DEEP GRADATIONAL CLAY LOAM

General Description: *Black well structured silty loam to clay loam, overlying a black or dark grey blocky clay becoming yellow and grey mottled with depth*

Landform: Alluvial flats

Substrate: Fine grained alluvial sediments

Vegetation: Red gum woodland

Type Site: Site No.: CH047

1:50,000 sheet:	6628-2 (Onkaparinga)	Hundred:	Onkaparinga
Annual rainfall:	1,000 mm	Sampling date:	24/02/93
Landform:	Adjacent to minor watercourse on a flat between rolling low hills. Slope 3%		
Surface:	Firm with no stones		

Soil Description:

Depth (cm)	*Description*
0-10	Black strongly granular clay loam. Clear to:
10-25	Very dark grey moderately granular clay loam. Clear to:
25-50	Very dark grey light clay with weak coarse prismatic structure. Clear to:
50-70	Light brownish grey and yellowish brown mottled medium heavy clay with weak coarse prismatic structure. Gradual to:
----------	Buried soil ----------
70-95	Light grey and brownish yellow light sandy clay loam. Clear to:
95-120	Brown and grey mottled medium clay with strong coarse prismatic structure. Gradual to:
120-135	Olive and yellowish mottled medium clay with coarse prismatic structure.

Classification: Humose-Mottled, Dystrophic?, Grey Dermosol; medium, non-gravelly, clay loamy / clayey, moderate

Summary of Properties

Drainage The soil is imperfectly drained due to its position in the landscape and its high clay content. The soil may remain wet for several weeks to some months. There was a water table at 135 cm at time of sampling (24th Feb. 1993).

Fertility This soil is normally very fertile, but at this site the very low pH has weakened the nutrient retention capacity of the soil. The large difference between the sum of exchangeable cations and the CEC indicates the extent of leaching. Most of the exchangeable cations are associated with the organic matter, levels of which are very high indicating low biological activity. There are no apparent deficiencies.

pH: Acidic at the surface and strongly acidic from 10 cm. This has caused severe leaching of base cations from the clay. Lime is needed for pH correction.

Rooting depth More than 130 cm in pit.

Barriers to root growth

Physical: Waterlogging due in part to tight clay layers at depth is the main physical constraint to root growth.

Chemical: High acidity and low nutrient retention capacity in the subsoil are the main chemical limitations (abnormal for this soil).

Water holding capacity 200 mm in root zone (very high).

Seedling emergence Good, although the surface tends to set down hard.

Workability Good, provided that organic matter levels are maintained.

Erosion Potential

Water: Moderately low, provided that run on water is controlled. Stream bank erosion in creeks associated with these soils is more significant.

Wind: Low.

Laboratory Data

Depth cm	pH H_2O	pH $CaC1_2$	$CaCO_3$ %	EC1:5 dS/m	ECe dS/m	Org.C %	Avail. P mg/kg	Avail. K mg/kg	SO_4-S mg/kg	Boron mg/kg	Trace Elements mg/kg (DTPA)				CEC cmol (+)/kg	Exchangeable Cations cmol(+)/kg				ESP
											Cu	Fe	Mn	Zn		Ca	Mg	Na	K	
Paddock	4.9	4.5	0	0.14	0.69	8.4	39	310	-	1.3	5.0	550	0.9	1.3	18.4	6.94	3.97	0.25	0.63	1.4
											*41	*957	*17	*8.7						
0-10	4.9	4.5	0	0.11	0.55	7.7	34	290	-	1.2	0.4	500	0.7	1.1	18.0	7.17	3.90	0.19	0.50	1.1
10-25	4.8	4.2	0	0.08	0.29	5.3	94	110	-	0.7	0.2	470	<0.1	0.2	17.1	3.70	1.75	0.34	0.09	2.0
25-50	5.0	4.0	0	0.05	0.21	2.2	9	78	-	0.7	0.5	420	<0.1	0.1	13.7	2.52	1.94	0.33	0.07	2.4
50-70	4.9	4.0	0	0.04	0.18	0.7	5	70	-	0.6	0.3	260	0.1	0.1	8.0	0.92	0.94	0.19	0.05	2.4
70-95	4.9	4.0	0	0.03	0.21	0.3	6	55	-	0.3	0.3	100	<0.1	0.3	3.3	0.28	0.38	0.11	0.03	3.3
95-120	4.9	3.9	0	0.05	0.14	0.8	10	130	-	0.9	0.8	140	0.1	0.8	12.0	1.21	1.78	0.33	0.26	2.8
120-135	4.9	3.9	0	0.04	0.14	0.5	8	140	-	0.9	0.8	140	0.3	2.8	12.9	1.17	1.78	0.32	0.26	2.5

Note: Paddock sample bulked from 20 cores (0-10 cm) taken around the pit.

* EDTA trace element analyses for "paddock" sample.

CEC (cation exchange capacity) is a measure of the soil's capacity to store and release major nutrient elements.

ESP (exchangeable sodium percentage) is derived by dividing the exchangeable sodium value by the CEC.