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**TEST VALLEY LOCAL PLAN REVIEW
Sites 107 110 Romsey Hampshire
Agricultural Land Classification
Semi Detailed Survey
ALC Map and Report**

January 1997

**Resource Planning Team
Eastern Region
FRCA Reading**

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AGRICULTURAL LAND CLASSIFICATION REPORT

TEST VALLEY LOCAL PLAN REVIEW

SITES 107 110

ROMSEY HAMPSHIRE

SEMI DETAILED SURVEY

INTRODUCTION

1 This report presents the findings of a semi detailed Agricultural Land Classification (ALC) survey of approximately 69 hectares of land to the south east of Romsey at Rownhams in Hampshire. The survey was carried out during January 1997.

2 The survey was commissioned by the Ministry of Agriculture Fisheries and Food (MAFF) from its Land Use Planning Unit in Reading in connection with the Test Valley Local Plan Review. The results of this survey supersede any previous ALC information for this land.

3 Prior to 1st April 1997 the work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS. After this date the work was completed by the same team as part of the Farming and Rural Conservation Agency (FRCA). The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF 1988). A description of the ALC grades and subgrades is given in Appendix I.

4 At the time of survey the agricultural land on this site was mostly in permanent grassland partly being grazed by horses and cattle. Other parts of the site were in arable cropping. Areas mapped as Other Land comprise woodland residential properties and farm buildings. The southern most part of the site was not surveyed due to difficulties in obtaining permission for access.

SUMMARY

5 The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. It is accurate at this scale but any enlargement would be misleading.

6 The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 overleaf.

7 The fieldwork was conducted at an average density of 1 boring every 1.5 hectares of agricultural land. A total of 35 borings and 3 soil pits was described.

8 The land at this site has been classified as Subgrade 3a (good quality) and Subgrade 3b (moderate quality) with small pockets of Grade 4 (poor quality) and Grade 5 (very poor quality). Soil wetness and soil droughtiness are the principal limitations throughout.

Table 1 Area of grades and other land

Grade/Other land	Area (hectares)	/ Total survey area	/ Total site area
3a	30.1	51.0	43.9
3b	27.6	46.8	40.2
4	0.1	0.2	0.1
5	1.2	2.0	1.8
Land not surveyed	4.0		5.8
Other land	5.6		8.2
Total survey area	59.0	100.0	86.0
Total site area	68.6		100.0

9 The majority of the land suffers from wetness problems to varying degrees since the predominant geology underlying the site is London Clay. The topsoils comprise fine loamy textures. These often overlie similar upper subsoils but become heavier with depth and pass to poorly structured clays. The depth to these poorly structured horizons will determine the final ALC grade. Where these poorly structured horizons are shallow, the drainage will be severely restricted and land is classified as Subgrade 3b, whereas when they occur deeper within the profile, the resultant ALC grade will be Subgrade 3a. These clayey soils cause drainage to be impeded so that land utilisation is restricted.

10 Localised parts of the site have severe drainage problems caused by seepage and spring lines where the junction between freely draining Bagshot Beds and the poorly drained London Clay outcrops at the surface, i.e. mid slopes. Grades 4 and 5 are mapped where the presence of hydrophilous vegetation and an uneven surface form suggest permanent waterlogging. The area assigned to Grade 5 is a degree worse than that mapped as Grade 4 and the land will only be suitable for seasonal grazing at best.

11 Across the higher land in the west of the site (where Bagshot Beds are recorded) and through the valley running east-west to the north of Parker's Farm, the soil profiles are generally better drained and are often sandier throughout and/or more stony at depth. Here the combination of soil properties and the prevailing climate results in soil droughtiness which will restrict the amount of profile available water for crops. Crop growth and yields will therefore be adversely affected to different degrees depending on the severity of the droughtiness limitation. Grades 3a and 3b have been mapped as a result.

12 Around and to the immediate south of Parker's Farm, the land is restricted to Subgrade 3b on the basis of gradient restrictions.

FACTORS INFLUENCING ALC GRADE

Climate

13 Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

14 The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met Office 1989)

Table 2 Climatic and altitude data

Factor	Units	Values	
		SU 387 169	SU 393 174
Grid reference	N/A	SU 387 169	SU 393 174
Altitude	m, AOD	60	30
Accumulated Temperature	day°C (Jan June)	1487	1521
Average Annual Rainfall	mm	829	820
Field Capacity Days	days	172	171
Moisture Deficit, Wheat	mm	105	108
Moisture Deficit Potatoes	mm	97	103
Overall climatic grade	N/A	Grade 1	Grade 1

15 The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions

16 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall (AAR) as a measure of overall wetness and accumulated temperature (ATO January to June) as a measure of the relative warmth of a locality

17 The combination of rainfall and temperature at this site mean that there is no overall climatic limitation. Local climatic factors such as exposure and frost risk do not affect land quality at this location. The site is climatically Grade 1. However climatic factors do interact with soil properties to influence soil wetness and soil droughtiness. At this locality the climate is relatively warm and moist in national terms. The likelihood of soil wetness problems may therefore be enhanced.

Site

18 The site lies at altitudes in the range 30-60 m AOD. The highest land occurs along the western site boundary with land falling through slight to moderate gradients towards Tanner's Brook which occupies a valley running north-south. Land then rises again towards the M27 at the north-eastern site boundary. Most of the site is not affected by site restrictions (i.e. gradient, micro-relief or flooding). However, around and to the immediate south of Parker's Farm, gradients in the range 7.5-9 were measured using an optical reading clinometer. These slopes will restrict the safe and efficient use of farm machinery and Subgrade 3b is therefore appropriate.

Geology and soils

19 The most detailed published geological information for the site (BGS 1973) shows the majority of it to be underlain by London Clay with Bagshot Sands and Bracklesham Beds outcropping on the higher land to the west. In addition, isolated patches of plateau gravel are mapped on this higher land along Rownhams Lane.

20 The most detailed published soils information covering the area (SSEW 1983) shows it to comprise entirely soils of the Wickham 3 association. These soils are described as slowly permeable seasonally waterlogged fine loamy over clayey and coarse loamy over clayey similar more permeable soils with slight waterlogging (SSEW 1983). Soils consistent with this description were observed across the site. Fine and coarse loamy soils overlie clay in the subsoil at variable depth. Occasional more sandy and/or gravelly soils were also found.

AGRICULTURAL LAND CLASSIFICATION

21 The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1.

22 The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix II.

Subgrade 3a

23 Land of good quality has been mapped on the mid and lower slopes on the site mainly coincident with deposits of London Clay. It occurs in conjunction with two main soil types.

24 Much of the land classified as Subgrade 3a is affected by soil wetness restrictions. Soils comprise non calcareous medium sandy loam or medium clay loam topsoils. These may contain up to 8% total flints by volume (1.3% > 2 cm in size). Topsoils overlie similar upper subsoils which pass to heavier textures of heavy clay loam and clay with depth. Soil pit 2 (see Appendix II) is typical of these soils. It proved the existence of poorly structured clay horizons which are slowly permeable and which thereby impede drainage and cause seasonal waterlogging. Many of the profiles were gleyed at shallow depth, evidence of the seasonal waterlogging. The depth to these slowly permeable clay subsoils (between 40 and 65 cm) results in soils being assigned to Wetness Class III or less commonly IV. The combination of imperfect soil drainage, topsoil texture and climatic factors gives rise to a land classification of Subgrade 3a. Excessive soil wetness may adversely affect crop growth and development as well as limiting the flexibility of the land due to the reduction in the number of days when the soil is in a suitable condition for cultivation, trafficking by machinery or grazing by livestock.

25 Localised areas of the land classified as Subgrade 3a, most notably along the small valley running east west to the north east of Parker's Farm are graded on the basis of a soil droughtiness limitation. Non calcareous medium clay loam topsoils containing up to 4% total flints by volume rest on similar upper subsoils with up to 10% flints. These pass to heavy clay loam subsoils which were commonly impenetrable to the soil auger between 50 and 75 cm depth. Soil pit 1 which is representative of these soils demonstrated that these subsoils contain up to 45% flints and eventually pass to gravel at depth. Gleying within 40 cm in the absence of a slowly permeable horizon is suggestive of a fluctuating watertable. Wetness Class II describes the drainage status given these soil characteristics. However the overriding limitation is one of droughtiness. The stony and gravelly subsoils restrict the moisture content of the profiles and moisture balance calculations indicate that the amount of water available to a growing crop may not be sufficient to meet its needs throughout the growing season. The resulting drought stress may cause the level and consistency of yields to be depressed. Subgrade 3a is appropriate.

Subgrade 3b

26 Moderate quality land is mapped in a number of different situations on this site. Limitations include soil wetness, soil droughtiness, topsoil stoniness and gradient.

27 Across the middle of the site a large unit of Subgrade 3b land relates to the occurrence of a significant soil wetness restriction. Soils typically comprise non calcareous medium clay loam topsoils which may contain 2-3% total flints by volume. These either directly overlie slowly permeable clay in the subsoil or pass through a thin horizon of heavy clay loam in the upper subsoil into clay in the lower subsoil. These profiles are all gleyed within 40 cm, evidence of severely impeded drainage arising from the presence of slowly permeable horizons between 20 and 42 cm. Such drainage characteristics equate to a wetness class of IV which, when considered alongside topsoil textures and the prevailing climatic conditions results in a land classification of Subgrade 3b.

28 Towards the south west of the site land is assigned to Subgrade 3b primarily on the basis of soil droughtiness/topsoil stones. In general soil profiles across this area proved impenetrable to the soil auger at relatively shallow depth due to high stone contents. A soil inspection pit (3P see Appendix II) was used to describe this mapping unit. Medium sandy loam or medium sandy silt loam topsoils contain up to 35% total flints by volume up to 16% of which are greater than 2 cm in diameter. Subsoils comprise medium sandy loam textures with approximately 50% flints passing to gravel below about 60 cm depth. These stony subsoils severely restrict the amount of water available in the profile and the interaction between such sandy gravelly soils and the climate at this locality results in significant soil droughtiness. Of equal significance in terms of land quality is the presence of more than 15% flints by volume that are greater than 2 cm in size in the topsoil. These will have the effect of increasing production costs by enhancing wear and tear to farm machinery and impairing the establishment, growth and quality of crops.

29 Around and to the immediate south of Parker's Farm, land is restricted to Subgrade 3b because of steep slopes. Gradients in the range 7.5-9 were recorded using an optical reading clinometer. These will affect the safe and efficient use of farm machinery.

Grade 4

30 A tiny unit of poor quality land has been delineated to the south east of Parker's Farm in association with an area of seepage. Severe soil wetness is caused by seepage at the junction of the freely draining Bagshot Sands and the underlying London Clay. The presence of hydrophilous vegetation e.g. *Juncus* sp. is suggestive of permanent waterlogging. Such conditions give rise to land which is severely restricted in its agricultural use.

Grade 5

31 Very poor quality agricultural land has been mapped to the south east of the site where seepage as described in paragraph 30 above is so severe as to cause permanent waterlogging to the surface which probably persists throughout the year and an uneven microrelief. Vegetation dominated by sedges and rushes would mean that the land is only suitable for low intensity seasonal grazing. The extent of seepage is assessed as being a degree worse than for land assigned to Grade 4 and therefore Grade 5 is appropriate.

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SOURCES OF REFERENCE

British Geological Survey (1973) *Sheet No 315 Southampton* 1 50 000 Drift Edition
BGS London

Ministry of Agriculture Fisheries and Food (1988) *Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land*
MAFF London

Met Office (1989) *Chimatological Data for Agricultural Land Classification*
Met Office Bracknell

Soil Survey of England and Wales (1983) *Sheet 6 Soils of South East England* 1 250 000
SSEW Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in South East England*
SSEW Harpenden

APPENDIX I

DESCRIPTIONS OF THE GRADES AND SUBGRADES

Grade 1 Excellent Quality Agricultural Land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 Very Good Quality Agricultural Land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural or horticultural crops can usually be grown but on some land of this grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1 land.

Grade 3 Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When more demanding crops are grown, yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a Good Quality Agricultural Land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops especially cereals or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b Moderate Quality Agricultural Land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass, or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4 Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or the level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 Very Poor Quality Agricultural Land

Land with severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

APPENDIX II

SOIL DATA

Contents

Sample location map

Soil abbreviations explanatory note

Soil pit descriptions

Soil boring descriptions (boring and horizon levels)

SOIL PIT DESCRIPTION

Site Name TEST VALLEY SITE 107 110 Pit Number 1P

Grid Reference SU39301770 Average Annual Rainfall 829 mm
 Accumulated Temperature 1521 degree days
 Field Capacity Level 172 days
 Land Use Permanent Grass
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 33	MCL	10YR41 00	0		4	HR	C				
33- 54	MCL	25 Y71 00	0		10	HR	C	MDCSAB	FR	M	
54 73	HCL	25 Y71 00	0		27	HR	M	WKCSAB	FR	M	
73- 90	HCL	25 Y71 00	0		45	HR	M			M	
90-120	GH	25 Y71 00	0		0		C			M	

Wetness Grade 2 Wetness Class II
 Gleying 0 cm
 SPL No SPL

Drought Grade 3A APW 112mm MBW 4 mm
 APP 107mm MBP 4 mm

FINAL ALC GRADE 3A
 MAIN LIMITATION Droughtiness

SOIL PIT DESCRIPTION

Site Name TEST VALLEY SITE 107 110 Pit Number 2P

Grid Reference SU39101730 Average Annual Rainfall 829 mm
 Accumulated Temperature 1521 degree days
 Field Capacity Level 172 days
 Land Use Permanent Grass
 Slope and Aspect 01 degrees N

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 34	MCL	10YR42 00	0		2	HR	C				
34- 55	HCL	10YR61 62	0		1	HR	M	MDCSAB	FR	M	
55- 90	C	05 Y62 00	0		2	HR	M	MDCOAB	FM	P	

Wetness Grade 3A Wetness C1 III
 Gleying 0 cm
 SPL 055 cm

Drought Grade 2 APW 114mm MBW 6 mm
 APP 112mm MBP 9 mm

FINAL ALC GRADE 3A
 MAIN LIMITATION Wetness

SOIL PROFILE DESCRIPTIONS EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database This uses notations and abbreviations as set out below

Boring Header Information

- 1 **GRID REF** national 100 km grid square and 8 figure grid reference
- 2 **USE** Land use at the time of survey The following abbreviations are used

ARA	Arable	WHT	Wheat	BAR	Barley
CER	Cereals	OAT	Oats	MZE	Maize
OSR	Oilseed rape	BEN	Field beans	BRA	Brassicae
POT	Potatoes	SBT	Sugar beet	FCD	Fodder crops
LIN	Linseed	FRT	Soft and top fruit	FLW	Fallow
PGR.	Permanent grass	LEY	Ley grass	RGR.	Rough grazing
SCR	Scrub	CFW	Coniferous woodland	OTH	Other
DCW	Deciduous woodland	BOG	Bog or marsh	SAS	Set Aside
HTH	Heathland	HRT	Horticultural crops	PLO	Ploughed
- 3 **GRDNT** Gradient as estimated or measured by a hand held optical clinometer
- 4 **GLEYSPL.** Depth in centimetres (cm) to gleying and/or slowly permeable layers
- 5 **AP (WHEAT/POTS)** Crop-adjusted available water capacity
- 6 **MB (WHEAT/POTS)** Moisture Balance (Crop adjusted AP crop adjusted MD)
- 7 **DRT** Best grade according to soil droughtiness
- 8 If any of the following factors are considered significant 'Y' will be entered in the relevant column

MREL	Microrelief limitation	FLOOD	Flood risk	EROSN	Soil erosion risk
EXP	Exposure limitation	FROST	Frost prone	DIST	Disturbed land
CHEM	Chemical limitation				

- 9 **LIMIT** The main limitation to land quality The following abbreviations are used.

OC	Overall Climate	AE	Aspect	ST	Topsoil Stoniness
FR	Frost Risk	GR	Gradient	MR	Microrelief
FL	Flood Risk	TX	Topsoil Texture	DP	Soil Depth
CH	Chemical	WE	Wetness	WK	Workability
DR	Drought	ER	Erosion Risk	WD	Soil Wetness/Droughtiness

Soil Pits and Auger Borings

- 1 **TEXTURE** soil texture classes are denoted by the following abbreviations

S	Sand	LS	Loamy Sand	SL	Sandy Loam
SZL.	Sandy Silt Loam	CL	Clay Loam	ZCL.	Silty Clay Loam
ZL	Silt Loam	SCL.	Sandy Clay Loam	C	Clay
SC	Sandy Clay	ZC	Silty Clay	OL	Organic Loam
P	Peat	SP	Sandy Peat	LP	Loamy Peat
PL	Peaty Loam	PS	Peaty Sand	MZ	Marine Light Silts

For the sand, loamy sand sandy loam and sandy silt loam classes the predominant size of sand fraction will be indicated by the use of the following prefixes

- F** Fine (more than 66% of the sand less than 0.2mm)
M Medium (less than 66% fine sand and less than 33% coarse sand)
C Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content

- M** Medium (<27% clay) **H** Heavy (27-35% clay)

2 **MOTTLE COL.** Mottle colour using Munsell notation

3 **MOTTLE ABUN** Mottle abundance expressed as a percentage of the matrix or surface described

F few <2/ C common 2-20% M many 20-40% VM very many 40% +

4 **MOTTLE CONT** Mottle contrast

F faint indistinct mottles evident only on close inspection

D distinct mottles are readily seen

P prominent mottling is conspicuous and one of the outstanding features of the horizon

5 **PED COL** Ped face colour using Munsell notation

6 **GLEYS** If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed an 'S' will appear

7 **STONE LITH** Stone Lithology one of the following is used

HR	all hard rocks and stones	FSST	soft fine grained sandstone
ZR	soft, argillaceous or silty rocks	CH	chalk
MSST	soft, medium grained sandstone	GS	gravel with porous (soft) stones
SI	soft weathered igneous/metamorphic rock	GH	gravel with non porous (hard) stones

Stone contents (>2cm >6cm and total) are given in percentages (by volume)

8 **STRUCT** the degree of development size and shape of soil peds are described using the following notation

Degree of development	WK	weakly developed	MD	moderately developed
	ST	strongly developed		
Ped size	F	fine	M	medium
	C	coarse		
Ped shape	S	single grain	M	massive
	GR	granular	AB	angular blocky
	SAB	sub-angular blocky	PR	prismatic
	PL	platy		

9 **CONSIST** Soil consistence is described using the following notation

L loose	FM firm	EH extremely hard
VF very friable	VM very firm	
FR friable	EM extremely firm	

10 **SUBS STR** Subsoil structural condition recorded for the purpose of calculating profile droughtiness
G good **M** moderate **P** poor

11 **POR** Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'Y' will appear in this column

12 **IMP** If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropriate horizon

13 **SPL** Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column

14 **CALC** If the soil horizon is calcareous a 'Y' will appear in this column

15 Other notations

APW	available water capacity (in mm) adjusted for wheat
APP	available water capacity (in mm) adjusted for potatoes
MBW	moisture balance wheat
MBP	moisture balance potatoes

SOIL PIT DESCRIPTION

Site Name TEST VALLEY SITE 107 110 Pit Number 3P

Grid Reference SU38801700 Average Annual Rainf 11 829 mm
 Accumulated Temperature 1521 degree days
 Field Capacity Level 172 days
 Land Use Permanent Grass
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 30	MSZL	10YR31 00	16		34	HR					
30- 59	MSL	10YR21 00	0		49	HR				M	
59-120	GH	10YR64 00	0		0					M	

Wetness Grade 1 Wetness Class I
 Gleying cm
 SPL No SPL

Drought Grade 3B APW 66 mm MBW -42 mm
 APP 64 mm MBP 39 mm

FINAL ALC GRADE 3B
 MAIN LIMITATION Droughtiness

SAMPLE NO	GRID REF	ASPECT USE	WETNESS		HEAT		POTS		M REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB					
1	SU39601790	PGR W	03	0 045	4	3A	106	2 97	6	3A			WE	3A	
1P	SU39301770	PGR		0	2	2	112	4 107	4	3A			DR	3A	
2	SU39401780	PGR W	03	030 050	3	3A	114	6 114	11	2			WE	3A	
2P	SU39101730	PGR N	01	0 055	3	3A	114	6 112	9	2			WE	3A	
3	SU39601780	PGR S	03	030 060	3	3A	105	3 110	7	3A			WE	3A	
3P	SU38801700	PGR			1	1	66	-42 64	39	3B			DR	3B	BEST
4	SU39101770	PLO S	03	026	2	2	111	3 113	10	3A			DR	3A	
5	SU39301770	PGR		030	2	2	109	1 116	13	3A			DR	3A	SEE 1P
6	SU39501770	PGR W	01	025	2	2	83	25 83	20	3B			DR	3A	SEE 1P
7	SU39001760	STB		0	2	2	45	-63 45	58	4			DR	3B	
8	SU39201760	STB		030 050	3	3A	98	10 110	7	3A			WE	3A	
9	SU39301760	PGR		0 040	4	3B	83	25 88	15	3B			WE	3B	
10	SU39101750	STB N	02	028 042	4	3B	103	5 108	5	3A			WE	3B	
11	SU39301750	LEY E	01	045	1	1	133	25 115	12	2			DR	2	
12	SU38801740	PGR NE	05	0 065	3	3A	118	10 114	11	2			WE	3A	
13	SU38901740	PGR NE	02	0 065	3	3A	109	1 116	13	3A			WE	3A	
14	SU39001740	PGR NE	01	035 035	4	3B	95	13 107	4	3A			WE	3B	
15	SU39201740	STB E	02	0 032	4	3B	86	22 92	11	3B			WE	3B	
16	SU39301740	PGR E	01	030	2	2	155	47 117	14	1			WE	2	
17	SU38701730	PGR E	05	020 020	4	3B	80	28 86	17	3B			WE	3B	
18	SU38901730	PGR NE	03	0	2	2	154	46 116	13	1			WE	2	
19	SU39001730	PGR E	01	032 045	4	3B	97	11 109	6	3A			WE	3B	
20	SU39101730	PGR S	01	0 055	3	3A	106	2 115	12	3A			WE	3A	SEE 2P
21	SU39301730	PGR E	01	0 027	4	3B	93	15 101	2	3A			WE	3B	
22	SU38701720	PGR SE	03	032	1	1	76	32 76	27	3B			DR	3B	SEE 3P
23	SU38801720	PGR NE	06	025 060	3	3A	97	11 94	9	3A			WE	3A	
24	SU39001720	PGR SE	04	038 045	3	3A	104	-4 109	6	3A			WE	3A	
25	SU39101720	PGR		0	2	2	68	-40 68	35	3B			DR	3B	POSS 3A
26	SU39201720	PGR		0 040	4	3B	97	11 109	6	3A			WE	3B	
27	SU39401720	PGR		0	2	2	54	54 54	-49	4			DR	3B	
28	SU38701710	PGR E	02		1	1	107	1 108	5	3A			DR	2	
29	SU38901710	PGR NE	03		1	1	66	-42 66	37	3B			DR	3B	IMP40QDR
30	SU39401710	PGR E	01	0 032	4	3B	94	14 102	1	3A			WE	3B	
31	SU38801700	PGR E	01	0	1	1	70	38 70	33	3B			DR	3B	SEE 3P
32	SU39001700	PGR E	02	040 040	3	3A	85	23 91	12	3B			WE	3A	
33	SU38701690	PGR			1	1	54	54 54	-49	4			DR	3B	SEE 3P
34	SU38901690	PGR E	02		1	1	52	56 52	51	4			DR	3B	SEE 3P
35	SU39001680	PGR E	02	030	1	1	158	50 111	8	2				1	Q 3B WATER

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES-			- PED		STONES-			STRUCT/ CONSIST	SUBS STR POR IMP SPL CALC				
				COL	ABUN	CONT	COL	GLE	2	6	LITH						TOT
1	0-25	ms1	10YR43 00 10YR58 00 C					S	0	0	HR	5					
	25-45	ms1	10YR63 62 10YR58 00 C					Y	0	0	HR	20	M				
	45-60	c	25Y 51 62 75YR68 58 M					Y	0	0		0	P			Y	
	60-100	c	25Y 51 52 75YR68 58 M					Y	0	0		0	P			Y	
1P	0-33	mc1	10YR41 00 10YR58 00 C					Y	0	0	HR	4					
	33-54	mc1	25 Y71 00 75YR58 00 C					Y	0	0	HR	10	MDCSAB FR M				
	54-73	hc1	25 Y71 00 75YR56 00 M					Y	0	0	HR	27	WKCSAB FR M			PSD	MCL
	73-90	hc1	25 Y71 00 75YR56 00 M					Y	0	0	HR	45	M				
	90-120	gh	25 Y71 00 75YR58 00 C					Y	0	0		0	M				
2	0-30	mc1	10YR44 00						0	0	HR	5					
	30-50	mc1	10YR53 00 10YR58 00 C					Y	0	0	HR	2	M				
	50-90	c	10YR53 00 75YR68 00 C					Y	0	0	HR	2	M			Y	
2P	0-34	mc1	10YR42 00 10YR46 00 C					Y	0	0	HR	2					
	34-55	hc1	10YR61 62 10YR58 00 M					Y	0	0	HR	1	MDCSAB FR M				
	55-90	c	05 Y62 00 75YR58 00 M					Y	0	0	HR	2	MDCOAB FM P	Y		Y	
3	0-30	mc1	10YR42 00						0	0	HR	5					
	30-40	mc1	25Y 62 63 10YR58 00 C					Y	0	0	HR	5	M				
	40-60	mc1	25Y 62 63 10YR56 00 C					Y	0	0	HR	5	M				
	60-80	c	25Y 62 00 75YR68 00 M					Y	0	0	HR	2	P			Y	
3P	0-30	ms 1	10YR31 00						16	8	HR	34				PSD	MSL
	30-59	ms1	10YR21 00						0	0	HR	49	M			PSD	MSL
	59-120	gh	10YR64 00						0	0		0	M				
4	0-26	mc1	10YR42 00						0	0	HR	5					
	26-45	mc1	25 Y61 62 10YR46 58 C					Y	0	0	HR	5	M				
	45-80	hc1	25 Y61 62 10YR46 58 C					Y	0	0	HR	2	M				
5	0-30	mc1	10YR42 00 10YR46 00 F						0	0	HR	2					
	30-47	mc1	10YR51 52 10YR58 00 C					Y	0	0		0	M				
	47-75	hc1	25Y 61 62 75YR58 00 M					Y	0	0	HR	3	M			Imp	gravelly
6	0-25	mc1	10YR42 00 10YR46 00 F						0	0	HR	2					
	25-50	hc1	10YR61 62 75YR46 58 M					00M00 00	Y	0	0	HR	2	M			Imp
7	0-20	mc1	10YR32 42 10YR46 00 C					Y	0	0	HR	5					
	20-27	hc1	10YR42 00 10YR46 00 C					Y	0	0	HR	5	M			Imp	g avelly
8	0-30	mc1	10YR42 00						1	0	HR	3					
	30-50	mc1	10YR53 00 10YR56 00 C					Y	0	0	HR	3	M				
	50-70	c	25Y 62 00 75YR68 00 M					Y	0	0		0	P			Y	
9	0-30	mc1	25Y 52 00 10YR58 00 C					Y	0	0	HR	5					
	30-40	mc1	25Y 62 00 10YR58 00 C					Y	0	0	HR	5	M				
	40-60	c	05Y 61 00 75YR58 00 M					Y	0	0	HR	20	P		Y	Imp	gravelly

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES			PED		STONES			STRUCT/ CONSIST	SUBS			CALC	
				COL	ABUN	CONT	COL	GLEY	2	6	LITH		TOT	STR	POR		IMP
10	0 28	mc1	10YR42 00						0	0	HR	2					
	28-42	hc1	25 Y62 00	75YR58	00	C		Y	0	0		0		M			
	42-80	c	25 Y71 00	75YR68	00	M		Y	0	0		0		P		Y	
11	0 20	mc1	10YR42 00	10YR46	00	F			0	0	HR	2					
	20-45	mc1	10YR52 63	10YR46	00	F			0	0	HR	2		M			
	45-80	hc1	25Y 51 52	75YR58	46	M		Y	0	0		0		M			
	80 100	sc1	10YR61 62	75YR58	00	M		Y	0	0		0		M			
12	0 32	mc1	10YR42 00	10YR46	00	C		Y	0	0		0					
	32 42	mc1	10YR52 00	75YR46	00	M		Y	0	0	HR	2		M			
	42 65	sc1	10YR62 00	10YR58	00	M		Y	0	0		0		M			
	65-90	c	25 Y62 00	75YR56	00	M		Y	0	0		0		P	Y		Y
13	0 35	mc1	10YR41 00	10YR46	00	C		Y	0	0	HR	3					
	35-55	mc1	10YR53 00	10YR58	00	C		Y	0	0		0		M			
	55-65	c	10YR53 00	10YR58	00	C		Y	0	0		0		M			
	65-80	c	10YR61 00	75YR58	00	M		Y	0	0		0		P	Y		Y
14	0 35	mc1	10YR42 00						0	0	HR	2					
	35-70	c	25 Y61 00	75YR58	00	M		Y	0	0		0		P			Y
15	0 32	mc1	10YR41 00	10YR46	00	C		Y	2	0	HR	3					
	32 60	c	10YR71 00	75YR68	00	M		Y	0	0		0		P			Y
16	0 30	mc1	10YR42 00	10YR46	00	F			0	0	HR	2					
	30-43	mc1	10YR52 00	10YR56	00	C		Y	0	0	HR	2		M			
	43 70	hc1	10YR52 62	10YR56	46	C	00MNO0	00	Y	0	0	0		M			
	70 120	sc1	10YR52 62	10YR58	00	M	00MNO0	00	Y	0	0	0		M			
17	0 20	mc1	10YR42 00						0	0	HR	5					
	20 60	c	25 Y61 00	75YR58	00	M		Y	0	0		0		P			Y
18	0 31	mc1	10YR42 00	10YR46	00	C		Y	0	0	HR	5					
	31 55	mc1	10YR54 00	75YR58	00	C		S	0	0		0		M			
	55-80	hc1	10YR54 00	75YR58	00	C		S	0	0		0		M			
	80 120	sc1	10YR54 00	75YR58	00	C		S	0	0		0		M			
19	0 32	mc1	10YR42 00						0	0	HR	2					
	32-45	hc1	10YR53 00	75YR58	00	C		Y	0	0	HR	5		M			
	45-70	c	25 Y71 00	75YR68	00	M		Y	0	0		0		P			Y
20	0 35	mc1	25Y 42 00	10YR46	00	M		Y	0	0	HR	0					
	35-45	mc1	25Y 53 00	10YR56	00	M		Y	0	0		0		M			
	45-55	hc1	25Y 62 00	10YR58	00	M		Y	0	0		0		M			
	55-75	c	25Y 62 00	10YR58	00	M		Y	0	0		0		P			Y
21	0 27	mc1	25 Y42 00	10YR46	00	M		Y	0	0	HR	1					
	27 60	c	25 Y62 00	10YR68	00	M	00MNO0	00	Y	0	0	0		M	Y		Y

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES-			PED		STONES			STRUCT/ CONSIST	SUBS			CALC	
				COL	ABUN	CONT	COL	GLEYS	2	6	LITH		TOT	STR	POR		IMP
22	0 32	msl	10YR41 00						0	0	HR	5					
	32 48	msl	10YR53 00	10YR58 00	C			Y	0	0	HR	10	M				
	48 55	ms	10YR56 00					Y	0	0	HR	40	M				Imp gavelly
23	0 25	msl	10YR41 00						5	0	HR	20					
	25-60	msl	25 Y64 00	10YR56 00	C			Y	0	0	HR	20	M				
	60 75	c	25 Y64 00	10YR56 00	M			Y	0	0	HR	10	M	Y		Y	
	75-90	c	25 Y72 00	75YR58 00	M			Y	0	0		0	P	Y		Y	
24	0 30	msl	10YR43 00						0	0	HR	3					
	30 38	msl	10YR54 00						0	0	HR	2	M				
	38-45	hcl	10YR54 00	10YR58 00	C			S	0	0		0	M				
	45-80	c	10YR53 00	75YR58 00	C			Y	0	0		0	P			Y	
25	0 30	msl	10YR41 00	10YR56 00	C			Y	0	0	HR	2					
	30-40	msl	10YR62 00	75YR58 00	M			Y	0	0	HR	5	M				Imp gavelly
26	0 32	msl	25 Y42 00	75YR46 00	M			Y	0	0		0					
	32 40	hcl	25 Y42 00	75YR46 00	M			Y	0	0		0	M				
	40 70	c	25 Y62 00	10YR46 00	M			Y	0	0	HR	1	P	Y		Y	
27	0 30	msl	25 Y42 00	10YR46 00	C			Y	0	0		0					Imp gravelly
28	0 32	msl	10YR22 00						0	0	HR	10					
	32 47	msl	10YR32 00						0	0	HR	10	M				
	47 65	msl	25 Y54 00						0	0	HR	5	M				
	65-82	msl	25 Y54 00						0	0	HR	15	M				Imp gravelly
29	0 30	msl	10YR42 00						0	0	HR	2					
	30 40	c	10YR54 00						0	0	HR	20	M				Imp stones
30	0 32	msl	25 Y53 00	10YR58 00	M			Y	0	0		0					
	32 60	c	25 Y63 00	10YR68 00	M			Y	0	0		0	M	Y		Y	
31	0 30	mszl	10YR32 00						0	0	HR	5					
	30-42	msl	10YR43 00						0	0	HR	20	M				Imp gravelly
32	0 30	msl	10YR42 00						3	0	HR	8					
	30 40	hcl	10YR43 53						0	0	HR	5	M				
	40 60	c	10YR63 00	75YR68 00	M			Y	0	0	HR	2	P		Y		Imp stone
33	0 32	mszl	10YR31 00						3	0	HR	12					Imp gravelly
34	0 30	msl	10YR41 00						3	0	HR	10					
	30 35	msl	10YR42 00						0	0	HR	25	M				Imp gravelly
35	0 30	msl	10YR42 00						0	0		0					
	30-40	sc1	10YR62 00	10YR58 00	C			Y	0	0		0	M				
	40 120	msl	10YR62 00	10YR58 00	M			Y	0	0		0	M				