Spur Hill Underground Coking Coal Project

Application for a Gateway Certificate

Appendix A
Agricultural Resource Assessment

November 2013

Agricultural Resource Assessment: "Spur Hill Underground Coking Coal Project", Denman, NSW

Prepared for Spur Hill Management Pty Ltd;
in conjunction with Resource Strategies Pty Ltd

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EXECUTIVE SUMMARY

The proposed Spur Hill Underground Coking Coal Project ("The Project") is located in the Upper Hunter Valley east of Denman and south-west of Muswellbrook. The Project is a proposed development of an underground coal mining operation for a mine life of up to 25 years.

A site inspection and soil survey was conducted, including assessment of 159 backhoe pits.

Based on the site inspection and soil survey, an assessment of biophysical strategic agricultural land ("BSAL") status was conducted in accordance with the Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land (NSW Government 2013). One soil landscape unit meets the criteria of BSAL and comprises an area of approximately 86 hectares in the underground mining area. The remainder of the site had a broad range of soil constraints including excessive slope (>10%), rock close to the soil surface, and subsoil with salinity, alkalinity and sodicity problems.

Possible impacts to agricultural productivity as a result of the Project would be associated with temporary loss of land due to construction of mine infrastructure (e.g. processing facilities) and potential subsidence impacts. With the implementation of proposed management measures to overcome anticipated ground cracking, low points and localised slope increases, it is considered that there would be no significant change to the long term agricultural productivity of the Project area as a result of subsidence impacts on agricultural land. Following completion of mining activities, infrastructure would be removed and the land rehabilitated to a condition consistent with pre-mining land use.

Many of the topsoil and subsoil constraints identified in this study can be overcome through improved soil / agronomic management. This means that future agricultural productivity and sustainability in the Project area is likely to be significantly better than in the past.

1.0 INTRODUCTION

The proposed Spur Hill Underground Coking Coal Project ("The Project") is located in the Upper Hunter Valley east of Denman and south-west of Muswellbrook (Figure 1). The Project has a proposed mine life of up to 25 years.

The Project underground mining area would be located entirely within Exploration Licence (EL) 7429 (approximate area of underground mining = 2,500 hectares [ha]) (Figure 2). The Project would also include development of facilities for handling, processing and transportation of coal that may extend outside of EL 7429.

The objectives of the assessment presented in this report were to:

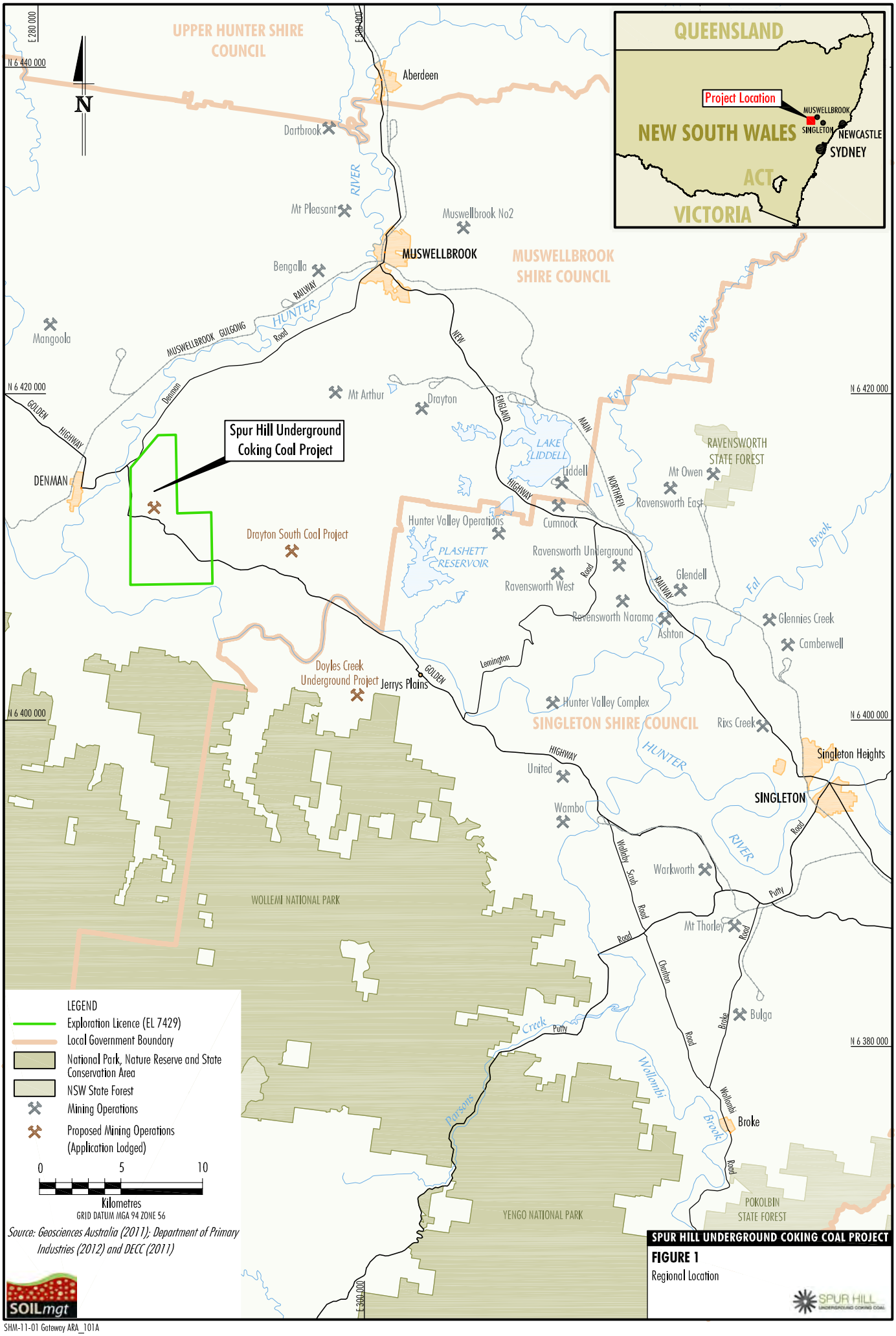
- Describe the agricultural resources (focusing on soil resources) and enterprises of the lands associated with the proposed development area.
- Identify areas of biophysical strategic agricultural land (BSAL) in accordance with the *Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land* (NSW Government 2013).
- Recommend management measures for agricultural resources, with emphasis on soil assessment and management in the proposed development area.
- Assess the potential impacts on agricultural enterprises and productivity as a result of the proposed development area.

2.0 PROJECT OVERVIEW

The Project (Figure 2) would include the following activities:

- longwall mining from a number of seams in the Wittingham Coal Measures within the underground mining area of EL 7429 for a mine life of up to 25 years;
- production of up to 8 million tonnes per annum of run-of-mine (ROM) coal;
- development of mine access drifts and mine infrastructure area, including administration offices, bathhouse, workshop compound, store buildings, coal stockpile areas, bunded fuel tank, laydown areas, car parking and access road;
- development of ventilation surface infrastructure and gas drainage infrastructure;
- construction and operation of a coal handling and preparation plant (CHPP);
- development of coal transportation infrastructure;
- construction and operation of train load-out facility including rail spur and loop;
- emplacement of waste rock excavated during the construction of access drifts and shafts and coarse rejects and fines generated during the initial processing of ROM coal;
- progressive development of sumps, pumps, pipelines, water storages and other water management equipment and structures;
- ongoing exploration activities within EL 7429;
- surface monitoring, rehabilitation and remediation of subsidence effects; and
- other associated minor infrastructure, plant, equipment and activities.

The Application for a Gateway Certificate applies to those activities within a proposed mining lease.



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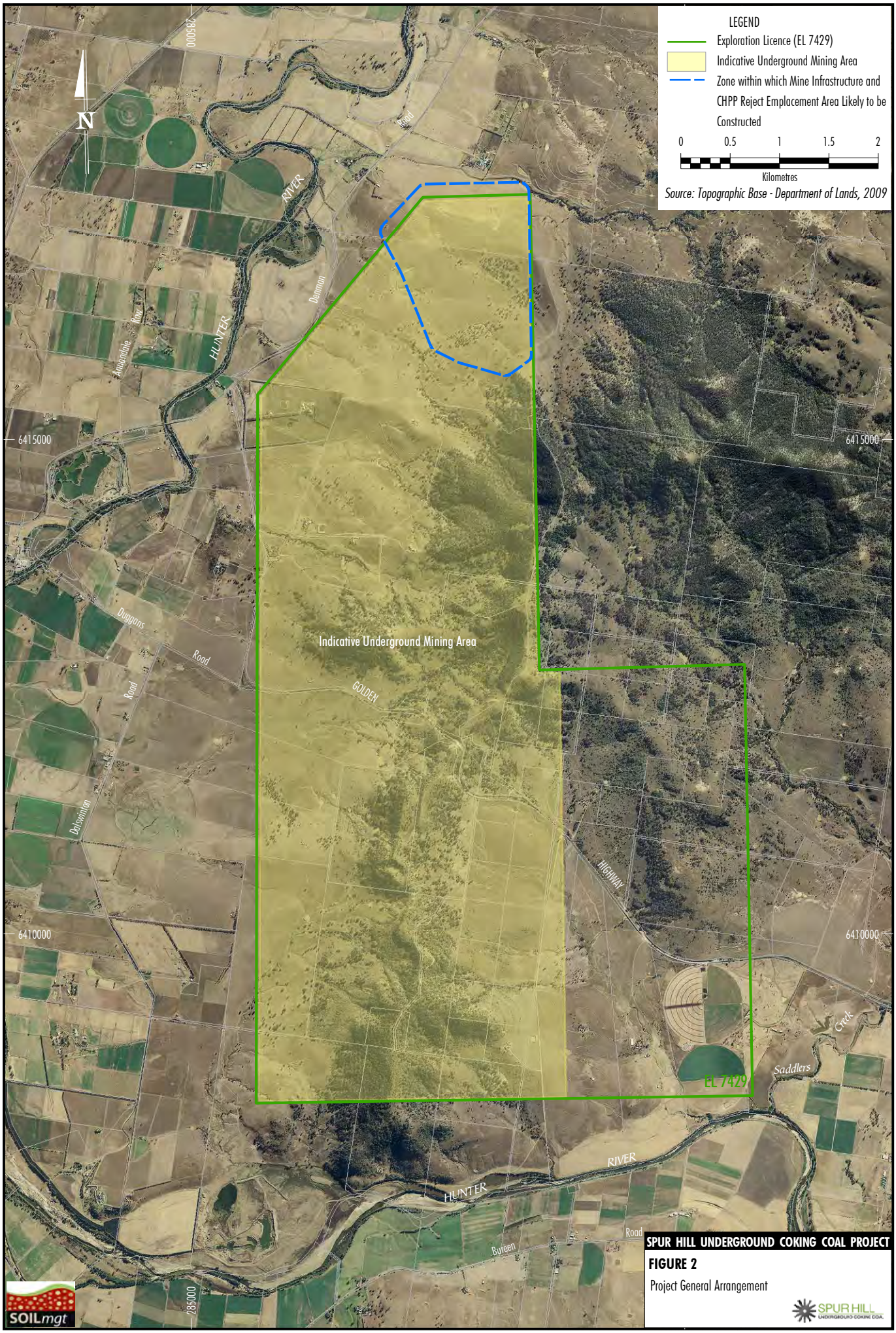

SPUR HILL UNDERGROUND COKING COAL PROJECT

FIGURE 2

Project General Arrangement

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SPUR HILL UNDERGROUND COKING COAL

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3.0 PROJECT SITE DESCRIPTION

The land within the Project underground mining area is used for agricultural (predominately cattle grazing) and rural residential purposes. A vineyard and winery is located on a property in the north-west of the underground mining area. Landholdings areas range from 14.3 ha to 1,844.4 ha with a mean area of 333.2 ha (excluding the small areas associated with the Merton cemetery and the Rural Fire Service). There are five houses in the proposed underground mining area. The cleared grazing land is under unimproved pasture, although dryland cropping has occurred in previous decades in the proposed development area.

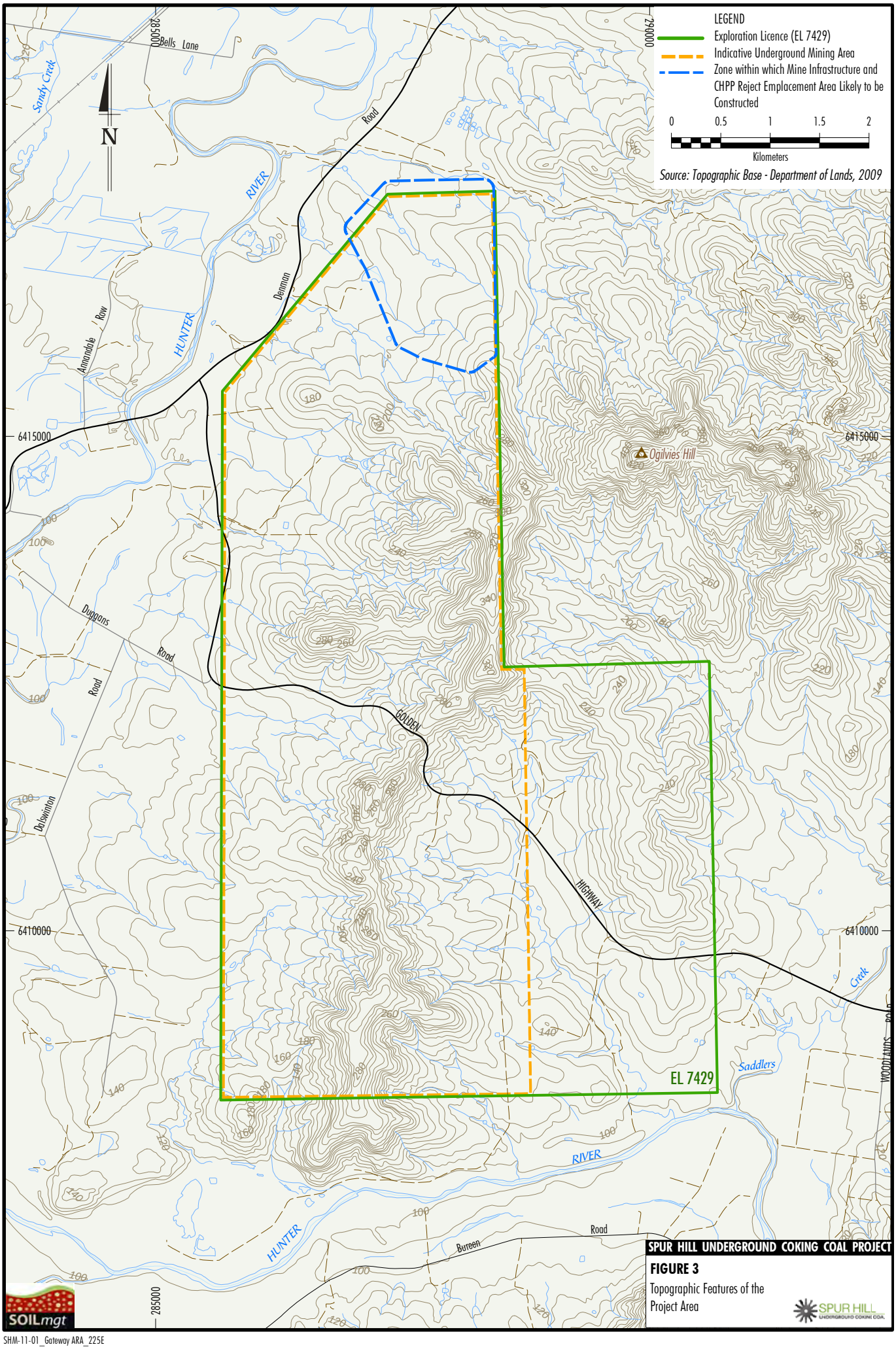
The topography of the Project area is dominated by a prominent ridge under native vegetation that trends southwards through the area from near Ogilvies Hill through Denman Gap to the south of EL 7429 (Figure 3).

The Project area is within the Hunter River catchment. The Hunter River is located to the west and south of the Project underground mining area (Figures 1 to 3). The Mount Arthur Coal Mine is to the north-east of the Project site. Wollemi National Park lies to the south of the Hunter River.

The Project underground mining area drains to the Hunter River via ephemeral drainage lines from the north-south trending ridgeline. The drainage lines in the Project underground mining area are unnamed first, second and third order streams.

Elevations in EL 7429 range from approximately 95 metres (m) Australian Height Datum (AHD) on the Hunter River floodplain to 298 m AHD on the southern end of the ridgeline, and up to 330 m AHD on the northern end of the ridgeline near Ogilvie's Hill (Figure 3).

The Denman (Palace Street) records for the last 128 years (since 1883) show the mean annual rainfall for the area as 592.1 millimetres (mm) (ranging from 234.4 mm to 1,125.5 mm) (Bureau of Meteorology 2013).



SPUR HILL UNDERGROUND COKING COAL PROJECT

FIGURE 3

Topographic Features of the Project Area

SPUR HILL UNDERGROUND COKING COAL

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4.0 SOIL RESOURCES

4.1 Review of Existing Information

The following existing information relevant to the Project area was reviewed for this agricultural resource assessment:

- Soil type and landscape mapping (Kovac and Lawrie 1991).
- Soil Profile Attribute Data Environment (SPADE) soil profiles (part of the New South Wales [NSW] Natural Resource Atlas).
- Geology map (NSW Government 2012).
- NSW Government soil type mapping (NSW Government 2012).
- Regional Inherent Soil Fertility mapping and Regional Land and Soil Capability (LSC) mapping prepared by NSW Office of Environment and Heritage (OEH).
- Biophysical Strategic Agricultural Land (BSAL) mapping (NSW Government 2012).
- Critical Industry Cluster mapping (NSW Government 2012).

A brief summary of relevant information from these reports is provided in the following subsections.

Soil Types, Soil Landscapes, Inherent Soil Fertility and Land and Soil Capability

Appendix 1 shows the location of soil landscape units as mapped and described by Kovac and Lawrie (1991) in the vicinity of the Project area. The soil types are described according to the superseded Great Soil Group system (Stace *et al.* 1968). Nevertheless, the descriptions of these units (Table 1) indicate the presence of a very broad range of soil conditions for plant growth.

The 2013 NSW Government 'Australian Soil Classification' (ASC) Soil Type map (Appendix 2) provides an overview of the Kovac and Lawrie (1991) information in a modern format. Vertosol is considered to be the dominant soil type in the Project area.

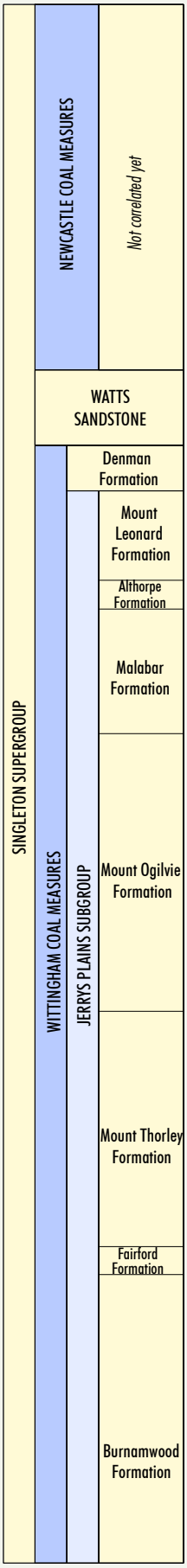
The regional 'Inherent Soil Fertility' and 'Land and Soil Capability' mapping prepared by OEH within the Project area is presented, respectively, in Appendixes 3 and 4.

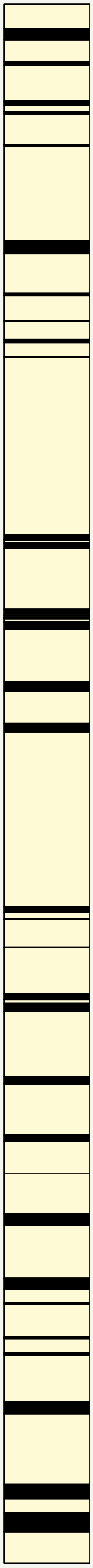
SPADE Soil Profile Database

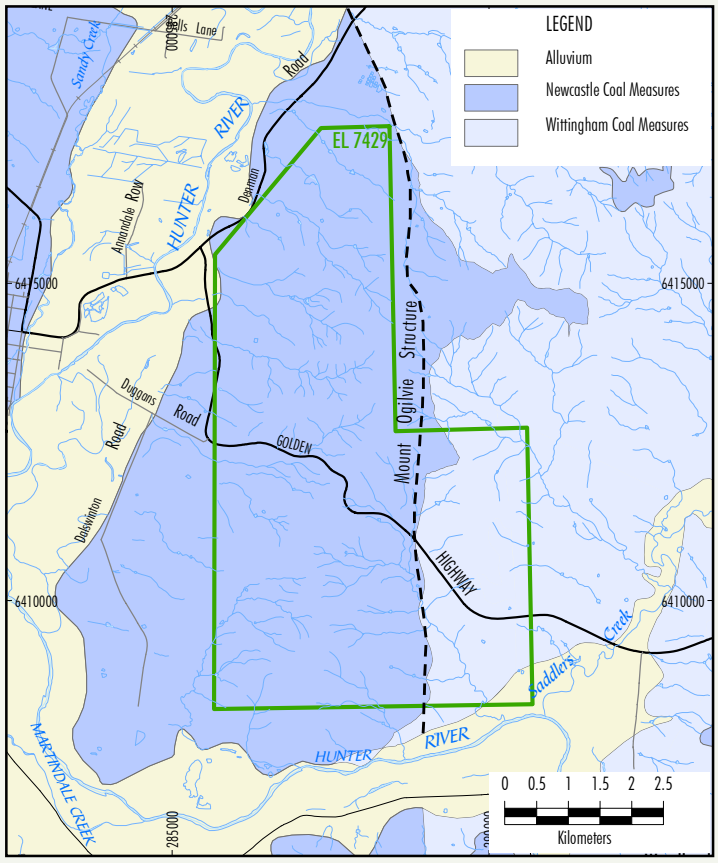
A search of the NSW Government's SPADE website (part of the NSW Natural Resource Atlas) was conducted to identify any existing soil profile information in the Project area. Only one SPADE soil profile with detailed profile descriptions and laboratory analyses could be found in the Project area; a Black Earth at the site labelled 'Singleton 316' in Appendix 1. However, the depths of sampling and laboratory analyses were not compatible with the Protocol procedures used in this report.

Geology / Parent Materials for Soil Formation

Rock types that are the parent material for soil formation in the Project area are shown in Figure 4. The dominant surface geological units belong to the coal measures of the Singleton Supergroup.







Source: Topographic Base - Department of Lands, 2009; MGBS, 2013 and Geological and Mining Services Australia, 2013

SPUR HILL UNDERGROUND COKING COAL PROJECT

FIGURE 4
Geology of the Project Area

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Table 1. Soil landscape units (Kovac and Lawrie 1991) in the vicinity of the Project

Soil landscape unit	Soil types present (Great Soil Group)	Likely constraints for agricultural production based on these descriptions
Hunter (hu)	Brown Clays and Black Earths on prior stream channels and on tributary flats, with Chernozems on prior stream channels.	Brown Clays on alluvial flats are imperfectly drained, but otherwise these soil types are relatively free of constraints to plant growth.
Dartbrook (db)	The main soils are Brown Clays with some Black Earths on upper to midslopes; Euchrozems and Non-calcic Brown Soils on mid to lower slopes, and Prairie Soils on the alluvial flats.	No major constraints identified.
Bray's Hill (br)	Mainly Red Clays on mid to upper slopes, with Black Earths and Grey Clays on mid to lower slopes that commonly have linear gilgai. Brown Clays may also occur midslope, with Yellow Solodic Soils on the lower slopes and Alluvial Soils in drainage depressions.	Drainage problems and high surface pH on Grey Clays; salinity on Solodic Soils.
Liddell (ld)	The main soils are Yellow Soloths on slopes with some Yellow Solodic Soils on concave slopes. There are Earthy and Silicious Sands on mid to lower slopes where the parent material is more sandy.	Tend to be poorly drained and saline; low chemical fertility.
Lees Pinch (lp)	Mainly shallow Silicious Sands with shallow Tenosols, Yellow and Brown Soloths, and Soloths.	A broad range of problems including poor water holding capacity, salinity, low pH and high risk of erosion.
Ogilvie (ol)	Shallow loams and sands (Lithosols) on steep areas underlaid by sandstone and conglomerate.	Poor water holding capacity and high risk of erosion.

Strategic Agricultural Land

The *Upper Hunter Strategic Regional Land Use Plan* (SRLUP) (NSW Government 2012) includes mapping of lands identified as Strategic Agricultural Lands. Strategic Agricultural Lands include BSAL and Critical Industry Clusters. BSAL is classified as land with reliable water supply of suitable quality, with a soil fertility of 'high' or 'moderately high' (Inherent General Fertility of NSW) and Class I, II or III LSC, or a soil fertility of 'moderate' and Class I or II Land Soil Capability (NSW Government 2012).

According to OEH's regional mapping, most of the Project site is mapped as not being BSAL (Appendix 5). The only exception is in the vicinity of the vineyard adjacent to the intersection of Golden Highway and Denman Road.

The *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* includes mapping of lands identified as Viticulture and Equine Critical Industry Clusters. Most of the Project site with a slope <10% is classified as part of a 'Viticulture Critical Industry Cluster' (Appendix 5a) and almost all of the Project site is classified as part of an 'Equine Critical Industry Cluster'.

In October 2013, the NSW Government released revised mapping of Critical Industry Clusters for exhibition that substantially reduced the area classified as part of a 'Viticulture Critical Industry Cluster' and an 'Equine Critical Industry Cluster' (Appendix 5b).

4.2 Methodology

A soil survey was conducted by McKenzie Soil Management to characterize and assess the soils in the Project area. This section provides a description of the soil survey methodology and outcomes.

The following soil information is regarded by Ward (1998) as being important for soil and overburden assessment associated with mine site reclamation:

- Classification (structure, texture, etc.); allows existing data and experience on managing similar soils elsewhere to be applied.
- Dispersion index and particle size analysis; indicates soil structural stability and erodibility.
- pH; need to identify extreme ranges for treatment of lime or selection of suitable plant species.
- Electrical conductivity (EC); indicates soluble salt status.
- Macro- and micro-nutrients.

More specifically, Elliott and Reynolds (2007) suggest that the following soil factors need to be considered when assessing suitability of topdressing materials for mine site reclamation:

- Structure grade, which affects the ability of water and oxygen to enter soil.
- The ability of a soil to maintain structure grade following mechanical work associated with the extraction, transportation and spreading of topdressing material.
- The ability of soil peds to resist deflocculation when moist.
- Macrostructure; where soil peds are larger than 100 mm in the subsoil, they are likely to slake or be hardsetting and prone to surface sealing.
- Mottling; its presence may indicate reducing conditions and poor soil aeration.
- Texture; soil with textures equal to or coarser than sandy loam are considered unsuitable as topdressing materials because they are extremely erodible and have low waterholding capacities.
- Material with a gravel and sand content greater than 60% is unsuitable.
- Saline material is unsuitable.

These soil factors have been taken into account when planning the soil assessment methodology, in conjunction with soil survey methodology for intensive agricultural developments described by McKenzie *et al.* (2008) and McKenzie (2013).

Field Survey

A site inspection and soil survey was conducted as part of the Agricultural Resource Assessment. The field work was carried out in three stages across several properties:

- 25 July – 9 August 2012: R. Wolfgang, J. Wolfgang, Cole, Moore and Mayfield properties (David McKenzie and John Rasic).
- 29-30 October 2012: R. Hordern, G. Cole (David McKenzie).
- 23-27 October 2012: P. Wolfgang, Wolfgang Estate (David McKenzie).
- 8-9 April 2013: Rossett Park, Callatoota Estate, Mediati (David McKenzie).

159 backhoe pits (approx. 1.4 m deep; shallower where hard rock was encountered) were assessed. The locations of the pits in the vicinity of EL 7429 are shown on Map 1. The soil pits were located in a way that covered as many of the major variations in elevation and landforms as possible. The pits in the areas with slope <10% were on a flexible grid spacing of approximately 300 m (approx. 1 pit per 10 ha). This provided an intensity of sampling that more than satisfied the '*Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land*' (NSW Government, 2013) nominated sampling density of 1 site per 5 – 25 ha for intensive mining developments (see Gallant *et al.* 2008).

Also, the pit spacing of 300 m provided a way of proving whether or not BSAL was >20ha:

- One pit on its own with BSAL characteristics – represents approx. 10 ha only, i.e. not above the BSAL threshold of 20 ha.
- Two pits together with BSAL characteristics – represents approx. 20 ha, i.e. strong chance of being above the BSAL threshold of 20 ha.
- Three pits together with BSAL characteristics – represents approx. 30 ha, i.e. almost certainly above the BSAL threshold of 20 ha.

In the steeper areas (>10%), a much broader pit spacing of approximately 800 m was used.

A Garmin '*GPSmap 62S*' instrument with an accuracy of about ±4 m was used to record the pit coordinates (Appendix 6).

The field description methods were as described in the '*Australian Soil and Land Survey Field Handbook*' (National Committee on Soil and Terrain 2009) and the '*Guidelines for Surveying Soil and Land Resources, Chapter 29*' (McKenzie *et al*. 2008). The soil profiles have been classified (Appendix 6) according to the ASC (Isbell 2002).

Field Soil Observations/Testing

The soil was examined using the 1.4 m deep backhoe pits. Additional deeper pits (to 2-3 m) were examined where suitable soil depth was present. The soil pits were trimmed with a geological pick to allow photography and description of the undisturbed structure and root growth.

The following characteristics were assessed for the layers identified in each of the soil profiles:

- thickness of each layer (horizon);
- soil moisture status at the time of sampling;
- pH (using Raupach test kit);
- colour of moistened soil (using Munsell reference colours);
- pedality of the soil aggregates;
- amount and type of coarse fragments (gravel, rock, manganese oxide nodules);
- texture (proportions of sand, silt and clay), estimated by hand;
- presence/absence of free lime and gypsum;
- root frequency; and
- dispersibility and the degree of slaking in deionised water (after 10 minutes).

Field observations for each pit are presented in Appendix 7.

The soil structure information (Appendix 8) has been summarised to give SOILpak 'compaction severity' scores (McKenzie 2001). This allows deep tillage recommendations to be made from the structure observations. The score is on a scale of 0.0 to 2.0, with a score of 0.0 indicating very poor structure for crop root growth and water entry/storage. Ideally, the SOILpak score of the root zone should be in the range 1.5 to 2.0.

Hand texturing (National Committee on Soil and Terrain 2009) provides an approximation of the clay content of a soil. In conjunction with the estimation of coarse fragment (gravel) content, it provides a low-cost alternative to particle size analysis.

Total available water (TAW) for the upper 1 m of soil has been estimated using texture, structural form and coarse fragment content data (McKenzie *et al*. 2008).

Laboratory Soil Testing

All of the pits were sampled for laboratory analysis. The sampling intervals for laboratory analysis were 0 to 15 centimetres (cm); 15 to 30 cm; 30 to 60 cm and 60 to 90 cm.

The soil was analysed by Incitec-Pivot Laboratory, Werribee Victoria for exchangeable cations, pH, EC, chlorides, nutrient status (nitrate-nitrogen, phosphorus, sulfur, zinc, copper, boron) and organic matter content. An ammonium acetate method was used for the extraction of exchangeable cations. The cation exchange capacity (CEC) values are the sum of exchangeable sodium, potassium, calcium, magnesium and aluminium. Phosphorus was determined using the Colwell method, sulphur by the CPC method, boron by a calcium chloride ($CaCl_2$ extraction) and zinc/copper by a DTPA extraction (see Rayment and Lyons [2011] for further details).

Soil dispersibility, as measured by the Aggregate Stability in Water (ASWAT) test (Field *et al.* 1997), was assessed by McKenzie Soil Management in Orange. The results are presented in Appendix 9. The ASWAT test has been related to the well known Emerson aggregate stability test by Hazelton and Murphy (2007) – see Table 2. An advantage of the ASWAT test is that the results can be linked with management issues such as the need for gypsum application and avoidance of wet working (Plate 1).

Table 2. The relationship between the Emerson aggregate stability test and the ASWAT test that assess the severity of dispersion when soil aggregates are added to water

Dispersibility	Emerson Aggregate Classes	Probable score for the ASWAT test (Field *et al.* 1997)
Very high	1 and 2(3)	12-16
High	2(2)	10-12
High to moderate	2(1)	9-10
Moderate	3(4) and 3(3)	5-8
Slight	3(2), 3(1) and 5	0-4
Negligible/aggregated	4, 6, 7, 8	0

The conversion factors of Slavich and Petterson (1993) allowed the electrical conductivity of saturated paste extracts (EC_e) to be calculated from the EC of 1:5 soil:water suspensions ($EC_{1:5}$) and texture.

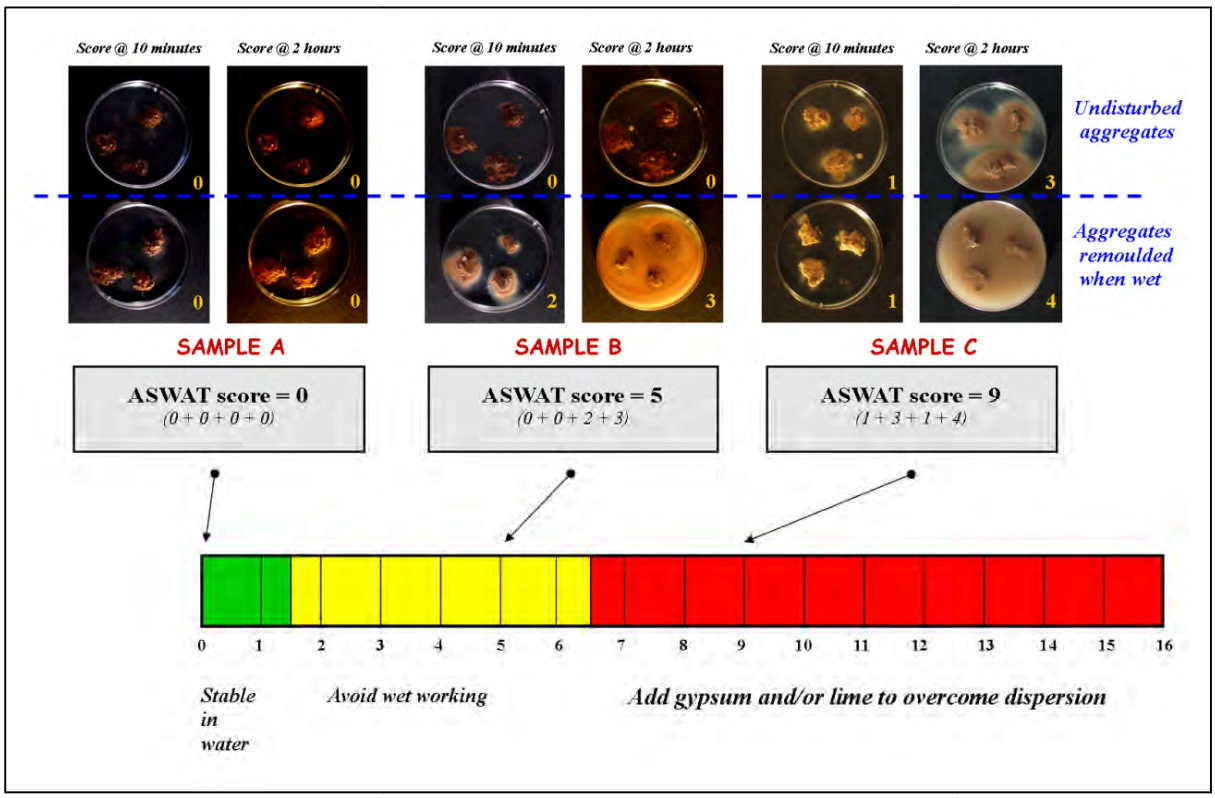

Plate 1 The Link between ASWAT Results and Soil Management Options (McKenzie 2012)

Twelve calibration samples (2 kilogram [kg] samples from Site 19-1 [0-15 cm, 15-30 cm, 30-60 cm, 60-90 cm], Site 23-2 [0-15 cm, 15-30 cm, 30-60 cm, 60-90 cm], and Site 31-10 [0-15 cm, 15-30 cm, 30-60 cm, 60-90 cm]) were analysed by NSW Soil Conservation Service Laboratory for the following analyses, which are part of the 'Erosion and Sediment Control' package (Appendix 10):

- Dispersion percentage.
- Emerson Aggregate Stability Test.
- Organic carbon.
- Particle size analysis.
- Particle size analysis – mechanical dispersion.
- Soil erodibility factor (K factor).

The following key soil factors are attached in the form of colour coded maps:

Map 2. Soil types (ASC).

Map 3. Depth to rock.

Map 4. Plant available water (TAW).

Map 5. Depth of mottled layer.

Map 6. Depth to layer with lime.

Map 7. Dispersion (ASWAT scores).

Map 8. Dispersion (Exchangeable sodium percentage [ESP] values).

Map 9. Compaction severity (SOILpak score).

Map 10. Cation Exchange Capacity (CEC).

Map 11. Salinity (electrical conductivity [ECe]).

Map 12. pH ($CaCl_2$).

Map 13. Phosphorus (Colwell P).

Map 14. Organic carbon (%).

4.3 Soil Types and Mapping

ASC Soil Types

The ASC (Isbell 2002) has been used to determine soil types at each of the 159 pits (Map 2). Photographs of representative soil profiles identified during the survey are presented in Figures 5a and 5b (for each soil landscape unit and ASC soil type described below). Frequency of the contrasting ASC soil types, and the equivalent Great Soil Group terminologies, are shown in Table 3.

Table 3. Soil types identified in the Project area; classified according to the ASC and Great Soil Groups

ASC Soil Type	Number of sites	Great Soil Group Equivalent
Sodosols (Brown, Red, Grey, Black, Yellow)	46	Solodic Soils
Vertosols (Brown, Grey, Red, Yellow)	35	Grey, Brown and Red Clays
Black Vertosol	7	Black Earths
Dermosols (Brown, Red, Grey, Yellow, Red)	31	Chocolate Soils, Red Podzolics
Stratic Rudosols	18	Alluvial Soils
Chromosols (Red, Brown)	10	Red-brown Earths, Non-calcic brown soils
Tenosols (Red/Brown/Grey/Yellow-Orthic)	7	Lithosols
Kandosols (Red, Brown)	5	Calcareous red earths

Soil Landscape Unit (Table 4)	Soil Profile Photographs		
Lower Slope Variant a (LSa)	 Pit 19: Brown Sodosol	 28: Brown Vertosol	
Lower Slope Variant b (LSb)	 151: Red Dermosol	 87: Red Chromosol	
Lower Slope Variant c (LSc)	 57: Black Dermosol	 50: Red Dermosol	
Mid Slope Variant a (MSa)	 78: Brown Sodosol	 100: Red Sodosol	
Mid Slope Variant b (MSb)	 38: Stratic Rudosol	 49: Stratic Rudosol	 37: Brown Vertosol
Upper Slope &/or Shallow (US-S)	 97: Yellow-Orthic Tenosol	 108: Grey-Orthic Tenosol	
Volcanic Influence (V)	 144: Brown Dermosol	 152: Brown Dermosol	

Figure 5a. Photographs of Soil Types Identified during the Survey – Dominant

Soil Landscape Unit (Table 4)	Soil Profile Photographs		
Lower Slope Variant a (LSa)	 2: Stratic Rudosol	 9: Brown Chromosol	
Lower Slope Variant b (LSb)	 127: Vertosol - gilgaied	 121: Stratic Rudosol	
Lower Slope Variant c (LSc)	 52: Red Kandosol	 59: Brown Vertosol	 56: Brown Sodosol
Mid Slope Variant a (MSa)	 99: Brown Vertosol	 134: Brown Dermosol	 135. Brown Kandosol
Mid Slope Variant b (MSb)	 26: Red Dermosol		
Upper Slope &/or Shallow (US-S)	 54: Yellow Sodosol	 67: Grey Vertosol	 143: Brown Dermosol
Volcanic Influence (V)	 96: Black Vertosol	 123: Black Vertosol	

Figure 5b. Photographs of Soil Types Identified during the Survey – Sub-Dominant

The soil types at the Project site have the following characteristics:

- Sodosols have strong texture contrast between topsoil and subsoil, and sodic subsoil (ESP of 6 or greater) (McKenzie *et al*. 2004).
- Vertosols have a clay content >35%, crack and slickensides.
- Dermosols are characterised by a lack of strong texture contrast between the topsoil and subsoil and moderately to strongly structured subsoil.
- Stratic Rudosols are derived from recently deposited alluvial/colluvial materials that have only minimal profile development.
- Chromosols have strong texture contrast between topsoil and subsoil, and a subsoil with pH water >5.5.
- Tenosols at this location are shallow and have only weak pedological development.
- Kandosols lack strong texture contrast and have a poorly structured subsoil.

Soil Landscape Units

Soil Landscape Units within EL 7429 that host the soil types described in the previous section are described in Table 4 and presented in Figure 6.

Table 4. Soil Types associated with the seven Soil Landscape Units identified in the Project Area

Soil Landscape Unit	Map code	Dominant soil types	Sub-dominant soil types	Additional comments
Lower Slope Variant a	LSa	Sodosol, Vertosol	Chromosol, Stratic Rudosol	Subsoil saline/alkaline/sodic
Lower Slope Variant b	LSb	Dermosol, Chromosol	Vertosol, Stratic Rudosol	Subsoil mostly saline/alkaline/sodic
Lower Slope Variant c	LSc	Dermosol	Kandosol, Vertosol, Sodosol	Less saline/alkaline/sodic than LSb
Mid Slope Variant a	MSa	Sodosol	Vertosol, Dermosol, Kandosol	Subsoil saline/alkaline/sodic
Mid Slope Variant b	MSb	Stratic Rudosol, Vertosol	Dermosol	-
Upper slope and/or shallow	US-S	Tenosol	Sodosol, Vertosol, Dermosol	Shallow soil; slope >10%
Volcanic influence	V	Dermosol	Black Vertosol	-

The first six Units listed in Table 4 are derived from coal measures of the Singleton Supergroup. Some of the soil pits intersected weathered coal seams within 1.5m of the soil surface (Pits 67, 101 and 128).

Localized geological features were observed in the southwestern section of the Project area that appeared to have volcanic origins. Along the main ridgeline, the parent material for soil formation was a very hard greyish rock that appeared to have been a valley deposit of volcanoclastic materials; its resistance to erosion appears to have created ridge-valley inversion. Vertical "pipes" (approx. 15 cm wide) containing large concentrations of carbonate deposits were observed at Pit 59 (bluish breccia also was present) and at Pit 131. Breccia also was observed in Pits 152 and 130.

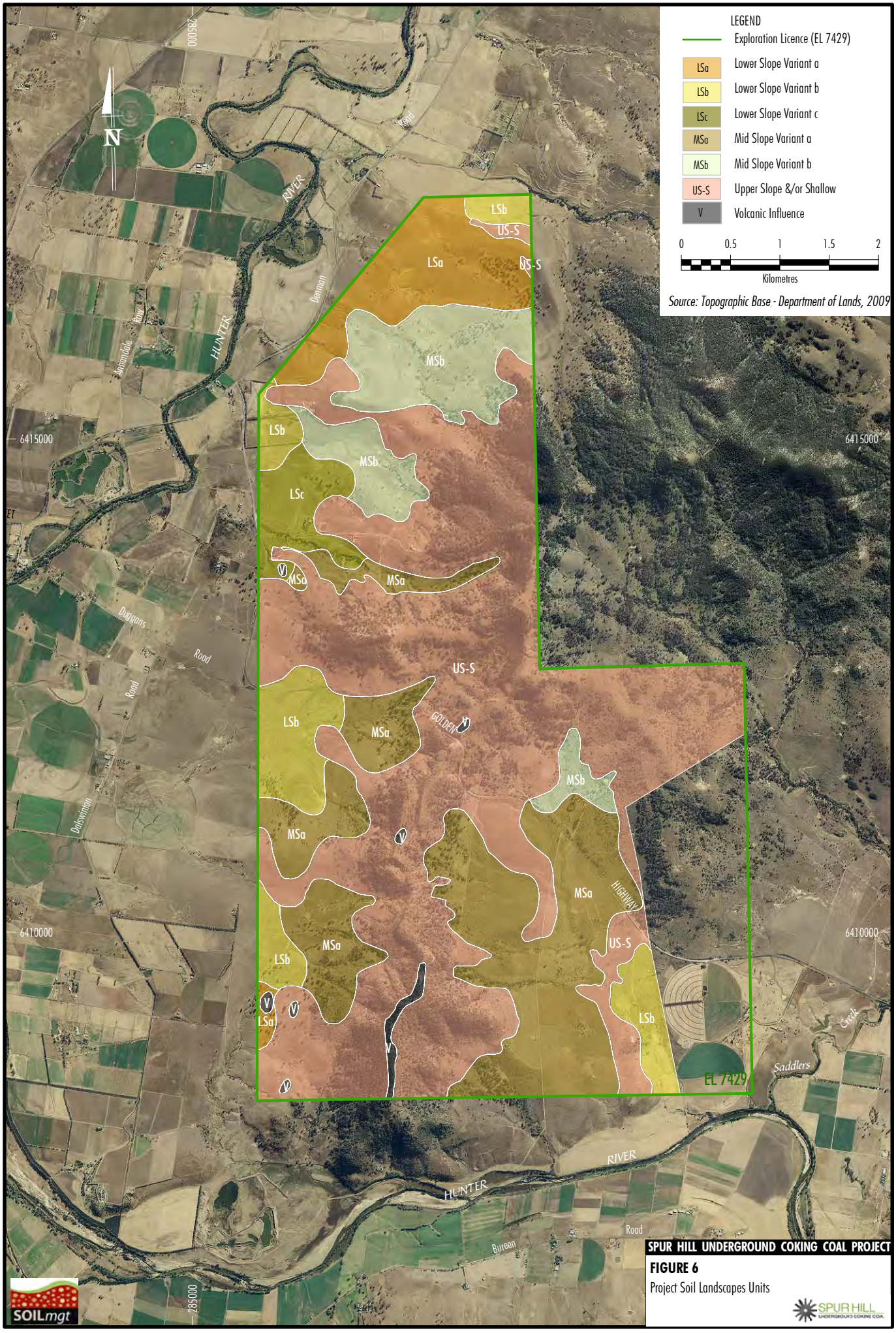

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FIGURE 6

Project Soil Landscapes Units

SPUR HILL UNDERGROUND COKING COAL

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Small (<20 ha) pockets of high quality soil (Dermosols, Black Vertosols) were observed along the narrow plateau that followed the steep-sided ridgeline. In some cases (Pits 123 and 153), numerous tubers of what appeared to be native yam plants were present at a depth of 10-50 cm.

4.4 Soil Conditions for Plant Growth

Soil Depth, Texture and Waterholding Capacity

As soil becomes shallower, stonier and/or sandier, its ability to store water declines (White 2006).

The shallowest soil in the Project area was mainly along and adjacent to the ridge lines (Map 3). The impact of profile shallowness/stoniness and sandiness on the ability of the soil to store plant available water (measured as Total Available Water; TAW) is shown in Appendix 6 and on Map 4.

Plants are more likely to suffer drought stress where soil has a poor water storage capacity, particularly in hot weather with extended dry periods between rainfall events. At the Project area, the lack of water holding capacity in shallow soils is a significant constraint to agricultural productivity.

However, the deeper soil tended to have very good water holding capacity because of a combination of moderate clay content, minimal coarse fragments and favourable soil structure.

Waterlogging Hazard

When soil is waterlogged, several adverse processes take place (Batey 1988):

- The lack of oxygen reduces the ability of plant roots to function properly.
- Anaerobic conditions can cause large losses of soil nitrogen to the atmosphere.
- Near-surface waterlogging is associated with inefficient storage of water due to excessive evaporation losses.

An indicator of waterlogging in the field is the presence of mottling (Map 5). Mottles are blotches of sub-dominant colours different from the matrix colour; for example, grey or yellow blotches within a reddish-brown subsoil. The impedance of internal drainage that creates mottling is usually caused either by impermeable rock close to the surface or dispersive subsoil. The majority of the sites did not show evidence of severe waterlogging (Map 5).

The widespread subsoil salinity (see below) has helped to flocculate the subsoil and maintain profile internal drainage, even though large amounts of naturally occurring lime in the subsoil (Map 6) indicated that there have not been large amounts of water flushing through the soil profiles.

Soil Stability in Water – Dispersion and Slaking

Dispersion is the separation of soil micro-aggregates into sand, silt and clay particles, which tend to block soil pores and create problems with poor aeration (Levy 2000). Excessive hardness then becomes a problem when the soil is dry. Dispersion is a process with the potential to reduce root growth and adversely affect profitability of most crop and pasture enterprises.

Dispersion may be associated with slaking, which is the collapse of soil aggregates to form micro-aggregates under moist conditions (So and Aylmore 1995). Slaking is associated with a lack of organic matter, which is important for the binding of soil micro-aggregates.

Soil prone to slaking, and particularly dispersion, is much more likely to be lost by water erosion than stable soil. This is because the soil tends to seal over under moist conditions and lose water as runoff, rather than taking in the water for storage in the subsoil (So and Aylmore 1995).

Two maps relating to soil stability in water are presented. The ASWAT score (Map 7) shows how prone the soil is to dispersion under conditions that existed when the soil was sampled (Field *et al*. 1997). The 'working when wet' procedure that is part of the ASWAT test is a simulation of processes such as raindrop impact on wet soil and the cutting/stockpiling of moist soil. Dispersion was evident in the sub-surface (15-30 cm) across much of the site (Map 7). The dispersion problems can be overcome in a cost-effective manner through gypsum application. However, elevated sodicity in the subsoil tended not to lead to dispersion because of the high salt concentrations – see below.

The main chemical factor influencing the behaviour of clay particles in these unstable soils is significant amounts of exchangeable sodium (ESP) (Map 8), aggravated in some cases by elevated exchangeable magnesium concentrations (Levy 2000).

Compaction Status

Compaction can strongly restrict plant growth because of poor water entry, poor efficiency of water storage, waterlogging when moist, and poor access to nutrients by plant roots (McKenzie 1998).

Compaction was assessed in this study using the SOILpak scoring system (Map 9). It was not a serious problem at most of the pit sites. This indicates that responsible pasture management practices have been used that minimise the compaction of soil by grazing animals under wet conditions. Also, structural regeneration through natural processes (see next section) has helped to alleviate previous compaction problems.

Structure Self-repair Ability

The ability of a soil to overcome compaction through shrinking and swelling induced by wet-dry cycles (soil structural resilience) can be estimated via CEC values (Map 10) (McKenzie 1998). The Vertosols in this study had topsoil with favourable self-repair capacity via shrink-swell processes, as did much of the subsoil across the Project area (Map 10).

Salt Concentrations

Subsoil salinity was a major constraint across the Project area (Map 11). It reduces the ability of many plant species to absorb water from the soil. However, some plant species are adversely affected much less than others, so they should be selected by farm managers in this area, e.g. when new pastures are being established. It is not practical to reduce the subsoil salt loads through increased leaching.

pH Imbalance

Mild topsoil acidity was noted (Map 12), particularly along the ridge lines. However, pH tended to increase rapidly with depth and many of the soils had excessively high pH in the subsoil. Serious alkalinity (pH > 8.1; see Map 12) is likely to be associated with undesirable bicarbonate salts. Very high pH values are likely to adversely affect nutrient uptake by plant roots.

Nutrients

The topsoil and subsoil was deficient (from an agricultural perspective) in phosphorus across the Project area (Map 13). However as the sum of exchangeable cations (an approximation of CEC) increases, the ability of soil to hold cation nutrients such as calcium, magnesium and potassium becomes greater (White 2006). CEC values (Map 10) are favourable from a nutritional perspective.

Soil Carbon and Soil Biological Health

The relatively high organic carbon concentrations in the topsoil (0 to 15 cm) (Map 14) provide beneficial soil organisms with a ready supply of food.

4.5 Inherent Soil Fertility

Favourable characteristics of the soil resources within the Project area include high nutrient holding potential, freedom from serious compaction damage, and very good water holding capacity (if the plant species being used have sufficient tolerance of salinity to utilize the stored water).

However, several chemical constraints for agricultural land use have been identified across much of the Project area including:

- Subsoil salinity.
- Strongly alkaline subsoil.
- Highly dispersive subsoil if the soluble salts are leached, which can lead to serious water erosion problems.

An exception to this conclusion is an area of land (approx. 86 ha) derived from colluvium in the north-western section of EL 7429. It does not have serious problems with salinity, alkalinity and sodicity. The main feature of this land is its versatility – it can support a broad range of agricultural enterprises besides pasture including viticulture and horticulture.

This area is described further in Section 5.0.

5.0 BIOPHYSICAL STRATEGIC AGRICULTURAL LAND ASSESSMENT

The *Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land* (NSW Government 2013) was used to assess BSAL status of all sampling sites. A flow chart with the steps used to assess BSAL is provided in Plate 2. The limiting factors in the BSAL determination process for survey sites (mainly salinity and alkalinity in the subsoil) are presented in Appendix 11.

BSAL status is determined on the dominant soil type (or a combination of the main soil types) within a soil mapping unit. Only one zone – Soil Landscape Class 'LSc' in the north-west of EL 7429 (Figures 7a and 7b; Table 5) had a cluster of sites that met the BSAL criteria (total of 12 criteria) and comprised an area >20ha (approximately 86 ha in the underground mining area). A total of 11 (7%) of the 159 soil pits in the vicinity of EL 7429 (Pits 1 to 159) concur with Protocol Steps 1-12 (Figure 7a). None coincide with the NSW Government's regional BSAL mapping (Appendix 5).

Remote aeromagnetic and radiometric survey information has been obtained by Spur Hill Management Pty Ltd across the Project area as part of the exploration program. This information has potential to assist with the mapping of key soil factors and soil landscape units. The remote sensing data have not been used in the verification of BSAL, but could be reviewed further as part of the EIS studies.

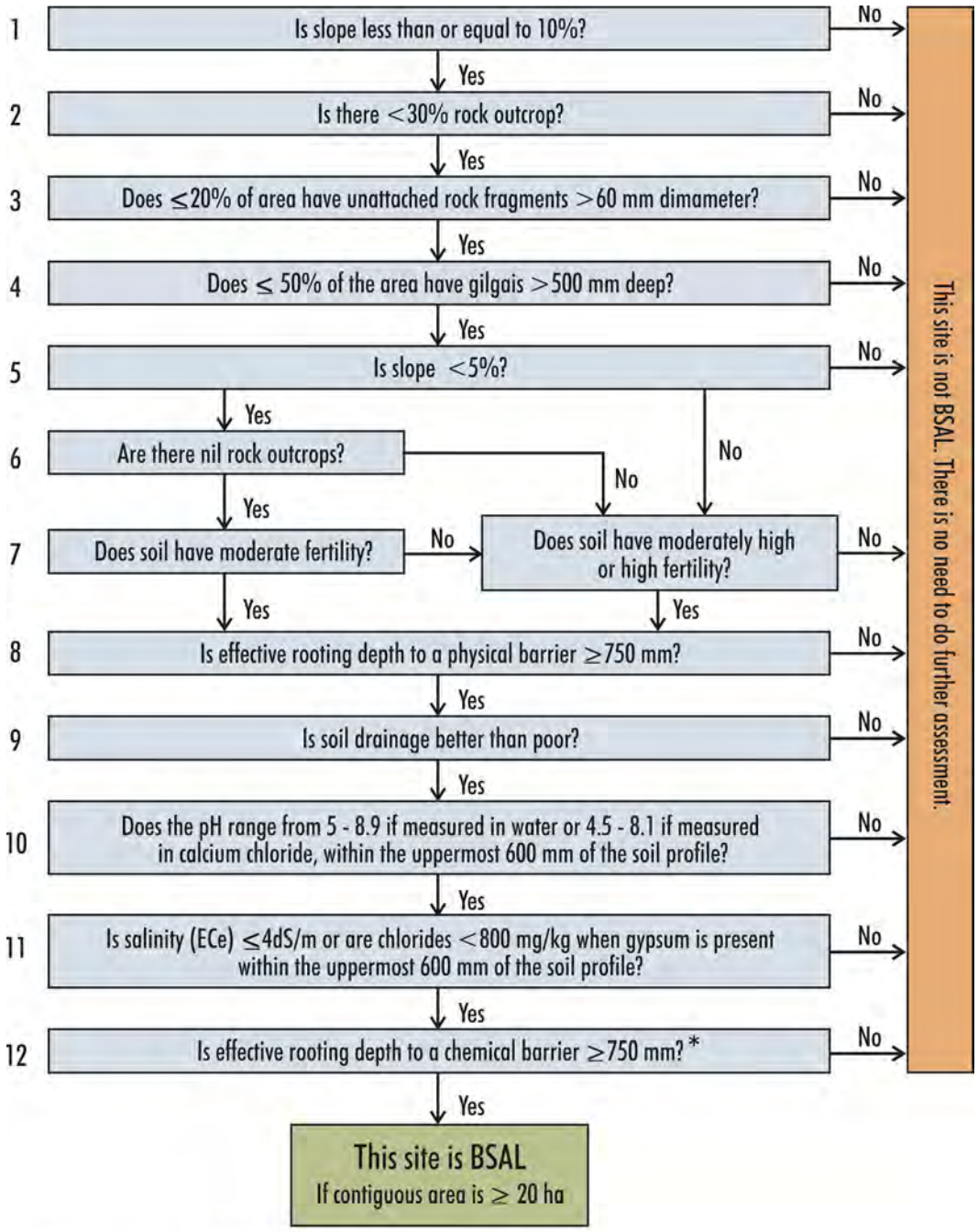
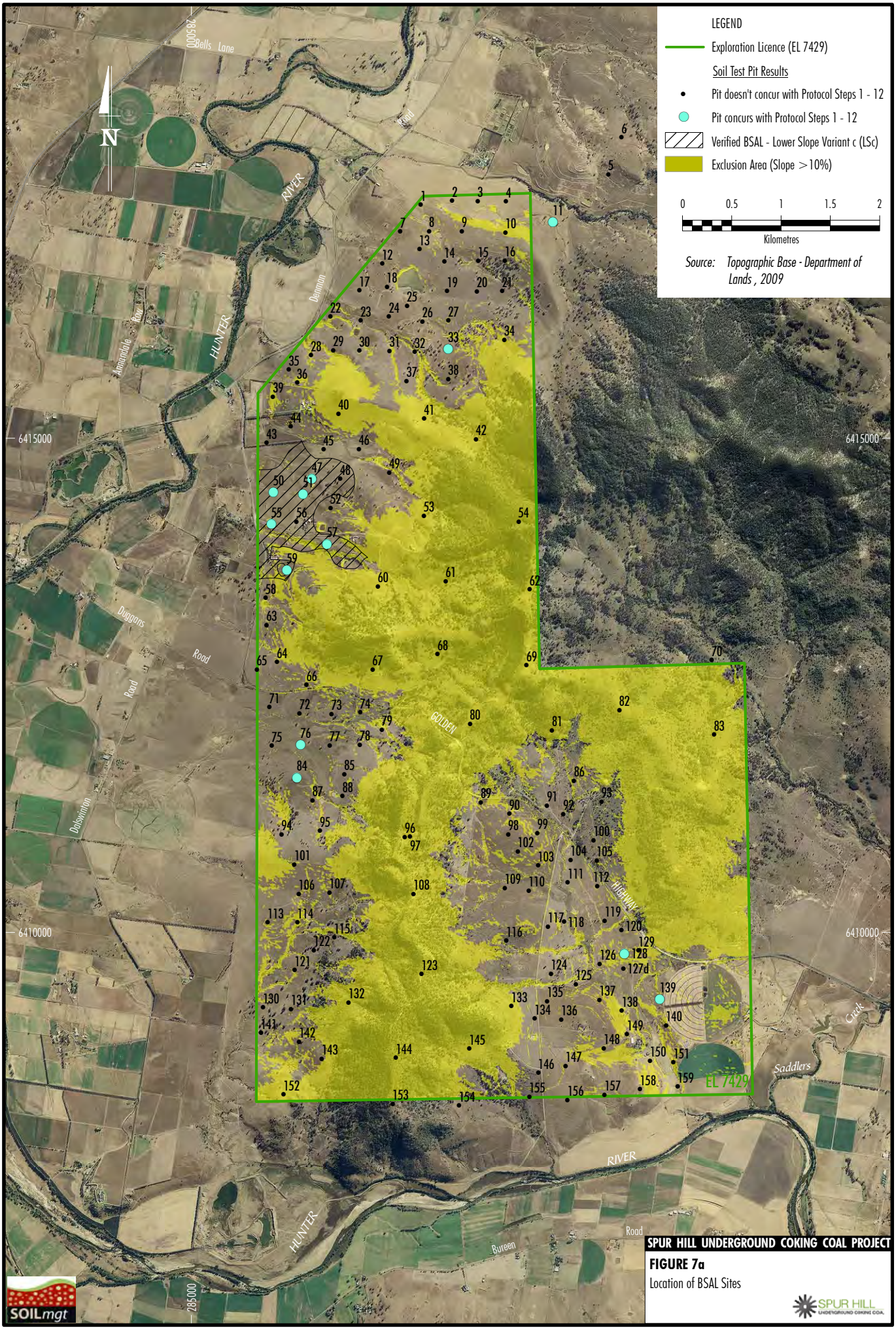


Plate 2: Flow Chart for the Assessment of Biophysical Strategies Agricultural Land



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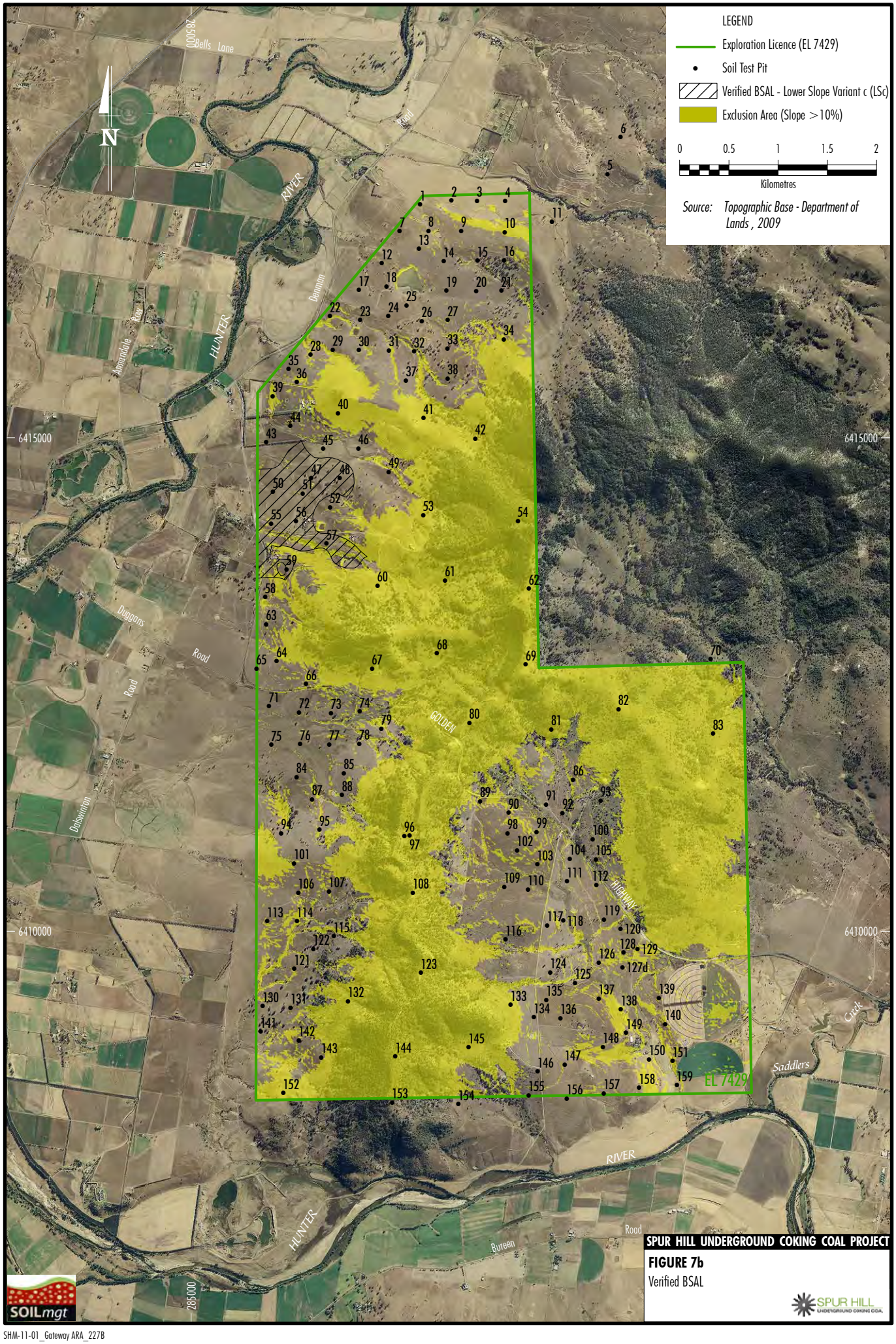

SPUR HILL UNDERGROUND COKING COAL PROJECT

FIGURE 7b

Verified BSAL

SOILmgt

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Table 5. BSAL status of Soil Landscape Units in the Project Area

Soil Landscape Unit (refer to Figure 6)	Map code	Dominant soil types	Sub-dominant soil types	BSAL status
Lower Slope Variant a	LSa	Sodosol, Vertosol	Stratic Rudosol, Chromosol	Nil (saline/alkaline/sodic)
Lower Slope Variant b	LSb	Dermosol, Chromosol	Vertosol, Stratic Rudosol	Scattered (<70%)
Lower Slope Variant c	LSc	Dermosol (less saline/ alkaline/sodic than LSb)	Kandosol, Vertosol, Sodosol	Dominant (>70%)
Mid Slope Variant a	MSa	Sodosol	Vertosol, Dermosol, Kandosol	Nil (saline/alkaline/sodic)
Mid Slope Variant b	MSb	Stratic Rudosol, Vertosol	Dermosol	Scattered (<70%)
Upper slope &/or shallow	US-S	Tenosol	Sodosol, Vertosol, Dermosol	Nil; >10% slope, shallow
Volcanic influence	V	Dermosol	Black Vertosol	Nil; <20 ha patches

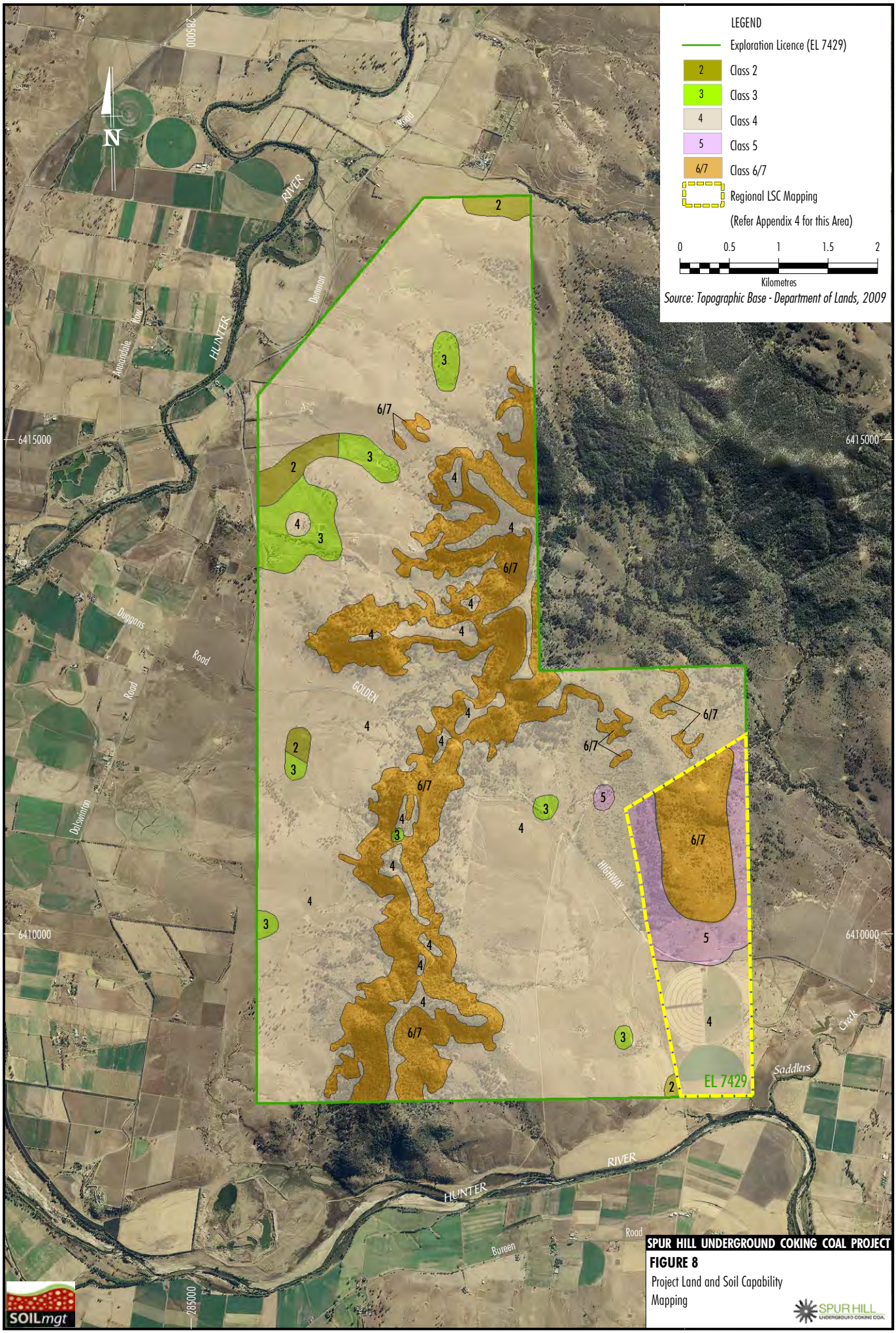
6.0 LAND AND SOIL CAPABILITY CLASSES

LSC mapping was prepared for the EL 7429 area based on the results of the soil survey conducted by McKenzie Soil Management was prepared in accordance with *The Land and Soil Capability Assessment Scheme – Second Approximation* (OEH 2012). LSC mapping is shown on Figure 8.

LSC Class 6/7 has severe erosion hazards associated with the steep slopes. The small area with Class 5 land is considered to have limited agricultural potential because of topsoil with acidity and poor buffering capacity.

LSC Class 4 dominates the Project area. It is 'moderate capability land' that has moderate to high limitations for high-impact land uses such as cropping, high-intensity grazing and horticulture. These limitations can only be managed by specialized management practices with a high level of knowledge, expertise, inputs, investment and technology (OEH 2012).

Zones with LSC Classes 2 and 3 are considered to be capable of a wide variety of land uses including cropping, grazing, horticulture, forestry and nature conservation. Areas categorised as these classes (Figure 8) generally coincide with the BSAL areas shown in Figure 7b and sites with Stratic Rudosols. The soil survey identified soil chemical and physical fertility characteristics which rates Stratic Rudosols highly for agricultural production, however, they are excluded from being BSAL as they are classified as having moderately low fertility (Appendix 2 of the *Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land* [NSW Government 2013]).



SPUR HILL UNDERGROUND COKING COAL PROJECT

FIGURE 8

Project Land and Soil Capability Mapping

SOILmgt

SPUR HILL UNDERGROUND COKING COAL

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7.0 VITICULTURE SUITABILITY ASSESSMENT

White (2003) has concluded that grapevines suffer negligible adverse effects from salinity when ECe < 2 dS/m. However vines on own roots begin to be affected when ECe = 2-4 dS/m; the reduction in vine yield is 10-25%. Where the soil is moderately saline (ECe = 4-8 dS/m), own-rooted vines are severely affected but vines on rootstocks such as 'Ramsey' are more tolerant. Grapevines cannot be grown successfully when ECe exceeds 16 dS/m.

Grapevines have roots that can penetrate several metres below the soil surface, so the ECe values for the depth interval 60-90 cm shown on Map 11 are relevant to this discussion. Most of the area mapped as 'Viticulture Critical Industry Cluster' (Appendix 5) is too saline for viticultural developments based on own-rooted vines.

Subsoil alkalinity also is a major constraint across the Project area. This problem is not readily corrected through improved soil management.

8.0 POTENTIAL IMPACTS ON SOIL RESOURCES

Possible impacts to agricultural productivity as a result of the Project would be associated with temporary loss of land due to construction of mine infrastructure (e.g. processing facilities) and potential subsidence impacts. Potential impacts on agricultural activities associated with subsidence could include:

- Low points with possible waterlogging problems, and adjacent increases in slope and erosion risk, along the outside boundaries of subsided longwall panels.
- Injury to livestock caused by ground cracking.
- Loss of integrity of stock fences and water pipelines.
- Possible injury to persons undertaking agricultural activities.

Potential impacts to agricultural enterprises associated with the Project are discussed in detail in the Agricultural Impact Statement (Short and Thomson, 2013).

8.1 Post-mining Land and Soil Capability Assessment

The components of the Project in the Gateway Application would temporarily remove approximately 200 ha of land from agricultural land uses for the duration of the Project (approximately 25 years). Following completion of mining activities, infrastructure would be removed and the land rehabilitated to a condition consistent with the pre-mining land use.

A CHPP rejects emplacement for the initial year's production would be located in the north of EL 7429 (Figure 2) on LSC Class 3 and 4 land. Topsoil would be stripped from the coal rejects emplacement footprint and stockpiled in accordance with the measures described in Section 8.2. Establishment of LSC Class 4 land on the emplacement facility would involve sealing of the emplacement with a suitable material, placement of stripped topsoil onto the final landform and seeding with an appropriate grass and woodland vegetation mix. It is anticipated that the remediated coal rejects emplacement could sustain livestock grazing, consistent with the existing land use, but that an area of pre-mining Class 3 land (approximately 6 ha) would be rehabilitated to Class 4 land.

Infrastructure such as the CHPP, offices and workshops is anticipated to be located to the immediate north of the coal rejects emplacement, on LSC Class 2 and 4 land located in the northern most part of EL 7429. Topsoil would be stripped and managed in accordance with the measures described in Section 8.2 so that it could be replaced across the existing Class 2 and 4 land following removal of surface infrastructure and remediation of soil compaction where necessary (e.g. through shallow ripping and re-grading). It is anticipated that the existing LSC classes within the proposed infrastructure area could be re-established following remediation.

Table 6 presents estimated pre-mining and post-mining Land and Soil Capability with EL 7429.

Table 6. Estimated Pre-mining and Post-mining LSC Class

Land and Soil Capability Class	Area pre-mining (ha)	Area post-mining (ha)	Change (%)
1	0	0	0
2	49	49	0
3	106	100	-6
4	2389	2395	<1
5	109	109	0
6 & 7	692	692	0
8	0	0	0
TOTAL	**3,346**	**3,346**	

8.2 Soil Resource Management Measures

General soil resource management practices, where surface development is proposed within the Project area, should involve the stripping and stockpiling of soil resources prior to any mine-related disturbance, other than clearing vegetation. The general strategy should be for those disturbance areas to be rehabilitated progressively.

The objectives of soil resource management for the Project are to:

- Identify and quantify potential soil resources for rehabilitation.
- Optimise the recovery of useable topsoil and subsoil during stripping operations.
- Manage topsoil and subsoil reserves so as not to degrade the resource when stockpiled.
- Establish effective soil amelioration procedures to maximise the availability of soil reserves for future rehabilitation works.
- Take into account the need to provide soil conditions that minimise the risk of soil loss via wind and water erosion during and after rehabilitation.

Stripping

A detailed topsoil mapping survey is recommended to be conducted prior to the commencement of construction activities to accurately inform the stripping depths across the surface disturbance areas. The following management measures should be implemented during the stripping of soils at the Project:

- Areas of disturbance requiring soil stripping are to be clearly defined following vegetation clearing.
- CHPP reject emplacement areas are to be stripped progressively, as required, to reduce potential erosion and sediment generation, and to minimise the extent of topsoil stockpiles and the period of soil storage.
- Topsoil and subsoil stripping during periods of high soil moisture content (i.e. following heavy rain) is to be avoided to reduce the likelihood of damage to soil structure.

The degree of success of a stripping and stockpiling program is strongly influenced by soil water content. Attempts to strip soil under moist conditions with inappropriate machinery settings can aggravate structural degradation problems. Excessive compaction and/or remoulding of the soil by heavy machinery under wet conditions also can be a major problem.

Stockpile Management

The following management measures should be implemented during the stockpiling/storage of soils at the Project:

- Topsoil and subsoil stockpiles should be retained at a height of no more than 2m, with slopes no greater than 1:2 (vertical to horizontal [V:H]) and a slightly roughened surface to minimise erosion.
- Construct topsoil stockpiles in a way that minimises erosion, encourages drainage, and promotes revegetation.
- Where amendments such as lime, gypsum and fertiliser are needed to improve the condition of cut soil, they should either be applied to the stockpiles in-between the application of separate layers from the scrapers, or be spread on the soil prior to scraping.
- Wherever practicable, soil should not be trafficked, deep ripped or removed in wet conditions to avoid breakdown in soil structure.
- All topsoil and subsoil stockpiles should be seeded with a non-persistent cover crop to reduce erosion potential as soon as practicable after completion of stockpiling. Where seasonal conditions preclude adequate development of a cover crop, stockpiles should be treated with a straw/vegetative mulch to improve stability.
- Grow deep-rooting vegetation to encourage organic matter accumulation and maintain microbial activity. Stockpile height can be excessive because of limited space at mine sites, but try to keep it as low as possible. This maximises the chances of plenty of plant roots reaching the base of the stockpile as it awaits redistribution.
- There should be no vehicle access on soil stockpiles, except when soil quality monitoring is required.
- Soil stockpiles should be located in positions to avoid surface water flows. Silt stop fencing would be placed immediately down-slope of stockpiles until stable vegetation cover is established.
- In the event that unacceptable weed generation is observed on soil stockpiles, a weed eradication program should be implemented.

- An inventory of soil resources (available and stripped) on the Project site should be maintained and regularly reconciled with rehabilitation requirements.
- In preference to stockpiling, wherever practicable, stripped topsoil and subsoil should be directly replaced on completed sections of the final landform of the CHPP reject emplacement area.

Application of Soil on Rehabilitated Landforms

The following management measures should be implemented during the application of soils on rehabilitated CHPP reject emplacement landforms at the Project:

- Topsoil and subsoil placement shall only proceed once the final landform and major drainage works (i.e. graded banks, drainage channels and rock waterways if required) have been completed.
- Topsoil and subsoil placement is to be undertaken from the top of slopes or top of sub drainage catchment to minimise erosion damage created by storm run-off from bare upslope areas.
- Topsoil and subsoil placement is to be conducted along the general run of the contour to minimise the incidence of erosion.
- Topsoil and subsoil is not to be placed in the invert of drainage lines or drainage works.
- Spread topsoil/subsoil profile thickness and quality is to be evaluated prior to sowing.

Remediation of Soil Compaction Beneath Infrastructure Areas

Following removal of infrastructure during mine closure, soil profile inspections are recommended to quantify the depth and severity of soil compaction damage. Deep ripping will then be carried out under dry conditions to de-compact the identified hard layers and provide a favourable root zone.

Rehabilitation Management Plan

It is recommended that a Rehabilitation Management Plan for the Project be prepared by a suitability qualified expert to detail the soil resource management measures outlined in the sections above. The Rehabilitation Management Plan should be progressively updated to cater for the site-specific management requirements of soils as the Project progresses.

8.3 Remediation Strategies for Subsidence Impacts

Remediation of surface cracks and/or low point development / slope steepening would be undertaken using conventional earthmoving equipment (such as backhoe or grader) (MSEC 2013). Minor cracks (i.e. less than 50 mm) that develop are not expected to require remediation as geomorphological processes would result in these cracks filling naturally over time.

It is noted that Frazier *et al.* (2010) found no significant effect of longwall mining subsidence on agricultural production, including cattle grazing, in the Hunter Valley region.

Given the above, and as discussed by Short and Thomson (2013), it is considered that there would be no significant change to the long term agricultural productivity of the Project area as a result of subsidence impacts on agricultural land under the proposed management regime.

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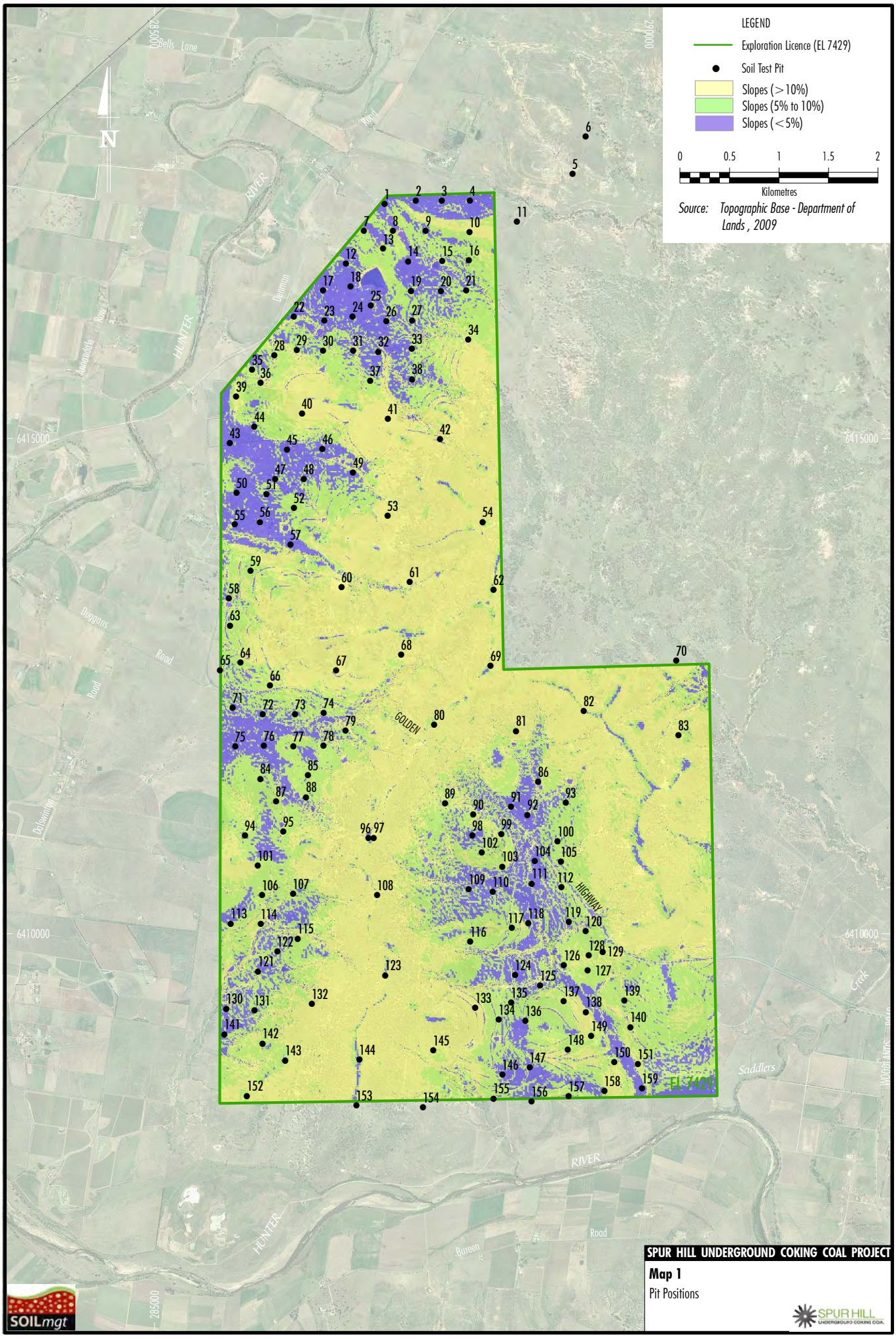

SPUR HILL UNDERGROUND COKING COAL PROJECT

Map 1

Pit Positions

SOILmgt

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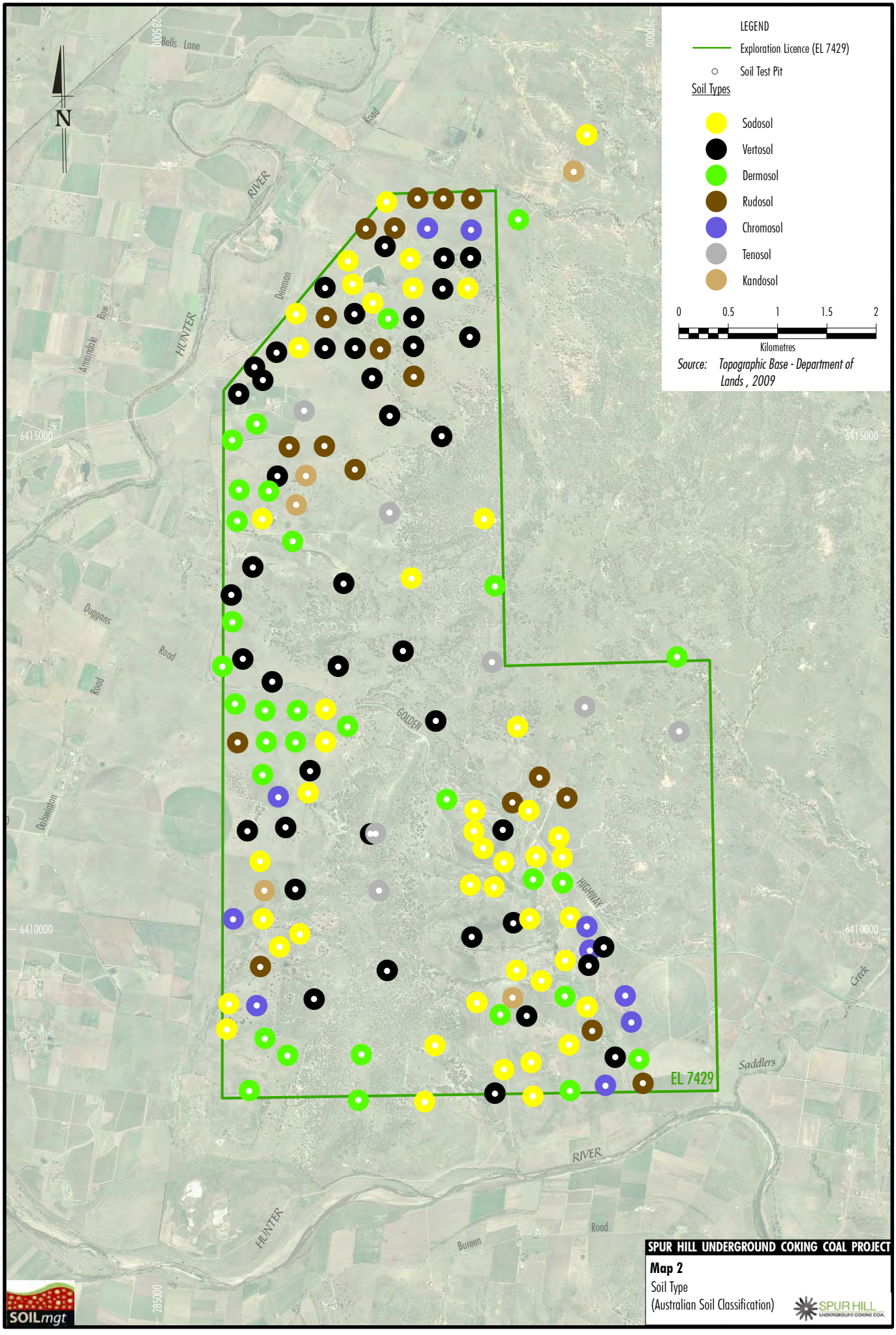

SPUR HILL UNDERGROUND COKING COAL PROJECT

Map 2

Soil Type
(Australian Soil Classification)

SOILmgt

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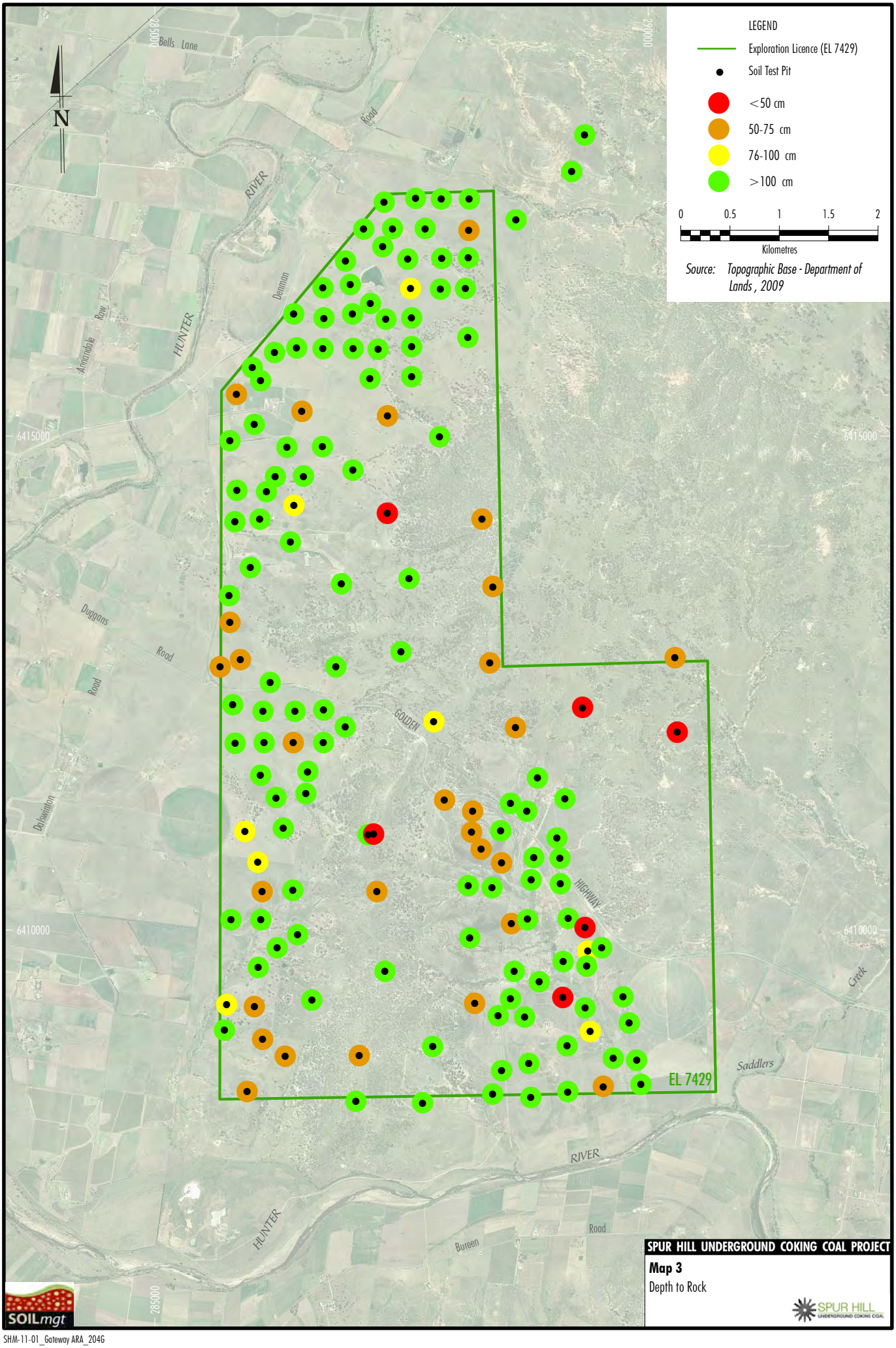

SPUR HILL UNDERGROUND COKING COAL PROJECT

Map 3

Depth to Rock

SOILmgt

SPUR HILL UNDERGROUND COKING COAL

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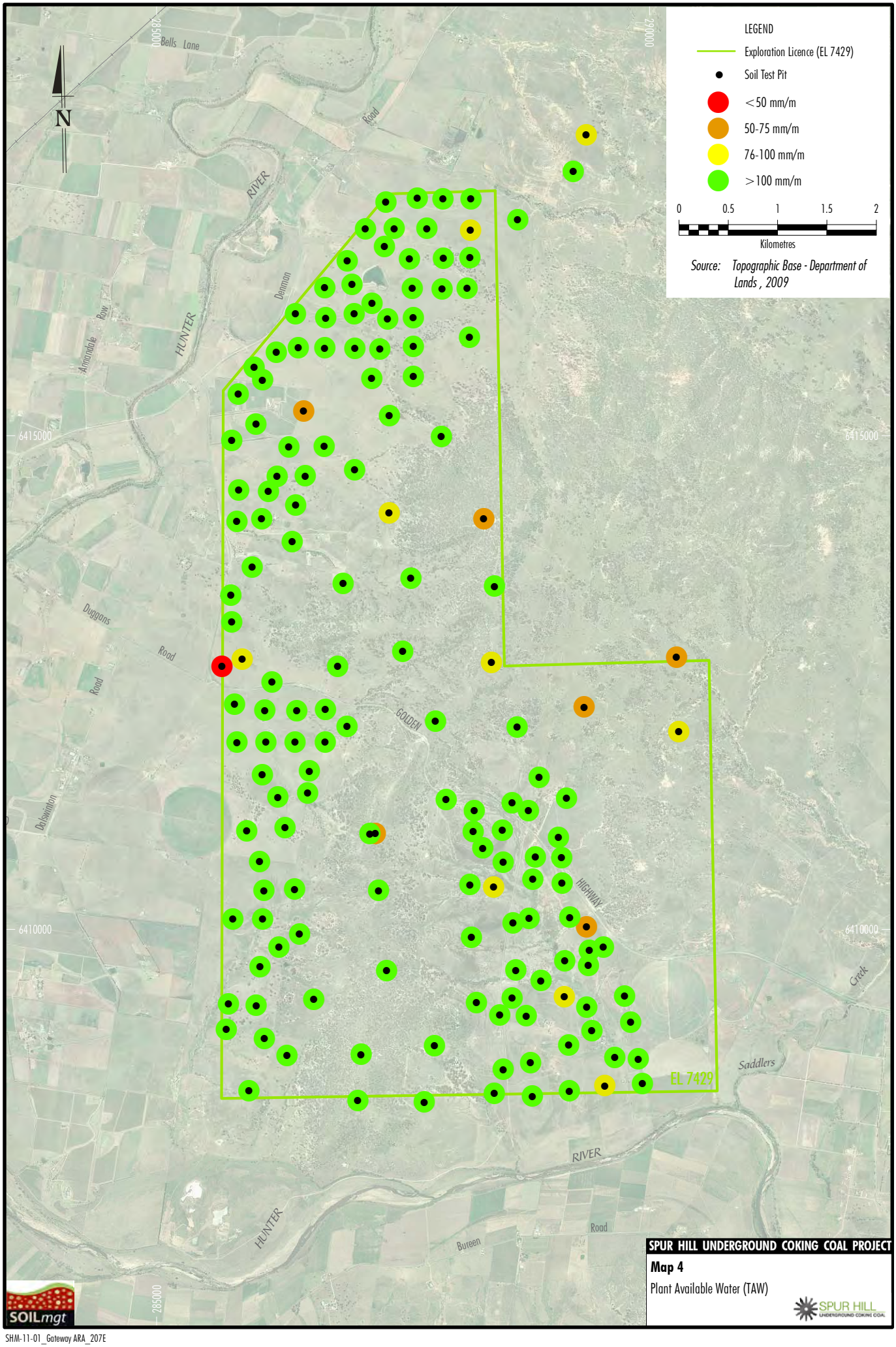

SPUR HILL UNDERGROUND COKING COAL PROJECT

Map 4

Plant Available Water (TAW)

SOILmgt

SPUR HILL UNDERGROUND COKING COAL

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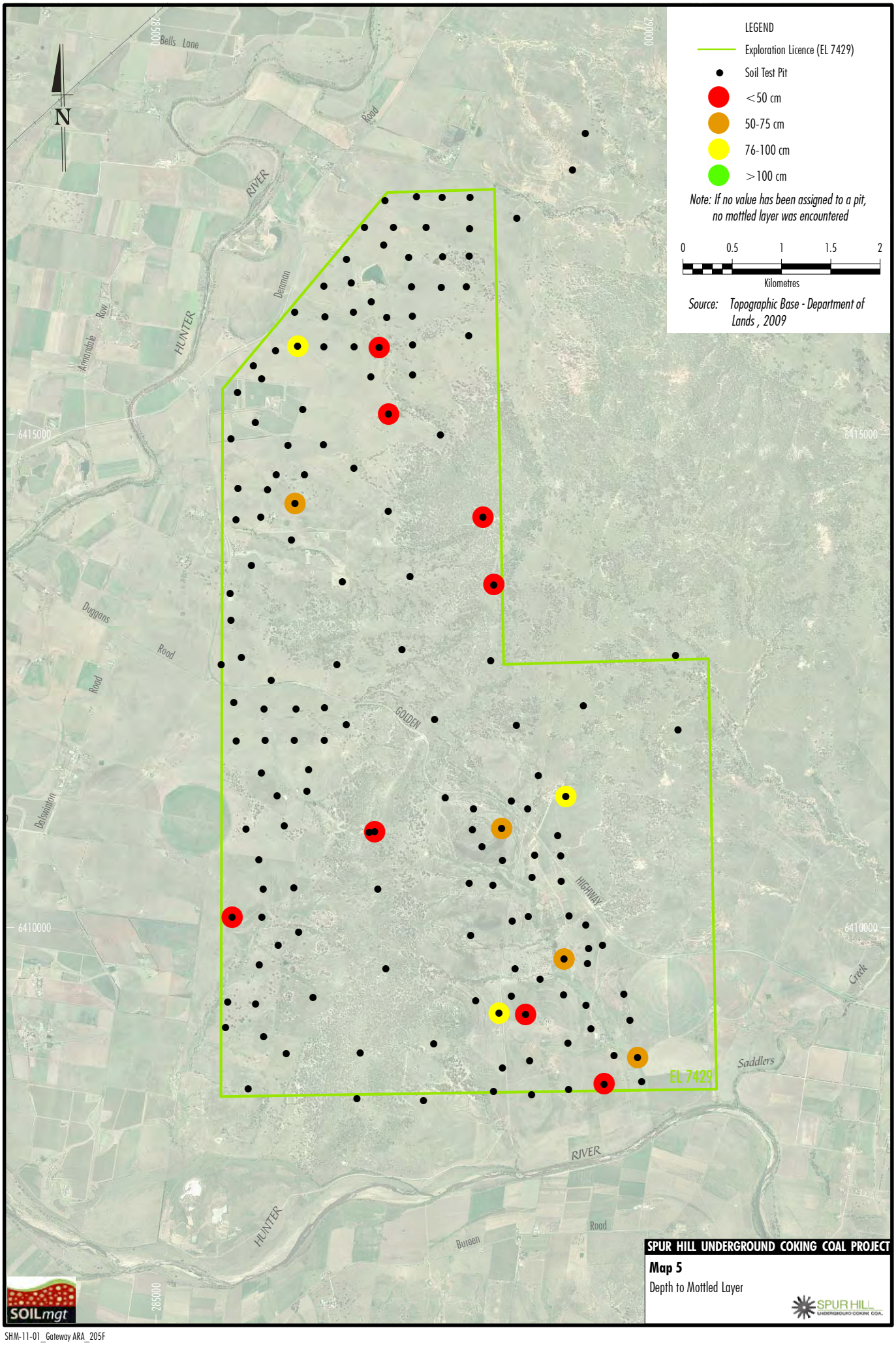
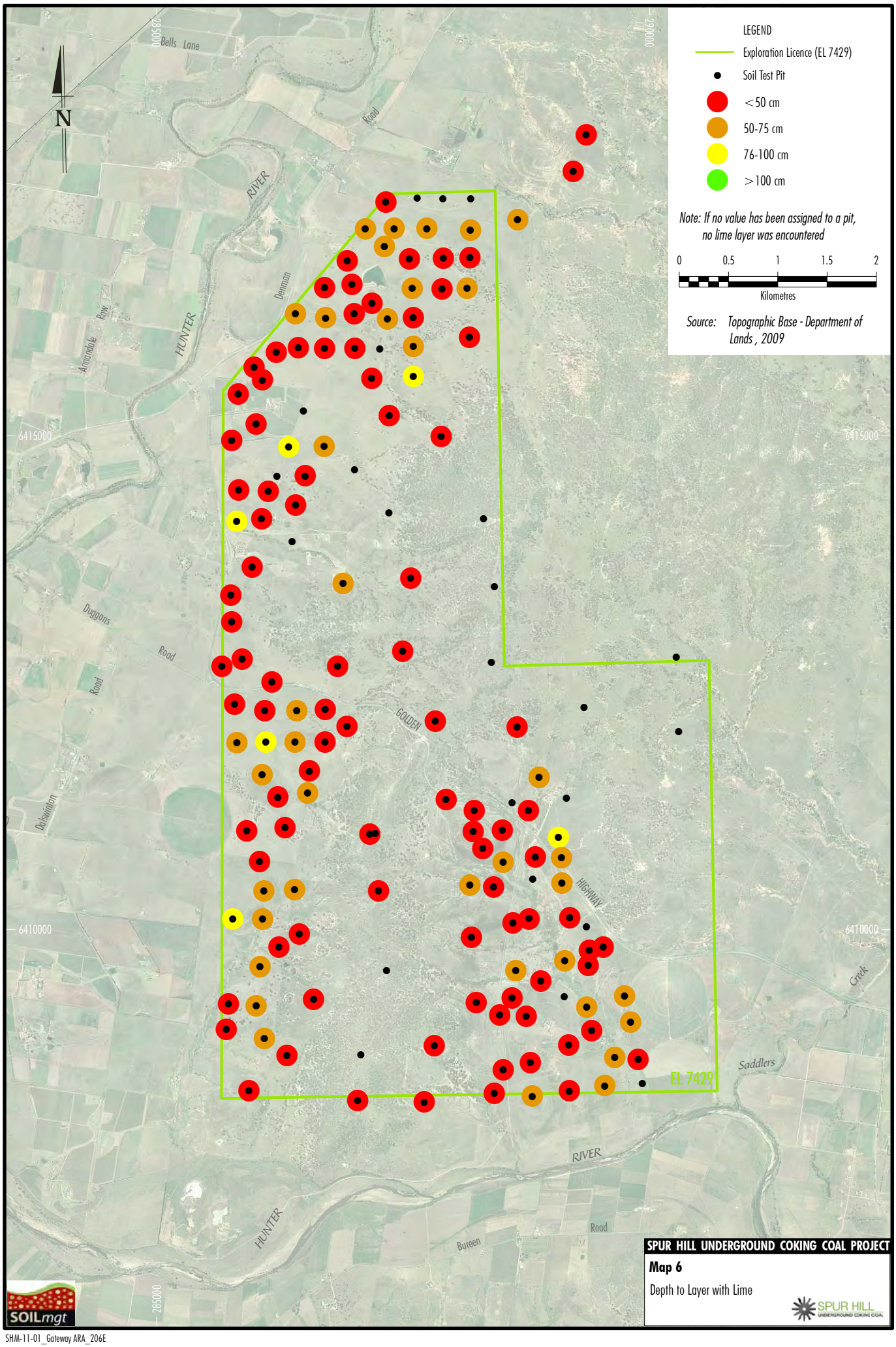
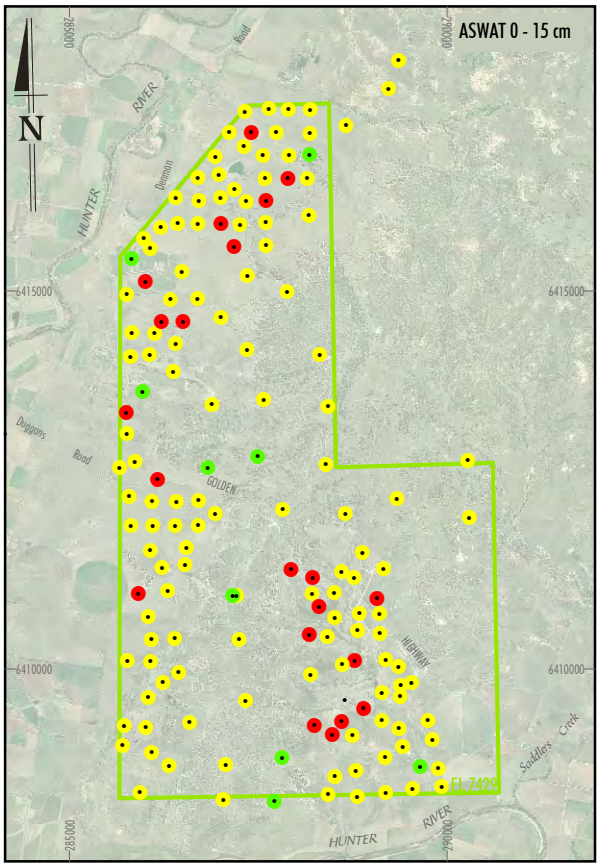
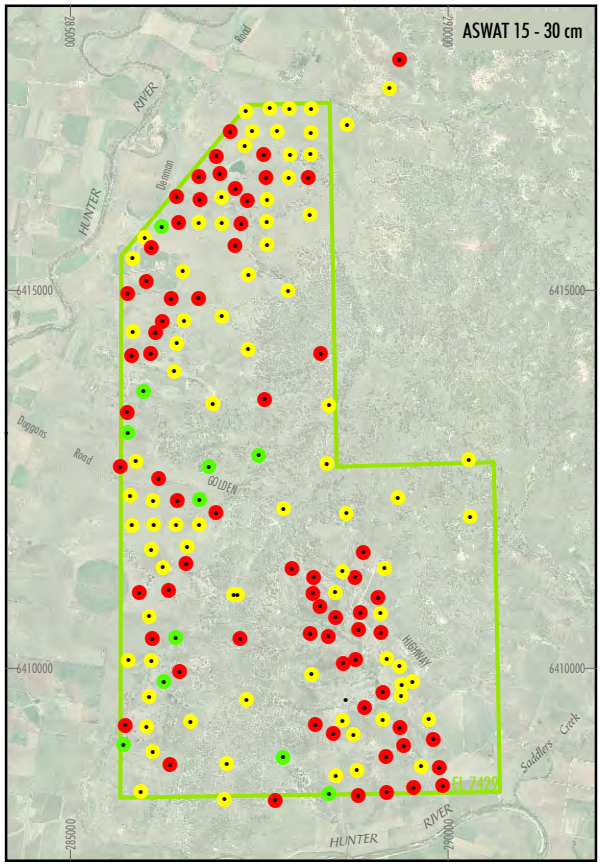
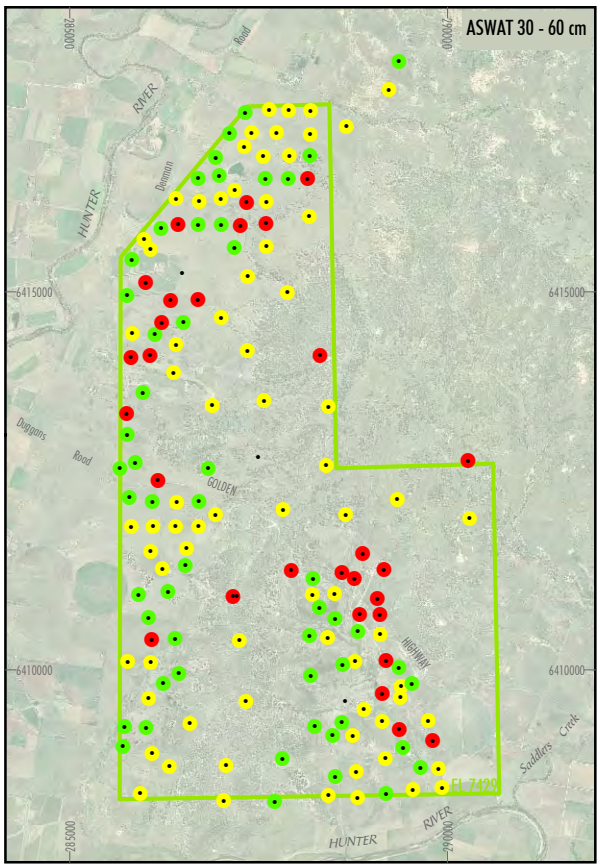

LEGEND
Exploration Licence (EL 7429)
Soil Test Pit
<50 cm
50-75 cm
76-100 cm
>100 cm
Note: If no value has been assigned to a pit, no mottled layer was encountered
0 0.5 1 1.5 2
Kilometres
Source: Topographic Base - Department of Lands , 2009
N
Bells Lane
Road
RIVER
Denman
Row
Amondale
HUNTER
6415000
Duggans
Road
Road
GOLDEN
Dalswinton
HIGHWAY
6410000
Creek
Saddlers
EL 7429
RIVER
HUNTER
Bureen
Road
285000
290000
SOILmgt
SPUR HILL UNDERGROUND COKING COAL PROJECT
Map 5
Depth to Mottled Layer
SPUR HILL
UNDERGROUND COKING COAL

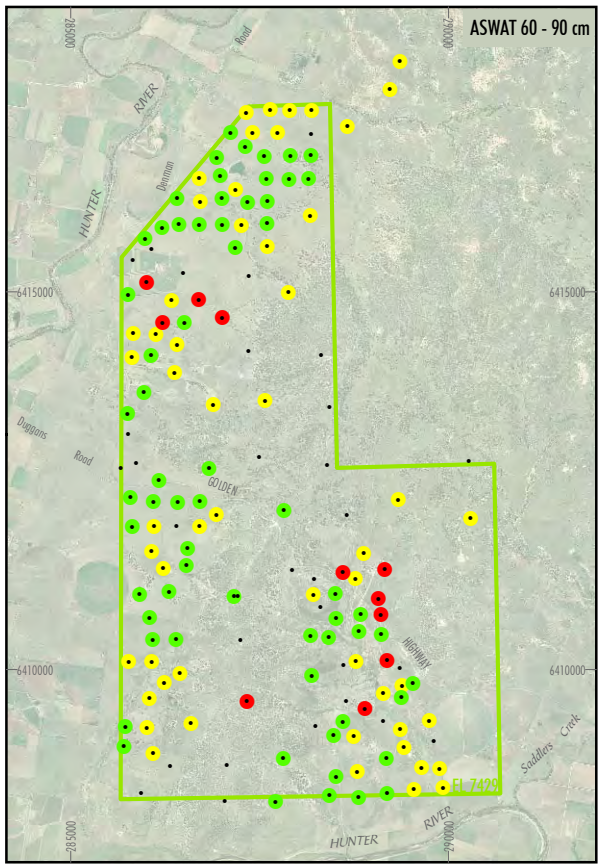


SHM-11-01_Gateway ARA_206E









LEGEND

Exploration Licence (EL 7429)

Soil Test Pit

> 6

2 - 6

< 2

0 1 2 3 4

Kilometers

GRID DATUM MGA ZONE 56

Source: Topographic Base - Department of Lands , 2009

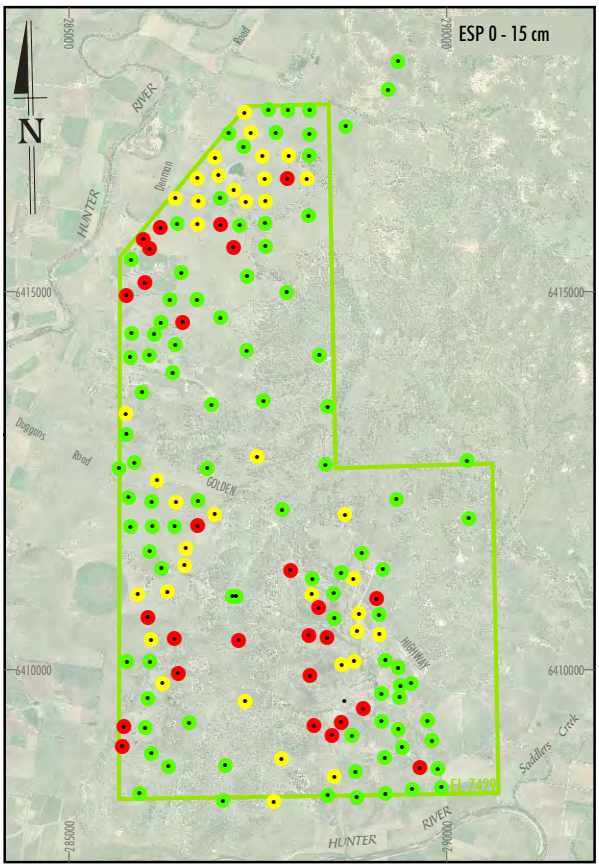
SOILmgt

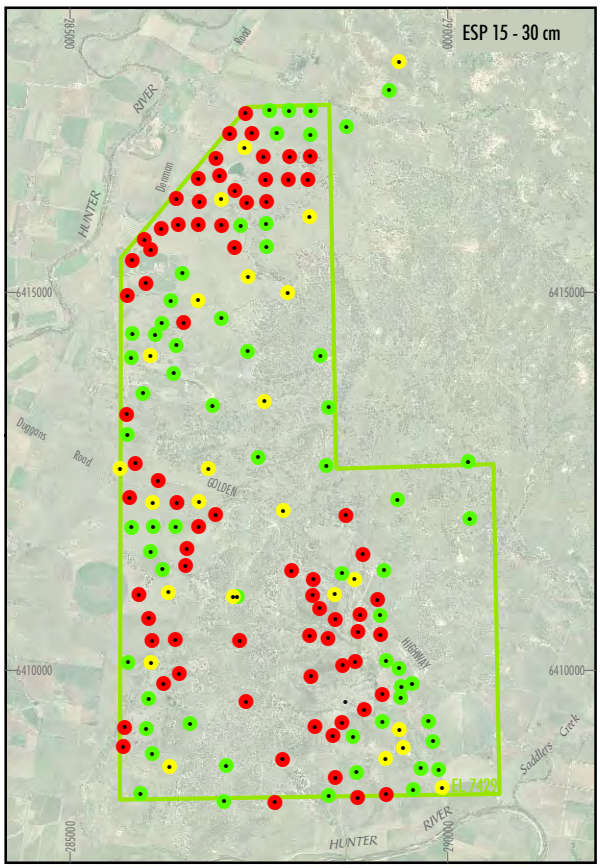
SPUR HILL UNDERGROUND COKING COAL PROJECT

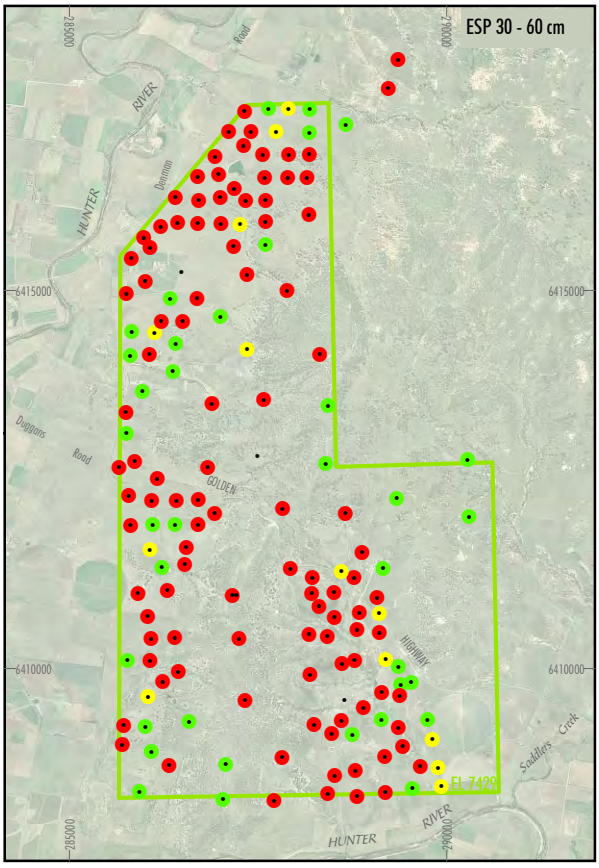
Map 7

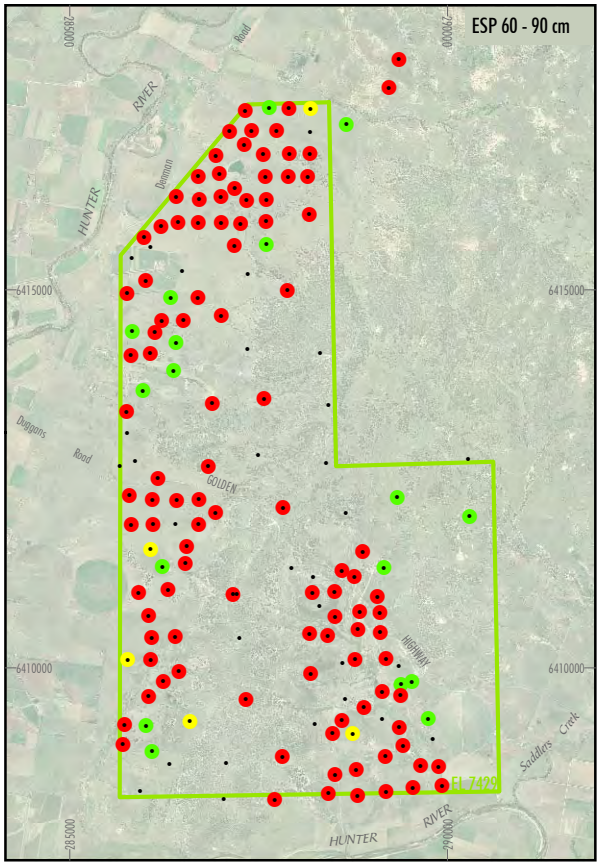
Dispersion (ASWAT Scores)

SPUR HILL UNDERGROUND COKING COAL









LEGEND

Exploration Licence (EL 7429)

Soil Test Pit

> 6

3 - 6

< 3

0 1 2 3 4

Kilometers

GRID DATUM MGA 94 ZONE 56

Source: Topographic Base - Department of Lands , 2009

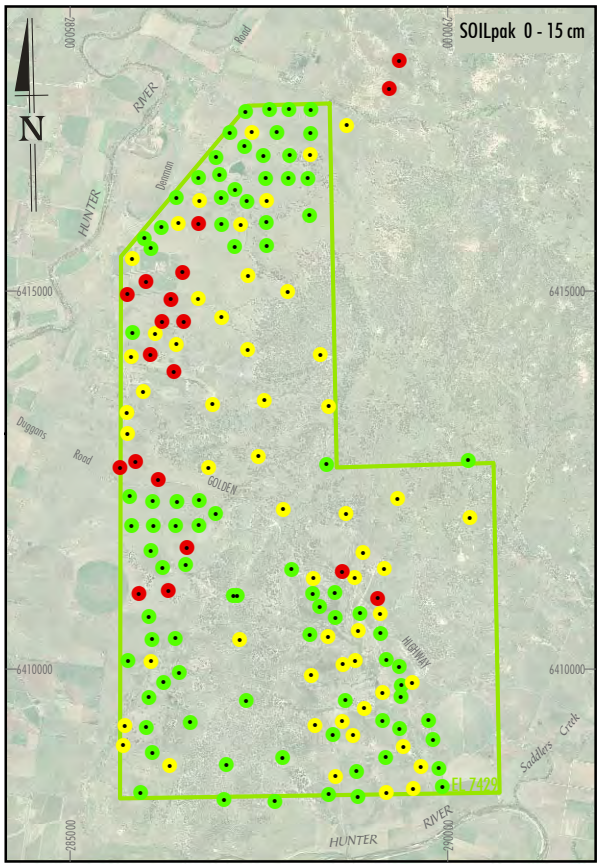
SPUR HILL UNDERGROUND COKING COAL PROJECT

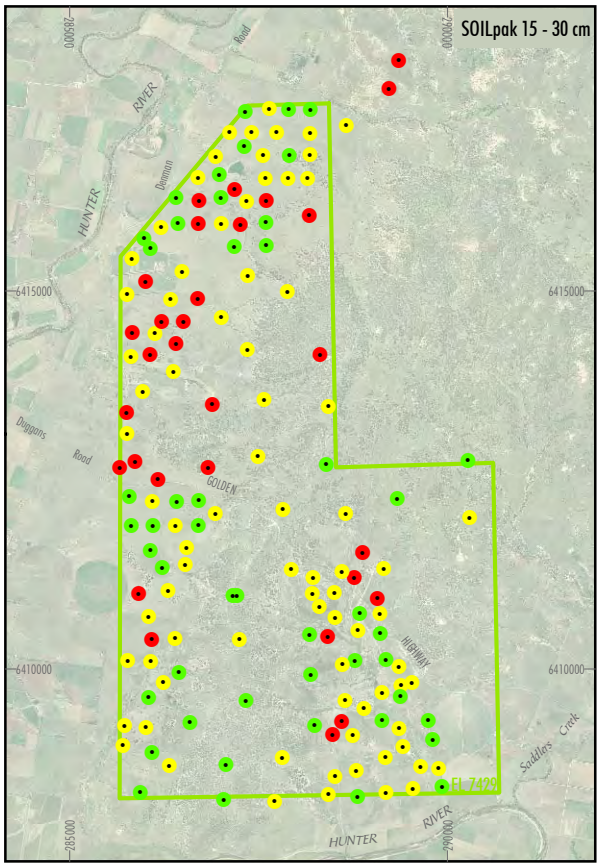
Map 8

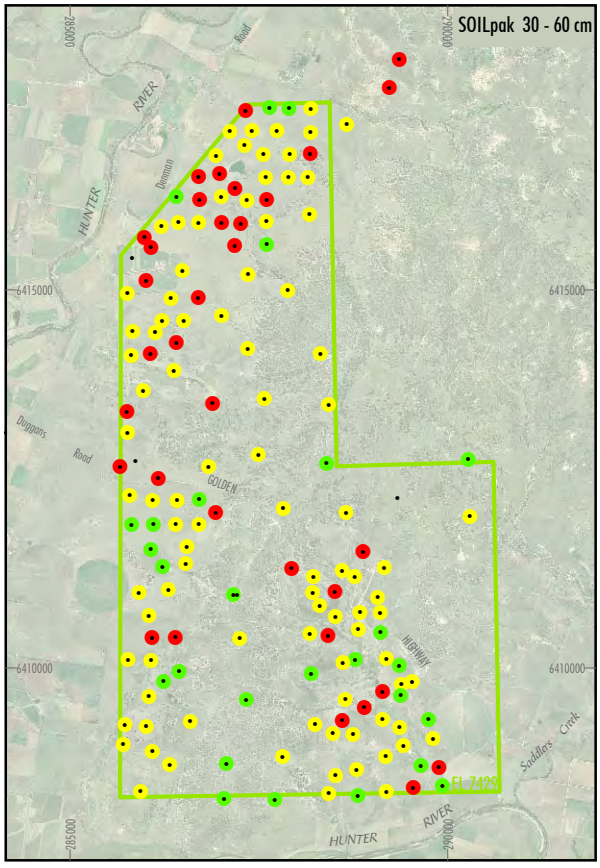
Dispersion (ESP Values)

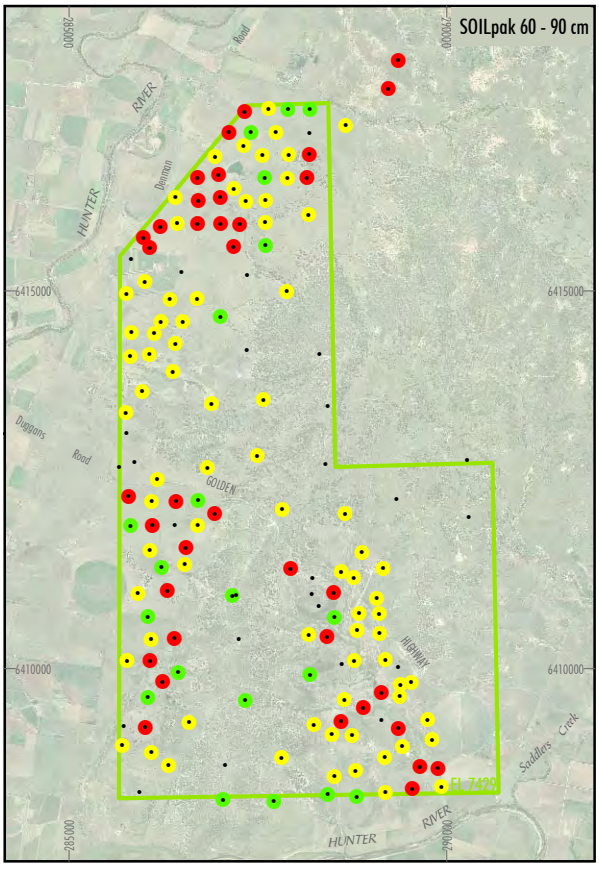
SOILmgt

SHM-11-01_Gateway ARA_209F









LEGEND

Exploration Licence (EL 7429)

Soil Test Pit

< 1.0

1.0 - 1.5

> 1.5

0 1 2 3 4

Kilometers

GRID DATUM MGA 94 ZONE 56

Source: Topographic Base - Department of Lands , 2009

SPUR HILL UNDERGROUND COKING COAL PROJECT

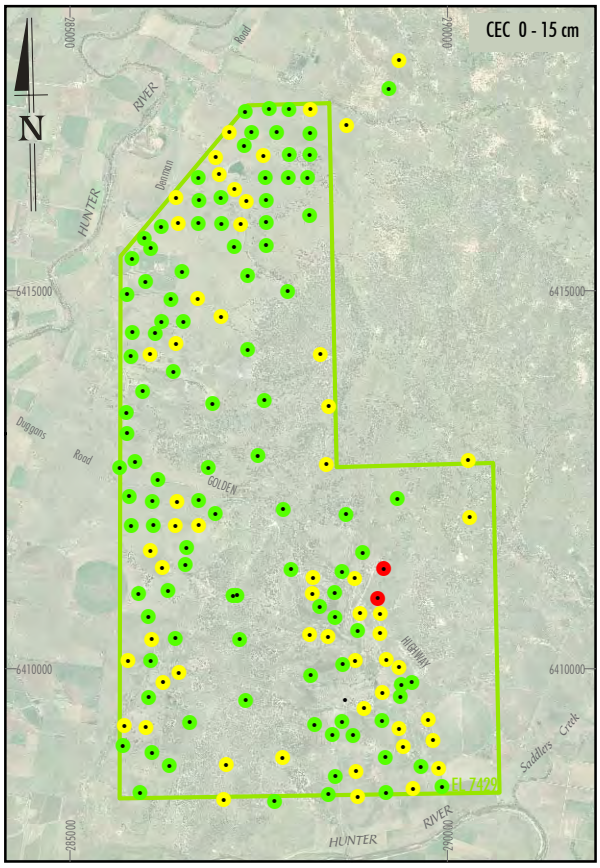
Map 9

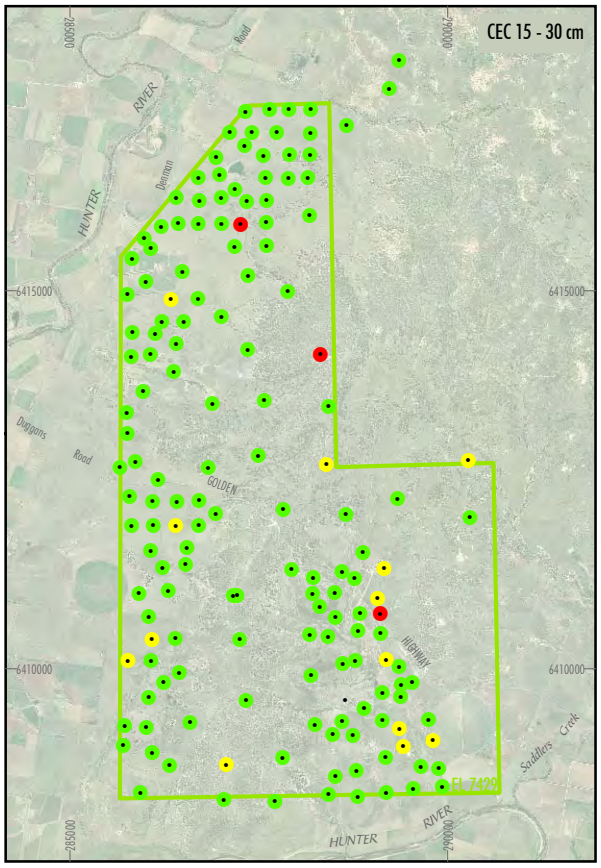
Compaction Severity (SOILpak Score)

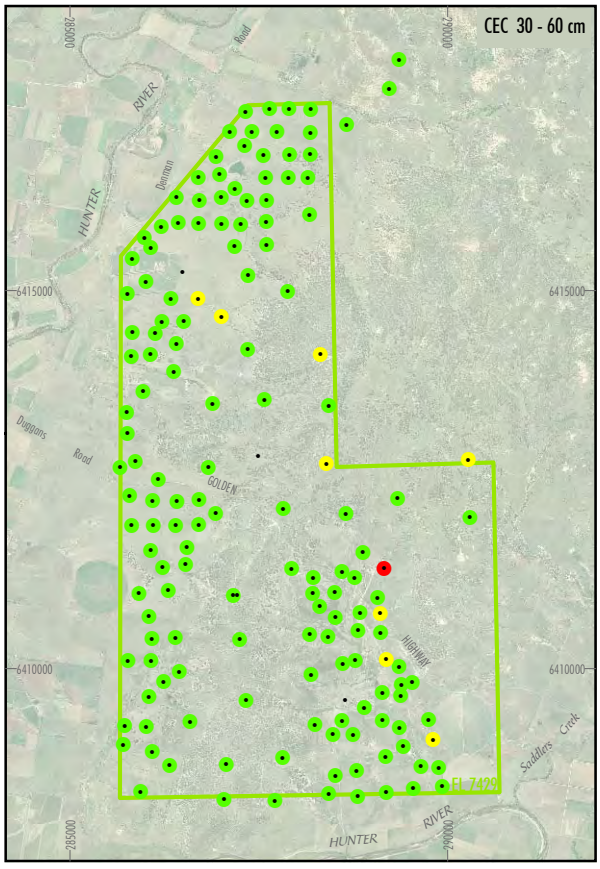
SOILmgt

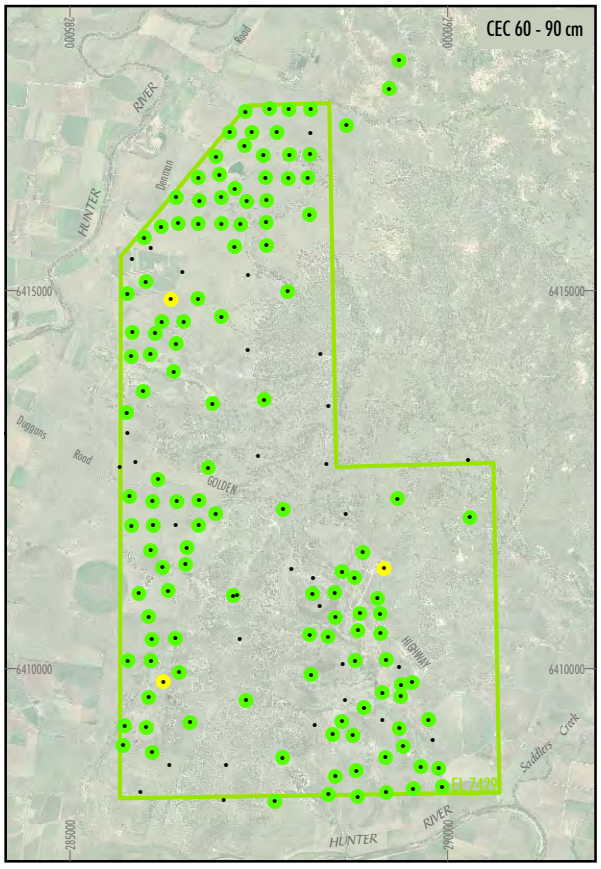
SPUR HILL UNDERGROUND COKING COAL

SHM-11-01_Gateway ARA_210E









LEGEND

Exploration Licence (EL 7429)

Soil Test Pit

< 5 (meq/100g)

5 - 15 (meq/100g)

> 15 (meq/100g)

0 1 2 3 4

Kilometers

GRID DATUM MGA 94 ZONE 56

Source: Topographic Base - Department of Lands , 2009

SOILmgt

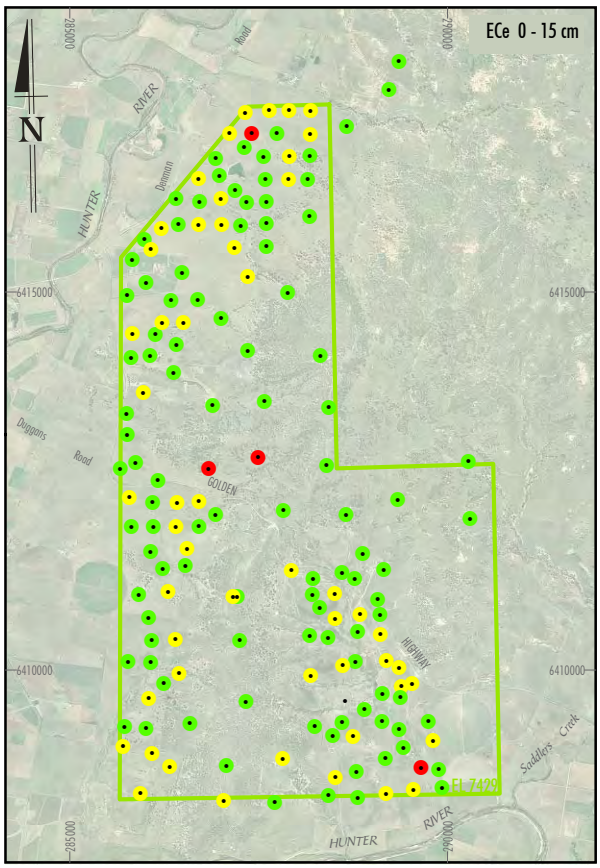
SPUR HILL UNDERGROUND COKING COAL PROJECT

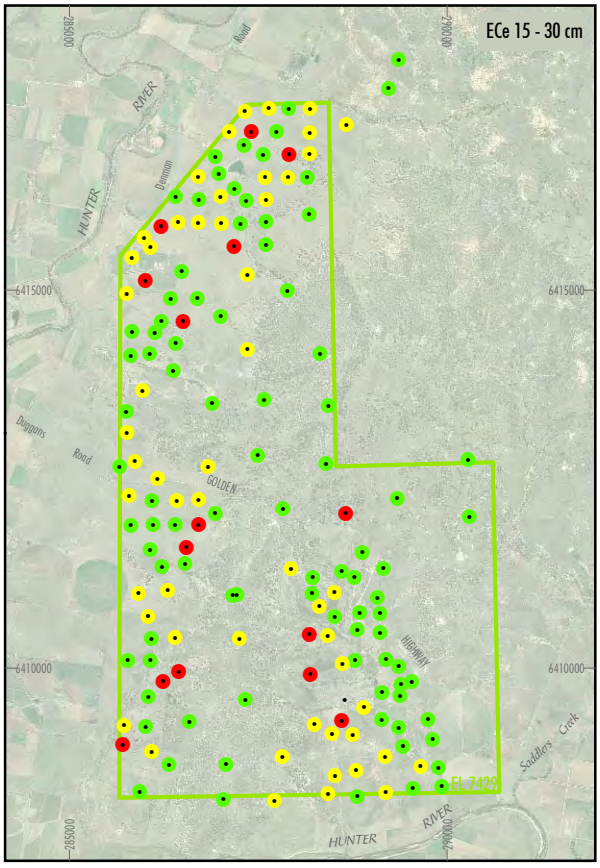
Map 10

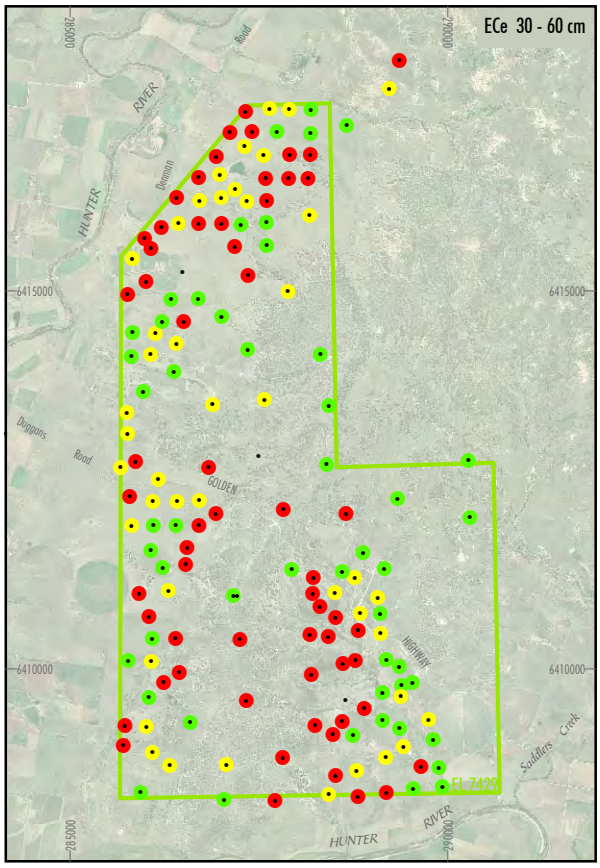
Cation Exchange Capacity

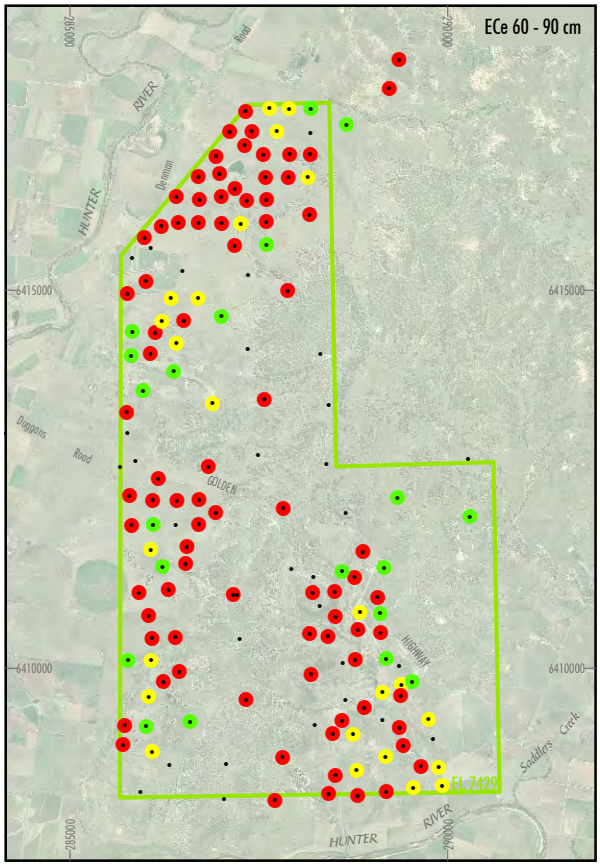
SPUR HILL UNDERGROUND COKING COAL

SHM-11-01_Gateway ARA_211E









LEGEND

Exploration Licence (EL 7429)

Soil Test Pit

> 4.0 dS/m

1.5 - 4.0 dS/m

< 1.5 dS/m

0 1 2 3 4

Kilometers

GRID DATUM MGA 94 ZONE 56

Source: Topographic Base - Department of Lands , 2009

SOILmgt

SPUR HILL UNDERGROUND COKING COAL PROJECT

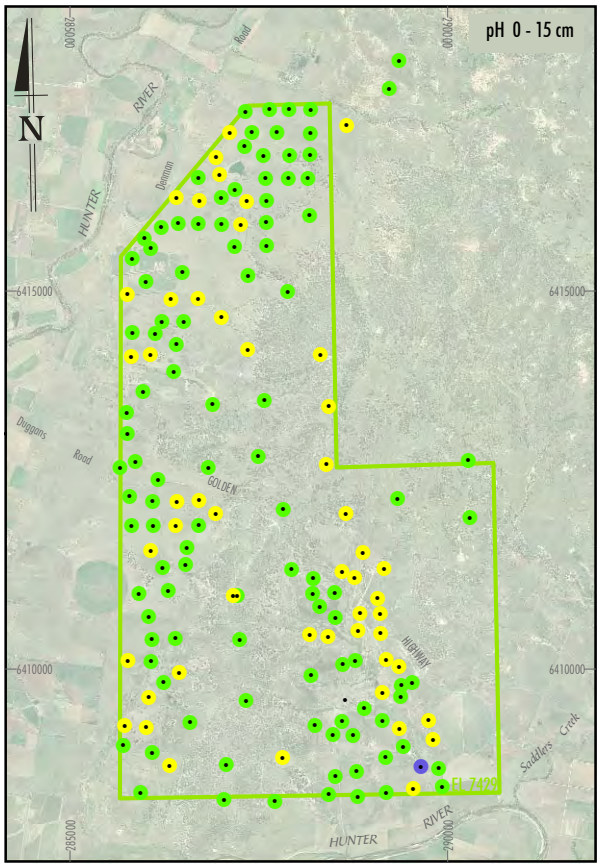
Map 11

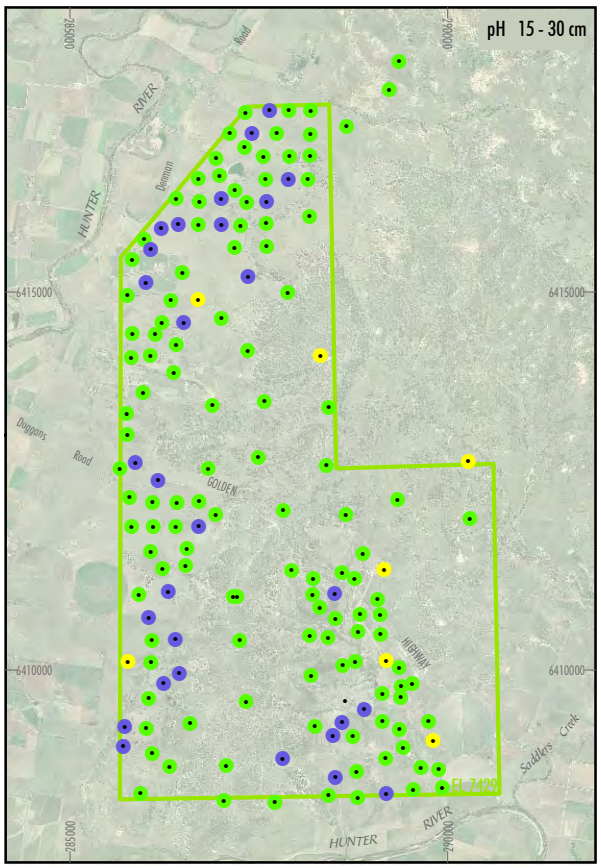
Salinity

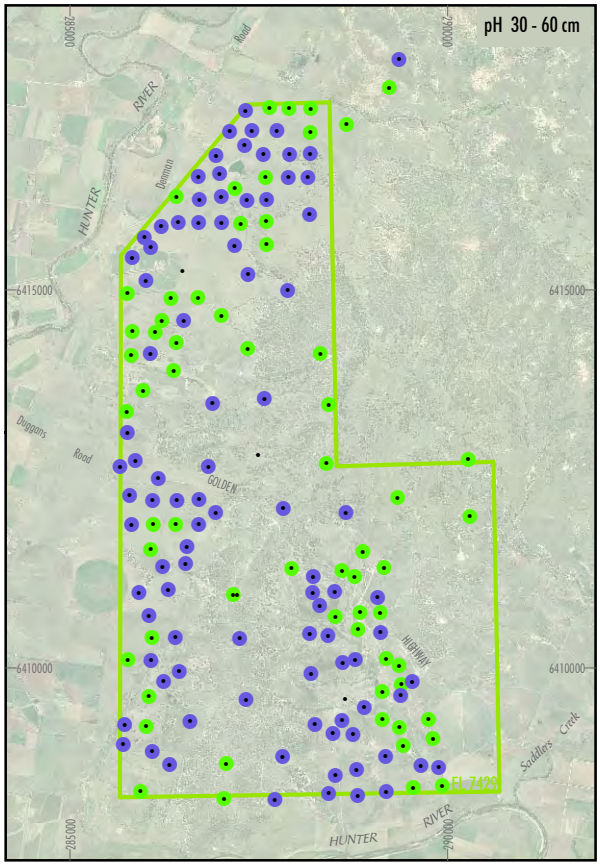
(Electrical Conductivity - ECe)

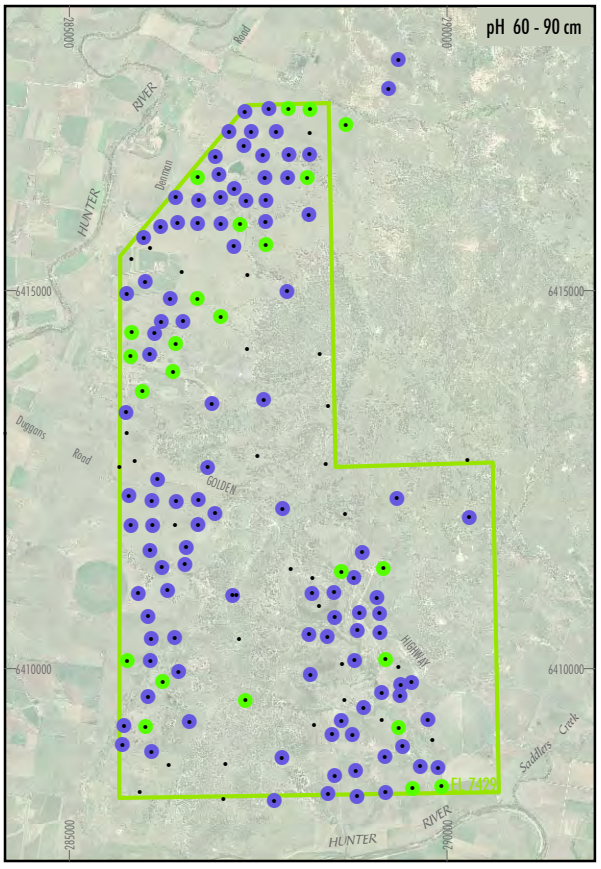
SPUR HILL UNDERGROUND COKING COAL

SHM-11-01_Gateway ARA_212F









LEGEND

Exploration Licence (EL 7429)

Soil Test Pit

< 4.5

4.5 - 5.5

5.6 - 8.1

> 8.1

0 1 2 3 4

Kilometers

GRID DATUM MGA 94 ZONE 56

Source: Topographic Base - Department of Lands , 2009

SOILmgt

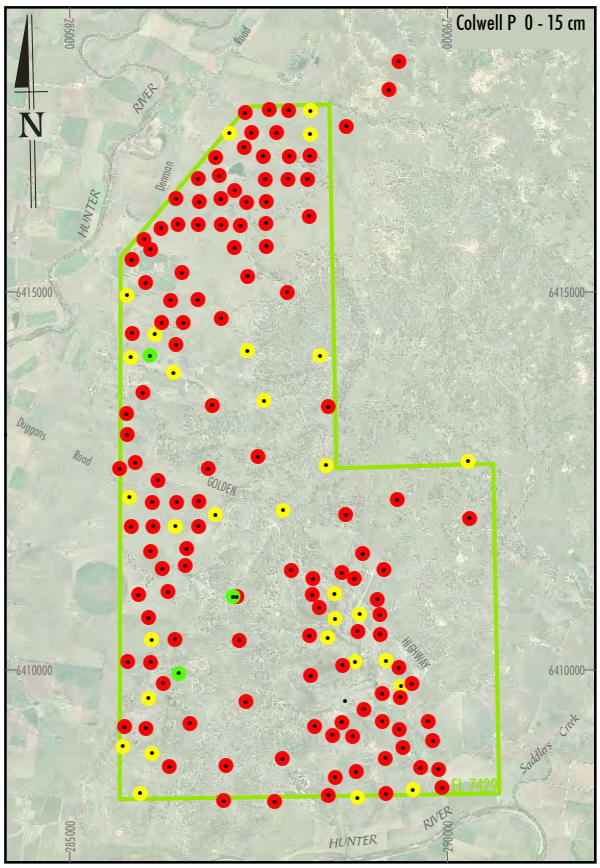
SPUR HILL UNDERGROUND COKING COAL PROJECT

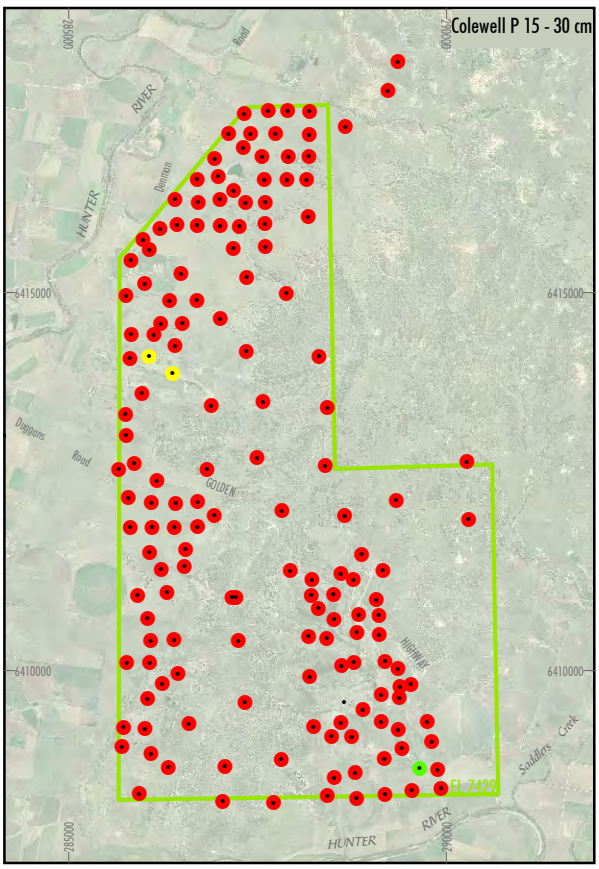
Map 12

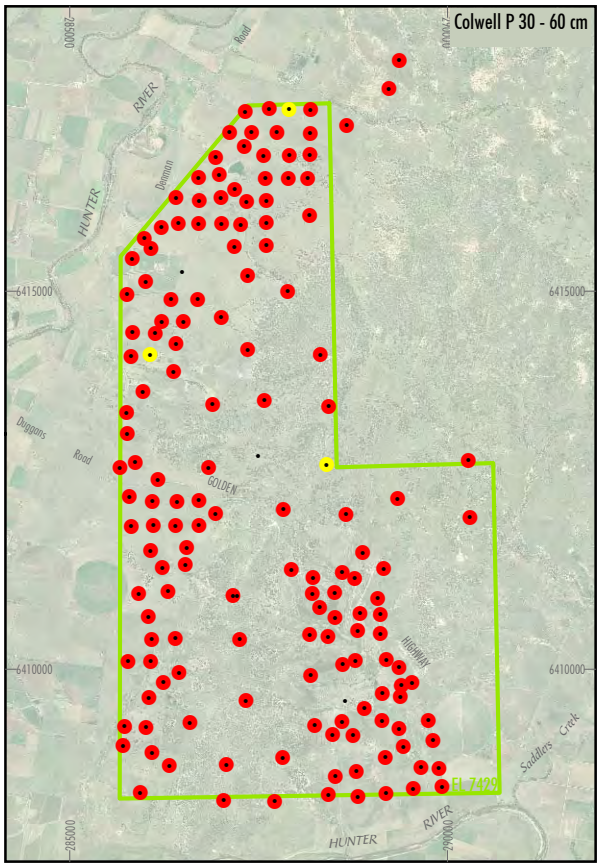
pH ($CaCl_2$)

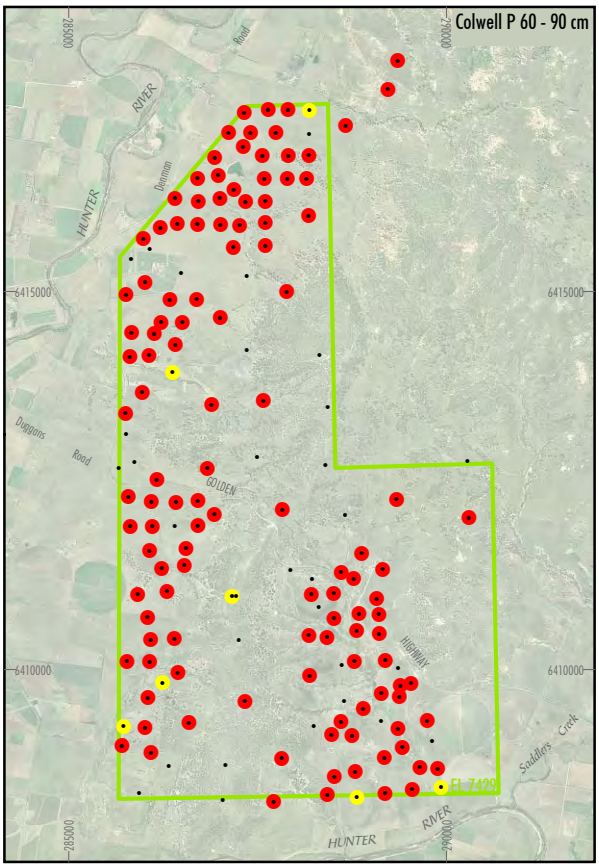
SPUR HILL UNDERGROUND COKING COAL

SHM-11-01_Gateway ARA_213E









LEGEND

Exploration Licence (EL 7429)

Soil Test Pit

< 10 mg/kg

10 - 30 mg/kg

> 30 mg/kg

0 1 2 3 4

Kilometers

GRID DATUM MGA 94 ZONE 56

Source: Topographic Base - Department of Lands , 2009

SOILmgt

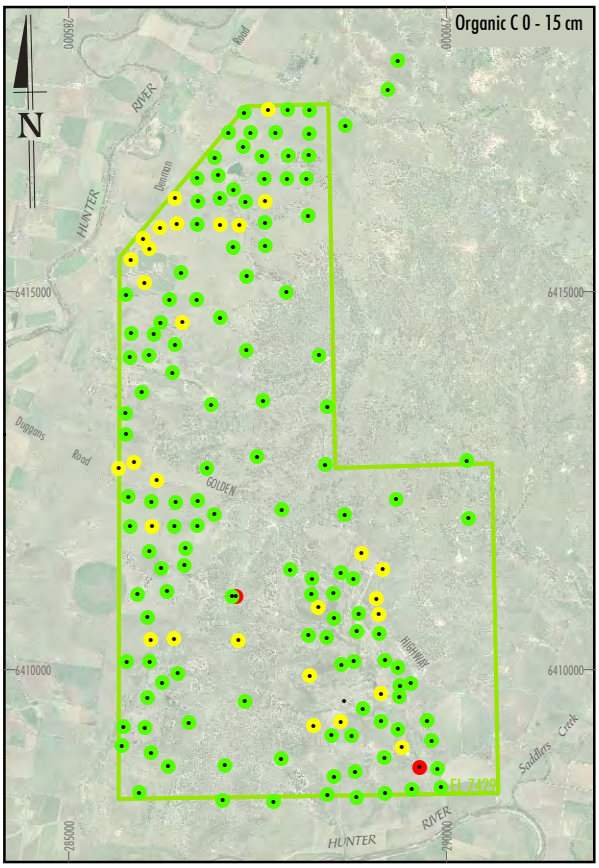
SPUR HILL UNDERGROUND COKING COAL PROJECT

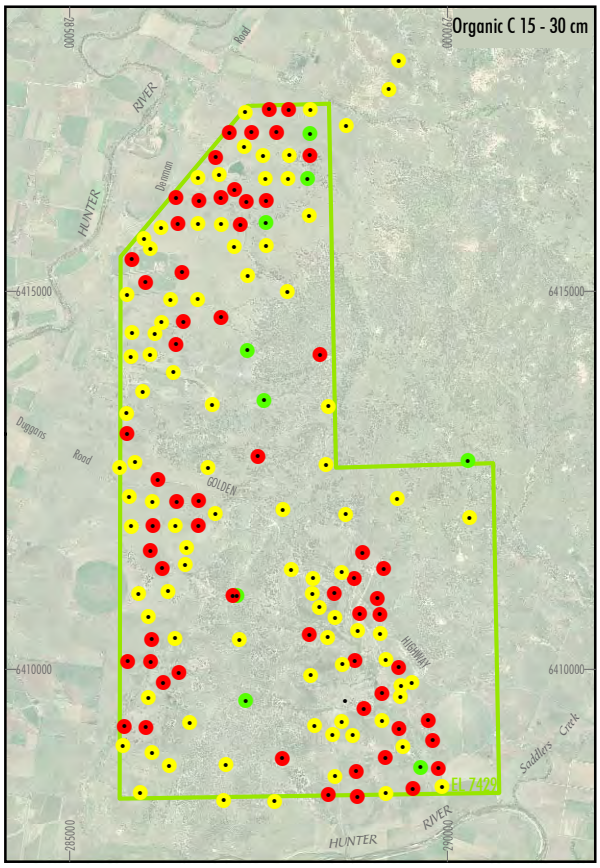
Map 13

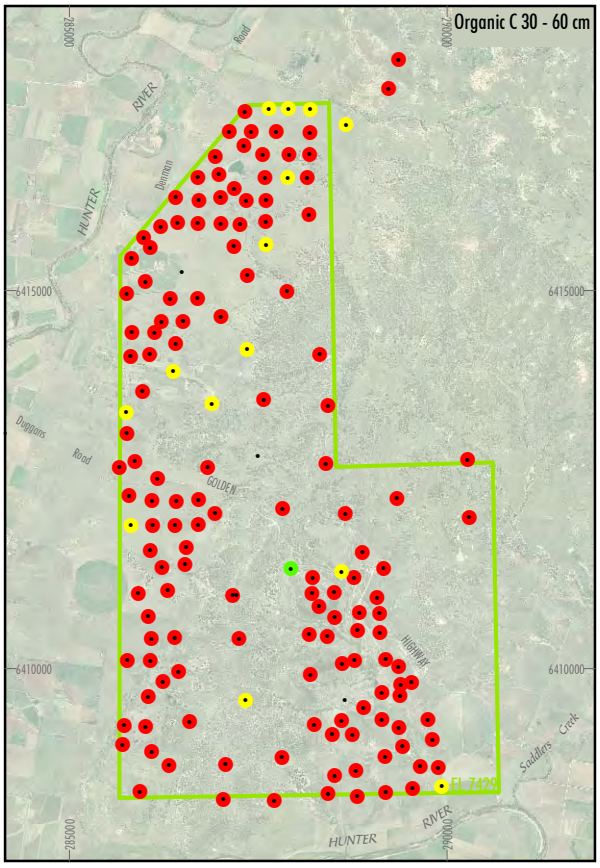
Phosphorus (Colwell P)

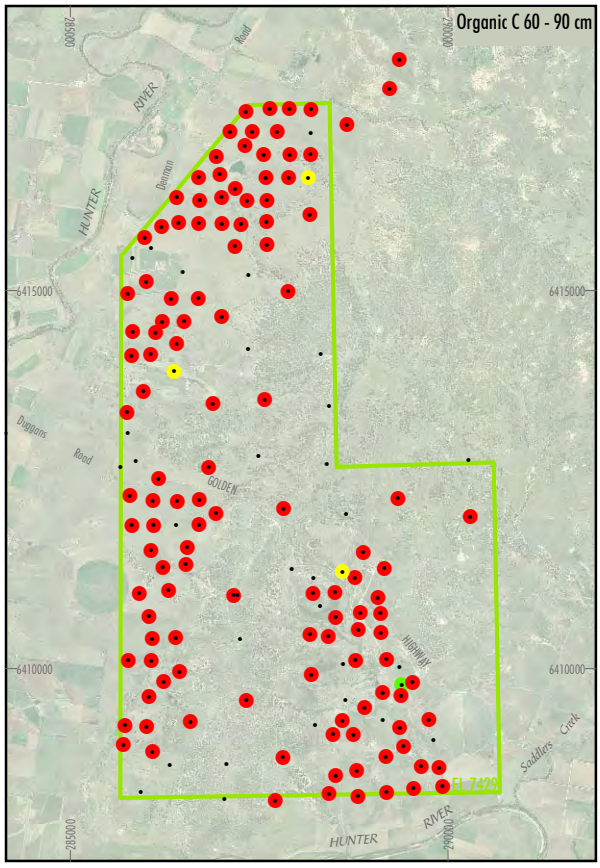
SPUR HILL UNDERGROUND COKING COAL

SHM-11-01_Gateway ARA_214E









LEGEND

Exploration Licence (EL 7429)

Soil Test Pit

< 0.8%

0.8 - 1.5%

> 1.5%

0 1 2 3 4

Kilometers

GRID DATUM MGA 94 ZONE 56

Source: Topographic Base - Department of Lands , 2009

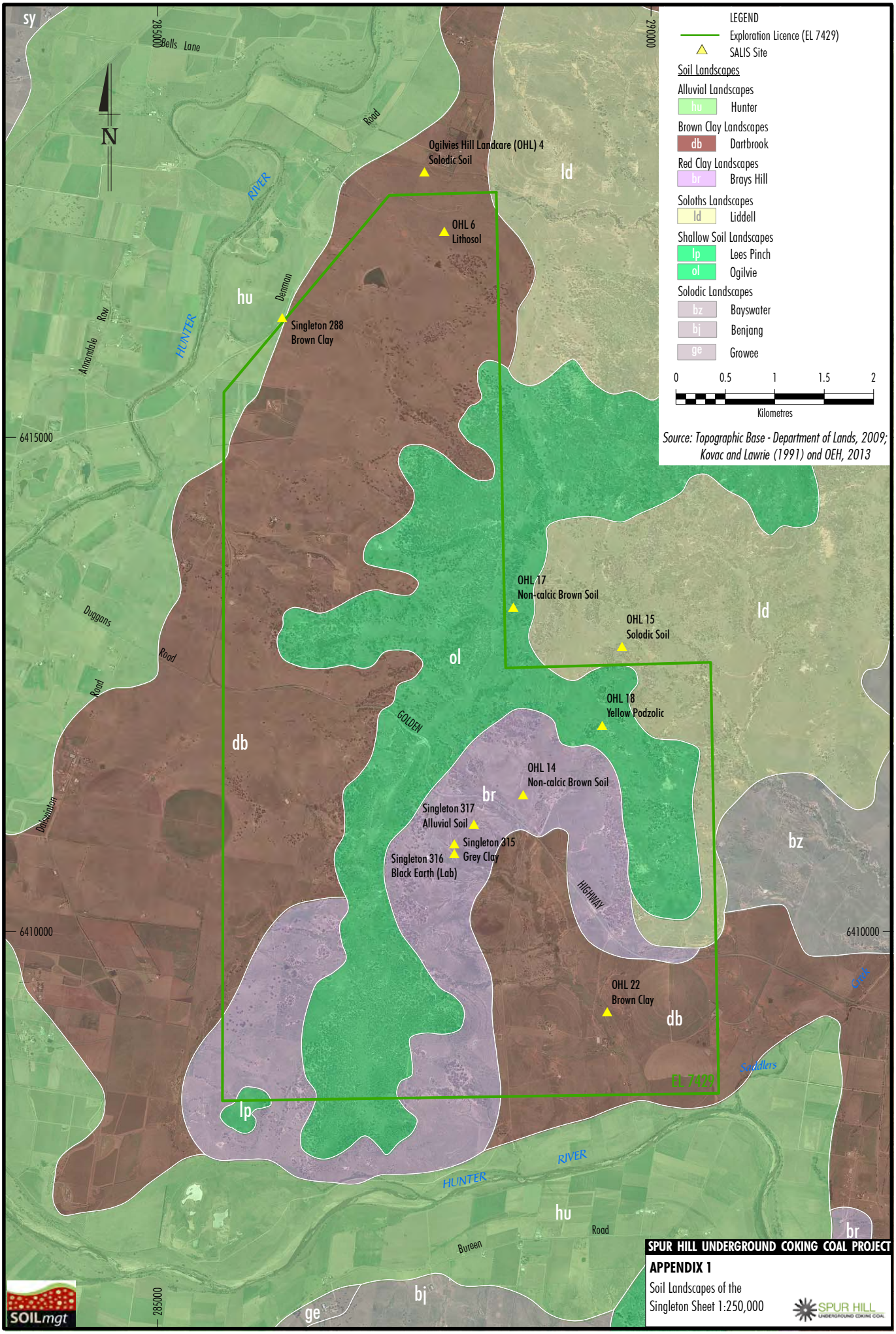
SPUR HILL UNDERGROUND COKING COAL PROJECT

Map 14

Organic Carbon

SOILmgt

SHM-11-01_Gateway ARA_215F



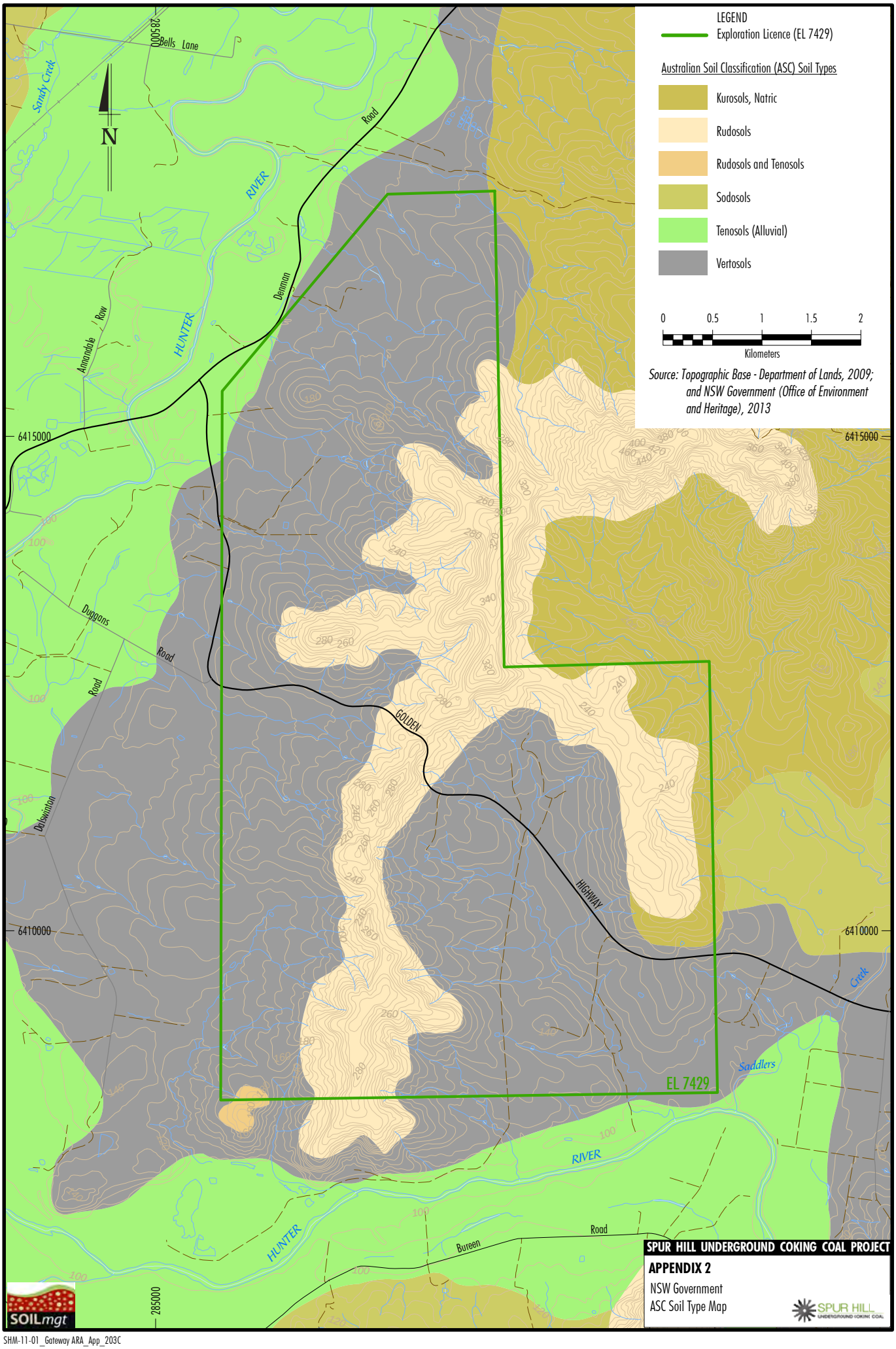
SPUR HILL UNDERGROUND COKING COAL PROJECT

APPENDIX 1

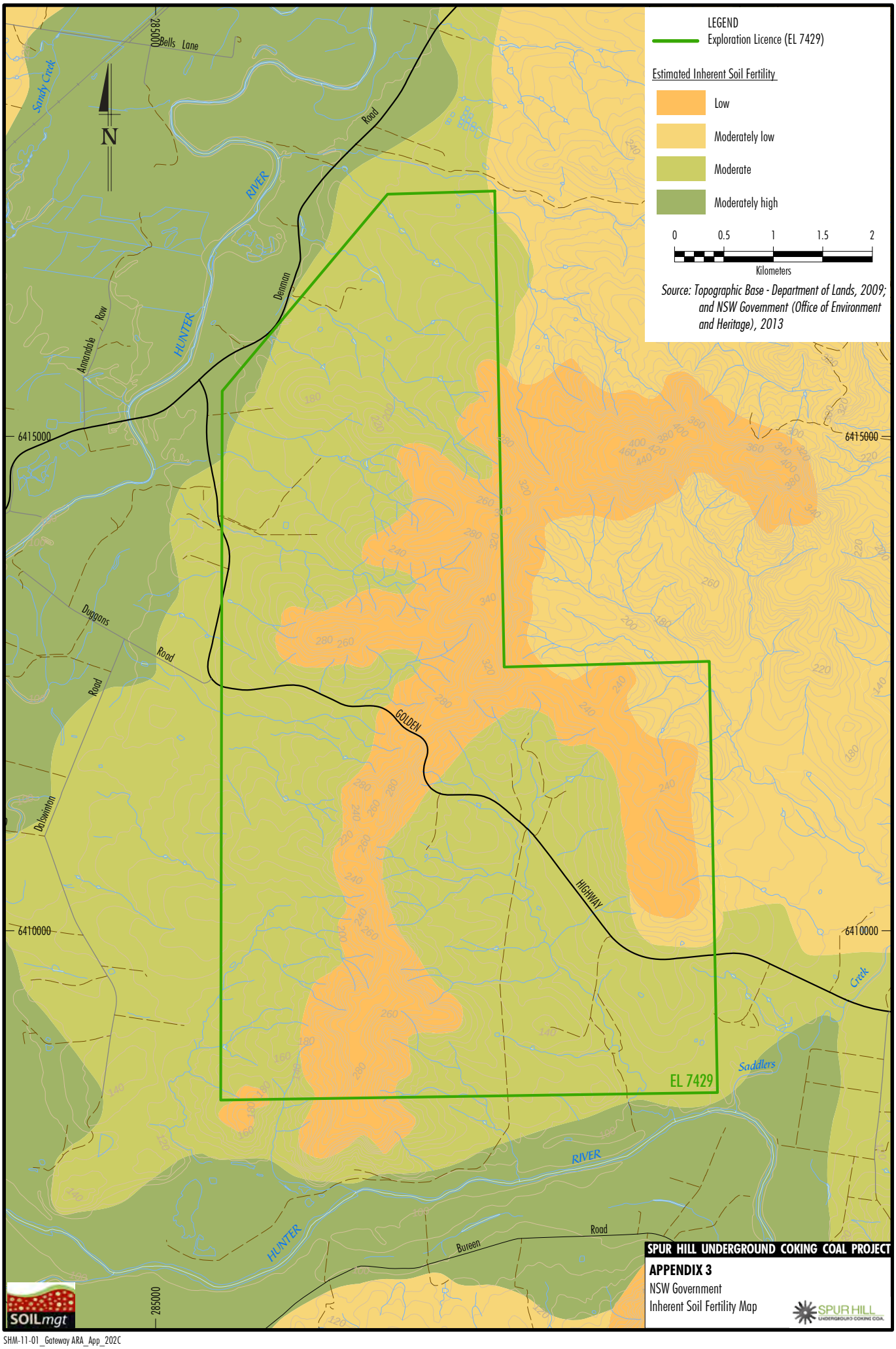
Soil Landscapes of the Singleton Sheet 1:250,000

SOILmgt

SPUR HILL UNDERGROUND COKING COAL



SHM-11-01_Gateway ARA_App_203C



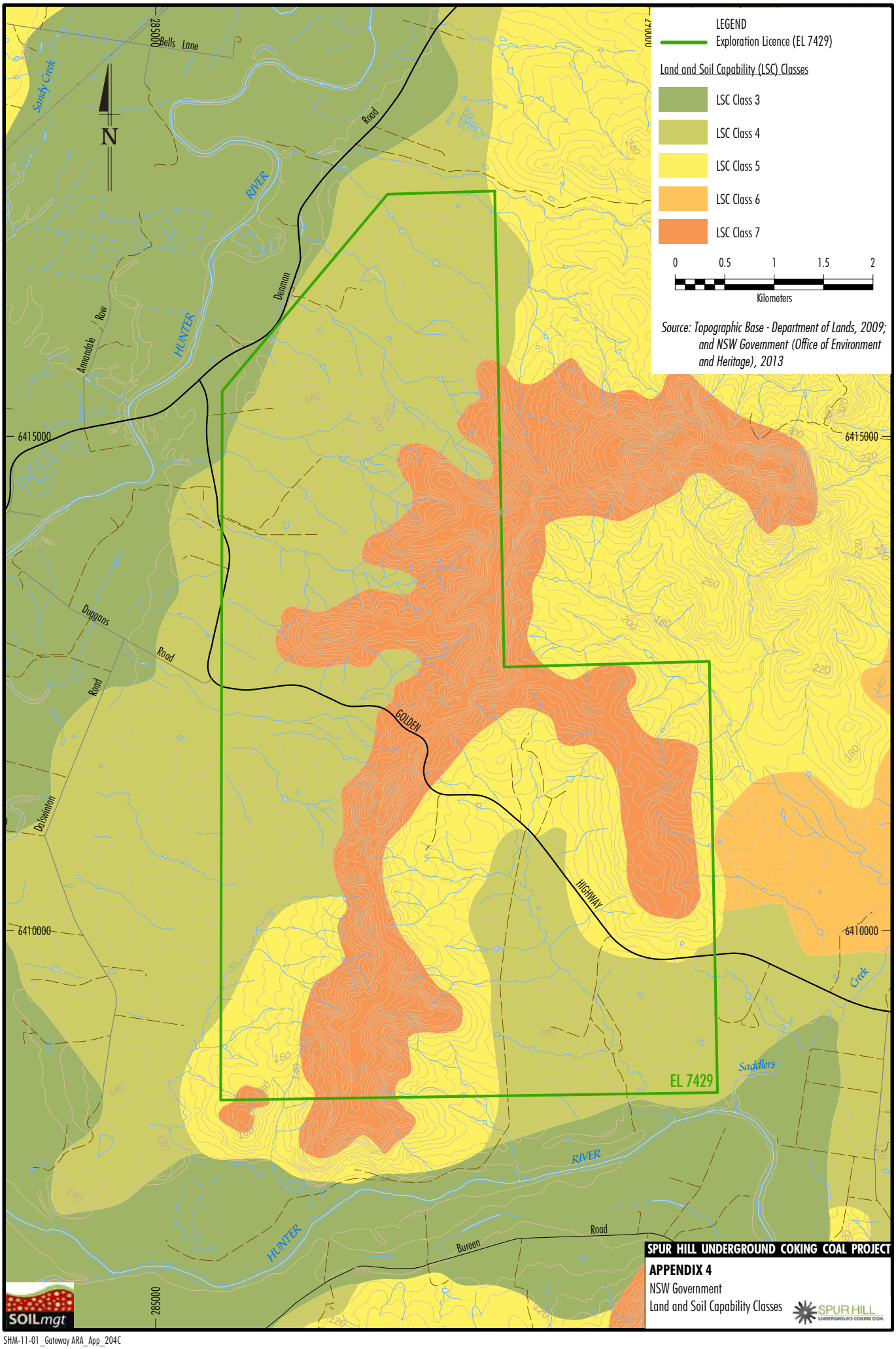
SPUR HILL UNDERGROUND COKING COAL PROJECT

APPENDIX 3

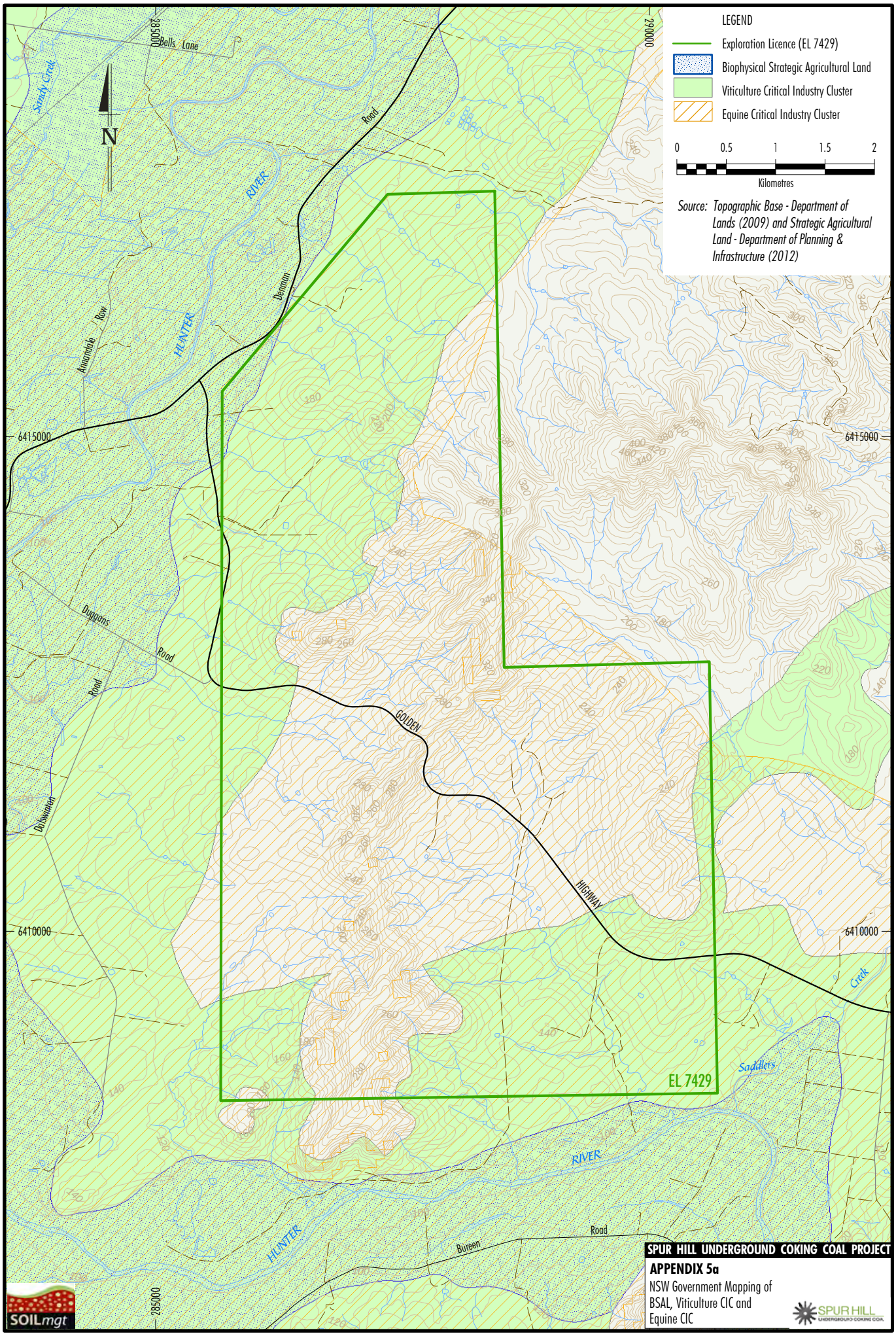
NSW Government
Inherent Soil Fertility Map

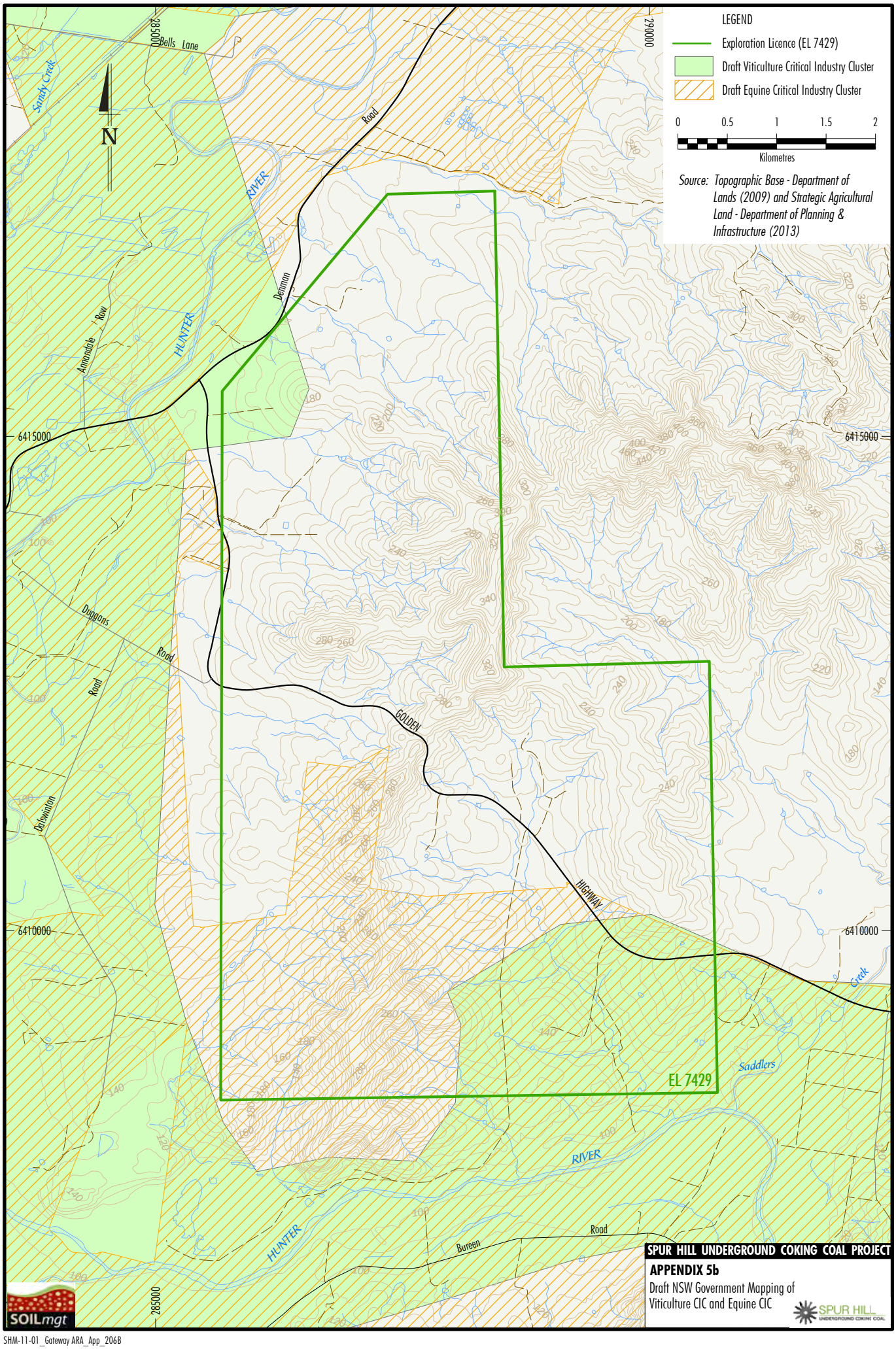
SOILmgt

SHM-11-01_Gateway ARA_App_202C



SHM-11-01_Gateway ARA_App_204C


LEGEND
Exploration Licence (EL 7429)
Biophysical Strategic Agricultural Land
Viticulture Critical Industry Cluster
Equine Critical Industry Cluster
0 0.5 1 1.5 2
Kilometres
Source: Topographic Base - Department of Lands (2009) and Strategic Agricultural Land - Department of Planning & Infrastructure (2012)
N
Bells Lane
Sandy Creek
Road
RIVER
Denman
HUNTER
Row
Amandale
285000
290000
6415000
6410000
Duggans
Road
Road
GOLDEN
HIGHWAY
Dalswinton
Creek
Saddlers
EL 7429
RIVER
HUNTER
Bureen
Road
SOILmgt
SPUR HILL UNDERGROUND COKING COAL PROJECT
APPENDIX 5a
NSW Government Mapping of BSAL, Viticulture CIC and Equine CIC
SPUR HILL
UNDERGROUND COKING COAL


LEGEND
Exploration Licence (EL 7429)
Draft Viticulture Critical Industry Cluster
Draft Equine Critical Industry Cluster
0 0.5 1 1.5 2
Kilometres
Source: Topographic Base - Department of Lands (2009) and Strategic Agricultural Land - Department of Planning & Infrastructure (2013)
N
285000
290000
6415000
6410000
Bells Lane
Sandy Creek
Road
RIVER
Denman
HUNTER
Row
Annandale
Duggans
Road
Road
Dalswinton
GOLDEN
HIGHWAY
EL 7429
Saddlers
Creek
RIVER
HUNTER
Bureen
Road
SOILmgt
SPUR HILL UNDERGROUND COKING COAL PROJECT
APPENDIX 5b
Draft NSW Government Mapping of Viticulture CIC and Equine CIC
SPUR HILL UNDERGROUND COKING COAL

Appendix 6. Overview data – Pits 1 to 159

Field Site ID	Farm Pit ID	Report Pit #	ASC	Land Use / Vegetation Type	Landscape Position	Easting (m) WGS84	Northing (m) WGS84	BSAL Status	Depth to Rock (cm)	Depth to Lime Layer (cm)	TAW (0-100 cm) (mm)	Depth to Mottled Layer (cm)	Other Comments
78	22-1	1	Red Sodosol	Moderately dense pasture	Lower slope	287324	6417368			35	149		
79	22-2	2	Stratic Rudosol	Short pasture	Lower slope	287641	6417405				135		Colluvium
80	22-3	3	Stratic Rudosol	Short pasture	Lower slope	287902	6417401				176		Colluvium
81	22-4	4	Stratic Rudosol	Short pasture	Lower slope	288188	6417399				176		Colluvium
145	22-37	5	Red Kandosol	Sparse pasture	Mod. steep mid slope	289225	6417674			25	102		Heavily eroded nearby (gully, rill, sheet)
146	22-38	6	Red Sodosol	Moderately dense pasture	Upper mid slope	289357	6418048			8	92		
82	22-5	7	Stratic Rudosol	Moderate grass	Lower mid slope	287116	6417097			60	126		
83	22-6	8	Stratic Rudosol	Short pasture	Mid slope	287408	6417099			50	149		
84	22-7	9	Brown Chromosol	Tall vigorous pasture	Mid slope	287740	6417099			50	203		
85	22-8	10	Red Chromosol	Moderately dense pasture	Mid slope	288184	6417084		65	65	82		
144	22-36	11	Brown Dermosol	Short pasture	Lower slope	288663	6417189	Probably		50	190		
86	22-9	12	Brown Sodosol	Moderately dense pasture	Lower slope	286933	6416769			10	210		
87	22-10	13	Brown Vertosol	Moderately dense pasture	Upper mid slope	287310	6416916			60	210		
88	22-11	14	Red Sodosol	Moderately dense pasture	Mid slope	287563	6416790			45	194		
89	22-12	15	Red Vertosol	Sparse pasture	Lower mid slope	287907	6416796			0	198		Linear gilgai; very wavy horizon boundaries
90	22-13	16	Red Vertosol	Sparse pasture near woodland	Lower mid slope	288178	6416802			0	144		Linear gilgai; very wavy horizon boundaries
91	22-14	17	Brown Vertosol	Moderately dense pasture	Lower slope	286703	6416498			40	138		
92	22-15	18	Brown Sodosol	Moderately dense pasture	Lower slope	286981	6416537			45	144		
93	22-16	19	Brown Sodosol	Moderately dense pasture	Mid slope	287591	6416492		90	55	189		
94	22-17	20	Black Vertosol	Moderately dense pasture	Mid slope	287894	6416490			25	210		
95	22-18	21	Red Sodosol	Moderately dense pasture	Upper mid slope	288150	6416493			60	158		
96	22-19	22	Brown Sodosol	Tall vigorous pasture	Lower slope	286408	6416234			65	200		
97	22-20	23	Stratic Rudosol	Moderately dense pasture	Lower slope	286715	6416194			50	108		Colluvium
98	22-21	24	Brown Vertosol	Moderately dense pasture	Lower slope	287002	6416234			0	174		
99	22-22	25	Brown Sodosol	Moderately dense pasture	Mid slope	287185	6416343			40	161		
100	22-23	26	Red Dermosol	Moderately dense pasture	Mid slope	287341	6416184			55	180		
101	22-24	27	Grey Vertosol	Moderately dense pasture	Lower mid slope	287602	6416196			30	150		
102	22-25	28	Brown Vertosol	Sparse pasture	Mid slope	286212	6415843			20	198		
103	22-26	29	Red Sodosol	Tall moderately dense pasture	Mid slope	286437	6415893			15	196	100	Very wavy horizon boundaries

Field Site ID	Farm Pit ID	Report Pit #	ASC	Land Use / Vegetation Type	Landscape Position	Easting (m) WGS84	Northing (m) WGS84	BSAL Status	Depth to Rock (cm)	Depth to Lime Layer (cm)	TAW (0-100 cm) (mm)	Depth to Mottled Layer (cm)	Other Comments
104	22-27	30	Black Vertosol	Short pasture	Mid slope	286703	6415889			20	138		Pugged surface
105	22-28	31	Brown Vertosol	Short pasture	Mid slope	287008	6415886			0	144		
106	22-29	32	Stratic Rudosol	Moderately dense pasture	Mini alluvial flat	287262	6415877				104	22	
107	22-30	33	Grey Vertosol	Moderately dense pasture	Mid slope	287601	6415905	Probably		50	210		
108	22-31	34	Brown Vertosol	Short pasture	Upper mid slope	288172	6416001			35	186		
109	22-32	35	Yellow Vertosol	Moderately dense pasture	Mid slope	285988	6415696		110	25	120		Erosion gullies nearby
110	22-33	36	Grey Vertosol	Patchy pasture	Steep mid slope	286072	6415565			30	126		
111	22-34	37	Brown Vertosol	Moderately dense pasture	Mid slope	287179	6415583			30	126		
112	22-35	38	Stratic Rudosol	Tall vigorous pasture	Lower slope	287602	6415601			90	190		
157	9_1	39	Brown Vertosol	Pasture between vines	Midslope (12%)	285827	6415423		70	30	130		
122	32-1	40	Red - Orthic Tenosol	Moderately dense pasture	Near top of hill	286490	6415251		50		68		
123	32-2	41	Grey Vertosol	Sparse pasture	Steep upper slope	287357	6415202		65	10	137	25	
124	32-3	42	Brown Vertosol	Moderately dense pasture	Mid slope above gully	287885	6414993		140	45	187		
155	9_2	43	Black Dermosol	Moderately dense pasture	Colluvium-alluvium b'dary	285761	6414955			40	194		
156	9_3	44	Brown Dermosol	Moderately dense pasture	Lower slope	286008	6415120			25	144		
120	32-4	45	Stratic Rudosol	Moderately dense pasture	Near drainage line	286339	6414889			90	132		Colluvium
121	32-5	46	Stratic Rudosol	Moderately dense pasture	Near drainage line	286697	6414893			65	146		Colluvium
118	32-6	47	Brown Vertosol	Tall vigorous pasture	Near drainage line	286220	6414590	Probably			174		
119	32-7	48	Red Kandosol	Moderately dense pasture	Lower mid slope	286507	6414592			12	174		
125	32-8	49	Stratic Rudosol	Tall vigorous pasture	Upper mid slope	287006	6414655				182		Colluvium
115	32-9	50	Red Dermosol	Tall vigorous pasture	Lower slope	285831	6414452	Probably		0	186		Colluvium
116	32-10	51	Brown Dermosol	Short pasture	Upper mid slope	286132	6414437	Probably		0	210		
117	32-11	52	Red Kandosol	Moderately dense pasture	Upper mid slope	286410	6414299	Probably	95	10	152	50	Near contour bank; B21 had shrinkage cracks
126	32-12	53	Grey - Orthic Tenosol	Moderately dense pasture	Upper slope	287355	6414220		40		84		
128	32-15	54	Yellow Sodosol	Tall pasture; eucalypts nearby	Upper slope	288316	6414159		50		67	30	
113	32-13	55	Brown Dermosol	Moderately dense pasture	Lower slope	285812	6414132	Probably		80	210		
114	32-14	56	Brown Sodosol	Short pasture	Short pasture	286065	6414158			40	164		A1 water repellent
143	19-1	57	Black Dermosol	Thick mown pasture	Lower slope	286374	6413929	Probably			199		
159	15_2	58	Grey Vertosol	Thick pasture	Lower midslope (7%)	285753	6413387			40	176		

Field Site ID	Farm Pit ID	Report Pit #	ASC	Land Use / Vegetation Type	Landscape Position	Easting (m) WGS84	Northing (m) WGS84	BSAL Status	Depth to Rock (cm)	Depth to Lime Layer (cm)	TAW (0-100 cm) (mm)	Depth to Mottled Layer (cm)	Other Comments
158	15_1	59	Brown Vertosol	Thick pasture	Lower midslope (8%)	285970	6413667	Probably		10	179		Vertical calcareous solution pipe (with blue breccia) on side of pit
142	19-2	60	Brown Vertosol	Moderately dense pasture	Mid slope	286890	6413503		110	50	164		
127	32-16	61	Red Sodosol	Tall weedy pasture	Lower slope above gully	287576	6413556			45	206		
129	31-1	62	Black Dermosol	Tall vigorous pasture	Rounded ridge top	288427	6413474		70		147	35	Narrow plateau on ridgeline
160	15_3	63	Red Dermosol	Moderately dense pasture	Mid slope (7%)	285762	6413113		50	30	105		
162	15_4	64	Grey Vertosol	Moderately dense pasture	Upper mid slope (9%)	285868	6412738		60	35	84		
161	15_7	65	Red Dermosol	Moderately dense pasture	Lower mid slope (6%)	285663	6412663		50	15	45		
163	15_8	66	Brown Vertosol	Poor pasture	Lower mid slope (8%)	286167	6412506			20	132		
164	15_5	67	Grey Vertosol	Excellent green pasture	Upper mid slope (12%)	286835	6412662		140	30	186		Coal, 100-120 cm
165	15_6	68	Grey Vertosol	Moderately dense pasture	Mid slope (17%)	287493	6412817		110	20	109		
130	31-2	69	Brown - Orthic Tenosol	Tall vigorous pasture	Rounded ridge top	288396	6412705		50		98		Tongues of fertile soil in rock fissures
141	31-3	70	Red Dermosol	Moderately dense pasture	Near crest of hill	290272	6412759		60		54		Numerous "Yams" 15-45 cm deep; fertile soil in vertical rock fissures
77	17-1	71	Brown Dermosol	Tall vigorous pasture	Lower slope	285790	6412280			35	186		
76	17-2	72	Red Dermosol	Moderately dense pasture	Lower mid slope	286096	6412218			45	210		
75	17-3	73	Brown Dermosol	Moderately dense pasture	Mid slope	286420	6412214			50	186		
74	17-4	74	Red Sodosol	Moderately dense pasture	Mid slope	286710	6412229			20	201		Erosion gullies nearby
69	17-5	75	Stratic Rudosol	Tall vigorous pasture	Lower mid slope	285815	6411892			60	210		
70	17-6	76	Grey Dermosol	Tall vigorous pasture	Lower slope	286106	6411898	Probably		75	145		Colluvium
71	17-7	77	Yellow Dermosol	Moderately dense pasture	Lower mid slope	286402	6411896		55	55	116		
72	17-8	78	Brown Sodosol	Short pasture	Mid slope	286707	6411899			15	203		
73	17-9	79	Yellow Dermosol	Short pasture	Mid slope	286930	6412053			25	120		
131	31-4	80	Black Vertosol	Moderately dense pasture	Rounded ridge top	287825	6412111		80	40	168		Narrow plateau on ridgeline
132	31-5	81	Black Sodosol	Mod. pasture; eucalypts nearby	Lower mid slope	288655	6412047		70	40	146		
139	31-6	82	Red - Orthic Tenosol	Moderately dense pasture	Hill crest edge	289336	6412251		35		74		"Yams" 15-30 cm deep
140	31-7	83	Red - Orthic Tenosol	Moderately dense pasture	Upper mid slope	290294	6412004		45		95		
68	17-10	84	Red Dermosol	Tall vigorous pasture	Mid Slope	286070	6411565	Probably		60	172		

Field Site ID	Farm Pit ID	Report Pit #	ASC	Land Use / Vegetation Type	Landscape Position	Easting (m) WGS84	Northing (m) WGS84	BSAL Status	Depth to Rock (cm)	Depth to Lime Layer (cm)	TAW (0-100 cm) (mm)	Depth to Mottled Layer (cm)	Other Comments
66	30-1	85	Brown Vertosol	Short pasture; no clover	Lower mid slope	286550	6411604			5	150		Pugged grey clay surface
138	31-9	86	Stratic Rudosol	Moderately dense pasture	Lower slope	288877	6411537			50	161		Narrow alluvial plain next to creek
67	17-11	87	Red Chromosol	Tall vigorous pasture	Upper mid slope	286228	6411339			18	173		
65	30-2	88	Brown Sodosol	Moderately dense pasture	Lower mid slope	286531	6411380			50	203		
20	35-1	89	Grey Dermosol	Sparse pasture	Upper mid slope	287934	6411317		70	18	102		
19	35-2	90	Brown Sodosol	Sparse pasture	Upper mid slope	288222	6411203		65	30	130		
133	31-8	91	Stratic Rudosol	Moderately dense pasture	Lower slope	288604	6411283				193		
134	31-11	92	Red Sodosol	Moderately dense pasture	Lower mid slope	288769	6411201			30	181		B21 columnar
137	31-10	93	Stratic Rudosol	Tall vigorous pasture	Lower slope	289156	6411325				155	80	Colluvium
153	23_1	94	Brown Vertosol	Sparse pugged pasture	Upper slope (4%)	285914	6410995		100	30	179		
154	23_2	95	Black Vertosol	Sparse pasture	Upper mid slope (8%)	286302	6411031			10	138		
47	29-1b	96	Black Vertosol	Heavily grazed pasture	Small elevated swamp	287162	6410968	Probably		45	210		Bluish tinge in soil for first few minutes
46	29-1a	97	Yellow - Orthic Tenosol	Moderately dense pasture	Rounded ridge top	287216	6410971		35		74	8	Shallow soil near swamp (on ridge)
18	35-3	98	Brown Sodosol	Moderately dense pasture	Top of broad ridge	288212	6410993		65	25	205		
17	35-4	99	Brown Vertosol	Short pasture with daisies	Mid slope	288506	6411007			12	126	60	
135	31-12	100	Red Sodosol	Moderately dense pasture	Lower mid slope	289074	6410935			80	179		
53	8-1	101	Grey Sodosol	Tall vigorous pasture	Mid Slope	286044	6410689		90	20	200		Coal > 90 cm
16	35-5	102	Brown Sodosol	Tall pasture	Top of broad ridge	288308	6410821		60	45	119		
15	35-6	103	Brown Sodosol	Short pasture	Upper mid slope	288514	6410678		75	60	202		
9	35-7	104	Brown Sodosol	Short pasture	Mid slope	288842	6410736			35	210		
136	31-13	105	Red Sodosol	Moderately dense pasture	Lower mid slope	289107	6410727			60	201		
54	8-2	106	Brown Kandosol	Moderately dense pasture	Lower mid slope	286087	6410392		70	50	106		
52	30-3	107	Brown Vertosol	Tall moderately dense pasture	Lower slope	286399	6410405			70	180		
48	30-4	108	Grey - Orthic Tenosol	Sparse pasture & shrubs	Steep ridge top	287249	6410391		65	30	137		
14	35-8	109	Grey Sodosol	Short pasture	Upper mid slope	288177	6410452			50	203		
13	35-9	110	Brown Sodosol	Short pasture	Upper mid slope	288418	6410425			30	97		Eroded gully nearby
8	35-10	111	Brown Dermosol	Short pasture	Mid slope	288814	6410507				210		
10	34-2	112	Red Dermosol	Tall pasture	Mid slope	289111	6410469			55	210		
55	8-3	113	Red Chromosol	Moderately dense pasture	Upper mid slope	285772	6410105	Probably		90	189	40	
56	8-4	114	Red Sodosol	Tall vigorous pasture	Upper mid slope	286074	6410103			50	155		

Field Site ID	Farm Pit ID	Report Pit #	ASC	Land Use / Vegetation Type	Landscape Position	Easting (m) WGS84	Northing (m) WGS84	BSAL Status	Depth to Rock (cm)	Depth to Lime Layer (cm)	TAW (0-100 cm) (mm)	Depth to Mottled Layer (cm)	Other Comments
51	30-5	115	Brown Sodosol	Moderately dense pasture	Mid Slope	286447	6409951			25	199		
21	35-13	116	Grey Vertosol	Pugged pasture, surface cracks	Upper mid slope	288192	6409919		110	40	210		
7	35-11	117	Black Vertosol	Short pasture	Upper mid slope	288613	6410063		55	25	116		
12	34-3	118	Brown Sodosol	Short pasture	Mid slope	288777	6410108			40	208		
11	34-4	119	Red Sodosol	Tall dense pasture	Mid slope	289189	6410122			45	203		Saturated A2; backhoe got bogged
45	30-7b	120	Red Chromosol	Tall vigorous pasture	Upper mid slope	289358	6410026		45		59		
58	8-6	121	Stratic Rudosol	Tall vigorous pasture	Mid Slope	286047	6409621			50	205		Colluvial outwash
57	8-5	122	Red Sodosol	Moderately dense pasture	Mid Slope	286241	6409823			30	167		
49	30-8a	123	Black Vertosol	Moderately dense pasture	Rounded ridge top	287331	6409582				194		"Yams" 10-30 cm deep
6	35-12	124	Brown Sodosol	Short pasture	Mid slope	288644	6409585			50	205		
3	34-7	125	Brown Sodosol	Short pasture	Creek line colluvium	288896	6409480			35	153		Pale volcanic angular coarse fragments in subsoil
5	34-5	126	Brown Sodosol	Short pasture	Mid slope	289138	6409683			65	197	65	
42a	30-9a	127p	P Yellow Vertosol	Short pasture	Mid slope	289376	6409633			0	192		Linear gilgai - puff
42b	30-9b	127d	D Brown Vertosol	Short pasture	Mid slope	289377	6409634			0	210		Linear gilgai - depression
44	30-6	128	Brown Chromosol	Moderately dense pasture	Upper mid slope	289388	6409785	Probably	80	40	170		Coal > 80 cm
43	30-7a	129	Grey Vertosol	Moderately dense pasture	Mid slope	289530	6409819			35	186		
59	8-7	130	Red Sodosol	Moderately dense pasture	Lower mid slope	285727	6409244		90	40	184		Breccia parent material
60	8-8	131	Red Chromosol	Moderately dense pasture	Lower mid slope	286010	6409227		60	50	120		Vertical calcareous solution pipe
50	30-8b	132	Brown Vertosol	Tall dense pasture	Mid Slope	286591	6409292			10	210		
22	36-1	133	Grey Sodosol	Short dense pasture	Upper slope	288242	6409256		65	40	131		
23	36-2	134	Brown Dermosol	Short dense pasture with daisies	Upper mid slope	288479	6409132			30	186	85	
2	34-6	135	Brown Kandosol	Short pasture	Upper slope	288605	6409306			22	116		Shrinkage cracks in subsoil
1	34-8	136	Brown Vertosol	Short pasture	Upper slope	288748	6409121			30	210	30	Farmer comment: "cracks when dry, excellent wheat in wet years".
4	34-9	137	Brown Dermosol	Short pasture	Upper mid slope	289135	6409318		45		95		
40	30-10	138	Red Sodosol	Tall dense pasture	Mid slope	289360	6409211			50	138		Excellent earth aroma
41	30-11	139	Red Chromosol	Tall dense pasture	Mid slope	289746	6409324			75	193		
39	30-13	140	Red Chromosol	Tall dense pasture	Mid slope	289808	6409059			60	180		
61	8-9	141	Brown Sodosol	Short pasture	Mid Slope	285706	6408986			40	203		
62	8-10	142	Brown Dermosol	Moderately dense pasture	Upper mid slope	286092	6408894		55	55	128		
63	8-11	143	Brown Dermosol	Moderately dense pasture	Rounded ridge top	286321	6408722		70	45	131		

Field Site ID	Farm Pit ID	Report Pit #	ASC	Land Use / Vegetation Type	Landscape Position	Easting (m) WGS84	Northing (m) WGS84	BSAL Status	Depth to Rock (cm)	Depth to Lime Layer (cm)	TAW (0-100 cm) (mm)	Depth to Mottled Layer (cm)	Other Comments
29	34-1a	144	Brown Dermosol	Tall dense grass pasture	Gently sloping ridge top	287071	6408733		60		126		
25	36-3	145	Brown Sodosol	Tall dense pasture	Lower mid slope	287816	6408824			45	201		
24	36-4	146	Black Sodosol	Moderately dense pasture	Mid slope	288516	6408580			40	203		
30	34-10	147	Brown Sodosol	Moderately dense pasture	Gentle mid slope	288792	6408649			40	193		
33	34-11	148	Brown Sodosol	Short pasture	Upper mid slope	289178	6408830			40	181		
38	30-12	149	Stratic Rudosol	Short pasture	Mid slope	289413	6408971		95	45	210		
36	30-14	150	Red Vertosol	Short pasture	Lower slope	289646	6408702			65	177		
37	30-15	151	Red Dermosol	Short pasture	Mid slope	289884	6408686			23	210	50	
64	8-12	152	Brown Dermosol	Tall vigorous pasture	Upper slope	285935	6408363		50	30	105		Breccia parent material
28	34-1b	153	Red Dermosol	Tall dense diverse pasture	Gently sloping ridge top	287039	6408267		40	20	113		Large numbers of "yams", 20-50 cm deep
27	36-5	154	Red Sodosol	Tall dense pasture	Upper mid slope	287713	6408250			35	206		
26	36-6	155	Grey Vertosol	Moderately dense pasture	Mid Slope	288425	6408339			20	210		
32	34-12	156	Red Sodosol	Tall dense pasture	Gentle mid slope	288811	6408308			50	205		
31	34-13	157	Brown Dermosol	Short pasture	Mid Slope	289186	6408361			35	210		Rill erosion nearby
34	30-16	158	Red Chromosol	Moderately dense pasture	Top of broad ridge	289545	6408415		75	50	76	20	
35	30-17	159	Stratic Rudosol	Short pasture	Lower slope	289927	6408440				189		

Appendix 7. Layer data – Pits 1 to 159

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
78	22-1	1	A1	15	Sandy light clay	7	5YR4/2	Dark reddish grey		1.8		2	Moist	0		3
78	22-1	1	B1	35	Light medium clay	9	5YR4/3	Redish brown		1.7		0	Moist	0		3
78	22-1	1	B2	80	Heavy clay	9	5YR5/4	Reddish brown		0.9		0	Moist	S/H		70
78	22-1	1	BC	120+	Medium clay	9	5YR4/4	Reddish brown		1.5		0	Dry	S/M		
79	22-2	2	A1	18	Silty loam	8	10YR5/4	Yellowish brown		1.9		0	Moist			3
79	22-2	2	2A	32	Loamy sand	8	10YR7/3	Very pale brown		1.5		0	Moist			3
79	22-2	2	3A	65	Silty clay loam	8	10YR5/3	Brown		1.9		0	Slight/Moist			3
79	22-2	2	4A	70	Coarse & fine sand	8.5	10YR6/2	Light brownish grey		1.5		0	Dry			3
79	22-2	2	5A	100	Silty clay loam	6.5	10YR5/4	Yellowish brown		1.7	2	0	Dry			3
79	22-2	2	6A	120	Silty clay loam	8	10YR5/1	Grey		1.9		0	Dry			3
80	22-3	3	A1	20	Silty clay loam	7.5	10YR5/4	Yellowish brown		1.7		0	Moist	0		3
80	22-3	3	2A	50	Silty clay loam	8	10YR4/4	Dark yellowish brown		1.8		0	Moist	0		3
80	22-3	3	3A	75	Silty clay loam	8	10YR5/2	Greyish brown		1.7		0	Moist	0		3
80	22-3	3	4A	120	Light medium clay	8.5	10YR4/6	Dark yellowish brown		1.6		0	Dry	0		3
81	22-4	4	A1	40	Fine sandy loam	8	10YR5/2	Greyish brown		1.9		0	Moist			3
81	22-4	4	2A	50	Silty loam	8	10YR6/4	Light yellowish brown		1.5		0	Moist			3
81	22-4	4	3A	70	Silty clay loam	9	10YR4/2	Dark greyish brown		1.9		0	Moist			3
81	22-4	4	4A	100	Silty clay loam	8	10YR5/3	Brown		1.8		0	Slight/Moist			3(90)
81	22-4	4	5A	130+	Silty clay loam	8.5	10YR4/4	Dark yellowish brown		1.7		0	Dry			
145	22-37	5	A11	12	Light clay	7	5YR5/3	Reddish brown		0.5		0	Dry			3
145	22-37	5	A12	25	Light clay	7.5	5YR4/3	Reddish brown		0.3		0	Dry			2
145	22-37	5	B21	90	Medium clay	8	2.5YR4/4	Reddish brown		0.4		0	Dry	2	N	1(65)
145	22-37	5	B22	120+	Light medium clay	8.5	5YR4/4	Reddish brown		1.5		0	Slight	5	D/P	
146	22-38	6	A1	8	Fine sandy clay loam	6.5	5YR3/2	Dark reddish brown		0.3		1	Dry			2
146	22-38	6	B21	40	Light medium clay	8.5	5YR4/4	Reddish brown		0.6		0	Dry	10	D	1
146	22-38	6	B22	105	Light medium clay	9	5YR4/6	Yellowish red		0.8		0	Slight	15	D/P	1(50)
146	22-38	6	BC	125+						0.0						
82	22-5	7	A1	20/50	Clay loam	6	2.5YR5/1	Reddish grey		1.6	65	0	Moist			3
82	22-5	7	2B21b	60	Medium heavy clay	8	2.5YR4/6	Red		1.0	10	2	Wet			3
82	22-5	7	2B22b	80	Heavy clay	9	2.5YR4/8	Red		0.7		1	Moist	1	D	3(70)
82	22-5	7	BC	120+	Sandy clay loam	9	2.5YR5/3	Reddish brown		1.9		0	Dry	15	D/P	

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
83	22-6	8	A1	30	Clayey sand	6	2.5YR4/1	Dark reddish grey		1.5	95	0	Dry			3
83	22-6	8	2B21b	50	Medium heavy clay	8	2.5YR3/3	Dark reddish brown		1.2	10	0	Moist/Wet			3
83	22-6	8	2B22b	90	Medium clay	9	2.5YR4/6	Red		1.6	5	0	Slight/Moist	30	D/P	3(70)
83	22-6	8	BC	120	Light medium clay	9	2.5YR5/6	Red		1.7		0	Dry	30	D/P	
84	22-7	9	A1	15	Fine sandy clay loam	8	10YR5/1	Grey		1.8	0		Moist			3
84	22-7	9	B21	50	Medium heavy clay	8.5	10YR4/6	Dark yellowish brown		1.0	0		Moist			3
84	22-7	9	B22	90	Medium clay	9	10YR5/4	Yellowish brown		1.5	0		Slight/Moist	10	D/P	3
84	22-7	9	C	120+	Sandy clay loam	9	10YR6/3	Pale brown		1.4	0	10	Dry	30	D/P	3(100)
85	22-8	10	A1	20	Fine sandy clay loam	8	10R5/1	Reddish grey		1.8	60	1	Dry			3
85	22-8	10	B1	40	Silty light clay	7	10R5/3	Weak red		1.5	65	0	Slight/Moist			3
85	22-8	10	B2	65	Medium heavy clay	7.5	10R4/6	Red		1.8	10	0	Moist	20	D/P	3
85	22-8	10	C	120	Conglomerate											3
144	22-36	11	A1	20	Fine sandy clay loam	5.5	5YR4/3	Redish brown		1.0		0	Dry			3
144	22-36	11	B2	50	Light clay	6.5	5YR4/3	Redish brown		1.3		0	Slight			2
144	22-36	11	BC	130+	Light clay	9	10YR7/4	Very pale brown		1.1	10	0	Slight	20	D/P	1
86	22-9	12	A1	10	Light clay	7.5	10YR5/2	Greyish brown		1.7		2	Moist			3
86	22-9	12	B1	40	Medium clay	9	10YR5/2	Greyish brown		1.2		1	Wet	1	D/P	
86	22-9	12	B21	90	Medium heavy clay	9	10YR4/4	Dark yellowish brown		1.1		1	Moist	25	D/P	3
86	22-9	12	B22	120+	Medium heavy clay	9.5	10YR4/6	Dark yellowish brown		1.1		0	Dry	15	D/P	3(80)
87	22-10	13	A1	40	Light medium clay	7.5	10YR4/4	Dark yellowish brown		1.6		0	Moist			3
87	22-10	13	B21	60	Medium heavy clay	8.5	10YR4/4	Dark yellowish brown		1.0		0	Moist			3
87	22-10	13	B22	95	Light clay	9	10YR4/6	Dark yellowish brown		1.4		0	Slight/Moist	30	D/P	3(70)
87	22-10	13	BC	120+	Sandy clay loam	9	10YR7/3	Very pale brown		1.4		0	Dry	30	D/P	
88	22-11	14	A1	15	Fine sandy clay loam	7.5	2.5YR5/3	Reddish brown		1.7		1	Moist			3
88	22-11	14	B21	45	Medium clay	8	2.5YR5/4	Reddish brown		1.3		1	Moist			3
88	22-11	14	B22	80	Medium heavy clay	9	2.5YR4/6	Red		1.1		0	Slight/Moist	25	D/P	3(70)
88	22-11	14	BC	120+	Silty clay loam	9	7.5YR6/3	Light brown		1.6		0	Dry	25	D/P	
89	22-12	15	A1	30	Light medium clay	8	2.5YR4/1	Dark reddish grey		1.7		1	Moist	3	D	3
89	22-12	15	B21	90	Medium heavy clay	9	2.5YR4/2	Weak red		1.1		1	Slight/Moist	15	D/P	3
89	22-12	15	B22	120	Heavy clay	9	2.5YR4/3	Reddish brown		0.7		1	Slight/Moist	10	D/P	3(85)
90	22-13	16	A1	30	Medium clay	9	10YR5/1	Grey		1.1		1	Dry	3	D	3
90	22-13	16	B21	90	Medium heavy clay	9	10YR4/4	Dark yellowish brown		0.9		1	Moist/Wet	15	P	3
90	22-13	16	B22	120+	Heavy clay	9.5	10YR4/6	Dark yellowish brown		0.7		1	Dry	10	D	3(70)

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
91	22-14	17	A1	20	Light clay	7.5	10YR4/1	Dark grey		1.8		1	Moist			3
91	22-14	17	B21	40	Medium clay	8	10YR4/2	Dark greyish brown		1.1		2	Wet			3
91	22-14	17	B22	65	Heavy clay	8.5	10YR5/4	Yellowish brown		0.9		0	Moist	5	D/P	3
91	22-14	17	BCK	120+	Medium clay	9	10YR6/4	Light yellowish brown		0.7		0	Slight/Moist	15	D	3(90)
92	22-15	18	A1	15	Light clay	7.5	10YR5/1	Grey		1.7		1	Moist			3
92	22-15	18	B21	45	Medium heavy clay	8	10YR4/3	Brown		1.6		1	Wet			3
92	22-15	18	B22	75	Heavy clay	9	10YR4/2	Dark greyish brown		0.8		0	Moist	10	D/P	3(60)
92	22-15	18	BC	120+	Medium clay	9	10YR4/3	Brown		0.7		0	Slight/Moist	3	P	
92	22-15	19	A1	20	Light clay	7	10YR4/1	Dark grey		1.8		1	Moist			3
92	22-15	19	B2	55	Medium heavy clay	8.5	10YR5/4	Yellowish brown		1.2		1	Moist			3
92	22-15	19	BC	90	Silty light clay	9	10YR6/2	Light brownish grey		1.7		0	Slight/Moist	30	P/D	3(70)
92	22-15	19	C	120+	Pale conglomerate											
94	22-17	20	A1	25/40	Light clay	7.5	2.5Y4/1	Dark grey		1.7		0	Moist			3
94	22-17	20	B1	50/80	Medium heavy clay	8.5	2.5Y3/1	Very dark grey		1.4		1	Moist/Wet	10	D/P	3
94	22-17	20	B2	110/120	Medium heavy clay	9	2.5Y6/3	Light yellowish brown		1.1		0	Moist	10	D/P	3
94	22-17	20	BC	120	Light medium clay	9	2.5Y7/2	Light grey		1.4		0	Moist	20	D/P	3(100)
95	22-18	21	A1	10	Clay loam	7	5YR4/1	Dark grey		1.8		1	Moist			3
95	22-18	21	B21	30	Medium clay	8	5YR4/3	Redish brown		1.4		1	Moist/Wet			3
95	22-18	21	B22	60	Medium heavy clay	8.5	5YR4/4	Reddish brown		1.1		0	Moist			3
95	22-18	21	B32	80	Medium clay	9	5YR5/4	Reddish brown		0.8		0	Slight	10	D/P	3
95	22-18	21	BC	120+	Sandy light clay	8.5	2.5YR5/2	Weak red		0.7			Dry	15	D	3(100)
96	22-19	22	A1	15/20	Sandy clay loam	7.5	10YR5/1	Grey		1.8		0	Moist			3
96	22-19	22	B1	65/80	Medium clay	7	10YR5/6	Yellowish brown		1.6		1	Moist			3
96	22-19	22	2B21b	110	Medium heavy clay	8	10YR3/1	Very dark grey		1.5		0	Slight	5	P	3(90)
96	22-19	22	2B22b	130+	Light medium clay	9	10YR3/2	V. dark greyish brown		1.6		0	Moist	15	P	
97	22-20	23	A1	15	Light medium clay	7.5	7.5YR4/2	Brown		1.5		2	Slight/Moist			2
97	22-20	23	2Bb	50	Heavy clay	8	10YR5/4	Yellowish brown		0.6		3	Moist/Wet			2
97	22-20	23	3Bb	80	Sandy light clay	9	10YR5/4	Yellowish brown		0.8		0	Slight	5	P	1(70)
97	22-20	23	4Bb	130+	Light medium clay	9	10YR4/3	Brown		0.5		0	Slight	2	P	0
98	22-21	24	A1	30/45	Medium clay	8.5	10YR4/1	Dark grey		1.6				1		3
98	22-21	24	B21	60/80	Heavy clay	9	10YR4/4	Dark yellowish brown		1.0			Wet	15		3
98	22-21	24	B22	120+	Medium heavy clay	9	10YR5/4	Yellowish brown		0.8				20		3(70)

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
99	22-22	25	A1	15	Sandy clay loam	7.5	10YR4/1	Dark grey		1.7		0	Moist			3
99	22-22	25	B21	40	Medium heavy clay	8	10YR5/3	Brown		0.9		0	Wet			3
99	22-22	25	B22	90	Medium clay	8.5	10YR4/4	Dark yellowish brown		1.0		0	Slight/Moist	10	D/P	3(70)
99	22-22	25	D	120+	Sandy clay	8	10YR5/4	Yellowish brown		0.7		0	Dry			
100	22-23	26	A1	15	Light clay	7.5	5YR5/1	Grey		1.7		1	Moist			3
100	22-23	26	B21	55	Medium heavy clay	8.5	5YR5/2	Reddish grey		1.1		0	Moist			3
100	22-23	26	B22k	80	Heavy clay	9	5YR5/3	Reddish brown		1.0		0	Slight/Moist	15	P	2
100	22-23	26	B3	120+	Medium heavy clay	9	5YR4/1	Dark grey		1.2		0	Dry	25	V	
101	22-24	27	A11	10	Medium heavy clay	6.5	7.5YR3/2	Dark brown		1.1		3	Moist			2
101	22-24	27	A12	30	Medium heavy clay	8	7.5YR4/2	Brown		0.8		2	Moist			2
101	22-24	27	B1	60	Medium heavy clay	9	7.5YR4/2	Brown		0.6		1	Moist	2	P	1
101	22-24	27	B2	115+	Medium clay	9	7.5YR4/6	Strong brown		1.3		0	Slight	8	P/D	1(70)
102	22-25	28	A1	20/40	Light clay	8.5	10YR3/2	V. dark greyish brown		1.6		1	Moist			3
102	22-25	28	B21	80/100	Medium heavy clay	9	10YR3/4	Dark yellowish brown		1.0		2	Moist/Wet	15	D/P	3
102	22-25	28	B22	120+	Medium clay	9	10YR5/4	Yellowish brown		0.8		0	Moist	10	D/P	
103	22-26	29	A1	15/40	Sandy clay loam	7.5	7.5YR5/3	Brown		1.5		0	Slight/Moist			3
103	22-26	29	B1	30/50	Medium heavy clay	9	5YR4/6	Yellowish red		1.6		2	Moist	1	D	3
103	22-26	29	B21	55/80	Medium heavy clay	9	5YR5/4	Reddish brown		1.3		0	Slight/Moist	25	D/P	3
103	22-26	29	B22	100	Sandy clay	8	2.5YR5/3	Reddish brown		1.3		0	Slight/Moist	1	D/P	3
103	22-26	29	BC	140+	Sandy clay	8	2.5YR5/4	Reddish brown		1.2		0	Dry			3(105)
104	22-27	30	A1	20	Light medium clay	7	10YR3/2	V. dark greyish brown		0.4		2	Slight/Moist			3
104	22-27	30	B1	60	Heavy clay	9	10YR3/2	V.dark greyish brown		1.2		0	Moist	10	P	2
104	22-27	30	B2	140+	Light medium clay	9	10YR5/4	Yellowish brown		0.5		0	Slight/Moist	15	P	1(75)
105	22-28	31	A1	15/30	Medium clay	9	10YR4/1	Dark grey		1.6		2	Moist	5	D	3
105	22-28	31	B21	30/60	Medium heavy clay	9	10YR3/3	Dark Brown		1.0		1	Moist	10	D/P	3
105	22-28	31	B22	60/100	Heavy clay	9	10YR4/3	Brown		0.7		0	Slight/Moist	5	D/P	3(70)
105	22-28	31	BC	120+	Medium heavy clay	9	10YR5/1	Grey		0.7		0	Slight/Moist	5	D/P	
106	22-29	32	A11	12	Sandy clay loam	5.5	7.5YR4/2	Brown		1.4		0	Slight/Moist			2
106	22-29	32	A12	22	Fine sandy loam	6	7.5YR4/4	Brown		1.6	2	2	Slight/Moist			2
106	22-29	32	2Bb	50	Medium heavy clay	7	10YR4/4	Dark yellowish brown	Yellow	0.7	20	3	Moist			1
106	22-29	32	3Bb	85	Sandy light clay	7.5	10YR4/4	Dark yellowish brown		0.5		2	Slight			1
106	22-29	32	4Bb	130+	Sandy light clay	6.5	10YR4/4	Dark yellowish brown		0.3	1	0	Slight			1

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
107	22-30	33	A11	10	Light clay	6.5	10YR3/2	V. dark greyish brown		1.7		2	Moist			3
107	22-30	33	A12	30	Light clay	7.5	10YR3/2	V. dark greyish brown		1.8		0	Moist			3
107	22-30	33	B21	50	Heavy clay	8	10YR4/2	Dark greyish brown		1.4		0	Moist			2
107	22-30	33	B22	70	Heavy clay	9	10YR4/3	Brown		1.0		0	Moist	5	P	1
107	22-30	33	B23	110+	Medium clay	9	10YR4/4	Dark yellowish brown		1.3		0	Slight/Moist	2	P	1(90)
108	22-31	34	A1	15	Light clay	7.5	2.5Y4/1	Dark grey		1.7		0	Moist			3
108	22-31	34	B21	35	Medium heavy clay	8	2.5Y4/3	Olive brown		0.9		1	Moist/Wet	5	P	3
108	22-31	34	B22	95	Heavy clay	9	2.5Y5/6	Light olive brown		1.0		0	Moist	15	D/P	3(90)
108	22-31	34	BC	120+	Light clay	9	2.5Y6/6	Olive yellow		1.7		0	Dry	15	D/P	
109	22-32	35	A1	25/30	Light medium clay	8	10YR5/2	Greyish brown		1.7		1	Moist			3
109	22-32	35	B2	50/60	Medium clay	8.5	10YR6/4	Light yellowish brown		1.8	10	0	Moist	15		3
109	22-32	35	BC	110	Silty clay loam	9	10YR7/3	Very pale brown		0.8	90		Slight	25		3(80)
109	22-32	35	C	120+	Pale shale											
110	22-33	36	A1	30	Light clay	8	10YR5/1	Grey		1.7		0	Moist/Wet			3
110	22-33	36	B1	55	Medium clay	9	10YR5/2	Greyish brown		0.8		0	Wet	1	P	3
110	22-33	36	B2	100	Heavy clay	9	10YR4/4	Dark yellowish brown		0.6		0	Slight/Moist	10	D/P	3(60)
110	22-33	36	BC	120+	Sandy clay	9	10YR4/6	Dark yellowish brown		1.4		0	Dry	30	D	
111	22-34	37	A1	30	Light medium clay	7.5	7.5YR5/1	Grey		1.8		0/1	Moist			3
111	22-34	37	B21	80	Medium heavy clay	9	7.5YR5/4	Brown		0.9		0/1	Moist/Wet	15	P	3
111	22-34	37	B22	120+	Heavy clay	9	7.5YR4/6	Strong brown		0.8			Moist	25	P	3(90)
112	22-35	38	A1	20	Sandy light clay	7.5	10YR5/4	Yellowish brown		1.8		0	Moist			3
112	22-35	38	2A	45	Fine sandy clay loam	8	10YR2/2	Very dark brown		1.8		0	Moist			3
112	22-35	38	3A	70	Light medium clay	8	10YR4/4	Dark yellowish brown		1.7		0	Moist			3
112	22-35	38	4A	90	Silty clay loam	8.5	10YR4/3	Brown		1.8		0	Moist			3
112	22-35	38	5A	120+	Light clay	9	10YR5/3	Brown		1.8		0	Slight/Moist	5	P	3
157	9-1	39	A1	5	Light clay	7.5	7.5YR4/2	Brown		1.2	2	0	Slight			2
157	9-1	39	B1	30	Medium clay	8.5	10YR4/3	Brown		1.0	5	0	Slight			2
157	9-1	39	BC	70		9.5	10YR5/4	Yellowish brown			25	0	Moist	10	D	1
157	9-1	39	C	140+	Pale Shale with Fossils											1(85)
122	32-1	40	A1	10	Light clay	6	7.5YR3/2	Dark brown		0.9		0	Dry			3
122	32-1	40	B2	30	Medium clay	6.5	7.5YR4/3	Brown		1.0		0	Dry			2
122	32-1	40	BC	50	Coarse sandy light clay	7	10YR4/4	Dark yellowish brown		1.2	65	0	Dry			1
122	32-1	40	C	80+	Pale Sandstone											0

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123	32-2	41	A1	10	Light medium clay	7	7.5YR4/2	Brown		1.1	5	0	Dry			3
123	32-2	41	B1	25	Medium clay	9.5	7.5YR4/2	Brown		1.0	2	0	Dry	3	D	3
123	32-2	41	B2	65	Medium clay	10	5YR5/4	Reddish brown		1.2		2	Dry	20	D/P	1
123	32-2	41	C	70+	Sandstone											
124	32-3	42	A1	20	Light clay	6.5	7.5YR3/2	Dark brown		1.2		1	Dry			3
124	32-3	42	B1	45	Light medium clay	8	7.5YR4/2	Brown		1.3	1	0	Dry			2
124	32-3	42	B21	110	Light medium clay	8.5	10YR5/4	Yellowish brown		1.3	20	0	Slight	5	D/N	2
124	32-3	42	B22	140	Light clay	8.5	10YR5/4	Yellowish brown		1.3	10	0	Slight	10	D/P	1
124	32-3	42	C	150+	Conglomerate											
155	9-2	43	A1	15	Clay loam	5.5	7.5YR4/1	Dark grey		0.8		3	Slight			3
155	9-2	43	B21	40	Medium clay	8.0	7.5YR3/1	Very dark grey		1.1		2	Slight			3
155	9-2	43	B22	100	Light medium clay	8.5	7.5YR4/1	Dark grey		1.1		0	Slight/moist	1	D/P	1
155	9-2	43	B23	140+	Light medium clay	8.5	7.5YR4/2	Brown		1.3		0	Slight/moist	3	D/P	0
156	9-3	44	A1	10	Light clay	5.5	7.5YR4/2	Brown		0.7		0	Dry			2
156	9-3	44	B1	25	Light medium clay	6.5	7.5YR3/2	Dark brown		0.9		2	Slight			2
156	9-3	44	B21	55	Medium clay	9.5	7.5YR4/3	Brown		0.8		1	Slight	5	P/D	1
156	9-3	44	B22	140+	Medium clay	9.5	7.5YR4/3	Brown		1.3		0	Slight/medium	3	P/D	1(70)
120	32-4	45	A1	10	Light clay	5.5	7.5YR3/2	Dark brown		0.8		0	Dry			4
120	32-4	45	2A	35	Sandy light clay	6.5	7.5YR4/2	Brown		1.1		0	Dry			4
120	32-4	45	4A, 5A, 7A	90 (sand lenses)	Sand lenses x 3	7	7.5YR5/4	Brown		1.5	40	0	Dry			4
120	32-4	45	4A, 6A	90 (clay layers)	Light clay layers x 2	6.5	7.5YR4/3	Brown		1.3		0	Dry			3
120	32-4	45	8A	130+	Light clay	9	7.5YR4/2	Brown		1.2		0	Slight	3	P/N	1
121	32-5	46	A1	15	Clay loam	5	7.5YR4/2	Brown		1.1		0	Dry			4
121	32-5	46	B2	55	Light medium clay	5	7.5YR4/2	Brown		0.6		0	Dry			3
121	32-5	46	2B	65	Coarse sandy clay loam	6	7.5YR4/3	Brown		0.9		0	Slight			1
121	32-5	46	3B	130+	Medium clay	8.5	7.5YR5/3	Brown		1.2		0	Slight	2	D	1(95)
118	32-6	47	A1	30	Light clay	7	7.5YR3/2	Dark brown		0.5		0	Dry			2
118	32-6	47	B21	45	Light clay	7.5	7.5YR4/3	Brown		1.3		0	Dry			2
118	32-6	47	B22	80	Light medium clay	8	7.5YR4/3	Brown		1.0		3	Slight			2
118	32-6	47	2B	130+	Light clay	9.5	7.5YR3/2	Dark brown		1.6		0	Slight/Moist			1(110)

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119	32-7	48	A1	12	Light clay	6.5	5YR4/3	Redish brown		0.4		2	Dry			3
119	32-7	48	B1	30	Light medium clay	9.5	5YR4/3	Redish brown		0.6		0	Dry	2	D	2
119	32-7	48	B21	90	Light medium clay	9.5	5YR4/4	Reddish brown		1.1	2	0	Slight	15	D/P	1
119	32-7	48	B22	140+	Light clay	8.5	5YR4/4	Reddish brown		1.3		0	Slight	3	D/P	1
125	32-8	49	A1	12	Light clay	5.5	7.5YR3/2	Dark brown		1.2		0	Dry			3
125	32-8	49	B1	45	Light medium clay	6.5	7.5YR3/2	Dark brown		1.1		0	Dry			3
125	32-8	49	2B	60	Coarse sand	6	7.5YR4/2	Brown		1.5	3	0	Slight			3
125	32-8	49	3B	130+	Medium clay	8.5	7.5YR3/1	Very dark grey		1.6		1	Moist			2
115	32-9	50	A1	10	Light clay	8.5	5YR4/3	Redish brown		1.6		0	Dry	10	D	3
115	32-9	50	A3	30	Light clay	9	5YR4/4	Reddish brown		0.7		0	Dry	10	D	4
115	32-9	50	B21	70	Light clay	9	5YR4/4	Reddish brown		1.1		0	Slight	15	D/N	3
115	32-9	50	B22	140+	Light clay	9	5YR6/6	Reddish yellow		1.2		0	Slight	25	D/N/P	2
116	32-10	51	A1	10	Light clay	6.5	7.5YR3/2	Dark brown		1.4		0	Dry	1	D	4
116	32-10	51	A3	40	Light clay	7.5	7.5YR4/3	Brown		1.1		0	Dry	1	D	3
116	32-10	51	B21	60	Light medium clay	9	7.5YR4/4	Brown		1.0		0	Slight	7	P/D	3
116	32-10	51	B22	140+	Light medium clay	9	7.5YR5/4	Brown		1.1		0	Slight	20	D/P	2(110)
117	32-11	52	A1	10	Light clay	6	5YR3/2	Dark reddish brown		1.0	0	0	Dry			3
117	32-11	52	B21	50	Light medium clay	9	2.5YR4/4	Reddish brown		0.7	0	0	Dry	1	D	3
117	32-11	52	B22	95	Light medium clay	9	5YR5/6	Yellowish red	Slight grey	1.3	20	0	Slight	15	N/D	2
117	32-11	52	C	100+	Sandstone											
126	32-12	53	A1	10	Light clay	6.53	7.5YR4/2	Brown		1.2		0	Dry			4
126	32-12	53	B1	40	Medium clay	7.5	7.5YR4/2	Brown		1.3		0	Slight/Moist			3
126	32-12	53	C	45+	Fissured shale											
128	32-15	54	A1	10	Sandy loam	5.5	7.5YR4/2	Brown		1.2		0	Dry			4
128	32-15	54	A2	30	Clayey sand	6	10YR5/4	Yellowish brown		0.7		1	Dry			2
128	32-15	54	B2	50	Sandy clay	7.5	10YR6/6	Brownish yellow	Grey	1.0		2	Dry			1
128	32-15	54	C	52+	Hard sandstone											
113	32-13	55	A1	10	Light clay	6	7.5YR3/2	Dark brown		1.3		0	Dry			3
113	32-13	55	B1	35	Light clay	6.5	10YR3/2	Very dark greyish brown		1.1		0	Dry			2
113	32-13	55	B21	80	Light medium clay	7.5	10YR5/3	Brown		1.0		0	Dry			1
113	32-13	55	B22	140+	Light medium clay	8	10YR5/3	Brown		1.2		0	Slight	2	P	1

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
114	32-14	56	A1	20	Clay loam	6.5	7.5YR4/2	Brown		0.8		0	Dry			3
114	32-14	56	A3	40	Light clay	8	7.5YR5/3	Brown		0.7		2	Dry			3
114	32-14	56	B21	65	Light medium clay	9	10YR5/4	Yellowish brown		1.1		0	Slight	5	N	2
114	32-14	56	B22	85	Medium clay	8	5YR4/4	Reddish brown		1.1		0	Slight			1
114	32-14	56	B23	140+	Medium clay	9.5	5YR4/4	Reddish brown		1.5		0	Slight/Moist	15	N/P	1(100)
143	19-1	57	A1	10	Silty clay loam	6	7.5YR3/2	Dark brown		0.7		1	Dry			4
143	19-1	57	2B	50	Light medium clay	6.5	7.5YR3/1	Very dark grey		1.0		0	Dry			3
143	19-1	57	3B	130+	Medium clay	7.5	7.5YR3/1	Very dark grey		1.4	1	0	Slight			2
159	15-2	58	A1	12	Light clay	5.0	7.5YR3/1	Very dark grey		1.3		1	Dry			3
159	15-2	58	B1	40	Light clay	6.0	7.5YR3/2	Dark brown		0.9		2	Slight			2
159	15-2	58	B2	140+	Light medium clay	8.5	7.5YR4/2	Brown		1.2		0	Slight	5	N	1(100)
158	15-1	59	A1	10	Light medium clay		7.5YR3/3	Dark brown		1.4		0	Slight			2
158	15-1	59	B1	30	Medium clay		7.5YR3/3	Dark brown		1.5		0	Slight	15	N	3
158	15-1	59	B21	50	Clay loam		7.5YR4/4	Brown		1.3		0	Slight	15	P/D	2
158	15-1	59	B22	140+	Clay loam		7.5YR7/6	Reddish yellow		1.4		0	Slight	15	P/D	1(90)
142	19-2	60	A1	12	Light medium clay	6.5	7.5YR4/2	Brown		1.0		0	Dry			4
142	19-2	60	B1	50	Medium clay	8	7.5YR4/3	Brown		0.8		0	Dry			3
142	19-2	60	B21	65	Medium clay	9	7.5YR5/4	Brown		1.2		0	Slight	2	D/N	1
142	19-2	60	B22	110	Medium clay	9	10YR6/4	Light yellowish brown		1.4		0	Slight	10	D/P	1(90)
142	19-2	60	C	130+	Hard grey tuff											
127	32-16	61	A1	10	Silty clay loam	5.5	7.5YR3/2	Dark brown		1.4		0	Dry			4
127	32-16	61	B21	30	Medium clay	7	5YR3/2	Dark reddish brown		1.2		2	Dry			3
127	32-16	61	B22	45	Medium clay	8	5YR4/3	Reddish brown		1.2	2	0	Dry			2
127	32-16	61	B23	120+	Medium heavy clay	9	7.5YR4/4	Brown		1.3		0	Slight	20	P/D	1(95)
129	31-1	62	A1	10	Light clay	5.5	7.5YR3/1	Very dark grey		1.3		0	Dry			3
129	31-1	62	B1	35	Light medium clay	6.5	7.5YR3/2	Dark brown		1.1		0	Dry			3
129	31-1	62	B2	70	Medium clay	7.5	7.5YR4/2	Brown	Yellow	1.4		0	Moist			1
129	31-1	62	C	75+	Hard Pale Volcanic Sandstone											
160	15-3	63	A1	8	Light clay	5.5	5YR4/2	Dark reddish grey		1.2		0	Dry			2
160	15-3	63	B1	30	Light clay	7.0	5YR4/4	Reddish brown		1.2		0	Slight			2
160	15-3	63	B2	50	Light medium clay	9.5	5YR5/4	Reddish brown		1.0		0	Slight	10	D/P	1
160	15-3	63	BC	140+	BRECCIA	9.5					90			25	D/P	1(80)

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
162	15-4	64	A1	15	Light medium clay	6.0	7.5YR4/2	Brown		0.6		0	Slight			2
162	15-4	64	B1	35	Medium heavy clay	8.0	7.5YR4/2	Brown		0.5		0	Slight			2
162	15-4	64	BC	60		9.5	10YR7/3	Very pale brown								1(50)
162	15-4	64	C	140+	Pale Sandstone									25	N/P	
161	15-7	65	A1	10	Light clay	5.0	5YR3/2	Dark reddish brown		0.8		0	Dry			2
161	15-7	65	A3	15	Light clay	5.5	5YR3/1	Very dark grey		0.5		0	Dry			2
161	15-7	65	B1	50	Medium clay	8.0	5YR5/4	Reddish brown		0.3		0	Slight	1	P	1
161	15-7	65	BC	125+	Pale Sandstone						98			15	D/P	1(70)
163	15-8	66	A1	10	Light clay	6..0	7.5YR4/2	Brown		0.4		0	Dry			2
163	15-8	66	B21	20	Medium heavy clay	8.0	7.5YR4/3	Brown		0.3		1	Slight			2
163	15-8	66	B22	65	Medium clay	9.0	7.5YR4/4	Brown		0.6		0	Slight/moist	20	P/D	1
163	15-8	66	B23	125+	Light medium clay	9.0	7.5YR4/6	Strong brown		1.2		0	Slight/moist	15	P/D	1(95)
164	15-5	67	A1	10	Light clay	5.5	5YR4/2	Dark reddish grey		1.0		0	Slight			3
164	15-5	67	B1	30	Medium clay	7.5	5YR4/2	Dark reddish grey		0.8	10	0	Slight			2
164	15-5	67	B21	70	Light medium clay	9.0	5YR5/2	Reddish grey		1.5		0	Slight/moist	10	D	1
164	15-5	67	B22	100	Light medium clay	9.0	7.5YR8/3	Pink		1.3		0	Moist	20	D	0
164	15-5	67	C1	120	Weathered Coal	8.0										
164	15-5	67	C2	140+	Sandstone											
165	15-6	68	A1	10-30	Light clay	5.5	5YR4/2	Dark reddish grey		1.0		0	Slight			3
165	15-6	68	A3	110	Light clay	8.0	5YR4/2	Dark reddish grey		1.3	60	0	Slight/moist	2	D/P	3
165	15-6	68	BC	130+	Sandstone						98					
77	17-1	71	A1	10	Medium clay	5.5	7.5YR3/3	Dark brown		1.8		1	Moist			3
77	17-1	71	B1	35	Medium heavy clay	7.5	7.5YR3/2	Dark brown		1.6		0	Moist			4
77	17-1	71	B21	80	Medium heavy clay	8	7.5YR4/4	Brown		1.4		0	Moist	5	P/P	2
77	17-1	71	B22	110+	Medium clay	8	5YR4/6	Yellowish red		0.7		0	Slight			1
76	17-2	72	A1	20	Light medium clay	7.5	5YR4/2	Dark reddish grey		1.8		1	Moist			3
76	17-2	72	B21	45	Medium heavy clay	9	5YR4/4	Reddish brown		1.0		0	Wet	1	D	3
76	17-2	72	B22	90	Medium heavy clay	9	5YR5/4	Reddish brown		1.2		0	Moist	10	D	3
76	17-2	72	B3	130+	Silty light clay	8	5YR3/4	Dark reddish brown		1.8		0	Dry	1	P	3(100)
75	17-3	73	A1	15	Light clay	7	10YR4/1	Dark grey		1.8		1	Moist			3
75	17-3	73	B21	50	Medium heavy clay	9	10YR4/3	Brown		1.8		1	Moist	1	D/P	3
75	17-3	73	B22	80	Medium heavy clay	9	10YR4/4	Dark yellowish brown		1.0		0	Slight	5	D/P	3(80)
75	17-3	73	BC	120+	Light medium clay	10	10YR5/4	Yellowish brown		0.9		0	Dry	5	P	

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
74	17-4	74	A1	20	Clay loam	7.5	5YR5/1	Grey		1.8		2	Moist			3
74	17-4	74	B21	40	Medium clay	8.5	5YR5/6	Yellowish red		1.7		0	Moist	1	D	3
74	17-4	74	B22	80	Medium heavy clay	8.5	5YR5/4	Reddish brown		1.6		0	Slight/Moist	10	P/D	3
74	17-4	74	BC	120+	Medium clay	9	5YR5/6	Yellowish red		1.6		0	Slight/Moist	30	P/D	3(95)
130	31-2	69	A1	15	Sandy clay loam	5.5	7.5YR4/2	Brown		1.6	15	0	Dry			4
130	31-2	69	B1	50	Sandy light clay	6.54	7.5YR4/3	Brown		1.7	50	0	Slight			3
130	31-2	69	BC	55+	Fissured Pale 'Volcanic Sandstone											
141	31-3	70	A11	15	Light clay	5.5	5YR3/2	Dark reddish brown		1.8	30	0	Dry			4
141	31-3	70	A12	45	Light clay	6	5YR4/2	Dark reddish grey		1.8	30	0	Dry			4
141	31-3	70	B2	60+	Light medium clay	6.5	5YR5/6	Yellowish red		1.6	80	0	Moist			4
141	31-3	70	C		Pale Tuff											
69	17-5	75	A11	15	Light medium clay	7	10YR3/2	V. dark greyish brown		1.8		0	Slight/Moist			4
69	17-5	75	A12	30	Light clay	7.5	10YR3/3	Dark Brown		1.8		0	Moist			3
69	17-5	75	2Ab	60	Medium clay	8	10YR2/1	Black		1.6		0	Slight/Moist			2
69	17-5	75	2Bb	120+	Medium clay	8.5	10YR3/1	Very dark grey		1.7		0	Slight	3	P	
70	17-6	76	A11	25	Sandy clay loam	9	10YR3/1	Very dark grey		1.9		0	Moist			3
70	17-6	76	A12	75	Silty clay loam	9	10YR4/2	Dark greyish brown		1.8		0	Slight/Moist			3
70	17-6	76	B2	120+	Medium heavy clay	9	5Y3/2	Dark olive grey		0.8		0	Slight	2	P	
71	17-7	77	A1	20	Light clay	7	10YR4/2	Dark greyish brown		1.8		2	Dry			3
71	17-7	77	B2	55	Medium clay	8	7.5YR6/6	Reddish yellow		1.5	10	2	Dry			3
71	17-7	77	C	90+	Pale Tuff											3(80)
72	17-8	78	A1	15	Sandy light clay	8.5	10YR4/1	Dark grey		1.8		1	Moist			3
72	17-8	78	B21	40	Medium clay	9	10YR4/3	Brown		1.7		1	Moist	1	D	3
72	17-8	78	B22	60	Medium heavy clay	9	10YR4/2	Dark greyish brown		1.4		0	Slight/Moist	30	P/D	41277
72	17-8	78	BC	120+	Medium heavy clay	9	7.5Y4/6	Strong brown		1		0	Dry	30	P/D	1(80)
73	17-9	79	A11	8	Medium clay	5.5	7.5YR3/2	Dark brown		1.7		1	Moist			3
73	17-9	79	A12	25	Medium heavy clay	7	7.5YR3/2	Dark brown		1.4	2	3	Moist			2
73	17-9	79	B2	130+	Sandy light clay	8.5	7.5YR6/4	Light brown		0.8	2	2	Slight	5	P/D	1(65)
131	31-4	80	A1	12	Light medium clay	6	7.5YR2.5/1	Black		1.4		0	Dry			4
131	31-4	80	B2	40	Medium clay	7.5	7.5YR2.5/1	Black		1.2		0	Dry			4
131	31-4	80	B3	80	Light medium clay	9.5	7.5YR6/1	Grey		1.4		0	Slight	15	P/D	3
131	31-4	80	C	110+	Tuff											1

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
132	31-5	81	A1	5	Fine sandy loam	5.5	7.5YR4/2	Brown		1.3		0	Dry			2
132	31-5	81	B21	40	Medium clay	8	7.5YR3/2	Dark brown		1.2		0	Dry	5	D	2
132	31-5	81	B22	70	Medium clay	9.5	7.5YR6/4	Light brown	Red pocket 20%	1.5		0	Slight	10	D	2
132	31-5	81	C	75+	Very Hard Breccia											
139	31-6	82	A1	10	Light medium clay	7	5YR4/3	Redish brown		1.1		0	Dry			4
139	31-6	82	B1	35	Medium clay	7.5	5YR5/3	Reddish brown		1.6		0	Slight			4
139	31-6	82	BC	105+	Soft Grey Shale											2(90)
140	31-7	83	A1	15	Light clay	6	7.5YR4/3	Brown		1.2		0	Dry			3
140	31-7	83	B2	45	Medium clay	7	5YR4/4	Reddish brown		1.2		0	Slight			3
140	31-7	83	BC	130+	Soft Conglomerate					0.0						2(130+)
68	17-10	84	A1	15	Sandy clay loam	7.5	10R5/4	Weak red		1.8		0	Moist			3
68	17-10	84	B	60	Medium clay	8	10R4/6	Red		1.7		0	Moist			3
68	17-10	84	BC	80	Sandy light clay	9	5YR5/4	Reddish brown		1.7		0	Moist	5	D/P	3
68	17-10	84	C	120+	Sandy light clay	8	5YR6/6	Reddish yellow		1.5	50	0	Slight/Moist	2	D/P	3(100)
66	30-1	85	A1	2	Light clay	6	7.5YR3/1	Very dark grey		0.3		1	Slight			2
66	30-1	85	B1	25	Medium heavy clay	8	7.5YR3/2	Dark brown		1.5		1	Moist	1	D	3
66	30-1	85	B21	55	Medium heavy clay	8.5	10YR4/3	Brown		1.1		0	Slight/Moist	7	D/P	1
66	30-1	85	B22	100	Heavy clay	8	7.5YR4/3	Brown		0.7		0	Slight			0
66	30-1	85	B23	140+	Medium clay	8	7.5YR3/2	Dark brown		1.5		0	Slight			0
138	31-9	86	A1	15	Fine sandy clay loam	6	7.5YR4/2	Brown		1.2		0	Dry			4
138	31-9	86	2B21	50	Medium clay	7	7.5YR4/2	Brown		0.8		2	Dry			4
138	31-9	86	2B22	75	Light medium clay	8.5	7.5YR4/2	Brown		1.1		0	Slight	2	N	3
138	31-9	86	3B	130+	Medium clay	8.5	7.5YR4/1	Dark grey		1.6		0	Slight			2
67	17-11	87	A1	18	Fine sandy clay loam	6	5YR3/2	Dark reddish brown		1.8		1	Slight/Moist			4
67	17-11	87	B2	55	Medium clay	8.5	5YR4/6	Yellowish red		1.7		0	Moist	5	D	2
67	17-11	87	BC	110+	Light clay	8.5	5YR6/6	Reddish yellow		1.8	30	0	Moist	10	D	1(90)
65	30-2	88	A1	15	Sandy clay loam	7.5	2.5Y4/1	Dark grey		1.7		0	Moist			3
65	30-2	88	B21	50	Medium heavy clay	9	2.5Y3/2	Very dark greyish brown		1.2		0	Moist			3
65	30-2	88	B22	80	Medium clay	8.5	2.5Y4/3	Olive brown		1.3		0	Moist	15	P/D	3
65	30-2	88	BC	120+	Light clay	8	2.5Y6/2	Light brownish grey		1.6		0	Slight/Moist	2	P/D	3(90)
20	35-1	89	A1	18	Sandy clay loam	7.5	10YR4/2	Dark greyish brown		1.7		1	Moist			3
20	35-1	89	B22	40	Medium heavy clay	8	10YR4/1	Dark grey		1.1		0	Moist	2	P	3
20	35-1	89	BC	70	Light medium clay	8.5	10YR4/2	Dark greyish brown		0.8	8	0	Slight/Moist			1(60)
20	35-1	89	C	140+	Mudstone											

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
19	35-2	90	A1	15	Clay loam	8	7.5YR4/2	Brown		1.5		0	Moist			3
19	35-2	90	B21	30	Light medium clay	8.5	7.5YR4/4	Brown		1.3		0	Moist			3
19	35-2	90	B22	45	Medium heavy clay	9	7.5YR4/6	Strong brown		1.1		0	Moist	5	D	2
19	35-2	90	BC	65	Light medium clay	9	7.5YR4/3	Brown		1.0	10	0	Slight/Moist	15	D	1(55)
19	35-2	90	C	140+	Calcareous Shale											
133	31-8	91	A1	10	Light clay	6	7.5YR4/2	Brown		0.3		0	Dry			3
133	31-8	91	B2	40	Light clay	6.5	7.5YR4/2	Brown		1.0		0	Dry			3
133	31-8	91	2B, 4B	)-42 & 58-60	Clayey sand	7				1.5			Dry			1
133	31-8	91	3B, 5B	80	Light clay	7.5	7.5YR4/2	Brown		1.4		1	Dry			2
133	31-8	91	6B	130+	Light medium clay	9	7.5YR5/3	Brown		1.2		2	Slight/Moist			1(110)
81	31_11	92	A1	10	Fine sandy clay loam	5.5	7.5YR4/2	Brown		1.2		0	Dry			4
81	31_11	92	B21	30	Medium clay	7	5YR5/4	Reddish brown		0.8		2	Dry			3
81	31_11	92	B22	80	Light medium clay	8.5	5YR5/4	Reddish brown		1.5		1	Slight	2	N/D	2
81	31_11	92	2B	140+	Light medium clay	8	7.5YR4/4	Brown		1.6		0	Slight/Moist			1(125)
137	31-10	93	A11	10	Coarse sandy loam	5.5	7.5YR4/3	Brown		1.3		0	Dry			4
137	31-10	93	A12	30	Coarse sandy loam	6	5YR4/2	Dark reddish grey		1.1		0	Dry			3
137	31-10	93	2A	55	Clayey sand	6	7.5YR5/3	Brown		1.1		0	Dry			2
137	31-10	93	3B	80	Sandy light clay	7.5	7.5YR6/4	Light brown		1.3		0	Slight/Moist			1
137	31-10	93	4B	140+	Medium clay	9	5YR5/6	Yellowish red	Grey	1.6		0	Moist			1(110)
153	23-1	94	A1	4	Light clay	5.5	7.5YR4/2	Brown		0.6		0	Slight			3
153	23-1	94	A2	8	Light clay	5.5	10YR4/2 (Dry: 10YR6/2)	Dark greyish brown		1.0		2	Slight			3
153	23-1	94	B1	30	Medium clay	8.0	10YR3/2	v. dark greyish brown		0.8		2	Slight			2
153	23-1	94	B21	65	Medium heavy clay	9.0	10YR4/3	Brown		1.2		0	Slight/medium	2	N	1(60)
153	23-1	94	B22	100	Light medium clay	9.0	10YR6/2	Light brownish grey		1.3		0	Slight/medium	15	D/N	
153	23-1	94	C	130+	Pale Shale											
95	23-2	95	A1	20	Light clay	5.5	7.5YR3/2	Dark brown		0.4	2	2	Slight			2
95	23-2	95	B21	60	Medium heavy clay	9.5	7.5YR3/2	Dark brown		1.0		1	Slight/moist	10	N/D	1(50)
95	23-2	95	B22	130+	Medium clay	9.5	10YR5/3	Brown		0.8	5 Fe-stone)	0	Slight/moist	30	N/D	
47	29-1b	96	A1	20	Light clay	7.5	5Y3/1	Very dark grey		1.8		0	Wet			3
47	29-1b	96	A3	45	Light medium clay	8.5	5Y2.5/1	Black		1.8		0	Wet			3
47	29-1b	96	B21	85	Medium clay	8.5	5Y2.5/1	Black		1.8		0	Wet	2	P	3
47	29-1b	96	B22	150+	Medium clay	8.5	5Y2.5/1	Black		1.5		0	Wet	2	P	2(100)

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
46	29-1a	97	A1	8	Light medium clay	6.5	10YR4/2	Dark greyish brown		1.8	2	0	Moist			3
46	29-1a	97	B2	35	Medium heavy clay	6	10YR6/4	Light yellowish brown	Grey	1.7	2	1	Moist			3
46	29-1a	97	C	50+	Hard pale tuff											0
18	35-3	98	A1	12	Sandy clay loam	7.5	7.5YR4/1	Dark grey		1.6		0	Moist			3
18	35-3	98	B21	25	Medium clay	8	7.5YR4/3	Brown		1.3		1	Moist			3
18	35-3	98	B22	45	Medium heavy clay	8.5	7.5YR4/4	Brown		1.5		0	Moist	5	D	1
18	35-3	98	BC	65	Light medium clay	9	10YR5/3	Brown		1.4	15	0	Slight/Moist	15	D	1
18	35-3	98	C	140+	Calcareous shale											
17	35-4	99	A1	12	Light medium clay	8	7.5YR4/4	Brown		1.6		0	Moist			2
17	35-4	99	B1	30	Heavy clay	8.5	10YR4/4	Dark yellowish brown		1.0		1	Moist	10	D/P	2
17	35-4	99	B21	60	Heavy clay	9	10YR5/4	Yellowish brown		0.4		0	Moist	25	D/P	1
17	35-4	99	B22	95	Medium heavy clay	9	7.5YR5/4	Brown	Grey	0.3		0	Slight/Moist	5	D/P	0
17	35-4	99	B23	140+	Medium clay	9	7.5YR5/4	Brown	Strong grey	0.3		0	Slight/Moist	3	D/P	0
135	31-12	100	A1	8	Fine sandy loam	5.5	7.5YR4/3	Brown		0.6		0	Dry			3
135	31-12	100	A2	15	Fine sandy loam	6	7.5YR5/4	Brown		1.0		2	Dry			3
135	31-12	100	B21	35	Sandy light clay	7.5	5YR5/4	Reddish brown		0.9		1	Dry			2
135	31-12	100	B22	80	Light medium clay	9	2.5YR4/4	Reddish brown		1.3		2	Slight			1
135	31-12	100	B23	130+	Light clay	9	2.5YR4/4	Reddish brown		1.2		0	Slight/Moist	5	D/P	1(90)
53	8-1	101	A1	20	Clay loam	7.5	10YR3/1	Very dark grey		1.8		0	Moist			3
53	8-1	101	B21	55	Medium heavy clay	8	10YR4/2	Dark greyish brown		1.4		0	Moist	5		3
53	8-1	101	B22	90	Heavy clay	8	10YR5/4	Yellowish brown		1.7		0	Moist	15		1(80)
53	8-1	101	C	120+	Coal											
16	35-5	102	A1	15	Sandy clay loam	7.5	7.5YR5/1	Grey		1.8		0	Moist			3
16	35-5	102	B1	30	Light medium clay	8	7.5YR4/2	Brown		1.3		1	Moist			3
16	35-5	102	B22	45	Medium heavy clay	9	7.5YR3/3	Dark brown		1.5		0	Slight/Moist			3
16	35-5	102	BC	60	Medium clay	10	7.5YR5/4	Brown		1.6	10	0	Slight/Moist	15	D	2
16	35-5	102	C	140+	Shale											
15	35-6	103	A1	17	Fine sandy clay loam	6	7.5YR4/3	Brown		1.7		2	Moist			3
15	35-6	103	B21	60	Heavy clay	7	7.5YR4/6	Strong brown		1.4		0	Moist			2
15	35-6	103	B22	75	Medium clay	8.5	7.5YR5/6	Strong brown		1.8		0	Moist	2	P	1
15	35-6	103	BC	120	Soft shale									20	D/P/N	1(90)
15	35-6	103	C	130+	Hard shale											

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
9	35-7	104	A1	10	Silty light clay	8	7.5YR4/3	Brown		1.8		2	Moist			3
9	35-7	104	B1	35	Medium heavy clay	8.5	7.5YR4/3	Brown		1.6		2	Moist			2
9	35-7	104	B21	80	Medium heavy clay	9	7.5YR4/3	Brown		1.2		0	Slight/Moist	1	D	2
9	35-7	104	B22	130+	Light medium clay	9	7.5YR4/6	Strong brown		1.2		0	Slight			1
136	31-13	105	A11	10	Fine sandy loam	5.5	7.5YR4/3	Brown		1.2		0	Dry			2
136	31-13	105	A12	25	Fine sandy clay loam	6	5YR4/4	Reddish brown		1.3		0	Dry			3
136	31-13	105	B21	60	Light clay	7.5	2.5YR5/6	Red		1.3		1	Dry			2
136	31-13	105	B22	130+	Light medium clay	9	2.5YR5/6	Red		1.4		1	Slight	2	Diffuse	1(110)
54	8-2	106	A1	12	Light clay	6	10YR4/3	Brown		1.6		2	Moist			3
54	8-2	106	A2	18	Fine sandy clay loam	6.5	10YR4/2	Dark greyish brown		1.3		3	Moist			2
54	8-2	106	B1	30	Heavy clay	7	10YR4/3	Brown		0.7		1	Moist			2
54	8-2	106	B21	50	Heavy clay	7.5	10YR4/4	Dark yellowish brown		0.8		0	Slight/Moist			1
54	8-2	106	B22	70	Medium clay	8	10YR4/4	Dark yellowish brown		1.0		0	Slight	2	P	1(60)
54	8-2	106	BC	110+	Pale shale											
52	30-3	107	A1	20	Light medium clay	7.5	7.5YR3/2	Dark brown		1.6			Moist			3
52	30-3	107	B21	45	Medium heavy clay	8	7.5YR4/2	Brown		1.5			Moist			2
52	30-3	107	B22	70	Heavy clay	9	7.5YR4/3	Brown		0.7			Moist/Wet			1
52	30-3	107	B23	120+	Medium heavy clay	8.5	7.5YR4/6	Strong brown		1.6			Slight/Moist	10	P/D	
48	30-4	108	A1	10	Medium heavy clay	6.5	10YR4/2	Dark greyish brown		1.2		2	Moist			3
48	30-4	108	B1	30	Heavy clay	8	10YR4/2	Dark greyish brown		1.2		1	Moist			3
48	30-4	108	BC	65	Medium clay	8.5	2.5YR5/3	Reddish brown		1.5	5	0	Slight	5	D	1
48	30-4	108	C	120+	Mudstone											1(90)
14	35-8	109	A1	15	Sandy clay loam	6	10YR2/2	Very dark brown		1.8		0	Moist			3
14	35-8	109	B1	35	Light medium clay	7.5	10YR3/2	V. dark greyish brown		1.7		0	Moist			3
14	35-8	109	B21	50	Light medium clay	8	10YR5/2	Greyish brown		1.7		0	Moist			2
14	35-8	109	B22	100	Medium clay	8.5	10YR4/2	Dark greyish brown		1.5		0	Slight/Moist	3	P	1(100)
14	35-8	109	B23	130+	Medium heavy clay	8	10YR4/4	Dark yellowish brown		1.2		0	Slight			
13	35-9	110	A1	10	Fine sandy clay loam	6	7.5YR3/1	Very dark grey		1.0		2	Moist			2
13	35-9	110	B1	30	Medium heavy clay	9	7.5YR3/2	Dark brown		0.9		1	Moist			2
13	35-9	110	B21	95	Medium heavy clay	9	7.5YR4/3	Brown		0.5		0	Moist	3	N	1(80)
13	35-9	110	B22	130+	Light medium clay	9	7.5YR4/3	Brown		0.2		0	Slight	7	N/P	0

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
8	35-10	111	A1	10	Medium heavy clay	9	7.5YR3/3	Dark brown		1.3		3	Moist			2
8	35-10	111	B1	60	Medium heavy clay	9.5	7.5YR4/3	Brown		1.5		0	Moist			2
8	35-10	111	B21	105	Silty light clay	9.5	7.5YR3/1	Very dark grey		1.4		0	Slight/Moist			1 (75)
8	35-10	111	B22	140+	Light medium clay	9.5	7.5YR3/3	Dark brown		1.2		0	Slight/Moist			
10	34-2	112	A1	13	Light clay	7.5	5YR4/3	Redish brown		1.9		1	Moist			3
10	34-2	112	B21	55	Medium heavy clay	8	5YR4/6	Yellowish red		1.7		1	Moist			2
10	34-2	112	B22	75	Medium heavy clay	9	5YR4/6	Yellowish red		1.7		0	Moist	5	D	1
10	34-2	112	B23	120+	Light medium clay	9	5YR4/6	Yellowish red		1.2		0	Slight/Moist	10	D/P	0
55	8-3	113	A1	10	Sandy clay loam	7	7.5YR4/3	Brown		1.6		1	Moist			3
55	8-3	113	A2	25	Sandy loam	7.5	7.5YR5/6	Strong brown		1.4		1	Moist			3
55	8-3	113	B21	40	Heavy clay	8	5YR5/6	Yellowish red		1.2		2	Moist			2
55	8-3	113	B22	90	Medium heavy clay	8	10YR6/6	Brownish yellow	Red, strong grey	1.1	15	0	Moist			1
55	8-3	113	BC	130+	Medium clay	9.5	2.5YR7/3	Light reddish brown		1.2		0	Slight/Moist	15	P	1
56	8-4	114	A1	10	Light clay	7.5	5YR4/2	Dark reddish grey		1.5		1	Moist			3
56	8-4	114	B21	50	Medium heavy clay	9	5YR5/3	Reddish brown		1.0		1	Moist			3
56	8-4	114	B22	70	Heavy clay	8.5	10YR5/3	Brown		1.6	10	0	Slight/Moist	2	D	3
56	8-4	114	BC	130+	Silty light clay	8.5	10YR6/2	Light brownish grey		0.7	70	0	Dry	15	D/N	
51	30-5	115	A1	25	Clay loam	7	10YR4/1	Dark grey		1.8		1	Moist			3
51	30-5	115	B21	45	Medium clay	8.5	10YR4/4	Dark yellowish brown		1.6		0	Wet	15	D	3
51	30-5	115	B22	120+	Light medium clay	9.5	10YR5/3	Brown		1.7		0	Slight/Moist	35	P/D	3(70)
21	35-13	116	A1	10	Silty light clay	6.5	7.5YR3/2	Dark brown		1.5		2	Moist			3
21	35-13	116	B1	40	Light medium clay	8	7.5YR3/2	Dark brown		1.7		0	Moist			3
21	35-13	116	B21	60	Medium clay	8.5	7.5YR4/2	Brown		1.7		0	Moist	2	D	1
21	35-13	116	B22	110	Heavy clay	8	7.5YR4/2	Brown		1.6		0	Moist			1
21	35-13	116	BC	140+	Pale shale											
7	35-11	117	A1	10	Light medium clay	9	7.5YR3/2	Dark brown		1.5		2	Moist			3
7	35-11	117	B1	25/40	Medium heavy clay	9	7.5YR3/2	Dark brown		1.4		1	Moist			2
7	35-11	117	BC	55	Light medium clay	9.5	7.5YR6/2	Pinkish grey		1.5		0	Moist	5	D	1 (65)
7	35-11	117	C	95	Pale mudstone											
12	34-3	118	A1	12	Silty loam	7	7.5YR3/4	Dark brown		1.5		2	Moist			3
12	34-3	118	B1	40	Medium heavy clay	8	7.5YR4/6	Strong brown		1.6		1	Moist			3
12	34-3	118	B21	65	Medium clay	8	7.5YR4/3	Brown		1.7		0	Moist	2	P	2
12	34-3	118	B22	130+	Medium clay	8.5	7.5YR4/3	Brown		1.1		0	Slight	7	N/P	1(75)

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
11	34-4	119	A11	10	Silty light clay	7	7.5YR3/3	Dark brown		1.8		2	Moist			3
11	34-4	119	A12	30	Light clay	7	7.5YR4/3	Brown		1.9		3	Moist			4
11	34-4	119	A2	45	Silty clay loam	6.5	7.5YR5/4	Brown		1.3		3	Wet			3
11	34-4	119	B21	80	Medium heavy clay	7.5	5YR5/6	Yellowish red		1.7		1	Moist	5	D	3
11	34-4	119	B22	140+	Light clay	9	5YR4/6	Yellowish red		1.5		1	Slight/Moist			2(110)
45	30-7b	120	A1	10	Sandy clay loam	7	10R4/1	Dark reddish grey		1.8	15	0	Moist	0		30
45	30-7b	120	A2	20	Sandy clay loam	7.5	10R7/3	Pale red		1.1	35	0	Moist	0		30
45	30-7b	120	B22	45	Medium heavy clay	8	10R4/6	Red		1.7	60	0	Moist	0		30
45	30-7b	120	C	120	Soft sandstone											
58	8-6	121	A1	10	Fine sandy clay loam	6.5	10YR3/3	Dark Brown		1.8		0	Moist			2
58	8-6	121	2A	27	Light clay	7.5	10YR3/2	V. dark greyish brown		1.8		0	Moist			3
58	8-6	121	3A	50	Sandy light medium clay	8	10YR4/3	Brown		1.3		0	Moist			2
58	8-6	121	4A	75	Medium heavy clay	9	10YR3/2	V. dark greyish brown		1.8		2	Slight	15	P	1(65)
58	8-6	121	4B	120+	Medium heavy clay	9	7.5YR7/4	Pink		1.7		0	Slight	15	P	0
57	8-5	122	A1	15	Sandy clay loam	7	5YR4/1	Dark grey		1.7		0	Moist			3
57	8-5	122	B21	30	Medium heavy clay	9	5YR4/4	Reddish brown		1.0		1	Moist			3
57	8-5	122	B22	70	Sandy heavy clay	9.5	5YR4/3	Redish brown		1.6		0	Moist	2	P	2(65)
57	8-5	122	BC	130+	Fine sandy clay loam	9	5YR5/6	Yellowish red		0.7		0				
49	30-8a	123	A1	10	Clay loam	8	10YR2/2	Very dark brown		1.8		1	Moist			3
49	30-8a	123	B21	55	Medium heavy clay	8	10YR2/1	Black		1.8		0	Moist			3
49	30-8a	123	B22	75	Heavy clay	8	5Y5/1	Grey		1.6		0	Moist			3
49	30-8a	123	BC	120+	Silty clay loam	8	5Y6/2	Light olive grey		1.7		1	Slight/Moist			3
6	35-12	124	A1	10	Sandy clay loam	8	7.5YR4/4	Brown		1.8		0	Moist			M
6	35-12	124	B1	22	Light medium clay	8	7.5YR5/4	Brown		1.2		2	Moist			M
6	35-12	124	B21	50	Medium clay	8.5	7.5YR5/6	Strong brown		1.5		0	Slight/Moist			F
6	35-12	124	B22	110+	Medium sandy clay	8.5	7.5YR5/6	Strong brown		1.3		0	Slight/Moist	5	D/P	F
3	34-7	125	A1	15	Clay loam	6.5	7.5YR3/2	Dark brown		1.4	2	3	Moist			3
3	34-7	125	B1	35	Medium heavy clay	8	7.5YR4/4	Brown		1.2	0	0	Moist			2
3	34-7	125	B21	65	Light medium clay	8	7.5YR5/4	Brown		0.7	10	0	Slight	3	D	1 (65)
3	34-7	125	B22	130+	Sandy light clay	8.5	7.5YR5/4	Brown		0.7	20	0	Slight	8	D	
5	34-5	126	A1	10	Sandy clay loam	7	7.5YR4/4	Brown		1.5	2	0	Moist			2
5	34-5	126	A2	15	Sandy loam	7	7.5YR5/4	Brown		1.5		2	Moist			2
5	34-5	126	B21	65	Medium heavy clay	8	7.5YR5/6	Strong brown		1.3		1	Moist			2
5	34-5	126	B22	130+	Medium clay	10	7.5YR5/6	Strong brown	sl. grey	0.8		0	Slight/Moist	5	D/P	1 (80)

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
42a	30-9a	127p	A1	15	Medium heavy clay	9	7.5YR5/3	Brown		1.7		0	Dry	3	D	4
42a	30-9a	127p	B21	30	Medium heavy clay	9	7.5YR6/4	Light brown		0.7		0	Dry	8	D/P	3
42a	30-9a	127p	B22	60	Medium heavy clay	9	7.5YR5/6	Strong brown		1.2		0	Dry	5	D/P	2
42a	30-9a	127p	B23	90	Medium heavy clay	9	7.5YR5/6	Strong brown		1.5		0	Dry	10	D/P	1
42b	30-9b	127d	A1	15	Medium heavy clay	9	7.5YR4/3	Brown		1.7		0	Moist	1	D	2
42b	30-9b	127d	B21	30	Medium heavy clay	9	7.5YR4/3	Brown		1.8		0	Moist	8	D/P	3
42b	30-9b	127d	B22	60	Medium heavy clay	9	7.5YR6/4	Light brown		1.6		0	Moist	5	D/P	2
42b	30-9b	127d	B23	90	Medium heavy clay	9	7.5YR6/4	Light brown		1.5		0	Moist	10	D/P	1
44	30-6	128	A1	12	Clay loam	8	7.5YR4/2	Brown		1.6		0	Moist			3
44	30-6	128	B22	40	Medium heavy clay	8.5	7.5YR5/4	Brown		1.4		0	Moist			3
44	30-6	128	B23	80	Silty clay loam	9	2.5Y6/1	Grey		1.5		0	Moist	15	D	3
44	30-6	128	C	120+	Coal					1.0						1(100)
43	30-7a	129	A1	15	Light clay	7.5	10YR4/1	Dark grey		1.2		0	Moist			3
43	30-7a	129	B21	35	Medium heavy clay	8	10YR7/2	Light grey		1.1		0	Moist			3
43	30-7a	129	B22	65	Medium clay	8.5	2.5YR5/2	Weak red		1.0		0	Moist	1	P	3
43	30-7a	129	B23	80	Sandy clay	9	2.5YR5/3	Reddish brown		1.1	2	0	Slight/Moist	15	D	1(75)
43	30-7a	129	BC	130+	Sandy light clay	9	2.5YR6/4	Light reddish brown		0.8	3	1	Dry	10	D	
59	8-7	130	A1	10	Fine sandy clay loam	7	7.5YR4/3	Brown		1.7	5	2	Moist			3
59	8-7	130	B21	40	Heavy clay	7.5	5YR4/4	Reddish brown		1.3		0	Moist (45)			2
59	8-7	130	B22	90	Light medium clay	8.5	5YR4/4	Reddish brown		1.1		0	Slight	15	P	1(70)
59	8-7	130	C	120+	Volcanic breccia											
60	8-8	131	A1	20	Sandy clay loam	6.5	2.5YR4/2	Weak red		1.8		0	Moist			3
60	8-8	131	B2	50	Medium clay	7	2.5YR5/6	Red		1.0		0	Moist			3
60	8-8	131	BC	60	Sandy clay loam	9	2.5Y6/2	Light brownish grey		1.0	10	0	Moist	25	P/D	
60	8-8	131	C	120+	Tuff + calcareous solution pipe					0.7	90					
50	30-8b	132	A1	10	Medium clay	6.5	7.5YR4/3	Brown		1.7		1	Moist			3
50	30-8b	132	B1	35	Medium heavy clay	7.5	7.5YR4/4	Brown		1.8		0	Moist	5	D	3
50	30-8b	132	B2	120+	Medium heavy clay	8.5	7.5YR4/3	Brown		1.3		0	Moist	25	P/D	1(85)
22	36-1	133	A1	13	Clay loam	7.5	10YR4/3	Brown		1.5		1	Moist			3
22	36-1	133	B22	40	Medium heavy clay	8.5	10YR3/2	V. dark greyish brown		1.6		1	Moist			2
22	36-1	133	BC	65	Medium clay	9	10YR5/4	Yellowish brown		1.2	15	0	Moist	10	D	1(60)
22	36-1	133	C	120+	Mudstone											

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
23	36-2	134	A1	10	Medium clay	7	7.5YR3/2	Dark brown		1.7		3	Moist			3
23	36-2	134	B1	30	Medium heavy clay	8	7.5YR4/2	Brown		0.8		2	Moist			3
23	36-2	134	B21	55	Medium heavy clay	9	7.5YR4/3	Brown		1.5		0	Slight/Moist	10	D/P	1
23	36-2	134	B22	85	Medium heavy clay	9	7.5YR5/4	Brown		1.2		0	Slight	7	D/P	1(70)
23	36-2	134	B23	140+	Medium clay	8.5	7.5YR5/4	Brown		1.0		0	Slight	1	D/P	0
2	34-6	135	11	10	Medium heavy clay	7.5	7.5YR3/2	Dark Brown		1.3		3	Moist			3
2	34-6	135	A12	22	Medium heavy clay	7.5	7.5YR4/3	Brown		1.3		1	Moist			3
2	34-6	135	B21	100	Light medium clay	8	7.5YR5/6	Strong brown		0.7		0	Slight	3	P	1
2	34-6	135	B22	140+	Light medium clay	7.5	7.5YR4/4	Brown		0.8		0	Slight			1 (120)
1	34-8	136	A1	12	Medium clay	7.5	7.5YR4/4	Brown		1.3		0	Moist			3
1	34-8	136	B1	30	Heavy clay	7.5	7.5YR4/6	Strong brown		1.2		0	Moist			3
1	34-8	136	B21	70	Medium clay	8	10YR6/4	Light yellowish brown		1.2		1	Moist	3	D	2
1	34-8	136	B22	120+	Light medium clay	9	10YR6/4	Light yellowish brown		1.1		0	Slight/Moist	10	P/N	1
4	34-9	137	A1	12	Light medium clay	6.5	7.5YR3/3	Dark brown		1.6		2	Moist			3
4	34-9	137	B21	25	Medium heavy clay	7	7.5YR4/3	Brown		1.7		0	Moist			3
4	34-9	137	B22	45	Medium clay	7.5	7.5YR4/4	Brown		1.3		0	Moist			2
4	34-9	137	C	120+	Tuff?											
40	30-10	138	A1	17	Fine sandy clay loam	6	5YR3/3	Dark reddish brown		1.8		1	Moist			4
40	30-10	138	A2	25	Fine sandy loam	6	7.5YR4/4	Brown		1.5		1	Moist/Wet			2
40	30-10	138	B21	50	Heavy clay	7.5	2.5YR5/6	Red		1.3		2	Moist			2
40	30-10	138	B22	120+	Light clay	8	5YR4/3	Redish brown		0.9		0	Slight	2	P	1(75)
41	30-11	139	A1	12	Sandy clay loam	7	5YR4/2	Dark reddish grey		1.8	2	1	Moist			3
41	30-11	139	B21	35	Medium clay	7.5	2.5YR4/6	Red		1.7	3	0	Moist			3
41	30-11	139	B22	75	Light medium clay	8	2.5YR5/6	Red		1.7	35	0	Moist			3
41	30-11	139	BC	120+	Silty clay loam	8.5	5YR6/3	Light reddish brown		1.3	75	0	Dry	10		1(100)
39	30-13	140	A1	15	Sandy clay loam	7.53	2.5YR4/2	Weak red		1.8		0	Moist			3
39	30-13	140	A2	25	Sandy clay loam	8.5	2.5YR7/3	Light reddish brown		1.6		2	Moist			3
39	30-13	140	B22	60	Medium clay	9	2.5YR4/8	Red		1.4		0	Moist			3
39	30-13	140	BC	120+	Silty clay loam	9	2.5YR6/4	Light reddish brown		1.1	80	0	Dry	5	P/D	2(100)
61	8-9	141	A1	15	Sandy clay loam	7.5	5YR5/1	Grey		1.2		0	Moist			3
61	8-9	141	B21	40	Medium heavy clay	8.5	5YR5/4	Reddish brown		1.0		0	Moist	1	D	3
61	8-9	141	B22	80	Medium clay	8.5	5YR4/6	Yellowish red		1.4		0	Moist	25	P	3
61	8-9	141	BC	120	Light medium clay	9	5YR5/4	Reddish brown		1.7		0	Dry	15	P	

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
62	8-10	142	A1	15	Sandy clay loam	7	7.5YR4/1	Dark grey		1.8		0	Moist			3
62	8-10	142	B21	40	Sandy light clay	9	7.5YR4/6	Strong brown		1.8		0	Moist			3
62	8-10	142	B22	55	Sandy light clay	8.5	7.5YR6/1	Grey		1.5	2	0	Moist			3
62	8-10	142	C	80	Grey tuff					1.0				30	D	3(65)
63	8-11	143	A1	30	Light medium clay	7.5	10YR5/1	Grey		1.2		0	Moist			3
63	8-11	143	B2	45	Medium heavy clay	8	10YR5/4	Yellowish brown		1.4		0	Moist	1		3
63	8-11	143	BC	70	Medium clay	9	10YR6/3	Pale brown		1.5	30	0	Slight/Moist	15		3
63	8-11	143	C	120+	Grey tuff									15		3(150)
29	34-1a	144	A1	15	Sandy light clay	6	7.5YR3/2	Dark brown		1.9		1	Moist			4
29	34-1a	144	B2	40	Medium clay	7	7.5YR4/6	Strong brown		1.8		0	Moist			4
29	34-1a	144	B3	60	Light medium clay	8	10YR6/4	Light yellowish brown		1.8	5	0	Moist			3
29	34-1a	144	BC	100+	Calcareous tuff											1
25	36-3	145	A1	20	Clay loam	7.53	2.5YR2.5/1	Reddish black		1.8		1	Moist			3
25	36-3	145	B21	45	Medium clay	8	2.5YR3/3	Dark reddish brown		1.1		0	Wet			3
25	36-3	145	B22	95	Medium heavy clay	9.5	2.5YR5/2	Weak red		1.1		0	Moist	15	P	2(60)
25	36-3	145	BC	120+	Heavy clay	9	2.5YR5/4	Reddish brown		1.0		0	Slight/Moist			
24	36-4	146	A1	15	Clay loam	7.5	10YR3/1	Very dark grey		1.5		2	Moist			
24	36-4	146	B21	40/50	Medium heavy clay	9	10YR3/2	Very dark greyish brown		1.4		1/0	Moist			
24	36-4	146	B22	60/70	Heavy clay	9.5	10YR3/6	Dark yellowish brown		1.1		0	Moist	1	D	3
24	36-4	146	B23	75/90	Silty light clay	10	10YR6/2	Light brownish grey		1.1		0	Moist	15	D	3
24	36-4	146	BC	120+	Silty clay loam	10	10YR7/3	Very pale brown		1.4		0	Slight/Moist	30	D	1(60)
30	34-10	147	A1	12	Sandy clay loam	7.5	2.5YR5/2	Weak red		1.7		1	Moist			3
30	34-10	147	B21	40	Medium heavy clay	8	2.5YR4/6	Red		1.5		0	Moist			3
30	34-10	147	B22	75	Light medium clay	9.5	2.5YR5/2	Weak red		1.4	5	0	Slight	25	D	2(70)
30	34-10	147	BC	110+	Clay loam	9	2.5YR6/3	Light reddish brown		1.5	35	0	Dry	30	D	
33	34-11	148	A1	10	Fine sandy clay loam	8	5YR5/1	Grey		1.6		0	Moist			3
33	34-11	148	B21	40	Medium heavy clay	8.5	5YR5/6	Yellowish red		1.2		0	Moist			23
33	34-11	148	B22	60	Medium clay	8.5	5YR4/6	Yellowish red		1.3		0	Slight/Moist	1	P	2
33	34-11	148	B23	80	Medium clay	9	5YR6/3	Light reddish brown		1.2		0	Dry	15	D	1(90)
33	34-11	148	BC	115+	Sandy clay	9	5YR6/3	Light reddish brown		0.4		0	Dry	15	D	

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
38	30-12	149	A1	10	Medium clay	6	7.5YR4/4	Brown		1.3		2	Moist			3
38	30-12	149	2Ab	20	Light clay	6	7.5YR4/3	Brown		1.5		1	Moist			3
38	30-12	149	2B2/b	45	Medium heavy clay	7	5YR5/6	Yellowish red		1.4		0	Moist			2
38	30-12	149	2B22b	95	Light medium clay	8.5	7.5YR4/4	Brown		1.3		0	Slight	20	P	0
38	30-12	149	C	110+	Pale calcareous shale											
36	30-14	150	A1	35	Medium clay	8	2.5YR3/4	Dark reddish grey		1.0		1	Slight/Moist			3
36	30-14	150	B3	65	Light medium clay	9	2.5YR5/4	Reddish brown	Grey	1.6		0	Dry	30	P	3
36	30-14	150	BC1	100	Sandy clay loam	9	2.5YR5/4	Reddish brown		0.8		0	Dry	5	P	1(80)
36	30-14	150	BC2	120+	Sandy clay loam	7.5	2.5YR4/3	Reddish brown		0.8		0	Dry			
37	30-15	151	A1	10	Light clay	6.5	5YR4/3	Redish brown		1.7		2	Moist			4
37	30-15	151	B21	23	Heavy clay	7.53	5YR5/6	Yellowish red		1.6		2	Moist			3
37	30-15	151	B22	50	Heavy clay	9	7.5YR5/6	Strong brown		1.5		0	Moist	3	D	2
37	30-15	151	B23	120+	Sandy light clay	9	7.5YR4/6	Strong brown	Grey	0.5		0	Slight	20	P	1(60)
64	8-12	152	A1	10	Light clay	6.5	7.5YR4/3	Brown		1.9		0	Moist			3
64	8-12	152	B21	30	Heavy clay	7.5	7.5YR4/4	Brown		1.7		0	Moist			2
64	8-12	152	B22	50	Medium clay	8.5	7.5YR4/2	Brown		1.5		0	Moist	5	D/P	1
64	8-12	152	BC	120+	Volcanic breccia - some basaltic fragments											
28	34-1b	153	A1	20	Sandy clay loam	6.5	5YR3/2	Dark reddish brown		1.9	5	2	Moist			3
28	34-1b	153	A3	40	Light sandy clay	7.5	5YR4/4	Reddish brown		1.7	40	2	Moist	1	P	3
28	34-1b	153	B2	80	Light sandy clay loam	8.5	5YR5/4	Reddish brown		1.6	90	0	Slight/Moist	25	D	3
28	34-1b	153	BC	115+	Light sandy clay loam	9	5YR6/4	Light reddish brown			96			25	D	
27	36-5	154	A1	10	Clay loam	8	2.5YR4/2	Weak red		1.8	1	0	Moist			3
27	36-5	154	B21	35	Medium heavy clay	8.5	2.5YR4/3	Reddish brown		1.0	0	2/3	Moist/Wet			3
27	36-5	154	B22	100	Heavy clay	8.5	2.5YR5/8	Red		1.7	2	0	Moist	15	D	2
27	36-5	154	BC	130	Medium heavy clay	8	2.5YR5/6	Red		1.6	0	0	Slight/Moist	25	D	1(110)
26	36-6	155	A1	20	Medium heavy clay	8	7.5YR3/2	Dark brown		1.7		0	Moist			3
26	36-6	155	B21	65	Medium clay	9	7.5YR4/2	Brown		1.4		1	Moist	15	P	3
26	36-6	155	B22	130+	Medium clay	9	5YR4/3	Redish brown		1.8		0	Slight/Moist	3	P	1
32	34-12	156	A1	10	Clay loam	7.5	2.5YR4/2	Weak red		1.7		0	Moist			3
32	34-12	156	B21	50	Medium clay	8	2.5YR4/6	Red		1.6		0	Moist			3
32	34-12	156	B22	85	Medium heavy clay	8.5	2.5YR6/6	Light red		1.6		0	Slight	10	D/P	2
32	34-12	156	BC	110+	Light medium clay	8	2.5YR5/6	Red		1.7		0	Dry	5	D	1(90)

Sampling Site (Field)	Farm Pit ID	Report Pit #	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)		Mottles	SOILpak Compaction Score	Gravel Fragments (%)	Dispersion 10 minutes	Moisture	Lime (%)	Type	Root Score
31	34-13	157	A1	20	Medium clay	7.5	7.5YR4/3	Brown		1.3		2	Moist			2
31	34-13	157	B1	35	Medium heavy clay	8	5YR4/4	Reddish brown		1.3		0	Moist			2
31	34-13	157	2B	60	Medium clay	8.5	7.5YR3/3	Dark brown		1.0		0	Slight/Moist	2	D	1
31	34-13	157	3B	110+	Light medium clay	8.5	7.5YR4/3	Brown		1.2		0	Slight/Moist	5	D/P	1(80)
34	30-16	158	A1	10	Clayey sand	7.5	5YR4/4	Reddish brown		1.2	15	2	Moist			2
34	30-16	158	B1	20	Medium heavy clay	8	5YR4/6	Yellowish red		1.6		0	Moist			2
34	30-16	158	B21	50	Medium clay	9.5	7.5YR4/6	Strong brown	Yellow	1.3	30	0	Moist			2
34	30-16	158	B22	75	Medium clay	10	7.5YR4/6	Strong brown	Grey	0.4	60	0	Moist	3	P	1(8)
34	30-16	158	C	120+	Conglomerate											
35	30-17	159	A1	40	Light medium clay	9	2.5YR3/1	Dark reddish grey		1.8		0	Moist			3
35	30-17	159	2A	65	Clay loam	9	2.5YR5/3	Reddish brown		1.7		0	Moist			3
35	30-17	159	3A	85	Sandy clay loam	10	2.5YR5/4	Reddish brown		1.5		0	Moist			3
35	30-17	159	4A	120+	Light clay	10	2.5YR4/1	Dark reddish grey		1.5		0	Moist			3

Appendix 8. Layer data – Soil Structure Details – Pits 1 to 159

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
78	22-1	1	15	S	SB	12	RP	2	1.8
78	22-1	1	35	S	AB	10	E	3	1.7
78	22-1	1	80	S	LE	13	SP	4	0.9
78	22-1	1	120+	M	SB	8	SP	3	1.5
79	22-2	2	18	W	AB	3	RP	1	1.9
79	22-2	2	32	apedal sand					1.5
79	22-2	2	65	W	SB	3	RP	2	1.9
79	22-2	2	70	apedal sand					1.5
79	22-2	2	100	W	PL	2	RP	1	1.7
79	22-2	2	120	W	AB	3	RP	1	1.9
80	22-3	3	20	S	SB	8	RP	2	1.7
80	22-3	3	50	W	AB	1	RP	2	1.8
80	22-3	3	75	W	AB	9	RP	2	1.7
80	22-3	3	120	S	BL	13	RP	3	1.6
81	22-4	4	40	M	SB	10	E	1	1.9
81	22-4	4	50	W	PO	8	E	1	1.5
81	22-4	4	70	W	AB	6	E	1	1.9
81	22-4	4	100	M	AB/PL	5	E	1	1.8
81	22-4	4	130+	M	BL	8	E	2	1.7
145	22-37	5	12	M	AB	25	RP	6	0.5
145	22-37	5	25	M	AB/LE	20	RP	6	0.3
145	22-37	5	90	M	AB/LE	18	RP	6	0.4
145	22-37	5	120+	S	PO	7	RP	2	1.5
146	22-38	6	8	W	AB	35	E	6	0.3
146	22-38	6	40	M	LE/AB	18	RP	5	0.6
146	22-38	6	105	M	LE	15	RP	4	0.8
146	22-38	6	125+						0

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
82	22-5	7	20/50	W	PO	5	E	2	1.6
82	22-5	7	60	S	BL	10	SP	4	1.0
82	22-5	7	80	S	LE	14	SP	5	0.7
82	22-5	7	120+	W	AB	8	E	3	1.9
83	22-6	8	30	apedal sand					1.5
83	22-6	8	50	S	BL	10	SP	4	1.2
83	22-6	8	90	S	AB	4	S/E	2	1.6
83	22-6	8	120	S	SB/PO	1(3)	E	1	1.7
84	22-7	9	15	S	SB	12	RP	2	1.8
84	22-7	9	50	S	BL	14	SP	4	1.0
84	22-7	9	90	S	SB	6	E/RP	3	1.5
84	22-7	9	120+	S	AB	7	E	3	1.4
85	22-8	10	20	M	SB	6	RP	1	1.8
85	22-8	10	40	M	PO	8	RP	2	1.5
85	22-8	10	65	S	PO	5	RP	2	1.8
85	22-8	10	120						
144	22-36	11	20	W	AB/PO	15	E	4	1.0
144	22-36	11	50	M	PO	8	RP	3	1.3
144	22-36	11	130+	W	AB	12	RP	3	1.1
86	22-9	12	10	S	SB	8	RP	2	1.7
86	22-9	12	40	S	BL	7	RP	3	1.2
86	22-9	12	90	S	SB	6	SP	4	1.1
86	22-9	12	120+	S	AB	8	SP	4	1.1
87	22-10	13	40	S	SB	10	RP	3	1.6
87	22-10	13	60	S	BL	12	SP	4	1.0
87	22-10	13	95	S	SB	10	E	2	1.4
87	22-10	13	120+	S	SB	8	E	2	1.4

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
88	22-11	14	15	S	SB	13	RP	2	1.7
88	22-11	14	45	S	BL	9	SP	4	1.3
88	22-11	14	80	S	BL/LE	10	SP	4	1.1
88	22-11	14	120+	S	AB	8	E	2	1.6
89	22-12	15	30	S	SB	10	RP	3	1.7
89	22-12	15	90	S	BL/LE	14	SP	4	1.1
89	22-12	15	120	S	LE	25	SP	5	0.7
90	22-13	16	30	S	SB/PL	14	RP	4	1.1
90	22-13	16	90	S	AB/LE	10	SP	4	0.9
90	22-13	16	120+	S	LE	18	SP	5	0.7
91	22-14	17	20	S	SB	14	RP	2	1.8
91	22-14	17	40	S	BL/PR	16	SP	3	1.1
91	22-14	17	65	S	PR	18	SP	4	0.9
91	22-14	17	120+	S	AB	6	E	1	0.7
92	22-15	18	15	S	SB	5	RP	2	1.7
92	22-15	18	45	S	BL	12	RP	3	1.6
92	22-15	18	75	S	LE	16	SP	4	0.8
92	22-15	18	120+	M	AB	8	SP	4	0.7
92	22-15	19	20	S	SB	16	RP	1	1.8
92	22-15	19	55	S	BL/PR	20	E/S	4	1.2
92	22-15	19	90	S	AB	8	E	2	1.7
92	22-15	19	120+						
94	22-17	20	25/40	S	AB/SB	10	RP	2	1.7
94	22-17	20	50/80	S	PL/LE	20	SP	3	1.4
94	22-17	20	110/120	S	LE	25	SP	4	1.1
94	22-17	20	120	S	AB	5	E	2	1.4

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
95	22-18	21	10	S	SB	8	RP	2	1.8
95	22-18	21	30	S	BL	14	RP/E	3	1.4
95	22-18	21	60	S	BL	12	E/S	4	1.1
95	22-18	21	80	S	AB	7	SP	4	0.8
95	22-18	21	120+	W	AB	12	RP	4	0.7
96	22-19	22	15/20	S	SB	6	RP	2	1.8
96	22-19	22	65/80	M	SB	8	RP	3	1.6
96	22-19	22	110	S	SB	6	SP	3	1.5
96	22-19	22	130+	W	AB	3	SP	2	1.6
97	22-20	23	15	M	PO	7	RP	2	1.5
97	22-20	23	50	W	B	15	RP	3	0.6
97	22-20	23	80	M	LE	12	RP	5	0.8
97	22-20	23	130+	M	LE	15	RP	6	0.5
98	22-21	24	30/45	S	SB	8	RP	3	1.6
98	22-21	24	60/80	M	PO	12	RP	4	1.0
98	22-21	24	120+	S	LE	10	SP	4	0.8
99	22-22	25	15	S	AB	7	RP	3	1.7
99	22-22	25	40	S	BL	12	SP	4	0.9
99	22-22	25	90	W	AB	8	SP	4	1.0
99	22-22	25	120+	W	AB	15	RP	5	0.7
100	22-23	26	15	S	SB	12	RP	2	1.7
100	22-23	26	55	S	BL	10	SP	4	1.1
100	22-23	26	80	S	SB	12	SP	4	1.0
100	22-23	26	120+	S	AB	10	SP	3	1.2
101	22-24	27	10	M	PO	12	RP	2	1.1
101	22-24	27	30	M	LE	15	RP	3	0.8
101	22-24	27	60	W	LE	18	RP	3	0.6
101	22-24	27	115+	M	PO	8	RP	3	1.3

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
102	22-25	28	20/40	S	SB	8	RP	3	1.6
102	22-25	28	80/100	S	AB/LE	16	SP	4	1.0
102	22-25	28	120+	S	LE/AB	12	SP	4	0.8
103	22-26	29	15/40	M	PO	5	E	2	1.5
103	22-26	29	30/50	S	AB/LE	12	E	3	1.6
103	22-26	29	55/80	S	AB/LE	10	SP	3	1.3
103	22-26	29	100	M	AB	10	RP	4	1.3
103	22-26	29	140+	S	PL	10	RP	4	1.2
104	22-27	30	20	S	B	20	RP	6	0.4
104	22-27	30	60	S	PO	12	RP	3	1.2
104	22-27	30	140+	M	B	15	RP	6	0.5
105	22-28	31	15/30	S	BL/LE	12	E	3	1.6
105	22-28	31	30/60	S	LE	16	SP	4	1.0
105	22-28	31	60/100	S	LE	20	SP	4	0.7
105	22-28	31	120+	S	LE	15	SP	4	0.7
106	22-29	32	12	W	PO	8	E	1	1.4
106	22-29	32	22	M	PO	8	E	1	1.6
106	22-29	32	50	W	B	15	RP	3	0.7
106	22-29	32	85	M	B	15	RP	4	0.5
106	22-29	32	130+	M	B	18	E	4	0.3
107	22-30	33	10	S	SB	6	RP	2	1.7
107	22-30	33	30	S	SB	5	RP	2	1.8
107	22-30	33	50	M	PO	8	RP	3	1.4
107	22-30	33	70	M	LE	15	RP	3	1.0
107	22-30	33	110+	M	PO	8	RP/SP	2	1.3
108	22-31	34	15	S	SB	10	RP	3	1.7
108	22-31	34	35	S	BL	14	SP	4	0.9
108	22-31	34	95	M	AB/SB	12	SP	4	1.0
108	22-31	34	120+	S	BL	6	E	2	1.7

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
109	22-32	35	25/30	S	SB	8	RP	3	1.7
109	22-32	35	50/60	S	BL	12	E/S	2	1.8
109	22-32	35	110	W	AB	12	RP	4	0.8
109	22-32	35	120+						
110	22-33	36	30	S	SB	7	RP	3	1.7
110	22-33	36	55	S	LE/BL	14	SP	4	0.8
110	22-33	36	100	S	LE	16	SP	4	0.6
110	22-33	36	120+	W	SB	10	E	3	1.4
111	22-34	37	30	S	AB	12	RP	2	1.8
111	22-34	37	80	S	AB/LE	16	SP	4	0.9
111	22-34	37	120+	S	LE	40	SP	4	0.8
112	22-35	38	20	S	AB	10	RP	2	1.8
112	22-35	38	45	S	AB	6	RP	2	1.8
112	22-35	38	70	M	PO	5	RP	2	1.7
112	22-35	38	90	W	AB	6	RP	2	1.8
112	22-35	38	120+	M	PL/AB	10	RP	2	1.8
157	9-1	39	5	M	PO	8	RP	4	1.2
157	9-1	39	30	M	PO	15	RP	5	1.0
122	32-1	40	10	W	AB	15	RP	6	0.9
122	32-1	40	30	M	AB/PO	12	RP	6	1.0
122	32-1	40	50	W	AB/PO	10	RP	4	1.2
123	32-2	41	10	M	AB/PO	12	RP	5	1.1
123	32-2	41	25	M	AB/PO	20	RP	5	1.0
123	32-2	41	65	M	AB/LE	12	RP	3	1.2
124	32-3	42	20	S	PO	10	RP	5	1.2
124	32-3	42	45	M	AB/LE	8	RP	4	1.3
124	32-3	42	110	M	LE/PO	8	RP	3	1.3
124	32-3	42	140	M	PO	8	RP	3	1.3

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
155	9-2	43	5	W	PL/PO	12	RP	5	0.8
155	9-2	43	40	M	LE/PO	10	RP	4	1.1
155	9-2	43	100	M	LE	10	RP	4	1.1
155	9-2	43	140+	M	PO	8	RP	3	1.3
156	9-3	44	10	W	BL	5	RP	5	0.7
156	9-3	44	25	M	LE	5	RP	5	0.9
156	9-3	44	55	M	BL	5	RP	5	0.8
156	9-3	44	140+	S	PO	3	RP	3	1.3
120	32-4	45	10	W	AB	15	RP	4	0.8
120	32-4	45	35	M	AB/PO	12	RP	4	1.1
120	32-4	45	90 (sand lenses)	apedal sand					1.5
120	32-4	45	90 (clay layers)	M	AB/PO	10	RP	3	1.3
120	32-4	45	130+	M	LE/AB	12	RP	3	1.2
121	32-5	46	15	M	PO/AB	20	E	4	1.1
121	32-5	46	55	M	AB	20	RP	6	0.6
121	32-5	46	65	M	LE/PO	15	E	5	0.9
121	32-5	46	130+	S	LE/AB	10	RP	4	1.2
118	32-6	47	30	M	AB	25	RP	6	0.5
118	32-6	47	45	S	PO/AB	10	RP	3	1.3
118	32-6	47	80	M	LE	15	RP	3	1.0
118	32-6	47	130+	S	PO	8	RP	2	1.6
119	32-7	48	12	M	AB	30	RP	6	0.4
119	32-7	48	30	S	AB/CO	20	RP	6	0.6
119	32-7	48	90	M	AB/PO	10	RP	5	1.1
119	32-7	48	140+	M	PO	7	RP	4	1.3
125	32-8	49	12	M	AB/PO	12	RP	3	1.2
125	32-8	49	45	M	AB/PO	10	RP	4	1.1
125	32-8	49	60	apedal sand					1.5
125	32-8	49	130+	S	PO	8	RP	2	1.6

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
115	32-9	50	10	S	SB	8	RP	3	1.6
115	32-9	50	30	M	B	25	RP	5	0.7
115	32-9	50	70	M	B	12	RP	4	1.1
115	32-9	50	140+	S	AB/PO	8	RP	4	1.2
116	32-10	51	10	S	PO	5	RP	4	1.4
116	32-10	51	40	M	AB	10	RP	5	1.1
116	32-10	51	60	S	AB	15	RP & SP	5	1.0
116	32-10	51	140+	M	LE/B	15	RP	5	1.1
117	32-11	52	10	M	PO/B	20	RP	4	1
117	32-11	52	50	M	AB	30	RP	6	0.7
117	32-11	52	95	M	PO	10	RP	3	1.3
117	32-11	52	100+						
126	32-12	53	10	S	AB	15	RP	5	1.2
126	32-12	53	40	S	AB/PO	10	RP & SP	4	1.3
126	32-12	53	45+						
128	32-15	54	10	M	PO	7	E	2	1.2
128	32-15	54	30	W	AB	25	E	4	0.7
128	32-15	54	50	M	PO/PL	10	RP	5	1.0
128	32-15	54	52+						
113	32-13	55	10	M	B	10	RP	5	1.3
113	32-13	55	35	M	B	15	RP	5	1.1
113	32-13	55	80	S	B	20	RP	5	1.0
113	32-13	55	140+	S	B	12	RP & SP	4	1.2
114	32-14	56	20	M	PL	12	RP	4	0.8
114	32-14	56	40	S	B	15	RP	5	0.7
114	32-14	56	65	M	B	10	RP	4	1.1
114	32-14	56	85	M	LE/B	12	RP	3	1.1
114	32-14	56	140+	M	LE/PO	8	RP	2	1.5

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
143	19-1	57	10	M	AB	20	E	5	0.7
143	19-1	57	50	M	AB/PO	10	RP	4	1.0
143	19-1	57	130+	S	PO	8	RP & SP	3	1.4
159	15-2	58	12	S	PO	6	RP	3	1.3
159	15-2	58	40	S	PO/LE	12	RP	5	0.9
159	15-2	58	140+	S	PO/LE	10	RP	3	1.2
158	15-1	59	10	S	SB/PO	7	RP	3	1.4
158	15-1	59	30	S	SB/PO	5	RP	3	1.5
158	15-1	59	50	M	PO	7	RP	3	1.3
158	15-1	59	140+	W	PO	7	RP	2	1.4
142	19-2	60	12	S	PO	8	RP	5	1.0
142	19-2	60	50	M	PO/AB	15	RP	5	0.8
142	19-2	60	65	M	PO/LE	8	RP	3	1.2
142	19-2	60	110	M	PO/LE	6	RP	2	1.4
127	32-16	61	10	S	PO	8	E	3	1.4
127	32-16	61	30	S	AB/PO	10	RP	5	1.2
127	32-16	61	45	M	AB/LE	12	RP	4	1.2
127	32-16	61	120+	S	PO/LE	10	RP	4	1.3
129	31-1	62	10	S	PO	8	RP	4	1.3
129	31-1	62	35	S	AB/PO	10	RP	5	1.1
129	31-1	62	70	M	PO	7	RP	3	1.4
160	15-3	63	8	M	PO/BL	10	RP	3	1.2
160	15-3	63	30	M	PO/BL	10	RP	3	1.2
160	15-3	63	50	M	PO/BL	15	RP	4	1.0
162	15-4	64	15	M	BL	20	RP	5	0.6
162	15-4	64	35	S	LE/PO	25	RP/SP	5	0.5
161	15-7	65	10	M	BL/PO	12	RP	3	0.8
161	15-7	65	15	M	BL	15	RP	4	0.5
161	15-7	65	50	S	PO/LE	18	RP/SP	5	0.3

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
163	15-8	66	10	M	BL	15	RP	5	0.4
163	15-8	66	20	S	CO/BL	20	RP	5	0.3
163	15-8	66	65	M	PO/BL	20	RP	4	0.6
163	15-8	66	125+	M	PO	8	RP	3	1.2
164	15-5	67	10	S	PO	10	RP	4	1.0
164	15-5	67	30	S	PO/LE	15	RP	4	0.8
164	15-5	67	70	M	PO/SB	5	RP	2	1.5
164	15-5	67	100	M	PO	8	RP	2	1.3
165	15-6	68	10-30	S	PO	12	RP	4	1.0
165	15-6	68	110	S	PO	7	RP	3	1.3
77	17-1	71	10	S	SB	5	RP	2	1.8
77	17-1	71	35	S	SB	8	RP	2	1.6
77	17-1	71	80	S	PO	5	RP	3	1.4
77	17-1	71	110+	M	B	10	RP	6	0.7
76	17-2	72	20	S	SB	12	RP	3	1.8
76	17-2	72	45	W	PO	10	RP	3	1.0
76	17-2	72	90	S	SB	7	SP	4	1.2
76	17-2	72	130+	S	SB	3	E	2	1.8
75	17-3	73	15	S	SB	12	RP	2	1.8
75	17-3	73	50	S	AB/PO	10	E/SP	2	1.8
75	17-3	73	80	W	AB	8	SP	4	1.0
75	17-3	73	120+	S	AB	10	SP	4	0.9
74	17-4	74	20	S	SB	8	RP	2	1.8
74	17-4	74	40	S	PO	5	E/SP	2	1.7
74	17-4	74	80	S	SB/AB	10	SP	3	1.6
74	17-4	74	120+	M	AB	5	E	2	1.6
130	31-2	69	15	S	SB	7	E	2	1.6
130	31-2	69	50	S	PO	8	RP	2	1.7
130	31-2	69	55+						

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
141	31-3	70	15	S	SB	7	RP	2	1.8
141	31-3	70	45	M	SB	5	RP	1	1.8
141	31-3	70	60+	M	PO/LE	7	RP	3	1.6
141	31-3	70							
69	17-5	75	15	S	SB	4	RP	2	1.8
69	17-5	75	30	S	SB	3	RP	2	1.8
69	17-5	75	60	S	PO	8	RP	3	1.6
69	17-5	75	120+	S	PO	10	RP	2	1.7
70	17-6	76	25	S	SB	12	RP	2	1.9
70	17-6	76	75	W	AB	8	RP	1	1.8
70	17-6	76	120+	W	AB	15	RP	4	0.8
71	17-7	77	20	S	SB	10	RP	2	1.8
71	17-7	77	55	S	PO	6	E/SP	3	1.5
71	17-7	77	90+						
72	17-8	78	15	S	AB	7	RP	2	1.8
72	17-8	78	40	S	BL	12	E/SP	3	1.7
72	17-8	78	60	S	BL/PR	10	SP	3	1.4
72	17-8	78	120+	S	PR	12	SP	4	1.0
73	17-9	79	8	M	PO	7	RP	2	1.7
73	17-9	79	25	M	PO	10	RP	3	1.4
73	17-9	79	130+	S	LE	15	RP	4	0.8
131	31-4	80	12	S	PO	7	RP	4	1.4
131	31-4	80	40	S	PO	15	RP & SP	5	1.2
131	31-4	80	80	M	AB/PO	10	RP	3	1.4
131	31-4	80	110+						
132	31-5	81	5	M	AB/PO	8	E	3	1.3
132	31-5	81	40	S	PO	10	RP	4	1.2
132	31-5	81	70	M	AB/PO	5	RP	3	1.5
132	31-5	81	75+						

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
139	31-6	82	10	M	PO	20	RP	4	1.1
139	31-6	82	35	S	PO	7	RP	3	1.6
139	31-6	82	105+						
140	31-7	83	15	M	AB	15	RP	4	1.2
140	31-7	83	45	S	PO/B	12	RP	4	1.2
140	31-7	83	130+						0.0
68	17-10	84	15	S	SB	12	RP	2	1.8
68	17-10	84	60	S	PO	5	E	3	1.7
68	17-10	84	80	M	AB	6	E	3	1.7
68	17-10	84	120+	W	AB	8	E	3	1.5
66	30-1	85	2	S	B	15	RP	6	0.3
66	30-1	85	25	S	PO	5	RP	2	1.5
66	30-1	85	55	S	B	10	RP	3	1.1
66	30-1	85	100	S	B	20	RP	4	0.7
66	30-1	85	140+	S	PO	7	RP	2	1.5
138	31-9	86	15	M	PO/LE	12	E	4	1.2
138	31-9	86	50	S	AB	20	RP	6	0.8
138	31-9	86	75	M	PO/LE	10	RP	3	1.1
138	31-9	86	130+	S	PO	7	RP	3	1.6
67	17-11	87	18	S	SB	5	E	2	1.8
67	17-11	87	55	S	SB	8	RP	2	1.7
67	17-11	87	110+	M	PO	5	RP	1	1.8
65	30-2	88	15	S	SB	8	RP	3	1.7
65	30-2	88	50	S	BL	10	E/SP	4	1.2
65	30-2	88	80	S	AB	8	SP	3	1.3
65	30-2	88	120+	S	SB	4	E	2	1.6
20	35-1	89	18	S	BL	9	E	4	1.7
20	35-1	89	40	S	AB/PL	7	SP	2	1.1
20	35-1	89	70	S	LE	10	SP	5	0.8

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
19	35-2	90	15	S	BL	10	E	4	1.5
19	35-2	90	30	S	SB	4	SP	2	1.3
19	35-2	90	45	S	PR	12	SP	3	1.1
19	35-2	90	65	W	SB	3	E	2	1.0
19	35-2	90	140+						
133	31-8	91	10	M	AB	35	RP	6	0.3
133	31-8	91	40	M	AB	12	RP	5	1.0
133	31-8	91	40-42 & 58-60	apedal sand					1.5
133	31-8	91	80	M	AB/PO	8	RP	3	1.4
133	31-8	91	130+	M	LE	15	RP	3	1.2
134	31_11	92	10	M	AB/LE	12	E	3	1.2
134	31_11	92	30	M	LE	8	RP	5	0.8
134	31_11	92	80	M	PO	8	RP	2	1.5
134	31_11	92	140+	M	PO/AB	7	RP	2	1.6
137	31-10	93	10	M	PO	12	E	2	1.3
137	31-10	93	30	M	PO/LE	10	E	2	1.1
137	31-10	93	55	M	LE	12	E	2	1.1
137	31-10	93	80	M	LE/PL	8	RP	3	1.3
137	31-10	93	140+	M	PO	7	RP	2	1.6
153	23-1	94	4	M	PL	15	RP	6	0.6
153	23-1	94	8	M	B	10	RP	4	1.0
153	23-1	94	30	S	PO	12	RP	5	0.8
153	23-1	94	65	S	PO	7	RP	3	1.2
153	23-1	94	100	S	PO	5	RP	3	1.3
154	23-2	95	20	W	BL	20	RP	6	0.4
154	23-2	95	60	M	PO	10	RP	3	1.0
154	23-2	95	130+	M	PO	15	RP	3	0.8

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
47	29-1b	96	20	S	GR	4	RP	4	1.8
47	29-1b	96	45	M	PO	3	RP	3	1.8
47	29-1b	96	85	M	PO	3	RP	3	1.8
47	29-1b	96	150+	M	PO	5	RP	3	1.5
46	29-1a	97	8	S	SB	5	RP	1	1.8
46	29-1a	97	35	S	SB	8	RP	1	1.7
46	29-1a	97	50+						
18	35-3	98	12	S	BL	4	SP	4	1.6
18	35-3	98	25	S	SB	3	SP	3	1.3
18	35-3	98	45	S	AB	3	SP	3	1.5
18	35-3	98	65	M	SB	3	E	3	1.4
18	35-3	98	140+						
17	35-4	99	12	S	PO	8	RP	3	1.6
17	35-4	99	30	M	LE	10	RP	4	1.0
17	35-4	99	60	W	LE	20	RP	4	0.4
17	35-4	99	95	M	LE	15	RP	5	0.3
17	35-4	99	140+	M	LE	15	RP	5	0.3
135	31-12	100	8	W	AB	25	E	4	0.6
135	31-12	100	15	M	AB	15	E	4	1.0
135	31-12	100	35	M	AB/LE	10	RP	5	0.9
135	31-12	100	80	M	AB/LE	8	RP	3	1.3
135	31-12	100	130+	M	AB/LE	10	RP	3	1.2
53	8-1	101	20	S	SB	9	RP	3	1.8
53	8-1	101	55	S	BL	10	SP	4	1.4
53	8-1	101	90	S	AB	8	E	3	1.7
16	35-5	102	15	S	PO	6	RP	3	1.8
16	35-5	102	30	S	SB	3	RP	4	1.3
16	35-5	102	45	S	SB	4	SP	4	1.5
16	35-5	102	60	S	AB	5	E	3	1.6

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
15	35-6	103	17	S	SB	7	RP	2	1.7
15	35-6	103	60	S	PO	10	SP	3	1.4
15	35-6	103	75	S	PO	5	RP	2	1.8
9	35-7	104	10	S	SB	5	RP	2	1.8
9	35-7	104	35	S	PO	8	RP	2	1.6
9	35-7	104	80	S	PO	10	RP	4	1.2
9	35-7	104	130+	S	LE	8	RP	3	1.2
136	31-13	105	10	M	LE/PO	12	E	3	1.2
136	31-13	105	25	M	LE	8	E	3	1.3
136	31-13	105	60	M	PO/LE	8	RP	3	1.3
136	31-13	105	130+	S	PO	7	RP & SP	3	1.4
54	8-2	106	12	S	SB	7	RP	2	1.6
54	8-2	106	18	M	PO	10	E	2	1.3
54	8-2	106	30	W	B	20	RP	3	0.7
54	8-2	106	50	M	LE	15	RP	3	0.8
54	8-2	106	70	S	LE	10	RP	4	1.0
54	8-2	106	110+						
52	30-3	107	20	S	SB	10	RP	3	1.6
52	30-3	107	45	S	SB	12	E/RP	4	1.5
52	30-3	107	70	M	AB	15	RP	4	0.7
52	30-3	107	120+	S	AB	8	E/SP	3	1.6
48	30-4	108	10	M	PO	10	RP	2	1.2
48	30-4	108	30	M	PO	10	RP	3	1.2
48	30-4	108	65	W	PO	5	RP	3	1.5
48	30-4	108	120+						
14	35-8	109	15	S	AB	6	RP	3	1.8
14	35-8	109	35	S	SB	7	RP	3	1.7
14	35-8	109	50	S	SB	8	E	2	1.7
14	35-8	109	100	S	PR	10	S	4	1.5
14	35-8	109	130+	S	LE	8	S	3	1.2

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
13	35-9	110	10	S	AB	12	RP	3	1.0
13	35-9	110	30	M	AB	15	RP	3	0.9
13	35-9	110	95	W	LE	18	RP	5	0.5
13	35-9	110	130+	W	LE	25	RP	6	0.2
8	35-10	111	10	M	PO	12	RP	3	1.3
8	35-10	111	60	S	PO	8	RP	3	1.5
8	35-10	111	105	M	BL	7	RP	3	1.4
8	35-10	111	140+	M	PO	12	RP	4	1.2
10	34-2	112	13	S	SB	5	RP	3	1.9
10	34-2	112	55	S	SB	8	RP	2	1.7
10	34-2	112	75	S	PO	8	RP	2	1.7
10	34-2	112	120+	S	AB	10	RP	3	1.2
55	8-3	113	10	M	SB	5	E	1	1.6
55	8-3	113	25	M	LE	10	E	1	1.4
55	8-3	113	40	M	AB	12	RP	2	1.2
55	8-3	113	90	M	AB	15	RP	2	1.1
55	8-3	113	130+	M	AB	10	RP	3	1.2
56	8-4	114	10	S	SB	3	E/RP	4	1.5
56	8-4	114	50	S	BL/PR	12	SP	4	1.0
56	8-4	114	70	S	AB	6	SP	2	1.6
56	8-4	114	130+	W	AB	10	SP	4	0.7
51	30-5	115	25	M	SB	8	RP	3	1.8
51	30-5	115	45	S	BL	8	SP	4	1.6
51	30-5	115	120+	S	SB	7	E	3	1.7
21	35-13	116	10	M	PO	8	RP	2	1.5
21	35-13	116	40	S	PO	5	RP	2	1.7
21	35-13	116	60	S	PO	5	RP	2	1.7
21	35-13	116	110	S	PO	7	RP	2	1.6
21	35-13	116	140+						

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
7	35-11	117	10	S	PO	8	RP	3	1.5
7	35-11	117	25/40	S	PO	7	RP	3	1.4
7	35-11	117	55	S	PO	8	RP	3	1.5
7	35-11	117	95						
12	34-3	118	12	S	PO	8	RP	3	1.5
12	34-3	118	40	S	PO	7	RP	2	1.6
12	34-3	118	65	S	PO	6	RP	2	1.7
12	34-3	118	130+	S	LE	10	RP	4	1.1
11	34-4	119	10	S	SB	5	RP	2	1.8
11	34-4	119	30	S	SB	4	RP	1	1.9
11	34-4	119	45	M	PO	7	RP	1	1.3
11	34-4	119	80	S	SB	8	RP	2	1.7
11	34-4	119	140+	M	PO	8	RP	3	1.5
45	30-7b	120	10	S	SB	8	RP	3	1.8
45	30-7b	120	20	W	PO	8	E	3	1.1
45	30-7b	120	45	S	PO	6	SP	3	1.7
45	30-7b	120	120						
58	8-6	121	10	S	SB	5	RP	2	1.8
58	8-6	121	27	S	SB	4	RP	1	1.8
58	8-6	121	50	M	PO	8	RP	2	1.3
58	8-6	121	75	S	BL	15	RP	4	1.8
58	8-6	121	120+	S	LE	10	RP	4	1.7
57	8-5	122	15	S	SB	8	RP	3	1.7
57	8-5	122	30	S	BL	10	SP	4	1.0
57	8-5	122	70	S	SB	6	E	3	1.6
57	8-5	122	130+	W	AB	10	E	4	0.7
49	30-8a	123	10	S	SB	10	E	3	1.8
49	30-8a	123	55	M	BL	7	SP	4	1.8
49	30-8a	123	75	S	SB	4	SP	3	1.6
49	30-8a	123	120+	S	PO	3	E	2	1.7

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
6	35-12	124	10	S	AB	8	RP	3	1.8
6	35-12	124	22	S	AB	10	RP	5	1.2
6	35-12	124	50	S	SB	6	E	6	1.5
6	35-12	124	110+	S	SB/AB	10	E	5	1.3
3	34-7	125	15	M	PO	7	RP	2	1.4
3	34-7	125	35	W	PO	10	RP	3	1.2
3	34-7	125	65	S	LE	15	RP	4	0.7
3	34-7	125	130+	S	LE	15	RP	4	0.7
5	34-5	126	10	M	PO	5	E	2	1.5
5	34-5	126	15	M	PO	7	E	2	1.5
5	34-5	126	65	S	PO	8	RP	3	1.3
5	34-5	126	130+	S	LE	15	RP	3	0.8
42a	30-9a	127p	15	M	AB	5	RP	2	1.7
42a	30-9a	127p	30	M	AB	15	RP	4	0.7
42a	30-9a	127p	60	S	AB	10	RP	2	1.2
42a	30-9a	127p	90	S	PO	7	RP	2	1.5
42b	30-9b	127d	15	S	SB	5	RP	2	1.7
42b	30-9b	127d	30	S	PO	5	RP	1	1.8
42b	30-9b	127d	60	S	AB	8	RP	2	1.6
42b	30-9b	127d	90	S	PO	7	RP	2	1.5
44	30-6	128	12	S	GR	3	RF	3	1.6
44	30-6	128	40	S	SB	4	E/SP	3	1.4
44	30-6	128	80	S	AB	2	E/RP	3	1.5
44	30-6	128	120+	W	PO	5	E	4	1.0
43	30-7a	129	15	S	SB	2	E/SP	4	1.2
43	30-7a	129	35	S	SB	3	S	3	1.1
43	30-7a	129	65	S	AB	2	E	3	1.0
43	30-7a	129	80	M	AB/SB	4	E	2	1.1
43	30-7a	129	130+	W	PO	7	RP	4	0.8

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
59	8-7	130	10	M	SB	5	E	13	1.7
59	8-7	130	40	S	PO	8	RP	2	1.3
59	8-7	130	90	S	B	10	RP	4	1.1
59	8-7	130	120+						
60	8-8	131	20	S	SB	6	RP	3	1.8
60	8-8	131	50	M	AB	4	SP	2	1.0
60	8-8	131	60	W	AB	10	E	3	1.0
60	8-8	131	120+	W	AB	10	E	4	0.7
50	30-8b	132	10	S	SB	7	RP	2	1.7
50	30-8b	132	35	S	SB	5	RP	1	1.8
50	30-8b	132	120+	M	PO	8	RP	3	1.3
22	36-1	133	13	S	BL	9	E	3	1.5
22	36-1	133	40	S	SB	8	SP	3	1.6
22	36-1	133	65	S	LE	6	SP	2	1.2
22	36-1	133	120+						
23	36-2	134	10	S	SB	5	RP	2	1.7
23	36-2	134	30	W	B	15	RP	4	0.8
23	36-2	134	55	S	PO	8	RP	3	1.5
23	36-2	134	85	M	LE	8	RP	4	1.2
23	36-2	134	140+	S	LE	12	SP	3	1.0
2	34-6	135	10	S	PO	8	RP	3	1.3
2	34-6	135	22	S	PO	8	RP	2	1.3
2	34-6	135	100	S	LE	15	RP	5	0.7
2	34-6	135	140+	S	LE	10	RP	5	0.8
1	34-8	136	12	S	PO	8	RP	3	1.3
1	34-8	136	30	M	PO	10	RP	3	1.2
1	34-8	136	70	M	PO	10	RP	3	1.2
1	34-8	136	120+	M	LE	15	RP	4	1.1

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
4	34-9	137	12	S	SB	7	RP	2	1.6
4	34-9	137	25	S	SB	5	RP	2	1.7
4	34-9	137	45	S	PO	8	RP	3	1.3
4	34-9	137	120+						
40	30-10	138	17	S	SB	5	E	1	1.8
40	30-10	138	25	M	PO	5	E	1	1.5
40	30-10	138	50	S	PO	8	RP	3	1.3
40	30-10	138	120+	S	PL/LE	12	RP	4	0.9
41	30-11	139	12	S	SB	8	RP	3	1.8
41	30-11	139	35	S	PO	6	RP	3	1.7
41	30-11	139	75	S	SB	3	RP	3	1.7
41	30-11	139	120+	W	PO	5	E	3	1.3
39	30-13	140	15	S	SB	3	RP	3	1.8
39	30-13	140	25	W	AB	3	E	3	1.6
39	30-13	140	60	S	PO	2	RP/SP	2	1.4
39	30-13	140	120+	W	PO	7	E	3	1.1
61	8-9	141	15	S	BL	12	E	4	1.2
61	8-9	141	40	S	BL	10	SP	4	1.0
61	8-9	141	80	S	SB	8	E/SP	3	1.4
61	8-9	141	120	S	BB	6	E	2	1.7
62	8-10	142	15	S	SB	4	RP	2	1.8
62	8-10	142	40	S	SB	6	RP	3	1.8
62	8-10	142	55	W	PO	5	E	3	1.5
62	8-10	142	80	W	PO	5	E	3	1.0
63	8-11	143	30	S	SB	10	S/E	2	1.2
63	8-11	143	45	S	BL	12	S/E	2	1.4
63	8-11	143	70	W	PO	5	RP	3	1.5
29	34-1a	144	15	S	SB	3	E	1	1.9
29	34-1a	144	40	S	SB	5	E	1	1.8
29	34-1a	144	60	S	PO	7	E	1	1.8

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
25	36-3	145	20	S	SB	12	RP	3	1.8
25	36-3	145	45	S	BL	8	SP	2	1.1
25	36-3	145	95	S	AB	6	SP	2	1.1
25	36-3	145	120+	W	SB	2	E	2	1.0
24	36-4	146	15	S	BL	8	E/SP	3	1.5
24	36-4	146	40/50	S	BL	7	SP	3	1.4
24	36-4	146	60/70	M	AB/BL	5	SP	2	1.1
24	36-4	146	75/90	W	SB	5	E	2	1.1
24	36-4	146	120+	S	PO	4	E	3	1.4
30	34-10	147	12	S	BL	6	RP	3	1.7
30	34-10	147	40	S	SB	6	SP	4	1.5
30	34-10	147	75	S	PO	3	E	3	1.4
30	34-10	147	110+	S	PO	2	E	3	1.5
33	34-11	148	10	S	SB	3	RP	3	1.6
33	34-11	148	40	S	BL	9	E/SP	4	1.2
33	34-11	148	60	S	AB	6	SP	4	1.3
33	34-11	148	80	S	LE	8	SP	4	1.2
33	34-11	148	115+	W	AB	4	SP	6	0.4
38	30-12	149	10	M	PO	10	RP	2	1.3
38	30-12	149	20	M	PO	7	RP	2	1.5
38	30-12	149	45	S	PO	7	RP	3	1.4
38	30-12	149	95	S	PO	7	RP	4	1.3
38	30-12	149	110+						
36	30-14	150	35	S	BL	8	SP	4	1.0
36	30-14	150	65	S	SB	4	E	3	1.6
36	30-14	150	100	W	PO	10	E	4	0.8
36	30-14	150	120+	W	PO	10	E	4	0.8

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
37	30-15	151	10	S	SB	5	E	2	1.7
37	30-15	151	23	S	SB	7	RP	2	1.6
37	30-15	151	50	S	PO	7	RP	3	1.5
37	30-15	151	120+	S	CO/AB	15	RP	6	0.5
64	8-12	152	10	S	SB	3	E/RP	1	1.9
64	8-12	152	30	S	SB	7	RP	2	1.7
64	8-12	152	50	S	PO	7	RP	3	1.5
64	8-12	152	120+						
28	34-1b	153	20	S	GR	1	RP	4	1.9
28	34-1b	153	40	W	SB	4	RP	3	1.7
28	34-1b	153	80	W	GR	2	E	2	1.6
28	34-1b	153	115+						
27	36-5	154	10	S	SB	8	RP	4	1.8
27	36-5	154	35	S	BL	8	SP	2	1.0
27	36-5	154	100	S	PO/AB	4	SP	3	1.7
27	36-5	154	130	S	AB	4	SP	4	1.6
26	36-6	155	20	S	SB	7	RP	2	1.7
26	36-6	155	65	M	PO	7	RP	3	1.4
26	36-6	155	130+	S	PO	7	SP	2	1.8
32	34-12	156	10	S	SB	8	RP	3	1.7
32	34-12	156	50	S	PO	7	RP/E	4	1.6
32	34-12	156	85	S	AB	7	E	3	1.6
32	34-12	156	110+	M	AB	6	E	3	1.7
31	34-13	157	20	M	PO	10	RP	3	1.3
31	34-13	157	35	M	PO	10	RP	3	1.3
31	34-13	157	60	S	B	15	RP	4	1.0
31	34-13	157	110+	S	B	10	RP	3	1.2

Sampling Site (Field)	Farm Pit ID	Report Pit #	Lower Depth (cm)	Pedality Grade	Type	Size (mm)	Fabric	Consistence	SOILpak Compaction Score
34	30-16	**158**	10	W	PO	8	E	1	1.2
34	30-16	**158**	20	S	SB	5	RP	2	1.6
34	30-16	**158**	50	M	PO	8	RP	3	1.3
34	30-16	**158**	75	S	LE	10	RP	6	0.4
34	30-16	**158**	120+						
35	30-17	**159**	40	S	GR	1	RP	2	1.8
35	30-17	**159**	65	W	AB	4	RP	3	1.7
35	30-17	**159**	85	W	PO	7	E	3	1.5
35	30-17	**159**	120+	W	PO	7	RP	3	1.5

Appendix 9. Laboratory Data – Pits 1 to 159

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269620	22_1	78	1	0	15	6.0	0.21	2.00	26	11.0	9.9	2.0	1.0	0.0	23.9	4.0	0.05	1.1	4	32	7	5	0.60	0.84	1.30	3.10
21269617	22_1	78	1	15	30	7.9	0.46	3.96	240	15.0	21.0	1.3	4.2	0.0	41.5	10.1	0.05	0.7	4	5	<5	8	0.05	0.75	3.70	1.10
21269618	22_1	78	1	30	60	8.4	1.08	8.10	990	18.0	23.0	0.6	8.3	0.0	49.9	16.6	0.06	0.8	0	1	<5	40	<0.02	0.83	5.10	0.45
21269619	22_1	78	1	60	90	8.4	1.37	10.28	1400	17.0	23.0	0.7	9.6	0.0	50.3	19.1	0.07	0.7	2	3	<5	57	0.04	0.79	4.60	0.25
21269616	22_2	79	2	0	15	7.8	0.25	2.38	18	19.0	5.0	2.4	0.1	0.0	26.5	0.4	0.66	3.8	2	22	<5	5	0.69	0.93	1.60	1.50
21269621	22_2	79	2	15	30	8.2	0.14	3.18	12	16.0	3.8	1.4	0.1	0.0	21.3	0.3	0.43	4.2	6	8	<5	3	0.32	0.42	0.89	0.47
21269622	22_2	79	2	30	60	8.1	0.21	1.81	60	20.0	7.7	0.5	0.4	0.0	28.6	1.5	0.14	2.6	2	4	<5	22	0.54	0.86	0.79	0.96
21269623	22_2	79	2	60	90	8.2	0.14	3.18	40	12.0	4.4	0.3	0.3	0.0	16.9	1.5	0.09	2.7	3	6	9	9	0.45	0.41	0.49	0.40
21269624	22_3	80	3	0	15	7.7	0.21	1.81	17	17.0	5.3	1.0	0.1	0.0	23.3	0.4	0.54	3.2	2	36	6	4	1.10	0.91	0.71	1.60
21269625	22_3	80	3	15	30	8.1	0.12	1.03	<10	18.0	5.5	0.3	0.1	0.0	23.9	0.3	0.36	3.3	3	3	<5	1	0.26	0.64	0.49	0.52
21269626	22_3	80	3	30	60	7.9	0.21	1.81	130	12.0	6.9	0.4	0.9	0.0	20.1	4.3	0.05	1.7	2	2	10	13	0.56	0.52	0.47	1.40
21269627	22_3	80	3	60	90	6.8	0.44	3.78	430	9.5	11.0	0.5	1.7	0.0	22.7	7.5	0.06	0.9	2	7	<5	16	0.09	1.30	0.69	0.40
21269628	22_4	81	4	0	15	5.7	0.23	3.17	11	9.5	3.3	1.3	0.1	0.0	14.2	0.4	0.65	2.9	3	73	11	8	2.50	0.67	0.74	2.90
21269629	22_4	81	4	15	30	8.0	0.15	2.07	<10	21.0	5.0	0.6	0.1	0.0	26.7	0.3	0.45	4.2	3	6	<5	2	0.39	0.59	0.85	1.20
21269630	22_4	81	4	30	60	8.0	0.13	1.12	10	18.0	4.9	0.2	0.3	0.0	23.4	1.1	0.12	3.7	4	2	6	2	0.50	0.50	0.53	1.20
21269631	22_4	81	4	60	90	7.9	0.16	1.38	41	12.0	6.2	0.2	0.6	0.0	19.1	3.2	0.05	1.9	4	1	10	14	0.22	0.90	0.25	0.68
21269767	22_37	145	5	0	15	7.7	0.15	1.29	29	17.0	5.0	0.9	0.1	0.0	23.0	0.6	0.25	3.4	4	<1	<5	5	1.00	0.79	0.67	1.70
21269768	22_37	145	5	15	30	7.7	0.09	0.77	37	12.0	4.9	0.5	0.4	0.0	17.8	2.1	0.04	2.4	4	<1	<5	2	0.38	0.58	0.57	1.30
21269769	22_37	145	5	30	60	8.1	0.31	2.33	330	11.0	12.0	0.5	1.8	0.0	25.3	7.1	0.04	0.9	2	<1	<5	7	0.10	0.60	1.20	0.52
21269770	22_37	145	5	60	90	8.4	0.68	5.10	750	18.0	15.0	0.4	3.4	0.0	36.8	9.2	0.07	1.2	2	<1	<5	20	0.09	0.55	1.80	0.34
21269772	22_38	146	6	0	15	5.7	0.07	0.60	26	5.5	4.6	0.9	0.3	0.0	11.2	2.2	0.03	1.2	4	1	<5	3	0.86	0.49	0.51	1.80
21269773	22_38	146	6	15	30	6.4	0.13	1.12	72	7.0	13.0	1.0	1.3	0.0	22.3	5.8	0.02	0.5	11	<1	<5	2	0.10	0.54	0.98	0.98
21269762	22_38	146	6	30	60	8.8	0.56	4.82	360	19.0	17.0	0.4	3.7	0.0	40.1	9.2	0.06	1.1	0	1	<5	15	0.02	0.27	3.20	0.45
21269771	22_38	146	6	60	90	8.8	1.03	8.86	880	16.0	20.0	0.4	7.4	0.0	43.8	16.9	0.06	0.8	2	<1	<5	83	<0.02	0.27	3.10	0.23
21269632	22_5	82	7	0	15	4.9	0.26	2.24	60	6.0	3.3	1.7	0.2	0.1	11.3	2.0	0.13	1.8	4	92	24	11	3.30	0.59	0.66	3.30
21269633	22_5	82	7	15	30	7.0	0.30	2.58	240	9.5	17.0	0.5	3.9	0.0	30.9	12.6	0.02	0.6	12	1	<5	9	0.07	0.42	2.40	0.74
21269634	22_5	82	7	30	60	8.3	1.61	9.38	1900	19.0	19.0	0.4	8.7	0.0	47.1	18.5	0.09	1.0	1	<1	<5	110	<0.02	0.27	4.30	0.30
21269635	22_5	82	7	60	90	8.6	1.12	6.50	1200	18.0	13.0	0.3	6.1	0.0	37.4	16.3	0.07	1.4	1	1	<5	83	0.03	0.27	1.40	<0.15
21269636	22_6	83	8	0	15	6.9	0.30	6.81	72	21.0	18.0	1.6	2.3	0.0	42.9	5.4	0.06	1.2	8	1	<5	4	0.13	0.71	1.10	1.80
21269637	22_6	83	8	15	30	8.4	0.92	20.88	700	26.0	28.0	0.9	7.4	0.0	62.3	11.9	0.08	0.9	2	1	<5	38	0.05	0.59	4.80	0.70
10222265	22_6	83	8	30	60	8.3	1.50	8.70	1600	21.0	25.0	0.7	9.6	0.0	56.3	17.0	0.09	0.8	2	1	<5	87	0.04	0.56	5.30	0.40
21269639	22_6	83	8	60	90	8.4	1.24	9.30	1300	20.0	16.0	0.4	7.4	0.0	43.8	16.9	0.07	1.3	2	2	6	81	0.05	0.28	4.00	0.18

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269640	22_7	84	9	0	15	5.9	0.17	1.46	<10	11.0	3.0	1.9	0.1	0.0	16.0	0.6	0.27	3.7	3	35	5	5	0.63	0.61	0.83	2.00
21269641	22_7	84	9	15	30	7.1	0.12	0.70	<10	15.0	7.8	1.7	0.6	0.0	25.1	2.4	0.05	1.9	4	2	<5	4	0.04	0.47	1.80	0.58
21269642	22_7	84	9	30	60	8.2	0.21	1.22	21	22.0	7.4	0.5	1.4	0.0	31.3	4.5	0.05	3.0	5	1	<5	7	<0.02	0.37	2.30	0.31
21269643	22_7	84	9	60	90	8.4	0.35	2.63	140	21.0	8.2	0.5	2.8	0.0	32.5	8.6	0.04	2.6	4	1	<5	16	<0.02	0.30	2.90	0.20
21269644	22_8	85	10	0	15	5.7	0.21	1.81	26	11.0	2.4	2.9	0.1	0.0	16.4	0.4	0.57	4.6	4	53	13	6	3.60	0.62	0.78	4.50
21269645	22_8	85	10	15	30	7.8	0.21	1.81	<10	36.0	2.8	1.8	0.1	0.0	40.7	0.2	1.22	12.9	2	6	<5	5	0.27	0.27	1.90	2.00
21269646	22_8	85	10	30	60	7.8	0.16	0.93	<10	22.0	4.8	1.8	0.2	0.0	28.8	0.7	0.24	4.6	2	1	<5	5	<0.02	0.13	2.60	0.35
21269763	22_36	144	11	0	15	5.5	0.07	0.60	<10	8.0	1.8	1.4	0.1	0.0	11.3	0.7	0.10	4.4	5	12	<5	4	0.84	0.82	0.66	1.70
21269764	22_36	144	11	15	30	7.3	0.23	1.98	<10	21.0	2.2	0.7	0.2	0.0	24.1	0.7	0.31	9.5	4	3	<5	2	0.13	0.66	0.53	1.20
21269765	22_36	144	11	30	60	7.8	0.13	1.12	11	25.0	2.3	0.4	0.2	0.0	27.9	0.7	0.19	10.9	4	<1	<5	2	0.05	0.59	0.62	0.86
21269766	22_36	144	11	60	90	8.1	0.11	0.95	16	21.0	1.9	0.2	0.1	0.0	23.1	0.3	0.32	11.1	5	<1	<5	5	0.04	0.25	0.48	0.32
21269648	22_9	86	12	0	15	5.2	0.11	0.95	11	4.8	6.2	1.1	0.7	0.1	12.9	5.7	0.02	0.8	4	25	5	4	1.10	0.48	0.72	2.10
21269649	22_9	86	12	15	30	6.9	0.12	0.90	26	6.5	12.0	0.6	2.2	0.0	21.3	10.3	0.01	0.5	15	1	<5	3	0.07	0.48	1.50	0.61
21269650	22_9	86	12	30	60	8.5	0.95	5.51	980	7.0	12.0	0.5	6.5	0.0	26.0	25.0	0.04	0.6	0	1	<5	48	0.06	0.50	2.40	<0.15
21269651	22_9	86	12	60	90	8.6	0.78	4.52	670	10.0	12.0	0.4	5.7	0.0	28.1	20.3	0.04	0.8	1	1	<5	33	0.06	0.44	2.70	0.17
21269652	22_10	87	13	0	15	6.9	0.14	1.20	14	22.0	13.0	1.3	1.1	0.0	37.4	2.9	0.05	1.7	2	2	<5	3	0.12	0.63	1.10	1.70
21269653	22_10	87	13	15	30	7.4	0.17	1.46	44	25.0	16.0	0.9	2.2	0.0	44.1	5.0	0.03	1.6	6	1	<5	4	0.08	0.64	1.50	1.40
21269654	22_10	87	13	30	60	8.2	0.50	2.90	250	28.0	16.0	0.5	3.4	0.0	47.9	7.1	0.07	1.8	2	1	<5	10	0.05	0.75	3.80	0.78
21269655	22_10	87	13	60	90	8.5	0.52	4.47	310	22.0	16.0	0.3	4.2	0.0	42.5	9.9	0.05	1.4	0	1	<5	8	<0.02	0.41	3.50	0.34
21269656	22_11	88	14	0	15	6.1	0.15	1.29	15	8.5	4.0	1.1	0.4	0.0	14.0	3.1	0.05	2.1	4	19	5	3	1.30	1.20	0.74	2.60
21269657	22_11	88	14	15	30	7.0	0.15	1.13	19	13.0	9.1	0.8	1.6	0.0	24.5	6.5	0.02	1.4	11	1	<5	2	0.13	1.10	1.20	1.10
21269658	22_11	88	14	30	60	8.4	0.49	2.84	300	20.0	11.0	0.3	3.8	0.0	35.1	10.8	0.05	1.8	2	1	<5	5	0.05	0.69	3.40	0.49
21269659	22_11	88	14	60	90	8.5	1.12	9.63	1200	17.0	9.9	0.3	6.5	0.0	33.7	19.3	0.06	1.7	0	1	<5	50	0.09	0.54	3.80	0.20
21269660	22_12	89	15	0	15	6.2	0.20	1.72	41	11.0	7.7	1.4	1.0	0.0	21.1	4.7	0.04	1.4	4	20	<5	7	0.94	1.10	0.78	2.50
21269661	22_12	89	15	15	30	7.9	0.56	4.82	340	22.0	16.0	0.9	3.9	0.0	42.8	9.1	0.06	1.4	2	1	<5	7	0.10	0.78	1.80	1.00
21269662	22_12	89	15	30	60	8.3	0.85	4.93	770	23.0	18.0	0.7	6.1	0.0	47.8	12.8	0.07	1.3	2	1	<5	29	0.07	0.94	4.10	0.56
21269663	22_12	89	15	60	90	8.4	1.35	7.83	1500	21.0	19.0	0.7	8.7	0.0	49.4	17.6	0.08	1.1	0	2	<5	69	0.05	0.82	5.20	0.19
21269664	22_13	90	16	0	15	6.1	0.13	0.98	<10	14.0	5.8	1.5	0.3	0.0	21.6	1.5	0.09	2.4	1	26	6	4	0.82	0.86	0.97	3.20
21269665	22_13	90	16	15	30	8.0	0.33	2.48	120	13.0	13.0	1.3	3.3	0.0	30.6	10.8	0.03	1.0	6	2	<5	6	0.10	0.70	2.10	0.72
21269666	22_13	90	16	30	60	8.3	0.85	6.38	690	16.0	16.0	0.9	6.5	0.0	39.4	16.5	0.05	1.0	1	1	<5	38	0.06	0.85	3.60	0.48
21269667	22_13	90	16	60	90	8.4	1.22	7.08	1200	21.0	17.0	0.7	8.7	0.0	47.4	18.4	0.07	1.2	0	1	<5	64	0.04	0.65	5.40	0.27

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269668	22_14	91	17	0	15	6.6	0.22	1.89	16	16.0	12.0	1.9	1.3	0.0	31.2	4.2	0.05	1.3	5	31	6	6	0.41	0.86	1.30	2.00
21269669	22_14	91	17	15	30	7.7	0.28	2.10	61	20.0	18.0	1.1	3.8	0.0	42.9	8.9	0.03	1.1	9	15	<5	13	0.19	0.67	2.10	1.30
21269670	22_14	91	17	30	60	8.4	1.40	8.12	1200	25.0	22.0	0.7	12.0	0.0	59.7	20.1	0.07	1.1	0	2	<5	140	0.10	0.75	6.60	0.42
21269671	22_14	91	17	60	90	7.7	2.80	21.00	1400	16.0	17.0	0.3	11.0	0.0	44.3	24.8	0.11	0.9	3	2	<5	1300	0.03	0.27	2.20	<0.15
21269672	22_15	92	18	0	15	5.0	0.14	1.20	19	5.5	5.8	0.8	0.6	0.1	12.8	4.8	0.03	0.9	4	37	9	8	1.40	0.58	0.71	2.40
10222266	22_15	92	18	15	30	6.2	0.12	0.70	26	9.5	12.0	0.5	2.1	0.0	24.1	8.7	0.01	0.8	11	<1	<5	9	0.09	0.64	1.10	0.91
10222267	22_15	92	18	30	60	8.3	0.67	3.89	530	17.0	12.0	0.3	4.8	0.0	34.1	14.1	0.05	1.4	1	1	<5	28	0.05	0.42	2.90	0.50
21269675	22_15	92	18	60	90	8.4	0.92	5.34	900	16.0	12.0	0.3	5.7	0.0	34.0	16.8	0.05	1.3	0	<1	<5	63	0.03	0.42	2.80	0.35
21269676	22_16	93	19	0	15	5.7	0.13	1.12	25	9.5	6.5	1.5	0.7	0.0	18.2	3.8	0.03	1.5	5	15	<5	5	0.69	0.87	0.66	2.90
21269677	22_16	93	19	15	30	7.1	0.31	1.80	190	15.0	17.0	0.9	3.9	0.0	36.8	10.6	0.03	0.9	11	<1	<5	4	0.08	0.61	1.50	0.97
21269678	22_16	93	19	30	60	8.1	1.08	6.26	950	17.0	22.0	0.7	8.7	0.0	48.4	18.0	0.06	0.8	0	1	<5	30	0.07	0.71	2.90	0.55
21269679	22_16	93	19	60	90	8.5	1.31	11.27	1500	20.0	16.0	0.4	8.7	0.0	45.1	19.3	0.07	1.3	0	1	<5	66	<0.02	0.42	1.80	0.16
21269680	22_17	94	20	0	15	7.1	0.28	2.41	100	15.0	14.0	1.1	3.4	0.0	33.5	10.1	0.03	1.1	11	6	<5	5	0.13	0.59	1.30	1.70
21269681	22_17	94	20	15	30	8.3	0.57	3.31	400	22.0	18.0	0.9	6.5	0.0	47.4	13.7	0.04	1.2	4	1	<5	7	0.09	0.50	2.20	1.20
21269682	22_17	94	20	30	60	8.4	1.16	6.73	1100	22.0	19.0	0.9	10.0	0.0	51.9	19.3	0.06	1.2	0	3	<5	42	0.09	0.63	3.90	0.85
21269683	22_17	94	20	60	90	8.4	2.03	11.77	2200	21.0	23.0	0.7	17.0	0.0	61.7	27.5	0.07	0.9	0	<1	<5	190	0.05	0.53	4.60	0.26
21269684	22_18	95	21	0	15	5.8	0.11	0.95	<10	9.5	8.1	1.3	1.0	0.0	19.9	4.8	0.02	1.2	2	19	<5	4	0.57	1.10	0.90	2.30
21269685	22_18	95	21	15	30	6.3	0.13	0.98	22	15.0	17.0	1.3	2.4	0.0	35.7	6.7	0.02	0.9	9	1	<5	4	0.15	1.00	1.90	1.70
21269686	22_18	95	21	30	60	8.5	1.20	6.96	1000	23.0	19.0	0.8	8.7	0.0	51.5	16.9	0.07	1.2	11	1	<5	83	0.06	0.99	4.70	0.25
21269687	22_18	95	21	60	90	7.8	0.40	3.00	170	14.0	19.0	0.8	4.8	0.0	38.6	12.4	0.03	0.7	0	1	<5	7	0.10	0.87	3.00	1.00
21269688	22_19	96	22	0	15	4.8	0.12	1.14	19	4.5	3.1	0.9	0.3	0.1	8.9	3.7	0.03	1.5	4	45	9	6	1.40	0.34	0.34	1.40
21269689	22_19	96	22	15	30	5.7	0.19	1.43	110	4.4	8.2	0.5	2.4	0.0	15.5	15.5	0.01	0.5	12	<1	<5	7	0.07	0.41	0.52	0.43
21269690	22_19	96	22	30	60	6.8	0.54	4.05	530	3.4	9.9	0.5	4.8	0.0	18.6	25.8	0.02	0.3	4	1	<5	27	0.08	0.50	0.94	0.18
21269691	22_19	96	22	60	90	8.3	1.27	7.37	1300	8.0	19.0	0.7	10.0	0.0	37.7	26.5	0.05	0.4	0	1	<5	74	0.17	0.96	1.90	0.36
21269692	22_20	97	23	0	15	5.4	0.13	1.12	13	10.0	6.5	0.8	0.9	0.1	18.3	4.8	0.03	1.5	4	35	<5	6	1.30	0.73	0.68	2.40
21269693	22_20	97	23	15	30	7.2	0.13	0.75	42	12.0	11.0	0.5	2.7	0.0	26.2	10.3	0.01	1.1	8	1	<5	3	0.09	0.52	1.10	0.60
21269694	22_20	97	23	30	60	8.4	0.58	3.36	410	10.0	12.0	0.3	6.1	0.0	28.4	21.5	0.03	0.8	6	<1	<5	30	0.05	0.47	2.30	0.22
21269695	22_20	97	23	60	90	8.6	0.75	6.45	590	12.0	9.1	0.3	5.7	0.0	27.1	21.0	0.04	1.3	4	1	<5	55	0.10	0.35	2.10	<0.15
21269696	22_20	97	23	90	120	8.4	0.86	7.40	780	8.0	9.9	0.4	7.0	0.0	25.3	27.7	0.03	0.8	4	2	<5	72	0.13	0.43	1.30	0.29
21269699	22_21	98	24	0	15	7.6	0.21	1.58	22	24.0	7.4	1.5	0.3	0.0	33.2	0.9	0.22	3.2	2	17	6	5	0.39	0.72	1.10	2.10
21269700	22_21	98	24	15	30	8.2	0.24	1.80	38	20.0	16.0	0.6	2.3	0.0	38.9	5.9	0.04	1.3	2	1	<5	5	0.07	0.73	1.60	0.71
21269701	22_21	98	24	30	60	8.4	0.57	3.31	340	21.0	21.0	0.6	5.7	0.0	48.3	11.8	0.05	1.0	3	2	<5	10	0.08	0.75	3.90	0.58
21269702	22_21	98	24	60	90	8.6	1.15	6.67	1100	19.0	19.0	0.5	8.7	0.0	47.2	18.4	0.06	1.0	0	1	<5	83	0.03	0.52	6.00	0.22

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269705	22_22	99	25	0	15	5.7	0.11	0.95	16	6.5	6.4	1.1	0.6	0.0	14.6	4.2	0.03	1.0	5	15	<5	3	0.98	0.37	0.53	2.00
21269706	22_22	99	25	15	30	6.1	0.10	0.58	14	9.5	11.0	0.8	1.4	0.0	22.7	6.2	0.02	0.9	11	1	<5	3	0.10	0.41	0.82	0.71
21269703	22_22	99	25	30	60	8.1	0.29	2.18	100	14.0	12.0	0.5	2.6	0.0	29.1	8.9	0.03	1.2	4	1	<5	5	0.07	0.28	1.30	0.55
21269704	22_22	99	25	60	90	8.5	0.66	4.95	490	13.0	11.0	0.3	4.4	0.0	28.7	15.3	0.04	1.2	2	<1	<5	34	0.04	0.39	1.80	0.18
21269707	22_23	100	26	0	15	5.3	0.12	1.03	20	6.5	6.6	1.1	0.6	0.1	14.9	4.1	0.03	1.0	4	31	<5	4	0.88	0.62	0.58	2.00
21269708	22_23	100	26	15	30	6.5	0.09	0.52	17	7.5	12.0	0.6	1.8	0.0	21.9	8.2	0.01	0.6	7	<1	<5	2	0.09	0.46	0.95	0.67
21269697	22_23	100	26	30	60	8.5	0.53	3.07	300	15.0	14.0	0.4	4.4	0.0	33.8	13.0	0.04	1.1	11	1	<5	18	0.03	0.45	2.60	0.26
21269698	22_23	100	26	60	90	8.5	1.03	5.97	940	14.0	16.0	0.5	7.0	0.0	37.5	18.7	0.06	0.9	0	1	<5	52	0.04	0.39	3.20	0.16
21269713	22_24	101	27	0	15	6.7	0.13	0.75	18	17.0	12.0	2.0	1.1	0.0	32.1	3.4	0.04	1.4	7	2	<5	4	0.11	0.94	1.20	1.50
21269714	22_24	101	27	15	30	8.2	0.28	1.62	89	18.0	17.0	0.8	3.7	0.0	39.5	9.4	0.03	1.1	5	1	<5	3	0.06	0.77	1.80	0.71
21269715	22_24	101	27	30	60	8.7	1.01	5.86	900	21.0	23.0	0.8	8.7	0.0	53.5	16.3	0.06	0.9	2	1	<5	29	0.05	0.90	5.00	0.55
21269716	22_24	101	27	60	90	8.8	1.32	9.90	1300	22.0	22.0	0.7	10.0	0.0	54.7	18.3	0.07	1.0	0	<1	<5	59	0.03	0.76	7.00	0.28
21269717	22_25	102	28	0	15	7.0	0.22	1.89	98	10.0	11.0	0.8	3.8	0.0	25.6	14.9	0.01	0.9	5	5	<5	3	0.28	0.65	1.60	1.30
21269718	22_25	102	28	15	30	8.6	0.81	6.97	610	16.0	18.0	0.6	10.0	0.0	44.6	22.4	0.04	0.9	1	<1	<5	34	0.06	0.82	3.60	0.83
21269719	22_25	102	28	30	60	8.6	1.47	8.53	1200	23.0	18.0	0.7	14.0	0.0	55.7	25.1	0.06	1.3	1	<1	<5	170	0.05	1.00	4.50	0.39
21269720	22_25	102	28	60	90	8.6	1.30	7.54	1100	20.0	16.0	0.6	12.0	0.0	48.6	24.7	0.05	1.3	0	1	<5	140	0.10	0.78	3.30	0.28
21269721	22_26	103	29	0	15	5.8	0.09	0.86	<10	7.0	3.4	1.0	0.3	0.0	11.7	2.5	0.04	2.1	4	22	<5	4	0.38	0.38	0.49	1.30
21269722	22_26	103	29	15	30	8.3	0.28	1.62	77	10.0	9.9	0.3	3.6	0.0	23.8	15.1	0.02	1.0	13	<1	<5	5	0.03	0.26	2.10	0.43
21269723	22_26	103	29	30	60	8.6	0.51	2.96	250	18.0	9.9	0.4	4.8	0.0	33.1	14.5	0.04	1.8	13	<1	<5	15	0.03	0.29	3.10	0.29
21269724	22_26	103	29	60	90	8.7	1.09	6.32	1100	17.0	12.0	0.5	9.1	0.0	38.6	23.6	0.05	1.4	0	1	<5	72	0.06	0.27	2.20	<0.15
21269725	22_27	104	30	0	15	6.5	0.20	1.72	26	13.0	7.4	1.1	1.3	0.0	22.8	5.7	0.04	1.8	4	19	6	6	0.47	0.69	0.86	2.30
21269726	22_27	104	30	15	30	8.1	0.32	1.86	190	16.0	12.0	0.5	4.8	0.0	33.3	14.4	0.02	1.3	4	<1	<5	7	0.07	0.61	1.50	0.97
21269727	22_27	104	30	30	60	8.5	1.29	7.48	1200	22.0	17.0	0.6	11.0	0.0	50.6	21.8	0.06	1.3	0	<1	<5	95	0.05	0.69	4.50	0.55
21269728	22_27	104	30	60	90	8.6	1.40	12.04	1400	21.0	15.0	0.5	11.0	0.0	47.5	23.2	0.06	1.4	0	<1	<5	120	0.05	0.48	3.80	0.20
21269730	22_28	105	31	0	15	7.4	0.20	1.50	50	13.0	11.0	0.8	2.8	0.0	27.6	10.1	0.02	1.2	7	3	<5	4	0.13	0.78	1.40	1.30
21269731	22_28	105	31	15	30	8.5	0.64	3.71	370	19.0	15.0	0.5	7.0	0.0	41.5	16.9	0.04	1.3	5	<1	<5	18	0.08	0.71	2.80	0.97
21269732	22_28	105	31	30	60	8.9	1.46	8.47	1200	20.0	17.0	0.5	12.0	0.0	49.5	24.2	0.06	1.2	0	<1	<5	200	0.06	0.91	4.70	0.40
21269729	22_28	105	31	60	90	8.8	1.64	9.51	1400	20.0	17.0	0.5	13.0	0.0	50.5	25.7	0.06	1.2	0	1	<5	290	0.08	0.66	4.00	0.40
21269734	22_29	106	32	0	15	4.8	0.08	0.76	13	3.4	1.2	1.1	0.1	0.1	5.9	2.0	0.04	2.8	4	22	8	4	1.00	0.21	0.31	1.20
21269735	22_29	106	32	15	30	5.6	0.03	0.41	<10	3.0	1.2	0.5	0.1	0.0	4.8	2.9	0.01	2.5	8	5	<5	2	0.08	0.13	0.22	0.36
21269736	22_29	106	32	30	60	7.1	0.11	0.64	26	11.0	6.6	0.4	1.1	0.0	19.1	5.7	0.02	1.7	7	<1	<5	6	0.06	0.52	0.61	0.26
21269733	22_29	106	32	60	90	7.6	0.24	2.06	180	7.5	5.9	0.2	2.3	0.0	15.9	14.4	0.02	1.3	3	<1	6	38	0.05	0.28	1.70	<0.15
21269737	22_29	106	32	90	120	7.1	0.23	2.19	180	6.0	4.4	0.2	2.0	0.0	12.6	15.9	0.01	1.4	4	1	6	35	0.10	0.31	0.99	<0.15

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269738	22_30	107	33	0	15	6.4	0.12	1.03	14	20.0	6.1	1.8	0.2	0.0	28.1	0.7	0.16	3.3	2	11	<5	7	0.23	1.00	0.89	2.60
21269739	22_30	107	33	15	30	7.0	0.06	0.52	19	17.0	6.5	0.8	0.4	0.0	24.7	1.5	0.04	2.6	6	<1	<5	3	0.08	0.72	0.80	1.60
21269740	22_30	107	33	30	60	8.1	0.17	0.99	24	16.0	17.0	0.7	2.8	0.0	36.5	7.7	0.02	0.9	7	<1	<5	3	0.05	0.93	1.30	0.73
21269741	22_30	107	33	60	90	8.5	1.19	8.93	1200	22.0	23.0	0.7	8.3	0.0	54.0	15.4	0.08	1.0	0	<1	<5	57	0.03	0.76	6.60	0.47
21269742	22_31	108	34	0	15	6.4	0.12	1.03	13	14.0	13.0	1.6	0.5	0.0	29.1	1.7	0.07	1.1	2	6	<5	4	0.47	1.10	0.98	1.70
21269743	22_31	108	34	15	30	7.0	0.12	0.70	27	14.0	16.0	1.1	1.1	0.0	32.2	3.4	0.04	0.9	3	<1	<5	4	0.19	0.91	1.50	1.10
21269744	22_31	108	34	30	60	8.3	0.40	2.32	230	24.0	16.0	0.6	2.7	0.0	43.3	6.2	0.06	1.5	2	<1	<5	6	0.05	0.67	2.10	0.62
21269745	22_31	108	34	60	90	8.4	0.82	4.76	770	21.0	16.0	0.5	4.2	0.0	41.7	10.1	0.08	1.3	2	<1	<5	11	0.04	0.49	1.80	0.21
21269749	22_32	109	35	0	15	6.6	0.17	1.46	35	11.0	15.0	1.0	2.3	0.0	29.3	7.8	0.02	0.7	6	13	<5	4	0.30	1.30	0.94	1.30
21269746	22_32	109	35	15	30	7.6	0.22	1.89	76	12.0	17.0	0.6	3.8	0.0	33.4	11.4	0.02	0.7	5	<1	<5	3	0.09	1.10	1.90	0.98
21269747	22_32	109	35	30	60	8.6	0.74	5.55	520	20.0	15.0	0.4	6.1	0.0	41.5	14.7	0.05	1.3	3	<1	<5	17	0.07	0.92	2.30	0.56
21269748	22_32	109	35	60	90	8.8	1.27	10.92	1200	18.0	14.0	0.4	12.0	0.0	44.4	27.0	0.05	1.3	0	<1	<5	75	0.03	0.44	7.40	0.19
21269750	22_33	110	36	0	15	7.6	0.24	2.06	30	16.0	9.1	0.7	2.3	0.0	28.1	8.2	0.03	1.8	6	3	<5	6	0.16	0.81	0.95	1.50
21269752	22_33	110	36	15	30	8.2	0.39	3.35	63	24.0	15.0	0.6	5.7	0.0	45.3	12.6	0.03	1.6	14	1	<5	4	0.09	0.79	2.30	1.10
21269753	22_33	110	36	30	60	8.7	1.30	9.75	1000	19.0	19.0	0.5	13.0	0.0	51.5	25.2	0.05	1.0	4	<1	<5	41	0.07	0.80	7.30	0.64
21269754	22_34	111	37	0	15	6.8	0.23	1.98	80	15.0	12.0	1.5	2.9	0.0	31.4	9.2	0.02	1.3	11	5	<5	5	0.19	1.20	1.40	1.70
21269755	22_34	111	37	15	30	8.1	0.55	4.73	280	22.0	16.0	1.1	5.2	0.0	44.3	11.7	0.05	1.4	11	<1	<5	11	0.13	1.00	2.50	1.10
21269756	22_34	111	37	30	60	8.4	1.68	9.74	1600	25.0	18.0	0.7	11.0	0.0	54.7	20.1	0.08	1.4	0	<1	<5	220	0.07	0.99	6.30	0.46
21269757	22_34	111	37	60	90	8.4	1.88	10.90	1900	22.0	17.0	0.8	12.0	0.0	51.8	23.2	0.08	1.3	0	<1	<5	320	0.07	0.92	6.70	0.30
21269758	22_35	112	38	0	15	5.8	0.15	1.29	15	16.0	6.3	1.0	0.1	0.0	23.4	0.4	0.39	2.5	2	25	<5	8	0.88	0.87	0.67	2.30
21269759	22_35	112	38	15	30	6.2	0.07	0.60	19	17.0	6.3	0.7	0.1	0.0	24.1	0.5	0.15	2.7	3	<1	<5	3	0.13	0.58	0.72	1.50
21269760	22_35	112	38	30	60	6.8	0.05	0.43	20	16.0	7.2	0.4	0.2	0.0	23.8	0.9	0.06	2.2	4	<1	<5	2	0.08	0.51	0.74	0.81
21269761	22_35	112	38	60	90	7.4	0.05	0.43	<10	15.0	6.4	0.4	0.4	0.0	22.2	1.9	0.03	2.3	5	<1	<5	2	0.07	0.63	0.57	0.48
21441594	9_1	157	39	0	15	7.4	0.11	0.83	20	13	12	0.71	0.7	0	26.41	2.7	0.04	1.08	0	1.1	<5	1.8	0.66	1.5	1.3	1.3
21441595	9_1	157	39	15	30	7.9	0.21	1.58	91	9.5	13	0.41	2	0	24.91	8	0.03	0.73	3	0.7	<5	1.3	0.08	1.2	1.7	0.53
21441596	9_1	157	39	30	60	8.7	0.43	3.23	300	15	9.1	0.21	2.7	0	27.01	10	0.04	1.65	0	0.9	<5	16	0.07	0.83	1.9	0.2
10222263	32_1	122	40	0	15	5.8	0.11	0.95	20	13.0	3.8	1.3	0.1	0.0	18.2	0.5	0.22	3.4	3	8	7	6	1.40	0.74	0.70	2.60
10222264	32_1	122	40	15	30	5.8	0.04	0.30	<10	14.0	3.6	0.8	0.1	0.0	18.5	0.5	0.07	3.9	5	<1	<5	2	0.07	0.52	0.46	0.73
21269917	32_2	123	41	0	15	6.9	0.24	2.06	<10	18.0	9.9	1.0	0.4	0.0	29.3	1.5	0.16	1.8	3	<1	<5	4	0.17	0.75	0.75	1.60
21269918	32_2	123	41	15	30	8.3	0.22	1.65	<10	27.0	14.0	0.7	1.6	0.0	43.3	3.7	0.06	1.9	3	<1	<5	3	0.05	0.59	1.20	0.95
21269919	32_2	123	41	30	60	9.1	0.61	4.58	280	18.0	16.0	0.4	7.4	0.0	41.8	17.7	0.03	1.1	5	<1	<5	18	0.05	0.44	3.50	0.39

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269920	32_3	124	42	0	15	6.2	0.12	1.03	12	16.0	11.0	1.4	0.7	0.0	29.1	2.4	0.05	1.5	4	<1	<5	3	0.22	0.83	1.20	1.70
21269921	32_3	124	42	15	30	7.3	0.13	1.12	13	19.0	15.0	1.2	1.5	0.0	36.7	4.1	0.03	1.3	5	<1	<5	3	0.07	0.75	1.90	1.10
21269922	32_3	124	42	30	60	8.4	0.33	2.84	120	19.0	13.0	0.5	3.0	0.0	35.5	8.5	0.04	1.5	2	<1	<5	8	0.03	0.45	2.00	0.47
21269923	32_3	124	42	60	90	8.6	0.62	5.33	450	16.0	15.0	0.5	4.8	0.0	36.3	13.2	0.05	1.1	2	<1	<5	23	0.04	0.45	2.40	0.39
21269924	32_3	124	42	90	120	8.7	0.49	4.21	330	18.0	12.0	0.3	4.4	0.0	34.7	12.7	0.04	1.5	2	<1	<5	6	0.06	0.39	1.10	0.19
21441597	9_2	155	43	0	15	5.5	0.12	1.03	28	10	7.9	1.4	1.4	0	20.7	6.8	0.02	1.27	5	1.1	26	5.4	1.4	0.82	0.96	2.3
21441598	9_2	155	43	15	30	6.8	0.27	2.03	180	15	14	0.67	4.8	0	34.47	13.9	0.02	1.07	12	0.6	8	8.1	0.17	0.67	1.3	1.2
21441599	9_2	155	43	30	60	8.1	1.15	9.89	1100	16	15	0.86	9.6	0	41.46	23.2	0.05	1.07	0	0.7	6	85	0.08	0.64	2.4	0.71
21441600	9_2	155	43	60	90	8.4	1.43	12.3	1400	15	15	0.68	12	0	42.68	28.1	0.05	1	0	<0.5	5	150	0.06	0.92	2.7	0.36
21441601	9_2	155	43	90	200	8.3	0.94	8.08	1000	8.5	9.9	0.45	7.4	0	26.25	28.2	0.03	0.86	10	1	17	70	0.11	0.47	2	0.2
21441602	9_2	155	43	200	300	8.4	0.88	7.57	930	8.5	8.2	0.42	7	0	24.12	29	0.03	1.04	9	1	13	62	0.15	0.46	1.4	0.17
21441603	9_3	156	44	0	15	6.1	0.12	1.03	33	8.5	8.2	0.73	1.9	0	19.33	9.8	0.01	1.04	13	0.9	<5	3	0.47	1	1.3	1.5
21441604	9_3	156	44	15	30	8.3	0.59	5.07	340	17	16	0.47	7.4	0	40.87	18.1	0.03	1.06	11	<0.5	<5	12	0.07	1.1	3.3	0.71
21441605	9_3	156	44	30	60	8.6	1.13	8.48	990	17	17	0.52	12	0	46.52	25.8	0.04	1	10	0.5	<5	130	0.06	1	5.4	0.34
21441606	9_3	156	44	60	90	8.5	1.34	10.1	1100	11	16	0.67	13	0	40.67	32	0.04	0.69	9	0.7	<5	220	0.11	0.85	3.8	0.28
21269925	32_4	120	45	0	15	5.4	0.09	0.77	28	10.0	4.0	1.3	0.1	0.1	15.5	0.5	0.20	2.5	6	3	7	4	1.20	0.76	0.52	1.90
21269926	32_4	120	45	15	30	6.1	0.05	0.43	<10	10.0	3.6	0.8	0.1	0.0	14.4	0.6	0.09	2.8	7	1	<5	2	0.05	0.41	0.45	0.93
21269927	32_4	120	45	30	60	6.8	0.04	0.91	<10	12.0	4.5	0.4	0.2	0.0	17.1	1.3	0.03	2.7	7	<1	<5	3	0.04	0.58	0.62	0.64
21269928	32_4	120	45	70	90	8.2	0.07	1.59	<10	7.5	1.8	0.2	0.2	0.0	9.7	2.2	0.03	4.2	5	<1	9	2	0.10	0.19	0.28	0.21
21269929	32_4	120	45	90	120	8.2	0.16	1.38	36	18.0	6.0	0.3	0.6	0.0	24.9	2.4	0.07	3.0	4	<1	<5	4	0.15	0.47	0.53	0.57
21441547	32_5	121	46	0	15	4.8	0.05	0.43	14	7.5	4.3	0.9	0.2	0.1	13.0	1.5	0.03	1.7	5	2	8	3	0.99	0.77	0.36	1.80
21441548	32_5	121	46	15	30	4.8	0.06	0.52	<10	11.0	8.2	0.5	0.8	0.1	20.7	4.0	0.01	1.3	7	1	6	2	0.03	0.55	0.37	1.00
21441549	32_5	121	46	30	55	5.8	0.05	0.43	11	7.5	5.8	0.3	1.3	0.0	14.9	8.8	0.01	1.3	9	<1	<5	1	0.08	1.00	0.34	0.50
21441551	32_5	121	46	65	90	7.9	0.31	2.67	240	11.0	11.0	0.4	3.9	0.0	26.3	14.8	0.02	1.0	9	<1	<5	11	0.03	0.63	0.92	0.46
21269930	32_6	118	47	0	15	6.1	0.20	1.72	19	13.0	6.1	1.0	0.3	0.0	20.4	1.4	0.15	2.1	7	3	6	3	0.60	1.40	1.00	1.60
21269931	32_6	118	47	15	30	6.3	0.06	0.52	<10	13.0	6.2	0.7	0.3	0.0	20.2	1.3	0.04	2.1	7	1	<5	2	0.41	1.20	1.00	1.30
21269932	32_6	118	47	30	60	7.0	0.08	0.69	<10	10.0	6.6	0.3	1.1	0.0	18.0	6.1	0.01	1.5	8	<1	<5	1	0.05	0.69	0.98	0.59
21441303	32_6	118	47	60	90	8.5	0.27	2.32	20	8.0	8.0	0.3	3.9	0.0	20.2	19.3	0.01	1.0	14	<1	<5	3	0.08	0.87	1.30	0.44
21441304	32_6	118	47	90	120	8.7	0.40	3.44	110	5.0	7.5	0.2	7.4	0.0	20.1	36.7	0.01	0.7	15	<1	8	6	0.12	0.55	1.50	0.69
21441305	32_7	119	48	0	15	6.1	0.18	1.55	43	6.0	9.1	0.6	2.0	0.0	17.7	11.3	0.02	0.7	9	1	5	3	0.20	0.67	0.98	0.99
21441306	32_7	119	48	15	30	8.8	0.47	4.04	190	19.0	13.0	0.3	4.3	0.0	36.6	11.7	0.04	1.5	5	<1	<5	6	0.07	0.59	1.90	0.74
21441307	32_7	119	48	30	60	8.7	1.07	9.20	920	18.0	13.0	0.3	7.4	0.0	38.7	19.1	0.06	1.4	0	<1	<5	97	0.06	0.56	3.50	0.32
21441308	32_7	119	48	60	90	8.7	1.18	10.15	1300	16.0	12.0	0.4	7.4	0.0	35.8	20.7	0.06	1.3	1	<1	<5	120	0.10	0.51	2.50	0.19
21441309	32_7	119	48	90	120	8.8	1.02	8.77	1100	6.5	11.0	0.4	7.4	0.0	25.3	29.2	0.03	0.6	11	2	5	74	0.24	0.57	2.00	0.18

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21441310	32_8	125	49	0	15	5.3	0.06	0.52	<10	8.0	3.1	0.8	0.1	0.1	12.1	0.8	0.07	2.6	3	5	5	3	0.88	0.58	0.44	1.60
21441311	32_8	125	49	15	30	5.7	0.06	0.52	21	11.0	5.0	0.5	0.2	0.0	16.6	1.0	0.06	2.2	3	<1	<5	1	0.11	0.49	0.48	0.68
21441312	32_8	125	49	45	60	6.0	0.01	0.23	<10	4.0	2.1	0.2	0.1	0.0	6.4	1.7	0.01	1.9	5	<1	9	<1	0.08	0.23	0.20	0.15
21441313	32_8	125	49	60	90	6.7	0.08	0.60	10	9.0	8.1	0.3	1.6	0.0	19.0	8.4	0.01	1.1	13	<1	<5	2	0.16	0.39	0.69	0.64
21441314	32_8	125	49	90	120	8.0	0.26	1.95	120	10.0	11.0	0.4	3.9	0.0	25.3	15.4	0.02	0.9	12	<1	<5	6	0.05	0.50	1.70	0.45
21441315	32_9	115	50	0	15	7.8	0.20	1.72	17	35.0	3.6	2.2	0.1	0.0	40.9	0.2	1.17	9.7	2	5	<5	5	0.31	0.68	1.10	2.30
21441316	32_9	115	50	15	30	7.9	0.16	1.38	<10	33.0	3.8	1.0	0.1	0.0	37.9	0.2	0.67	8.7	2	2	<5	3	0.07	0.42	1.00	0.97
21441317	32_9	115	50	30	60	8.0	0.15	1.29	<10	31.0	5.4	0.4	0.2	0.0	37.0	0.6	0.26	5.7	2	<1	<5	2	0.04	0.53	0.99	0.67
21441318	32_9	115	50	60	90	8.0	0.16	1.38	<10	28.0	7.9	0.4	0.4	0.0	36.7	1.0	0.17	3.5	2	<1	<5	4	0.02	0.53	1.30	0.43
21441319	32_9	115	50	90	120	8.1	0.16	1.38	<10	26.0	9.1	0.5	0.4	0.0	36.0	1.2	0.13	2.9	3	<1	<5	3	0.03	0.49	0.91	0.20
21441320	32_10	116	51	0	15	6.8	0.13	1.12	<10	14.0	5.8	2.8	0.2	0.0	22.8	0.8	0.16	2.4	2	6	10	4	1.00	0.77	1.40	1.80
21441321	32_10	116	51	15	30	7.0	0.12	1.03	14	14.0	7.4	2.9	0.3	0.0	24.6	1.3	0.09	1.9	7	4	9	3	0.43	0.83	1.80	1.30
21441322	32_10	116	51	30	60	8.1	0.34	2.92	69	25.0	13.0	1.2	2.3	0.0	41.5	5.5	0.06	1.9	1	<1	<5	8	0.04	0.54	2.60	0.57
21441323	32_10	116	51	60	90	8.5	0.70	6.02	550	17.0	14.0	0.7	5.2	0.0	36.9	14.1	0.05	1.2	2	<1	<5	34	0.04	0.35	6.00	0.26
21441324	32_11	117	52	0	15	5.8	0.06	0.52	<10	7.0	1.7	1.4	0.1	0.0	10.2	0.5	0.12	4.1	3	3	6	3	0.89	0.55	0.64	1.70
21441325	32_11	117	52	15	30	6.9	0.11	0.95	13	11.0	3.1	1.1	0.2	0.0	15.4	1.1	0.10	3.5	3	2	<5	3	0.12	0.73	1.10	0.79
21441326	32_11	117	52	30	60	7.9	0.18	1.55	21	22.0	5.5	0.9	0.4	0.0	28.8	1.3	0.14	4.0	2	<1	<5	7	0.04	0.41	2.60	0.46
21441327	32_11	117	52	60	90	8.1	0.19	1.63	38	22.0	5.4	0.7	0.4	0.0	28.4	1.3	0.15	4.1	2	<1	<5	10	0.03	0.38	2.30	0.32
21441328	32_12	126	53	0	10	5.4	0.16	1.38	20	17.0	13.0	2.2	0.4	0.1	32.7	1.2	0.13	1.3	4	14	11	10	1.90	0.98	1.30	4.30
21441329	32_12	126	53	15	30	6.3	0.22	1.65	40	22.0	19.0	1.3	1.0	0.0	43.3	2.2	0.10	1.2	3	24	<5	14	0.20	0.77	1.50	1.80
21441330	32_12	126	53	30	40	7.3	0.19	1.43	36	23.0	22.0	0.8	1.9	0.0	47.7	4.0	0.05	1.0	2	2	<5	9	0.12	0.89	2.10	1.40
21441341	32_15	128	54	0	15	5.1	0.05	0.69	14	3.6	1.2	0.5	0.1	0.1	5.5	1.1	0.05	3.0	4	2	19	4	5.00	0.24	0.37	2.00
21441342	32_15	128	54	15	30	5.5	0.02	0.45	<10	1.2	0.7	0.2	0.0	0.0	2.2	1.8	0.01	1.6	7	1	7	1	0.28	0.11	0.16	0.51
21441343	32_15	128	54	30	50	7.0	0.08	0.69	13	3.7	4.8	0.5	0.6	0.0	9.6	6.3	0.01	0.8	16	1	5	6	0.12	0.47	0.87	0.68
21441331	32_13	113	55	0	15	5.1	0.07	0.60	<10	10.0	7.8	2.2	0.1	0.1	20.2	0.6	0.11	1.3	5	2	21	2	4.20	1.50	0.52	1.90
21441332	32_13	113	55	15	30	6.0	0.06	0.52	<10	12.0	9.9	2.2	0.2	0.0	24.3	0.7	0.08	1.2	8	1	8	2	0.34	1.10	0.64	1.20
21441333	32_13	113	55	30	60	6.8	0.05	0.43	12	7.5	9.1	0.7	0.5	0.0	17.8	2.9	0.02	0.8	8	<1	7	4	0.04	0.51	0.50	0.65
21441334	32_13	113	55	60	90	7.6	0.15	1.29	75	10.0	14.0	0.5	1.6	0.0	26.1	6.1	0.02	0.7	4	<1	<5	9	0.04	0.59	0.70	0.52
21441335	32_13	113	55	90	120	8.0	0.41	3.53	320	11.0	15.0	0.6	2.3	0.0	28.9	8.0	0.05	0.7	1	<1	<5	21	0.06	0.69	1.10	0.50
21441336	32_14	114	56	0	15	5.5	0.10	0.86	14	4.9	2.6	3.4	0.2	0.0	11.1	1.4	0.07	1.9	6	7	73	4	2.70	0.55	0.60	1.70
21441337	32_14	114	56	15	30	6.6	0.09	0.77	<10	8.5	7.7	3.6	0.9	0.0	20.7	4.2	0.02	1.1	9	2	14	3	0.68	0.66	1.10	0.89
21441338	32_14	114	56	30	60	8.5	0.42	3.61	150	13.0	13.0	4.4	2.9	0.0	33.3	8.7	0.05	1.0	7	1	14	15	0.09	0.87	2.70	0.61
21441339	32_14	114	56	60	90	8.5	0.82	6.15	700	6.5	14.0	2.2	5.7	0.0	28.4	20.1	0.04	0.5	1	35	6	87	0.07	0.87	3.70	0.63
21441340	32_14	114	56	90	120	8.4	1.71	12.83	1500	19.0	21.0	1.3	9.6	0.0	50.9	18.9	0.09	0.9	0	170	<5	190	0.07	0.39	4.70	0.37

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269608	19_1	143	57	0	15	5.8	0.11	0.95	<10	13.0	6.2	1.4	0.1	0.0	20.7	0.3	0.32	2.1	3	4	27	4	0.99	1.00	0.68	2.50
21269609	19_1	143	57	15	30	6.2	0.08	0.69	<10	17.0	8.2	0.9	0.1	0.0	26.2	0.5	0.17	2.1	4	2	10	3	0.12	0.77	0.78	1.40
21269610	19_1	143	57	30	60	6.7	0.05	0.43	<10	16.0	9.9	0.5	0.2	0.0	26.6	0.8	0.06	1.6	4	1	5	2	0.02	0.70	0.59	0.81
21269611	19_1	143	57	60	90	7.4	0.08	0.60	<10	16.0	14.0	0.5	0.6	0.0	31.1	2.0	0.04	1.1	4	<1	10	2	0.03	0.73	0.68	0.92
21441611	15_2	159	58	0	15	5.7	0.09	0.77	14	12	6	0.77	0.65	0	19.42	3.3	0.03	2	10	0.9	8	2.1	1.7	1	0.49	2.2
21441612	15_2	159	58	15	30	6.1	0.1	0.86	21	13	8.2	0.41	2	0	23.61	8.5	0.01	1.59	14	<0.5	<5	1.1	0.23	0.9	0.55	1.2
21441613	15_2	159	58	30	60	7.7	0.25	2.15	190	14	11	0.39	4.8	0	30.19	15.9	0.02	1.27	12	<0.5	<5	8.1	0.07	0.65	0.9	0.9
21441614	15_2	159	58	60	90	8.3	0.61	5.25	580	13	11	0.41	5.7	0	30.11	18.9	0.03	1.18	0	0.8	<5	9	0.05	0.63	1.4	0.44
21441607	15_1	158	59	0	15	7	0.26	2.24	<10.0	24	4.9	1.5	0.11	0	30.51	0.4	0.72	4.9	0	0.9	6	5.1	0.83	0.73	0.92	2.3
21441608	15_1	158	59	15	30	7.6	0.2	1.5	<10.0	38	5.8	0.98	0.08	0	44.86	0.2	1.12	6.55	0	0.6	6	3.5	0.16	0.44	1	1.5
21441609	15_1	158	59	30	60	7.9	0.15	1.29	<10.0	34	6	0.28	0.15	0	40.43	0.4	0.4	5.67	0	0.7	<5	2.8	<0.02	0.11	0.49	0.44
21441610	15_1	158	59	60	90	8.1	0.13	1.12	<10.0	31	6.4	0.21	0.14	0	37.75	0.4	0.35	4.84	0	<0.5	<5	<1.0	0.06	0.11	0.33	0.25
21269612	19_2	142	60	0	15	6.5	0.09	0.77	<10	25.0	12.0	1.2	0.5	0.0	38.7	1.3	0.07	2.1	4	1	<5	3	0.13	0.72	1.30	1.60
21269613	19_2	142	60	15	30	6.8	0.09	0.68	<10	25.0	13.0	0.9	1.0	0.0	39.9	2.5	0.04	1.9	5	1	<5	3	0.06	0.65	1.50	1.20
21269614	19_2	142	60	30	60	8.2	0.35	2.63	79	30.0	13.0	0.6	2.9	0.0	46.5	6.2	0.06	2.3	2	1	<5	20	<0.02	0.53	3.20	0.85
21269615	19_2	142	60	60	90	8.3	0.46	3.45	230	25.0	11.0	0.4	3.2	0.0	39.6	8.1	0.06	2.3	3	1	<5	52	<0.02	0.33	2.50	0.25
21441344	32_16	127	61	0	15	5.6	0.12	1.03	17	13.0	7.6	2.0	0.4	0.0	23.0	1.9	0.06	1.7	4	5	15	6	2.60	1.50	0.95	4.00
21441345	32_16	127	61	15	30	6.7	0.14	1.05	<10	15.0	16.0	1.9	1.1	0.0	34.0	3.2	0.04	0.9	8	2	<5	3	0.14	1.50	1.50	1.60
21441346	32_16	127	61	30	60	8.2	0.49	2.84	200	23.0	24.0	0.6	3.3	0.0	50.9	6.5	0.08	1.0	2	1	<5	22	0.06	0.53	2.00	0.64
21441347	32_16	127	61	60	90	8.4	0.96	5.57	960	19.0	22.0	0.3	5.2	0.0	46.5	11.2	0.09	0.9	2	<1	5	52	0.06	0.41	2.20	0.38
21269863	31_1	129	62	0	15	5.5	0.06	0.52	14	11.0	2.0	1.0	0.1	0.0	14.1	0.4	0.17	5.5	4	4	<5	3	1.30	0.42	0.64	2.00
21269864	31_1	129	62	15	30	6.0	0.04	0.34	<10	12.0	2.2	1.0	0.1	0.0	15.3	0.4	0.10	5.5	5	<1	<5	2	0.27	0.30	0.80	1.10
21269865	31_1	129	62	30	60	7.7	0.14	1.05	<10	20.0	3.1	0.9	0.1	0.0	24.1	0.3	0.42	6.5	3	<1	<5	2	0.08	0.08	0.86	0.46
21441615	15_3	160	63	0	15	5.7	0.05	0.43	<10.0	12	3.6	1.2	0.06	0	16.86	0.4	0.14	3.33	3	0.6	<5	1.4	0.24	0.58	1.1	1.6
21441616	15_3	160	63	15	30	7.7	0.25	2.15	45	22	6	1.3	0.12	0	29.42	0.4	0.61	3.67	0	0.7	<5	6.4	0.04	0.37	2	0.77
21441617	15_3	160	63	30	50	8.3	0.19	1.63	17	24	8	0.67	0.26	0	32.93	0.8	0.24	3	0	<0.5	<5	1.6	<0.02	0.31	3.5	0.41
21441618	15_4	162	64	0	15	7.3	0.15	1.29	<10.0	22	11	1.1	0.87	0	34.97	2.5	0.06	2	4	<0.5	<5	2	0.18	0.7	1.6	1.5
21441619	15_4	162	64	15	30	8.6	0.27	1.81	51	30	12	0.61	2.9	0	45.51	6.4	0.04	2.5	3	<0.5	<5	2.7	0.06	0.71	2.8	0.87
21441620	15_4	162	64	30	60	8.4	0.74	4.96	650	25	9.9	0.37	5.7	0	40.97	13.9	0.05	2.53	0	<0.5	<5	38	0.04	0.52	3.7	0.44
21441628	15_7	161	65	0	15	5.9	0.07	0.6	<10.0	10	6.2	0.69	0.48	0	17.37	2.8	0.03	1.61	5	<0.5	<5	1.9	0.16	0.49	0.81	1.3
21441629	15_7	161	65	15	30	6.9	0.09	0.68	23	14	11	0.63	1.3	0	26.93	4.8	0.02	1.27	11	<0.5	<5	1.3	0.08	0.4	1.4	0.82
21441630	15_7	161	65	30	50	8.2	0.45	3.38	290	22	14	0.57	3	0	39.57	7.6	0.06	1.57	0	<0.5	<5	15	<0.02	0.4	3.4	0.42

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21441631	15_8	163	66	0	15	6.8	0.1	0.86	22	10	12	1.2	1.3	0	24.5	5.3	0.02	0.83	12	<0.5	<5	2.7	0.25	0.89	1.2	1.2
21441632	15_8	163	66	15	30	8.3	0.29	2.18	57	22	15	0.74	2.6	0	40.34	6.4	0.04	1.47	12	<0.5	<5	2.5	0.07	0.75	2	0.66
21441633	15_8	163	66	30	60	8.6	0.59	4.43	390	18	16	0.55	4.8	0	39.35	12.2	0.05	1.13	10	<0.5	<5	21	0.05	0.69	4.9	0.33
21441634	15_8	163	66	60	90	8.5	0.86	7.4	760	15	15	0.56	6.1	0	36.66	16.6	0.05	1	0	<0.5	7	78	0.08	0.6	4.8	0.23
21441621	15_5	164	67	0	15	7.2	0.47	4.04	19	21	16	1.6	0.7	0	39.3	1.8	0.26	1.31	0	<0.5	7	4.5	0.57	0.74	1	2.7
21441622	15_5	164	67	15	30	8	0.25	1.88	56	19	23	0.84	2.5	0	*45.34*	5.5	0.05	0.83	0	<0.5	<5	3.1	0.09	0.54	2.1	1.3
21441623	15_5	164	67	30	60	8.7	0.77	6.62	680	21	23	0.2	6.1	0	50.3	12.1	0.06	0.91	0	<0.5	<5	11	<0.02	0.29	3.2	0.76
21441624	15_5	164	67	70	90	8.8	1.73	14.9	2200	21	30	0.25	13	0	64.25	20.2	0.09	0.7	0	<0.5	<5	40	<0.02	0.07	2.4	0.27
21441625	15_5	164	67	90	120	8.3	1.55	13.3	2200	18	37	0.27	14	0	69.27	20.2	0.08	0.49	0	0.6	8	46	0.8	0.1	1.1	10
21441626	15_6	165	68	0	15	7.2	0.67	5.76	220	31	14	0.49	1.7	0	47.19	3.6	0.19	2.21	0	<0.5	5	8.6	0.18	1.2	0.69	1.8
21441627	15_6	165	68	15	30	7	0.09	0.77	<10.0	20	8	0.09	0.19	0	28.28	0.7	0.13	2.5	0	<0.5	6	<1.0	0.04	0.25	0.27	0.3
21269866	31_2	130	69	0	15	5.2	0.05	0.48	14	7.0	1.5	1.0	0.0	0.1	9.6	0.3	0.16	4.7	5	2	15	5	2.00	0.24	0.52	1.70
21269867	31_2	130	69	15	30	5.8	0.04	0.34	12	7.5	1.9	0.9	0.0	0.0	10.3	0.4	0.10	3.9	5	2	8	2	0.33	0.15	0.51	0.87
21269868	31_2	130	69	30	60	6.3	0.04	0.34	11	8.0	2.3	1.2	0.1	0.0	11.6	0.5	0.08	3.5	6	1	18	4	0.29	0.17	0.58	0.70
21269869	31_3	141	70	0	15	5.7	0.10	0.86	13	8.5	2.1	1.3	0.0	0.0	11.9	0.3	0.30	4.0	4	5	13	10	7.00	0.57	0.77	4.10
21269870	31_3	141	70	15	30	5.3	0.06	0.52	12	7.0	1.5	0.8	0.1	0.1	9.5	0.5	0.11	4.7	4	10	6	5	1.60	0.37	0.68	2.10
21269871	31_3	141	70	30	60	6.6	0.05	0.43	10	9.5	2.1	0.9	0.1	0.0	12.6	0.7	0.07	4.5	11	<1	<5	3	0.04	0.19	0.89	0.30
21269527	17_1	77	71	0	15	6.4	0.31	2.33	11	16.0	8.1	1.8	0.6	0.0	26.5	2.2	0.14	2.0	2	57	11	8	1.20	1.10	1.20	3.30
21269528	17_1	77	71	15	30	8.0	0.34	1.97	88	22.0	16.0	0.9	3.4	0.0	42.3	8.0	0.04	1.4	5	4	<5	4	0.18	0.92	2.00	1.20
21269529	17_1	77	71	30	60	8.5	1.00	5.80	820	18.0	23.0	0.8	10.0	0.0	51.8	19.3	0.05	0.8	1	<1	<5	56	0.07	1.10	5.20	0.63
21269530	17_1	77	71	60	90	8.5	1.40	8.12	1200	18.0	21.0	0.9	12.0	0.0	51.9	23.1	0.06	0.9	0	<1	<5	200	0.07	1.10	4.90	0.33
21269531	17_1	77	71	90	120	8.4	1.59	11.93	1400	18.0	21.0	1.0	13.0	0.0	53.0	24.5	0.06	0.9	0	<1	16	230	0.14	1.20	4.50	0.23
21269532	17_2	76	72	0	15	6.0	0.13	1.12	21	9.0	9.9	1.5	0.5	0.0	20.9	2.5	0.05	0.9	2	10	5	7	0.68	1.20	1.10	2.20
21269569	17_2	76	72	15	30	6.8	0.10	0.58	<10	10.0	16.0	1.3	1.1	0.0	28.4	3.9	0.03	0.6	6	<1	<5	3	0.11	1.10	2.10	0.94
21269570	17_2	76	72	30	60	8.5	0.53	3.07	370	17.0	20.0	0.7	3.9	0.0	41.6	9.4	0.06	0.9	0	<1	<5	12	0.04	0.98	4.70	0.40
21269571	17_2	76	72	60	90	8.5	1.11	6.44	1000	16.0	21.0	0.8	6.5	0.0	44.3	14.7	0.08	0.8	0	<1	<5	66	0.05	0.83	3.30	0.21
21269572	17_3	75	73	0	15	5.3	0.20	1.72	32	5.5	6.6	1.4	0.8	0.1	14.4	5.8	0.03	0.8	3	55	9	6	1.70	0.66	0.63	1.80
21269573	17_3	75	73	15	30	7.8	0.36	2.09	120	10.0	13.0	0.8	3.3	0.0	27.1	12.2	0.03	0.8	11	1	<5	5	0.07	0.75	2.00	0.47
21269574	17_3	75	73	30	60	8.6	0.66	3.83	500	15.0	12.0	0.4	5.2	0.0	32.6	16.0	0.04	1.3	3	<1	<5	22	0.03	0.66	2.50	0.33
21269575	17_3	75	73	60	90	8.5	1.15	6.67	1300	12.0	14.0	0.5	8.3	0.0	34.8	23.9	0.05	0.9	0	<1	<5	79	0.12	0.70	2.20	0.21
21269576	17_4	74	74	0	15	4.9	0.26	2.24	36	9.0	6.4	2.5	0.2	0.1	18.2	1.1	0.24	1.4	2	81	<5	19	1.00	1.10	1.00	2.80
21269577	17_4	74	74	15	30	8.0	0.27	2.03	46	20.0	15.0	0.8	1.3	0.0	37.1	3.5	0.08	1.3	0	28	<5	4	0.06	0.65	2.00	0.67
21269578	17_4	74	74	30	60	8.4	0.39	2.26	140	20.0	18.0	0.6	3.2	0.0	41.8	7.7	0.05	1.1	0	9	<5	6	0.04	0.72	3.30	0.45
21269579	17_4	74	74	60	90	8.5	0.94	5.45	930	17.0	20.0	0.7	6.5	0.0	44.2	14.7	0.06	0.9	0	1	<5	32	0.06	0.76	5.30	0.33

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269580	17_5	69	75	0	15	5.8	0.14	1.20	14	17.0	6.0	1.1	0.1	0.0	24.2	0.6	0.24	2.8	3	18	5	4	0.42	0.92	0.68	2.00
21269581	17_5	69	75	15	30	7.6	0.14	1.20	12	20.0	6.4	0.6	0.3	0.0	27.3	1.0	0.14	3.1	2	2	<5	2	0.18	0.80	0.84	1.10
21269582	17_5	69	75	30	60	8.2	0.36	2.70	87	24.0	15.0	0.5	4.8	0.0	44.3	10.8	0.03	1.6	5	<1	<5	4	0.09	0.90	1.40	1.10
21269583	17_5	69	75	60	90	8.3	1.29	9.68	1400	22.0	20.0	0.6	11.0	0.0	53.6	20.5	0.06	1.1	0	<1	<5	61	0.06	1.10	2.60	0.63
21269584	17_6	70	76	0	15	6.2	0.12	1.03	<10	13.0	4.7	0.8	0.1	0.0	18.6	0.5	0.22	2.8	2	11	6	3	0.35	0.83	0.63	1.50
21269585	17_6	70	76	15	30	6.9	0.07	0.60	<10	14.0	5.7	0.5	0.2	0.0	20.4	1.0	0.07	2.5	2	3	<5	1	0.10	0.79	0.60	0.79
21269586	17_6	70	76	30	60	7.2	0.07	0.60	<10	13.0	5.8	0.3	0.4	0.0	19.5	2.1	0.03	2.2	4	4	<5	2	0.18	0.57	0.60	0.50
21269587	17_6	70	76	60	90	8.2	0.17	0.99	10	15.0	9.1	0.4	1.6	0.0	26.1	6.1	0.03	1.6	4	1	<5	2	0.12	0.77	0.60	0.41
21269588	17_7	71	77	0	15	5.0	0.24	2.06	<10	8.0	1.9	1.5	0.0	0.1	11.5	0.3	0.69	4.2	2	99	13	8	4.80	0.75	0.77	4.00
21269589	17_7	71	77	15	30	6.3	0.06	0.45	<10	9.5	2.5	1.3	0.1	0.0	13.4	0.5	0.11	3.8	6	4	<5	2	0.15	0.74	0.93	1.10
21269590	17_7	71	77	30	60	8.1	0.17	1.28	10	16.0	3.8	1.0	0.1	0.0	20.9	0.6	0.27	4.2	2	1	<5	2	0.22	0.58	1.30	0.48
21269592	17_8	72	78	0	15	5.8	0.13	1.24	34	6.5	6.0	1.1	1.1	0.0	14.7	7.5	0.02	1.1	5	17	7	4	1.30	0.71	0.87	2.10
21269593	17_8	72	78	15	30	8.7	0.60	4.50	350	19.0	14.0	0.6	5.7	0.0	39.3	14.5	0.04	1.4	2	<1	<5	9	0.08	0.72	2.80	0.64
21269594	17_8	72	78	30	60	8.9	1.04	6.03	890	20.0	15.0	0.5	9.1	0.0	44.6	20.4	0.05	1.3	2	<1	<5	49	0.04	0.55	2.90	0.28
21269595	17_8	72	78	60	90	8.7	1.25	7.25	1400	19.0	12.0	0.4	8.7	0.0	40.1	21.7	0.06	1.6	2	1	<5	62	0.07	0.44	2.00	<0.15
21269596	17_9	73	79	0	15	4.9	0.18	1.35	22	8.5	4.3	1.8	0.6	0.1	15.3	3.7	0.05	2.0	4	53	11	7	2.20	0.70	0.86	3.00
21269597	17_9	73	79	15	30	6.4	0.13	0.75	30	11.0	7.5	1.0	1.5	0.0	21.0	7.1	0.02	1.5	7	9	<5	4	0.11	0.44	1.20	1.10
21269598	17_9	73	79	30	60	8.9	0.54	4.64	240	18.0	11.0	0.5	5.7	0.0	35.2	16.2	0.03	1.6	6	2	<5	20	0.07	0.60	2.50	0.46
21269599	17_9	73	79	60	90	9.0	0.86	7.40	690	16.0	9.9	0.3	8.7	0.0	34.9	24.9	0.03	1.6	5	2	<5	82	0.16	0.61	2.80	0.34
21269872	31_4	131	80	0	15	5.8	0.12	1.03	24	17.0	12.0	1.9	0.8	0.0	31.7	2.5	0.05	1.4	5	2	10	7	3.30	0.74	1.20	4.10
21269873	31_4	131	80	15	30	6.6	0.11	0.83	22	20.0	17.0	1.0	2.0	0.0	40.0	5.0	0.02	1.2	5	<1	<5	4	0.13	0.42	1.90	1.40
21269874	31_4	131	80	30	60	8.7	0.49	4.21	290	22.0	16.0	0.3	4.8	0.0	43.1	11.1	0.04	1.4	3	<1	<5	15	0.05	0.20	2.10	0.47
21269875	31_4	131	80	60	90	8.8	0.79	6.79	650	22.0	16.0	0.3	6.5	0.0	44.8	14.5	0.05	1.4	0	<1	<5	52	0.04	0.25	2.70	0.44
21269876	31_5	132	81	0	5	4.8	0.10	0.75	31	7.5	7.3	0.8	0.8	0.1	16.5	4.7	0.02	1.0	5	2	6	7	1.80	0.42	0.46	3.00
21269877	31_5	132	81	15	30	7.8	0.54	4.05	420	18.0	20.0	0.5	4.8	0.0	43.3	11.1	0.05	0.9	2	<1	<5	7	0.09	0.25	1.40	1.10
21269878	31_5	132	81	40	60	8.7	1.11	8.33	1100	18.0	15.0	0.4	9.1	0.0	42.5	21.4	0.05	1.2	2	<1	<5	92	0.03	0.30	1.40	0.21
21269879	31_6	139	82	0	15	6.5	0.11	0.95	12	15.0	6.7	1.2	0.1	0.0	23.0	0.3	0.42	2.2	2	6	<5	4	0.29	1.30	0.71	1.60
21269880	31_6	139	82	15	30	7.1	0.06	0.45	13	16.0	7.2	0.6	0.1	0.0	23.9	0.4	0.16	2.2	4	1	<5	2	0.08	0.71	0.65	0.82
21269881	31_6	139	82	30	60	8.1	0.12	0.90	<10	23.0	6.8	0.3	0.1	0.0	30.2	0.3	0.40	3.4	4	1	<5	1	0.03	0.51	0.44	0.48
21269882	31_6	139	82	60	90	8.3	0.13	0.98	<10	20.0	12.0	0.3	0.2	0.0	32.5	0.6	0.22	1.7	2	1	<5	<1	0.02	0.61	0.35	0.28
21269883	31_7	140	83	0	15	5.8	0.07	0.60	<10	6.5	4.7	1.0	0.1	0.0	12.3	0.4	0.17	1.4	4	1	<5	3	0.39	1.10	0.48	1.80
21269884	31_7	140	83	15	30	6.1	0.05	0.38	<10	9.5	9.1	1.2	0.1	0.0	19.9	0.6	0.09	1.0	6	<1	<5	3	0.20	0.71	0.64	0.84
21269885	31_7	140	83	30	60	7.9	0.15	1.13	<10	13.0	9.1	0.6	0.1	0.0	22.9	0.6	0.26	1.4	2	1	<5	2	0.08	0.42	0.64	0.51
21269886	31_7	140	83	60	90	8.3	0.10	0.75	<10	15.0	4.9	0.2	0.1	0.0	20.2	0.3	0.29	3.1	4	<1	<5	<1	0.07	0.21	0.28	<0.15

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269600	17_10	68	84	0	15	5.3	0.16	1.38	15	6.0	1.6	1.2	0.1	0.1	9.0	0.6	0.29	3.8	2	56	6	6	1.60	0.61	0.59	2.30
21269601	17_10	68	84	15	30	6.7	0.07	0.53	14	12.0	3.7	1.0	0.3	0.0	17.0	1.7	0.04	3.2	4	1	<5	2	0.05	0.59	1.00	0.48
21269602	17_10	68	84	30	60	7.6	0.11	0.83	24	11.0	3.7	0.6	0.5	0.0	15.8	3.0	0.04	3.0	6	1	<5	5	<0.02	0.37	1.30	0.29
21269603	17_10	68	84	60	90	8.2	0.18	1.55	40	22.0	3.6	0.3	1.0	0.0	26.9	3.6	0.05	6.1	5	1	<5	7	<0.02	0.44	0.70	0.15
21269780	30_1	65	85	0	15	6.5	0.20	1.72	40	17.0	12.0	1.3	1.3	0.0	31.6	4.1	0.05	1.4	4	8	7	4	0.90	0.41	0.81	2.60
21269781	30_1	65	85	15	30	8.1	0.71	4.12	470	24.0	18.0	1.0	5.7	0.0	48.7	11.7	0.06	1.3	2	1	<5	10	0.12	0.24	1.50	1.10
21269782	30_1	65	85	30	60	8.5	1.85	10.73	2000	25.0	22.0	0.7	13.0	0.0	60.7	21.4	0.09	1.1	2	<1	<5	140	0.04	0.25	3.20	0.54
21269783	30_1	65	85	60	90	8.3	2.00	11.60	2300	14.0	23.0	0.6	15.0	0.0	52.6	28.5	0.07	0.6	0	1	<5	200	0.03	0.24	2.50	0.20
21269784	30_1	65	85	90	120	5.5	1.91	14.33	2400	12.0	16.0	0.4	13.0	0.0	41.4	31.4	0.06	0.8	3	2	<5	180	0.04	0.29	0.54	0.48
21269892	31_9	138	86	0	15	5.4	0.06	0.52	12	9.5	5.0	0.7	0.3	0.1	15.6	1.9	0.03	1.9	5	1	<5	3	0.75	1.20	0.51	1.40
21269893	31_9	138	86	15	30	6.3	0.08	0.60	12	11.0	7.4	0.5	1.3	0.0	20.2	6.4	0.01	1.5	9	<1	<5	2	0.07	0.91	0.51	0.71
21269894	31_9	138	86	30	50	7.3	0.18	1.35	61	11.0	8.0	0.4	2.3	0.0	21.7	10.6	0.02	1.4	11	<1	<5	3	0.04	0.77	0.76	0.62
21269895	31_9	138	86	50	70	8.5	0.68	5.83	660	13.0	9.9	0.4	6.1	0.0	29.4	20.7	0.03	1.3	3	<1	<5	29	0.05	0.75	0.87	0.42
21269896	31_9	138	86	90	120	8.3	1.20	9.00	1500	13.0	11.0	0.5	8.3	0.0	32.8	25.3	0.05	1.2	2	<1	<5	67	0.05	0.79	0.71	0.49
21269604	17_11	67	87	0	15	5.7	0.14	1.20	12	8.0	1.3	1.3	0.1	0.0	10.7	0.6	0.25	6.2	3	39	<5	5	0.76	0.34	0.74	1.70
21269605	17_11	67	87	15	30	7.9	0.16	1.20	<10	21.0	1.8	1.0	0.1	0.0	23.8	0.2	0.76	11.7	3	3	<5	2	0.06	0.36	1.00	0.68
21269606	17_11	67	87	30	60	8.2	0.15	1.13	<10	24.0	3.2	0.9	0.1	0.0	28.2	0.4	0.42	7.5	3	1	<5	2	<0.02	0.27	1.80	0.40
21269607	17_11	67	87	60	90	8.2	0.14	1.20	<10	25.0	4.0	0.7	0.1	0.0	29.8	0.4	0.35	6.3	4	1	<5	3	<0.02	0.40	1.60	0.36
21269785	30_2	66	88	0	15	5.6	0.10	0.95	31	9.5	7.2	1.0	0.8	0.0	18.5	4.5	0.02	1.3	4	4	<5	5	0.53	0.58	0.59	2.50
21269786	30_2	66	88	15	30	6.7	0.13	0.75	54	12.0	12.0	0.6	2.6	0.0	27.2	9.6	0.01	1.0	11	<1	<5	2	0.07	0.40	0.87	1.00
21269787	30_2	66	88	30	60	8.5	1.56	9.05	1900	22.0	19.0	0.5	11.0	0.0	52.5	20.9	0.07	1.2	0	<1	<5	28	<0.02	0.43	1.70	0.33
21269788	30_2	66	88	60	90	8.3	1.25	9.38	1500	9.5	13.0	0.4	8.7	0.0	31.6	27.5	0.05	0.7	0	<1	<5	16	0.09	0.40	0.90	0.18
21441403	35_1	20	89	0	15	6.0	0.35	3.33	56	11.0	9.1	1.0	1.8	0.0	22.9	7.9	0.04	1.2	13	40	<5	14	1.20	0.57	1.10	2.10
21441404	35_1	20	89	15	30	7.9	0.41	2.38	360	12.0	13.0	0.6	5.2	0.0	30.8	16.9	0.02	0.9	11	<1	<5	8	0.05	0.27	1.70	0.89
21441405	35_1	20	89	30	60	6.3	0.17	1.46	65	11.0	9.1	0.8	2.0	0.0	22.9	8.7	0.02	1.2	10	5	<5	5	0.72	0.47	1.10	1.90
21441406	35_2	19	90	0	15	5.7	0.06	0.52	<10	7.0	3.4	0.8	0.3	0.0	11.5	2.6	0.02	2.1	7	1	<5	3	0.34	0.59	0.56	1.60
21441407	35_2	19	90	15	30	7.1	0.09	0.77	24	12.0	7.7	0.7	1.4	0.0	21.8	6.4	0.01	1.6	11	<1	<5	3	0.06	0.54	1.40	1.00
21441408	35_2	19	90	30	60	8.5	0.64	4.80	480	22.0	9.9	0.4	4.8	0.0	37.1	12.9	0.05	2.2	1	<1	<5	32	0.02	0.40	3.00	0.45
21269887	31_8	133	91	0	15	5.4	0.08	0.69	25	13.0	7.2	0.9	0.2	0.1	21.4	0.9	0.09	1.8	3	1	<5	5	3.50	1.00	0.54	2.50
21269888	31_8	133	91	15	30	5.7	0.05	0.43	<10	14.0	7.5	0.4	0.5	0.0	22.4	2.1	0.02	1.9	6	<1	<5	2	0.63	0.85	0.55	1.40
21269889	31_8	133	91	30	60	6.8	0.05	0.43	<10	14.0	7.5	0.3	1.1	0.0	22.9	4.8	0.01	1.9	7	<1	<5	<1	0.19	0.52	0.67	0.86
21269890	31_8	133	91	60	80	7.3	0.07	0.60	14	15.0	7.4	0.3	1.7	0.0	24.4	7.0	0.01	2.0	8	<1	<5	2	0.08	0.57	0.87	0.85
21269891	31_8	133	91	90	120	7.7	0.08	0.69	16	10.0	5.3	0.2	1.6	0.0	17.1	9.3	0.01	1.9	8	<1	<5	4	0.04	0.44	0.47	0.40

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269901	31_11	134	92	0	15	5.0	0.05	0.43	13	6.5	3.5	0.8	0.4	0.1	11.3	3.4	0.01	1.9	5	2	<5	3	2.20	0.57	0.43	1.80
21269902	31_11	134	92	15	30	5.9	0.09	0.68	15	9.5	8.2	0.7	1.1	0.0	19.5	5.6	0.02	1.2	12	<1	<5	3	0.09	0.66	0.69	0.63
21269903	31_11	134	92	30	60	7.7	0.26	2.24	180	9.5	9.1	0.4	2.8	0.0	21.8	12.9	0.02	1.0	11	<1	<5	14	0.04	0.59	1.20	0.25
21269904	31_11	134	92	60	80	8.2	0.51	4.39	510	7.0	7.3	0.3	4.1	0.0	18.7	21.9	0.02	1.0	3	<1	<5	22	0.03	0.38	1.10	<0.15
21269905	31_11	134	92	90	120	8.3	0.91	7.83	1000	9.0	8.2	0.4	5.7	0.0	23.3	24.5	0.04	1.1	2	<1	<5	42	0.04	0.56	1.10	0.16
21269897	31_10	137	93	0	15	5.4	0.03	0.41	<10	3.0	0.7	0.9	0.0	0.1	4.7	0.6	0.05	4.3	5	2	<5	2	0.41	0.19	0.28	0.86
21269898	31_10	137	93	15	30	5.4	0.02	0.28	<10	3.7	0.7	0.7	0.1	0.1	5.3	0.9	0.02	5.1	5	1	<5	<1	0.07	0.16	0.23	0.73
21269899	31_10	137	93	30	60	5.9	0.02	0.45	<10	2.2	0.4	0.4	0.0	0.0	3.1	1.3	0.02	5.0	7	<1	<5	<1	<0.02	0.06	0.23	0.16
21269900	31_10	137	93	60	90	7.3	0.05	0.43	<10	4.8	2.6	0.6	0.2	0.0	8.2	2.6	0.02	1.8	11	<1	<5	2	<0.02	0.11	0.79	<0.15
21441635	23_1	153	94	0	15	6.1	0.1	0.86	15	10	7.1	1	0.78	0	18.88	4.1	0.02	1.41	11	1.1	6	3.5	0.59	0.62	0.9	2.4
21441636	23_1	153	94	15	30	7.4	0.2	1.5	130	16	17	0.92	3.7	0	37.62	9.8	0.02	0.94	11	<0.5	<5	5	0.09	0.53	2.1	1.2
21441637	23_1	153	94	30	60	8.6	0.94	6.3	880	20	18	0.67	7	0	45.67	15.3	0.06	1.11	0	<0.5	<5	28	0.04	0.57	3.3	0.57
21441638	23_1	153	94	60	90	8.4	0.79	6.79	750	20	13	0.46	5.2	0	38.66	13.5	0.06	1.54	0	<0.5	<5	30	0.04	0.44	2	0.25
21441639	23_2	154	95	0	15	7.5	0.3	2.58	22	22	12	1.9	1.1	0	37	3	0.1	1.83	2	2.2	<5	3.9	0.22	0.6	1.2	1.7
21441640	23_2	154	95	15	30	8.4	0.27	1.81	37	26	15	1.4	2.3	0	44.7	5.1	0.05	1.73	10	<0.5	<5	3.4	0.07	0.55	2.4	1
21441641	23_2	154	95	30	60	8.5	0.6	4.02	380	23	20	0.98	5.2	0	49.18	10.6	0.06	1.15	0	0.6	<5	22	0.04	0.57	5.6	0.58
21441642	23_2	154	95	60	90	8.6	0.72	5.4	450	20	16	0.68	6.5	0	43.18	15.1	0.05	1.25	0	2.9	<5	45	0.03	0.5	3.2	0.23
21269775	29_1B	47	96	0	15	5.5	0.43	3.70	25	17.0	5.2	2.1	0.6	0.0	24.9	2.4	0.18	3.3	1	170	41	21	5.00	2.20	1.10	3.40
21269777	29_1B	47	96	15	30	7.2	0.10	0.86	19	16.0	6.1	2.0	1.5	0.0	25.6	5.9	0.02	2.6	4	6	7	3	0.17	0.93	0.97	0.60
21269778	29_1B	47	96	30	60	7.9	0.12	0.90	23	16.0	7.2	2.0	2.7	0.0	27.9	9.7	0.01	2.2	12	4	<5	4	0.10	0.75	1.30	0.50
21269779	29_1B	47	96	60	90	8.6	0.76	5.70	490	19.0	9.9	1.6	7.8	0.0	38.3	20.4	0.04	1.9	1	1	11	41	0.19	0.97	2.60	0.47
21269774	29_1A	46	97	0	15	6.6	0.11	0.95	<10	11.0	4.7	0.7	0.2	0.0	16.7	1.4	0.08	2.3	2	4	<5	2	0.08	0.18	0.51	0.61
21269776	29_1A	46	97	15	30	5.9	0.19	1.10	16	11.0	4.4	1.4	0.1	0.0	16.9	0.4	0.46	2.5	4	43	6	6	2.20	0.31	0.62	2.50
21441409	35_3	18	98	0	15	6.1	0.17	1.46	23	7.0	5.7	1.1	0.7	0.0	14.5	4.5	0.04	1.2	6	18	9	8	2.50	0.58	0.93	2.60
21441410	35_3	18	98	15	30	7.5	0.18	1.35	83	8.5	12.0	1.0	2.4	0.0	23.9	10.0	0.02	0.7	14	<1	<5	10	0.04	0.37	2.00	0.86
21441411	35_3	18	98	30	60	8.6	0.71	4.12	480	16.0	15.0	0.8	5.2	0.0	37.0	14.1	0.05	1.1	2	<1	<5	41	0.03	0.50	3.50	0.45
21441412	35_3	18	98	60	90	8.7	0.88	7.57	720	18.0	14.0	0.6	6.5	0.0	39.1	16.6	0.05	1.3	2	<1	<5	78	0.03	0.36	3.30	0.31
21441413	35_4	17	99	0	15	7.5	0.29	2.49	28	25.0	7.9	1.5	0.7	0.0	35.1	2.1	0.14	3.2	4	5	15	5	0.36	0.56	1.10	2.00
21441414	35_4	17	99	15	30	8.5	0.31	1.80	88	27.0	12.0	0.8	2.3	0.0	42.1	5.5	0.06	2.3	2	<1	<5	5	0.03	0.38	2.10	0.74
21441415	35_4	17	99	30	60	8.5	0.63	3.65	350	24.0	14.0	0.7	5.7	0.0	44.4	12.8	0.05	1.7	2	<1	<5	21	<0.02	0.35	3.40	0.55
21441416	35_4	17	99	60	90	8.6	1.53	8.87	1700	21.0	14.0	0.6	10.0	0.0	45.6	21.9	0.07	1.5	0	1	<5	110	<0.02	0.31	3.70	0.23
21441417	35_4	17	99	90	120	8.4	1.49	11.18	1500	21.0	16.0	0.6	12.0	0.0	49.6	24.2	0.06	1.3	2	<1	<5	73	0.04	0.28	2.20	0.17

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269906	31_12	135	100	0	15	4.9	0.04	0.55	30	1.9	1.4	0.4	0.3	0.1	4.1	6.4	0.01	1.4	7	<1	<5	1	0.49	0.36	0.30	1.10
21269907	31_12	135	100	15	30	7.1	0.15	1.29	120	2.9	6.3	0.2	2.6	0.0	12.0	21.6	0.01	0.5	14	<1	<5	3	0.03	0.49	1.40	0.39
21269908	31_12	135	100	30	60	8.5	0.46	3.96	410	3.6	8.2	0.3	4.8	0.0	16.9	28.5	0.02	0.4	12	<1	<5	13	<0.02	0.53	2.60	0.26
21269909	31_12	135	100	60	90	8.8	0.92	7.91	920	14.0	9.9	0.4	7.0	0.0	31.3	22.4	0.04	1.4	11	<1	<5	45	0.06	0.53	3.10	<0.15
21269910	31_12	135	100	90	120	8.7	0.95	8.17	950	15.0	9.1	0.4	7.0	0.0	31.5	22.2	0.04	1.6	2	<1	7	41	0.08	0.44	2.70	<0.15
21269483	8_1	53	101	0	15	5.8	0.14	1.20	28	9.5	6.4	0.7	1.4	0.0	18.0	7.8	0.02	1.5	4	13	6	4	0.69	0.65	0.92	2.10
21269484	8_1	53	101	15	30	8.4	0.67	3.89	460	24.0	15.0	0.6	6.1	0.0	45.7	13.4	0.05	1.6	2	<1	<5	14	0.15	0.51	1.90	0.93
21269485	8_1	53	101	30	60	8.9	1.82	10.56	2100	23.0	20.0	0.6	16.0	0.0	59.6	26.9	0.07	1.2	0	<1	<5	100	0.18	0.25	2.30	0.31
21269486	8_1	53	101	60	90	8.7	2.07	12.01	2500	23.0	21.0	0.7	18.0	0.0	62.7	28.7	0.07	1.1	0	<1	<5	130	0.20	0.25	1.70	0.18
21441418	35_5	16	102	0	15	6.9	0.15	1.29	50	10.0	13.0	1.4	2.0	0.0	26.4	7.6	0.02	0.8	12	<1	<5	4	0.09	0.50	1.50	1.20
21441419	35_5	16	102	15	30	7.4	0.23	1.98	130	10.0	14.0	1.3	2.7	0.0	28.0	9.6	0.02	0.7	14	6	<5	5	0.13	0.41	1.80	1.10
21441420	35_5	16	102	30	60	8.4	0.77	4.47	580	19.0	16.0	0.8	5.7	0.0	41.5	13.7	0.06	1.2	0	<1	<5	19	0.05	0.44	2.50	0.58
21441421	35_6	15	103	0	15	6.6	0.18	1.55	46	9.5	5.3	0.9	0.4	0.0	16.1	2.5	0.07	1.8	3	21	12	6	1.10	0.82	0.44	2.20
21441422	35_6	15	103	15	30	6.9	0.19	1.10	140	12.0	15.0	0.7	2.8	0.0	30.5	9.2	0.02	0.8	13	<1	<5	6	0.09	0.84	1.10	0.85
21441423	35_6	15	103	30	60	8.1	0.96	5.57	980	12.0	17.0	0.6	6.1	0.0	35.7	17.1	0.06	0.7	0	<1	<5	20	0.04	0.73	2.40	0.50
21441424	35_6	15	103	60	90	8.5	1.13	8.48	1400	19.0	16.0	0.4	6.1	0.0	41.5	14.7	0.08	1.2	0	<1	8	33	0.04	0.37	1.60	0.17
21441425	35_7	9	104	0	15	5.4	0.27	2.32	35	5.5	4.4	0.8	0.7	0.1	11.4	5.7	0.05	1.3	5	110	18	8	3.10	0.79	0.56	2.50
21441426	35_7	9	104	15	30	6.4	0.12	0.70	39	8.5	9.9	0.6	2.2	0.0	21.2	10.4	0.01	0.9	13	<1	<5	4	0.13	1.20	0.84	0.63
21441427	35_7	9	104	30	60	8.0	0.47	2.73	350	11.0	12.0	0.5	5.2	0.0	28.7	18.2	0.03	0.9	12	<1	<5	13	0.08	0.90	1.60	0.45
21441428	35_7	9	104	60	90	8.3	0.68	3.94	650	8.0	9.9	0.4	6.5	0.0	24.8	26.2	0.03	0.8	1	<1	<5	33	0.06	0.79	1.10	0.19
21269911	31_13	136	105	0	15	5.4	0.04	0.55	12	3.0	1.3	0.6	0.1	0.1	5.1	1.4	0.03	2.3	5	1	5	3	1.10	0.33	0.43	1.10
21269912	31_13	136	105	15	30	5.6	0.02	0.28	<10	3.1	1.2	0.4	0.1	0.0	4.8	1.5	0.01	2.6	5	1	<5	1	0.06	0.22	0.44	0.46
21269913	31_13	136	105	30	60	7.3	0.06	0.52	<10	6.5	5.3	0.5	0.8	0.0	13.1	6.0	0.01	1.2	14	<1	<5	2	<0.02	0.47	1.50	0.16
21269914	31_13	136	105	60	90	8.3	0.13	1.12	31	4.8	9.9	0.5	2.8	0.0	18.0	15.6	0.01	0.5	15	<1	<5	2	<0.02	0.48	3.50	<0.15
21269487	8_2	54	106	0	12	5.7	0.14	1.20	10	6.0	4.5	0.8	0.4	0.0	11.7	3.4	0.04	1.3	3	41	15	4	0.53	0.55	0.46	1.40
21269488	8_2	54	106	12	18	6.2	0.09	0.77	25	4.8	4.4	0.3	1.0	0.0	10.5	9.5	0.01	1.1	12	2	<5	2	0.09	0.42	0.44	0.76
21269489	8_2	54	106	18	30	6.9	0.19	1.10	96	7.0	9.9	0.5	3.0	0.0	20.4	14.7	0.01	0.7	13	<1	<5	5	0.10	0.59	1.10	0.68
21269490	8_2	54	106	30	60	8.3	1.17	6.79	1200	13.0	17.0	0.8	9.1	0.0	39.9	22.8	0.05	0.8	0	<1	<5	66	0.06	0.55	2.50	0.37
21269789	30_3	52	107	0	15	7.8	0.34	2.92	33	26.0	15.0	1.2	3.0	0.0	45.2	6.6	0.05	1.7	6	1	<5	4	0.12	0.62	1.10	1.40
21269790	30_3	52	107	15	30	8.5	0.38	2.20	180	28.0	18.0	0.9	6.1	0.0	53.0	11.5	0.03	1.6	0	<1	<5	5	0.06	0.68	1.90	0.92
21269791	30_3	52	107	30	60	8.6	1.26	7.31	1100	21.0	19.0	0.9	13.0	0.0	53.9	24.1	0.05	1.1	0	<1	<5	48	0.05	0.62	3.70	0.49
21269792	30_3	52	107	60	90	8.6	1.35	7.83	1400	20.0	16.0	0.6	12.0	0.0	48.6	24.7	0.05	1.3	0	<1	<5	67	0.02	0.48	2.50	0.20

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269793	30_4	48	108	0	15	6.8	0.22	1.28	35	17.0	13.0	1.1	2.2	0.0	33.3	6.6	0.03	1.3	5	7	<5	6	0.30	1.10	0.71	1.20
21269794	30_4	48	108	15	30	8.1	0.49	2.84	240	17.0	13.0	0.6	5.2	0.0	35.8	14.5	0.03	1.3	11	1	<5	12	0.08	0.66	1.20	0.90
21269795	30_4	48	108	30	60	8.8	0.83	6.23	690	19.0	12.0	0.4	7.8	0.0	39.2	19.9	0.04	1.6	4	<1	<5	45	0.06	0.67	1.20	0.34
21441429	35_8	14	109	0	15	5.1	0.08	0.69	34	6.0	4.0	0.7	1.0	0.1	11.8	8.2	0.01	1.5	7	2	<5	3	0.34	0.47	0.37	1.60
21441430	35_8	14	109	15	30	7.9	0.69	5.93	700	12.0	14.0	0.5	7.8	0.0	34.3	22.8	0.03	0.9	11	<1	<5	16	0.04	0.46	1.20	0.61
21441431	35_8	14	109	30	60	8.5	1.46	12.56	1700	20.0	13.0	0.4	10.0	0.0	43.4	23.0	0.06	1.5	0	<1	<5	73	0.03	0.39	1.30	0.26
21441432	35_8	14	109	60	90	8.5	1.22	9.15	1300	18.0	12.0	0.4	9.1	0.0	39.5	23.0	0.05	1.5	0	2	<5	47	0.05	0.28	1.00	0.16
21441433	35_9	13	110	0	15	5.4	0.13	1.12	57	4.4	4.7	0.7	1.7	0.1	11.6	14.6	0.01	0.9	6	13	23	6	1.10	0.22	0.63	1.90
21441434	35_9	13	110	15	30	8.1	0.44	2.55	250	10.0	16.0	0.5	7.4	0.0	33.9	21.9	0.02	0.6	11	<1	<5	18	0.11	0.19	2.10	0.80
21441435	35_9	13	110	30	60	9.0	1.20	6.96	1100	17.0	16.0	0.5	12.0	0.0	45.5	26.4	0.05	1.1	4	1	<5	50	0.05	0.19	2.70	0.29
21441436	35_9	13	110	60	90	8.7	1.29	7.48	1300	17.0	14.0	0.5	11.0	0.0	42.5	25.9	0.05	1.2	0	1	<5	51	0.06	0.24	2.00	0.16
21441437	35_10	8	111	0	15	5.4	0.14	0.81	25	8.5	8.1	1.0	1.1	0.1	18.8	5.9	0.02	1.0	4	35	5	5	1.10	0.90	0.66	1.80
21441438	35_10	8	111	15	30	6.3	0.20	1.16	130	13.0	14.0	0.9	3.7	0.0	31.6	11.7	0.02	0.9	14	1	<5	4	0.11	1.10	1.00	0.87
21441439	35_10	8	111	30	60	7.6	0.89	5.16	940	14.0	16.0	0.6	8.3	0.0	38.9	21.3	0.04	0.9	0	<1	<5	25	0.09	1.10	1.50	0.56
21441440	35_10	8	111	60	90	8.5	1.23	10.58	1300	21.0	15.0	0.5	9.6	0.0	46.1	20.8	0.06	1.4	0	1	<5	54	0.10	0.82	1.10	0.54
21441354	34_2	10	112	0	15	5.4	0.25	2.15	52	7.5	5.3	1.5	0.5	0.1	14.9	3.5	0.07	1.4	4	87	6	10	2.50	1.00	1.20	2.90
21441355	34_2	10	112	15	30	7.2	0.21	1.22	89	8.5	12.0	0.8	2.3	0.0	23.6	9.8	0.02	0.7	11	9	<5	4	0.10	0.79	2.40	1.00
21441356	34_2	10	112	30	60	8.6	0.50	2.90	270	16.0	16.0	0.6	4.8	0.0	37.4	12.8	0.04	1.0	4	4	<5	19	0.04	0.85	5.20	0.68
21441357	34_2	10	112	60	90	8.6	1.11	6.44	980	16.0	17.0	0.6	7.8	0.0	41.4	18.9	0.06	0.9	0	<1	<5	97	0.07	0.82	5.40	0.22
21269491	8_3	55	113	0	15	4.8	0.14	1.33	11	4.8	1.0	0.9	0.1	0.1	6.8	0.7	0.19	4.8	4	57	9	6	1.20	0.28	0.36	1.60
21269492	8_3	55	113	15	30	5.3	0.04	0.55	<10	3.8	0.9	0.4	0.0	0.1	5.2	0.8	0.05	4.2	5	9	<5	2	0.06	0.09	0.26	0.37
21269493	8_3	55	113	30	60	6.5	0.06	0.35	<10	12.0	3.8	0.8	0.2	0.0	16.8	1.2	0.05	3.2	6	1	<5	3	0.05	0.15	0.97	0.38
21269495	8_3	55	113	60	90	8.1	0.15	0.87	17	11.0	5.1	0.5	0.5	0.0	17.1	3.0	0.05	2.2	4	1	<5	7	0.03	0.10	1.10	0.19
21269494	8_4	56	114	0	15	5.7	0.15	1.29	26	12.0	5.7	1.6	0.3	0.0	19.6	1.4	0.11	2.1	2	33	9	5	0.84	0.89	0.80	2.40
21269520	8_4	56	114	15	30	7.4	0.13	0.75	17	15.0	9.9	1.3	1.1	0.0	27.3	4.0	0.03	1.5	6	<1	<5	2	0.09	0.62	1.80	0.71
21269497	8_4	56	114	30	60	8.4	0.42	2.44	250	18.0	8.2	0.5	2.6	0.0	29.3	8.9	0.05	2.2	2	<1	<5	20	0.04	0.43	2.20	0.18
21269498	8_4	56	114	60	90	8.4	0.45	3.87	310	20.0	8.2	0.5	2.8	0.0	31.5	8.9	0.05	2.4	2	1	<5	19	0.09	0.39	1.60	<0.15
21269796	30_5	51	115	0	15	4.5	0.22	1.89	42	3.8	2.2	0.7	0.7	0.3	7.7	9.1	0.02	1.7	4	90	33	8	1.80	0.49	0.43	2.30
21269797	30_5	51	115	15	30	8.3	0.49	4.21	380	7.0	12.0	0.4	6.1	0.0	25.5	23.9	0.02	0.6	12	1	<5	14	0.04	0.38	1.40	0.51
21269798	30_5	51	115	30	60	8.7	1.03	7.73	890	18.0	13.0	0.5	7.4	0.0	38.9	19.0	0.05	1.4	0	1	<5	38	0.04	0.29	2.10	0.18
21269799	30_5	51	115	60	90	8.7	1.03	8.86	1100	18.0	12.0	0.5	7.4	0.0	37.9	19.5	0.05	1.5	2	1	<5	37	0.03	0.31	1.50	<0.15

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21441444	35_13	21	116	0	15	7.1	0.26	2.24	98	14.0	14.0	1.0	3.9	0.0	32.9	11.9	0.02	1.0	5	1	<5	5	0.17	0.14	1.50	1.30
21441445	35_13	21	116	15	30	8.1	0.54	4.64	370	14.0	14.0	0.6	6.1	0.0	34.7	17.6	0.03	1.0	3	1	<5	13	0.07	0.08	1.40	0.83
21441446	35_13	21	116	30	60	8.7	1.93	14.48	1900	24.0	16.0	0.5	13.0	0.0	53.5	24.3	0.08	1.5	0	1	<5	230	0.04	0.06	1.80	0.35
21441447	35_13	21	116	60	90	8.7	2.26	13.11	2500	25.0	21.0	0.6	18.0	0.0	64.6	27.9	0.08	1.2	0	1	<5	310	0.10	0.06	1.50	0.26
21441441	35_11	7	117	0	15	5.7	0.21	1.81	37	13.0	12.0	1.5	1.5	0.0	28.0	5.4	0.04	1.1	6	37	6	8	0.93	0.61	0.86	2.30
21441442	35_11	7	117	15	30	7.8	0.36	2.09	230	15.0	17.0	1.1	4.8	0.0	37.9	12.7	0.03	0.9	11	1	<5	12	0.14	0.34	1.40	1.20
21441443	35_11	7	117	30	60	8.8	0.76	6.54	560	21.0	12.0	0.5	5.7	0.0	39.2	14.5	0.05	1.8	0	2	<5	28	0.04	0.36	1.70	0.38
21441358	34_3	12	118	0	15	5.6	0.14	1.33	24	7.5	4.2	1.4	0.7	0.0	13.8	5.1	0.03	1.8	8	38	10	6	1.40	0.64	0.87	1.90
21441359	34_3	12	118	15	30	7.0	0.15	0.87	74	10.0	7.2	0.6	2.7	0.0	20.5	13.2	0.01	1.4	15	<1	<5	7	0.12	0.59	1.20	0.70
21441360	34_3	12	118	30	60	8.3	0.70	5.25	600	15.0	9.9	0.6	6.1	0.0	31.6	19.3	0.04	1.5	4	<1	<5	26	0.14	0.86	1.70	0.38
21441361	34_3	12	118	60	90	8.5	0.88	6.60	910	12.0	9.9	0.6	7.0	0.0	29.5	23.7	0.04	1.2	2	<1	<5	39	0.22	0.61	1.40	0.22
21441362	34_4	11	119	0	10	4.6	0.20	1.72	12	5.0	2.3	1.1	0.2	0.1	8.7	2.1	0.10	2.2	4	100	12	7	5.40	0.81	0.63	2.40
21441363	34_4	11	119	10	30	5.4	0.06	0.52	<10	5.0	2.4	0.8	0.2	0.1	8.5	2.1	0.03	2.1	6	16	<5	2	0.43	0.90	0.49	0.99
21441365	34_4	11	119	45	60	6.7	0.06	0.35	<10	5.5	6.0	1.1	0.6	0.0	13.2	4.6	0.01	0.9	10	<1	<5	5	0.04	0.42	1.20	0.23
21441366	34_4	11	119	60	90	7.4	0.07	0.60	11	6.0	8.2	0.9	1.2	0.0	16.3	7.4	0.01	0.7	13	<1	<5	6	<0.02	0.39	2.70	0.19
21441367	34_4	11	119	90	120	8.4	0.17	1.46	18	5.0	8.0	0.7	1.9	0.0	15.6	12.2	0.01	0.6	15	<1	<5	6	0.03	0.49	3.00	<0.15
21269810	30_7B	45	120	0	15	5.3	0.19	1.81	29	6.0	1.6	1.2	0.0	0.1	8.9	0.4	0.42	3.8	3	82	8	7	1.90	0.49	0.46	2.20
21269808	30_7B	45	120	15	30	6.9	0.10	0.95	18	16.0	6.3	1.0	0.2	0.0	23.5	0.9	0.12	2.5	3	1	<5	3	0.03	0.33	1.40	0.72
21269809	30_7B	45	120	30	60	8.0	0.16	0.93	18	26.0	6.1	0.6	0.3	0.0	33.0	0.8	0.20	4.3	0	2	<5	5	<0.02	0.37	1.50	0.42
21269504	8_6	58	121	0	10	5.0	0.21	1.81	14	16.0	4.4	1.0	0.1	0.1	21.6	0.6	0.35	3.6	2	63	19	8	2.20	0.91	0.52	3.40
21269505	8_6	58	121	10	25	6.3	0.07	0.60	<10	12.0	3.6	0.5	0.1	0.0	16.3	0.9	0.08	3.3	4	10	5	2	0.21	0.44	0.52	0.96
21269506	8_6	58	121	30	60	7.0	0.06	0.45	<10	11.0	5.5	0.5	0.8	0.0	17.7	4.4	0.01	2.0	6	<1	<5	2	0.04	0.42	0.54	0.34
21269507	8_6	58	121	60	90	8.5	0.43	2.49	170	17.0	12.0	0.6	4.8	0.0	34.4	14.0	0.03	1.4	3	<1	<5	14	0.03	0.46	1.60	0.34
21269503	8_6	58	121	90	120	8.8	1.00	5.80	780	18.0	17.0	0.9	10.0	0.0	45.9	21.8	0.05	1.1	0	<1	<5	38	0.05	0.52	4.60	0.25
21269499	8_5	57	122	0	15	5.7	0.14	1.33	17	6.5	3.9	0.9	0.6	0.0	11.9	4.8	0.03	1.7	5	33	5	6	0.79	0.49	0.43	1.80
21269500	8_5	57	122	15	30	8.5	0.84	4.87	740	22.0	15.0	0.7	6.5	0.0	44.2	14.7	0.06	1.5	0	1	<5	18	0.07	0.42	2.80	0.54
21269501	8_5	57	122	30	60	8.6	1.38	8.00	1400	8.0	11.0	0.5	10.0	0.0	29.5	33.9	0.04	0.7	0	3	5	170	0.12	0.36	2.00	0.27
21269502	8_5	57	122	60	90	8.0	0.80	7.60	800	2.5	4.9	0.4	5.7	0.0	13.5	42.4	0.02	0.5	4	2	10	78	0.11	0.34	1.40	<0.15
21269811	30_8A	49	123	0	15	6.3	0.17	1.46	23	14.0	7.8	1.7	0.9	0.0	24.4	3.6	0.05	1.8	4	10	<5	6	0.91	0.32	0.78	2.80
21269812	30_8A	49	123	15	30	7.1	0.25	1.45	90	19.0	14.0	1.5	3.0	0.0	37.5	8.0	0.03	1.4	6	<1	<5	7	0.13	0.30	1.70	1.70
21269813	30_8A	49	123	30	60	8.6	1.13	6.55	1000	25.0	17.0	0.8	9.1	0.0	51.9	17.5	0.06	1.5	2	<1	<5	73	0.06	0.31	3.30	0.89
21269814	30_8A	49	123	60	90	6.6	1.12	6.50	1100	12.0	17.0	0.5	12.0	0.0	41.5	28.9	0.04	0.7	12	1	<5	97	0.27	0.60	2.30	0.25
21269815	30_8A	49	123	90	120	4.2	0.99	8.51	1000	8.5	14.0	0.5	10.0	2.7	35.7	28.0	0.04	0.6	13	1	<5	65	0.65	0.82	0.49	0.18

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
	35_12	6	124	*missing*																						
21441376	34_7	3	125	0	15	5.9	0.17	1.46	30	6.5	5.6	0.9	1.1	0.0	14.1	7.8	0.02	1.2	10	37	7	5	0.68	0.37	0.81	1.60
21441377	34_7	3	125	15	30	8.4	0.41	2.38	100	22.0	12.0	0.7	3.8	0.0	38.5	9.9	0.04	1.8	11	<1	<5	9	0.06	0.43	2.20	0.63
21441378	34_7	3	125	30	60	8.8	0.74	6.36	620	18.0	12.0	0.4	6.1	0.0	36.5	16.7	0.04	1.5	2	<1	<5	20	0.03	0.41	3.70	0.49
21441379	34_7	3	125	60	90	8.7	0.96	8.26	870	13.0	9.9	0.4	7.0	0.0	30.3	23.1	0.04	1.3	11	1	<5	39	<0.02	0.23	2.70	<0.15
21441368	34_5	5	126	0	15	5.0	0.05	0.48	<10	2.4	1.9	0.8	0.1	0.1	5.3	2.3	0.02	1.3	6	13	<5	2	0.21	0.25	0.42	0.85
21441369	34_5	5	126	15	30	6.4	0.12	0.70	35	5.0	12.0	0.7	2.0	0.0	19.7	10.2	0.01	0.4	14	<1	<5	3	0.05	0.50	1.30	0.60
21441370	34_5	5	126	30	60	7.9	0.25	1.45	220	4.5	12.0	0.6	3.4	0.0	20.5	16.6	0.02	0.4	13	<1	<5	8	<0.02	0.40	2.90	0.53
21441371	34_5	5	126	60	90	8.7	0.51	3.83	390	8.0	9.9	0.4	3.7	0.0	22.0	16.8	0.03	0.8	2	<1	<5	12	<0.02	0.30	2.60	<0.15
21269820	30_9DEP	42a	127d	0	15	7.9	0.24	1.39	60	30.0	12.0	1.4	0.2	0.0	43.6	0.5	0.46	2.5	2	5	<5	2	0.25	0.98	0.97	1.60
21269821	30_9DEP	42a	127d	15	30	8.1	0.24	1.39	52	26.0	17.0	0.8	0.9	0.0	44.7	2.0	0.12	1.5	2	<1	<5	2	0.05	0.99	1.00	0.81
21269823	30_9DEP	42a	127d	30	60	8.4	0.38	2.20	87	21.0	23.0	0.7	3.3	0.0	48.0	6.9	0.06	0.9	2	<1	<5	2	0.04	1.10	2.70	0.62
21269822	30_9DEP	42a	127d	60	90	8.6	0.68	3.94	440	17.0	23.0	0.6	5.7	0.0	46.3	12.3	0.06	0.7	1	<1	<5	12	0.03	1.00	5.60	0.47
21269824	30_9puff	42b	127p	0	15	7.9	0.21	1.22	21	31.0	12.0	1.5	0.1	0.0	44.6	0.3	0.72	2.6	2	7	<5	3	0.25	0.91	0.89	1.90
21269825	30_9puff	42b	127p	15	30	8.1	0.24	1.39	48	29.0	16.0	0.8	0.5	0.0	46.3	1.1	0.21	1.8	2	<1	<5	2	0.09	0.90	0.81	0.82
21269826	30_9puff	42b	127p	30	60	8.4	0.37	2.15	51	21.0	23.0	0.7	3.4	0.0	48.1	7.1	0.05	0.9	2	<1	<5	5	0.06	0.89	2.00	0.59
21269827	30_9puff	42b	127p	60	90	8.6	0.73	4.23	510	18.0	26.0	0.7	6.1	0.0	50.8	12.0	0.06	0.7	2	<1	<5	12	0.04	0.90	4.30	0.33
21269802	30_6	44	128	0	15	6.5	0.28	2.41	24	19.0	6.2	1.4	0.1	0.0	26.7	0.4	0.68	3.1	2	37	10	9	1.10	1.50	0.62	3.30
21269803	30_6	44	128	15	30	6.8	0.13	0.75	13	23.0	7.8	0.7	0.2	0.0	31.7	0.6	0.21	2.9	4	<1	<5	3	0.09	0.64	0.62	0.90
21269800	30_6	44	128	30	60	8.1	0.15	1.29	20	29.0	7.1	0.3	0.3	0.0	36.7	0.7	0.21	4.1	2	<1	<5	1	<0.02	0.37	0.48	0.65
21269801	30_6	44	128	60	90	8.2	0.18	1.55	47	27.0	12.0	0.2	1.0	0.0	40.2	2.5	0.07	2.3	4	<1	9	4	0.12	0.41	0.26	3.70
21269806	30_7A	43	129	0	15	6.7	0.18	1.55	16	16.0	7.5	1.7	0.1	0.0	25.3	0.2	0.76	2.1	2	8	6	7	0.91	1.50	0.61	3.20
21269807	30_7A	43	129	15	30	7.8	0.18	1.04	<10	34.0	9.9	1.3	0.3	0.0	45.5	0.6	0.28	3.4	2	1	9	4	0.06	0.52	1.00	1.40
21269804	30_7A	43	129	30	60	8.2	0.14	1.05	10	25.0	12.0	0.4	0.2	0.0	37.5	0.5	0.31	2.1	1	<1	<5	2	<0.02	0.52	0.74	0.60
21269805	30_7A	43	129	60	90	8.5	0.17	1.46	13	21.0	20.0	0.3	0.7	0.0	42.1	1.8	0.10	1.1	0	1	<5	5	<0.02	0.59	0.66	0.29
21269508	8_7	59	130	0	15	5.5	0.13	1.12	33	4.1	3.2	0.7	1.0	0.0	9.0	11.1	0.01	1.3	4	29	8	4	0.95	0.54	0.56	1.80
21269509	8_7	59	130	15	30	8.4	0.63	3.65	440	7.0	13.0	0.4	7.8	0.0	28.2	27.7	0.02	0.5	11	<1	<5	30	0.06	0.64	2.80	0.54
21269510	8_7	59	130	30	60	8.7	1.30	11.18	1100	16.0	12.0	0.5	11.0	0.0	39.5	27.9	0.05	1.3	0	<1	<5	140	0.06	0.59	3.10	0.20
21269511	8_7	59	130	60	90	8.8	1.55	13.33	1500	16.0	12.0	0.5	11.0	0.0	39.5	27.8	0.06	1.3	0	<1	10	210	0.11	0.59	2.30	<0.15
21269859	8_8	60	131	0	15	4.6	0.15	1.43	13	7.0	1.2	0.8	0.1	0.1	9.1	0.5	0.27	5.8	2	53	9	8	1.90	0.51	0.49	2.80
21269860	8_8	60	131	15	30	6.1	0.06	0.45	12	14.0	3.1	0.8	0.2	0.0	18.0	0.8	0.07	4.5	5	4	<5	2	0.06	0.43	0.73	0.65
21269861	8_8	60	131	30	60	7.6	0.22	1.65	15	26.0	3.9	0.7	0.2	0.0	30.8	0.6	0.34	6.7	0	3	<5	4	0.04	0.27	0.91	0.53
21269862	8_8	60	131	60	90	8.1	0.12	1.14	<10	24.0	2.6	0.3	0.2	0.0	27.0	0.6	0.22	9.2	4	2	<5	3	0.04	0.24	0.73	0.53

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269816	30_8B	50	132	0	15	6.7	0.13	0.98	17	21.0	6.2	1.6	0.2	0.0	29.0	0.7	0.19	3.4	4	7	<5	5	0.23	0.68	0.85	2.30
21269817	30_8B	50	132	15	30	7.9	0.17	0.99	<10	29.0	9.9	1.0	0.1	0.0	40.0	0.3	0.68	2.9	2	<1	<5	2	0.06	0.68	0.90	1.20
21269818	30_8B	50	132	30	60	8.3	0.15	0.87	<10	21.0	7.8	0.4	0.7	0.0	29.9	2.5	0.06	2.7	3	<1	<5		<0.02	0.27	0.79	0.35
21269819	30_8B	50	132	60	90	8.7	0.17	0.99	<10	19.0	8.2	0.3	1.0	0.0	28.5	3.5	0.05	2.3	5	<1	<5	2	<0.02	0.17	0.63	0.21
21441448	36_1	22	133	0	15	6.3	0.10	0.86	22	9.0	7.2	0.8	1.3	0.0	18.3	7.1	0.01	1.3	7	1	<5	3	0.19	0.48	0.63	1.30
21441449	36_1	22	133	15	30	7.6	0.29	1.68	200	14.0	15.0	0.6	5.7	0.0	35.3	16.2	0.02	0.9	12	<1	<5	5	0.08	0.38	1.50	0.82
21441450	36_1	22	133	30	60	8.4	1.54	11.55	1800	23.0	17.0	0.7	13.0	0.0	53.7	24.2	0.06	1.4	0	<1	<5	49	0.20	0.54	2.90	0.63
21441451	36_2	23	134	0	15	6.2	0.14	1.05	32	12.0	7.7	1.4	1.4	0.0	22.5	6.2	0.02	1.6	15	4	<5	5	0.35	0.67	0.88	2.40
21441452	36_2	23	134	15	30	8.4	0.60	3.48	350	25.0	16.0	1.2	6.1	0.0	48.3	12.6	0.05	1.6	10	1	<5	10	0.10	0.41	1.80	1.10
21441453	36_2	23	134	30	60	8.5	1.87	10.85	2100	24.0	17.0	0.9	14.0	0.0	55.9	25.1	0.07	1.4	0	1	<5	92	0.04	0.42	3.60	0.40
21441454	36_2	23	134	60	90	8.5	2.06	11.95	2500	22.0	16.0	0.8	15.0	0.0	53.8	27.9	0.07	1.4	0	1	<5	130	0.06	0.39	3.30	0.22
21441372	34_6	2	135	0	15	6.3	0.13	0.75	41	9.5	9.1	1.2	2.1	0.0	21.9	9.6	0.01	1.0	12	2	<5	3	0.37	0.81	1.40	1.50
21441373	34_6	2	135	15	30	8.6	0.79	4.58	670	21.0	17.0	1.0	7.0	0.0	46.0	15.2	0.05	1.2	3	<1	<5	16	0.07	0.68	3.50	0.81
21441374	34_6	2	135	30	60	8.9	1.15	9.89	1200	18.0	16.0	0.8	9.6	0.0	44.4	21.6	0.05	1.1	0	<1	<5	42	0.06	0.67	6.30	0.36
21441375	34_6	2	135	60	90	8.8	1.43	12.30	1600	17.0	16.0	0.8	11.0	0.0	44.8	24.5	0.06	1.1	0	1	<5	66	0.09	0.60	4.10	0.20
21441380	34_8	1	136	0	15	7.5	0.20	1.50	16	19.0	6.3	1.4	0.1	0.0	26.8	0.4	0.54	3.0	3	1	5	5	0.43	0.95	1.10	1.70
21441381	34_8	1	136	15	30	8.0	0.34	1.97	11	28.0	9.9	0.7	0.2	0.0	38.8	0.6	0.60	2.8	4	<1	<5	2	0.08	1.10	0.89	0.97
21441382	34_8	1	136	30	60	8.4	0.19	1.43	<10	25.0	13.0	0.5	0.6	0.0	39.0	1.5	0.13	1.9	2	<1	<5	2	0.05	1.10	0.90	0.64
21441383	34_8	1	136	60	90	8.4	0.24	2.06	50	21.0	16.0	0.4	1.4	0.0	38.8	3.6	0.07	1.3	2	<1	<5	7	<0.02	0.99	0.77	0.34
21441384	34_9	4	137	0	15	6.2	0.11	0.95	<10	12.0	5.9	1.3	0.2	0.0	19.4	0.8	0.13	2.0	5	14	7	3	0.46	0.93	0.89	1.70
21441385	34_9	4	137	15	30	6.7	0.11	0.64	12	18.0	9.1	1.2	0.5	0.0	28.8	1.8	0.06	2.0	4	1	<5	2	0.13	0.79	1.20	1.30
21441386	34_9	4	137	30	60	7.3	0.10	0.75	18	19.0	9.9	0.9	0.7	0.0	30.5	2.3	0.04	1.9	4	<1	<5	3	0.04	0.57	1.60	0.77
21269828	30_10	40	138	0	15	5.3	0.13	1.12	11	5.0	2.2	1.1	0.1	0.1	8.5	1.3	0.10	2.3	6	39	6	4	1.70	0.57	0.47	1.60
21269829	30_10	40	138	15	30	5.6	0.04	0.55	15	3.7	2.1	0.5	0.3	0.0	6.5	4.1	0.01	1.8	7	8	<5	<1	0.09	0.23	0.37	0.54
21269830	30_10	40	138	30	60	7.6	0.21	1.22	160	9.0	9.9	0.7	2.6	0.0	22.2	11.7	0.02	0.9	11	1	<5	6	0.03	0.85	2.60	0.31
21269831	30_10	40	138	60	90	7.9	0.62	5.33	590	7.0	9.9	0.5	4.4	0.0	21.8	20.2	0.03	0.7	2	<1	<5	25	0.03	0.59	1.90	0.25
21269832	30_11	41	139	0	15	5.1	0.15	1.43	21	6.5	2.2	1.7	0.1	0.1	10.6	0.5	0.32	3.0	3	56	5	5	1.50	0.84	0.64	1.90
21269833	30_11	41	139	15	30	7.0	0.11	0.95	12	14.0	5.3	2.1	0.1	0.0	21.5	0.6	0.18	2.6	4	3	<5	3	0.08	0.63	1.40	0.77
21269834	30_11	41	139	30	60	8.1	0.20	1.72	54	21.0	7.0	0.6	0.4	0.0	29.0	1.3	0.15	3.0	2	1	<5	14	0.03	0.63	2.00	0.43
21269835	30_11	41	139	60	90	8.2	0.27	2.32	190	17.0	7.3	0.5	0.4	0.0	25.2	1.7	0.15	2.3	2	2	<5	7	0.03	0.49	2.10	0.20
21269840	30_13	39	140	0	15	5.5	0.19	1.81	21	5.0	1.6	1.3	0.1	0.0	8.0	0.6	0.30	3.1	2	68	8	7	8.30	0.64	0.60	2.10
21269841	30_13	39	140	15	30	5.4	0.05	0.48	12	3.0	1.2	0.7	0.1	0.1	5.1	1.4	0.04	2.5	12	5	<5	2	0.52	0.43	0.37	0.49
21269842	30_13	39	140	30	60	6.6	0.11	0.83	65	8.0	5.7	0.5	0.7	0.0	14.9	4.4	0.03	1.4	13	1	<5	12	0.04	0.71	1.40	0.38

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269512	8_9	61	141	0	15	6.3	0.23	2.19	59	7.0	6.7	0.8	2.0	0.0	16.5	12.2	0.02	1.0	5	30	10	5	1.10	0.55	0.87	2.00
21269513	8_9	61	141	15	30	8.7	0.79	4.58	520	17.0	14.0	0.5	7.8	0.0	39.3	19.9	0.04	1.2	0	1	<5	21	0.10	0.70	2.40	0.89
21269514	8_9	61	141	30	60	8.7	1.60	12.00	1700	17.0	13.0	0.5	12.0	0.0	42.5	28.3	0.06	1.3	0	<1	<5	190	0.13	0.54	2.40	0.33
21269515	8_9	61	141	60	90	8.8	1.34	10.05	1300	15.0	11.0	0.4	10.0	0.0	36.4	27.5	0.05	1.4	0	1	<5	150	0.23	0.50	1.40	<0.15
21269516	8_10	62	142	0	15	5.6	0.23	2.19	19	12.0	1.9	1.1	0.1	0.0	15.1	0.7	0.35	6.3	4	71	20	8	2.40	0.34	0.44	3.10
21269517	8_10	62	142	15	30	7.7	0.19	1.63	<10	31.0	2.8	0.9	0.1	0.0	34.7	0.3	0.73	11.1	2	4	<5	3	0.07	0.11	0.60	0.86
21269518	8_10	62	142	30	60	8.2	0.10	2.27	<10	25.0	1.6	0.3	0.1	0.0	27.0	0.3	0.39	15.6	2	2	<5	3	0.03	<0.01	0.32	0.24
21269519	8_10	62	142	60	90	8.3	0.10	2.27	12	23.0	1.5	0.3	0.1	0.0	24.8	0.3	0.31	15.3	3	1	<5	4	0.02	0.02	0.25	0.17
21269521	8_11	63	143	0	15	5.4	0.42	3.15	25	11.0	7.7	2.2	0.6	0.1	21.6	2.6	0.16	1.4	2	120	5	16	1.10	1.60	0.92	2.90
21269522	8_11	63	143	15	30	6.9	0.13	0.98	41	14.0	12.0	1.6	1.5	0.0	29.1	5.2	0.03	1.2	7	3	<5	6	0.18	1.80	1.50	1.00
21269523	8_11	63	143	30	60	8.7	0.49	2.84	310	20.0	12.0	0.7	3.1	0.0	35.8	8.7	0.06	1.7	2	<1	<5	10	0.09	1.80	1.90	0.46
21441348	34_1A	29	144	0	15	6.1	0.14	1.20	<10	9.5	1.3	1.0	0.0	0.0	11.8	0.3	0.55	7.3	4	52	6	5	1.20	0.20	0.73	2.40
21441349	34_1A	29	144	15	30	6.8	0.06	0.45	<10	8.5	1.2	0.7	0.0	0.0	10.4	0.4	0.16	7.1	4	4	<5	2	0.11	0.11	0.77	0.94
21441350	34_1A	29	144	30	60	8.1	0.19	1.63	91	21.0	1.0	0.4	0.1	0.0	22.5	0.3	0.61	21.2	2	14	<5	10	0.04	0.08	0.84	0.63
21441455	36_3	25	145	0	15	5.2	0.22	1.89	16	7.0	4.4	1.6	0.5	0.1	13.6	3.5	0.06	1.6	0	70	8	7	2.10	0.51	0.57	2.40
21441456	36_3	25	145	15	30	8.3	0.45	3.38	240	20.0	19.0	1.2	5.2	0.0	45.4	11.5	0.04	1.1	0	2	<5	9	0.09	0.39	1.80	0.70
21441457	36_3	25	145	30	60	8.6	1.11	6.44	970	17.0	18.0	0.7	9.6	0.0	45.3	21.2	0.05	0.9	0	<1	<5	75	0.03	0.28	1.60	0.18
21441458	36_3	25	145	60	90	8.6	0.76	4.41	520	22.0	18.0	0.9	7.0	0.0	47.9	14.6	0.05	1.2	0	<1	<5	34	0.04	0.31	2.00	0.42
21441459	36_4	24	146	0	15	6.9	0.19	1.63	25	16.0	13.0	1.6	1.6	0.0	32.2	5.0	0.04	1.2	6	4	<5	5	0.45	0.67	1.20	2.00
21441460	36_4	24	146	15	30	8.3	0.54	3.13	300	26.0	21.0	1.0	5.7	0.0	53.7	10.6	0.05	1.2	3	<1	<5	14	0.07	0.69	2.70	0.94
21441461	36_4	24	146	30	60	8.5	1.13	6.55	950	25.0	22.0	0.8	10.0	0.0	57.8	17.3	0.07	1.1	0	<1	<5	54	0.05	0.79	4.70	0.55
21441462	36_4	24	146	60	90	8.7	1.41	12.13	1500	25.0	21.0	0.4	11.0	0.0	57.4	19.2	0.07	1.2	0	<1	<5	110	0.03	0.39	3.40	0.29
21441387	34_10	30	147	0	15	6.2	0.09	0.86	11	9.0	3.3	1.5	0.1	0.0	13.9	0.5	0.18	2.7	6	11	<5	3	0.67	0.54	0.96	1.70
21441388	34_10	30	147	15	30	7.6	0.26	1.51	<10	15.0	7.3	1.7	0.6	0.0	24.6	2.3	0.11	2.1	4	<1	<5	3	0.07	0.60	2.20	0.74
21441389	34_10	30	147	30	60	8.4	0.27	2.32	93	21.0	9.1	0.8	2.1	0.0	33.0	6.4	0.04	2.3	6	<1	<5	8	<0.02	0.45	3.90	0.36
21441390	34_10	30	147	60	90	8.7	0.32	2.75	150	18.0	8.2	0.7	2.5	0.0	29.4	8.5	0.04	2.2	4	<1	<5	15	0.03	0.33	2.80	<0.15
21441391	34_11	33	148	0	15	6.7	0.16	1.38	23	12.0	5.3	1.8	0.2	0.0	19.3	0.9	0.17	2.3	5	6	8	7	0.95	1.20	1.10	2.60
21441392	34_11	33	148	15	30	7.9	0.29	1.68	62	18.0	12.0	1.5	1.5	0.0	33.0	4.5	0.06	1.5	14	<1	<5	5	0.05	1.20	2.50	0.76
21441393	34_11	33	148	30	60	8.2	0.35	2.63	160	23.0	12.0	1.2	2.4	0.0	38.6	6.2	0.06	1.9	5	<1	<5	11	<0.02	0.54	4.50	0.34
21441394	34_11	33	148	60	90	8.4	0.43	3.23	290	24.0	11.0	0.9	2.7	0.0	38.6	7.0	0.06	2.2	1	<1	<5	11	0.03	0.46	2.80	0.45
21269836	30_12	38	149	0	15	5.8	0.07	0.53	14	7.0	5.8	0.9	0.3	0.0	13.9	2.0	0.03	1.2	4	3	<5	2	0.32	0.78	0.59	1.30
21269837	30_12	38	149	15	30	5.9	0.06	0.52	18	5.5	4.2	0.4	0.4	0.0	10.5	3.9	0.02	1.3	11	4	<5	1	0.15	0.29	0.44	1.00
21269838	30_12	38	149	30	60	7.9	0.48	2.78	440	9.0	13.0	0.5	3.7	0.0	26.2	14.1	0.03	0.7	1	<1	<5	12	0.03	0.46	2.10	0.43
21269839	30_12	38	149	60	90	8.5	0.79	6.79	730	17.0	12.0	0.3	4.3	0.0	33.6	12.8	0.06	1.4	4	<1	<5	28	0.03	0.39	1.60	0.23

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269843	30_14	36	150	0	15	8.3	0.87	6.53	870	22.0	15.0	0.8	4.8	0.0	42.6	11.3	0.08	1.5	0	1	<5	19	0.06	0.83	2.40	0.62
21269844	30_14	36	150	15	30	6.7	0.23	1.73	35	12.0	7.4	2.1	0.7	0.0	22.2	2.9	0.08	1.6	5	34	41	8	1.30	1.10	1.10	2.90
21269845	30_14	36	150	30	60	8.3	1.45	10.88	1900	22.0	15.0	0.6	6.5	0.0	44.1	14.7	0.10	1.5	0	2	<5	60	0.04	0.68	2.50	0.36
21269846	30_14	36	150	60	90	8.3	1.26	11.97	1500	11.0	12.0	0.4	5.7	0.0	29.1	19.6	0.06	0.9	2	2	5	45	0.04	0.30	1.10	<0.15
21269848	30_15	37	151	0	15	5.6	0.15	1.29	18	7.0	4.6	1.8	0.1	0.0	13.5	1.0	0.16	1.5	3	44	8	5	2.10	0.54	0.71	1.90
21269849	30_15	37	151	15	30	7.2	0.13	0.75	19	10.0	12.0	1.5	0.5	0.0	24.0	2.0	0.06	0.8	7	6	<5	2	0.08	0.43	1.40	0.66
21269850	30_15	37	151	30	60	8.5	0.22	1.28	30	18.0	13.0	0.7	1.3	0.0	33.0	3.9	0.06	1.4	4	1	<5	4	0.03	0.62	2.40	0.31
21269847	30_15	37	151	60	90	8.7	0.31	2.67	110	11.0	12.0	0.6	2.3	0.0	25.9	8.9	0.03	0.9	3	1	<5	11	<0.02	0.51	3.10	<0.15
21269524	8_12	64	152	0	15	5.6	0.23	1.98	<10	17.0	5.0	1.4	0.1	0.0	23.5	0.6	0.42	3.4	2	57	13	6	1.30	0.57	0.76	3.80
21269525	8_12	64	152	15	30	6.7	0.13	0.75	<10	24.0	8.0	0.7	0.3	0.0	33.0	0.9	0.14	3.0	3	5	<5	3	0.10	0.35	0.76	0.92
21269526	8_12	64	152	30	60	8.0	0.16	1.20	11	30.0	6.9	0.4	0.5	0.0	37.8	1.4	0.12	4.3	2	2	<5	3	0.05	0.56	1.10	0.65
21441351	34_1B	28	153	0	15	6.7	0.22	2.09	<10	11.0	1.5	1.4	0.0	0.0	13.9	0.1	1.53	7.3	2	65	8	8	2.00	0.44	0.95	2.70
21441352	34_1B	28	153	15	30	7.9	0.14	1.20	<10	15.0	1.4	1.3	0.0	0.0	17.7	0.2	0.62	10.7	4	3	<5	2	0.10	0.42	0.91	0.97
21441353	34_1B	28	153	30	45	8.1	0.14	1.20	14	20.0	1.4	0.8	0.1	0.0	22.2	0.3	0.52	14.3	4	5	<5	4	0.10	0.22	0.96	0.65
21441463	36_5	27	154	0	15	6.0	0.17	1.46	20	8.5	5.8	1.6	0.5	0.0	16.4	3.2	0.05	1.5	1	47	7	5	0.89	0.63	0.83	2.30
21441464	36_5	27	154	15	30	7.9	0.39	2.26	140	23.0	15.0	1.1	2.9	0.0	42.0	6.9	0.06	1.5	11	<1	<5	5	0.08	0.53	2.40	0.95
21441465	36_5	27	154	30	60	8.5	1.82	10.56	2000	21.0	19.0	0.7	12.0	0.0	52.7	22.8	0.08	1.1	0	<1	<5	180	0.05	0.52	9.00	0.27
21441466	36_5	27	154	60	90	8.4	2.01	11.66	2400	18.0	16.0	0.9	12.0	0.0	46.9	25.6	0.08	1.1	0	<1	7	230	0.09	0.47	6.20	<0.15
21441467	36_6	26	155	0	15	7.6	0.25	1.45	16	25.0	11.0	2.1	0.6	0.0	38.7	1.6	0.16	2.3	2	8	5	6	0.44	0.71	1.10	1.80
21441468	36_6	26	155	15	30	8.1	0.22	1.65	<10	29.0	15.0	1.5	1.3	0.0	46.8	2.8	0.08	1.9	0	<1	<5	3	0.07	0.69	2.30	0.76
21441469	36_6	26	155	30	60	8.4	0.42	3.15	100	24.0	20.0	1.0	4.1	0.0	49.1	8.4	0.05	1.2	3	<1	<5	10	0.05	0.71	5.20	0.47
21441470	36_6	26	155	60	90	8.4	1.07	8.03	960	21.0	21.0	1.0	8.7	0.0	51.7	16.8	0.06	1.0	0	<1	<5	66	0.05	0.67	5.20	0.31
21441395	34_12	32	156	0	15	5.8	0.14	1.20	13	7.0	2.5	1.2	0.1	0.0	10.8	1.3	0.11	2.8	6	32	12	6	0.96	0.80	0.91	2.10
21441396	34_12	32	156	15	30	7.6	0.12	0.90	33	11.0	7.6	1.1	1.6	0.0	21.3	7.5	0.02	1.4	14	<1	<5	12	0.04	0.94	1.80	0.51
21441397	34_12	32	156	30	60	8.4	0.59	4.43	540	18.0	7.8	0.9	3.6	0.0	30.3	11.9	0.05	2.3	2	<1	<5	23	<0.02	0.71	3.60	0.16
21441398	34_12	32	156	60	90	8.5	0.83	4.81	940	17.0	7.4	0.9	4.8	0.0	30.1	16.0	0.05	2.3	0	1	10	46	0.06	0.76	2.90	<0.15
21441399	34_13	31	157	0	15	7.6	0.28	2.10	37	18.0	12.0	1.6	0.7	0.0	32.3	2.2	0.13	1.5	4	2	<5	4	0.26	1.20	1.50	1.60
21441400	34_13	31	157	15	30	8.3	0.50	2.90	230	22.0	18.0	1.2	3.5	0.0	44.7	7.8	0.06	1.2	11	<1	<5	32	0.05	1.20	2.30	0.81
21441401	34_13	31	157	30	60	8.5	1.05	7.88	1200	18.0	21.0	1.0	8.3	0.0	48.3	17.2	0.06	0.9	1	<1	<5	37	0.03	1.20	5.20	0.67
21441402	34_13	31	157	60	90	8.4	1.27	10.92	1500	19.0	20.0	1.0	8.7	0.0	48.7	17.9	0.07	1.0	0	<1	<5	74	0.04	0.98	6.10	0.37
21269851	30_16	34	158	0	15	4.8	0.17	3.86	12	3.7	1.7	1.5	0.0	0.1	7.0	0.6	0.30	2.2	4	66	23	5	1.10	0.41	0.58	2.00
21269852	30_16	34	158	15	30	6.8	0.11	0.64	12	11.0	7.6	2.0	0.2	0.0	20.8	0.9	0.12	1.4	8	4	<5	2	0.03	0.40	2.00	0.61
21269853	30_16	34	158	30	60	7.7	0.15	1.13	20	11.0	11.0	1.2	0.5	0.0	23.7	2.2	0.07	1.0	2	1	<5	5	0.02	0.38	3.20	0.29
21269854	30_16	34	158	60	90	8.1	0.30	2.25	130	11.0	16.0	1.2	2.0	0.0	30.2	6.6	0.05	0.7	3	<1	<5	9	<0.02	0.29	2.70	<0.15

Sample ID (IncPivot)	Farm Pit ID	Field Pit #	Map Pit #	Upper (cm)	Lower (cm)	pH CaCl2	EC1:5	ECe	Cl	Ca	Mg	K	Na	Al	CEC	ESP	ESI	Ca/Mg	ASWAT	NO_3 -N	Col. P	SO_4 -S	DTPA -Zn	DTPA -Cu	B	Org. C
21269858	30_17	35	159	0	15	6.6	0.09	0.68	12	17.0	7.5	0.7	0.4	0.0	25.6	1.6	0.06	2.3	4	5	7	2	0.23	0.67	0.78	1.90
21269855	30_17	35	159	15	30	7.3	0.08	0.60	12	16.0	6.3	0.4	0.9	0.0	23.6	3.7	0.02	2.5	11	1	5	3	0.06	0.55	0.78	1.10
21269856	30_17	35	159	30	60	7.7	0.13	1.12	30	15.0	5.5	0.4	1.2	0.0	22.1	5.4	0.02	2.7	6	1	7	6	0.06	0.44	0.68	0.80
21269857	30_17	35	159	60	90	7.7	0.24	2.06	200	11.0	4.4	0.3	1.3	0.0	17.0	7.7	0.03	2.5	2	1	15	12	0.05	0.35	0.45	0.55

Appendix 10. SCS Laboratory; Calibration Data regarding Soil Erosion Hazard

NSW GOVERNMENT | Soil Conservation Service

SOIL TEST REPORT

Scone Research Centre

REPORT NO:	SCO13/093R1
REPORT TO:	David McKenzie McKenzie Soil Management PO Box 2171 ORANGE NSW 2800
REPORT ON:	Twelve soil samples REF: Spur Hill
PRELIMINARY RESULTS ISSUED:	Not issued
REPORT STATUS:	Final
DATE REPORTED:	2 May 2013
METHODS:	Information on test procedures can be obtained from Scone Research Centre

TESTING CARRIED OUT ON SAMPLE AS RECEIVED

SR Young
(Laboratory Manager)

Scone Research Centre, PO Box 283 Scone 2337, 709 Gundy Road Scone 2337
Ph: 02 6545 1666, Fax: 02 6545 2520

SOIL CONSERVATION SERVICE
Scone Research Service Centre

Report No: SCO13/093R1
Client Reference: David McKenzie
McKenzie Soil Management
PO Box 2171
ORANGE NSW 2800

Lab No	Method	P7B/2 Particle Size Analysis (%)					P8A/2	P9B/2	C6A/2
	Sample Id	clay	silt	f sand	c sand	gravel	D%	EAT	OC (%)
1	Spur Hill 19-1 0-15 cm	27	20	40	13	<1	19	8	3.14
2	Spur Hill 19-1 15-30 cm	33	20	34	12	1	15	5	1.45
3	Spur Hill 19-1 30-60 cm	31	19	41	9	<1	19	3 (1)	0.88
4	Spur Hill 19-1 60-90 cm	35	20	35	10	0	17	5	0.95
5	Spur Hill 23-2 0-15 cm	52	18	20	8	2	22	7	2.39
6	Spur Hill 23-2 15-30 cm	59	16	16	8	1	39	3 (1)	0.88
7	Spur Hill 23-2 30-60 cm	58	14	15	11	2	57	2 (1)	0.56
8	Spur Hill 23-2 60-90 cm	46	20	15	15	4	57	2 (1)	0.30
9	Spur Hill 31-10 0-15 cm	10	12	29	47	2	27	3 (1)	0.75
10	Spur Hill 31-10 15-30 cm	10	12	28	48	2	33	3 (1)	0.60
11	Spur Hill 31-10 30-60 cm	10	10	28	44	8	47	3 (1)	0.17
12	Spur Hill 31-10 60-90 cm	24	10	27	37	2	53	2 (1)	0.12

SOIL CONSERVATION SERVICE
Scone Research Service Centre

Report No: SCO13/093R1
Client Reference: David McKenzie
McKenzie Soil Management
PO Box 2171
ORANGE NSW 2800

Lab No	Method	P7C/2 Particle Size Analysis - mech dis (%)				
	Sample Id	clay	silt	f sand	c sand	gravel
1	Spur Hill 19-1 0-15 cm	16	23	42	19	<1
2	Spur Hill 19-1 15-30 cm	22	22	41	14	1
3	Spur Hill 19-1 30-60 cm	22	22	46	10	<1
4	Spur Hill 19-1 60-90 cm	28	25	37	10	0
5	Spur Hill 23-2 0-15 cm	35	22	22	19	2
6	Spur Hill 23-2 15-30 cm	49	23	18	9	1
7	Spur Hill 23-2 30-60 cm	47	26	14	11	2
8	Spur Hill 23-2 60-90 cm	40	23	16	17	4
9	Spur Hill 31-10 0-15 cm	8	12	30	48	2
10	Spur Hill 31-10 15-30 cm	8	11	30	49	2
11	Spur Hill 31-10 30-60 cm	7	10	32	43	8
12	Spur Hill 31-10 60-90 cm	26	11	26	35	2

END OF TEST REPORT

NSW GOVERNMENT Soil Conservation Service

Experienced people protecting your resources

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David McKenzie
McKenzie Soil Management
PO Box 2171
ORANGE NSW 2800

2 May 2013 SCO13/093R1

Dear David McKenzie

Soil Erodibility Factor – Spur Hill

The Soil Conservation Service has analysed twelve soil samples for Spur Hill (Soil Test Report SCO13/093R1). The soil erodibility factor (K factor) has been determined from the particle size analysis-mechanical dispersion (clay, silt, fine sand, coarse sand and gravel) and the organic carbon (OC) as described by Rosewell (1993). The surface soil structure was assumed to be medium granular and the profile permeability was assumed to be slow to moderate.

Lab No	Sample Id	Soil erodibility K factor
1	Spur Hill 19-1 0-15 cm	0.034
2	Spur Hill 19-1 15-30 cm	0.041
3	Spur Hill 19-1 30-60 cm	0.047
4	Spur Hill 19-1 60-90 cm	0.041
5	Spur Hill 23-2 0-15 cm	0.023
6	Spur Hill 23-2 15-30 cm	0.022
7	Spur Hill 23-2 30-60 cm	0.024
8	Spur Hill 23-2 60-90 cm	0.026
9	Spur Hill 31-10 0-15 cm	0.035
10	Spur Hill 31-10 15-30 cm	0.035
11	Spur Hill 31-10 30-60 cm	0.037
12	Spur Hill 31-10 60-90 cm	0.028

This interpretation was based on the soil samples being representative, and literature guidelines. If you have any queries, please contact me on (02) 6545 1666.

Yours sincerely

SR Young
Laboratory Manager

References

Rosewell CJ (1993) Soiloss – A program to assist in the selection of management practices to reduce erosion. Department of Conservation and Land Management.

Appendix 11 BSAL and LSC Assessment Matrix

Note: Red indicates factors where the pit does not meet the BSAL criteria; amber highlights soil types that are not BSAL because of slope category and 'moderate' fertility status

Report Pit Number	Slope (%)	Gilgai	Depth to Rock (cm)	Depth to Mottles (cm)	pH CaCl2			ESP			Salinity (ECe, dS/m)			Australian Soil Classification: Fertility Status	BSAL? (if area >20ha)	LSC Class
					0-15cm	15-30-cm	30-60-cm	0-15cm	15-30-cm	30-60-cm	0-15cm	15-30-cm	30-60-cm			
1					6.0	7.9	8.4	4.0	10.1	16.6	2.0	4.0	8.1	Red Sodosol		4
2					7.8	8.2	8.1	0.4	0.3	1.5	2.4	3.2	1.8	Stratic Rudosol		4
3					7.7	8.1	7.9	0.4	0.3	4.3	1.8	1.0	1.8	Stratic Rudosol		2
4					5.7	8.0	8.0	0.4	0.3	1.1	3.2	2.1	1.1	Stratic Rudosol		2
5	>10%				7.7	7.7	8.1	0.6	2.1	7.1	1.3	0.8	2.3	Red Kandosol		5
6					5.7	6.4	8.8	2.2	5.8	9.2	0.6	1.1	4.8	Red Sodosol		4
7					4.9	7.0	8.3	2.0	12.6	18.5	2.2	2.6	9.4	Stratic Rudosol		4
8					6.9	8.4	8.3	5.4	11.9	17.0	6.8	20.9	8.7	Stratic Rudosol		4
9					5.9	7.1	8.2	0.6	2.4	4.5	1.5	0.7	1.2	Brown Chromosol		4
10			65		5.7	7.8	7.8	0.4	0.2	0.7	1.8	1.8	0.9	Red Chromosol		4
11	<5%				5.5	7.3	7.8	0.7	0.7	0.7	0.6	2.0	1.1	Brown Dermosol	YES	2
12					5.2	6.9	8.5	5.7	10.3	25.0	1.0	0.9	5.5	Brown Sodosol		4
13					6.9	7.4	8.2	2.9	5.0	7.1	1.2	1.5	2.9	Brown Vertosol		4
14					6.1	7.0	8.4	3.1	6.5	10.8	1.3	1.1	2.8	Red Sodosol		4
15					6.2	7.9	8.3	4.7	9.1	12.8	1.7	4.8	4.9	Red Vertosol		4
16					6.1	8.0	8.3	1.5	10.8	16.5	1.0	2.5	6.4	Red Vertosol		4
17					6.6	7.7	8.4	4.2	8.9	20.1	1.9	2.1	8.1	Brown Vertosol		4
18					5.0	6.2	8.3	4.8	8.7	14.1	1.2	0.7	3.9	Brown Sodosol		4
19			90		5.7	7.1	8.1	3.8	10.6	18.0	1.1	1.8	6.3	Brown Sodosol		4
20					7.1	8.3	8.4	10.1	13.7	19.3	2.4	3.3	6.7	Black Vertosol		4
21					5.8	6.3	8.5	4.8	6.7	16.9	1.0	1.0	7.0	Red Sodosol		4
22					4.8	5.7	6.8	3.7	15.5	25.8	1.1	1.4	4.1	Brown Sodosol		4
23					5.4	7.2	8.4	4.8	10.3	21.5	1.1	0.8	3.4	Stratic Rudosol		4
24					7.6	8.2	8.4	0.9	5.9	11.8	1.6	1.8	3.3	Brown Vertosol		4
25					5.7	6.1	8.1	4.2	6.2	8.9	1.0	0.6	2.2	Brown Sodosol		4
26					5.3	6.5	8.5	4.1	8.2	13.0	1.0	0.5	3.1	Red Dermosol		4
27					6.7	8.2	8.7	3.4	9.4	16.3	0.8	1.6	5.9	Grey Vertosol		4
28					7.0	8.6	8.6	14.9	22.4	25.1	1.9	7.0	8.5	Brown Vertosol		4

Report Pit Number	Slope (%)	Gilgai	Depth to Rock (cm)	Depth to Mottles (cm)	pH CaCl2			ESP			Salinity (ECe, dS/m)			Australian Soil Classification: Fertility Status	BSAL? (if area >20ha)	LSC Class
					0-15cm	15-30-cm	30-60-cm	0-15cm	15-30-cm	30-60-cm	0-15cm	15-30-cm	30-60-cm			
29				100	5.8	8.3	8.6	2.5	15.1	14.5	0.9	1.6	3.0	Red Sodosol		4
30					6.5	8.1	8.5	5.7	14.4	21.8	1.7	1.9	7.5	Black Vertosol		4
31					7.4	8.5	8.9	10.1	16.9	24.2	1.5	3.7	8.5	Brown Vertosol		4
32				22	4.8	5.6	7.1	2.0	2.9	5.7	0.8	0.4	0.6	Stratic Rudosol		4
33	<5%				6.4	7.0	8.1	0.7	1.5	7.7*	1.0	0.5	1.0	Grey Vertosol	YES	3
34					6.4	7.0	8.3	1.7	3.4	6.2	1.0	0.7	2.3	Brown Vertosol		4
35			110		6.6	7.6	8.6	7.8	11.4	14.7	1.5	1.9	5.6	Yellow Vertosol		4
36					7.6	8.2	8.7	8.2	12.6	25.2	2.1	3.4	9.8	Grey Vertosol		4
37					6.8	8.1	8.4	9.2	11.7	20.1	2.0	4.7	9.7	Brown Vertosol		4
38					5.8	6.2	6.8	0.4	0.5	0.9	1.3	0.6	0.4	Stratic Rudosol		2
39			70		7.4	7.9	8.7	2.7	8.0	10.0	0.8	1.6	3.2	Brown Vertosol		4
40			50		5.8	5.8		0.5	0.5		1.0	0.3		Red - Orthic Tenosol		4
41			65	25	6.9	8.3	9.1	1.5	3.7	17.7	2.1	1.7	4.6	Grey Vertosol		4
42			140		6.2	7.3	8.4	2.4	4.1	8.5	1.0	1.1	2.8	Brown Vertosol		4
43					5.5	6.8	8.1	6.8	13.9	23.2	1.0	2.0	9.9	Black Dermosol		4
44					6.1	8.3	8.6	9.8	18.1	25.8	1.0	5.1	8.5	Brown Dermosol		4
45					5.4	6.1	6.8	0.5	0.6	1.3	0.8	0.4	0.9	Stratic Rudosol		2
46					4.8	4.8	5.8	1.5	4.0	8.8	0.4	0.5	0.4	Stratic Rudosol		3
47	<5%				6.1	6.3	7.0	1.4	1.3	6.1*	1.7	0.5	0.7	Brown Vertosol	YES	4
48					6.1	8.8	8.7	11.3	11.7	19.1	1.6	4.0	9.2	Red Kandosol		4
49					5.3	5.7	6.0	0.8	1.0	1.7	0.5	0.5	0.2	Stratic Rudosol		3
50	<5%				7.8	7.9	8.0	0.2	0.2	0.6	1.7	1.4	1.3	Red Dermosol	YES	2
51	<5%				6.8	7.0	8.1	0.8	1.3	5.5	1.1	1.0	2.9	Brown Dermosol	YES	3
52	5-10%		95	50	5.8	6.9	7.9	0.5	1.1	1.3	0.5	1.0	1.6	Red Kandosol		2
53			40		5.4	6.3	7.3	1.2	2.2	4.0	1.4	1.7	1.4	Grey - Orthic Tenosol		4
54			50	30	5.1	5.5	7.0	1.1	1.8	6.3	0.7	0.5	0.7	Yellow Sodosol		4
55	<5%				5.1	6.0	6.8	0.6	0.7	2.9	0.6	0.5	0.4	Brown Dermosol	YES	3
56					5.5	6.6	8.5	1.4	4.2	8.7	0.9	0.8	3.6	Brown Sodosol		4
57	<5%				5.8	6.2	6.7	0.3	0.5	0.8	1.0	0.7	0.4	Black Dermosol	YES	2
58	5-10%				5.7	6.1	7.7	3.3	8.5	15.9	0.8	0.9	2.2	Grey Vertosol		4

Report Pit Number	Slope (%)	Gilgai	Depth to Rock (cm)	Depth to Mottles (cm)	pH CaCl2			ESP			Salinity (ECe, dS/m)			Australian Soil Classification: Fertility Status	BSAL? (if area >20ha)	LSC Class
					0-15cm	15-30-cm	30-60-cm	0-15cm	15-30-cm	30-60-cm	0-15cm	15-30-cm	30-60-cm			
59	5-10%				7.0	7.6	7.9	0.4	0.2	0.4	2.2	1.5	1.3	Brown Vertosol (Epipedal)	YES	3
60	>10%		110		6.5	6.8	8.2	1.3	2.5	6.2	0.8	0.7	2.6	Brown Vertosol		4
61					5.6	6.7	8.2	1.9	3.2	6.5	1.0	1.1	2.8	Red Sodosol		4
62			70	35	5.5	6.0	7.7	0.4	0.4	0.3	0.5	0.3	1.1	Black Dermosol		4
63			50		5.7	7.7	8.3	0.4	0.4	0.8	0.4	2.2	1.6	Red Dermosol		4
64			60		7.3	8.6	8.4	2.5	6.4	13.9	1.3	1.8	5.0	Grey Vertosol		4
65			50		5.9	6.9	8.2	2.8	4.8	7.6	0.6	0.7	3.4	Red Dermosol		4
66					6.8	8.3	8.6	5.3	6.4	12.2	0.9	2.2	4.4	Brown Vertosol		4
67			140		7.2	8.0	8.7	1.8	5.5	12.1	4.0	1.9	6.6	Grey Vertosol		4
68			110		7.2	7.0		3.6	0.7		5.8	0.8		Grey Vertosol		4
69			50		5.2	5.8	6.3	0.3	0.4	0.5	0.5	0.3	0.3	Brown - Orthic Tenosol		4
70			60		5.7	5.3	6.6	0.3	0.5	0.7	0.9	0.5	0.4	Red Dermosol		4
71					6.4	8.0	8.5	2.2	8.0	19.3	2.3	2.0	5.8	Brown Dermosol		4
72					6.0	6.8	8.5	2.5	3.9	9.4	1.1	0.6	3.1	Red Dermosol		4
73					5.3	7.8	8.6	5.8	12.2	16.0	1.7	2.1	3.8	Brown Dermosol		4
74					4.9	8.0	8.4	1.1	3.5	7.7	2.2	2.0	2.3	Red Sodosol		4
75					5.8	7.6	8.2	0.6	1.0	10.8	1.2	1.2	2.7	Stratic Rudosol		4
76	<5%				6.2	6.9	7.2	0.5	1.0	2.1	1.0	0.6	0.6	Grey Dermosol	YES	2
77			55		5.0	6.3	8.1	0.3	0.5	0.6	2.1	0.5	1.3	Yellow Dermosol		4
78					5.8	8.7	8.9	7.5	14.5	20.4	1.2	4.5	6.0	Brown Sodosol		4
79					4.9	6.4	8.9	3.7	7.1	16.2	1.4	0.8	4.6	Yellow Dermosol		4
80			80		5.8	6.6	8.7	2.5	5.0	11.1	1.0	0.8	4.2	Black Vertosol		4
81			70		4.8	7.8	8.7	4.7	11.1	21.4	0.8	4.1	8.3	Black Sodosol		4
82			35		6.5	7.1	8.1	0.3	0.4	0.3	1.0	0.5	0.9	Red - Orthic Tenosol		4
83			45		5.8	6.1	7.9	0.4	0.6	0.6	0.6	0.4	1.1	Red - Orthic Tenosol		4
84	5-10%				5.3	6.7	7.6	0.6	1.7	3.0	1.4	0.5	0.8	Red Dermosol	YES	2
85					6.5	8.1	8.5	4.1	11.7	21.4	1.7	4.1	10.7	Brown Vertosol		4
86					5.4	6.3	7.3	1.9	6.4	10.6	0.5	0.6	1.4	Stratic Rudosol		4
87					5.7	7.9	8.2	0.6	0.2	0.4	1.2	1.2	1.1	Red Chromosol		4

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					0-15cm	15-30-cm	30-60-cm	0-15cm	15-30-cm	30-60-cm	0-15cm	15-30-cm	30-60-cm			
88					5.6	6.7	8.5	4.5	9.6	20.9	1.0	0.8	9.1	Brown Sodosol		4
89			70		6.0	7.9	6.3	7.9	16.9	8.7	3.3	2.4	1.5	Grey Dermosol		4
90			65		5.7	7.1	8.5	2.6	6.4	12.9	0.5	0.8	4.8	Brown Sodosol		4
91					5.4	5.7	6.8	0.9	2.1	4.8	0.7	0.4	0.4	Stratic Rudosol		3
92					5.0	5.9	7.7	3.4	5.6	12.9	0.4	0.7	2.2	Red Sodosol		4
93				80	5.4	5.4	5.9	0.6	0.9	1.3	0.4	0.3	0.5	Stratic Rudosol		5
94			100		6.1	7.4	8.6	4.1	9.8	15.3	0.9	1.5	6.3	Brown Vertosol		4
95					7.5	8.4	8.5	3.0	5.1	10.6	2.6	1.8	4.0	Black Vertosol		4
96					5.5	7.2	7.9	2.4	5.9	9.7	3.7	0.9	0.9	Black Vertosol		3
97			35	8	6.6	5.9		1.4	0.4		1.0	1.1		Yellow - Orthic Tenosol		4
98			65		6.1	7.5	8.6	4.5	10.0	14.1	1.5	1.4	4.1	Brown Sodosol		4
99				60	7.5	8.5	8.5	2.1	5.5	12.8	2.5	1.8	3.7	Brown Vertosol		4
100					4.9	7.1	8.5	6.4	21.6	28.5	0.6	1.3	4.0	Red Sodosol		4
101			90		5.8	8.4	8.9	7.8	13.4	26.9	1.2	3.9	10.6	Grey Sodosol		4
102			60		6.9	7.4	8.4	7.6	9.6	13.7	1.3	2.0	4.5	Brown Sodosol		4
103			75		6.6	6.9	8.1	2.5	9.2	17.1	1.6	1.1	5.6	Brown Sodosol		4
104					5.4	6.4	8.0	5.7	10.4	18.2	2.3	0.7	2.7	Brown Sodosol		4
105					5.4	5.6	7.3	1.4	1.5	6.0	0.6	0.3	0.5	Red Sodosol		4
106			70		5.7	6.2	6.9	3.4	9.5	14.7	1.2	0.8	1.1	Brown Kandosol		4
107					7.8	8.5	8.6	6.6	11.5	24.1	2.9	2.2	7.3	Brown Vertosol		4
108			65		6.8	8.1	8.8	6.6	14.5	19.9	1.3	2.8	6.2	Grey - Orthic Tenosol		4
109					5.1	7.9	8.5	8.2	22.8	23.0	0.7	5.9	12.6	Grey Sodosol		4
110					5.4	8.1	9.0	14.6	21.9	26.4	1.1	2.6	7.0	Brown Sodosol		4
111					5.4	6.3	7.6	5.9	11.7	21.3	0.8	1.2	5.2	Brown Dermosol		4
112					5.4	7.2	8.6	3.5	9.8	12.8	2.2	1.2	2.9	Red Dermosol		4
113				40	4.8	5.3	6.5	0.7	0.8	1.2	1.3	0.6	0.4	Red Chromosol		4
114					5.7	7.4	8.4	1.4	4.0	8.9	1.3	0.8	2.4	Red Sodosol		4
115					4.5	8.3	8.7	9.1	23.9	19.0	1.9	4.2	7.7	Brown Sodosol		4
116			110		7.1	8.1	8.7	11.9	17.6	24.3	2.2	4.6	14.5	Grey Vertosol		4
117			55		5.7	7.8	8.8	5.4	12.7	14.5	1.8	2.1	6.5	Black Vertosol		4

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					0-15cm	15-30-cm	30-60-cm	0-15cm	15-30-cm	30-60-cm	0-15cm	15-30-cm	30-60-cm			
118					5.6	7.0	8.3	5.1	13.2	19.3	1.3	0.9	5.3	Brown Sodosol		4
119					4.6	5.4	6.7	2.1	2.1	4.6	1.7	0.5	0.4	Red Sodosol		4
120			45		5.3	6.9	8.0	0.4	0.9	0.8	1.8	1.0	0.9	Red Chromosol		4
121					5.0	6.3	7.0	0.6	0.9	4.4	1.8	0.6	0.5	Stratic Rudosol		4
122					5.7	8.5	8.6	4.8	14.7	33.9	1.3	4.9	8.0	Red Sodosol		4
123					6.3	7.1	8.6	3.6	8.0	17.5	1.5	1.5	6.6	Black Vertosol		4
124														Brown Sodosol		4
125					5.9	8.4	8.8	7.8	9.9	16.7	1.5	2.4	6.4	Brown Sodosol		4
126				65	5.0	6.4	7.9	2.3	10.2	16.6	0.5	0.7	1.5	Brown Sodosol		4
127d		Linear			7.9	8.1	8.4	0.5	2.0	6.9	1.4	1.4	2.2	D Brown Vertosol		4
127p		Linear			7.9	8.1	8.4	0.3	1.1	7.1	1.2	1.4	2.2	P Yellow Vertosol		4
128	5-10%		80		6.5	6.8	8.1	0.4	0.6	0.7	2.4	0.8	1.3	Brown Chromosol (Hypocalcic)	YES	4
129					6.7	7.8	8.2	0.2	0.6	0.5	1.6	1.0	1.1	Grey Vertosol		4
130			90		5.5	8.4	8.7	11.1	27.7	27.9	1.1	3.7	11.2	Red Sodosol		4
131			60		4.6	6.1	7.6	0.5	0.8	0.6	1.4	0.5	1.7	Red Chromosol		4
132					6.7	7.9	8.3	0.7	0.3	2.5	1.0	1.0	0.9	Brown Vertosol		4
133			65		6.3	7.6	8.4	7.1	16.2	24.2	0.9	1.7	11.6	Grey Sodosol		4
134				85	6.2	8.4	8.5	6.2	12.6	25.1	1.1	3.5	10.9	Brown Dermosol		4
135					6.3	8.6	8.9	9.6	15.2	21.6	0.8	4.6	9.9	Brown Kandosol		4
136				30	7.5	8.0	8.4	0.4	0.6	1.5	1.5	2.0	1.4	Brown Vertosol		4
137			45		6.2	6.7	7.3	0.8	1.8	2.3	1.0	0.6	0.8	Brown Dermosol		4
138					5.3	5.6	7.6	1.3	4.1	11.7	1.1	0.6	1.2	Red Sodosol		4
139					5.1	7.0	8.1	0.5	0.6	1.3	1.4	1.0	1.7	Red Chromosol	YES	4
140	>10%				5.5	5.4	6.6	0.6	1.4	4.4	1.8	0.5	0.8	Red Chromosol		4
141					6.3	8.7	8.7	12.2	19.9	28.3	2.2	4.6	12.0	Brown Sodosol		4
142			55		5.6	7.7	8.2	0.7	0.3	0.3	2.2	1.6	2.3	Brown Dermosol		4
143			70		5.4	6.9	8.7	2.6	5.2	8.7	3.2	1.0	2.8	Brown Dermosol		4
144			60		6.1	6.8	8.1	0.3	0.4	0.3	1.2	0.5	1.6	Brown Dermosol		4
145					5.2	8.3	8.6	3.5	11.5	21.2	1.9	3.4	6.4	Brown Sodosol		4
146					6.9	8.3	8.5	5.0	10.6	17.3	1.6	3.1	6.6	Black Sodosol		4

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					0-15cm	15-30-cm	30-60-cm	0-15cm	15-30-cm	30-60-cm	0-15cm	15-30-cm	30-60-cm			
147					6.2	7.6	8.4	0.5	2.3	6.4	0.9	1.5	2.3	Brown Sodosol		4
148					6.7	7.9	8.2	0.9	4.5	6.2	1.4	1.7	2.6	Brown Sodosol		4
149			95		5.8	5.9	7.9	2.0	3.9	14.1	0.5	0.5	2.8	Stratic Rudosol		3
150					8.3	6.7	8.3	11.3	2.9	14.7	6.5	1.7	10.9	Red Vertosol		4
151				50	5.6	7.2	8.5	1.0	2.0	3.9	1.3	0.8	1.3	Red Dermosol		4
152			50		5.6	6.7	8.0	0.6	0.9	1.4	2.0	0.8	1.2	Brown Dermosol		4
153				40	6.7	7.9	8.1	0.1	0.2	0.3	2.1	1.2	1.2	Red Dermosol		4
154					6.0	7.9	8.5	3.2	6.9	22.8	1.5	2.3	10.6	Red Sodosol		4
155					7.6	8.1	8.4	1.6	2.8	8.4	1.5	1.7	3.2	Grey Vertosol		4
156					5.8	7.6	8.4	1.3	7.5	11.9	1.2	0.9	4.4	Red Sodosol		4
157					7.6	8.3	8.5	2.2	7.8	17.2	2.1	2.9	7.9	Brown Dermosol		4
158			75	20	4.8	6.8	7.7	0.6	0.9	2.2	3.9	0.6	1.1	Red Chromosol		4
159					6.6	7.3	7.7	1.6	3.7	5.4	0.7	0.6	1.1	Stratic Rudosol		2

*** Although ESP values are greater than 6.0, this is no considered to be a chemical barrier to effective rooting depth as there is no evidence of subsoil waterlogging**