTF ERL 012	329566	6702839	0.05	0.4	0.001	0.26	13	0.1	0.001	0.05	0.052	0.04	0.004	0.005	11.4	0.001
MTF ERL 013	329548	6702848	0.05	0.4	0.001	0.43	11	0.1	0.001	0.05	0.185	0.05	0.004	0.005	10.3	0.02
MTF ERL 014	329534	6702836	0.05	0.4	0.001	0.38	11	0.2	0.001	0.05	0.124	0.05	0.006	0.005	7.8	0.001
MTF ERL 015	329522	6702820	0.05	0.4	0.001	0.28	20	0.5	0.03	0.05	0.073	0.04	0.004	0.005	3.9	0.001
MTF ERL 016	329499	6702825	0.05	0.5	0.001	0.24	20	0.4	0.001	0.05	0.211	0.03	0.004	0.005	6.5	0.03
MTF ERL 017	329479	6702818	0.05	0.5	0.001	0.25	10	0.6	0.001	0.05	0.165	0.005	0.007	0.01	3.3	0.001
MTF ERL 018	329463	6702822	0.05	0.5	0.001	0.25	17	0.6	0.001	0.05	0.071	0.03	0.005	0.005	3.5	0.001
MTF ERL 019	329452	6702821	0.05	0.4	0.001	0.25	9	0.6	0.001	0.05	0.189	0.08	0.005	0.005	5.7	0.001
MTF ERL 020	329425	6702820	0.05	0.3	0.001	0.22	13	0.2	0.001	0.05	0.08	0.04	0.003	0.005	3	0.001
MTF ERL 020R	329425	6702820	0.05	0.4	0.001	0.23	9	0.4	0.02	0.05	0.085	0.03	0.004	0.005	3.1	0.001
MTF ERL 021	329451	6702842	0.05	0.4	0.001	0.2	12	1.1	0.001	0.05	0.262	0.04	0.003	0.005	5.5	0.001
MTF ERL 022	329467	6702831	0.05	0.5	0.001	0.24	14	0.7	0.02	0.05	0.127	0.08	0.002	0.005	5.3	0.001
MTF ERL 023	329521	6703085	0.05	0.4	0.001	0.28	7	0.3	0.001	0.05	0.069	0.07	0.002	0.005	5.6	0.001
MTF ERL 024	329513	6703073	0.05	0.3	0.001	0.25	14	0.3	0.03	0.05	0.075	0.09	0.003	0.005	6.7	0.001
MTF ERL 025	329485	6703072	0.05	0.4	0.001	0.26	11	0.8	0.001	0.05	0.12	0.03	0.002	0.005	7.2	0.001
MTF ERL 026	329488	6703063	0.05	0.4	0.001	0.3	15	0.2	0.001	0.05	0.222	0.005	0.004	0.005	7.1	0.001
MTF ERL 027	335725	6696529	0.05	0.5	0.001	0.21	20	1	0.02	0.05	0.036	0.06	0.004	0.01	3.9	0.001
MTF ERL 028	336013	6696515	0.05	0.4	0.001	0.27	18	0.1	0.03	0.05	0.03	0.02	0.006	0.01	6.6	0.001
MTF ERL 029	335762	6696535	0.05	0.4	0.001	0.22	10	0.5	0.001	0.05	0.047	0.03	0.003	0.005	7.6	0.001
MTF ERL 030	335740	6696527	0.05	0.4	0.001	0.21	12	0.5	0.001	0.05	0.039	0.06	0.002	0.005	4.8	0.001

Appendix C: *Eremophila freelingii* leaf biogeochemistry results.

Sample	Easting	Northing	Ta_ppm	Zr_ppm	Y_ppm	Ce_ppm	In_ppm	Re_ppm	Be_ppm	Li_ppm	Pd_ppb	Pt_ppb
MTF ERL 001	262817	6654841	0.0005	0.23	0.096	0.3	0.001	0.5	0.05	1.14	1	5
MTF ERL 002	262689	6654911	0.001	0.21	0.098	0.34	0.001	1	0.05	1.39	1	4
MTF ERL 003	262629	6654943	0.0005	0.37	0.161	0.58	0.001	2	0.05	1.58	1	2
MTF ERL 004	262626	6655008	0.0005	0.21	0.102	0.37	0.001	3	0.05	1.41	1	0.5
MTF ERL 005	262722	6654997	0.0005	0.21	0.101	0.36	0.001	2	0.05	2.22	1	2
MTF ERL 006	262813	6654896	0.0005	0.4	0.18	0.61	0.001	3	0.05	7.13	1	0.5
MTF ERL 007	262823	6654890	0.0005	0.22	0.095	0.32	0.001	2	0.05	3.15	1	1
MTF ERL 008	324602	6692513	0.0005	0.09	0.055	0.2	0.001	3	0.05	1.58	1	0.5
MTF ERL 009	329618	6702844	0.0005	0.18	0.116	0.43	0.001	2	0.05	1.92	1	1
MTF ERL 010	329589	6702841	0.0005	0.12	0.055	0.27	0.001	4	0.05	1.21	1	0.5
MTF ERL 010R	329589	6702841	0.0005	0.11	0.063	0.22	0.001	6	0.05	1.56	1	0.5
MTF ERL 011	329576	6702844	0.0005	0.07	0.037	0.16	0.001	0.5	0.05	2.18	1	0.5
MTF ERL 012	329566	6702839	0.0005	0.15	0.071	0.31	0.001	0.5	0.05	4.55	1	0.5
MTF ERL 013	329548	6702848	0.0005	0.08	0.049	0.19	0.001	2	0.05	0.85	1	0.5
MTF ERL 014	329534	6702836	0.0005	0.09	0.038	0.22	0.001	3	0.05	1.69	1	1
MTF ERL 015	329522	6702820	0.0005	0.11	0.054	0.21	0.001	0.5	0.05	1.19	1	0.5
MTF ERL 016	329499	6702825	0.0005	0.17	0.098	0.45	0.001	1	0.05	2.45	1	0.5
MTF ERL 017	329479	6702818	0.0005	0.17	0.081	0.32	0.001	2	0.05	1.36	1	0.5
MTF ERL 018	329463	6702822	0.0005	0.14	0.065	0.31	0.001	3	0.05	1.7	1	0.5
MTF ERL 019	329452	6702821	0.0005	0.11	0.05	0.27	0.001	0.5	0.05	0.99	1	0.5
MTF ERL 020	329425	6702820	0.001	0.06	0.037	0.16	0.001	3	0.05	1.09	1	0.5
MTF ERL 020R	329425	6702820	0.0005	0.08	0.038	0.15	0.001	2	0.05	1.07	1	0.5
MTF ERL 021	329451	6702842	0.0005	0.09	0.066	0.23	0.001	2	0.05	1.32	1	0.5
MTF ERL 022	329467	6702831	0.0005	0.09	0.061	0.21	0.001	0.5	0.05	0.7	1	0.5
MTF ERL 023	329521	6703085	0.0005	0.1	0.064	0.28	0.001	2	0.05	1.72	1	0.5
MTF ERL 024	329513	6703073	0.001	0.09	0.059	0.26	0.001	11	0.05	1.5	1	0.5
MTF ERL 025	329485	6703072	0.0005	0.06	0.036	0.17	0.001	2	0.05	0.76	1	0.5
MTF ERL 026	329488	6703063	0.0005	0.09	0.061	0.24	0.001	2	0.05	1.27	1	1
MTF ERL 027	335725	6696529	0.0005	0.12	0.059	0.22	0.001	3	0.05	0.58	1	0.5
MTF ERL 028	336013	6696515	0.0005	0.14	0.077	0.36	0.001	7	0.05	0.59	1	0.5
MTF ERL 029	335762	6696535	0.0005	0.07	0.042	0.15	0.001	1	0.05	0.8	1	0.5
MTF ERL 030	335740	6696527	0.0005	0.04	0.033	0.11	0.001	2	0.05	0.19	1	0.5

Appendix C: *Eremophila freelingii* leaf biogeochemistry results.

Sample	Easting	Northing	Mo_ppm	Cu_ppm	Pb_ppm	Zn_ppm	Ag_ppm	Ni_ppm	Co_ppm	Mn_ppm	Fe_pct	As_ppm	U_ppm	Au_ppb	Th_ppm	Sr_ppm
MTF ERL 030R	335708	6696536	0.27	10.68	0.48	24.5	9	0.5	0.12	21	0.015	0.1	0.005	0.1	0.01	73
MTF ERL 031	335708	6696536	0.06	8.11	1.21	15.1	16	0.9	0.09	42	0.023	0.5	0.01	0.1	0.04	67.8
MTF ERL 032	335707	6696594	0.29	8.49	0.39	9.4	17	0.7	0.12	44	0.024	0.1	0.005	0.1	0.04	143.1
MTF ERL 033	335733	6696624	0.4	11.09	0.18	9.5	13	0.5	0.1	22	0.019	0.05	0.005	0.3	0.03	54.7
MTF ERL 034	335708	6696527	0.2	5.87	1.93	16.7	8	0.5	0.07	31	0.016	0.2	0.005	0.1	0.02	48.4
MTF ERL 035	335710	6696511	0.42	5.84	20.26	16.3	19	0.6	0.1	28	0.016	0.3	0.005	0.1	0.02	77.1
MTF ERL 036	335711	6696499	0.06	9.34	47.23	14.1	28	0.6	0.13	32	0.019	1	0.005	0.3	0.02	46.2
MTF ERL 037	335714	6696480	0.75	10.24	8.71	27.9	21	0.6	0.11	39	0.014	0.2	0.01	0.3	0.01	103
MTF ERL 038	335715	6696407	0.03	7.88	0.27	16.5	8	0.9	0.09	56	0.015	0.05	0.005	0.1	0.01	83.6
MTF ERL 039	335567	6696469	0.26	6.14	0.3	11.4	7	0.9	0.18	33	0.017	0.3	0.005	0.1	0.02	67.3
MTF ERL 040	335573	6696480	0.27	6.38	0.31	14.9	42	0.8	0.14	16	0.017	0.9	0.005	0.1	0.02	104.8
MTF ERL 040R	335573	6696480	0.28	6.84	0.33	14.7	43	0.8	0.13	16	0.018	0.7	0.005	0.1	0.02	107.7
MTF ERL 041	335594	6696489	0.07	4.74	0.26	9.7	8	0.6	0.12	24	0.014	0.7	0.005	0.1	0.01	94.7
MTF ERL 042	335596	6696494	0.26	8.61	1.69	16.8	13	0.8	0.12	66	0.017	1.5	0.005	0.2	0.01	98.6
MTF ERL 043	335603	6696507	0.29	11.78	1.19	11.7	20	0.9	0.16	37	0.017	0.1	0.02	0.1	0.02	82.4
MTF ERL 044	335613	6696517	0.11	11.4	0.88	22.1	9	1.3	0.12	32	0.012	0.05	0.005	0.1	0.01	63.7
MTF ERL 045	335614	6696534	0.14	5.68	1.03	10.4	6	0.9	0.11	55	0.019	0.05	0.005	0.1	0.01	77.5
MTF ERL 046	335618	6696567	0.22	6.75	0.86	9.8	15	0.5	0.05	14	0.014	0.5	0.005	0.1	0.02	48.4
MTF ERL 047	335625	6696633	0.28	9.84	0.85	12.4	34	0.4	0.1	16	0.021	0.05	0.005	0.1	0.04	107.1
MTF ERL 048	322626	6691535	0.02	9.88	0.19	23.6	1	0.4	0.1	66	0.019	0.05	0.005	0.1	0.03	83.6
MTF ERL 049	322632	6691511	0.36	12.19	0.15	114.4	7	1	0.34	141	0.018	0.9	0.005	0.1	0.02	12.3
MTF ERL 050	323975	6691693	0.3	15.58	0.28	33.6	13	0.7	0.33	120	0.012	0.4	0.03	0.1	0.02	77.7
MTF ERL 050R	323975	6691693	0.35	17.29	0.19	29.6	18	0.8	0.32	121	0.017	0.3	0.03	0.1	0.03	84.4
MTF ERL 051	323721	6693833	0.18	9.6	0.13	19.8	29	0.3	0.1	76	0.014	0.05	0.005	0.1	0.02	91.4
MTF ERL 052	325075	6691175	0.22	7.02	0.21	24.1	3	0.5	0.13	36	0.018	0.05	0.005	0.1	0.02	72.1
MTF ERL 053	324272	6693275	0.11	4.57	0.25	13.8	3	0.5	0.09	55	0.027	0.1	0.005	0.1	0.03	55.6
MTF ERL 054	349488	6690445	0.58	17.59	0.37	86.2	16	0.5	0.11	35	0.016	0.4	0.005	0.1	0.01	82.7
MTF ERL 055	349476	6690438	0.2	18.74	0.4	117.2	5	0.3	0.12	37	0.013	0.2	0.005	0.1	0.02	47.9
MTF ERL 056	349468	6690459	0.56	25.41	1.83	273.9	31	0.6	0.14	38	0.016	0.4	0.005	0.1	0.01	111.1
MTF ERL 057	349466	6690468	0.5	40.3	9.08	229.4	39	0.6	0.12	27	0.02	0.4	0.005	0.3	0.03	93
MTF ERL 058	349462	6690473	0.59	48.09	48.49	326.1	110	0.6	0.18	27	0.036	1.8	0.03	0.1	0.05	131.3
MTF ERL 059	349450	6690470	0.25	24.69	2.07	146	63	0.5	0.13	20	0.023	0.05	0.005	0.1	0.03	57.6

Appendix C: *Eremophila freelingii* leaf biogeochemistry results.

Sample	Easting	Northing	Cd_ppm	Sb_ppm	Bi_ppm	V_ppm	Ca_pct	P_pct	La_ppm	Cr_ppm	Mg_pct	Ba_ppm	Ti_pct	B_ppm	Al_pct	Na_pct	K_pct
MTF ERL 030R	335708	6696536	0.07	0.001	0.001	1	2.15	0.245	0.04	0.6	0.137	5.3	14	19	0.005	0.058	1.55
MTF ERL 031	335708	6696536	0.05	0.001	0.04	1	1.56	0.142	0.13	1.8	0.039	2.5	9	14	0.02	0.113	1.4
MTF ERL 032	335707	6696594	0.1	0.001	0.001	1	2.03	0.146	0.15	1.8	0.198	3.3	10	17	0.02	0.271	0.86
MTF ERL 033	335733	6696624	0.04	0.001	0.001	1	1.13	0.133	0.1	1.9	0.107	1.4	8	17	0.01	0.17	1.95
MTF ERL 034	335708	6696527	0.1	0.001	0.001	1	1.47	0.311	0.09	1.8	0.128	2.7	16	11	0.01	0.147	1.36
MTF ERL 035	335710	6696511	0.38	0.001	0.001	1	2.44	0.128	0.08	1.9	0.176	12.8	8	13	0.005	0.197	1.32
MTF ERL 036	335711	6696499	0.33	0.04	0.001	1	1.59	0.123	0.09	1.9	0.132	1.7	8	26	0.01	0.438	1.32
MTF ERL 037	335714	6696480	0.78	0.001	0.001	1	1.78	0.139	0.05	1.9	0.124	3.5	8	18	0.005	0.199	1.4
MTF ERL 038	335715	6696407	0.03	0.001	0.001	1	1.99	0.176	0.07	1.9	0.189	1.4	10	14	0.005	0.216	1.07
MTF ERL 039	335567	6696469	0.06	0.001	0.001	1	2.21	0.123	0.1	2.1	0.247	4.2	8	15	0.01	0.387	0.84
MTF ERL 040	335573	6696480	0.04	0.001	0.001	1	2.39	0.26	0.08	1.7	0.386	20.4	14	14	0.01	0.182	0.94
MTF ERL 040R	335573	6696480	0.04	0.001	0.001	1	2.45	0.258	0.08	2	0.399	22.8	15	15	0.01	0.204	1
MTF ERL 041	335594	6696489	0.06	0.001	0.001	1	1.86	0.125	0.05	2.1	0.307	3.9	8	14	0.005	0.223	1.18
MTF ERL 042	335596	6696494	0.27	0.001	0.001	1	2.34	0.179	0.06	1.8	0.271	5.3	10	11	0.005	0.111	1.22
MTF ERL 043	335603	6696507	0.04	0.001	0.001	1	1.89	0.203	0.09	1.8	0.117	4.2	12	15	0.01	0.657	0.74
MTF ERL 044	335613	6696517	0.03	0.001	0.001	1	1.28	0.327	0.05	2	0.156	3	17	14	0.005	0.195	1.24
MTF ERL 045	335614	6696534	0.02	0.001	0.001	1	1.75	0.082	0.1	1.9	0.229	2.7	6	17	0.01	0.304	0.83
MTF ERL 046	335618	6696567	0.03	0.001	0.001	1	0.91	0.183	0.07	2	0.126	1.9	10	14	0.01	0.389	1.34
MTF ERL 047	335625	6696633	0.06	0.001	0.001	1	1.41	0.2	0.11	2	0.119	5.4	12	22	0.02	0.114	1.33
MTF ERL 048	322626	6691535	0.02	0.001	0.001	1	0.98	0.071	0.16	2	0.151	1.6	6	20	0.01	0.048	1.8
MTF ERL 049	322632	6691511	0.1	0.001	0.001	1	1.07	0.212	0.12	1.8	0.148	2	12	17	0.01	0.344	1.23
MTF ERL 050	323975	6691693	0.04	0.001	0.001	1	1.85	0.143	0.06	2	0.237	1.3	7	17	0.005	0.13	2.36
MTF ERL 050R	323975	6691693	0.04	0.001	0.001	1	2.03	0.125	0.1	2	0.264	1.7	7	17	0.01	0.151	2.23
MTF ERL 051	323721	6693833	0.1	0.001	0.001	1	1.98	0.237	0.07	2	0.358	2.3	11	20	0.01	0.459	1.26
MTF ERL 052	325075	6691175	0.05	0.001	0.001	1	1.54	0.2	0.12	2.1	0.191	8.4	11	15	0.02	0.139	2.62
MTF ERL 053	324272	6693275	0.02	0.001	0.001	1	1.59	0.152	0.08	2.1	0.114	0.9	9	16	0.005	0.441	1.33
MTF ERL 054	349488	6690445	1.05	0.07	0.001	1	1.07	0.135	0.08	2.2	0.101	21.1	10	15	0.01	0.187	1.64
MTF ERL 055	349476	6690438	0.53	0.06	0.001	1	0.85	0.161	0.05	1.9	0.146	8	11	17	0.005	0.196	2.02
MTF ERL 056	349468	6690459	5.76	0.22	0.001	2	1.49	0.239	0.06	2.2	0.182	17.7	15	21	0.01	0.083	1.96
MTF ERL 057	349466	6690468	3.32	0.6	0.001	3	1.72	0.222	0.09	2.1	0.163	24.9	16	20	0.01	0.101	1.28
MTF ERL 058	349462	6690473	4.19	1.56	0.001	2	2.03	0.205	0.18	2.4	0.181	31.7	21	24	0.03	0.22	1.26
MTF ERL 059	349450	6690470	1.51	0.2	0.001	1	1.28	0.26	0.12	1.9	0.128	21.4	18	24	0.02	0.05	2.04

Appendix C: *Eremophila freelingii* leaf biogeochemistry results.

Sample	Easting	Northing	W_ppm	Sc_ppm	Tl_ppm	S_pct	Hg_ppm	Se_ppm	Te_ppm	Ga_ppm	Cs_ppm	Ge_ppm	Hf_ppm	Nb_ppm	Rb_ppm	Sn_ppm
MTF ERL 030R	335708	6696536	0.05	0.5	0.001	0.21	9	0.4	0.001	0.05	0.037	0.01	0.003	0.005	5	0.001
MTF ERL 031	335708	6696536	0.05	0.3	0.001	0.15	11	0.6	0.001	0.05	0.048	0.005	0.001	0.005	5.2	0.05
MTF ERL 032	335707	6696594	0.05	0.3	0.001	0.22	12	0.5	0.05	0.05	0.124	0.005	0.006	0.01	6.4	0.03
MTF ERL 033	335733	6696624	0.05	0.3	0.001	0.17	12	0.2	0.001	0.05	0.019	0.02	0.008	0.005	3.6	0.03
MTF ERL 034	335708	6696527	0.05	0.3	0.001	0.11	13	0.4	0.001	0.05	0.021	0.02	0.005	0.005	3.5	0.02
MTF ERL 035	335710	6696511	0.05	0.4	0.001	0.19	12	0.3	0.001	0.05	0.019	0.005	0.0005	0.005	2.8	0.001
MTF ERL 036	335711	6696499	0.05	0.4	0.001	0.25	16	0.6	0.001	0.05	0.021	0.01	0.008	0.005	3.4	0.001
MTF ERL 037	335714	6696480	0.05	0.3	0.001	0.28	17	0.6	0.001	0.05	0.022	0.03	0.002	0.005	3	0.001
MTF ERL 038	335715	6696407	0.05	0.3	0.001	0.21	10	0.4	0.02	0.05	0.054	0.01	0.0005	0.005	4.9	0.001
MTF ERL 039	335567	6696469	0.05	0.3	0.001	0.24	14	0.6	0.02	0.05	0.131	0.01	0.005	0.01	3.6	0.02
MTF ERL 040	335573	6696480	0.05	0.3	0.001	0.16	18	0.3	0.001	0.05	0.04	0.005	0.003	0.005	2.8	0.001
MTF ERL 040R	335573	6696480	0.05	0.4	0.001	0.2	10	0.5	0.001	0.05	0.042	0.01	0.007	0.01	3.2	0.001
MTF ERL 041	335594	6696489	0.05	0.3	0.001	0.16	14	0.3	0.04	0.05	0.035	0.02	0.002	0.005	3.7	0.001
MTF ERL 042	335596	6696494	0.05	0.3	0.001	0.21	13	0.4	0.001	0.05	0.034	0.03	0.003	0.005	4.2	0.001
MTF ERL 043	335603	6696507	0.05	0.3	0.001	0.2	16	0.4	0.001	0.05	0.035	0.005	0.007	0.005	2.3	0.02
MTF ERL 044	335613	6696517	0.05	0.4	0.001	0.2	15	0.4	0.001	0.05	0.022	0.005	0.0005	0.005	3.8	0.001
MTF ERL 045	335614	6696534	0.05	0.3	0.001	0.16	14	0.3	0.001	0.05	0.047	0.005	0.003	0.005	3.9	0.001
MTF ERL 046	335618	6696567	0.05	0.4	0.001	0.17	17	0.4	0.001	0.05	0.043	0.005	0.004	0.005	4.5	0.001
MTF ERL 047	335625	6696633	0.05	0.4	0.001	0.17	21	0.2	0.001	0.05	0.071	0.005	0.002	0.005	5.7	0.001
MTF ERL 048	322626	6691535	0.05	0.4	0.001	0.19	16	0.05	0.001	0.05	0.056	0.05	0.002	0.005	8	0.001
MTF ERL 049	322632	6691511	0.05	0.3	0.001	0.25	6	0.05	0.001	0.05	0.338	0.005	0.003	0.005	22.1	0.001
MTF ERL 050	323975	6691693	0.05	0.1	0.001	0.22	4	0.5	0.001	0.05	0.013	0.02	0.0005	0.005	2.5	0.03
MTF ERL 050R	323975	6691693	0.05	0.05	0.001	0.25	7	0.5	0.001	0.05	0.019	0.03	0.002	0.005	2.4	0.001
MTF ERL 051	323721	6693833	0.05	0.1	0.001	0.23	13	0.8	0.001	0.05	0.104	0.02	0.005	0.005	6.1	0.001
MTF ERL 052	325075	6691175	0.05	0.1	0.001	0.25	16	0.6	0.001	0.05	0.087	0.005	0.0005	0.005	10.9	0.001
MTF ERL 053	324272	6693275	0.05	0.3	0.001	0.24	13	0.3	0.001	0.05	0.024	0.03	0.006	0.005	3.2	0.02
MTF ERL 054	349488	6690445	0.05	0.3	0.001	0.22	16	0.4	0.001	0.05	0.037	0.03	0.007	0.005	7.3	0.001
MTF ERL 055	349476	6690438	0.05	0.3	0.001	0.21	9	0.3	0.001	0.05	0.056	0.01	0.007	0.005	8.3	0.001
MTF ERL 056	349468	6690459	0.05	0.4	0.001	0.29	14	0.8	0.001	0.05	0.053	0.04	0.0005	0.005	6.2	0.001
MTF ERL 057	349466	6690468	0.05	0.4	0.001	0.21	34	0.8	0.001	0.05	0.124	0.02	0.003	0.005	5.9	0.001
MTF ERL 058	349462	6690473	0.05	0.3	0.001	0.27	55	2	0.001	0.1	0.079	0.03	0.006	0.02	4.2	0.03
MTF ERL 059	349450	6690470	0.05	0.4	0.001	0.21	19	0.5	0.001	0.05	0.035	0.05	0.004	0.01	5.5	0.001

Appendix C: *Eremophila freelingii* leaf biogeochemistry results.

Sample	Easting	Northing	Ta_ppm	Zr_ppm	Y_ppm	Ce_ppm	In_ppm	Re_ppm	Be_ppm	Li_ppm	Pd_ppb	Pt_ppb
MTF ERL 030R	335708	6696536	0.0005	0.05	0.03	0.1	0.001	1	0.05	0.22	1	0.5
MTF ERL 031	335708	6696536	0.0005	0.12	0.079	0.32	0.001	0.5	0.05	0.59	1	0.5
MTF ERL 032	335707	6696594	0.0005	0.15	0.098	0.31	0.001	2	0.05	0.79	1	0.5
MTF ERL 033	335733	6696624	0.0005	0.09	0.077	0.26	0.001	6	0.05	0.56	1	0.5
MTF ERL 034	335708	6696527	0.0005	0.1	0.051	0.19	0.001	0.5	0.05	0.39	1	0.5
MTF ERL 035	335710	6696511	0.0005	0.07	0.041	0.17	0.001	5	0.05	0.19	1	0.5
MTF ERL 036	335711	6696499	0.0005	0.09	0.054	0.22	0.001	0.5	0.05	0.49	1	0.5
MTF ERL 037	335714	6696480	0.0005	0.08	0.035	0.16	0.001	1	0.05	0.49	1	0.5
MTF ERL 038	335715	6696407	0.0005	0.07	0.038	0.14	0.001	0.5	0.05	0.27	1	0.5
MTF ERL 039	335567	6696469	0.0005	0.12	0.061	0.23	0.001	2	0.05	0.97	1	0.5
MTF ERL 040	335573	6696480	0.0005	0.11	0.049	0.2	0.001	0.5	0.05	0.54	1	0.5
MTF ERL 040R	335573	6696480	0.0005	0.09	0.048	0.17	0.001	0.5	0.05	0.52	1	0.5
MTF ERL 041	335594	6696489	0.0005	0.06	0.033	0.11	0.001	1	0.05	0.52	1	0.5
MTF ERL 042	335596	6696494	0.0005	0.08	0.034	0.12	0.001	0.5	0.05	0.36	2	0.5
MTF ERL 043	335603	6696507	0.0005	0.08	0.056	0.2	0.001	1	0.05	0.81	1	0.5
MTF ERL 044	335613	6696517	0.0005	0.07	0.036	0.13	0.001	1	0.05	0.27	1	0.5
MTF ERL 045	335614	6696534	0.0005	0.08	0.078	0.23	0.001	0.5	0.05	0.86	1	0.5
MTF ERL 046	335618	6696567	0.0005	0.07	0.047	0.19	0.001	2	0.05	0.36	1	0.5
MTF ERL 047	335625	6696633	0.0005	0.14	0.08	0.29	0.001	2	0.05	0.51	1	0.5
MTF ERL 048	322626	6691535	0.0005	0.12	0.101	0.4	0.001	0.5	0.05	0.87	1	0.5
MTF ERL 049	322632	6691511	0.0005	0.11	0.77	0.41	0.001	5	0.05	3.31	1	0.5
MTF ERL 050	323975	6691693	0.0005	0.09	0.058	0.12	0.001	12	0.05	0.9	1	0.5
MTF ERL 050R	323975	6691693	0.0005	0.13	0.101	0.25	0.001	13	0.05	1.45	1	0.5
MTF ERL 051	323721	6693833	0.0005	0.12	0.06	0.21	0.001	1	0.05	1.7	1	0.5
MTF ERL 052	325075	6691175	0.0005	0.13	0.086	0.24	0.001	0.5	0.05	0.33	1	0.5
MTF ERL 053	324272	6693275	0.0005	0.11	0.073	0.24	0.001	0.5	0.05	1.39	1	0.5
MTF ERL 054	349488	6690445	0.0005	0.11	0.064	0.19	0.001	0.5	0.05	0.24	1	0.5
MTF ERL 055	349476	6690438	0.0005	0.08	0.038	0.14	0.001	0.5	0.05	0.19	1	0.5
MTF ERL 056	349468	6690459	0.0005	0.1	0.048	0.14	0.001	0.5	0.05	0.14	1	0.5
MTF ERL 057	349466	6690468	0.0005	0.11	0.059	0.23	0.001	0.5	0.05	0.18	1	1
MTF ERL 058	349462	6690473	0.0005	0.21	0.11	0.44	0.001	0.5	0.05	0.51	1	0.5
MTF ERL 059	349450	6690470	0.0005	0.13	0.067	0.28	0.001	2	0.05	0.22	1	0.5

Appendix C: *Eremophila freelingii* leaf biogeochemistry results.

Sample	Easting	Northing	Mo_ppm	Cu_ppm	Pb_ppm	Zn_ppm	Ag_ppm	Ni_ppm	Co_ppm	Mn_ppm	Fe_pct	As_ppm	U_ppm	Au_ppb	Th_ppm	Sr_ppm
MTF ERL 060	349461	6690481	0.56	50.76	16.99	703.9	27	0.5	0.19	18	0.013	0.7	0.02	0.1	0.01	61.7
MTF ERL 060R	349461	6690481	0.45	55.75	15.3	806.8	30	0.5	0.19	19	0.015	0.7	0.02	0.1	0.02	63.9
MTF ERL 061	349465	6690477	0.69	38.54	11.54	437.3	55	0.5	0.13	24	0.018	0.8	0.02	0.1	0.02	80
MTF ERL 062	349476	6690488	1.16	28.48	3.46	272	80	0.3	0.15	17	0.022	1.1	0.005	0.1	0.03	65.4
MTF ERL 063	349559	6690473	0.15	14.16	0.45	41.6	3	0.3	0.12	20	0.032	0.3	0.005	0.1	0.06	55.2
MTF ERL 064	349550	6690496	0.11	12.46	0.19	45.3	1	0.4	0.09	42	0.02	0.2	0.005	0.1	0.03	90.4

Sample	Easting	Northing	Cd_ppm	Sb_ppm	Bi_ppm	V_ppm	Ca_pct	P_pct	La_ppm	Cr_ppm	Mg_pct	Ba_ppm	Ti_pct	B_ppm	Al_pct	Na_pct	K_pct
MTF ERL 060	349461	6690481	5.42	0.44	0.001	1	1.42	0.208	0.05	1.9	0.303	8.1	12	19	0.005	0.043	1.19
MTF ERL 060R	349461	6690481	6	0.48	0.001	1	1.48	0.186	0.07	2.2	0.29	7.7	13	18	0.01	0.06	1.09
MTF ERL 061	349465	6690477	6.97	0.55	0.001	1	1.4	0.126	0.07	2.3	0.208	6	11	23	0.01	0.098	1.81
MTF ERL 062	349476	6690488	7.05	1.14	0.001	1	1.21	0.125	0.11	2	0.118	15.3	13	14	0.02	0.297	1.82
MTF ERL 063	349559	6690473	0.12	0.09	0.05	1	1.31	0.101	0.21	1.9	0.099	13.1	14	19	0.03	0.261	1.81
MTF ERL 064	349550	6690496	0.11	0.02	0.001	1	1.98	0.138	0.09	1.7	0.086	14	11	26	0.01	0.178	1.41

Sample	Easting	Northing	W_ppm	Sc_ppm	Tl_ppm	S_pct	Hg_ppm	Se_ppm	Te_ppm	Ga_ppm	Cs_ppm	Ge_ppm	Hf_ppm	Nb_ppm	Rb_ppm	Sn_ppm
MTF ERL 060	349461	6690481	0.05	0.3	0.001	0.2	31	1.2	0.001	0.05	0.042	0.005	0.006	0.005	3.2	0.001
MTF ERL 060R	349461	6690481	0.05	0.4	0.001	0.2	30	1.2	0.001	0.05	0.043	0.005	0.003	0.005	3.1	0.001
MTF ERL 061	349465	6690477	0.05	0.4	0.001	0.29	31	1.1	0.001	0.05	0.07	0.01	0.003	0.005	6.7	0.001
MTF ERL 062	349476	6690488	0.05	0.4	0.001	0.2	28	1.3	0.001	0.05	0.044	0.005	0.008	0.005	6.1	0.001
MTF ERL 063	349559	6690473	0.05	0.5	0.001	0.19	25	0.6	0.001	0.05	0.196	0.04	0.008	0.02	17.5	0.06
MTF ERL 064	349550	6690496	0.05	0.4	0.001	0.22	17	0.5	0.001	0.05	0.122	0.08	0.004	0.01	11.8	0.02

Sample	Easting	Northing	Ta_ppm	Zr_ppm	Y_ppm	Ce_ppm	In_ppm	Re_ppm	Be_ppm	Li_ppm	Pd_ppb	Pt_ppb
MTF ERL 060	349461	6690481	0.0005	0.07	0.036	0.15	0.001	0.5	0.05	0.16	1	0.5
MTF ERL 060R	349461	6690481	0.0005	0.09	0.041	0.19	0.001	0.5	0.05	0.23	1	0.5
MTF ERL 061	349465	6690477	0.0005	0.13	0.054	0.21	0.001	0.5	0.05	0.39	1	0.5
MTF ERL 062	349476	6690488	0.001	0.13	0.057	0.27	0.001	0.5	0.05	0.18	1	0.5
MTF ERL 063	349559	6690473	0.001	0.24	0.122	0.49	0.001	0.5	0.05	0.17	1	0.5
MTF ERL 064	349550	6690496	0.0005	0.12	0.063	0.21	0.001	0.5	0.05	0.1	1	0.5

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Sample	Easting	Northing	Mo_ppm	Cu_ppm	Pb_ppm	Zn_ppm	Ag_ppm	Ni_ppm	Co_ppm	Mn_pct	Fe_pct	As_ppm	U_ppm	Au_ppb	Th_ppm	Sr_ppm
MTF ERT 028	335725	6696529	0.18	7.53	1.11	5.7	4	0.7	0.14	58	0.014	0.2	0.005	0.5	0.01	109.5
MTF ERL 028R	335762	6696535	0.18	7.1	0.99	6	3	0.5	0.11	47	0.014	0.1	0.005	0.6	0.01	100.1
MTF ERT 029	335762	6696535	0.62	7.78	0.68	28	3	0.4	0.14	39	0.014	0.3	0.005	0.3	0.02	111.8
MTF ERT 030	335740	6696527	0.32	7.82	0.96	20	3	0.5	0.23	26	0.015	0.05	0.005	0.3	0.02	84.8
MTF ERT 031	335708	6696536	0.09	9.55	1.62	10.8	6	0.9	0.17	54	0.027	0.05	0.005	0.1	0.04	130.7
MTF ERT 032	335707	6696594	0.41	8.62	0.4	9	5	0.6	0.26	41	0.026	0.2	0.005	0.1	0.03	158
MTF ERT 033	335733	6696624	0.31	9	0.4	7.1	3	0.5	0.13	33	0.021	0.2	0.005	0.1	0.03	105.7
MTF ERT 034	335708	6696527	0.28	8.58	1.43	14.2	4	0.6	0.06	34	0.015	0.05	0.005	0.1	0.01	87.9
MTF ERT 035	335710	6696511	0.28	9.33	32.8	18.8	10	0.6	0.1	30	0.015	0.6	0.005	0.1	0.01	106.4
MTF ERT 036	335711	6696499	0.05	9.37	57.16	11	14	0.6	0.21	32	0.017	0.3	0.005	0.1	0.02	62.7
MTF ERT 037	335714	6696480	0.81	18.07	13.54	12.9	7	0.6	0.21	37	0.014	0.05	0.005	0.4	0.01	143.5
MTF ERT 038	335715	6696407	0.08	10.08	0.51	12.2	3	0.5	0.11	49	0.018	0.05	0.005	0.1	0.02	125.1
MTF ERL 038R	335715	6696407	0.05	9.87	0.7	10.7	2	0.7	0.11	48	0.016	0.05	0.005	0.3	0.01	120.5
MTF ERT 039	335567	6696469	0.38	9.37	0.41	8.3	3	0.8	0.27	27	0.022	0.3	0.005	0.1	0.03	69.6
MTF ERT 040	335573	6696480	0.26	14.18	0.47	9.6	6	0.5	0.18	20	0.015	0.4	0.005	0.1	0.01	108.4
MTF ERT 041	335594	6696489	0.12	6.59	0.47	9	5	0.4	0.15	17	0.013	0.05	0.005	0.3	0.01	92.9
MTF ERT 042	335596	6696494	0.33	8.3	2.22	10.6	3	0.6	0.2	36	0.012	0.2	0.005	0.3	0.005	94.8
MTF ERT 043	335603	6696507	0.33	9.33	1.13	9.8	5	0.6	0.16	27	0.017	0.1	0.005	0.1	0.02	100.8
MTF ERT 044	335613	6696517	0.14	7.51	0.88	21.3	3	0.8	0.12	35	0.015	0.05	0.005	0.3	0.005	99.8
MTF ERT 045	335614	6696534	0.12	8.28	1.08	16.2	1	0.7	0.17	55	0.019	0.05	0.005	0.1	0.02	113.5
MTF ERT 046	335618	6696567	0.19	7.69	1.09	13.8	5	0.6	0.1	27	0.015	0.05	0.005	0.3	0.01	131
MTF ERT 047	335625	6696633	0.27	7.59	0.63	9.2	8	0.5	0.15	22	0.02	0.2	0.005	0.3	0.03	152.5
MTF ERT 048	322626	6691535	0.04	9.42	0.18	18.7	1	0.4	0.13	61	0.023	0.05	0.005	0.3	0.04	162.5
MTF ERL 048R	322626	6691535	0.04	9.2	0.2	20	1	0.5	0.1	59	0.018	0.2	0.005	0.1	0.02	158.4
MTF ERT 049	322632	6691511	0.43	10.82	0.25	68.3	3	0.6	0.37	84	0.024	0.3	0.005	0.3	0.03	22.2
MTF ERT 050	323975	6691693	0.32	17.08	0.18	15.1	4	0.7	0.3	55	0.025	0.05	0.02	0.1	0.04	82.2
MTF ERT 051	323721	6693833	0.15	11.33	0.12	19.3	4	0.2	0.13	47	0.018	0.05	0.005	0.1	0.02	84.5
MTF ERT 052	325075	6691175	0.16	8.92	0.24	18.4	1	0.5	0.16	43	0.026	0.05	0.005	0.1	0.04	107.5
MTF ERT 053	324272	6693275	0.11	5.64	0.24	9.6	1	0.2	0.18	55	0.033	0.05	0.005	0.1	0.03	104.1
MTF ERT 054	349488	6690445	0.42	9.15	0.53	67.6	4	0.3	0.17	47	0.02	0.2	0.005	0.1	0.03	168.8
MTF ERT 055	349476	6690438	0.12	10.46	0.76	79.2	2	0.2	0.16	36	0.015	0.05	0.005	0.1	0.02	68.4
MTF ERT 056	349468	6690459	0.29	17.6	3.86	214.4	8	0.3	0.2	32	0.016	0.05	0.005	0.1	0.02	135.5

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Sample	Easting	Northing	Mo_ppm	Cu_ppm	Pb_ppm	Zn_ppm	Ag_ppm	Ni_ppm	Co_ppm	Mn_pct	Fe_pct	As_ppm	U_ppm	Au_ppb	Th_ppm	Sr_ppm
MTF ERT 057	349466	6690468	0.19	21.08	8.26	136.6	14	0.1	0.09	19	0.014	0.2	0.005	0.1	0.02	100.7
MTF ERT 058	349462	6690473	0.4	35.78	61.36	239.8	73	0.3	0.21	22	0.033	1	0.02	0.1	0.04	151.6
MTF ERL 058R	349462	6690473	0.39	32.43	43.54	210.2	46	0.4	0.15	21	0.029	0.5	0.02	0.2	0.04	149.5
MTF ERT 059	349450	6690470	0.15	12.73	3.09	113.9	11	0.3	0.14	30	0.018	0.05	0.005	0.1	0.03	108.9
MTF ERT 060	349461	6690481	0.37	17.96	13.86	348.1	11	0.05	0.15	14	0.013	0.2	0.005	0.3	0.02	93
MTF ERT 061	349465	6690477	0.36	23.06	12.34	307.4	14	0.2	0.12	21	0.018	0.1	0.005	0.1	0.02	150
MTF ERT 062	349476	6690488	0.97	20.64	4.33	194.4	17	0.3	0.13	20	0.015	0.05	0.005	0.1	0.02	114.7
MTF ERT 063	349559	6690473	0.1	8.71	0.29	28.5	1	0.2	0.09	26	0.023	0.3	0.005	0.3	0.03	123.9
MTF ERT 064	349550	6690496	0.09	12.52	0.25	43.8	1	0.2	0.12	42	0.021	0.05	0.005	0.1	0.03	134.7
MTF ERT 065	336013	6696515	0.14	8.85	0.14	11.8	1	0.2	0.21	36	0.014	0.05	0.005	0.5	0.02	181.7

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Sample	Easting	Northing	Cd_ppm	Sb_ppm	Bi_ppm	V_ppm	Ca_pct	P_pct	La_ppm	Cr_ppm	Mg_pct	Ba_ppm	Ti_pct	B_ppm	Al_pct	Na_pct	K_pct
MTF ERT 028	335725	6696529	0.1	0.001	0.001	1	2.18	0.144	0.06	1.7	0.114	5.5	9	13	0.005	0.17	2.15
MTF ERL 028R	335762	6696535	0.08	0.001	0.001	1	1.79	0.147	0.06	1.5	0.109	4.8	8	13	0.005	0.146	1.89
MTF ERT 029	335762	6696535	0.18	0.001	0.001	1	2.22	0.215	0.06	1.5	0.092	3.9	12	16	0.005	0.132	1.77
MTF ERT 030	335740	6696527	0.09	0.001	0.001	1	2.04	0.142	0.06	1.8	0.087	4.9	8	14	0.01	0.088	1.73
MTF ERT 031	335708	6696536	0.07	0.001	0.001	1	2.41	0.194	0.13	1.6	0.073	3.4	12	13	0.02	0.165	1.69
MTF ERT 032	335707	6696594	0.11	0.001	0.001	1	2.21	0.144	0.14	1.7	0.168	3.3	10	12	0.02	0.42	1.66
MTF ERT 033	335733	6696624	0.12	0.001	0.001	1	1.66	0.174	0.11	1.7	0.178	1.9	11	14	0.01	0.118	2.12
MTF ERT 034	335708	6696527	0.12	0.001	0.001	1	2.09	0.26	0.04	1.5	0.134	3.3	13	13	0.005	0.079	1.51
MTF ERT 035	335710	6696511	0.42	0.001	0.001	1	2.57	0.216	0.05	1.9	0.134	8.4	12	12	0.005	0.066	1.46
MTF ERT 036	335711	6696499	0.46	0.02	0.001	1	1.62	0.097	0.08	1.7	0.111	2.1	7	15	0.01	0.453	1.09
MTF ERT 037	335714	6696480	1.27	0.001	0.001	1	2.03	0.216	0.04	1.6	0.139	3.4	12	13	0.005	0.089	1.66
MTF ERT 038	335715	6696407	0.04	0.001	0.001	1	2.52	0.249	0.06	1.7	0.149	2.3	14	16	0.01	0.542	1.02
MTF ERL 038R	335715	6696407	0.03	0.001	0.001	1	2.34	0.252	0.04	1.6	0.143	1.7	13	14	0.005	0.501	1
MTF ERT 039	335567	6696469	0.07	0.001	0.001	1	1.86	0.115	0.1	1.6	0.167	5	8	12	0.02	0.312	1.39
MTF ERT 040	335573	6696480	0.06	0.001	0.001	1	2.03	0.285	0.04	1.5	0.366	19.5	15	10	0.005	0.131	1.86
MTF ERT 041	335594	6696489	0.09	0.001	0.001	1	1.69	0.121	0.05	1.7	0.126	3.8	7	15	0.005	0.139	1.53
MTF ERT 042	335596	6696494	0.22	0.001	0.001	1	1.73	0.176	0.02	1.6	0.114	3.6	9	10	0.005	0.079	1.46
MTF ERT 043	335603	6696507	0.05	0.001	0.001	1	1.93	0.229	0.07	1.8	0.105	3.8	13	13	0.01	0.291	1.38
MTF ERT 044	335613	6696517	0.04	0.001	0.001	1	1.87	0.324	0.04	1.7	0.163	3.3	17	10	0.005	0.23	1.43
MTF ERT 045	335614	6696534	0.03	0.001	0.001	1	2.23	0.122	0.09	1.6	0.176	3	8	11	0.01	0.37	0.91
MTF ERT 046	335618	6696567	0.07	0.001	0.001	1	2.07	0.233	0.05	1.9	0.117	2.9	13	13	0.005	0.322	1.85
MTF ERT 047	335625	6696633	0.1	0.001	0.001	1	1.73	0.144	0.08	1.9	0.117	5.7	9	16	0.01	0.182	1.45
MTF ERT 048	322626	6691535	0.07	0.001	0.001	1	1.6	0.056	0.18	1.6	0.126	2.5	5	17	0.01	0.192	1.97
MTF ERL 048R	322626	6691535	0.06	0.001	0.001	1	1.65	0.053	0.13	1.7	0.125	2.4	5	17	0.01	0.21	1.92
MTF ERT 049	322632	6691511	0.2	0.001	0.001	1	1.39	0.266	0.12	1.7	0.141	3.2	15	15	0.01	0.194	2.58
MTF ERT 050	323975	6691693	0.05	0.001	0.001	1	1.7	0.085	0.11	1.6	0.161	2	6	13	0.02	0.08	1.82
MTF ERT 051	323721	6693833	0.08	0.001	0.05	1	1.84	0.377	0.07	1.6	0.413	2	23	16	0.005	0.145	1.63
MTF ERT 052	325075	6691175	0.05	0.001	0.001	1	1.78	0.128	0.15	1.5	0.122	8.9	10	11	0.02	0.121	2.03
MTF ERT 053	324272	6693275	0.03	0.001	0.001	1	1.91	0.163	0.09	1.6	0.104	1.2	11	14	0.01	0.515	1.37
MTF ERT 054	349488	6690445	1.52	0.06	0.001	1	1.71	0.197	0.09	1.7	0.14	30.7	16	12	0.02	0.138	1.88
MTF ERT 055	349476	6690438	0.96	0.06	0.001	1	0.97	0.182	0.07	1.4	0.136	9.7	14	13	0.01	0.101	2.17
MTF ERT 056	349468	6690459	6.85	0.15	0.001	1	1.49	0.245	0.07	1.4	0.122	17.7	17	13	0.01	0.025	2.42

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Sample	Easting	Northing	Cd_ppm	Sb_ppm	Bi_ppm	V_ppm	Ca_pct	P_pct	La_ppm	Cr_ppm	Mg_pct	Ba_ppm	Ti_pct	B_ppm	Al_pct	Na_pct	K_pct
MTF ERT 057	349466	6690468	2.91	0.42	0.001	1	1.49	0.227	0.06	1.6	0.107	15	16	11	0.005	0.101	1.62
MTF ERT 058	349462	6690473	4.22	2.14	0.001	1	1.85	0.229	0.21	1.7	0.131	24.1	25	15	0.03	0.198	1.93
MTF ERL 058R	349462	6690473	3.8	1.42	0.001	1	1.83	0.232	0.16	1.8	0.126	22	23	14	0.02	0.2	1.92
MTF ERT 059	349450	6690470	1.95	0.12	0.001	1	1.93	0.204	0.08	1.5	0.118	24.9	16	17	0.01	0.075	1.72
MTF ERT 060	349461	6690481	5.36	0.35	0.001	1	1.67	0.231	0.04	1.5	0.149	6.1	16	13	0.005	0.037	1.9
MTF ERT 061	349465	6690477	7.29	0.45	0.001	1	2.04	0.118	0.05	1.4	0.14	5.9	10	14	0.005	0.203	1.87
MTF ERT 062	349476	6690488	9.7	0.81	0.001	1	1.43	0.179	0.07	1.6	0.101	15.3	16	13	0.01	0.133	1.88
MTF ERT 063	349559	6690473	0.17	0.03	0.001	1	1.77	0.131	0.1	1.5	0.126	14.4	13	18	0.02	0.074	1.72
MTF ERT 064	349550	6690496	0.11	0.001	0.001	1	2.16	0.124	0.08	1.5	0.08	12.8	12	16	0.01	0.082	1.88
MTF ERT 065	336013	6696515	0.05	0.001	0.001	1	1.48	0.33	0.06	1.6	0.123	3.6	21	10	0.005	0.217	1.68

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Sample	Easting	Northing	S_pct	Hg_ppm	Se_ppm	Te_ppm	Ga_ppm	Cs_ppm	Ge_ppm	Hf_ppm	Nb_ppm	Rb_ppm	Sn_ppm	Ta_ppm	Zr_ppm	Y_ppm
MTF ERT 028	335725	6696529	0.25	3	0.4	0.001	0.05	0.025	0.02	0.002	0.005	5.9	0.03	0.0005	0.06	0.037
MTF ERL 028R	335762	6696535	0.25	6	0.3	0.001	0.05	0.028	0.03	0.003	0.005	5.4	0.001	0.0005	0.07	0.033
MTF ERT 029	335762	6696535	0.38	5	0.2	0.001	0.05	0.049	0.02	0.001	0.005	7	0.001	0.0005	0.07	0.047
MTF ERT 030	335740	6696527	0.45	5	0.2	0.001	0.05	0.034	0.03	0.0005	0.005	4.8	0.001	0.0005	0.08	0.046
MTF ERT 031	335708	6696536	0.56	6	0.4	0.001	0.05	0.054	0.03	0.007	0.005	7.2	0.001	0.0005	0.15	0.095
MTF ERT 032	335707	6696594	0.3	9	0.4	0.001	0.05	0.165	0.06	0.009	0.01	12	0.001	0.0005	0.14	0.091
MTF ERT 033	335733	6696624	0.27	4	0.1	0.001	0.05	0.023	0.06	0.004	0.005	4.5	0.001	0.002	0.11	0.063
MTF ERT 034	335708	6696527	0.4	2	0.3	0.001	0.05	0.015	0.02	0.002	0.005	4.6	0.001	0.0005	0.06	0.023
MTF ERT 035	335710	6696511	0.62	3	0.2	0.001	0.05	0.018	0.05	0.004	0.005	3.2	0.001	0.0005	0.08	0.024
MTF ERT 036	335711	6696499	0.28	4	0.2	0.001	0.05	0.021	0.04	0.004	0.005	3.1	0.001	0.0005	0.09	0.054
MTF ERT 037	335714	6696480	0.63	5	0.3	0.001	0.05	0.021	0.03	0.0005	0.005	3.7	0.001	0.0005	0.05	0.03
MTF ERT 038	335715	6696407	0.66	4	0.2	0.001	0.05	0.058	0.01	0.003	0.005	5.6	0.001	0.0005	0.07	0.048
MTF ERL 038R	335715	6696407	0.67	7	0.3	0.001	0.05	0.053	0.05	0.0005	0.005	5.3	0.001	0.0005	0.06	0.034
MTF ERT 039	335567	6696469	0.36	7	0.4	0.001	0.05	0.116	0.01	0.005	0.005	5.3	0.001	0.0005	0.13	0.077
MTF ERT 040	335573	6696480	0.47	4	0.1	0.001	0.05	0.043	0.03	0.003	0.005	5.8	0.001	0.0005	0.07	0.027
MTF ERT 041	335594	6696489	0.32	0.5	0.2	0.001	0.05	0.032	0.02	0.004	0.005	4.4	0.001	0.001	0.06	0.031
MTF ERT 042	335596	6696494	0.47	5	0.2	0.001	0.05	0.031	0.07	0.0005	0.005	5.7	0.001	0.0005	0.04	0.015
MTF ERT 043	335603	6696507	0.37	3	0.1	0.001	0.05	0.046	0.02	0.002	0.01	4.2	0.001	0.0005	0.1	0.049
MTF ERT 044	335613	6696517	0.38	0.5	0.1	0.001	0.05	0.023	0.03	0.0005	0.005	5.3	0.001	0.0005	0.06	0.024
MTF ERT 045	335614	6696534	0.31	4	0.1	0.001	0.05	0.052	0.02	0.006	0.005	4.8	0.001	0.0005	0.1	0.058
MTF ERT 046	335618	6696567	0.3	3	0.3	0.001	0.05	0.038	0.03	0.004	0.005	6.2	0.001	0.0005	0.04	0.031
MTF ERT 047	335625	6696633	0.26	0.5	0.2	0.001	0.05	0.075	0.03	0.004	0.005	6.9	0.001	0.0005	0.11	0.057
MTF ERT 048	322626	6691535	0.25	4	0.2	0.001	0.05	0.068	0.04	0.008	0.005	9.6	0.001	0.0005	0.13	0.102
MTF ERL 048R	322626	6691535	0.24	4	0.05	0.001	0.05	0.067	0.04	0.006	0.005	9.9	0.001	0.0005	0.11	0.087
MTF ERT 049	322632	6691511	0.3	7	0.2	0.001	0.05	0.421	0.005	0.004	0.005	41.6	0.001	0.0005	0.12	0.475
MTF ERT 050	323975	6691693	0.37	6	0.2	0.001	0.05	0.023	0.03	0.009	0.005	2.3	0.001	0.0005	0.16	0.066
MTF ERT 051	323721	6693833	0.39	4	0.2	0.001	0.05	0.099	0.03	0.003	0.005	8.7	0.03	0.001	0.09	0.035
MTF ERT 052	325075	6691175	0.22	5	0.5	0.02	0.05	0.08	0.05	0.007	0.02	10.8	0.03	0.0005	0.15	0.107
MTF ERT 053	324272	6693275	0.67	4	0.05	0.001	0.05	0.033	0.03	0.007	0.005	3.9	0.02	0.001	0.14	0.086
MTF ERT 054	349488	6690445	0.29	8	0.2	0.001	0.05	0.04	0.02	0.005	0.01	8.4	0.03	0.0005	0.13	0.064
MTF ERT 055	349476	6690438	0.15	4	0.05	0.001	0.05	0.043	0.03	0.004	0.005	8.1	0.001	0.0005	0.1	0.041
MTF ERT 056	349468	6690459	0.32	8	0.3	0.03	0.05	0.046	0.03	0.0005	0.005	8.5	0.001	0.0005	0.08	0.036

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Sample	Easting	Northing	S_pct	Hg_ppm	Se_ppm	Te_ppm	Ga_ppm	Cs_ppm	Ge_ppm	Hf_ppm	Nb_ppm	Rb_ppm	Sn_ppm	Ta_ppm	Zr_ppm	Y_ppm
MTF ERT 057	349466	6690468	0.14	15	0.5	0.03	0.05	0.087	0.005	0.004	0.005	6.4	0.001	0.0005	0.07	0.026
MTF ERT 058	349462	6690473	0.23	45	1.3	0.04	0.1	0.081	0.04	0.006	0.03	5.1	0.04	0.002	0.2	0.115
MTF ERL 058R	349462	6690473	0.22	30	1.1	0.001	0.05	0.065	0.04	0.005	0.03	5.4	0.03	0.0005	0.15	0.075
MTF ERT 059	349450	6690470	0.17	7	0.2	0.001	0.05	0.024	0.05	0.003	0.01	4.6	0.02	0.0005	0.12	0.044
MTF ERT 060	349461	6690481	0.2	21	0.5	0.001	0.05	0.033	0.01	0.004	0.005	4.5	0.001	0.0005	0.05	0.029
MTF ERT 061	349465	6690477	0.35	7	0.8	0.001	0.05	0.049	0.005	0.002	0.01	6.1	0.001	0.001	0.07	0.031
MTF ERT 062	349476	6690488	0.22	13	0.5	0.001	0.05	0.028	0.02	0.002	0.005	6.1	0.001	0.0005	0.1	0.041
MTF ERT 063	349559	6690473	0.25	7	0.3	0.001	0.05	0.139	0.05	0.004	0.01	17.4	0.001	0.001	0.15	0.059
MTF ERT 064	349550	6690496	0.42	5	0.2	0.001	0.05	0.106	0.03	0.003	0.005	14.3	0.001	0.0005	0.1	0.05
MTF ERT 065	336013	6696515	0.33	5	0.05	0.001	0.05	0.017	0.05	0.0005	0.005	5.2	0.001	0.0005	0.07	0.028

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Sample	Easting	Northing	Re_ppm	Be_ppm	Li_ppm	Pd_ppb	Pt_ppb
MTF ERT 028	335725	6696529	0.5	0.05	0.02	1	0.5
MTF ERL 028R	335762	6696535	0.5	0.05	0.06	1	0.5
MTF ERT 029	335762	6696535	0.5	0.05	0.05	1	0.5
MTF ERT 030	335740	6696527	0.5	0.05	0.08	1	0.5
MTF ERT 031	335708	6696536	0.5	0.05	0.15	1	0.5
MTF ERT 032	335707	6696594	0.5	0.05	0.16	1	0.5
MTF ERT 033	335733	6696624	0.5	0.05	0.17	1	0.5
MTF ERT 034	335708	6696527	0.5	0.05	0.07	1	0.5
MTF ERT 035	335710	6696511	0.5	0.05	0.07	2	0.5
MTF ERT 036	335711	6696499	0.5	0.05	0.05	1	0.5
MTF ERT 037	335714	6696480	0.5	0.05	0.04	1	0.5
MTF ERT 038	335715	6696407	0.5	0.05	0.03	1	0.5
MTF ERL 038R	335715	6696407	0.5	0.05	0.04	1	0.5
MTF ERT 039	335567	6696469	0.5	0.05	0.13	1	0.5
MTF ERT 040	335573	6696480	0.5	0.05	0.05	1	0.5
MTF ERT 041	335594	6696489	0.5	0.05	0.07	1	0.5
MTF ERT 042	335596	6696494	0.5	0.05	0.05	1	0.5
MTF ERT 043	335603	6696507	0.5	0.05	0.06	1	0.5
MTF ERT 044	335613	6696517	0.5	0.05	0.13	1	0.5
MTF ERT 045	335614	6696534	0.5	0.05	0.1	1	0.5
MTF ERT 046	335618	6696567	0.5	0.05	0.06	1	0.5
MTF ERT 047	335625	6696633	0.5	0.05	0.11	1	0.5
MTF ERT 048	322626	6691535	0.5	0.05	0.24	1	0.5
MTF ERL 048R	322626	6691535	0.5	0.05	0.23	1	0.5
MTF ERT 049	322632	6691511	0.5	0.05	0.65	1	0.5
MTF ERT 050	323975	6691693	0.5	0.05	0.17	1	0.5
MTF ERT 051	323721	6693833	0.5	0.05	0.11	1	0.5
MTF ERT 052	325075	6691175	0.5	0.05	0.13	1	2
MTF ERT 053	324272	6693275	0.5	0.05	0.48	1	0.5
MTF ERT 054	349488	6690445	0.5	0.05	0.15	1	0.5
MTF ERT 055	349476	6690438	0.5	0.05	0.1	1	0.5
MTF ERT 056	349468	6690459	0.5	0.05	0.08	1	0.5

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Sample	Easting	Northing	Re_ppm	Be_ppm	Li_ppm	Pd_ppb	Pt_ppb
MTF ERT 057	349466	6690468	0.5	0.05	0.03	1	0.5
MTF ERT 058	349462	6690473	0.5	0.05	0.18	1	0.5
MTF ERL 058R	349462	6690473	0.5	0.05	0.13	1	0.5
MTF ERT 059	349450	6690470	0.5	0.05	0.08	1	0.5
MTF ERT 060	349461	6690481	0.5	0.05	0.09	1	0.5
MTF ERT 061	349465	6690477	0.5	0.05	0.18	1	0.5
MTF ERT 062	349476	6690488	0.5	0.05	0.1	1	0.5
MTF ERT 063	349559	6690473	0.5	0.05	0.08	1	0.5
MTF ERT 064	349550	6690496	0.5	0.05	0.07	1	0.5
MTF ERT 065	336013	6696515	0.5	0.05	0.09	1	0.5

Appendix E: Bedrock geology geochemistry results.

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Sample	Eastings	Northings	SiO2_pct	Al2O3_pct	Fe2O3_pct	CaO_pct	MgO_pct	Na2O_pct	K2O_pct	MnO_pct	TiO2_pct	P2O5_pct	Cr2O3_pct	Ba_ppm
MTF BR 002	329522	6702820	5.9	1.71	13.63	31.06	9.28	0.03	0.1	0.61	0.07	0.05	0.004	0.01
MTF BR 003	329499	6702825	48.9	4.04	19.84	11.18	0.79	0.23	0.79	0.6	0.16	0.18	0.004	0.03
MTF BR 004	329479	6702818	68.8	14.95	3.69	0.47	1.51	0.71	3.94	0.04	0.78	0.2	0.014	0.03
MTF BR 005	329463	6702822	18.2	1.47	12.1	27.46	7.59	0.01	0.06	0.58	0.06	0.05	0.002	0.01
MTF BR 006	329451	6702842	71.7	13.78	4.05	0.36	1.14	1.84	3.46	0.04	0.76	0.17	0.01	0.06
MTF BR 007	329521	6703085	19.2	0.75	33.65	5.89	8.49	0.01	0.09	1.9	0.01	0.01	0.0005	0.005
MTF BR 008	335725	6696529	68.3	13.21	7.33	0.32	1.59	1.6	3.35	0.32	0.71	0.21	0.005	0.1
MTF BR 009	335762	6696535	85.3	6.69	1.71	0.28	0.37	1.59	1.77	0.06	0.43	0.14	0.003	0.04
MTF BR 010 A	335740	6696527	82.7	7.2	2.61	0.11	0.2	2.1	1.63	0.73	0.44	0.1	0.014	0.05
MTF BR 010 B	335740	6696527	81.4	6.18	4	0.16	0.12	2.16	1.36	1.71	0.38	0.12	0.004	0.03
MTF BR 011	335708	6696536	68.1	12.81	7.51	0.62	2.02	1.72	2.7	0.13	0.65	0.17	0.008	0.07
MTF BR 012	335707	6696594	64.3	16.19	6.04	0.39	2.33	1.52	3.77	0.1	0.89	0.24	0.016	0.07
MTF BR 013	335733	6696624	88.2	4.94	1.61	0.24	0.45	0.03	1.55	0.03	0.33	0.02	0.005	0.03
MTF BR 014	335708	6696624	63.8	15.55	7.88	0.28	2.52	1.39	3.56	0.05	0.79	0.16	0.017	0.06
MTF BR 015	335710	6696511	65.3	16.24	6	0.29	2.01	1.29	4.29	0.04	0.8	0.16	0.014	0.07
MTF BR 016	335711	6696499	69.6	13.03	6	0.74	1.99	1.86	2.57	0.1	0.68	0.14	0.01	0.05
MTF BR 017	335714	6696480	48.3	7.6	9.9	13.4	1.4	0.1	1.27	0.83	0.44	0.52	0.011	0.02
MTF BR 018	335715	6696407	68.1	9.17	5.52	5.24	0.81	3.45	0.97	0.3	0.5	0.15	0.002	0.02
MTF BR 019	335567	6696469	92.1	4.02	0.93	0.19	0.48	0.58	0.66	0.01	0.17	0.06	0.004	0.02
MTF BR 020 A	335573	6696480	79.8	7.38	3.99	0.77	3.2	0.39	1.16	0.03	0.38	0.1	0.006	0.03
MTF BR 020 B	335573	6696480	77.3	8.78	6.4	0.21	1.36	0.43	2.23	0.05	0.46	0.13	0.005	0.03
MTF BR 021	335594	6696489	71.9	12.94	4.36	0.49	2.2	1.79	2.29	0.03	0.68	0.16	0.01	0.04
MTF BR 022	335596	6696494	87.7	1.04	7.81	0.51	0.17	0.07	0.27	0.05	0.1	0.05	0.003	0.05
MTF BR 023	335603	6696507	80.6	7.9	4.35	0.19	1.69	1.9	0.74	0.02	0.37	0.12	0.003	0.02
MTF BR 024	335613	6696517	68.5	13.46	6.64	0.22	2.15	1.46	2.82	0.06	0.7	0.16	0.011	0.05
MTF BR 025	335614	6696534	61.8	16.31	7.98	0.21	2.1	1.35	3.67	0.03	0.86	0.15	0.017	0.05
MTF BR 026	335618	6696567	66.4	15.26	6.24	0.26	1.63	1.23	3.76	0.03	0.85	0.2	0.013	0.06
MTF BR 027	335625	6696633	78.8	6.4	7.82	0.43	0.6	0.04	1.39	0.06	0.47	0.04	0.002	0.04
MTF BR 030 A	323721	6693833	0.3	0.13	0.82	30.52	21.6	0.005	0.005	0.12	0.02	0.04	0.001	0.005
MTF BR 030 B	323721	6693833	0.2	0.11	0.89	30.66	21.6	0.005	0.005	0.12	0.005	0.04	<0.001	0.005
MTF BR 031	324272	6693275	2.1	0.8	50.56	22.63	0.66	0.005	0.005	0.81	0.005	0.4	0.004	0.04
MTF BR 032	325075	6691175	71.3	11.83	4.96	0.89	1.89	1.71	3.43	0.08	0.8	0.16	0.005	0.13

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Sample	Eastings	Northings	LOI_pct	SUM	TOT/C	TOT/S	Ba_1	Be_ppm	Co_ppm	Cs_ppm	Ga_ppm	Hf_ppm	Nb_ppm	Rb_ppm	Sn_ppm	Sr_ppm
MTF BR 002	329522	6702820	37.2	99.66	10.53	0.02	85	0.5	5.9	0.6	2.9	0.3	1.3	18.7	0.5	183.5
MTF BR 003	329499	6702825	12.61	99.36	2.65	0.05	299	5	66.5	1.7	5.3	2.1	2.9	41.8	0.5	127.7
MTF BR 004	329479	6702818	3.63	98.79	0.1	0.01	296	3	6.7	3.4	18	6.2	14.1	151.4	4	28.1
MTF BR 005	329463	6702822	31.88	99.52	8.92	0.03	88	0.5	6.8	0.9	1.9	0.4	1.1	10.8	0.5	290.9
MTF BR 006	329451	6702842	2.97	100.31	0.06	0.02	521	3	9.9	4	16.2	7.7	12.5	135.8	3	54.6
MTF BR 007	329521	6703085	28.34	98.32	9.47	0.25	8	0.5	3.7	0.3	1.9	0.3	0.3	6.3	0.5	86.1
MTF BR 008	335725	6696529	3.15	100.19	0.06	0.01	928	4	24	3	15.7	5.8	13.2	143.9	3	83.8
MTF BR 009	335762	6696535	1.18	99.54	0.05	0.01	374	0.5	4.9	1.3	6.7	10.8	7.8	58	0.5	44
MTF BR 010 A	335740	6696527	1.39	99.28	0.02	0.01	469	0.5	4.5	0.9	6.7	7.9	7	49.4	1	75.8
MTF BR 010 B	335740	6696527	1.54	99.17	0.01	0.03	332	0.5	7.1	0.9	5.8	8.6	5.4	40.1	0.5	124.4
MTF BR 011	335708	6696536	3.26	99.75	0.12	0.02	674	2	14.2	2.8	15.7	5.5	12.4	116.2	3	72.9
MTF BR 012	335707	6696594	3.5	99.34	0.07	0.02	643	4	22.3	3.4	20.2	6.1	16	167.3	3	62.5
MTF BR 013	335733	6696624	1.9	99.32	0.07	0.05	256	2	8.2	2.4	4.7	7.1	5.3	72.7	0.5	26.7
MTF BR 014	335708	6696624	3.77	99.85	0.08	0.02	591	3	14.3	3.8	19	4.6	14.4	159.8	2	54.6
MTF BR 015	335710	6696511	3.71	100.22	0.04	0.01	583	3	12.8	4.2	20.5	6.1	14.3	183.5	4	44.9
MTF BR 016	335711	6696499	3.22	100.01	0.15	0.02	381	5	11.1	2.7	15.5	5.5	12.2	114.1	3	57
MTF BR 017	335714	6696480	14.24	98.01	3.1	0.01	158	4	31.8	1.9	9.7	4.1	8	65.6	4	113
MTF BR 018	335715	6696407	5.68	99.95	1.08	0.03	190	0.5	9.4	0.9	9.5	6.2	11.9	46.6	2	84.2
MTF BR 019	335567	6696469	1.06	100.29	0.03	0.04	217	0.5	2.8	0.8	3.9	2.2	4.6	28.5	1	24.3
MTF BR 020 A	335573	6696480	2.88	100.1	0.15	0.02	322	0.5	14.1	0.9	9.8	5	8.6	49.2	1	23.4
MTF BR 020 B	335573	6696480	2.67	100.11	0.05	0.01	268	0.5	13.9	1.7	12.1	4.6	8.9	93.7	2	19.4
MTF BR 021	335594	6696489	3.04	99.94	0.08	0.01	350	0.5	9.7	2.2	14.7	6.6	11.6	102.1	4	43.9
MTF BR 022	335596	6696494	1.89	99.6	0.13	0.22	74	0.5	2.2	0.2	5.3	1.1	2	11.3	0.5	20.6
MTF BR 023	335603	6696507	1.82	99.72	0.04	0.01	103	0.5	6.6	0.9	8.9	7.2	7.1	34.4	2	33.7
MTF BR 024	335613	6696517	3.52	99.7	0.06	0.01	406	0.5	16	3.1	16.3	4.6	12.9	121	3	42.3
MTF BR 025	335614	6696534	4.89	99.36	0.08	0.01	482	0.5	9.6	3.5	20.4	5.9	15.3	158.1	4	49.7
MTF BR 026	335618	6696567	3.96	99.83	0.09	0.01	506	2	7	3.2	19.3	6.6	16.5	162.2	4	44.5
MTF BR 027	335625	6696633	3.3	99.37	0.1	0.01	433	3	11.5	3.8	6.2	13.1	8.2	54.1	0.5	35.1
MTF BR 030 A	323721	6693833	46.95	100.48	12.73	0.01	19	0.5	1.4	0.05	0.025	0.05	0.05	1.2	0.5	33.2
MTF BR 030 B	323721	6693833	47.02	100.64	12.93	0.01	15	0.5	1.1	0.1	0.025	0.05	0.05	1.1	0.5	37.4
MTF BR 031	324272	6693275	21.51	99.51	4.95	0.1	348	0.5	89.8	0.1	1.5	0.5	0.3	1.3	0.5	264.5
MTF BR 032	325075	6691175	2.94	100.15	0.2	0.03	1376	0.5	9.7	3.1	14.3	8.4	14.6	138.4	3	95.5

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Sample	Eastings	Northings	Ta_ppm	Th_ppm	U_ppm	V_ppm	W_ppm	Zr_ppm	Y_ppm	La_ppm	Ce_ppm	Pr_ppm	Nd_ppm	Sm_ppm	Eu_ppm	Gd_ppm
MTF BR 002	329522	6702820	0.2	1.9	0.4	15	0.025	18.8	25.9	8.5	19.5	2.48	12.3	3.62	1.21	4.37
MTF BR 003	329499	6702825	0.3	4.7	1.3	50	0.025	82.5	31.9	14.9	31.8	3.63	14.8	4.28	1.24	4.94
MTF BR 004	329479	6702818	1.1	16.7	2.7	96	2	216.2	29.1	45.3	87.8	9.3	37.9	6.34	1.22	5.39
MTF BR 005	329463	6702822	0.05	1.7	0.7	16	0.025	19.8	19.2	7.9	20	2.56	9.2	3.05	1.27	3.41
MTF BR 006	329451	6702842	1	18.2	2.5	86	1.5	258.6	22.7	40.6	84.6	9.19	38.8	6.22	1.25	5.15
MTF BR 007	329521	6703085	0.05	0.7	0.05	4	0.9	8.5	14	3.8	7.5	0.94	3.4	1.09	0.48	1.54
MTF BR 008	335725	6696529	1.2	16.3	3.6	83	2.3	245.5	27.8	44.1	89.9	9.83	35.7	6.88	1.3	5.87
MTF BR 009	335762	6696535	0.7	11.6	1.8	26	1.5	434	22.9	27.9	59.5	6.73	23	5.21	0.93	4.4
MTF BR 010 A	335740	6696527	0.6	10.4	1.7	28	1	324	17.1	26.5	56.1	6.13	24	4.45	0.89	4
MTF BR 010 B	335740	6696527	0.6	9.9	2.2	20	0.7	321.2	18.6	25.6	56.4	5.99	22.8	4.85	0.9	4.31
MTF BR 011	335708	6696536	1	15	2.6	77	1.5	190.2	27.7	40.3	85.1	8.99	32.8	6.3	1.22	5.72
MTF BR 012	335707	6696594	1.3	21.1	3.6	105	2.5	209.6	32	52.4	105.9	11.51	40.7	7.75	1.44	7.06
MTF BR 013	335733	6696624	0.5	8	1.4	16	1	260.2	19.3	22.4	44.6	5.07	18.5	3.46	0.65	3.4
MTF BR 014	335708	6696624	1.3	19.5	3.1	98	2.5	191.1	27.8	40.8	86	9.19	35.6	6.25	1.17	5.64
MTF BR 015	335710	6696511	1.4	19.8	2.7	105	2.6	201.8	27.2	42.3	88.6	9.44	34.4	6.33	1.2	5.69
MTF BR 016	335711	6696499	0.9	15.8	3	76	1.5	193.8	27.4	40.3	84.6	9.46	35.4	7.03	1.27	5.84
MTF BR 017	335714	6696480	0.6	10.6	15.6	74	1.7	156.1	21.1	22	46.4	5.32	18.2	4.13	0.91	3.69
MTF BR 018	335715	6696407	0.7	13.1	2	55	1	231.8	32.6	31.6	62.4	7.79	28.4	6.36	1.23	6.22
MTF BR 019	335567	6696469	0.4	3.4	0.8	19	0.025	90.4	9.5	11.1	21.7	2.91	10	2.44	0.49	2.25
MTF BR 020 A	335573	6696480	0.6	10.8	1.8	54	1.5	183.6	20.5	25	46.7	5.59	19.2	4.29	0.9	4.47
MTF BR 020 B	335573	6696480	0.7	11.8	2.5	63	1.3	159.3	19.4	28.9	51.4	6.44	25.5	5.46	1.14	4.77
MTF BR 021	335594	6696489	1.1	16.8	2.7	81	1.8	233.8	28.7	42.4	75.9	9.51	37.3	7.22	1.38	6.33
MTF BR 022	335596	6696494	0.1	2.5	0.8	41	0.025	44.7	2.9	6.2	10.6	1.27	4.8	0.79	0.18	0.81
MTF BR 023	335603	6696507	0.6	9.8	2.1	42	0.9	284.7	21.9	31.1	59.9	7.39	29.6	5.1	1.02	5
MTF BR 024	335613	6696517	1.1	17.3	2.8	85	2.5	173.3	26.2	40.5	73.4	8.8	35.3	6.23	1.18	5.16
MTF BR 025	335614	6696534	1.2	20.2	3.3	114	2.1	209.4	27	43.3	78.4	9.13	31.7	5.94	1.14	5.2
MTF BR 026	335618	6696567	1.3	21.3	3.4	109	2.9	232.9	26	46	85.2	10.55	37.7	6.61	1.19	5.49
MTF BR 027	335625	6696633	0.7	12.1	2.1	35	1.1	500.7	27.8	28.3	58.2	7.33	26.5	5.77	1.18	5.46
MTF BR 030 A	323721	6693833	0.05	0.1	0.2	4	0.025	3.3	1.6	0.8	1.6	0.17	0.8	0.17	0.03	0.17
MTF BR 030 B	323721	6693833	0.05	0.1	0.2	4	0.025	2.1	1.6	0.8	1.3	0.17	0.6	0.16	0.05	0.12
MTF BR 031	324272	6693275	0.05	1.4	4.8	17	0.025	22.4	24	4	12.8	1.47	8.4	2.78	0.57	3.56
MTF BR 032	325075	6691175	1	17.5	2.6	73	1.4	314.4	29.4	41.8	74.3	9.47	36.4	6.64	1.14	5.87

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Sample	Eastings	Northings	Tb_ppm	Dy_ppm	Ho_ppm	Er_ppm	Tm_ppm	Yb_ppm	Lu_ppm	Mo_ppm	Cu_ppm	Pb_ppm	Zn_ppm	Ni_ppm	As_ppm
MTF BR 002	329522	6702820	0.86	4.23	1	2.38	0.3	1.71	0.28	0.3	1.7	20.4	11	20.4	1.6
MTF BR 003	329499	6702825	0.95	5.45	1.04	3.05	0.41	2.76	0.4	0.7	8.9	108.5	132	87.4	28.1
MTF BR 004	329479	6702818	0.94	5.35	1.08	2.99	0.41	2.78	0.45	0.2	3.9	974	26	14.1	4.6
MTF BR 005	329463	6702822	0.66	3.73	0.7	1.82	0.23	1.37	0.18	0.7	2.3	56.2	17	14.4	2.8
MTF BR 006	329451	6702842	0.79	3.81	1.01	2.52	0.36	2.21	0.38	0.1	7.7	10.4	59	21.4	5.8
MTF BR 007	329521	6703085	0.38	2.4	0.55	1.54	0.2	1.3	0.19	0.5	89.1	9830	1787	9.9	815.6
MTF BR 008	335725	6696529	0.96	5.09	1.05	2.98	0.43	2.48	0.39	0.5	30.5	43.2	65	44.3	10.9
MTF BR 009	335762	6696535	0.75	4.13	0.8	2.26	0.34	2.51	0.34	0.05	14.4	12.8	14	8.2	0.8
MTF BR 010 A	335740	6696527	0.59	3.09	0.65	1.64	0.27	1.68	0.26	0.7	15	11.5	11	6.5	1.8
MTF BR 010 B	335740	6696527	0.7	3.9	0.75	2.05	0.28	2.22	0.3	1.6	16.9	18.1	8	7.3	6.9
MTF BR 011	335708	6696536	0.93	5.46	1.06	3.19	0.42	2.78	0.42	0.5	37.2	19	76	38.3	8.1
MTF BR 012	335707	6696594	1.1	5.95	1.22	3.52	0.48	3.24	0.52	0.2	23.4	10.1	69	37.9	9.8
MTF BR 013	335733	6696624	0.57	3.49	0.76	2.29	0.29	2.04	0.27	0.1	7.7	7.2	78	17.6	0.025
MTF BR 014	335708	6696624	0.88	4.93	1.03	2.75	0.41	2.89	0.44	0.5	59.3	28.6	104	44.3	4.3
MTF BR 015	335710	6696511	0.95	5.04	1.12	2.82	0.45	3.1	0.45	0.4	25	14	61	41.1	7.2
MTF BR 016	335711	6696499	0.98	5.59	1.11	3.04	0.42	2.79	0.41	0.5	24.4	44.7	83	39	4.8
MTF BR 017	335714	6696480	0.6	3.44	0.72	2.34	0.31	2.02	0.36	5.6	206.3	10000	109	48.7	20.9
MTF BR 018	335715	6696407	0.93	6.26	1.09	3.38	0.44	2.93	0.37	0.4	32.8	10.4	19	20.3	3.2
MTF BR 019	335567	6696469	0.33	1.99	0.33	1.05	0.14	0.87	0.13	0.3	20.8	5.2	11	4.9	3.4
MTF BR 020 A	335573	6696480	0.62	3.68	0.71	1.89	0.26	2.06	0.24	0.2	6.8	31.9	30	19.2	8.9
MTF BR 020 B	335573	6696480	0.61	3.7	0.68	2.03	0.29	1.9	0.27	0.5	6.4	57.6	14	20.6	10.5
MTF BR 021	335594	6696489	0.83	5.32	0.98	2.93	0.42	2.77	0.4	0.3	12.2	53.4	30	32.7	20.6
MTF BR 022	335596	6696494	0.09	0.57	0.08	0.23	0.04	0.34	0.04	0.9	35.2	3173.5	4	2.9	105.3
MTF BR 023	335603	6696507	0.64	4.42	0.76	2.34	0.3	1.99	0.29	0.2	4.5	15.7	32	23.3	8.6
MTF BR 024	335613	6696517	0.74	4.8	0.97	2.67	0.38	2.32	0.35	0.3	43	13.7	51	35.2	9.2
MTF BR 025	335614	6696534	0.74	5.03	0.88	2.79	0.42	2.64	0.39	0.3	91.5	9.2	45	30.7	5.1
MTF BR 026	335618	6696567	0.75	4.84	0.79	2.98	0.43	2.68	0.39	1	51.4	8.5	52	25.5	41.9
MTF BR 027	335625	6696633	0.81	5.18	0.9	2.85	0.41	2.81	0.36	0.2	23.7	5.6	49	28.2	4.9
MTF BR 030 A	323721	6693833	0.03	0.17	0.03	0.09	0.01	0.11	0.005	0.05	1.2	0.7	5	1.2	1.2
MTF BR 030 B	323721	6693833	0.03	0.2	0.03	0.12	0.01	0.07	0.005	0.05	1.4	0.6	5	0.7	0.7
MTF BR 031	324272	6693275	0.39	2.44	0.47	1.79	0.23	1.35	0.21	0.9	17.3	10.8	136	49.7	158.5
MTF BR 032	325075	6691175	0.78	5.17	0.95	3.18	0.47	3.11	0.42	0.1	7	8.9	50	24.1	2.4

Appendix D: *Eremophila freelingii* twig biogeochemistry results.

Sample	Eastings	Northings	Cd_ppm	Sb_ppm	Bi_ppm	Ag_ppm	Au_ppb	Hg_ppm	Tl_ppm	Se_ppm
MTF BR 002	329522	6702820	0.1	0.1	0.05	0.05	0.025	0.01	0.05	0.025
MTF BR 003	329499	6702825	1.3	0.8	0.05	0.1	1	0.03	0.05	0.025
MTF BR 004	329479	6702818	0.05	0.3	0.2	0.8	1.9	0.01	0.05	0.025
MTF BR 005	329463	6702822	0.1	0.3	0.05	0.05	0.025	0.03	0.05	0.025
MTF BR 006	329451	6702842	0.05	0.3	0.2	0.05	0.025	0.01	0.05	0.025
MTF BR 007	329521	6703085	17.8	5.3	0.8	5.8	33	0.07	0.05	0.025
MTF BR 008	335725	6696529	0.1	0.1	0.3	0.1	0.025	0.01	0.2	0.025
MTF BR 009	335762	6696535	0.05	0.1	0.05	0.05	0.025	0.05	0.05	0.025
MTF BR 010 A	335740	6696527	0.05	0.05	0.05	0.05	0.025	0.05	0.05	0.025
MTF BR 010 B	335740	6696527	0.05	0.3	0.05	0.05	0.025	0.05	0.05	0.025
MTF BR 011	335708	6696536	0.05	0.1	0.4	0.05	0.025	0.01	0.1	0.025
MTF BR 012	335707	6696594	0.2	0.2	0.2	0.05	0.025	0.02	0.1	0.025
MTF BR 013	335733	6696624	0.05	0.05	0.05	0.05	0.025	0.05	0.1	0.025
MTF BR 014	335708	6696624	0.05	0.05	0.7	0.05	0.025	0.05	0.2	0.025
MTF BR 015	335710	6696511	0.05	0.05	0.3	0.05	0.025	0.05	0.2	0.025
MTF BR 016	335711	6696499	0.2	0.1	0.2	0.05	0.025	0.05	0.1	0.025
MTF BR 017	335714	6696480	5.9	47.6	1.5	5.5	22.2	0.01	0.05	0.025
MTF BR 018	335715	6696407	0.1	0.1	0.3	0.05	2	0.05	0.05	0.025
MTF BR 019	335567	6696469	0.05	0.5	0.05	0.05	1.2	0.05	0.05	0.025
MTF BR 020 A	335573	6696480	0.05	0.5	0.4	0.05	0.025	0.05	0.05	0.025
MTF BR 020 B	335573	6696480	0.1	0.7	0.5	0.05	1.7	0.05	0.05	0.025
MTF BR 021	335594	6696489	0.2	0.4	0.05	0.05	0.6	0.05	0.05	0.025
MTF BR 022	335596	6696494	0.05	4.6	9.1	6.5	4.4	0.02	0.05	0.025
MTF BR 023	335603	6696507	0.05	0.1	0.05	0.05	0.025	0.05	0.05	0.025
MTF BR 024	335613	6696517	0.05	0.1	0.5	0.05	0.025	0.05	0.1	0.025
MTF BR 025	335614	6696534	0.05	0.3	1.1	0.05	0.7	0.05	0.05	0.6
MTF BR 026	335618	6696567	0.05	0.2	0.5	0.05	1.4	0.05	0.1	0.7
MTF BR 027	335625	6696633	0.05	0.3	0.2	0.05	0.025	0.05	0.05	0.025
MTF BR 030 A	323721	6693833	0.05	0.05	0.05	0.05	0.025	0.005	0.05	0.025
MTF BR 030 B	323721	6693833	0.05	0.05	0.05	0.05	0.025	0.005	0.05	0.025
MTF BR 031	324272	6693275	0.3	1.2	0.05	0.05	0.025	0.06	0.2	0.025
MTF BR 032	325075	6691175	0.05	0.05	0.2	0.05	0.025	0.02	0.05	0.025