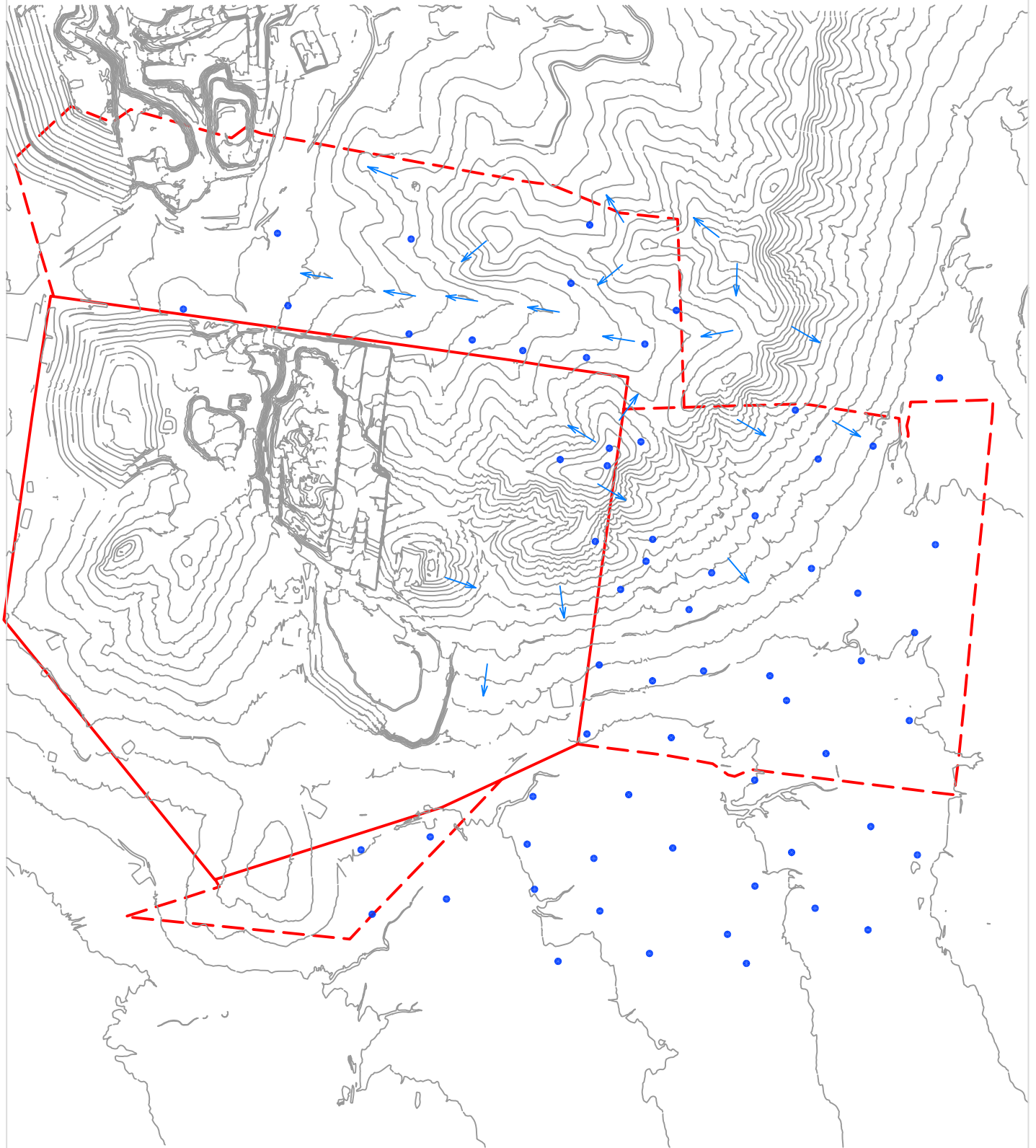


Maps

Tarrawonga Coal Project - Soil Survey



"Tarrawonga" Coal Project
Soil Survey Tarrawonga Coal Pty Ltd
Gunnedah NSW
Elevation data (5m interval)

Map 1 of 12

KEY

- Soil Pit Locations
- Contours (Metres a.s.l., 5m Intervals)
- ↘ Direction of flow of water

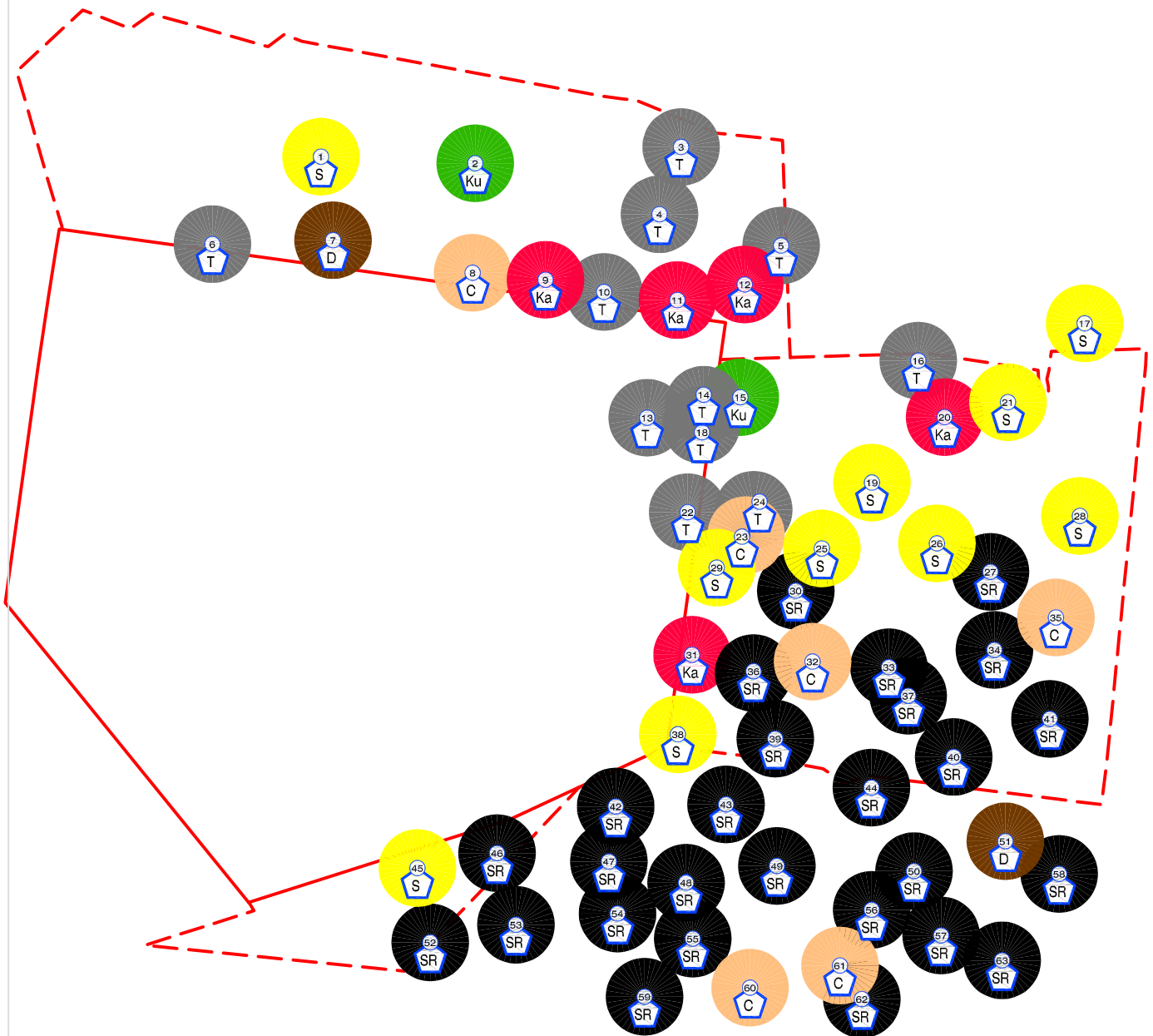
Elevation data provided by Tarrawonga Coal Pty Ltd



0 200 400 600
Metres



Tarrawonga Coal Project - Soil Survey



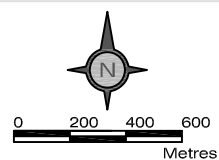
"Tarrawonga" Coal Project
 Soil Survey Tarrawonga Coal Pty Ltd
 Gunnedah NSW
 Soil Types; Australian Soil Classification

Map 2 of 12

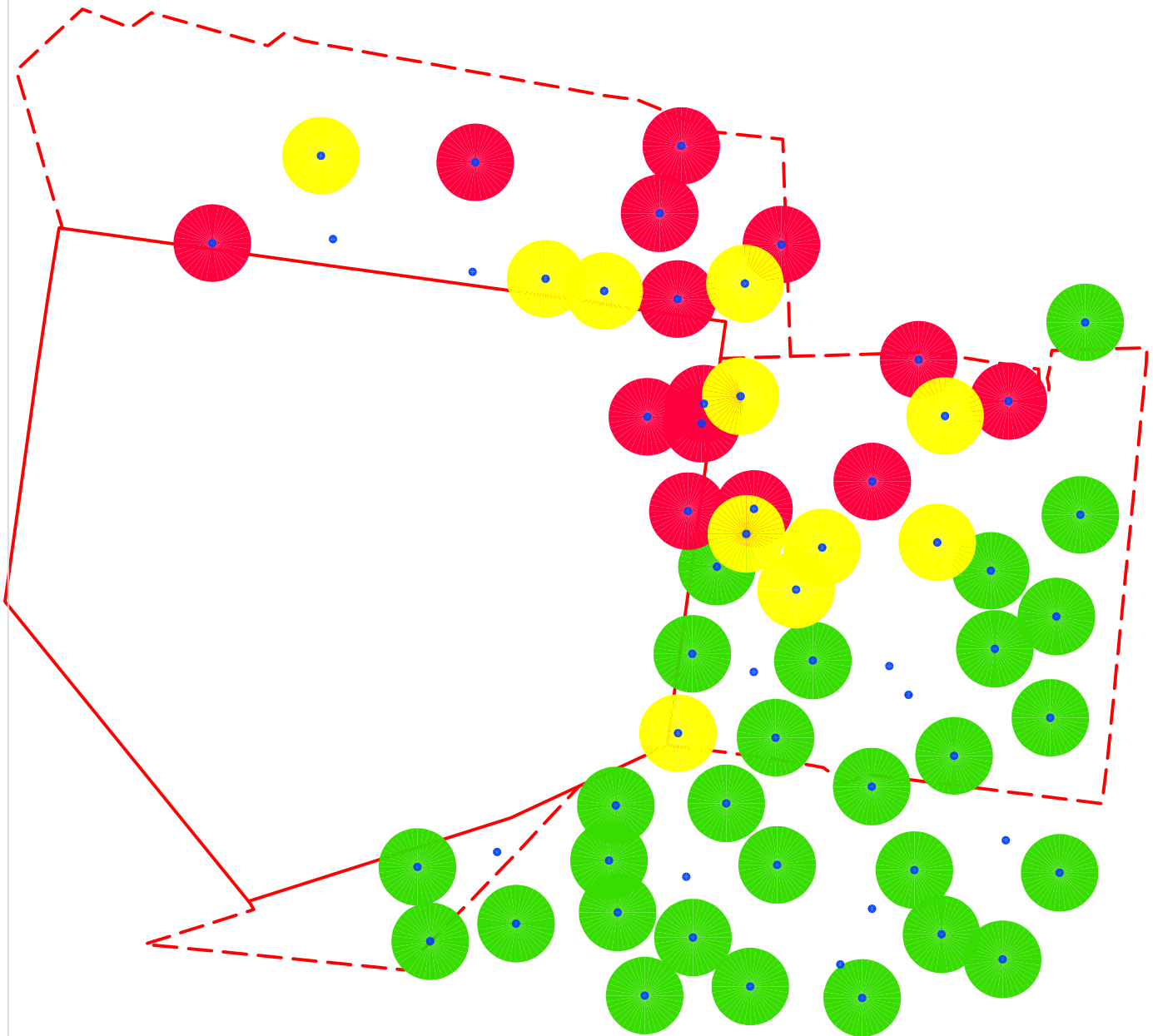
KEY	
	Stratlic Rudosol (SR)
	Tenosol (T)
	Chromosol (C)
	Sodosol (S)
	Kurosol (Ku)
	Kandosol (Ka)
	Dermosol (D)

Soil types; Australian Soil Classification

Pit ID
 Soil Type



Tarrawonga Coal Project - Soil Survey

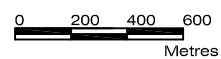
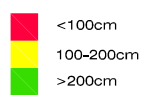


"Tarrawonga" Coal Project
Soil Survey Tarrawonga Coal Pty Ltd
Gunnedah NSW

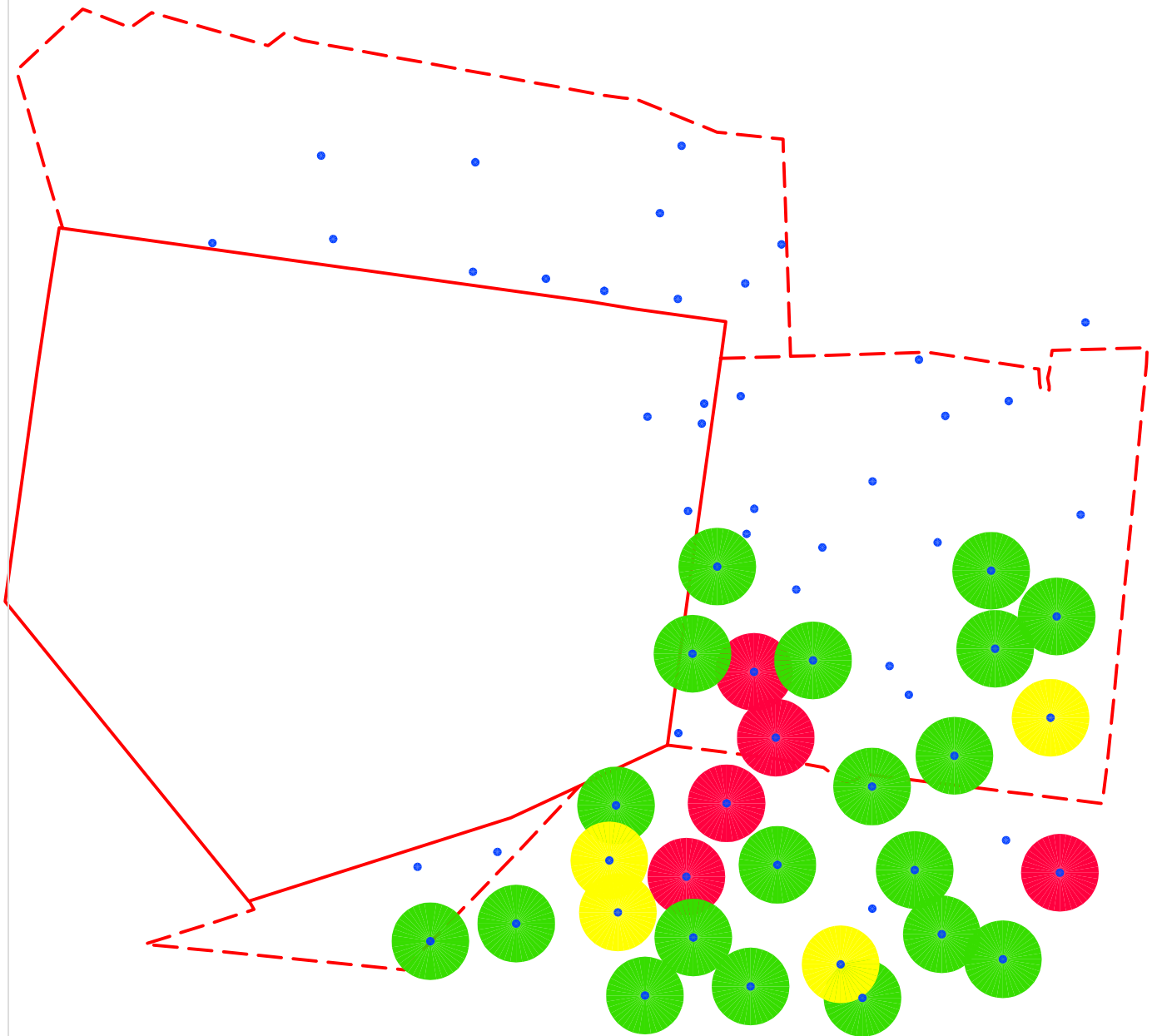
Depth to rock

Map 3 of 12

KEY Depth to rock

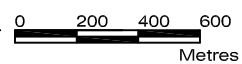


Tarrawonga Coal Project - Soil Survey

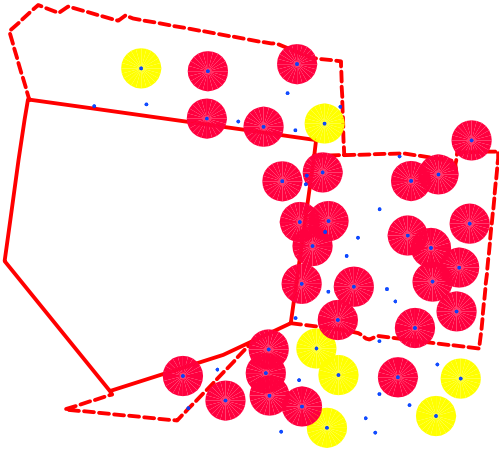


"Tarrawonga" Coal Project
Soil Survey Tarrawonga Coal Pty Ltd
Gunnedah NSW
Depth to gravel/sand layers
in alluvium/colluvium
Map 4 of 12

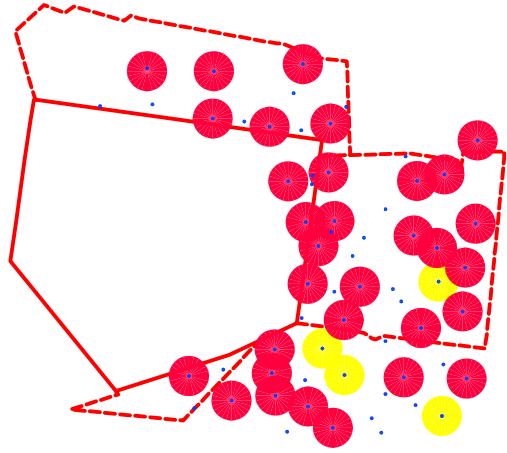
KEY Depth to gravel /sand layers in alluvium/colluvium



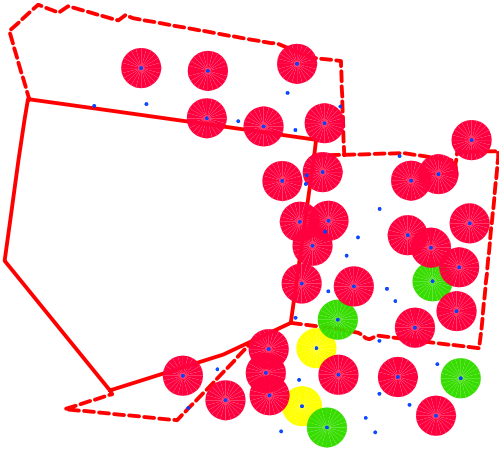
Tarrawonga Coal Project - Soil Survey



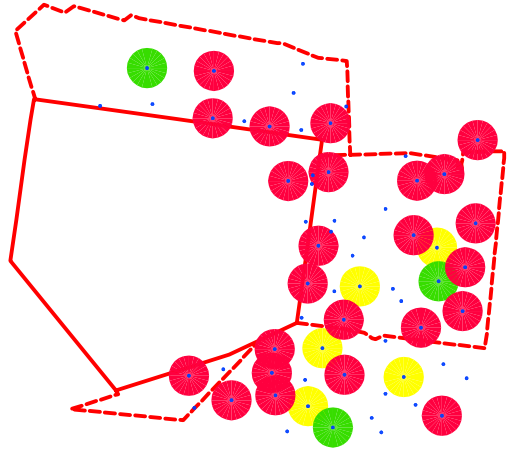
Dispersion; ASWAT score
0 - 15cm



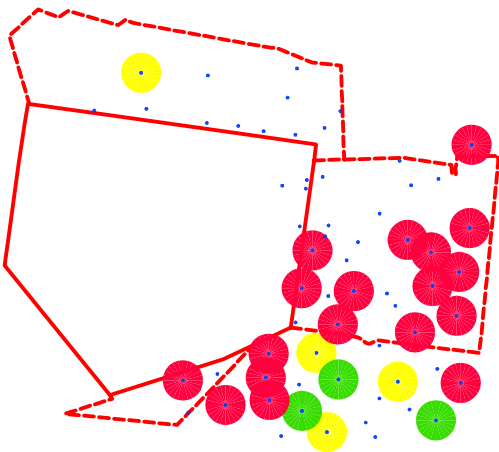
Dispersion; ASWAT score
15-30cm



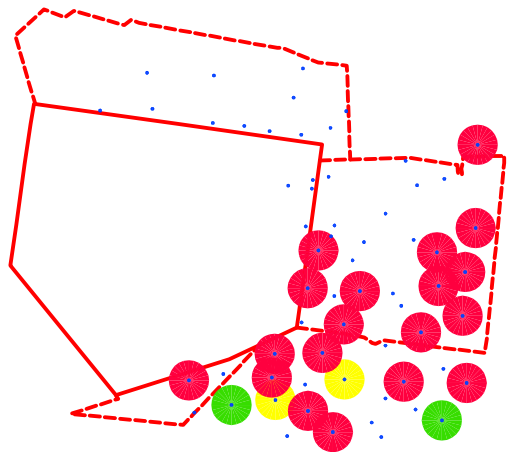
Dispersion; ASWAT score
30 - 60cm



Dispersion; ASWAT score
60-90cm



Dispersion; ASWAT score
2m



Dispersion; ASWAT score
3m

"Tarrawonga" Coal Project
Soil Survey Tarrawonga Coal Pty Ltd
Gunnedah NSW

Dispersion; ASWAT scores
Map 5 of 12

KEY

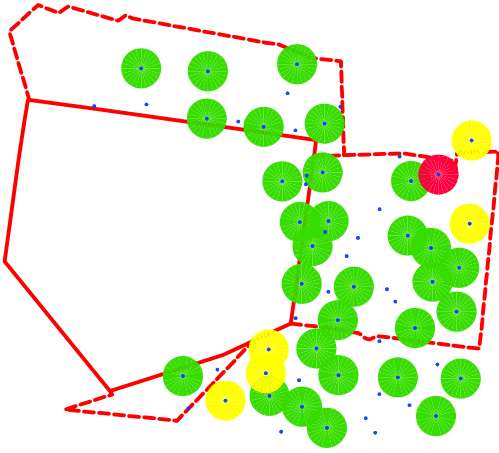
- Soil Pit Locations
- ASWAT score > 6
- ASWAT score 2 - 6
- ASWAT score < 2



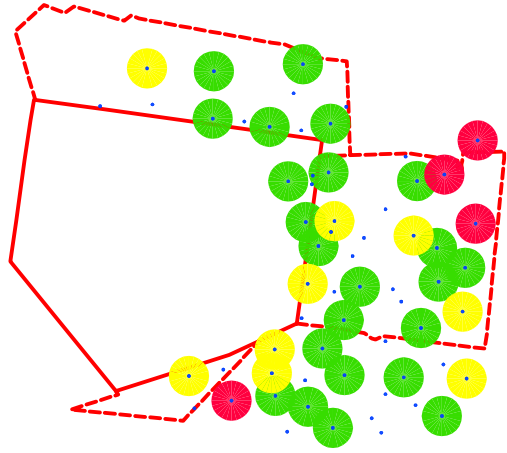
0 400 800 1200
Metres



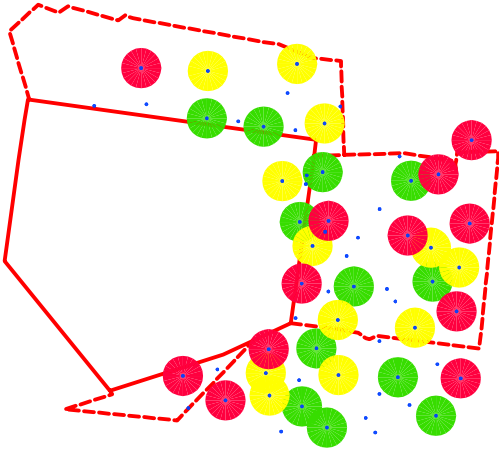
Tarrawonga Coal Project - Soil Survey



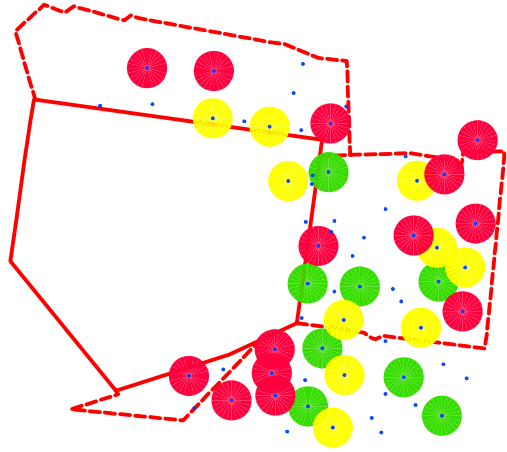
Dispersion; ESP Value
0 - 15cm



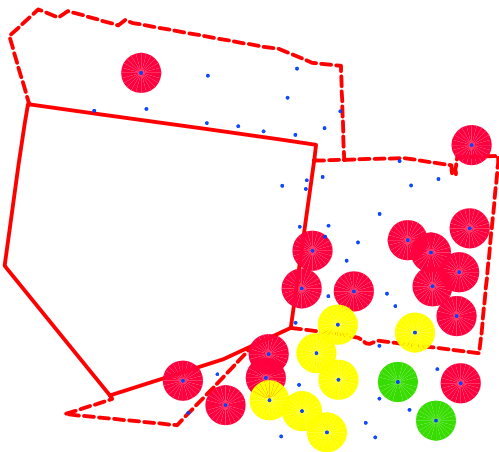
Dispersion; ESP Value
15-30cm



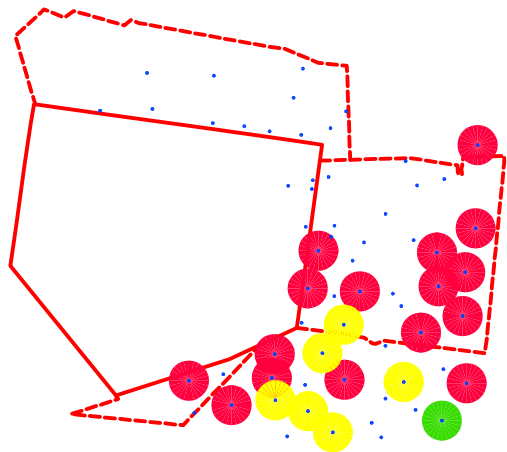
Dispersion; ESP Value
30 - 60cm



Dispersion; ESP Value
60-90cm



Dispersion; ESP Value
2m

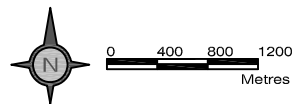


Dispersion; ESP Value
3m

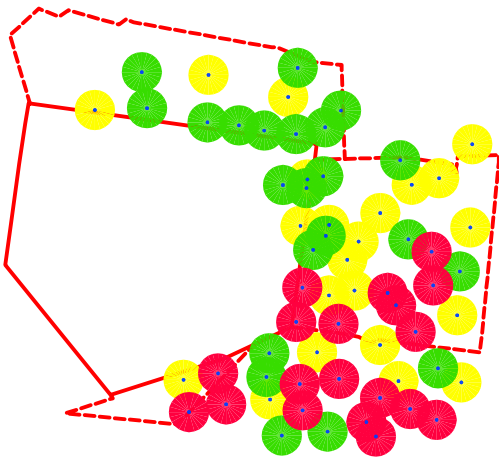
"Tarrawonga" Coal Project
Soil Survey Tarrawonga Coal Pty Ltd
Gunnedah NSW

Dispersion; ESP values
Map 6 of 12

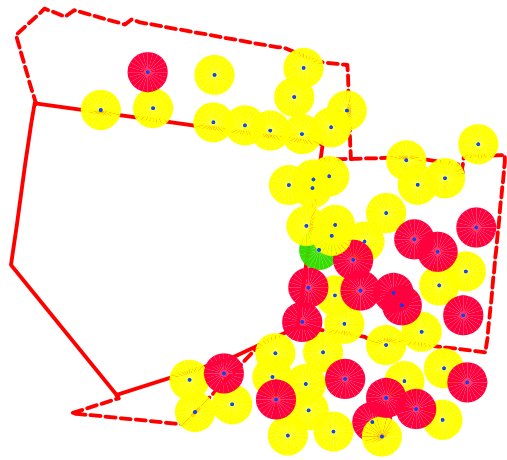
- KEY**
- Soil Pit Locations
 - ESP Value > 6
 - ESP Value 2 - 6
 - ESP Value < 2



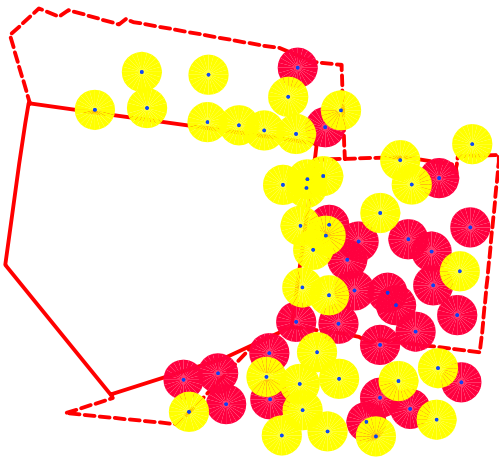
Tarrawonga Coal Project - Soil Survey



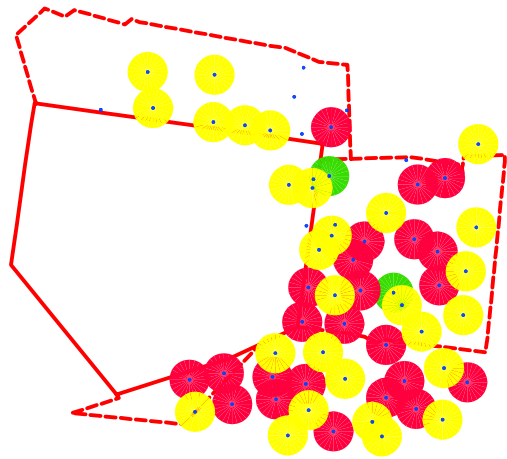
Compaction severity - SOILpak score
0 - 15cm



Compaction severity - SOILpak score
15-30cm



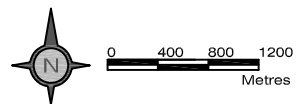
Compaction severity - SOILpak score
30 - 60cm



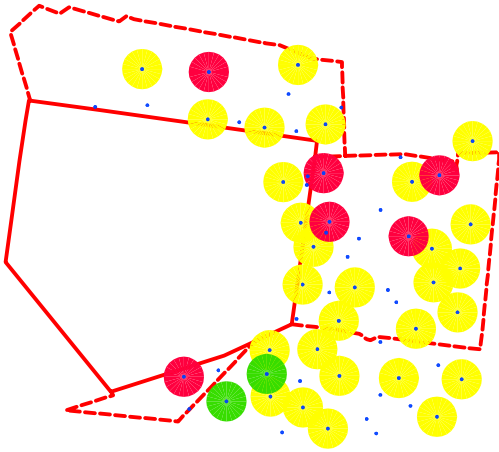
Compaction severity - SOILpak score
60-90cm

KEY

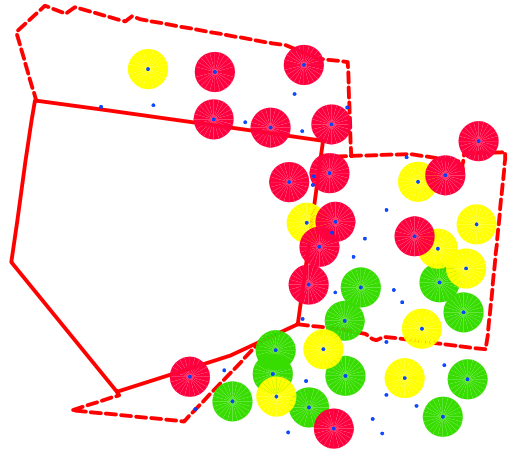
- Soil Pit Locations
- SOILpak score < 1
- SOILpak score 1.0 - 1.5
- SOILpak score > 1.5



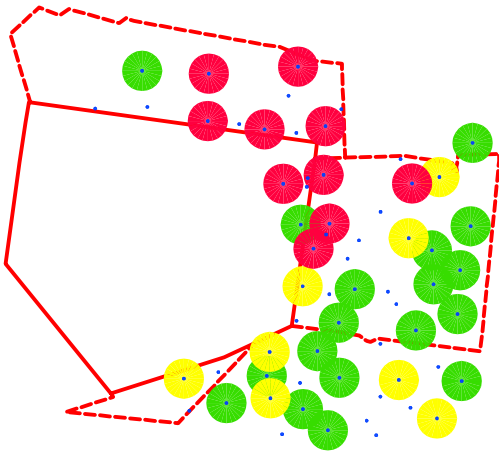
Tarrawonga Coal Project - Soil Survey



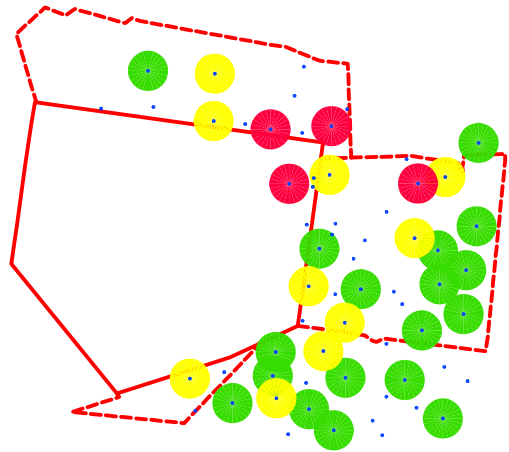
Cation Exchange Capacity (meq/100g)
0 - 15cm



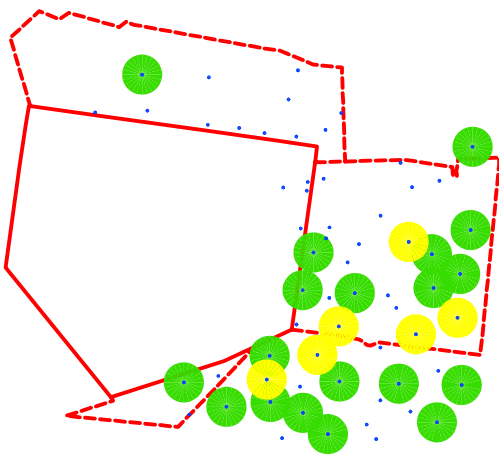
Cation Exchange Capacity (meq/100g)
15-30cm



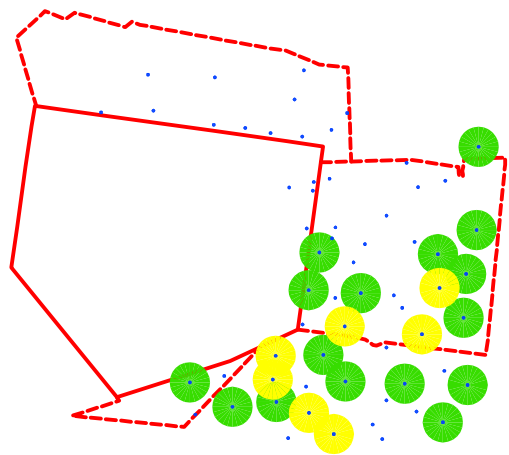
Cation Exchange Capacity (meq/100g)
30 - 60cm



Cation Exchange Capacity (meq/100g)
60-90cm



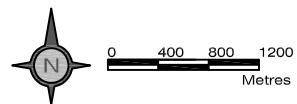
Cation Exchange Capacity (meq/100g)
2m



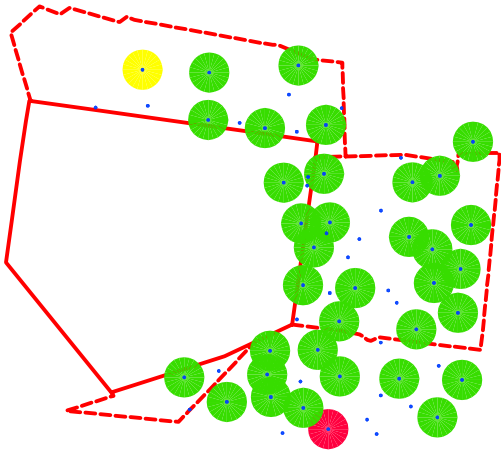
Cation Exchange Capacity (meq/100g)
3m

"Tarrawonga" Coal Project
Soil Survey Tarrawonga Coal Pty Ltd
Gunnedah NSW
Cation Exchange Capacity
(meq/100g)
Map 8 of 12

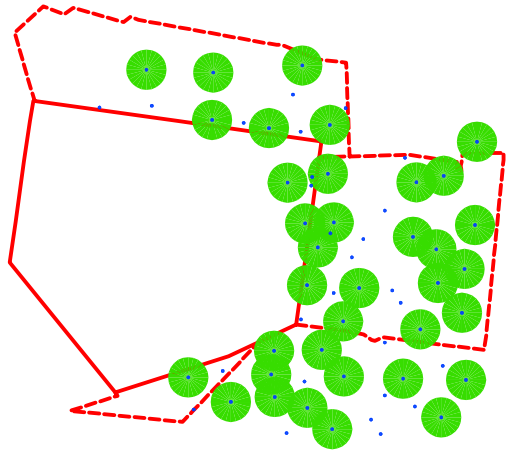
- KEY**
- Soil Pit Locations
 - Cation Exchange Capacity < 5
 - Cation Exchange Capacity 5 - 15
 - Cation Exchange Capacity > 15



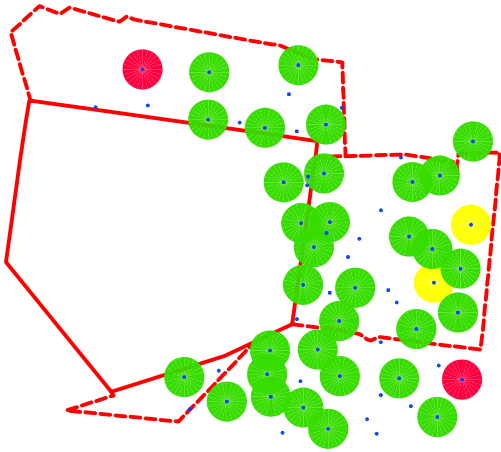
Tarrawonga Coal Project - Soil Survey



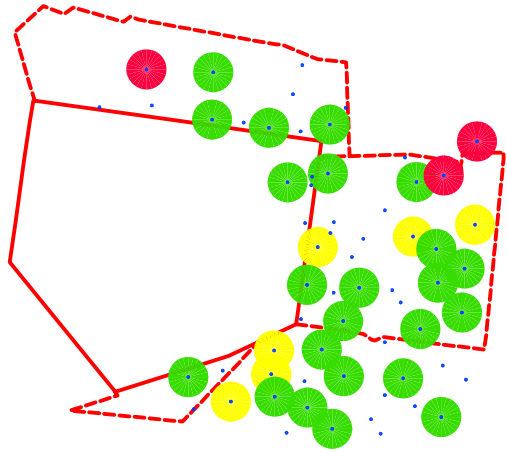
electrical conductivity
(EC_e , dS/m) 0 - 15cm



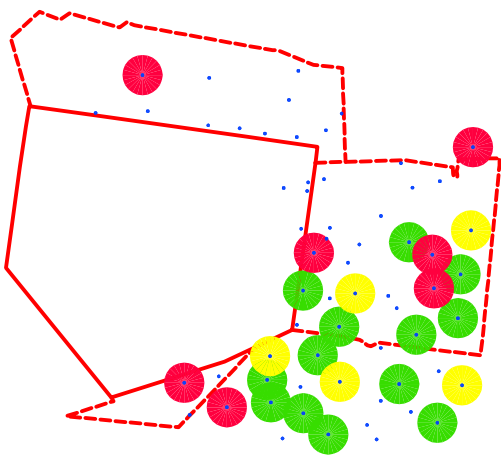
electrical conductivity
(EC_e , dS/m) 15-30cm



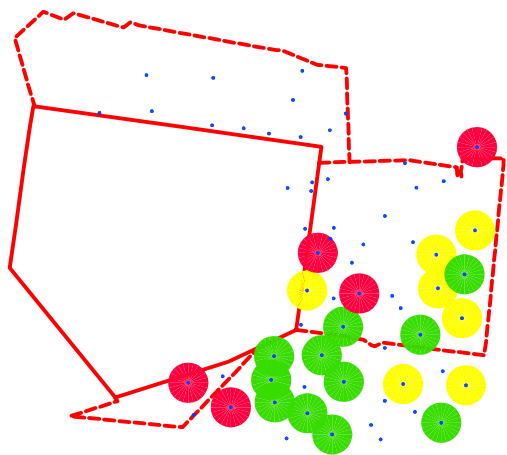
electrical conductivity
(EC_e , dS/m) 30 - 60cm



electrical conductivity
(EC_e , dS/m) 60-90cm



electrical conductivity
(EC_e , dS/m) 2m



electrical conductivity
(EC_e , dS/m) 3m

"Tarrawonga" Coal Project
Soil Survey Tarrawonga Coal Pty Ltd
Gunnedah NSW
Salinity; electrical conductivity
(EC_e , dS/m)
Map 9 of 12

KEY

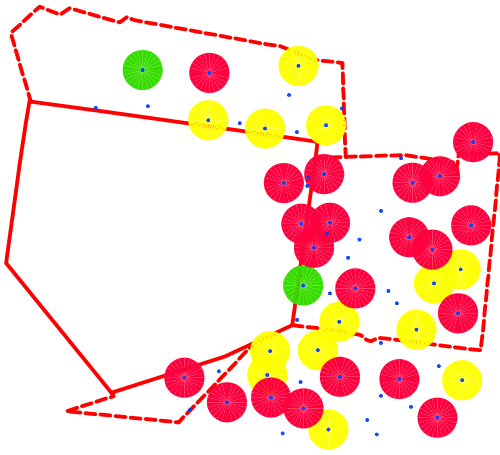
- Soil Pit Locations
- electrical conductivity > 3.0
- electrical conductivity $1.5 - 3.0$
- electrical conductivity < 1.5



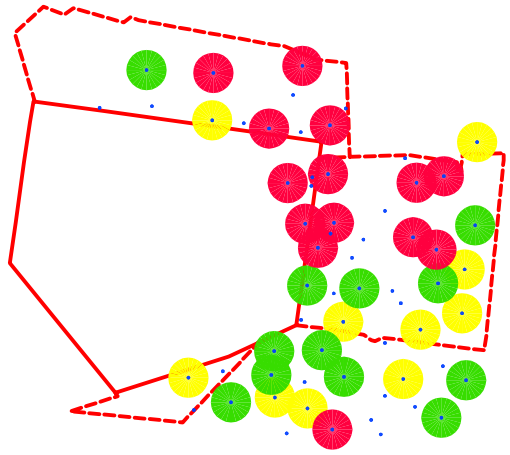
0 400 800 1200
Metres



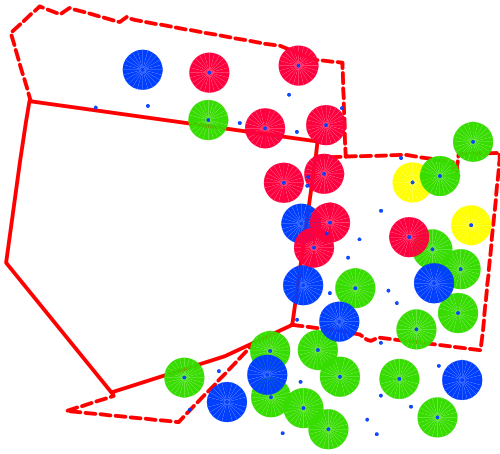
Tarrawonga Coal Project - Soil Survey



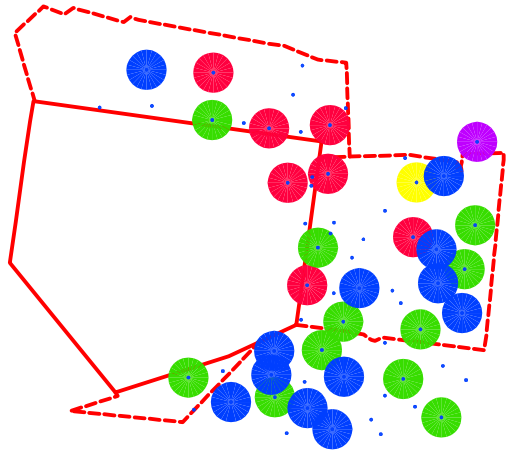
pH (CaCl₂)
0 - 15cm



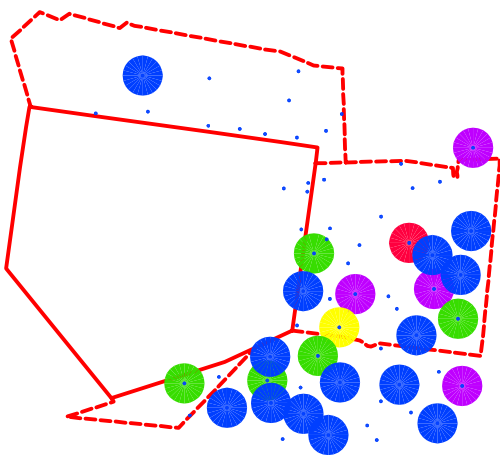
pH (CaCl₂)
15-30cm



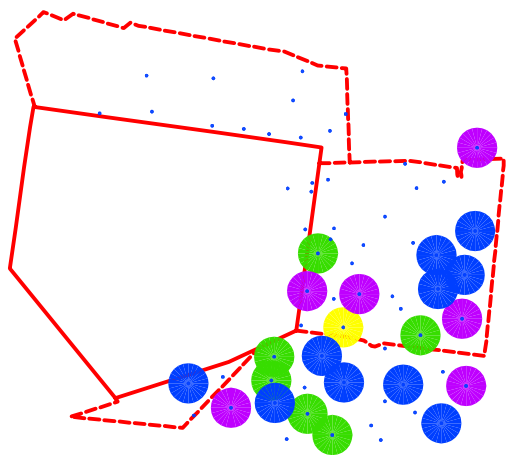
pH (CaCl₂)
30 - 60cm



pH (CaCl₂)
60-90cm



pH (CaCl₂)
2m



pH (CaCl₂)
3m

"Tarrawonga" Coal Project
Soil Survey Tarrawonga Coal Pty Ltd
Gunnedah NSW

pH (CaCl₂)

Map 10 of 12

KEY

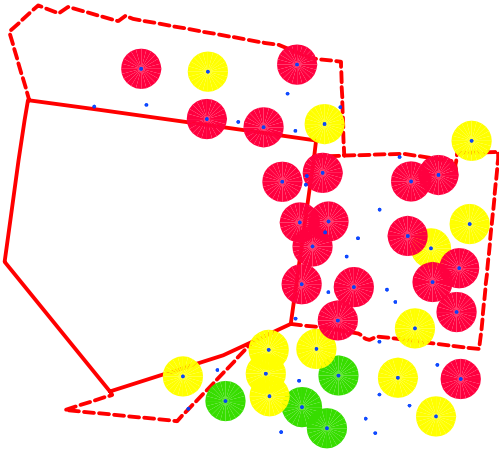
- Soil Pit Locations
- pH > 8.5
- pH 7.6 - 8.5
- pH 6.1 - 7.5
- pH 5.5 - 6.0
- pH < 5.5



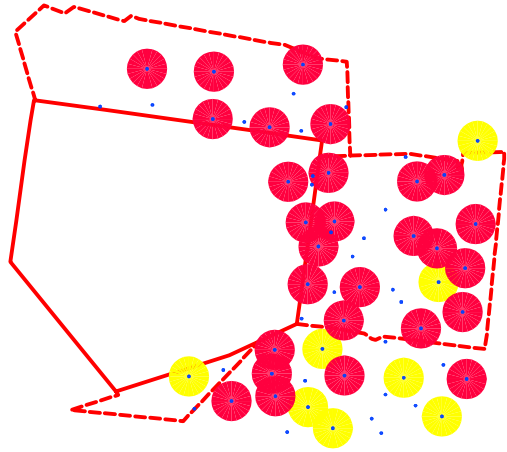
0 400 800 1200
Metres



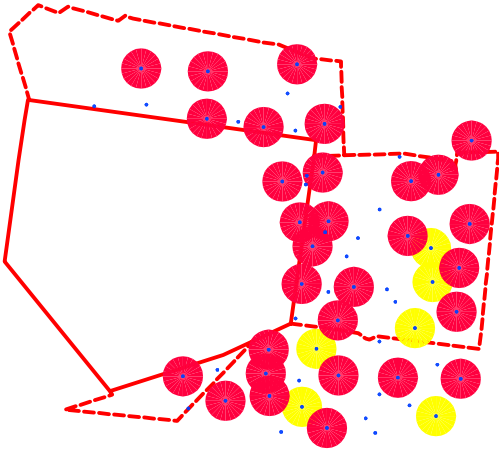
Tarrawonga Coal Project - Soil Survey



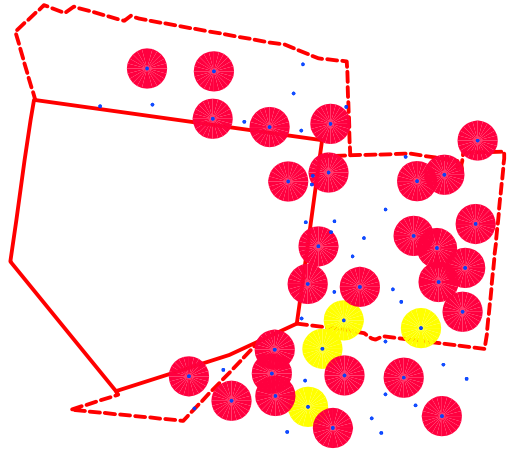
Phosphorus (Colwell P, mg/kg)
0 - 15cm



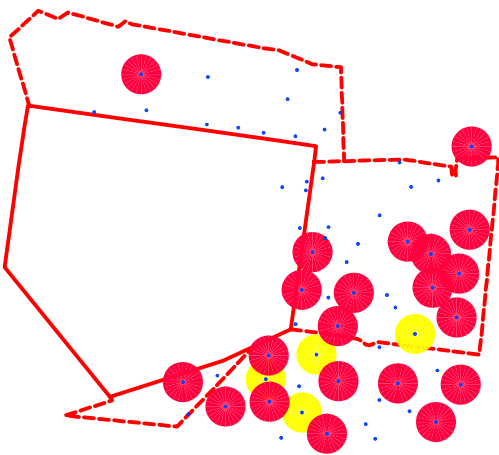
Phosphorus (Colwell P, mg/kg)
15-30cm



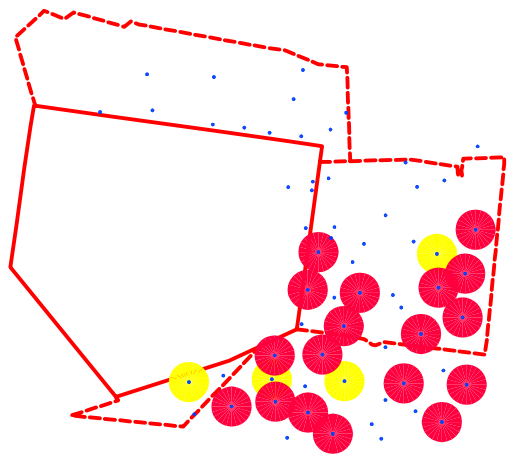
Phosphorus (Colwell P, mg/kg)
30 - 60cm



Phosphorus (Colwell P, mg/kg)
60-90cm



Phosphorus (Colwell P, mg/kg)
2m

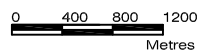


Phosphorus (Colwell P, mg/kg)
3m

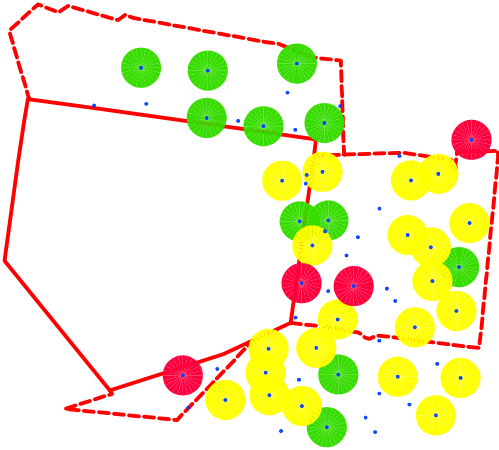
"Tarrawonga" Coal Project
Soil Survey Tarrawonga Coal Pty Ltd
Gunnedah NSW
Phosphorus (Colwell P, mg/kg)

KEY

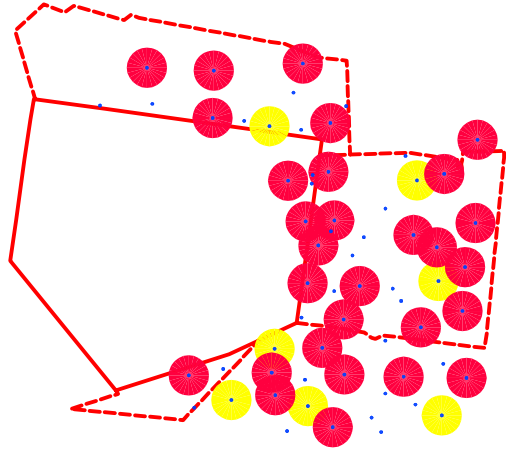
- Soil Pit Locations
- Phosphorus (Colwell P, mg/kg) < 10
- Phosphorus (Colwell P, mg/kg) 10 - 30
- Phosphorus (Colwell P, mg/kg) > 30



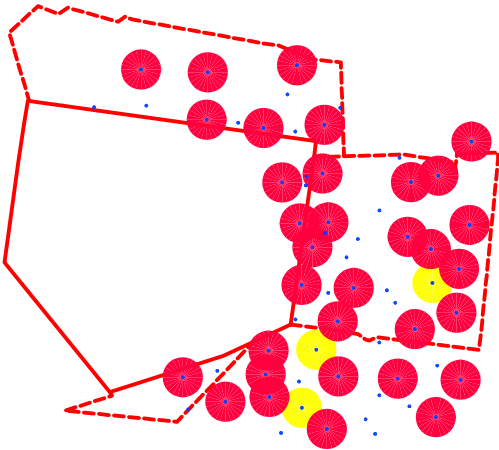
Tarrawonga Coal Project - Soil Survey



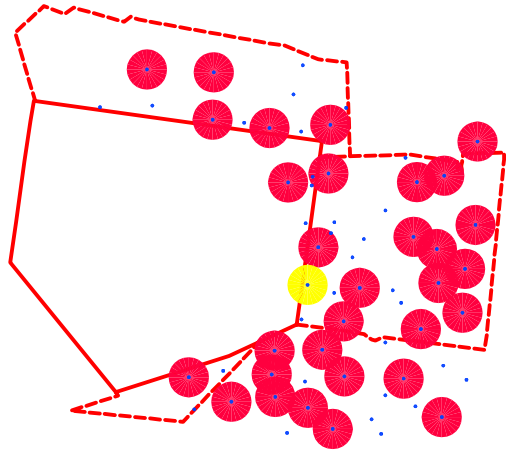
Organic Carbon (%)
0 - 15cm



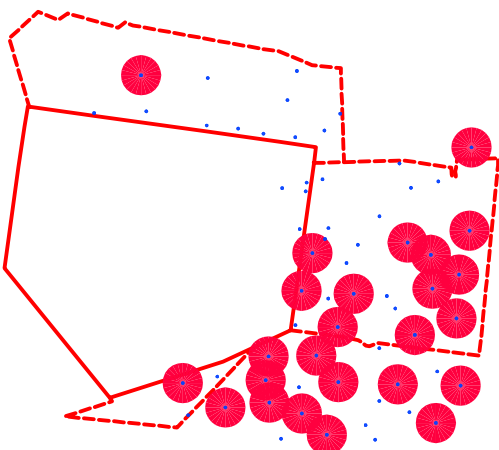
Organic Carbon (%)
15-30cm



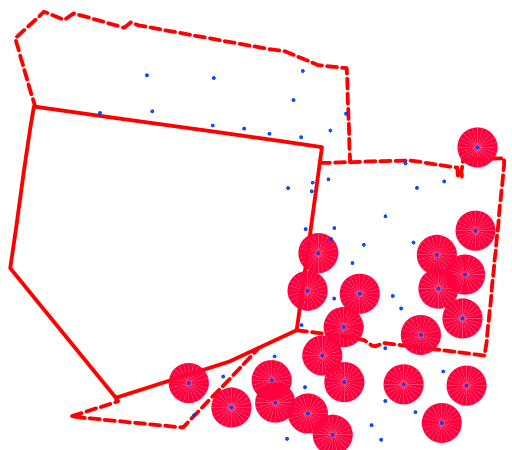
Organic Carbon (%)
30 - 60cm



Organic Carbon (%)
60-90cm



Organic Carbon (%)
2m



Organic Carbon (%)
3m

Appendix 1 Pre-existing Soil Information

1.1 SPADE Data

Soil Essentials Report

Page 1 of 1

NSW SOIL AND LAND INFORMATION SYSTEM



Soil Essentials Report

Site Location: Boggabri - 500m South East of "Thuin"

Map Reference: MGA Grid Reference : Easting 228141, Northing 6605552 BOGGABRI (8936) 1:100,000 sheet

Profile Details: Soil Landscapes of the Boggabri 1:100 000 Sheet Survey, Profile 96, collected by Robert Banks on August 16, 2001

Physiography: hillcrest in low hills under woodland grass u'storey on conglomerate lithology and used for timber/scrub/unused , Slope 4 % (measured) , aspect east . profile is mod. well drained , erosion hazard is slight , and no salting evident

Soil Type: Bleached Eutrophic Brown Chromosol (ASC) , Non-calcic Brown Soil (GSG)

Profile Field Notes: ERD = 2m

Soil Description:

Layer 0

Layer 1
00.00 -
00.20 m
A1 Horizon
sandy loam with massive structure (earthy) , many (25-100/10x10cm) roots (<1mm) , field pH is 6 . Coarse fragments are as parent material ; smooth clear (20-50 mm) boundary to...

Layer 2
00.20 -
00.55 m
A2 conspicuously bleached Horizon
sandy loam with massive structure (earthy) , many (25-100/10x10cm) roots (<1mm) , field pH is 6 . Coarse fragments are as parent material ; smooth gradual (50-100 mm) boundary to...

Layer 3
00.55 -
00.70 m
B2 Horizon
sandy clay loam with weak pedality (angular blocky , smooth-faced peds) , many (25-100/10x10cm) roots (<1mm) , field pH is 6 . Coarse fragments are as parent material ; smooth gradual (50-100 mm) boundary to...

Laboratory Test Data:

Upper Bound	Lower Bound	% Clay	USCS	PH	EC	OC	Bray P	P Sorbt	Exch Al	Exch Ca	Exch K	Exch Mg	Exch Na
00.00	00.20												
00.20	00.55												
00.55	00.70												

For information on laboratory test data and units of measure, please see the SPADE Help page

SALIS Soil Essentials Report

To contact us email: soils@dnr.nsw.gov.au
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Thu May 05 17:43:16 EST 2011

http://spade.dnr.nsw.gov.au/SoilEssentials.jsp?p_profile_id=66732

5/05/2011

NSW SOIL AND LAND INFORMATION SYSTEM



Soil Essentials Report

Site Location: SOUTHERN SITE, LEARD STATE FOREST

Map Reference: MGA Grid Reference : Easting 227205, Northing 6608489 BOGGABRI (8936)
1:100,000 sheet

Profile Details: BOGGABRI COAL CONSULTANCY Survey, Profile 102, collected by John Wood on February 03, 1993

Physiography: plain under dry sclerophyll forest on not identified lithology and used for timber/scrub/unused ; Slope 1 % (measured) , elevation 287 m , profile is imperfectly drained , erosion hazard is slight , and no salting evident

Soil Type: Db1.43 (PPF)

Soil Description:

Layer 0

Layer 1
00.00 -
00.15 m
A1 Horizon
loam with single grained (granular < 2 mm) , many (25-100/10x10cm) roots (<1mm) . common (10-25/10x10cm) roots (1-2mm) , common (10-25/10x10cm) roots (2-5mm) , few (1-2/10x10 cm) roots (>5mm) , field pH is 6.5 . Coarse fragments are not identified , fine gravel (2-6 mm),gravel (6-20 mm),cobbles (60-200 mm) , and not identified , cobbles (60-200 mm) , pans are not evident . Layer notes are: Sand fraction is coarse. ; smooth sharp (<5 mm) boundary to...

Layer 2
00.15 -
00.65 m
A2 Horizon
sandy loam with massive structure many (25-100/10x10cm) roots (<1mm) , few (1-10/10x10cm) roots (1-2mm) , few (1-10/10x10cm) roots (2-5mm) , few (1-2/10x10 cm) roots (>5mm) , field pH is 6 . Coarse fragments are not identified , fine gravel (2-6 mm),gravel (6-20 mm) , pans are discontinuous , nodular , silcrete . Layer notes are: Very hard. Indurated. White. Calcrete orsilcrete possible. Alot of small gravel.Question if leached as A2. ; irregular abrupt (5-20 mm) boundary to...

Layer 3
00.65 -
00.85 m
B silicate clay
Horizon
clay loam,clay loam with moderate pedality (sub-angular blocky 5 - 10 mm) , few (1-10/10x10cm) roots (1-2mm) , few (1-10/10x10cm) roots (2-5mm) , few (1-2/10x10 cm) roots (>5mm) , field pH is 8.5 , pans are discontinuous , nodular , red-brown hardpan . Layer notes are: Hard. Some red/brown mottling. Strong pedality - few large breaking into common medium sub-angular blocks. Very high pH. Sodidity? No salts?= dispersibility.

Laboratory Test Data:

Upper Bound	Lower Bound	% Clay	USCS	PH	EC	OC	Bray P	P Sorbt	Exch Al	Exch Ca	Exch K	Exch Mg	Exch Na
-------------	-------------	--------	------	----	----	----	--------	---------	---------	---------	--------	---------	---------

For information on laboratory test data and units of measure, please see the SPADE Help page

SALIS Soil Essentials Report

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5/05/2011

NSW SOIL AND LAND INFORMATION SYSTEM



Soil Essentials Report

Site Location: SOUTHERN SITE, LEARD STATE FOREST

Map Reference: MGA Grid Reference : Easting 227905, Northing 6608489 BOGGABRI (8936)
1:100,000 sheet

Profile Details: BOGGABRI COAL CONSULTANCY Survey, Profile 103, collected by John Wood on February 03, 1993

Physiography: plain under woodland grass u'storey on not identified lithology and used for timber/scrub/unused . Slope 1 % (measured) , elevation 296 m . profile is imperfectly drained , erosion hazard is slight , and no salting evident

Soil Type: Gn2.83 (PPF)

Soil Description:

Layer 0

Layer 1
00.00 -
00.10 m
A1 Horizon
loam with single grained (granular < 2 mm) , many (25-100/10x10cm) roots (<1mm) , common (10-25/10x10cm) roots (1-2mm) , common (10-25/10x10cm) roots (2-5mm) , few (1-2/10x10 cm) roots (>5mm) , field pH is 6.5 . Coarse fragments are not identified , fine gravel (2-6 mm),gravel (6-20 mm) . Layer notes are: Sand fraction is coarse. ; smooth sharp (<5 mm) boundary to...

Layer 2
00.10 -
00.30 m
B1 Horizon
clay loam,clay loam with moderate pedality (sub-angular blocky 10 - 20 mm) , common (10-25/10x10cm) roots (<1mm) , common (10-25/10x10cm) roots (1-2mm) , few (1-10/10x10cm) roots (2-5mm) , few (1-2/10x10 cm) roots (>5mm) , field pH is 7 . Coarse fragments are not identified , fine gravel (2-6 mm),gravel (6-20 mm) . Layer notes are: Sodic? Very dispersible. ; irregular abrupt (5-20 mm) boundary to...

Layer 3
00.30 -
01.00 m
B2 silicate clay
Horizon
clay loam,clay loam with massive structure few (1-10/10x10cm) roots (<1mm) , few (1-10/10x10cm) roots (1-2mm) , few (1-10/10x10cm) roots (2-5mm) , few (1-2/10x10 cm) roots (>5mm) , field pH is 8.5 . Segregations are calcareous , calcareous . Layer notes are: Sodic. Very dispersible. Source or CaCo3unclear; cause of pH at 8.5.

Laboratory Test Data:

Upper Bound	Lower Bound	% Clay	USCS	PH	EC	OC	Bray P	P Sorbt	Exch Al	Exch Ca	Exch K	Exch Mg	Exch Na
-------------	-------------	--------	------	----	----	----	--------	---------	---------	---------	--------	---------	---------

For information on laboratory test data and units of measure, please see the SPADE Help page

SALIS Soil Essentials Report

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5/05/2011

1.2 Cunningham (2005b) Data

SPECIALIST CONSULTANT STUDIES
Part 3b: Soils and Land Capability Study
Proposed Transport Route

3b - A1

EAST BOGGABRI JOINT VENTURE
Proposed East Boggabri Coal Mine
Report No. 643/02

Profile 47, Level plain location. *Surface condition hard setting. Surface stone absent.*

0-32cm; silty clay loam; many roots present; no lime present, no manganese present, pH 5.0; some gravel rounded and angular 2cm to 3cm; not mottled; not bleached, brown (10YR5/3) dry, brown (7.5YR4/3) moist; peds rough-faced, highly pedal (100%), polyhedral, <5mm to 10mm in size; firm consistency dry; hydrophobic; *abrupt to:-*

32-60cm; sandy clay loam; many roots present; no lime present, no manganese present, pH 6.0; some gravel rounded to 2cm; not mottled; not bleached, brown (7.5YR5/3) dry, dark brown (7.5YR3/2) moist; peds rough-faced, highly pedal (100%), polyhedral, <5mm to 10mm in size; very firm to strong consistency dry; not hydrophobic; *sharp to abrupt to:-*

60-81cm; medium to heavy clay; many roots present; no lime present, no manganese present, pH 8.0; some gravel rounded to 3cm; not mottled; not bleached, light yellowish brown (10YR6/4) dry, brown (7.5YR4/3) moist; peds rough-faced, highly pedal (100%), polyhedral, <5mm to 10mm in size; strong to very strong consistency dry; not hydrophobic; *gradual to:-*

81-109cm; sandy clay loam; few roots; no lime present, no manganese present, pH 6.0; some gravel rounded to 2cm; not mottled; not bleached, light grey (10YR7/2) dry, brown (7.5YR5/3) moist; peds rough / smooth-faced, highly pedal (100%), polyhedral, <5mm to 10mm in size; very firm consistency dry; not hydrophobic; *diffuse to:-*

109-157cm; gritty light clay; few roots; no lime present, no manganese present, pH 9.0; much rounded and angular gravel to 2cm; not mottled; not bleached, light brown (7.5YR6/4) dry, brown (7.5YR4/3) moist; peds rough / smooth-faced, highly pedal (100%), polyhedral/platy, 5mm to 15mm in size; strong to very strong consistency dry; not hydrophobic; *gradual to diffuse to:-*

157-252cm; light to medium clay; no roots observed; no lime present, no manganese present, pH 9.0; much angular gravel to 2cm; not mottled; not bleached, brown (10YR5/3) dry, brown (7.5YR4/3) moist; peds rough-smooth faced, highly pedal (100%), polyhedral/platy, <5mm to 15mm in size; strong to very strong consistency dry; not hydrophobic.

Profile 48, Level plain location. *Surface condition hard setting. Surface stone absent.*

0-20cm; silty clay; roots common; no lime present, no manganese present, pH 6.0; some angular flat gravel to 1cm; not mottled; not bleached, light brownish grey (10YR6/2) dry, very dark greyish brown (10YR3/2) moist; peds rough / smooth-faced, highly pedal (100%), polyhedral, 5mm to 15mm in size; strong consistency dry; slightly hydrophobic; *gradual to:-*

20-80cm; light to medium clay; few roots; no lime present, no manganese present, pH 7.0; occasional gravel rounded <1cm; not mottled; not bleached, light brownish grey (10YR6/2) dry, brown (10YR5/3) moist; peds rough / smooth faced, highly pedal (100%), polyhedral, 5mm to 15mm in size; strong to very strong consistency dry; not hydrophobic; *diffuse to:-*

80-147cm; sandy clay; few roots; no lime present, manganese concretions present, pH 9.0; gravel common rounded to 3cm; not mottled; not bleached, light yellowish brown (10YR6/4) dry, brown (10YR5/3) moist; peds rough / smooth-faced, highly pedal (100%), polyhedral, <5mm to 10mm in size; strong consistency dry; not hydrophobic; *abrupt to:-*

147-250cm; sand; few roots; no lime present, no manganese present, pH 6.5; mix of layers and pockets of sand and gravel rounded 1cm to 3cm; not mottled; not bleached, pale brown (10YR6/3) dry, brown (10YR4/3) moist; fabric rough, massive, not hydrophobic.

Geoff Cunningham Natural Resource Consultants Pty Ltd

Appendix 2 Overview Data

Sampling Site	Site Description	Landuse/Vegetation Type	Landscape Position	Easting (m)		Northing (m)		Australian Soil Classification	Depth to Bedrock (cm)	Gravel/Sand Depth in Alluvials (cm)	Other Comments
				WGS84	WGS84						
1	Leard Forest	Whitebox/pine	Upper slope	56228121	6608650	Brown Sodosol	>200		moist 80-100 cm; hydr. lifting?		
2	Leard Forest	Pine/ironbark	Upper slope	56228783	6608622	Red Kurosol	80				
3	Leard Forest	Pine/ironbark	Upper slope	56229667	6608692	Leptic Tenosol	75				
4	Leard Forest	Pine/ironbark	Upper slope	56229574	6608403	Brown-Orthic Tenosol	75				
5	Leard Forest	Pine/ironbark	Upper slope	56230096	6608269	Yellow-Orthic Tenosol	60				
6	Leard Forest	Pine/ironbark	Upper slope	56227655	6608275	Brown-Orthic Tenosol	70		A12 water repellent		
7	Leard Forest	Whitebox/pine	Upper slope	56228173	6608292	Brown Dermosol	>220				
8	Leard Forest	Pine/ironbark	Upper slope	56228772	6608152	Red Chromosol	150+				
9	Leard Forest	Pine/ironbark	Upper slope	56229085	6608122	Grey Kandosol	100				
10	Leard Forest	Pine/ironbark	Upper slope	56229336	6608070	Yellow-Orthic Tenosol	110				
11	Leard Forest	Pine/ironbark	Upper slope	56229651	6608035	Yellow Kandosol	70				
12	Leard Forest	Pine/ironbark	Upper slope	56229940	6608102	Yellow Kandosol	130				
13	Mining Lease	Pine/ironbark	Upper slope	56229521	6607530	Leptic Tenosol	85				
14	East of Mining Lease	Pine/ironbark	Top of hill	56229764	6607586	Leptic Tenosol	50				
15	East of Mining Lease	Cypress pine regrowth	Mid-slope	56229921	6607618	Red Kurosol	100				
16	East of Mining Lease	Cypress pine regrowth	Mid-slope	56230685	6607575	Bleached-Leptic Tenosol	60				
17	Green Hills	Cleared	Alluvial	56231399	6607935	Brown Sodosol	>300				
18	Mining Lease	Pine/ironbark	Upper slope	56229754	6607500	Leptic Tenosol	90				
19	East of Mining Lease	Pine	Upper slope w'course	56230486	6607252	Brown Sodosol	75				
20	East of Mining Lease	Cleared	Mid-slope	56230798	6607533	Grey Kandosol	110				
21	East of Mining Lease	Cleared	Lower slope	56231070	6607597	Grey Sodosol	90				
22	T'wonga Mining Lease	Ironbark	Mid-slope	56229695	6607125	Bleached-Leptic Tenosol	95				
23	East of Mining Lease	Whitebox	Mid-slope	56229946	6607027	Brown Chromosol	140				
24	T'wonga Mining Lease	Pine/ironbark	Mid-slope	56229979	6607135	Bleached-Leptic Tenosol	60				
25	East of Mining Lease	Cleared	Mid-slope	56230271	6606969	Grey Sodosol	120				
26	East of Mining Lease	Cypress pine regrowth	Mid-slope	56230765	6606991	Red Sodosol	>200				
27	East of Mining Lease	Cleared	Alluvial	56230995	6606869	Stratic Rudosol	>300	>300			
28	Bollol Creek Station	Cleared	Alluvial	56231379	6607109	Brown Sodosol	>300				
29	East of Mining Lease	Whitebox	Mid-slope	56229820	6606887	Yellow Sodosol	>300	>300			

Sampling Site	Site Description	Landuse/Vegetation Type	Landscape Position	Easting (m)		Australian Soil Classification	Depth to Bedrock (cm)	Gravel/Sand Depth in Alluvials (cm)	Other Comments
				WGS84	WGS84				
30	East of Mining Lease	Cleared	Lower slope - colluvium	56230159	6606788	Stratic Rudosol	120		
31	East of Mining Lease	Cleared	Lower slope - colluvium	56229714	6606513	Grey Kandosol	300	230	Free water @ 290 cm
32	East of Mining Lease	Cleared	Lower slope - colluvium	56230231	6606484	Grey Chromosol	>300	>300	
33	East of Mining Lease	Cleared	Alluvial	56230559	6606460	Stratic Rudosol	>140	>140	
34	Bollol Creek Station	Cleared	Alluvial	56231012	6606534	Stratic Rudosol	>300	250	Free water @ 250 cm
35	Bollol Creek Station	Cleared	Alluvial	56231276	6606673	Stratic Rudosol	>400	>400	Free water @ 330 cm
36	East of Mining Lease	Cleared	Lower slope - colluvium	56229978	6606535	Stratic Rudosol	>150	50	
37	Bollol Creek Station	Cleared	Alluvial	56230642	6606337	Stratic Rudosol	>150		
38	East of Mining Lease	Cleared	Footslope	56229653	6606172	Grey Sodosol	135		
39	East of Mining Lease	Cleared	Alluvial	56230071	6606153	Stratic Rudosol	>300	80	
40	Bollol Creek Station	Cleared	Alluvial	56230837	6606075	Stratic Rudosol	>300	>300	
41	Bollol Creek Station	Cleared	Alluvial	56231250	6606238	Stratic Rudosol	>300	100	
42	Templemore	Cleared	Alluvial	56229386	6605862	Stratic Rudosol	>300	230	Free water @ 290 cm
43	Templemore	Cleared	Alluvial	56229860	6605871	Stratic Rudosol	>300	15	
44	Templemore	Cleared	Alluvial	56230484	6605943	Stratic Rudosol	>300	>300	
45	Thuin	Cleared	Footslope - colluvium	56228535	6605598	Brown Sodosol	>300		
46	Thuin	Cleared	Alluvial	56228877	6605662	Stratic Rudosol	>150	>150	
47	Templemore	Cleared	Alluvial	56229357	6605626	Stratic Rudosol	>300	155	Free water @ 260 cm
48	Templemore	Cleared	Alluvial	56229688	6605556	Stratic Rudosol	>150	32	
49	Templemore	Cleared	Alluvial	56230078	6605607	Stratic Rudosol	>300	220	
50	Templemore	Cleared	Alluvial	56230667	6605585	Stratic Rudosol	>300	>300	
51	Templemore	Cleared	Alluvial	56231059	6605713	Brown Dermosol	>130		
52	Thuin	Cleared	Alluvial	56228590	6605279	Stratic Rudosol	>320	320	
53	Templemore	Cleared	Alluvial	56228958	6605355	Stratic Rudosol	>300	>300	
54	Templemore	Cleared	Alluvial	56229394	6605403	Stratic Rudosol	>300	150	
55	Templemore	Cleared	Alluvial	56229717	6605295	Stratic Rudosol	>300	>300	
56	Templemore	Cleared	Alluvial	56230485	6605419	Stratic Rudosol	>150	>150	
57	Templemore	Cleared	Alluvial	56230783	6605309	Stratic Rudosol	>300	>300	
58	Templemore	Cleared	Alluvial	56231290	6605733	Stratic Rudosol	>300	70	
59	Templemore	Cleared	Alluvial	56229510	6605046	Stratic Rudosol	>300	>300	

Sampling Site	Site Description	Landuse/Vegetation Type	Landscape Position	Easting (m)		Australian Soil Classification	Depth to Bedrock (cm)	Gravel/Sand Depth in Alluvials (cm)	Other Comments
				WGS84	WGS84				
60	Templemore	Yellow box	Alluvial	56229963	6605085	Brown Chromosol	>300	270	
61	Templemore	Cleared	Alluvial	56230493	6605180	Red Chromosol	>170	160	
62	Templemore	Poplar box?	Alluvial	56230443	6605036	Stratic Rudosol	>300	>300	
63	Templemore	M. Bracteata	Alluvial	56231045	6605202	Stratic Rudosol	>300	260	

Appendix 3 Layer Data

Pit (New #)	Pit (field)	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)	Colour	Mottles	A2 Dry Soil Colour	SOILpak Compaction Score	Gravel (%)	Dispersion 10 min.	Moisture	Lime		Root Score
														%	Type	
1	28	A1	12	Sandy loam	5.5	7.5YR3/2	Dark brown	-		1.7	1	0	Dry	-	-	4
1		A2	20	Sandy loam	6.0	7.5YR5/3	Brown	-	7.5YR7/2	0.9	3	0	Dry	-	-	3
1		B21	95	Light medium clay	8.5	7.5YR4/6	Strong brown	grey		1.3	0	0	Dry(40), Moist	-	-	3
1		B22	140+	Light clay	8.5	10YR6/4	Light yellowish brown	-		1.5	1	0	Slight	-	-	2
2	24	A11	10	Clayey sand	5.5	7.5YR4/3	Brown	-		1.5	35	0	Dry	-	-	4
2		A12	25	Clayey sand	4.5	7.5YR4/4	Brown	-		1.4	25	0	Dry	-	-	4
2		A2	45	Clayey sand	4.5	7.5YR4/4	Brown	-	7.5YR7/2	1.3	30	2	Dry	-	-	2
2		B2	80	Sandy lt. medium clay	4.5	5YR5/6	Yellowish red	grey		1.1	0	0	Dry	-	-	0
2		C	82+					-			100		Dry	-	-	0
3	20	A11	10	Sandy loam	5.5	7.5YR4/3	Brown	-		1.6	3	0	Dry	-	-	4
3		A12	30	Sandy loam	4.5	7.5YR4/4	Brown	-		1.5	15	1	Dry	-	-	4
3		B1	50	Sandy clay loam	6.0	7.5YR6/4	Light brown	-		0.7	75	4	Dry	-	-	2 (70)
3		C	75+					-			100			-	-	0
4	29	A11	12	Loamy sand	6.0	10YR4/3	Brown	-		1.1	3	0	Dry	-	-	4
4		A12	60	Loamy sand	4.5	7.5YR5/4	Brown	-		1.2	5	1	Dry	-	-	3
4		BC	75	Sand	5.0	10YR5/4	Yellowish brown	-			70	3	Dry	-	-	1
4		C	77+					-			100			-	-	0
5	21	A11	10	Loamy sand	5.0	10YR4/3	Brown	-		1.7	3	0	Dry	-	-	4
5		A12	45	Loamy sand	4.5	10YR6/4	Light yellowish brown	-		1.3	2	1	Dry	-	-	3
5		B1	60	Sand	4.5	7.5YR6/4	Light brown	-		1.1	7	4	Dry	-	-	2
5		C	62+					-			100			-	-	0
6	26	A11	15	Clayey sand	5.0	10YR4/3	Brown	-		1.3	1	0	Dry	-	-	4
6		A12	30	Clayey sand	4.5	10YR4/4	Dark yellowish brown	-		1.5	2	0	Dry	-	-	4
6		BC	70	Coarse loamy sand	4.5	10YR6/4	Light yellowish brown	-		1.2	5	2	Dry	-	-	3
6		C	100+					-			100			-	-	0

Pit (New #)	Pit (field)	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)	Colour	Mottles	A2 Dry Soil Colour	SOILpak Compaction Score	Gravel (%)	Dispersion 10 min.	Moisture	Lime		Root Score
														%	Type	
7	27	A1	12	Clay loam	6.0	7.5YR3/2	Dark brown	-		1.7	2	0	Dry	-	-	4
7		B1	60	Light clay	5.5	7.5YR4/4	Brown	-		1.3	1	2	Dry	-	-	3
7		B21	85	Light clay	9.0	7.5YR5/4	Brown	-		1.5	1	0	Slight	20	N/D	2
7		B22	140+	Light clay	9.0	7.5YR5/4	Brown	-		1.3	3	0	Slight	3	D	1
8	25	A1	20	Clayey sand	5.0	7.5YR3/2	Dark brown	-		1.6	1	0	Dry	-	-	3
8		A2	55	Loamy sand	5.5	7.5YR6/3	Light brown	-	7.5YR8/2	1.2	40	1	Dry	-	-	3
8		B21	110	Sandy light clay	7.0	5YR5/4	Reddish brown	grey/Mn		1.0	2	2	Dry	-	-	1
8		B22	150+	Sandy light clay	6.5	10YR6/2	Light brownish grey	-		1.4	4	0	Dry	-	-	1 (110)
9	22	A11	15	Clayey sand	5.0	7.5YR3/2	Dark brown	-		1.6	1	0	Dry	-	-	4
9		A12	40	Clayey sand	4.5	7.5YR4/3	Brown	-		1.4	2	1	Dry	-	-	4
9		B2	70	Sandy clay loam	5.0	10YR6/3	Pale brown	-		1.0	15	3	Dry	-	-	3
9		BC	100	Loamy sand	5.0	10YR6/4	Light yellowish brown	-			0	4	Dry	-	-	1
9		C	105+					-			100			-	-	0
10	23	A11	15	Sandy loam	5.5	7.5YR3/2	Dark brown	-		1.6	10	0	Dry	-	-	4
10		A12	30	Clayey sand	4.5	7.5YR4/3	Brown	-		1.5	15	1	Dry	-	-	4
10		B1	80	Clayey sand	5.0	7.5YR6/4	Light brown	-		1.2	50	3	Dry	-	-	2
10		BC	110	Clayey sand				-			95		Dry	-	-	1
10		C	115+					-			100			-	-	0
11	30	A11	12	Loamy sand	5.0	7.5YR3/2	Dark brown	-		1.6	25	0	Dry	-	-	4
11		A12	30	Loamy sand	4.5	7.5YR6/4	Light brown	-		1.2	35	1	Dry	-	-	4
11		BC	70	Loamy sand	5.0	7.5YR6/4	Light brown	-			40	3	Dry	-	-	3
11		C	85+					-			100			-	-	0
12	19	A1	10	Sandy loam	5.5	7.5YR4/3	Brown	-		1.8	2	0	Dry	-	-	4
12		A2	50	Loamy sand	4.5	10YR6/4	Light yellowish brown	-	10YR8/2	1.1	20	2	Dry	-	-	3
12		B2	130	Loamy sand	5.5	7.5YR6/4	Light brown	-		0.3	10	4	Dry	-	-	1 (110)
12		C	140+					-			100			-	-	0

Pit (New #)	Pit (field)	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)	Colour	Mottles	A2 Dry Soil Colour	SOILpak Compaction Score	Gravel (%)	Dispersion 10 min.	Moisture	Lime		Root Score
														%	Type	
13	17	A11	10	Loamy sand	5.0	7.5YR3/3	Dark brown	-		1.7	15	0	Dry	-	-	4
13		A12	45	Loamy sand	5.0	7.5YR5/4	Brown	-		1.1	35	2	Dry	-	-	3
13		BC	85	Sand	4.5	7.5YR6/4	Light brown	-			75	3	Dry	-	-	2
13		C	88+					-			100		Dry	-	-	0
14	35	A11	20	Loamy sand	5.5	7.5YR3/3	Dark brown	-		1.4	15	0	Dry	-	-	3
14		A12	50	Loamy sand	6.0	7.5YR5/4	Brown	-		1.3	30	1	Dry	-	-	3
14		C	70+					-			100			-	-	0
15	14	A11	15	Loamy sand	5.0	10YR5/3	Brown	-		1.6	35	0	Dry	-	-	3
15		A12	60	Clayey sand	5.5	7.5YR5/3	Brown	-		1.5	40	0	Dry	-	-	4
15		B2	100	Sandy lt. medium clay	4.5	5YR5/6	Yellowish red	-		1.7	70	0	Dry	-	-	2
15		C	102+					-			100			-	-	0
16	13	A11	10	Clayey sand	4.5	10YR4/2	Dark greyish brown	-		1.8	30	0	Dry	-	-	4
16		A12	50	Loamy sand	5.5	10YR5/3	Brown	-		1.5	25	0	Dry	-	-	4
16		A2	60	Loamy sand	5.5	10YR6/3	Pale brown	-	10YR8/1	1.0	65	4	Dry	-	-	1
16		C	62+					-			100		Dry	-	-	0
17	43	A1	12	Sandy loam	5.0	10YR4/3	Brown	-		1.2	0	0	Dry	-	-	3
17		A2	30	Sandy loam	5.5	10YR7/3	Very pale brown	-	10YR8/1	1.1	1	2	Dry	-	-	2
17		B21	85	Light clay	7.5	10YR5/4	Yellowish brown	-		1.4	1	0	Dry	-	-	1
17		B22	150+	Light medium clay	9.0	10YR5/2	Greyish brown	-		1.6	1	0	Slight	3	N	1 (110)
18	47	A11	15	Clayey sand	5.5	7.5YR4/3	Brown	-		1.7	2	0	Moist/Slight	-	-	3
18		A12	40	Clayey sand	5.5	7.5YR5/3	Brown	-		1.3	8	0	Dry	-	-	3
18		B1	90	Sand	6.0	7.5YR6/4	Light brown	-			50	2	Dry	-	-	3 (90)
18		C	100+					-						-	-	0

Pit (New #)	Pit (field)	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)	Colour	Mottles	A2 Dry Soil Colour	SOILpak Compaction Score	Gravel (%)	Dispersion 10 min.	Moisture	Lime		Root Score
														%	Type	
19	36	A1	10	Sandy clay loam	5.0	10YR4/2	Dark greyish brown	-		1.5	5	0	Dry	-	-	2
19		A2	20	Sandy loam	5.0	10YR6/2	Light brownish grey	-	10YR6/1	1.3	30	2	Dry	-	-	2
19		B21	45	Sandy light clay	6.0	10YR5/3	Brown	-		1.5	1	1	Dry	-	-	1
19		B22	75	Light medium clay	8.0	10YR5/3	Brown	-		1.2	15	0	Slight	-	-	1
19		C	90+					-			100			-	-	0
20	31	A1	15	Clayey sand	5.0	10YR4/3	Brown	-		1.5	15	0	Dry	-	-	4
20		A3	60	Clayey sand	5.5	10YR5/4	Yellowish brown	-		1.3	20	0	Dry	-	-	3
20		B21	95	Sandy clay loam	4.5	10YR7/2	Light grey	-		0.7	1	4	Dry	-	-	2
20		B22	110	Sandy clay loam				-			90		Dry	-	-	1
20		C	120+					-			100			-	-	0
21	12	A1	20	Sandy loam	4.5	10YR5/3	Brown	-		1.4	2	0	Dry	-	-	3
21		A2	40	Clayey sand	5.5	10YR6/3	Pale brown	-	10YR8/1	1.0	0	3	Dry	-	-	1
21		B21	60	Sandy loam	6.0	10YR6/3	Pale brown	-		0.2	15	2	Dry	-	-	0
21		B22	90	Loamy sand	8.5	10YR6/4	Light yellowish brown	grey		0.2	25	2	Dry	-	-	0
21		C	95+					-			100		Dry	-	-	0
22	16	A11	10	Loamy coarse sand	5.5	10YR4/3	Brown	-		1.4	10	0	Dry	-	-	4
22		A12	30	Loamy coarse sand	5.5	10YR6/4	Light yellowish brown	-		1.3	20	0	Dry	-	-	2
22		A2	60	Sandy clay loam	6.0	10YR6/4	Light yellowish brown	-	10YR7/3	1.4	70	2	Dry	-	-	1
22		C	95+					-			99			-	-	0
23	33	A1	15	Fine sandy clay loam	5.5	7.5YR4/3	Brown	-		1.6	3	0	Dry	-	-	4
23		B1	40	Medium clay	7.5	7.5YR5/6	Strong brown	-		1.3	0	0	Dry	-	-	4
23		B21	80	Light medium clay	8.5	10YR5/6	Yellowish brown	-		1.0	3	0	Slight/moist	5	N	3
23		B22	140	Light clay	8.5	10YR6/6	Brownish yellow	-		1.5	3	0	Slight/moist	3	N/V	3
23		C	145+	Hard gravel	-	-	-	-		-	100	-	-	-	-	0
24	15	A1	15	Clayey sand	5.0	7.5YR3/3	Dark brown	-		1.3	25	0	Dry	-	-	4
24		A2	30	Clayey sand	5.5	7.5YR6/3	Light brown	-	7.5YR8/1	1.2	40	1	Dry	-	-	2
24		B2	60	Loamy coarse sand	5.5	10YR6/4	Light yellowish brown	grey		0.1	80	3	Dry	-	-	1
24		C	62+					-			100			-	-	0

Pit (New #)	Pit (field)	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)	Colour	Mottles	A2 Dry Soil Colour	SOILpak Compaction Score	Gravel (%)	Dispersion 10 min.	Moisture	Lime		Root Score
														%	Type	
25	32	A1	15	Clayey sand	5.0	10YR3/3	Dark brown	-		1.3	40	0	Dry	-	-	3
25		A2	40	Clayey sand	5.5	10YR5/3	Brown	-	10YR7/2	1.1	70	0	Dry	-	-	1
25		B21	70	Light clay	6.0	10YR6/3	Pale brown	-		0.9	2	2	Dry	-	-	1
25		B22	120	Light medium clay	9.0	10YR5/3	Brown	-		1.5	1	1	Dry	-	-	1 (90)
25		C	140+					-						-	-	0
26	11	A1	10	Sandy loam	4.5	10YR4/3	Brown	-		1.7	3	0	Dry	-	-	3
26		A2	35	Sandy loam	4.5	10YR6/3	Pale brown	-	10YR8/2	0.9	0	3	Dry	-	-	3
26		B21	95	Sandy clay loam	5.5	5YR5/6	Yellowish red	grey		0.2	8	3	Dry	-	-	1
26		B22	150+	Sandy clay loam	5.5	10YR6/3	Pale brown	-		0.2	20	0	Dry	-	-	1
27	18	A1	15	Fine sandy clay loam	4.5	10YR4/2	Dark greyish brown	-		0.5	1	0	Dry	-	-	2
27		2Ab	30	Silty clay loam	5.0	10YR5/2	Greyish brown	-		0.9	1	0	Dry	-	-	2
27		3Bb	80	Medium clay	5.0	10YR4/2	Dark greyish brown	-		0.7	0	2	Dry	-	-	2
27		4Bb	140+	Light medium clay	8.0	10YR5/2	Greyish brown	-		1.2	0	0	Slight	0.5	N	1
28	44	A1	12	Sandy loam	5.0	7.5YR4/2	Brown	-		1.2	0	0	Moist/Slight	-	-	2
28		A2	25	Sandy loam	5.5	7.5YR5/2	Brown	-	7.5YR7/3	0.9	1	3	Dry	-	-	1
28		B21	60	Light clay	5.5	7.5YR5/3	Brown	-		0.4	1	3	Dry	-	-	1
28		B22	75	Light clay	6.0	7.5YR5/4	Brown	-		1.1	0	1	Dry	-	-	1
28		2Bb	150+	Light medium clay	8.5	7.5YR4/3	Brown	-		1.4	0	0	Slight	1	N	0
29	10	A1	25	Sandy loam	5.0	10YR6/3	Pale brown	-		1.7	20	0	Dry	-	-	3
29		A2	50	Clayey sand	5.5	7.5YR6/4	Light brown	-	10YR8/2	1.4	15	2	Dry	-	-	3
29		B21	95	Sandy light clay	5.5	10YR6/4	Light yellowish brown	sl. grey		1.5	5	1	Dry	-	-	1
29		B22	150+	Loamy sand	8.0	10YR5/3	Brown	-		1.3	15	1	Slight	-	-	0
30	48	A1	10	Clay loam	5.5	7.5YR3/3	Dark brown	-		1.4	10	0	Moist/Slight	-	-	3
30		A2	20	Sandy clay loam	5.0	7.5YR6/3	Light brown	-	7.5YR8/2	1.3	40	0	Dry	-	-	2
30		2Bb	50	Medium heavy clay	5.5	10YR5/3	Brown	-		0.8	3	0	Dry	-	-	1
30		3Ab	70	Loamy sand	7.0	10YR7/4	Very pale brown	yellow		0.8	80	0	Dry	-	-	1 (110)
30		4Bb	120	Sandy light clay	7.5	10YR5/2	Greyish brown	-		1.3	2	0	Dry	-	-	0
30		C	125+					-			100	0	Slight	-	-	0

Pit (New #)	Pit (field)	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)	Colour	Mottles	A2 Dry Soil Colour	SOILpak Compaction Score	Gravel (%)	Dispersion 10 min.	Moisture	Lime		Root Score
														%	Type	
31	8	A1	25	Coarse sandy loam	5.0	10YR3/2	Very dark greyish brown	-		0.8	3	0	Dry	-	-	3
31		A2	60	Coarse sandy loam	5.5	10YR6/3	Pale brown	-	10YR8/1	1.0	15	3	Dry	-	-	1
31		2Ab	120	Coarse loamy sand	10.0	10YR4/2	Dark greyish brown	-		0.9	50	1	Dry	-	-	1
31		2Bb	150+	Loamy sand	10.0	10YR5/3	Brown	grey		1.6	20	0	Slight/Moist	-	-	2
32	9	A1	15	Sandy loam	5.5	10YR4/2	Dark greyish brown	-		1.0	1	0	Dry	-	-	3
32		B21	45	Sandy lt. medium clay	5.5	10YR5/2	Greyish brown	-		0.5	0	1	Dry	-	-	2
32		B22	80	Light medium clay	8.0	10YR4/2	Dark greyish brown	yellow/grey		0.8	0	0	Dry	3	N	1
32		2Bb	100	Clayey sand	8.5	10YR6/2	Light brownish grey	-		1.5	50	1	Dry	5	N	1
32		3Bb	150+	Light clay	9.0	10YR5/4	Yellowish brown	-		1.7	0	2	Moist	0.5	D	1 (110)
33	50	A1	10	Silty clay loam	5.5	7.5YR4/2	Brown	-		0.3	0	1	Slight	-	-	2
33		2B1b	60	Light medium clay	8.0	7.5YR5/2	Brown	-		0.6	1	0	Dry	0.5	N	2
33		2B2b	140+	Light clay	8.5	7.5YR5/2	Brown	-		1.7	1	0	Slight	2	N	1 (120)
34	5	A1	12	Clay loam	6.5	7.5YR4/2	Brown	-		0.7	0	0	Dry	-	-	2
34		2Ab	50	Light clay	6.5	7.5YR3/1	Very dark grey	-		1.2	0	0	Dry	-	-	2
34		2Bb	110	Light medium clay	8.5	7.5YR4/2	Brown	-		0.9	0	0	Dry	4	N/D	2
34		3Bb	150+	Light clay	9.0	7.5YR5/3	Brown	-		1.6	0	0	Slight	1	N/D	1
35	45	A11	15	Fine sandy clay loam	5.5	7.5YR3/2	Dark brown	-		1.7	1	0	Moist/Slight	-	-	3
35		A12	25	Fine sandy clay loam	6.0	7.5YR5/3	Brown	-		1.2	0	1	Dry	-	-	3
35		2Bb	105	Medium clay	6.5	7.5YR4/2	Brown	-		1.0	0	0	Slight	-	-	3
35		3Bb	140+	Light clay	8.5	7.5YR5/4	Brown	-		1.5	0	0	Slight/Moist	1	N	2
36	49	A1	12	Clayey sand	4.5	7.5YR4/2	Brown	-		1.3	2	0	Slight	-	-	4
36		A3	50	Loamy sand	5.5	7.5YR6/4	Light brown	-		1.2	45	0	Dry	-	-	2
36		2Ab	75	Loamy sand	5.5	7.5YR6/4	Light brown	-			70	0	Dry	-	-	1
36		3Ab	135	Loamy sand	5.5	7.5YR6/4	Light brown	-			0	0	Dry	-	-	1
36		4Bb	150+	Light clay	7.5	10YR5/2	Greyish brown	-		1.4	0	0	Slight/Moist	-	-	0

Pit (New #)	Pit (field)	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)	Colour	Mottles	A2 Dry Soil Colour	SOILpak Compaction Score	Gravel (%)	Dispersion 10 min.	Moisture	Lime		Root Score
														%	Type	
37	37	A1	18	Silty clay loam	5.0	10YR4/2	Dark greyish brown	-		0.8	1	0	Dry	-	-	3
37		A2	32	Sandy clay loam	5.5	10YR6/3	Pale brown	-	10YR8/1	0.9	2	1	Dry	-	-	2
37		2Bb	60	Sandy clay loam	6.0	10YR6/2	Light brownish grey	-		0.7	20	3	Slight	-	-	1
37		3B1b	80	Light clay	6.0	10YR5/3	Brown	-		1.3	0	1	Slight	-	-	0.5
37		3B2b	130+	Light medium clay	6.5	10YR5/2	Greyish brown	-		1.7	0	0	Slight	-	-	2
38	34	A1	12	Sandy loam	5.5	10YR4/2	Dark greyish brown	-		0.4	3	0	Dry	-	-	3
38		B1	40	Sandy light clay	7.0	10YR5/2	Greyish brown	-		0.5	1	3	Dry	-	-	2
38		B21	90	Sandy light clay	7.0	10YR5/2	yellow	-		0.8	5	1	Dry	-	-	1 (50)
38		B22	130+	Sandy light clay	10.0	10YR6/4	Light yellowish brown	-		1.2	50	0	Slight	-	-	0
39	7	A1	15	Sandy clay loam	5.0	7.5YR3/2	Dark brown	-		0.7	0	0	Dry	-	-	1
39		B2	50	Medium clay	7.0	7.5YR4/3	Brown	-		1.2	0	1	Dry	-	-	2
39		2Bb	80	Sandy clay loam	8.0	7.5YR4/6	Strong brown	-		0.8	0	0	Dry	1	N/D	2
39		3Bb	140+	Loamy coarse sand	7.5	7.5YR4/4	Brown	-		1.5	70	0	Slight	-	-	1
40	6	A1	15	Silty light clay	4.5	10YR3/2	Very dark greyish brown	-		0.5	0.5	0	Dry	-	-	2
40		2Ab	40	Light clay	5.5	10YR4/2	Dark greyish brown	-		1.0	0	0	Dry	-	-	2
40		2B1b	65	Light clay	6.0	10YR5/2	Greyish brown	-		0.4	0	0	Dry	-	-	2
40		2B2b	90	Light medium clay	6.5	10YR4/2	Dark greyish brown	-		1.2	0	0	Dry	-	-	1
40		3Bb	150+	Light medium clay	9.0	10YR5/2	Greyish brown	-		0.8	0	0	Slight	1	N	1
41	46	A1	17	Fine sandy clay loam	4.5	7.5YR4/4	Brown	-		1.4	0	0	Moist/Slight	-	-	4
41		2Bb	55	Medium clay	5.5	5YR4/4	Reddish brown	-		0.5	0	2	Dry	-	-	2
41		3Bb	100	Sandy light clay	8.0	5YR4/4	Reddish brown	-		1.3	40	0	Dry	-	-	1
41		4Bb	150+	Sand	5.5			-			65		Slight	-	-	1 (120)
42	63	A1	10	Silty light clay	5.5	7.5YR3/2	Dark brown	-		1.6	0	1	Moist	-	-	3
42		2Bb	40	Light medium clay	7.0	7.5YR3/1	Very dark grey	-		1.2	0	1	Dry	-	-	2
42		3B1b	55	Sandy clay loam	7.5	7.5YR4/1	Dark grey	-		0.4	2	3	Dry	-	-	1
42		3B2b	85	Light medium clay	9.0	7.5YR4/3	Brown	-		1.1	1	0	Dry	1	N	1
42		4Bb	150+	Sandy light clay	9.0	7.5YR5/4	Brown	-		1.3	0	0	Slight	3	P/N	1 (125)

Pit (New #)	Pit (field)	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)	Colour	Mottles	A2 Dry Soil Colour	SOILpak Compaction Score	Gravel (%)	Dispersion 10 min.	Moisture	Lime		Root Score
														%	Type	
43	56	A1	15	Fine sandy clay loam	5.0	7.5YR3/2	Dark brown	-		1.2	1	0	Moist/Slight	-	-	2
43		2Bb	25	Coarse sand	5.5	7.5YR4/2	Brown	-			3	0	Dry	-	-	2
43		3Ab	45	Light clay	6.0	7.5YR3/2	Dark brown	-		1.3	1	0	Dry	-	-	2
43		4Ab	115	Sand	6.0	7.5YR4/3	Brown	-			5	0	Dry	-	-	1
43		4Bb	150+	Sand	6.5			-			45	0	Dry	-	-	2
44	53	A1	15	Silty loam	5.0	7.5YR3/2	Dark brown	-		1.2	0	0	Moist/Slight	-	-	4
44		A2	28	Silty loam	5.5	7.5YR4/2	Brown	-	7.5YR7/2	1.0	0	1	Dry	-	-	3
44		2Bb	55	Light medium clay	6.5	7.5YR4/2	Brown	-		0.3	1	0	Dry	-	-	2
44		3Bb	80	Sandy lt. medium clay	8.0	10YR5/4	Yellowish brown	-		0.2	25	0	Dry	-	-	1
44		4Bb	150+	Sandy light clay	8.0	10YR5/3	Brown	-		0.4	10	0	Slight	-	-	1
45	1	A1	25	Sandy clay loam	4.5	7.5YR4/3	Brown	-		1.2	0	0	Dry	-	-	3
45		A2	45	Sandy clay loam	5.5	7.5YR6/4	Light brown	-	7.5YR8/1	0.8	3	2	Dry	-	-	2
45		B21	100	Light clay	6.0	7.5YR5/4	Brown	grey		0.6	0	2	Dry	-	-	1
45		B22	140+	Light clay	7.0	7.5YR4/4	Brown	-		1.1	0	0	Slight	-	-	1
46	52	A1	10	Silty clay loam	5.0	7.5YR4/2	Brown	-		0.9	0	1	Moist/Slight	-	-	2
46		2Bb	50	Light medium clay	6.5	10YR4/1	Dark grey	-		0.7	0	2	Dry	-	-	2
46		3B1b	80	Light clay	9.0	10YR5/4	Yellowish brown	-		1.4	0	0	Dry	1	N	1
46		3B2b	150+	Light clay	9.0	10YR5/4	Yellowish brown	-		1.6	0	0	Slight	7	N	1 (100)
47	62	A1	12	Silty clay loam	5.5	7.5YR2.5/2	Very dark brown	-		1.6	1	1	Moist	-	-	3
47		2Ab	28	Silty clay loam	6.0	7.5YR4/2	Brown	-		1.2	0	2	Dry	-	-	2
47		3Ab	80	Light medium clay	9.0	7.5YR4/1	Dark grey	-		1.0	0	0	Dry	1	N	2
47		3Bb	115	Medium clay	9.0	10YR4/3	Brown	-		0.3	2	2	Dry	7	N	1
47		4Bb	155	Light medium clay	9.0	10YR4/4	Dark yellowish brown	-		1.2	0	0	Slight	2	N	1
47		5Ab	170+	Sand	7.5	10YR4/4	Dark yellowish brown	-								

Pit (New #)	Pit (field)	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)	Colour	Mottles	A2 Dry Soil Colour	SOILpak Compaction Score	Gravel (%)	Dispersion 10 min.	Moisture	Lime		Root Score
														%	Type	
48	42	A1	12	Light clay	5.0	10YR4/2	Dark greyish brown	-		0.4	2	0	Dry	-	-	2
48		2Ab	32	Coarse sandy light clay	5.5	10YR3/2	V. dark greyish brown	-		1.4	15	0	Dry	-	-	2
48		3Ab	60	Coarse sand	6.0	7.5YR4/3	Brown	-			40	0	Dry	-	-	2
48		4Ab	75	Sandy light clay	6.0	10YR4/2	Dark greyish brown	-		0.7	0	2	Dry	-	-	1
48		5Ab	115	Light medium clay	7.0	7.5YR3/2		-		0.3	0	0	Slight	-	-	1
48		6Bb	150+	Sandy light clay	7.5	7.5YR5/4		-		1.4	3	1	Slight	-	-	1 (130)
49	55	A11	10	Silty loam	5.0	7.5YR4/2	Brown	-		0.9	0	1	Moist/Slight	-	-	2
49		A12	22	Silty loam	5.0	7.5YR3/2	Dark brown	-		1.2	0	0	Dry	-	-	2
49		2B1b	80	Medium clay	7.5	7.5YR3/2	Dark brown	-		0.8	0	0	Dry	-	-	2
49		2B2b	150+	Light medium clay	8.5	7.5YR4/2	Brown	-		1.0	0	0	Slight	5	N	1
50	54	A1	10	Sandy loam	4.5	7.5YR4/2	Brown	-		1.2	0	0	Moist/Slight	-	-	2
50		2Ab	20	Sandy clay loam	5.0	7.5YR3/2	Dark brown	-		1.0	0	0	Dry	-	-	3
50		3Ab	55	Sandy loam	5.5	7.5YR5/4	Brown	-		1.1	1	1	Dry	-	-	2
50		4Bb	115	Medium clay	7.5	7.5YR4/4	Brown	-		0.7	1	0	Dry	-	-	1
50		5Bb	150+	Light medium clay	8.5	7.5YR5/4	Brown	-		1.5	2	0	Dry	3	P	1 (130)
51	38	A1	15	Light clay	5.5	7.5YR3/2	Dark brown	-		1.7	1	0	Dry	-	-	2
51		A2	30	Light clay	6.0	7.5YR4/3	Brown	-	7.5YR7/2	1.4	2	0	Dry	-	-	2
51		B21	80	Medium clay	8.0	7.5YR4/4	Brown	-		1.2	10	0	Dry	-	-	2
51		B22	110	Light medium clay	8.5	7.5YR5/6	Strong brown	-		1.3	45	0	Dry	10	N/D	1
51		2Bb	130+	Sandy lt. medium clay	8.5	7.5YR6/3	Light brown	-		1.5	2	0	Slight	25	N/D	0
52	51	A1	8	Silty clay loam	6.0	7.5YR4/2	Brown	-		0.7	0	2	Moist/Slight	-	-	2
52		2B1b	48	Light medium clay	8.0	7.5YR5/2	Brown	-		1.3	0	0	Dry	-	-	2
52		2B2b	70	Light clay	8.5	7.5YR5/4	Brown	-		1.2	0	0	Dry	5	N	2
52		3Bb	95	Sandy clay loam	8.5	7.5YR5/4	Brown	-		1.1	0	0	Dry	1	P	1
52		4Bb	140+	Light medium clay	8.5	7.5YR5/4	Brown	-		0.8	0	0	Slight	0.5	N	1 (115)

Pit (New #)	Pit (field)	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)	Colour	Mottles	A2 Dry Soil Colour	SOILpak Compaction Score	Gravel (%)	Dispersion 10 min.	Moisture	Lime		Root Score
														%	Type	
53	2	A1	10	Silty clay loam	4.5	7.5YR3/2	Dark brown	-		0.9	0	1	Dry	-	-	2
53		2A	40	Medium clay	5.0	7.5YR2.5/1	Black	-		1.1	0	2	Dry	-	-	2
53		2B1b	75	Medium clay	7.0	7.5YR4/2	Brown	-		0.8	0	1	Dry	-	-	1
53		2B2b	140+	Light medium clay	8.5	7.5YR4/4	Brown	-		1.2	1	1	Dry	4	N	0.5
54	61	A1	15	Sandy clay loam	5.0	7.5YR4/2	Brown	-		1.4	0	1	Moist	-	-	3
54		2Ab	55	Light clay	6.0	7.5YR4/3	Brown	-		0.8	2	1	Dry	-	-	2
54		3Bb	95	Sandy light clay	6.5	7.5YR6/4	Light brown	grey/yellow		0.4	10	2	Dry	-	-	1
54		4Bb	140+	Sandy clay loam	7.0	7.5YR5/6	Strong brown	grey		0.7	35	0	Slight	-	-	0
55	57	A1	8	Silty clay loam	5.0	10YR5/3	Brown	-		0.7	0	2	Moist/Slight	-	-	3
55		2B21b	70	Light clay	7.0	7.5YR2.5/1	Black	-		1.1	0	0	Dry	-	-	2
55		2B22b	95	Light clay	8.5	7.5YR4/2	Brown	-		1.3	0	0	Dry	0.5	N	1
55		3Bb	140+	Light medium clay	8.5	7.5YR3/2	Dark brown	-		1.7	0	0	Slight	1	N	1
56	41	A11	17	Sandy loam	5.0	7.5YR4/4	Brown	-		0.3	0	0	Dry	-	-	2
56		A12	25	Sandy loam	5.5	7.5YR4/4	Brown	-		0.8	0	0	Dry	-	-	1
56		2Bb	65	Light clay	6.5	7.5YR4/4	Brown	-		0.4	1	1	Dry	-	-	1
56		3Bb	105	Light clay	9.0	7.5YR5/6	Strong brown	-		0.8	30	0	Dry	12	N/D	1
56		4Bb	150+	Light medium clay	9.0	7.5YR5/4	Brown	-		1.5	0	0	Slight	4	D	1 (115)
57	3	A1	25	Fine sandy loam	4.5	7.5YR4/4	Brown	-		0.7	0	0	Dry	-	-	2
57		B21	95	Light clay	6.0	7.5YR5/6	Strong brown	-		0.8	0	0	Dry	-	-	1
57		B22	130+	Light clay	8.5	5YR5/4	Reddish brown	-		1.4	0	0	Slight	6	N	0
58	4	A1	15	Silty light clay	4.5	7.5YR4/2	Brown	-		1.0	0	0	Dry	-	-	2
58		2A3b	70	Light medium clay	7.5	7.5YR5/2	Brown	-		0.7	2	0	Dry	1	N	2
58		3Ab	150+	Loamy sand	8.5	7.5YR5/4	Brown	grey			95		Slight/Moist	2	N	0

Pit (New #)	Pit (field)	Horizon	Lower Depth (cm)	Texture	pH Water	Moist Soil Colour (Munsell)	Colour	Mottles	A2 Dry Soil Colour	SOILpak Compaction Score	Gravel (%)	Dispersion 10 min.	Moisture	Lime		Root Score
														%	Type	
59	60	A11	10	Silty clay loam	5.0	7.5YR4/3	Brown	-		1.6	0	0	Moist/Slight	-	-	3
59		A12	27	Silty clay loam	5.5	7.5YR5/3	Brown	-		1.2	0	0	Dry	-	-	3
59		2Ab	80	Light medium clay	6.0	7.5YR4/1	Dark grey	-		1.0	0	0	Dry	-	-	2
59		2Bb	110	Light clay	7.5	7.5YR4/2	Brown	-		1.4	0	0	Dry	1	N	1
59		3Bb	140+	Light medium clay	9.0	7.5YR6/4	Light brown	-		1.3	0	1	Dry	25	N/D	1
60	58	A1	12	Fine sandy loam	5.0	7.5YR4/3	Brown	-		1.6	2	0	Moist/Slight	-	-	4
60		A2	28	Sandy loam	5.5	7.5YR5/4	Brown	-	7.5YR7/3	1.3	25	0	Dry	-	-	3
60		B2	80	Medium clay	7.5	7.5YR4/6	Strong brown	-		1.0	0	0	Dry	-	-	2
60		2Bb	115	Medium clay	8.5	7.5YR5/6	Strong brown	-		0.7	5	0	Dry	15	P/N	2
60		3Bb	140+	Sandy clay loam	9.0	7.5YR5/6	Strong brown	-			20	0	Slight	30	D/N	1
61	40	A1	12	Silty loam	5.0	7.5YR4/4	Brown	-		0.2	0	0	Dry	-	-	3
61		B21	50	Medium clay	8.0	7.5YR4/6	Strong brown	-		0.9	2	0	Dry	-	-	2
61		B22	160	Light medium clay	8.0	5YR4/6	Yellowish red	-		1.1	4	0	Slight	2	N	1 (115)
61		2Bb	170+	Coarse sand				-			50		Slight	-	-	0
62	59	A1	15	Clay loam	5.0	7.5YR4/2	Brown	-		0.6	0	0	Moist/Slight	-	-	3
62		2B21b	75	Medium clay	7.0	7.5YR4/2	Brown	-		1.2	0	0	Dry	-	-	2
62		2B22b	150+	Light medium clay	9.0	7.5YR5/4	Brown	-		1.0	0	0	Slight	5	P/N	1
63	39	A11	15	Light clay	5.5	7.5YR3/2	Dark brown	-		0.7	1	0	Dry	-	-	3
63		A12	45	Silty light clay	6.0	7.5YR4/3	Brown	-		1.3	0	0	Dry	-	-	2
63		A2	65	Silty light clay	6.5	7.5YR5/3	Brown	-	7.5YR7/3	1.0	0	1	Dry	-	-	2
63		2Bb	105	Light medium clay	6.5	7.5YR4/4	Brown	-		1.2	0	0	Slight	-	-	2
63		3Bb	150+	Light clay	9.0	7.5YR5/6	Strong brown	-		1.2	2	0	Slight	-	-	1 (120)

Appendix 4 Layer Data – Soil Structure Details

PIT (New #)	Horizon	Lower Depth (cm)	PEDALITY			FABRIC	CONSISTENCE	SOILpak Compaction Score
			Grade	Type	Size (mm)			
1	A1	12	M	PO	5	E	2	1.7
1	A2	20	W	LE	6	E	5	0.9
1	B21	95	S	LE	7	RP	3	1.3
1	B22	140+	M	LE	4	E	3	1.5
2	A11	10	M	PO	7	E	2	1.5
2	A12	25	W	PO	4	E	2	1.4
2	A2	45	W	LE	5	E	3	1.3
2	B2	80	M	LE	7	E	4	1.1
2	C	82+	-	-	-	-	-	-
3	A11	10	W	PO	6	E	3	1.6
3	A12	30	W	LE	5	E	2	1.5
3	B1	50	W	LE	3	E	4	0.7
3	C	75+	-	-	-	-	-	-
4	A11	12	W	PO	4	E	2	1.1
4	A12	60	W	PO	3	E	3	1.2
4	BC	75	G	-	-	S	-	-
4	C	77+	-	-	-	-	-	-
5	A11	10	M	SB	3	E	2	1.7
5	A12	45	W	LE	6	E	3	1.3
5	B1	60	W	AB	10	E	3	1.1
5	C	62+	-	-	-	-	-	-
6	A11	15	M	PO	3	E	2	1.3
6	A12	30	W	PO	5	E	1	1.5
6	BC	70	W	PO	5	E	3	1.2
6	C	100+	-	-	-	-	-	-
7	A1	12	M	SB	3	E	2	1.7
7	B1	60	S	PO	7	RP	4	1.3
7	B21	85	S	PO	4	RP	3	1.5
7	B22	140+	W	PO	4	E	2	1.3
8	A1	20	M	PO	7	E	3	1.6
8	A2	55	W	LE	3	E	2	1.2
8	B21	110	M	AB	10	RP	6	1.0
8	B22	150+	W	PO	6	RP	4	1.4

PIT (New #)	Horizon	Lower Depth (cm)	PEDALITY			FABRIC	CONSISTENCE	SOILpak Compaction Score
			Grade	Type	Size (mm)			
9	A11	15	W	PO	6	E	2	1.6
9	A12	40	W	LE	5	E	3	1.4
9	B2	70	W	LE	3	E	3	1.0
9	BC	100	G	-	-	S	-	-
9	C	105+	-	-	-	-	-	-
10	A11	15	M	PO	4	E	2	1.6
10	A12	30	M	PO	5	E	2	1.5
10	B1	80	W	LE	6	E	4	1.2
10	BC	110	-	-	-	-	-	-
10	C	115+	-	-	-	-	-	-
11	A11	12	M	SB	4	E	2	1.6
11	A12	30	W	PO	5	E	4	1.2
11	BC	70	G	-	-	S	-	-
11	C	85+	-	-	-	-	-	-
12	A1	10	M	SB	3	E	2	1.8
12	A2	50	W	LE	7	E	3	1.1
12	B2	130	W	LE	10	E	5	0.3
12	C	140+	-	-	-	-	-	-
13	A11	10	M	PO	4	E	2	1.7
13	A12	45	W	PO	3	S	1	1.1
13	BC	85	G	-	-	S	-	-
13	C	88+	-	-	-	-	-	-
14	A11	20	W	PO	3	E	2	1.4
14	A12	50	W	PO	2	E	2	1.3
14	C	70+	-	-	-	-	-	-
15	A11	15	M	PO	3	E	3	1.6
15	A12	60	M	PO	6	E	3	1.5
15	B2	100	S	SB	3	RP	2	1.7
15	C	102+	-	-	-	-	-	-
16	A11	10	W	SB	2	E	1	1.8
16	A12	50	W	PO	2	E	1	1.5
16	A2	60	W	LE	8	E	3	1.0
16	C	62+	-	-	-	-	-	-
17	A1	12	W	LE	7	E	2	1.2
17	A2	30	W	AB	5	E	3	1.1
17	B21	85	M	PO	6	RP	3	1.4
17	B22	150+	M	PO	4	RP	2	1.6

PIT (New #)	Horizon	Lower Depth (cm)	PEDALITY			FABRIC	CONSISTENCE	SOILpak Compaction Score
			Grade	Type	Size (mm)			
18	A11	15	W	SB	4	E	1	1.7
18	A12	40	W	LE	7	E	3	1.3
18	B1	90	G	-	-	S	-	-
18	C	100+	-	-	-	-	-	-
19	A1	10	M	PO	7	E	2	1.5
19	A2	20	W	LE	3	E	2	1.3
19	B21	45	S	PO	6	E	4	1.5
19	B22	75	S	PO	4	E	5	1.2
19	C	90+	-	-	-	-	-	-
20	A1	15	W	SB	2	E	2	1.5
20	A3	60	W	LE	7	E	2	1.3
20	B21	95	W	LE	10	E	4	0.7
20	B22	110	-	-	-	-	-	-
20	C	120+	-	-	-	-	-	-
21	A1	20	W	PO	5	E	3	1.4
21	A2	40	W	LE	10	E	4	1.0
21	B21	60	M	LE	20	E	7	0.2
21	B22	90	W	AB	15	E	7	0.2
21	C	95+	-	-	-	-	-	-
22	A11	10	W	PO	4	E	3	1.4
22	A12	30	M	PO	5	E	2	1.3
22	A2	60	M	LE	3	E	3	1.4
22	C	95+	-	-	-	-	-	-
23	A1	15	M	PO	8	E	3	1.6
23	B1	40	S	PO	10	RP	5	1.3
23	B21	80	M	LE	15	E	6	1.0
23	B22	140	M	PO	8	E	3	1.5
23	C	145+	-	-	-	-	-	-
24	A1	15	W	AB	7	E	3	1.3
24	A2	30	W	LE	5	E	2	1.2
24	B2	60	W	LE	20	E	7	0.1
24	C	62+	-	-	-	-	-	-
25	A1	15	M	LE	4	E	3	1.3
25	A2	40	W	LE	5	E	3	1.1
25	B21	70	S	LE	15	RP	4	0.9
25	B22	120	M	LE	5	RP	2	1.5
25	C	140+	-	-	-	-	-	-

PIT (New #)	Horizon	Lower Depth (cm)	PEDALITY			FABRIC	CONSISTENCE	SOILpak Compaction Score
			Grade	Type	Size (mm)			
26	A1	10	M	PO	4	E	3	1.7
26	A2	35	W	AB	15	E	5	0.9
26	B21	95	M	L	12	E	6	0.2
26	B22	150+	W	L	15	E	7	0.2
27	A1	15	W	LE	10	E	5	0.5
27	2Ab	30	W	LE	8	E	3	0.9
27	3Bb	80	M	LE	15	RP	6	0.7
27	4Bb	140+	S	AB	6	RP	4	1.2
28	A1	12	W	LE	10	E	2	1.2
28	A2	25	W	LE	8	E	2	0.9
28	B21	60	W	LE	5	RP	6	0.4
28	B22	75	M	LE	8	RP	3	1.1
28	2Bb	150+	M	PO	5	RP	3	1.4
29	A1	25	M	SB	6	E	3	1.7
29	A2	50	W	PO	3	E	2	1.4
29	B21	95	S	PO	5	RP	5	1.5
29	B22	150+	S	PO	4	RP	5	1.3
30	A1	10	M	PO	8	E	2	1.4
30	A2	20	W	LE	7	E	2	1.3
30	2Bb	50	S	LE	15	RP	5	0.8
30	3Ab	70	W	LE	8	E	4	0.8
30	4Bb	120	M	LE	12	E	2	1.3
30	C	125+	-	-	-	-	-	-
31	A1	25	W	AB	15	E	6	0.8
31	A2	60	W	LE	6	E	3	1.0
31	2Ab	120	M	LE	7	RP	4	0.9
31	2Bb	150+	M	SB	5	RP	2	1.6
32	A1	15	W	AB	10	E	4	1.0
32	B21	45	M	LE	20	RP	6	0.5
32	B22	80	M	AB	10	RP	5	0.8
32	2Bb	100	M	PO	3	RP	3	1.5
32	3Bb	150+	W	PO	5	E	2	1.7
33	A1	10	W	AB	30	E	6	0.3
33	2B1b	60	S	AB	15	RP	5	0.6
33	2B2b	140+	M	PO	4	E	2	1.7
34	A1	12	W	AB	15	E	6	0.7
34	2Ab	50	M	LE	6	RP	5	1.2
34	2Bb	110	M	PO	8	RP	5	0.9
34	3Bb	150+	M	SB	5	RP	3	1.6

PIT (New #)	Horizon	Lower Depth (cm)	PEDALITY			FABRIC	CONSISTENCE	SOILpak Compaction Score
			Grade	Type	Size (mm)			
35	A11	15	M	PO	4	E	2	1.7
35	A12	25	W	LE	10	E	3	1.2
35	2Bb	105	M	PO	12	SP	4	1.0
35	3Bb	140+	M	PO	7	E	2	1.5
36	A1	12	W	PO	4	E	2	1.3
36	A3	50	W	LE	5	E	2	1.2
36	2Ab	75	G	-	-	S	-	-
36	3Ab	135	G	-	-	S	-	-
36	4Bb	150+	W	PO	5	E	1	1.4
37	A1	18	W	PL	12	E	4	0.8
37	A2	32	W	LE	10	E	2	0.9
37	2Bb	60	M	LE	15	RP	4	0.7
37	3B1b	80	M	LE	5	RP	3	1.3
37	3B2b	130+	S	PO	4	RP	2	1.7
38	A1	12	W	AB	30	E	5	0.4
38	B1	40	M	AB	15	E	6	0.5
38	B21	90	M	LE	7	E	4	0.8
38	B22	130+	W	LE	7	E	3	1.2
39	A1	15	W	LE	20	E	6	0.7
39	B2	50	S	PO	10	RP	5	1.2
39	2Bb	80	M	LE	15	E	5	0.8
39	3Bb	140+	G	-	-	S	-	1.5
40	A1	15	W	LE	25	E	6	0.5
40	2Ab	40	S	AB	10	SP	6	1.0
40	2B1b	65	W	AB	30	E	6	0.4
40	2B2b	90	S	PO	15	RP	4	1.2
40	3Bb	150+	M	PO	18	RP	6	0.8
41	A1	17	M	PO	6	E	2	1.4
41	2Bb	55	S	LE	15	RP	6	0.5
41	3Bb	100	M	LE	8	SP	2	1.3
41	4Bb	150+	-	-	-	-	-	-
42	A1	10	M	SB	5	E	2	1.6
42	2Bb	40	M	PO	7	RP	4	1.2
42	3B1b	55	W	LE	10	E	6	0.4
42	3B2b	85	M	LE	12	RP	4	1.1
42	4Bb	150+	S	PO	7	E	3	1.3

PIT (New #)	Horizon	Lower Depth (cm)	PEDALITY			FABRIC	CONSISTENCE	SOILpak Compaction Score
			Grade	Type	Size (mm)			
43	A1	15	S	PO	8	E	2	1.2
43	2Bb	25	G	-	-	S	-	-
43	3Ab	45	M	PO	7	RP	4	1.3
43	4Ab	115	G	-	-	S	-	-
43	4Bb	150+	G	-	-	S	-	-
44	A1	15	M	PO	8	E	3	1.2
44	A2	28	W	LE	8	E	4	1.0
44	2Bb	55	W	LE	15	E	6	0.3
44	3Bb	80	W	LE	15	E	6	0.2
44	4Bb	150+	W	LE	12	E	5	0.4
45	A1	25	M	SB	6	E	2	1.2
45	A2	45	M	AB	12	E	3	0.8
45	B21	100	S	AB	12	RP	5	0.6
45	B22	140+	S	SB	5	RP	3	1.1
46	A1	10	W	AB	20	E	5	0.9
46	2Bb	50	S	PO	25	RP	5	0.7
46	3B1b	80	M	LE	10	E	3	1.4
46	3B2b	150+	S	PO	6	RP	3	1.6
47	A1	12	M	SB	5	E	2	1.6
47	2Ab	28	M	LE	10	E	3	1.2
47	3Ab	80	M	LE	12	RP	4	1.0
47	3Bb	115	W	LE	20	E	6	0.3
47	4Bb	155	M	PO	10	E	4	1.2
47	5Ab	170+	G	-	-	-	-	-
48	A1	12	W	AB	25	E	5	0.4
48	2Ab	32	S	PO	3	E	4	1.4
48	3Ab	60	G	-	-	-	-	-
48	4Ab	75	W	LE	12	E	4	0.7
48	5Ab	115	M	PO	7	RP	3	0.3
48	6Bb	150+	M	PO	8	E	3	1.4
49	A11	10	W	AB	15	E	3	0.9
49	A12	22	M	LE	8	E	2	1.2
49	2B1b	80	M	LE	20	RP	5	0.8
49	2B2b	150+	M	PO	8	RP	5	1.0
50	A1	10	W	PO	7	E	3	1.2
50	2Ab	20	W	LE	10	E	4	1.0
50	3Ab	55	W	LE	6	E	3	1.1
50	4Bb	115	M	AB	15	RP	6	0.7
50	5Bb	150+	S	PO	5	RP	3	1.5

PIT (New #)	Horizon	Lower Depth (cm)	PEDALITY			FABRIC	CONSISTENCE	SOILpak Compaction Score
			Grade	Type	Size (mm)			
51	A1	15	S	PO	7	RP	5	1.7
51	A2	30	M	PO	5	E	3	1.4
51	B21	80	S	LE	5	SP	5	1.2
51	B22	110	M	LE	6	RP	3	1.3
51	2Bb	130+	M	LE	3	RP	2	1.5
52	A1	8	W	AB	25	E	3	0.7
52	2B1b	48	S	PO	7	RP	4	1.3
52	2B2b	70	S	PO	7	E	4	1.2
52	3Bb	95	W	LE	6	E	4	1.1
52	4Bb	140+	M	LE	12	E	4	0.8
53	A1	10	W	SB	7	E	6	0.9
53	2A	40	S	SB	10	RP	6	1.1
53	2B1b	75	S	AB	10	RP	7	0.8
53	2B2b	140+	S	SB	7	RP	5	1.2
54	A1	15	M	PO	8	E	2	1.4
54	2Ab	55	W	LE	10	E	5	0.8
54	3Bb	95	W	LE	20	RP	6	0.4
54	4Bb	140+	W	LE	6	E	3	0.7
55	A1	8	M	PL	12	E	2	0.7
55	2B21b	70	S	PO	10	RP	4	1.1
55	2B22b	95	S	PO	6	RP	3	1.3
55	3Bb	140+	S	SB	5	RP	3	1.7
56	A11	17	W	PL	30	E	3	0.3
56	A12	25	W	LE	10	E	3	0.8
56	2Bb	65	M	LE	18	E	6	0.4
56	3Bb	105	M	LE	12	E	4	0.8
56	4Bb	150+	S	PO	4	RP	4	1.5
57	A1	25	M	AB	12	E	4	0.7
57	B21	95	S	AB	18	RP	6	0.8
57	B22	130+	S	AB	6	RP	4	1.4
58	A1	15	S	PO	7	E	5	1.0
58	2A3b	70	S	AB	30	SP	6	0.7
58	3Ab	150+	-	-	-	-	-	-
59	A11	10	M	SB	5	E	1	1.6
59	A12	27	M	PO	8	E	4	1.2
59	2Ab	80	S	PO	15	RP	5	1.0
59	2Bb	110	S	PO	7	RP	4	1.4
59	3Bb	140+	M	LE	10	E	3	1.3

PIT (New #)	Horizon	Lower Depth (cm)	PEDALITY			FABRIC	CONSISTENCE	SOILpak Compaction Score
			Grade	Type	Size (mm)			
60	A1	12	M	SB	5	E	2	1.6
60	A2	28	W	LE	7	E	2	1.3
60	B2	80	S	PO	12	SP	5	1.0
60	2Bb	115	M	LE	15	RP	5	0.7
60	3Bb	140+	W	LE	15	RP	5	
61	A1	12	W	LE	25	E	6	0.2
61	B21	50	S	AB	15	RP	5	0.9
61	B22	160	S	PO	8	E	5	1.1
61	2Bb	170+	G	-	-	S	-	-
62	A1	15	W	LE	20	E	6	0.6
62	2B21b	75	S	LE	15	RP	6	1.2
62	2B22b	150+	M	E	12	E	4	1.0
63	A11	15	W	PO	20	E	4	0.7
63	A12	45	S	PO	7	RP	3	1.3
63	A2	65	M	LE	15	E	3	1.0
63	2Bb	105	S	PO	7	RP	4	1.2
63	3Bb	150+	M	PO	8	E	3	1.2

Appendix 5 Laboratory Data

Site	Depth cm	pH	EC 1:5 dS/m	ECe dS/m	Cl mg/kg	Exch. cations					CEC	ESP	ESI	Ca/Mg	ASWAT Score	Slaking 2 hrs	NO ₃ -N (mg/kg)	C'well P (mg/kg)	SO ₄ -S (mg/kg)	DTPA Zn (mg/kg)	DTPA Cu (mg/kg)	B (mg/kg)	Org. C (%)
						Ca	Mg	K	Na	Al													
1	0 to 12	6.4	0.06	2.2	12	9.5	2.6	1.0	0.1	0.0	13.2	0.5	0.13	3.65	6	x	2	7	3	0.51	0.27	1.10	2.60
1	12 to 20	6.6	0.04	0.6	16	2.8	1.8	0.7	0.2	0.0	5.5	2.9	0.01	1.56	11	✓	1	5	1	0.03	0.09	0.52	0.48
1	30 to 60	7.7	0.47	4.2	510	5.5	8.2	1.6	4.0	0.0	19.3	20.7	0.02	0.67	11	✓	1	5	18	0.02	0.25	2.60	0.26
1	60 to 90	8.4	0.78	7.0	670	7.0	9.9	1.5	6.1	0.0	24.5	24.9	0.03	0.71	0	✓	1	5	51	0.02	0.29	2.50	0.15
1	90 to 120	8.2	0.82	7.4	730	6.0	11.0	1.5	7.4	0.0	25.9	28.6	0.03	0.55	0	✓	1	5	73	0.02	0.23	1.40	0.15
1	200	7.7	0.58	5.2	630	2.5	5.9	1.1	5.7	0.0	15.2	37.5	0.02	0.42	4	✓	1	5	60	0.02	0.10	0.70	0.15
2	0 to 10	4.7	0.03	0.7	10	2.2	1.1	0.5	0.0	0.2	4.0	0.5	0.06	2.00	8	✓	1	14	3	0.25	0.09	0.29	1.70
2	10 to 25	4.1	0.01	0.2	10	0.1	1.0	0.4	0.0	1.0	2.4	1.6	0.01	0.09	13	✓	1	5	1	0.03	0.04	0.14	0.36
2	30 to 45	4.2	0.01	0.2	10	0.1	1.1	0.4	0.1	0.8	2.4	4.1	0.00	0.11	12	✓	1	5	1	0.05	0.05	0.09	0.15
2	60 to 90	4.2	0.06	0.5	30	1.2	5.3	0.8	0.8	0.6	8.7	8.9	0.01	0.23	11	✓	1	5	1	0.02	0.15	0.18	0.16
3	0 to 10	5.5	0.05	0.1	11	5.5	1.2	0.4	0.0	0.0	7.2	0.3	0.18	4.58	11	x	1	8	4	0.43	0.23	0.32	2.00
3	15 to 30	4.2	0.01	0.1	10	1.2	0.8	0.2	0.0	0.6	2.8	0.7	0.01	1.46	11	x	1	5	1	0.10	0.26	0.13	0.39
3	45 to 60	5.3	0.01	0.1	10	2.6	1.1	0.3	0.1	0.1	4.2	2.2	0.00	2.36	12	✓	1	5	1	0.12	0.16	0.12	0.25
8	0 to 15	5.6	0.05	1.2	10	6.0	2.0	0.7	0.0	0.0	8.7	0.3	0.15	3.00	7	x	1	5	3	0.50	0.27	0.54	1.80
8	15 to 30	5.6	0.02	0.5	10	1.8	1.2	0.6	0.0	0.0	3.6	0.6	0.04	1.50	11	✓	1	5	1	0.02	0.08	0.25	0.28
8	30 to 55	6.1	0.01	0.2	10	1.5	1.0	0.5	0.0	0.0	3.0	0.7	0.02	1.52	12	✓	1	8	1	0.02	0.04	0.23	0.15
8	60 to 90	6.6	0.04	0.4	18	3.0	2.6	1.0	0.2	0.0	6.8	3.1	0.01	1.15	11	✓	1	5	2	0.13	0.13	0.53	0.15
8	90 to 120	6.9	0.08	0.7	53	5.5	6.5	1.6	0.9	0.0	14.5	6.0	0.01	0.85	7	✓	1	5	2	0.02	0.21	1.10	0.15
10	0 to 15	5.8	0.05	0.7	10	7.0	1.2	0.7	0.0	0.0	8.9	0.2	0.22	5.83	12	x	1	7	3	0.81	0.27	0.45	1.80
10	15 to 30	4.2	0.01	0.2	10	1.6	1.0	0.4	0.0	0.6	3.6	0.6	0.02	1.62	12	✓	1	5	1	0.19	0.33	0.20	0.83
10	30 to 60	4.5	0.01	0.2	10	1.8	1.2	0.4	0.0	0.1	3.6	1.1	0.01	1.50	14	✓	1	5	1	0.02	0.12	0.16	0.28
10	60 to 90	4.9	0.01	0.2	10	1.9	1.3	0.4	0.1	0.1	3.8	2.6	0.00	1.46	14	✓	1	5	1	0.02	0.05	0.09	0.15

Site	Depth cm	pH	EC 1:5 CaCl2	ECe dS/m	Cl mg/kg	Exch. cations					CEC	ESP	ESI	Ca/Mg	ASWAT Score	Slaking 2 hrs	NO ₃ -N (mg/kg)	C'well P (mg/kg)	SO ₄ -S (mg/kg)	DTPA Zn (mg/kg)	DTPA Cu (mg/kg)	B (mg/kg)	Org. C (%)
						Ca	Mg	K	Na	Al													
12	0 to 10	5.6	0.06	0.8	10	6.0	2.3	0.8	0.0	0.0	9.1	0.4	0.14	2.61	5	x	2	20	4	0.64	0.18	0.80	2.40
12	15 to 30	4.3	0.01	0.2	10	0.2	1.1	0.6	0.0	0.4	2.3	1.8	0.01	0.16	8	x	1	5	2	0.08	0.07	0.26	0.27
12	30 to 50	4.5	0.01	0.2	10	0.2	1.5	0.5	0.2	0.2	2.6	5.8	0.00	0.13	12	✓	1	5	1	0.03	0.09	0.16	0.15
12	60 to 90	5.3	0.01	0.2	10	0.8	1.6	0.4	0.2	0.1	3.1	6.5	0.00	0.47	14	✓	1	5	1	0.02	0.13	0.13	0.15
13	0 to 15	4.7	0.03	0.7	10	3.2	0.9	0.7	0.0	0.1	5.0	0.4	0.07	3.52	8	x	1	6	2	1.10	0.12	0.25	1.40
13	15 to 30	4.7	0.02	0.5	10	2.3	1.1	0.5	0.0	0.1	4.1	0.7	0.03	2.09	10	✓	1	5	1	0.05	0.02	0.26	0.72
13	30 to 60	4.3	0.02	0.5	10	0.9	1.6	0.5	0.1	0.7	3.7	2.9	0.01	0.53	13	✓	1	5	2	0.02	0.02	0.28	0.31
13	60 to 90	4.3	0.02	0.5	10	0.9	1.6	0.5	0.2	0.7	3.8	4.2	0.00	0.53	13	✓	1	5	1	0.02	0.01	0.14	0.15
15	0 to 15	4.7	0.02	0.5	13	2.8	0.8	0.5	0.0	0.1	4.2	0.7	0.03	3.41	8	x	1	5	2	0.55	0.22	0.18	1.10
15	15 to 30	4.3	0.01	0.2	10	2.3	0.7	0.4	0.0	0.3	3.7	0.8	0.01	3.38	12	✓	1	5	1	0.06	0.08	0.33	0.65
15	30 to 60	4.6	0.01	0.2	10	2.2	1.6	0.3	0.1	0.1	4.3	1.2	0.01	1.38	14	✓	1	5	1	0.02	0.04	0.11	0.26
15	60 to 90	4.6	0.04	0.9	11	4.7	4.8	0.5	0.2	0.3	10.5	1.8	0.02	0.98	12	✓	1	5	1	0.02	0.07	0.22	0.28
17	0 to 12	5.0	0.04	0.6	10	3.3	0.8	0.8	0.1	0.1	5.1	2.0	0.02	4.02	12	x	7	18	3	0.18	0.18	0.34	0.70
17	15 to 30	5.6	0.03	0.4	12	2.1	0.7	0.1	0.6	0.0	3.5	16.3	0.00	3.04	12	✓	1	27	3	0.02	0.05	0.14	0.15
17	30 to 60	7.2	0.11	1.0	50	7.5	4.7	0.3	5.7	0.0	18.2	31.4	0.00	1.60	7	✓	1	9	4	0.02	0.29	0.47	0.16
17	60 to 90	8.8	0.41	3.7	81	14.0	4.8	0.4	6.5	0.0	25.7	25.3	0.02	2.92	9	✓	1	5	3	0.02	0.24	0.70	0.15
17	200	8.9	0.39	3.5	120	6.0	4.9	0.8	9.6	0.0	21.3	45.0	0.01	1.22	11	✓	2	5	4	0.02	0.29	0.59	0.15
17	300	9.1	0.53	4.8	120	8.5	4.6	0.8	9.6	0.1	23.6	40.7	0.01	1.85	13	✓	2	5	5	0.09	0.34	0.34	0.15
20	0 to 15	5.1	0.04	0.9	10	3.1	1.2	0.9	0.0	0.1	5.3	0.6	0.07	2.58	10	x	1	9	3	0.93	0.13	0.28	1.40
20	15 to 30	5.2	0.02	0.5	10	4.0	1.2	0.8	0.0	0.1	6.1	0.5	0.04	3.33	12	✓	1	5	1	0.10	0.20	0.25	0.88
20	30 to 60	5.6	0.01	0.2	11	2.4	1.3	0.3	0.0	0.0	4.1	0.7	0.01	1.85	14	✓	1	6	1	0.02	0.08	0.13	0.30
20	60 to 90	5.7	0.01	0.1	10	1.0	1.7	0.3	0.1	0.0	3.2	4.4	0.00	0.59	14	✓	1	5	1	0.02	0.05	0.10	0.16
21	0 to 15	4.7	0.03	0.4	18	1.9	0.9	0.4	0.2	0.1	3.6	6.5	0.00	2.09	8	x	1	5	4	0.13	0.17	0.19	0.92
21	20 to 30	5.3	0.01	0.2	11	1.3	0.8	0.2	0.3	0.1	2.7	12.5	0.00	1.71	14	✓	1	5	1	0.02	0.06	0.13	0.19
21	40 to 60	6.2	0.06	0.8	14	1.3	2.6	0.2	1.7	0.0	5.8	29.4	0.00	0.50	16	✓	1	5	4	0.02	0.12	0.22	0.15
21	60 to 90	8.5	0.21	4.8	80	1.8	2.5	0.3	2.4	0.0	7.0	34.1	0.01	0.72	12	✓	2	5	33	0.02	0.08	0.17	0.15

Site	Depth cm	pH	EC 1:5 CaCl2	ECe dS/m	Cl mg/kg	Exch. cations					CEC	ESP	ESI	Ca/Mg	ASWAT Score	Slaking 2 hrs	NO ₃ -N (mg/kg)	C'well P (mg/kg)	SO ₄ -S (mg/kg)	DTPA Zn (mg/kg)	DTPA Cu (mg/kg)	B (mg/kg)	Org. C (%)
						Ca	Mg	K	Na	Al													
22	0 to 15	5.0	0.05	1.2	10	4.8	2.2	0.7	0.0	0.1	7.8	0.4	0.13	2.18	11	x	1	5	5	0.66	0.13	0.32	1.60
22	15 to 30	5.2	0.03	0.7	10	3.4	2.4	0.6	0.1	0.1	6.5	0.8	0.04	1.42	11	✓	1	5	4	0.09	0.09	0.20	0.40
22	30 to 60	7.6	0.13	1.3	18	9.0	5.4	0.5	0.3	0.0	15.2	1.6	0.08	1.67	8	✓	1	5	2	0.03	0.19	0.25	0.20
24	0 to 15	4.3	0.02	0.5	10	1.5	0.9	0.5	0.0	0.6	3.6	0.6	0.04	1.65	12	x	1	5	3	0.31	0.10	0.16	1.70
24	15 to 30	4.4	0.01	0.2	10	0.9	1.1	0.4	0.1	0.4	2.8	2.5	0.00	0.77	14	✓	1	5	2	0.04	0.03	0.15	0.60
24	30 to 60	4.8	0.02	0.5	10	0.3	1.9	0.4	0.2	0.1	2.8	7.0	0.00	0.15	14	✓	1	5	2	0.02	0.02	0.10	0.17
26	0 to 15	4.7	0.02	0.3	11	1.4	0.7	0.7	0.0	0.2	3.0	1.0	0.02	1.92	8	xx	1	5	2	0.39	0.22	0.21	0.82
26	15 to 30	4.5	0.01	0.1	12	0.9	0.5	0.3	0.1	0.2	2.0	3.0	0.00	1.88	12	x	1	5	1	0.02	0.08	0.12	0.19
26	35 to 60	4.7	0.05	0.5	32	0.8	2.7	0.3	1.1	0.1	5.0	22.1	0.00	0.30	14	✓	1	5	3	0.02	0.19	0.25	0.15
26	60 to 90	5.3	0.19	1.9	160	1.0	4.6	0.5	2.8	0.1	9.0	31.1	0.01	0.21	11	✓	1	5	26	0.07	0.30	0.35	0.15
26	200	4.2	0.07	0.7	29	0.9	3.1	0.4	2.1	0.6	7.1	29.7	0.00	0.27	14	✓	1	5	15	0.04	0.17	0.10	0.15
27	0 to 15	5.2	0.04	0.6	10	6.0	1.6	1.2	0.0	0.1	8.9	0.3	0.12	3.75	9	xx	1	12	6	0.63	0.47	0.49	1.10
27	15 to 30	5.4	0.02	0.2	10	5.0	1.2	0.6	0.1	0.1	7.0	1.1	0.02	4.17	12	x	2	7	2	0.04	0.30	0.29	0.57
27	30 to 60	6.5	0.05	0.4	10	13.0	5.6	0.9	0.7	0.0	20.2	3.2	0.02	2.32	11	x	1	14	4	0.02	0.75	0.85	0.39
27	60 to 90	7.6	0.10	0.8	16	14.0	6.3	0.7	1.0	0.0	22.0	4.5	0.02	2.22	6	✓	1	6	1	0.02	0.44	1.10	0.35
27	200	8.1	0.44	3.3	470	15.0	4.7	0.7	3.0	0.0	23.4	12.8	0.03	3.19	12	✓	1	8	3	0.02	0.42	0.73	0.15
27	300	8.3	0.33	2.5	310	14.0	4.8	0.7	3.3	0.0	22.8	14.5	0.02	2.92	12	✓	1	10	4	0.14	0.46	0.60	0.15
28	0 to 12	5.0	0.05	0.7	13	4.0	1.2	0.8	0.3	0.1	6.3	3.9	0.01	3.33	8	xx	8	10	2	0.53	0.31	0.35	1.10
28	15 to 25	6.5	0.03	0.4	10	4.4	0.7	0.1	0.6	0.0	5.8	10.6	0.00	6.57	12	x	1	6	1	0.05	0.08	0.31	0.33
28	30 to 60	5.5	0.22	2.0	65	7.5	3.3	0.2	4.3	0.0	15.3	28.2	0.01	2.27	16	✓	1	5	8	0.03	0.68	0.50	0.20
28	60 to 90	6.4	0.19	1.7	100	9.0	4.4	0.3	6.1	0.0	19.8	30.8	0.01	2.05	11	✓	1	6	11	0.10	0.82	0.43	0.15
28	200	8.5	0.26	2.3	35	9.0	3.4	0.4	8.7	0.0	21.5	40.4	0.01	2.65	12	✓	2	6	5	0.18	0.61	0.35	0.19
28	300	8.4	0.21	1.9	10	6.0	3.1	0.5	8.7	0.0	18.3	47.5	0.00	1.94	13	✓	1	7	4	0.14	0.75	0.26	0.15

Site	Depth cm	pH	EC 1:5 CaCl2	ECe dS/m	Cl mg/kg	Exch. cations					CEC	ESP	ESI	Ca/Mg	ASWAT Score	Slaking 2 hrs	NO ₃ -N (mg/kg)	C'well P (mg/kg)	SO ₄ -S (mg/kg)	DTPA Zn (mg/kg)	DTPA Cu (mg/kg)	B (mg/kg)	Org. C (%)
						Ca	Mg	K	Na	Al													
29	0 to 15	4.9	0.03	0.4	12	2.8	1.5	0.8	0.1	0.1	5.2	1.3	0.02	1.87	12	x	1	5	5	0.21	0.12	0.30	1.20
29	15 to 25	4.5	0.02	0.3	11	1.5	1.0	0.4	0.0	0.5	3.4	1.2	0.02	1.52	12	x	1	5	1	0.04	0.05	0.20	0.45
29	30 to 60	4.5	0.01	0.2	13	0.4	1.3	0.3	0.1	0.4	2.6	4.3	0.00	0.30	14	x	1	5	1	0.02	0.03	0.10	0.15
29	60 to 90	6.7	0.27	2.4	160	2.0	16.0	1.6	4.4	0.0	24.0	18.3	0.01	0.13	11	x	1	5	30	0.02	0.20	0.44	0.15
29	200	6.6	0.48	4.3	260	2.2	17.0	0.8	5.2	0.0	25.2	20.7	0.02	0.13	10	✓	1	5	100	0.02	0.12	0.24	0.15
29	300	6.8	0.43	3.9	250	0.9	12.0	0.5	4.0	0.0	17.4	23.0	0.02	0.08	11	✓	1	5	120	0.02	0.11	0.12	0.15
31	0 to 15	6.1	0.02	0.3	10	3.6	0.9	0.5	0.0	0.0	5.0	0.6	0.03	3.96	12	x	1	5	1	0.03	0.18	0.25	0.28
31	15 to 25	6.4	0.02	0.3	13	2.2	0.9	0.4	0.2	0.0	3.6	4.1	0.00	2.42	12	✓	1	5	1	0.02	0.07	0.22	0.15
31	30 to 60	7.6	0.06	0.8	29	5.0	5.3	1.0	2.4	0.0	13.7	17.5	0.00	0.94	12	✓	1	5	4	0.02	0.14	0.40	0.15
31	60 to 90	5.4	0.04	0.9	15	4.4	1.2	1.1	0.0	0.1	6.8	0.3	0.14	3.67	12	✓	1	5	3	0.81	0.37	0.42	1.40
31	200	8.2	0.15	1.4	23	8.0	12.0	1.9	5.2	0.0	27.1	19.2	0.01	0.67	12	✓	1	5	6	0.02	0.10	0.79	0.15
31	300	8.9	0.24	2.2	16	6.5	7.0	1.0	3.8	0.0	18.3	20.8	0.01	0.93	13	✓	1	5	4	0.02	0.06	0.24	0.15
32	0 to 15	5.1	0.02	0.3	13	3.0	1.2	0.9	0.0	0.1	5.2	0.4	0.05	2.50	12	x	1	5	2	0.07	0.26	0.43	0.52
32	15 to 30	6.2	0.02	0.2	15	11.0	3.4	0.7	0.1	0.0	15.2	0.5	0.04	3.24	9	x	1	5	1	0.02	0.22	1.00	0.18
32	30 to 60	7.3	0.06	0.5	12	13.0	4.6	0.6	0.2	0.0	18.4	0.9	0.06	2.83	8	x	1	5	2	0.02	0.42	1.40	0.19
32	60 to 90	8.1	0.12	1.1	12	16.0	5.4	0.6	0.3	0.0	22.3	1.2	0.10	2.96	6	x	1	5	2	0.02	0.32	1.90	0.15
32	90 to 120	8.2	0.10	2.3	14	7.0	4.5	0.6	0.4	0.0	12.5	3.2	0.03	1.56	12	✓	1	5	3	0.02	0.21	1.00	0.15
32	200	9.0	0.26	2.3	27	4.8	9.1	1.1	7.4	0.0	22.4	33.0	0.01	0.53	15	✓	1	5	5	0.02	0.25	4.00	0.15
32	300	9.1	0.46	4.1	88	7.5	8.2	1.0	9.6	0.0	26.3	36.5	0.01	0.91	12	✓	1	5	15	0.02	0.22	2.00	0.15
34	0 to 12	5.8	0.05	0.7	13	8.5	2.3	1.1	0.0	0.0	11.9	0.3	0.20	3.70	8	xx	1	9	2	0.49	0.52	0.48	1.20
34	15 to 30	6.1	0.03	0.3	14	15.0	3.0	0.6	0.0	0.0	18.7	0.2	0.19	5.00	4	x	1	12	2	0.09	0.38	0.61	1.30
34	30 to 60	7.6	0.17	1.5	10	29.0	3.0	0.4	0.1	0.0	32.5	0.3	0.55	9.67	0	x	1	11	2	0.05	0.40	0.66	0.92
34	60 to 90	8.0	0.12	1.1	10	26.0	4.8	0.5	0.2	0.0	31.5	0.6	0.20	5.42	0	✓	1	5	2	0.02	0.52	0.84	0.15
34	200	8.7	0.47	4.2	120	16.0	5.8	0.3	7.8	0.0	29.9	26.1	0.02	2.76	12	✓	1	9	17	0.03	0.28	1.10	0.15
34	300	7.8	0.07	1.6	18	4.1	2.2	0.1	2.2	0.0	8.6	25.6	0.00	1.86	12	✓	1	7	2	0.05	0.09	0.15	0.15

Site	Depth cm	pH	EC 1:5 CaCl2	ECe dS/m	Cl mg/kg	Exch. cations					CEC	ESP	ESI	Ca/Mg	ASWAT Score	Slaking 2 hrs	NO ₃ -N (mg/kg)	C'well P (mg/kg)	SO ₄ -S (mg/kg)	DTPA Zn (mg/kg)	DTPA Cu (mg/kg)	B (mg/kg)	Org. C (%)
						Ca	Mg	K	Na	Al													
35	0 to 15	5.6	0.05	0.7	10	7.0	2.1	1.2	0.1	0.0	10.4	0.9	0.06	3.33	8	x	4	7	2	0.69	0.59	0.55	1.60
35	15 to 25	5.9	0.02	0.3	10	5.5	1.8	0.5	0.1	0.0	7.9	0.9	0.02	3.06	11	x	1	5	1	0.05	0.38	0.33	0.44
35	30 to 60	6.5	0.03	0.2	10	14.0	6.3	0.5	0.5	0.0	21.3	2.4	0.01	2.22	7	x	1	5	1	0.03	0.78	0.39	0.25
35	60 to 90	6.8	0.03	0.2	10	14.0	6.7	0.5	0.7	0.0	22.0	3.4	0.01	2.09	8	✓	1	5	1	0.02	0.67	0.49	0.28
35	90 to 120	8.2	0.17	1.5	43	17.0	7.5	0.5	1.6	0.0	26.6	6.0	0.03	2.27	11	✓	1	5	1	0.05	0.37	0.71	0.15
35	200	7.9	0.11	1.0	30	14.0	4.4	0.3	1.4	0.0	20.1	7.0	0.02	3.18	12	✓	1	5	1	0.08	0.24	0.29	0.15
35	300	7.9	0.07	0.6	10	9.0	4.3	0.2	1.9	0.0	15.4	12.4	0.01	2.09	14	✓	1	5	1	0.07	0.13	0.28	0.15
39	0 to 15	5.5	0.03	0.3	11	5.0	1.6	1.0	0.0	0.0	7.6	0.3	0.11	3.13	8	xx	1	8	2	0.39	0.52	0.39	0.91
39	15 to 30	5.9	0.04	0.3	12	12.0	6.4	0.5	0.3	0.0	19.2	1.6	0.03	1.88	7	x	1	5	1	0.03	0.59	0.83	0.40
39	30 to 60	7.9	0.14	1.1	20	16.0	6.9	0.5	0.6	0.0	24.0	2.4	0.06	2.32	0	x	1	5	2	0.02	0.46	1.10	0.22
39	60 to 90	7.5	0.04	0.4	18	6.0	2.5	0.3	0.4	0.0	9.2	4.0	0.01	2.40	7	✓	1	14	2	0.09	0.18	0.42	0.15
39	200	5.5	0.02	0.3	12	7.5	5.1	0.6	0.4	0.0	13.6	3.2	0.01	1.47	14	✓	1	7	2	0.05	0.24	0.18	0.15
39	300	5.8	0.02	0.3	11	5.0	4.4	0.5	0.4	0.0	10.3	4.1	0.00	1.14	14	✓	1	6	2	0.09	0.15	0.15	0.15
40	0 to 15	5.7	0.04	0.4	13	9.5	2.7	0.9	0.0	0.0	13.1	0.2	0.26	3.52	8	xx	1	28	2	0.45	0.61	0.51	1.40
40	15 to 30	5.7	0.02	0.2	11	10.0	3.0	0.6	0.1	0.0	13.7	0.7	0.03	3.33	9	x	1	7	1	0.05	0.60	0.49	0.57
40	30 to 60	6.4	0.03	0.3	10	11.0	3.5	0.4	0.3	0.0	15.2	2.1	0.01	3.14	9	✓	1	15	1	0.06	0.52	0.60	0.33
40	60 to 90	7.1	0.06	0.5	29	12.0	4.1	0.6	0.7	0.0	17.3	3.8	0.02	2.93	8	✓	1	28	1	0.03	0.46	1.20	0.28
40	200	8.0	0.08	0.8	10	9.5	3.2	0.6	0.5	0.0	13.8	3.8	0.02	2.97	10	✓	1	11	1	0.02	0.20	0.71	0.15
40	300	7.1	0.05	0.5	20	7.5	3.5	0.5	1.3	0.0	12.8	10.2	0.00	2.14	13	✓	1	6	1	0.05	0.32	0.38	0.15
41	0 to 15	4.8	0.04	0.6	10	3.5	1.2	0.6	0.1	0.1	5.5	1.4	0.03	2.92	11	xx	6	7	2	0.51	0.42	0.36	0.91
41	17 to 30	5.5	0.05	0.4	10	10.0	7.3	0.2	0.9	0.0	18.4	4.7	0.01	1.37	13	✓	1	5	2	0.02	0.52	0.55	0.30
41	30 to 60	6.9	0.11	0.8	19	10.0	9.1	0.3	1.3	0.0	20.7	6.3	0.02	1.10	11	✓	1	5	21	0.03	0.54	1.00	0.21
41	60 to 90	7.6	0.12	0.8	22	8.5	6.7	0.3	1.6	0.0	17.1	9.4	0.01	1.27	7	✓	1	7	28	0.03	0.26	0.55	0.15
41	90 to 120	6.7	0.06	1.4	21	5.5	3.8	0.2	1.3	0.0	10.8	12.1	0.00	1.45	11	✓	1	5	10	0.12	0.21	0.19	0.15
41	200	7.4	0.06	1.4	14	3.4	5.8	0.2	4.0	0.0	13.4	29.9	0.00	0.59	13	✓	1	5	1	0.06	0.20	0.24	0.15
41	300	8.9	0.48	2.9	130	18.0	12.0	0.4	7.8	0.0	38.2	20.4	0.02	1.50	13	✓	1	5	7	0.06	0.27	0.27	0.15

Site	Depth cm	pH	EC 1:5 CaCl2	ECe dS/m	Cl mg/kg	Exch. cations					CEC	ESP	ESI	Ca/Mg	ASWAT Score	Slaking 2 hrs	NO ₃ -N (mg/kg)	C'well P (mg/kg)	SO ₄ -S (mg/kg)	DTPA Zn (mg/kg)	DTPA Cu (mg/kg)	B (mg/kg)	Org. C (%)
						Ca	Mg	K	Na	Al													
42	0 to 10	5.5	0.05	0.5	19	9.5	3.8	0.7	0.5	0.0	14.5	3.6	0.01	2.50	12	x	1	23	1	0.54	0.59	0.56	1.30
42	15 to 30	6.7	0.06	0.5	13	15.0	6.3	0.3	1.8	0.0	23.4	7.7	0.01	2.38	13	x	1	5	1	0.10	0.53	0.87	0.89
42	40 to 55	7.2	0.06	0.8	19	7.0	3.8	0.2	2.1	0.0	13.1	16.0	0.00	1.84	14	✓	1	5	1	0.04	0.32	0.74	0.36
42	60 to 90	8.4	0.28	2.5	65	9.5	7.2	0.5	5.2	0.0	22.4	23.3	0.01	1.32	11	✓	1	7	43	0.04	0.49	1.70	0.15
42	90 to 120	8.5	0.40	3.4	66	10.0	5.8	0.7	4.8	0.0	21.3	22.6	0.02	1.72	10	✓	2	7	64	0.07	0.28	1.40	0.15
42	200	8.3	0.19	1.7	14	9.0	7.9	0.6	4.3	0.0	21.8	19.7	0.01	1.14	10	✓	1	8	2	0.03	0.27	0.91	0.15
42	300	6.7	0.02	0.5	10	3.3	1.6	0.1	0.5	0.0	5.6	9.4	0.00	2.06	12	✓	1	5	1	0.04	0.06	0.08	0.15
43	0 to 10	5.6	0.05	0.7	16	9.5	2.1	1.1	0.0	0.0	12.7	0.2	0.32	4.52	6	x	7	17	1	0.57	0.53	0.39	1.20
43	15 to 25	6.1	0.02	0.5	10	7.0	1.5	0.6	0.0	0.0	9.2	0.3	0.06	4.67	5	✓	2	18	1	0.12	0.15	0.21	0.25
43	30 to 45	6.4	0.03	0.3	10	13.0	3.0	0.7	0.0	0.0	16.7	0.2	0.13	4.33	5	✓	1	18	1	0.12	0.42	0.41	0.80
43	60 to 90	6.7	0.01	0.2	10	4.1	1.0	0.4	0.0	0.0	5.5	0.7	0.01	4.14	4	✓	1	10	1	0.11	0.08	0.14	0.15
43	200	6.9	0.02	0.5	10	6.0	1.8	0.3	0.2	0.0	8.3	2.9	0.01	3.33	6	✓	2	13	1	0.18	0.26	0.24	0.15
43	300	7.6	0.07	0.6	10	15.0	5.7	0.5	0.6	0.0	21.8	2.8	0.02	2.63	8	✓	2	6	1	0.07	0.38	0.22	0.15
45	0 to 15	4.7	0.02	0.3	16	2.3	0.6	0.9	0.0	0.1	4.0	0.8	0.03	3.97	9	x	1	14	3	0.27	0.32	0.28	0.57
45	15 to 30	5.8	0.01	0.1	13	1.5	0.5	0.3	0.1	0.0	2.4	4.3	0.00	3.06	12	✓	1	10	1	0.05	0.07	0.15	0.35
45	30 to 60	6.1	0.08	0.7	45	5.5	3.6	0.3	2.1	0.0	11.5	18.3	0.00	1.53	15	✓	1	5	2	0.02	0.39	0.56	0.21
45	60 to 90	7.4	0.13	1.2	88	5.5	4.0	0.4	2.9	0.0	12.8	22.7	0.01	1.38	12	✓	1	5	4	0.02	0.43	1.10	0.15
45	200	7.3	0.71	6.4	810	7.5	5.2	0.6	7.4	0.0	20.7	35.8	0.02	1.44	10	✓	1	6	3	0.05	0.70	0.96	0.15
45	300	8.4	0.67	6.0	590	13.0	4.8	0.6	7.4	0.0	25.8	28.7	0.02	2.71	10	✓	1	11	5	0.06	0.60	0.75	0.15
47	0 to 12	5.7	0.04	0.4	10	13.0	4.3	0.8	0.4	0.0	18.5	2.2	0.02	3.02	7	xx	1	21	1	0.50	0.72	0.52	1.30
47	15 to 28	6.9	0.05	0.5	10	14.0	5.3	0.4	0.6	0.0	20.3	3.0	0.02	2.64	8	x	1	9	1	0.10	0.33	0.65	0.46
47	30 to 60	7.9	0.14	1.3	10	18.0	6.6	0.4	1.0	0.0	26.0	3.9	0.04	2.73	8	✓	1	6	1	0.04	0.46	0.83	0.45
47	75 to 90	8.4	0.22	1.7	17	21.0	8.2	0.3	2.7	0.0	32.2	8.4	0.03	2.56	11	✓	1	5	1	0.02	0.45	2.00	0.22
47	90 to 120	8.5	0.30	2.3	80	15.0	9.1	0.3	3.9	0.0	28.3	13.8	0.02	1.65	12	✓	1	5	10	0.03	0.44	2.50	0.15
47	200	6.9	0.02	0.5	10	4.1	2.1	0.2	0.6	0.0	7.0	8.7	0.00	1.95	12	✓	3	10	1	0.07	0.11	0.16	0.15
47	300	6.5	0.04	0.9	10	6.0	4.3	0.4	1.3	0.0	12.0	10.9	0.00	1.40	14	✓	1	14	1	0.14	0.21	0.21	0.15

Site	Depth cm	pH	EC 1:5 CaCl2	ECe dS/m	Cl mg/kg	Exch. cations					CEC	ESP	ESI	Ca/Mg	ASWAT Score	Slaking 2 hrs	NO ₃ -N (mg/kg)	C'well P (mg/kg)	SO ₄ -S (mg/kg)	DTPA Zn (mg/kg)	DTPA Cu (mg/kg)	B (mg/kg)	Org. C (%)
						Ca	Mg	K	Na	Al													
49	0 to 15	5.2	0.08	0.8	14	9.5	2.6	2.1	0.0	0.1	14.3	0.3	0.29	3.65	6	x	15	79	3	1.60	0.83	0.64	1.90
49	15 to 30	6.4	0.04	0.4	10	14.0	5.1	1.0	0.2	0.0	20.3	1.0	0.04	2.75	6	✓	2	9	1	0.06	0.61	0.67	0.55
49	30 to 60	7.0	0.05	0.4	10	15.0	7.0	0.7	0.5	0.0	23.3	2.2	0.02	2.14	7	x	1	5	1	0.05	0.63	1.00	0.48
49	60 to 90	8.1	0.13	1.0	10	14.0	8.0	0.5	1.4	0.1	24.0	5.8	0.02	1.75	9	✓	1	6	1	0.05	0.52	1.20	0.28
49	200	8.0	0.28	2.1	73	20.0	12.0	0.9	2.0	0.0	34.9	5.7	0.05	1.67	0	✓	8	8	21	0.06	0.30	3.90	0.15
49	300	7.6	0.14	1.3	66	9.5	5.2	0.5	1.3	0.0	16.5	7.9	0.02	1.83	4	✓	4	10	8	0.13	0.29	0.85	0.15
50	0 to 15	5.1	0.08	1.1	21	5.5	1.5	1.4	0.0	0.1	8.5	0.5	0.17	3.67	11	x	14	29	4	1.10	0.48	0.50	1.30
50	15 to 30	5.9	0.03	0.4	10	5.0	1.5	0.4	0.0	0.0	7.0	0.6	0.05	3.33	12	✓	2	14	1	0.16	0.28	0.30	0.31
50	30 to 60	6.8	0.02	0.3	10	4.2	1.5	0.2	0.1	0.0	6.0	1.5	0.01	2.80	12	✓	1	9	1	0.08	0.16	0.19	0.15
50	60 to 90	7.3	0.04	0.3	10	12.0	8.1	0.4	0.4	0.0	20.9	1.8	0.02	1.48	3	✓	1	9	1	0.03	0.38	0.54	0.15
50	200	8.2	0.18	1.1	24	24.0	17.0	0.4	0.6	0.0	42.0	1.5	0.12	1.41	5	✓	2	5	3	0.03	0.27	0.36	0.15
50	300	8.2	0.22	1.7	110	11.0	15.0	0.2	0.7	0.0	27.0	2.7	0.08	0.73	12	✓	1	5	11	0.16	0.27	0.67	0.15
53	0 to 15	5.2	0.05	0.5	16	11.0	4.2	0.7	0.7	0.1	16.7	4.4	0.01	2.62	10	xx	1	38	2	0.90	1.00	0.58	1.40
53	15 to 30	6.7	0.06	0.5	17	18.0	6.8	0.3	2.0	0.0	27.1	7.4	0.01	2.65	10	xx	1	9	2	0.15	0.64	0.84	0.90
53	30 to 60	7.9	0.18	1.4	43	16.0	7.7	0.4	3.4	0.0	27.5	12.4	0.01	2.08	12	✓	1	9	5	0.06	0.50	1.40	0.39
53	60 to 90	8.2	0.31	2.3	91	15.0	8.1	0.4	4.8	0.0	28.3	16.9	0.02	1.85	11	✓	1	9	30	0.06	0.61	1.70	0.24
53	200	8.0	0.71	5.3	490	9.0	6.7	0.6	7.8	0.0	24.1	32.4	0.02	1.34	11	✓	4	8	130	0.06	0.40	0.63	0.15
53	300	8.7	0.91	5.5	550	22.0	6.9	0.4	9.6	0.0	38.9	24.7	0.04	3.19	0	✓	4	6	170	0.03	0.16	0.37	0.15
54	0 to 15	5.1	0.04	0.6	29	7.5	2.4	0.7	0.1	0.1	10.7	0.8	0.05	3.13	11	x	4	14	1	0.39	0.53	0.41	0.99
54	15 to 30	5.7	0.02	0.2	18	7.5	2.8	0.3	0.2	0.0	10.7	1.7	0.01	2.68	11	x	2	7	1	0.06	0.35	0.33	0.37
54	30 to 55	6.3	0.03	0.3	16	6.0	3.1	0.2	0.5	0.0	9.8	5.3	0.01	1.94	12	✓	1	7	1	0.04	0.36	0.34	0.15
54	60 to 90	6.8	0.07	0.6	55	8.0	4.7	0.3	1.1	0.0	14.1	7.8	0.01	1.70	13	✓	1	7	1	0.03	0.51	0.46	0.15
54	90 to 120	7.1	0.17	1.5	180	7.0	4.4	0.3	1.6	0.0	13.3	12.0	0.01	1.59	4	✓	1	15	9	0.02	0.20	0.47	0.15
54	200	8.2	0.14	1.3	26	9.5	7.7	0.3	1.1	0.0	18.6	5.9	0.02	1.23	8	✓	1	5	3	0.04	0.24	0.28	0.15
54	300	8.3	0.19	1.1	18	25.0	9.9	0.3	1.5	0.0	36.7	4.1	0.05	2.53	6	✓	1	5	4	0.03	0.21	0.25	0.15

Site	Depth cm	pH	EC 1:5 CaCl2	ECe dS/m	Cl mg/kg	Exch. cations					CEC	ESP	ESI	Ca/Mg	ASWAT Score	Slaking 2 hrs	NO ₃ -N (mg/kg)	C'well P (mg/kg)	SO ₄ -S (mg/kg)	DTPA Zn (mg/kg)	DTPA Cu (mg/kg)	B (mg/kg)	Org. C (%)
						Ca	Mg	K	Na	Al													
55	0 to 8	4.8	0.03	0.3	10	6.0	1.4	1.1	0.1	0.1	8.7	0.7	0.04	4.29	11	x	3	32	2	0.42	0.49	0.33	1.10
55	15 to 30	5.9	0.03	0.3	21	16.0	3.0	0.7	0.1	0.0	19.8	0.5	0.07	5.33	8	✓	1	20	1	0.13	0.78	0.61	0.97
55	30 to 60	6.7	0.03	0.3	27	20.0	3.9	0.7	0.2	0.0	24.7	0.7	0.04	5.13	6	✓	1	25	1	0.08	0.61	0.87	0.98
55	60 to 90	7.8	0.11	1.0	10	18.0	3.8	0.8	0.2	0.0	22.8	0.9	0.12	4.74	4	✓	2	28	1	0.06	0.58	0.91	0.53
55	90 to 120	7.9	0.12	1.0	29	21.0	5.2	1.0	0.4	0.0	27.6	1.3	0.09	4.04	0	✓	1	18	1	0.05	0.51	1.20	0.59
55	200	8.0	0.14	1.3	33	14.0	4.4	0.7	0.7	0.0	19.7	3.3	0.04	3.18	0	✓	2	10	11	0.08	0.35	0.88	0.15
55	300	7.2	0.04	0.6	24	9.0	3.1	0.4	0.4	0.0	12.9	2.9	0.01	2.90	7	✓	1	8	3	0.18	0.21	0.30	0.15
58	0 to 15	5.6	0.06	0.5	19	8.5	3.8	0.6	0.2	0.0	13.1	1.7	0.04	2.24	6	xx	1	8	4	0.54	0.97	0.46	1.30
58	15 to 30	6.3	0.08	0.7	44	13.0	9.1	0.4	1.3	0.0	23.8	5.5	0.01	1.43	8	x	1	5	2	0.06	0.72	0.48	0.38
58	30 to 60	7.9	0.58	5.2	500	14.0	11.0	0.4	3.3	0.0	28.7	11.5	0.05	1.27	0	✓	1	5	55	0.02	0.40	0.90	0.35
58	200	8.6	0.28	1.7	43	21.0	12.0	0.3	3.6	0.0	36.9	9.8	0.03	1.75	9	✓	1	6	11	0.04	0.18	0.37	0.15
58	300	8.6	0.30	1.8	43	19.0	16.0	0.3	4.3	0.0	39.6	10.9	0.03	1.19	10	✓	1	7	9	0.03	0.14	0.26	0.15
60	0 to 12	5.9	0.31	4.3	100	5.5	1.9	2.9	0.1	0.0	10.4	0.5	0.64	2.89	6	x	89	36	17	1.40	0.34	1.10	1.90
60	15 to 28	5.1	0.02	0.3	16	2.8	1.0	0.7	0.0	0.1	4.6	0.6	0.03	2.83	12	✓	7	23	1	0.06	0.26	0.32	0.26
60	30 to 60	7.2	0.04	0.3	16	10.0	7.8	0.5	0.3	0.0	18.6	1.4	0.03	1.28	0	✓	1	5	1	0.02	0.43	1.50	0.17
60	60 to 80	8.2	0.15	1.1	23	18.0	12.0	0.5	0.6	0.0	31.1	2.0	0.08	1.50	0	✓	1	5	1	0.02	0.48	2.50	0.15
60	80 to 115	8.4	0.20	4.5	46	21.0	12.0	0.5	1.0	0.0	34.5	2.9	0.07	1.75	0	✓	1	9	6	0.02	0.34	2.20	0.15
60	200	8.1	0.13	1.2	34	9.5	7.7	0.5	0.5	0.0	18.2	2.6	0.05	1.23	4	✓	1	5	6	0.03	0.18	0.79	0.15
60	300	7.5	0.04	0.9	19	6.0	2.9	0.3	0.3	0.0	9.4	2.9	0.01	2.07	7	✓	1	5	2	0.05	0.08	0.20	0.15
63	0 to 15	5.4	0.04	0.4	10	10.0	2.2	1.1	0.1	0.1	13.5	0.4	0.11	4.55	6	xx	1	23	2	0.84	0.73	0.48	1.20
63	15 to 30	6.2	0.05	0.5	10	16.0	3.7	0.3	0.2	0.0	20.2	1.0	0.05	4.32	4	x	1	18	5	0.55	0.79	0.67	1.00
63	45 to 60	6.8	0.05	0.5	22	7.5	1.9	0.2	0.1	0.0	9.7	1.3	0.04	3.95	12	✓	1	15	7	0.29	0.31	0.29	0.31
63	65 to 90	6.8	0.05	0.5	31	13.0	5.6	0.5	0.3	0.0	19.4	1.6	0.03	2.32	9	✓	1	6	1	0.04	0.69	0.46	0.19
63	200	8.1	0.16	1.2	14	26.0	7.0	0.8	0.3	0.0	34.1	1.0	0.16	3.71	1	✓	1	5	10	0.02	0.22	0.99	0.15
63	300	7.8	0.14	1.3	39	14.0	6.6	0.7	0.3	0.0	21.6	1.5	0.09	2.12	0	✓	1	5	11	0.02	0.19	0.50	0.15

Glossary

EC_e: Electrical conductivity of the saturation extract; a measure of the salinity of a soil sample. It is assessed using a 1:5 soil:water extract, then multiplied by a conversion factor that takes into account the influence of texture (clay content) on the response of plants to salinity.

CEC: Cation Exchange Capacity (sum of exchangeable cations); exchangeable cations are positively charged ions held loosely on negatively charged soil particles, and readily exchanged with other ions in the soil solution.

ESP: The number of exchangeable sodium ions as a percentage of all exchangeable cations held by soil. The critical ESP above which dispersion occurs ranges from 2 to 15, depending on the amount of electrolyte in soil solution.

ESI: Electrochemical Stability Index; EC_{1.5} (dS/m) divided by ESP; it is a measure of soil stability in water; aim for values greater than 0.05.

Appendix 6 SCS Laboratory; Calibration Data



David McKenzie
 McKenzie Soil Management Pty Ltd
 PO Box 2171
 Orange NSW 2800

30 March 2011

SCO11/069

Dear David McKenzie

Analysis of seven soil samples

The Soil Conservation Service laboratory has completed the analysis of seven soil samples (Soil test report SCO11/069R1). These samples were analysed for: particle size (clay, silt, fine sand, coarse sand and gravel); dispersion percentage (D%); Emerson aggregate test (EAT); organic carbon (OC); and particle size-mechanical dispersion (clay, silt, fine sand, coarse sand and gravel).

The soil erodibility factor (K factor) has been determined (as described by Rosewell 1993) using the particle size analysis-mechanical dispersion and the organic carbon (OC). 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	K factor	Rating
1	Pit T17 0-15cm	0.020	Low
2	Pit T17 15-30cm	0.016	Low
3	Pit T17 30-60cm	0.016	Low
4	Pit T18 0-15cm	0.059	High
5	Pit T18 15-30cm	0.059	High
6	Pit T18 30-60cm	0.034	Moderate
7	Pit T18 60-90cm	0.044	High

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

References

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



SOIL TEST REPORT

Page 1 of 3

Scone Research Centre

REPORT NO: SCO11/069R1

REPORT TO: David McKenzie
McKenzie Soil Management Pty Ltd
PO Box 2171
Orange NSW 2800

REPORT ON: Seven soil samples

PRELIMINARY RESULTS
ISSUED: Not issued

REPORT STATUS: Final

DATE REPORTED: 30 March 2011

METHODS: Information on test procedures can be obtained from Scone
Research Centre

TESTING CARRIED OUT ON SAMPLE AS RECEIVED
THIS DOCUMENT MAY NOT BE REPRODUCED EXCEPT IN FULL

A handwritten signature in black ink, appearing to read "SR Young".

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: SC011/069R1
 Client Reference: David McKenzie
 McKenzie Soil Management Pty Ltd
 PO Box 2171
 Orange NSW 2800

Lab No	Method Sample Id	P7B/2 Particle Size Analysis (%)						P8A/2 D%	P9B/2 EAT	C6A/2 OC (%)
		clay	silt	f sand	c sand	gravel				
1	Pit T17 0-15cm	5	9	14	34	38	25	8	1.12	
2	Pit T17 15-30cm	5	7	11	24	53	35	8	1.04	
3	Pit T17 30-60cm	6	7	11	23	53	45	8	0.46	
4	Pit T18 0-15cm	13	28	43	12	4	25	3(1)	1.01	
5	Pit T18 15-30cm	17	28	43	10	2	50	3(2)	0.52	
6	Pit T18 30-60cm	33	16	44	6	1	75	2(1)	0.30	
7	Pit T18 60-90cm	44	18	30	8	<1	26	3(1)	0.30	



SOIL CONSERVATION SERVICE
 Scone Research Service Centre

Report No: SCO11/069R1
 Client Reference: David McKenzie
 McKenzie Soil Management Pty Ltd
 PO Box 2171
 Orange NSW 2800

Lab No	Method Sample Id	P7C/2 Particle Size Analysis - mechanical dis (%)					
		clay	silt	f sand	c sand	gravel	
1	Pit T17 0-15cm	5	7	14	36	38	
2	Pit T17 15-30cm	5	4	13	25	53	
3	Pit T17 30-60cm	8	3	13	23	53	
4	Pit T18 0-15cm	9	28	46	13	4	
5	Pit T18 15-30cm	15	28	45	10	2	
6	Pit T18 30-60cm	38	22	32	7	1	
7	Pit T18 60-90cm	30	30	31	9	<1	



END OF TEST REPORT

Appendix 7 Agricultural Suitability of Key Sites under the Current Management Regime¹

Pit	Agricultural Suitability Factors										
	Slope / erosion hazard	Depth to gravel/sand	Depth to hard rock	Compaction (SOILpak score) ²	Dispersive topsoil	Dispersivesub soil	Acidic topsoil	Acidic subsoil	Salinity	Nutrient deficiency	OVERALL RATING
27	2	1	1	4	3	4	4	1	1	4	4
32	3	1	1	4	3	3	4	1	1	4	4
33	2	1	1	4							4
34	2	1	1	4	3	2	2	1	1	4	4
37	2	1	1	4							4
39	2	3	1	4	3	3	2	1	1	4	4

¹ The 'poor land management' that caused land degradation at this survey area in 2011 was, in the 1970s and 80s, regarded by many as 'land management using a moderate level of agricultural management practice'.

² Compaction severity observed in the field was consistent with the following 'Class 4' feature described by Hulme *et al.* (2002): 'Soil physical and chemical properties limit crop and pasture growth, and low productivity levels limit the ability to economically manage this constraint.'