REGOLITH AND ASSOCIATED GEOCHEMICAL AND BIOGEOCHEMICAL EXPRESSION OF BURIED COPPER-GOLD MINERALISATION AT THE HILLSIDE PROSPECT, YORKE PENINSULA.

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A Manuscript submitted for the Honours Degree of Bachelor of Science

University of Adelaide October 2009

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ABSTRACT

Significant Cu-Au mineralisation with some high grade U has been discovered by recent drilling by Rex Minerals Ltd within its Hillside Project, Yorke Peninsula, South Australia. Drilling so far suggests that mineralisation has characteristics typical of Iron-Oxide Copper Gold (IOCG) mineralisation, which provide large economic resources for South Australia. Much of Australia is covered by extensive regolith, much of which is equivalent to Hillside. Vegetation, soil and calcrete sampling was conducted to characterise the regolith expression of the buried Cu-Au mineralisation in the 'Hillside' area. More specifically this included: 1. characterisation of geochemical and biogeochemical signatures with moderate transported cover thickness; 2. develop a recommended soil geochemical exploration approach for the project area, and potentially equivalent settings; 3. characterisation of soil geochemistry across the mineralised zones and non-mineralised substrate with increasing thicknesses of sedimentary cover; and, 4. interpretation of recommended soil geochemistry exploration results within the project area, including their possible implications for further mineral exploration. The suite of elements chosen for detailed presentation is based on their local abundance and expression of known mineralisation. These include; mineralisation commodity elements (Au, Cu, U), secondary mineral trace element host elements (Al, Fe, Ca), and pathfinder and mineralisation accessory elements (Ce, Co, Dy, Li, Tl and V). This study highlights the potential of geochemical and biogeochemical sampling to characterise regolith expression of the buried Cu-Au mineralisation. The results from this study have major implications for mineral exploration in landscapes dominated by aeolian cover, such as at Hillside. This study supports the use of vegetation, calcrete and soil as a sampling medium in regional, prospect and tenement-scale mineral exploration programs. This study has also emphasised the importance of understanding the landscape setting and using orientation studies. These vital elements of the research process enable suitable sampling medium to be recognised, making an effective geochemical and biogeochemical sampling program for applications in mineral exploration.

KEY WORDS: Hillside, Regolith expression, Geochemical, Biogeochemical, Regolith carbonates, IOCG, Mineral exploration.

Contents

1.0 INTRODUCTION

Iron-Oxide Copper Gold (IOCG) deposits provide large economic resources for South Australia, such as the world's largest U deposit and major Cu and Au mineralisation at Olympic Dam. The exploration for IOCG deposits, typically involves discovery from outcrop or by drilling geophysical expressions. Since South Australia is covered by widespread and thick regolith, this setting provides a challenge based on outcrop occurrences, as well as an efficient and convenient way to assess the geochemical 'fertility' of buried geophysical targets.

As geophysical methods are advancing with the advent of new technology, certain magnetic and gravimetric signatures can now be produced for ore bodies buried under a large amount of regolith, however, this does not give a definite answer as to whether a mineralisation zone is present unless drilling is conducted. Testing of the "chemical fertility" from near surface soil samples is a cost-effective method, suitable for sampling on a large-scale region, which provides a reduced exploration risk, since drilling is an expensive process.

Previous studies on regolith expression and Cu-Au mineralisation include the Blue Rose Au-Cu Prospect (Skwarnecki & Lintern, 2005), Poona and Wheal Hughes Cu Deposits (Keeling & Hartley, 2005), Portia and North Portia Cu-Au-Mo Prospect (Tan *et al.*, 2005) and White Dam Au-Cu Prospect (Brown & Hill, 2005) and have expressed successful results with geochemical exploration. These case studies have shown that minerals associated with Cu-Au deposits have similarities, such as certain sulphide minerals and Fe-oxides, however do not provide a regolith expression specifically for IOCG mineralisation. Considering the significance of IOCG mineralisation for the mineral production of South Australia and the high prospectivity of this style of mineralisation as an exploration target, there are minimal widely accessible accounts on the regolith expression of IOCG mineralisation in Australia.

Substantial Cu-Au mineralisation with some high grade U has been discovered by recent drilling by Rex Minerals Ltd within its Hillside Project, Yorke Peninsula, South Australia. Mineralisation is commonly within N-S trending fault-zones immediately to the west of the Pine Point Fault. From east to west these fault zones are: Songvaar Fault Zone; Parsee Fault Zone; Zanoni Fault Zone; and, Dart Fault Zone (Figure 1). Drilling so far suggests that mineralisation has characteristics typical of IOCG mineralisation.

This range in cover thickness over mineralisation allows for the testing and characterisation of the surficial geochemical expression of mineralisation through increasing thickness of sedimentary cover. The project broadly aims to characterise the regolith expression of the buried Cu-Au mineralisation in the 'Hillside' area, South Australia. Specifically this includes:

1. Characterisation of the soil geochemistry and plant biogeochemistry along an orientation line with moderate (ie. ~10 m) transported cover thickness over mineralised and non-mineralised substrate;
2. Develop a recommended soil geochemical exploration approach for the project area and potentially for equivalent settings;
3. Characterisation of soil geochemistry across the mineralised zones and non-mineralised substrate with increasing thicknesses of sedimentary cover; and,
4. Interpretation of recommended soil geochemistry exploration results within the project area, including their possible implications for the expression of further mineralisation.

2.0 SETTINGS

2.1 Location and Landuse

The Hillside prospect is located approximately 150 km north-west from Adelaide and is 12 km south of Ardrossan on the Yorke Peninsula shown in Figure 2. Hillside is close to the coastline with existing port facilities located in Ardrossan, which is accessible by the Yorke Valley Highway. Arable farming in the area is based on a rotation incorporating cereals and annual pastures with livestock carried in association with cereal growing (French *et al.*, 1967). Pastoral development began on Yorke Peninsula in 1846, but significant expansion of farming only occurred following the cessation of major mining at the Moota-Wallaroo Mines in 1923, with former miners relocating throughout the peninsula (Zang *et al.*, 2003).

2.2 Geology

The basement geology of the Hillside prospect is only broadly known due to the extensively overlying Cambrian and Tertiary sediments. Hillside is on the south-eastern margin of the Gawler Craton and contains the Palaeoproterozoic Wallaroo Group rocks. The Wallaroo Group (Conor, 1995; Daly et al., 1998; Zang, 2002; Cowley et al., 2003) comprises a succession of late Palaeoproterozoic metasediments, and felsic and mafic volcanics, which have been dated ~1760-1735 Ma on the Yorke Peninsula (Conor ,1995). Subdivision of the Wallaroo Group are summarised in Table 1.

The Palaeoproterozoic rocks were intruded during the Mesoproterozic by the Hiltaba Suite granite (1600-1580 Ma). This includes the Arthurton Granite, which is a pink, coarse-grained adamellite, occurring at northern Pine Point and west of Ardrossan (Zang, 2002). Subdivision of Hiltaba Suite Granite are summarised in Table 2.

The older Proterozoic basement is covered by Cambrian sediments consisting of the Winulta Sandstone, Kulpara Limestone and Yuruga fluvial sandstone and conglomerates. Faunal successions based on numerous well-exposed sections have been established in the Yorke Peninsula, with sections occurring at Kulpara, Ardrossan (Horse Gully) and Curramulka (Daily, 1956). Cambrian sediments found regionally near Hillside are summarised in Table 3.

Remnants of these sediments are preserved at the Hillside prospect where they are mostly buried beneath Tertiary sediments. The Upper Eocene to Oligocene Rogue Formation (Stuart, 1970) is a mainly marine sequence consisting of a siliciclastic unit comprising of silty sandstone, calcareous sandstone, sandy siltstone and sandy limestone with numerous facies changes in the sections from south of Rogue Point to Port Vincent on eastern Yorke Peninsula. Between Rogue and Muloowurtie Points, part of the Rogue Formation consists of either thin-bedded, grey and grey-white, calcareous, siliceous quartz sandstones or arenaceous and argillaceous limestones with minor interbeds of brown and green arenaceous and silty clays (Stuart, 1970).

The Port Vincent Limestone, deposited during the Eocene to Middle Miocene, includes bryozoal limestones, which are exposed intermittently in coastal cliffs between Port Julia and Edithburgh gradationally overlying the Rogue Formation (Stuart, 1970). Quaternary Hindmarsh Clay is an unconsolidated to semi-consolidated, mottled, mainly red-brown clay and sandy clay with granules and gravels (Firman, 1966) found overlying the Port Vincent Limestone with younger carbonate, dunes and loamy soils following.

Mineralisation is hosted in Proterozoic basement with different minerals forming at increasing depths in the ore body. Azurite and malachite (Cu carbonates) are found in zones of secondary oxide enrichment near the surface. Chalcocite and covellite (Cu sulphides) form in zones of secondary sulphide enrichment, with the primary sulphide zone containing bornite and

Chalcopyrite (Cu-Fe sulphides). These minerals form at different depths as they are unstable in the presence of natural weathering agents (principally air and water) as Cu deposits are particularly susceptible to oxidation, which Cu sulphides are converted to oxides and carbonates (Corbett, 1973).

2.3 Regolith

Hillside is comprised of a series of regolith units. Weathering profiles located along the coastline show *in-situ* bedrock altered to saprock and saprolite. Saprolite is found extensively in low relief zones and drainage depressions, which is covered by transported regolith. Alluvial sediments occur within drainage zones, which are transported eastward during periods of heavy rainfall.

Extensive aeolian sediments cover the entire landscape. Regolith carbonates are widespread within the upper parts of the transported cover of this area, typically at depths of 50-100 cm. The indurated nodular and hardpan regolith carbonate horizon is seen along road cuttings underling aeolian sediments. Ferruginous regolith is recognised as ferruginised beach sediments located along the coastline with inter-tidal sediments. Maghemite is also found in palaeodrainage channels occurring along sections of the exposed coastline.

2.4 Geomorphology

The landscape of the Yorke Peninsula region has undergone many changes due to the tectonic history being relatively complicated, particularly with respect to the formation of the basement rocks. Many major extensional events can be recognised - deposition of the late Palaeoproterozoic Wallaroo Group (1770–1740 Ma), Cambrian (~540–500 Ma), Late Carboniferous–Permian and Tertiary sediments, while Quaternary tectonics have shaped the recent landscape (Zang *et al.*, 2003).

The Pine Point Fault Zone has undergone several episodes of extension and compression, which overall has resulted in the western side of the Pine Point Fault to be uplifted. Compression during the Delamerian Orogeny and the Tertiary have influenced this movement, however, Neotectonic movements are vital to an understanding of the recent topography on Yorke Peninsula (Zang *et al.*, 2003). The Ardrossan and Pine Point Fault systems also have an important effect on the distribution and thickness of Tertiary deposits (Crawford, 1965).

Uplift events during late-Early Pleistocene (~0.8 Ma) and late-Middle Pleistocene (~0.125 Ma) reactivated major N–S-trending faults and formed ranges or hills, which is probably controlled by a nearly E–W compression during the Quaternary, based on stress-field analysis (Zang *et al.*, 2003). Most of the low ridges on the Yorke Peninsula are N-S orientated and were formed during Quaternary uplifting events (~800 000-120 000 years ago) (Zang *et al.*, 2003).

The contemporary landscape consists of subdued relief, which is lower at the coast and higher inland. The mapping area consists of undulating hills and valleys with three main hill crests and two drainage depressions running roughly E-W. The valleys drain towards the coast and cut into Proterozoic bedrock upon reaching the beach. Smaller valleys are present along the cliff section with valleys also cutting into Proterozoic bedrock from extensive weathering and erosion. Palaeochannels and valleys are found flanking the sides of the current drainage depressions along the coastline. Raised beaches are present, where a notch cut in what was once the cliff base is now approximately 2 meters above the bottom of the cliff, which the cliffs were cut by the sea during an earlier period of high sea level (Corbett, 1973).

2.5 Climate

The Yorke Peninsula climate consists of hot, dry summers and mild to cold, wet winters (average yearly minimum 10.6°C and maximum 22.6°C). Northerly winds occurring during the summer months provide the hot and dry conditions. Strong sea breezes occur seasonally due to coastal location and open landscape, with the strongest winds occurring during the winter and early spring months.

The average annual rainfall is ~300 mm, which mainly falls between April to October. The area has a reliable moderate rainfall but due to hot summers and mild winters, which together with persistent and often strong winds, result in a fairly high evaporation rate (Crawford, 1965).

2.6 Vegetation

Much of the Hillside prospect has been cleared for agriculture. Prior to clearing, the vegetation was mostly mallee woodland dominated by red mallee (*Eucalyptus socialis*) and yorrel (*Eucalyptus gracilis*). Mallee woodland remnants extend along the main roads, such as the Ardrossan-Curramulka Road and the Ardossan-Pine Point Road, as well as along the coastal cliff tops and extending along a major drainage depression in the northeast of the prospect area.

3.0 METHODS

3.1 Regolith-Landform Mapping and Face Cliff Section

Regolith-landform and face cliff mapping provides an important framework and context for presenting and interpreting regolith geochemical and biogeochemical results. The mapping also provides an account of the distribution and occurrence of particular regolith sampling media. The regolith-landform map involved remotely sensed data interpretation as well as field mapping. The mapping from remotely sensed data mostly involved the use of imagery presented on Google Earth by satellite imagery. This imagery was geo-rectified to GDA 94 and provided a base map for field mapping and for plotting spatial data.

Coastal cliff section mapping involved marking in the different regolith characteristics, such as lithologies, horizons, sedimentary packages, major fractures and jointing, weathering and induration overprints. A photo-mosaic of the coastal cliffs between 6175300 mN and 6172850 mN extending for 2.5 km was used as a base for this mapping. Selected sections were also lithologically logged along the coastline and are presented along with a compilation of the cliff section map.

3.2 Soil Profile Description and Sampling

Orientation soil pits were examined to help better understand the geochemical properties of the soils and their potential to express buried mineralisation. The sample location was first recorded (GPS coordinates using GDA 94 and Universal Transverse Mercator (UTM) projection) and by using a hand auger and shovel, the soil pits were excavated down to the regolith carbonate horizon below, which hand auger penetration was impeded. The three pit sites correspond to trees that had a range of organ types sampled (as described below) and were positioned approximately 200 m apart at:

1. the central part of the transect, overlying the extrapolated surface projection of the mineralised Zanoni Fault Zone (GDA: 763517 mE - 6174817 mN);
2. the western end of the transect, most likely overlying non-mineralised bedrock (GDA: 763371 mE - 6174735 mN); and,
3. the central-east of the transect, potentially overlying mineralisation but not fully assessed (GDA: 763690 mE - 6174846 mN).

Soil samples were collected at 10 cm intervals from the pit wall with a cleaned and pre-contaminated plastic trowel and placed in ten piles to signify the depth of the hole. A photograph was taken of the hole for future reference, which then the samples were placed within a plastic sieve stack and sieved through a 200 µm nylon mesh. Samples were agitated and lightly crushed between fingers before both the < 200 µm and >200 µm fractions were placed into separate labeled, heavy duty plastic snap-seal bags.

Representative bulk samples were also placed in a ‘drilling chip tray’ and marked accordingly for future reference of the profile. At the nodular regolith carbonate horizons, nodules were collected from the upper part of the profile and placed into a labeled heavy duty plastic snap-seal bags.

Orientation samples were also collected by the same method from a nearby road cutting and a cliff section near the dismissed Harts Mine along the coast to further express the differing soil type within the profile. The full sample coordinates, depth, sample type and results are provided in the attached Excel spreadsheet (Appendix I).

The soil and calcrete samples were sent to Genalysis Laboratories, Perth, for a multi-element analysis by Aqua regia B/OES/MS and have been presented in Excel. The results from the orientation study will indicate the variation of concentration of elements with varying depth. This will provide a suitable sampling media for future sampling.

3.3 Transect Sampling

The vegetated verge along the Ardrossan-Curramulka Main road was chosen for biogeochemical sampling. It is colonised by mallee woodland dominated by yorrell (*Eucalyptus gracilis*) which was chosen as the target sampling tree because it was the most widespread and abundant tree along the transect, particularly within the vicinity of the extrapolated surface projection of the Zanoni Fault Zone. In sections where yorrell (*Eucalyptus gracilis*) was absent, the red mallee (*Eucalyptus socialis*) was sampled as this species has similar characteristics to the yorrell, therefore likely to provide equivalent results.

Vegetation samples are from approximately 25 m spacing near the Zanoni Fault Zone and then opportunistically at approximately 100 m spacing along the transect. A further two plant samples were also taken from directly overlying the Harts Mine in the east of the study area. There are 34 plant samples, with 24 being leaf samples, 3 of litter, twig, bark and 1 sample of fruit. The full sample coordinates, species, organ and results are provided in the attached Excel spreadsheet (Appendix II).

The plant sample location was first recorded (GPS coordinates using GDA 94), followed by the type and description of plant. Sites with greater chances of environmental contamination were avoided where possible, such as dusty vehicle tracks and sites immediately adjacent to the road. Unbleached paper bags (i.e. brown paper lunch bags) were labeled with sample numbers (HSV

001-040). These bags minimise sample sweating and decomposition and minimise further contamination to the sample.

Mature, healthy leaves were the target plant organ, although at each of the orientation soil pits, yorrell (*Eucalyptus gracilis*) was sampled for bark, <2 mm diameter twigs, fruit, leaves and underlying litter. The eastern soil pit corresponded to a red mallee (*Eucalyptus socialis*) tree, which had its bark, twigs, fruit, leaves and underlying litter sampled. The opening of these bags was folded over several times after the sample has been collected (avoiding use of metal fasteners for the bags, such as staples or pins, because these can be a source of metal contamination). Hands were clean and any jewellery removed and covered with powder-free nitrile gloves for each sample. This minimises contamination while sampling. New gloves were used for each sample to prevent cross contamination. Samples were taken from around the plant canopy with several hundred grams (which usually fills about half to three quarters of a bag full) of sample taken from each plant.

Sample decomposition and contamination were minimised during initial transport and storage by ensuring that they were kept in sheltered, well-ventilated places. Samples then underwent clean oven drying, which desiccated and stabilises the samples. An oven temperature of <60° C for approximately 48 hours was used as higher oven temperatures may volatilise some important chemical components from the samples. Once thoroughly dried, the samples were ready to be milled and placed into sealable bags for shipment to Genalysis Laboratories, Perth. Plant samples are analysed by ICP-OES and ICP-MS following milling and acid digest.

The concentration of each element was collated and presented in excel. By using Excel, the concentration of each element was plotted against easting to further visualise biogeochemical results.

3.4 Grid Sampling

A soil transect grid was established in order to characterise the surficial regolith expression and possible extent of buried mineralisation in this area. Soil samples were collected along seven adjacent 1.8 km east-west transects over the Hillside mineralisation. The soil samples were collected at 100 m spacing along the transect, with line spacing ~400 m. Between coordinates 763,200 mE and 763,600 mE, soil samples were collected at 50 m intervals to further express the underlying Dart and Zanoni Fault Zones trending north-south.

The sample location was first recorded (GPS coordinates using GDA 94) and by using a hand auger and shovel, the soil pits were excavated down to the regolith carbonate horizon. If the regolith carbonate horizon was not witnessed, the depth of the hole was 1m to provide a constant. The soil excavated with the auger was placed in 10 cm depth piles on the surface to signify the depth of the pit. For future reference of soil horizons and the soil sampled, a photograph was taken at each pit.

From the orientation soil pits results, a preferred sampling media was found being the soil horizon above the regolith carbonate zone. Each sample was taken within the 10 cm margin above the regolith carbonate horizon (if not, sampled at 90-100 cm) with a cleaned and pre-contaminated plastic trowel. A small amount of sample was placed within a plastic sieve stack and sieved through a 200 µm nylon mesh to pre-contaminate the equipment. The existing material was removed and more sample was placed within the sieve. The sample was agitated and lightly crushed between fingers before being sieved. The <200 µm fractions was placed into a labeled, heavy duty plastic snap-seal bag. Samples that could not pass thought the <200 µm mesh were taken as a bulk sample and marked accordingly. A total of 149 samples were collected and marked as HS100-149. The full sample coordinates, depth to regolith carbonate, depth of sample, regolith landform and results are provided in the attached Excel spreadsheet (Appendix III).

The nodular regolith carbonates were opportunistically sampled at the base of the soil pit, which nodules were collected from the upper part of the profile and placed into a labeled heavy duty plastic snap-seal bag. These samples were marked as HSC# (# being the number of the soil sample collected).

The soil and calcrete samples were sent to Genalysis Laboratories, Perth, for a multi-element analysis by Aqua regia B/OES/MS and have been presented in excel. By using ArcGis 9.0, the concentration of each element was plotted overlying a geo-rectified total magnetic intensity image of the Hillside area and a regolith-landform map to further visualise geochemical results with known fault zones. Samples with concentrations below detection limit are assigned values of half detection limit to prevent complication in data analysis. The results from the transect grid will indicate the extent of buried mineralisation and identify relationship between associated elements.

The cut-offs for each concentration range were determined from box plots and normal probability plots produced in the program ioGas (ioGlobal 2007). IoGas has also been used to create X-Y scatter plots to determine associations with trace elements. Box plots have proven to be a good exploratory tool for determining important geochemical signatures. The box contains 50% of the data series, which the line inside the box signifies the median with the lower and upper lines of the box symbolising the 25th and 75th percentiles. The whiskers indicate the nearest value not past a standard distance from the quartiles with the step usually being 1.5 times the Inter-Quartile Range (Q1–Q3) (Benjamini, 1988). Outliers are drawn individually above this line. The anatomy of a box plots is outlined in Figure 3. The cut-offs for the geochemical spatial maps are determined by the minimum, quartile 1, quartile 3, maximum and outlier values.

4.0 RESULTS

4.1 Regolith-Landform Map and Cliff Section

The mapping area (Figure 4) is dominated by transported material, in particular aeolian sediments. A broad valley in the prospect hosts alluvial sediments within the centre of the mapping area with smaller valleys in the north and south. Drainage in the valleys flow towards the east reaching the coastline and contributing to beach and coastal sediments.

Nine regolith-landform units have been outlined in the area (Table 4), and broadly include:

- Alluvial sediments;
- Aeolian sediments;
- Coastal sediments;
- Beach sediments;
- Saprolite / saprock; and,
- (Anthropogenic) Fill.

Transported Regolith

Aeolian regolith-landforms

Aeolian regolith-landforms are prominent across the mapping area, and can be sub-divided into two main types based on landscape setting and variation in regolith carbonate induration. The mapped RLUs are: $ISps_1$, widespread across the mapping area; and, $ISps_2$, which is mostly restricted to highest elevated, central parts of ridgelines and plateaus. Both RLUs consist of well-sorted, rounded and spherical quartzose and calcareous sands, with $ISps_1$ containing a highly indurated nodular and hardpan regolith carbonate horizon, whereas $ISps_2$ contains friable, nodular pedogenic carbonate overlying the highly indurated nodular and hardpan regolith carbonate horizon within $ISps_1$. Where these units have been incised by drainage depressions, but coexist within a toposequence (such as in the road cutting on the Ardrossan-Pine Point Road), the $ISps_2$ RLU occurs upslope of the $ISps_1$ RLU. Agricultural landuse is prominent for these RLUs, however prior to clearing they hosted dense mallee woodland including *Eucalyptus gracilis* and *Eucalyptus socialis*, such as is now restricted to remnants along the verges of many of the roads.

Alluvial drainage depression regolith-landforms;

Alluvial regolith materials are within the main drainage depressions flowing towards the coastline. The mapped RLU is Aed_1, extending from west of the mapping area towards the coast. The drainage depressions form the lowest points within the mapping area and consist of a mixture of reworked aeolian sediments, rounded maghemite gravels and saprolitic clays and minor sub-angular to angular vein quartz and lithic gravels. The alluvial sediments are mostly confined to drainage depressions incised into the aeolian regolith and the underlying weathered bedrock. This RLU is mainly cleared for agriculture, however towards the coast mallee woodlands remain (such as in the north-eastern corner of the study area).

Coastal regolith-landforms;

Coastal regolith-landforms are dominant along the eastern margin of the mapping area. The mapped RLU is Oc consisting of a mixture of exposed bedrock, alluvial sediment outwash from drainage depressions and aeolian sediments. The coastal sediments occur on coastal lands with cliffs exposing the underlying bedrock. Mallee woodlands sparsely vegetate this unit.

Beach regolith-landforms;

Beach regolith-landforms occur along the eastern margin of the mapping area. The mapped RLU is OBcc, which is a mixture of calcareous shell fragments, quartzose sands and local accumulations of magnetite-rich fine sand, with minor bedrock exposures. Seaward of the beach is a broad, flat, shore platform consisting of slightly to moderately weathered bedrock exposed at low tide. Basal beach sands and gravels overlying the shore platform have been indurated by Fe-oxides, providing patchy remnants of ferruginised beach sediments (Figure 5). Beach sediments occur on the beach, which is influenced by tidal movement and longshore drift.

Fill regolith-landforms;

Fill regolith-landforms are minor within this landscape. The mapped RLUs are: Fm_1, a farm house, and Fm_2 corresponding to bituminised roads extending N-S and E-W in the northern section of the mapping area. Parts of the Fm_2 RLU have been underlain by a road base consisting of regolith carbonates derived from quarries outside of the mapping area.

In Situ Regolith

Moderately weathered bedrock

Moderately weathered bedrock is exposed at the Hillside mine site in the northern section of the mapping area and in sections along the coast (mapped as minor components within the coastal regolith). The exposure at the Hillside Mine is on the crest of an erosional rise, with a mullock heap and surface lag derived from the mine. The RLU is mapped as SMer.

Highly weathered bedrock

Highly weathered bedrock exposures occur as erosional rises flanking alluvial drainage depressions in the mapping area. This consists of highly weathered saprolite clay with mixed nodular regolith carbonates at the aeolian sediment boundary. The RLU is mapped as SHer, which is dominated by agricultural landuse.

The coastal cliff section is shown in Figure 6. The coastal cliff section is 2.45 km long and is vertically exaggerated to show the thickness of exposures of; bedrock, cover, and detritus material. Bedrock is Proterozoic basement consisting of bedrock, saprock and saprolite, which mineralisation is hosted within. Cover contains units stratigraphically above Proterozoic bedrock consisting of Cambrian, Tertiary and Quaternary sediments. The detritus material is mapped as loose material covering the face of the exposure, making the underlying unit indistinguishable.

Stratigraphic columns were made at each transect line (Figure 6) and at the Harts Mine to show thickness of cover along the coast line. Variation in thickness is limited with a larger section of cover occurring at transect 1. Transect 1 has 12 m of exposed cover sediments with no exposure of bedrock. Transects 2-7 and Harts Mine all contain bedrock exposures 8 to 14 m thick with cover ranging from 8 to 24 m thick. Transect 4 and 6 have 8-10 m of cover sediments overlying bedrock exposures while transect 2, 3, 5 and 7 have less cover ranging from 2-6 m thick.

4.2 Geochemical and Biogeochemical Target Element Suites

The suite of elements chosen for detailed presentation here are based on their local abundance and expression of known mineralisation within the soil, calcrete, and vegetation analytical results. The target elements can be grouped into 3 sub-sets:

1. mineralisation commodity elements (Au, Cu, U);
2. secondary mineral trace element host elements (Al for clays, Fe for Fe-oxides and Ca for carbonates); and,
3. pathfinder and mineralisation accessory elements (Ce, Co, Dy, Li, Tl and V).

Average crustal abundance of the elemental examined in detail is shown in Table 5.

4.3 Soil Profiles

The results from analysis of the <200 and >200 µm size fraction from regolith profile samples show consistent patterns of elevated results in the <200 µm size fraction. In general the sampled regolith profiles have elevated Cu, Au and U with increasing depth.

Orientation pit 1 indicates a greater concentration of elements within the <200 µm fraction. Gold and U concentrations occur at greater depth with Cu decreasing with depth. The elements Al, Ce, Li and V show similar trends in concentrations down profile, which show similar patterns for Cu and Co.

Results from orientation pit 2 show similar patterns between <200 µm and >200 µm size fractions. Greater concentrations of trace elements occur within the <200 µm fractions, which also occur with increasing depth. This relationship is shown with Cu, Au and U. Target elements Au, U, Co, Cu and V show similar patterns down profile, which Al, Ce and Li having separate distinctive trends.

Orientation pit 3 also hosts greater concentrations of elements within the <200 µm size fractions. Greater concentrations of Cu, Au and U occur at greater depth. Similar patterns between target elements in orientation pit 2 are similar to target elements in orientation pit 3. Gold, U, Co, Cu and V show similar concentration trends increasing down profile, with Al, Ce and Li also showing a distinctively different trend such that concentrations decrease down profile. Target element concentration with increasing depth for <200 µm are shown in Figure 7 with >200 µm target element concentrations with increasing depth shown in Figure 8.

Higher concentrations are measured at the surface, seen in Figures 7, for each target element. The depth of each pit was determined by the depth of the regolith carbonate horizon, which impeded further augering. Overall greater concentrations of elements are within the finer clay horizon above the nodular regolith carbonate. The regolith carbonates sampled show lower concentrations of elements than the corresponding soil sample. Results for comparison between <200 µm soil and calcrete for Orientation pits 1, 2 and 3 are shown in Table 6.

There is a major difference in element concentrations between the Harts Mine and the road cutting samples. All target elements, with the exception of Ca, are more abundant in the Harts Mine profile, demonstrating soil geochemical expression overlying mineralisation. By comparing Harts Mine and the road cutting element concentrations in Figure 9, the road cutting target element concentrations are much lower than the Harts Mine concentrations, demonstrating a soil geochemical expression for 'background' (non-mineralised) element concentrations.

As seen in Figure 9, the greatest depth results for Cu, U, Fe and Tl for Harts Mine >200 µm include a bulk sample of mineralisation host rock, and therefore show highly elevated concentrations. The equivalent <200 µm sample also shows highly elevated concentrations for Cu, U, Fe, Al, Ce, Co, Dy, Li, Tl and V. Calcium concentrations decrease with depth for the Harts Mine profile <200 µm and >200 µm samples, with Fe-rich sediments lower in the profile, diluting the Ca concentration. Road cutting profile samples show an increase in Ca down the profile as regolith carbonates and limestone are encountered. Iron and Al decrease relative to Ca concentrations, as Fe and Al are diluted.

4.4 Transect

Summarised results for vegetation are shown in Table 7.

Different vegetation media were sampled at the orientation pit locations showing varied results between; litter, bark, twigs, fruit, and leaves. Summarised results for target elements for differing vegetation media are shown in Table 8. For each orientation pit, bark and litter show greater concentrations in all target elements than fruit, twigs and leaves with Tl only detected in bark and litter. Host elements, U, V, Ce, Dy and Tl are particularly higher in bark and litter samples than fruit, twigs and leaves with Co, Cu and Li showing similar results between media.

Fruit has the lowest target element concentrations with similarities occurring between the twigs and leaves. Twig samples have higher concentrations than leaves in host elements and Ce, with similar results in Co, Cu, Dy, Li, U and V. The two eucalyptus species show similar results for the different media sampled, which in shown in Table 8.

Target elements plotted as concentration vs. Easting show spatial distribution of element are seen in Figure 10. Higher concentration of Cu, U, Li and Co are found on the western margin of the transect line with Ca, Ce and Dy higher on the eastern margin. Fe and Al are evenly distributed across the transect showing higher absorption on the western margin. Higher occurrence of element concentration may appear on the western margin due to underlying mineralisation.

The peaks shown in target element concentration vs easting plots (Figure 10) outline a spatial association with the underlying structural zones. Lower concentrations are found between the 5 known fault zones with higher concentrations occurring above the fault zones. Higher element concentrations are found overlying the Dart and Zanoni Fault Zones.

Summarised results for target elements for vegetation, soil and calcrete with orientation pits 1, 2 and 3 are shown in Table 9. Similarity in trends can be seen between each sampling media for each orientation pit. Most elements for each media occur in greater concentration in orientation pit 2. The different sampling media individually have a distinct pattern, which when plotted together show a similar trend. Soils generally are greater in concentration for each site with the exception of Ca. Calcrete and vegetation show a very distinct pattern with soil, which shadow soil concentration for Cu, Al, Fe, Li, Tl and V as seen in Figure 11.

Vegetation overlying Harts Mine mineralisation was sampled with results showing little difference between target elements. Both eucalyptus species show little variation in target element concentration with the exception of Ce showing greater concentration in *Eucalyptus gracilis*. Results for Harts Mine vegetation and transect samples are in appendix II.

4.5 Grid

4.5.1 OVERVIEW

All target elements appear above detection limit with the exception of V in calcrete and Au in soil and calcrete. Vanadium appears above detection limit in 73 of 74 calcrete samples (99%) while Au appears above detection limit in 124 of 149 soil samples (83%) and 14 of 74 (19%) calcrete samples. Summarised results for soil and calcrete are shown in Tables 10 and 11.

4.5.2 ELEMENT ASSOCIATION

Element associations for soil and calcrete target elements are shown in Table 12. Higher r^2 values determine stronger correlations between elements with low r^2 values showing a weak relationship.

The mineralisation elements do not strongly correlate with associated elements in X-Y scatter plots. Gold, Cu and U show a weak to slight correlation for certain associated target elements, as seen in Table 12. Gold results show a slight correlation with Tl concentrations with other associated target elements having a less than slight correlation. The Au X-Y scatter plots show sub-populations occurring within the Co, Li and Cu scatter plots. Gold and Co show a sub-population with a general positive association, while another population indicates a poor Au and Co relationship. Gold and Cu show a positive relationship at lower concentration levels. Gold and Li have 2 distinctive sub-populations: 1. high Li with low Au; and, 2. proportional Li and Au associations. Gold and Tl show a slight positive correlation. Outliers occur for each target element, indicate both high and low Au settings as seen in Figure 12.

Copper shows a slight correlation with Co with other associated elements showing weak correlation. The Cu X-Y scatter plots show scattered results among target elements with few sub-populations occurring with Co, Dy, Li and Tl. Cu and Co have 2 populations; a postive relationship with minimal values and high Cu with mid-range Co. Similar trends with mid-ranged relationships are also seen between Cu and Dy, Li and Tl as seen in Figure 13.

Uranium shows a slight correlation with V with other associated elements showing weak correlation. The U X-Y scatter plots show scattered results, which show weak correlations. The high U outliers affect the distribution. By eliminating the high U outliers, a much stronger positive relationship is seen with V shown in Figure 14.

The host mineralisation elements show relationships with certain target elements. They show a slight, if not, weak correlation as seen in Table 8. The X-Y scatter plots for Al show positive relationships with Co, Dy, Fe, Li and Tl as seen in Figure 15. These elements occur mostly within the clays with Fe occurring as oxides within the clays.

Calcium shows a slight relationship with Au with other associated elements showing weak correlation. The Ca X-Y scatter plots show scatter results making it difficult to determine relationships. A relationship between Ca and Cu is shown by the 3 sub-populations occurring.

The majority of Ca has low Cu, with another population showing mid-range Cu values. The lower Cu values indicate the limestone association being quite barren. The mid-range Cu values occur from the pedogenic carbonates occurring in small areas of the grid. A 3rd population signifies the greater concentration of Cu occurring with Ca, which is produced from the weathering of mineralisation (i.e. malachite). The X-Y scatter plots are shown in Figure16.

Iron shows a slight correlation with Al and V, with other associated elements showing weak correlation. The Fe X-Y scatter plots show a positive relationship with Al, Ce, Co, Dy, Tl and V shown in Figure 17. If the outliers are removed from U, there is a positive correlation with Fe, therefore showing a stronger relationship with Fe.

The calcrete correlations are shown in Table 8. Only a few target elements have a slight correlation with the majority showing weak relationships. The calcrete samples did not express the buried mineralisation as thought with low concentrations occurring with commodity elements and associated target elements. The X-Y scatter plots for Au and Cu do not positively correlate, however the Ca-Cu X-Y scatter plot indicate similar patterns occurring with the soil samples as seen in Figure 18. 3 sub-populations are seen with the Ca-Cu X-Y scatter plot. The majority of Ca has low Cu while mid-range Cu values occur. The lower Cu values indicate the limestone association being quite barren and the mid-range Cu values occur from the pedogenic carbonates occurring in small areas of the grid. The 3rd population signifies the greater concentration of Cu occurring with Ca, which is produced from the weathering of mineralisation (i.e. malachite).

The remaining X-Y scatter plots for target elements for soil are shown in appendix IV.

4.5.3 SPATIAL ASSOCIATION

The majority of target elements for soil are concentrated on the western side of the mapping area, which corresponds to the high magnetic anomaly. Aluminium occurs widespread while concentrating within the drainage depressions and low relief areas. Iron is concentrated on the western side of the mapping area and mainly occurring on erosional rises and low relief zones in highly weathered bedrock. Calcium is extensive across the mapping area with greater concentrations on high relief areas and lower concentrations occurring within drainage depressions.

Gold is concentrated in the central and western mapping area with higher Au relating to the underlying magnetic anomaly zone. The highest concentrations are found within the erosional rises with lowest concentrations occurring in drainage depressions. Gold is not restricted to the magnetic anomaly as high Au is found on the eastern margins. Copper is restricted to the magnetic anomaly zone on the western and central zone. Low Cu is found outside the magnetic anomaly with the highest concentrations of Cu outlining the underlying magnetic anomaly.

Uranium is concentrated in the north-western part of transect 1 with a few scattered locations occurring in the central and western section. Higher concentrations occur in lower relief zones with the lowest concentrations in the highest relief areas. The highest U value is located near the Hillside mine with similar values outlining the extent of the magnetic anomaly.

Cerium and Dy show a very similar pattern with high and low concentrations occurring in similar locations. They both outline the extent of the magnetic anomaly with high concentration occurring on the eastern section of transect 5 within the erosional rise. Higher concentrations of Li also outline the magnetic anomaly, which occur in all regolith units. The lower concentrations are found in the eastern and south-eastern section. Cobalt is seen in comparable locations as Li with high and low concentrations occurring at similar sites.

Thallium and V show different high locations, which are scattered across the mapping area. The higher concentrations of Tl still occur within the magnetic anomaly but occur as singularities and not grouped highs. Few high Tl concentrations are outside the magnetic anomaly occurring on the eastern section. Vanadium shows a similar pattern with Tl, however higher Tl values are found in different areas. Higher V concentrations are in the north-western part of transect 1, the central section of transect 3, and in the eastern area of transect 6. High V is found below the aeolian regolith unit with lower values occurring in drainage depressions and erosional rises.

As well as outlining the magnetic anomaly, the geochemical signatures of all target elements define the underlying geological structures occurring in an N-S direction. Iron, Cu and Au specifically show this relationship with underlying structural components. Spatial association maps for soil target elements are found in Figures 19-30.

The calcrete target elements concentrations are found in similar locations to the soil samples,, however they show a much lower values. High Al is found in calcrete similar to soil locations and is high in erosional rises and drainage depressions. Iron concentration in calcrete is significantly lower with the highest value occurring within highly weathered bedrock on an erosional rise. Calcium calcrete concentrations occur in comparable locations to soil with the same pattern seen. High Ca is seen on high relief zones with low Ca occurring in drainage depressions.

Gold is detected in a few samples with high concentrations corresponding to high Au soil samples found in the central mapping area. Similar results are seen for Cu and U, with much lower concentrations. The calcrete samples for Au, Cu and U appear as singularity targets rather than group areas. Cerium, Co, Dy and Tl in calcrete show similar patterns with soil occurring in comparable locations. Lower concentrations are seen in calcrete occurring as singularities.

Lithium in calcrete is very similar to soil with high concentrations seen in similar locations. Lithium highs are grouped rather than singularities as seen with other calcrete target elements. It also outlines the extent of the magnetic anomaly with mid-range concentrations seen along transect 7. Vanadium in calcrete concentrations is relatively low with the exception of a few high V results. The highest concentration of V occurs near the Hillside mine, with similar results in the western areas of transects 4 and 7. These high values occur as singularities with much lower V surrounding it. Spatial association maps for calcrete target elements are found in Figures 31-42.

Box plots and normal probability plots have been used to determine the ranges for the legend for each target element. These are found in appendix V with box plots also present on the spatial association maps for soil and calcrete element distribution found in Figures 19-42. Elements that are not discussed in the results are present as spatial association maps for soil and calcrete element distribution in appendix VI and appendix VII respectively.

5.0 DISCUSSION

5.1 Landscape Evolution Model

The landscape of the Hillside prospect has undergone many changes leading to the contemporary expression of the landscape. A landscape evolution model (Figure 43) has been created to compile these changes. Proterozoic bedrock was once exposed at the landsurface during the Palaeogene, mostly in the form of saprock and saprolite. Drainage depressions incised the exposed bedrock and contain an abundance of maghemite pebbles, as exposed in sections along coastal cliffs.

A marine transgression occurred during the Tertiary (Oligocene – Early Miocene) burying the palaeochannels and basement rock with beach and shallow marine carbonate sediments. The resulting Tertiary limestone (equivalent to the Port Willunga Limestone) soon followed, in which uplift along the Pine Point Fault Zone later occurred resulting in the sea level to recede towards the east, exposing the Tertiary limestone. A continuation of the palaeochannels resulted in new drainage depressions forming at surface flowing towards the east.

Prevailing winds continued to relocate aeolian sediments from the coast later covering the landscape with aeolian dunes during the Neogene. At this stage, further erosion and weathering of the drainage depressions continued to create widespread drainage systems flowing out to sea. Vegetation, such as mallee woodlands, colonised the aeolian sediments with pedogenic carbonates later developing within the upper parts of the dune sediments (within soil B-horizons) during the Quaternary. Further erosion of the drainage depressions continued to expose the underlying limestone with nodular regolith carbonates forming on the upper layer of the limestone.

The preservation of the pedogenic carbonate layer is now restricted to hill crests, flanked by drainage depressions that have incised the dunes exposing the underlying Tertiary limestone. Tree clearance associated with agricultural development mostly occurred during the 1840's, resulting in increased erosion and sedimentation. Coastal exposures show the contemporary drainage depressions cutting into the maghemite palaeovalleys with drainage depressions consisting of highly weathered bedrock (saprock/saprolite), regolith carbonates and transported sediments.

5.2 Trace Element Associations

Although there are some similarities in the distribution of certain target elements, they do not show a distinguishable pattern between each element. Gold and Cu show a positive relationship at lower concentrations as they can be pathfinders for each other. Similar patterns in the X-Y scatter plots (Figure 12 &13) for Au, Cu, Co, Li and Tl may be an association seen with IOCG mineralisation.

Uranium and V show a positive relationship once outliers are eliminated, suggesting that V may be a geochemical pathfinder for U. Vanadium is a component of carnotite, which is a secondary U mineral, and although carnotite has not been recognised in the regolith profiles it may explain this association. Another possibility is that the V is derived from the mafic bedrock associated with mineralisation that contains U, and therefore there association is coincidental. Removing the outliers for U and Fe also indicates a positive relationship as U occurs within the Fe-oxides, therefore being more mobile within the sub-surface.

Cobalt, Dy, Li and Tl show a positive relationship with Al, which indicates these elements are occurring within clays associated with highly weathered bedrock (saprolite). Iron oxides also show a positive relationship with Al, hence oxides occurring within the red clays. Cerium, Co, Dy, Tl and V show a positive relationship with Fe suggesting that these elements are associated with Fe-oxides. Vanadium shows a closer association with Fe than other target elements, which may indicate that V is occurring with U in Fe-oxides within the sub-surface.

Calcium shows an interesting correlation with Cu as it specifies 3 sub-populations occurring within soil. From Figure 16, that the relationship between Cu and Ca may relate to weathering of mineralisation, or, pedogenic carbonates, or, have a limestone association. Samples enriched in Ca and with low Cu abundance are derived from the weathered limestone, which is marine sourced. Soils in close proximity to pedogenic calcrete occur as another sub-population with a 3rd sub-population appearing as weathered mineralisation products, such as malachite and azurite, being high in Cu. A similar pattern occurs with calcrete samples, which show the same relationship between Ca and Cu.

5.3 Relationships Between Media

The transect grid has proven the soil to be the preferred sampling media as it is relatively accessible and therefore conveniently obtained. However, vegetation and calcrete have also proven to be an effective sampling media. Results from the orientation pits show that higher concentrations of elements occur ~10 cm above the nodular regolith carbonates. The highest target element concentrations are found within the <200 µm size fractions. A fine size fraction is favourable in geochemical exploration, since elements, such as Cu and Zn are generally attached to fine clay particles and Fe-oxides (Joyce, 1976), which has proven to be the preferred sampling medium. Higher concentrations are also at the landsurface, which may be caused by local contamination, such as detrital inputs from the nearby Hillside Mine or they could be due to elevated concentrations in leaf litter.

Low concentrations are within the calcrete samples below the targeted soil horizon, which may indicate that calcrete does not absorb elements as freely as other locations (Tunkillia Project, Ferris & Wilson, 2004), however, higher trace elements in calcrete are found in certain locations. Higher trace elements occurring in calcrete are found within high relief zones due to a preserved nodular pedogenic regolith carbonate horizon. Previous studies have found these to be a useful mineral exploration sampling medium, however profile context and regolith-landform setting have been recently shown to be important considerations for greatly refining the use of this medium. Pedogenic carbonates, such as the nodular and hardpan morphologies observed in the study area have been typically targeted for Au exploration, whereas groundwater carbonates have been shown to host carnotite U-mineralisation within palaeodrainage systems. Pedogenic carbonates can also host expressions of other buried mineralisation types such as Cu.

There are two horizons of nodular regolith carbonate recognised in the area, including one that is relatively barren of mineralisation geochemical expressions (being directly derived from a marine limestone), with the other containing nodular regolith carbonates formed by vegetation. The regolith carbonates are difficult to distinguish as both have a nodular morphology, however the pedogenic carbonate is typically more friable and the harder, nodular weathered limestone occurs directly above a hardpan horizon (Figure 44). This was recognised after sampling had been initiated, therefore providing questions as to which regolith carbonate was sampled. This may explain why a large variation in regolith carbonate geochemistry has resulted, due to inconsistent sampling, which is found in the Ca-Cu X-Y scatter plots for calcrete.

As vegetation is restricted in distribution, this provides difficulties to derive a relationship between the vegetation and calcrete. However, as the landscape has recently been cleared for agriculture, rhizomorphs have been found (Figure 45) within the pedogenic regolith carbonate horizon along a road cutting, providing evidence that the pedogenic carbonates have formed when mallee woodlands were extensive.

5.4 Models for Trace Element Dispersion and Residence

To model trace element dispersion and residence, specific controls need to be accounted for. These include mineralisation, landscape setting, depth of cover, mineral hosts, trace element suites and other unrecognised factors.

Host mineralisation elements can be considered in relation to their landform setting within the study area. Aluminium is more abundant in drainage depression settings with higher concentrations corresponding with highly weathered erosional rises or sediments in drainage depressions. High Al concentrations occurring outside of drainage depressions may be related to clays within palaeochannels, which are seen in coastal exposures. Exposures of weathered granite extend along the coastline, providing a local kaolinite source to then be distributed into the soil horizons, which may add to the higher Al concentrations seen outside the areas of high magnetic response typically associated with palaeochannels. Iron is mainly restricted to erosional rises, which consists of highly weathered bedrock. Weathering of IOCG mineralisation would provide sufficient Fe to account for this geochemical signature. Large sections of ferruginised sediment occur along the coastline. The Fe has been weathered and become mobile, which than has been transported through groundwater to the coast. Recently precipitated Fe-oxide accumulations and cements have occur within beach sediments and gravels overlying the shore-platform along the coast, and represent local zones of groundwater discharge and oxidation within the contemporary landscape.

High Ca concentrations are widespread, which may be the result of the underlying Tertiary limestone. As the Tertiary limestone occurs as a sheet across much of the landscape, weathering of this unit has created a nodular regolith carbonate horizon above a hardpan horizon, with carbonaceous clays forming within the regolith carbonate horizon. Although Ca is widespread, higher concentrations are distributed in high relief zones with lower concentrations appearing in drainage depressions. The drainage depressions are incised below the limestone unit, therefore dilution creates lower concentrations in Ca as it is mixed with transported sediments and highly weathered bedrock.

Gold is most concentrated in the western section of the mapping area, which may be defined by the structural zones and underlying magnetic anomaly. The highest Au results occur above the magnetic anomaly and if the structural map (Figure 1) is overlain the Au concentrations, the highest Au results occur directly above the main structural zones trending N-S (Figure 46). A similar distribution pattern occurs for Cu, which is restricted to zones above the magnetic anomaly finding residence within the N-S trending fault zones. Significantly lower concentrations occur outside the magnetic anomaly and structural zones, indicating that Cu is enriched above the magnetic anomaly and is migrating to the surface along zones of weakness, which Au is following a similar pattern (Figure 47). Recent drilling results by Rex Minerals indicate significant supergene Cu-zones overlying mineralisation and these responses could relate to that. A supply of drilling intersections relating to this supergene Cu was not available during the early stages of this project but may warrant further later investigation and characterisation.

Uranium does not show a direct relationship with the magnetic and structural zones, however similarities occur with Au, Cu and especially V. Weathering of IOCG mineralisation may allow U to become mobile, migrating towards the surface along zones of weakness, similar to Au and Cu. However, as U is mobile in its oxidised state, this needs to be taken into account to explain why U is more widespread across the landscape. High U and V concentrations occur in close proximity to the Hillside Mine, which may provide detrital inputs from the mullock heap. However, as V is a component of carnotite, being a secondary U mineral, areas showing high concentrations of both elements would need to be more closely examined.

Cerium and Dy concentrations show a very similar distribution pattern. Both are Rare Earth Elements (REEs), which outline the extent of the magnetic anomaly while also occurring in similar high concentrations outside the magnetic zone. Lithium shows similar patterns, however, its greatest abundance is restricted to the area of the magnetic anomaly. Similarities occur between Au and Li, where Li may act in association with Au and is enriched above the magnetic anomaly before migrating to the surface along fracture conduits. Cobalt occurs in similar locations as Li, therefore it may also follow a comparable path along zones of weakness. As these elements show a common occurrence with clays and oxides in the regolith (Scott, 2008), these elements appear in greater abundance with higher concentrations of Al and Fe. The common occurrence of Tl in regolith appears to be associated with Fe/Mn oxides (Scott, 2008), in which a similar relationship occurs for Tl and Fe/Mn distribution and residence.

Elements can migrate, or be transported, from their original mineral sites by a number of known dispersion mechanisms (McQueen, 2008) (Figure 48), such as:

1. Hydromorphic (aqueous);
2. Electrochemical;
3. Biogenic;
4. Gaseous; and,
5. Mechanical.

These mechanisms have an effect on the distribution and residence for trace elements, for which an in-depth study by Aspandiar *et al.* (2006) has identified further mechanisms capable of transferring metals upwards. These can be grouped into four categories, with most having sub-categories, such as:

1. Hydrogeochemical (or groundwater as the main medium transfer)
    - Capillary
    - Dilatancy Pumping
    - Free Convection/Heat

- Electrochemical

2. Gases
   - Diffusion
   - Atmospheric Pumping
   - Bubble Migration
3. Vegetation
   - Uptake and Transfer
   - Hydraulic Lift
4. Bioturbation

Detailed descriptions of these mechanisms are explained by Aspandiar *et al.* (2006).

The biogeochemical cycling process in plants may provide insight to how elements are distributed in the soil, as well as pedogenic calcretes. Trees alter soil mineralogy and geochemistry as a result of biogeochemical cycling processes, such as rainfall modification through stem flow and canopy drip, litter fall and its decomposition (Field & Little, 2008) (Figure 49). The geochemistry of materials that plants grow in can be expressed in the plant biogeochemistry, where plants interact with large quantities of regolith, soils and groundwater within the rooting zone, and acting as integrators and concentrators (Field & Little, 2008). The use of accumulator plants can increase the likelihood of finding geochemical anomalies because the plants actively collect particular elements and concentrate them in specific organs (Field & Little, 2008).

Vegetation can be linked to anomalous trace element concentrations in regolith carbonates by: 1. plant roots directly accessing elements (including those associated with mineralisation) within the saprolith and bringing them to the surface forming an anomaly in plant tissues and topsoil; and, 2. elements are eluviated by rainwater through the porous sandy profile and concentrate and precipitate in the rhizosphere due to transpiration (Lintern, 2005). This may explain why geochemical anomalies occur in certain regolith carbonates, particularly those that include calcareous rhizomorphs.

Another mechanism for emplacement of mineralisation metals and trace elements into the sub-surface is detoxification and accumulation of metals and elements in leaves, which are discarded through litter fall and decompose beneath the tree. As Ca is a fundamental structural element for cell walls and membranes (Dunn, 2007) as well as within calcium oxalate crystals within plant structures, high concentrations of Ca are also expected within the decomposing litter contributing Ca to form pedogenic calcrete close to the surface. The formation of pedogenic calcrete is a combination of biogeochemical cycling and percolating rainfall resulting in the dissolution and re-precipitation of elements within the sub-surface. Dissolution and re-precipitation may occur many times during the development of a calcrete profile (Chen, 2002).

5.5 Implications for Mineral Exploration

Much of Australia is covered by thick regolith, much of which is equivalent (aeolian sediments and palaeodrainage systems) to the regolith at Hillside, so therefore this study provides broad-scale implications for mineral exploration. The presence of regolith presents numerous exploration problems, affecting geological, geophysical and geochemical mapping and exploration techniques, and constraining their use (Anand & Paine, 2002). Testing of the "chemical fertility" from near surface soil samples has proven to be a cost-effective method, suitable for sampling across a large-scale region. The results can provide a reduced exploration risk, since drilling is an expensive process, to better define drilling targets. An example of early recognition of the biogeochemical expression of mineralisation in the region was associated with the mineralisation at Moonta, Yorke Peninsula, where wood used for fuel by shepherds was noticed to burn with a green flame (Crawford, 1965).

Initiating an orientation study has been a crucial component for developing an effective regolith-based mineral exploration strategy for Hillside. Based on conventional knowledge and if this orientation study had not been conducted, dispersion and residence of the target and association elements would not have been distinguished within the soil horizons. At first, a calcrete survey was thought to provide geochemical signatures for underlying IOCG mineralisation, however, this proved to be less effective than soil. Again, if an orientation study was not conducted for different soil size fractions, a less practical sampling media may have been chosen. For instance, in many cases for aeolian settings the fine grained soil fractions are the most widely dispersed and therefore the least related to underlying bedrock (e.g. Gatehouse *et al*., 2001), however in this study the fine grained size fraction provided the best expression of buried mineralisation across the study area. The potential for biogeochemical expression of this mineralisation was also unknown, and has since proven to be important, even if limited to the area of remnant native trees along the road.

Regolith-landform and face cliff mapping provide key context for interpreting trace element dispersion and residence for mineral exploration. Regolith and landforms can restrict the expression of certain elements within sub-surface material while also concentrating elements within certain units. Thickness of cover can be estimated from the cliff section, which also determines how strong the geochemical expression will be at the surface. Effective geochemical exploration can only be achieved by recognition of the problems caused by the evolution of the landscape and regolith, and by the selection of a suitable sampling media (Anand & Paine, 2002).

The soils in the transect area were exclusively within transported material, mostly of aeolian origin, with a broad valley hosting alluvial reworked aeolian sediments in the east of the transect area. Traditionally, soils within aeolian materials have been problematic for geochemical exploration because of their exotic (transported) source that is largely unrelated to underlying bedrock, and that they typically have a mineralogy dominated by poor trace element hosts, such as quartz. As a result, any trace metal geochemical expressions tend to be diluted, and therefore at best extremely subtle. An added complication in this prospect area is that other than along the vegetated road verges, the soils host agriculture and therefore are disturbed by ploughing and modified by chemical additives such as fertilisers. The recognition of these problems prior to sampling has allowed for an effective geochemical and biogeochemical sampling program to proceed.

5.5.1 REGIONAL

Although remnant native vegetation is sparse across the remainder of the project area, this part of the study tests a regionally significant exploration technique (ie. regional sampling along remnant vegetation belts crossing proposed drilling targets), as well as contributing to an understanding of dispersion mechanisms within the pre-settlement regolith profile (ie. possible mechanisms for transported buried mineralisation geochemistry through transported cover to the land surface). It may be particularly useful in regional geochemical sampling programs on the Yorke Peninsula especially for testing the "chemical fertility" of geophysical targets, given that most of the road ways in the district tend to have vegetated verges and these mostly trend in either N-S or E-W orientated grids, which is mostly perpendicular to regional structures such as the Pine Point Fault.

5.5.2 TENEMENT

Tenement sampling programs would include close spaced vegetation sampling (100-400 m) over geophysical anomalies. This would further outline significant exploration targets, which soil and calcrete sampling could be used if native vegetation is sparse. Geochemical sampling would include soil sampling spaced 100-400 m with nodular regolith carbonates sampled opportunistically. Care is required when sampling nodular regolith carbonates as two horizons may be present. Regolith-landform mapping would be required to understand dispersion and residence of trace elements and to identify soil horizons to find a suitable sampling media for soil. Transects would be orientated N-S or E-W, which is mostly perpendicular to regional structures such as the Pine Point Fault.

5.5.3 PROSPECT

Prospect sampling programs such as a transect grid would be conducted similar to tenement-scale sampling, but on a smaller scale to further visualise the extent of buried mineralisation. Soil or calcrete samples are the preferred sampling media as native vegetation may not be widespread enough to sample vegetation organs. Sampling would follow similar methods as described in section 3.4 to study dispersion and residence occurring with buried mineralisation. Geochemical sampling would include soil sampling at 100 m spacing with transect lines spaced 300-500 m apart. Nodular regolith carbonates would be sampled opportunistically, while being aware of the two nodular regolith carbonate horizons. Geochemical sampling would be 25-50 m spacing over buried mineralisation and underlying structural zones to further express mineralisation.

6.0 CONCLUSION

The project broadly aimed to characterise the regolith expression of the buried Cu-Au mineralisation in the Hillside area. Recent company drilling here suggests that mineralisation has characteristics typical of IOCG mineralisation. The project has:

1. Characterised the soil geochemistry and plant biogeochemistry along an orientation line with moderate (ie. ~10 m) transported cover thickness over mineralised and non-mineralised substrate. This showed increasing concentrations of elements with increasing depth while highlighting the difference in mineralised (highly weathered bedrock) and non-mineralised (transported aeolian sediments) substrate.

2. Developed a recommended soil geochemical exploration approach for the project area, and potentially for equivalent settings. The recommended approach includes vegetation, calcrete and soil as a sampling medium in regional, prospect and tenement-scale mineral exploration programs.

3. Characterisation of soil geochemistry across the mineralised zones and non-mineralised substrate with increasing thicknesses of sedimentary cover. The general characteristic of the soil geochemistry in mineralised areas includes higher concentrations in all target elements above the underlying magnetic anomaly and structural zones. In non-mineralised areas certain target elements are less abundant, host elements are still widespread but show lower concentrations with the exception of Ca; and,

4. Interpretation of recommended soil geochemistry exploration results within the project area, including their possible implications for the expression of further mineralisation. This shows the importance of understanding the landscape setting and using orientation studies. These vital elements of the research process enable suitable sampling medium to be recognised, making an effective geochemical and biogeochemical sampling program for applications in mineral exploration.

The application of geochemical and biogeochemical techniques to mineral exploration is a cost-effective method, suitable for sampling across the regional-scale, providing a reduced exploration risk where drilling is an otherwise expensive process. Mineral exploration for IOCG mineralisation in Australia is moving towards areas covered by thick regolith, much of which is equivalent (aeolian sediments and palaeodrainage systems) to the regolith at Hillside. There are minimal, widely accessible accounts of the regolith expressions of IOCG mineralisation in Australia, which this study provides broad-scale implications for mineral exploration.

Specific research highlights from this project include:

- A landscape evolution model has been created to compile the many changes leading to the contemporary expression of the landscape to provide a better understanding of the regolith-landform units.
- Trace element associations have been distinguished concerning relationships between: mineralisation commodity elements (Au, Cu, U), secondary mineral trace element host elements (Al for clays, Fe for Fe-oxides and Ca for carbonates), and, pathfinder and mineralisation accessory elements (Ce, Co, Dy, Li, Tl, and V).
- Relationships have been determined between sampling media for soil, calcrete and vegetation. Soil was proven to be the most effective sampling medium expressing the extent of buried mineralisation with large variations occurring in regolith carbonates.
- Two horizons of nodular regolith carbonates are recognised in the area, including one relatively barren of mineralisation geochemical expressions (being directly derived from a marine limestone), with the other containing nodular carbonates formed by vegetation, which may explain why large variations in regolith carbonate geochemistry has resulted.
- Vegetation sampling with relation to biogeochemical cycling process provides insight to how elements may distribute within the soil and in pedogenic calcrete. Biogeochemical concentrations have expressed buried mineralisation along the transect line.
- Models for trace element dispersion and residence indicate specific controls that need to be accounted for. These include mineralisation, landscape setting, depth of cover, mineral hosts, trace element suites and other unrecognised factors. Trace element dispersion and residence for target element suites are affected by the underlying magnetic anomaly and regional structural zones trending N-S.

- Initiating an orientation study has been a crucial component for developing an effective regolith-based mineral exploration strategy for Hillside. A suitable sampling medium can only be recognised if an orientation study and regolith-landform mapping is conducted, with identification of landscape evolution.
- The orientation study has identified certain factors, such as exotic (transported) aeolian sediments and soils disturbed by ploughing and chemical additives, which may influence geochemical and biogeochemical signatures. The recognition of these problems prior to sampling has allowed for an effective geochemical and biogeochemical sampling program to proceed for applications in mineral exploration.

7.0 ACKNOWLEDGEMENTS

I would like to thank Steven Hill for his guidance and assistance throughout the duration of this project. His knowledge, commitment, and dad jokes have made this an exciting and interesting year. I am also grateful to Geoff Lowe and the crew from Rex Minerals for their contribution and support on this project. I would like to thank the honours team for the many distractions with a special mention to 'the hacky sack.' Thanks to Adam, Ashlyn, Ben and Lord Vander for their insight and endless discussion on how Regolith-Landform geology is so much better than normal geology. Thankyou to my family and friends and to Melissah for helping me survive my honours year.

8.0 REFERENCES

Anand, R.R. and Paine, M., 2002. Regolith geology of the Yilgarn Craton, Western Australia: implications for explorations, *Australian Journal of Earth Sciences*, 49, 3-162.

Aspandiar, M.F., Anand, R. and Gray, D., 2006. Mechanisms of element dispersion through transported cover: A review. CRC LEME Report 230.

Brown, A.D. and Hill, S.M., 2005. White Dam Au-Cu Prospect, Curnamona Province, South Australia. In: C.R.M. Butt, I.D.M. Robertson, K.M. Scott and M. Cornelius (Editors), Regolith Expression of Australian Ore Systems. CRC LEME, Perth. 392-394.

Benjamini, Y., 1988. Opening the box of a boxplot, *The American Statistician*, vol.42, no. 4, pp. 257-262.

Chen, X.Y., 2002. Origins. In: X.Y. Chen, M.J. Lintern and I.C. Roach (editors), Calcrete: characteristics, distribution and use in mineral exploration. CRC LEME, Perth. 8-15.

Conor, C.H.H., 1995. Moonta–Wallaroo region, an interpretation of the geology of the Maitland and Wallaroo 1:100 000 sheet areas. South Australia. Department of Primary Industries and Resources. Open file Envelope, 8886 (unpublished).

Cowley, W.M., Conor, C.H.H. and Zang, W-L., 2003. New and revised Proterozoic stratigraphic units on northern Yorke Peninsula. *MESA Journal,* 29:46-58.

Corbett, D., 1973. Yorke Peninsula – a natural history, Department of Adult Education, The University of Adelaide, Adelaide.

Crawford, A.R., 1965. The geology of Yorke Peninsula. *South Australia. Geological Survey. Bulletin,* 39:96.

Daily, B., 1956. The Cambrian in South Australia. In: Crawford, A.R., 1965. The geology of Yorke Peninsula. *South Australia. Geological Survey. Bulletin,* 39:96.

Daly, S.J., Fanning, C.M. and Fairclough, M.C., 1998. Tectonic evolution and exploration potential of the Gawler Craton, South Australia. In: Zang, W., Cowley, W., and Fairclough, M.C., (2003). Maitland Special [1:250 000 Geological Series] / Geological Survey of South Australia. Primary Industries and Resources SA.

Dunn, C.E., 2007. Biogeochemistry in Mineral Exploration. Handbook of Exploration and Environmental Geochemistry. M. Hale, 9. Elsevier, Amsterdam.

Ferris, G. and Wilson, M., 2004. Tunkillia Project – Proterozoic shear-zone-hosted gold mineralisation within the Yarlbrinda Shear Zone, *MESA Journal*, 35, pp. 6-12.

Field, J. and Little, D., 2008. Regolith and biota. In: K.M. Scott and C.F. Pain (Editors), Regolith Science. CSIRO Publishing, Victoria. 176-217.

Firman, J.B., 1966. Stratigraphic units of late Cainozoic age in the St Vincent Basin, South Australia. In: Zang, W., Cowley, W., and Fairclough, M.C., (2003). Maitland Special [1:250 000 Geological Series] / Geological Survey of South Australia. Primary Industries and Resources SA.

French, R.J., Matheson, W.E. and Clarke, A.L., 1967. Soils and Agriculture of the Northern and Yorke Peninsula Regions of South Australia / [R.J. French, W.E. Matheson and A.L. Clarke]. Department of Agriculture, South Australia [Adelaide].

Gatehouse, R.D., Willians, I.S. and Pillans, B.J., 2001. Fingerprinting windblown dust in south-eastern Australian soils by uranium-lead dating of detrital zircons, *Australian Journal of Soil Research*, 39, 7-12.

Joyce, A.S., 1976, Exploration Geochemistry, Techsearch Inc. and The Australian Mineral Foundation, Adelaide.

Keeling. J.L. and Hartley, K.L., 2005. Poona and Wheal Hughes Cu Deposits, Moonta, South Australia. In: C.R.M. Butt, I.D.M. Robertson, K.M. Scott and M. Cornelius (Editors), Regolith Expression of Australian Ore Systems. CRC LEME, Perth. 383-385.

Lintern, M.J., 2005. Biogeochemical anomalies at Barns Gold Prospect (Eyre Peninsula, South Australia). In: Roach I.C. (editor), Regolith 2005 – Ten Years of CRC LEME. CRC LEME, 195-196.

McQueen, K.G., 2008. Regolith geochemistry. In: K.M. Scott and C.F. Pain (Editors), Regolith Science. CSIRO Publishing, Victoria. 74-104.

Scott, K.M., 2008. Regolith geochemistry of elements. In: K.M. Scott and C.F. Pain (Editors), Regolith Science. CSIRO Publishing, Victoria. 434-452.

Skwarnecki, M.S. and Lintern, M.J., 2005. Blue Rose Au-Cu Prospect, South Australia. In: C.R.M. Butt, I.D.M. Robertson, K.M. Scott and M. Cornelius (Editors), Regolith Expression of Australian Ore Systems. CRC LEME, Perth. 359-361.

Stuart, W.J.Jnr, 1970. The Cainozoic stratigraphy of the eastern coastal area of Yorke Peninsula, South Australia. *Royal Society of South Australia. Transactions,* 94:151-178.

Tan, K.P., de Caritat, P., Scott, K.M., Eggleton, R.A., Skidmore, C. and Lawie, D., (2005). Portia and North Portia Cu-Au-Mo Prospects, South Australia. In: C.R.M. Butt, I.D.M. Robertson, K.M. Scott and M. Cornelius (Editors), Regolith Expression of Australian Ore Systems. CRC LEME, Perth. 386-388.

Zang, W., (2002). Late Palaeoproterozoic Wallaroo Group and early Mesoproterozoic mineralisation in the Moonta Domain, eastern Gawler Craton, SA. South Australia. Department of Primary Industries and Resources. Report Book, 2002/1.

Zang, W., Cowley, W., and Fairclough, M.C., (2003). Maitland Special [1:250 000 Geological Series] / Geological Survey of South Australia. Primary Industries and Resources SA.

TABLES

Table 1. Subdivision of the Wallaroo Group (Cowley *et al.,* 2003 in Zang *et al.,* 2003).

Wallaroo Group ~1760-1735 Ma		
Wandearah Formation (metasediments)	Aagot Member	Mainly sandstone and argillite.
	Doora Member	Mainly biotite schist, minor calcsilicate.
	New Cornwall Member	Carbonate, graphitic siltstone and calcsilicate.
	Wokurna Member	Red–brown siltstone, calcsilicate and albitic rocks.
	Ninnes Member	Interlayered albitite, siltstone, sandstone, carbonate.
Weetulta Formation (A-type felsic volcanics)	Moonta Porphyry Member	Porphyritic rhyolite to rhyodacite.
	Wardang Volcanics Member	Rhyolite, rhyodacite, dacite
	Mona Volcanics Member	Felsics in the Bute area.
Matta Formation (mafic volcanics, tholeiites)	Willamulka Volcanics Member	Amygdaloidal mafics.
	Renowden Metabasalt Member	Fine-grained extrusive and shallow intrusive.

Table 2. Subdivision of Hiltaba Suite Granite (Cowley *et al*., 2003).

Hiltaba Suite	Tickera Granite	Variable I and S-type granitoids; monozogranite, quartz monzonite, leucotonalite, commonly intensely deformed; 1598±7, 1586±5, 1575±7 Ma.
	Arthurton Granite	A-type granite, monzogranite, quartz monzonite, generally undeformed; 1583±7 Ma.
	Curramulka Granite	Gabbronorite, metamorphosed to middle amphibolites facies; 1583±5 Ma.

Table 3. Cambrian sediments found regionally near Hillside (Zang *et al.*, 2003).

Winulta Formation	Basal conglomerates, sandstones and minor siltstones. The most widespread Cambrian unit. It is conformably overlain by dolomite of the Kulpara Formation with thin bands of grey siltstones interbedded with the sandstone and dolomite, indicating a transgressive history.
Kulpara Formation	Carbonate unit, containing an upper limestone unit and a lower dolomite unit. The thick-bedded upper limestone unit unconformably overlies the dolomite, which the limestone unit has a restricted distribution.
Yuruga Formation	Red-brown fluvial sandstone, conglomerates and breccias. Contains a series of fluvial cycles, with angular to subangular fault-generated breccias, coarse grained sandstone, trough cross-bedded medium grained sandstone, cross-bedded fine grained sandstone and siltstones.

Table 4. Regolith and Landform codes used for Regolith-Landform mapping.

REGOLITH TYPE	LANDFORM TYPE
Transported Regolith	c – coastal plain
A – Alluvial Sediments	cc – beach
IS – Aeolian Sands	ed – drainage depression
O – Coastal Sediments	er – erosional rise (9 < 30 m)
OB – Beach Sediments	m – made land
F – Fill	ps - sandplain
***In situ* regolith**	
SM – Moderately Weathered	
SH – Highly Weathered	

Table 5. Abundance of chemical elements in the continental crust (Taylor, 1964).

Atomic Number	*Element*	*Crustal average*	*Unit*
3	Li	20	ppm
13	Al	8.23	%
20	Ca	4.15	%
23	V	135	ppm
26	Fe	5.63	%
27	Co	25	ppm
29	Cu	55	ppm
58	Ce	60	ppm
66	Dy	3.0	ppm
79	Au	0.004	ppm
81	Tl	0.45	ppm
92	U	2.7	ppm

Table 6. Comparison between <200 µm soil and calcrete for Orientation pits 1, 2 and 3.

Soil/Calcrete	GDA E	GDA N	Depth	Type	Au ppb	Al ppm	Ca %	Ce ppm	Co ppm	Cu ppm	Dy ppm	Fe %	Li ppm	Tl ppm	U ppm	V ppm
PIT 1																
HS011	763517	6174817	85-90 cm	<200 µm soil	2	19112	12.5	15.93	4.8	14	1.06	1.41	16.4	0.12	0.47	22
HS013	763517	6174817	100 cm	carbonate nodules	X	7469	19.42	11.66	8.2	11	1.01	0.6	9.6	0.08	0.39	10
PIT 2																
HS026	763371	6174735	30-35 cm	<200 µm soil	3	24751	16.45	20.49	7.8	20	1.61	2.01	22.4	0.2	0.91	42
HS028	763371	6174735	35 cm	carbonate nodules	X	8403	19.11	13.66	7	11	1.13	0.68	11.1	0.08	0.52	13
PIT 3																
HS037	763690	6174846	40-45 cm	<200 µm soil	2	18717	12.75	13.74	6	19	1.03	1.58	17.3	0.25	0.91	41
HS039	763690	6174846	50 cm	carbonate nodules	X	8975	20.12	13.35	4.2	9	1.14	0.76	8.9	0.09	0.88	15

Table 7. Summary of element properties for 12 out of 64 vegetation elements determined.

Table 8. Summary of target elements for the different vegetation media sampled for orientation pits 1, 2 and 3. X denotes below detection limit.

Sample	GDA E	GDA N	Species	Organ	Au ppb	Al ppm	Ca ppm	Ce ppb	Co ppm	Cu ppm	Dy ppb	Fe ppm	Li ppm	Tl ppb	U ppb	V ppm
PIT 1																
HSV 001	763517	6174817	E. gracilis	litter	0.5	4996	25869	6931	1.3	9.4	455	3416	3.74	37	185	6.5
HSV 002	763517	6174817	E. gracilis	bark	1	4473	34041	4637	1.1	4.8	297	2784	4	39	92	4.3
HSV 003	763517	6174817	E. gracilis	twigs	X	419	10595	575	0.1	4.2	34	298	0.95	X	23	0.5
HSV 004	763517	6174817	E. gracilis	fruit	X	122	5335	136	0.05	3.5	8	95	0.7	X	11	X
HSV 005	763517	6174817	E. gracilis	leaves	X	139	12223	160	X	3.7	8	109	3.24	X	29	X
PIT 2																
HSV 012	763371	6174735	E. gracilis	bark	X	2712	26782	2882	0.67	4.3	181	1824	2.2	26	68	3
HSV 013	763371	6174735	E. gracilis	twigs	X	281	6673	310	0.06	8.4	17	207	0.97	X	12	0.3
HSV 014	763371	6174735	E. gracilis	leaves	X	173	4886	181	0.04	5.7	10	145	2.73	X	12	0.2
HSV 015	763371	6174735	E. gracilis	litter	X	2011	28397	2619	0.46	5.2	173	1401	1.58	17	58	2.4
PIT 3																
HSV 019	763690	6174846	E. socialis	litter	X	4371	24500	4512	0.93	7.6	323	3028	3.17	31	126	5.3
HSV 020	763690	6174846	E. socialis	bark	X	1445	8669	2019	0.4	3	126	1050	1.07	13	45	1.9
HSV 021	763690	6174846	E. socialis	twigs	X	191	10481	326	0.06	5.6	21	143	0.45	X	11	0.2
HSV 022	763690	6174846	E. socialis	leaves	X	179	8196	283	0.04	4.1	28	124	2.56	X	45	X

Table 9. Summary of target elements for vegetation, soil and calcrete with orientation pits 1, 2 and 3. X denotes below detection limit.

Soil/Calcrete	GDA E	GDA N	Depth	Type	Au ppb	Al ppm	Ca %	Ce ppm	Co ppm	Cu ppm	Dy ppm	Fe %	Li ppm	Tl ppm	U ppm	V ppm
PIT 1																
HS011	763517	6174817	85-90 cm	<200 µm soil	2	19112	12.5	15.93	4.8	14	1.06	1.41	16.4	0.12	0.47	22
HS013	763517	6174817	100 cm	carbonate nodules	X	7469	19.42	11.66	8.2	11	1.01	0.6	9.6	0.08	0.39	10
PIT 2																
HS026	763371	6174735	30-35 cm	<200 µm soil	3	24751	16.45	20.49	7.8	20	1.61	2.01	22.4	0.2	0.91	42
HS028	763371	6174735	35 cm	carbonate nodules	X	8403	19.11	13.66	7	11	1.13	0.68	11.1	0.08	0.52	13
PIT 3																
HS037	763690	6174846	40-45 cm	<200 µm soil	2	18717	12.75	13.74	6	19	1.03	1.58	17.3	0.25	0.91	41
HS039	763690	6174846	50 cm	carbonate nodules	X	8975	20.12	13.35	4.2	9	1.14	0.76	8.9	0.09	0.88	15
Vegetation	**GDA E**	**GDA N**	**Species**	**Type**	**Au ppb**	**Al ppm**	**Ca ppm**	**Ce ppb**	**Co ppm**	**Cu ppm**	**Dy ppb**	**Fe ppm**	**Li ppm**	**Tl ppb**	**U ppb**	**V ppm**
PIT 1																
HSV 005	763517	6174817	E. gracilis	leaves	X	139	12.223	160	X	3.7	8	109	3.24	X	29	X
PIT 2																
HSV 014	763371	6174735	E. gracilis	leaves	X	173	4.886	181	0.04	5.7	10	145	2.73	X	12	0.2
PIT 3																
HSV 022	763690	6174846	E. socialis	leaves	X	179	8.196	283	0.04	4.1	28	124	2.56	X	45	X

Table 10. *Summary of element properties for 12 out of 59 soil elements determined.*

Element	Counts	%>DL	Dection Limit	Minimum	Maximum	Mean	Median	Variance	Standard Deviation	Kurtosis	Skewness	Range
Au	149	83.2	1 ppb	1.0	72.0	7.2	5.0	74.9	8.7	23.9	4.0	71.5
Al	149	100	20 ppm	5226	49240	24923	25136	75182635	8671	0	0	44014
Ca	149	100	0.01%	0.12	24.71	11.57	13.94	45.17	6.72	-1.08	-0.37	24.59
Ce	149	100	0.01 ppm	7.47	169.78	22.91	20.50	256.47	16.01	48.21	5.70	162.31
Co	149	100	0.1 ppm	2.2	27.8	6.8	6.4	7.2	2.7	24.3	3.3	25.6
Cu	149	100	1 ppm	3.0	153.0	17.8	12.0	475.4	21.8	20.2	4.2	150.0
Dy	149	100	0.01 ppm	0.36	5.04	1.57	1.48	0.77	0.88	2.24	1.35	4.68
Fe	149	100	0.01%	0.96	9.89	2.70	2.47	1.30	1.14	9.81	2.15	8.93
Li	149	100	0.1 ppm	3.5	35.0	16.2	17.1	33.7	5.8	0.0	0.1	31.5
Tl	149	100	0.01 ppm	0.04	0.85	0.22	0.21	0.01	0.11	14.67	3.05	0.81
U	149	100	0.01 ppm	0.18	15.70	0.94	0.59	2.28	1.51	69.47	7.79	15.52
V	149	100	2 ppm	19.0	304.0	85.2	53.0	4778.5	69.1	0.8	1.4	285.0

Table 11. Summary of element properties for 12 out of 59 calcrete elements determined.

Elements	Count	%>DL	Detection Limit	Minimum	Maximum	Mean	Median	Variance	Standard Deviation	Kurtosis	Skewness	Range
Au	74	18.9	1 ppb	1.0	36.0	1.4	0.5	17.9	4.2	63.7	7.8	35.5
Al	74	100	20 ppm	4014	15206	8322	7967	6033511	2456	1	1	11192
Ca	74	100	0.01%	0.97	23.33	17.91	19.06	24.02	4.90	4.26	-2.01	22.36
Ce	74	100	0.01 ppm	5.95	91.87	16.29	13.75	123.66	11.12	29.36	4.69	85.92
Co	74	100	0.1 ppm	1.4	26.4	8.4	7.8	13.6	3.7	6.6	1.7	25.0
Cu	74	100	1 ppm	2.0	78.0	10.2	7.0	144.9	12.0	17.3	3.9	76.0
Dy	74	100	0.01 ppm	0.51	5.15	1.39	1.29	0.54	0.74	8.99	2.33	4.64
Fe	74	100	0.01%	0.30	12.94	1.16	0.75	2.96	1.72	32.48	5.40	12.64
Li	74	100	0.1 ppm	2.5	16.9	9.1	9.0	7.0	2.7	0.8	0.4	14.4
Tl	74	100	0.01 ppm	0.05	0.34	0.10	0.09	0.00	0.05	9.50	2.84	0.29
U	74	100	0.01 ppm	0.18	3.17	0.54	0.37	0.23	0.48	14.54	3.47	2.99
V	74	98.6	2 ppm	2.0	546.0	28.2	13.0	4715.6	68.7	46.9	6.5	544.0

Table 12. Spearman correlation for soil and calcrete target elements. The r^2 values identify association with corresponding elements.

Spearman - Soil	Au	Al	Ca	Ce	Co	Cu	Dy	Fe	Li	Tl	U	V
Au	1	0.3	0.62	0.34	0.43	0.45	0.36	0	0.27	0.64	0.2	0.017
Al	0.3	1	0	0.27	0.6	0.54	0.26	0.66	0.59	0.59	0.21	0.43
Ca	0.62	0	1	0.49	0.25	0.091	0.6	-0.4	0.17	0.43	-0.1	-0.4
Ce	0.34	0.27	0.49	1	0.55	0.29	0.91	0.075	0.35	0.4	0.036	-0.2
Co	0.43	0.6	0.25	0.55	1	0.62	0.53	0.45	0.51	0.57	0.28	0.29
Cu	0.45	0.54	0.091	0.29	0.62	1	0.27	0.33	0.43	0.29	0.33	0.22
Dy	0.36	0.26	0.6	0.91	0.53	0.27	1	0	0.36	0.41	-0.1	-0.2
Fe	0	0.66	-0.4	0.075	0.45	0.33	0	1	0.11	0.32	0.32	0.73
Li	0.27	0.59	0.17	0.35	0.51	0.43	0.36	0.11	1	0.39	0.26	0.19
Tl	0.64	0.59	0.43	0.4	0.57	0.29	0.41	0.32	0.39	1	0.2	0.25
U	0.2	0.21	-0.1	0.036	0.28	0.33	-0.1	0.32	0.26	0.2	1	0.6
V	0.017	0.43	-0.4	-0.2	0.29	0.22	-0.2	0.73	0.19	0.25	0.6	1

Spearman - Calcrete	Au	Al	Ca	Ce	Co	Cu	Dy	Fe	Li	Tl	U	V
Au	1	0.11	-0.2	-0.2	-0.2	0.34	-0.3	0.063	0.12	0.35	0.22	0.13
Al	0.11	1	-0.2	0.22	0.18	0.46	0.15	0.64	0.48	0.57	0.3	0.58
Ca	-0.2	-0.2	1	0.005	0.51	-0.1	0.26	-0.5	-0.1	-0.3	-0.4	-0.6
Ce	-0.2	0.22	0.005	1	0.43	0	0.86	0.38	0.02	0.25	0.2	0.13
Co	-0.2	0.18	0.51	0.43	1	0.1	0.64	-0.1	0.022	-0.1	-0.2	-0.3
Cu	0.34	0.46	-0.1	0	0.1	1	0	0.2	0.51	0.22	0.29	0.25
Dy	-0.3	0.15	0.26	0.86	0.64	0	1	0.13	-0.1	0.015	0.006	-0.1
Fe	0.063	0.64	-0.5	0.38	-0.1	0.2	0.13	1	0.03	0.52	0.38	0.79
Li	0.12	0.48	-0.1	0.02	0.022	0.51	-0.1	0.03	1	0.32	0.19	0.19
Tl	0.35	0.57	-0.3	0.25	-0.1	0.22	0.015	0.52	0.32	1	0.39	0.42
U	0.22	0.3	-0.4	0.2	-0.2	0.29	0.006	0.38	0.19	0.39	1	0.48
V	0.13	0.58	-0.6	0.13	-0.3	0.25	-0.1	0.79	0.19	0.42	0.48	1

r^2 Value	Association
< 0.49	Weak
0.50 – 0.74	Slight
0.75 – 0.89	General
0.90 – 0.94	Strong
> 0.95	Very Strong

FIGURE CAPTIONS

Figure 1. Aerial image of Hillside Cu Mine, Yorke Peninsula, with regional structural zones trending N-S (Source: www.rexminerals.com).

Figure 2. Regional locality map (source: www.yorkepeninsula.com).

Figure 3. Anatomy of a Box Plot. The box contains 50% of the data series, which the line inside the box signifies the median with the lower and upper lines of the box symbolising the 25th and 75th percentiles. The whiskers indicate the nearest value not past a standard distance from the quartiles. Outliers are drawn individually above this line.

Figure 4. Regolith-Landform map for Hillside, Yorke Peninsula.

Figure 5. Ferruginised beach sediments with remnant shell fossils (S.Hill, 2009).

Figure 6. Face cliff section with stratigraphic columns for Hillside coast line, Yorke Peninsula. Bedrock is Proterozoic basement consisting of bedrock, saprock and saprolite. Cover contains units stratigraphically above Proterozoic bedrock consisting of Cambrian, Tertiary and Quaternary sediments. The detritus material is loose material covering the face of the exposure.

Figure 7. Target element concentration vs. depth plots for orientation holes <200 µm.

Figures 8. Target element concentration vs. depth plots for orientation holes >200 µm.

Figure 9. Concentration vs. Depth plots of target elements for Harts Mine and Road Cutting soil profiles. Harts Mine and Road Cutting soil samples were split into <200 and >200 µm.

Figure 10. Concentration vs. Easting for vegetation target elements.

Figure 11. Concentration vs. Easting for soil, calcrete and vegetation target elements for orientation pits 1, 2 and 3.

Figure 12. Soil X-Y scatter plots for Au against Co, Cu, Li and Tl.

Figure 13. Soil X-Y scatter plots for Cu against Co, Dy, Li and Tl.

Figure 14. Soil X-Y scatter plots for U against V. First plot is without outliers showing a positive correlations with U and V. Second plot shows high U outliers.

Figure 15. Soil X-Y scatter plots for Al against Co, Dy, Fe, Li and Tl.

Figure 16. Soil X-Y scatter plots for Ca against Au and Cu. The dashed lines on the Ca-Cu scatter plot indicate sub-populations, 1: weathering of mineralisation, 2: pedogenic carbonates and 3: limestone associations.

Figure 17. Soil X-Y scatter plots for Fe against Al, Ce, Co, Dy, Tl, V and U. Outliers have been removed from Fe-U scatter plot to enhance positive relationship.

Figure 18. Calcrete X-Y scatter plot for Ca and Cu. The dashed lines on the Ca-Cu scatter plot indicate sub-populations, 1: weathering of mineralisation, 2: pedogenic carbonates and 3: limestone associations.

Figure 19 Spatial association map for Al soil element distribution.

Figure 20. Spatial association map for Au soil element distribution.

Figure 21. Spatial association map for Ca soil element distribution.

Figure 22. Spatial association map for Ce soil element distribution.

Figure 23. Spatial association map for Co soil element distribution.

Figure 24. Spatial association map for Cu soil element distribution.

Figure 25. Spatial association map for Dy soil element distribution.

Figure 26. Spatial association map for Fe soil element distribution.

Figure 27. Spatial association map for Li soil element distribution.

Figure 28. Spatial association map for Tl soil element distribution.

Figure 29. Spatial association map for U soil element distribution.

Figure 30. Spatial association map for V soil element distribution.

Figure 31. Spatial association map for Al calcrete element distribution.

Figure 32. Spatial association map for Au calcrete element distribution.

Figure 33. Spatial association map for Ca calcrete element distribution.

Figure 34. Spatial association map for Ce calcrete element distribution.

Figure 35. Spatial association map for Co calcrete element distribution.

Figure 36. Spatial association map for Cu calcrete element distribution.

Figure 37. Spatial association map for Dy calcrete element distribution.

Figure 38. Spatial association map for Fe calcrete element distribution.

Figure 39. Spatial association map for Li calcrete element distribution.

Figure 40. Spatial association map for Tl calcrete element distribution.

Figure 41. Spatial association map for U calcrete element distribution.

Figure 42. Spatial association map for V calcrete element distribution.

Figure 43. Landscape evolution model for Hillside, Yorke Peninsula. A) Proterozoic bedrock exposed at the landsurface during the Palaeogene, mostly in the form of saprock and saprolite. Drainage depressions incised exposed bedrock transporting maghemite pebbles. B) marine transgression during the Tertiary (Oligocene) burying palaeochannels and basement rock. C) Uplift along Pine Point Fault Zone resulting in receding sea level during the Neogene. New drainage depressions form at surface with prevailing wind relocating aeolian sediments. D) Formation of aeolian dunes during the Quaternary. Further weathering of drainage depressions create widespread drainage systems. Vegetation colonises aeolian sediments with pedogenic carbonates later developing. E) Contemporary landscape. Tree clearance associated with agricultural development occurred with continual incision of drainage depressions.

Figure 44. Schematic regolith cross section for Hillside, Yorke Peninsula, indicating sequence of regolith units. Two horizons of nodular regolith carbonate can be recognised, one being a nodular weathered limestone, the other a pedogenic carbonate located on hill crests where vegetation is present.

Figure 45. Photograph of calcareous rhizomorphs found at Hillside, Yorke Peninsula, within pedogenic carbonate horizon.

Figure 46. Spatial association map for Au soil element distribution with regional fault zones.

Figure 47. Spatial association map for Cu soil element distribution with regional fault zones.

Figure 48. Types of element dispersion, with examples for weathering ore deposits (McQueen, 2008).

Figure 49. A simplified biogeochemical cycle based on a single tree (Field & Little, 2008).

FIGURES

Figure 1.

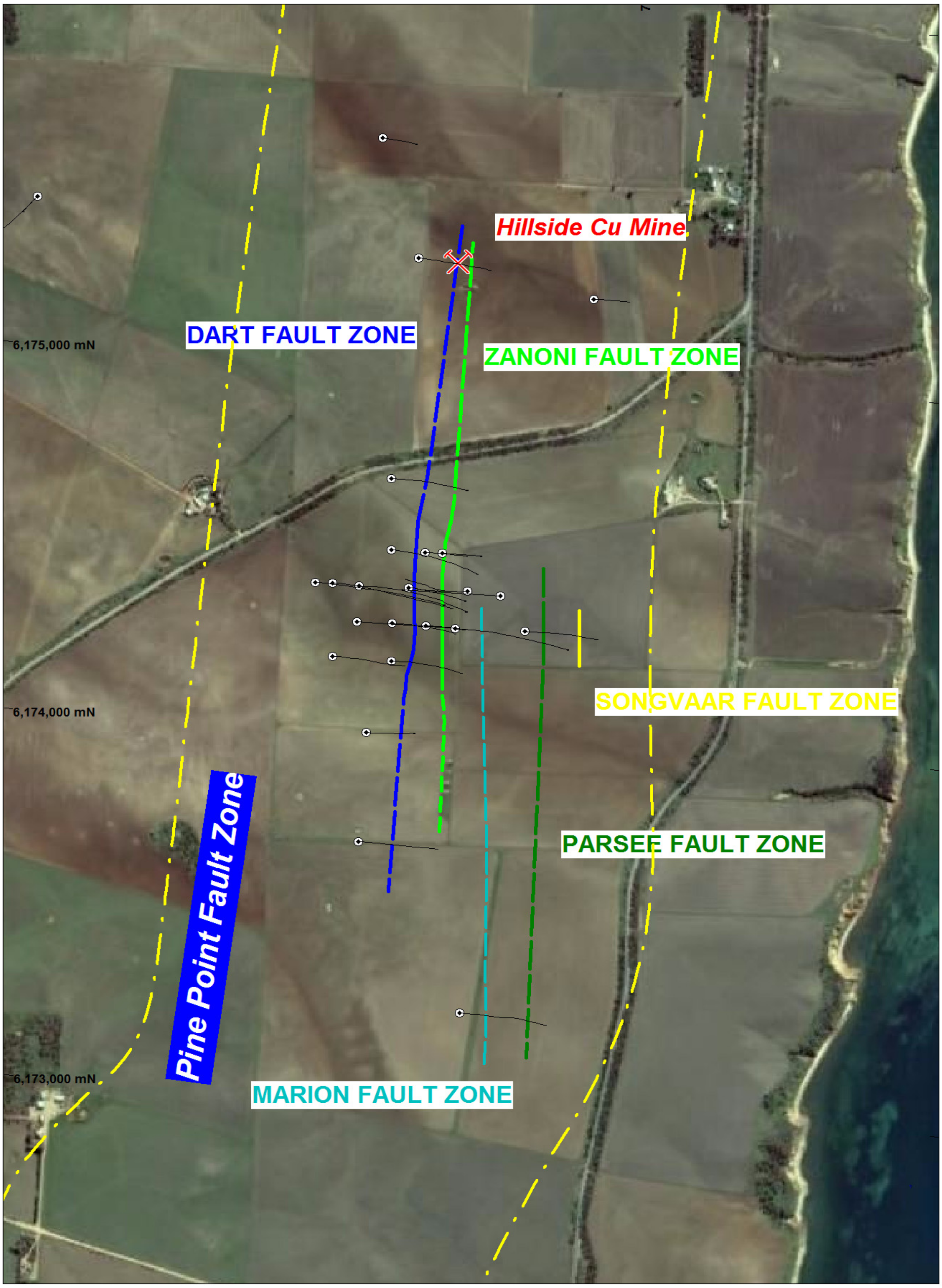

Hillside Cu Mine
DART FAULT ZONE
ZANONI FAULT ZONE
6,175,000 mN
SONGVAAR FAULT ZONE
6,174,000 mN
Pine Point Fault Zone
PARSEE FAULT ZONE
6,173,000 mN
MARION FAULT ZONE

Figure 2.


AUSTRALIA
Darwin
Brisbane
Sydney
Perth
Adelaide
Melbourne
YORKE
PENINSULA
Wood Point
Crystal
Brook
Merriton
Gulnare
Yacka
Munderoo Bay
Port Broughton
1
Tickera Bay
Tickera
Alford
Snowtown
Blyth
Point Riley
Wallaroo
Bute
Lochiel
Kadina
Paskeville
Moonta Bay
Moonta Bay
Pt Hughes
Moonta
Kulpara
Cape Elizabeth
Balaklava
Pt. Wakefield
Arthurton
Price
Wild Horse
Plains
SPENCER
GULF
Balgowan
Maitland
Windsor
Reef Point
Point Pearce
Ardrossan
Dublin
Pt. Victoria
Pine Point
Port Alfred
Wauraltee Beach
N
Port Rickaby
Curramulka
Port Julia
Two Wells
GULF
ST
VINCENT
Minlaton
Port Vincent
Corny Point
The Pines
Pt. Souttar
Hardwicke Bay
Berry Bay
Point Turton
Stansbury
Corny point
ADELAIDE
Daly Head
Warooka
Wool Bay
Formby
Bay
Yorketown
Coobowie
Edithburgh
Port Moorowie
INNES
N.P.
Troubridge Point
Marion Bay
Stenhouse Bay
INVESTIGATOR STRAIT
Cape
Spencer
Road Classification
Main Highways
Bitumen Roads
Gravel Roads

Figure 3.

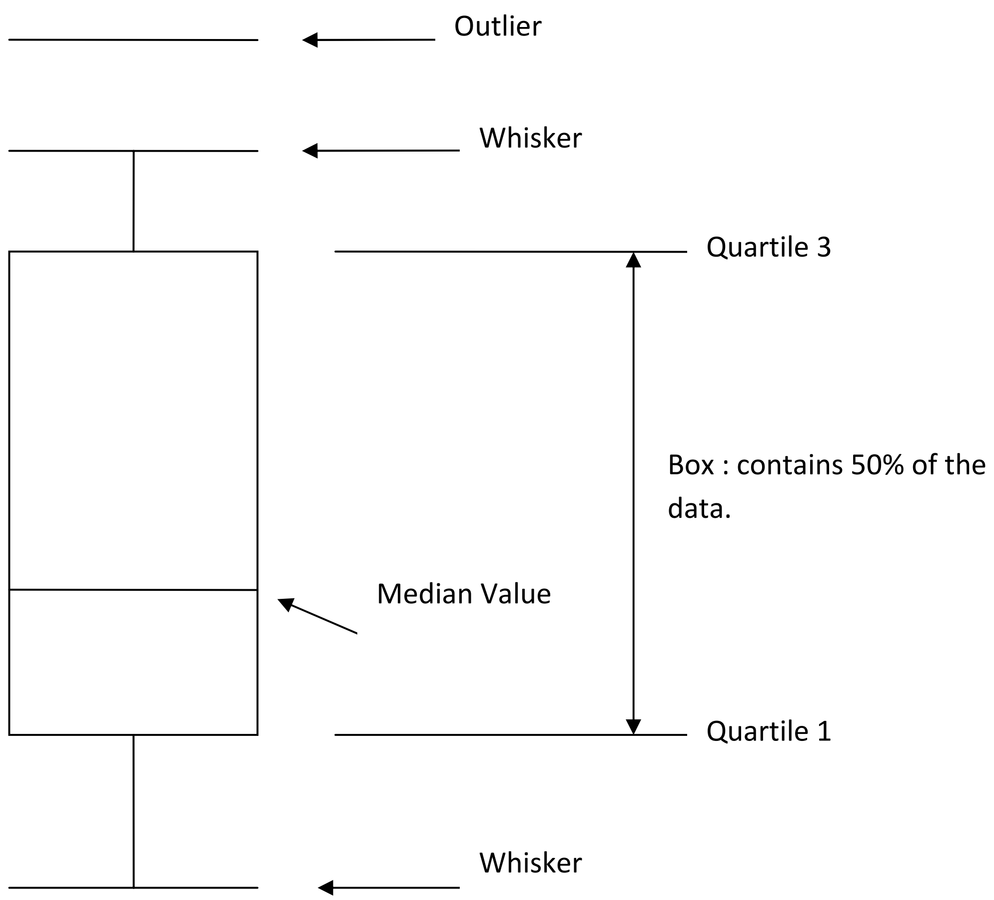

Outlier
Whisker
Quartile 3
Box : contains 50% of the data.
Median Value
Quartile 1
Whisker

Figure 4.

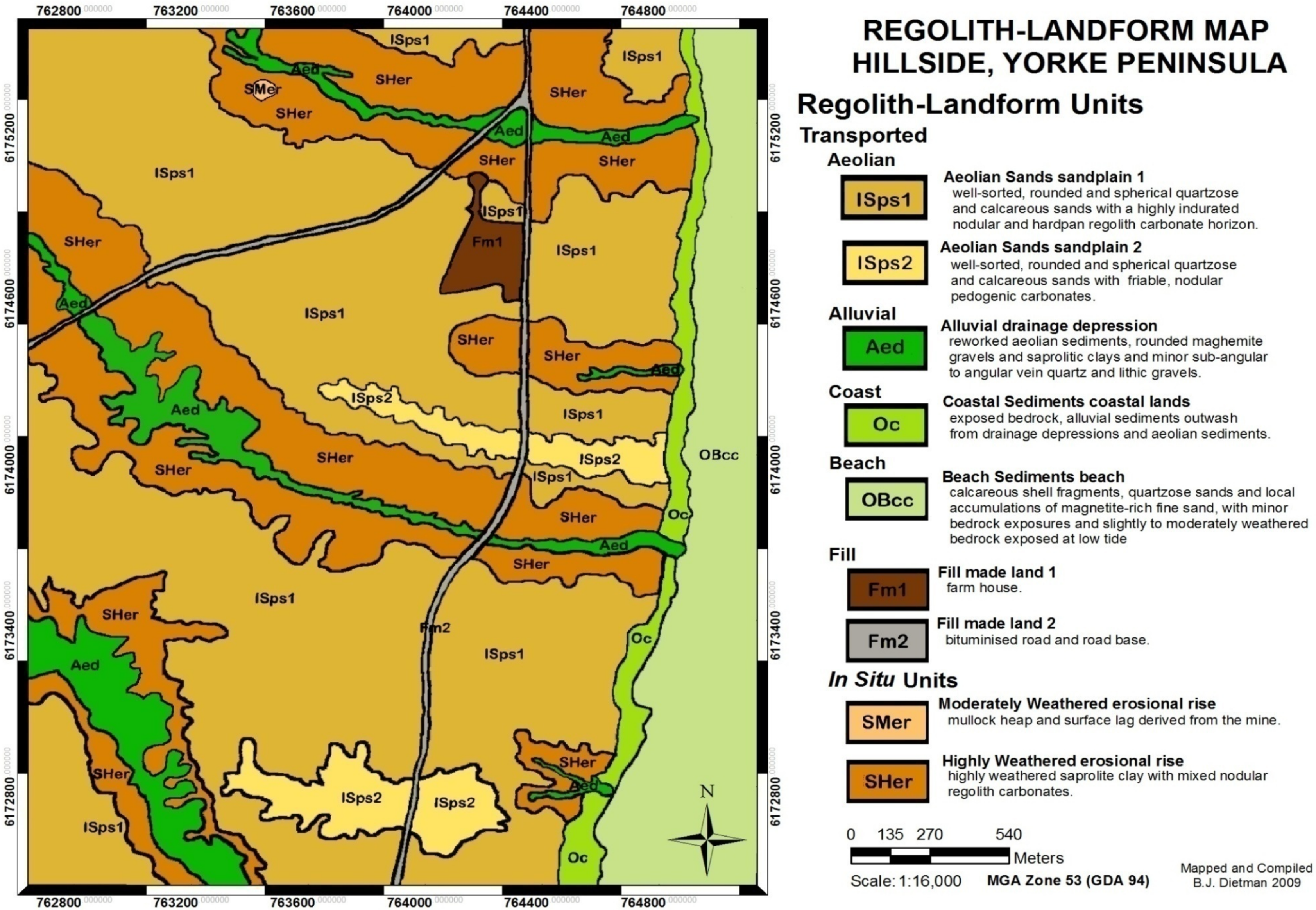

REGOLITH-LANDFORM MAP
HILLSIDE, YORKE PENINSULA
Regolith-Landform Units
Transported
Aeolian
ISps1
Aeolian Sands sandplain 1
well-sorted, rounded and spherical quartzose and calcareous sands with a highly indurated nodular and hardpan regolith carbonate horizon.
ISps2
Aeolian Sands sandplain 2
well-sorted, rounded and spherical quartzose and calcareous sands with friable, nodular pedogenic carbonates.
Alluvial
Aed
Alluvial drainage depression
reworked aeolian sediments, rounded maghemite gravels and saprolitic clays and minor sub-angular to angular vein quartz and lithic gravels.
Coast
Oc
Coastal Sediments coastal lands
exposed bedrock, alluvial sediments outwash from drainage depressions and aeolian sediments.
Beach
OBcc
Beach Sediments beach
calcareous shell fragments, quartzose sands and local accumulations of magnetite-rich fine sand, with minor bedrock exposures and slightly to moderately weathered bedrock exposed at low tide
Fill
Fm1
Fill made land 1
farm house.
Fm2
Fill made land 2
bituminised road and road base.
In Situ Units
SMer
Moderately Weathered erosional rise
mullock heap and surface lag derived from the mine.
SHer
Highly Weathered erosional rise
highly weathered saprolite clay with mixed nodular regolith carbonates.
0 135 270 540
Meters
Scale: 1:16,000
MGA Zone 53 (GDA 94)
Mapped and Compiled
B.J. Dietman 2009
N
762800
763200
763600
764000
764400
764800
6175200
6174600
6174000
6173400
6172800

Figure 5.

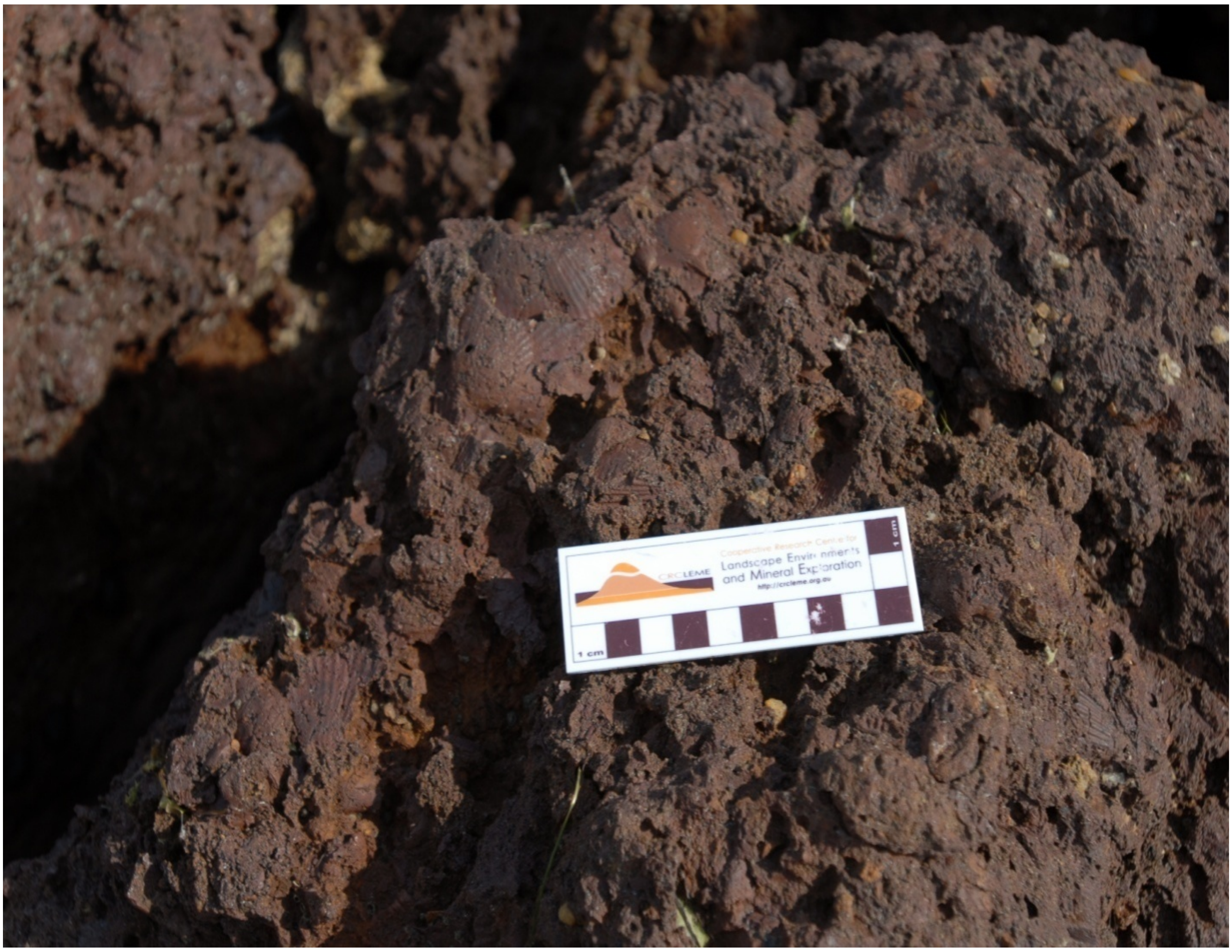
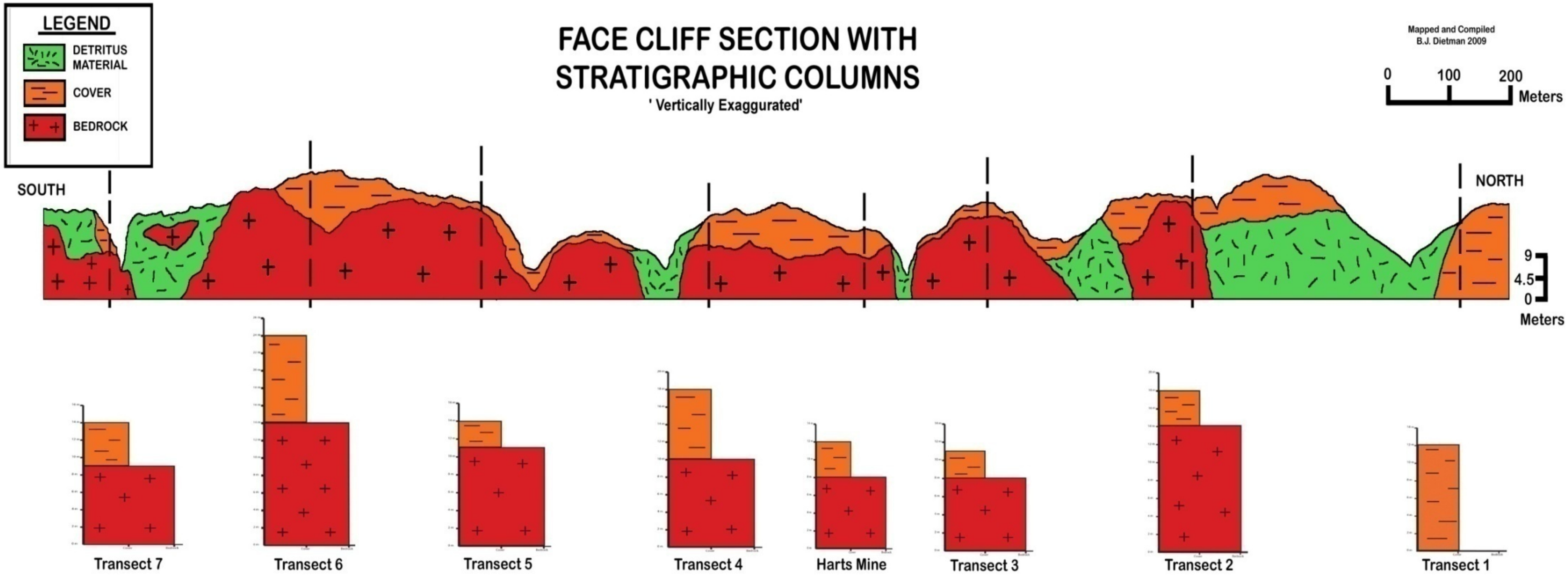
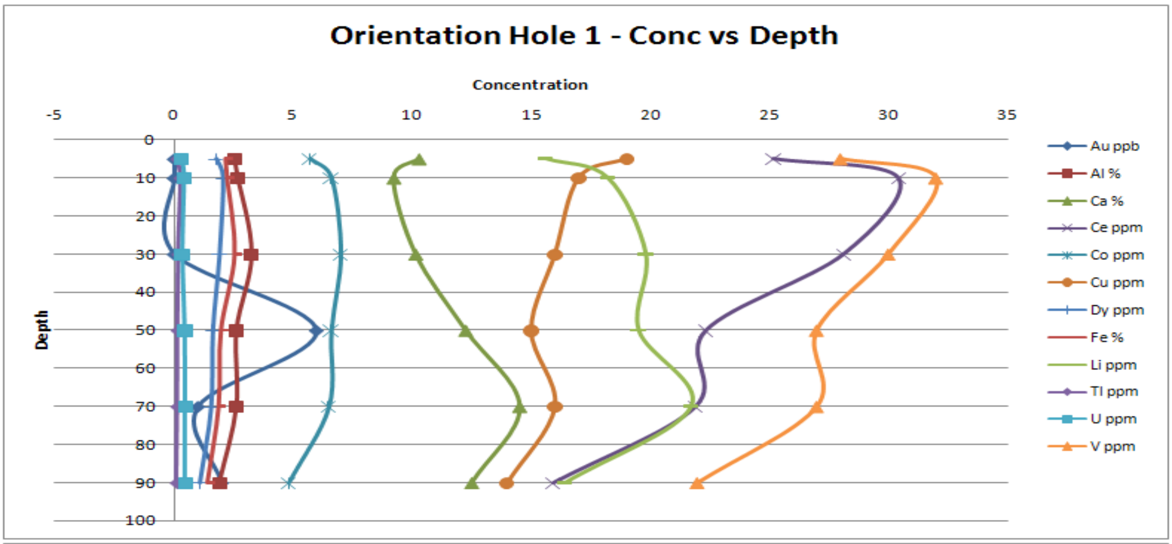

CRCLEME
Cooperative Research Centre for
Landscape Environments
and Mineral Exploration
http://crcleme.org.au
1 cm
1 cm

Figure 6.

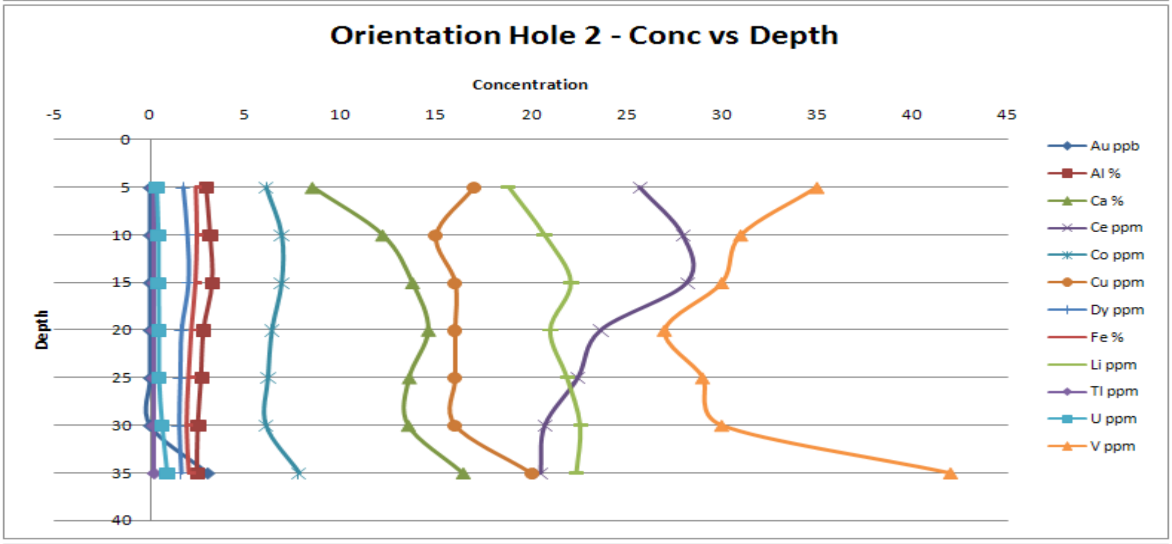


LEGEND
DETRITUS MATERIAL
COVER
BEDROCK
FACE CLIFF SECTION WITH STRATIGRAPHIC COLUMNS
' Vertically Exaggurated'
Mapped and Compiled
B.J. Dietman 2009
0
100
200
Meters
SOUTH
NORTH
9
4.5
0
Meters
Transect 7
Transect 6
Transect 5
Transect 4
Harts Mine
Transect 3
Transect 2
Transect 1

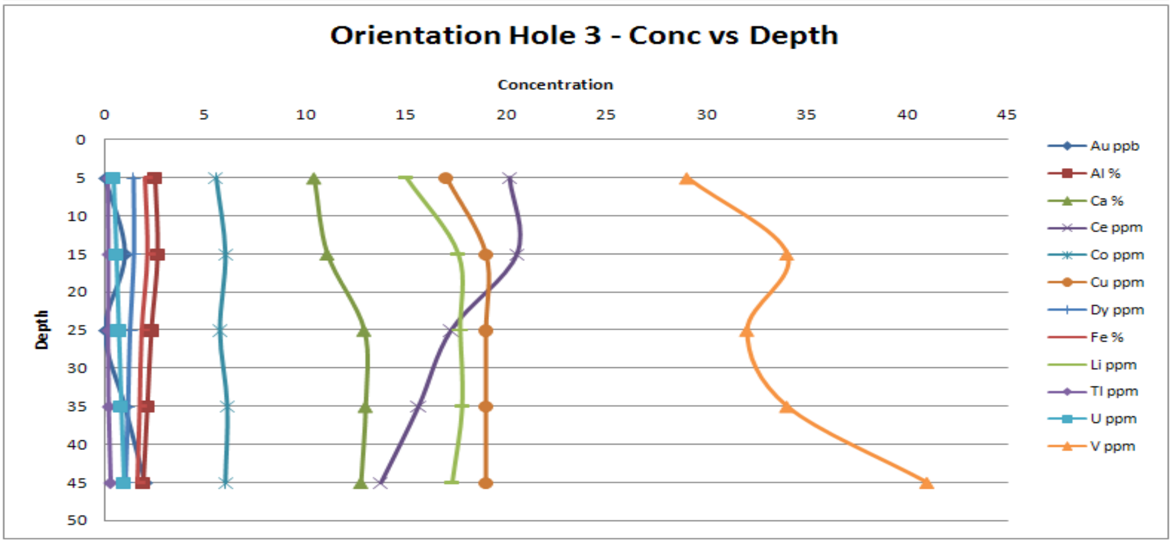
Figure 7.



Orientation Hole 1 - Conc vs Depth
Concentration
-5
0
5
10
15
20
25
30
35
Depth
0
10
20
30
40
50
60
70
80
90
100
Au ppb
Al %
Ca %
Ce ppm
Co ppm
Cu ppm
Dy ppm
Fe %
Li ppm
Tl ppm
U ppm
V ppm

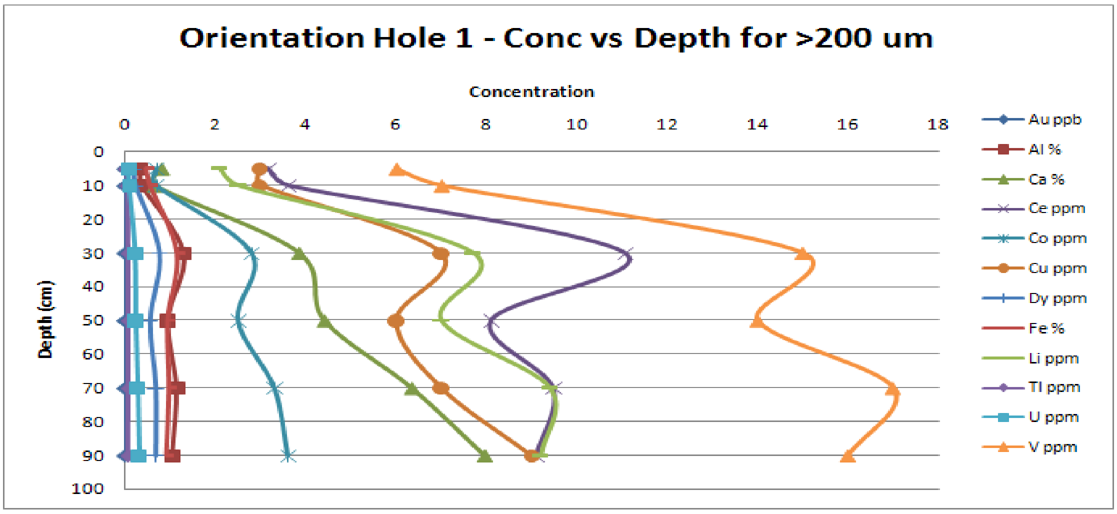


Orientation Hole 2 - Conc vs Depth
Concentration
-5
0
5
10
15
20
25
30
35
40
45
Depth
0
5
10
15
20
25
30
35
40
Au ppb
Al %
Ca %
Ce ppm
Co ppm
Cu ppm
Dy ppm
Fe %
Li ppm
Tl ppm
U ppm
V ppm

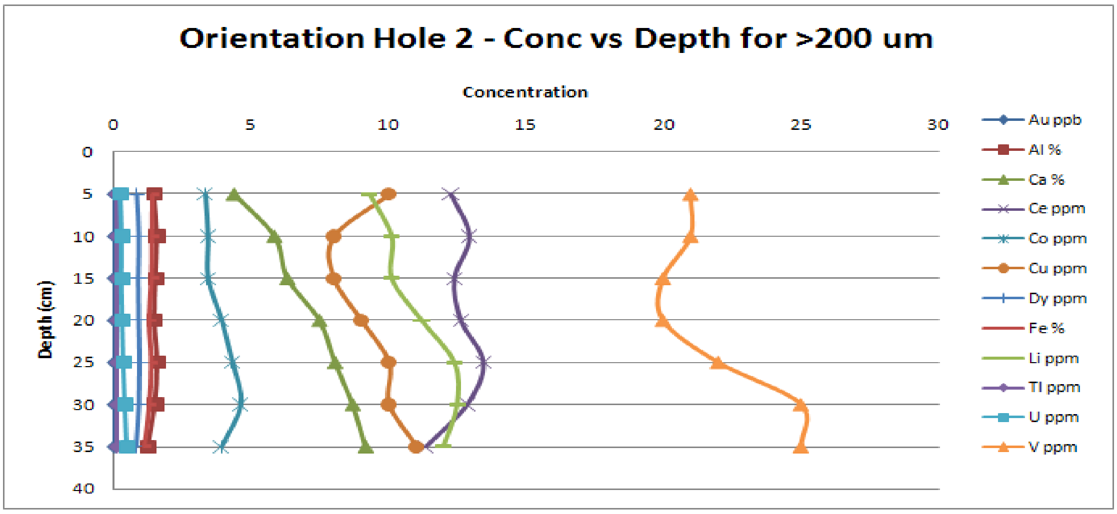


Orientation Hole 3 - Conc vs Depth
Concentration
0
5
10
15
20
25
30
35
40
45
Depth
0
5
10
15
20
25
30
35
40
45
50
Au ppb
Al %
Ca %
Ce ppm
Co ppm
Cu ppm
Dy ppm
Fe %
Li ppm
Tl ppm
U ppm
V ppm

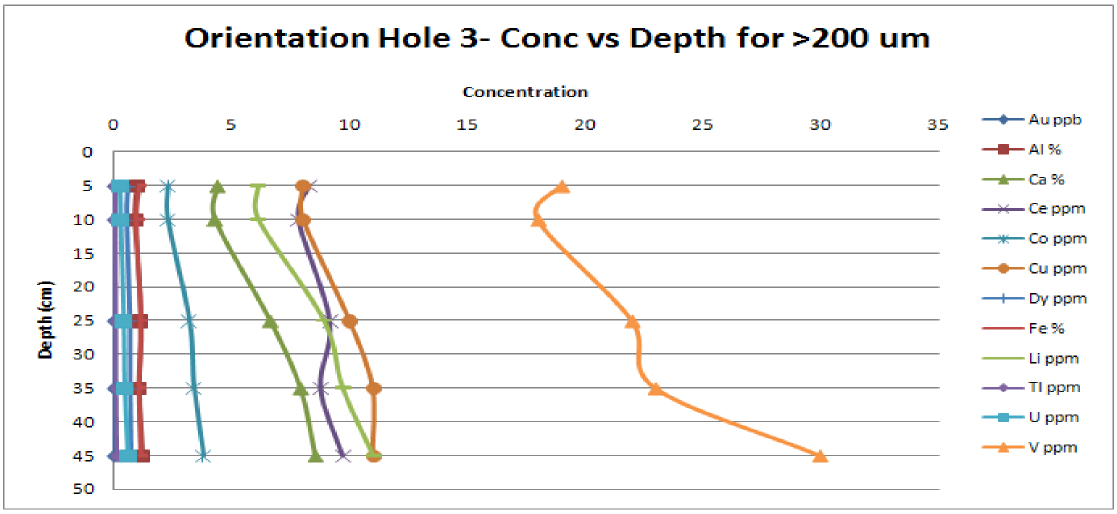
Figure 8.



Orientation Hole 1 - Conc vs Depth for >200 um
Concentration
0
2
4
6
8
10
12
14
16
18
Depth (cm)
0
10
20
30
40
50
60
70
80
90
100
Au ppb
Al %
Ca %
Ce ppm
Co ppm
Cu ppm
Dy ppm
Fe %
Li ppm
Tl ppm
U ppm
V ppm



Orientation Hole 2 - Conc vs Depth for >200 um
Concentration
0
5
10
15
20
25
30
Depth (cm)
0
5
10
15
20
25
30
35
40
Au ppb
Al %
Ca %
Ce ppm
Co ppm
Cu ppm
Dy ppm
Fe %
Li ppm
Tl ppm
U ppm
V ppm



Orientation Hole 3- Conc vs Depth for >200 um
Concentration
0
5
10
15
20
25
30
35
Depth (cm)
0
5
10
15
20
25
30
35
40
45
50
Au ppb
Al %
Ca %
Ce ppm
Co ppm
Cu ppm
Dy ppm
Fe %
Li ppm
Tl ppm
U ppm
V ppm

Figure 9.

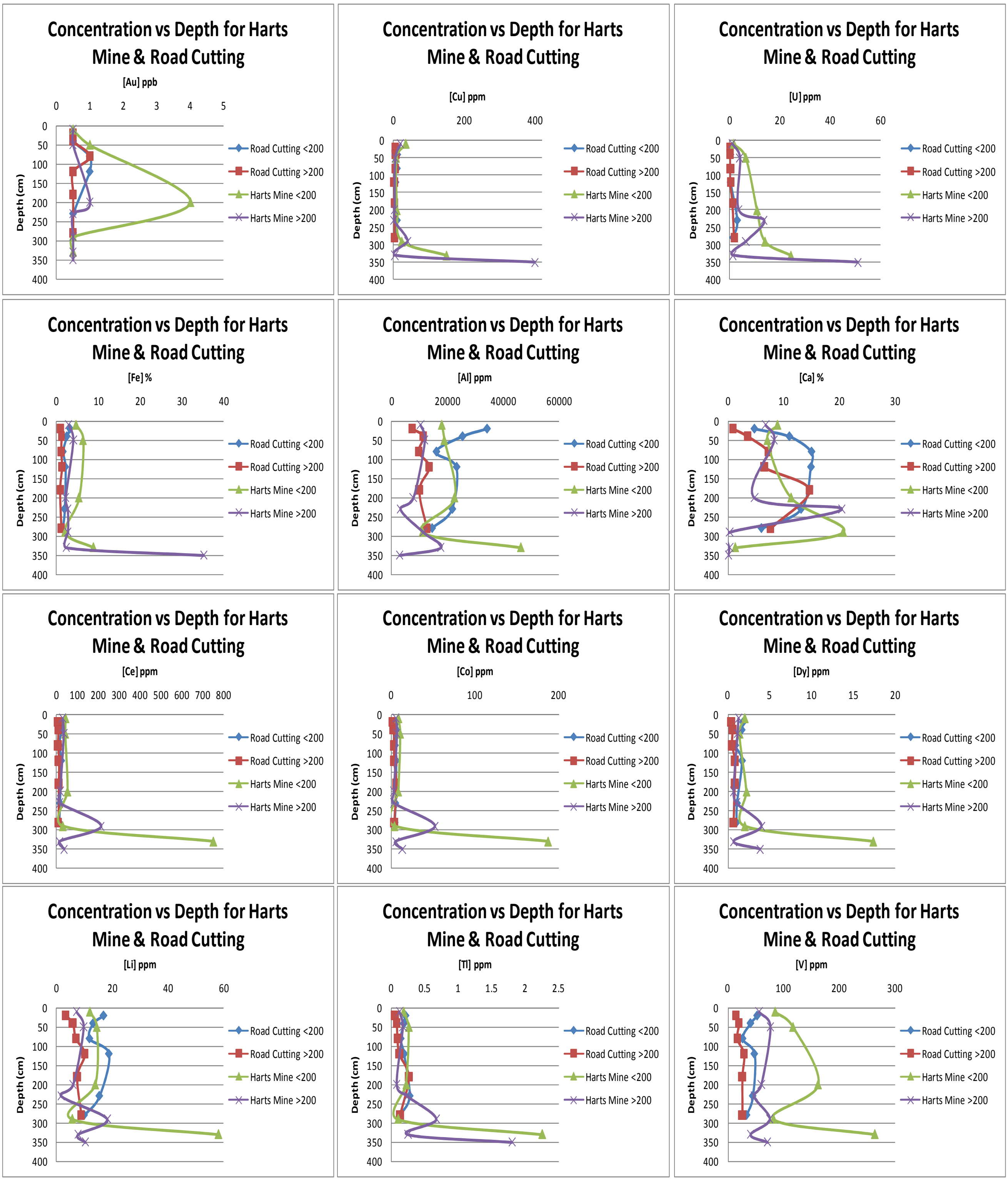

Concentration vs Depth for Harts Mine & Road Cutting
[Au] ppb
Depth (cm)
Concentration vs Depth for Harts Mine & Road Cutting
[Cu] ppm
Depth (cm)
Concentration vs Depth for Harts Mine & Road Cutting
[U] ppm
Depth (cm)
Concentration vs Depth for Harts Mine & Road Cutting
[Fe] %
Depth (cm)
Concentration vs Depth for Harts Mine & Road Cutting
[Al] ppm
Depth (cm)
Concentration vs Depth for Harts Mine & Road Cutting
[Ca] %
Depth (cm)
Concentration vs Depth for Harts Mine & Road Cutting
[Ce] ppm
Depth (cm)
Concentration vs Depth for Harts Mine & Road Cutting
[Co] ppm
Depth (cm)
Concentration vs Depth for Harts Mine & Road Cutting
[Dy] ppm
Depth (cm)
Concentration vs Depth for Harts Mine & Road Cutting
[Li] ppm
Depth (cm)
Concentration vs Depth for Harts Mine & Road Cutting
[Tl] ppm
Depth (cm)
Concentration vs Depth for Harts Mine & Road Cutting
[V] ppm
Depth (cm)
Road Cutting <200
Road Cutting >200
Harts Mine <200
Harts Mine >200

Figure 10.

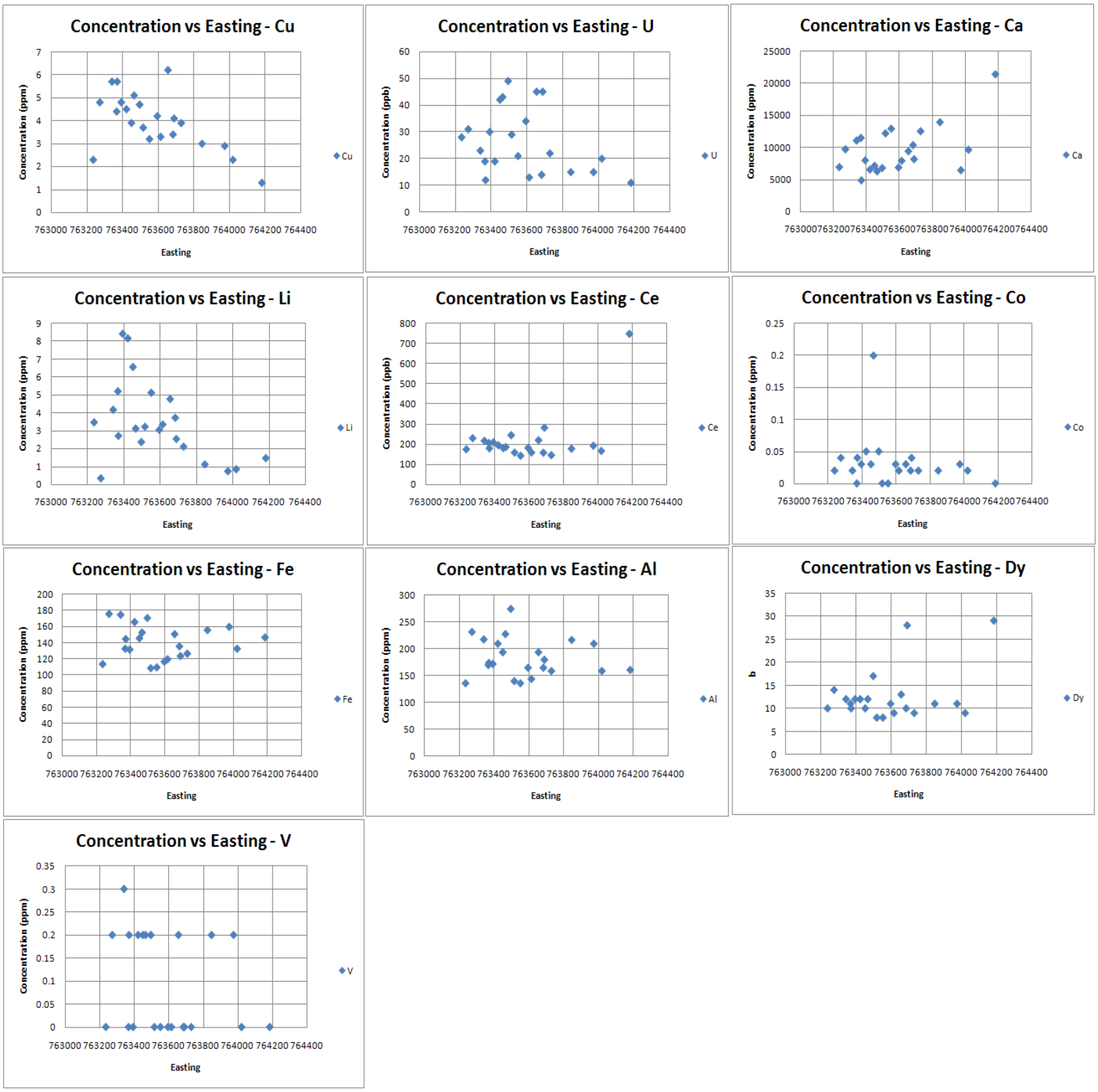

Concentration vs Easting - Cu
Concentration (ppm)
Easting
Cu
Concentration vs Easting - U
Concentration (ppb)
Easting
U
Concentration vs Easting - Ca
Concentration (ppm)
Easting
Ca
Concentration vs Easting - Li
Concentration (ppm)
Easting
Li
Concentration vs Easting - Ce
Concentration (ppb)
Easting
Ce
Concentration vs Easting - Co
Concentration (ppm)
Easting
Co
Concentration vs Easting - Fe
Concentration (ppm)
Easting
Fe
Concentration vs Easting - Al
Concentration (ppm)
Easting
Al
Concentration vs Easting - Dy
b
Easting
Dy
Concentration vs Easting - V
Concentration (ppm)
Easting
V
763000 763200 763400 763600 763800 764000 764200 764400

Figure 11.

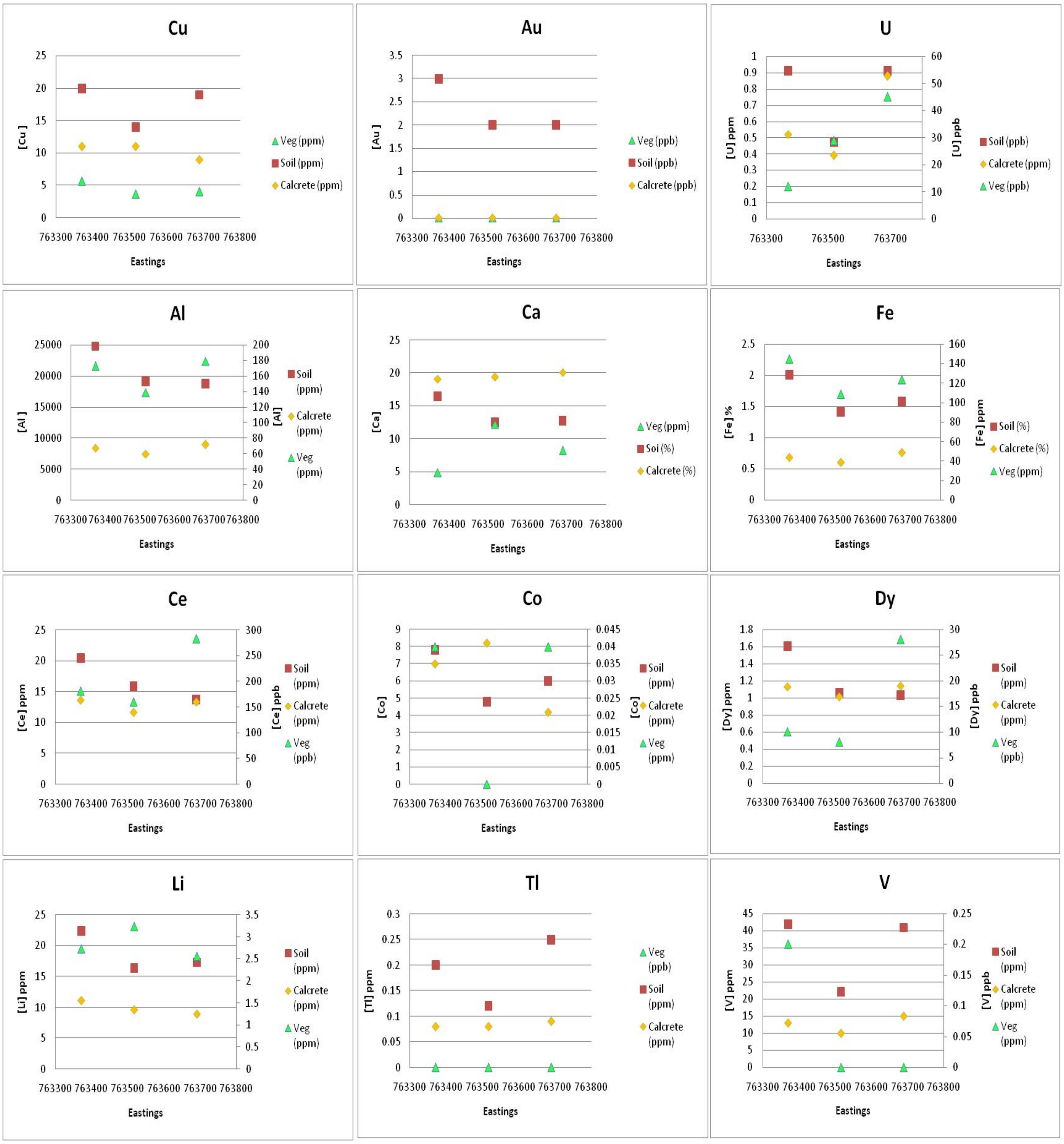

Cu
[Cu]
Eastings
Veg (ppm)
Soil (ppm)
Calcrete (ppm)
Au
[Au]
Eastings
Veg (ppb)
Soil (ppb)
Calcrete (ppb)
U
[U] ppm
[U] ppb
Eastings
Soil (ppb)
Calcrete (ppm)
Veg (ppb)
Al
[Al]
Eastings
Soil (ppm)
Calcrete (ppm)
Veg (ppm)
Ca
[Ca]
Eastings
Veg (ppm)
Soi (%)
Calcrete (%)
Fe
[Fe] %
[Fe] ppm
Eastings
Soil (%)
Calcrete (%)
Veg (ppm)
Ce
[Ce] ppm
[Ce] ppb
Eastings
Soil (ppm)
Calcrete (ppm)
Veg (ppb)
Co
[Co]
Eastings
Soil (ppm)
Calcrete (ppm)
Veg (ppm)
Dy
[Dy] ppm
[Dy] ppb
Eastings
Soil (ppm)
Calcrete (ppm)
Veg (ppb)
Li
[Li] ppm
Eastings
Soil (ppm)
Calcrete (ppm)
Veg (ppm)
Tl
[Tl] ppm
Eastings
Veg (ppb)
Soil (ppm)
Calcrete (ppm)
V
[V] ppm
[V] ppb
Eastings
Soil (ppm)
Calcrete (ppm)
Veg (ppm)

Figure 12.

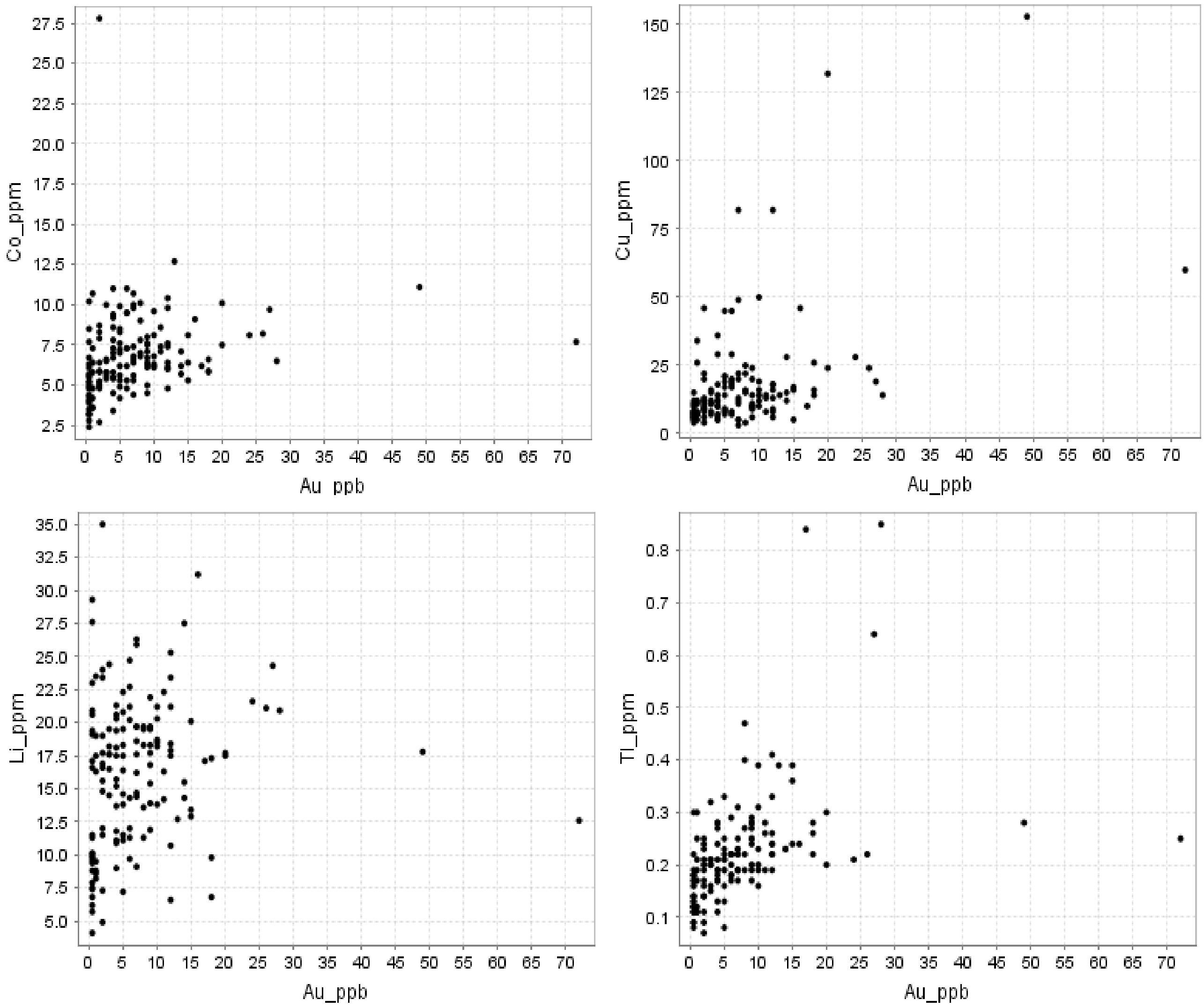


Figure 13.

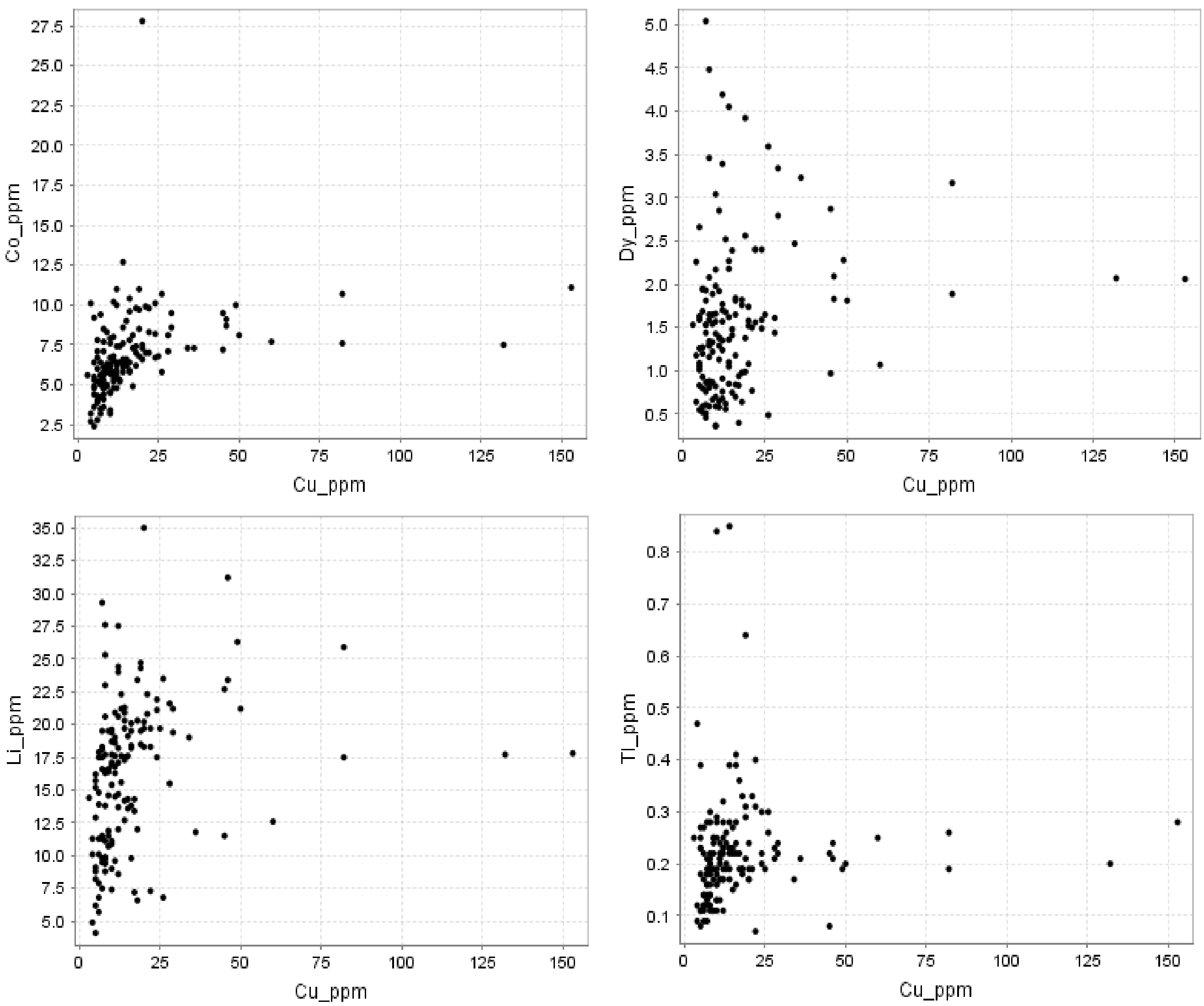
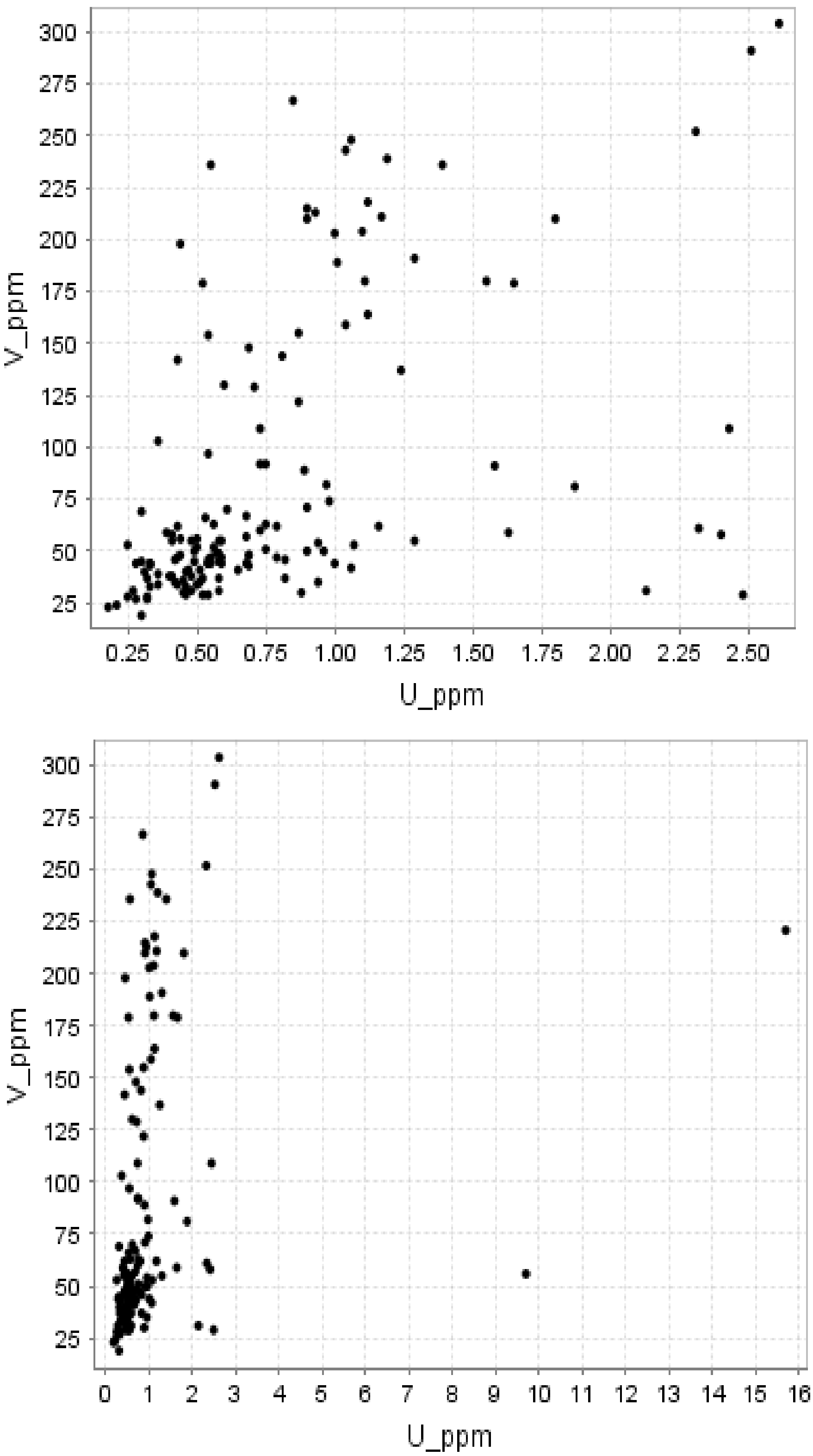
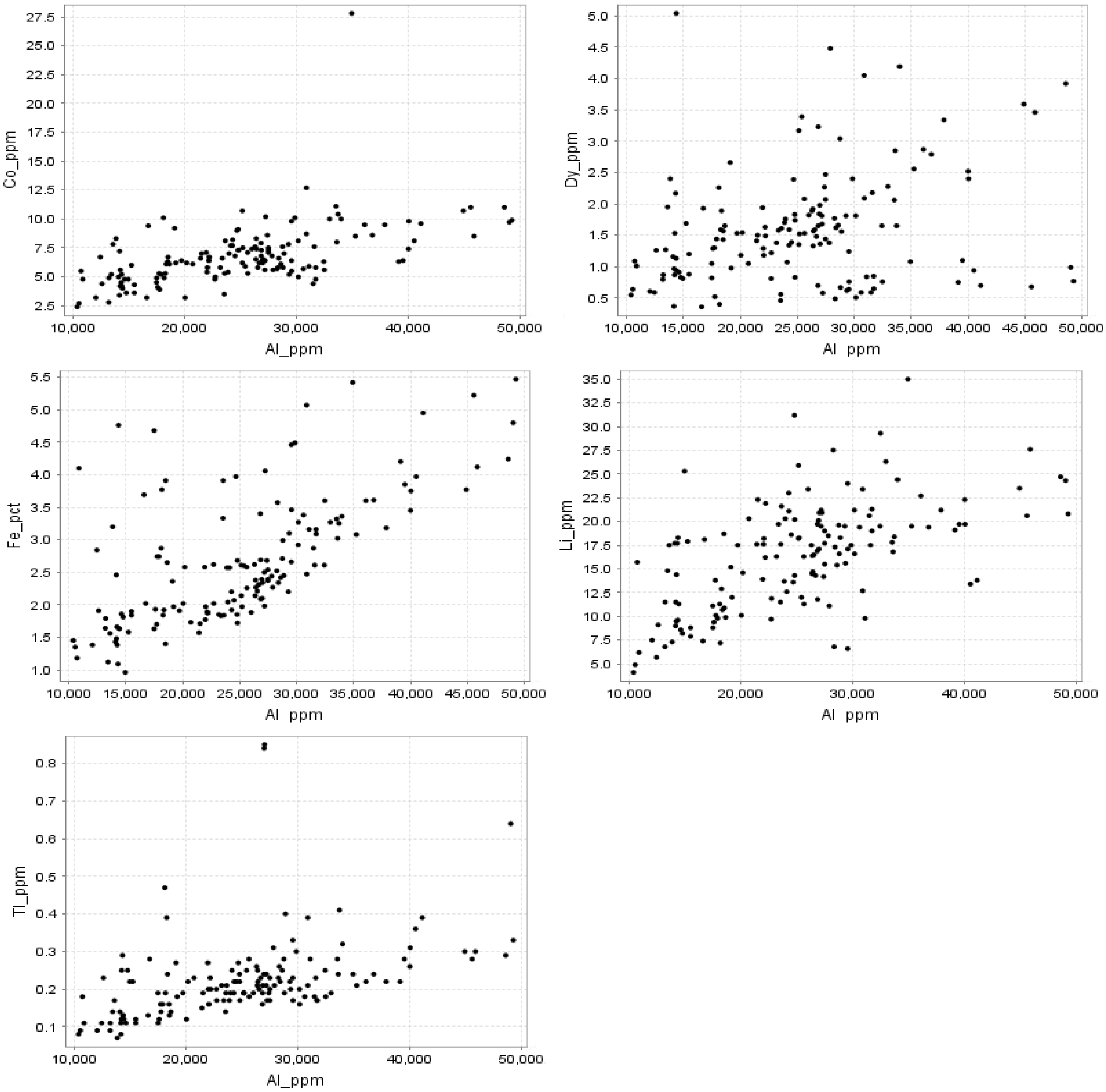


Figure 14.



300
275
250
225
200
175
150
125
100
75
50
25
V_ppm
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
2.25
2.50
U_ppm
300
275
250
225
200
175
150
125
100
75
50
25
V_ppm
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
U_ppm

Figure 15.



Co_ppm
Al_ppm
Dy_ppm
Al ppm
Fe_pct
Al ppm
Li_ppm
Al ppm
Tl_ppm
Al_ppm

Figure 16.

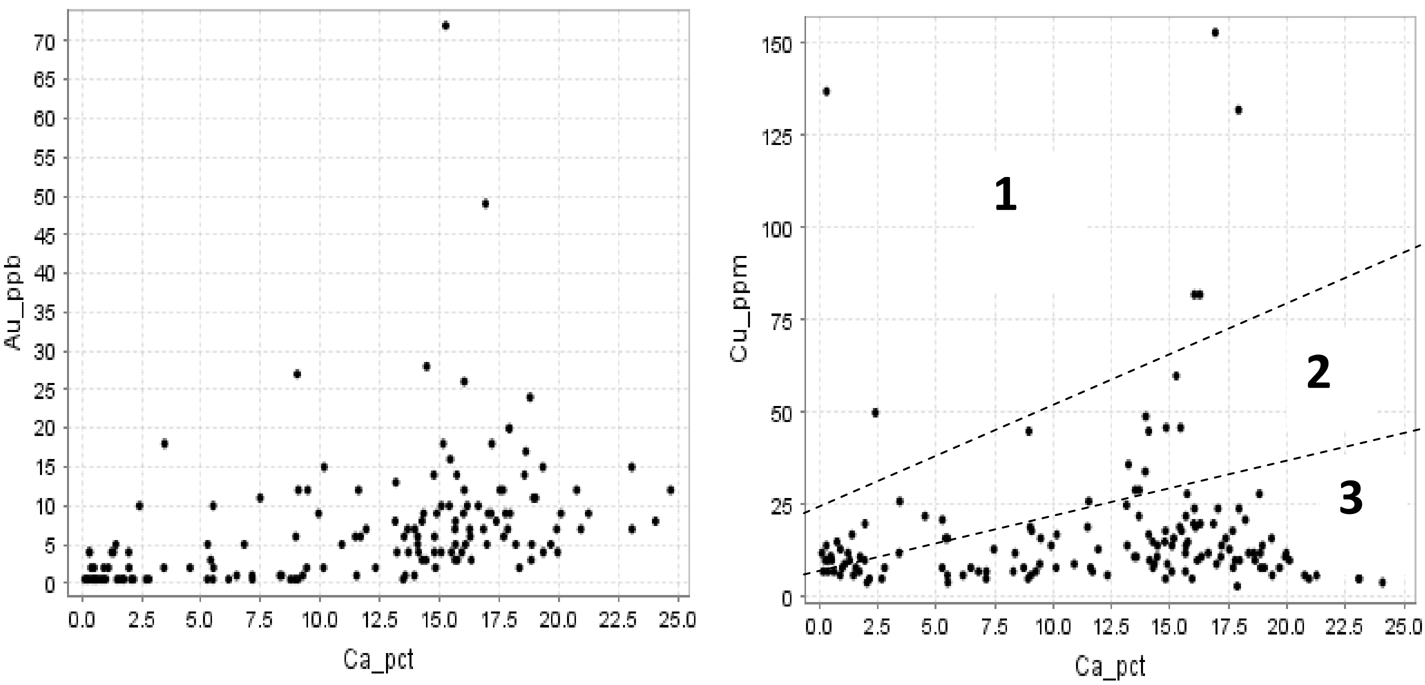


Figure 17.

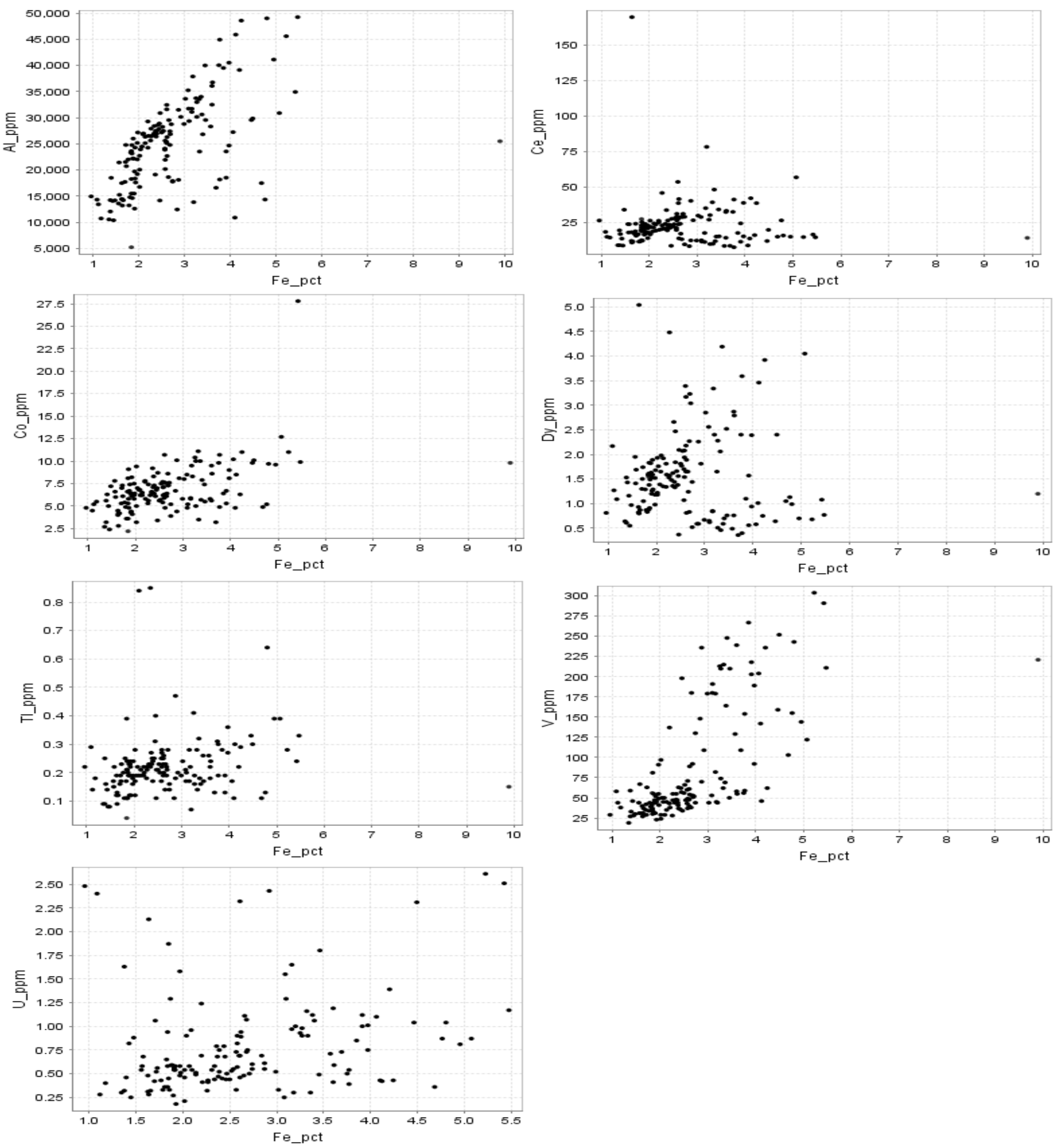
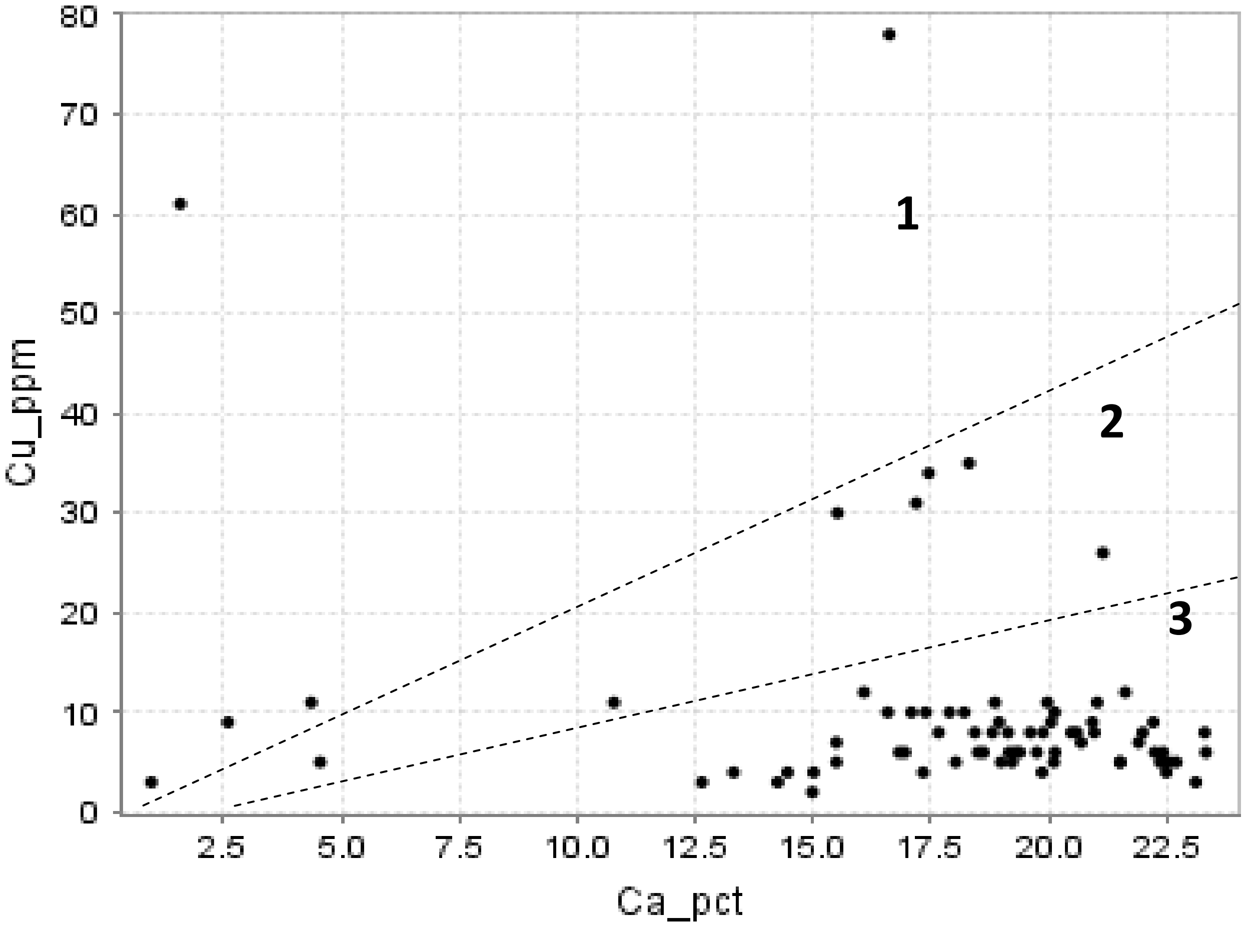
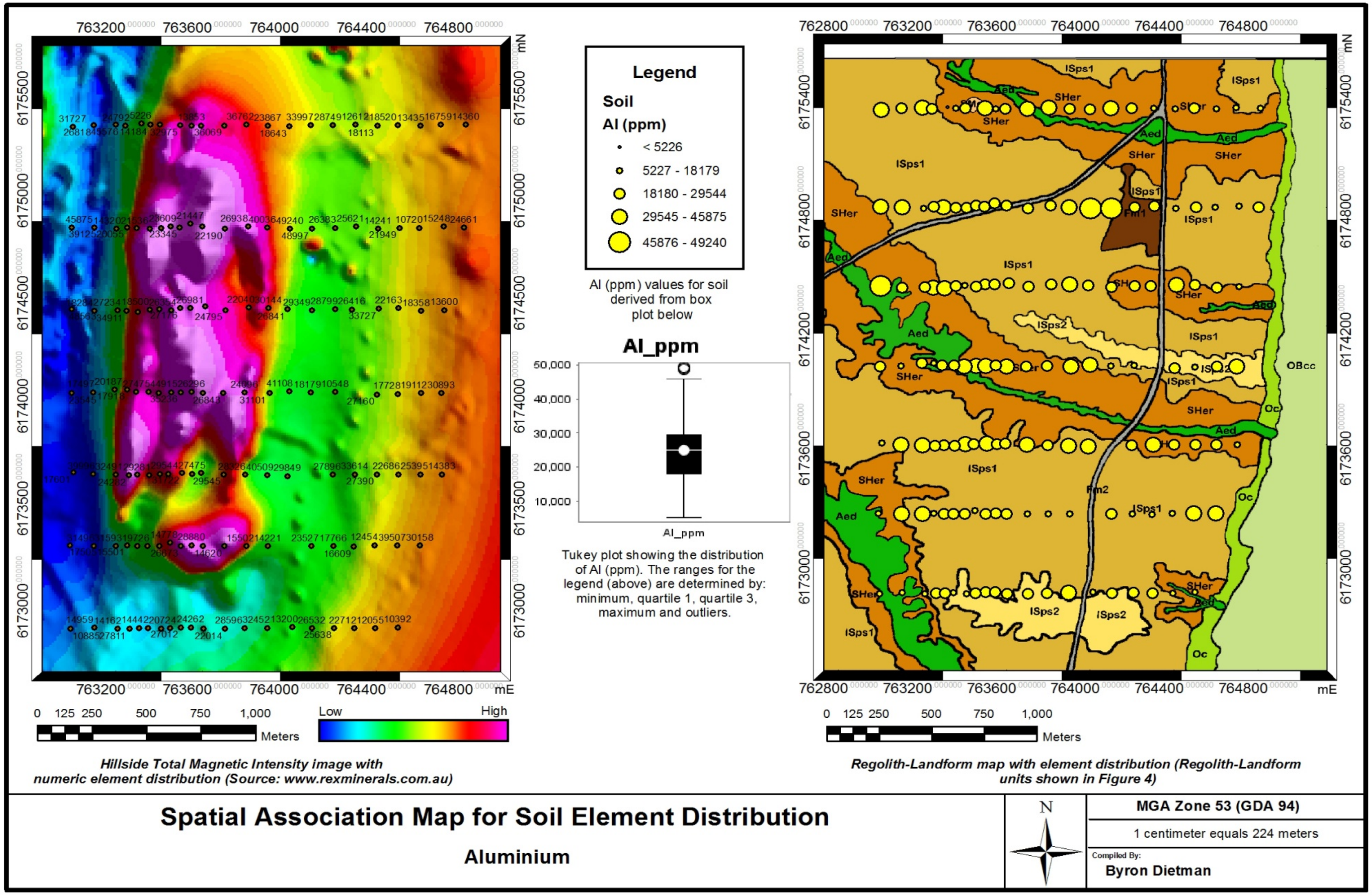

Al_ppm
Fe_pct
Ce_ppm
Fe_pct
Co_ppm
Fe_pct
Dy_ppm
Fe_pct
Tl_ppm
Fe_pct
V_ppm
Fe_pct
U_ppm
Fe_pct

Figure 18.



80
70
60
50
40
30
20
10
0
Cu_ppm
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
Ca_pct
1
2
3

Figure 19.



Spatial Association Map for Soil Element Distribution
Aluminium
Legend
Soil
Al (ppm)
< 5226
5227 - 18179
18180 - 29544
29545 - 45875
45876 - 49240
Al (ppm) values for soil derived from box plot below
Al_ppm
50,000
40,000
30,000
20,000
10,000
Al_ppm
Tukey plot showing the distribution of Al (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
0 125 250 500 750 1,000
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
ISps1
ISps2
SHer
Aed
OBcc
Oc
Fm1
Fm2
763200
763600
764000
764400
764800
762800
mE
6175500
6175000
6174500
6174000
6173500
6173000
6175400
6174800
6174200
6173600
mN
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 20

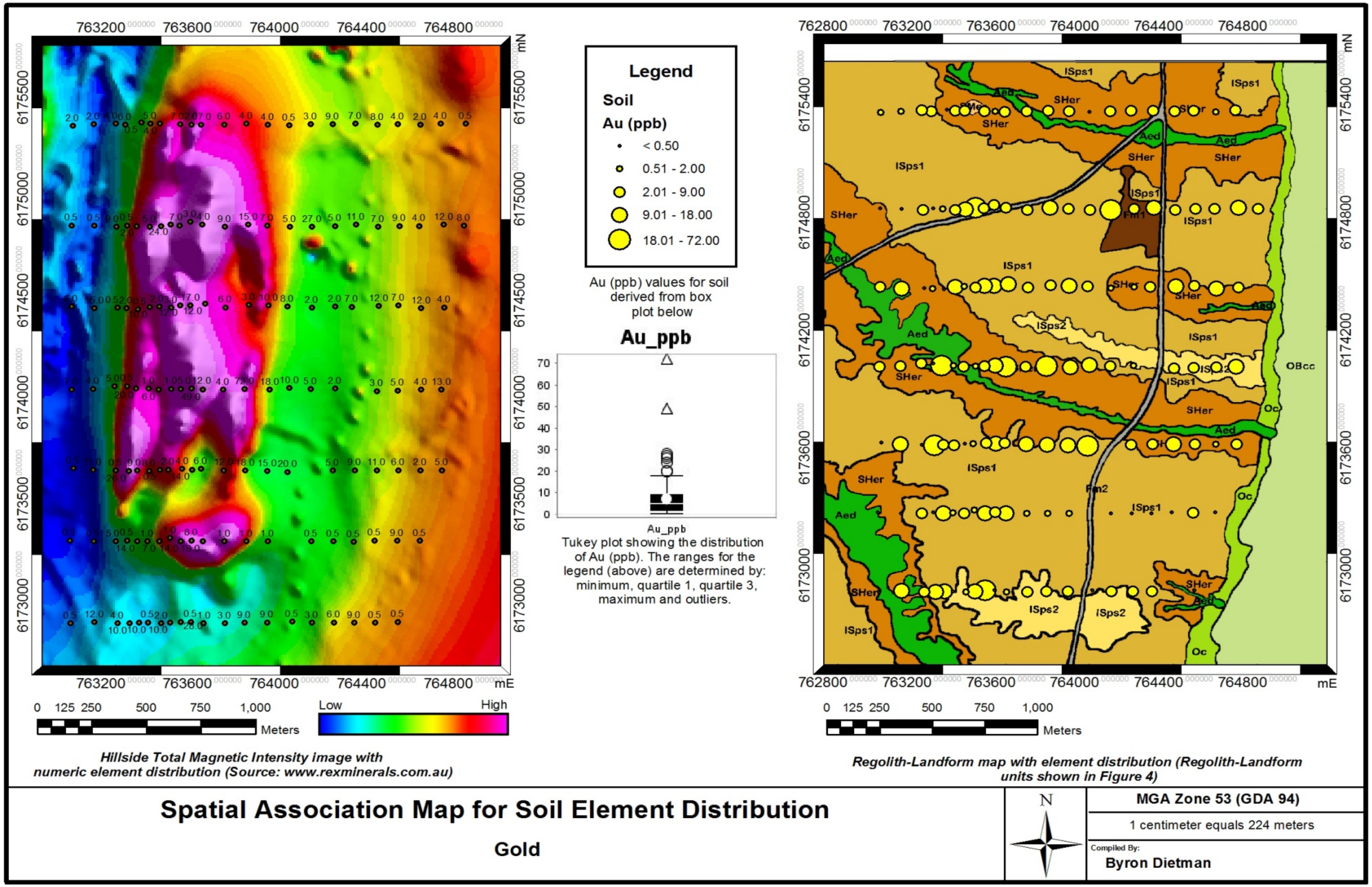
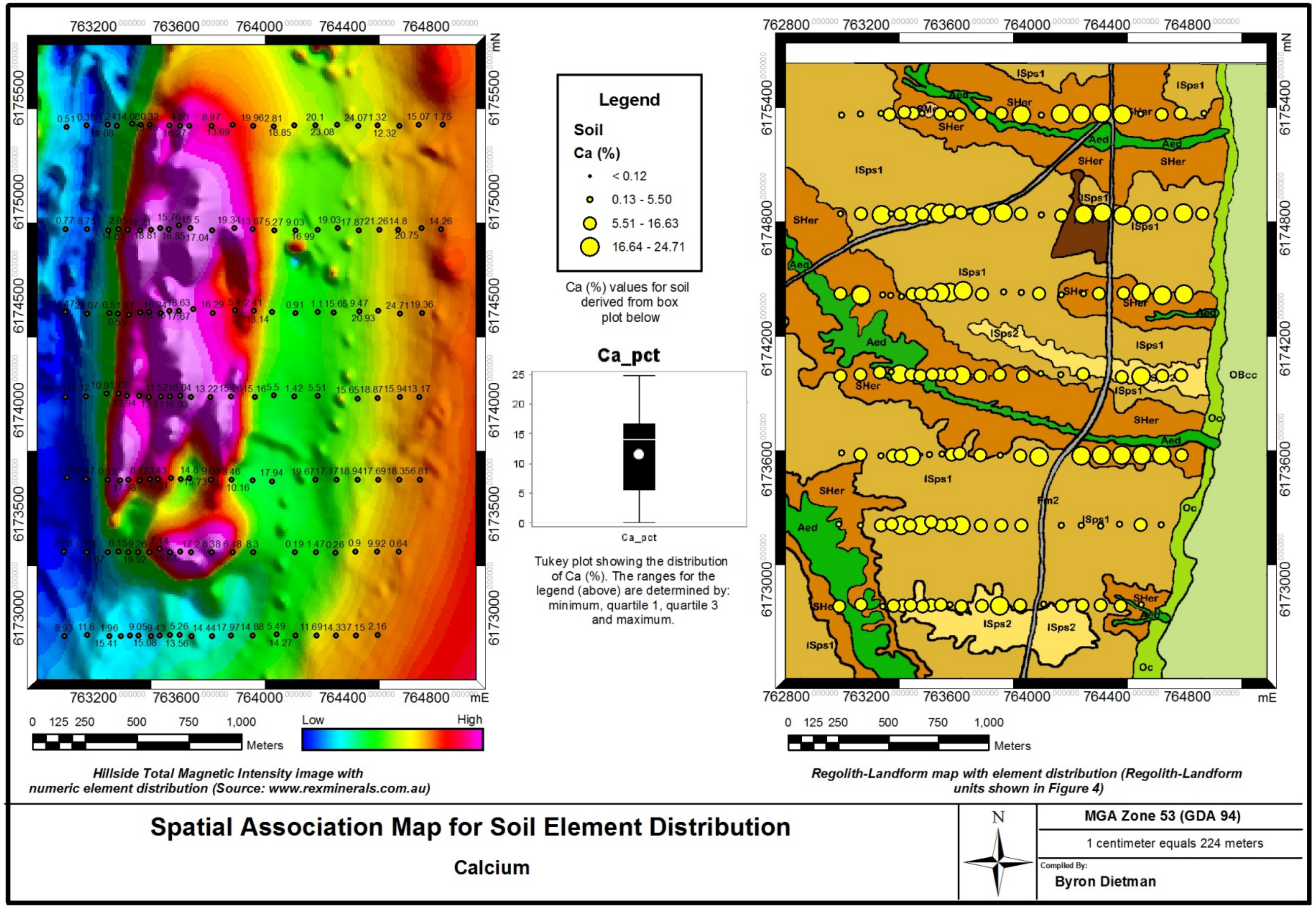
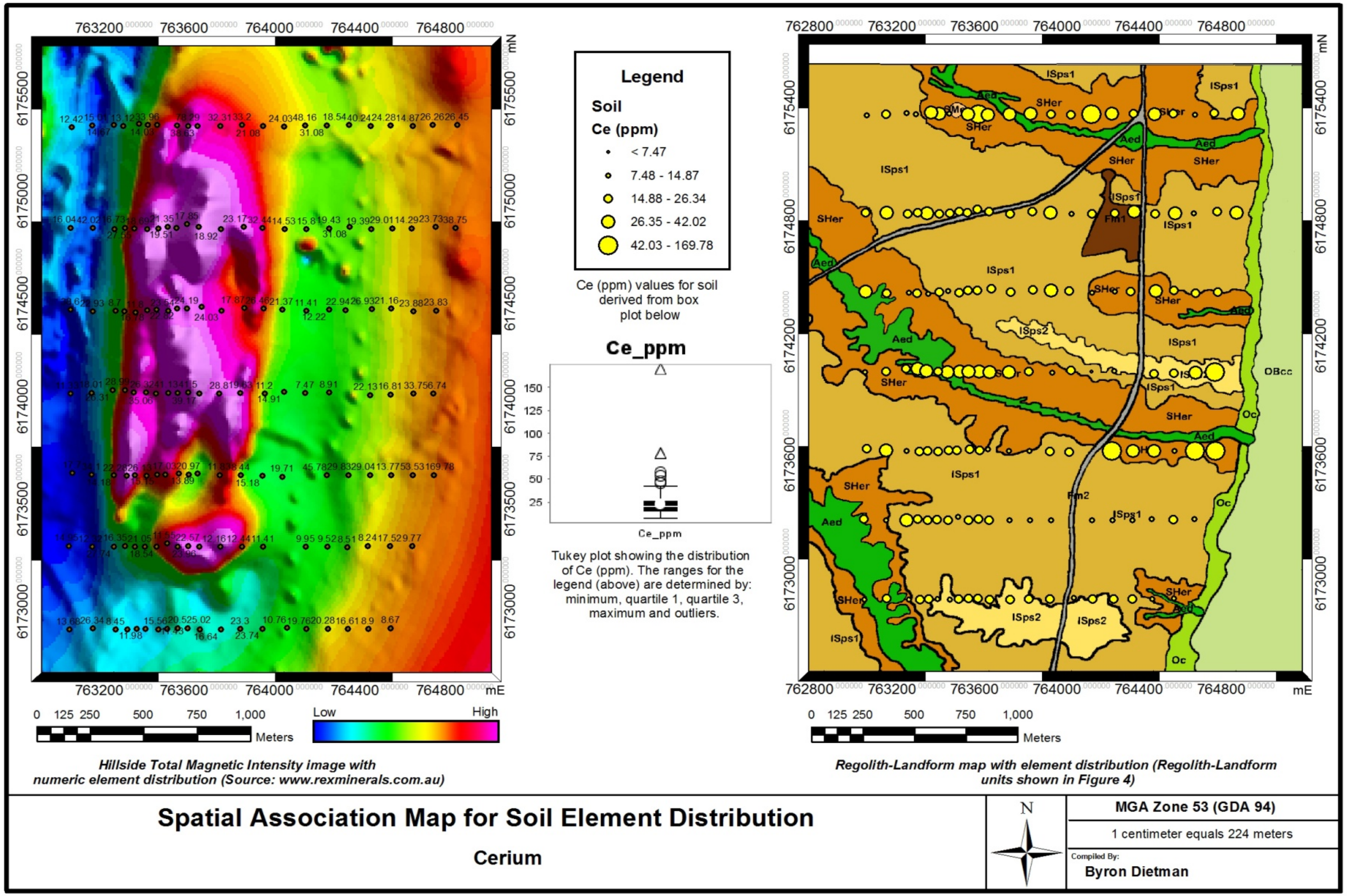

Legend
Soil
Au (ppb)
< 0.50
0.51 - 2.00
2.01 - 9.00
9.01 - 18.00
18.01 - 72.00
Au (ppb) values for soil derived from box plot below
Au_ppb
Tukey plot showing the distribution of Au (ppb). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Soil Element Distribution
Gold
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 21



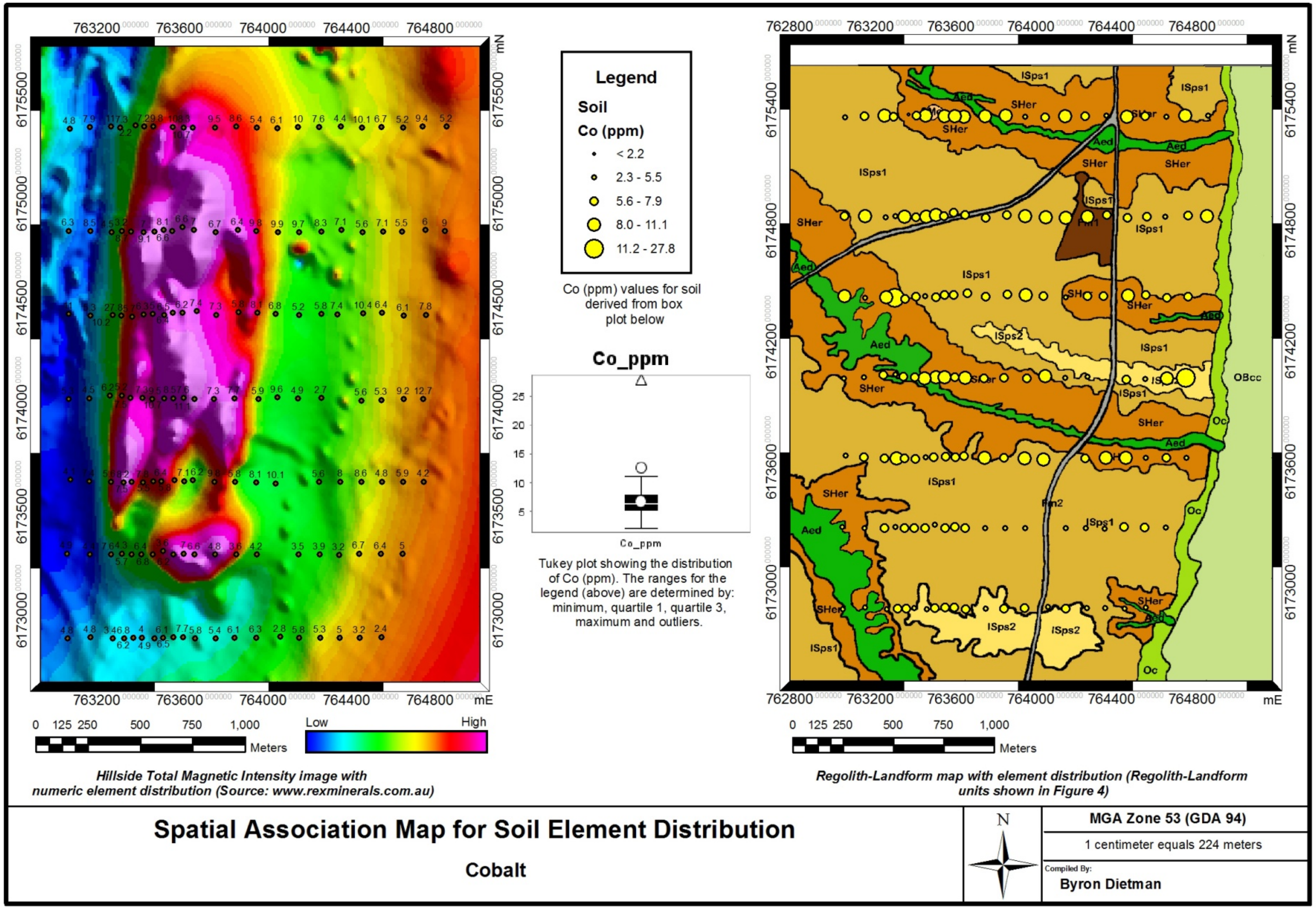
Legend
Soil
Ca (%)
< 0.12
0.13 - 5.50
5.51 - 16.63
16.64 - 24.71
Ca (%) values for soil derived from box plot below
Ca_pct
Tukey plot showing the distribution of Ca (%). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3 and maximum.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
ISps1
ISps2
SHer
Aed
OBcc
Oc
Spatial Association Map for Soil Element Distribution
Calcium
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 22



Legend
Soil
Ce (ppm)
< 7.47
7.48 - 14.87
14.88 - 26.34
26.35 - 42.02
42.03 - 169.78
Ce (ppm) values for soil derived from box plot below
Ce_ppm
Tukey plot showing the distribution of Ce (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
mE
mN
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Soil Element Distribution
Cerium
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 23



Legend
Soil
Co (ppm)
< 2.2
2.3 - 5.5
5.6 - 7.9
8.0 - 11.1
11.2 - 27.8
Co (ppm) values for soil derived from box plot below
Co_ppm
Tukey plot showing the distribution of Co (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Soil Element Distribution
Cobalt
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 24

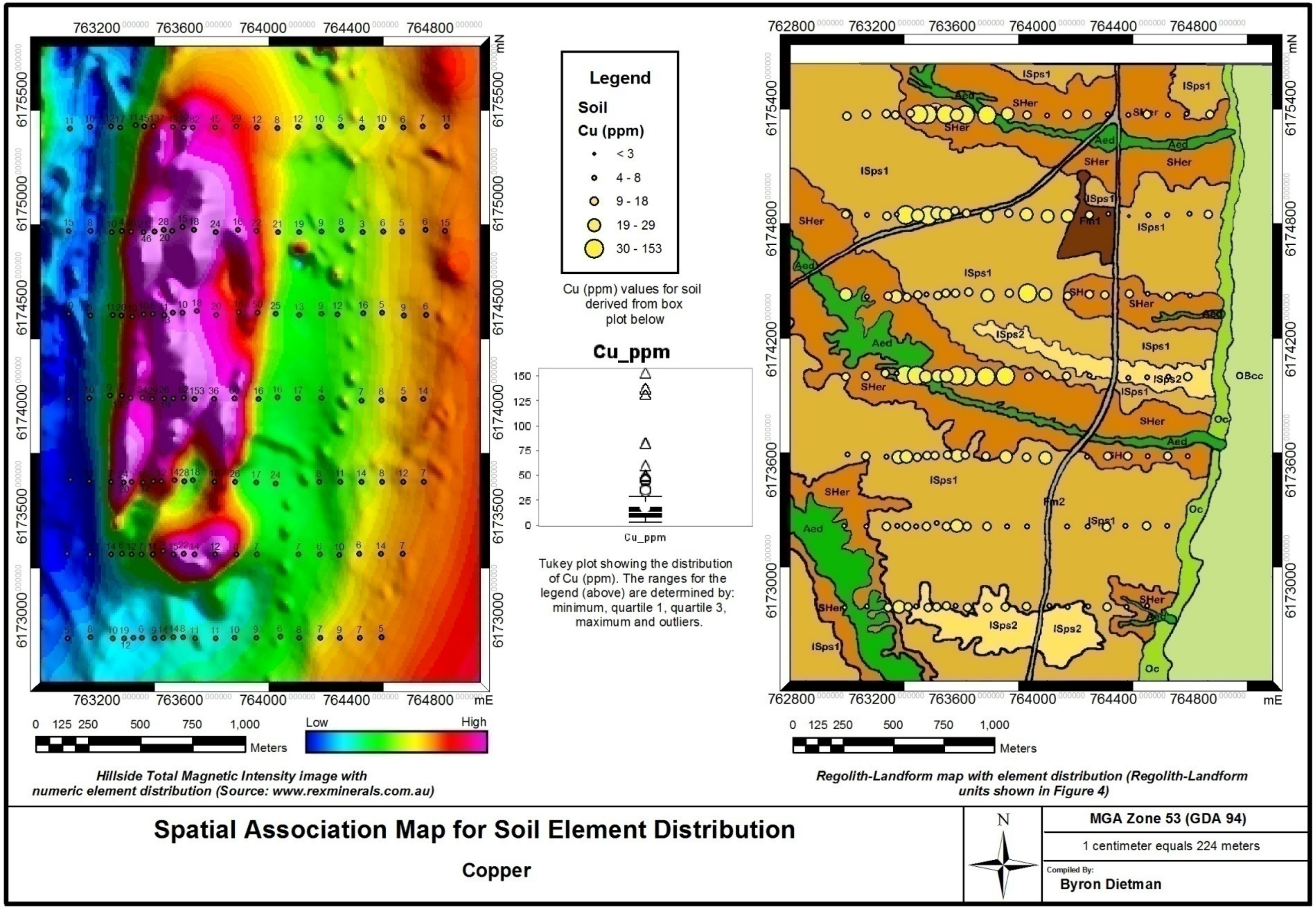

Legend
Soil
Cu (ppm)
< 3
4 - 8
9 - 18
19 - 29
30 - 153
Cu (ppm) values for soil derived from box plot below
Cu_ppm
Tukey plot showing the distribution of Cu (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Low
High
Meters
Spatial Association Map for Soil Element Distribution
Copper
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 25.

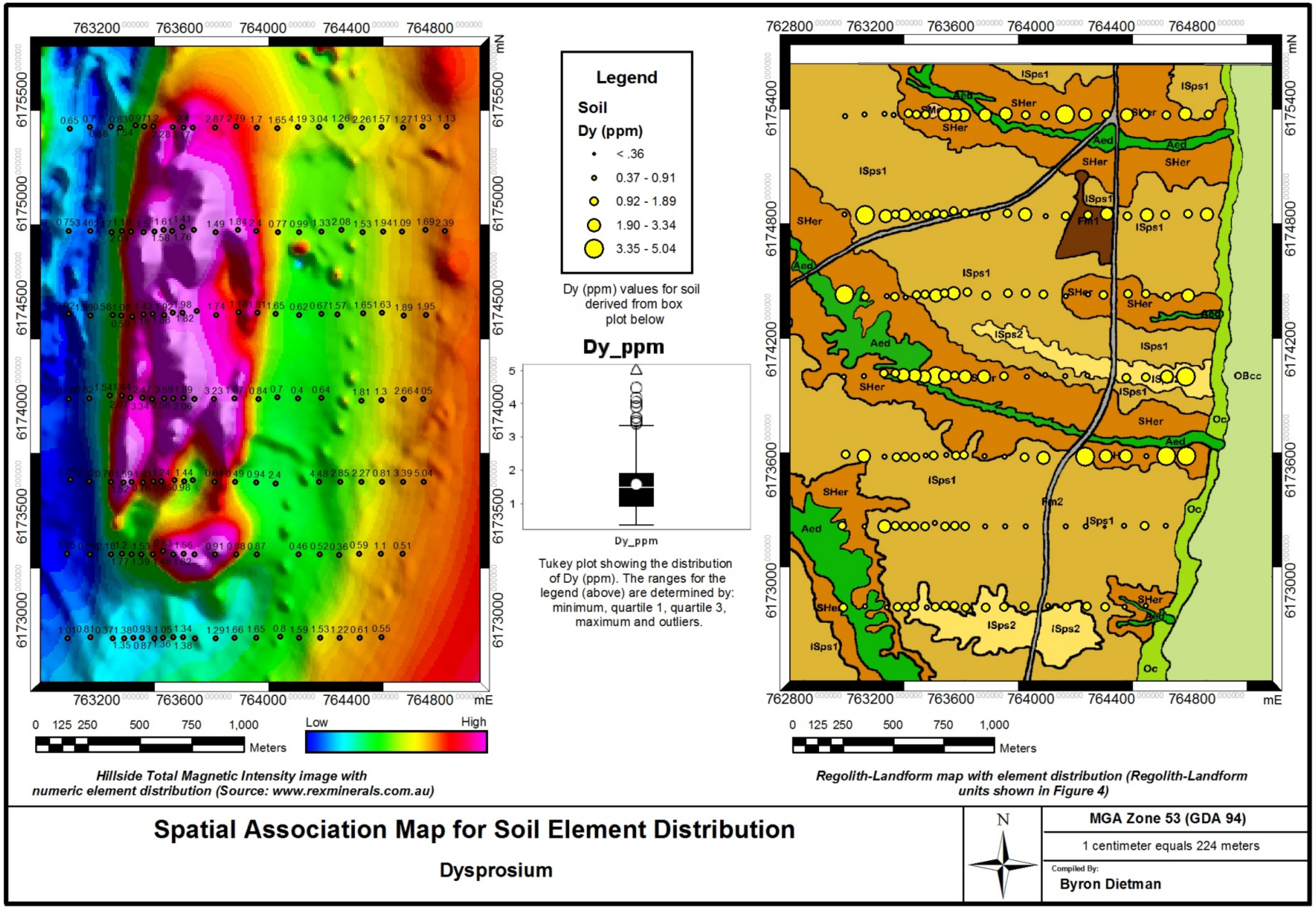

Legend
Soil
Dy (ppm)
< .36
0.37 - 0.91
0.92 - 1.89
1.90 - 3.34
3.35 - 5.04
Dy (ppm) values for soil derived from box plot below
Dy_ppm
Tukey plot showing the distribution of Dy (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Soil Element Distribution
Dysprosium
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 26.

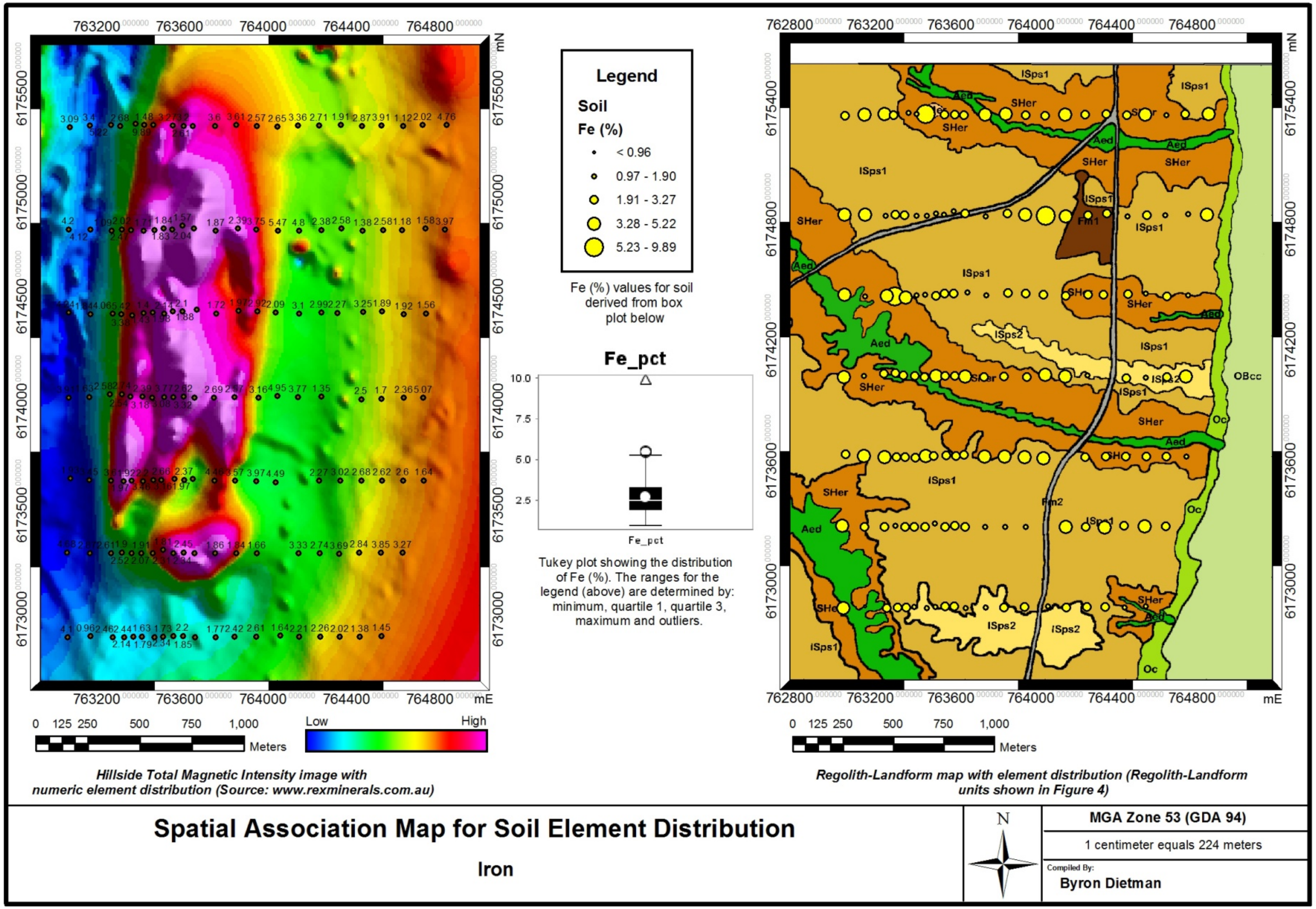

Legend
Soil
Fe (%)
< 0.96
0.97 - 1.90
1.91 - 3.27
3.28 - 5.22
5.23 - 9.89
Fe (%) values for soil derived from box plot below
Fe_pct
Tukey plot showing the distribution of Fe (%). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Soil Element Distribution
Iron
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 27.

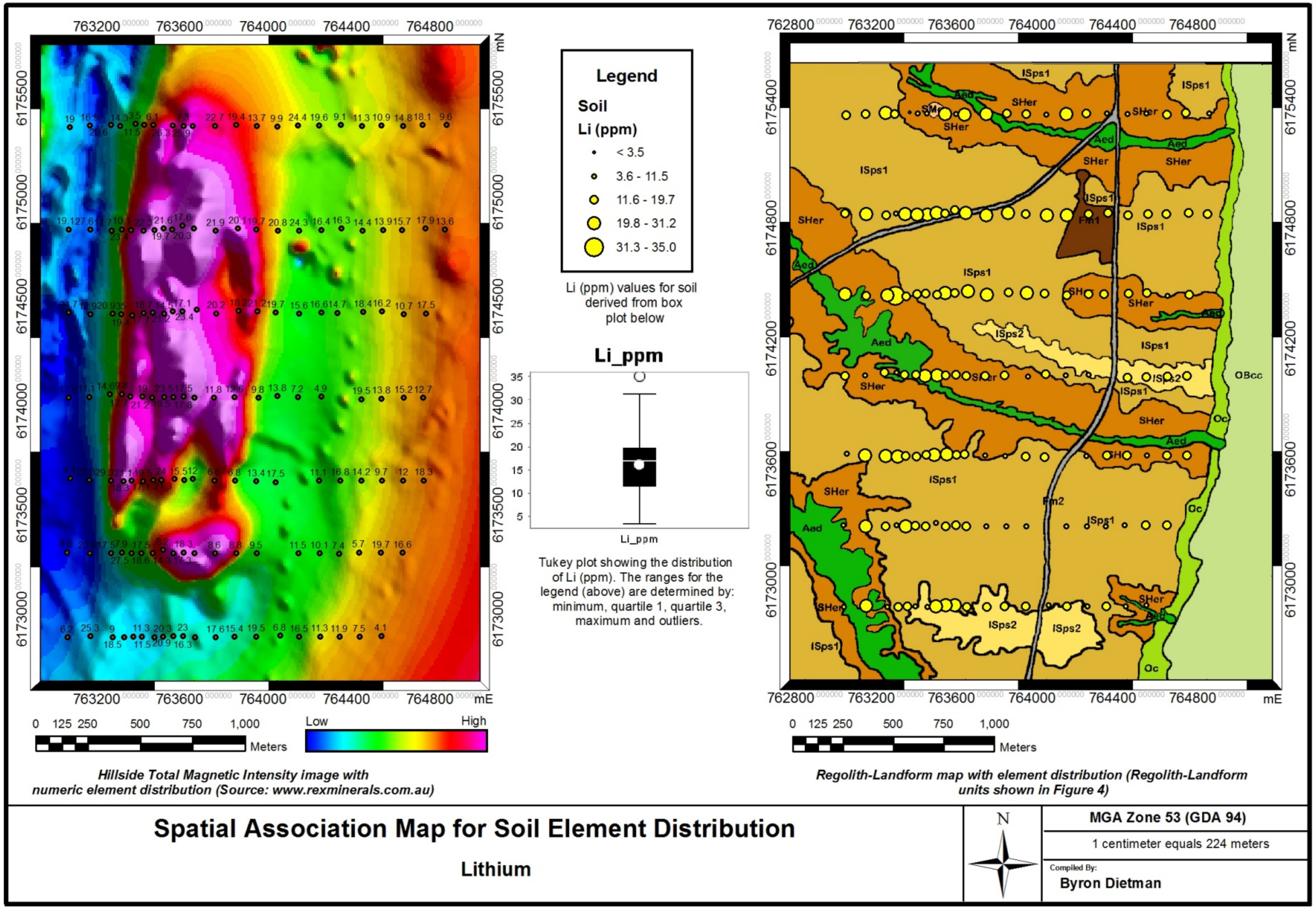

Legend
Soil
Li (ppm)
< 3.5
3.6 - 11.5
11.6 - 19.7
19.8 - 31.2
31.3 - 35.0
Li (ppm) values for soil derived from box plot below
Li_ppm
Tukey plot showing the distribution of Li (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Soil Element Distribution
Lithium
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 28.

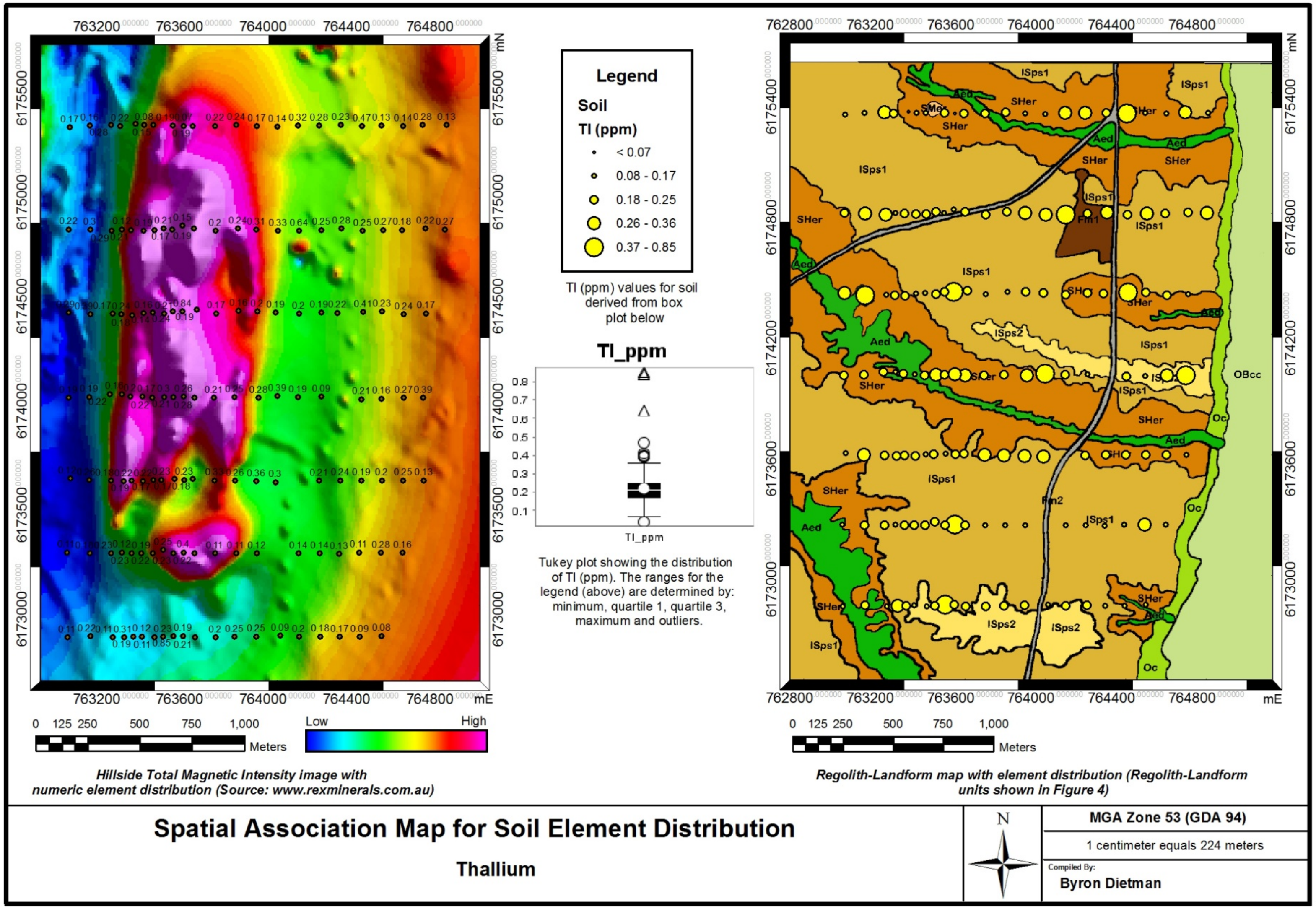

Legend
Soil
Tl (ppm)
< 0.07
0.08 - 0.17
0.18 - 0.25
0.26 - 0.36
0.37 - 0.85
Tl (ppm) values for soil derived from box plot below
Tl_ppm
Tukey plot showing the distribution of Tl (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Soil Element Distribution
Thallium
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 29.

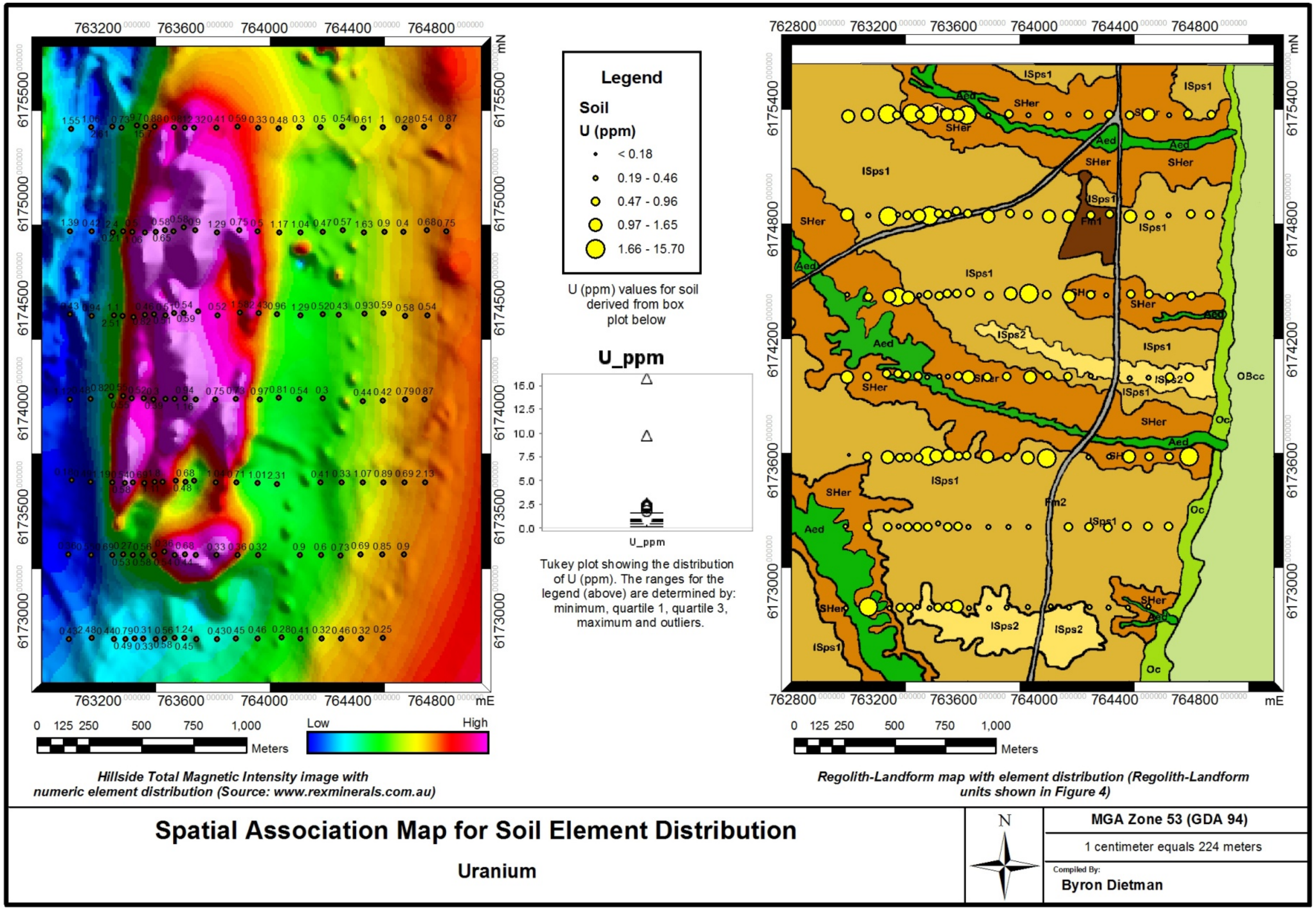
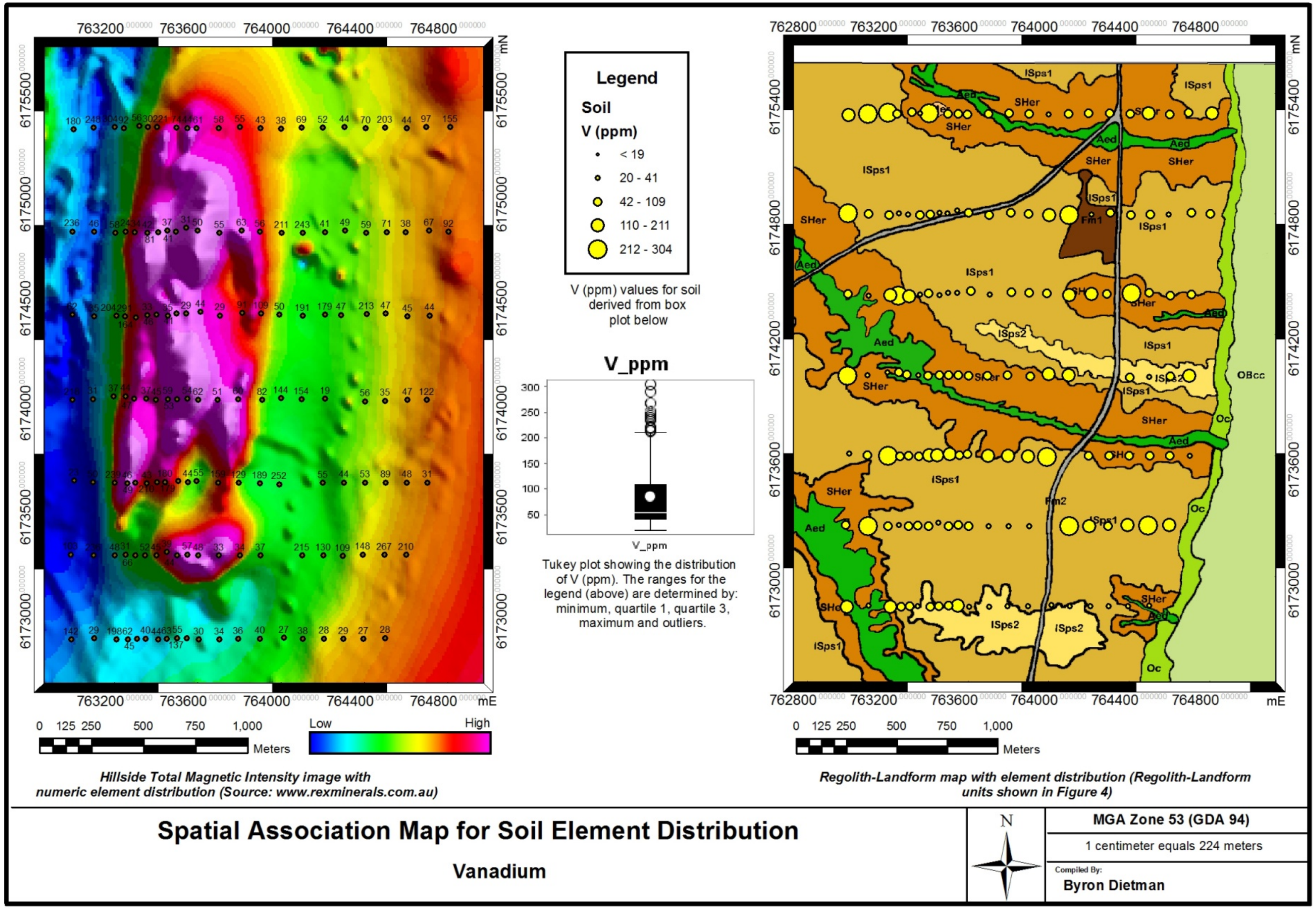
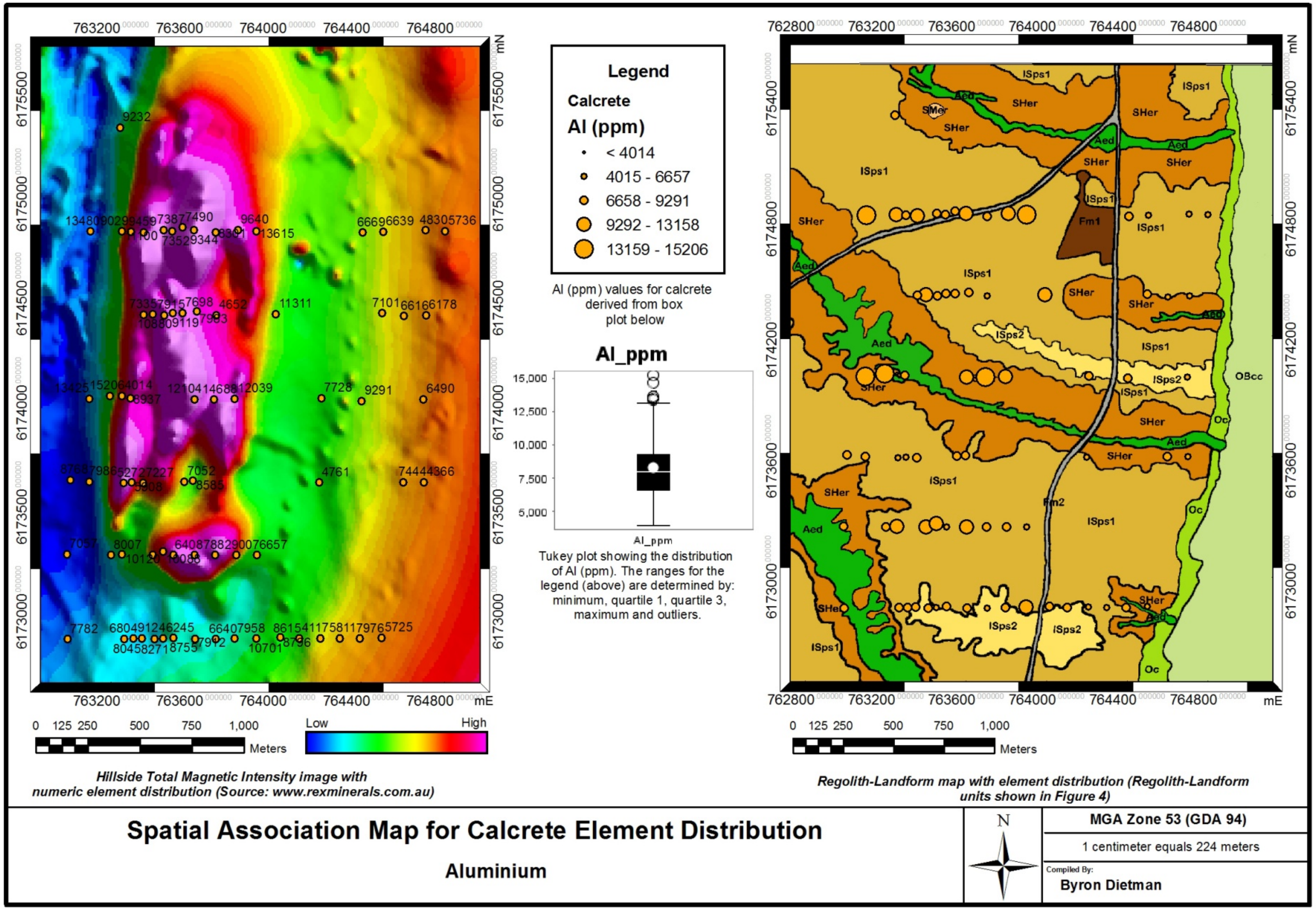

Legend
Soil
U (ppm)
< 0.18
0.19 - 0.46
0.47 - 0.96
0.97 - 1.65
1.66 - 15.70
U (ppm) values for soil derived from box plot below
U_ppm
Tukey plot showing the distribution of U (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
ISps1
ISps2
SHer
Aed
Fm1
Fm2
Oc
OBcc
Spatial Association Map for Soil Element Distribution
Uranium
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 30.



Legend
Soil
V (ppm)
< 19
20 - 41
42 - 109
110 - 211
212 - 304
V (ppm) values for soil derived from box plot below
V_ppm
Tukey plot showing the distribution of V (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Soil Element Distribution
Vanadium
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 31.



Legend
Calcrete
Al (ppm)
< 4014
4015 - 6657
6658 - 9291
9292 - 13158
13159 - 15206
Al (ppm) values for calcrete derived from box plot below
Al_ppm
Tukey plot showing the distribution of Al (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Calcrete Element Distribution
Aluminium
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 32.

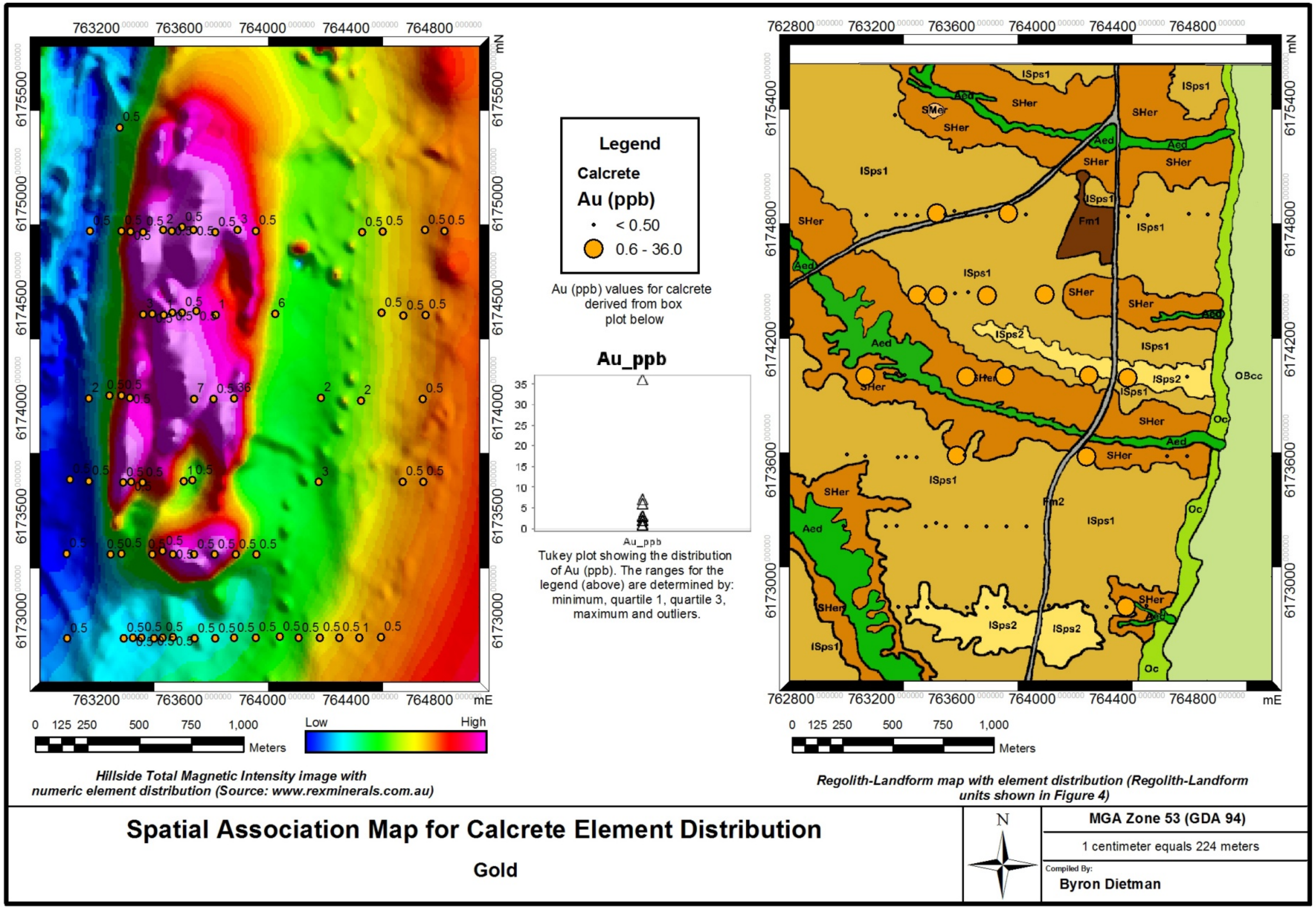

Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Low
High
Meters
Legend
Calcrete
Au (ppb)
< 0.50
0.6 - 36.0
Au (ppb) values for calcrete derived from box plot below
Au_ppb
Tukey plot showing the distribution of Au (ppb). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Calcrete Element Distribution
Gold
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 33.

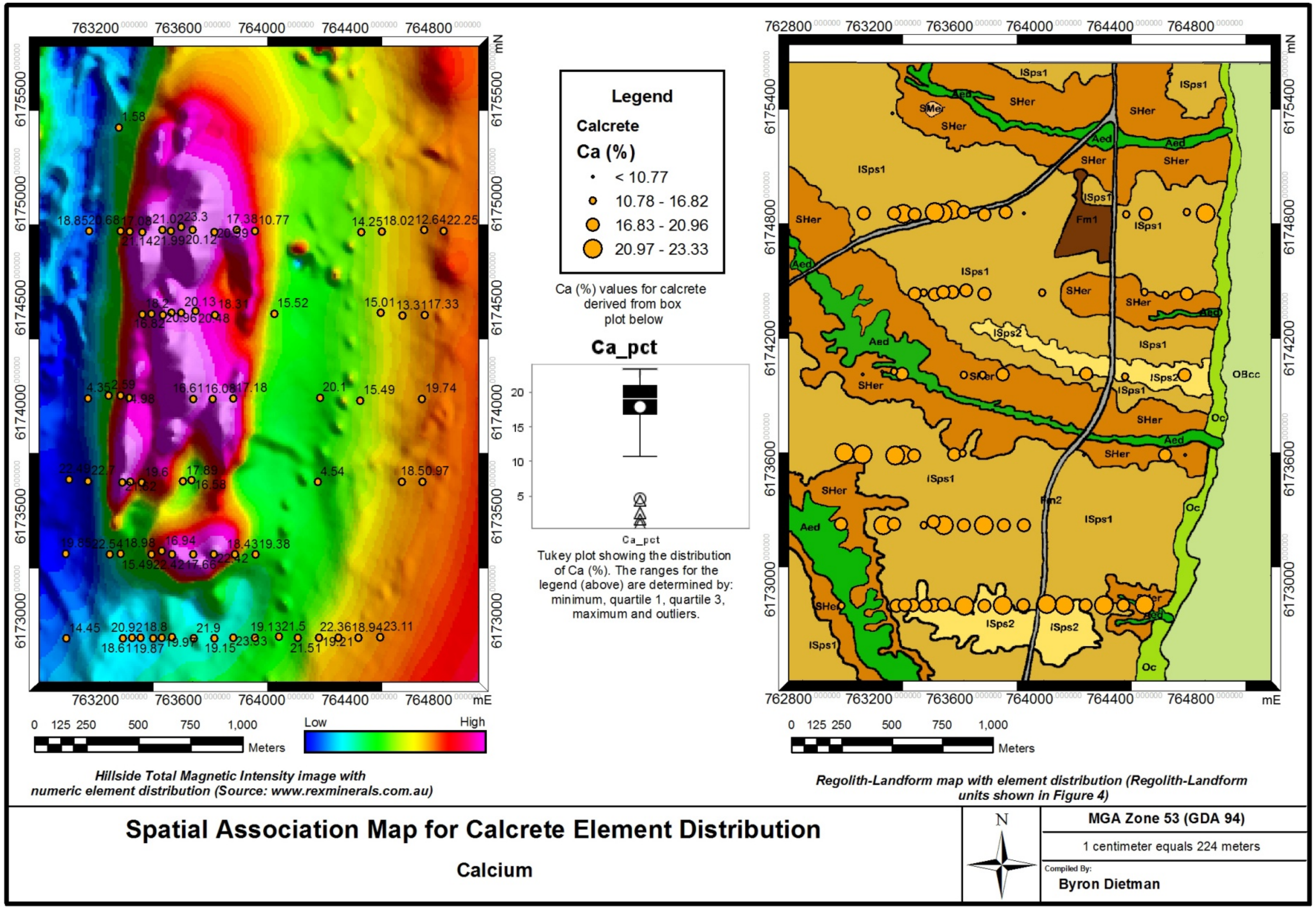

Legend
Calcrete
Ca (%)
< 10.77
10.78 - 16.82
16.83 - 20.96
20.97 - 23.33
Ca (%) values for calcrete derived from box plot below
Ca_pct
Tukey plot showing the distribution of Ca (%). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Calcrete Element Distribution
Calcium
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 34.

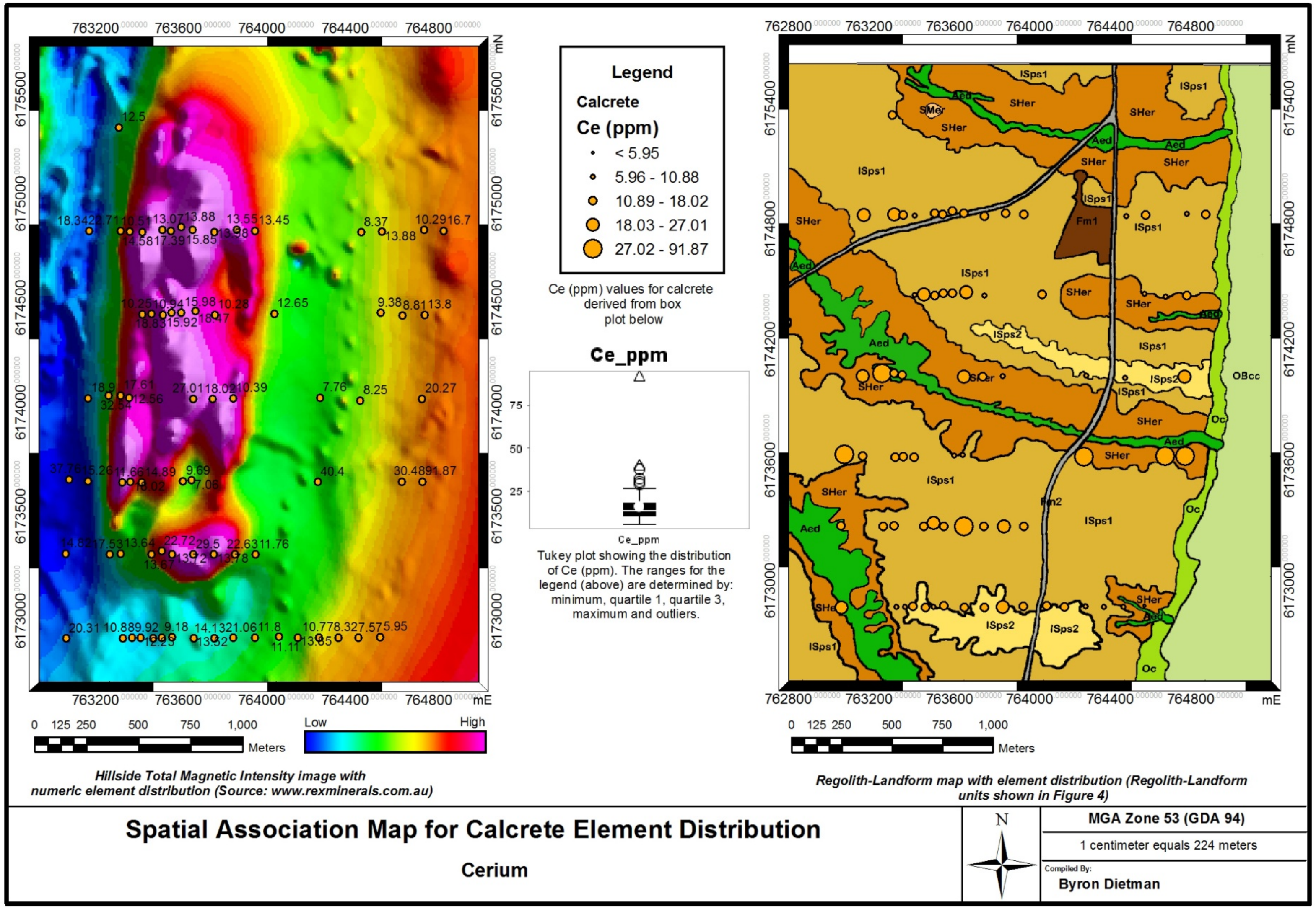

Legend
Calcrete
Ce (ppm)
< 5.95
5.96 - 10.88
10.89 - 18.02
18.03 - 27.01
27.02 - 91.87
Ce (ppm) values for calcrete derived from box plot below
Ce_ppm
Tukey plot showing the distribution of Ce (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Calcrete Element Distribution
Cerium
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 35.

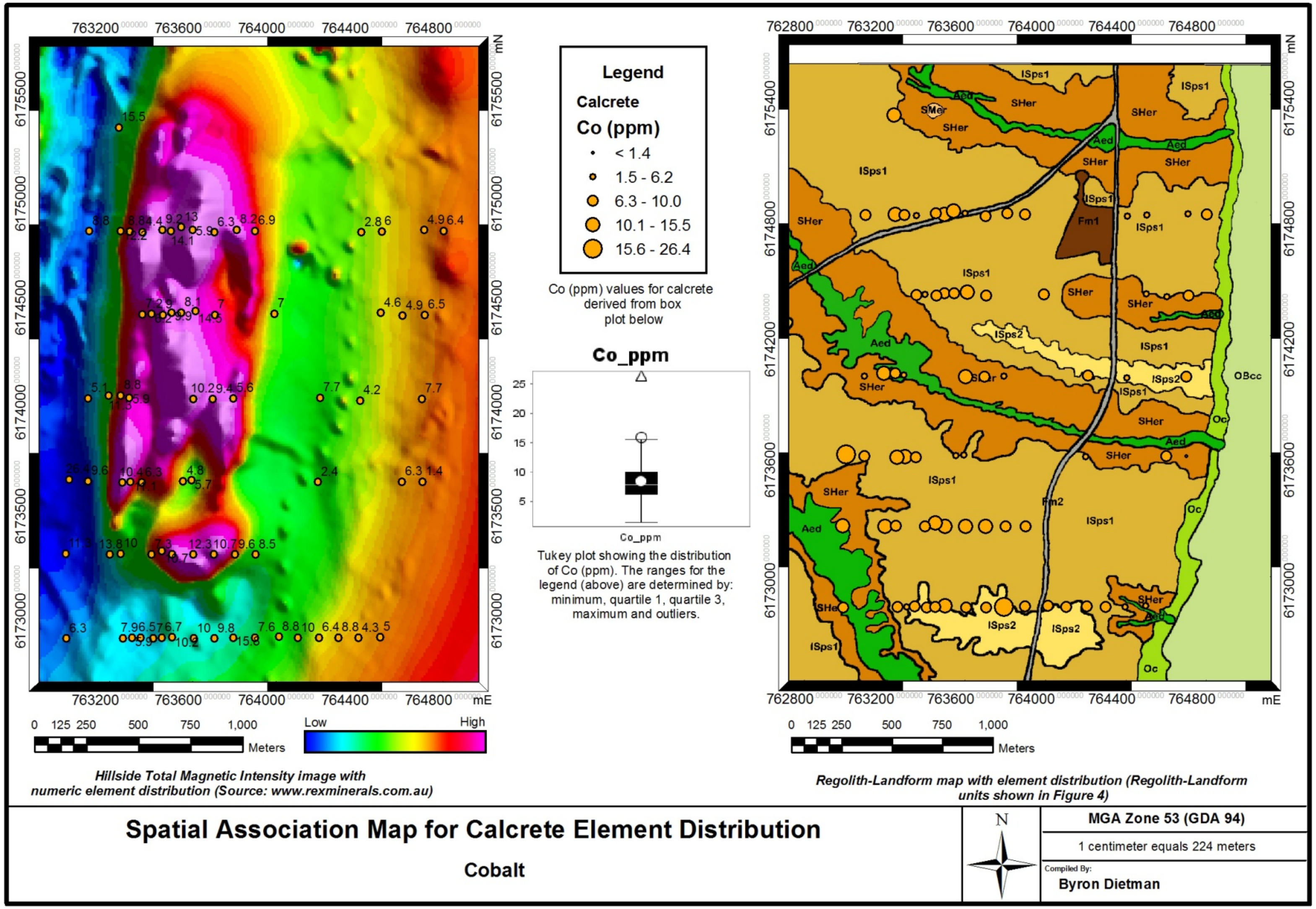

Legend
Calcrete
Co (ppm)
< 1.4
1.5 - 6.2
6.3 - 10.0
10.1 - 15.5
15.6 - 26.4
Co (ppm) values for calcrete derived from box plot below
Co_ppm
Tukey plot showing the distribution of Co (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Calcrete Element Distribution
Cobalt
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 36.

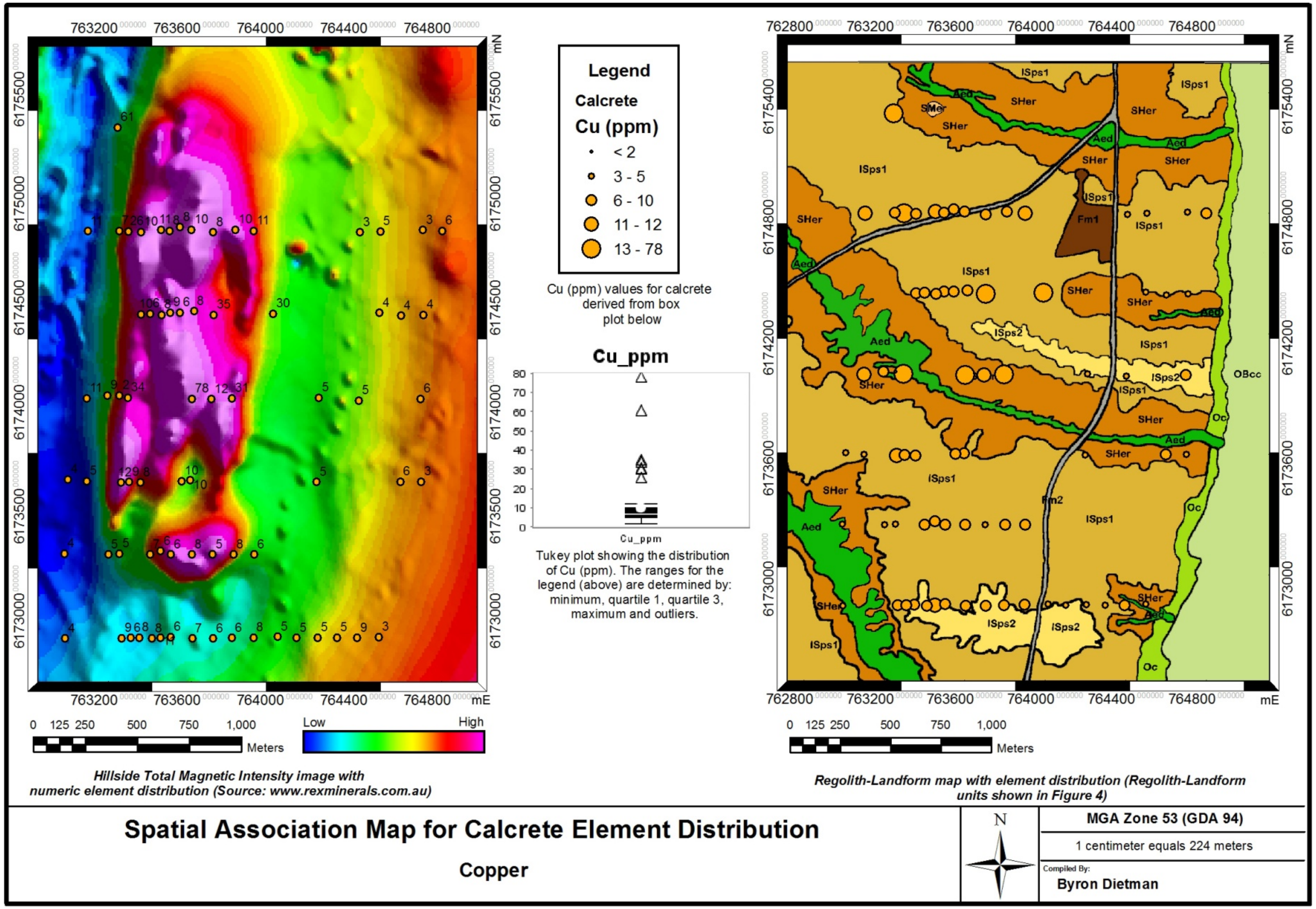
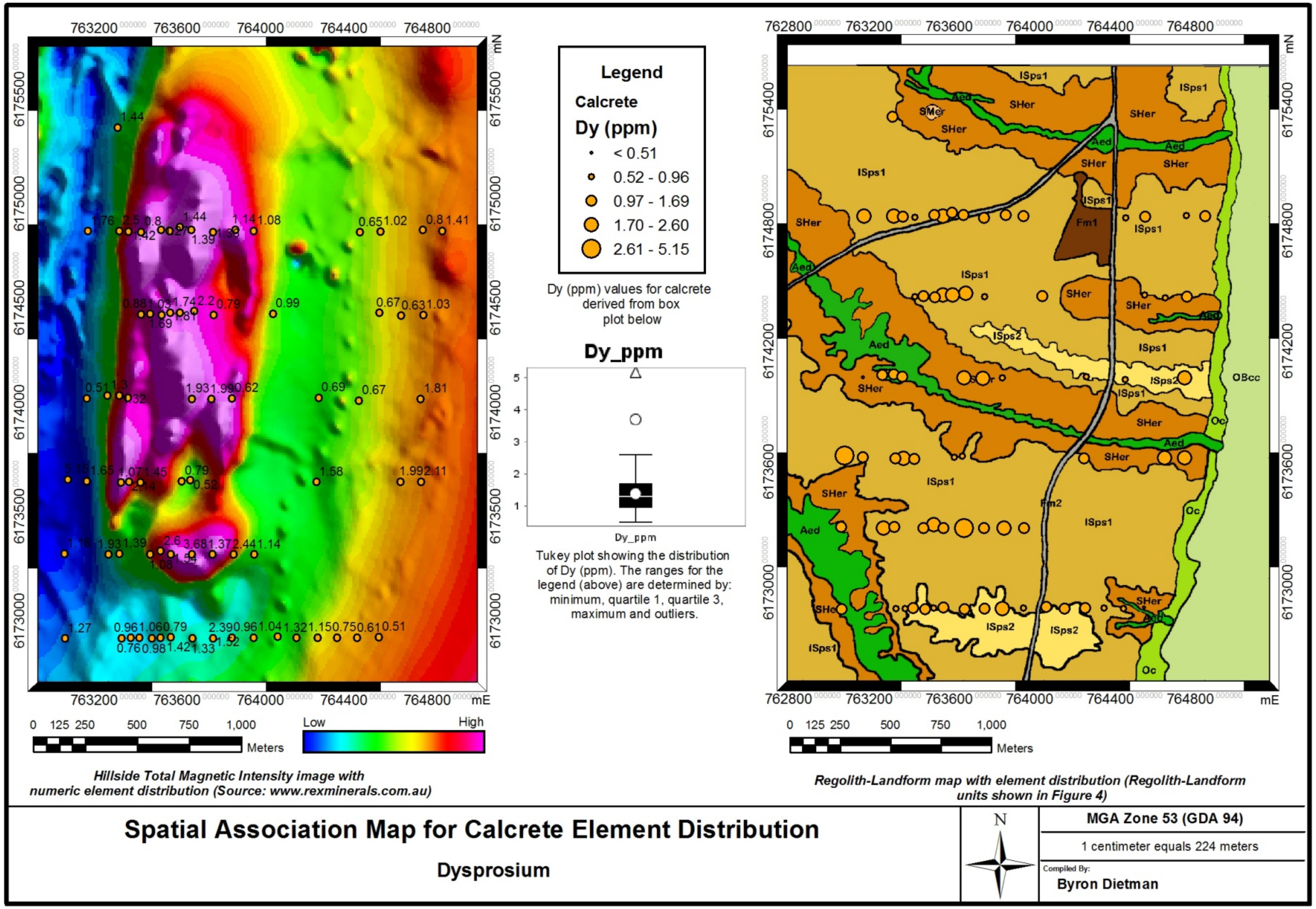
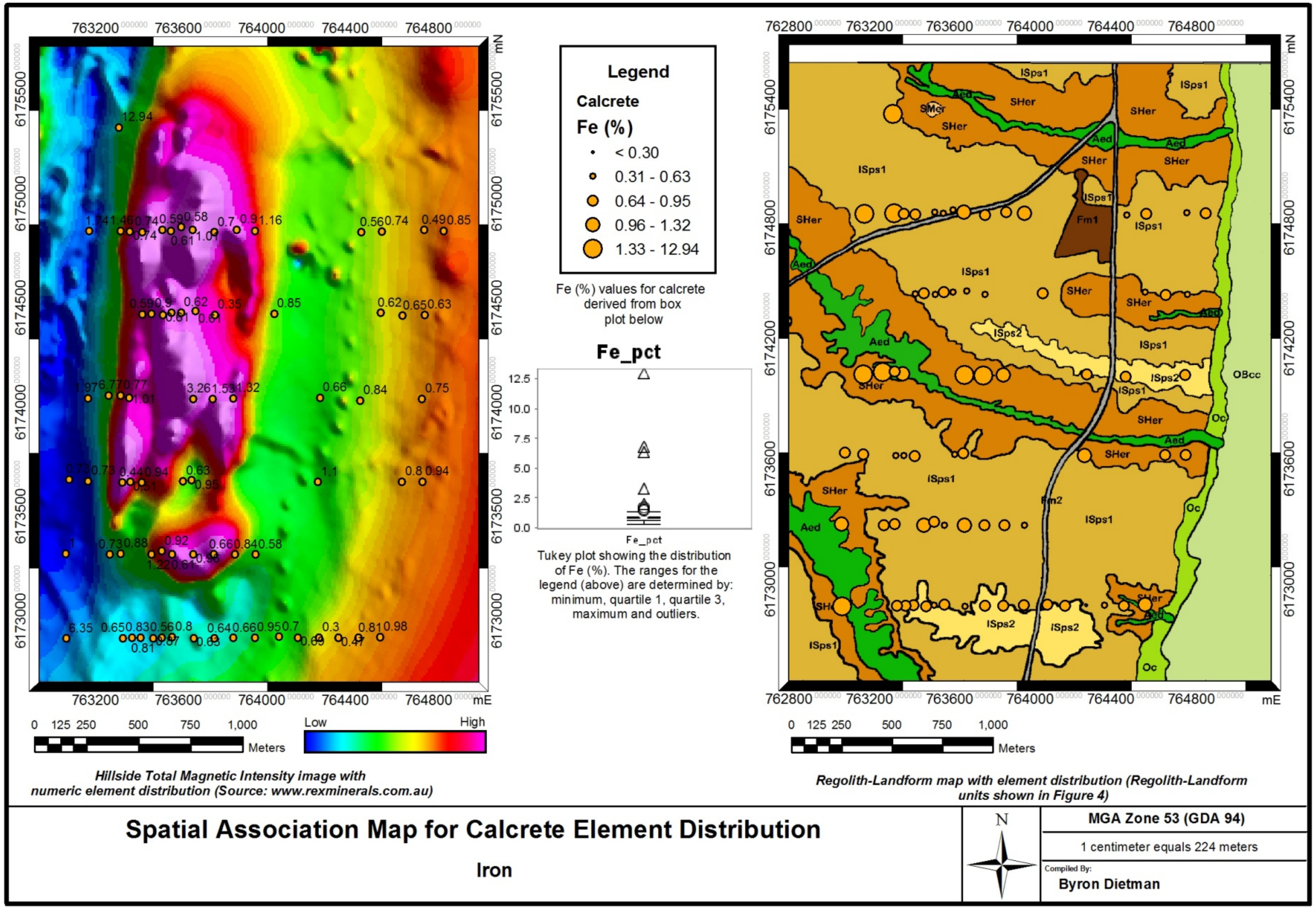

Legend
Calcrete
Cu (ppm)
< 2
3 - 5
6 - 10
11 - 12
13 - 78
Cu (ppm) values for calcrete derived from box plot below
Cu_ppm
Tukey plot showing the distribution of Cu (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Calcrete Element Distribution
Copper
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 37.



Legend
Calcrete
Dy (ppm)
< 0.51
0.52 - 0.96
0.97 - 1.69
1.70 - 2.60
2.61 - 5.15
Dy (ppm) values for calcrete derived from box plot below
Dy_ppm
Tukey plot showing the distribution of Dy (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Calcrete Element Distribution
Dysprosium
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 38.



Legend
Calcrete
Fe (%)
< 0.30
0.31 - 0.63
0.64 - 0.95
0.96 - 1.32
1.33 - 12.94
Fe (%) values for calcrete derived from box plot below
Fe_pct
Tukey plot showing the distribution of Fe (%). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Calcrete Element Distribution
Iron
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 39.

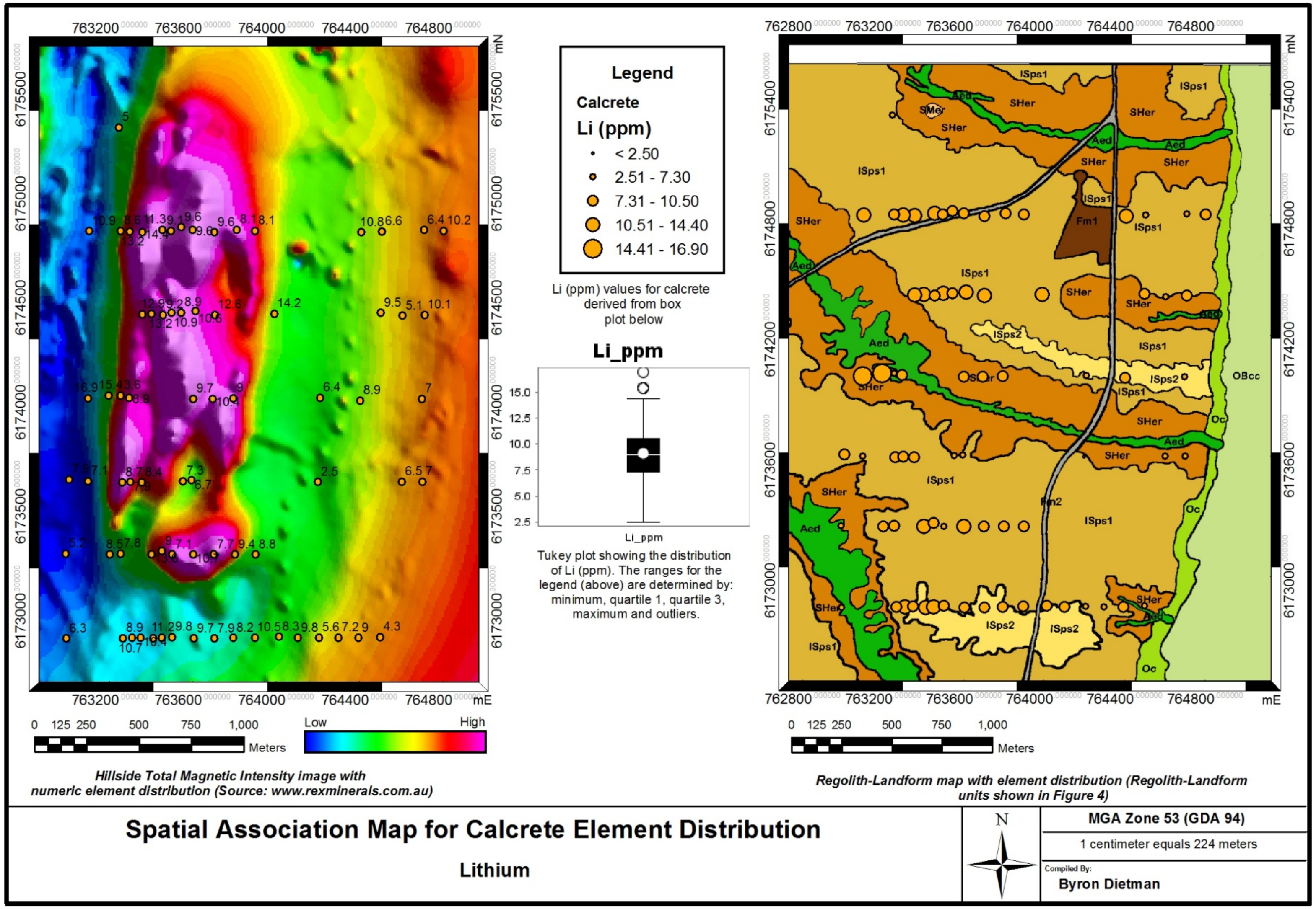
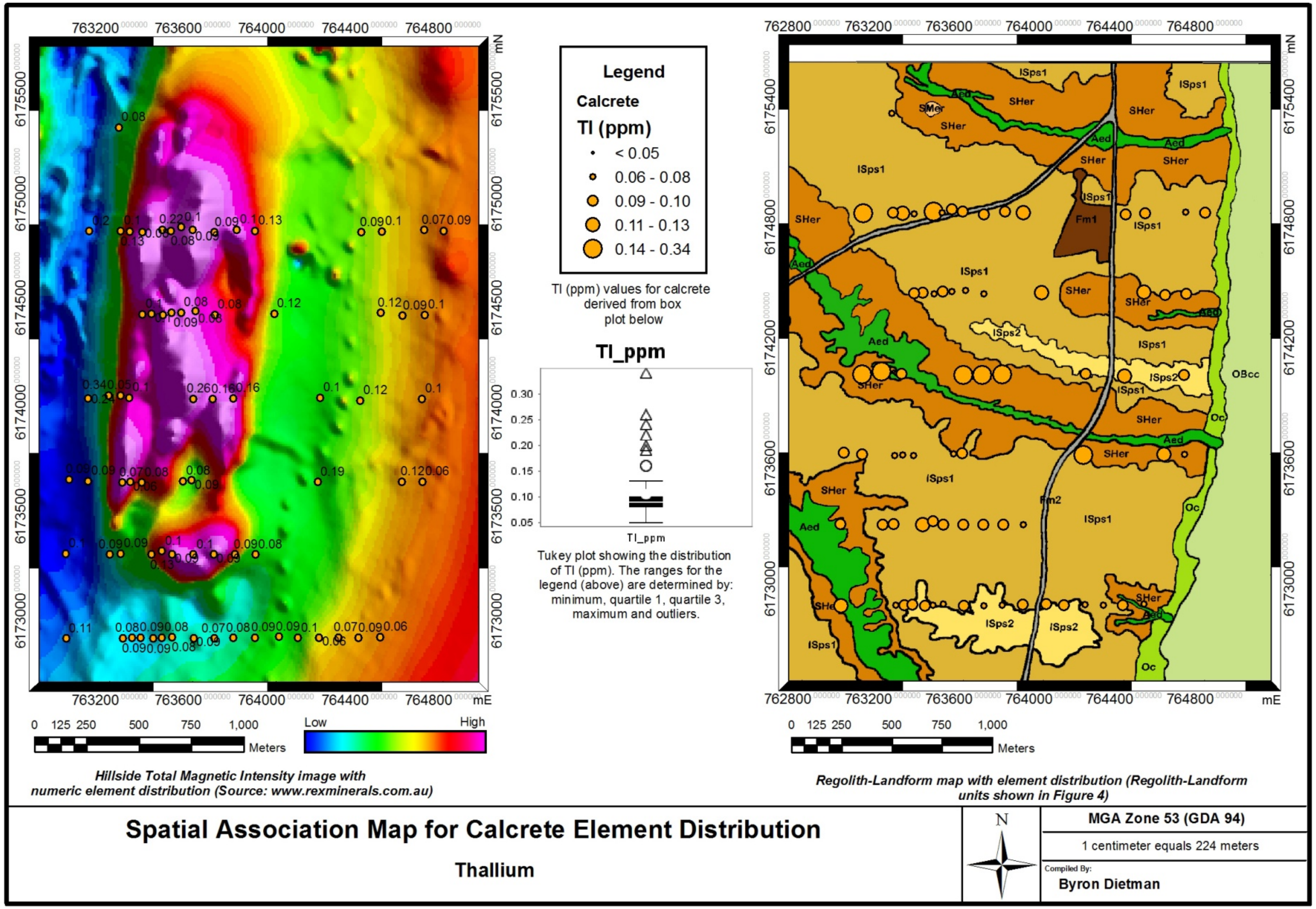

Legend
Calcrete
Li (ppm)
< 2.50
2.51 - 7.30
7.31 - 10.50
10.51 - 14.40
14.41 - 16.90
Li (ppm) values for calcrete derived from box plot below
Li_ppm
Tukey plot showing the distribution of Li (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Calcrete Element Distribution
Lithium
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 40.



Legend
Calcrete
Tl (ppm)
< 0.05
0.06 - 0.08
0.09 - 0.10
0.11 - 0.13
0.14 - 0.34
Tl (ppm) values for calcrete derived from box plot below
Tl_ppm
Tukey plot showing the distribution of Tl (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Calcrete Element Distribution
Thallium
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 41.

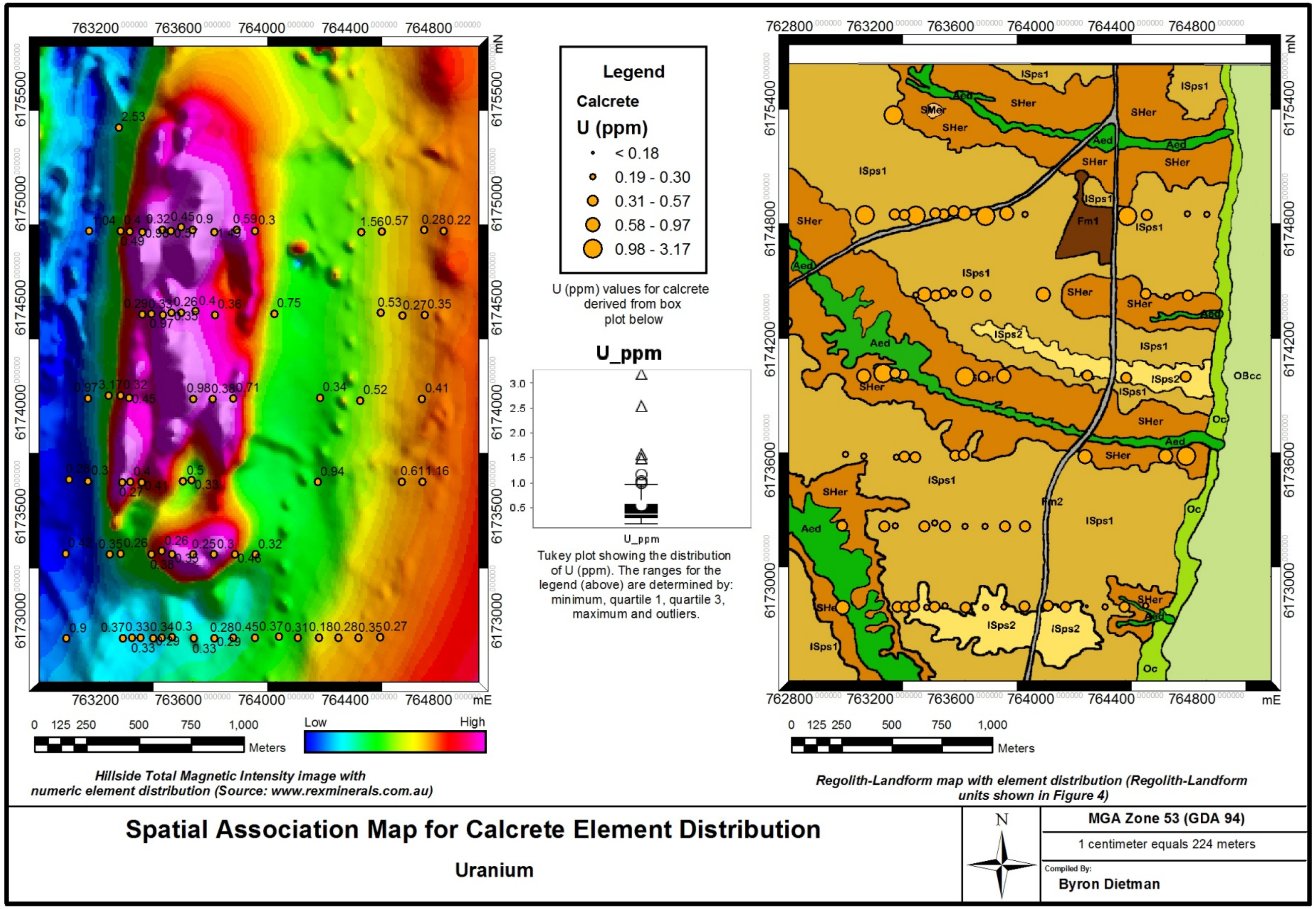

Legend
Calcrete
U (ppm)
< 0.18
0.19 - 0.30
0.31 - 0.57
0.58 - 0.97
0.98 - 3.17
U (ppm) values for calcrete derived from box plot below
U_ppm
Tukey plot showing the distribution of U (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Calcrete Element Distribution
Uranium
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 42.

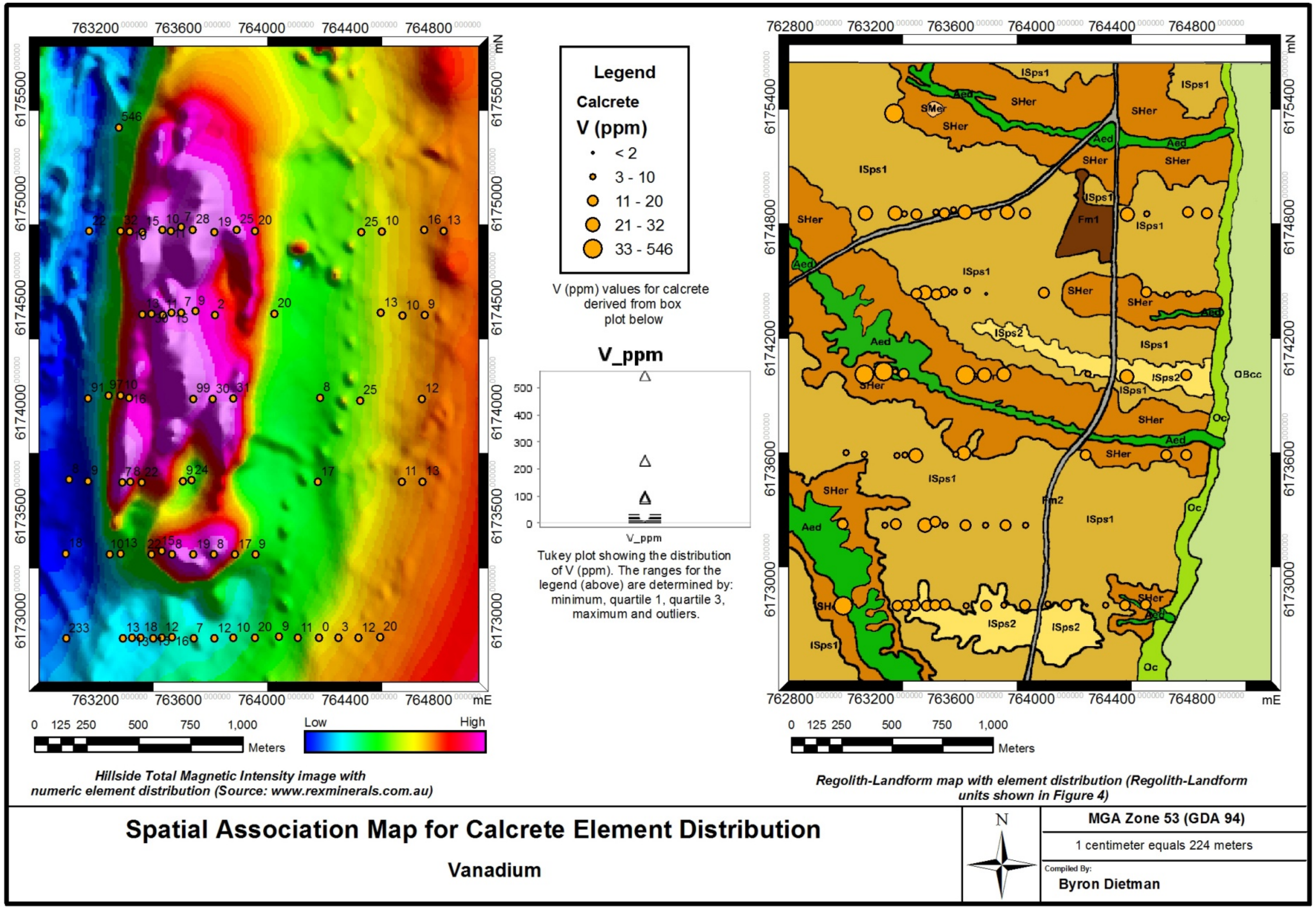
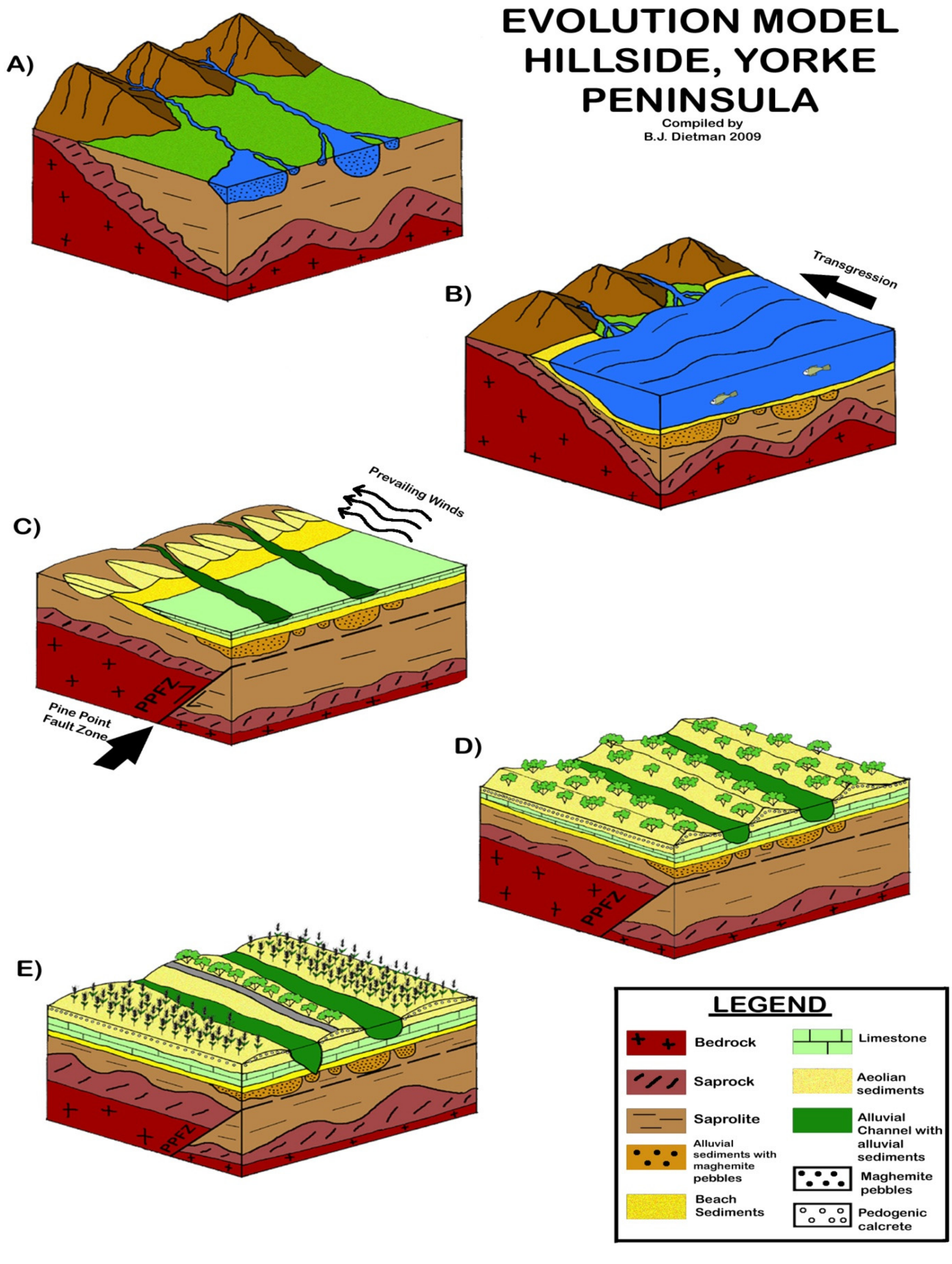

Legend
Calcrete
V (ppm)
< 2
3 - 10
11 - 20
21 - 32
33 - 546
V (ppm) values for calcrete derived from box plot below
V_ppm
Tukey plot showing the distribution of V (ppm). The ranges for the legend (above) are determined by: minimum, quartile 1, quartile 3, maximum and outliers.
Low
High
Meters
Hillside Total Magnetic Intensity image with numeric element distribution (Source: www.rexminerals.com.au)
Regolith-Landform map with element distribution (Regolith-Landform units shown in Figure 4)
Spatial Association Map for Calcrete Element Distribution
Vanadium
N
MGA Zone 53 (GDA 94)
1 centimeter equals 224 meters
Compiled By:
Byron Dietman

Figure 43.



EVOLUTION MODEL
HILLSIDE, YORKE
PENINSULA
Compiled by
B.J. Dietman 2009
A)
B)
Transgression
C)
Prevailing Winds
PPFZ
Pine Point
Fault Zone
D)
PPFZ
E)
PPFZ
LEGEND
Bedrock
Saprock
Saprolite
Alluvial sediments with maghemite pebbles
Beach Sediments
Limestone
Aeolian sediments
Alluvial Channel with alluvial sediments
Maghemite pebbles
Pedogenic calcrete

Figure 44.

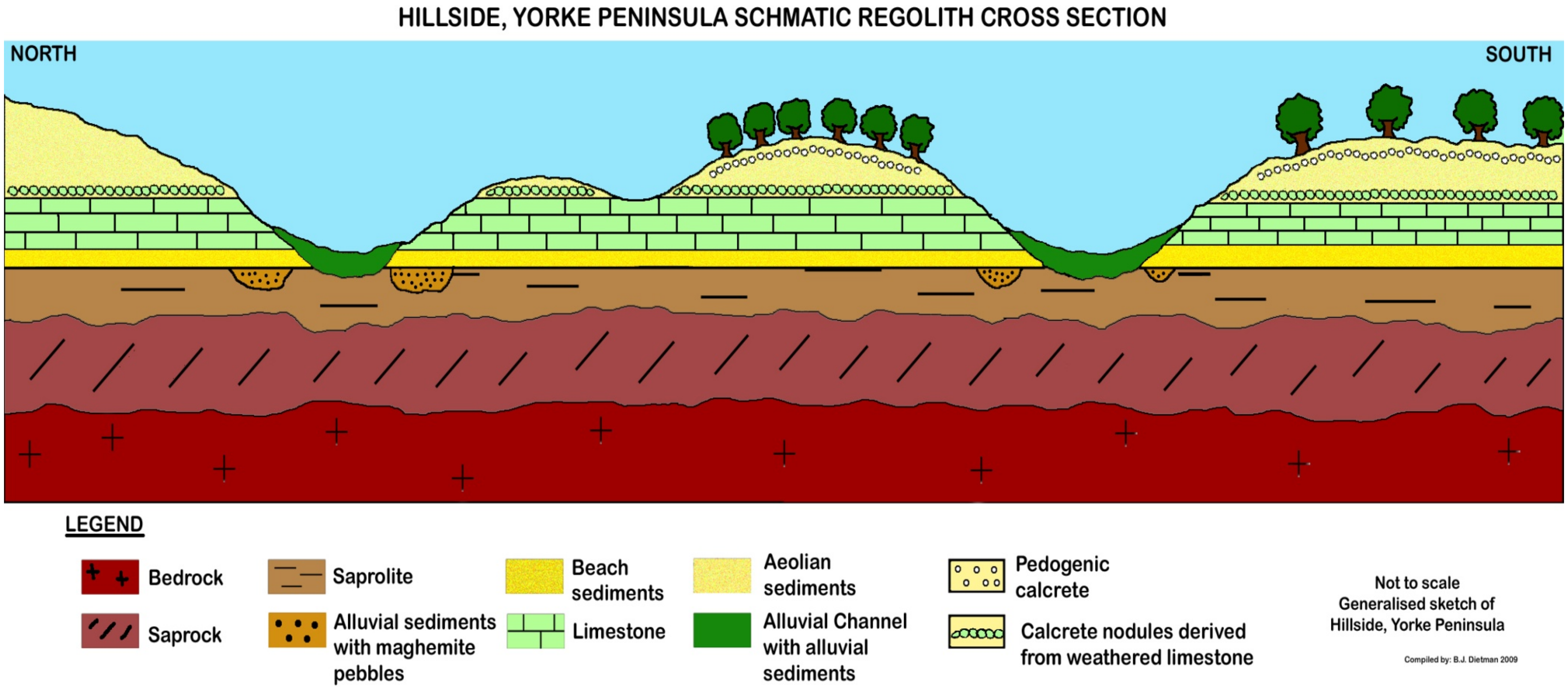

HILLSIDE, YORKE PENINSULA SCHMATIC REGOLITH CROSS SECTION
NORTH
SOUTH
LEGEND
Bedrock
Saprock
Saprolite
Alluvial sediments with maghemite pebbles
Beach sediments
Limestone
Aeolian sediments
Alluvial Channel with alluvial sediments
Pedogenic calcrete
Calcrete nodules derived from weathered limestone
Not to scale
Generalised sketch of Hillside, Yorke Peninsula
Compiled by: B.J. Dietman 2009

Figure 45.

Figure 46.

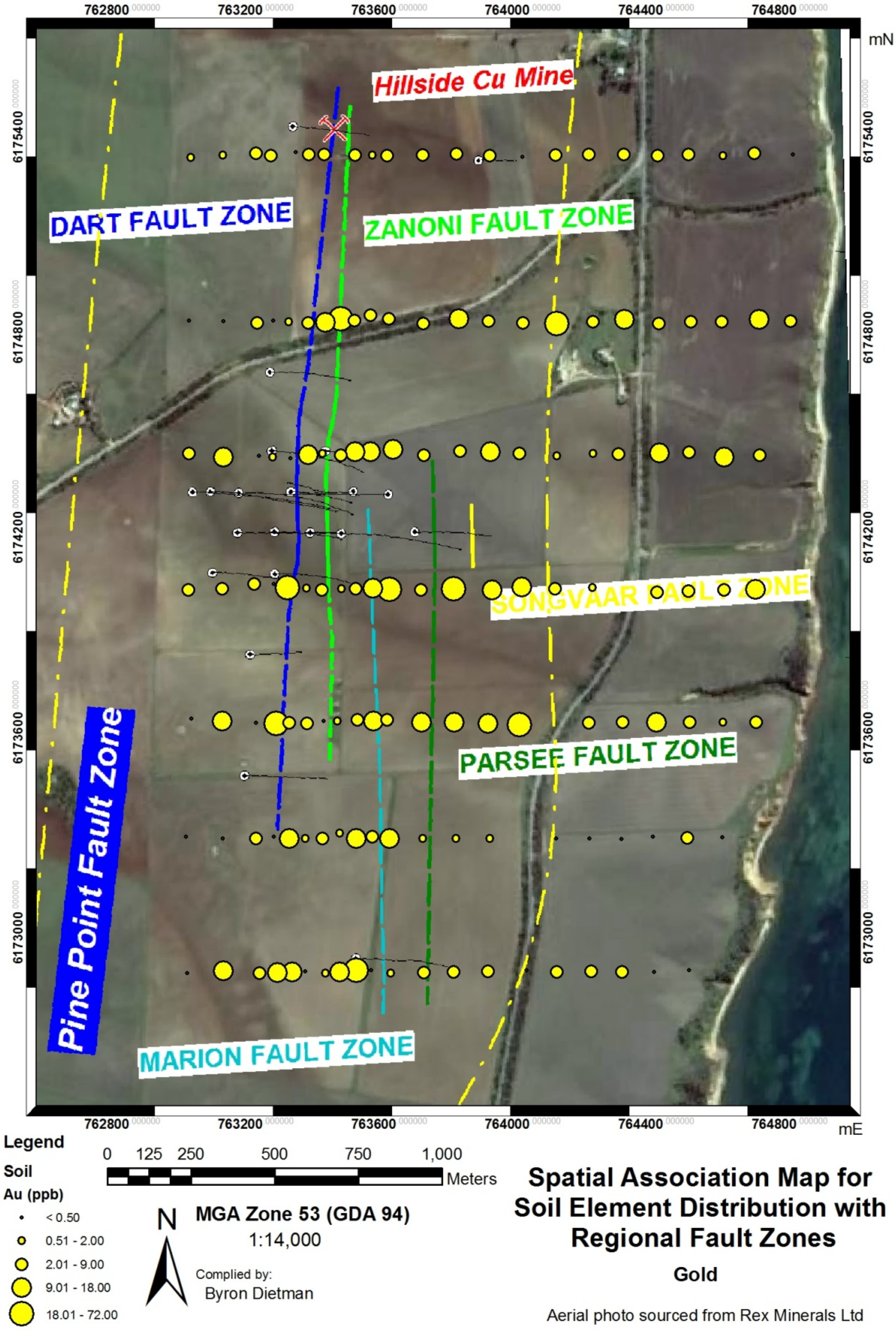
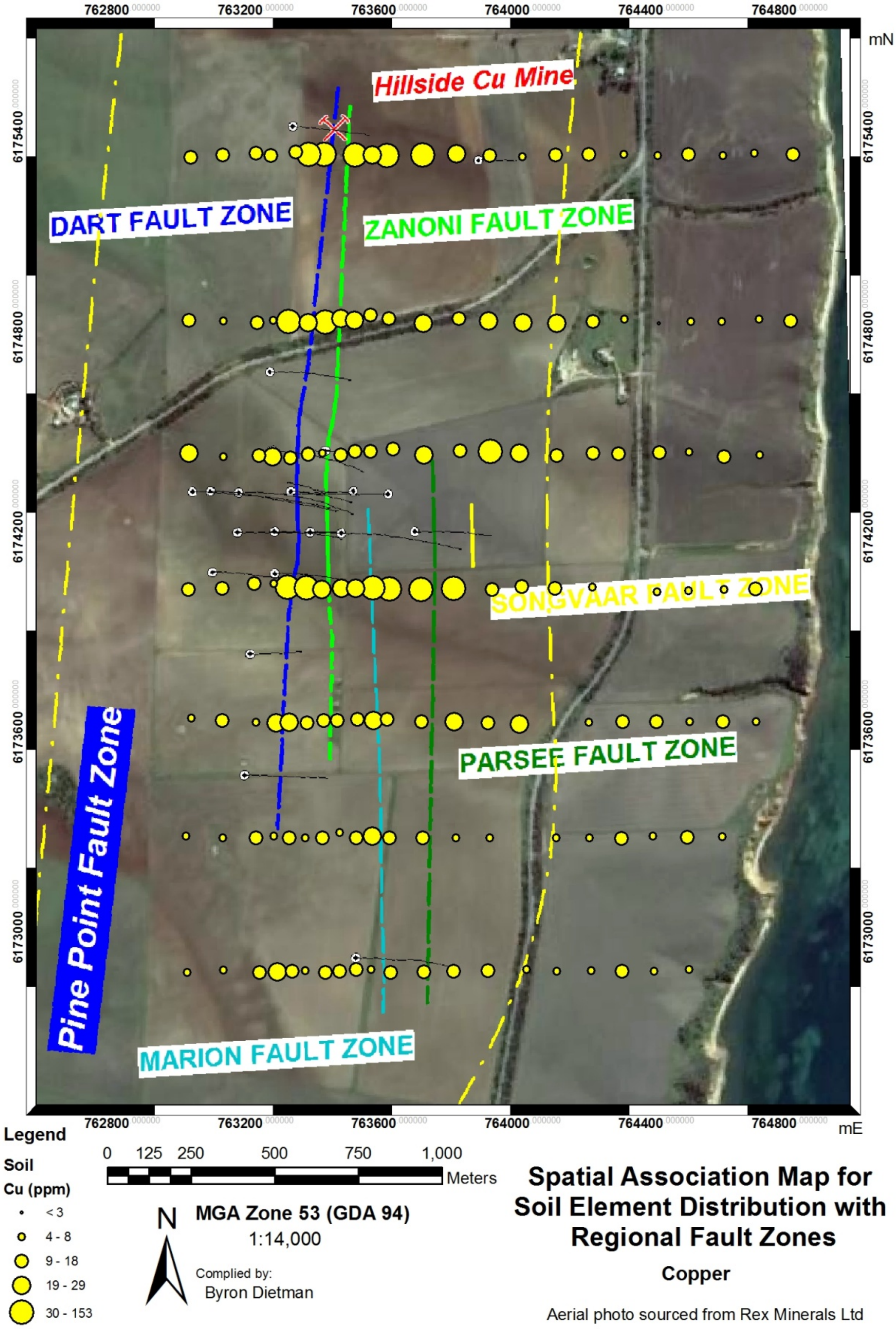

762800
763200
763600
764000
764400
764800
mN
6175400
6174800
6174200
6173600
6173000
Hillside Cu Mine
DART FAULT ZONE
ZANONI FAULT ZONE
SONGVAAR FAULT ZONE
PARSEE FAULT ZONE
Pine Point Fault Zone
MARION FAULT ZONE
mE
Legend
Soil
Au (ppb)
< 0.50
0.51 - 2.00
2.01 - 9.00
9.01 - 18.00
18.01 - 72.00
0 125 250 500 750 1,000
Meters
N
MGA Zone 53 (GDA 94)
1:14,000
Complied by:
Byron Dietman
Spatial Association Map for
Soil Element Distribution with
Regional Fault Zones
Gold
Aerial photo sourced from Rex Minerals Ltd

Figure 47.



762800
763200
763600
764000
764400
764800
mN
mE
6175400
6174800
6174200
6173600
6173000
Hillside Cu Mine
DART FAULT ZONE
ZANONI FAULT ZONE
SONGVAAR FAULT ZONE
PARSEE FAULT ZONE
Pine Point Fault Zone
MARION FAULT ZONE
Legend
Soil
Cu (ppm)
< 3
4 - 8
9 - 18
19 - 29
30 - 153
0 125 250 500 750 1,000
Meters
N
MGA Zone 53 (GDA 94)
1:14,000
Complied by:
Byron Dietman
Spatial Association Map for Soil Element Distribution with Regional Fault Zones
Copper
Aerial photo sourced from Rex Minerals Ltd

Figure 48.

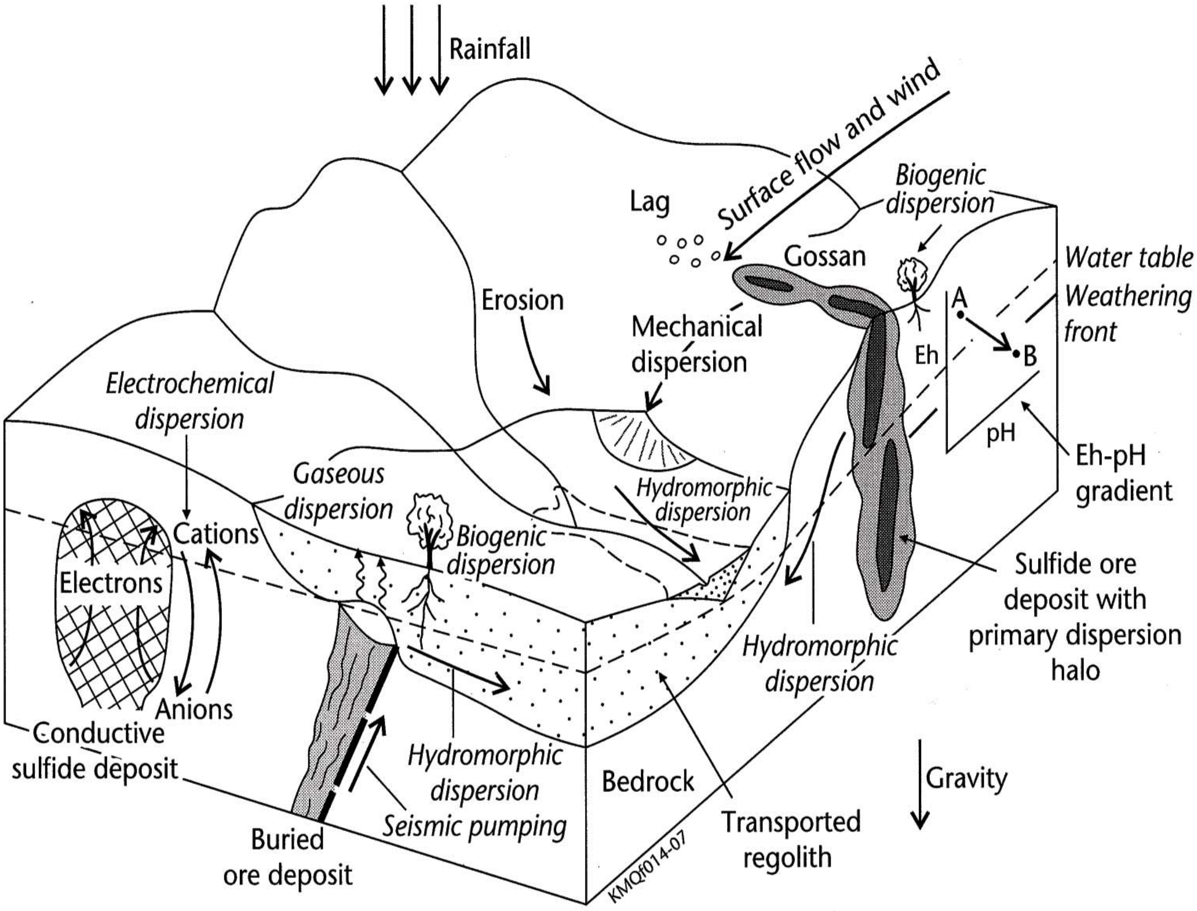
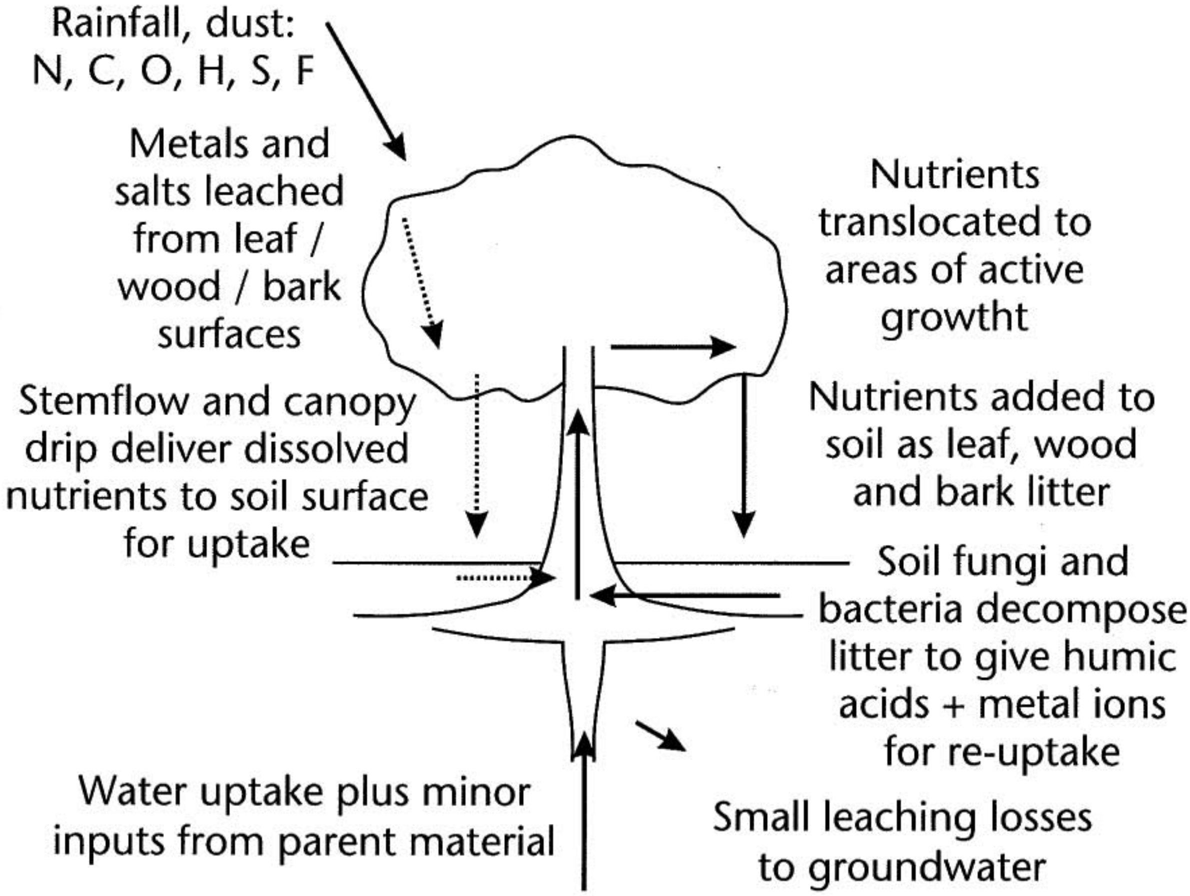

Rainfall
Surface flow and wind
Lag
Biogenic dispersion
Gossan
Water table
Weathering front
Erosion
Mechanical dispersion
A
B
Eh
pH
Eh-pH gradient
Electrochemical dispersion
Gaseous dispersion
Hydromorphic dispersion
Cations
Electrons
Biogenic dispersion
Sulfide ore deposit with primary dispersion halo
Hydromorphic dispersion
Anions
Conductive sulfide deposit
Hydromorphic dispersion
Seismic pumping
Bedrock
Gravity
Transported regolith
Buried ore deposit
KMQf014-07

Figure 49.


Rainfall, dust:
N, C, O, H, S, F
Metals and salts leached from leaf / wood / bark surfaces
Nutrients translocated to areas of active growtht
Stemflow and canopy drip deliver dissolved nutrients to soil surface for uptake
Nutrients added to soil as leaf, wood and bark litter
Soil fungi and bacteria decompose litter to give humic acids + metal ions for re-uptake
Water uptake plus minor inputs from parent material
Small leaching losses to groundwater

Appendix I – Soil Profile Locations and Geochemical Assays.

				ELEMENTS	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu
				UNITS	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
				DETECTION	1	0.05	20	1	1	0.05	0.01	0.01	0.05	0.01	0.1	2	0.002	1	0.01	0.01	0.01
Sample No:	GDA E	GDA N	Depth	Sample Type																	
HS001	763517	6174817	0-5 cm	<80µm soil	X	X	25403	4	101	0.72	0.1	10.29	0.17	25.16	5.7	30	1.705	19	1.77	0.92	0.56
HS002	763517	6174817	0-5 cm	>80µm soil	X	X	3409	X	21	0.1	0.02	0.81	X	3.18	0.7	6	0.23	3	0.2	0.1	0.05
HS003	763517	6174817	5-10 cm	<80µm soil	X	X	26827	3	109	0.87	0.1	9.23	0.14	30.41	6.6	31	1.839	17	2.06	1.08	0.66
HS004	763517	6174817	5-10 cm	>80µm soil	X	X	3679	X	24	0.1	0.02	0.66	X	3.61	0.7	6	0.25	3	0.23	0.12	0.06
HS005	763517	6174817	25-30 cm	<80µm soil	X	X	32575	3	138	1.04	0.11	10.15	0.08	28.12	7	35	2.218	16	1.91	0.98	0.63
HS006	763517	6174817	25-30 cm	>80µm soil	X	X	12936	1	52	0.34	0.05	3.85	X	11.07	2.8	16	0.816	7	0.75	0.39	0.24
HS007	763517	6174817	45-50 cm	<80µm soil	6	X	26227	3	118	0.79	0.08	12.25	X	22.34	6.6	28	1.806	15	1.62	0.82	0.51
HS008	763517	6174817	45-50 cm	>80µm soil	X	X	9452	1	44	0.29	0.04	4.41	X	8.11	2.5	12	0.611	6	0.55	0.29	0.17
HS009	763517	6174817	65-70 cm	<80µm soil	1	X	26239	4	116	0.78	0.08	14.52	X	21.9	6.5	29	1.816	16	1.55	0.81	0.52
HS010	763517	6174817	65-70 cm	>80µm soil	X	X	11332	2	53	0.34	0.04	6.34	X	9.48	3.3	14	0.74	7	0.67	0.36	0.21
HS011	763517	6174817	85-90 cm	<80µm soil	2	X	19112	3	88	0.52	0.06	12.5	X	15.93	4.8	21	1.283	14	1.06	0.56	0.35
HS012	763517	6174817	85-90 cm	>80µm soil	X	X	10398	2	53	0.32	0.03	7.95	X	9.11	3.6	13	0.679	9	0.67	0.35	0.21
HS013	763517	6174817	100 cm	carbonate nodules	X	X	7469	3	92	0.3	0.03	19.42	X	11.66	8.2	16	0.518	11	1.01	0.6	0.28
HS014	763371	6174735	0-5 cm	<80µm soil	X	X	29406	3	109	0.81	0.1	8.51	0.14	25.69	6.1	32	1.921	17	1.71	0.87	0.55
HS015	763371	6174735	0-5 cm	>80µm soil	X	X	14503	2	61	0.38	0.05	4.36	0.08	12.27	3.3	17	0.952	10	0.82	0.43	0.26
HS016	763371	6174735	5-10 cm	<80µm soil	X	X	31444	3	137	0.89	0.1	12.21	0.07	27.96	6.9	34	2.14	15	1.94	1.02	0.64
HS017	763371	6174735	5-10 cm	>80µm soil	X	X	15597	2	66	0.42	0.05	5.83	X	12.95	3.4	19	0.987	8	0.91	0.47	0.29
HS019	763371	6174735	10-15 cm	<80µm soil	X	X	32501	2	139	0.87	0.1	13.78	0.05	28.19	6.9	35	2.169	16	2	0.98	0.65
HS018	763371	6174735	10-15 cm	>80µm soil	X	X	15031	2	67	0.42	0.05	6.3	X	12.39	3.4	18	0.968	8	0.88	0.44	0.27
HS020	763371	6174735	15-20 cm	<80µm soil	X	X	28020	3	133	0.84	0.09	14.62	X	23.65	6.4	31	1.904	16	1.62	0.86	0.54
HS021	763371	6174735	15-20 cm	>80µm soil	X	X	14658	2	69	0.42	0.05	7.47	X	12.63	3.9	17	0.932	9	0.9	0.46	0.27
HS022	763371	6174735	20-25 cm	<80µm soil	X	X	26765	3	128	0.79	0.08	13.61	X	22.44	6.2	29	1.834	16	1.55	0.81	0.52
HS023	763371	6174735	20-25 cm	>80µm soil	X	X	15764	2	76	0.44	0.05	8.04	X	13.46	4.3	18	1.013	10	0.94	0.48	0.3
HS024	763371	6174735	25-30 cm	<80µm soil	X	X	25039	4	117	0.69	0.08	13.56	X	20.7	6.1	27	1.683	16	1.49	0.77	0.49
HS025	763371	6174735	25-30 cm	>80µm soil	X	X	14883	2	74	0.45	0.05	8.68	X	12.87	4.6	17	0.967	10	0.91	0.48	0.3
HS026	763371	6174735	30-35 cm	<80µm soil	3	X	24751	5	123	0.72	0.09	16.45	X	20.49	7.8	23	1.62	20	1.61	0.81	0.52
HS027	763371	6174735	30-35 cm	>80µm soil	X	X	12357	3	71	0.34	0.04	9.15	X	11.36	3.9	15	0.838	11	0.79	0.41	0.25
HS028	763371	6174735	35 cm	carbonate nodules	X	X	8403	3	115	0.32	0.03	19.11	X	13.66	7	16	0.607	11	1.13	0.67	0.31
HS029	763690	6174846	0-5 cm	<80µm soil	X	X	24812	3	108	0.72	0.08	10.43	0.05	20.18	5.5	27	1.738	17	1.41	0.72	0.46
HS030	763690	6174846	0-5 cm	>80µm soil	X	X	9875	2	52	0.27	0.04	4.39	X	8.27	2.3	13	0.671	8	0.57	0.29	0.17
HS031	763690	6174846	10-15 cm	<80µm soil	1	X	26192	4	122	0.68	0.09	11.08	X	20.55	6	29	1.883	19	1.43	0.77	0.48
HS032	763690	6174846	10-15 cm	>80µm soil	X	X	9187	2	52	0.25	0.04	4.27	X	7.81	2.3	12	0.635	8	0.53	0.28	0.17
HS033	763690	6174846	20-25 cm	<80µm soil	X	X	22870	5	115	0.6	0.07	12.91	X	17.25	5.7	25	1.625	19	1.24	0.67	0.4
HS034	763690	6174846	20-25 cm	>80µm soil	X	X	11348	3	62	0.31	0.04	6.62	X	9.15	3.2	14	0.778	10	0.65	0.35	0.21
HS035	763690	6174846	30-35 cm	<80µm soil	1	X	20770	6	115	0.56	0.08	12.98	X	15.62	6.1	23	1.482	19	1.15	0.61	0.38
HS036	763690	6174846	30-35 cm	>80µm soil	X	X	10614	3	67	0.29	0.04	7.91	X	8.76	3.4	13	0.719	11	0.66	0.36	0.21
HS037	763690	6174846	40-45 cm	<80µm soil	2	X	18717	7	108	0.5	0.07	12.75	X	13.74	6	21	1.329	19	1.03	0.56	0.33
HS038	763690	6174846	40-45 cm	>80µm soil	X	X	11894	5	72	0.35	0.04	8.54	X	9.71	3.8	15	0.83	11	0.7	0.36	0.22
HS039	763690	6174846	50 cm	carbonate nodules	X	X	8975	3	116	0.32	0.04	20.12	X	13.35	4.2	18	0.661	9	1.14	0.66	0.31
HS040	764329	6174063	road cutting profile	carbonate nodules	X	X	6524	3	115	0.2	0.02	15.9	X	7.55	4.3	13	0.469	7	0.58	0.36	0.16

*X denotes below detection limits

				ELEMENTS	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu
				UNITS	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
				DETECTION	1	0.05	20	1	1	0.05	0.01	0.01	0.05	0.01	0.1	2	0.002	1	0.01	0.01	0.01
Sample No:	**GDA E**	**GDA N**	**Depth**	**Sample Type**																	
Harts Mine																					
HM001	764847	6174230	0-10	<80	X	0.06	18110	70	83	1.32	0.11	8.87	0.1	44.74	8.3	35	1.19	36	2.03	1.1	0.57
HM002	764847	6174230	0-10	>80	1	X	10403	38	48	0.91	0.07	6.79	0.07	30.6	5	21	0.78	21	1.27	0.67	0.35
HM003	764847	6174230	40-50	<80	1	0.12	19023	135	53	1.91	0.14	7.06	0.07	43.08	10.5	42	0.903	9	1.42	0.75	0.38
HM004	764847	6174230	40-50	>80	X	0.07	11970	76	30	1.2	0.08	8.33	0.09	35.97	6.4	31	0.863	6	1.16	0.56	0.33
HM005	764847	6174230	180-200	<80	4	0.15	22643	68	104	2.34	0.18	11.32	0.14	53.86	8.1	67	1.247	11	2.24	1.2	0.54
HM006	764847	6174230	180-200	>80	1	0.05	7818	19	18	0.97	0.05	4.8	X	19.2	2.7	31	0.634	4	0.68	0.35	0.19
HM007	764847	6174230	220-230	carbonate	X	0.06	3227	20	60	1.24	0.03	20.39	0.21	17	2.6	20	0.279	2	1.03	0.59	0.26
HM008	764847	6174230	270-290	<80	X	0.06	11232	21	71	1.73	0.09	20.65	0.5	31.2	3.7	32	0.574	25	2.03	1.27	0.46
HM009	764847	6174230	270-290	>80	X	X	11462	15	58	3.88	0.05	0.32	0.05	213.48	52.2	33	0.659	41	4.05	2.43	1.02
HM010	764847	6174230	320-330	<80	X	0.12	46437	59	185	15.23	0.18	1.31	0.19	752.26	187.7	104	2.059	150	17.37	10.04	4.6
HM011	764847	6174230	320-330	>80	X	X	17676	3	163	0.5	0.09	0.3	X	16.85	5	29	1.836	5	0.68	0.4	0.16
HM012	764847	6174230	350	>80	X	X	2936	79	116	15.77	0.06	0.14	0.07	38.2	12.8	6	0.047	400	3.87	3.44	0.68
Road Cutting																					
RC1001	764328	6174037	0-20	<80	X	X	34146	7	109	0.84	0.14	4.81	X	31.54	6.4	39	2.345	10	1.8	0.9	0.59
RC1002	764328	6174037	0-20	>80	X	X	7492	2	34	0.13	0.04	0.94	X	6.75	1.4	17	0.52	6	0.39	0.19	0.11
RC1003	764328	6174037	30-40	<80	X	X	25395	9	138	0.74	0.11	11.02	X	23.16	6.2	32	1.932	11	1.64	0.86	0.5
RC1004	764328	6174037	30-40	>80	X	X	11334	3	57	0.3	0.05	3.55	X	8.75	2.7	21	0.805	7	0.56	0.3	0.17
RC1005	764328	6174037	70-80	<80	1	X	16019	8	138	0.42	0.07	14.96	X	13.11	4.5	20	1.275	10	0.89	0.48	0.27
RC1006	764328	6174037	70-80	>80	1	X	9768	4	79	0.25	0.04	7.22	X	7.58	3	12	0.738	6	0.51	0.26	0.15
RC1007	764328	6174037	110-120	<80	1	X	23275	11	172	0.64	0.09	14.87	X	21.85	5.7	27	1.609	6	1.68	0.95	0.51
RC1008	764328	6174037	110-120	>80	X	X	13438	5	85	0.35	0.05	6.54	X	11.24	3.3	17	0.955	3	0.86	0.46	0.26
RC1009	764328	6174037	150-180	carbonate	X	X	9957	4	269	0.31	0.04	14.6	X	10.18	5.6	11	0.767	4	0.82	0.46	0.22
RC1011	764328	6174037	210-230	<80	X	X	21736	8	320	0.56	0.08	13.11	X	15.96	5	29	1.54	10	1.08	0.54	0.33
RC1012	764328	6174037	250-280	>80	X	X	12584	4	97	0.33	0.05	7.62	X	9.5	3.5	14	0.937	4	0.69	0.36	0.2
RC1013	764328	6174037	250-280	>80	X	X	14484	6	98	0.38	0.06	6.05	X	12.23	4.2	17	1.07	4	1.01	0.52	0.3

*X denotes below detection limits

				ELEMENTS	Fe	Ga	Gd	Hf	Ho	In	K	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	P	Pb
				UNITS	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
				DETECTION	0.01	0.05	0.01	0.01	0.01	0.01	20	0.01	0.1	0.01	1	0.1	0.02	0.01	1	20	1
Sample No:	**GDA E**	**GDA N**	**Depth**	**Sample Type**																	
HS001	763517	6174817	0-5 cm	<80µm soil	2.18	6.28	2.23	0.26	0.34	0.03	6483	12.64	15.6	1.33	183	0.3	0.23	12.83	13	447	12
HS002	763517	6174817	0-5 cm	>80µm soil	0.45	0.83	0.26	0.03	0.04	X	888	1.61	2.1	0.14	30	0.1	0.07	1.48	2	49	2
HS003	763517	6174817	5-10 cm	<80µm soil	2.25	6.86	2.68	0.31	0.39	0.03	6653	15.01	18.2	1.29	213	0.3	0.25	15.49	14	268	10
HS004	763517	6174817	5-10 cm	>80µm soil	0.54	0.89	0.27	0.04	0.04	X	972	1.77	2.5	0.13	36	0.1	0.06	1.62	3	27	1
HS005	763517	6174817	25-30 cm	<80µm soil	2.57	8.2	2.54	0.42	0.37	0.03	8173	14.07	19.8	1.36	221	0.3	0.24	14.73	15	174	12
HS006	763517	6174817	25-30 cm	>80µm soil	1.15	2.98	0.96	0.15	0.14	0.01	3074	5.59	7.7	0.62	98	0.2	0.16	5.63	7	77	6
HS007	763517	6174817	45-50 cm	<80µm soil	1.99	6.73	2.09	0.34	0.3	0.03	7229	11.03	19.5	2.02	156	0.2	0.17	11.54	14	107	8
HS008	763517	6174817	45-50 cm	>80µm soil	0.94	2.23	0.7	0.15	0.11	X	2477	4.03	7	0.74	71	0.2	0.14	4.03	5	40	3
HS009	763517	6174817	65-70 cm	<80µm soil	1.89	6.76	1.96	0.37	0.29	0.03	7480	10.81	21.7	2.38	125	0.2	0.13	11.37	14	82	7
HS010	763517	6174817	65-70 cm	>80µm soil	0.97	2.73	0.89	0.17	0.13	0.01	3164	4.76	9.4	1.15	70	0.2	0.11	4.88	7	36	3
HS011	763517	6174817	85-90 cm	<80µm soil	1.41	4.79	1.35	0.23	0.21	0.02	5515	7.77	16.4	2.27	93	0.2	0.1	8.04	12	53	5
HS012	763517	6174817	85-90 cm	>80µm soil	0.91	2.58	0.84	0.13	0.13	X	2937	4.51	9.2	1.32	69	0.2	0.08	4.63	7	30	3
HS013	763517	6174817	100 cm	carbonate nodules	0.6	1.92	1.15	0.12	0.21	X	2378	5.32	9.6	1.51	93	0.1	0.12	5.68	9	X	3
HS014	763371	6174735	0-5 cm	<80µm soil	2.38	7.25	2.25	0.32	0.33	0.03	8102	12.76	18.8	1.56	229	0.3	0.28	13.07	14	318	14
HS015	763371	6174735	0-5 cm	>80µm soil	1.37	3.61	1.08	0.11	0.16	0.01	3919	6.1	9.3	0.79	126	0.3	0.18	6.16	8	164	7
HS016	763371	6174735	5-10 cm	<80µm soil	2.44	7.93	2.46	0.36	0.36	0.03	8319	13.7	20.7	1.5	207	0.2	0.19	14.54	15	155	10
HS017	763371	6174735	5-10 cm	>80µm soil	1.35	3.68	1.13	0.17	0.17	0.01	3885	6.38	10.1	0.79	112	0.2	0.14	6.52	8	76	5
HS019	763371	6174735	10-15 cm	<80µm soil	2.36	8.17	2.52	0.39	0.37	0.03	8572	14.16	22.1	1.65	192	0.2	0.21	14.6	15	137	9
HS018	763371	6174735	10-15 cm	>80µm soil	1.34	3.73	1.13	0.2	0.17	0.01	3843	6.25	10.1	0.86	104	0.2	0.14	6.37	8	59	4
HS020	763371	6174735	15-20 cm	<80µm soil	2.14	7.07	2.18	0.32	0.31	0.03	8031	11.64	21	2.19	160	0.2	0.12	12.12	15	88	7
HS021	763371	6174735	15-20 cm	>80µm soil	1.25	3.49	1.13	0.15	0.17	0.01	3870	6.19	11.2	1.15	102	0.2	0.13	6.46	8	43	4
HS022	763371	6174735	20-25 cm	<80µm soil	1.99	6.8	1.98	0.26	0.3	0.03	7480	10.98	21.9	2.14	150	0.2	0.13	11.43	14	82	7
HS023	763371	6174735	20-25 cm	>80µm soil	1.33	3.82	1.2	0.15	0.18	0.01	4133	6.77	12.4	1.28	113	0.2	0.15	6.8	9	50	5
HS024	763371	6174735	25-30 cm	<80µm soil	1.89	6.38	1.89	0.29	0.28	0.02	7034	10.15	22.6	2.46	146	0.2	0.12	10.8	15	74	7
HS025	763371	6174735	25-30 cm	>80µm soil	1.26	3.66	1.18	0.15	0.18	0.01	3957	6.43	12.5	1.47	110	0.2	0.12	6.53	9	43	4
HS026	763371	6174735	30-35 cm	<80µm soil	2.01	6.37	2.01	0.41	0.29	0.03	7239	10.67	22.4	3.68	159	0.3	0.14	11.33	16	78	8
HS027	763371	6174735	30-35 cm	>80µm soil	1.07	3.15	1.03	0.14	0.15	0.01	3389	5.44	12	1.89	80	0.2	0.09	5.67	8	26	4
HS028	763371	6174735	35 cm	carbonate nodules	0.68	2.27	1.32	0.13	0.24	X	2681	6.26	11.1	2.25	83	0.1	0.08	6.53	8	X	4
HS029	763690	6174846	0-5 cm	<80µm soil	1.99	6.79	1.86	0.26	0.28	0.02	7385	11.22	15	1.79	138	0.2	0.26	10.88	11	215	8
HS030	763690	6174846	0-5 cm	>80µm soil	1.06	2.56	0.74	0.06	0.11	X	2851	4.5	6.1	0.85	66	0.2	0.18	4.33	6	92	4
HS031	763690	6174846	10-15 cm	<80µm soil	2.13	6.94	1.88	0.26	0.28	0.03	7536	11.41	17.6	2.11	144	0.3	0.22	11.07	13	165	8
HS032	763690	6174846	10-15 cm	>80µm soil	0.96	2.43	0.7	0.09	0.1	X	2606	4.16	6.1	0.9	60	0.2	0.14	3.96	5	55	3
HS033	763690	6174846	20-25 cm	<80µm soil	1.81	6.02	1.6	0.29	0.24	0.02	6503	9.46	17.7	2.97	102	0.2	0.18	9.23	12	93	6
HS034	763690	6174846	20-25 cm	>80µm soil	1.1	3	0.84	0.17	0.13	0.01	3108	5.02	8.9	1.62	63	0.2	0.15	4.75	7	47	3
HS035	763690	6174846	30-35 cm	<80µm soil	1.7	5.66	1.46	0.27	0.22	0.02	6150	8.65	17.8	3.48	94	0.3	0.12	8.53	15	74	5
HS036	763690	6174846	30-35 cm	>80µm soil	1.04	2.86	0.82	0.13	0.13	0.01	3081	4.72	9.7	2	54	0.2	0.11	4.69	12	39	3
HS037	763690	6174846	40-45 cm	<80µm soil	1.58	5.12	1.38	0.34	0.21	0.02	5604	7.43	17.3	3.87	81	0.3	0.09	7.3	18	45	4
HS038	763690	6174846	40-45 cm	>80µm soil	1.11	3.15	0.89	0.21	0.14	0.01	3351	5.24	11	2.35	54	0.2	0.09	5.13	8	28	3
HS039	763690	6174846	50 cm	carbonate nodules	0.76	2.43	1.3	0.16	0.23	X	3304	6.79	8.9	1.88	36	0.1	0.08	6.75	9	X	3
HS040	764329	6174063	road cutting profile	carbonate nodules	0.5	1.78	0.67	0.13	0.12	X	2035	3.28	7	1.33	23	X	0.09	3.38	10	X	2

*X denotes below detection limits

				ELEMENTS	Fe	Ga	Gd	Hf	Ho	In	K	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	P	Pb
				UNITS	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
				DETECTION	0.01	0.05	0.01	0.01	0.01	0.01	20	0.01	0.1	0.01	1	0.1	0.02	0.01	1	20	1
Sample No:	**GDA E**	**GDA N**	**Depth**	**Sample Type**																	
Harts Mine																					
HM001	764847	6174230	0-10	<80	4.7	4.66	2.59	0.4	0.42	0.04	10065	19.78	12	1.03	489	0.6	0.63	17.29	17	472	11
HM002	764847	6174230	0-10	>80	2.92	2.76	1.66	0.1	0.26	0.02	5020	13.74	7.3	0.62	307	0.4	0.45	11.45	9	270	7
HM003	764847	6174230	40-50	<80	6.37	4.29	1.83	1.1	0.28	0.04	15429	14.92	14.5	0.84	343	2.6	0.17	14.27	21	188	13
HM004	764847	6174230	40-50	>80	3.99	3.06	1.54	0.94	0.21	0.03	7262	13.83	9.8	0.57	225	2	0.14	12.94	11	164	9
HM005	764847	6174230	180-200	<80	5.36	3.71	2.75	1.06	0.44	0.07	12951	22.07	13.9	0.7	378	2.1	0.2	19.64	15	352	10
HM006	764847	6174230	180-200	>80	2.2	1.46	0.94	0.59	0.13	0.02	4048	7.78	6	0.29	134	0.7	0.09	6.96	8	121	4
HM007	764847	6174230	220-230	carbonate	2.68	0.66	1.29	0.35	0.21	0.01	2036	11.1	1.8	0.39	1175	1.2	0.13	9.13	5	196	6
HM008	764847	6174230	270-290	<80	2.05	1.47	2.49	0.33	0.47	0.03	7285	27.99	5.7	0.46	179	2.7	0.15	17.43	3	188	9
HM009	764847	6174230	270-290	>80	2.74	1.96	4.39	0.44	0.85	0.02	3294	31.71	18.3	0.27	3773	2.4	0.1	31.39	30	64	19
HM010	764847	6174230	320-330	<80	8.86	6.85	18.66	1.78	3.53	0.09	14141	153.11	58.2	0.95	12636	8.8	0.42	145.31	100	227	71
HM011	764847	6174230	320-330	>80	2.39	7.62	0.74	0.37	0.15	0.02	3846	5.73	7.8	0.68	170	0.9	0.05	4.7	8	28	3
HM012	764847	6174230	350	>80	35.24	1.54	3.87	0.26	1.05	0.07	612	24.66	10.4	0.91	5861	5.3	0.2	17.44	X	745	24
Road Cutting																					
RC1001	764328	6174037	0-20	<80	3.28	9.96	2.57	0.33	0.35	0.03	8446	16.09	16.9	0.79	160	0.4	0.37	15.38	14	172	10
RC1002	764328	6174037	0-20	>80	0.89	2.08	0.48	0.09	0.07	X	1740	3.37	3.4	0.17	44	0.1	0.12	3.09	14	32	3
RC1003	764328	6174037	30-40	<80	2.5	7.9	2.03	0.31	0.32	0.03	7110	10.94	13.2	0.93	85	0.3	0.2	11.48	16	170	6
RC1004	764328	6174037	30-40	>80	1.18	3.29	0.75	0.17	0.11	0.01	2777	4.41	5.9	0.36	49	0.2	0.11	4.21	15	57	3
RC1005	764328	6174037	70-80	<80	1.57	5.18	1.14	0.12	0.18	0.02	4699	6.24	11.9	1.25	41	0.2	0.14	6.39	10	189	4
RC1006	764328	6174037	70-80	>80	1.13	2.97	0.64	0.1	0.1	X	2512	3.79	7	0.74	50	0.2	0.13	3.64	6	81	3
RC1007	764328	6174037	110-120	<80	2.13	6.83	2.2	0.45	0.34	0.02	6635	10.27	18.8	2.3	45	0.3	0.11	11.12	13	161	6
RC1008	764328	6174037	110-120	>80	1.3	4	1.1	0.27	0.17	0.01	3691	5.57	10.2	1.07	36	0.2	0.06	5.8	8	58	3
RC1009	764328	6174037	150-180	carbonate	0.9	3.17	0.98	0.17	0.17	0.01	3158	4.75	7.5	0.98	40	0.2	0.11	5.07	3	130	3
RC1011	764328	6174037	210-230	<80	1.95	6.38	1.36	0.49	0.22	0.02	6486	7.43	15.4	2.54	49	0.3	0.09	7.57	20	107	5
RC1012	764328	6174037	250-280	>80	1.16	3.83	0.87	0.3	0.13	0.01	3826	4.52	9	1.42	31	0.2	0.05	4.59	7	60	3
RC1013	764328	6174037	250-280	>80	1.5	4.41	1.24	0.3	0.2	0.01	4098	6.6	10	1.13	47	0.2	0.03	6.77	7	48	3

*X denotes below detection limits

				ELEMENTS	Pd	Pr	Pt	Rb	Re	Sb	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl
				UNITS	ppb	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
				DETECTION	10	0.005	5	0.02	0.01	0.02	1	1	0.01	0.05	0.02	0.01	0.005	0.05	0.01	5	0.01
Sample No:	GDA E	GDA N	Depth	Sample Type																	
HS001	763517	6174817	0-5 cm	<80µm soil	X	3.175	X	29.79	X	0.16	5	X	2.61	0.99	433.85	X	0.311	X	4.65	198	0.14
HS002	763517	6174817	0-5 cm	>80µm soil	X	0.381	X	4.24	X	0.04	X	X	0.29	0.25	30.9	X	0.034	X	0.81	125	0.02
HS003	763517	6174817	5-10 cm	<80µm soil	X	3.781	X	30.76	X	0.15	5	X	3.07	1.07	450.93	X	0.372	X	5.84	245	0.28
HS004	763517	6174817	5-10 cm	>80µm soil	X	0.413	X	4.77	X	0.03	X	X	0.32	0.31	32.42	X	0.039	X	0.88	132	0.05
HS005	763517	6174817	25-30 cm	<80µm soil	X	3.605	X	39.01	X	0.15	7	X	2.91	1.13	451.83	X	0.343	X	5.98	194	0.19
HS006	763517	6174817	25-30 cm	>80µm soil	X	1.394	X	14.27	X	0.09	2	X	1.12	0.49	177.92	X	0.138	X	2.35	171	0.08
HS007	763517	6174817	45-50 cm	<80µm soil	X	2.871	X	32.34	X	0.15	5	X	2.4	0.92	802.98	X	0.277	X	5.1	155	0.16
HS008	763517	6174817	45-50 cm	>80µm soil	X	0.991	X	10.98	X	0.08	1	X	0.8	0.44	248.87	X	0.103	0.05	1.86	156	0.08
HS009	763517	6174817	65-70 cm	<80µm soil	X	2.771	X	32.97	X	0.14	5	X	2.3	0.92	1024.1	X	0.272	X	4.98	186	0.15
HS010	763517	6174817	65-70 cm	>80µm soil	X	1.208	X	13.58	X	0.09	2	X	0.99	0.47	407.54	X	0.122	X	2.35	152	0.08
HS011	763517	6174817	85-90 cm	<80µm soil	X	1.943	X	22.82	X	0.13	4	X	1.65	0.66	901.26	X	0.191	X	3.53	166	0.12
HS012	763517	6174817	85-90 cm	>80µm soil	X	1.134	X	12.08	X	0.09	2	X	0.96	0.43	508.05	X	0.118	X	2.28	141	0.07
HS013	763517	6174817	100 cm	carbonate nodules	X	1.363	X	9.26	X	0.08	2	X	1.22	0.34	1094.3	X	0.165	X	2.73	130	0.08
HS014	763371	6174735	0-5 cm	<80µm soil	X	3.3	X	33.8	X	0.17	5	X	2.66	1.03	415.58	X	0.31	X	5.37	243	0.17
HS015	763371	6174735	0-5 cm	>80µm soil	X	1.529	X	16.5	X	0.12	2	X	1.25	0.6	220.64	X	0.151	X	2.58	182	0.08
HS016	763371	6174735	5-10 cm	<80µm soil	X	3.568	X	38.35	X	0.14	7	X	2.95	1.1	610.02	X	0.346	X	6.17	179	0.17
HS017	763371	6174735	5-10 cm	>80µm soil	X	1.66	X	17.66	X	0.11	3	X	1.35	0.59	278.57	X	0.158	X	3.02	194	0.09
HS019	763371	6174735	10-15 cm	<80µm soil	X	3.531	X	39.27	X	0.15	7	X	2.96	1.1	734.6	X	0.348	X	6.45	225	0.18
HS018	763371	6174735	10-15 cm	>80µm soil	X	1.571	X	17.34	X	0.09	3	X	1.34	0.63	322.36	X	0.151	X	2.96	175	0.09
HS020	763371	6174735	15-20 cm	<80µm soil	X	3.006	X	33.59	X	0.14	6	X	2.52	0.98	921.61	X	0.294	X	5.44	168	0.16
HS021	763371	6174735	15-20 cm	>80µm soil	X	1.594	X	17.22	X	0.13	3	X	1.33	0.55	438.95	X	0.153	X	3.08	192	0.1
HS022	763371	6174735	20-25 cm	<80µm soil	X	2.804	X	33.65	X	0.15	5	1	2.37	0.96	909.84	X	0.278	X	5.14	196	0.16
HS023	763371	6174735	20-25 cm	>80µm soil	X	1.712	X	18.47	X	0.15	3	X	1.42	0.61	479.66	X	0.164	X	3.16	239	0.1
HS024	763371	6174735	25-30 cm	<80µm soil	X	2.655	X	30.61	X	0.19	5	X	2.24	0.96	984.64	X	0.268	X	4.85	208	0.16
HS025	763371	6174735	25-30 cm	>80µm soil	X	1.623	X	17.21	X	0.17	3	X	1.37	0.55	562.95	X	0.163	X	3.21	207	0.1
HS026	763371	6174735	30-35 cm	<80µm soil	X	2.754	X	31.2	X	0.2	5	X	2.27	1.14	1262	X	0.29	X	4.59	207	0.2
HS027	763371	6174735	30-35 cm	>80µm soil	X	1.382	X	14.66	X	0.16	2	X	1.16	0.49	709.71	X	0.144	X	2.6	151	0.09
HS028	763371	6174735	35 cm	carbonate nodules	X	1.529	X	10.93	X	0.09	2	X	1.36	0.36	1263.4	X	0.192	X	2.94	91	0.08
HS029	763690	6174846	0-5 cm	<80µm soil	X	2.724	X	31.74	X	0.16	5	X	2.19	0.91	595.29	X	0.25	X	4.72	177	0.14
HS030	763690	6174846	0-5 cm	>80µm soil	X	1.098	X	12.41	X	0.13	1	X	0.9	0.53	243.76	X	0.1	X	2.03	182	0.06
HS031	763690	6174846	10-15 cm	<80µm soil	X	2.761	X	34.29	X	0.2	5	X	2.22	1	729.18	X	0.262	X	4.83	182	0.16
HS032	763690	6174846	10-15 cm	>80µm soil	X	0.988	X	11.49	X	0.11	1	X	0.8	0.44	260.72	X	0.097	X	2.01	157	0.06
HS033	763690	6174846	20-25 cm	<80µm soil	X	2.287	X	29.47	X	0.17	5	X	1.87	0.86	1033.8	X	0.223	X	4.34	180	0.15
HS034	763690	6174846	20-25 cm	>80µm soil	X	1.235	X	14.18	X	0.13	2	X	0.95	0.54	486.56	X	0.114	X	2.51	175	0.08
HS035	763690	6174846	30-35 cm	<80µm soil	X	2.108	X	27.65	X	0.19	4	X	1.7	0.89	1214.3	X	0.203	0.05	4.23	135	0.17
HS036	763690	6174846	30-35 cm	>80µm soil	X	1.156	X	13.44	X	0.14	2	X	0.94	0.56	636.83	X	0.112	X	2.38	150	0.09
HS037	763690	6174846	40-45 cm	<80µm soil	X	1.881	X	24.29	X	0.24	4	X	1.54	0.81	1289.7	X	0.188	X	3.88	134	0.25
HS038	763690	6174846	40-45 cm	>80µm soil	X	1.268	X	14.94	X	0.13	2	X	1.03	0.55	726.27	X	0.124	X	2.66	166	0.12
HS039	763690	6174846	50 cm	carbonate nodules	X	1.595	X	13.8	X	0.11	3	X	1.42	0.42	1104.4	X	0.195	X	3.29	110	0.09
HS040	764329	6174063	road cutting profile	carbonate nodules	X	0.819	X	8.76	X	0.08	2	X	0.74	0.37	879.58	X	0.093	X	2.19	99	0.07

*X denotes below detection limits

				ELEMENTS	Pd	Pr	Pt	Rb	Re	Sb	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl
				UNITS	ppb	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
				DETECTION	10	0.005	5	0.02	0.01	0.02	1	1	0.01	0.05	0.02	0.01	0.005	0.05	0.01	5	0.01
Sample No:	**GDA E**	**GDA N**	**Depth**	**Sample Type**																	
Harts Mine																					
HM001	764847	6174230	0-10	<80	X	5.12	8	21.29	X	0.23	4	X	3.12	1.67	201.27	X	0.369	X	8.69	157	0.18
HM002	764847	6174230	0-10	>80	X	3.393	7	13.32	X	0.31	2	X	2.01	1.04	130.91	X	0.237	X	6.44	198	0.12
HM003	764847	6174230	40-50	<80	X	4.031	8	14.54	0.01	0.63	4	X	2.41	1.58	183.16	X	0.266	0.07	12.54	223	0.26
HM004	764847	6174230	40-50	>80	X	3.825	8	12.89	X	0.57	3	X	2.09	1.17	150.76	X	0.213	0.06	10.22	267	0.17
HM005	764847	6174230	180-200	<80	X	5.569	10	21.13	X	0.61	5	X	3.3	1.78	179.53	X	0.398	0.12	18.74	264	0.22
HM006	764847	6174230	180-200	>80	X	2.016	7	11.44	X	0.19	2	X	1.18	0.82	63.64	X	0.132	X	6.53	164	0.08
HM007	764847	6174230	220-230	carbonate	X	2.701	10	4.39	X	0.31	3	X	1.49	0.41	243.66	X	0.18	X	4.44	89	0.24
HM008	764847	6174230	270-290	<80	X	4.928	6	9.61	X	0.24	3	X	2.5	0.83	151.28	X	0.341	0.09	8.34	57	0.1
HM009	764847	6174230	270-290	>80	X	9.102	11	9.94	X	0.17	2	X	5.36	0.77	29.64	X	0.691	X	6.61	233	0.67
HM010	764847	6174230	320-330	<80	<30	42.559	<30	27.67	X	0.63	8	X	23.07	2.48	155.33	X	2.79	0.1	21.57	607	2.25
HM011	764847	6174230	320-330	>80	X	1.425	8	33.42	X	0.2	3	X	0.84	1.06	51.93	X	0.119	0.07	7.28	126	0.25
HM012	764847	6174230	350	>80	2	4.994	X	0.47	X	0.21	1	7	2.96	0.88	30.03	X	0.547	X	5.76	109	1.8
Road Cutting																					
RC1001	764328	6174037	0-20	<80	X	4.405	X	41.51	X	0.23	7	X	3.02	6.39	193.78	X	0.346	X	8.67	286	0.21
RC1002	764328	6174037	0-20	>80	X	0.869	X	9.32	X	0.07	2	X	0.59	4.87	39.85	X	0.067	X	2.13	102	0.05
RC1003	764328	6174037	30-40	<80	11	3.09	X	35.15	X	0.23	6	X	2.29	5.68	465.9	X	0.287	X	6.59	95	0.19
RC1004	764328	6174037	30-40	>80	X	1.189	X	14.66	X	0.1	2	X	0.85	5.32	135.38	X	0.105	X	3.02	106	0.08
RC1005	764328	6174037	70-80	<80	X	1.705	X	22.43	X	0.14	4	X	1.26	5.33	810.33	X	0.165	0.06	3.15	54	0.14
RC1006	764328	6174037	70-80	>80	X	0.99	8	13.02	X	0.14	2	X	0.73	0.48	404.31	X	0.094	X	2.53	97	0.09
RC1007	764328	6174037	110-120	<80	X	2.963	8	28.84	X	0.26	5	X	2.33	0.92	1232.7	X	0.299	0.06	7.45	118	0.19
RC1008	764328	6174037	110-120	>80	X	1.577	6	17.11	X	0.13	3	X	1.2	0.57	531.13	X	0.153	X	3.89	90	0.12
RC1009	764328	6174037	150-180	carbonate	X	1.295	8	14.18	X	0.18	3	X	1.05	4.86	870.65	X	0.139	0.08	3.11	58	0.26
RC1011	764328	6174037	210-230	<80	18	2.083	13	28.31	X	0.22	5	X	1.47	0.97	896.8	X	0.19	0.07	5.61	136	0.27
RC1012	764328	6174037	250-280	>80	10	1.257	8	17.17	X	0.13	3	X	0.95	0.58	534.57	X	0.12	X	3.4	76	0.13
RC1013	764328	6174037	250-280	>80	X	1.792	5	18.99	X	0.14	3	X	1.37	0.61	381.54	X	0.174	X	4.39	78	0.13

*X denotes below detection limits

				ELEMENTS	Tm	U	V	W	Y	Yb	Zn	Zr
				UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
				DETECTION	0.01	0.01	2	0.05	0.02	0.01	1	0.1
Sample No:	**GDA E**	**GDA N**	**Depth**	**Sample Type**								
HS001	763517	6174817	0-5 cm	<80µm soil	0.12	0.31	28	X	9.59	0.73	27	8.6
HS002	763517	6174817	0-5 cm	>80µm soil	0.01	0.08	6	X	0.98	0.09	4	1.2
HS003	763517	6174817	5-10 cm	<80µm soil	0.14	0.42	32	X	11.17	0.85	19	10.2
HS004	763517	6174817	5-10 cm	>80µm soil	0.02	0.1	7	X	1.08	0.1	4	1.7
HS005	763517	6174817	25-30 cm	<80µm soil	0.13	0.33	30	X	10.74	0.8	23	12.3
HS006	763517	6174817	25-30 cm	>80µm soil	0.05	0.22	15	X	3.82	0.32	9	4.9
HS007	763517	6174817	45-50 cm	<80µm soil	0.11	0.46	27	X	8.98	0.7	15	11.7
HS008	763517	6174817	45-50 cm	>80µm soil	0.04	0.24	14	X	3	0.24	6	5.5
HS009	763517	6174817	65-70 cm	<80µm soil	0.11	0.47	27	X	8.65	0.68	14	13.1
HS010	763517	6174817	65-70 cm	>80µm soil	0.05	0.28	17	X	3.64	0.29	6	6.1
HS011	763517	6174817	85-90 cm	<80µm soil	0.07	0.47	22	X	5.93	0.46	9	9.6
HS012	763517	6174817	85-90 cm	>80µm soil	0.05	0.31	16	X	3.67	0.3	5	5.5
HS013	763517	6174817	100 cm	carbonate nodules	0.09	0.39	10	X	6.17	0.56	X	6
HS014	763371	6174735	0-5 cm	<80µm soil	0.12	0.35	35	X	8.8	0.69	22	9.4
HS015	763371	6174735	0-5 cm	>80µm soil	0.06	0.23	21	X	4.32	0.36	12	3.9
HS016	763371	6174735	5-10 cm	<80µm soil	0.13	0.44	31	X	10.37	0.81	20	11.3
HS017	763371	6174735	5-10 cm	>80µm soil	0.06	0.28	21	X	4.57	0.38	9	5.8
HS019	763371	6174735	10-15 cm	<80µm soil	0.13	0.45	30	X	10.25	0.82	15	12.5
HS018	763371	6174735	10-15 cm	>80µm soil	0.06	0.27	20	X	4.5	0.37	7	7.2
HS020	763371	6174735	15-20 cm	<80µm soil	0.11	0.47	27	X	9.11	0.69	14	11.5
HS021	763371	6174735	15-20 cm	>80µm soil	0.06	0.3	20	X	4.62	0.38	7	6.2
HS022	763371	6174735	20-25 cm	<80µm soil	0.1	0.47	29	X	8.7	0.66	12	10.4
HS023	763371	6174735	20-25 cm	>80µm soil	0.06	0.34	22	X	5.03	0.41	6	6.6
HS024	763371	6174735	25-30 cm	<80µm soil	0.1	0.64	30	X	7.91	0.61	14	11.3
HS025	763371	6174735	25-30 cm	>80µm soil	0.07	0.4	25	X	5.06	0.42	6	6.5
HS026	763371	6174735	30-35 cm	<80µm soil	0.11	0.91	42	0.09	8.4	0.66	19	17.6
HS027	763371	6174735	30-35 cm	>80µm soil	0.06	0.47	25	X	4.33	0.35	4	6.3
HS028	763371	6174735	35 cm	carbonate nodules	0.1	0.52	13	X	7.02	0.64	X	6.2
HS029	763690	6174846	0-5 cm	<80µm soil	0.1	0.41	29	X	7.81	0.58	17	8.4
HS030	763690	6174846	0-5 cm	>80µm soil	0.04	0.24	19	X	3.05	0.25	8	2.9
HS031	763690	6174846	10-15 cm	<80µm soil	0.1	0.54	34	X	8.13	0.61	15	8.7
HS032	763690	6174846	10-15 cm	>80µm soil	0.04	0.27	18	X	2.95	0.23	7	3.6
HS033	763690	6174846	20-25 cm	<80µm soil	0.09	0.66	32	X	7.1	0.55	12	11.7
HS034	763690	6174846	20-25 cm	>80µm soil	0.05	0.4	22	X	3.63	0.28	6	6.6
HS035	763690	6174846	30-35 cm	<80µm soil	0.08	0.78	34	X	6.71	0.51	14	11.6
HS036	763690	6174846	30-35 cm	>80µm soil	0.05	0.45	23	X	3.73	0.29	7	6.5
HS037	763690	6174846	40-45 cm	<80µm soil	0.08	0.91	41	X	5.98	0.46	12	13.9
HS038	763690	6174846	40-45 cm	>80µm soil	0.05	0.59	30	X	3.89	0.32	5	8.7
HS039	763690	6174846	50 cm	carbonate nodules	0.1	0.88	15	X	7.21	0.62	X	8.1
HS040	764329	6174063	road cutting profile	carbonate nodules	0.05	0.24	6	X	3.62	0.33	X	6.4

*X denotes below detection limits

				ELEMENTS	Tm	U	V	W	Y	Yb	Zn	Zr
				UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
				DETECTION	0.01	0.01	2	0.05	0.02	0.01	1	0.1
Sample No:	**GDA E**	**GDA N**	**Depth**	**Sample Type**								
Harts Mine												
HM001	764847	6174230	0-10	<80	0.16	1.84	85	0.07	10.85	0.97	38	21.9
HM002	764847	6174230	0-10	>80	0.1	1.2	56	0.05	6.41	0.6	22	9
HM003	764847	6174230	40-50	<80	0.11	6.55	117	0.05	6.67	0.67	61	55.8
HM004	764847	6174230	40-50	>80	0.08	4.13	76	X	5.25	0.48	35	45.9
HM005	764847	6174230	180-200	<80	0.17	10.96	162	X	11.62	1.04	36	49.5
HM006	764847	6174230	180-200	>80	0.05	3.64	60	X	3.37	0.3	14	23.2
HM007	764847	6174230	220-230	carbonate	0.08	13.76	47	0.06	6.05	0.49	11	25.5
HM008	764847	6174230	270-290	<80	0.17	14.12	82	0.07	23.06	0.92	11	17.6
HM009	764847	6174230	270-290	>80	0.37	6.55	75	X	20.25	2.49	16	21.7
HM010	764847	6174230	320-330	<80	1.52	24.28	264	0.18	87.4	10.19	64	89.3
HM011	764847	6174230	320-330	>80	0.06	1.47	41	0.18	3.69	0.38	5	13.9
HM012	764847	6174230	350	>80	0.52	50.92	71	0.17	37.3	3.45	170	9.6
Road Cutting												
RC1001	764328	6174037	0-20	<80	0.13	0.49	53	X	8.98	0.76	24	12.3
RC1002	764328	6174037	0-20	>80	0.02	0.15	15	X	1.74	0.17	8	3.6
RC1003	764328	6174037	30-40	<80	0.12	0.4	41	X	8.05	0.71	16	12.9
RC1004	764328	6174037	30-40	>80	0.04	0.2	20	X	2.85	0.26	9	7
RC1005	764328	6174037	70-80	<80	0.07	0.37	27	X	4.83	0.43	9	5
RC1006	764328	6174037	70-80	>80	0.04	0.27	17	X	2.55	0.25	4	5
RC1007	764328	6174037	110-120	<80	0.13	0.56	48	X	8.78	0.79	10	15.6
RC1008	764328	6174037	110-120	>80	0.07	0.31	29	X	4.38	0.4	6	9.3
RC1009	764328	6174037	150-180	carbonate	0.07	1.22	26	X	4.63	0.42	3	9.1
RC1011	764328	6174037	210-230	<80	0.07	3.04	45	X	5.39	0.51	12	16.7
RC1012	764328	6174037	250-280	>80	0.05	1.87	26	X	3.41	0.31	5	9.8
RC1013	764328	6174037	250-280	>80	0.07	1.49	34	X	5.22	0.46	6	10.5

*X denotes below detection limits

Appendix II – Transect locations and Biogeochemical Assays

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				ELEMENTS	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Ge
				UNITS	ppb	ppb	ppm	ppm	ppm	ppm	ppb	ppm	ppb	ppb	ppm	ppm	ppb	ppm	ppb	ppb	ppb	ppm	ppm	ppb	ppm
				DETECTION	0.5	5	5	0.2	0.05	0.02	5	5	5	5	0.02	0.2	1	0.2	5	5	5	5	0.02	5	0.05
Sample No:	GDA E	GDA N	Species	Organ																					
HSV 001	763517	6174817	E. gracilis	litter	0.5	8	4996	0.9	28.19	0.15	29	25869	134	6931	1.3	5.3	394	9.4	455	232	144	3416	1.4	590	X
HSV 002	763517	6174817	E. gracilis	bark	1	7	4473	0.8	19.48	0.13	23	34041	82	4637	1.1	4.6	398	4.8	297	154	97	2784	1.28	383	X
HSV 003	763517	6174817	E. gracilis	twigs	X	5	419	X	3.16	X	X	10595	20	575	0.1	0.8	34	4.2	34	17	11	298	0.13	44	X
HSV 004	763517	6174817	E. gracilis	fruit	X	6	122	X	1.42	X	X	5335	6	136	0.05	0.4	10	3.5	8	X	X	95	0.04	10	X
HSV 005	763517	6174817	E. gracilis	leaves	X	X	139	X	2.59	X	X	12223	6	160	X	0.6	10	3.7	8	X	X	109	0.04	12	X
HSV 006	763497	6174797	E. gracilis	leaves	X	6	274	X	2.61	X	7	6810	22	246	0.05	0.4	16	4.7	17	9	5	171	0.07	21	X
HSV 007	763466	6174798	E. gracilis	leaves	X	X	227	X	3.29	X	X	6284	21	187	0.2	0.3	14	5.1	12	6	X	153	0.06	15	X
HSV 008	763451	6174800	E. gracilis	leaves	X	X	193	X	1.71	X	X	7155	16	182	0.03	0.3	15	3.9	10	5	X	146	0.06	13	X
HSV 009	763423	6174790	E. gracilis	leaves	X	X	209	X	2.85	X	X	6565	18	196	0.05	0.4	17	4.5	12	6	X	166	0.06	15	X
HSV 010	763394	6174787	E. gracilis	leaves	X	X	171	X	2.65	X	X	8007	16	211	0.03	0.2	12	4.8	12	6	X	132	0.04	16	X
HSV 011	763368	6174780	E. gracilis	leaves	X	X	169	X	3.62	X	X	11516	25	207	X	0.3	14	4.4	11	5	X	133	0.04	15	X
HSV 012	763371	6174735	E. gracilis	bark	X	7	2712	0.4	12.8	0.07	14	26782	80	2882	0.67	2.9	286	4.3	181	91	60	1824	0.66	240	X
HSV 013	763371	6174735	E. gracilis	twigs	X	9	281	X	2.69	X	X	6673	16	310	0.06	0.6	24	8.4	17	8	6	207	0.08	23	X
HSV 014	763371	6174735	E. gracilis	leaves	X	X	173	X	1.66	X	X	4886	6	181	0.04	0.4	15	5.7	10	X	X	145	0.05	13	X
HSV 015	763371	6174735	E. gracilis	litter	X	7	2011	0.3	25.55	0.05	10	28397	60	2619	0.46	2.4	194	5.2	173	88	58	1401	0.46	226	X
HSV 016	763342	6174758	E. gracilis	leaves	X	X	217	X	4.02	X	X	11099	15	218	0.02	0.4	17	5.7	12	6	X	175	0.06	16	X
HSV 017	763274	6174744	E. gracilis	leaves	X	X	231	X	5.5	X	7	9732	30	231	0.04	0.4	20	4.8	14	7	X	176	0.06	17	X
HSV 018	763237	6174760	E. gracilis	leaves	X	X	135	X	5	X	X	6955	37	176	0.02	0.3	12	2.3	10	X	X	114	0.04	13	X
HSV 019	763690	6174846	E. socialis	litter	X	7	4371	0.9	30.3	0.1	20	24500	96	4512	0.93	5.1	384	7.6	323	164	99	3028	0.96	411	X
HSV 020	763690	6174846	E. socialis	bark	X	X	1445	0.4	11.11	0.03	15	8669	53	2019	0.4	2	136	3	126	65	42	1050	0.37	168	X
HSV 021	763690	6174846	E. socialis	twigs	X	6	191	X	7.89	X	X	10481	52	326	0.06	0.6	22	5.6	21	10	8	143	0.05	33	X
HSV 022	763690	6174846	E. socialis	leaves	X	X	179	X	6.44	X	X	8196	21	283	0.04	0.4	15	4.1	28	13	9	124	0.04	38	X
HSV 023	763684	6174842	E. gracilis	leaves	X	6	164	X	3.16	X	X	10381	14	159	0.02	0.3	14	3.4	10	5	X	136	0.05	13	X
HSV 024	763656	6174831	E. gracilis	leaves	X	X	193	X	1.82	X	X	9432	18	221	0.03	0.4	16	6.2	13	6	X	151	0.05	17	X
HSV 025	763615	6174826	E. gracilis	leaves	X	6	143	X	2.17	X	X	7933	6	160	0.02	0.3	12	3.3	9	X	X	120	0.04	12	X
HSV 026	763596	6174828	E. gracilis	leaves	X	X	164	X	3.94	X	X	6897	15	183	0.03	0.3	12	4.2	11	6	X	117	0.04	13	X
HSV 027	763552	6174815	E. gracilis	leaves	X	5	135	X	3.54	X	X	12940	9	144	X	0.6	12	3.2	8	X	X	110	0.05	12	X
HSV 028	763730	6174857	E. gracilis	leaves	X	X	158	X	6.76	X	X	12556	14	147	0.02	0.3	14	3.9	9	X	X	127	0.04	11	X
HSV 029	763847	6174881	E. gracilis	leaves	X	X	216	X	18.41	X	X	13958	14	179	0.02	0.4	19	3	11	5	X	156	0.05	15	X
HSV 030 (Harts Mine)	764827	6174225	E. gracilis	leaves	X	X	213	X	3.14	X	X	9139	12	487	0.07	0.4	19	4.1	20	10	8	194	0.05	29	X
HSV 031 (Harts Mine)	764834	6174233	E. socialis	leaves	X	X	117	X	6.75	X	X	13444	36	185	X	0.3	11	3.3	10	5	X	135	0.04	12	X
HSV 032	764183	6175004	E. gracilis	leaves	X	X	160	X	6.46	X	X	21436	16	749	X	0.4	15	1.3	29	13	11	147	0.04	50	X
HSV 033	764020	6175004	E. gracilis	leaves	X	X	158	X	10.19	X	X	9654	20	168	0.02	0.3	15	2.3	9	X	X	133	0.05	12	X
HSV 034	763974	6174979	E. gracilis	leaves	X	X	209	X	6.83	X	X	6472	24	194	0.03	0.3	17	2.9	11	5	X	160	0.06	14	X

*X denotes below detection limits

				ELEMENTS	Hf	Hg	Ho	In	K	La	Li	Lu	Mg	Mn	Mo	Na	Nb	Nd	Ni	P	Pb	Pd	Pr	Pt	Rb
				UNITS	ppb	ppb	ppb	ppb	ppm	ppb	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	ppb	ppb	ppb	ppm
				DETECTION	5	5	5	5	10	5	0.02	2	10	0.5	0.02	20	0.01	5	0.2	10	0.02	2	2	1	0.01
Sample No:	GDA E	GDA N	Species	Organ																					
HSV 001	763517	6174817	E. gracilis	litter	X	36	89	6	2406	3766	3.74	29	3348	54.6	0.17	659	0.08	3496	2.9	574	4.67	X	944	X	6.64
HSV 002	763517	6174817	E. gracilis	bark	24	41	58	6	2147	2474	4	20	2750	37	0.14	1164	0.1	2297	2.3	298	3.27	X	619	X	6.9
HSV 003	763517	6174817	E. gracilis	twigs	10	31	6	X	1983	298	0.95	2	2196	8.1	0.08	4647	0.01	275	0.5	211	0.73	X	73	X	0.87
HSV 004	763517	6174817	E. gracilis	fruit	X	7	X	X	5242	70	0.7	X	1428	7.3	0.07	7052	X	63	0.4	696	0.18	X	17	X	1.05
HSV 005	763517	6174817	E. gracilis	leaves	X	21	X	X	3995	86	3.24	X	3055	12.1	0.1	3933	X	78	0.2	482	0.2	X	21	X	0.55
HSV 006	763497	6174797	E. gracilis	leaves	X	29	X	X	5629	119	2.39	X	2633	19.3	0.06	4173	X	122	0.6	653	0.39	X	33	1	0.62
HSV 007	763466	6174798	E. gracilis	leaves	X	28	X	X	3738	93	3.14	X	3560	11.2	0.05	4954	X	92	0.6	505	0.28	X	24	X	0.51
HSV 008	763451	6174800	E. gracilis	leaves	X	23	X	X	4286	90	6.58	X	3527	12.2	0.08	4108	X	85	X	655	0.21	X	23	X	0.64
HSV 009	763423	6174790	E. gracilis	leaves	X	24	X	X	3327	100	8.18	X	3254	17.7	0.08	5537	X	91	0.4	600	0.26	X	25	X	0.58
HSV 010	763394	6174787	E. gracilis	leaves	X	32	X	X	4003	111	8.43	X	2828	10.1	0.05	5568	X	99	0.4	646	0.23	X	26	X	0.46
HSV 011	763368	6174780	E. gracilis	leaves	X	26	X	X	4498	112	5.22	X	4117	26.6	0.15	7686	X	98	X	760	0.23	X	27	X	0.7
HSV 012	763371	6174735	E. gracilis	bark	56	48	35	X	1392	1497	2.2	12	2413	30.3	0.17	1846	0.07	1456	1.3	355	2.27	X	380	X	3.81
HSV 013	763371	6174735	E. gracilis	twigs	6	18	X	X	3702	162	0.97	X	2054	7.4	0.17	7180	X	149	0.5	827	0.42	X	40	X	0.97
HSV 014	763371	6174735	E. gracilis	leaves	X	19	X	X	6044	91	2.73	X	2659	8.3	0.31	6769	X	86	0.5	1141	0.19	X	23	X	1.18
HSV 015	763371	6174735	E. gracilis	litter	40	25	34	X	1467	1366	1.58	11	2558	35.5	0.2	1011	0.05	1353	1.1	386	1.93	X	349	X	2.61
HSV 016	763342	6174758	E. gracilis	leaves	X	20	X	X	3716	111	4.19	X	3179	17.4	0.12	3637	X	105	0.6	1082	0.22	X	28	X	0.53
HSV 017	763274	6174744	E. gracilis	leaves	X	31	X	X	4383	118	0.36	X	3013	20.1	0.13	6179	X	108	0.6	680	0.27	X	29	X	0.66
HSV 018	763237	6174760	E. gracilis	leaves	X	24	X	X	3659	90	3.49	X	2590	21.9	0.13	5171	X	83	X	1166	0.25	X	22	X	0.47
HSV 019	763690	6174846	E. socialis	litter	14	56	63	5	2300	2521	3.17	21	4658	44.2	0.22	1080	0.09	2438	2.6	576	3.92	X	637	X	5.39
HSV 020	763690	6174846	E. socialis	bark	33	34	25	X	1026	1070	1.07	8	1898	16.8	0.12	1300	0.04	1013	0.8	222	2.06	X	270	X	2.11
HSV 021	763690	6174846	E. socialis	twigs	X	9	X	X	5046	255	0.45	X	2024	18	0.05	3097	X	214	0.4	643	0.29	X	59	X	1.33
HSV 022	763690	6174846	E. socialis	leaves	X	26	5	X	4547	202	2.56	X	2093	28.8	0.07	3417	X	219	0.5	586	0.23	X	57	X	0.79
HSV 023	763684	6174842	E. gracilis	leaves	X	28	X	X	4244	84	3.74	X	4042	9	0.15	5351	X	81	X	593	0.28	X	21	X	0.56
HSV 024	763656	6174831	E. gracilis	leaves	X	23	X	X	3867	145	4.79	X	3136	10.9	0.1	5512	X	116	0.4	522	0.26	X	32	X	0.68
HSV 025	763615	6174826	E. gracilis	leaves	X	21	X	X	3495	93	3.37	X	3246	15.4	0.06	5097	X	76	X	479	0.21	X	21	X	0.54
HSV 026	763596	6174828	E. gracilis	leaves	X	26	X	X	4051	105	3.07	X	3086	17.5	0.07	3280	X	88	0.5	656	0.24	X	24	X	0.48
HSV 027	763552	6174815	E. gracilis	leaves	X	25	X	X	4677	76	5.14	X	3979	44.2	0.14	3369	X	71	X	557	0.21	X	19	X	0.64
HSV 028	763730	6174857	E. gracilis	leaves	X	22	X	X	2937	76	2.13	X	4964	14.2	0.11	3424	X	70	X	570	0.22	X	19	X	0.56
HSV 029	763847	6174881	E. gracilis	leaves	X	25	X	X	3225	93	1.14	X	4079	34	0.2	3245	X	87	0.4	418	0.27	X	23	X	0.61
HSV 030 (Harts Mine)	764827	6174225	E. gracilis	leaves	X	18	X	X	5012	251	1.97	X	2791	135.2	0.09	8636	0.02	226	0.4	816	0.21	X	63	X	0.55
HSV 031 (Harts Mine)	764834	6174233	E. socialis	leaves	X	23	X	X	4367	99	1.97	X	2000	52.3	0.22	2683	0.01	81	X	617	0.17	X	22	X	0.35
HSV 032	764183	6175004	E. gracilis	leaves	X	34	6	X	3019	553	1.49	X	3874	60.4	0.1	4292	0.01	442	0.4	515	0.31	X	126	1	0.67
HSV 033	764020	6175004	E. gracilis	leaves	X	39	X	X	3234	88	0.87	X	3961	8.8	0.09	4033	X	80	X	466	0.26	X	22	2	0.52
HSV 034	763974	6174979	E. gracilis	leaves	X	31	X	X	2870	100	0.76	X	3414	6.1	0.19	6377	X	90	X	658	0.24	X	24	X	0.52

*X denotes below detection limits

				ELEMENTS	Re	S	Sb	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
				UNITS	ppb	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppb	ppb	ppm	ppb	ppm	ppb	ppb	ppb	ppm	ppm	ppb	ppb	ppm	ppm
				DETECTION	5	5	0.01	0.1	0.02	5	0.02	0.01	5	2	0.02	5	1	5	5	5	0.2	0.02	5	5	0.2	0.05
Sample No:	GDA E	GDA N	Species	Organ																						
HSV 001	763517	6174817	E. gracilis	litter	X	1012	X	0.7	0.24	674	0.16	202.69	X	82	X	700	21	37	32	185	6.5	X	2433	190	19.9	0.12
HSV 002	763517	6174817	E. gracilis	bark	X	745	0.01	0.7	0.24	452	0.17	508.49	6	54	X	712	29	39	21	92	4.3	X	1537	131	12	1.57
HSV 003	763517	6174817	E. gracilis	twigs	X	696	X	X	0.39	54	X	172.36	X	6	X	104	4	X	X	23	0.5	X	187	14	5.5	0.26
HSV 004	763517	6174817	E. gracilis	fruit	X	483	X	X	0.15	13	X	80.41	X	X	X	26	X	X	X	11	X	X	45	X	7.8	0.06
HSV 005	763517	6174817	E. gracilis	leaves	X	923	X	X	0.38	15	X	178.81	X	X	X	25	1	X	X	29	X	X	49	X	7.8	0.06
HSV 006	763497	6174797	E. gracilis	leaves	X	1425	X	X	0.16	25	X	52.33	X	3	X	38	2	X	X	49	0.2	X	104	8	13.8	0.1
HSV 007	763466	6174798	E. gracilis	leaves	X	1383	X	X	0.16	18	X	56.6	X	2	X	34	2	X	X	43	0.2	X	68	5	15.1	0.09
HSV 008	763451	6174800	E. gracilis	leaves	X	1167	X	X	0.28	16	X	120.29	X	X	X	33	2	X	X	42	0.2	X	54	X	8.6	0.08
HSV 009	763423	6174790	E. gracilis	leaves	X	1337	X	X	0.33	17	0.04	107.75	X	2	X	33	2	X	X	19	0.2	X	63	X	7.8	0.12
HSV 010	763394	6174787	E. gracilis	leaves	X	1170	X	X	0.25	18	X	111.16	X	2	X	26	1	X	X	30	X	X	71	X	7.4	0.06
HSV 011	763368	6174780	E. gracilis	leaves	X	1432	X	X	0.32	18	X	144.68	X	2	X	30	2	X	X	19	X	X	58	X	14.5	0.07
HSV 012	763371	6174735	E. gracilis	bark	X	917	0.01	0.4	0.35	281	0.11	474.17	X	33	X	548	22	26	13	68	3	X	837	78	11	1.52
HSV 013	763371	6174735	E. gracilis	twigs	X	810	X	X	0.23	29	X	140.38	X	3	X	54	3	X	X	12	0.3	X	90	7	19.8	0.14
HSV 014	763371	6174735	E. gracilis	leaves	X	1187	X	X	0.31	17	X	74.45	X	X	X	30	2	X	X	12	0.2	X	52	6	10.6	0.07
HSV 015	763371	6174735	E. gracilis	litter	X	934	X	0.3	0.27	268	0.06	383.02	X	32	X	453	17	17	12	58	2.4	X	811	73	9	1.15
HSV 016	763342	6174758	E. gracilis	leaves	X	1011	X	X	0.27	21	X	149.53	X	2	X	39	2	X	X	23	0.3	X	58	5	10.8	0.09
HSV 017	763274	6174744	E. gracilis	leaves	X	1137	X	X	0.27	21	X	135.74	8	2	X	35	2	X	X	31	0.2	X	76	5	9.7	0.1
HSV 018	763237	6174760	E. gracilis	leaves	X	1128	X	X	0.23	15	X	81.54	X	X	X	26	1	X	X	28	X	X	50	X	13.7	0.07
HSV 019	763690	6174846	E. socialis	litter	X	1243	0.01	0.8	0.38	469	0.15	245.56	X	57	X	829	34	31	22	126	5.3	X	1490	135	19.6	1.11
HSV 020	763690	6174846	E. socialis	bark	X	600	X	0.2	0.25	194	0.05	110.97	6	23	X	352	13	13	9	45	1.9	X	624	56	14.4	0.93
HSV 021	763690	6174846	E. socialis	twigs	X	580	X	X	0.11	38	X	188.74	X	4	X	33	2	X	X	11	0.2	X	113	7	15	0.09
HSV 022	763690	6174846	E. socialis	leaves	X	1014	X	X	0.2	41	X	116.37	X	5	X	25	1	X	X	45	X	X	160	9	10.1	X
HSV 023	763684	6174842	E. gracilis	leaves	X	1168	X	X	0.57	15	X	183.03	X	X	X	25	2	X	X	14	X	X	48	X	8.2	0.06
HSV 024	763656	6174831	E. gracilis	leaves	X	1191	X	X	0.19	21	X	129.55	X	2	X	32	2	X	X	45	0.2	X	62	X	10.2	0.07
HSV 025	763615	6174826	E. gracilis	leaves	X	1157	X	X	0.3	15	X	137.52	X	X	X	23	2	X	X	13	X	X	44	X	12.8	0.06
HSV 026	763596	6174828	E. gracilis	leaves	X	1268	X	X	0.16	17	X	98.88	X	2	X	24	1	X	X	34	X	X	59	X	9.7	X
HSV 027	763552	6174815	E. gracilis	leaves	X	1697	X	X	0.35	13	X	199.43	X	X	X	22	1	X	X	21	X	X	43	X	14.6	X
HSV 028	763730	6174857	E. gracilis	leaves	X	1161	X	X	0.37	14	X	224.99	X	X	X	25	1	X	X	22	X	X	43	X	10.9	0.06
HSV 029	763847	6174881	E. gracilis	leaves	X	1071	X	X	0.57	16	X	237.71	X	X	X	31	2	X	X	15	0.2	X	54	X	16.1	0.08
HSV 030 (Harts Mine)	764827	6174225	E. gracilis	leaves	X	1425	X	X	0.19	37	X	29.28	X	4	X	47	2	X	X	18	0.3	X	98	8	12.5	0.09
HSV 031 (Harts Mine)	764834	6174233	E. socialis	leaves	X	1014	X	X	0.04	14	X	37.63	X	X	X	35	1	X	X	18	0.2	X	46	X	13.7	0.09
HSV 032	764183	6175004	E. gracilis	leaves	X	1283	X	X	0.13	68	X	219.1	X	6	X	30	2	X	X	11	X	X	139	9	6.5	0.07
HSV 033	764020	6175004	E. gracilis	leaves	X	1088	X	X	0.28	15	X	152.52	X	X	X	28	2	X	X	20	X	X	44	X	8.5	0.07
HSV 034	763974	6174979	E. gracilis	leaves	X	1386	X	X	0.54	17	X	113.19	X	2	X	34	2	X	X	15	0.2	X	54	X	15.1	0.08

*X denotes below detection limits

Appendix III – Soil and Calcrete Grid Locations and Geochemical Assays.

Appendix 3.1 – Soil Grid Locations and Geochemical Assays

Sample No:	Easting	Northing	Calcrete Depth (M)	Sample Depth (M)	Regolith Landform	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd
					ELEMENTS	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd
					UNITS	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm
					DETECTION	1	0.05	20	1	1	0.05	0.01	0.01	0.05	0.01	0.1	2	0.002	1	0.01	0.01	0.01	0.01	0.05	0.01
HS100	763319	6175308	DNH 1m	0.9	HILL SLOPE	0.5	0.06	5226	7	80	1	0.05	13.48	0.29	27.37	2.2	27	0.478	11	1.54	0.9	0.34	1.84	1.39	2.03
HS101	763405	6175302	DNH 1.2m	0.9	HILL SLOPE	4	0.07	25497	8	27	0.98	0.21	0.32	0.025	14.03	9.8	77	2.358	137	1.2	0.61	0.34	9.89	13.87	1.42
HS102	763497	6175300	DNH 1.2m	0.9	HILL SLOPE	7	0.025	32975	8	216	1.06	0.14	13.96	0.025	30.13	10	35	2.072	49	2.28	1.23	0.69	3.27	9.55	2.81
HS103	763594	6175297	DNH 1M	0.9	HILL SLOPE	7	0.025	25136	7	148	1.33	0.1	16.27	0.06	38.63	10.7	25	1.429	82	3.17	1.92	0.87	2.61	7.36	3.65
HS104	763700	6175299	DNH 1.1M	0.9	DEPRESSION	6	0.07	36069	6	282	1.18	0.16	8.97	0.06	32.31	9.5	40	2.365	45	2.87	1.47	0.83	3.6	10.25	3.46
HS105	763802	6175303	DNH 1.2M	0.9	DEPRESSION	4	0.07	36762	5	329	1.18	0.17	13.69	0.07	33.2	8.6	44	2.436	29	2.79	1.44	0.82	3.61	10.07	3.48
HS106	763900	6175298	DNH 1.2m	0.9	HILL SLOPE	4	0.08	23867	7	158	0.79	0.11	19.96	0.025	21.08	5.4	29	1.525	12	1.7	0.91	0.53	2.57	6.62	2.1
HS107	763999	6175295	0.5	0.4	HILL SLOPE	0.5	0.025	18643	5	60	0.66	0.08	2.81	0.025	24.03	6.1	25	1.244	8	1.65	0.86	0.48	2.65	5.1	2.06
HS108	764098	6175300	DNH 1.2m	0.9	HILL SLOPE	3	0.11	33997	8	133	1.47	0.14	18.85	0.025	48.16	10	38	2.161	12	4.19	2.15	1.18	3.36	9.13	5.16
HS109	764198	6175301	DNH 1.2m	0.9	HILL SLOPE	9	0.025	28749	8	131	1.14	0.12	20.1	0.06	31.08	7.6	32	1.934	10	3.04	1.59	0.86	2.71	7.56	3.79
HS110	764302	6175302	DNH 1.2m	0.9	HILL SLOPE	7	0.1	12612	12	79	0.55	0.07	23.08	0.06	18.54	4.4	21	0.995	5	1.26	0.65	0.37	1.91	3.3	1.54
HS111	764404	6175298	DNH 1.1M	0.9	HILL SLOPE	8	0.06	18113	23	88	1.27	0.08	24.07	0.05	40.24	10.1	28	1.278	4	2.26	1.18	0.59	2.87	4.14	2.74
HS112	764496	6175301	DNH 1.1M	0.9	HILL SLOPE	4	0.06	18520	33	33	0.81	0.11	1.32	0.025	24.28	6.7	32	1.44	10	1.57	0.84	0.4	3.91	4.49	1.97
HS113	762999	6174803	DNH 1M	0.9	HILL SLOPE	0.5	0.025	39125	19	242	0.76	0.16	0.77	0.025	16.04	6.3	43	2.64	15	0.75	0.39	0.25	4.2	11.8	1.01
HS114	763103	6174801	0.2	0.1	HILL CREST	0.5	0.025	45875	3	132	1.35	0.17	8.75	0.07	42.02	8.5	48	2.894	8	3.46	1.8	1.04	4.12	12.49	4.3
HS115	763204	6174796	DNH 1.1M	0.9	HILL CREST	9	0.025	14320	7	427	0.5	0.06	17.77	0.07	18.28	4.5	23	0.944	10	2.17	1.25	0.68	1.09	3.92	2.72
HS116	763298	6174800	0.4	0.3	HILL CREST	2	0.025	30897	3	131	0.96	0.11	14.83	0.025	27.55	8.7	31	2	46	2.09	1.09	0.64	2.47	8.88	2.63
HS117	763408	6174798	DNH 1M	0.9	HILL SLOPE	16	0.05	24769	9	119	0.95	0.1	15.45	0.05	25.21	9.1	32	1.482	46	1.83	1	0.54	1.85	6.5	2.25
HS118	763495	6174803	1	0.9	ON AEOLIAN SANDS ALONG ROAD	7	0.025	23345	4	103	0.78	0.09	16.85	0.025	19.51	6.6	27	1.372	20	1.58	0.84	0.48	1.83	6.06	1.93
HS119	763599	6174808	0.7	0.6	ON AEOLIAN SANDS ALONG ROAD	4	0.025	23948	6	114	0.78	0.1	15.5	0.025	21.64	7	25	1.495	18	1.76	0.9	0.54	2.04	6.47	2.17
HS120	763702	6174795	0.7	0.6	ON AEOLIAN SANDS ALONG ROAD	9	0.025	22190	6	108	0.72	0.11	17.04	0.025	18.92	6.7	34	1.389	24	1.49	0.77	0.48	1.87	6.16	1.9
HS121	763809	6174808	1	0.9	HILL CREST	15	0.025	26938	7	156	0.77	0.09	19.34	0.025	23.17	6.4	32	1.686	16	1.84	0.98	0.56	2.39	7.69	2.23
HS122	763898	6174802	0.3	0.2	HILL SLOPE	7	0.05	40036	7	199	1.12	0.14	13.67	0.07	32.44	9.8	44	2.509	22	2.4	1.24	0.72	3.75	11.39	2.91
HS123	764001	6174796	DNH 1.1M	0.9	HILL SLOPE	5	0.025	49240	30	208	0.73	0.18	5.27	0.025	14.53	9.9	61	2.87	21	0.77	0.4	0.25	5.47	17.12	1
HS124	764101	6174795	DNH 1.1M	0.9	HILL SLOPE	27	0.19	48997	28	220	0.92	0.18	9.03	0.07	15.8	9.7	62	3.157	19	0.99	0.56	0.31	4.8	15.58	1.2
HS125	764210	6174800	DNH 1.2m	0.9	HILL SLOPE	5	0.025	26383	4	148	0.81	0.09	16.99	0.025	19.43	8.3	29	1.73	9	1.33	0.73	0.4	2.38	7.58	1.64
HS126	764305	6174807	DNH 1.1M	0.9	HILL SLOPE	11	0.025	25621	7	147	0.82	0.1	19.03	0.08	31.08	7.1	29	1.713	8	2.08	1.09	0.63	2.58	7.34	2.59
HS127	764407	6174795	1.1	1	HILL SLOPE	7	0.09	14241	8	88	0.6	0.07	17.87	0.08	19.39	5.6	19	0.941	3	1.53	0.83	0.45	1.38	3.78	1.97
HS128	764504	6174800	1.1	1	HILL SLOPE	9	0.05	21949	12	105	1.05	0.1	21.26	0.06	29.01	7.1	32	1.376	6	1.94	1	0.5	2.58	5.09	2.39
HS129	762999	6174404	DNH 1M	0.9	DEPRESSION	6	0.07	48563	2	202	1.48	0.18	11.47	0.025	38.6	11	56	3.365	19	3.92	2.06	1.21	4.24	13	4.98
HS130	763103	6174395	DNH 1M	0.9	HILL SLOPE	15	0.025	18284	2	261	0.72	0.12	23.07	0.025	22.93	5.3	27	1.945	5	1.59	0.79	0.49	1.84	5.76	2.18
HS131	763209	6174398	DNH 1M	0.9	HILL SLOPE	0.5	0.025	27234	26	364	0.45	0.15	0.5	0.025	8.7	10.2	43	1.814	11	0.58	0.32	0.18	4.06	10.36	0.75
HS132	763303	6174391	DNH 1M	0.9	HILL SLOPE	0.5	0.025	30618	14	183	0.57	0.14	0.55	0.025	11.8	5.7	37	2.063	10	0.59	0.32	0.19	3.38	9.43	0.79
HS133	763400	6174405	1.1	1	HILL CREST	2	0.025	14084	4	76	0.5	0.06	10.13	0.025	13.52	5	14	0.858	8	1.16	0.62	0.34	1.43	3.85	1.43
HS134	763497	6174410	0.4	0.3	HILL CREST	12	0.08	27176	4	112	0.84	0.09	17.53	0.05	22.82	6.4	29	1.609	13	1.68	0.93	0.53	1.98	6.63	2.24
HS135	763611	6174417	0.5	0.4	HILL CREST	12	0.025	26006	4	120	0.96	0.09	17.67	0.025	22.95	7.4	27	1.574	18	1.82	0.94	0.56	1.88	6.65	2.31
HS136	763704	6174400	0.2	0.1	HILL CREST	6	0.025	24795	3	103	0.82	0.08	16.29	0.025	24.03	7.3	23	1.463	20	1.74	0.92	0.53	1.72	6.12	2.23
HS137	763812	6174412	DNH 1M	0.9	HILL SLOPE	3	0.025	22040	8	104	0.63	0.08	5.4	0.025	17.87	5.8	22	1.291	16	1.18	0.63	0.37	1.97	5.68	1.5
HS138	763902	6174410	DNH 1M	0.9	HILL SLOPE	10	0.025	30144	7	205	0.79	0.12	2.41	0.025	26.46	8.1	32	1.906	50	1.81	0.94	0.54	2.92	8.33	2.22
HS139	763990	6174405	0.4	0.3	HILL SLOPE	8	0.025	26841	6	124	0.74	0.09	13.14	0.06	21.37	6.8	27	1.593	25	1.65	0.88	0.51	2.09	7.01	2.12

*X denotes below detection limits

					ELEMENTS	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd
					UNITS	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm
					DETECTION	1	0.05	20	1	1	0.05	0.01	0.01	0.05	0.01	0.1	2	0.002	1	0.01	0.01	0.01	0.01	0.05	0.01
Sample No:	**Easting**	**Northing**	**Calcrete Depth (M)**	**Sample Depth (M)**	**Regolith Landform**																				
HS140	764101	6174398	DNH 1M	0.9	HILL SLOPE	2	0.12	29349	20	205	0.49	0.12	0.91	0.025	11.41	5.2	37	1.955	13	0.62	0.34	0.2	3.1	9.22	0.79
HS141	764210	6174404	DNH 1M	0.9	HILL SLOPE	2	0.025	28799	24	239	0.48	0.12	1.1	0.025	12.22	5.8	36	1.965	9	0.67	0.35	0.21	2.99	9.19	0.87
HS142	764287	6174403	DNH 1M	0.9	HILL SLOPE	7	0.025	26416	7	215	0.74	0.1	15.65	0.025	22.94	7.4	28	1.744	12	1.57	0.84	0.48	2.27	7.75	1.95
HS143	764410	6174407	DNH 1.1M	0.9	HILL SLOPE	12	0.025	33727	38	107	0.86	0.13	9.47	0.07	26.93	10.4	51	2.315	16	1.65	0.87	0.48	3.25	10.08	2.12
HS144	764499	6174409	1	0.9	HILL SLOPE	7	0.025	22163	7	112	0.91	0.07	20.93	0.05	21.16	6.4	25	1.393	5	1.63	0.83	0.5	1.89	5.74	2.06
HS145	764603	6174395	0.6	0.5	HILL SLOPE	12	0.025	18358	9	138	0.85	0.08	24.71	0.07	23.88	6.1	26	1.197	9	1.89	0.99	0.54	1.92	4.74	2.35
HS146	764710	6174400	0.8	0.7	HILL CREST	4	0.025	13600	15	75	0.77	0.06	19.36	0.09	23.83	7.8	17	0.862	6	1.95	1.03	0.51	1.56	3.54	2.28
HS147	762998	6173996	DNH 1.1M	0.9	HILL SLOPE	7	0.025	23545	19	389	0.44	0.11	11.93	0.025	11.33	5.3	37	1.893	13	0.56	0.29	0.21	3.91	10.8	0.77
HS148	763098	6174000	0.5	0.4	HILL SLOPE	4	0.025	17497	3	330	0.56	0.11	14.12	0.025	18.01	4.5	23	2.25	10	0.82	0.43	0.27	1.63	6.84	1.14
HS149	763195	6174013	0.3	0.2	HILL SLOPE	5	0.025	20187	7	217	1.09	0.14	10.9	0.025	26.31	6.2	29	3.87	9	1.54	0.76	0.43	2.58	6.62	1.97
HS150	763294	6174003	0.5	0.4	HILL SLOPE	20	0.18	27480	6	177	1.15	0.39	17.92	0.06	27.93	7.5	31	2.491	132	2.07	1.15	0.59	2.54	8.21	2.64
HS151	763397	6173996	DNH 1M	0.9	DEPRESSION	6	0.025	37869	2	202	1.24	0.15	13.51	0.025	35.06	9.5	43	2.631	29	3.34	1.76	1	3.18	10.35	4.15
HS152	763499	6174000	DNH 1M	0.9	DEPRESSION	5	0.025	35236	3	305	1.02	0.13	16.09	0.025	28.75	8.5	39	2.254	19	2.56	1.37	0.76	3.08	9.92	3.14
HS153	763601	6173997	0.5	0.4	HILL SLOPE	49	0.025	33542	12	136	1.25	0.11	16.93	0.05	39.17	11.1	38	2.029	153	2.06	1.19	0.65	3.32	9.4	2.58
HS154	763695	6173996	0.2	0.1	HILL SLOPE	4	0.025	26843	11	139	0.78	0.09	13.22	0.07	28.8	7.3	31	1.763	36	3.23	1.76	0.95	2.69	7.52	4.04
HS155	763793	6173999	0.3	0.2	HILL SLOPE	72	0.025	24096	17	164	0.52	0.1	15.26	0.025	19.63	7.7	29	1.684	60	1.07	0.57	0.36	2.57	7.35	1.39
HS156	763908	6173995	DNH 1M	0.9	HILL SLOPE	18	0.025	31101	8	757	0.57	0.15	15.16	0.06	11.2	5.9	38	2.418	16	0.84	0.5	0.26	3.16	10.65	0.98
HS157	763997	6174005	DNH 1M	0.9	HILL SLOPE	10	0.025	41108	12	110	0.82	0.2	5.5	0.025	14.91	9.6	53	3.008	16	0.7	0.39	0.24	4.95	14.66	0.96
HS158	764097	6173999	DNH 1M	0.9	HILL SLOPE	5	0.025	18179	15	94	0.34	0.13	1.42	0.025	7.47	4.9	195	1.452	17	0.4	0.22	0.12	3.77	7.14	0.51
HS159	764209	6174002	0.2	0.1	HILL CREST	2	0.025	10548	2	62	0.27	0.06	5.51	0.07	8.91	2.7	13	0.694	4	0.64	0.34	0.19	1.35	3.09	0.79
HS160	764402	6173989	1.1	1	HILL CREST	3	0.025	27160	10	148	0.85	0.11	15.65	0.025	22.13	5.6	29	1.667	7	1.81	0.97	0.52	2.5	7.38	2.17
HS161	764497	6173992	DNH 1M	0.9	HILL CREST	5	0.025	17728	7	133	0.62	0.08	18.87	0.025	16.81	5.3	20	1.17	8	1.3	0.69	0.4	1.7	4.92	1.65
HS162	764603	6173995	DNH 1M	0.9	HILL SLOPE	4	0.025	19112	11	101	1.72	0.08	15.94	0.025	33.7	9.2	23	1.231	5	2.66	1.45	0.66	2.36	5.2	3.14
HS163	764698	6173997	0.3	0.2	HILL SLOPE	13	0.07	30893	40	100	2.34	0.2	13.17	0.16	56.74	12.7	54	1.826	14	4.05	2.34	1.05	5.07	6.95	5
HS164	763006	6173610	0.2	0.1	HILL CREST	0.5	0.025	17601	2	49	0.51	0.08	1.58	0.025	17.7	4.1	23	1.059	8	1.29	0.67	0.39	1.93	4.74	1.6
HS165	763098	6173602	0.2	0.1	HILL CREST	11	0.025	39996	4	111	1.22	0.18	7.47	0.12	34.1	7.4	48	2.531	13	2.52	1.3	0.75	3.45	10.65	3.22
HS166	763200	6173598	DNH 1M	0.9	HILL SLOPE	0.5	0.025	32491	27	173	0.68	0.14	0.39	0.025	14.18	5.6	36	2.073	7	0.76	0.39	0.22	3.6	9.76	0.97
HS167	763300	6173598	0.3	0.2	HILL CREST	9	0.025	25185	8	125	0.71	0.1	16.01	0.025	20.85	7.5	24	1.645	20	1.52	0.81	0.47	1.97	7.16	1.88
HS168	763403	6173603	DNH 1M	0.9	HILL CREST	0.5	0.025	29560	20	253	0.63	0.16	0.12	0.025	15.15	5.5	33	1.869	12	0.76	0.4	0.24	3.46	8.29	0.98
HS169	763505	6173606	DNH 1	0.9	HILL CREST	4	0.025	31722	22	164	0.71	0.13	0.31	0.025	17.56	5.8	32	1.926	14	0.85	0.46	0.26	3.16	8.23	1.08
HS170	763594	6173607	0.7	0.6	HILL CREST	6	0.025	19216	10	172	0.5	0.09	14.8	0.025	13.89	6.2	21	1.509	18	0.98	0.53	0.3	1.97	6.4	1.23
HS171	763696	6173600	DNH 1.2m	0.9	HILL CREST	12	0.025	29545	20	524	0.62	0.16	9.08	0.025	11.83	9.8	43	2.288	18	0.64	0.34	0.21	4.46	12.72	0.8
HS172	763795	6173599	DNH 1M	0.9	HILL SLOPE	18	0.1	28326	11	110	0.45	0.19	3.46	0.025	8.44	5.8	43	2.251	26	0.49	0.27	0.15	3.57	9.85	0.59
HS173	763896	6173596	DNH 1M	0.9	HILL SLOPE	15	0.025	40509	13	370	0.79	0.18	10.16	0.025	15.18	8.1	46	2.838	17	0.94	0.52	0.29	3.97	12.87	1.08
HS174	763990	6173592	DNH 1M	0.9	HILL SLOPE	20	0.08	29849	76	505	0.69	0.19	17.94	0.025	19.71	10.1	45	1.92	24	2.4	1.47	0.56	4.49	8.67	2.53
HS175	764198	6173598	0.7	0.6	HILL SLOPE	5	0.05	27896	12	127	1.41	0.1	19.67	0.05	45.78	5.6	27	1.697	8	4.48	2.35	0.88	2.27	8.14	4.96
HS176	764300	6173600	DNH 1M	0.9	HILL SLOPE	9	0.025	33614	4	207	1.11	0.15	17.17	0.025	29.83	8	36	2.178	11	2.85	1.55	0.77	3.02	9.24	3.31
HS177	764400	6173600	DNH 1.1M	0.9	HILL CREST	11	0.025	27390	9	161	0.92	0.13	18.94	0.05	29.04	8.6	31	1.781	14	2.27	1.22	0.61	2.68	7.2	2.7
HS178	764500	6173600	DNH 1M	0.9	HILL SLOPE	6	0.025	22686	16	253	0.43	0.1	17.69	0.025	13.77	4.8	27	1.676	8	0.81	0.45	0.21	2.62	7.27	0.97
HS179	764600	6173600	0.5	0.4	HILL SLOPE	2	0.025	25395	12	186	1.05	0.11	18.35	0.06	53.53	5.9	28	1.71	12	3.39	1.88	0.73	2.6	6.95	3.97
HS180	764700	6173600	0.8	0.7	HILL CREST	5	0.025	14383	4	83	1.25	0.08	6.81	0.025	169.8	4.2	20	1.565	7	5.04	3.63	0.71	1.64	5.29	5
HS181	762990	6173255	0.2	0.1	HILL SLOPE	0.5	0.025	17505	16	73	0.49	0.14	2.68	0.025	14.95	4.9	41	1.127	5	1.05	0.57	0.29	4.68	6.12	1.25
HS182	763100	6173250	DNH 1M	0.9	HILL CREST	0.5	0.025	31496	31	262	0.52	0.13	0.99	0.025	12.32	4.4	31	1.898	8	0.59	0.3	0.2	2.87	8.78	0.8
HS183	763200	6173250	0.4	0.3	HILL CREST	5	0.025	31593	7	139	0.99	0.11	15.67	0.025	27.74	7.6	31	1.935	14	2.18	1.15	0.63	2.61	8.74	2.74
HS184	763300	6173250	DNH 1.1M	0.9	HILL SLOPE	14	0.025	28259	8	123	0.93	0.13	18.57	0.025	23.74	5.7	38	1.662	12	1.77	0.94	0.52	2.52	7.57	2.13

*X denotes below detection limits

Appendix 3.1 – Soil Grid Locations and Geochemical Assays

					ELEMENTS	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd
					UNITS	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm
					DETECTION	1	0.05	20	1	1	0.05	0.01	0.01	0.05	0.01	0.1	2	0.002	1	0.01	0.01	0.01	0.01	0.05	0.01
Sample No:	Easting	Northing	Depth to Calcrete (M)	Depth of Sample (M)	Regolith Landform																				
HS185	763400	6173250	0.5	0.4	HILL CREST PLAIN	7	0.025	24497	6	133	0.64	0.1	19.92	0.06	18.54	6.8	26	1.493	11	1.39	0.75	0.42	2.07	6.77	1.7
HS186	763500	6173250	0.4	0.3	HILL CREST PLAIN	14	0.07	26673	5	115	0.97	0.13	14.77	0.1	20.63	6.2	29	1.745	15	1.48	0.8	0.47	2.31	7.4	1.9
HS187	763600	6173250	0.5	0.4	HILL CREST PLAIN	18	0.025	28401	4	137	0.86	0.13	17.2	0.05	23.96	6.6	31	1.906	14	1.62	0.88	0.52	2.34	7.84	2.12
HS188	763700	6173250	0.2	0.1	HILL CREST PLAIN	1	0.025	14620	4	82	0.4	0.08	8.38	0.025	12.16	4.8	314	1.011	12	0.91	0.48	0.28	1.86	4.58	1.12
HS189	763800	6173250	0.4	0.3	HILL CREST PLAIN	1	0.025	15502	4	82	0.41	0.07	6.48	0.025	12.44	3.6	18	1.066	8	0.88	0.47	0.26	1.84	4.79	1.12
HS190	763900	6173250	0.3	0.2	HILL CREST PLAIN	1	0.025	14221	5	79	0.38	0.07	8.3	0.025	11.41	4.2	18	0.97	7	0.87	0.49	0.25	1.66	4.36	1.08
HS191	764100	6173250	DNH 1M	0.9	HILL SLOPE	0.5	0.025	23527	23	255	0.37	0.15	0.19	0.025	9.95	3.5	33	1.617	7	0.46	0.25	0.16	3.33	7.75	0.66
HS192	764200	6173250	DNH 1M	0.9	HILL SLOPE	0.5	0.025	17766	14	276	0.36	0.11	1.47	0.025	9.52	3.9	26	1.348	6	0.52	0.27	0.16	2.74	6.23	0.68
HS193	764295	6173248	DNH 1.1M	0.9	HILL SLOPE	0.5	0.025	16609	12	198	0.27	0.14	0.26	0.025	8.51	3.2	107	1.488	10	0.36	0.2	0.12	3.69	7.36	0.5
HS194	764390	6173255	DNH 1M	0.9	HILL SLOPE	0.5	0.025	12454	16	120	0.37	0.11	0.9	0.025	8.24	6.7	104	1.007	6	0.59	0.4	0.14	2.84	5.53	0.63
HS195	764494	6173253	DNH 1M	0.9	HILL SLOPE	9	0.07	39507	47	465	0.71	0.18	9.92	0.06	17.52	6.4	46	2.902	14	1.1	0.61	0.35	3.85	12.25	1.47
HS196	764598	6173254	DNH 1M	0.9	HILL SLOPE	0.5	0.025	30158	38	494	0.49	0.14	0.64	0.025	9.77	5	33	1.919	7	0.51	0.26	0.17	3.27	8.66	0.66
HS197	762993	6172847	1	0.9	HILL CREST	0.5	0.025	10885	19	78	0.5	0.15	8.93	0.025	13.68	4.8	43	0.827	5	1.01	0.54	0.29	4.1	4.46	1.21
HS198	763103	6172854	DNH 1M	0.9	HILL SLOPE	12	0.09	14959	4	113	0.66	0.11	11.6	0.025	26.34	4.8	21	3.003	8	0.81	0.39	0.24	0.96	5.4	1.31
HS199	763210	6172847	DNH 1M	0.9	HILL SLOPE	4	0.025	14162	32	139	0.27	0.1	1.96	0.025	8.45	3.4	69	1.14	10	0.37	0.2	0.12	2.46	6	0.5
HS200	763308	6172850	0.4	0.3	HILL CREST PLAIN	10	0.025	25133	6	129	0.75	0.1	16.63	0.025	19.13	6.2	27	1.738	12	1.35	0.68	0.41	2.14	7.21	1.67
HS201	763409	6172847	0.3	0.2	HILL CREST PLAIN	2	0.025	13227	7	95	0.41	0.09	9.43	0.025	11.43	4.9	18	0.943	9	0.87	0.49	0.27	1.79	4.12	1.09
HS202	763500	6172855	0.5	0.4	HILL CREST PLAIN	28	0.11	27012	10	125	1.02	0.17	14.46	0.025	20.5	6.5	31	1.799	14	1.36	0.69	0.43	2.34	7.89	1.73
HS203	763603	6172847	0.3	0.2	HILL CREST PLAIN	1	0.025	23165	3	105	0.82	0.09	13.56	0.025	18.61	5.8	23	1.57	11	1.38	0.74	0.44	1.85	6.85	1.75
HS204	763703	6172848	0.4	0.3	HILL CREST PLAIN	3	0.025	22014	5	116	0.63	0.08	14.44	0.025	16.64	5.4	21	1.551	11	1.29	0.68	0.38	1.77	6.71	1.61
HS205	763793	6172850	0.3	0.2	HILL CREST PLAIN	9	0.05	28596	4	137	0.8	0.13	17.97	0.025	23.3	6.1	31	1.898	10	1.66	0.88	0.51	2.42	8.01	2.16
HS206	763896	6172852	0.4	0.3	HILL CREST PLAIN	9	0.025	32452	5	138	0.93	0.12	14.88	0.06	23.74	6.3	32	2.058	9	1.65	0.87	0.51	2.61	8.8	2.13
HS207	764012	6172856	0.2	0.1	HILL CREST PLAIN	0.5	0.025	13200	3	67	0.42	0.07	5.49	0.025	10.76	2.8	17	0.845	6	0.8	0.44	0.24	1.64	3.82	1.01
HS208	764102	6172850	0.4	0.3	HILL CREST PLAIN	3	0.025	26532	5	130	0.8	0.1	14.27	0.025	19.76	5.8	27	1.807	8	1.59	0.81	0.49	2.21	7.89	1.97
HS209	764205	6172852	0.3	0.2	HILL CREST PLAIN	6	0.05	25638	2	116	0.75	0.11	11.69	0.06	20.28	5.3	28	1.654	7	1.53	0.82	0.48	2.26	7.24	1.9
HS210	764297	6172851	0.2	0.1	HILL CREST PLAIN	9	0.1	22712	2	107	0.64	0.11	14.33	0.06	16.61	5	25	1.475	9	1.22	0.63	0.37	2.02	6.51	1.47
HS211	764394	6172850	0.2	0.1	HILL CREST PLAIN	0.5	0.025	12055	4	71	0.33	0.06	7.15	0.06	8.9	3.2	15	0.789	7	0.61	0.33	0.18	1.38	3.53	0.78
HS212	764498	6172855	0.2	0.1	HILL SLOPE	0.5	0.025	10392	4	52	0.26	0.06	2.16	0.11	8.67	2.4	28	0.727	5	0.55	0.29	0.15	1.45	3.05	0.72
HS213	763200	6175304	DNH 1M	0.9	HILL SLOPE	4	0.025	45576	16	124	0.68	0.23	1.24	0.025	14.67	11	58	2.963	12	0.68	0.38	0.22	5.22	15.84	0.95
HS214	763100	6175300	DNH 1M	0.9	HILL SLOPE	2	0.025	26818	28	236	0.59	0.15	0.38	0.025	15.01	7.9	36	2.106	10	0.7	0.38	0.21	3.4	8.74	0.86
HS215	763004	6175293	DNH 1M	0.9	HILL SLOPE	2	0.025	31727	14	211	0.58	0.15	0.51	0.025	12.42	4.8	35	2.122	11	0.65	0.34	0.2	3.09	8.56	0.87
HS216	763245	6175298	0.4	0.3	HILL SLOPE	6	0.025	24792	18	213	0.57	0.1	14.08	0.025	13.12	7.3	30	2.313	17	0.83	0.43	0.27	2.68	8.31	1.05
HS217	763252	6174803	0.4	0.3	HILL CREST PLAIN	0.5	0.025	20055	1	63	0.53	0.08	2.05	0.025	16.73	3.2	21	1.291	4	1.18	0.59	0.37	2.02	5.17	1.54
HS218	763359	6175302	0.6	0.5	HILL SLOPE	5	0.025	14184	6	185	0.49	0.07	14.08	0.025	33.96	7.2	19	0.829	45	0.97	0.49	0.44	1.48	4.06	1.64
HS219	763549	6175299	0.2	0.1	HILL SLOPE	2	0.025	13853	6	51	1.17	0.07	4.53	0.025	78.29	8.3	18	0.699	22	2.4	1.39	0.64	3.2	4.91	3.03
HS220	764600	6175297	DNH 1M	0.9	HILL SLOPE	2	0.025	13435	10	78	0.5	0.04	12.32	0.06	14.87	5.2	12	0.824	6	1.27	0.67	0.36	1.12	3.59	1.53
HS221	764694	6175304	DNH 1M	0.9	HILL SLOPE	4	0.025	16759	27	77	0.9	0.08	15.07	0.1	26.26	9.4	19	1.271	7	1.93	1.06	0.54	2.02	4.16	2.35
HS222	764810	6175302	DNH 1M	0.9	HILL SLOPE	0.5	0.025	14360	43	26	0.67	0.12	1.75	0.025	26.45	5.2	29	2.887	11	1.13	0.6	0.29	4.76	3.76	1.4
HS223	764596	6174800	DNH 1M	0.9	HILL SLOPE	4	0.025	10720	10	62	0.55	0.05	14.8	0.025	14.29	5.5	12	0.714	5	1.09	0.61	0.3	1.18	2.76	1.32
HS224	764708	6174806	1	0.9	HILL CREST	12	0.07	15248	16	70	0.93	0.09	20.75	0.08	23.73	6	22	1.003	6	1.69	0.96	0.46	1.58	3.64	2.04
HS225	764802	6174802	0.1	0	HILL CREST	8	0.16	24661	32	78	1.37	0.15	14.26	0.25	38.75	9	37	1.707	15	2.39	1.25	0.62	3.97	5.56	2.88
HS226	763357	6174797	1	0.9	HILL CREST	5	0.025	21536	4	116	0.81	0.1	18.21	0.025	18.69	7	25	1.395	21	1.5	0.79	0.46	1.71	5.86	1.89
HS227	763454	6174808	0.3	0.2	HILL CREST PLAIN	24	0.07	23609	2	106	0.98	0.12	18.81	0.025	21.35	8.1	33	1.417	28	1.61	0.91	0.51	1.84	5.85	2.06
HS228	763543	6174820	0.3	0.2	HILL CREST PLAIN	3	0.025	21447	3	102	0.67	0.08	15.76	0.025	17.85	6.6	20	1.349	15	1.41	0.74	0.42	1.57	5.71	1.78
HS229	763250	6174395	DNH 1M	0.9	HILL SLOPE	2	0.025	34911	27	131	0.89	0.17	1.97	0.025	16.46	27.8	57	2.374	20	1.08	0.59	0.29	5.42	14.15	1.26

*X denotes below detection limits

Appendix 3.1 – Soil Grid Locations and Geochemical Assays

					ELEMENTS	Au	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd
					UNITS	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm
					DETECTION	1	0.05	20	1	1	0.05	0.01	0.01	0.05	0.01	0.1	2	0.002	1	0.01	0.01	0.01	0.01	0.05	0.01
Sample No:	**Easting**	**Northing**	**Calcrete Depth (M)**	**Sample Depth (M)**	**Regolith Landform**																				
HS230	763357	6174402	0.2	0.1	HILL CREST	10	0.025	18500	4	110	0.72	0.09	16.16	0.06	16.78	6.3	23	1.111	10	1.43	0.77	0.42	1.4	4.53	1.73
HS231	763455	6174399	0.2	0.1	HILL CREST PLAIN	3	0.025	26354	4	121	0.84	0.14	16.34	0.08	23.54	6.5	31	1.584	11	1.92	1.04	0.64	2.14	6.38	2.38
HS232	763544	6174410	0.2	0.1	HILL CREST PLAIN	17	0.12	26981	4	120	0.86	0.17	18.63	0.05	24.19	6.2	29	1.635	10	1.98	1.08	0.63	2.1	6.7	2.62
HS233	763253	6174014	0.2	0.1	HILL SLOPE	0.5	0.025	17918	5	110	0.75	0.12	1.72	0.08	28.99	5.2	27	2.097	7	1.44	0.7	0.44	2.74	5.35	2.03
HS234	763351	6174001	DNH 1M	0.9	DEPRESSION	1	0.025	27475	3	128	1.02	0.12	13.94	0.025	26.32	7.3	28	2.178	34	2.47	1.31	0.71	2.39	7.89	3.02
HS235	763456	6174000	DNH 1M	0.9	DEPRESSION	1	0.15	44915	4	284	1.39	0.18	11.52	0.06	41.13	10.7	49	3	26	3.59	1.96	1.06	3.77	12.26	4.41
HS236	763550	6174001	DNH 1M	0.9	HILL SLOPE	12	0.025	26296	8	130	0.88	0.14	16.04	0.025	41.5	7.6	30	1.662	82	1.89	1.08	0.57	2.62	7.85	2.26
HS237	763260	6173596	0.3	0.2	HILL CREST	26	0.09	24282	6	114	0.8	0.12	16.04	0.07	22.28	8.2	32	1.545	24	1.59	0.82	0.44	1.92	6.56	1.94
HS238	763353	6173595	0.2	0.1	HILL CREST	8	0.08	29281	5	127	0.94	0.11	17.38	0.025	26.13	7.8	32	1.736	16	1.81	0.99	0.58	2.2	7.34	2.26
HS239	763443	6173603	DNH 1M	0.9	HILL CREST	2	0.025	29544	26	177	0.64	0.12	3.43	0.025	17.03	6.4	29	1.93	12	1.24	0.66	0.38	2.66	8.46	1.62
HS240	763553	6173603	0.3	0.2	HILL CREST	14	0.025	27475	7	130	1.08	0.12	15.73	0.05	20.97	7.1	33	1.829	28	1.44	0.74	0.45	2.37	7.79	1.79
HS241	763254	6173255	0.3	0.2	HILL CREST PLAIN	0.5	0.025	15501	4	72	0.52	0.07	6.15	0.025	16.35	4.3	20	1.094	6	1.2	0.62	0.35	1.9	4.42	1.49
HS242	763347	6173251	1	0.9	HILL CREST PLAIN	1	0.025	19726	7	86	0.58	0.09	9.26	0.025	21.05	6.4	21	1.274	7	1.53	0.81	0.47	1.91	5.71	1.92
HS243	763450	6173267	0.3	0.2	HILL CREST PLAIN	1	0.025	14778	5	74	0.41	0.08	7.14	0.025	11.55	3.6	20	0.972	5	0.83	0.45	0.26	1.81	4.48	1.03
HS244	763549	6173255	0.5	0.4	HILL CREST PLAIN	8	0.05	28880	7	139	0.92	0.13	15.67	0.025	22.57	7	40	1.877	22	1.56	0.84	0.51	2.45	8.13	2.1
HS245	763264	6172849	0.3	0.2	HILL CREST PLAIN	10	0.14	27811	6	153	1.08	0.14	15.41	0.08	21.14	6.8	38	1.927	19	1.38	0.73	0.41	2.44	8.1	1.71
HS246	763348	6172852	0.3	0.2	HILL CREST PLAIN	0.5	0.025	14442	5	85	0.39	0.08	9.05	0.025	11.98	4	17	1.003	6	0.93	0.51	0.28	1.63	4.36	1.14
HS247	763451	6172851	0.4	0.3	HILL CREST PLAIN	10	0.36	20724	9	104	0.75	0.1	15.08	0.05	15.56	6.1	25	1.356	14	1.05	0.57	0.32	1.73	5.89	1.32
HS248	763545	6172855	DNH 1M	0.9	HILL CREST PLAIN	0.5	0.025	24262	16	332	0.76	0.1	5.26	0.025	25.02	7.7	23	1.446	8	1.34	0.72	0.42	2.2	6.06	1.59
			* DNH = Did not hit Calcrete horizon																						

Appendix 3.1 – Soil Grid Locations and Geochemical Assays

Sample No:	Easting	Northing	Calcrete Depth (M)	Sample Depth (M)	Regolith Landform	Hf	Ho	In	K	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	P	Pb	Pd	Pr	Pt	Rb	Re	Sb
					UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppb	ppm	ppm	ppm
					DETECTION	0.01	0.01	0.01	20	0.01	0.1	0.01	1	0.1	0.02	0.01	1	20	1	10	0.005	10	0.02	0.01	0.02
HS100	763319	6175308	DNH 1m	0.9	HILL SLOPE	0.34	0.3	0.02	3215	20.16	3.5	0.3	85	1.2	0.1	13.56	5	175	6	11	3.752	X	9.22	X	0.08
HS101	763405	6175302	DNH 1.2m	0.9	HILL SLOPE	0.45	0.21	0.07	5265	7.18	6.1	0.42	72	5.8	0.05	7.14	13	420	6	<30	1.84	<30	75.37	X	0.2
HS102	763497	6175300	DNH 1.2m	0.9	HILL SLOPE	0.67	0.42	0.05	5782	15.04	26.3	2.04	234	0.5	0.13	15.51	17	280	8	<30	3.933	<30	32.8	X	0.18
HS103	763594	6175297	DNH 1M	0.9	HILL SLOPE	0.51	0.61	0.06	7328	26.03	25.9	3.72	354	0.5	0.15	20.86	14	240	8	<30	5.684	<30	29.17	X	0.18
HS104	763700	6175299	DNH 1.1M	0.9	DEPRESSION	0.65	0.51	0.05	7872	16.56	22.7	1.67	442	0.5	0.11	17.42	19	292	9	<20	4.441	<20	43.55	X	0.17
HS105	763802	6175303	DNH 1.2M	0.9	DEPRESSION	0.57	0.52	0.05	8052	17.74	19.4	1.26	283	0.6	0.13	18.59	17	273	10	<50	4.68	<50	43.1	X	0.18
HS106	763900	6175298	DNH 1.2m	0.9	HILL SLOPE	0.49	0.32	0.03	6105	10.3	13.7	1.28	107	0.4	0.1	11.07	14	242	7	<30	2.776	<30	30.25	X	0.2
HS107	763999	6175295	0.5	0.4	HILL SLOPE	0.37	0.3	0.03	4431	10.96	9.9	0.32	229	0.4	0.08	11.36	11	101	6	0	2.881	X	26.13	X	0.13
HS108	764098	6175300	DNH 1.2m	0.9	HILL SLOPE	0.59	0.74	0.04	7495	27	24.4	0.94	116	0.5	0.13	30.39	20	228	10	<30	7.884	<30	45.59	X	0.19
HS109	764198	6175301	DNH 1.2m	0.9	HILL SLOPE	0.47	0.56	0.04	7060	18.91	19.6	0.88	233	0.3	0.11	21.17	13	284	8	<20	5.361	<20	37.26	X	0.14
HS110	764302	6175302	DNH 1.2m	0.9	HILL SLOPE	0.15	0.22	0.02	3576	8.77	9.1	0.97	172	0.3	0.15	9.73	8	301	5	<30	2.518	<30	17.73	X	0.21
HS111	764404	6175298	DNH 1.1M	0.9	HILL SLOPE	0.58	0.41	0.04	5463	18.25	11.3	0.99	425	0.5	0.14	17.34	13	306	8	<30	4.65	<30	24.1	X	0.28
HS112	764496	6175301	DNH 1.1M	0.9	HILL SLOPE	0.5	0.29	0.03	3747	13.01	10.9	1.6	49	1.1	0.2	13.4	11	68	6	<40	3.571	<40	17.07	X	0.31
HS113	762999	6174803	DNH 1M	0.9	HILL SLOPE	0.51	0.13	0.04	9048	7.99	19.1	1.15	131	0.8	0.03	6.65	11	69	7	X	1.836	10	42.23	X	0.27
HS114	763103	6174801	0.2	0.1	HILL CREST	0.69	0.63	0.06	12392	20.71	27.6	0.8	131	0.3	0.18	23.28	21	233	13	<20	5.841	<20	57.54	X	0.22
HS115	763204	6174796	DNH 1.1M	0.9	HILL CREST	0.43	0.43	0.02	3784	14.29	17.7	9.37	83	0.3	0.07	14.32	18	123	5	<50	3.447	<50	16.75	X	0.22
HS116	763298	6174800	0.4	0.3	HILL CREST	0.49	0.38	0.04	8628	13.68	23.4	1.8	170	0.3	0.21	14.29	21	245	8	<15	3.684	<15	40.3	X	0.19
HS117	763408	6174798	DNH 1M	0.9	HILL SLOPE	0.52	0.34	0.03	7602	12.09	31.2	5.69	167	0.4	0.09	12.43	28	218	8	<50	3.21	<50	27.96	X	0.27
HS118	763495	6174803	1	0.9	ON AEOLIAN SANDS ALONG ROAD	0.43	0.3	0.03	6658	9.86	19.7	3.23	117	0.2	0.11	10.73	21	221	6	<30	2.685	<30	26.63	X	0.19
HS119	763599	6174808	0.7	0.6	ON AEOLIAN SANDS ALONG ROAD	0.42	0.31	0.03	7408	11.47	20.3	3.32	156	0.3	0.1	11.8	17	208	9	<20	2.976	<20	31.72	X	0.18
HS120	763702	6174795	0.7	0.6	ON AEOLIAN SANDS ALONG ROAD	0.48	0.27	0.03	6067	10.04	21.9	4.26	134	0.4	0.12	10.24	32	203	6	<50	2.618	<50	26.9	X	0.21
HS121	763809	6174808	1	0.9	HILL CREST	0.53	0.35	0.03	7599	11.19	20.1	1.93	110	0.2	0.07	11.8	18	217	7	<30	2.966	<30	31.01	X	0.21
HS122	763898	6174802	0.3	0.2	HILL SLOPE	0.71	0.45	0.05	7237	15.77	19.7	1.08	131	0.4	0.15	15.72	18	259	10	<30	4.079	<30	44.57	X	0.29
HS123	764001	6174796	DNH 1.1M	0.9	HILL SLOPE	0.98	0.13	0.06	5267	9.58	20.8	2.44	81	0.7	0.05	6.81	20	102	8	<30	1.889	<30	44.77	X	0.33
HS124	764101	6174795	DNH 1.1M	0.9	HILL SLOPE	1.32	0.18	0.07	5332	9.69	24.3	2.44	93	1.3	0.11	7.64	25	89	10	<70	2.056	<70	48.46	X	0.44
HS125	764210	6174800	DNH 1.2m	0.9	HILL SLOPE	0.61	0.25	0.03	6715	8.6	16.4	2.89	96	0.3	0.08	9.1	16	222	6	<30	2.299	<30	32.33	X	0.19
HS126	764305	6174807	DNH 1.1M	0.9	HILL SLOPE	0.51	0.38	0.03	6865	14.14	16.3	1.92	169	0.3	0.1	14.58	15	230	8	<20	3.762	<20	35.14	X	0.18
HS127	764407	6174795	1.1	1	HILL SLOPE	0.42	0.28	0.02	4088	11.87	14.4	8.61	146	0.3	0.1	11.96	10	131	5	<50	3.015	<50	18.77	X	0.2
HS128	764504	6174800	1.1	1	HILL SLOPE	0.6	0.36	0.03	6717	13.85	13.9	4.13	194	0.5	0.14	12.85	19	164	7	<50	3.41	<50	31.9	X	0.37
HS129	762999	6174404	DNH 1M	0.9	DEPRESSION	0.81	0.73	0.05	9854	25.94	24.7	1.09	312	0.4	0.14	27.24	30	229	10	<50	6.89	<50	60.48	X	0.22
HS130	763103	6174395	DNH 1M	0.9	HILL SLOPE	0.54	0.28	0.02	2522	13.07	12.9	1.6	95	0.7	0.14	12.51	14	234	3	<50	3.194	<50	20.92	X	0.19
HS131	763209	6174398	DNH 1M	0.9	HILL SLOPE	0.53	0.11	0.04	4040	5.42	20.9	0.87	79	0.7	0.03	4.3	13	34	4	0	1.148	X	27.39	X	0.22
HS132	763303	6174391	DNH 1M	0.9	HILL SLOPE	0.41	0.11	0.03	6763	5.99	19.4	0.82	123	0.7	0.02	5.17	11	42	5	0	1.38	X	32.27	X	0.16
HS133	763400	6174405	1.1	1	HILL CREST	0.32	0.22	0.02	4547	7.08	17.7	3.15	108	0.2	0.06	7.46	10	100	4	0	1.873	X	17.51	X	0.17
HS134	763497	6174410	0.4	0.3	HILL CREST	0.53	0.32	0.03	6935	11.92	21.2	3.05	118	0.4	0.13	12.2	22	160	7	<50	3.115	<50	31.62	X	0.24
HS135	763611	6174417	0.5	0.4	HILL CREST	0.41	0.33	0.03	6826	11.67	23.4	3.7	113	0.2	0.13	12.24	20	248	7	<30	3.102	<30	31.4	X	0.2
HS136	763704	6174400	0.2	0.1	HILL CREST	0.51	0.32	0.03	7687	11.42	20.2	3.25	122	0.2	0.16	11.81	19	272	6	<20	3.034	<20	28.09	X	0.14
HS137	763812	6174412	DNH 1M	0.9	HILL SLOPE	0.39	0.22	0.02	5883	8.43	18.2	2.86	130	0.3	0.04	8.24	11	63	5	0	2.162	12	23.59	X	0.12
HS138	763902	6174410	DNH 1M	0.9	HILL SLOPE	0.46	0.33	0.03	7985	12.69	21.2	0.93	151	0.4	0.03	12.41	13	63	7	0	3.235	X	33.69	X	0.12
HS139	763990	6174405	0.4	0.3	HILL SLOPE	0.41	0.31	0.03	7518	11.04	19.7	2.93	136	0.3	0.12	11.48	17	223	7	<20	2.938	<20	31.78	X	0.16

*X denotes below detection limits

Sample No:	Easting	Northing	Calcrete Depth (M)	Sample Depth (M)	Regolith Landform	Hf	Ho	In	K	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	P	Pb	Pd	Pr	Pt	Rb	Re	Sb
					ELEMENTS	Hf	Ho	In	K	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	P	Pb	Pd	Pr	Pt	Rb	Re	Sb
					UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppb	ppm	ppm	ppm
					DETECTION	0.01	0.01	0.01	20	0.01	0.1	0.01	1	0.1	0.02	0.01	1	20	1	10	0.005	10	0.02	0.01	0.02
HS140	764101	6174398	DNH 1M	0.9	HILL SLOPE	0.44	0.11	0.03	5503	6.21	15.6	0.96	99	0.7	0.03	5.23	14	50	6	X	1.433	X	30.17	X	0.15
HS141	764210	6174404	DNH 1M	0.9	HILL SLOPE	0.47	0.12	0.03	6167	6.44	16.6	1.34	81	0.5	0.02	5.4	12	36	5	0	1.471	X	30.85	X	0.23
HS142	764287	6174403	DNH 1M	0.9	HILL SLOPE	0.5	0.29	0.03	6463	10.46	14.7	1.99	112	0.2	0.13	10.67	15	248	6	<15	2.741	<15	32.28	X	0.2
HS143	764410	6174407	DNH 1.1M	0.9	HILL SLOPE	0.79	0.3	0.05	6361	16.74	18.4	5.22	174	0.6	0.15	13.22	38	X	8	<70	3.71	<70	38.2	X	0.5
HS144	764499	6174409	1	0.9	HILL SLOPE	0.42	0.29	0.02	6867	11.66	16.2	3.51	108	0.4	0.1	11.29	21	228	5	<50	2.956	<50	28.7	X	0.25
HS145	764603	6174395	0.6	0.5	HILL SLOPE	0.21	0.34	0.03	4899	12.71	10.7	1.7	127	0.3	0.16	13.03	16	306	6	<50	3.396	<50	24.3	X	0.16
HS146	764710	6174400	0.8	0.7	HILL CREST	0.29	0.35	0.02	5884	12.08	17.5	5.75	185	0.2	0.1	12.13	16	152	5	<30	3.203	<30	20.18	X	0.18
HS147	762998	6173996	DNH 1.1M	0.9	HILL SLOPE	0.75	0.1	0.03	5699	6.39	17.6	4.46	55	0.4	0.06	5.08	11	134	4	<20	1.364	<20	35.6	X	0.2
HS148	763098	6174000	0.5	0.4	HILL SLOPE	0.29	0.15	0.02	5088	9.1	11.1	1.4	144	0.2	0.15	7.95	9	228	3	<20	2.145	<20	37.13	X	0.11
HS149	763195	6174013	0.3	0.2	HILL SLOPE	0.25	0.27	0.03	6845	12.97	14.6	1.94	436	0.6	0.28	12.1	15	228	5	<20	3.228	<20	51.04	X	0.11
HS150	763294	6174003	0.5	0.4	HILL SLOPE	0.3	0.39	0.04	6900	14.49	17.7	1.15	237	0.4	0.32	13.87	16	237	7	<50	3.63	<50	41.38	X	0.16
HS151	763397	6173996	DNH 1M	0.9	DEPRESSION	0.33	0.62	0.04	8337	21.86	21.2	1.12	407	0.3	0.3	21.8	23	287	9	<30	5.549	<30	49.58	X	0.24
HS152	763499	6174000	DNH 1M	0.9	DEPRESSION	0.5	0.47	0.04	8191	17.29	19.5	0.99	213	0.3	0.11	17.11	16	239	8	<30	4.342	<30	42.75	X	0.14
HS153	763601	6173997	0.5	0.4	HILL SLOPE	0.33	0.39	0.08	8682	17.14	17.8	1.1	309	0.4	0.16	15.56	17	273	8	<30	4.08	<30	40.03	X	0.15
HS154	763695	6173996	0.2	0.1	HILL SLOPE	0.31	0.59	0.04	7651	22.5	11.8	0.97	188	0.4	0.24	24.27	13	318	6	<15	6.29	<15	35.32	X	0.15
HS155	763793	6173999	0.3	0.2	HILL SLOPE	0.26	0.2	0.04	5987	8.14	12.6	1.2	159	0.4	0.11	8.47	10	216	5	<20	2.19	<20	31.4	X	0.21
HS156	763908	6173995	DNH 1M	0.9	HILL SLOPE	0.72	0.17	0.03	5435	6.75	9.8	2.07	55	0.5	0.08	5.55	14	167	5	<50	1.464	<50	45.32	X	0.22
HS157	763997	6174005	DNH 1M	0.9	HILL SLOPE	1	0.13	0.06	5371	9.68	13.8	1.96	71	0.7	0.04	6.58	21	76	6	<50	1.872	<50	53.29	X	0.23
HS158	764097	6173999	DNH 1M	0.9	HILL SLOPE	0.58	0.07	0.03	2579	4.48	7.2	0.85	104	2.6	0.03	3.33	14	58	4	X	0.933	X	24.83	X	0.19
HS159	764209	6174002	0.2	0.1	HILL CREST	0.2	0.12	0.01	2831	4.51	4.9	0.48	82	0.3	0.16	4.41	5	166	3	X	1.15	X	12.99	X	0.08
HS160	764402	6173989	1.1	1	HILL CREST	0.61	0.34	0.03	8328	10.32	19.5	2.18	68	0.3	0.09	11.01	15	173	6	<20	2.746	<20	34.41	X	0.15
HS161	764497	6173992	DNH 1M	0.9	HILL CREST	0.43	0.24	0.02	5156	8	13.8	1.99	47	0.2	0.15	8.6	14	233	5	X	2.184	X	22.67	X	0.14
HS162	764603	6173995	DNH 1M	0.9	HILL SLOPE	0.47	0.51	0.03	6958	14.98	15.2	2.29	76	0.3	0.15	16.03	20	212	6	X	4.086	X	27.17	X	0.13
HS163	764698	6173997	0.3	0.2	HILL SLOPE	0.47	0.8	0.06	7947	29.41	12.7	1.17	325	0.8	0.43	28.36	36	334	13	<50	7.573	<50	36.68	X	0.5
HS164	763006	6173610	0.2	0.1	HILL CREST	0.3	0.24	0.02	4396	8.16	9.4	0.26	116	1.5	0.15	8.78	14	101	5	0	2.214	X	21.77	X	0.11
HS165	763098	6173602	0.2	0.1	HILL CREST	0.64	0.46	0.05	10739	17.25	22.3	0.75	510	0.6	0.14	17.6	33	293	10	<50	4.579	<50	51.02	X	0.18
HS166	763200	6173598	DNH 1M	0.9	HILL SLOPE	0.41	0.13	0.04	6471	7.48	29.3	0.62	142	1.2	0.03	6.44	11	54	5	0	1.717	X	37.68	X	0.23
HS167	763300	6173598	0.3	0.2	HILL CREST	0.59	0.28	0.03	6630	10.3	18.3	2.96	150	0.3	0.12	10.26	17	275	6	<20	2.65	<20	30.57	X	0.24
HS168	763403	6173603	DNH 1M	0.9	HILL CREST	0.29	0.13	0.04	7228	7.8	17.1	0.58	101	0.9	0.02	6.55	9	35	7	X	1.774	X	32.08	X	0.16
HS169	763505	6173606	DNH 1	0.9	HILL CREST	0.46	0.16	0.04	7623	8.27	21.3	0.66	130	0.5	0.02	6.82	10	28	8	12	1.864	X	32.49	X	0.15
HS170	763594	6173607	0.7	0.6	HILL CREST	0.28	0.19	0.03	4891	6.95	12	1.97	95	0.3	0.1	6.7	12	225	5	0	1.747	X	27.99	X	0.18
HS171	763696	6173600	DNH 1.2m	0.9	HILL CREST	0.92	0.12	0.05	4188	7.11	6.6	2.6	62	1.2	0.09	5.3	13	124	5	<20	1.491	<20	48.52	X	0.35
HS172	763795	6173599	DNH 1M	0.9	HILL SLOPE	0.83	0.08	0.04	3404	5.36	6.8	1.48	42	1.3	0.08	3.82	19	X	4	<70	1.092	<70	41.14	X	0.36
HS173	763896	6173596	DNH 1M	0.9	HILL SLOPE	0.93	0.17	0.05	5423	9.57	13.4	1.95	73	1	0.07	7.19	17	105	6	<50	2.009	<50	55.74	X	0.37
HS174	763990	6173592	DNH 1M	0.9	HILL SLOPE	0.98	0.47	0.04	4788	12.02	17.5	2.02	59	1.6	0.15	12.12	18	112	8	<50	3.092	<50	32.13	X	1.44
HS175	764198	6173598	0.7	0.6	HILL SLOPE	0.36	0.81	0.03	2367	35.94	11.1	0.67	39	0.5	1.46	27.87	13	248	8	<20	8.15	<20	28.07	X	0.13
HS176	764300	6173600	DNH 1M	0.9	HILL SLOPE	0.63	0.52	0.04	7928	17.01	16.8	1.06	181	0.3	0.12	18.07	17	220	8	<50	4.61	<50	40.06	X	0.15
HS177	764400	6173600	DNH 1.1M	0.9	HILL CREST	0.55	0.41	0.04	7195	14.74	14.2	1.64	140	0.4	0.11	14.2	14	204	8	<50	3.795	<50	34.68	X	0.18
HS178	764500	6173600	DNH 1M	0.9	HILL SLOPE	0.42	0.15	0.03	4779	8.17	9.7	1.46	67	0.6	0.16	6.21	9	214	4	<20	1.736	<20	28.18	X	0.22
HS179	764600	6173600	0.5	0.4	HILL SLOPE	0.35	0.63	0.03	5975	35.96	12	0.97	119	0.4	1.14	25.12	14	293	7	<30	7.377	<30	33.01	X	0.23
HS180	764700	6173600	0.8	0.7	HILL CREST	1.45	1.04	0.01	2874	90.95	18.3	3.29	58	0.2	4.86	48.04	10	168	7	<20	16.35	<20	24.52	X	0.31
HS181	762990	6173255	0.2	0.1	HILL SLOPE	0.48	0.2	0.03	3962	6.92	8.8	0.26	142	1.2	0.17	7.04	10	109	8	0	1.846	X	22.49	X	0.4
HS182	763100	6173250	DNH 1M	0.9	HILL CREST	0.51	0.1	0.04	6967	6.66	20.6	1.42	115	0.6	0.04	5.43	10	23	6	0	1.469	X	31.99	X	0.15
HS183	763200	6173250	0.4	0.3	HILL CREST	0.42	0.4	0.04	7425	13.69	17.5	1.05	192	0.3	0.23	14.7	19	271	7	<30	3.721	<30	38.56	X	0.21
HS184	763300	6173250	DNH 1.1M	0.9	HILL SLOPE	0.62	0.32	0.04	6096	10.26	27.5	3.32	76	0.6	0.12	10.79	30	144	7	<50	2.819	<50	30.37	X	0.25

*X denotes below detection limits

					ELEMENTS	Hf	Ho	In	K	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	P	Pb	Pd	Pr	Pt	Rb	Re	Sb
					UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppb	ppm	ppm	ppm
					DETECTION	0.01	0.01	0.01	20	0.01	0.1	0.01	1	0.1	0.02	0.01	1	20	1	10	0.005	10	0.02	0.01	0.02
Sample No:	**Easting**	**Northing**	**Calcrete Depth (M)**	**Sample Depth (M)**	**Regolith Landform**																				
HS185	763400	6173250	0.5	0.4	HILL CREST PLAIN	0.32	0.25	0.03	6162	8.69	18.6	2.02	89	0.3	0.14	9.07	17	240	5	<30	2.337	<30	30.88	X	0.22
HS186	763500	6173250	0.4	0.3	HILL CREST PLAIN	0.5	0.27	0.03	6595	11.06	14.3	2.36	127	0.4	0.13	10.69	18	174	6	<70	2.739	<70	32.16	X	0.37
HS187	763600	6173250	0.5	0.4	HILL CREST PLAIN	0.48	0.3	0.03	6579	12.23	17.3	2.89	129	0.4	0.25	11.63	20	225	6	<50	3.06	<50	33.31	X	0.21
HS188	763700	6173250	0.2	0.1	HILL CREST PLAIN	0.25	0.17	0.02	3913	6.38	8.6	1.1	91	2.4	0.16	6.17	15	151	5	0	1.591	X	19.17	X	0.18
HS189	763800	6173250	0.4	0.3	HILL CREST PLAIN	0.22	0.17	0.02	4008	6.51	8.8	1	117	0.3	0.15	6.22	9	157	4	0	1.631	X	20.95	X	0.13
HS190	763900	6173250	0.3	0.2	HILL CREST PLAIN	0.25	0.16	0.02	3703	5.74	9.5	1.4	106	0.7	0.25	5.72	9	134	4	0	1.468	X	18.12	X	0.28
HS191	764100	6173250	DNH 1M	0.9	HILL SLOPE	0.3	0.08	0.03	4710	5.38	11.5	0.55	65	1	0.02	4.43	7	39	5	0	1.208	X	24.34	X	0.17
HS192	764200	6173250	DNH 1M	0.9	HILL SLOPE	0.33	0.09	0.02	4187	5.25	10.1	1.14	101	0.5	0.03	4.45	8	36	4	X	1.187	X	21.88	X	0.18
HS193	764295	6173248	DNH 1.1M	0.9	HILL SLOPE	0.59	0.06	0.03	3855	5.05	7.4	0.79	77	1.8	0.03	3.68	9	55	5	X	1.044	X	22.84	X	0.23
HS194	764390	6173255	DNH 1M	0.9	HILL SLOPE	0.45	0.13	0.02	1952	4.61	5.7	0.61	42	1.2	0.04	3.48	8	35	4	10	0.976	11	17.26	X	0.18
HS195	764494	6173253	DNH 1M	0.9	HILL SLOPE	0.89	0.21	0.04	7478	10.91	19.7	2.55	111	0.9	0.09	8.97	18	150	7	<30	2.399	<30	43.44	X	0.34
HS196	764598	6173254	DNH 1M	0.9	HILL SLOPE	0.29	0.09	0.04	5558	5.78	16.6	0.85	57	1.1	X	4.48	9	35	5	0	1.234	X	31.17	X	0.22
HS197	762993	6172847	1	0.9	HILL CREST	0.23	0.19	0.03	2430	6.42	6.2	0.45	123	1.1	0.07	6.52	9	140	8	22	1.685	X	14.32	X	0.72
HS198	763103	6172854	DNH 1M	0.9	HILL SLOPE	0.69	0.13	0.03	6332	12.57	25.3	4.06	44	0.5	0.29	10.36	16	96	2	<50	2.929	<50	59.59	X	0.27
HS199	763210	6172847	DNH 1M	0.9	HILL SLOPE	0.44	0.07	0.02	2427	4.9	9	1.36	47	1	0.04	3.68	7	28	4	0	1.035	X	17.62	X	0.31
HS200	763308	6172850	0.4	0.3	HILL CREST PLAIN	0.56	0.24	0.04	7211	9.94	18.2	2.72	147	0.4	0.13	9.28	16	243	6	<30	2.453	<30	33.62	X	0.26
HS201	763409	6172847	0.3	0.2	HILL CREST PLAIN	0.31	0.17	0.02	3964	5.74	11.5	1.97	109	0.9	0.13	5.77	11	116	4	11	1.464	X	17.61	X	0.21
HS202	763500	6172855	0.5	0.4	HILL CREST PLAIN	0.66	0.26	0.03	6839	10.31	20.9	3.58	131	2	0.09	10.06	16	187	7	<50	2.6	<50	33.95	X	3.43
HS203	763603	6172847	0.3	0.2	HILL CREST PLAIN	0.37	0.26	0.03	6671	9.39	16.3	2.25	146	0.3	0.18	9.57	13	224	5	14	2.441	X	30.46	X	0.19
HS204	763703	6172848	0.4	0.3	HILL CREST PLAIN	0.44	0.23	0.03	6287	8.64	17.6	2.57	121	0.2	0.14	8.65	13	201	5	14	2.216	X	31.17	X	0.19
HS205	763793	6172850	0.3	0.2	HILL CREST PLAIN	0.49	0.3	0.03	7444	11.84	15.4	2.13	113	0.5	0.14	11.78	19	205	7	<50	3.034	<50	35.47	X	0.28
HS206	763896	6172852	0.4	0.3	HILL CREST PLAIN	0.61	0.3	0.04	8709	12	19.5	2.57	140	0.4	0.14	11.94	18	216	7	<30	3.049	<30	40.47	X	0.25
HS207	764012	6172856	0.2	0.1	HILL CREST PLAIN	0.25	0.15	0.02	4067	5.82	6.8	0.72	80	1	0.22	5.67	7	120	4	11	1.461	X	17.65	X	0.21
HS208	764102	6172850	0.4	0.3	HILL CREST PLAIN	0.49	0.29	0.03	7961	10.6	16.5	2.35	134	0.3	0.14	10.72	13	221	6	<20	2.748	<20	36.5	X	0.19
HS209	764205	6172852	0.3	0.2	HILL CREST PLAIN	0.43	0.29	0.03	8268	10.67	11.3	1.25	133	0.3	0.1	10.78	13	250	7	<30	2.75	<30	32.8	X	0.11
HS210	764297	6172851	0.2	0.1	HILL CREST PLAIN	0.36	0.22	0.03	6425	8.13	11.9	1.86	104	0.4	0.13	8.2	13	283	6	<30	2.128	<30	28.78	X	0.17
HS211	764394	6172850	0.2	0.1	HILL CREST PLAIN	0.2	0.11	0.02	3282	4.52	7.5	1.35	63	0.9	0.21	4.37	7	221	3	0	1.138	X	15.19	X	0.15
HS212	764498	6172855	0.2	0.1	HILL SLOPE	0.1	0.1	0.01	2872	4.47	4.1	0.35	66	0.5	0.11	4.11	6	201	4	X	1.091	X	13.85	X	0.11
HS213	763200	6175304	DNH 1M	0.9	HILL SLOPE	0.8	0.12	0.06	5472	9.61	20.6	1.34	53	1.2	0.03	6.59	21	41	7	<20	1.892	<20	43.35	X	0.28
HS214	763100	6175300	DNH 1M	0.9	HILL SLOPE	0.46	0.12	0.03	4898	7.04	16.9	0.63	107	0.8	X	5.75	10	55	6	11	1.581	X	28.72	X	0.25
HS215	763004	6175293	DNH 1M	0.9	HILL SLOPE	0.47	0.12	0.04	6716	6.83	19	0.63	71	0.9	X	5.55	10	45	6	X	1.513	X	32.59	X	0.2
HS216	763245	6175298	0.4	0.3	HILL SLOPE	0.47	0.15	0.03	3448	6.89	14.3	2.33	54	0.6	0.16	6.14	18	207	4	<20	1.629	<20	27.64	X	0.35
HS217	763252	6174803	0.4	0.3	HILL CREST PLAIN	0.34	0.21	0.02	4666	8.21	10.1	0.37	91	0.2	0.06	8.75	9	54	7	0	2.202	10	23.66	X	0.1
HS218	763359	6175302	0.6	0.5	HILL SLOPE	0.22	0.16	0.01	1445	16.61	11.5	2.17	55	0.3	0.1	14.34	14	221	3	<15	3.971	<15	11.86	X	0.18
HS219	763549	6175299	0.2	0.1	HILL SLOPE	0.15	0.45	0.05	2030	39.1	7.3	0.51	154	0.6	0.44	27.18	8	165	4	X	8.119	X	12.55	X	0.19
HS220	764600	6175297	DNH 1M	0.9	HILL SLOPE	0.24	0.23	0.02	3915	8.82	14.8	5.84	55	0.2	0.07	8.79	13	120	4	<15	2.29	<15	14.56	X	0.27
HS221	764694	6175304	DNH 1M	0.9	HILL SLOPE	0.35	0.36	0.03	6296	13.31	18.1	5.14	168	0.5	0.1	13.05	15	174	7	<20	3.378	<20	24	X	0.34
HS222	764810	6175302	DNH 1M	0.9	HILL SLOPE	0.21	0.21	0.03	6085	11.72	9.6	1.19	77	1.9	0.06	9.55	13	67	6	0	2.705	X	27.55	X	0.39
HS223	764596	6174800	DNH 1M	0.9	HILL SLOPE	0.31	0.21	0.02	4809	7.07	15.7	5.67	95	0.3	0.07	7.17	13	108	4	<15	1.853	<15	15.64	X	0.28
HS224	764708	6174806	1	0.9	HILL CREST	0.39	0.34	0.03	6048	11.68	17.9	6.75	114	0.5	0.16	11.01	18	154	6	<50	2.93	<50	21.52	X	0.43
HS225	764802	6174802	0.1	0	HILL CREST	0.16	0.41	0.04	8933	18.48	13.6	1.7	377	0.8	0.63	17.21	25	702	16	<30	4.531	<30	31.92	X	0.5
HS226	763357	6174797	1	0.9	HILL CREST	0.33	0.28	0.03	6308	9.32	22.3	3.28	133	0.4	0.08	9.79	21	206	6	<30	2.49	<30	25.83	X	0.25
HS227	763454	6174808	0.3	0.2	HILL CREST PLAIN	0.45	0.31	0.02	7346	10.92	21.6	3.8	183	0.6	0.11	11.58	28	229	6	<70	2.935	<70	26.93	X	0.28
HS228	763543	6174820	0.3	0.2	HILL CREST PLAIN	0.26	0.26	0.02	6634	9.07	17.6	2.85	128	0.3	0.16	9.41	15	239	6	<15	2.4	<15	25.19	X	0.21
HS229	763250	6174395	DNH 1M	0.9	HILL SLOPE	0.39	0.2	0.05	5223	9.39	35	2.02	191	1.4	0.05	7.44	17	44	6	<20	2.01	<20	37.82	X	0.3

*X denotes below detection limits

Appendix 3.1 – Soil Grid Locations and Geochemical Assays

Sample No:	Easting	Northing	Calcrete Depth (M)	Sample Depth (M)	Regolith Landform	Hf	Ho	In	K	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	P	Pb	Pd	Pr	Pt	Rb	Re	Sb
					UNITS	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppb	ppm	ppm	ppm
					DETECTION	0.01	0.01	0.01	20	0.01	0.1	0.01	1	0.1	0.02	0.01	1	20	1	10	0.005	10	0.02	0.01	0.02
HS230	763357	6174402	0.2	0.1	HILL CREST	0.45	0.27	0.02	4828	8.97	18.7	4.43	124	0.3	0.11	9.18	22	249	5	<30	2.333	<30	21.01	X	0.21
HS231	763455	6174399	0.2	0.1	HILL CREST PLAIN	0.44	0.37	0.03	6944	12.33	14.5	2.32	129	0.4	0.13	13.11	21	316	8	<50	3.294	<50	30.38	X	0.21
HS232	763544	6174410	0.2	0.1	HILL CREST PLAIN	0.73	0.38	0.04	7704	12.84	17.1	2.38	123	0.9	0.08	13.85	21	194	8	<50	3.497	<50	32.41	X	0.22
HS233	763253	6174014	0.2	0.1	HILL SLOPE	0.28	0.25	0.03	4824	13.19	9.8	0.38	315	1	0.24	13.38	12	204	6	0	3.569	X	33.72	X	0.14
HS234	763351	6174001	DNH 1M	0.9	DEPRESSION	0.31	0.46	0.04	7934	16	19	0.78	181	0.3	0.09	15.94	13	234	9	0	4.106	X	40.62	X	0.16
HS235	763456	6174000	DNH 1M	0.9	DEPRESSION	0.69	0.69	0.05	9779	22.86	23.5	1.15	458	0.5	0.09	23.58	23	256	10	<30	6.031	<30	54.37	X	0.18
HS236	763550	6174001	DNH 1M	0.9	HILL SLOPE	0.32	0.37	0.06	7443	16.03	17.5	1.57	188	0.4	0.12	13.65	12	243	8	<20	3.75	<20	32.67	X	0.19
HS237	763260	6173596	0.3	0.2	HILL CREST	0.49	0.29	0.03	6260	10.94	21.1	3.93	231	0.6	0.1	10.92	30	228	8	<50	2.786	<50	28.11	X	0.25
HS238	763353	6173595	0.2	0.1	HILL CREST	0.47	0.34	0.03	7348	12.48	19.5	2.77	172	0.4	0.13	12.76	25	215	7	<30	3.293	<30	33.4	X	0.22
HS239	763443	6173603	DNH 1M	0.9	HILL CREST	0.52	0.23	0.03	7223	10.42	24	2.86	112	0.4	0.03	9.22	11	44	6	0	2.394	X	34.05	X	0.26
HS240	763553	6173603	0.3	0.2	HILL CREST	0.6	0.27	0.04	7262	11.18	15.5	3.04	158	0.5	0.12	10.31	24	221	5	<50	2.732	<50	35.46	X	0.28
HS241	763254	6173255	0.3	0.2	HILL CREST PLAIN	0.22	0.22	0.02	3996	7.83	7.9	0.37	122	1	0.14	8.33	10	125	5	0	2.116	X	21.45	X	0.13
HS242	763347	6173251	1	0.9	HILL CREST PLAIN	0.39	0.29	0.02	4893	9.94	17.5	1.83	78	0.7	0.07	10.49	12	113	5	10	2.675	X	24.56	X	0.22
HS243	763450	6173267	0.3	0.2	HILL CREST PLAIN	0.22	0.16	0.02	4017	5.93	8.2	0.79	70	0.4	0.1	5.94	9	102	4	15	1.526	X	19.2	X	0.22
HS244	763549	6173255	0.5	0.4	HILL CREST PLAIN	0.55	0.31	0.03	7746	11.52	18.3	3.7	166	0.9	0.13	11.45	26	208	11	<50	2.943	<50	33.83	X	0.29
HS245	763264	6172849	0.3	0.2	HILL CREST PLAIN	0.53	0.26	0.04	6624	11.8	18.5	3.59	138	0.7	0.15	10.17	20	106	7	<50	2.699	<50	34.51	X	0.35
HS246	763348	6172852	0.3	0.2	HILL CREST PLAIN	0.26	0.17	0.02	3943	6.29	11.3	1.67	90	0.3	0.07	6.02	10	116	4	12	1.555	X	19.25	X	0.15
HS247	763451	6172851	0.4	0.3	HILL CREST PLAIN	0.46	0.2	0.02	5589	7.9	20.3	4.76	111	0.5	0.1	7.78	20	157	6	<50	1.945	<50	24.05	X	0.31
HS248	763545	6172855	DNH 1M	0.9	HILL CREST PLAIN	0.34	0.25	0.03	6147	9.26	23	2.56	129	0.4	0.04	9.01	10	52	8	X	2.358	X	26.04	X	0.19
			* DNH = Did not hit Calcrete horizon																						

*X denotes below detection limits

Appendix 3.1 – Soil Grid Locations and Geochemical Assays

Sample No:	Easting	Northing	Calcrete Depth (M)	Sample Depth (M)	Regolith Landform	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
					ELEMENTS	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
					UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
					DETECTION	1	1	0.01	0.05	0.02	0.01	0.005	0.05	0.01	5	0.01	0.01	0.01	2	0.05	0.02	0.01	1	0.1
HS100	763319	6175308	DNH 1m	0.9	HILL SLOPE	2	0.5	2.09	0.87	126.9	X	0.283	0.025	7.84	168	0.04	0.1	9.7	56	0.025	13.01	0.64	8	13.4
HS101	763405	6175302	DNH 1.2m	0.9	HILL SLOPE	11	2	1.56	0.84	43.14	X	0.211	0.05	8.34	127	0.15	0.08	15.7	221	0.19	4.48	0.57	11	19.4
HS102	763497	6175300	DNH 1.2m	0.9	HILL SLOPE	6	0.5	3.14	1.68	844.3	X	0.426	0.07	9.66	223	0.19	0.16	0.98	74	0.025	11.24	1.1	30	20.4
HS103	763594	6175297	DNH 1M	0.9	HILL SLOPE	4	0.5	3.78	2.51	1078	X	0.574	0.12	10.92	200	0.19	0.26	2.32	61	0.025	18.95	1.87	28	17.9
HS104	763700	6175299	DNH 1.1M	0.9	DEPRESSION	8	0.5	3.69	1.81	426.7	X	0.52	0.08	10.78	197	0.22	0.19	0.41	58	0.025	13.52	1.36	40	19.5
HS105	763802	6175303	DNH 1.2M	0.9	DEPRESSION	7	0.5	3.78	1.91	430.5	X	0.513	0.025	11.62	283	0.24	0.18	0.59	55	0.025	13.42	1.32	65	20
HS106	763900	6175298	DNH 1.2m	0.9	HILL SLOPE	4	0.5	2.27	1.24	900.6	X	0.306	0.025	7.37	137	0.17	0.12	0.33	43	0.025	8.37	1.05	17	16.7
HS107	763999	6175295	0.5	0.4	HILL SLOPE	4	0.5	2.27	0.99	101	X	0.306	0.025	6.65	168	0.14	0.11	0.48	38	0.025	7.88	0.73	13	11.5
HS108	764098	6175300	DNH 1.2m	0.9	HILL SLOPE	6	0.5	5.89	1.39	708	X	0.766	0.025	13.16	245	0.32	0.28	0.3	69	0.025	19.04	1.81	17	18.5
HS109	764198	6175301	DNH 1.2m	0.9	HILL SLOPE	5	0.5	4.28	1.14	570.4	X	0.556	0.025	9.17	182	0.28	0.21	0.5	52	0.025	13.83	1.4	21	14.9
HS110	764302	6175302	DNH 1.2m	0.9	HILL SLOPE	2	0.5	1.89	0.73	701	X	0.231	0.025	5.3	72	0.23	0.09	0.54	44	0.025	5.57	0.59	14	7.1
HS111	764404	6175298	DNH 1.1M	0.9	HILL SLOPE	3	0.5	3.09	1.06	652.5	X	0.421	0.025	8.85	123	0.47	0.16	0.61	70	0.06	10.91	0.93	17	22.8
HS112	764496	6175301	DNH 1.1M	0.9	HILL SLOPE	4	1	2.39	1.23	106	X	0.292	0.08	11.19	220	0.13	0.1	1	203	0.08	6.23	0.7	14	18.3
HS113	762999	6174803	DNH 1M	0.9	HILL SLOPE	8	0.5	1.28	1.51	181.4	X	0.146	0.025	11.66	175	0.22	0.05	1.39	236	0.025	3.2	0.35	22	15.4
HS114	763103	6174801	0.2	0.1	HILL CREST	10	0.5	4.78	1.85	289.3	X	0.637	0.025	14.65	214	0.3	0.23	0.42	46	0.025	16.32	1.46	25	24.1
HS115	763204	6174796	DNH 1.1M	0.9	HILL CREST	2	0.5	2.88	1.17	2039	X	0.389	0.05	7.89	120	0.29	0.17	2.4	58	0.025	13.08	1.08	13	14.3
HS116	763298	6174800	0.4	0.3	HILL CREST	6	0.5	2.91	1.28	893.8	X	0.384	0.025	8.25	192	0.21	0.14	0.5	34	0.025	10.19	0.89	16	17.4
HS117	763408	6174798	DNH 1M	0.9	HILL SLOPE	4	0.5	2.56	1.49	1560	X	0.336	0.07	8.07	209	0.24	0.13	1.87	81	0.025	8.77	0.85	21	18.3
HS118	763495	6174803	1	0.9	ON AEOLIAN SANDS ALONG ROAD	4	0.5	2.23	1.04	1277	X	0.285	0.025	6.15	153	0.17	0.1	0.65	41	0.025	7.76	0.68	17	16.4
HS119	763599	6174808	0.7	0.6	ON AEOLIAN SANDS ALONG ROAD	4	0.5	2.43	0.87	1332	X	0.319	0.025	6.74	113	0.19	0.11	0.9	50	0.025	8.37	0.74	18	14.9
HS120	763702	6174795	0.7	0.6	ON AEOLIAN SANDS ALONG ROAD	3	1	2.12	0.93	1648	X	0.271	0.11	6.54	167	0.2	0.1	1.29	55	0.025	7.33	0.68	23	17.7
HS121	763809	6174808	1	0.9	HILL CREST	5	0.5	2.5	1.02	1132	X	0.338	0.025	7.52	181	0.24	0.13	0.75	63	0.025	9.25	0.86	18	18.2
HS122	763898	6174802	0.3	0.2	HILL SLOPE	8	0.5	3.11	1.55	600.4	X	0.427	0.06	10.83	265	0.31	0.15	0.5	56	0.025	11.62	1.04	23	25
HS123	764001	6174796	DNH 1.1M	0.9	HILL SLOPE	11	0.5	1.26	2.47	713.9	X	0.142	0.025	16.01	263	0.33	0.05	1.17	211	0.025	2.94	0.4	16	28.1
HS124	764101	6174795	DNH 1.1M	0.9	HILL SLOPE	10	2	1.4	3.2	964.3	X	0.185	0.91	16.33	360	0.64	0.07	1.04	243	0.025	4.05	0.53	27	39.4
HS125	764210	6174800	DNH 1.2m	0.9	HILL SLOPE	5	0.5	1.83	1.23	1203	X	0.241	0.06	7.26	112	0.25	0.1	0.47	41	0.025	6.68	0.62	15	21.6
HS126	764305	6174807	DNH 1.1M	0.9	HILL SLOPE	5	0.5	2.87	1.13	1042	X	0.382	0.05	8.4	137	0.28	0.14	0.57	49	0.025	10.11	0.91	15	18.1
HS127	764407	6174795	1.1	1	HILL SLOPE	2	0.5	2.24	0.93	1332	X	0.286	0.13	5.56	122	0.25	0.1	1.63	59	0.025	7.52	0.63	13	15.2
HS128	764504	6174800	1.1	1	HILL SLOPE	2	1	2.49	1.09	1010	X	0.344	0.08	7.93	244	0.27	0.13	0.9	71	0.025	9.74	0.81	26	24.4
HS129	762999	6174404	DNH 1M	0.9	DEPRESSION	10	0.5	5.49	1.76	293.2	X	0.72	0.1	12.44	421	0.29	0.26	0.43	62	0.025	18.66	1.64	47	22.7
HS130	763103	6174395	DNH 1M	0.9	HILL SLOPE	2	2	2.39	0.95	1210	X	0.313	1.21	12.19	154	0.39	0.09	0.94	35	0.06	7.3	0.62	12	21.8
HS131	763209	6174398	DNH 1M	0.9	HILL SLOPE	6	0.5	0.82	1.37	103.9	X	0.109	0.08	8.75	79	0.17	0.04	1.1	204	0.025	2.94	0.28	11	17.3
HS132	763303	6174391	DNH 1M	0.9	HILL SLOPE	7	0.5	0.98	1.32	90.37	X	0.118	0.025	9.57	85	0.18	0.04	1.12	164	0.025	2.53	0.3	18	12.2
HS133	763400	6174405	1.1	1	HILL CREST	2	0.5	1.52	0.6	1017	X	0.212	0.05	4.84	105	0.14	0.08	0.82	46	0.025	5.94	0.53	9	12.2
HS134	763497	6174410	0.4	0.3	HILL CREST	4	3	2.41	1.02	1172	X	0.324	0.15	7.88	235	0.24	0.11	0.51	41	0.025	8.54	0.79	25	20.8
HS135	763611	6174417	0.5	0.4	HILL CREST	4	1	2.46	0.9	1348	X	0.333	0.11	6.48	181	0.19	0.12	0.59	44	0.025	8.99	0.79	18	17.6
HS136	763704	6174400	0.2	0.1	HILL CREST	4	0.5	2.4	0.78	1303	X	0.323	0.025	5.75	130	0.17	0.12	0.52	29	0.025	8.39	0.77	17	20
HS137	763812	6174412	DNH 1M	0.9	HILL SLOPE	4	0.5	1.65	0.74	685.9	X	0.227	0.025	6.27	99	0.16	0.08	1.58	91	0.025	5.65	0.55	12	12.6
HS138	763902	6174410	DNH 1M	0.9	HILL SLOPE	6	0.5	2.46	1.11	199	X	0.323	0.025	9.35	99	0.2	0.13	2.43	109	0.025	8.76	0.8	19	13.3
HS139	763990	6174405	0.4	0.3	HILL SLOPE	5	0.5	2.35	1.05	1286	X	0.306	0.025	7.98	122	0.19	0.12	0.96	50	0.025	8.17	0.73	16	16.7

*X denotes below detection limits

Appendix 3.1 – Soil Grid Locations and Geochemical Assays

Sample No:	Easting	Northing	Calcrete Depth (M)	Sample Depth (M)	Regolith Landform	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
					UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
					DETECTION	1	1	0.01	0.05	0.02	0.01	0.005	0.05	0.01	5	0.01	0.01	0.01	2	0.05	0.02	0.01	1	0.1
HS140	764101	6174398	DNH 1M	0.9	HILL SLOPE	6	0.5	1	1.26	166.2	X	0.118	0.025	7.87	123	0.2	0.05	1.29	191	0.025	2.63	0.31	15	12.4
HS141	764210	6174404	DNH 1M	0.9	HILL SLOPE	6	0.5	1.04	1.23	257.7	X	0.13	0.025	8.58	166	0.19	0.05	0.52	179	0.025	2.84	0.3	14	14.8
HS142	764287	6174403	DNH 1M	0.9	HILL SLOPE	5	0.5	2.15	1.07	1004	X	0.279	0.025	8.11	130	0.22	0.11	0.43	47	0.2	7.65	0.72	16	18.6
HS143	764410	6174407	DNH 1.1M	0.9	HILL SLOPE	7	2	2.38	1.58	1150	X	0.311	0.08	13.41	321	0.41	0.12	0.93	213	0.025	7.46	0.75	27	26.2
HS144	764499	6174409	1	0.9	HILL SLOPE	3	0.5	2.26	0.89	1254	X	0.303	0.05	6.15	166	0.23	0.11	0.59	47	0.025	7.88	0.67	14	15.6
HS145	764603	6174395	0.6	0.5	HILL SLOPE	2	0.5	2.56	0.81	657.9	X	0.342	0.025	5.35	113	0.24	0.13	0.58	45	0.06	9.02	0.8	16	8.8
HS146	764710	6174400	0.8	0.7	HILL CREST	2	0.5	2.44	0.62	1260	X	0.356	0.07	5.09	103	0.17	0.13	0.54	44	0.025	9.24	0.84	13	13.6
HS147	762998	6173996	DNH 1.1M	0.9	HILL SLOPE	4	0.5	0.94	1.51	1646	X	0.106	0.025	7.3	91	0.19	0.04	1.12	218	0.025	2.65	0.26	9	24.6
HS148	763098	6174000	0.5	0.4	HILL SLOPE	3	0.5	1.42	1.14	861.8	X	0.167	0.025	5	90	0.19	0.06	0.48	31	0.025	3.92	0.36	10	8.9
HS149	763195	6174013	0.3	0.2	HILL SLOPE	4	0.5	2.28	1.27	693.6	X	0.287	0.025	6.92	208	0.22	0.09	0.82	37	0.025	7.47	0.6	15	9.4
HS150	763294	6174003	0.5	0.4	HILL SLOPE	4	0.5	2.75	1.93	653.3	X	0.377	0.08	9.1	196	0.2	0.16	0.55	47	0.11	10.71	1.34	18	10.6
HS151	763397	6173996	DNH 1M	0.9	DEPRESSION	7	0.5	4.38	2.18	412.3	X	0.61	0.025	9.5	362	0.22	0.23	0.3	45	0.025	16.86	1.49	33	11.1
HS152	763499	6174000	DNH 1M	0.9	DEPRESSION	6	0.5	3.4	2.46	450.1	X	0.456	0.07	9.44	224	0.21	0.18	0.25	53	0.025	13.08	1.22	25	16.2
HS153	763601	6173997	0.5	0.4	HILL SLOPE	6	0.5	3	4.28	587.2	X	0.383	0.05	9.42	180	0.28	0.17	1.16	62	0.025	10.73	1.13	20	12.1
HS154	763695	6173996	0.2	0.1	HILL SLOPE	5	0.5	4.65	1.53	602.7	X	0.596	0.025	7.78	98	0.21	0.24	0.75	51	0.025	16.78	1.65	18	12
HS155	763793	6173999	0.3	0.2	HILL SLOPE	5	0.5	1.65	1.56	802.8	X	0.206	0.06	7.49	84	0.25	0.08	0.73	60	0.025	5.2	0.51	12	10.1
HS156	763908	6173995	DNH 1M	0.9	HILL SLOPE	6	0.5	1.12	1.49	1540	X	0.146	0.025	9.54	114	0.28	0.06	0.97	82	0.16	4.16	0.45	23	18.4
HS157	763997	6174005	DNH 1M	0.9	HILL SLOPE	9	1	1.24	2.05	525.6	X	0.139	0.025	12.25	268	0.39	0.05	0.81	144	0.025	2.9	0.36	19	27.6
HS158	764097	6173999	DNH 1M	0.9	HILL SLOPE	4	0.5	0.64	1.38	198.1	X	0.075	0.025	6.88	104	0.19	0.03	0.54	154	0.025	1.54	0.21	12	16.6
HS159	764209	6174002	0.2	0.1	HILL CREST	2	0.5	0.88	0.5	251.7	X	0.12	0.025	3.55	89	0.09	0.05	0.3	19	0.025	2.89	0.3	6	7.2
HS160	764402	6173989	1.1	1	HILL CREST	5	0.5	2.29	1.07	1223	X	0.321	0.025	8.24	111	0.21	0.13	0.44	56	0.06	9.12	0.85	14	20.6
HS161	764497	6173992	DNH 1M	0.9	HILL CREST	3	0.5	1.78	0.75	1246	X	0.235	0.025	6.34	80	0.16	0.09	0.42	35	0.025	6.32	0.59	10	15.4
HS162	764603	6173995	DNH 1M	0.9	HILL SLOPE	3	0.5	3.22	0.87	1163	X	0.465	0.025	8.24	66	0.27	0.19	0.79	47	0.025	13.71	1.16	11	17.2
HS163	764698	6173997	0.3	0.2	HILL SLOPE	5	0.5	5.16	1.85	383.3	X	0.747	0.09	15.57	288	0.39	0.3	0.87	122	0.18	21.47	1.87	41	26.9
HS164	763006	6173610	0.2	0.1	HILL CREST	4	0.5	1.76	0.81	51.2	X	0.233	0.025	4.79	116	0.12	0.09	0.18	23	0.05	6.38	0.57	11	9.5
HS165	763098	6173602	0.2	0.1	HILL CREST	8	0.5	3.56	1.62	264.3	X	0.46	0.025	12.06	259	0.26	0.16	0.49	50	0.14	11.54	1.14	32	20.6
HS166	763200	6173598	DNH 1M	0.9	HILL SLOPE	7	0.5	1.18	1.44	65.24	X	0.139	0.025	10.03	129	0.18	0.05	1.19	239	0.025	3.3	0.35	16	11.6
HS167	763300	6173598	0.3	0.2	HILL CREST	4	1	2.12	1.08	1257	X	0.284	0.025	7.42	137	0.19	0.11	0.58	49	0.06	7.52	0.69	14	19.8
HS168	763403	6173603	DNH 1M	0.9	HILL CREST	6	0.5	1.23	1.22	42.61	X	0.145	0.025	10.38	59	0.17	0.05	1.8	210	0.025	3.03	0.38	16	9.1
HS169	763505	6173606	DNH 1	0.9	HILL CREST	6	0.5	1.29	1.1	59.58	X	0.166	0.025	10.14	114	0.17	0.06	1.65	179	0.16	3.5	0.44	15	13.1
HS170	763594	6173607	0.7	0.6	HILL CREST	4	0.5	1.35	0.95	1260	X	0.181	0.025	6.65	56	0.18	0.07	0.48	55	0.025	4.84	0.46	10	11.5
HS171	763696	6173600	DNH 1.2m	0.9	HILL CREST	7	0.5	0.97	2	1368	X	0.117	0.31	14.51	211	0.33	0.05	1.04	159	0.025	2.63	0.34	10	33.3
HS172	763795	6173599	DNH 1M	0.9	HILL SLOPE	5	2	0.71	1.94	405.8	X	0.091	0.38	10.31	253	0.26	0.03	0.71	129	0.18	1.94	0.26	16	23.6
HS173	763896	6173596	DNH 1M	0.9	HILL SLOPE	7	0.5	1.4	2.04	1306	X	0.172	0.12	13.26	273	0.36	0.07	1.01	189	0.13	4	0.5	15	28.1
HS174	763990	6173592	DNH 1M	0.9	HILL SLOPE	5	0.5	2.69	2.86	1964	X	0.404	0.15	16.91	221	0.3	0.2	2.31	252	0.3	11.07	1.3	11	28.6
HS175	764198	6173598	0.7	0.6	HILL SLOPE	4	0.5	5.53	1.36	558.8	X	0.802	0.08	23.81	71	0.21	0.31	0.41	55	0.15	19.03	1.97	54	13.3
HS176	764300	6173600	DNH 1M	0.9	HILL SLOPE	6	0.5	3.74	1.49	570.5	X	0.492	0.025	12.31	217	0.24	0.21	0.33	44	0.11	13.64	1.3	28	19.4
HS177	764400	6173600	DNH 1.1M	0.9	HILL CREST	4	0.5	2.88	1.36	1050	X	0.401	0.025	10.09	162	0.19	0.16	1.07	53	0.11	10.3	1.05	23	16.7
HS178	764500	6173600	DNH 1M	0.9	HILL SLOPE	4	0.5	1.14	1.2	1471	X	0.145	0.025	16.25	128	0.2	0.06	0.89	89	0.025	3.84	0.4	12	16.9
HS179	764600	6173600	0.5	0.4	HILL SLOPE	4	0.5	4.74	1.24	769.7	X	0.602	0.08	28.2	176	0.25	0.25	0.69	48	0.08	15.56	1.62	17	14.8
HS180	764700	6173600	0.8	0.7	HILL CREST	2	0.5	7.18	1.33	1219	X	0.833	0.025	85.18	74	0.13	0.56	2.13	31	0.48	23.21	4.08	8	45.5
HS181	762990	6173255	0.2	0.1	HILL SLOPE	4	0.5	1.4	0.94	78.92	X	0.188	0.025	14.26	116	0.11	0.07	0.36	103	0.025	4.96	0.49	9	15.9
HS182	763100	6173250	DNH 1M	0.9	HILL CREST	6	0.5	1	1.25	258.5	X	0.115	0.025	11.29	136	0.18	0.04	0.55	236	0.025	2.44	0.28	15	14.7
HS183	763200	6173250	0.4	0.3	HILL CREST	5	0.5	2.99	1.23	558.1	X	0.397	0.025	10.6	214	0.23	0.15	0.69	48	0.025	10.55	0.94	18	17.5
HS184	763300	6173250	DNH 1.1M	0.9	HILL SLOPE	4	1	2.36	1.3	1477	X	0.316	0.08	11.01	198	0.23	0.12	0.53	66	0.025	7.96	0.81	18	19.2

*X denotes below detection limits

Appendix 3.1 – Soil Grid Locations and Geochemical Assays

					ELEMENTS	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
					UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
					DETECTION	1	1	0.01	0.05	0.02	0.01	0.005	0.05	0.01	5	0.01	0.01	0.01	2	0.05	0.02	0.01	1	0.1
Sample No:	**Easting**	**Northing**	**Calcrete Depth (M)**	**Sample Depth (M)**	**Regolith Landform**																			
HS185	763400	6173250	0.5	0.4	HILL CREST PLAIN	3	2	1.89	0.99	1497	X	0.242	0.05	6.71	147	0.22	0.1	0.58	45	0.025	6.85	0.62	15	14.1
HS186	763500	6173250	0.4	0.3	HILL CREST PLAIN	4	2	2.16	1.58	1010	X	0.273	0.05	8.95	254	0.23	0.1	0.54	44	0.025	7.42	0.68	26	18
HS187	763600	6173250	0.5	0.4	HILL CREST PLAIN	4	1	2.36	1.24	1076	X	0.314	0.06	9.07	238	0.22	0.12	0.44	48	0.13	7.72	0.78	21	18.1
HS188	763700	6173250	0.2	0.1	HILL CREST PLAIN	3	0.5	1.23	0.85	527.7	X	0.167	0.025	4.74	124	0.11	0.06	0.33	33	0.06	4.46	0.41	11	9.5
HS189	763800	6173250	0.4	0.3	HILL CREST PLAIN	3	0.5	1.23	0.68	404.7	X	0.163	0.025	5	136	0.11	0.06	0.36	34	0.06	4.31	0.39	11	8.3
HS190	763900	6173250	0.3	0.2	HILL CREST PLAIN	3	0.5	1.13	0.76	634.1	X	0.16	0.06	4.99	155	0.12	0.06	0.32	37	0.08	4.13	0.41	8	9.1
HS191	764100	6173250	DNH 1M	0.9	HILL SLOPE	5	0.5	0.85	1.15	59.13	X	0.095	0.025	8.78	74	0.14	0.03	0.9	215	0.025	1.84	0.22	12	9.3
HS192	764200	6173250	DNH 1M	0.9	HILL SLOPE	4	0.5	0.86	0.96	282.8	X	0.1	0.025	7.87	88	0.14	0.04	0.6	130	0.08	2.26	0.25	11	10.6
HS193	764295	6173248	DNH 1.1M	0.9	HILL SLOPE	4	0.5	0.67	1.27	56.13	X	0.071	0.025	8.63	142	0.13	0.03	0.73	109	0.08	1.33	0.17	14	15.8
HS194	764390	6173255	DNH 1M	0.9	HILL SLOPE	3	0.5	0.67	0.95	106.9	X	0.098	0.025	6.22	92	0.11	0.06	0.69	148	0.06	2.67	0.41	7	14.1
HS195	764494	6173253	DNH 1M	0.9	HILL SLOPE	7	0.5	1.76	1.77	1285	X	0.211	0.025	12.93	309	0.28	0.08	0.85	267	0.39	5.09	0.57	27	26.3
HS196	764598	6173254	DNH 1M	0.9	HILL SLOPE	6	0.5	0.83	1.22	151	X	0.099	0.025	8.37	117	0.16	0.04	0.9	210	0.09	2.12	0.27	13	10.7
HS197	762993	6172847	1	0.9	HILL CREST	3	0.5	1.33	0.67	293.2	X	0.179	0.07	9.53	121	0.11	0.07	0.43	142	0.14	4.64	0.46	7	9.4
HS198	763103	6172854	DNH 1M	0.9	HILL SLOPE	3	2	1.72	1.25	1139	X	0.182	0.11	10.21	255	0.22	0.05	2.48	29	0.32	3.39	0.29	14	25.5
HS199	763210	6172847	DNH 1M	0.9	HILL SLOPE	4	0.5	0.67	0.96	521.8	X	0.073	0.025	7.06	140	0.11	0.03	0.44	198	0.11	1.51	0.2	12	13.3
HS200	763308	6172850	0.4	0.3	HILL CREST PLAIN	4	0.5	1.82	1.16	1280	X	0.248	0.025	7.58	191	0.19	0.09	0.49	45	0.07	6.43	0.63	20	20.8
HS201	763409	6172847	0.3	0.2	HILL CREST PLAIN	2	0.5	1.17	0.7	798.4	X	0.16	0.025	5.3	93	0.11	0.06	0.33	44	0.025	4.35	0.41	8	11.4
HS202	763500	6172855	0.5	0.4	HILL CREST PLAIN	4	0.5	2.01	1.3	1181	X	0.252	1.3	9.22	236	0.85	0.09	0.58	55	0.19	6.45	0.65	22	25.5
HS203	763603	6172847	0.3	0.2	HILL CREST PLAIN	4	0.5	1.95	0.91	1055	X	0.262	0.1	6.19	146	0.21	0.1	0.45	30	0.07	6.97	0.62	20	14.7
HS204	763703	6172848	0.4	0.3	HILL CREST PLAIN	4	0.5	1.77	0.89	1289	X	0.237	0.07	6.22	111	0.2	0.09	0.43	34	0.025	6.51	0.59	12	16.5
HS205	763793	6172850	0.3	0.2	HILL CREST PLAIN	5	2	2.34	1.45	1107	X	0.301	0.13	8.4	212	0.25	0.11	0.45	36	0.09	8.07	0.74	21	18.8
HS206	763896	6172852	0.4	0.3	HILL CREST PLAIN	6	1	2.38	1.29	1018	X	0.302	0.1	7.96	225	0.25	0.11	0.46	40	0.07	8.13	0.7	19	21.4
HS207	764012	6172856	0.2	0.1	HILL CREST PLAIN	3	0.5	1.15	0.69	314.7	X	0.147	0.025	4.27	115	0.09	0.05	0.28	27	0.025	3.97	0.38	8	8.5
HS208	764102	6172850	0.4	0.3	HILL CREST PLAIN	5	0.5	2.22	1.09	1062	X	0.291	0.025	7.26	136	0.2	0.11	0.41	38	0.06	7.63	0.69	15	17
HS209	764205	6172852	0.3	0.2	HILL CREST PLAIN	5	0.5	2.14	1.02	551	X	0.278	0.07	7.09	118	0.18	0.1	0.32	28	0.025	7.55	0.69	18	13.8
HS210	764297	6172851	0.2	0.1	HILL CREST PLAIN	4	2	1.66	1.09	851.7	X	0.216	0.08	6.33	132	0.17	0.09	0.46	29	0.15	5.71	0.56	16	13.1
HS211	764394	6172850	0.2	0.1	HILL CREST PLAIN	2	0.5	0.87	0.66	531.6	X	0.116	0.025	3.65	98	0.09	0.05	0.32	27	0.025	3.05	0.29	10	7.9
HS212	764498	6172855	0.2	0.1	HILL SLOPE	2	0.5	0.79	0.61	102.8	X	0.101	0.025	3.6	78	0.08	0.04	0.25	28	0.025	2.53	0.25	10	4
HS213	763200	6175304	DNH 1M	0.9	HILL SLOPE	9	0.5	1.21	2.25	291.6	X	0.14	0.025	12.99	181	0.28	0.05	2.61	304	0.025	2.6	0.33	17	22.6
HS214	763100	6175300	DNH 1M	0.9	HILL SLOPE	6	0.5	1.08	1.23	83.66	X	0.133	0.025	9.75	101	0.16	0.05	1.06	248	0.025	2.89	0.34	16	13.4
HS215	763004	6175293	DNH 1M	0.9	HILL SLOPE	7	0.5	1.03	1.2	87.47	X	0.123	0.025	10.57	83	0.17	0.05	1.55	180	0.025	3.02	0.31	17	13.5
HS216	763245	6175298	0.4	0.3	HILL SLOPE	4	0.5	1.23	1.23	1076	X	0.155	0.07	9.45	137	0.22	0.06	0.73	92	0.025	3.82	0.42	11	18.6
HS217	763252	6174803	0.4	0.3	HILL CREST PLAIN	4	0.5	1.77	0.75	89.5	X	0.222	0.025	6.06	117	0.12	0.07	0.21	24	0.025	5.11	0.5	10	9.2
HS218	763359	6175302	0.6	0.5	HILL SLOPE	1	2	2.42	0.54	1162	X	0.211	0.06	9.17	131	0.08	0.06	0.88	30	0.07	4.41	0.39	5	9.2
HS219	763549	6175299	0.2	0.1	HILL SLOPE	3	0.5	3.97	4.38	186.6	X	0.463	0.025	15.71	139	0.07	0.19	1	44	0.06	13.13	1.3	15	7.4
HS220	764600	6175297	DNH 1M	0.9	HILL SLOPE	2	0.5	1.68	0.61	1387	X	0.223	0.05	5.1	58	0.14	0.09	0.28	44	0.025	6.3	0.55	8	10.4
HS221	764694	6175304	DNH 1M	0.9	HILL SLOPE	3	0.5	2.54	0.83	1290	X	0.353	0.025	7.28	104	0.28	0.14	0.54	97	0.06	9.76	0.89	18	14.2
HS222	764810	6175302	DNH 1M	0.9	HILL SLOPE	3	0.5	1.66	1.3	143.9	X	0.209	0.06	12.09	123	0.13	0.08	0.87	155	0.08	4.81	0.54	31	9.6
HS223	764596	6174800	DNH 1M	0.9	HILL SLOPE	1	0.5	1.37	0.53	1441	X	0.201	0.025	4.8	66	0.18	0.08	0.4	38	0.05	5.56	0.51	8	14.6
HS224	764708	6174806	1	0.9	HILL CREST	1	1	2.14	1.24	1323	X	0.312	0.09	6.84	209	0.22	0.11	0.68	67	0.11	8.83	0.8	18	16.5
HS225	764802	6174802	0.1	0	HILL CREST	3	1	3.18	1.97	404.3	X	0.428	0.09	6.61	299	0.27	0.17	0.75	92	0.23	11.73	1.11	51	6.3
HS226	763357	6174797	1	0.9	HILL CREST	4	0.5	2.06	0.87	1210	X	0.28	0.09	5.83	147	0.19	0.1	1.06	42	0.025	7.1	0.66	14	12.6
HS227	763454	6174808	0.3	0.2	HILL CREST PLAIN	3	3	2.3	1.18	1406	X	0.308	0.05	6.74	207	0.21	0.12	0.58	37	0.09	7.98	0.75	22	18.3
HS228	763543	6174820	0.3	0.2	HILL CREST PLAIN	4	0.5	1.91	0.78	1235	X	0.262	0.06	5.19	129	0.15	0.1	0.58	31	0.025	6.91	0.62	15	11.2
HS229	763250	6174395	DNH 1M	0.9	HILL SLOPE	9	1	1.45	2.19	288.7	X	0.192	0.025	15.35	145	0.24	0.08	2.51	291	0.07	5.02	0.52	17	15.4

*X denotes below detection limits

Appendix 3.1 – Soil Grid Locations and Geochemical Assays

					ELEMENTS	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
					UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
					DETECTION	1	1	0.01	0.05	0.02	0.01	0.005	0.05	0.01	5	0.01	0.01	0.01	2	0.05	0.02	0.01	1	0.1
Sample No:	**Easting**	**Northing**	**Calcrete Depth (M)**	**Sample Depth (M)**	**Regolith Landform**																			
HS230	763357	6174402	0.2	0.1	HILL CREST	2	1	1.87	1	1683	X	0.257	0.05	6.15	102	0.16	0.1	0.46	33	0.025	6.88	0.68	14	19
HS231	763455	6174399	0.2	0.1	HILL CREST PLAIN	4	2	2.66	1.27	903.2	X	0.354	0.09	7.73	164	0.21	0.13	0.51	35	0.18	9	0.94	23	16.4
HS232	763544	6174410	0.2	0.1	HILL CREST PLAIN	4	1	2.96	1.34	1039	X	0.379	0.89	9.74	178	0.84	0.14	0.54	29	0.12	9.41	0.91	21	28.6
HS233	763253	6174014	0.2	0.1	HILL SLOPE	4	0.5	2.51	1.05	65.29	X	0.281	0.025	7.92	243	0.16	0.09	0.55	44	0.025	6.18	0.57	14	10
HS234	763351	6174001	DNH 1M	0.9	DEPRESSION	5	0.5	3.2	1.21	433.7	X	0.446	0.025	8.25	176	0.17	0.17	0.52	37	0.025	12.53	1.08	18	10.3
HS235	763456	6174000	DNH 1M	0.9	DEPRESSION	9	0.5	4.76	1.74	341.5	X	0.658	0.08	13	311	0.3	0.24	0.39	59	0.025	17.81	1.57	36	19.8
HS236	763550	6174001	DNH 1M	0.9	HILL SLOPE	5	0.5	2.59	2.1	888.8	X	0.333	0.07	8.76	136	0.26	0.15	0.94	54	0.025	9.78	1.06	15	11.9
HS237	763260	6173596	0.3	0.2	HILL CREST	3	1	2.12	1.1	1411	X	0.291	0.15	7.73	182	0.22	0.11	0.54	46	0.025	7.58	0.68	22	19.6
HS238	763353	6173595	0.2	0.1	HILL CREST	4	1	2.5	1.23	1393	X	0.325	0.06	7.22	239	0.22	0.12	0.69	43	0.07	8.71	0.81	18	17.7
HS239	763443	6173603	DNH 1M	0.9	HILL CREST	5	0.5	1.8	1.16	672.9	X	0.23	0.025	8.73	160	0.23	0.08	1.11	180	0.025	6.18	0.56	15	16.3
HS240	763553	6173603	0.3	0.2	HILL CREST	4	1	2.03	1.27	1212	X	0.257	0.08	8.87	214	0.23	0.1	0.68	44	0.09	7	0.61	19	22.6
HS241	763254	6173255	0.3	0.2	HILL CREST PLAIN	3	0.5	1.63	0.8	165	X	0.218	0.025	5.44	94	0.12	0.08	0.27	31	0.025	5.64	0.52	8	8.4
HS242	763347	6173251	1	0.9	HILL CREST PLAIN	4	0.5	2.15	0.88	920.8	X	0.285	0.025	6.52	94	0.19	0.11	0.56	52	0.025	7.39	0.68	8	12.8
HS243	763450	6173267	0.3	0.2	HILL CREST PLAIN	3	0.5	1.19	0.75	435.6	X	0.154	0.32	5.15	115	0.25	0.06	0.36	39	0.025	4.06	0.36	8	9.4
HS244	763549	6173255	0.5	0.4	HILL CREST PLAIN	5	0.5	2.39	1.52	1203	X	0.3	0.39	8.62	254	0.4	0.11	0.68	57	0.025	7.69	0.77	22	19.9
HS245	763264	6172849	0.3	0.2	HILL CREST PLAIN	4	1	1.92	1.51	1225	X	0.251	0.21	8.08	285	0.31	0.1	0.79	62	0.025	6.55	0.66	23	20.8
HS246	763348	6172852	0.3	0.2	HILL CREST PLAIN	3	0.5	1.22	0.64	706.5	X	0.166	0.05	5.04	111	0.12	0.06	0.31	40	0.025	4.53	0.43	8	9.6
HS247	763451	6172851	0.4	0.3	HILL CREST PLAIN	3	2	1.55	1.23	1749	X	0.196	0.14	6.65	205	0.23	0.08	0.56	63	0.025	5.13	0.5	16	17.7
HS248	763545	6172855	DNH 1M	0.9	HILL CREST PLAIN	4	0.5	1.77	0.86	564.5	X	0.236	0.025	7.42	102	0.19	0.09	1.24	137	0.025	6.01	0.62	10	11.4
			* DNH = Did not hit Calcrete horizon																					

*X denotes below detection limits

Appendix 3.2 – Calcrete Grid Locations and Geochemical Assays

		ELEMENTS	Au	Au-Rp1	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Hf	Ho	In	K
		UNITS	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
		DETECTION	1	1	0.05	20	1	1	0.05	0.01	0.01	0.05	0.01	0.1	2	0.002	1	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	20
SAMPLE No:	Easting	Northing																									
HSC114	763103	6174801	0.5		0.025	13480	5	142	0.77	0.06	18.85	0.025	18.34	8.8	17	0.933	11	1.76	1.04	0.47	1.74	3.85	2.06	0.29	0.37	0.02	3535
HSC116	763298	6174800	0.5		0.025	9029	2	129	0.3	0.06	21.14	0.025	14.58	8.8	14	0.616	26	1.42	0.84	0.36	0.74	2.56	1.55	0.11	0.31	0.005	2247
HSC118	763495	6174803	0.5		0.025	7352	2	109	0.34	0.04	21.99	0.025	17.39	14.1	24	0.508	8	2.17	1.31	0.55	0.61	2	2.43	0.1	0.49	0.005	2170
HSC119	763599	6174808	0.5		0.025	9344	4	115	0.34	0.06	20.12	0.025	15.85	5.9	17	0.635	10	1.39	0.85	0.38	1.01	2.61	1.61	0.13	0.3	0.005	2703
HSC120	763702	6174795	0.5		0.025	8301	4	120	0.28	0.04	20.59	0.025	13.58	6.3	13	0.598	8	1.36	0.81	0.36	0.7	2.43	1.56	0.15	0.28	0.005	2581
HSC121	763809	6174808	3		0.025	9640	4	132	0.31	0.04	17.38	0.025	13.55	8.2	13	0.676	10	1.14	0.67	0.32	0.9	2.96	1.34	0.13	0.24	0.01	2706
HSC122	763898	6174802	0.5		0.025	13615	3	118	0.38	0.05	10.77	0.025	13.45	6.9	24	0.964	11	1.08	0.62	0.32	1.16	3.83	1.35	0.16	0.24	0.01	2489
HSC127	764407	6174795	0.5		0.025	6669	5	74	0.23	0.03	14.25	0.025	8.37	2.8	11	0.532	3	0.65	0.34	0.2	0.56	2.02	0.89	0.18	0.13	0.005	2134
HSC128	764504	6174800	0.5		0.025	6639	3	92	0.34	0.03	18.02	0.025	13.88	6	10	0.51	5	1.02	0.6	0.26	0.74	1.9	1.21	0.12	0.22	0.005	2352
HSC133	763400	6174405	0.5		0.025	10880	4	108	0.4	0.05	16.82	0.025	18.83	6.2	18	0.744	6	1.69	0.95	0.48	0.9	3.15	2.09	0.18	0.36	0.01	3652
HSC134	763497	6174410	0.5		0.025	9119	3	107	0.37	0.05	20.04	0.025	15.92	9.9	11	0.652	9	1.81	1.05	0.47	0.72	2.63	2.07	0.09	0.38	0.005	2388
HSC135	763611	6174417	0.5		0.025	7983	3	127	0.37	0.04	20.48	0.025	18.47	14.5	19	0.554	8	2.2	1.35	0.58	0.61	2.3	2.54	0.1	0.49	0.005	2461
HSC136	763704	6174400	1		0.025	4652	2	110	0.25	0.02	18.31	0.025	10.28	7	6	0.316	35	0.79	0.49	0.19	0.35	1.41	0.85	0.1	0.17	0.005	1822
HSC139	763990	6174405	6	9	0.025	11311	4	128	0.34	0.04	15.52	0.025	12.65	7	13	0.804	30	0.99	0.58	0.28	0.85	3.34	1.15	0.15	0.2	0.01	3263
HSC144	764499	6174409	0.5		0.025	7101	3	96	0.25	0.03	15.01	0.025	9.38	4.6	7	0.53	4	0.67	0.36	0.2	0.62	2.13	0.88	0.13	0.13	0.005	2830
HSC145	764603	6174395	0.5		0.025	6616	3	86	0.28	0.03	13.31	0.025	8.81	4.9	9	0.48	4	0.63	0.36	0.17	0.65	1.96	0.75	0.03	0.13	0.005	2007
HSC146	764710	6174400	0.5		0.025	6178	3	74	0.33	0.03	17.33	0.025	13.8	6.5	8	0.472	4	1.03	0.58	0.26	0.63	1.87	1.2	0.08	0.21	0.005	2753
HSC148	763098	6174000	2		0.025	13425	11	228	0.91	0.23	4.35	0.025	18.9	5.1	33	3.576	11	0.51	0.23	0.16	1.97	9.38	0.85	0.35	0.09	0.02	8357
HSC149	763195	6174013	0.5		0.025	15206	48	90	1.69	0.43	2.59	0.025	32.54	11.3	46	9.959	9	1.3	0.64	0.31	6.77	8.36	1.75	0.52	0.25	0.04	10028
HSC150	763294	6174003	0.5		0.025	8937	3	159	0.43	0.08	17.45	0.025	12.56	5.9	14	1.358	34	1.01	0.62	0.26	1.01	3.06	1.23	0.1	0.22	0.01	2648
HSC153	763601	6173997	7	9	0.025	12104	54	114	0.49	0.08	16.61	0.025	27.01	10.2	33	0.943	78	1.93	1.09	0.53	3.26	4.65	2.27	0.25	0.39	0.02	2852
HSC154	763695	6173996	0.5		0.025	14688	8	122	0.47	0.07	16.08	0.025	18.02	9.4	18	1.244	12	1.99	1.22	0.54	1.53	4.8	2.44	0.19	0.42	0.02	3674
HSC155	763793	6173999	36	42	0.025	12039	11	180	0.35	0.05	17.18	0.025	10.39	5.6	16	1.084	31	0.62	0.36	0.19	1.32	4.19	0.76	0.13	0.13	0.02	2657
HSC159	764209	6174002	2		0.025	7728	3	141	0.25	0.04	20.1	0.025	7.76	7.7	10	0.575	5	0.69	0.42	0.18	0.66	2.43	0.79	0.16	0.14	0.005	2351
HSC160	764402	6173989	2		0.025	9291	6	195	0.29	0.04	15.49	0.025	8.25	4.2	18	0.684	5	0.67	0.37	0.18	0.84	2.93	0.75	0.2	0.13	0.01	2674
HSC163	764698	6173997	0.5		0.025	6490	6	109	0.58	0.03	19.74	0.09	20.27	7.7	10	0.487	6	1.81	1.1	0.4	0.75	1.88	2.06	0.15	0.4	0.005	2101
HSC164	763006	6173610	0.5		0.025	8768	3	147	0.39	0.05	22.49	0.025	37.76	26.4	9	0.646	4	5.15	2.82	1.69	0.73	2.68	7.84	0.06	1.1	0.005	2188
HSC165	763098	6173602	0.5		0.025	7986	3	122	0.32	0.04	22.7	0.025	15.26	9.6	11	0.63	5	1.65	0.95	0.41	0.73	2.53	1.92	0.05	0.35	0.005	2493
HSC167	763300	6173598	0.5		0.025	5908	4	124	0.33	0.03	22.21	0.025	18.02	11.1	8	0.465	9	2.14	1.3	0.55	0.51	1.78	2.44	0.1	0.46	0.005	1983
HSC170	763594	6173607	0.5		0.025	8585	6	150	0.24	0.04	16.58	0.025	7.06	5.7	12	0.726	10	0.52	0.3	0.14	0.95	3.13	0.62	0.11	0.11	0.005	1900
HSC175	764198	6173598	3		0.025	4761	6	45	0.43	0.06	4.54	0.025	40.4	2.4	21	0.445	5	1.58	0.89	0.29	1.1	1.77	1.73	0.23	0.31	0.005	917
HSC179	764600	6173600	0.5		0.025	7444	5	182	0.42	0.03	18.5	0.025	30.48	6.3	7	0.62	6	1.99	1.04	0.39	0.8	2.54	2.4	0.09	0.39	0.005	1717
HSC180	764700	6173600	0.5		0.025	4366	2	35	0.56	0.04	0.97	0.025	91.87	1.4	31	1	3	2.11	1.41	0.34	0.94	2.06	2.41	0.55	0.45	0.005	1397
HSC181	762990	6173255	0.5		0.025	7057	7	165	0.29	0.04	19.85	0.025	14.82	11.3	11	0.637	4	1.16	0.67	0.32	1	2.67	1.5	0.08	0.26	0.01	1627
HSC183	763200	6173250	0.5		0.025	8007	4	146	0.38	0.04	22.54	0.025	17.53	13.8	10	0.584	5	1.93	1.17	0.47	0.73	2.49	2.21	0.1	0.42	0.005	2214
HSC185	763400	6173250	0.5		0.025	13158	6	113	0.41	0.06	15.49	0.025	13.67	7.3	16	0.979	7	1.08	0.59	0.32	1.22	4.12	1.32	0.16	0.22	0.01	3568
HSC186	763500	6173250	0.5		0.025	6408	4	129	0.35	0.04	22.42	0.025	13.72	12.9	9	0.483	6	1.54	0.96	0.39	0.61	2.01	1.75	0.09	0.34	0.005	1978
HSC187	763600	6173250	0.5		0.025	10799	4	115	0.45	0.05	17.66	0.025	29.5	12.3	13	0.822	8	3.68	2.01	1.2	0.96	3.4	5.22	0.12	0.75	0.01	2840
HSC188	763700	6173250	0.5		0.025	7882	3	136	0.31	0.04	22.42	0.025	13.78	10.7	10	0.609	5	1.37	0.8	0.35	0.66	2.5	1.5	0.15	0.29	0.005	2060
HSC189	763800	6173250	0.5		0.025	9007	3	114	0.37	0.04	18.43	0.025	22.63	9.6	20	0.728	8	2.44	1.36	0.69	0.84	2.86	2.93	0.09	0.51	0.01	2463
HSC190	763900	6173250	0.5		0.025	6657	3	115	0.25	0.03	19.38	0.025	11.76	8.5	10	0.52	6	1.14	0.7	0.3	0.58	2.06	1.34	0.11	0.25	0.005	1987
HSC197	762993	6172847	0.5		0.025	7782	33	125	0.39	0.25	14.45	0.025	20.31	6.3	57	0.702	4	1.27	0.69	0.36	6.35	4.85	1.59	0.35	0.25	0.03	1668
HSC200	763308	6172850	0.5		0.1	8045	3	128	0.29	0.04	18.61	0.025	9.92	5.9	11	0.636	6	0.76	0.44	0.2	0.81	2.59	0.86	0.13	0.16	0.005	2668
HSC201	763409	6172847	0.5		0.025	8271	4	129	0.33	0.04	19.87	0.025	12.07	7	12	0.622	8	0.98	0.61	0.25	0.87	2.58	1.1	0.13	0.22	0.005	2824
HSC202	763500	6172855	0.5		0.025	8755	3	127	0.34	0.04	19.28	0.025	14.76	10.2	12	0.62	6	1.42	0.89	0.39	0.8	2.56	1.67	0.09	0.3	0.005	2526
HSC203	763603	6172847	0.5		0.025	7912	2	114	0.35	0.04	21.9	0.025	13.52	10	9	0.567	7	1.33	0.81	0.34	0.63	2.36	1.46	0.09	0.28	0.005	2379

*X denotes below detection limits

Appendix 3.2 – Calcrete Grid Locations and Geochemical Assays

		ELEMENTS	Au	Au-Rp1	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Dy	Er	Eu	Fe	Ga	Gd	Hf	Ho	In	K
		UNITS	ppb	ppb	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm
		DETECTION	1	1	0.05	20	1	1	0.05	0.01	0.01	0.05	0.01	0.1	2	0.002	1	0.01	0.01	0.01	0.01	0.05	0.01	0.01	0.01	0.01	20
SAMPLE No:	**Easting**	**Northing**																									
HSC204	763703	6172848	0.5		0.025	6640	4	102	0.31	0.04	19.15	0.025	14.13	9.8	12	0.477	6	1.52	0.89	0.39	0.64	2.01	1.66	0.06	0.32	0.005	1828
HSC205	763793	6172850	0.5		0.025	7958	3	133	0.35	0.04	23.33	0.025	21.06	15.8	11	0.563	6	2.39	1.43	0.61	0.66	2.43	2.78	0.09	0.51	0.005	1941
HSC206	763896	6172852	0.5		0.025	10701	4	110	0.34	0.05	19.13	0.025	11.8	7.6	13	0.738	8	0.96	0.59	0.28	0.95	3.12	1.16	0.08	0.2	0.01	2810
HSC207	764012	6172856	0.5		0.025	8796	3	124	0.3	0.04	21.5	0.025	11.11	8.8	12	0.634	5	1.04	0.65	0.28	0.7	2.63	1.24	0.14	0.23	0.005	2715
HSC208	764102	6172850	0.5		0.025	8615	3	132	0.31	0.04	21.51	0.025	13.85	10	9	0.607	5	1.32	0.82	0.34	0.69	2.51	1.49	0.09	0.28	0.005	2440
HSC209	764205	6172852	0.5		0.025	4117	1	120	0.19	0.02	19.21	0.025	10.77	6.4	5	0.295	5	1.15	0.69	0.3	0.3	1.16	1.32	0.05	0.24	0.005	1121
HSC210	764297	6172851	0.5		0.025	5811	2	128	0.2	0.03	22.36	0.025	8.32	8.8	7	0.435	5	0.75	0.45	0.19	0.47	1.77	0.83	0.05	0.16	0.005	1756
HSC211	764394	6172850	1		0.025	7976	4	129	0.23	0.04	18.94	0.025	7.57	4.3	12	0.605	9	0.61	0.35	0.17	0.81	2.43	0.74	0.13	0.13	0.005	2272
HSC212	764498	6172855	0.5		0.025	5725	7	132	0.17	0.03	23.11	0.05	5.95	5	11	0.474	3	0.51	0.3	0.14	0.98	2.03	0.6	0.06	0.11	0.005	1407
HSC216	763245	6175298	0.5		0.025	9232	127	62	0.66	0.09	1.58	0.025	12.5	15.5	45	0.626	61	1.44	0.76	0.33	12.94	5.76	1.43	0.53	0.28	0.03	715
HSC217	763252	6174803	0.5		0.025	11100	8	132	0.48	0.05	20.68	0.025	22.71	12.2	14	0.782	7	2.5	1.55	0.65	1.46	3.27	2.92	0.2	0.54	0.01	2866
HSC224	764708	6174806	0.5		0.025	4830	4	42	0.26	0.02	12.64	0.025	10.29	4.9	14	0.342	3	0.8	0.45	0.19	0.49	1.3	0.93	0.08	0.17	0.005	2164
HSC225	764802	6174802	0.5		0.025	5736	7	78	0.38	0.03	22.25	0.08	16.7	6.4	10	0.436	6	1.41	0.83	0.34	0.85	1.63	1.55	0.07	0.3	0.005	2453
HSC226	763357	6174797	0.5		0.025	9459	2	102	0.32	0.04	17.08	0.025	10.51	4.4	14	0.646	10	0.8	0.44	0.23	0.74	2.68	0.97	0.1	0.16	0.005	2734
HSC227	763454	6174808	2		0.025	7387	3	97	0.33	0.05	21.02	0.025	13.07	9.2	18	0.492	11	1.27	0.77	0.34	0.59	2.08	1.42	0.1	0.28	0.005	2470
HSC228	763543	6174820	0.5		0.025	7490	3	113	0.29	0.04	23.3	0.025	13.88	13	8	0.504	8	1.44	0.88	0.37	0.58	2.07	1.64	0.1	0.32	0.005	2321
HSC230	763357	6174402	3		0.025	7335	3	105	0.27	0.03	18.2	0.025	10.25	7.2	9	0.479	10	0.88	0.52	0.24	0.59	2.01	1.05	0.15	0.19	0.005	2283
HSC231	763455	6174399	1		0.025	7915	3	99	0.28	0.04	20.96	0.025	10.94	9	9	0.54	8	1.03	0.6	0.27	0.61	2.2	1.15	0.08	0.22	0.005	1910
HSC232	763544	6174410	0.5		0.025	7698	2	96	0.32	0.04	20.13	0.025	15.98	8.1	9	0.518	6	1.74	0.98	0.46	0.62	2.16	2.05	0.14	0.37	0.005	2261
HSC233	763253	6174014	0.5		0.025	4014	2	111	0.26	0.03	14.98	0.025	17.61	8.8	10	0.463	2	1.32	0.7	0.41	0.77	1.49	1.94	0.02	0.27	0.005	979
HSC237	763260	6173596	0.5		0.025	5272	3	102	0.24	0.03	21.62	0.025	11.66	10.4	10	0.372	12	1.07	0.65	0.26	0.44	1.52	1.23	0.08	0.23	0.005	1760
HSC238	763353	6173595	0.5		0.07	7227	4	101	0.27	0.05	19.6	0.025	14.89	6.3	13	0.516	8	1.45	0.82	0.39	0.94	2.22	1.65	0.12	0.3	0.005	2113
HSC240	763553	6173603	1		0.025	7052	3	107	0.26	0.04	17.89	0.025	9.69	4.8	13	0.529	10	0.79	0.48	0.21	0.63	2.16	0.93	0.13	0.17	0.005	2445
HSC241	763254	6173255	0.5		0.025	10120	3	113	0.33	0.04	18.98	0.025	13.64	10	13	0.69	5	1.39	0.82	0.37	0.88	2.96	1.62	0.11	0.3	0.005	2669
HSC243	763450	6173267	0.5		0.06	10088	4	112	0.4	0.05	16.94	0.025	22.72	10.7	14	0.69	6	2.6	1.48	0.77	0.92	3.05	3.35	0.14	0.55	0.01	2518
HSC245	763264	6172849	0.5		0.025	6804	3	147	0.3	0.04	20.92	0.025	10.88	7.9	12	0.515	9	0.96	0.6	0.25	0.65	2.17	1.09	0.12	0.21	0.005	2262
HSC246	763348	6172852	0.5		0.025	9124	4	117	0.31	0.04	18.8	0.025	12.23	6.5	12	0.655	8	1.06	0.63	0.29	0.83	2.81	1.22	0.1	0.22	0.005	2693
HSC247	763451	6172851	0.5		0.025	6245	3	114	0.26	0.03	19.97	0.025	9.18	6.7	9	0.463	11	0.79	0.47	0.21	0.56	1.95	0.86	0.13	0.17	0.005	2366

*X denotes below detection limits

Appendix 3.2 – Calcrete Grid Locations and Geochemical Assays

		ELEMENTS	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	P	Pb	Pd	Pr	Pt	Rb	Re	Sb	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th
		UNITS	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
		DETECTION	0.01	0.1	0.01	1	0.1	0.02	0.01	1	20	1	10	0.005	10	0.02	0.01	0.02	1	1	0.01	0.05	0.02	0.01	0.005	0.05	0.01
SAMPLE No:	**Easting**	**Northing**																									
HSC114	763103	6174801	9.11	10.9	1.09	171	0.5	0.16	9.61	8	170	5	5	2.559	0	17.06	X	0.27	4	X	2.04	0.59	912.1	X	0.299	X	5.36
HSC116	763298	6174800	6.61	13.2	1.95	88	0.3	0.14	7.02	7	186	4	5	1.823	8	11.05	X	0.2	3	X	1.53	0.38	1181	X	0.232	X	4.14
HSC118	763495	6174803	9.88	9.1	1.05	139	0.3	0.11	10.67	6	180	4	5	2.639	7	8.85	X	0.09	3	X	2.33	0.28	1007	X	0.353	X	5.32
HSC119	763599	6174808	7.83	9.6	1.22	99	0.3	0.2	7.96	10	181	5	5	2.059	10	12.23	X	0.19	3	X	1.64	0.32	1073	X	0.236	X	4.47
HSC120	763702	6174795	7.06	9.6	1.58	63	0.3	0.15	7.38	8	181	4	5	1.89	6	11.43	X	0.16	3	X	1.54	0.32	1258	X	0.227	0.05	4.2
HSC121	763809	6174808	6.97	8.1	0.83	105	0.2	0.1	6.81	4	151	3	5	1.792	7	11.31	X	0.16	3	X	1.39	0.37	810.4	X	0.198	X	3.48
HSC122	763898	6174802	6.58	8.1	0.59	66	0.2	0.08	6.81	7	108	4	5	1.801	7	15.04	X	0.26	3	X	1.42	0.51	507.3	X	0.193	X	3.46
HSC127	764407	6174795	5.47	10.8	7.12	29	0.2	0.09	5.41	2	98	2	5	1.442	10	9.79	X	0.11	2	X	1.01	0.31	1180	X	0.118	X	1.94
HSC128	764504	6174800	6.26	6.6	1.98	117	0.4	0.13	6.33	5	147	4	5	1.694	5	12.07	X	0.11	2	X	1.23	0.34	802.2	X	0.174	X	2.77
HSC133	763400	6174405	9.65	13.2	1.75	66	0.2	0.09	10.25	5	146	4	5	2.659	6	14.04	X	0.13	3	X	2.12	0.53	849	X	0.304	X	4.79
HSC134	763497	6174410	8.83	10.9	1.29	89	0.1	0.13	9.61	4	176	5	5	2.442	7	11.36	X	0.09	3	X	2.03	0.44	1058	X	0.3	X	4.35
HSC135	763611	6174417	10.74	10.6	1.26	116	0.2	0.12	11.68	6	170	5	5	2.967	10	10.34	X	0.08	3	X	2.47	0.3	1134	X	0.374	X	5.38
HSC136	763704	6174400	3.59	12.6	4.16	50	0.2	0.12	3.91	5	152	2	5	1.018	5	6.05	X	0.17	2	X	0.84	0.2	1701	X	0.129	X	2.56
HSC139	763990	6174405	5.42	14.2	2.43	76	0.2	0.15	5.82	6	164	4	20	1.556	14	14.5	X	0.23	3	X	1.22	0.43	1407	X	0.166	0.06	3.58
HSC144	764499	6174409	5.19	9.5	3.64	40	0.4	0.12	5.23	3	112	2	16	1.425	11	10.66	X	0.17	2	X	0.97	0.41	1086	X	0.117	X	2.18
HSC145	764603	6174395	4.15	5.1	0.8	52	0.4	0.18	4.12	3	137	2	12	1.134	8	9.64	X	0.14	2	X	0.82	0.39	418.7	X	0.108	X	1.62
HSC146	764710	6174400	6.66	10.1	2.57	156	0.5	0.15	6.29	6	144	3	14	1.728	8	10.87	X	0.11	2	X	1.23	0.33	822.8	X	0.171	X	2.4
HSC148	763098	6174000	9.36	16.9	1.75	66	0.4	0.15	7.35	7	63	3	5	2.209	5	75.55	X	0.23	3	X	1.2	1.33	271.7	X	0.101	X	6.51
HSC149	763195	6174013	15.98	15.4	1.14	275	4.8	0.32	13.24	13	104	11	5	3.916	11	112.5	X	0.21	6	X	2.23	1.75	200.5	X	0.235	X	13.35
HSC150	763294	6174003	6.39	8.9	0.84	119	0.3	0.2	6.2	2	152	3	5	1.644	12	19.62	X	0.16	3	X	1.19	0.49	714.1	X	0.168	X	3.25
HSC153	763601	6173997	14.47	9.7	0.74	211	2.6	0.13	12.63	8	147	8	5	3.516	11	16.38	X	0.53	4	X	2.36	0.84	588.5	X	0.318	X	6.88
HSC154	763695	6173996	12.22	10.4	0.65	107	0.5	0.22	13.08	4	144	4	5	3.5	8	21.4	X	0.37	4	X	2.6	0.69	581.1	X	0.342	X	5.17
HSC155	763793	6173999	4.48	9	0.96	77	0.4	0.13	4.34	2	150	3	5	1.166	8	17.89	X	0.37	3	X	0.87	0.6	850.2	X	0.111	X	3.75
HSC159	764209	6174002	3.44	6.4	1.04	45	0.2	0.15	3.72	5	186	3	5	0.986	8	10.12	X	0.23	2	X	0.78	0.37	1003	X	0.116	X	3.11
HSC160	764402	6173989	3.55	8.9	1.06	27	0.2	0.1	3.81	3	125	3	5	1.008	7	12.39	X	0.13	2	X	0.81	0.4	1034	X	0.112	X	2.79
HSC163	764698	6173997	10.95	7	1.14	150	0.3	0.3	10.5	5	202	3	17	2.818	10	9.34	X	0.15	2	X	2.07	0.43	795.4	X	0.31	X	4.18
HSC164	763006	6173610	52.85	7.9	0.65	216	0.2	0.16	43.96	8	192	5	5	11.32	11	11.8	X	0.14	3	X	7.61	0.34	721.5	X	0.967	X	3.57
HSC165	763098	6173602	8.83	7.1	0.67	390	0.4	0.15	8.84	13	208	3	5	2.277	7	12.43	X	0.21	3	X	1.85	0.37	663.9	X	0.28	X	3.2
HSC167	763300	6173598	12.91	7.9	0.92	157	0.2	0.13	11.5	6	199	4	5	2.99	11	8.59	X	0.11	2	X	2.29	0.25	923.7	X	0.354	X	4.08
HSC170	763594	6173607	3.45	6.7	1.04	39	0.4	0.13	3.2	5	140	3	5	0.88	7	12.37	X	0.34	2	X	0.66	0.44	953.5	X	0.087	X	2.7
HSC175	764198	6173598	26.19	2.5	0.21	25	0.5	4.14	15.84	3	65	3	5	5.108	13	10.02	X	0.11	1	X	2.42	0.58	163.1	X	0.262	X	15.34
HSC179	764600	6173600	26.11	6.5	0.7	46	0.4	2.87	16.36	1	184	3	5	5.186	11	10.5	X	0.18	2	X	2.85	0.47	931.3	X	0.353	X	19.16
HSC180	764700	6173600	46.72	7	0.64	24	0.2	1.2	25.5	4	53	4	5	9.206	6	16.69	X	0.15	X	X	3.64	0.81	75.84	X	0.345	X	34.08
HSC181	762990	6173255	9.53	5.2	0.86	287	0.3	0.22	7.99	7	175	3	5	2.229	8	10.66	X	0.31	2	X	1.55	0.43	736.1	X	0.204	X	4.44
HSC183	763200	6173250	9	8.5	0.75	211	0.2	0.16	9.48	7	192	4	5	2.485	10	11.39	X	0.15	3	X	2.05	0.33	797.7	X	0.32	X	4.47
HSC185	763400	6173250	6.61	13.6	1.16	56	0.4	0.19	7.1	8	142	4	5	1.884	10	18.87	X	0.26	3	X	1.45	0.52	995.4	X	0.189	X	3.79
HSC186	763500	6173250	8.07	7.1	0.99	185	0.2	0.14	7.95	8	189	5	5	2.058	X	9.01	X	0.12	2	X	1.69	0.29	1026	X	0.257	X	3.79
HSC187	763600	6173250	34.39	10.7	1.28	100	0.2	0.23	29.74	6	159	4	5	8.048	10	14.29	X	0.14	3	X	5.24	0.44	894.4	X	0.667	X	4.67
HSC188	763700	6173250	6.76	7.7	1.09	105	0.2	0.19	6.86	5	200	4	5	1.759	16	10.47	X	0.17	2	X	1.46	0.34	1029	X	0.227	X	3.75
HSC189	763800	6173250	17.02	9.4	1.07	137	0.3	0.18	15.29	6	167	4	5	3.953	X	13.32	X	0.14	3	X	2.99	0.39	852	X	0.412	X	4.92
HSC190	763900	6173250	5.92	8.8	1.3	91	0.2	0.17	6.12	3	173	3	5	1.563	10	9.07	X	0.12	2	X	1.3	0.3	1104	X	0.195	X	3.73
HSC197	762993	6172847	10.83	6.3	1.27	148	1.5	0.43	9.54	7	129	11	5	2.588	X	11.62	X	1.96	3	X	1.81	0.63	648.5	X	0.228	0.11	12.56
HSC200	763308	6172850	4.37	10.7	2.29	56	0.2	0.15	4.48	4	163	3	5	1.184	10	12.12	X	0.24	2	X	0.9	0.37	1277	X	0.133	X	3.09
HSC201	763409	6172847	5.24	11.8	2.39	95	0.3	0.15	5.28	6	175	4	5	1.382	10	12.24	X	0.19	2	X	1.15	0.42	1272	X	0.166	X	3.64
HSC202	763500	6172855	7.63	9.8	1.35	133	0.2	0.14	7.83	6	177	4	5	2.022	10	11.64	X	0.16	3	X	1.6	0.4	1058	X	0.245	X	4.29
HSC203	763603	6172847	6.59	9.7	1.51	119	0.2	0.15	6.91	4	182	4	5	1.782	7	10.72	X	0.12	3	X	1.42	0.36	1090	X	0.22	X	3.59

*X denotes below detection limits

Appendix 3.2 – Calcrete Grid Locations and Geochemical Assays

		ELEMENTS	La	Li	Mg	Mn	Mo	Nb	Nd	Ni	P	Pb	Pd	Pr	Pt	Rb	Re	Sb	Sc	Se	Sm	Sn	Sr	Ta	Tb	Te	Th
		UNITS	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
		DETECTION	0.01	0.1	0.01	1	0.1	0.02	0.01	1	20	1	10	0.005	10	0.02	0.01	0.02	1	1	0.01	0.05	0.02	0.01	0.005	0.05	0.01
SAMPLE No:	**Easting**	**Northing**																									
HSC204	763703	6172848	7.33	7.9	1.01	153	0.2	0.14	7.9	5	182	4	5	2.01	6	8.7	X	0.11	2	X	1.69	0.3	898.6	X	0.252	X	3.86
HSC205	763793	6172850	13.12	8.2	0.96	163	0.3	0.17	12.44	5	210	5	5	3.194	13	10.36	X	0.14	3	X	2.56	0.31	1016	X	0.395	X	4.73
HSC206	763896	6172852	5.61	10.5	1.42	94	0.2	0.16	5.68	5	191	4	5	1.501	8	13.08	X	0.18	3	X	1.18	0.39	1131	X	0.164	X	3.25
HSC207	764012	6172856	5.18	8.3	1.22	103	0.2	0.15	5.64	5	182	3	5	1.452	7	11.83	X	0.19	3	X	1.17	0.32	1040	X	0.173	X	3.66
HSC208	764102	6172850	6.5	9.8	1.23	103	0.3	0.18	6.83	3	202	4	5	1.79	10	11.24	X	0.11	3	X	1.45	0.41	1176	X	0.213	X	3.71
HSC209	764205	6172852	6.51	5.6	0.75	38	0.1	0.13	6.34	X	174	2	5	1.633	7	5.59	X	0.07	2	X	1.3	0.18	784.7	X	0.193	X	2.57
HSC210	764297	6172851	3.47	7.2	1.19	57	0.2	0.15	3.77	2	207	3	5	0.983	10	7.92	X	0.12	2	X	0.82	0.24	1046	X	0.124	X	2.6
HSC211	764394	6172850	4.08	9	2.58	34	0.2	0.13	3.91	7	150	2	5	1.03	11	10.67	X	0.22	2	X	0.77	0.33	1268	X	0.1	X	2.61
HSC212	764498	6172855	3.18	4.3	0.75	74	0.2	0.16	3.08	X	202	2	5	0.796	13	8.17	X	0.28	2	X	0.64	0.32	753.7	X	0.087	X	2.34
HSC216	763245	6175298	5.65	5	0.44	105	5.8	0.09	6.53	19	73	7	1	1.786	1	8.95	X	1.39	3	1	1.55	0.66	93.84	X	0.238	0.06	10.7
HSC217	763252	6174803	12.38	8.6	0.71	123	0.6	0.16	12.9	6	175	5	5	3.29	13	13.46	X	0.21	3	X	2.82	0.43	643	X	0.415	X	6.38
HSC224	764708	6174806	4.48	6.4	1.53	85	0.1	0.06	4.49	6	106	2	5	1.194	9	7.94	X	0.05	1	X	0.93	0.24	473.9	X	0.132	X	2.2
HSC225	764802	6174802	7.67	10.2	1.74	147	0.2	0.15	7.69	3	208	5	5	1.986	11	9.55	X	0.13	2	X	1.55	0.28	757.7	X	0.229	X	2.98
HSC226	763357	6174797	4.77	14.4	2.86	61	0.2	0.1	4.95	4	137	3	5	1.299	10	11.08	X	0.13	3	X	1.02	0.38	1065	X	0.139	X	2.47
HSC227	763454	6174808	6.04	11.3	1.44	100	0.3	0.16	6.76	5	169	3	5	1.71	18	9.05	X	0.13	2	X	1.42	0.37	1088	X	0.212	0.07	3.86
HSC228	763543	6174820	6.76	9.6	1.27	113	0.2	0.18	7.37	4	190	3	5	1.854	13	9.09	X	0.12	3	X	1.59	0.42	1078	X	0.24	X	4.25
HSC230	763357	6174402	4.71	12.9	2.78	59	0.2	0.15	5.08	6	138	4	14	1.299	12	9.19	X	0.26	2	X	1.05	0.65	1365	X	0.15	X	2.85
HSC231	763455	6174399	5.09	9.2	1.1	87	0.2	0.17	5.56	3	194	3	5	1.431	12	9.48	X	0.09	2	X	1.2	0.79	975.6	X	0.171	X	2.97
HSC232	763544	6174410	8.79	8.9	0.94	94	0.2	0.14	9.46	3	167	4	12	2.4	11	10.23	X	0.11	3	X	2.02	4.73	819.3	X	0.289	X	4.18
HSC233	763253	6174014	9.99	3.6	0.29	235	0.3	0.15	10.9	4	146	2	5	2.931	10	7.15	X	0.08	2	X	2.08	5.04	279.2	X	0.252	X	3.8
HSC237	763260	6173596	5.38	8.7	1.43	157	0.2	0.12	5.68	8	178	3	12	1.458	11	6.98	X	0.08	2	X	1.22	5.45	1082	X	0.173	X	2.72
HSC238	763353	6173595	7.7	8.4	1.57	109	0.2	0.1	8.14	3	166	4	17	2.092	7	9.49	X	0.15	3	X	1.73	5.23	1033	X	0.238	X	4.15
HSC240	763553	6173603	4.48	7.3	2.08	60	0.1	0.09	4.63	4	127	3	10	1.193	9	10.14	X	0.12	2	X	0.95	0.35	1049	X	0.138	X	2.93
HSC241	763254	6173255	7.4	7.8	0.62	110	0.3	0.12	7.61	7	142	4	17	1.945	10	12.82	X	0.14	3	X	1.6	5.65	596.1	X	0.227	X	3.28
HSC243	763450	6173267	16.87	9	0.79	92	0.3	0.13	16.46	7	134	7	5	4.207	12	12.79	X	0.11	3	X	3.33	4.96	716.9	X	0.458	X	5.03
HSC245	763264	6172849	5.47	8.9	1.75	83	0.2	0.12	5.24	4	168	4	13	1.378	12	9.52	X	0.13	2	X	1.08	5.97	1225	X	0.164	X	3.3
HSC246	763348	6172852	5.99	10.4	1.62	77	0.1	0.1	5.82	4	165	4	12	1.551	15	12.12	X	0.09	3	X	1.21	5.59	1048	X	0.18	X	3.34
HSC247	763451	6172851	3.87	11.2	2.66	57	0.3	0.12	4.12	4	164	3	13	1.053	14	8.84	X	0.13	2	X	0.88	5.1	1559	X	0.131	X	2.96

*X denotes below detection limits

Appendix 3.2 – Calcrete Grid Locations and Geochemical Assays

		ELEMENTS	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
		UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
		DETECTION	5	0.01	0.01	0.01	2	0.05	0.02	0.01	1	0.1
SAMPLE No:	**Easting**	**Northing**										
HSC114	763103	6174801	101	0.2	0.15	1.04	22	0.06	10.77	0.96	5	14.3
HSC116	763298	6174800	65	0.13	0.12	0.49	10	X	8.36	0.79	1	5.9
HSC118	763495	6174803	54	0.08	0.2	0.57	11	X	13.37	1.26	0.05	5.1
HSC119	763599	6174808	65	0.09	0.12	0.9	28	0.05	8.07	0.81	2	6.1
HSC120	763702	6174795	59	0.09	0.12	1.49	19	X	7.85	0.77	0.05	7.2
HSC121	763809	6174808	85	0.1	0.09	0.59	25	X	6.88	0.61	2	6.3
HSC122	763898	6174802	132	0.13	0.08	0.3	20	X	6.34	0.55	6	7.7
HSC127	764407	6174795	47	0.09	0.05	1.56	25	X	3.47	0.29	0.05	5.9
HSC128	764504	6174800	65	0.1	0.09	0.57	10	X	6.27	0.52	0.05	6.5
HSC133	763400	6174405	76	0.1	0.13	0.97	30	X	9.7	0.84	2	8.3
HSC134	763497	6174410	79	0.09	0.15	0.35	15	X	10.43	1	2	4.9
HSC135	763611	6174417	53	0.08	0.19	0.4	9	X	13.76	1.28	0.05	5.2
HSC136	763704	6174400	29	0.08	0.08	0.36	2	X	4.69	0.5	0.05	6
HSC139	763990	6174405	72	0.12	0.08	0.75	20	X	5.58	0.6	3	7.8
HSC144	764499	6174409	56	0.12	0.05	0.53	13	X	3.63	0.32	0.05	6.1
HSC145	764603	6174395	77	0.09	0.05	0.27	10	X	3.66	0.32	1	2.1
HSC146	764710	6174400	75	0.1	0.08	0.35	9	0.39	5.95	0.51	2	5.1
HSC148	763098	6174000	194	0.24	0.03	0.97	91	X	2.46	0.18	5	11.5
HSC149	763195	6174013	685	0.34	0.09	3.17	97	0.13	6.52	0.56	16	22.6
HSC150	763294	6174003	92	0.1	0.09	0.45	16	0.06	6.45	0.58	2	5.1
HSC153	763601	6173997	99	0.26	0.16	0.98	99	X	11.55	1.05	5	12.3
HSC154	763695	6173996	116	0.16	0.18	0.38	30	X	13.38	1.32	4	8.9
HSC155	763793	6173999	58	0.16	0.05	0.71	31	X	3.52	0.35	2	6.5
HSC159	764209	6174002	57	0.1	0.06	0.34	8	X	3.99	0.41	0.05	9.5
HSC160	764402	6173989	61	0.12	0.05	0.52	25	X	3.6	0.33	3	8.4
HSC163	764698	6173997	112	0.1	0.16	0.41	12	X	11.97	0.97	3	8.3
HSC164	763006	6173610	59	0.09	0.36	0.28	8	X	39.16	1.97	0.05	4.4
HSC165	763098	6173602	42	0.09	0.13	0.3	9	X	10.56	0.83	1	3.4
HSC167	763300	6173598	34	0.06	0.18	0.4	8	X	13.79	1.15	0.05	5.4
HSC170	763594	6173607	60	0.09	0.05	0.33	24	X	3.12	0.28	2	6
HSC175	764198	6173598	33	0.19	0.14	0.94	17	0.22	7.82	0.89	2	9.9
HSC179	764600	6173600	39	0.12	0.15	0.61	11	0.09	9.3	0.93	1	5
HSC180	764700	6173600	36	0.06	0.23	1.16	13	0.28	10.12	1.58	3	18.8
HSC181	762990	6173255	43	0.1	0.09	0.42	18	X	7.93	0.59	0.05	4.8
HSC183	763200	6173250	52	0.09	0.17	0.35	10	X	12.73	1.07	0.05	6
HSC185	763400	6173250	75	0.13	0.08	0.38	22	X	5.96	0.53	4	8.9
HSC186	763500	6173250	29	0.09	0.13	0.35	8	X	9.87	0.84	0.05	5.4
HSC187	763600	6173250	44	0.1	0.24	0.25	19	X	23.95	1.45	3	5.9
HSC188	763700	6173250	66	0.09	0.12	0.3	8	X	8.42	0.8	0.05	8
HSC189	763800	6173250	59	0.09	0.19	0.46	17	X	15.13	1.17	3	4.8
HSC190	763900	6173250	60	0.08	0.1	0.32	9	X	7.03	0.66	0.05	6
HSC197	762993	6172847	231	0.11	0.1	0.9	233	0.22	7.29	0.59	1	16.3
HSC200	763308	6172850	56	0.09	0.07	0.33	13	X	4.46	0.44	2	7.2
HSC201	763409	6172847	67	0.09	0.09	0.29	15	X	6.14	0.61	2	7.2
HSC202	763500	6172855	75	0.08	0.12	0.3	16	X	8.72	0.81	2	5.3
HSC203	763603	6172847	50	0.09	0.12	0.33	7	X	8.44	0.79	1	5.3

*X denotes below detection limits

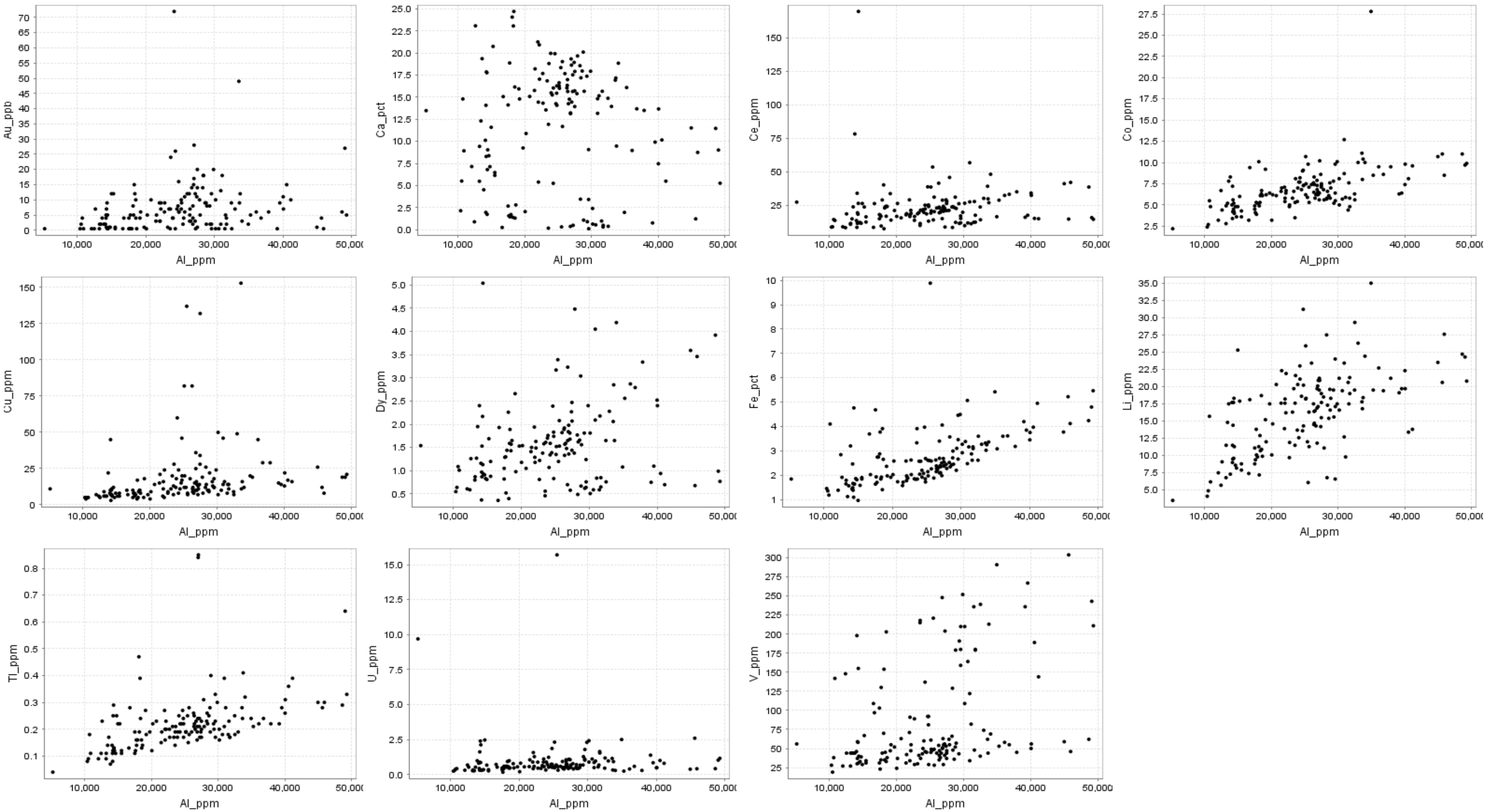
Appendix 3.2 – Calcrete Grid Locations and Geochemical Assays

		ELEMENTS	Ti	Tl	Tm	U	V	W	Y	Yb	Zn	Zr
		UNITS	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
		DETECTION	5	0.01	0.01	0.01	2	0.05	0.02	0.01	1	0.1
SAMPLE No:	Easting	Northing										
HSC204	763703	6172848	56	0.07	0.12	0.29	12	X	9.23	0.8	1	4
HSC205	763793	6172850	54	0.08	0.2	0.28	10	X	15.43	1.27	0.05	5.3
HSC206	763896	6172852	74	0.09	0.08	0.45	20	X	5.67	0.53	3	4.4
HSC207	764012	6172856	69	0.09	0.09	0.37	9	X	6.42	0.6	0.05	6.9
HSC208	764102	6172850	66	0.1	0.12	0.31	11	X	7.97	0.78	1	4.9
HSC209	764205	6172852	36	0.06	0.1	0.18	X	0.06	7.58	0.6	0.05	3.3
HSC210	764297	6172851	29	0.07	0.07	0.28	3	X	4.41	0.45	0.05	3.7
HSC211	764394	6172850	45	0.09	0.05	0.35	12	X	3.65	0.33	0.05	7.3
HSC212	764498	6172855	43	0.06	0.04	0.27	20	X	3.2	0.27	0.05	4.1
HSC216	763245	6175298	158	0.08	0.12	2.53	546	0.06	4.65	0.82	28	23.4
HSC217	763252	6174803	74	0.1	0.22	0.4	32	X	15.36	1.38	3	9.6
HSC224	764708	6174806	40	0.07	0.06	0.28	16	X	4.77	0.4	2	4.1
HSC225	764802	6174802	42	0.09	0.12	0.22	13	X	8.94	0.75	2	5.1
HSC226	763357	6174797	73	0.08	0.06	0.98	15	X	4.47	0.43	3	5
HSC227	763454	6174808	73	0.22	0.11	0.32	10	X	7.57	0.75	2	6.2
HSC228	763543	6174820	70	0.1	0.13	0.45	7	X	8.82	0.84	0.05	5.3
HSC230	763357	6174402	60	0.1	0.08	0.29	13	X	4.97	0.49	0.05	7.5
HSC231	763455	6174399	54	0.08	0.09	0.33	11	X	6.12	0.61	2	4.7
HSC232	763544	6174410	50	0.08	0.14	0.26	7	X	10.38	0.92	0.05	6.4
HSC233	763253	6174014	73	0.05	0.09	0.32	10	0.06	8.19	0.58	0.05	1.7
HSC237	763260	6173596	29	0.07	0.09	0.27	7	X	6.75	0.63	1	4.6
HSC238	763353	6173595	40	0.08	0.12	0.41	22	X	8.08	0.77	2	5.8
HSC240	763553	6173603	36	0.08	0.07	0.5	9	X	4.89	0.47	1	6.3
HSC241	763254	6173255	56	0.09	0.12	0.26	13	X	8.44	0.74	2	6.1
HSC243	763450	6173267	39	0.1	0.2	0.26	15	X	16.67	1.22	3	7.1
HSC245	763264	6172849	38	0.08	0.09	0.37	13	X	6.2	0.59	2	6.3
HSC246	763348	6172852	46	0.09	0.09	0.33	18	X	6.19	0.59	3	5.4
HSC247	763451	6172851	35	0.08	0.07	0.34	12	X	4.69	0.46	0.05	7

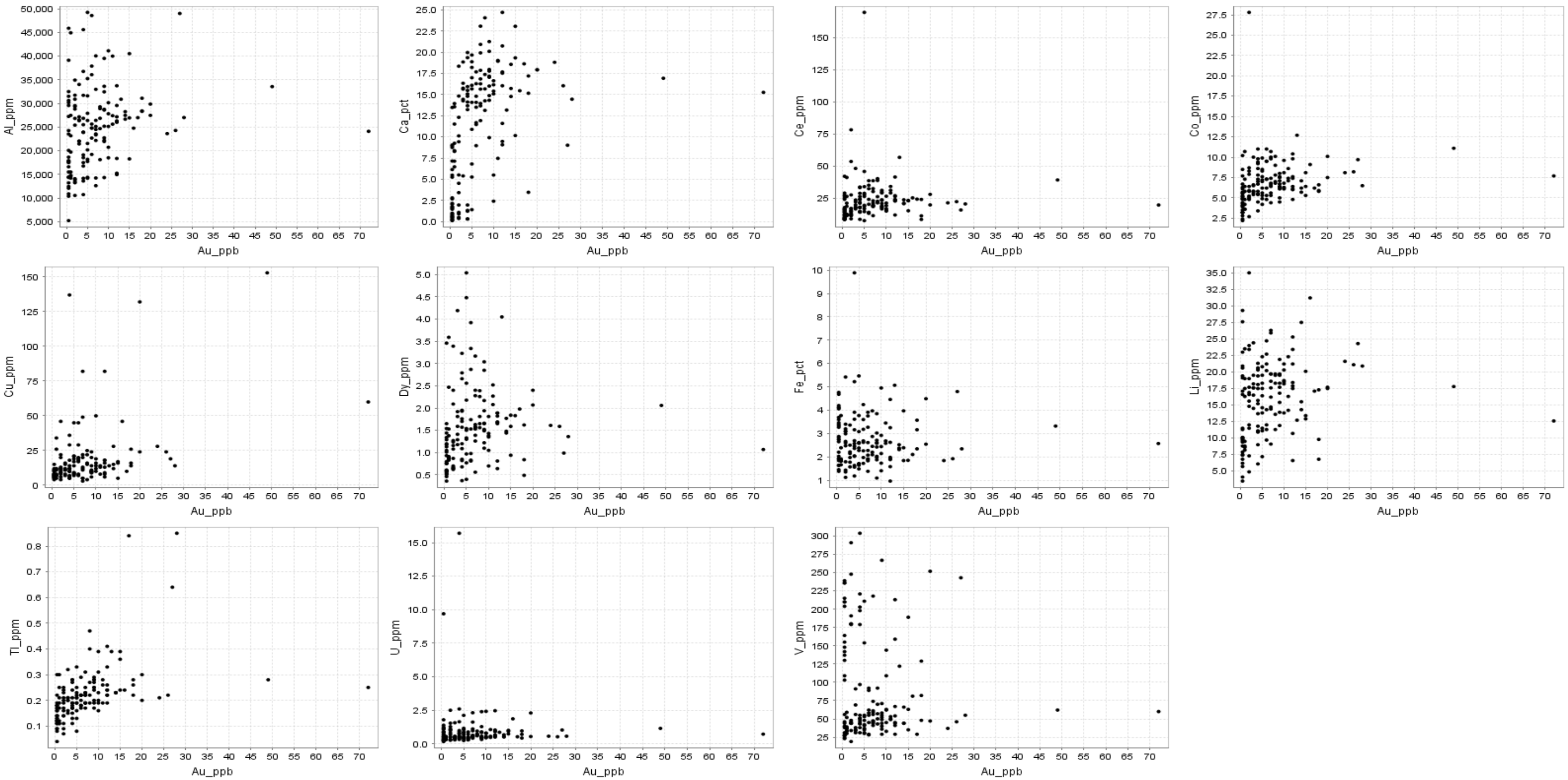
*X denotes below detection limits

Appendix IV – X-Y Scatter Plots for Targeted Element Suite.

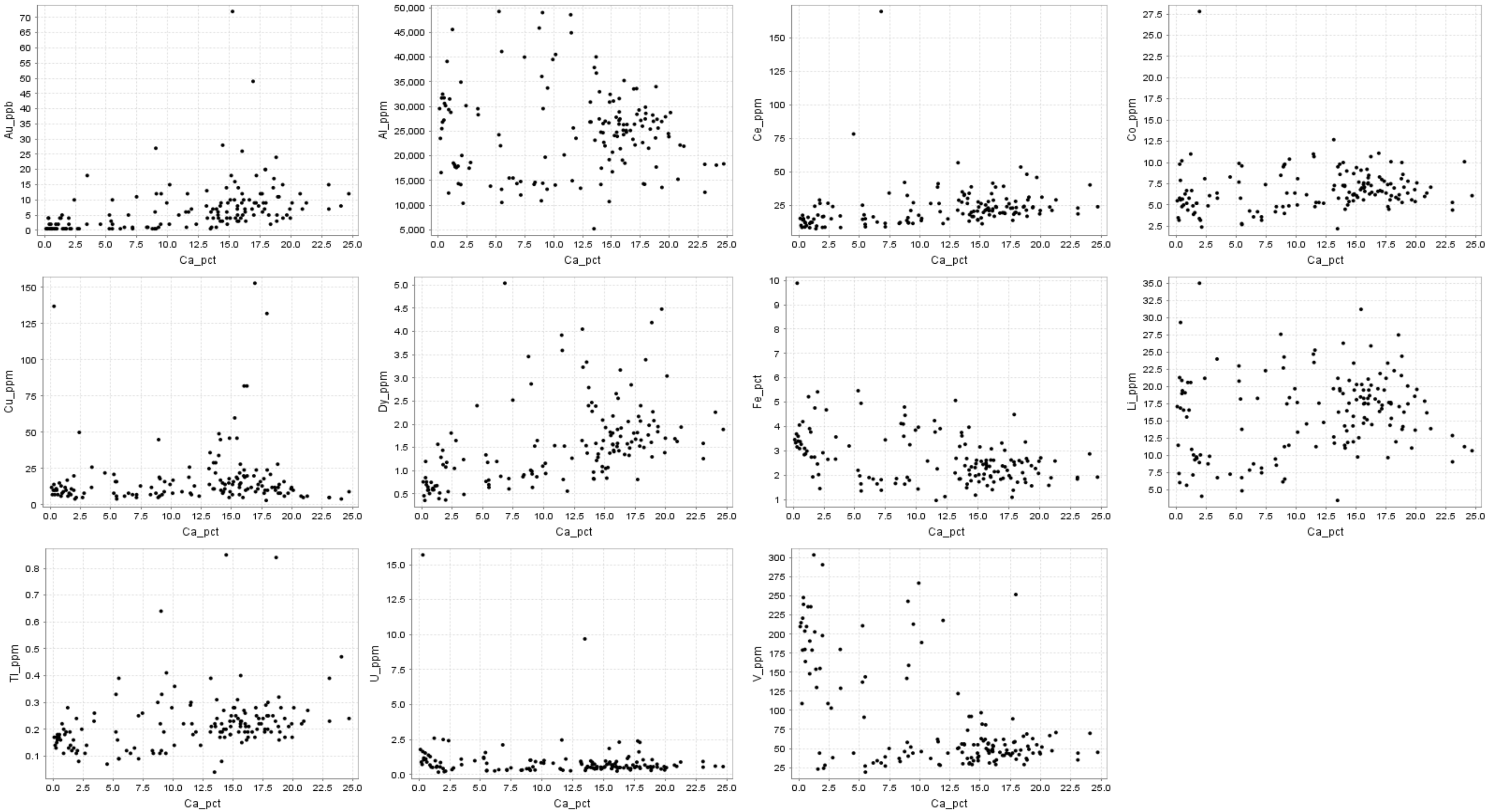
Appendix 4.01



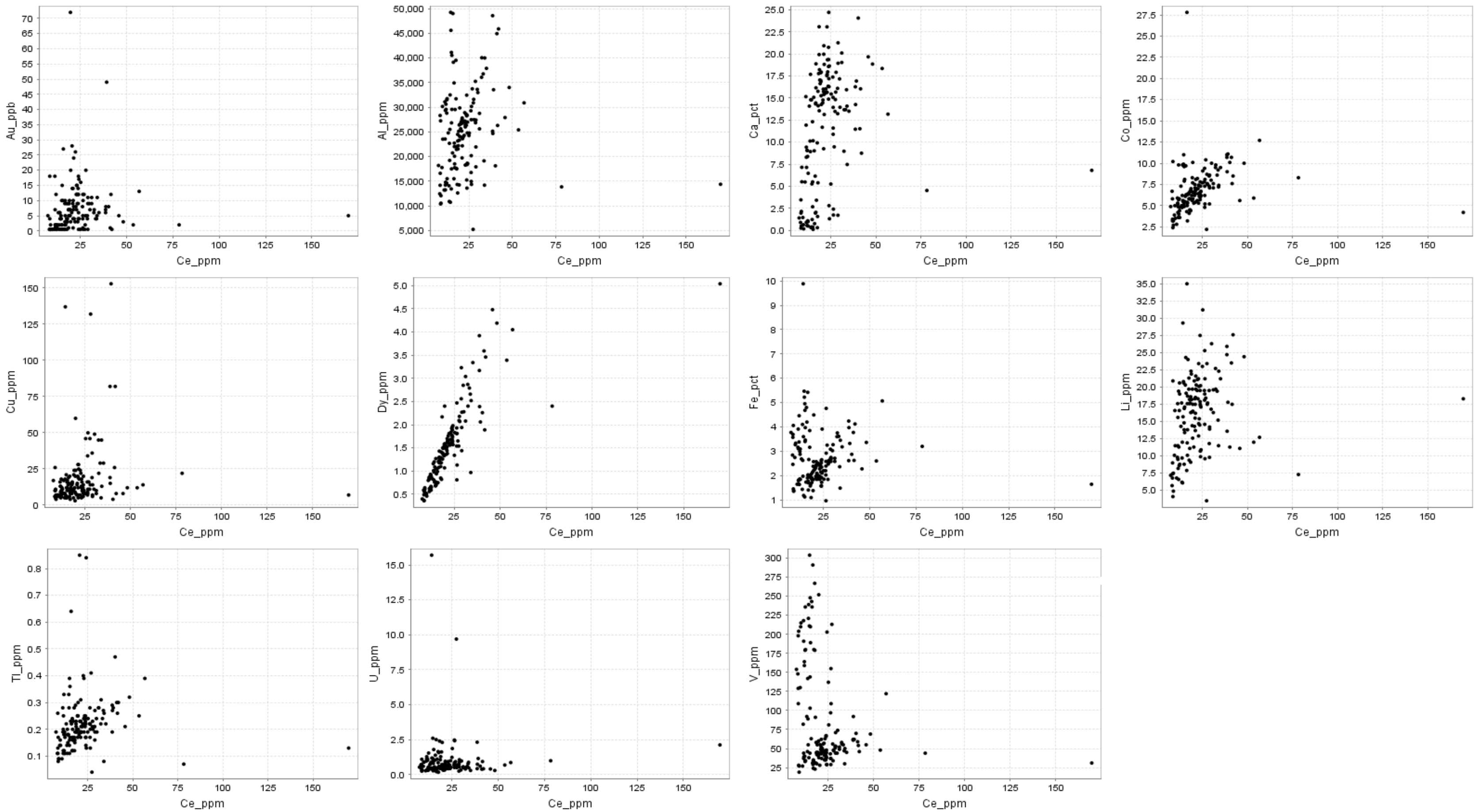
Appendix 4.02



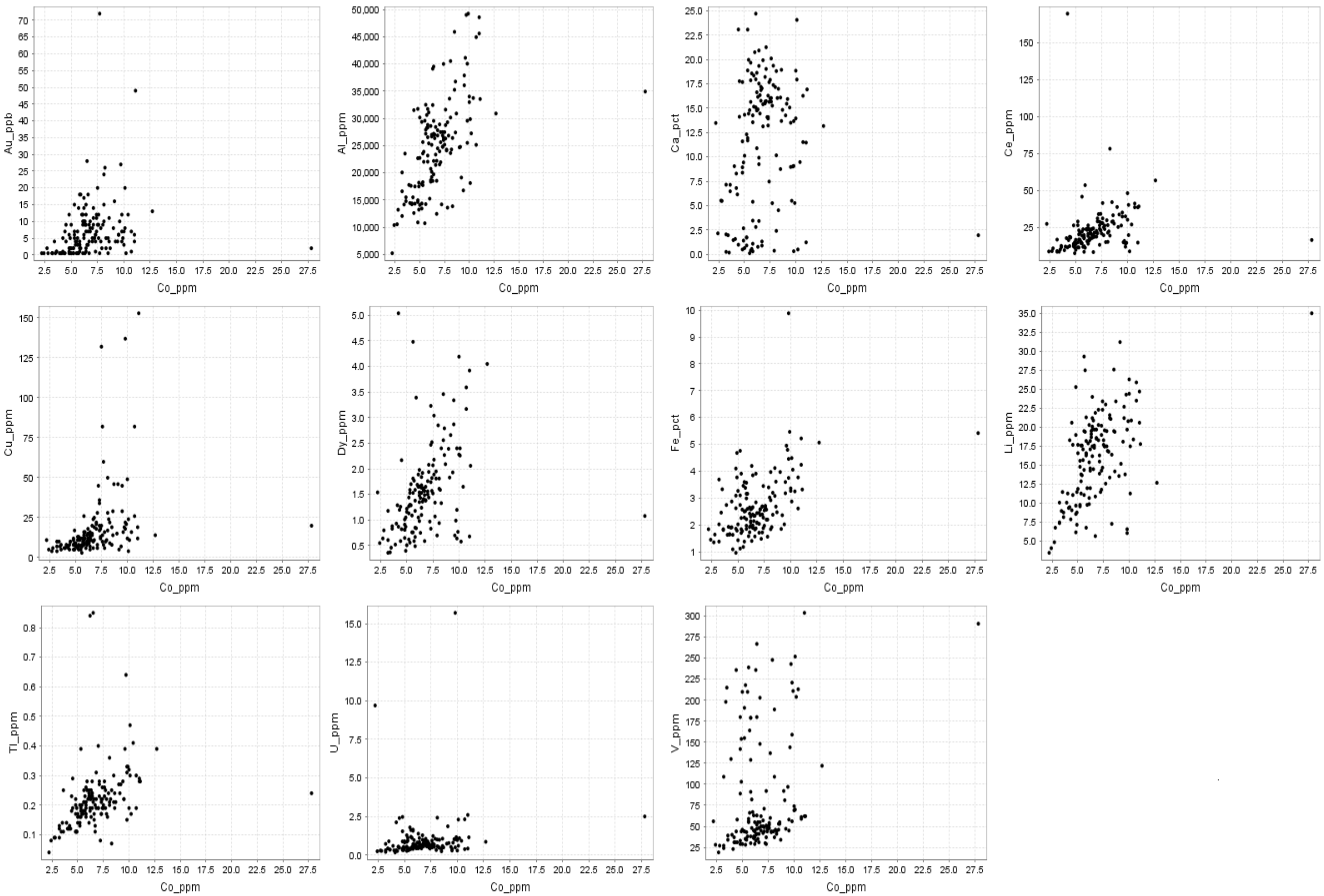
Appendix 4.03



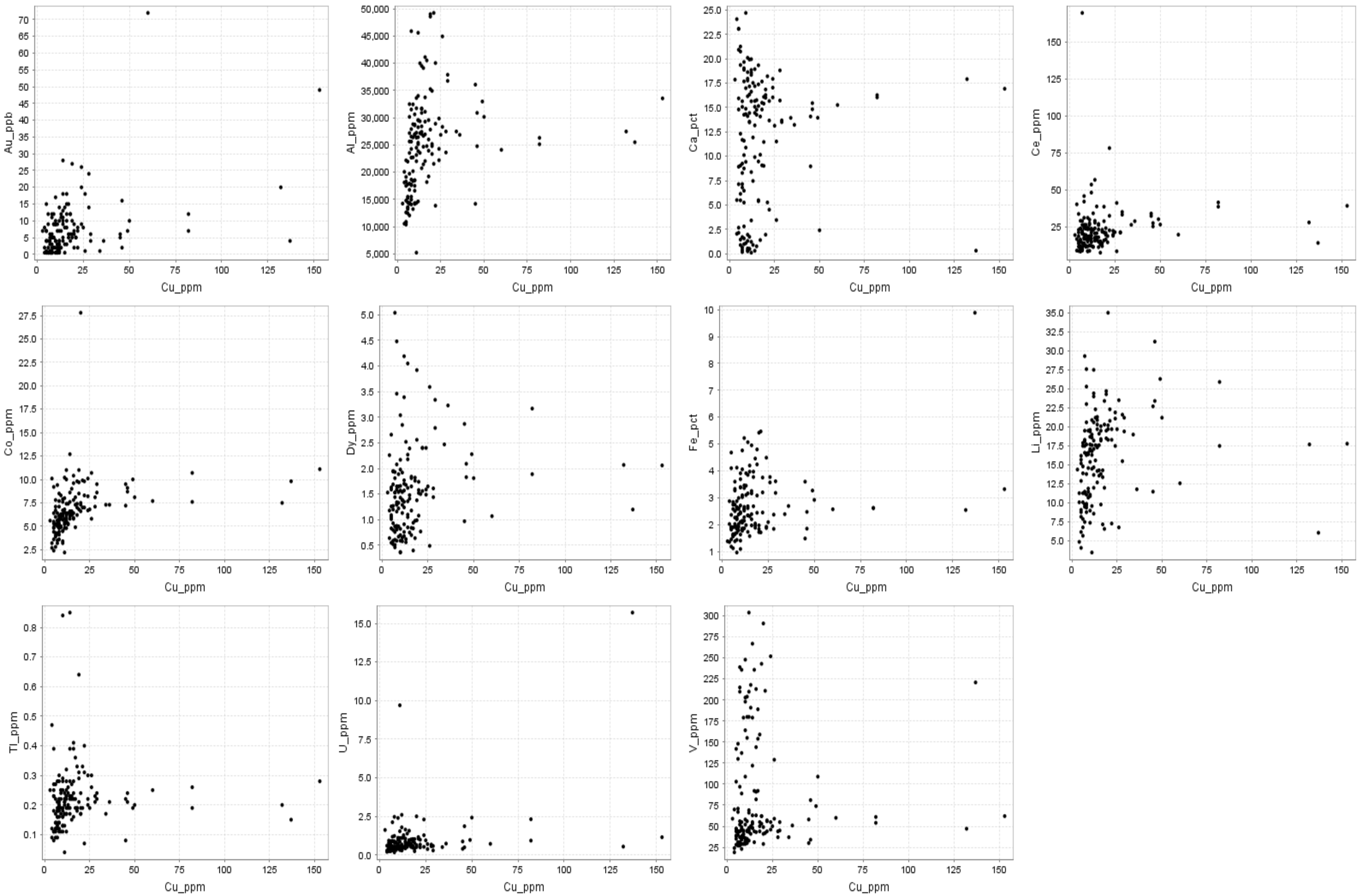
Appendix 4.04



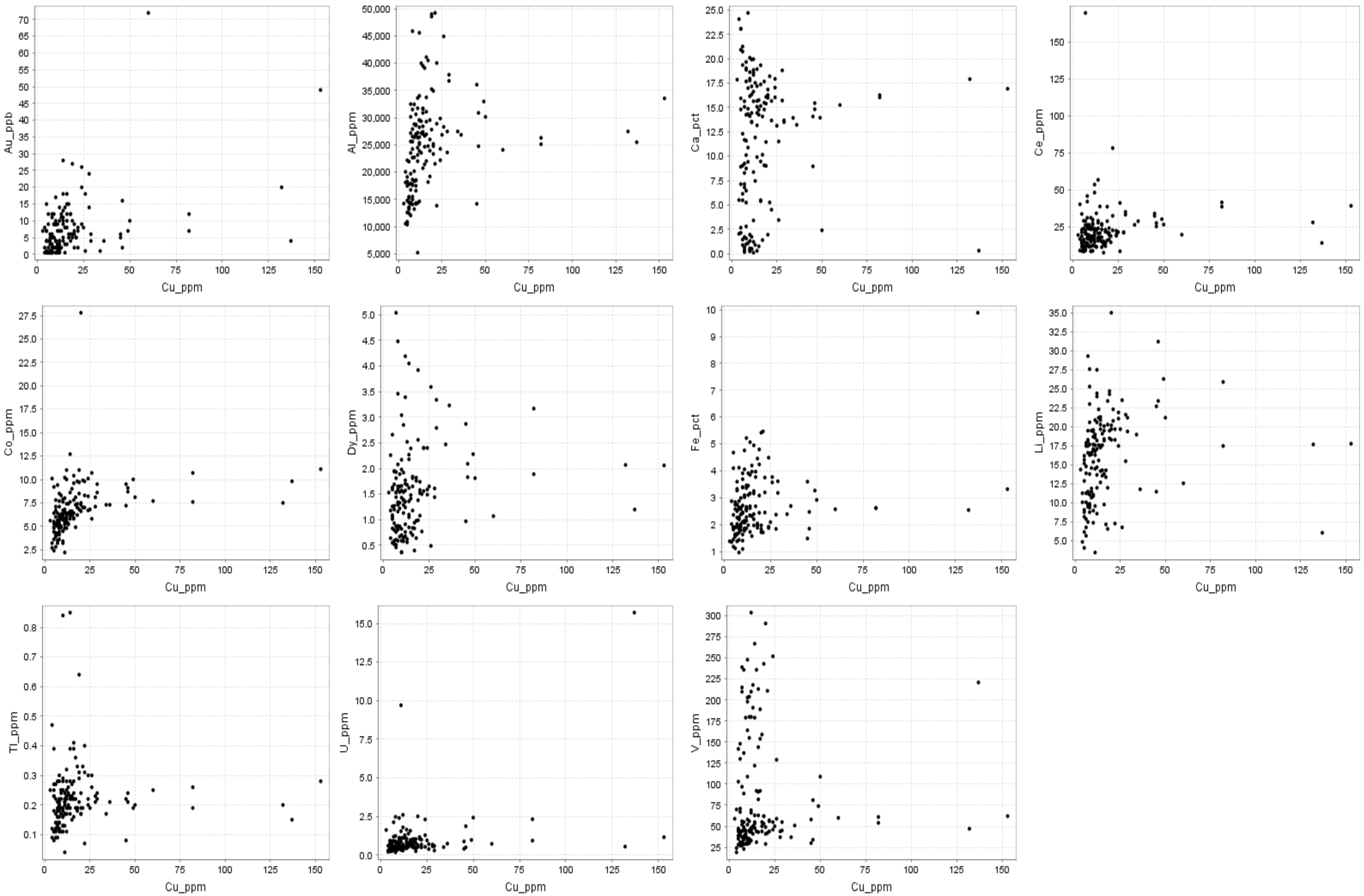
Appendix 4.05



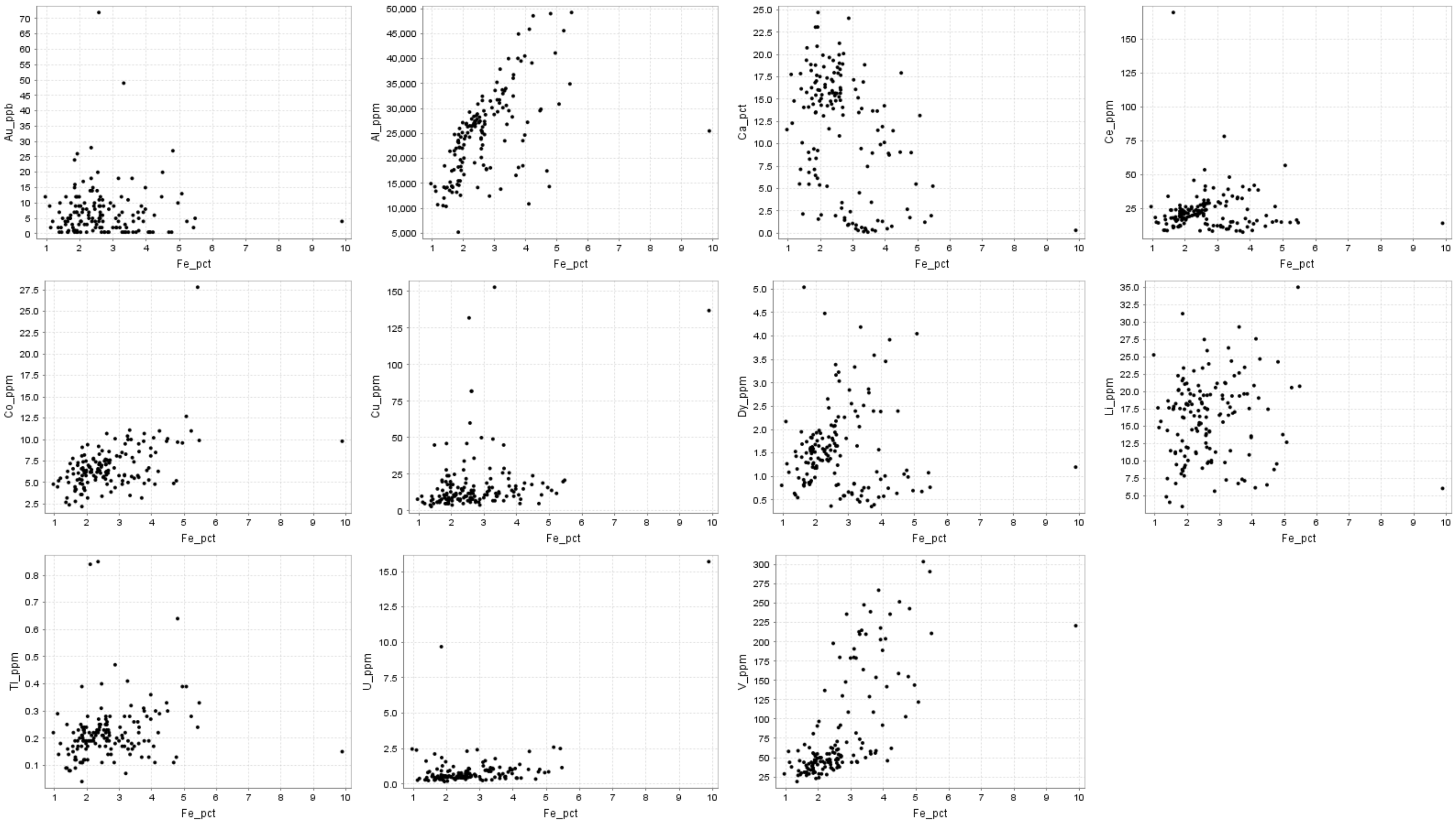
Appendix 4.06



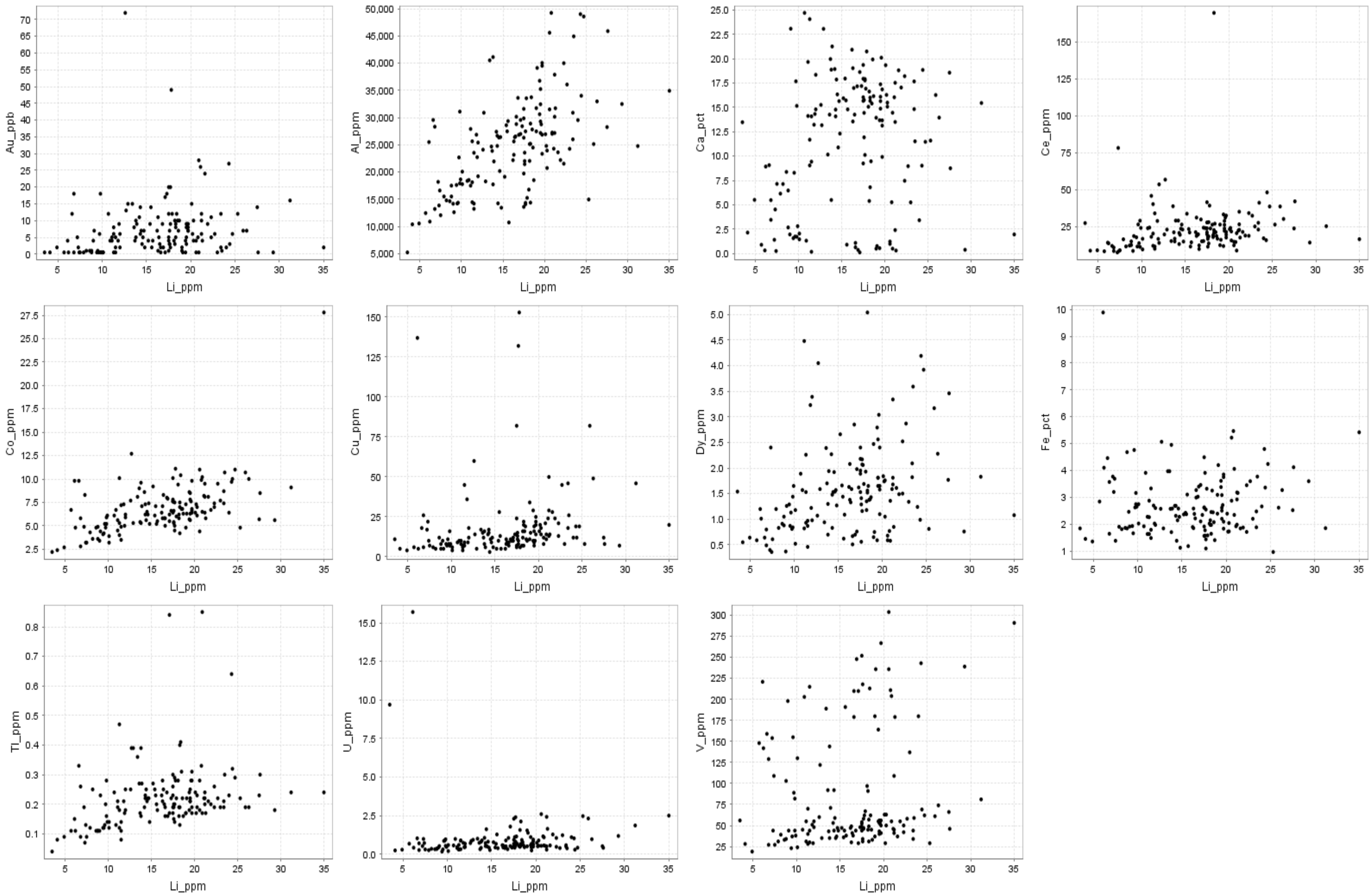
Appendix 4.07



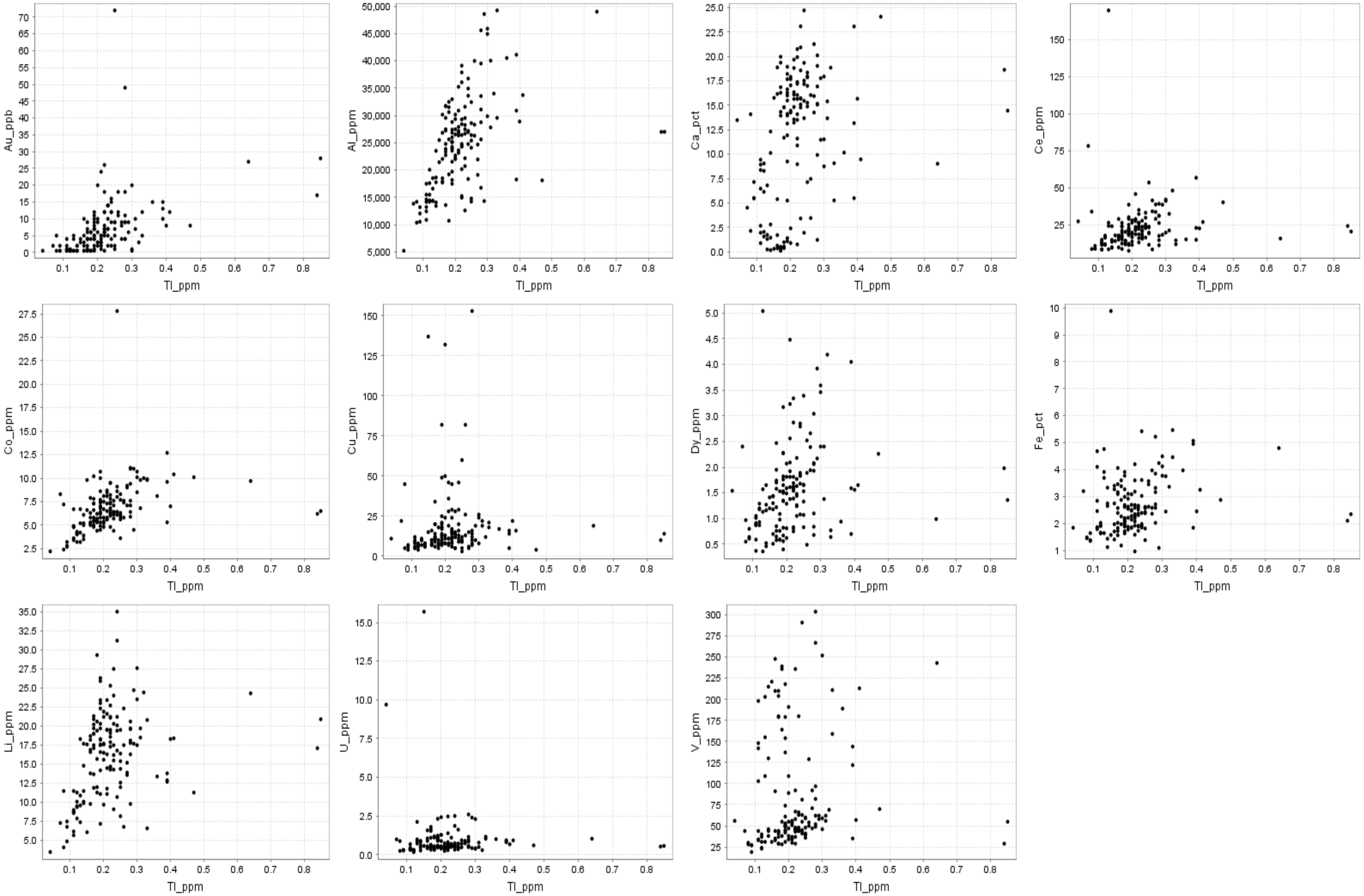
Appendix 4.08



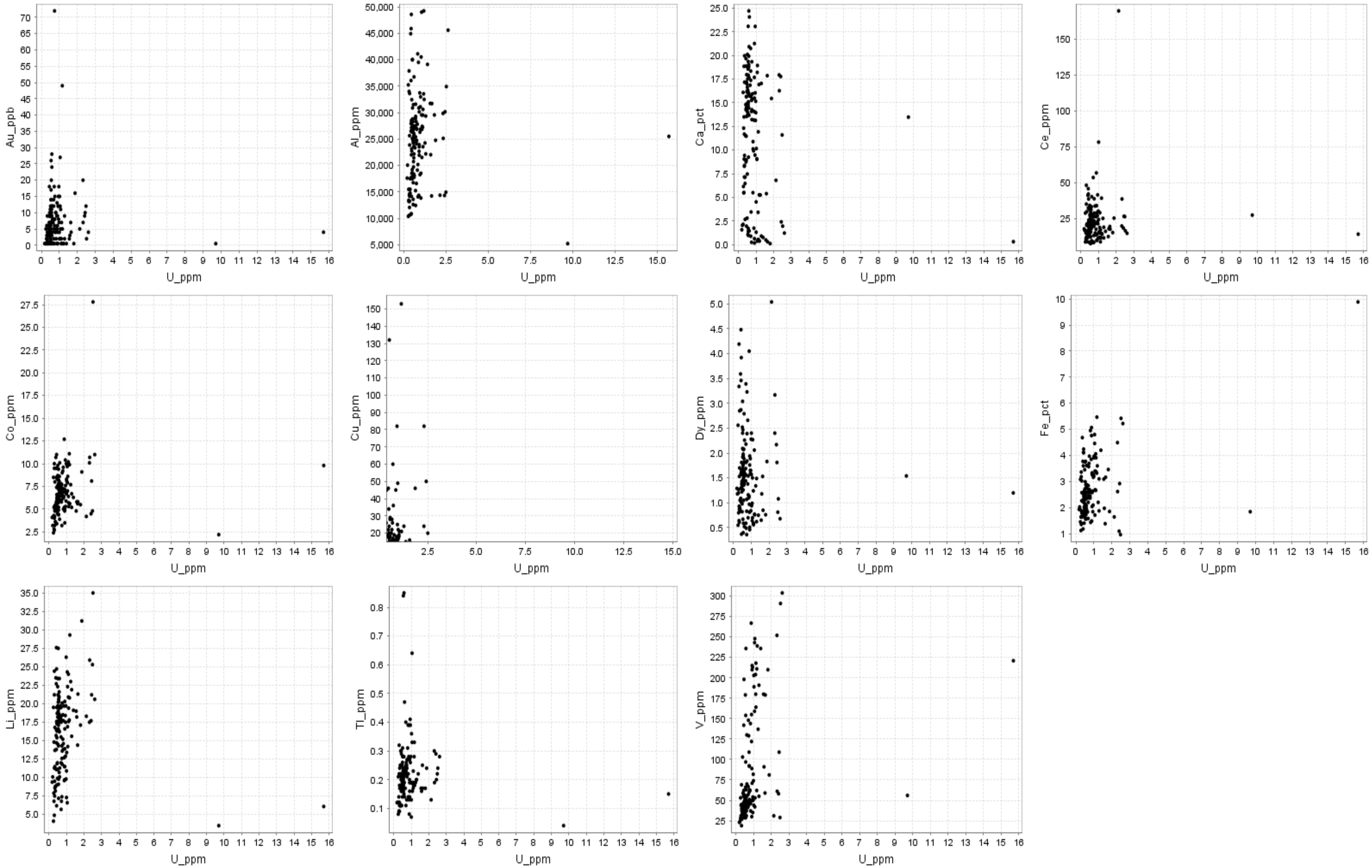
Appendix 4.09



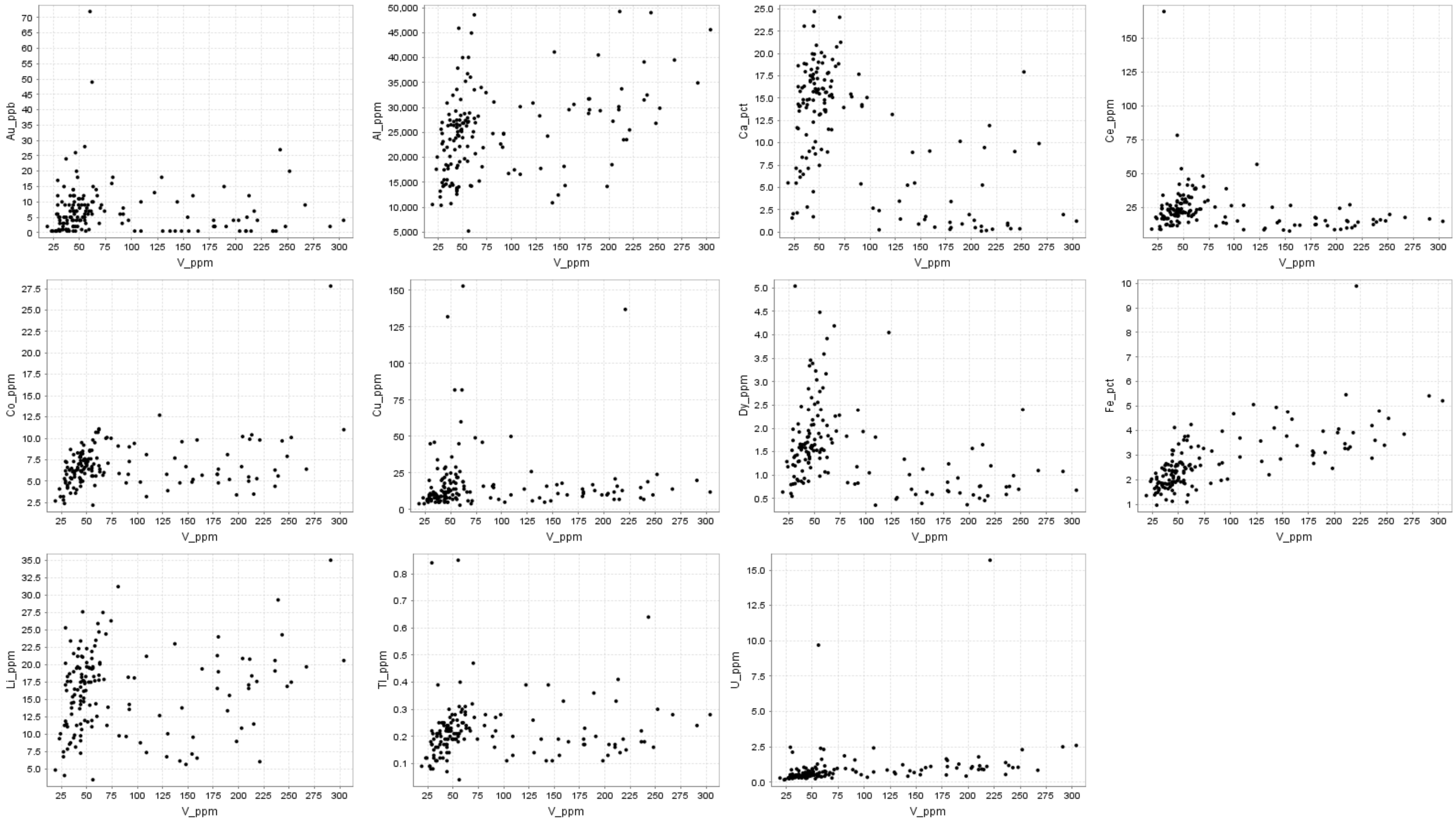
Appendix 4.10



Appendix 4.11

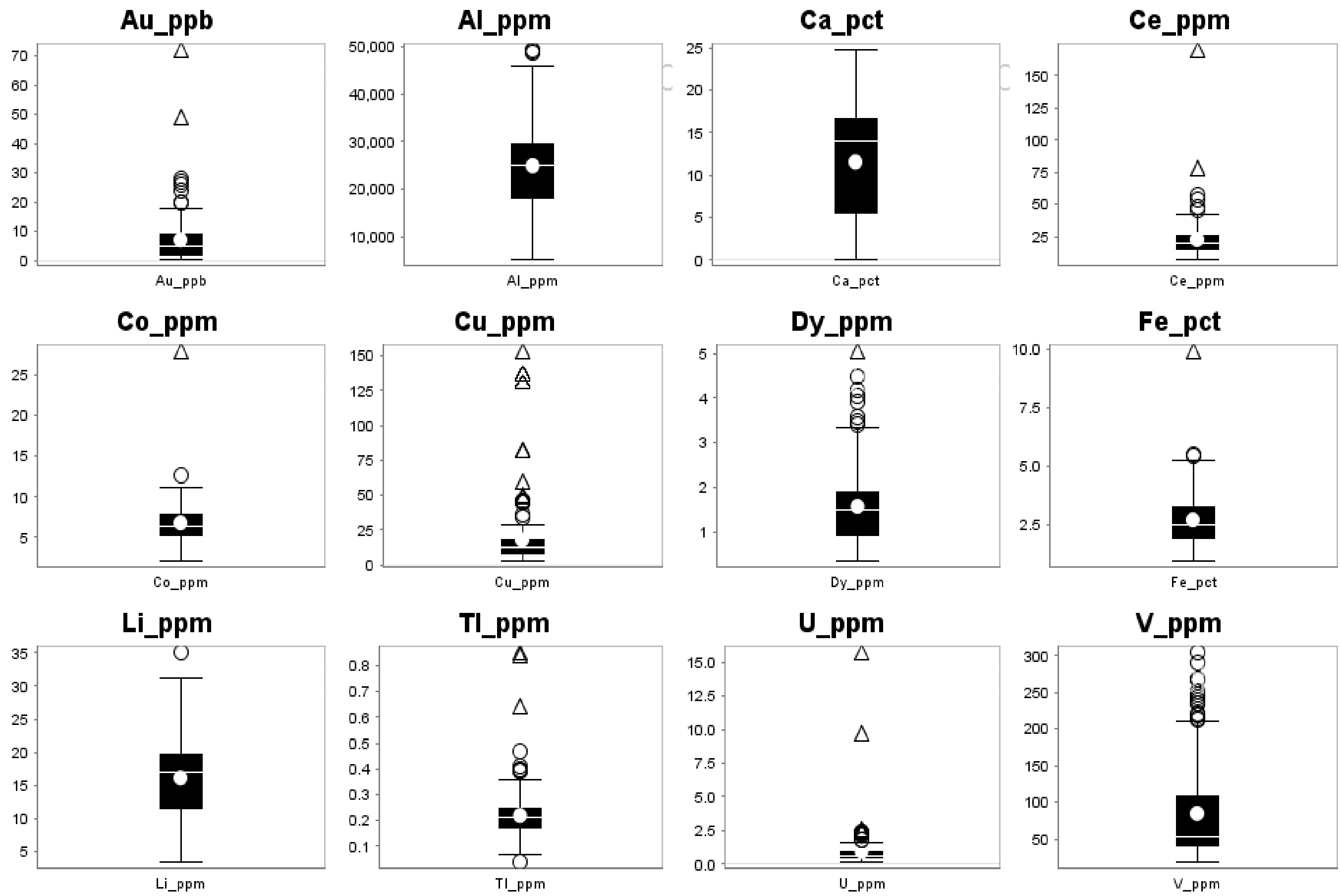


Appendix 4.12

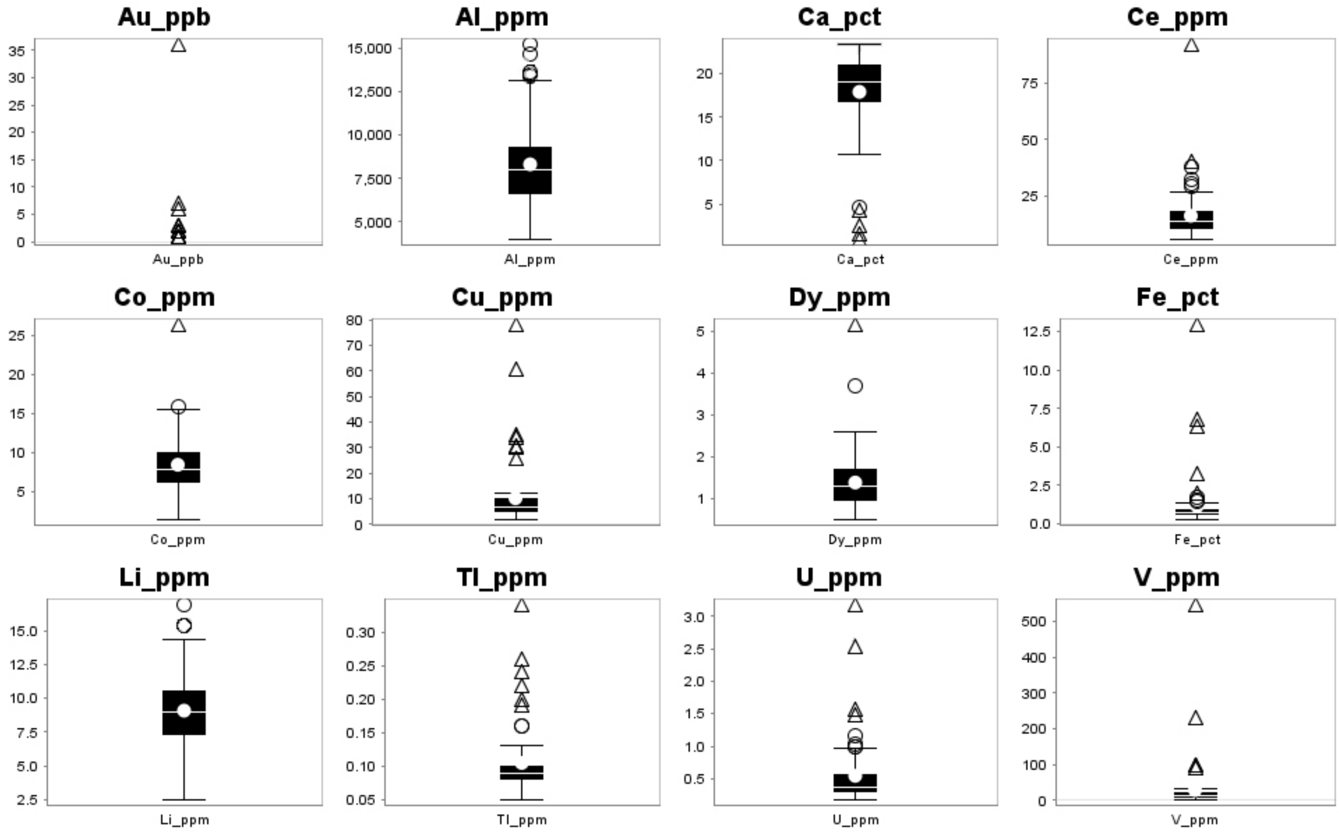


Appendix V – Box Plots for Target Element Suites.

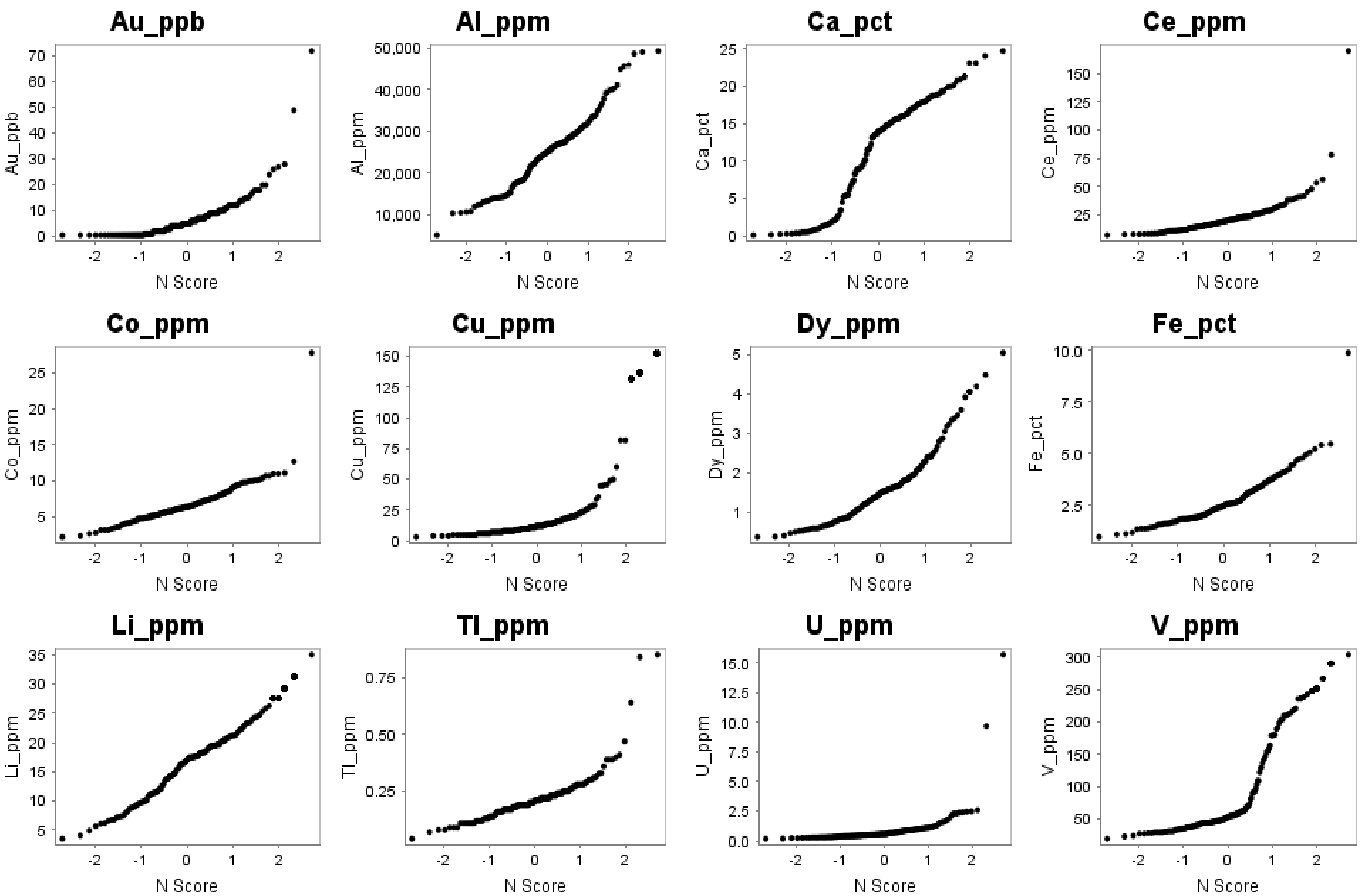
Appendix 5.1 – Box Plots for Soil Targeted Element Suites



Appendix 5.2 – Box Plots for Calcrete Targeted Element Suites

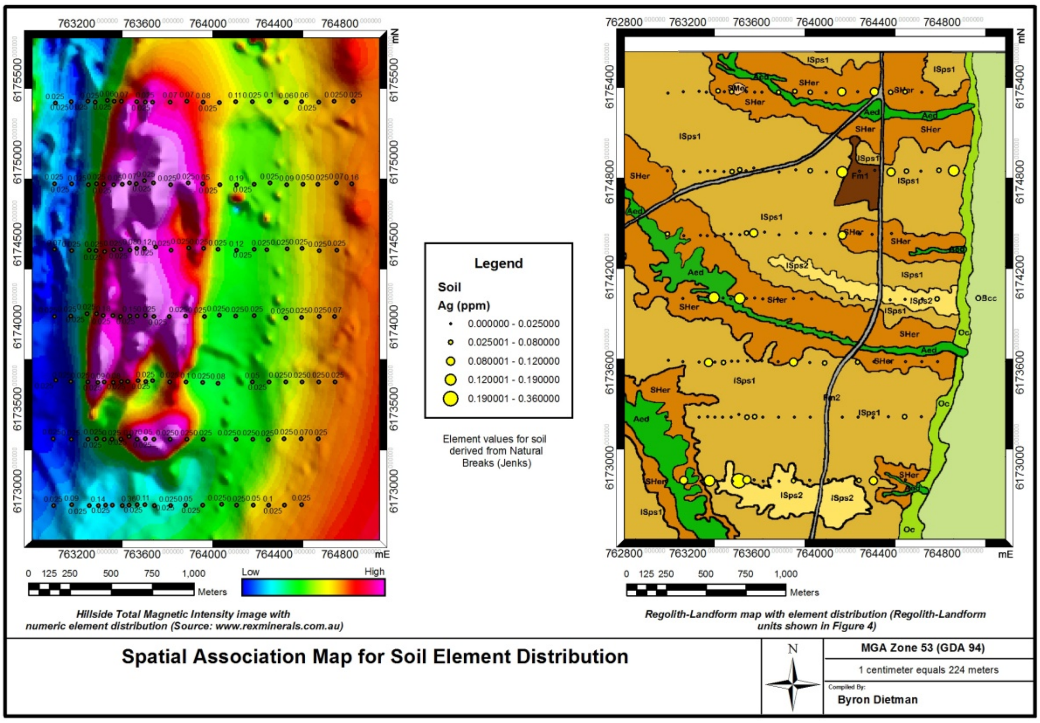


Appendix 5.3 – Normal Probability Plots for Targeted Element Suites

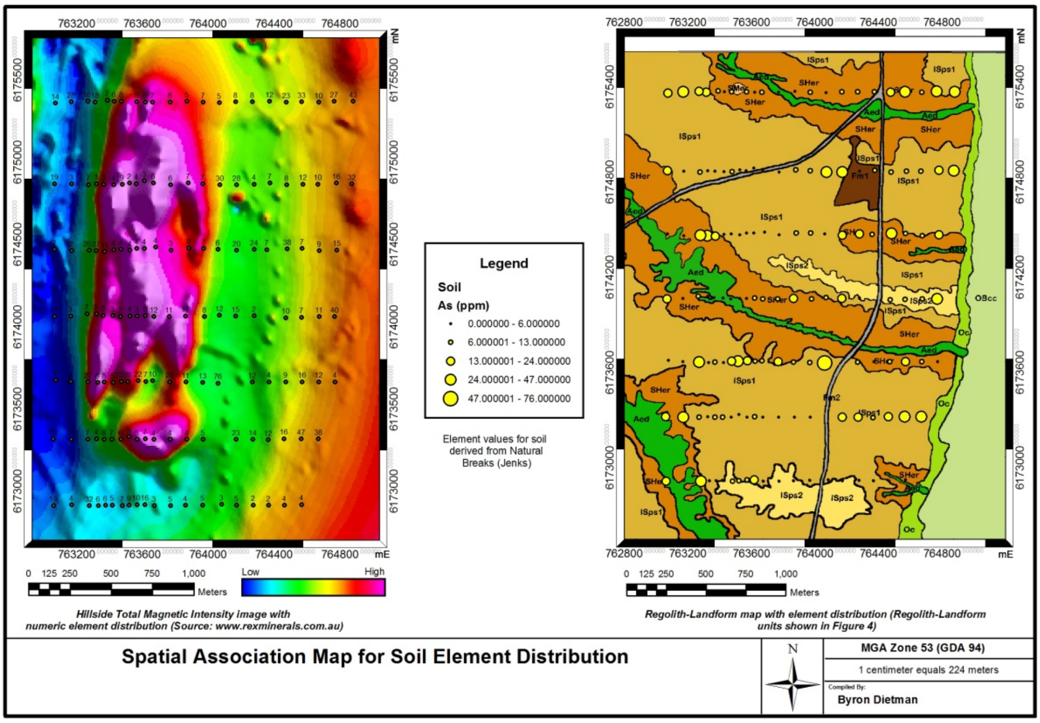


Appendix VI – Spatial Association Maps for Soil Element Distribution.

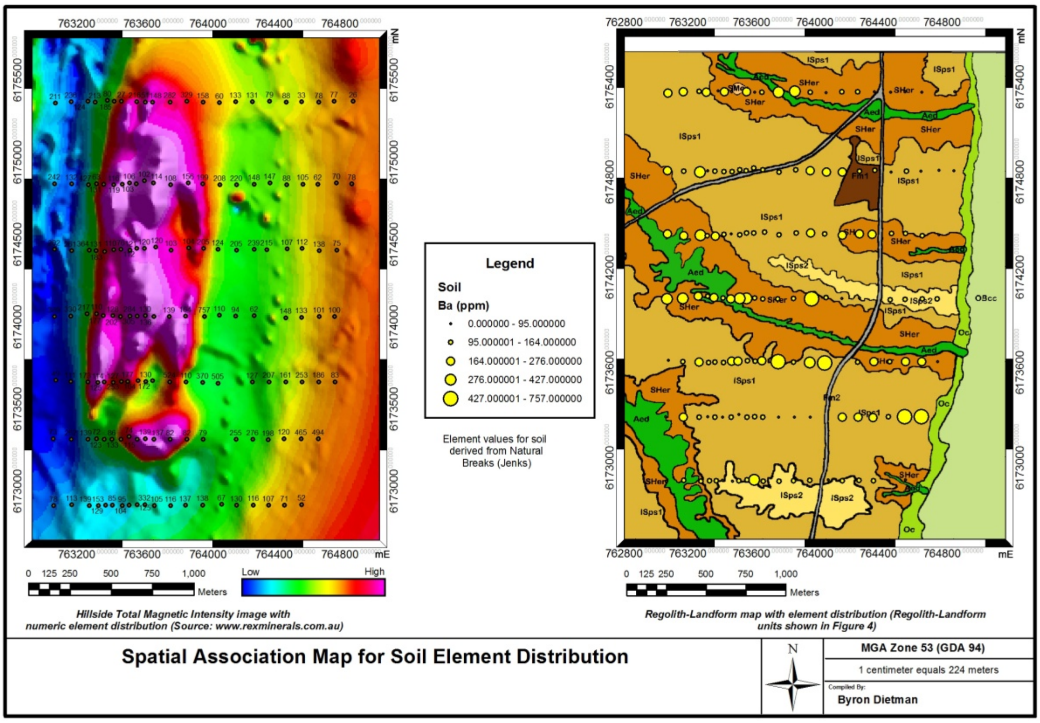
Appendix 6.01



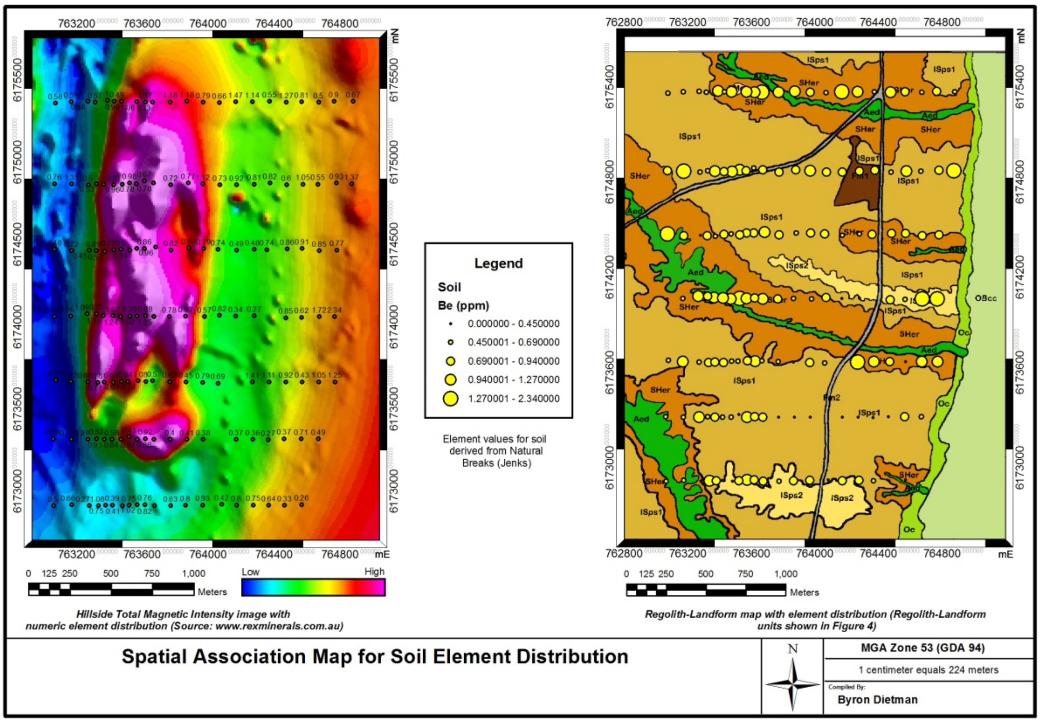
Appendix 6.02



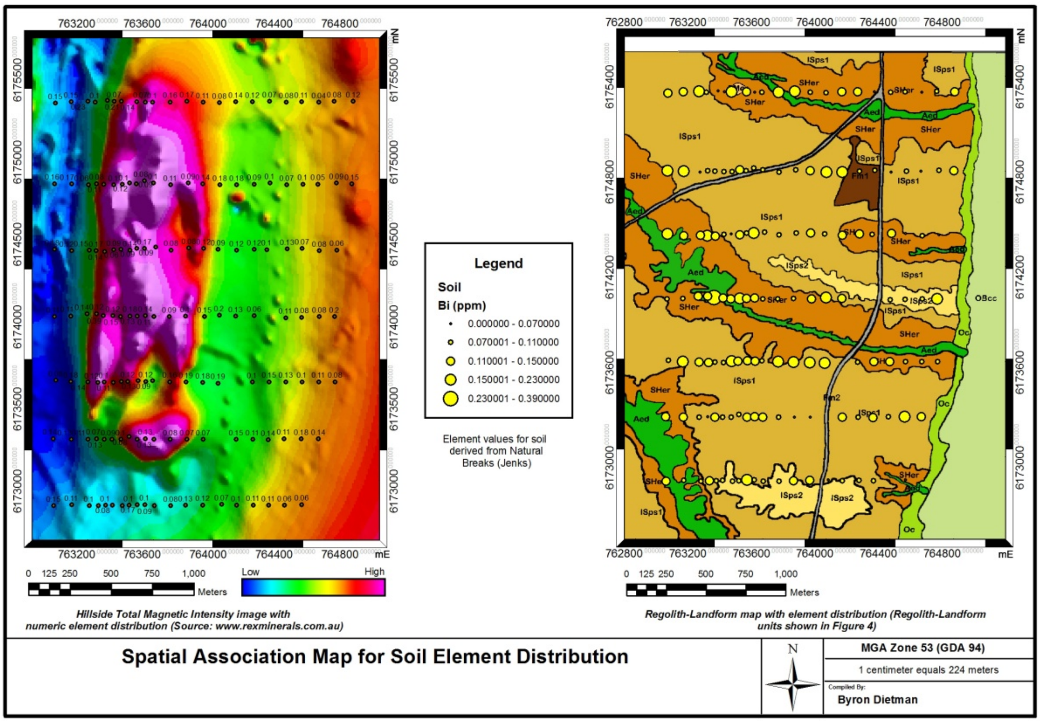
Appendix 6.03



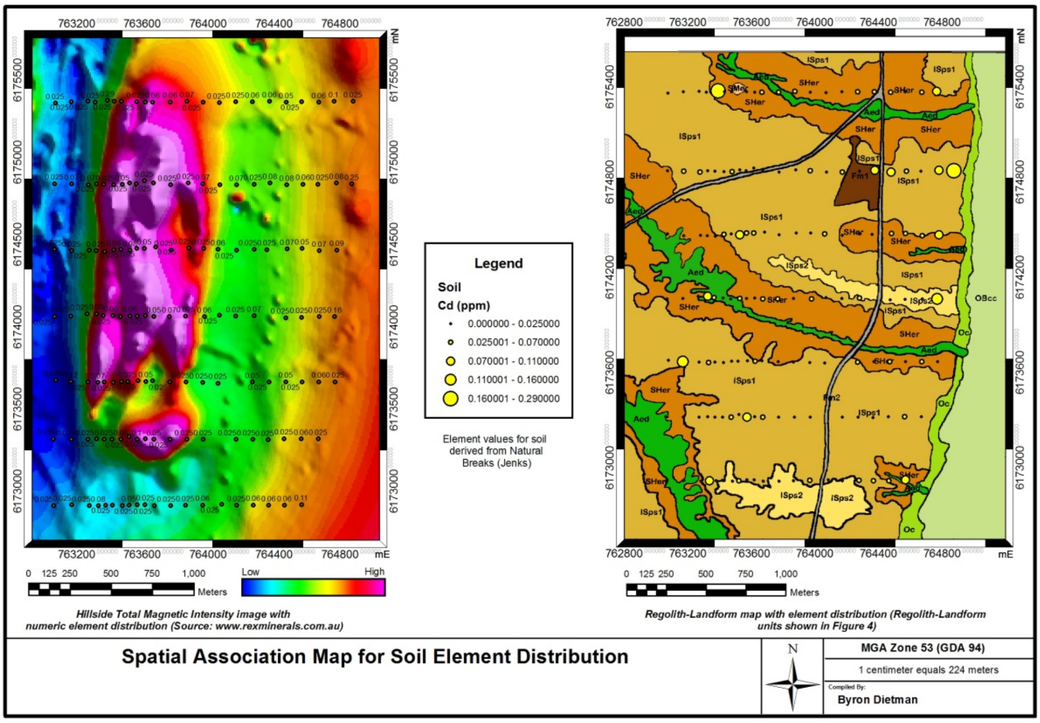
Appendix 6.04



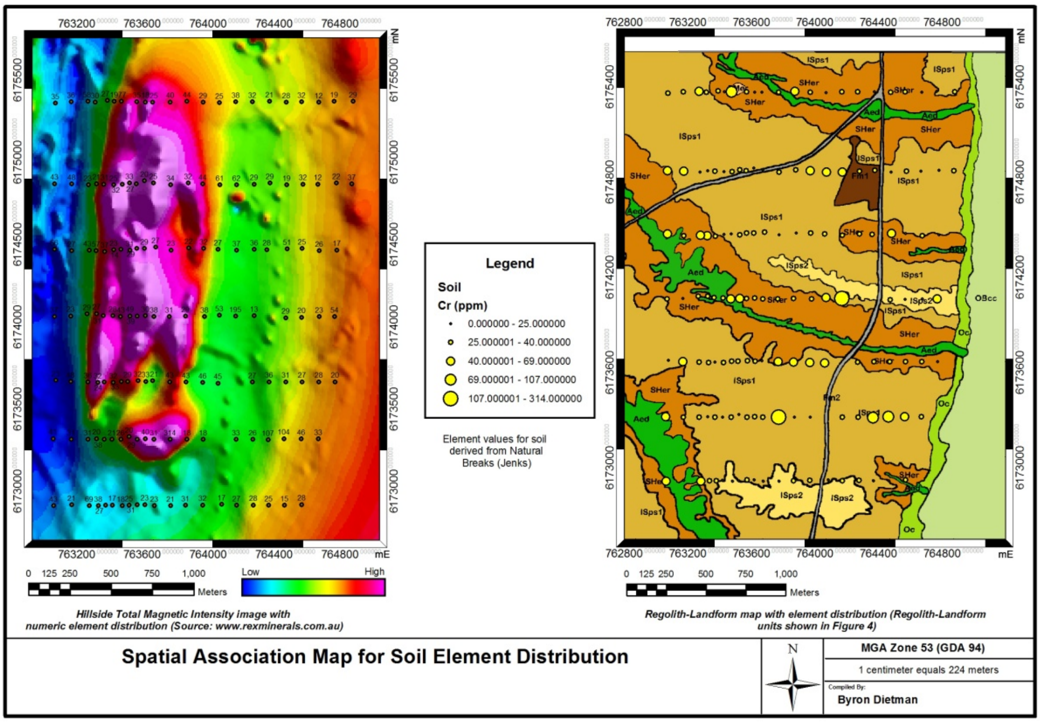
Appendix 6.05



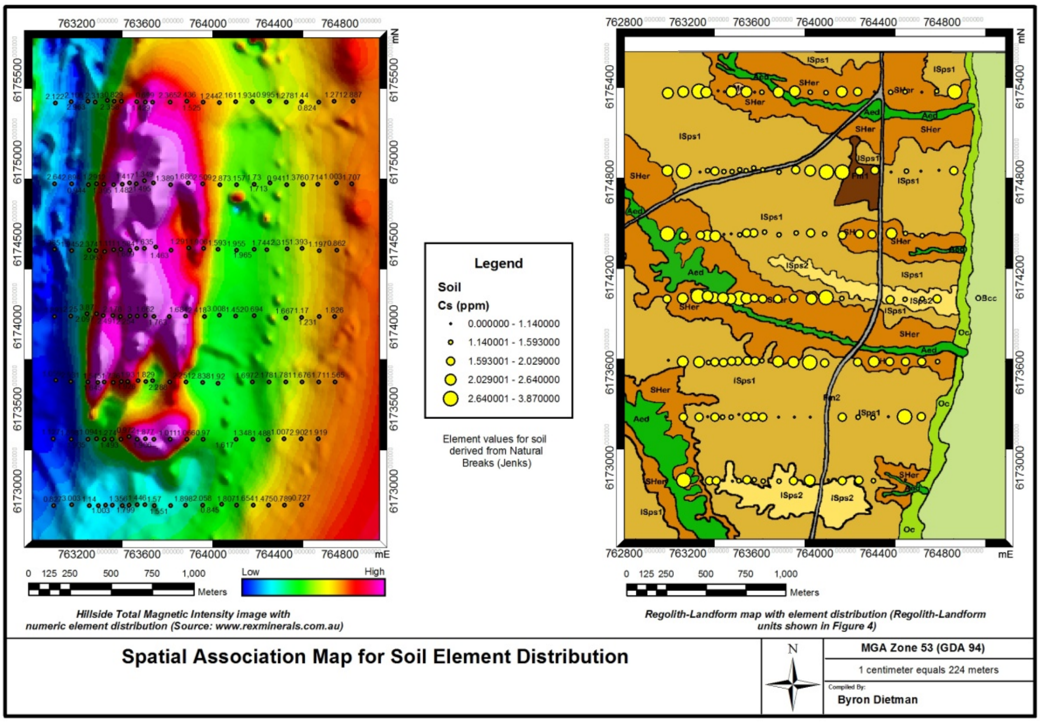
Appendix 6.06



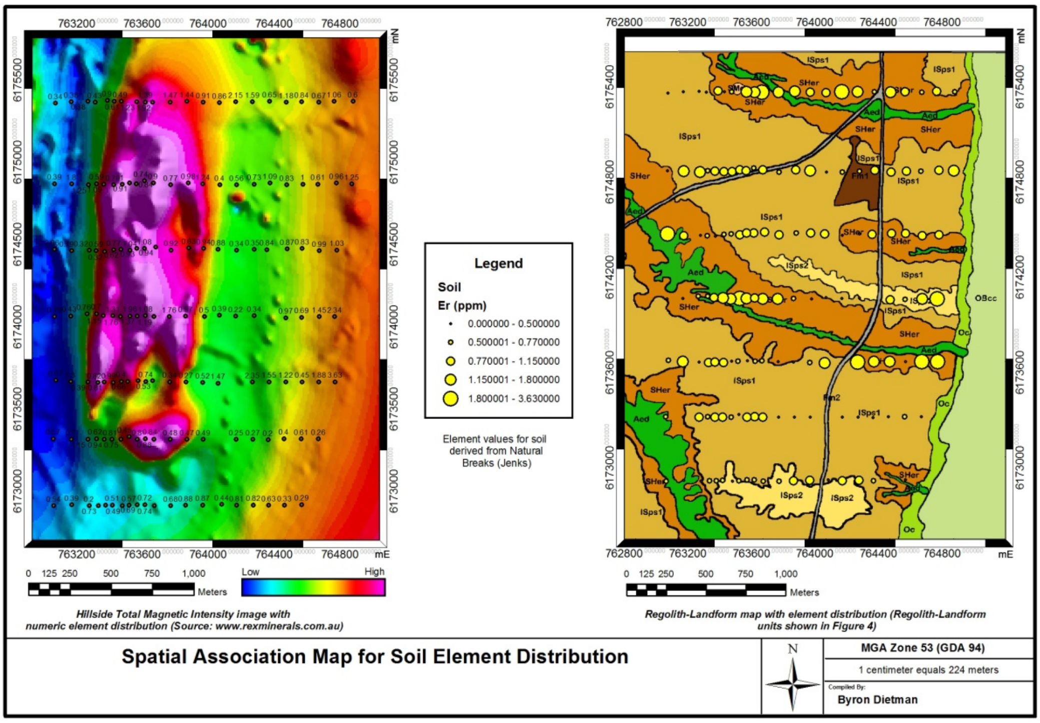
Appendix 6.07



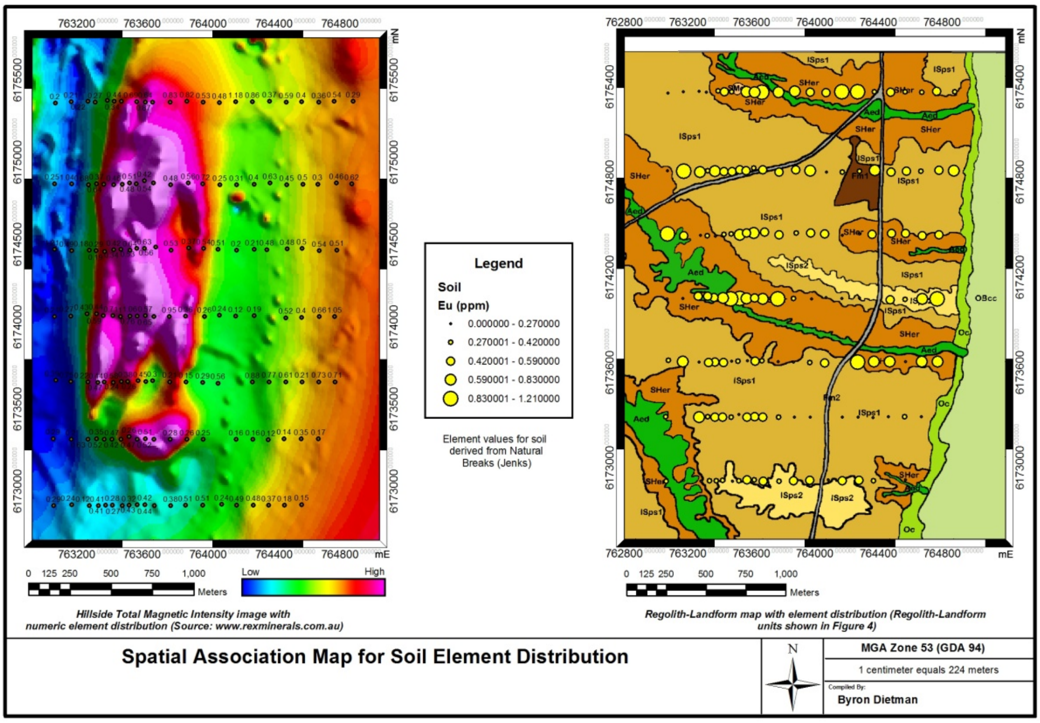
Appendix 6.08



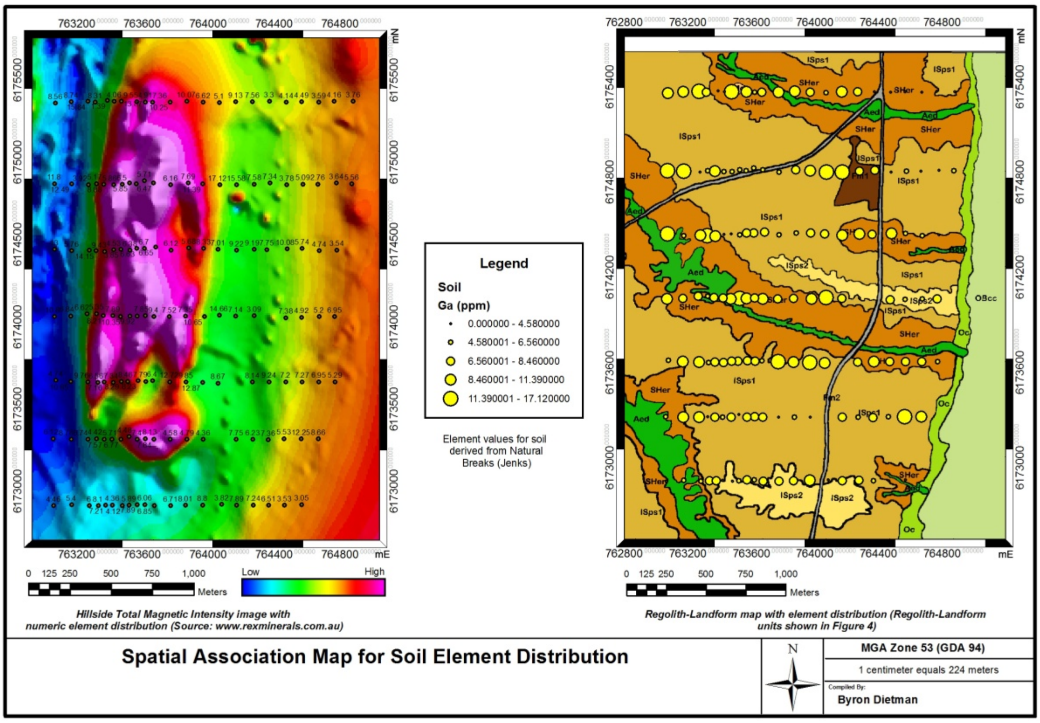
Appendix 6.09



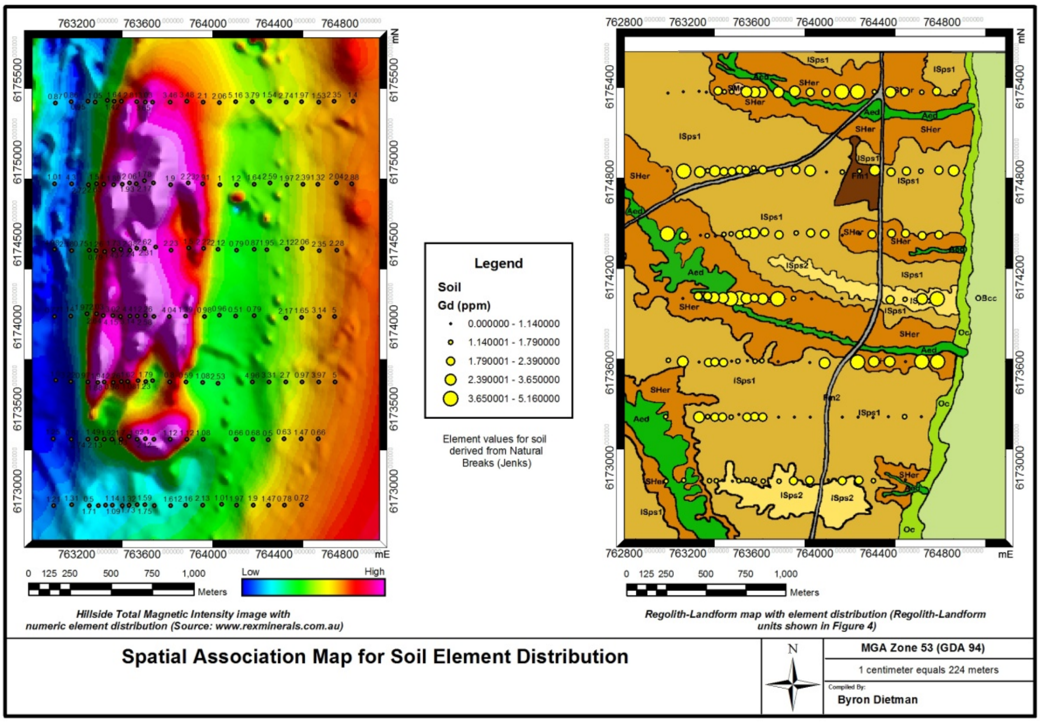
Appendix 6.10



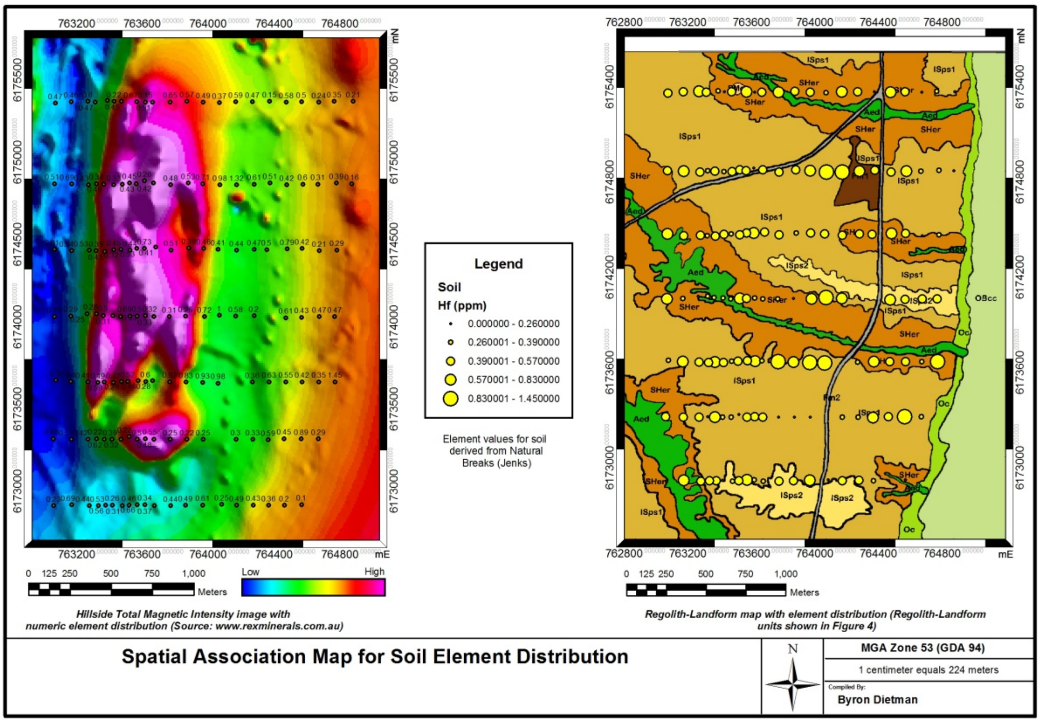
Appendix 6.11



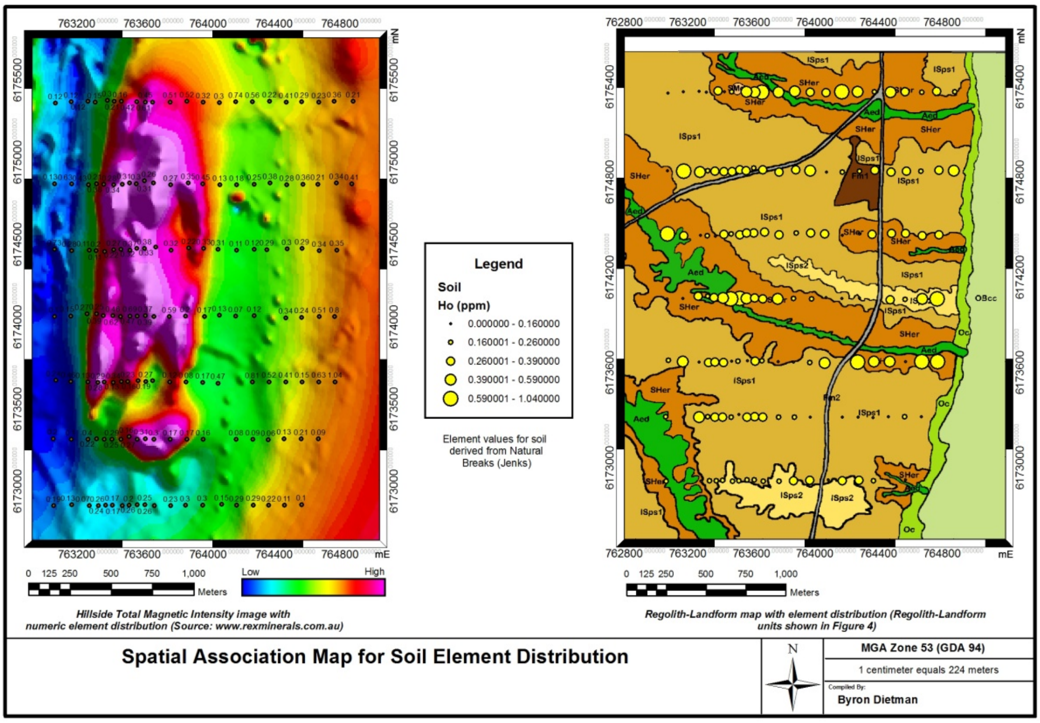
Appendix 6.12



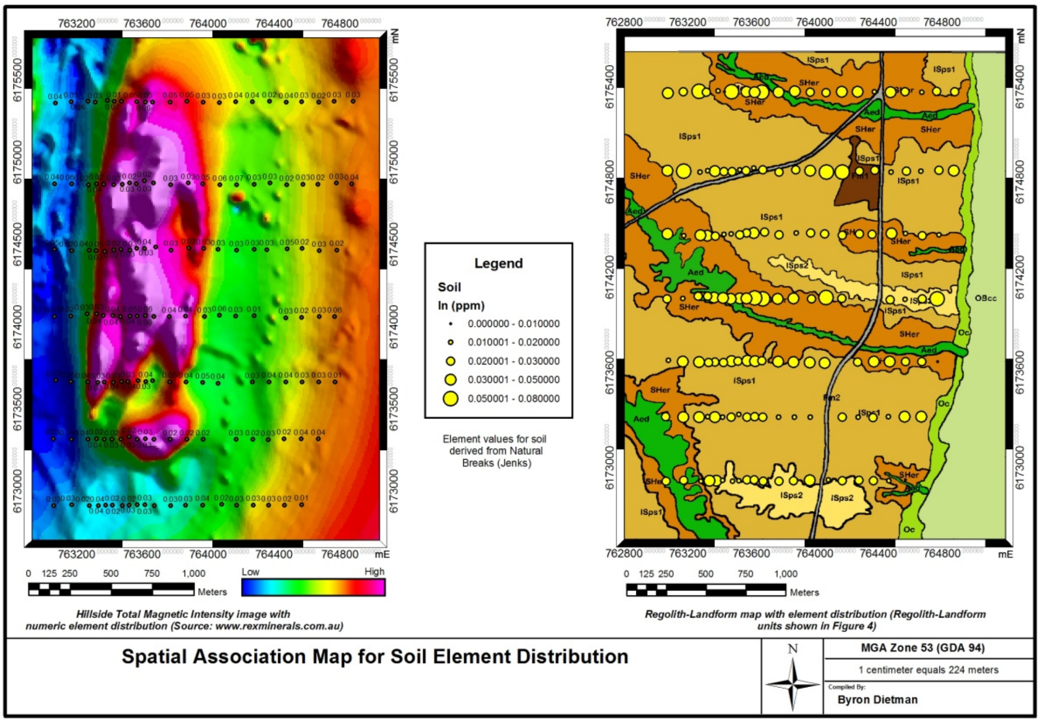
Appendix 6.13



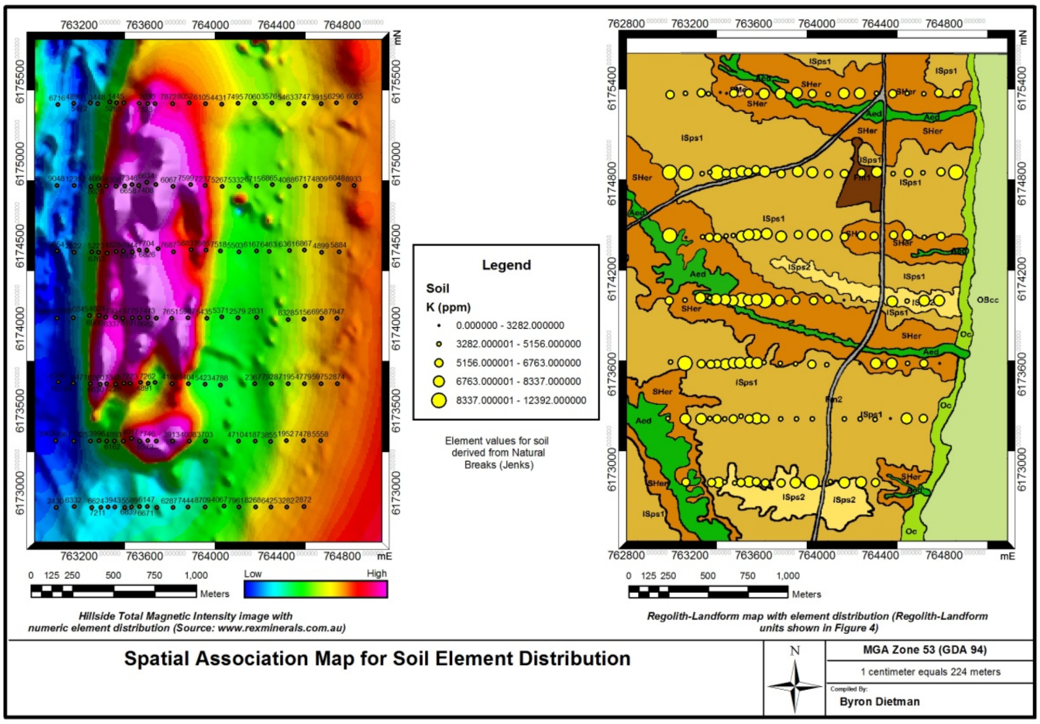
Appendix 6.14



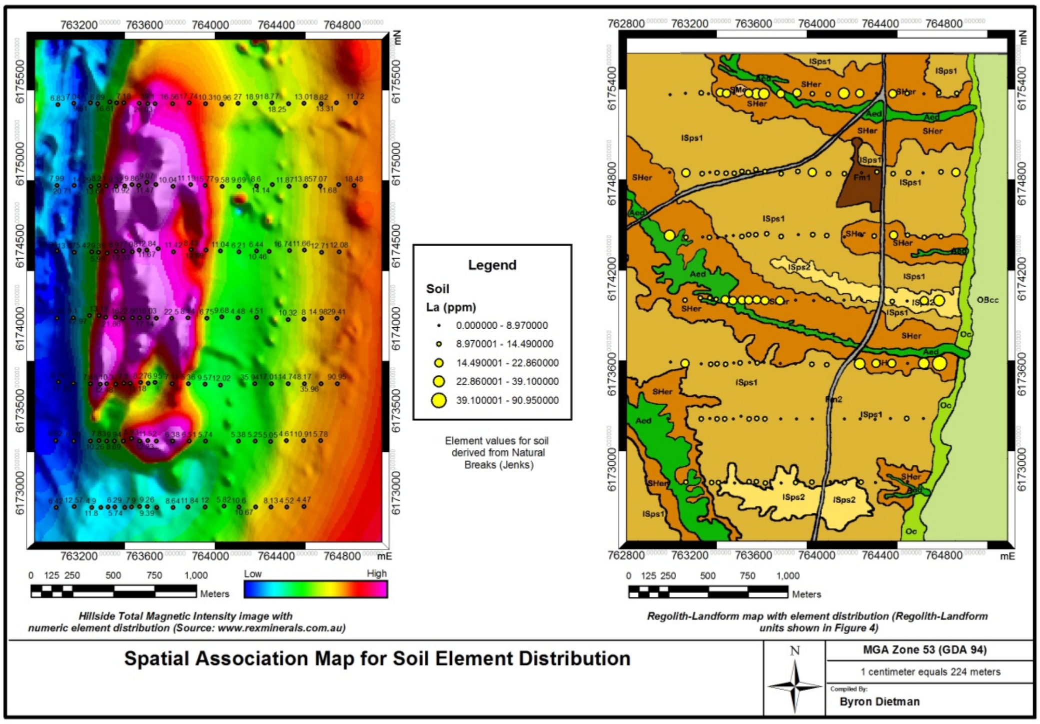
Appendix 6.15



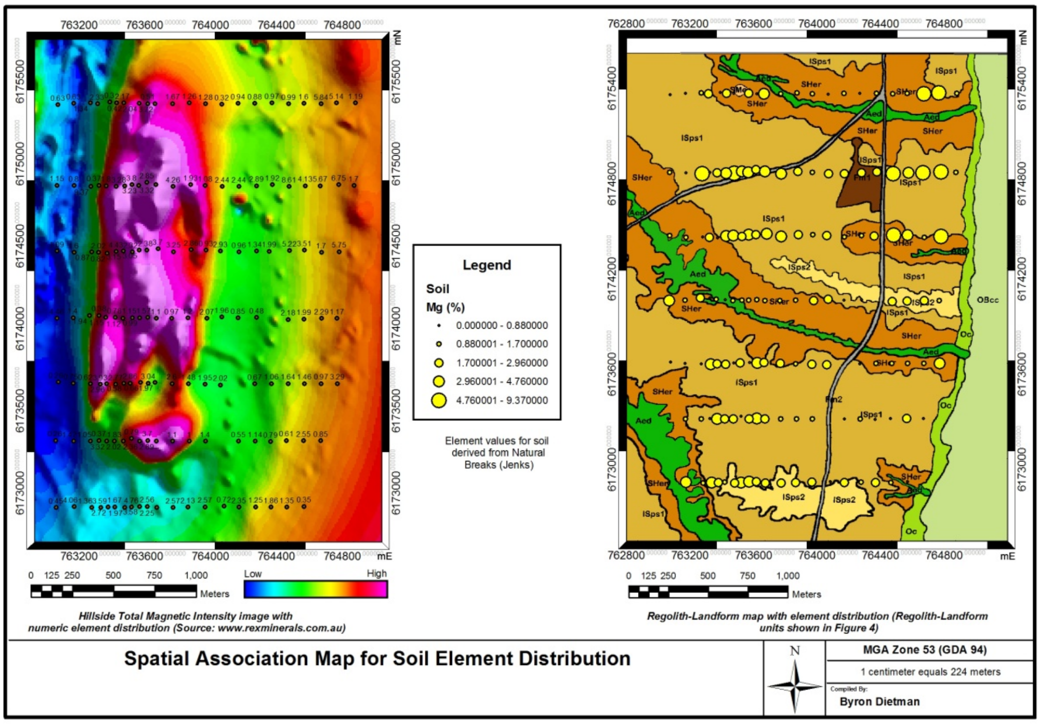
Appendix 6.16



Appendix 6.17



Appendix 6.18



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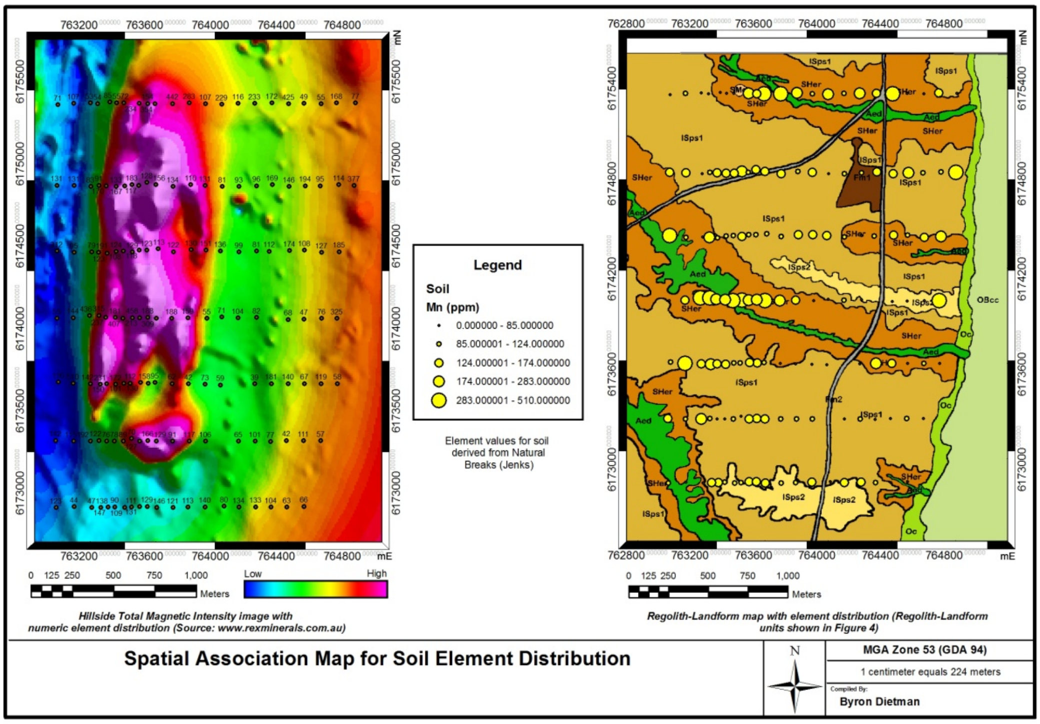
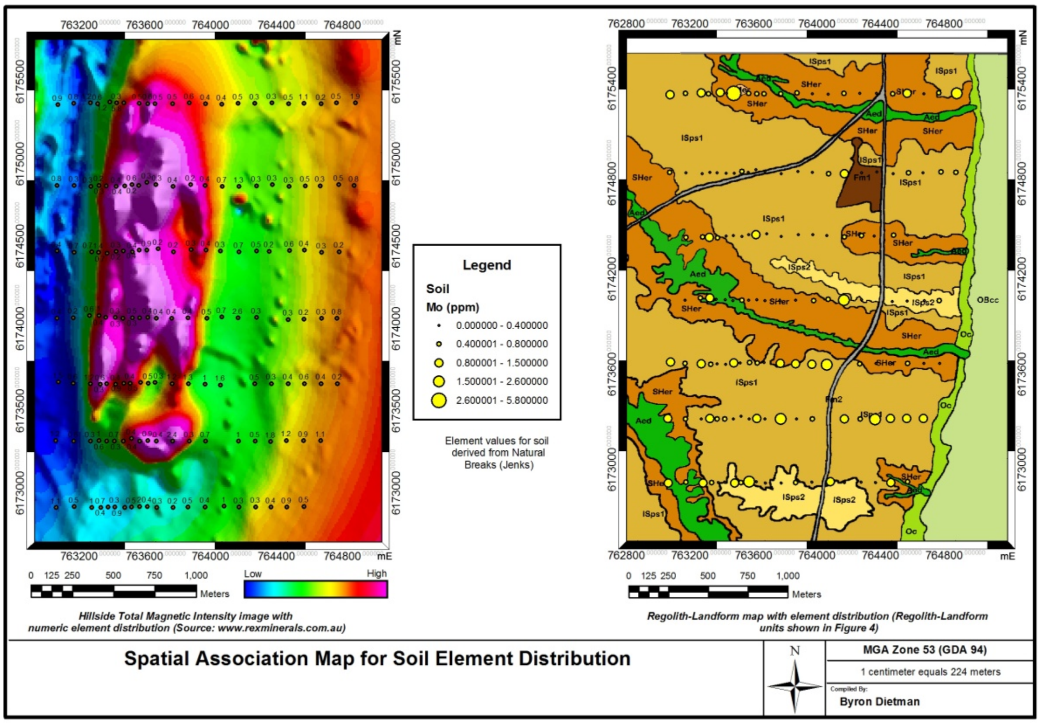
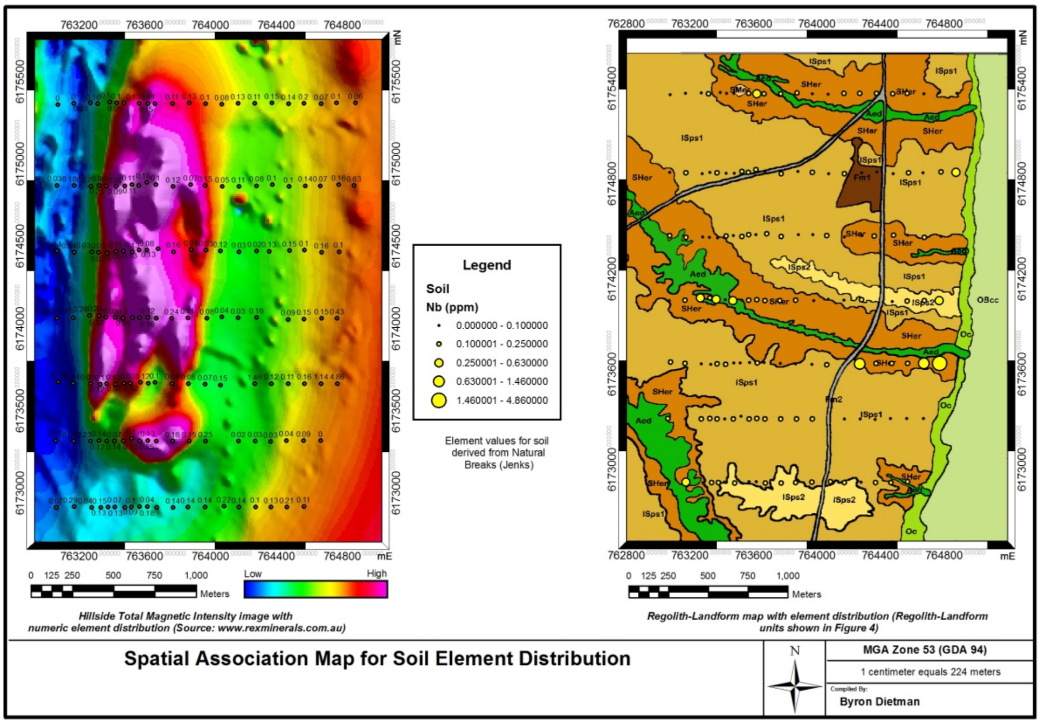


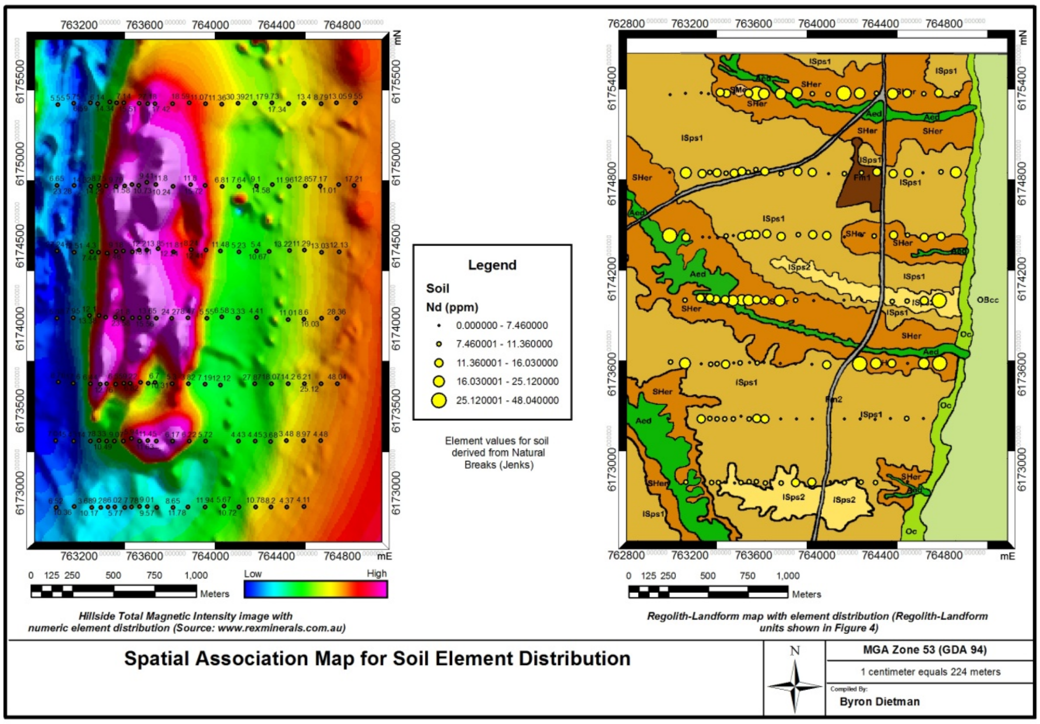
Appendix 6.20



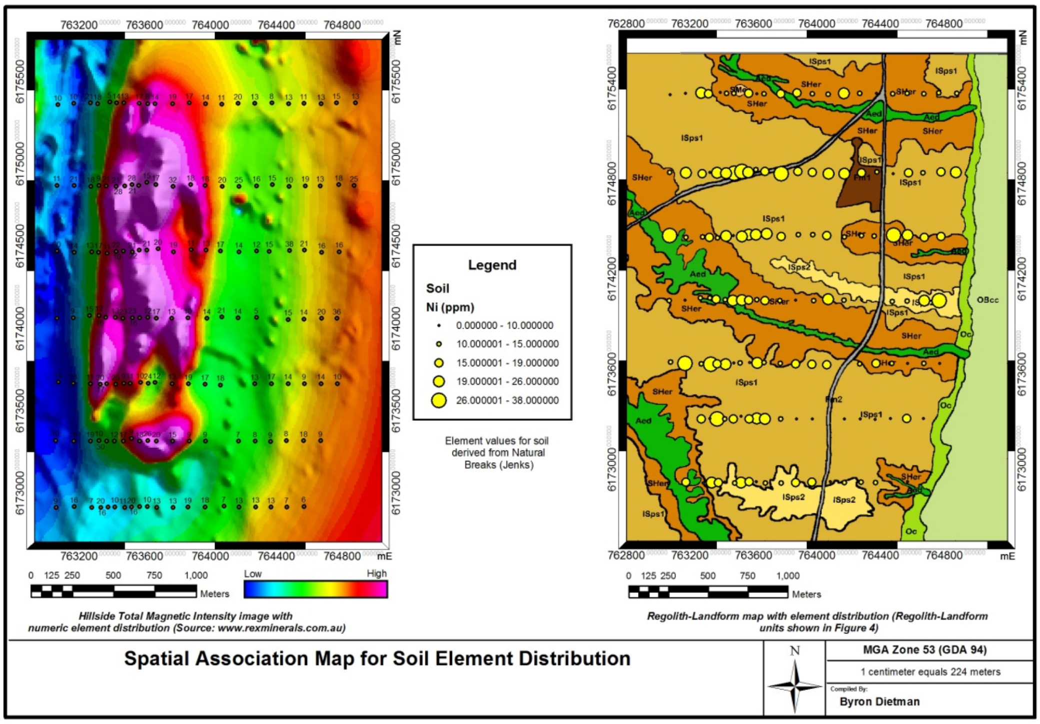
Appendix 6.21



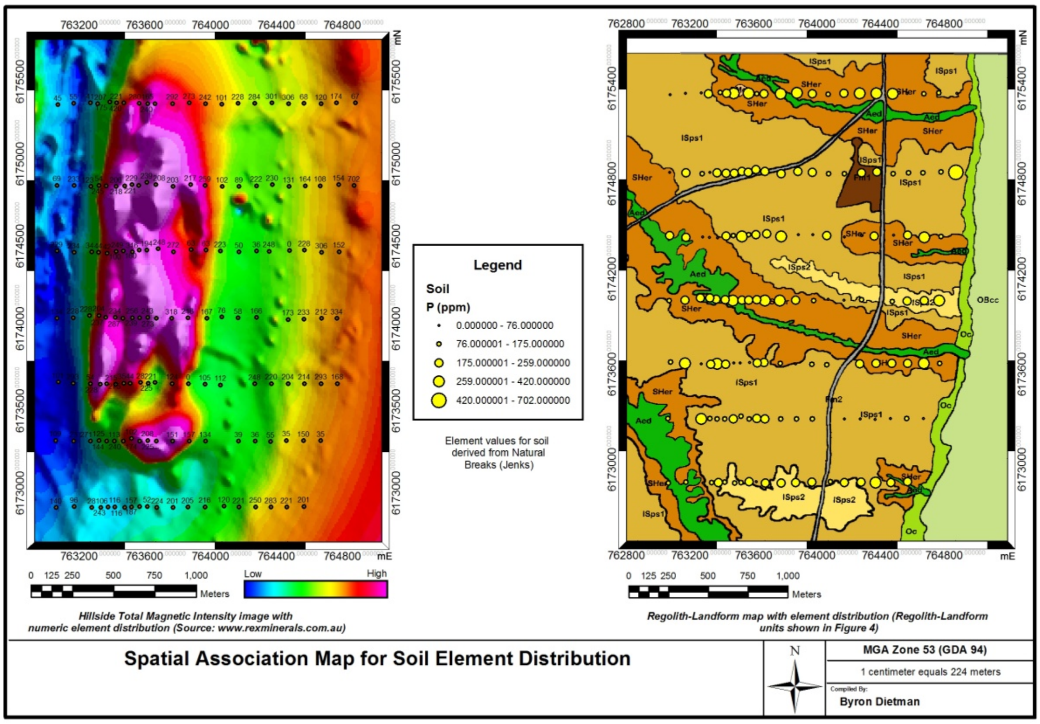
Appendix 6.22



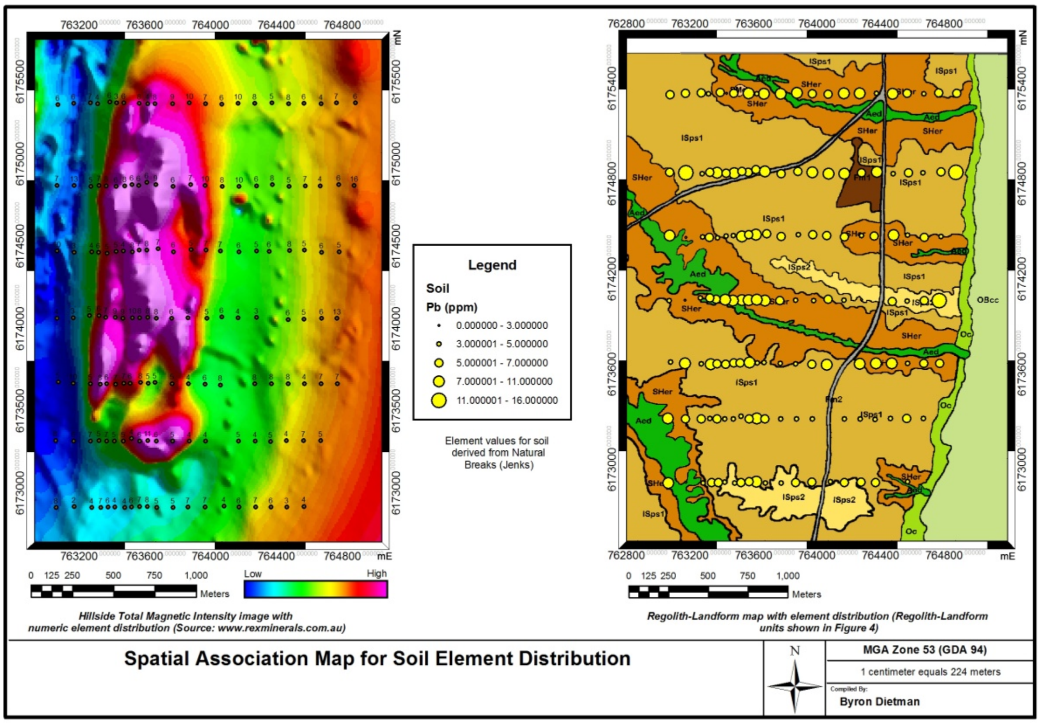
Appendix 6.23



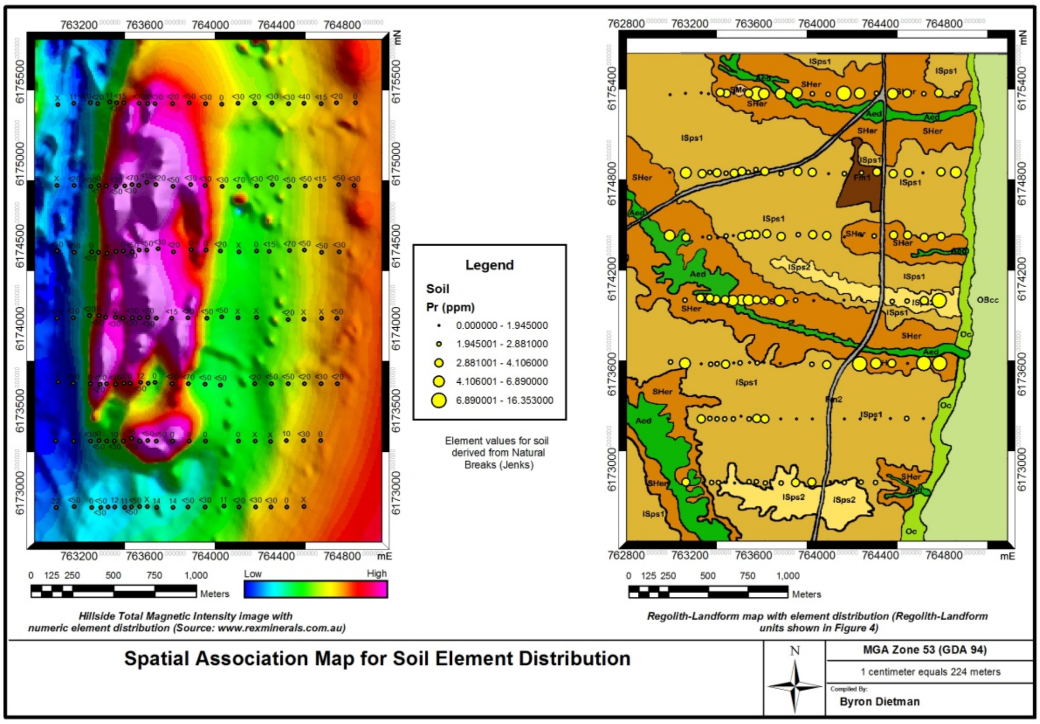
Appendix 6.24



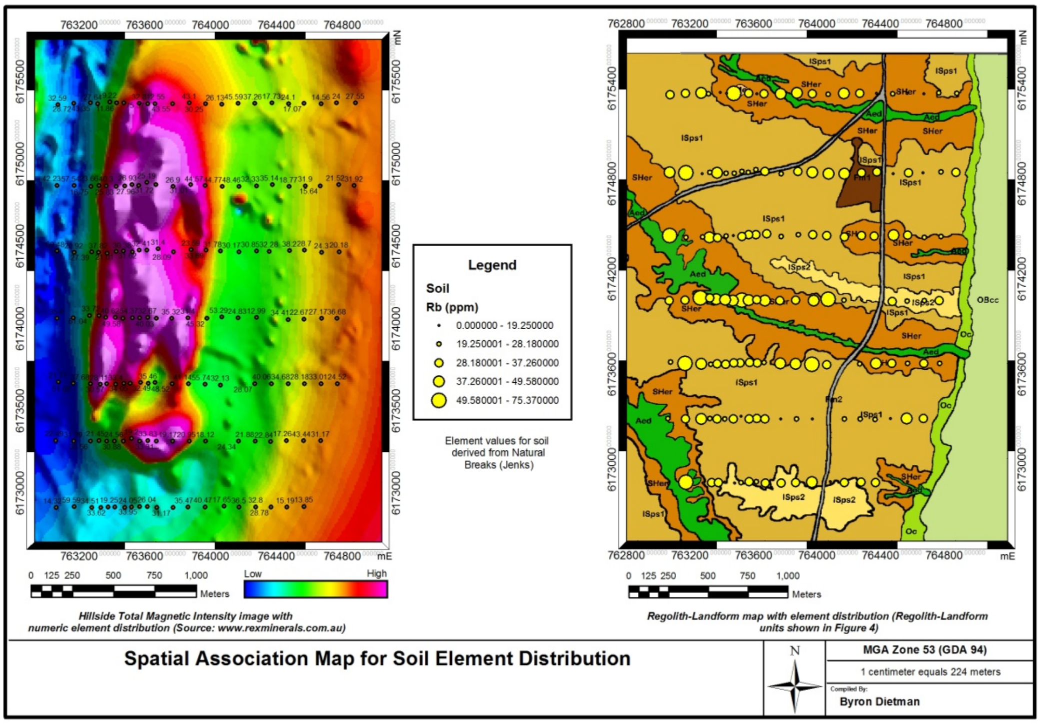
Appendix 6.25



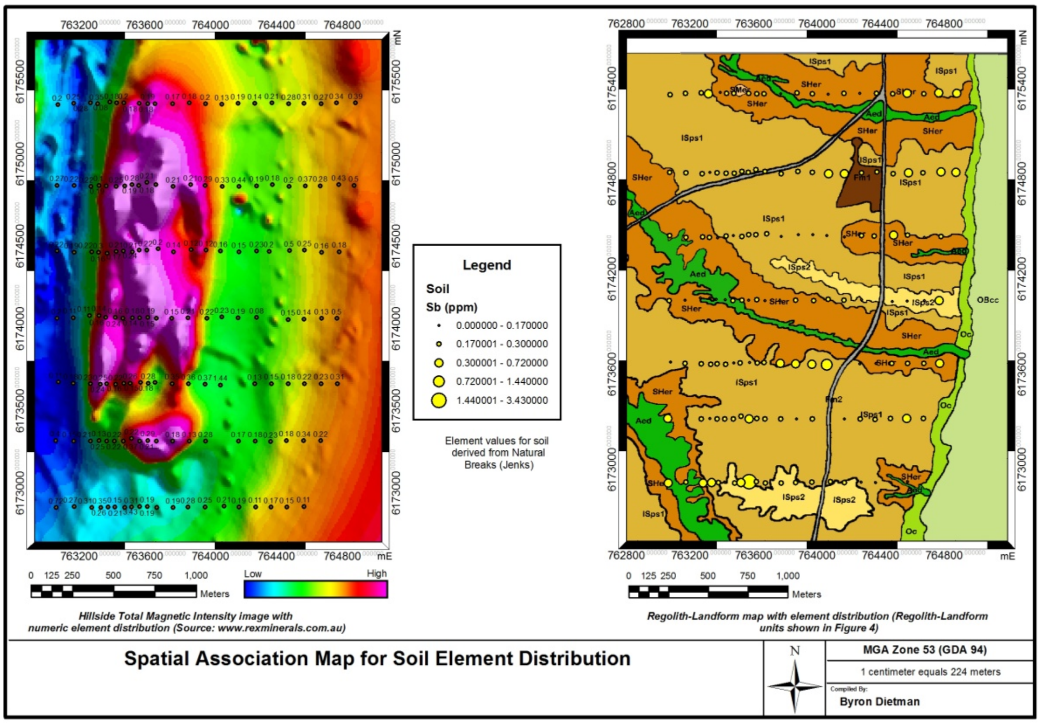
Appendix 6.26



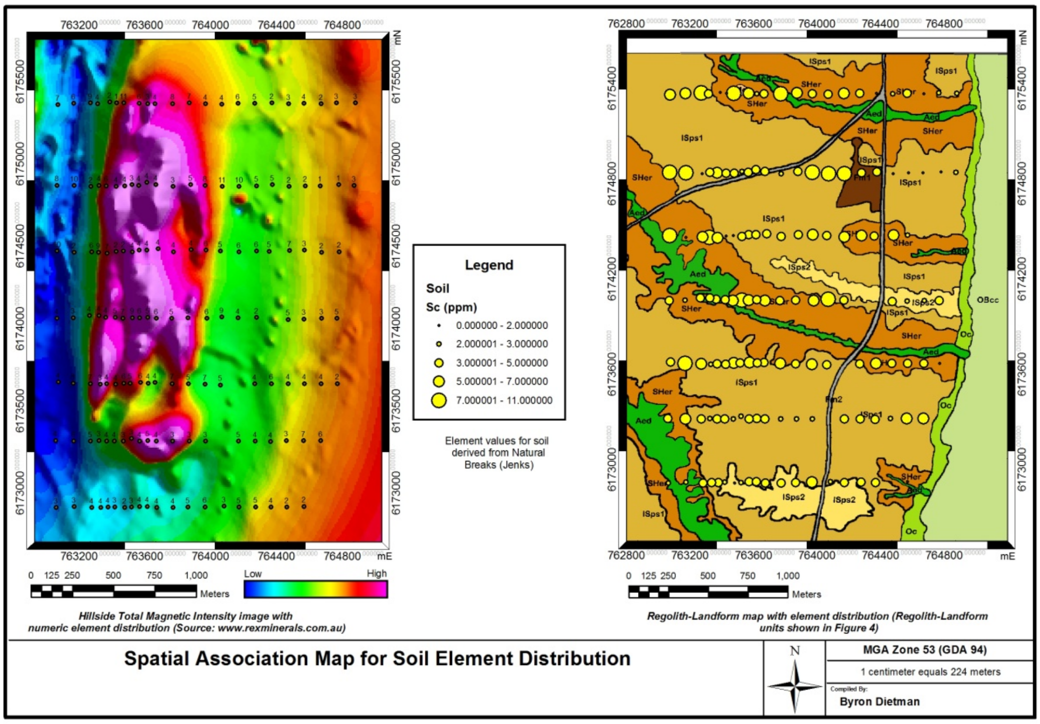
Appendix 6.27



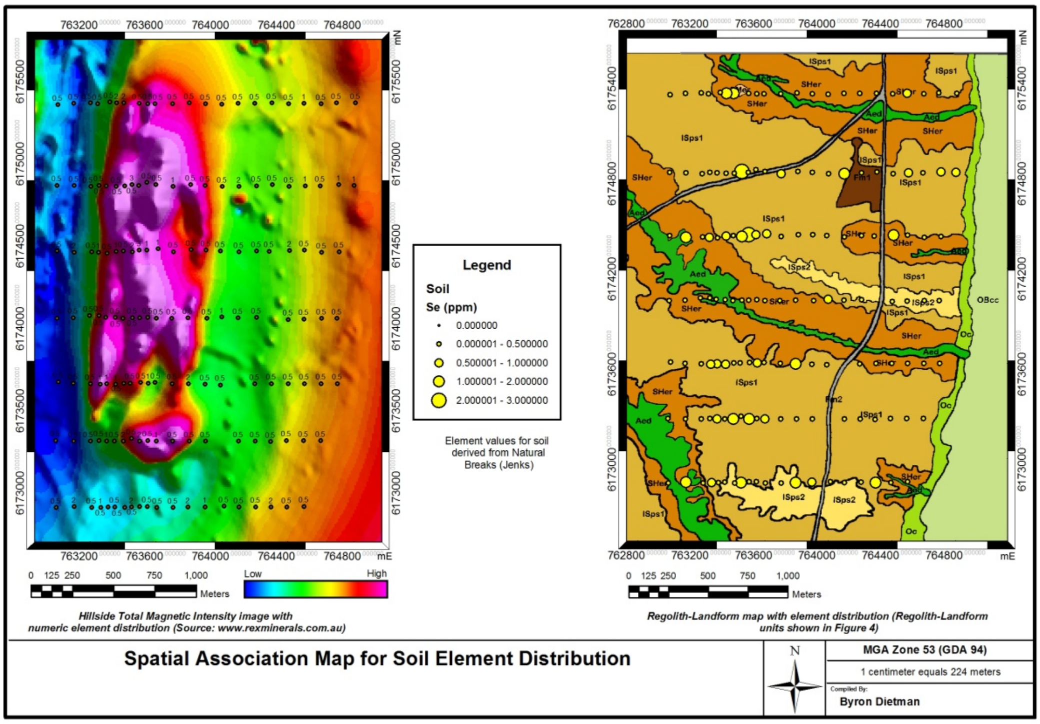
Appendix 6.28



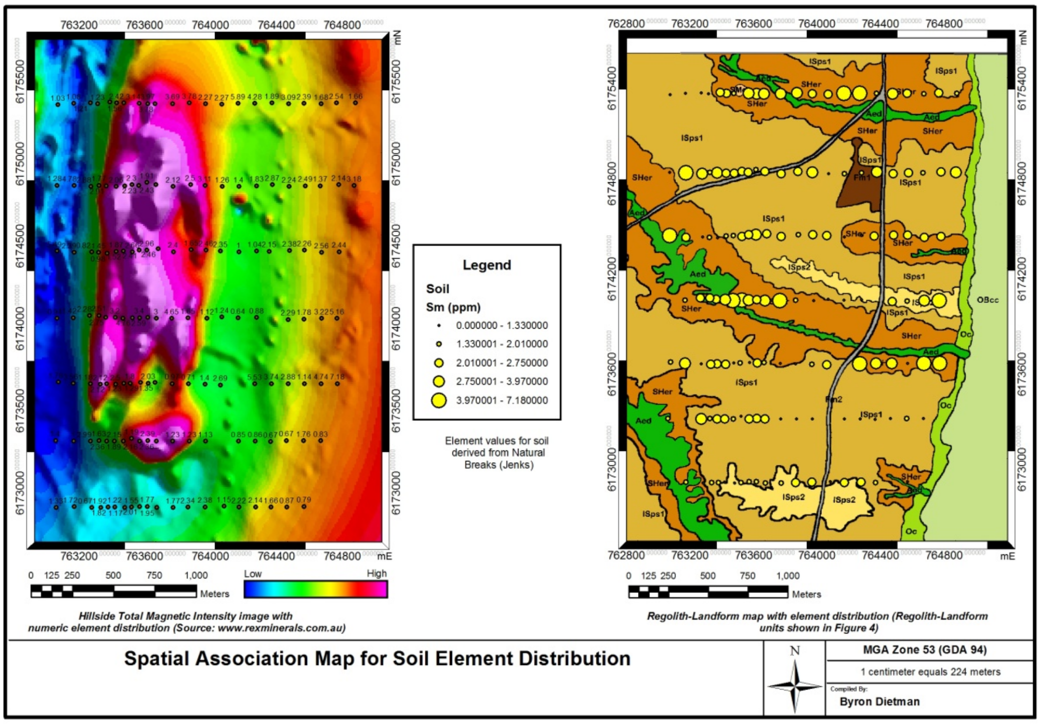
Appendix 6.29



Appendix 6.30



Appendix 6.31



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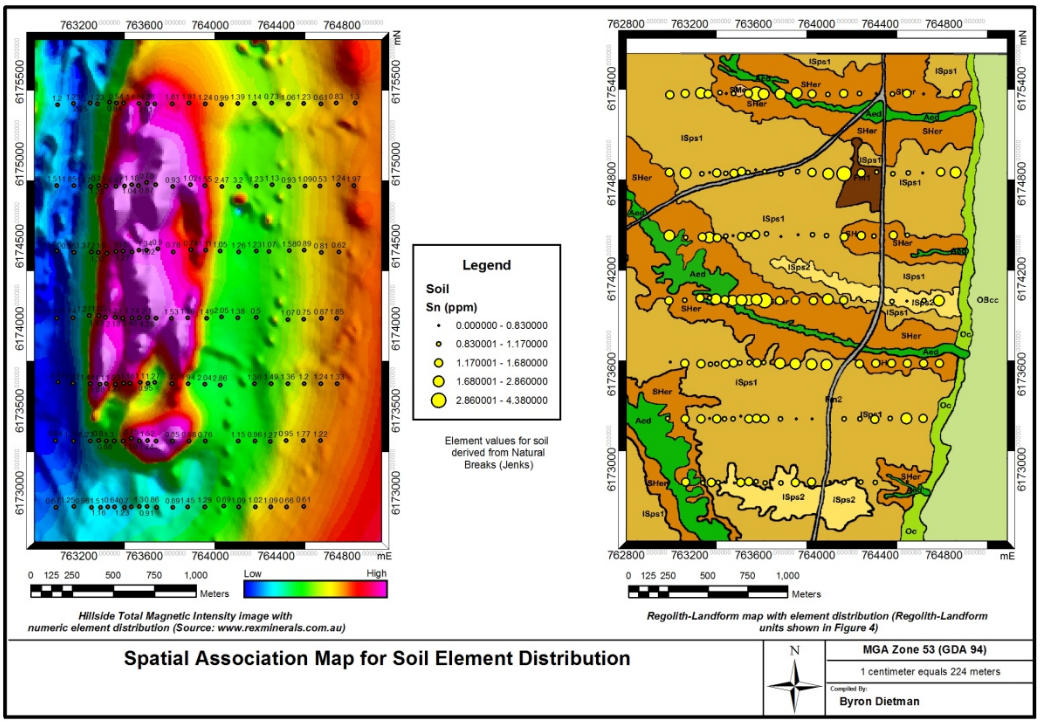
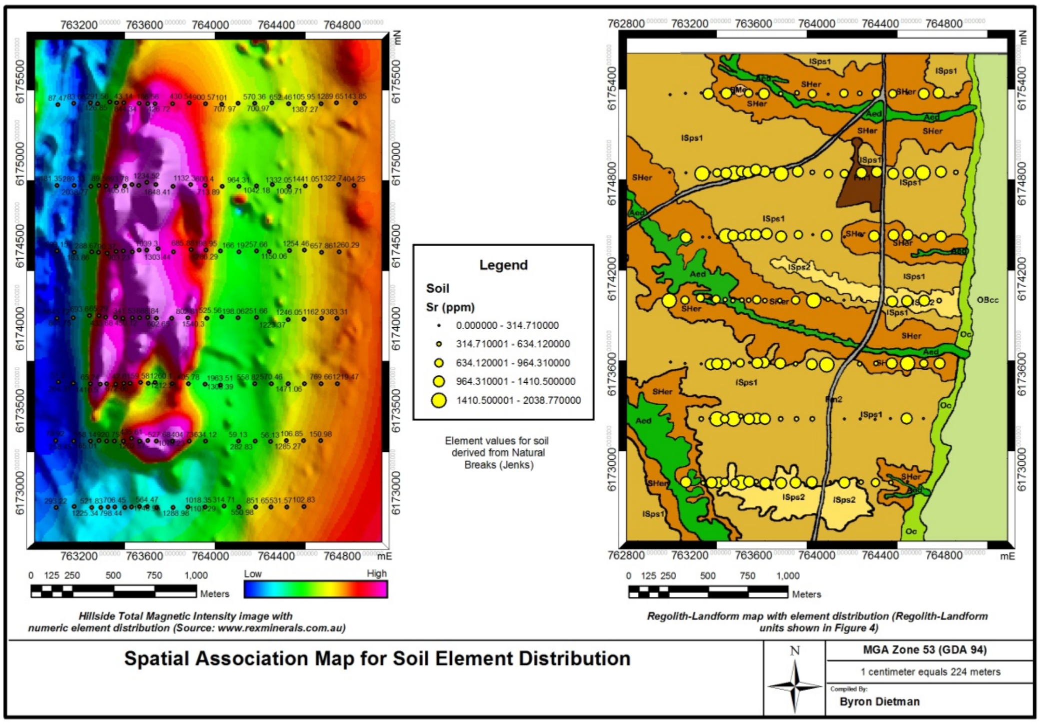


Appendix 6.33



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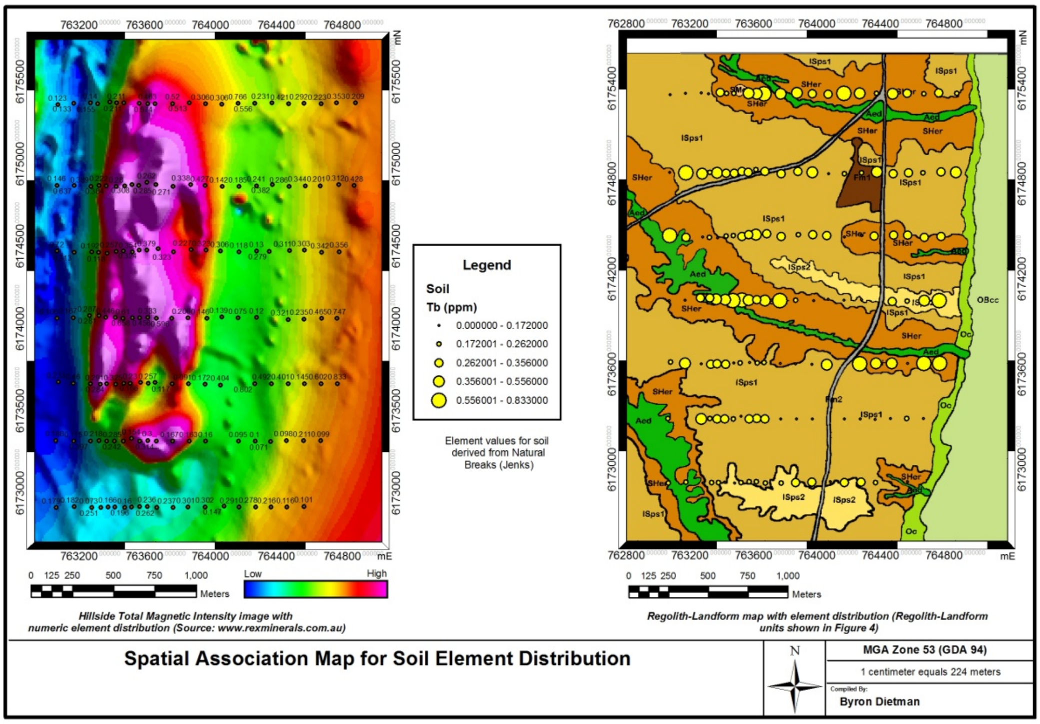
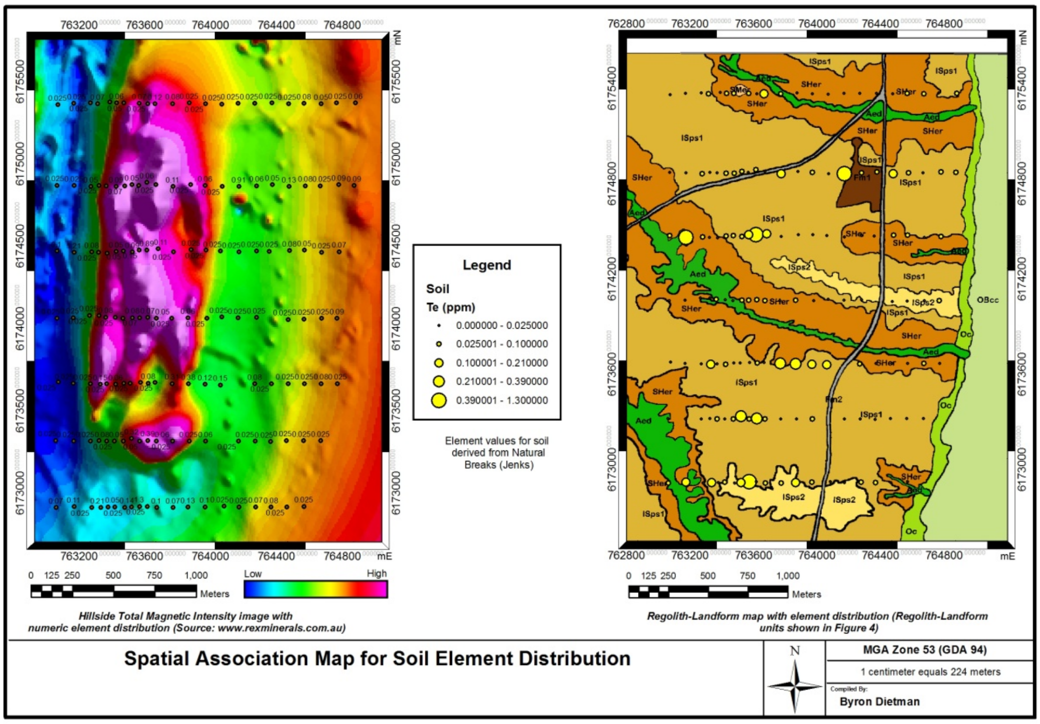


Appendix 6.35



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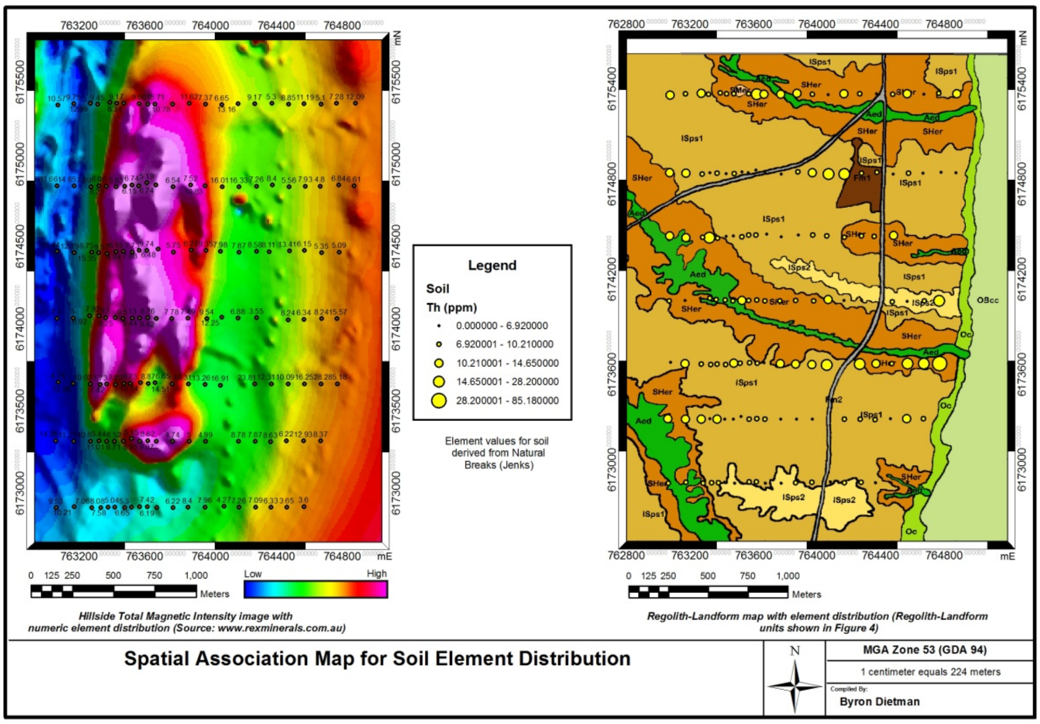

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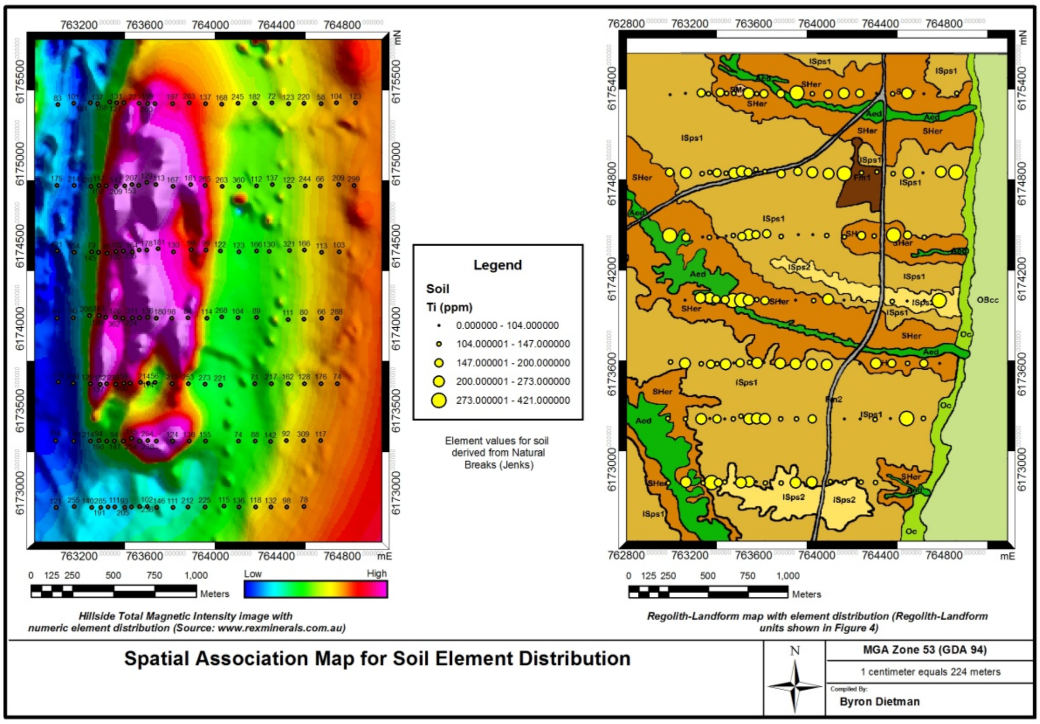

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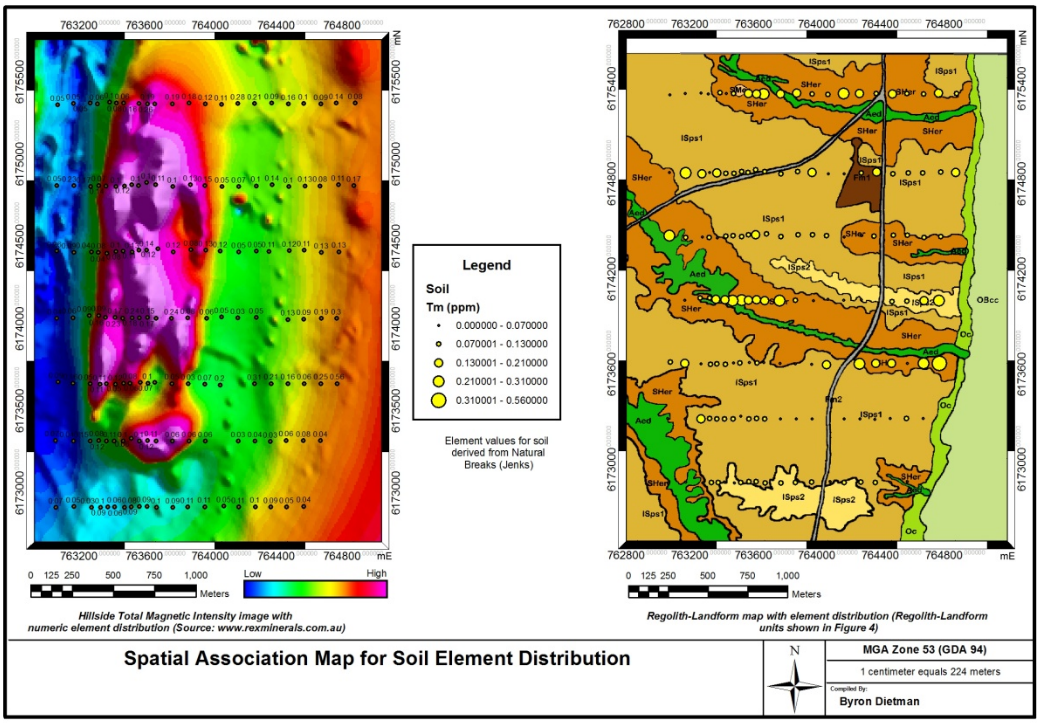

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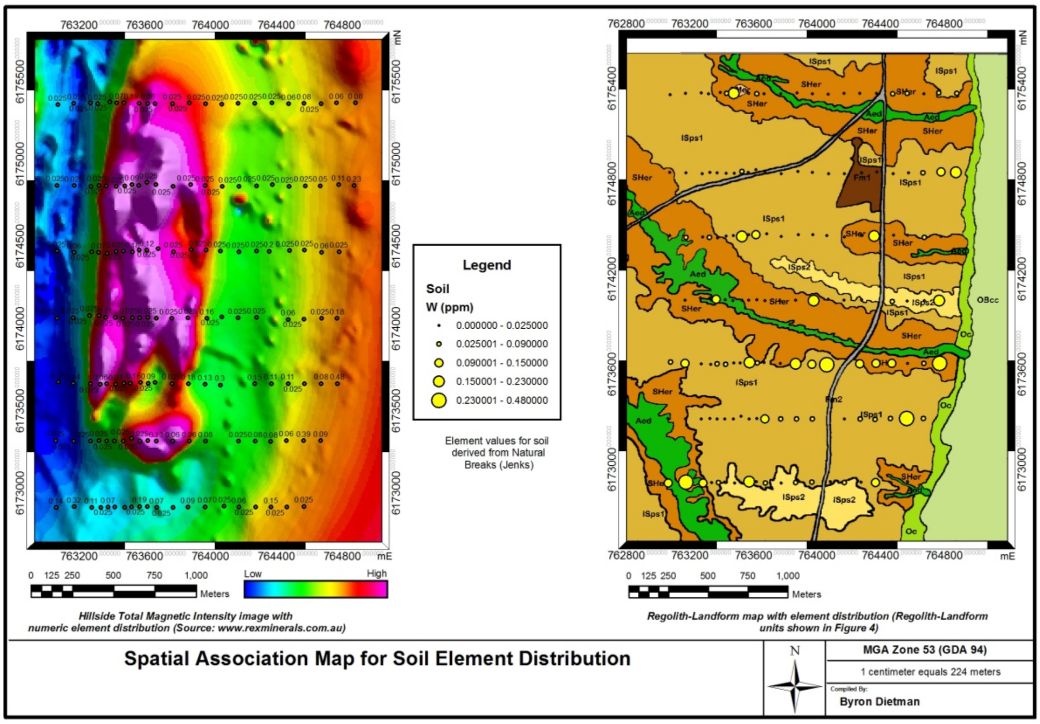

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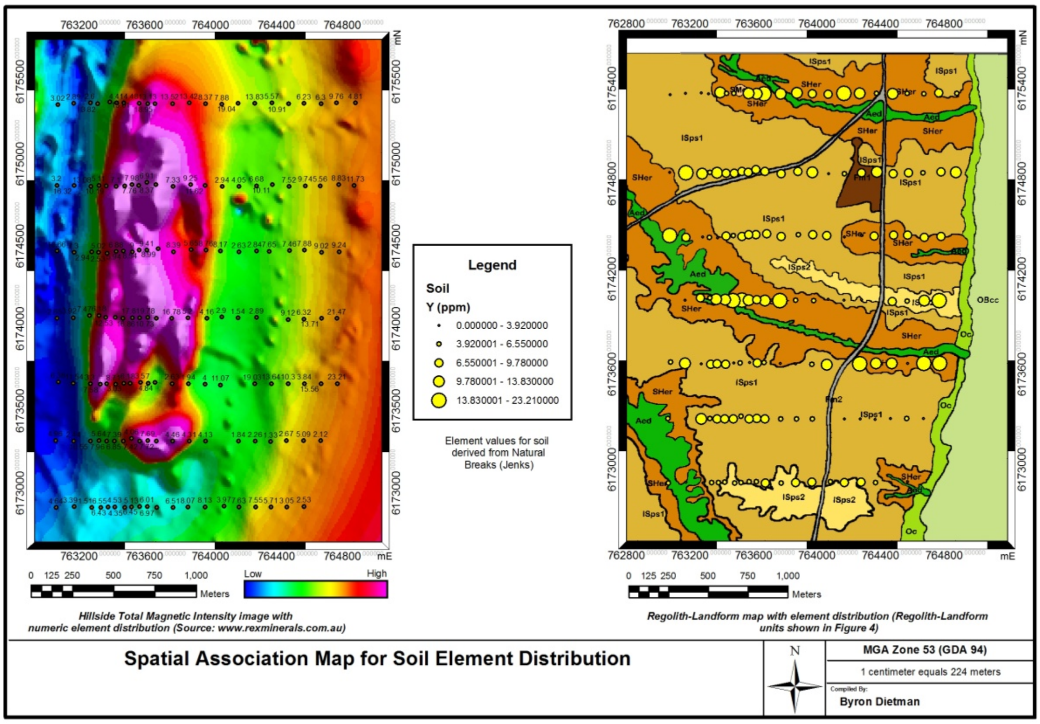

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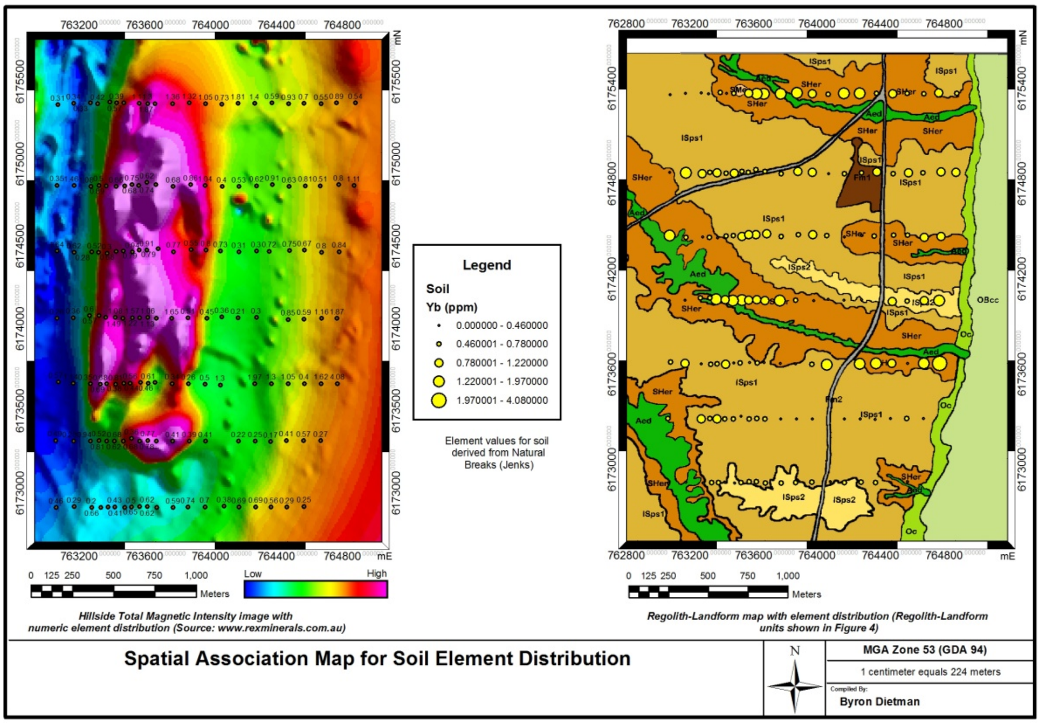

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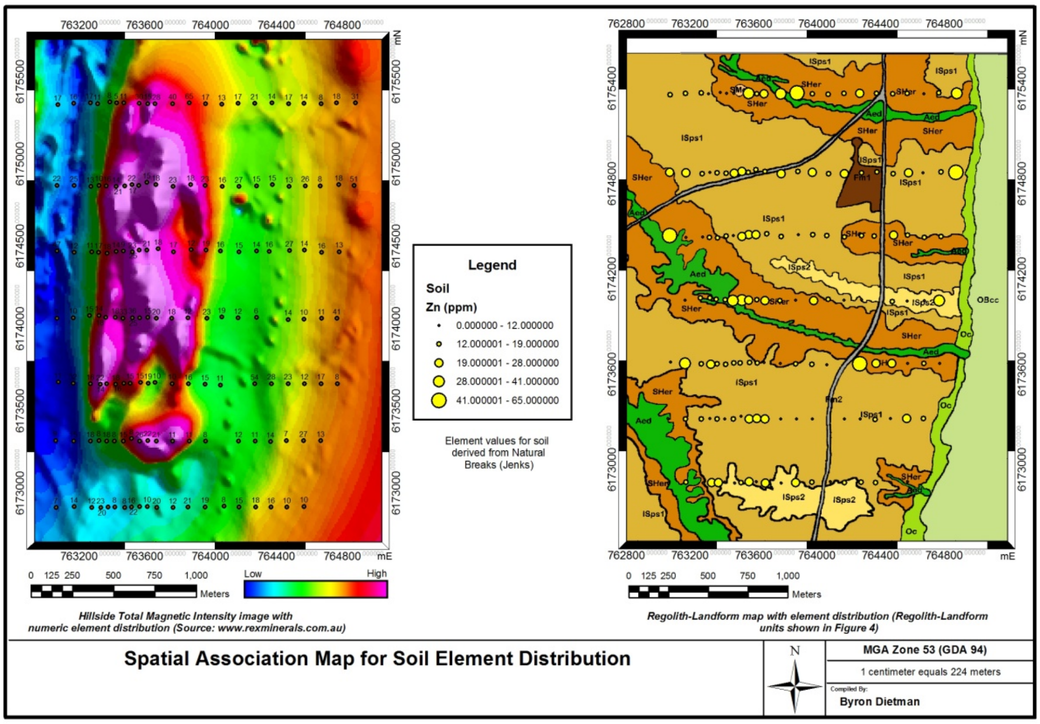

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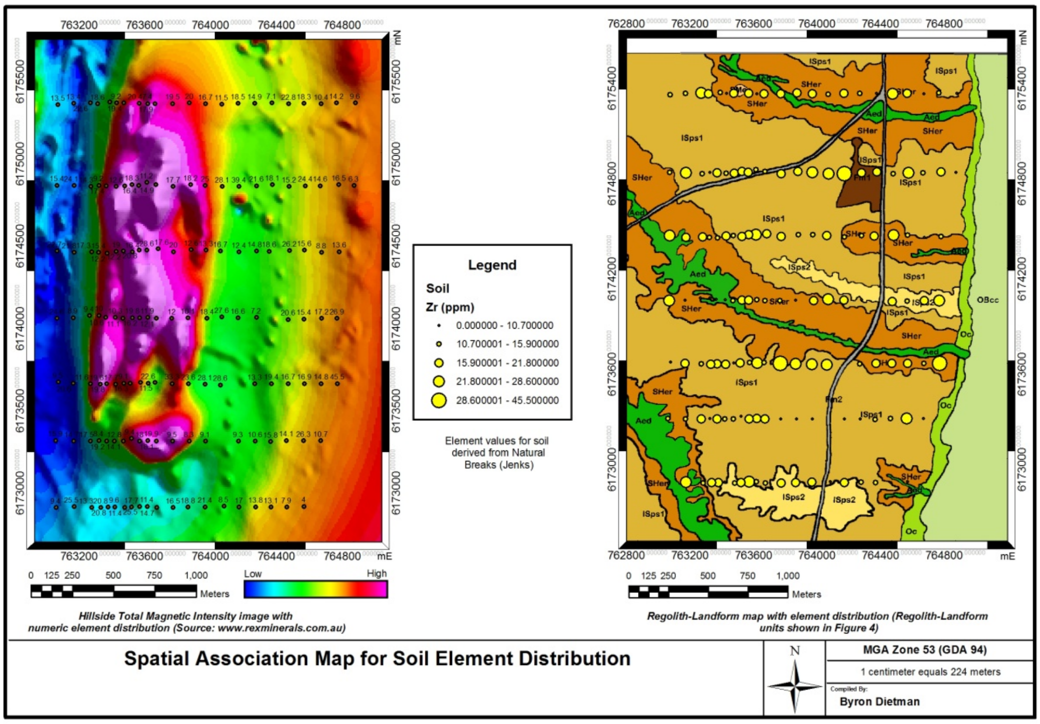
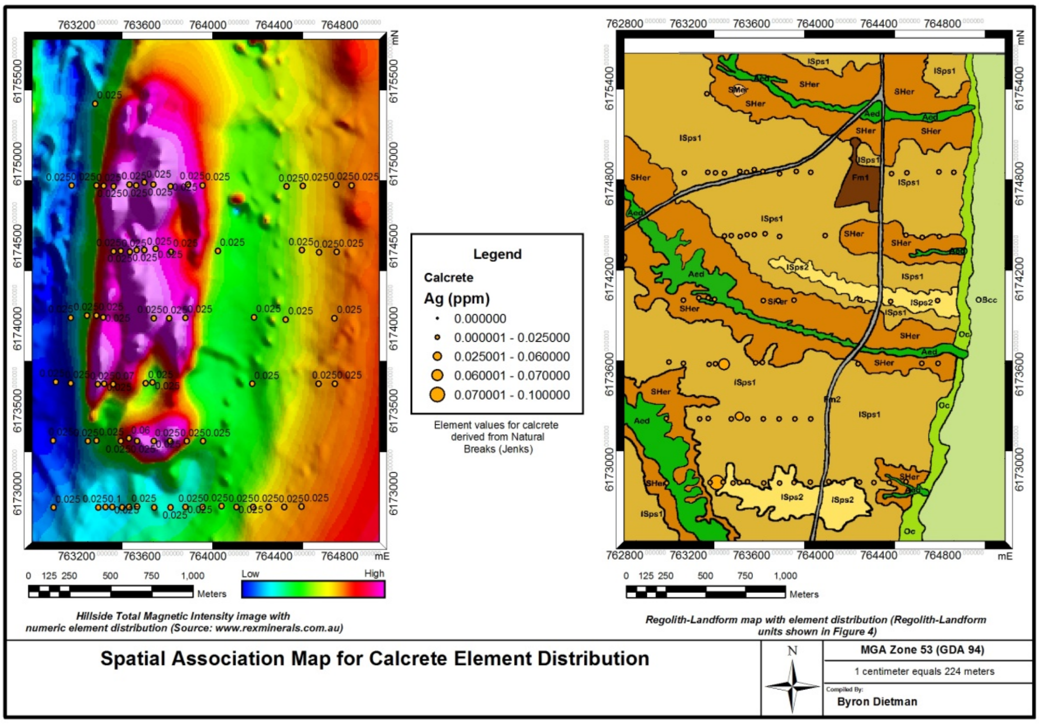


Appendix VII – Spatial Association Maps for Calcrete Element Distribution.

Appendix 7.01



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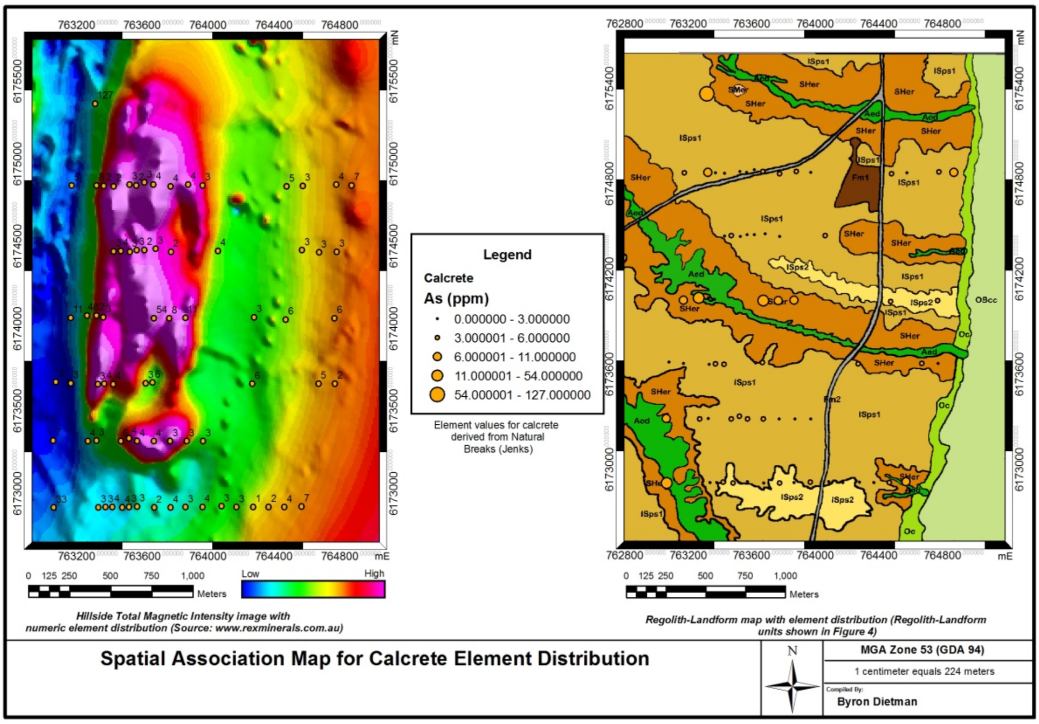

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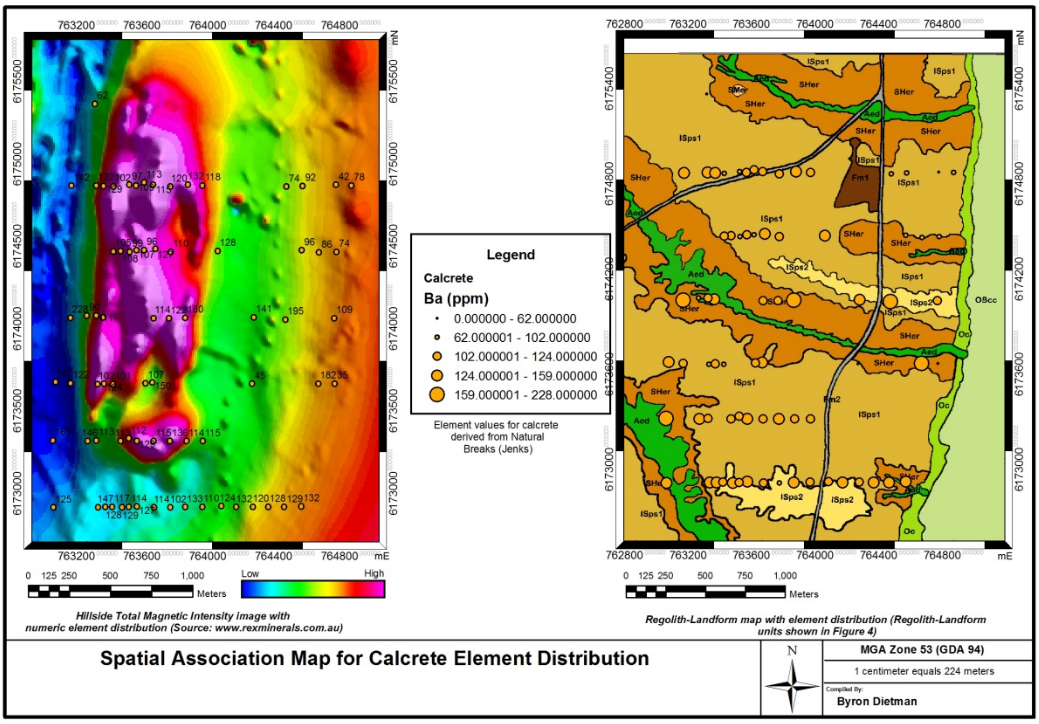

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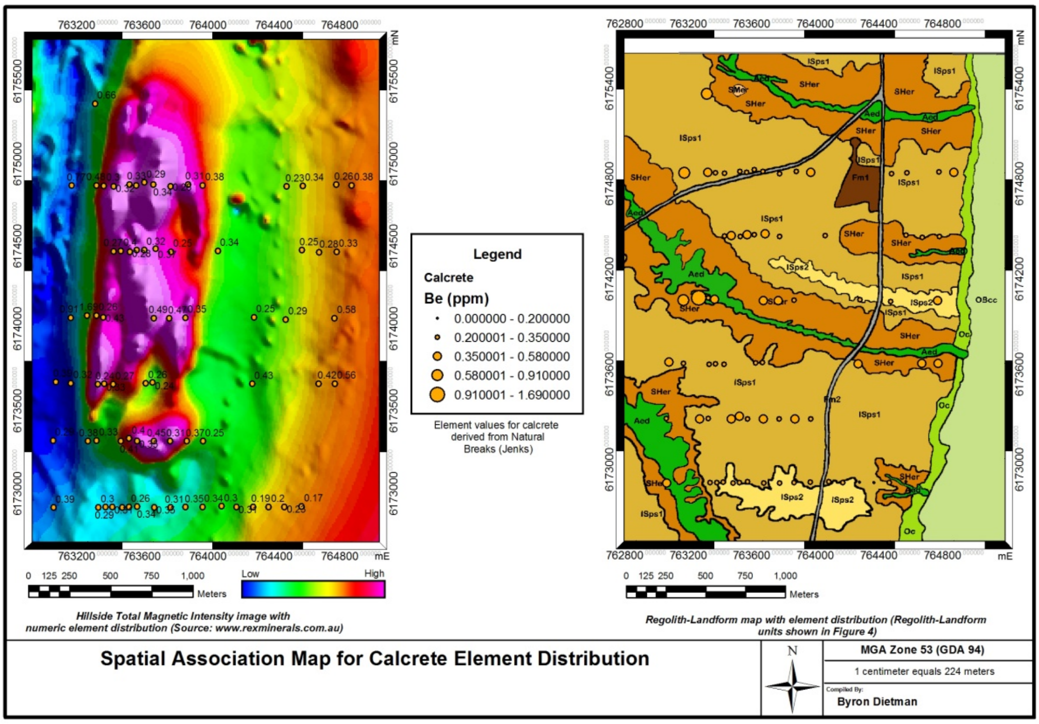

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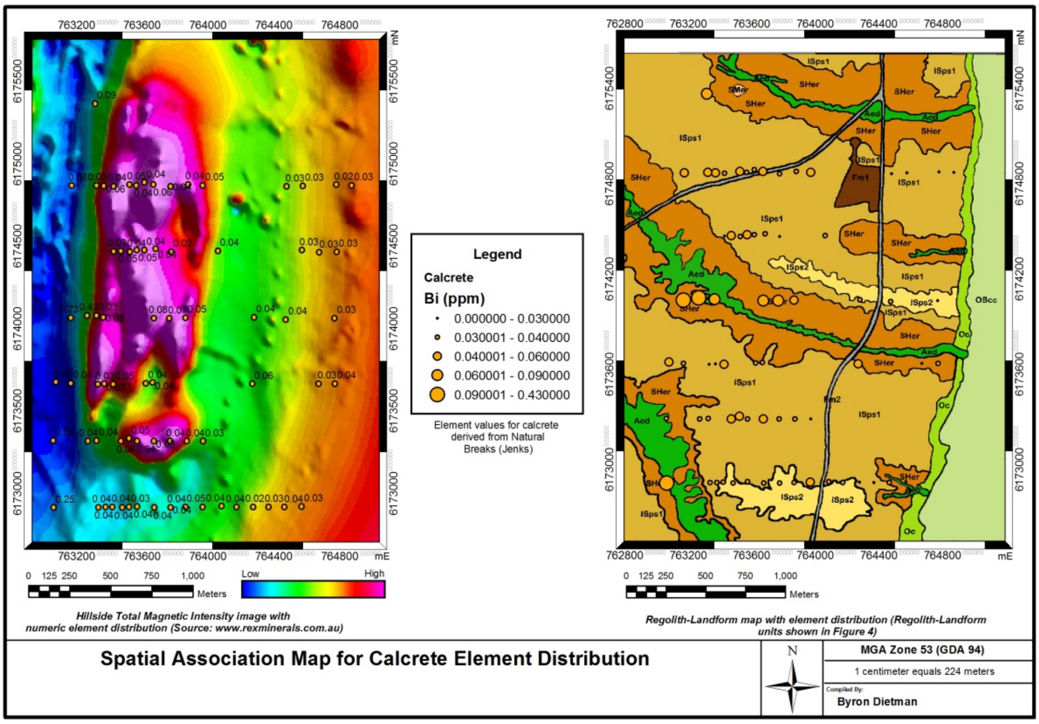

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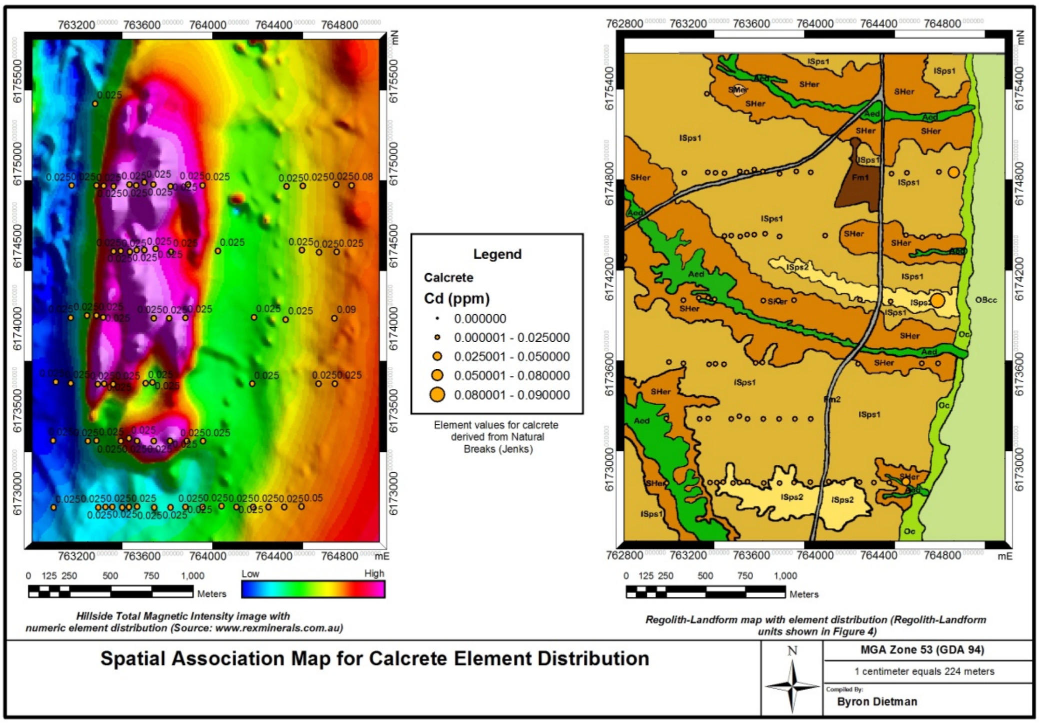

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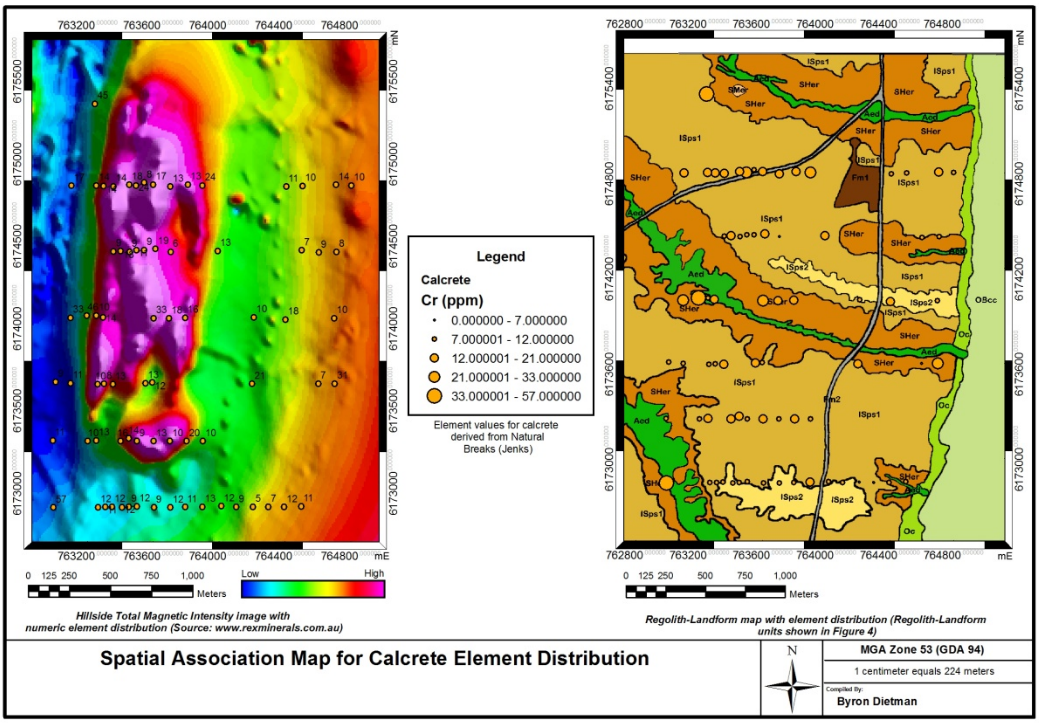

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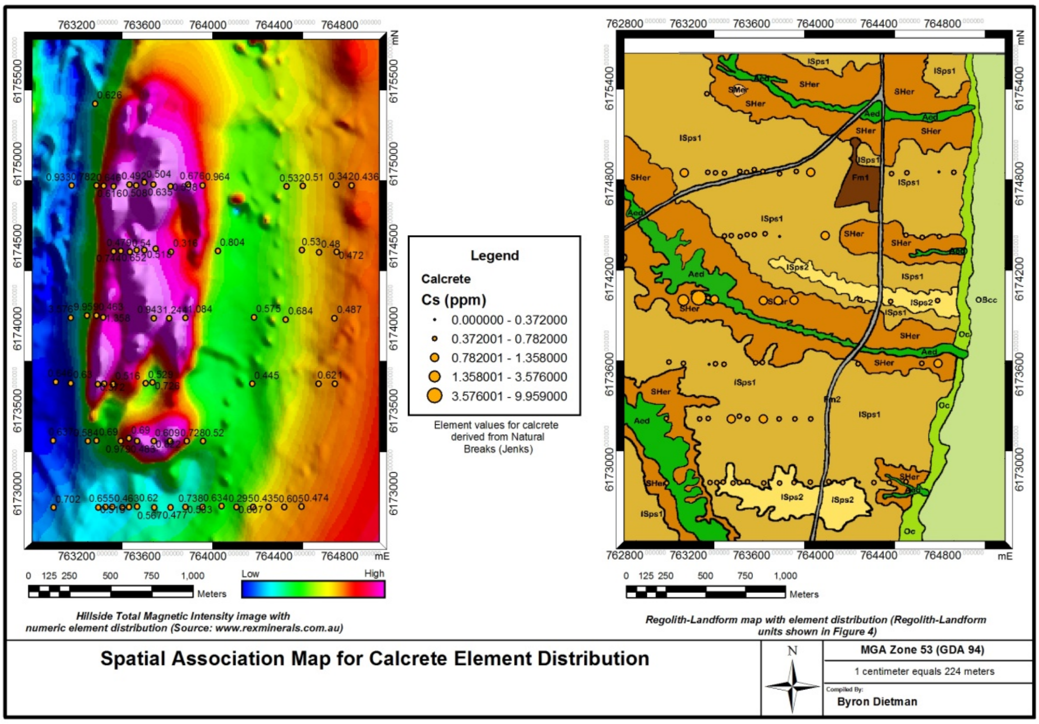

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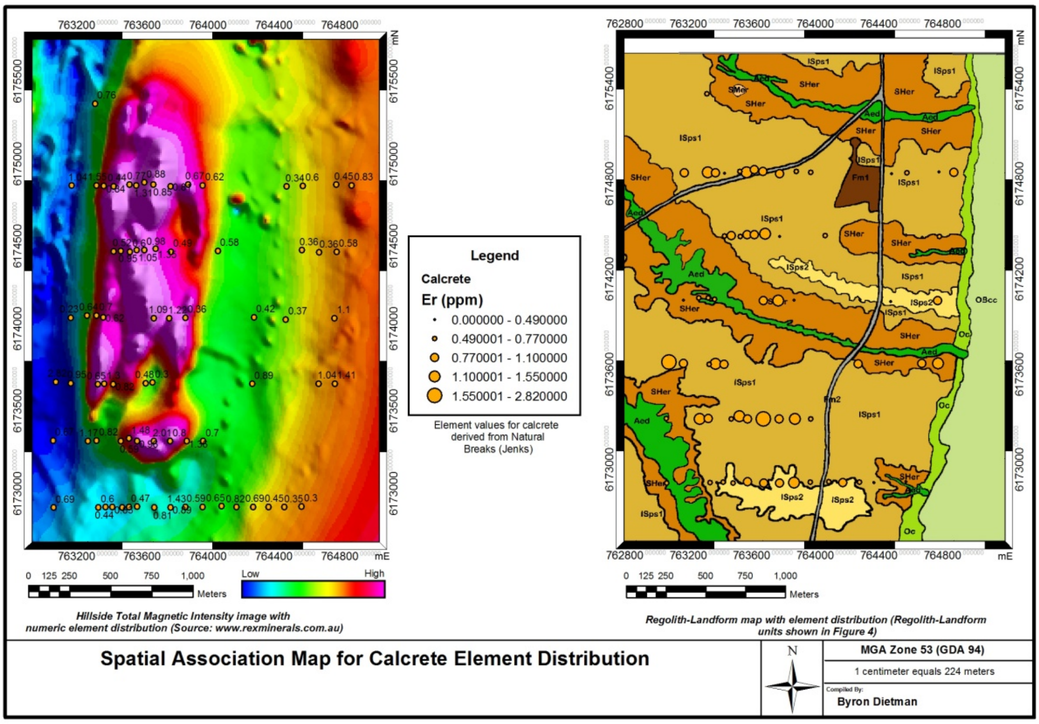

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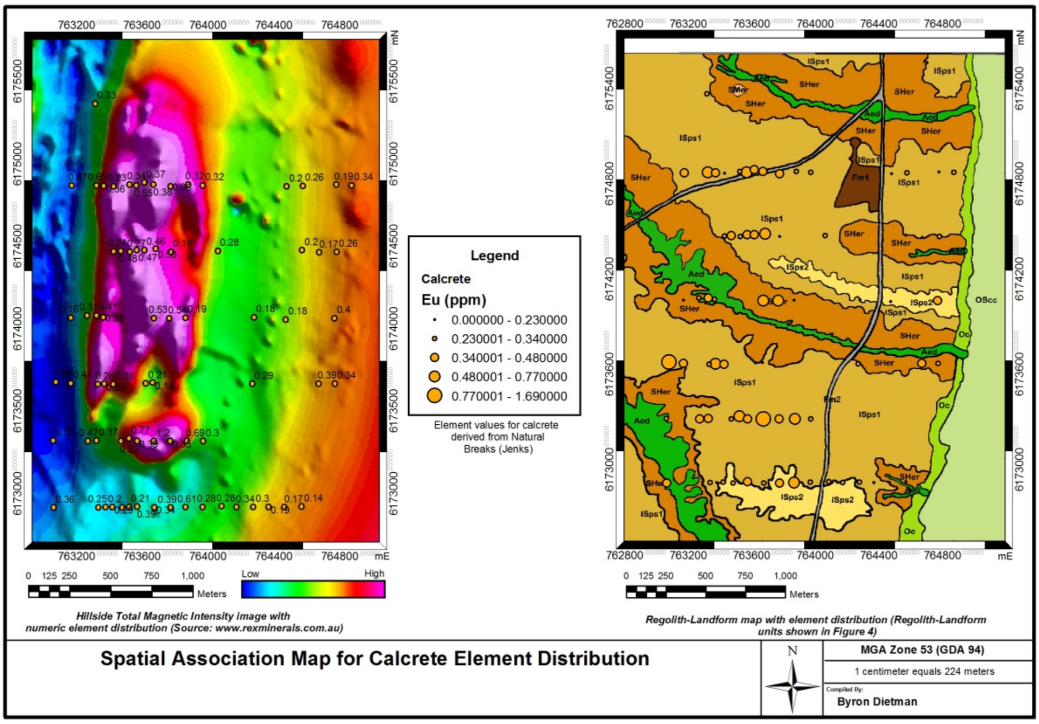

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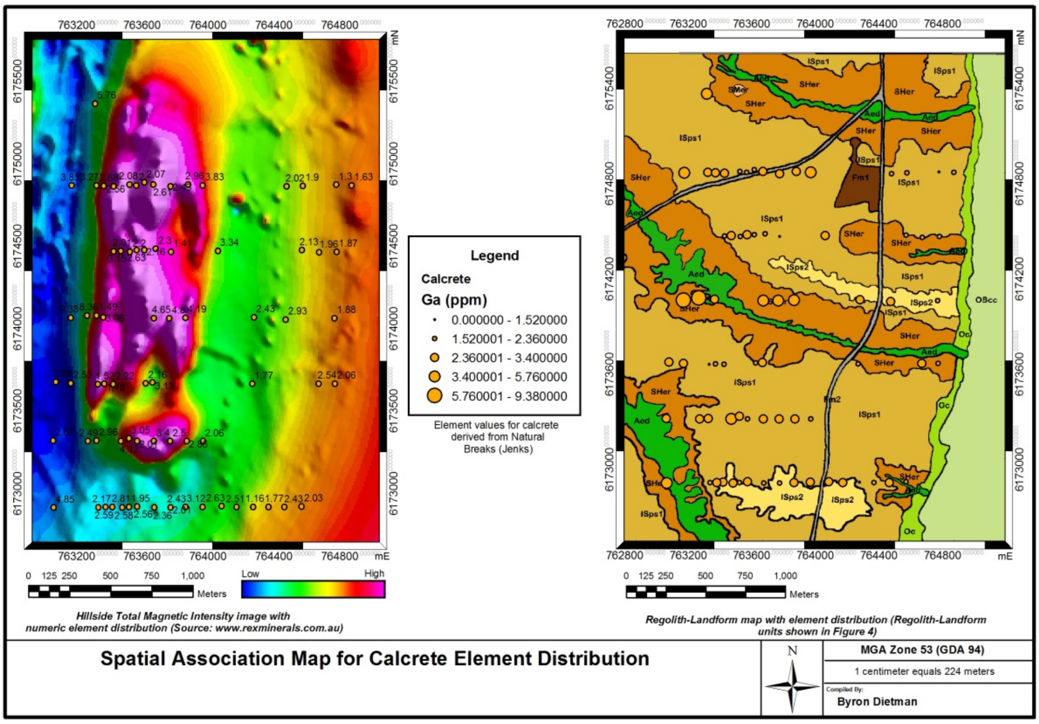

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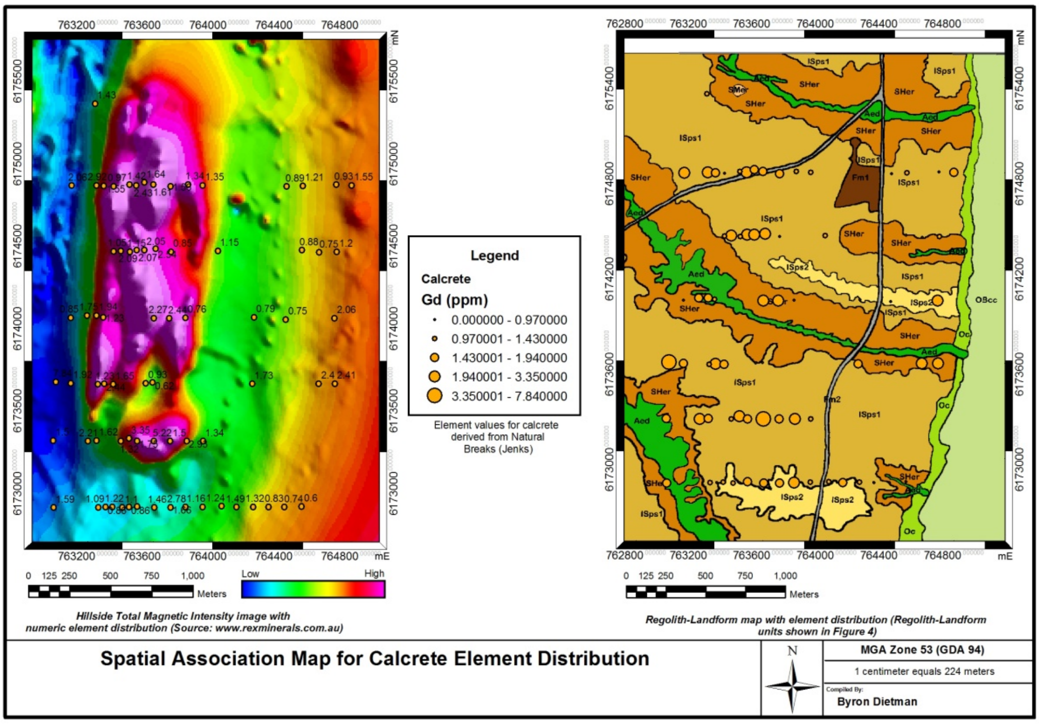

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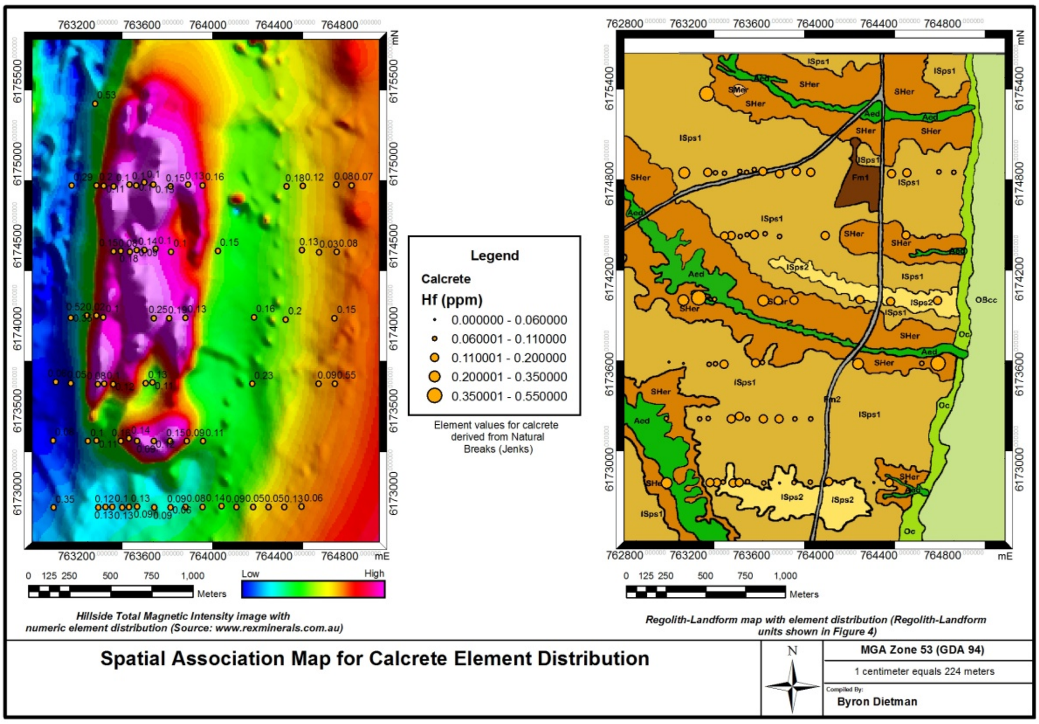

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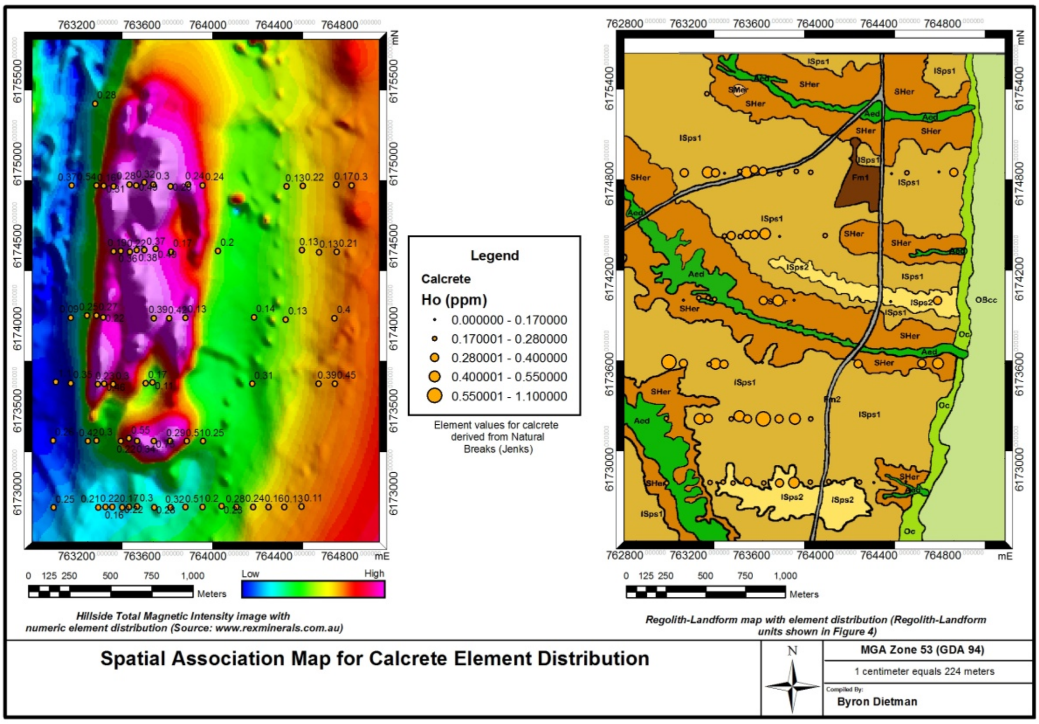

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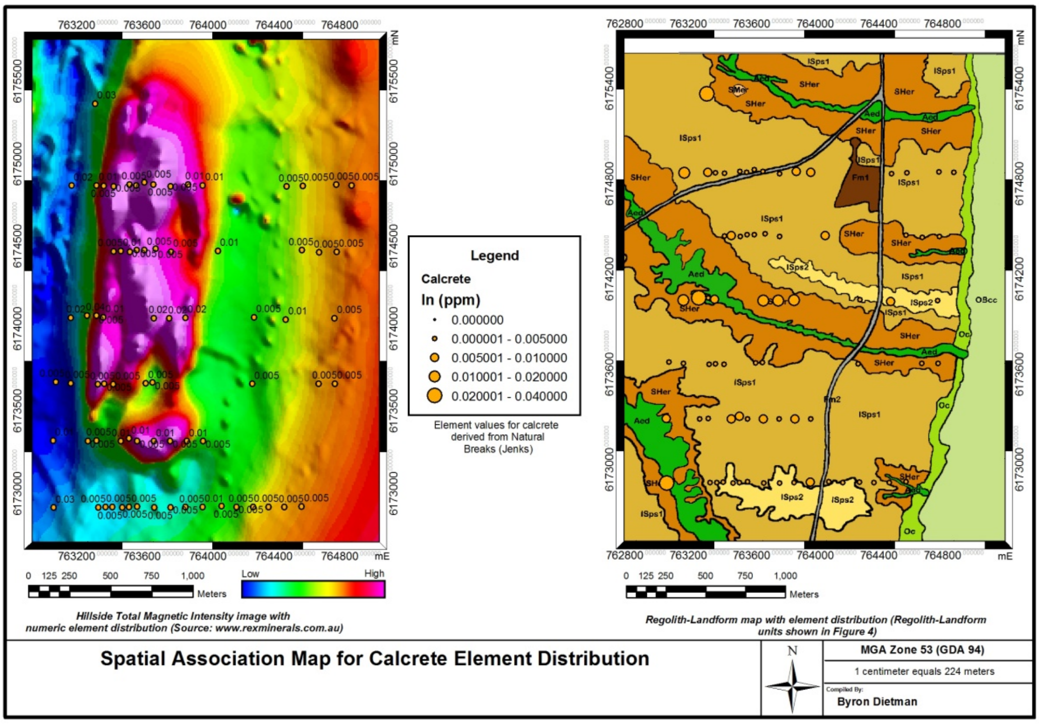

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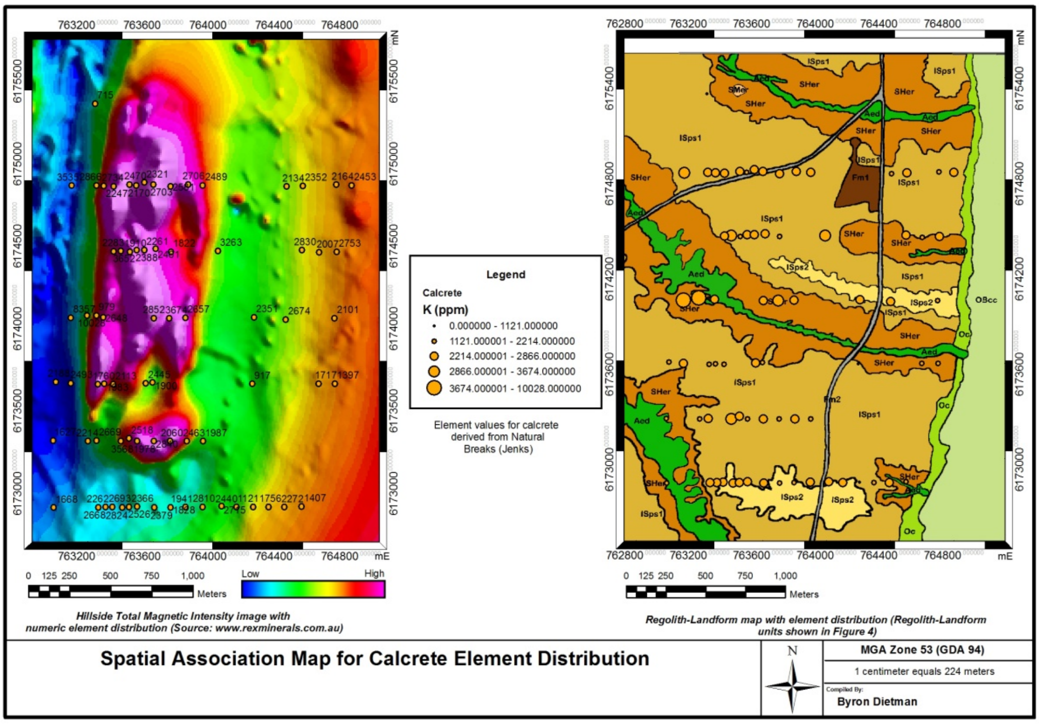

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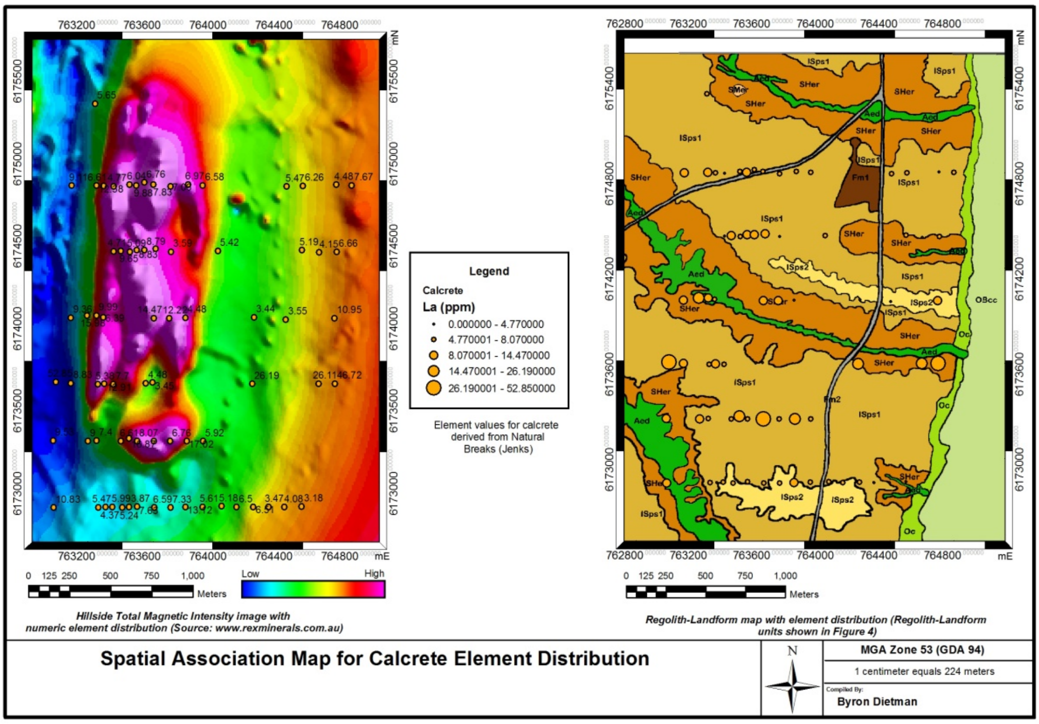

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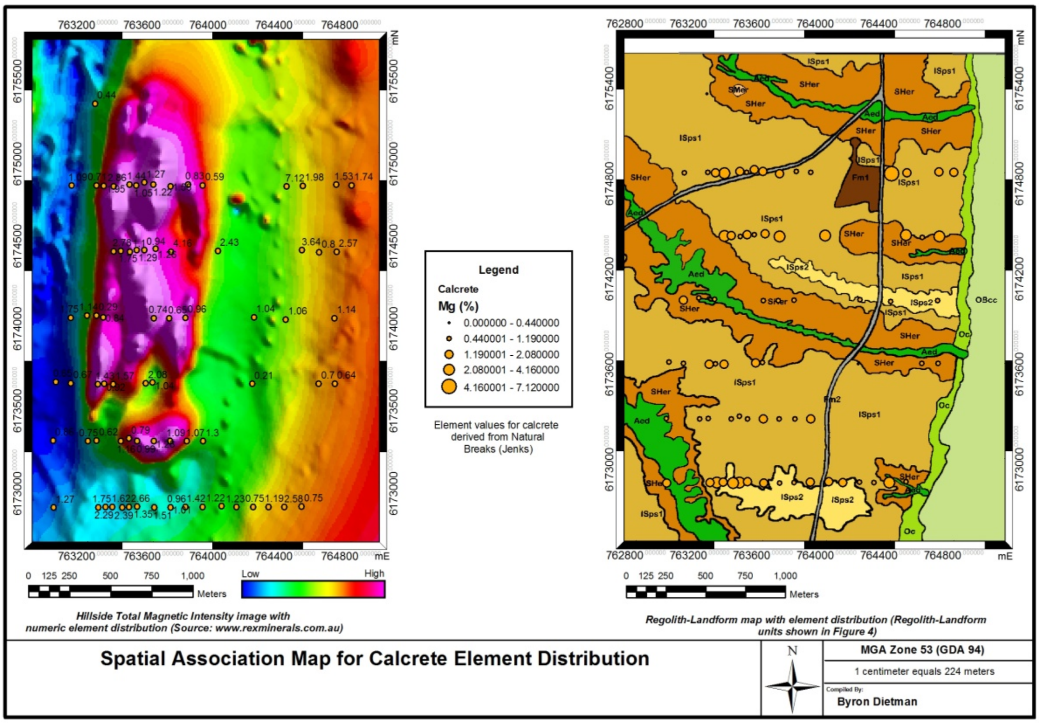

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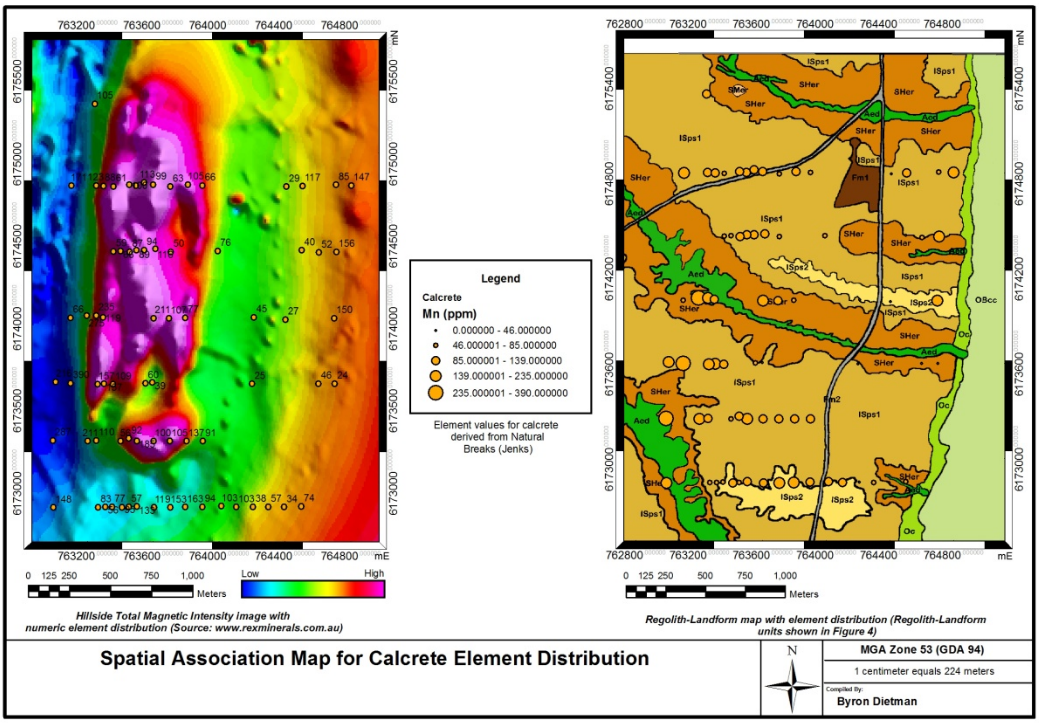

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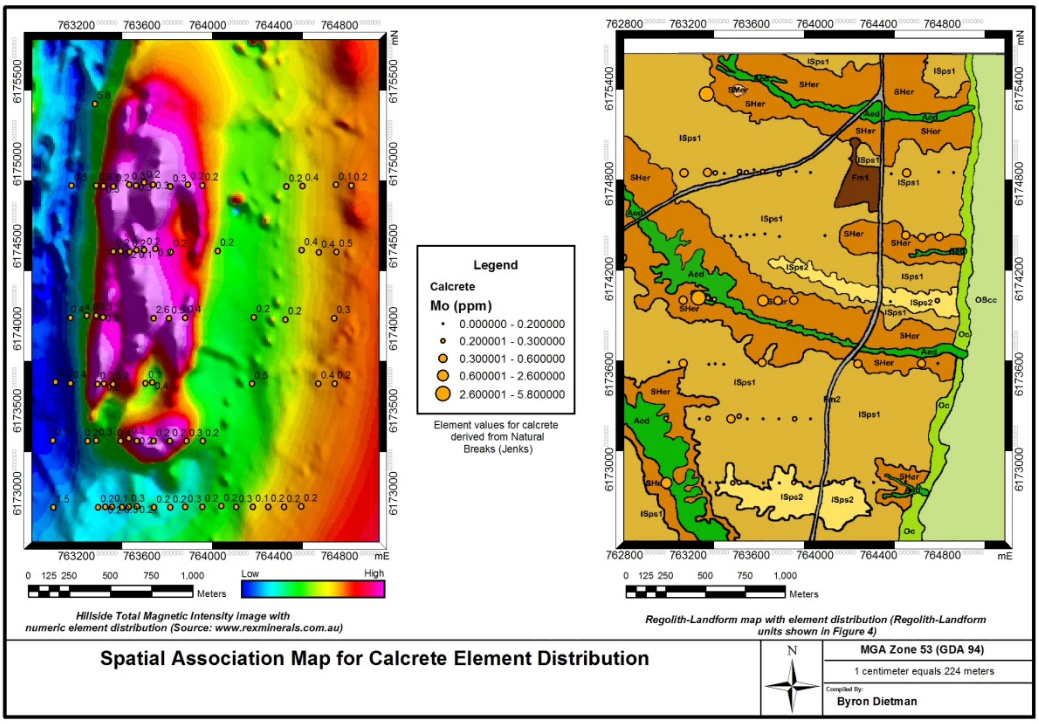

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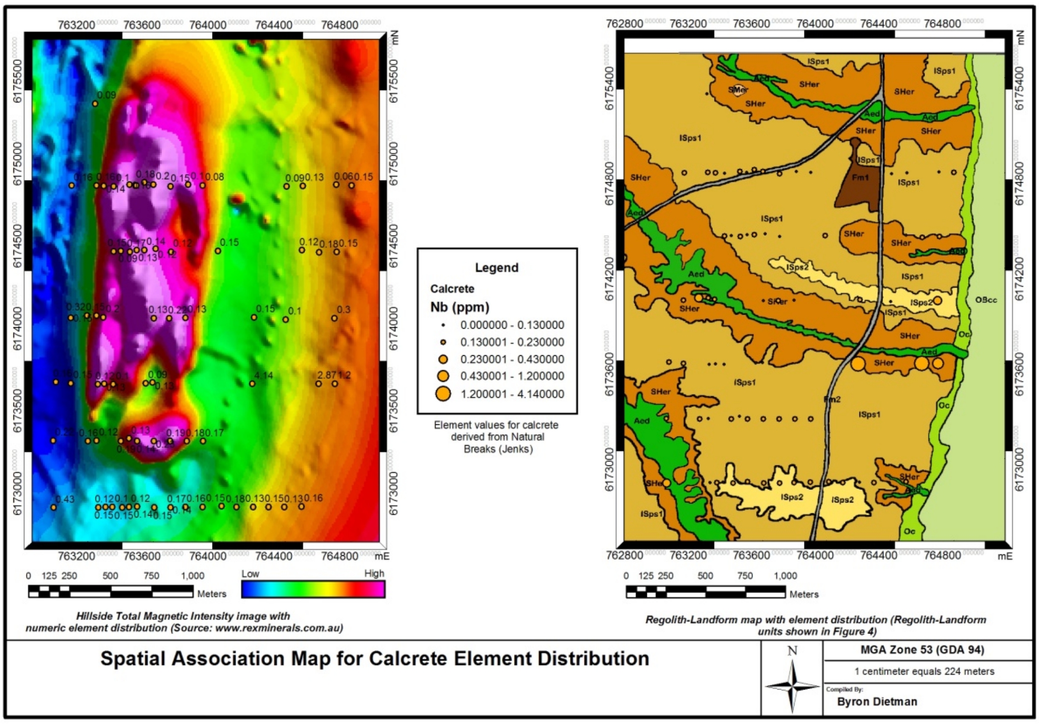

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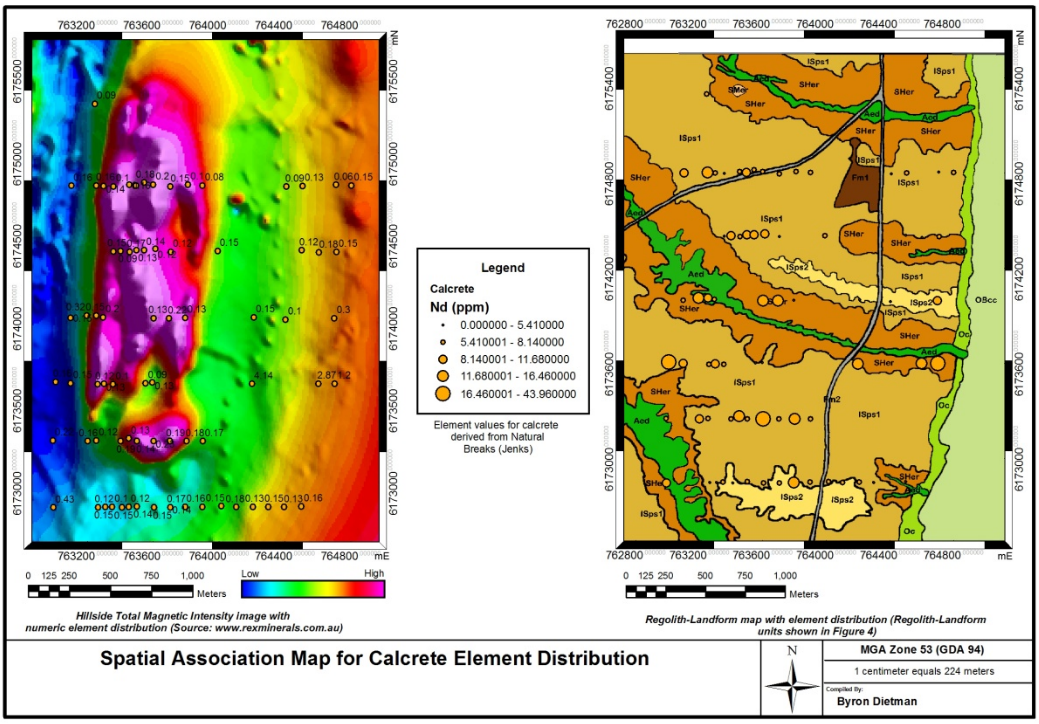

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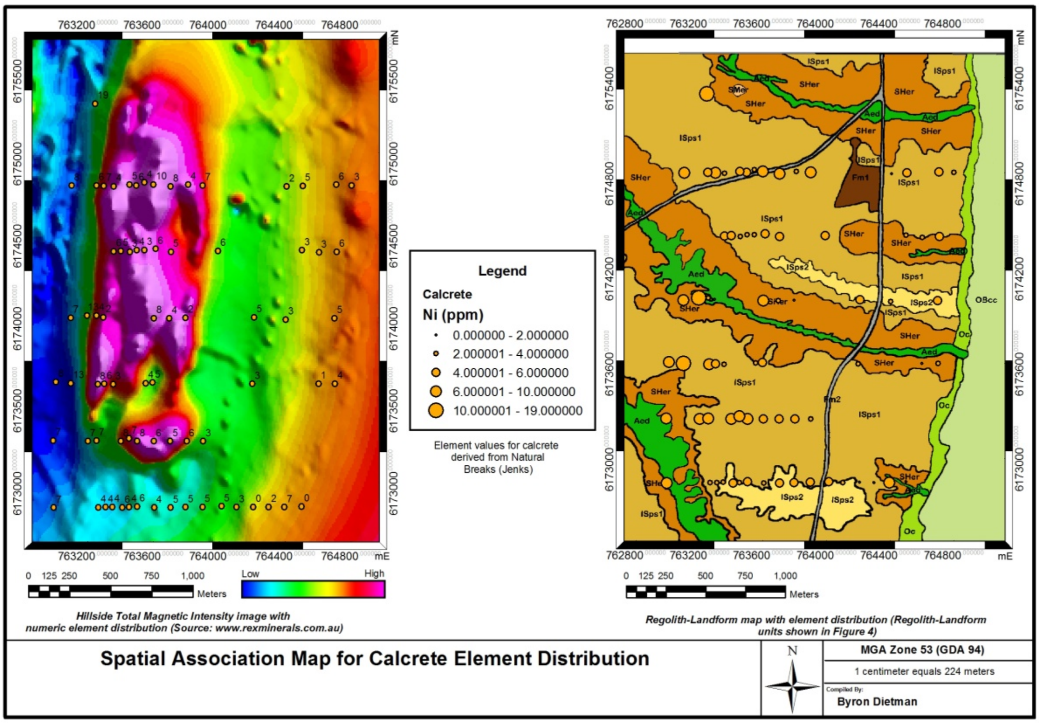

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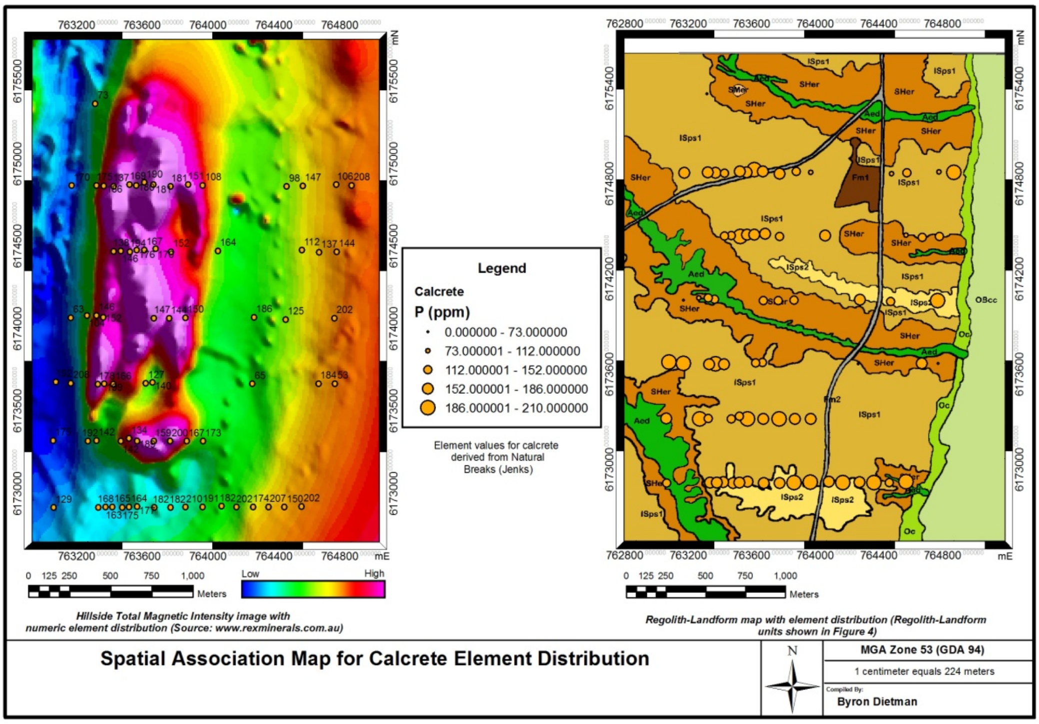

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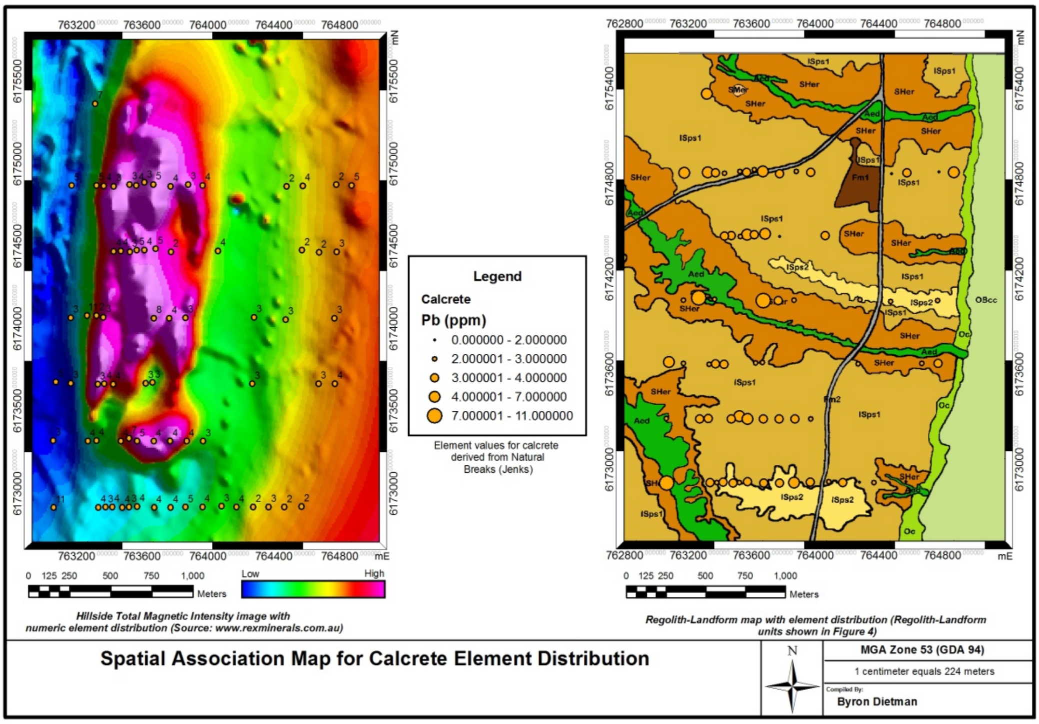

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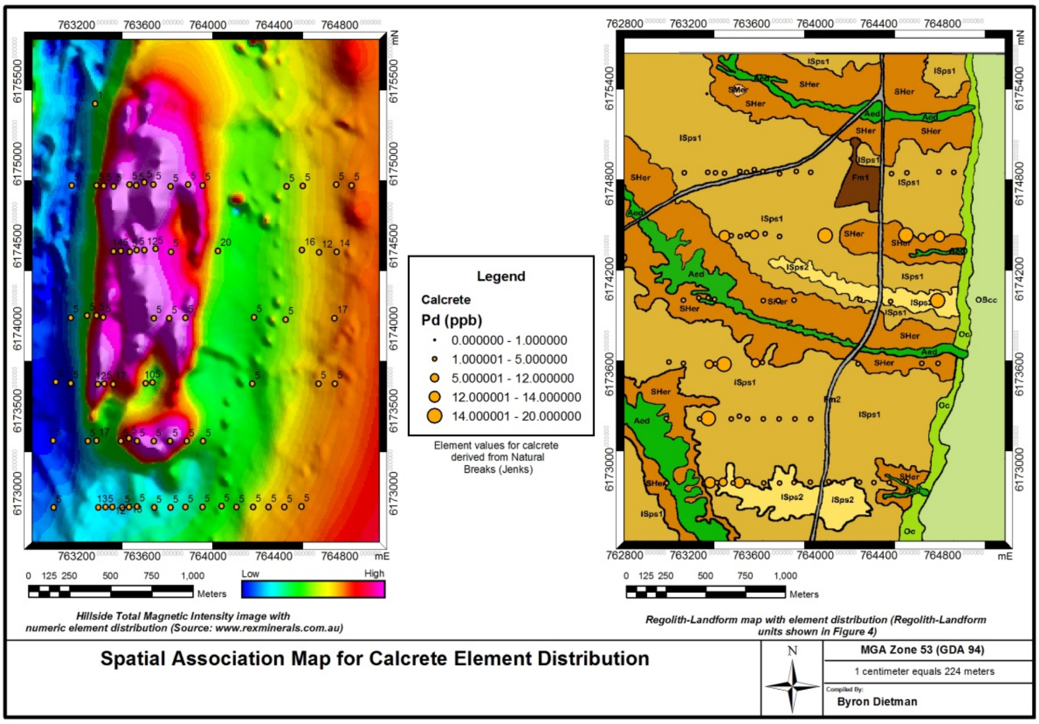

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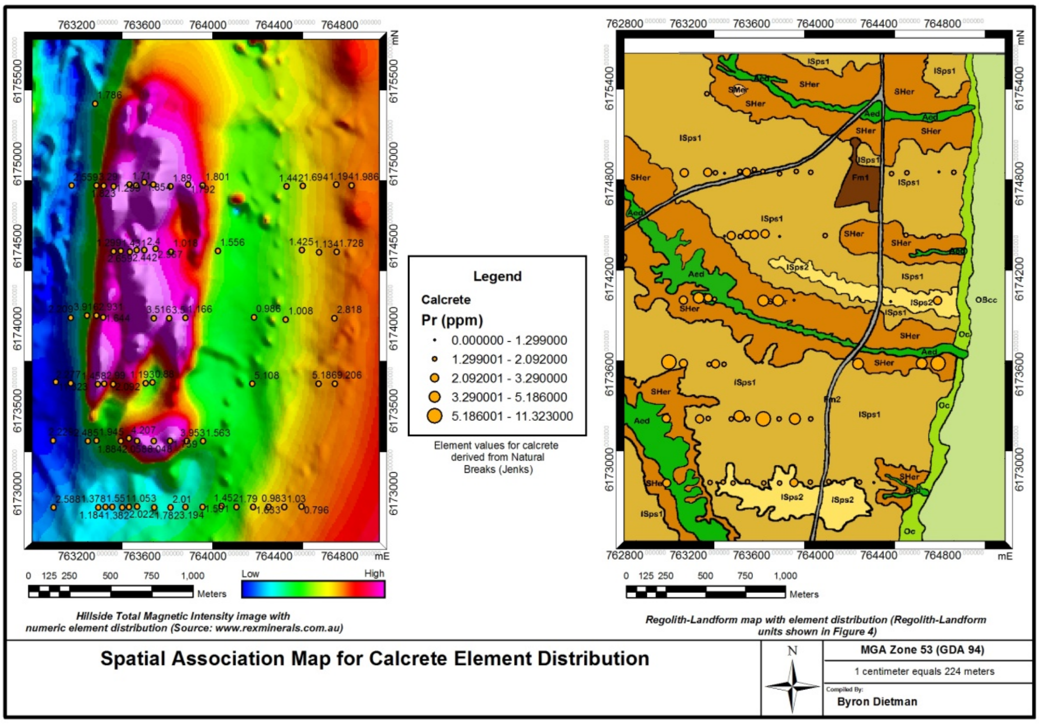

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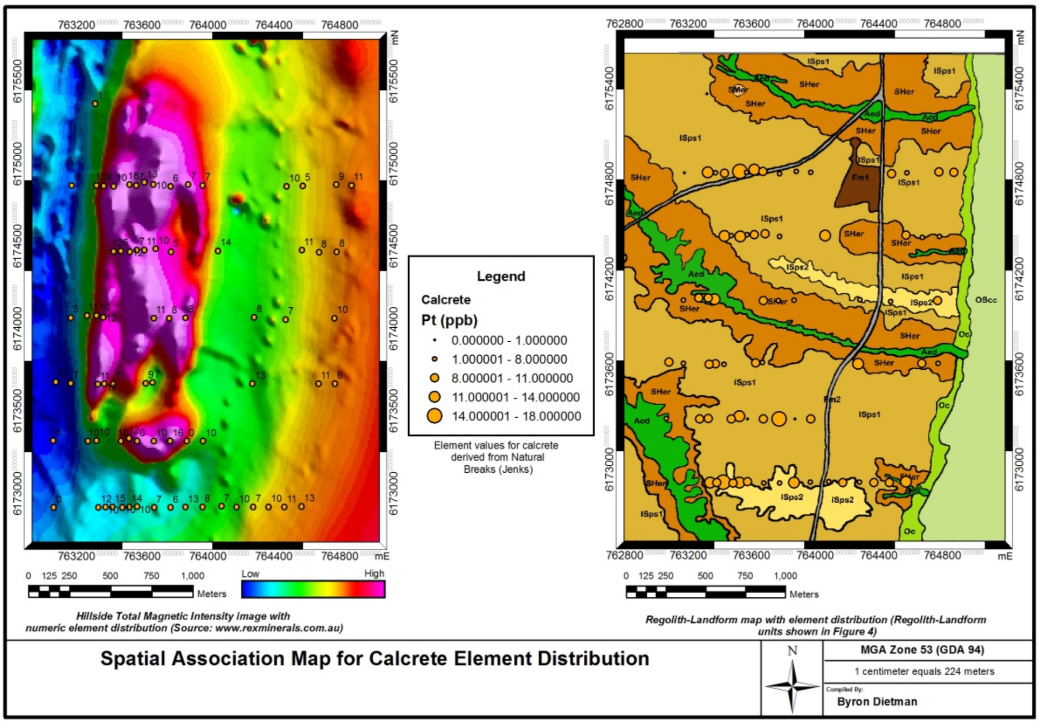

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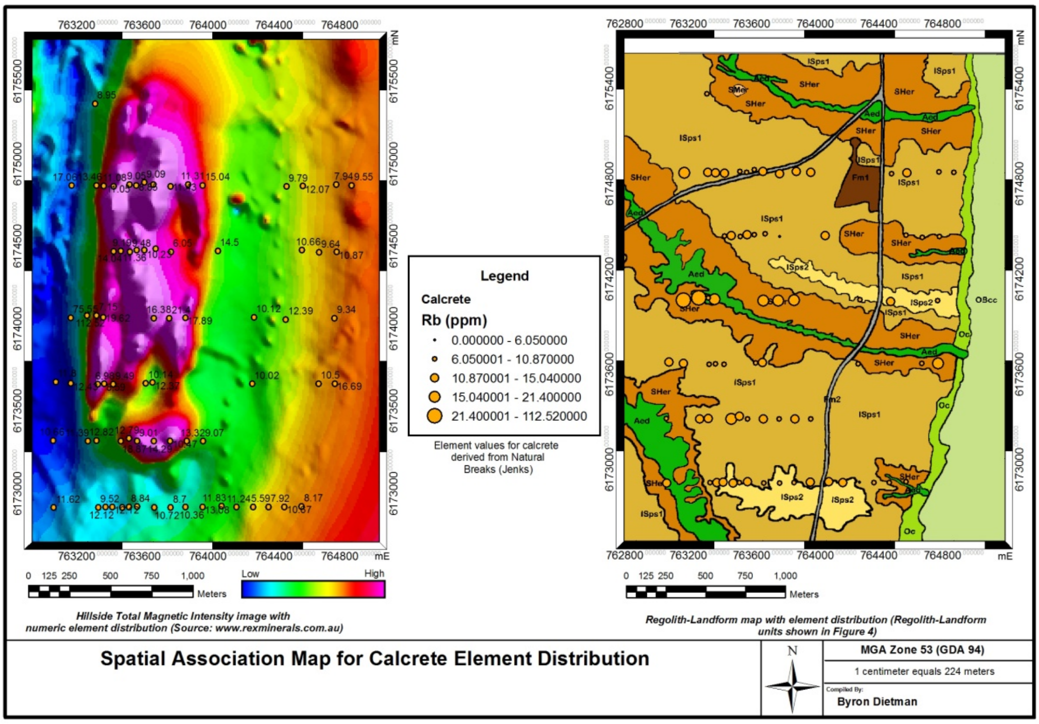

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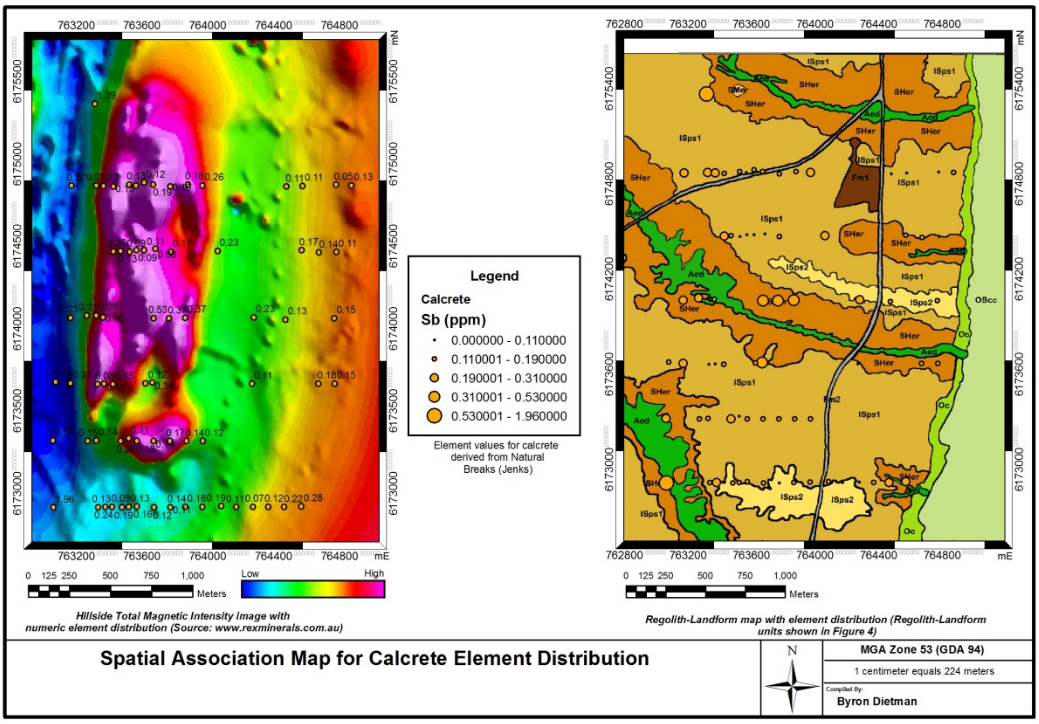

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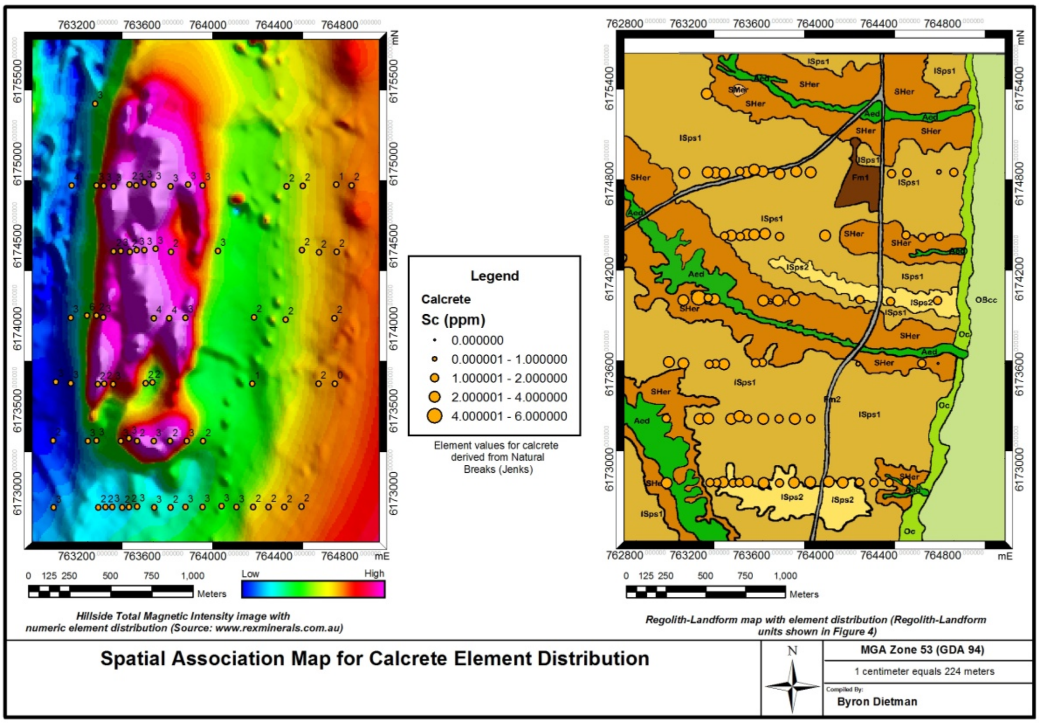

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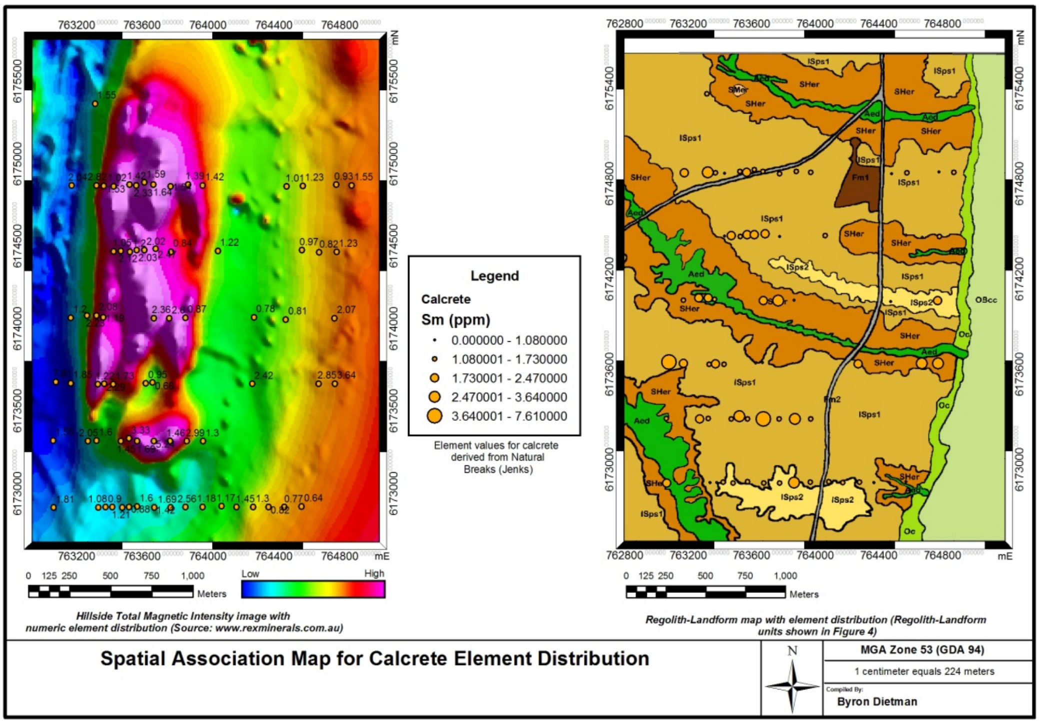

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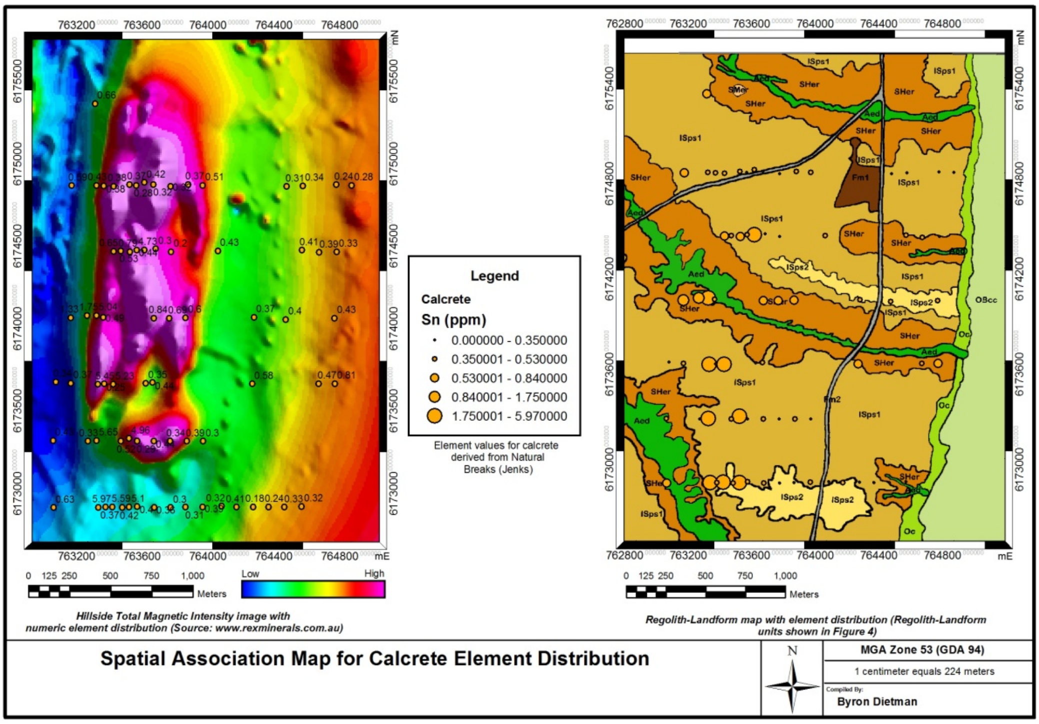

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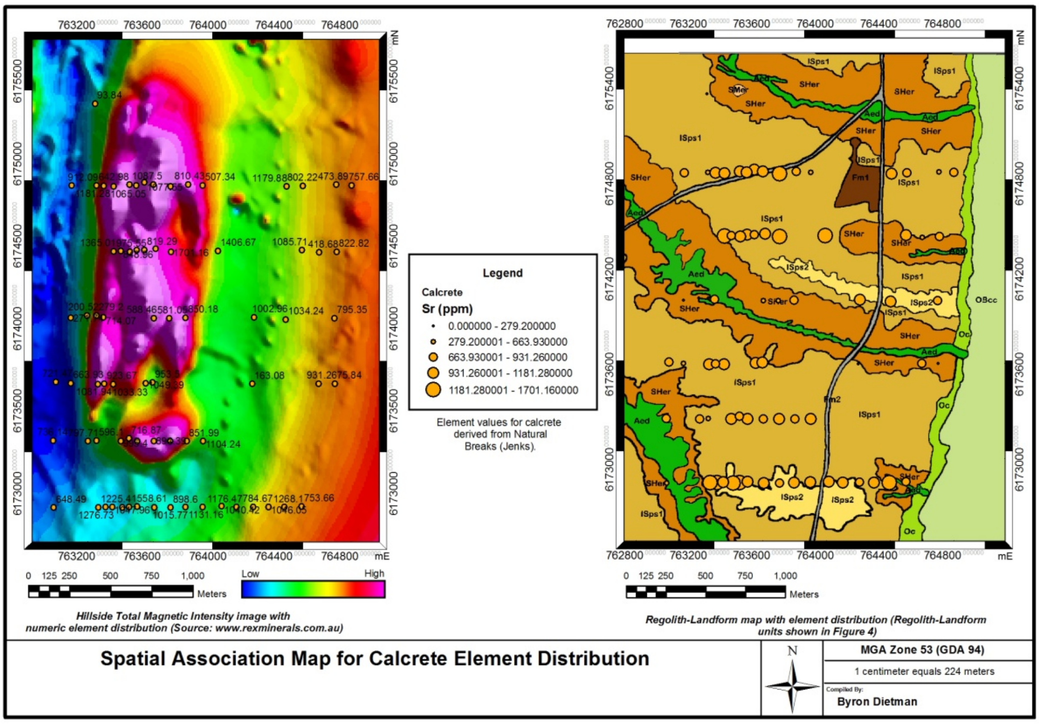

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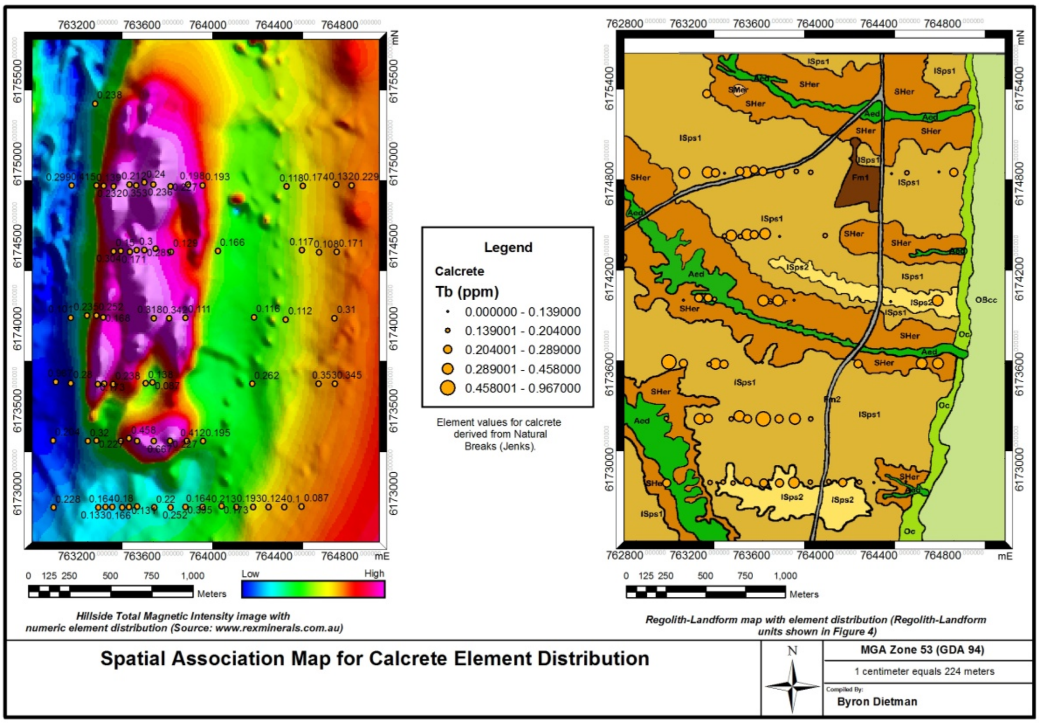

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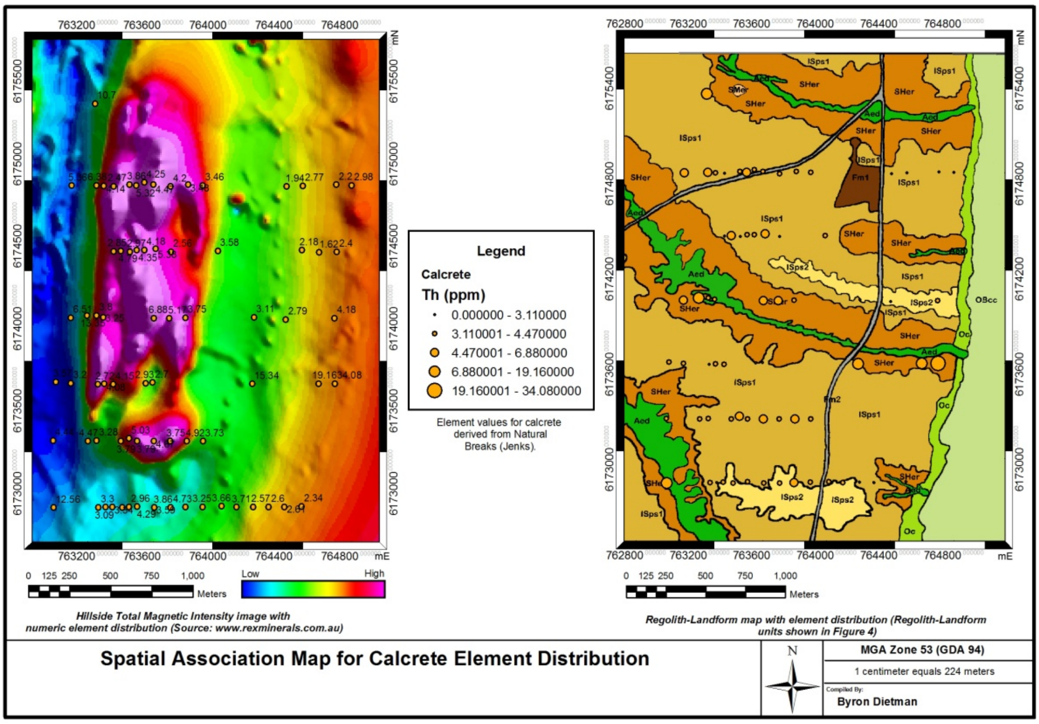

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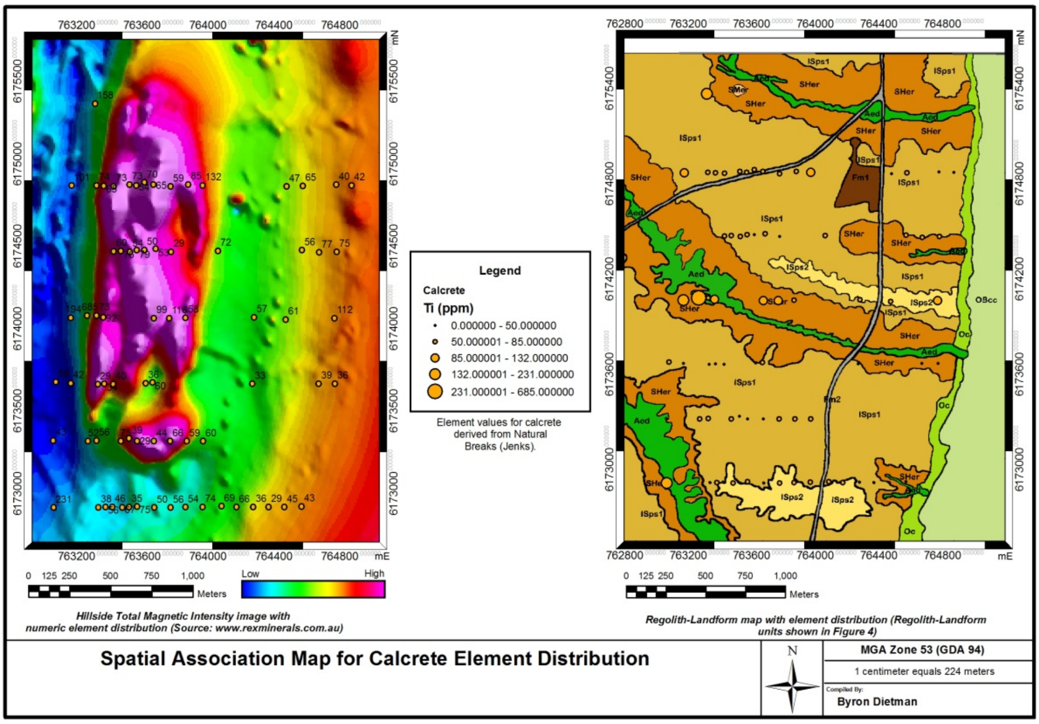

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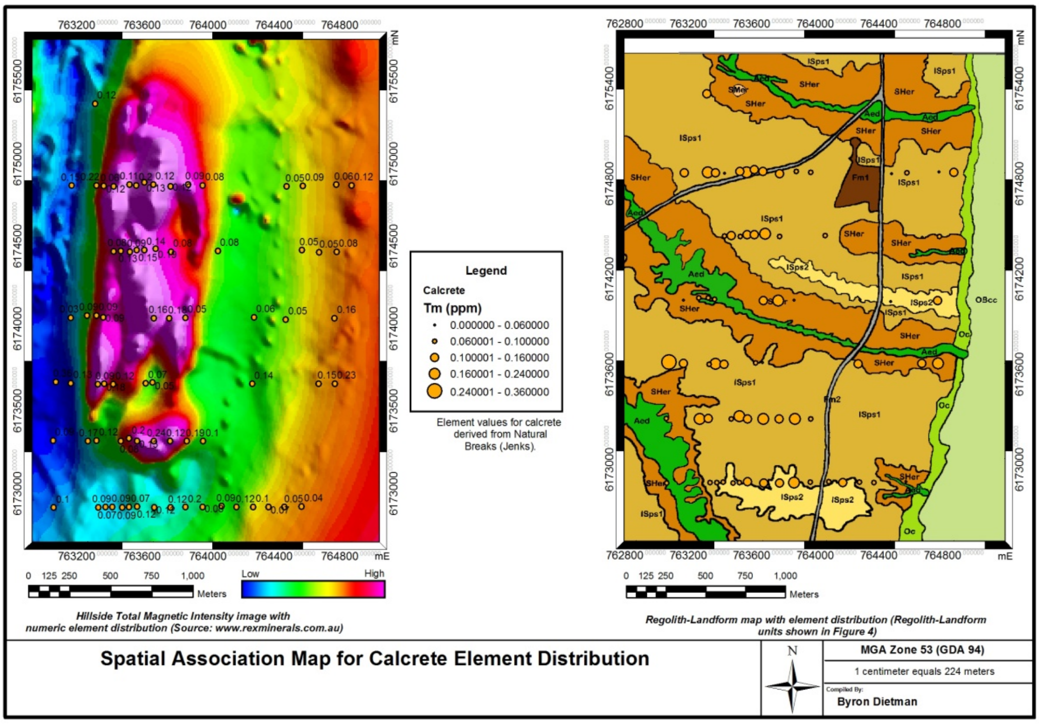

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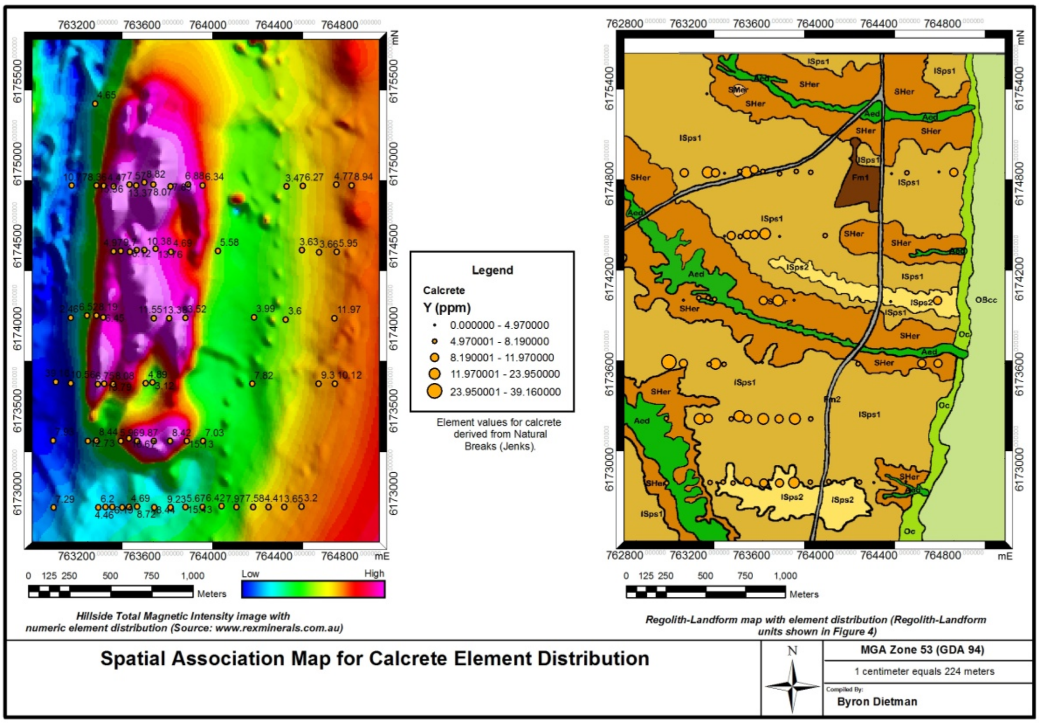

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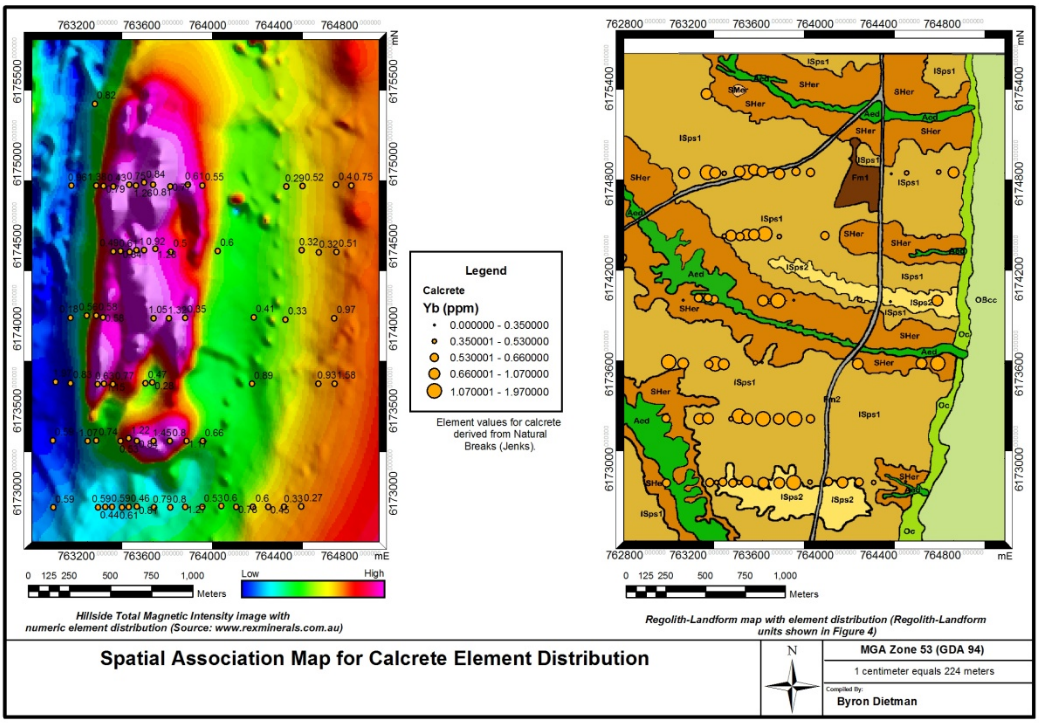

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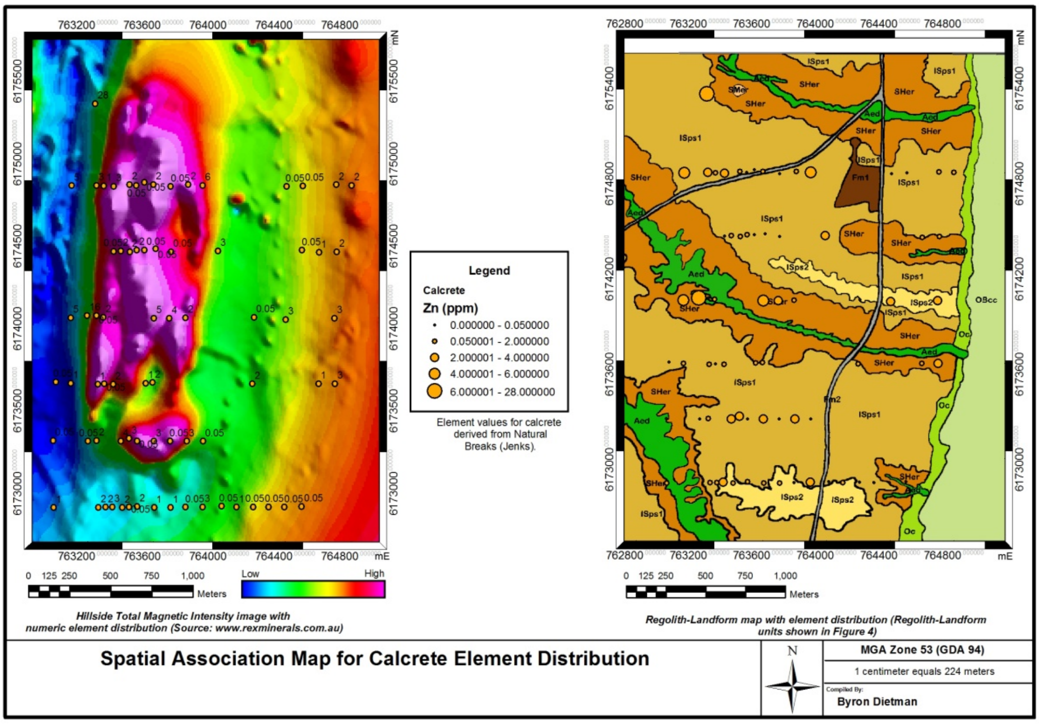

Appendix 7.42