Project Name: **Improving Soil Survey Field Measurement and Interpretation. LWRRDC Project No. 90/R16**
Project Code: **Morphology** **Site ID:** **CP322** **Observation ID:** **1**
Agency Name: **CSIRO Division of Soils (ACT)**

Site Information

Desc. By:	N.J. McKenzie	**Locality:**	
Date Desc.:	30/10/92	**Elevation:**	10 metres
Map Ref.:	Sheet No. : 9540-2-N 1:25000	**Rainfall:**	No Data
Northing/Long.:	6816300 AMG zone: 56	**Runoff:**	Slow
Easting/Lat.:	535200 Datum: AGD66	**Drainage:**	Well drained

Geology

ExposureType:	Soil pit	**Conf. Sub. is Parent. Mat.:**	No Data
Geol. Ref.:	No Data	**Substrate Material:**	No Data

Land Form

Rel/Slope Class:	Level plain <9m <1%	**Pattern Type:**	Flood plain
Morph. Type:	Flat	**Relief:**	3 metres
Elem. Type:	Backplain	**Slope Category:**	No Data
Slope:	0 %	**Aspect:**	No Data

Surface Soil Condition (dry): Firm

Erosion:

Soil Classification

Australian Soil Classification:
Black Ferrosol
ASC Confidence:
No analytical data are available but confidence is fair.

Mapping Unit: N/A
Principal Profile Form: Gn4.41
Great Soil Group: N/A

Site Disturbance: Cultivation. Rainfed

Vegetation: Low Strata - Sod grass, 0.26-0.5m, Closed or dense. *Species includes - None recorded

Surface Coarse Fragments: No surface coarse fragments

Profile Morphology

A11	0 - 0.05 m	Dark brown (7.5YR3/2-Moist); ; Clay loam; Strong grade of structure, 10-20 mm, Polyhedral; Rough-ped fabric; Dry; Strong consistence; Few cutans, <10% of ped faces or walls coated, faint; Field pH 5.5 (Raupach); Many, fine (1-2mm) roots; Gradual, Smooth change to -
A12	0.05 - 0.1 m	Dark brown (7.5YR3/2-Moist); ; Light clay; Strong grade of structure, 10-20 mm, Polyhedral; Rough-ped fabric; Dry; Strong consistence; Few cutans, <10% of ped faces or walls coated, faint; Field pH 6 (Raupach); Many, fine (1-2mm) roots; Gradual, Smooth change to -
B1	0.1 - 0.2 m	Dark brown (7.5YR3/2-Moist); ; Light clay; Strong grade of structure, 20-50 mm, Polyhedral; Rough-ped fabric; Dry; Strong consistence; Common cutans, 10-50% of ped faces or walls coated, distinct; Field pH 5.5 (Raupach); Many, fine (1-2mm) roots; Gradual, Smooth change to -
B21	0.2 - 0.3 m	Dark brown (7.5YR3/2-Moist); ; Light medium clay; Strong grade of structure, 20-50 mm, Polyhedral; Rough-ped fabric; Dry; Strong consistence; Common cutans, 10-50% of ped faces or walls coated, distinct; Field pH 5.5 (Raupach); Common, fine (1-2mm) roots; Gradual, Smooth change to -
B22	0.3 - 0.5 m	Dark brown (7.5YR3/2-Moist); ; Light medium clay; Moderate grade of structure, 20-50 mm, Polyhedral; Moderate grade of structure, 5-10 mm, Polyhedral; Rough-ped fabric; Dry; Strong consistence; Common cutans, 10-50% of ped faces or walls coated, distinct; Field pH 5.5 (Raupach); Common, fine (1-2mm) roots; Gradual, Smooth change to -
B23	0.5 - 0.7 m	Dark brown (7.5YR3/2-Moist); ; Light medium clay; Moderate grade of structure, 10-20 mm, Polyhedral; Moderate grade of structure, 5-10 mm, Polyhedral; Rough-ped fabric; Moderately moist; Very firm consistence; Common cutans, 10-50% of ped faces or walls coated, distinct; Very few (0 - 2 %), Manganiferous, Medium (2 -6 mm), Nodules; Field pH 5 (Raupach); Common, fine (1-2mm) roots; Diffuse, Smooth change to -
B31	0.7 - 0.9 m	Brown (7.5YR4/2-Moist); , 7.5YR20, 2-10% , 5-15mm, Distinct; Light medium clay; Moderate grade of structure, 10-20 mm, Polyhedral; Moderate grade of structure, 5-10 mm, Polyhedral; Smooth-ped fabric; Moderately moist; Very firm consistence; Many cutans, >50% of ped faces or walls coated, prominent; Few (2 - 10 %), Manganiferous, Medium (2 -6 mm), Nodules; Field pH 4.5 (Raupach); Common, very fine (0-1mm) roots; Diffuse, Smooth change to -

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B32	0.9 - 1.1 m	Brown (7.5YR4/2-Moist); , 7.5YR20, 10-20% , 5-15mm, Distinct; Light medium clay; Moderate grade of structure, 10-20 mm, Polyhedral; Moderate grade of structure, 5-10 mm, Polyhedral; Smooth-ped fabric; Moderately moist; Very firm consistence; Many cutans, >50% of ped faces or walls coated, prominent; Very few (0 - 2 %), Manganiferous, Medium (2 -6 mm), Nodules; Field pH 4.5 (Raupach); Common, very fine (0-1mm) roots; Gradual, Smooth change to -
B4	1.1 - 1.3 m	Very dark grey (7.5YR3/1-Moist); ; Medium clay; Strong grade of structure, 5-10 mm, Polyhedral; Smooth-ped fabric; Moist; Very firm consistence; Many cutans, >50% of ped faces or walls coated, prominent; Field pH 4.5 (Raupach); Few, very fine (0-1mm) roots;

Morphological Notes

Observation Notes

Floods once to five times per anum.Common vertical pores due to worms (filled with roots). Direct drill pasture with milk factory waste being added. Substrate material is alluvium derived from basalts of the alstonville plateau.

Site Notes

Boat Harbour (Morph 21)

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Laboratory Test Results:

Depth	pH	1:5 EC	Exchangeable Cations				Exchangeable Acidity	CEC	ECEC	ESP
			Ca	Mg	K	Na				
m		dS/m				Cmol (+)/kg				%
0 - 0.05	5.42A	0.11A	7.8B	7.2	0.5	0.29		20.5A		1.41
0 - 0.2										
0 - 0.2										
0.05 - 0.1	5.33A	0.06A	7.5B	5.5	0.48	0.24		18.9A		1.27
0.1 - 0.2	5.33A	0.04A	7.3B	4.6	0.3	0.27		17.7A		1.53
0.2 - 0.3	5.39A	0.04A	6.8B	4.3	0.15	0.2		16.9A		1.18
0.3 - 0.5	5.47A	0.03A	6.8B	4.7	0.07	0.22		16.6A		1.33
0.3 - 0.5	5.47A	0.03A	6.8B	4.7	0.07	0.22		16.6A		1.33
0.3 - 0.5	5.47A	0.03A	6.8B	4.7	0.07	0.22		16.6A		1.33
0.5 - 0.7	5.31A	0.03A	5B	5.3	0.11	0.25		15.1A		1.66
0.5 - 0.7	5.31A	0.03A	5B	5.3	0.11	0.25		15.1A		1.66
0.5 - 0.7	5.31A	0.03A	5B	5.3	0.11	0.25		15.1A		1.66
0.7 - 0.9	5.27A	0.03A	3.3B	6	0.06	0.26		16A		1.63
0.9 - 1.1	5.24A	0.03A	2.6B	6	0.06	0.31		18.1A		1.71
1.1 - 1.3	5.29A	0.03A	2.2B	5.5	0.05	0.38		18.8A		2.02

Depth	CaCO3	Organic C	Avail. P	Total P	Total N	Total K	Bulk Density	Particle Size Analysis				
								GV	CS	FS	Silt	Clay
m	%	%	mg/kg	%	%	%	Mg/m3			%		
0 - 0.05		5.01B						0				
0 - 0.2							1.22					
							1.19					
							1.18					
							1.18					
0 - 0.2							1.22					
							1.19					
							1.18					
							1.18					
0.05 - 0.1		3.23B					1.23	0				
0.1 - 0.2		2.62B						0				
0.2 - 0.3		2.52B						0				
0.3 - 0.5		1.84B					1.23	0				
							1.13					
							1.13					
							1.21					
							1.28					
0.3 - 0.5		1.84B					1.23	0				
							1.13					
							1.13					
							1.21					
							1.28					
0.3 - 0.5		1.84B					1.23	0				
							1.13					
							1.13					
							1.21					
							1.28					
0.5 - 0.7		1.17B					1.25	0				
							1.26					
							1.23					
							1.22					
							1.22					

0.5 - 0.7	1.17B	1.25	0
		1.26	
		1.23	
		1.22	
		1.22	
0.5 - 0.7	1.17B	1.25	0
		1.26	
		1.23	
		1.22	
		1.22	
0.7 - 0.9	0.89B		0
0.9 - 1.1	0.89B		0
1.1 - 1.3	1B		0

Depth	**COLE**	**Gravimetric/Volumetric Water Contents**							**K sat**	**K unsat**
		Sat.	**0.05 Bar**	**0.1 Bar**	**0.5 Bar**	**1 Bar**	**5 Bar**	**15 Bar**		
m				**g/g - m3/m3**					**mm/h**	**mm/h**
0 - 0.05										
0 - 0.2		0.53E	0.47E	0.44E	0.4D		0.34F	0.3F	408.1D	121A
		0.55E	0.49E	0.47E	0.43D		0.33F	0.31F		
		0.56E	0.48E	0.46E	0.44D					
		0.55E	0.46E	0.45E	0.43D					
0 - 0.2		0.53E	0.47E	0.44E	0.4D		0.34F	0.3F	408.1D	121A
		0.55E	0.49E	0.47E	0.43D		0.33F	0.31F		
		0.56E	0.48E	0.46E	0.44D					
		0.55E	0.46E	0.45E	0.43D					
0.05 - 0.1	0.058B									
0.1 - 0.2										
0.2 - 0.3										
0.3 - 0.5	0.054B	0.58E	0.5E	0.47E	0.43D		0.32F	0.3F	486.7D	43A
		0.53E	0.5E	0.47E	0.43D		0.35F	0.31F		
		0.52E	0.43E	0.41E	0.4D					
			0.42E	0.4E	0.38D					
0.3 - 0.5	0.054B	0.58E	0.5E	0.47E	0.43D		0.32F	0.3F	486.7D	43A
		0.53E	0.5E	0.47E	0.43D		0.35F	0.31F		
		0.52E	0.43E	0.41E	0.4D					
			0.42E	0.4E	0.38D					
0.3 - 0.5	0.054B	0.58E	0.5E	0.47E	0.43D		0.32F	0.3F	486.7D	43A
		0.53E	0.5E	0.47E	0.43D		0.35F	0.31F		
		0.52E	0.43E	0.41E	0.4D					
			0.42E	0.4E	0.38D					
0.5 - 0.7	0.058B	0.52E	0.49E	0.48E	0.45D		0.35F	0.32F	937.7D	23.9A
		0.52E	0.48E	0.47E	0.44D		0.34F	0.3F		
		0.53E	0.47E	0.46E	0.45D					
		0.54E	0.47E	0.45E	0.44D					
0.5 - 0.7	0.058B	0.52E	0.49E	0.48E	0.45D		0.35F	0.32F	937.7D	23.9A
		0.52E	0.48E	0.47E	0.44D		0.34F	0.3F		
		0.53E	0.47E	0.46E	0.45D					
		0.54E	0.47E	0.45E	0.44D					
0.5 - 0.7	0.058B	0.52E	0.49E	0.48E	0.45D		0.35F	0.32F	937.7D	23.9A
		0.52E	0.48E	0.47E	0.44D		0.34F	0.3F		
		0.53E	0.47E	0.46E	0.45D					
		0.54E	0.47E	0.45E	0.44D					
0.7 - 0.9										
0.9 - 1.1										
1.1 - 1.3										

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Laboratory Analyses Completed for this profile

15A2_CA	Exchangeable bases (Ca2+,Mg2+,Na+,K+) - 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
15A2_CEC	Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
15A2_K	Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
15A2_MG	Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
15A2_NA	Exchangeable bases- 1M ammonium chloride at pH 7.0, pretreatment for soluble salts
3A1	EC of 1:5 soil/water extract
4A1	pH of 1:5 soil/water suspension
5A1	Chloride - 1:5 soil/water extract, potentiometric titration
6B2	Total organic carbon - high frequency induction furnace, volumetric
P10_GRAV	Gravel (%)
P10_S_0.20	0.20 micron (cumulative %) - Sedigraph
P10_S_1000	1000 micron (cumulative %) - Sedigraph
P10_S_125	125 micron (cumulative %) - Sedigraph
P10_S_2	2 micron (cumulative %) - Sedigraph
P10_S_20	20 micron (cumulative %) - Sedigraph
P10_S_2000	2000 micron (cumulative %) - Sedigraph
P10_S_250	250 micron (cumlative %) - Sedigraph
P10_S_31.2	31.2 micron (cumulative %) - Sedigraph
P10_S_500	500 micron (cumulative %) - Sedigraph
P10_S_63	63 micron (cumulative %) - Sedigraph
P3A1	Bulk density - g/cm3
P3B2VL_15	15 BAR Moisture m3/m3 - Volumetric using disturbed sample on pressure plate
P3B2VL_5	5 BAR Moisture m3/m3 - Volumetric using disturbed sample on pressure plate
P3B3VLb001	0.01 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLb003	0.03 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLb005	0.05 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLb01	0.1 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLb05	0.5 BAR Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P3B3VLbSAT	Saturated Moisture m3/m3 - Volumetric using undisturbed 73mm diameter and 75mm height core on suction plate taken from center of large core (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P4_50_McK	Unsaturated Hydraulic Conductivity - 50mm potential (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P4_sat_McK	Saturated Hydraulic Conductivity (CSIRO Div of Soil, DR 125, McKenzie and Jacquier, 1996)
P5_LS_MOD	Modified linear shrinkage (McKenzie, Jacquier and Ringrose-Voase, AJSR, 1994, 32, 931-8)