

**A1
Test Valley Local Plan Review
Sites 125 130
Land south east of Romsey Hampshire**

**Agricultural Land Classification
Semi detailed Survey
ALC Map and Report**

December 1996

**Resource Planning Team
Eastern Region
FRCA Reading**

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AGRICULTURAL LAND CLASSIFICATION REPORT
TEST VALLEY LOCAL PLAN REVIEW
SITES 125 130 LAND SOUTH EAST OF ROMSEY HAMPSHIRE
SEMI DETAILED SURVEY

INTRODUCTION

1 This report presents the findings of a semi detailed Agricultural Land Classification (ALC) survey of approximately 61 hectares of land to the to the south east of Romsey south Hampshire The survey was carried out during December 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 All of this site currently being considered was surveyed in 1983 (ADAS Ref 1512/023/83) at a reconnaissance level of detail prior to the revision of the ALC guidelines in 1988 (MAFF 1988) The results of the more detailed 1996 survey supersede any previous ALC information for this land

3 Prior to 1 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) Reading 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 all of the agricultural land was in permanent grassland The areas shown as Other Land comprise areas of scrub and agricultural buildings

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

Table 1 Area of grades and other land

Grade/Other land	Area (hectares)	/ surveyed area	/ site area
2	7.3	12.6	12.0
3a	10.0	17.2	16.5
3b	35.6	61.4	58.6
4	5.1	8.8	8.4
Other land	2.7	N/A	4.5
Total surveyed area	58.0	100.0	95.5
Total site area	60.7		100.0

7 The fieldwork was conducted at an average density of approximately two borings every three hectares. A total of 38 borings and four soil pits were described.

8 Much of this site has been classified as Subgrade 3b (moderate quality) land. Subgrade 3a (good quality) land has been mapped on the northern mid slopes. Grade 2 (very good quality) land has been classified adjacent to the railway line which forms the western site boundary.

9 The majority of profiles on the site suffer from wetness problems to varying degrees. Soil wetness acts to restrict the flexibility of cropping, stocking and cultivations. Typically medium textured loamy topsoils overlie similar upper subsoils. These profiles pass to poorly structured clay loams or clays which act to impede soil drainage. The depth to these poorly structured horizons will determine the final ALC grade. Where these poorly structured horizons are shallow the drainage will be poor and the land is classified as Subgrade 3b. Elsewhere where they are deeper within the profile the resulting ALC grade will be Grade 2 or Subgrade 3a depending upon local circumstances.

10 The higher land around Whitenap Farm comprises gravelly soils derived from river gravel deposits. At this locality these soil characteristics act to impart a soil droughtiness limitation such that this land will have lower and less consistent crop yields. A classification of Subgrade 3b is appropriate. Where the gravelly deposits occur deep within the profile the limitation is much less severe. Consequently some of the Grade 2 land is equally limited by soil droughtiness as well as soil wetness.

11 The higher land between Keepers Cottage and the Mountbatten School is classified as Grade 4. According to the geology map for this area this land has undergone gravel extraction. The re-instated soils have significant amounts of larger flints in the topsoil and highly variable subsoils which restricts the flexibility of this land.

FACTORS INFLUENCING ALC GRADE

Climate

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

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

14 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.

15 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 (AT0 January to June) as a measure of the relative warmth of a locality.

Table 2 Climatic and altitude data

Factor	Units	Values	
		SU 364 202	SU 369 207
Grid reference	N/A		
Altitude	m, AOD	18	35
Accumulated Temperature	day°C (Jan June)	1534	1514
Average Annual Rainfall	mm	814	818
Field Capacity Days	days	174	175
Moisture Deficit, Wheat	mm	110	108
Moisture Deficit, Potatoes	mm	105	102
Overall climatic grade	N/A	Grade 1	Grade 1

16 The combination of rainfall and accumulated temperature at this site mean that there is no overall climatic limitation. However climatic factors do interact with soil properties to influence soil wetness and droughtiness limitations. At this locality the climate is relatively wet in regional terms. As a result the likelihood of soil wetness problems may be increased. No local climatic factors such as exposure or frost risk are believed to adversely affect the land quality on the site. This site is climatically Grade 1.

Site

17 The highest land which occurs around Whitenap Farm and to the east of Beggarspath Wood lies at an altitude of approximately 35 m AOD. The land gently falls (1:4) typically in a westerly direction. The western half of the site is flat and lies at an altitude of approximately 18 m AOD. Nowhere on the site do gradient or microrelief adversely affect agricultural land quality.

Geology and soils

18 The published geology map (BGS 1987) shows the flatter western half of the site to be underlain by river terrace deposits (mainly loam and clay resting on river terrace gravels). The mid slopes of the site are shown to be underlain by the Wittering Formation (part of the Bracklesham Group) whilst the higher land around Whitenap Farm is mapped as river terrace deposits (mainly gravel). The higher land to the east of Beggarspath Wood is shown on the published geology map for the area as having been extracted for gravel. Discrete areas in the centre of the site are shown to be underlain by alluvium and Earnley Sand (the latter also being part of the Bracklesham Group).

19 The most detailed published soil map for this area (SSEW 1983) shows most of the site to comprise soils of the Wickham 3 Association. These soils are described as Slowly permeable seasonally waterlogged fine loamy over clayey and coarse loamy over clayey soils and similar more permeable soils with slight waterlogging. Some deep coarse loamy soils affected by groundwater (SSEW 1983). A thin strip of land adjacent to the railway line is shown as the Hamble 2 Association. These soils are described as Deep stoneless well drained silty soils and similar soils affected by groundwater over gravel locally (SSEW 1983). A small area in the extreme south of the site is mapped as soils of the Hurst Association. These soils are described as Coarse and fine loamy permeable soils mainly over gravel variably affected by groundwater (SSEW 1983).

Agricultural Land Classification

20 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 page 1

21 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 page 10

Grade 2

22 Land adjacent to the railway line has been classified as Grade 2 (very good quality) This land is limited by minor soil droughtiness sometimes in conjunction with minor soil wetness This land approximates to the area shown as the Hamble 2 and Hurst soil associations Profiles typically comprise non calcareous medium clay loam topsoils which overlie permeable similarly textured upper subsoils Lower subsoils also comprise medium clay loams and occasionally brownish heavy clay loams both of which are permeable Topsoils are slightly stony containing 0.2% flints > 2 cm and 5.8% total flints Subsoils have a similar stone content though pass into much stonier (32.45% total flints) lower subsoils at approximately 85 to 95 cm depth These profiles which are well drained (Wetness Class I) are typified by Pit 2 (see Appendix II) The interaction between the soil characteristics with the prevailing climate acts to reduce the amount of soil available water Consequently this land may be subject to lower and less consistent crop yields

23 Where soil wetness is also equally limiting the profiles lack the very stony lower horizons and pass into slowly permeable heavy clay loams or clays at between 70 and 75 cm depth These profiles are moderately well drained (Wetness Class II) as indicated by gleying from between 45 and 70 cm depth The interaction between the medium textured topsoils drainage characteristics and the relatively wet prevailing climate means that this land may be subject to minor restrictions on the flexibility of cropping stocking and cultivations

Subgrade 3a

24 Land on the mid slopes in the north of the site has been classified as Subgrade 3a (good quality) because of soil wetness and workability limitations Profiles comprise non calcareous medium clay loam topsoils which pass into permeable similarly textured or slightly heavier (heavy clay loam) upper subsoils At approximately 48 to 55 cm depth, these pass into slowly permeable heavy clay loam and clay lower subsoils These profiles are imperfectly drained (Wetness Class III) and are gleyed from 45 to 55 cm depth In some of the profiles the slowly permeable layers occur deeper within the soil profile (55 to 70 cm depth) however these profiles are gleyed within 40 cm depth Consequently these profiles have also been assessed as imperfectly drained (Wetness Class III) The interaction between the medium textured topsoils imperfect drainage characteristics and the relatively wet prevailing climate means that this land may be subject to some restrictions on the flexibility of cropping stocking and cultivations

Subgrade 3b

25 The lower lying land on the site has been classified as Subgrade 3b (moderate quality) because of significant soil wetness and workability restrictions. Profiles comprise non calcareous medium and heavy clay loam topsoils which in parts overlie narrow permeable heavy clay loam and clay upper subsoils. All profiles are slowly permeable (heavy clay loams and clays) from between 22 cm and 45 cm depth. All of these profiles are gleyed within 40 cm and as such, are poorly drained (Wetness Class IV). Such profiles are typified by Pits 1 and 3 (see Appendix II). The interaction between the soil drainage characteristics and the relatively wet local climate means that this land is limited by soil wetness. Soil wetness can adversely affect seed germination and survival and can inhibit the development of a good root system. It also influences the sensitivity of soil to structural damage and is therefore a major factor in determining the number of days when cultivation, trafficking or grazing can take place.

26 The higher land on the site around Whitenap Farm has been classified as Subgrade 3b because of significant soil droughtiness limitations arising from soils developed in gravelly deposits. Topsoils comprise non calcareous medium clay loams and occasionally medium silty clay loams which are moderately stony (13.15% flints > 2 cm, 2.6% flints > 6 cm and 20.32% total flints). Upper subsoils typically comprise medium clay loams which are very stony (35.50% total flints). At approximately 40 to 48 cm depth these profiles proved impenetrable to a soil auger. Consequently Pit 4 was dug to assess the lower subsoil conditions. From Pit 4 it could be seen that the lower subsoils are extremely stony containing well over 70% total flints by volume. In comparison to soil flints retain much less water available for uptake by crop roots. Consequently the interaction between the soil characteristics (but in particular the high flint content) and the prevailing climate leads to a restriction in water availability for plants in most years. Consequently Subgrade 3b is appropriate on the basis of soil droughtiness. This land will be subject to low and inconsistent crop yields.

Grade 4

27 Land classified as Grade 4 (poor quality) occurs on the restored area on the higher land between Keepers Cottage and the Mountbatten School. According to the geology map for this area, gravel was extracted from this land. The reinstated land is limited by severe soil droughtiness arising from very shallow and flinty soils. Topsoils typically comprise non calcareous medium clay loams which are moderately stony (18.20% flints > 2 cm, 5.7% flints > 6 cm and 30.35% total flints by volume). Where penetrable to a soil auger these were found to overlie very shallow upper subsoils which are of variable texture (medium clay loams loamy medium sands) and slightly stonier (approximately 40% total flints by volume). Due to very compact and stony underlying horizons these profiles generally proved impenetrable to both soil auger and spade at 30 to 40 cm depth. Although no soil inspection pit was dug in this area the underlying horizon is likely to be hard and consolidated and thus impenetrable to implements and plant roots. The resulting restricted rooting means that the amount of profile available water is likely to be severely reduced. This land is therefore likely to suffer from severe soil droughtiness. In addition, this land is also likely to suffer from both soil wetness

and workability limitations The hard and consolidated horizon is likely to be of low permeability thus acting as a very slowly permeable layer at a shallow depth within the soil profile Such poor drainage characteristics means that this land may suffer from restricted flexibility of cropping stocking and cultivations

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SOURCES OF REFERENCE

British Geological Survey (1987) *Sheet No 315 Southampton 1 50 000 (solid and 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) *Climatological 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 and accompanying legend.*

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 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 pasture	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
EX Exposure		

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 **GLEY** 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	VF very friable	FR friable	FM firm	VM very firm
EM extremely firm		EH extremely hard		

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 LP SITES 125 Pit Number 1P

Grid Reference SU36402040
 Average Annual Rainfall 0 mm
 Accumulated Temperature 0 degree days
 Field Capacity Level 174 days
 Land Use Permanent Grass
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0-22	HCL	10YR4/3 0/0	0		2	HR					
22-38	C	25Y 6/2 0/0	0		2	HR	M	WKCSAB	FM	P	
38-48	C	25Y 6/2 0/0	0		0		M	STCAB	FM	P	
48-58	C	25Y 5/1 0/0	0		0		M	STCAB	FM	P	
58-80	HCL	10YR6/2 7/2	0		5	HR	M	MDCSAB	FR	M	

Wetness Grade 3B
 Wetness Class IV
 Gleying 022 cm
 SPL 022 cm

Drought Grade
 APW mm MBW 0 mm
 APP mm MBP 0 mm

FINAL ALC GRADE 3B
 MAIN LIMITATION Wetness

SOIL PIT DESCRIPTION

Site Name TEST VALLEY LP SITES 125 Pit Number 2P

Grid Reference SU36502010 Average Annual Rainfall 0 mm
 Accumulated Temperature 0 degree days
 Field Capacity Level 174 days
 Land Use Permanent Grass
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0	21	MCL	10YR43 00	0	5	HR					
21	42	MCL	10YR46 00	0	2	HR		MDCSAB	FR	M	
42	72	HCL	10YR44 00	0	1	HR	C	MDCSAB	C	M	
72	85	C	10YR46 00	0	32	HR	C			M	
85-	95	HCL	10YR46 00	0	45	HR	C			M	

Wetness Grade 1 Wetness Class I
 Gleying cm
 SPL No SPL

Drought Grade 2 APW 116mm MBW 6 mm
 APP 113mm MBP 8 mm

FINAL ALC GRADE 2
 MAIN LIMITATION Droughtiness

SOIL PIT DESCRIPTION

Site Name TEST VALLEY LP SITES 125 Pit Number 3P

Grid Reference SU36632037 Average Annual Rainfall 0 mm
 Accumulated Temperature 0 degree days
 Field Capacity Level 174 days
 Land Use Permanent Grass
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0-25	MZCL	10YR4.3/0.0	0		2	HR					
25-42	HCL	10YR6.2/6.3	0		2	HR	M	MDCAB	FM	P	
42-60	HCL	10YR6.4/0.0	0		2	HR	M	MDCAB	FM	P	
60-75	C	10YR7.2/0.0	0		0		M	WKCSAB	FM	P	

Wetness Grade 3B
 Wetness Class IV
 Gleying 0.25 cm
 SPL 0.25 cm

Drought Grade
 APW mm MBW 0 mm
 APP mm MBP 0 mm

FINAL ALC GRADE 3B
 MAIN LIMITATION Wetness

SOIL PIT DESCRIPTION

Site Name TEST VALLEY LP SITES 125 Pit Number 4P

Grid Reference SU36702073 Average Annual Rainfall 0 mm
 Accumulated Temperature 0 degree days
 Field Capacity Level 174 days
 Land Use Permanent Gr
 Slope and Aspect degrees

HORIZON	TEXTURE	COLOUR	STONES	2	TOT STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0 26	MCL	10YR43 00	13		30	HR					
26 47	MCL	10YR44 00	0		45	HR			FR	M	
47 120	GH	10YR56 00	0		0					P	

Wetness Grade 1 Wetness Class I
 Gleying cm
 SPL No SPL

Drought Grade 3B APW 61 mm MBW 49 mm
 APP 58 mm MBP 47 mm

FINAL ALC GRADE 3B
 MAIN LIMITATION Droughtiness

SAMPLE NO	GRID REF	ASPECT USE	WETNESS-		-WHEAT		POTS-		M REL		EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB					
1	SU36582088	PGR W	04		1	1	123	13	111	6	2		DR	2	Imp95gravelly
1P	SU36402040	PGR		022 022	4	3B		0		0			WE	3B	Sto 1er 80+
2	SU36682084	PGR NW	01		1	1	50	60	50	55	4		DR	3B	Imp40 see 4P
2P	SU36502010	PGR			1	1	116	6	113	8	2		DR	2	S1 gleyed 42
3	SU36402080	PGR		038 038	4	3B		0		0			WE	3B	Plastic 3B
3P	SU36632037	PGR		025 025	4	3B		0		0			WE	3B	Pit to 75
4	SU36602080	PGR SW	05		1	1	83	27	91	14	3B		DR	3A	Imp68g velly
4P	SU36702073	PGR			1	1	61	49	58	-47	3B		DR	3B	Pit to 85
5	SU36302070	PGR		028 028	4	3B		0		0			WE	3B	Imp65gravelly
6	SU36502070	PGR		0 045	4	3B		0		0			WE	3B	
7	SU36702070	PGR W	03		1	1	59	51	59	46	4		DR	3B	Imp48 see 4P
8	SU36902070	PGR E	03		1	1	49	61	49	56	4		DR	3B	Imp42 see 4P
9	SU36402060	PGR		035 035	4	3B		0		0			WE	3B	Ma y MN 35-55
10	SU36602060	PGR W	03	055 055	3	3A	116	6	106	1	2		WE	3A	
11	SU36802060	PGR W	02		1	1	52	58	52	53	4		DR	3B	Imp45 see 4P
12	SU36302050	PGR		045 085	1	2	140	30	111	6	2		WD	2	S1 gleyed 35
13	SU36502050	PGR		030 040	4	3B		0		0			WE	3B	
14	SU36702050	PGR W	02	0 058	3	3A	121	11	112	7	2		WE	3A	Q 3B we
15	SU36402040	PGR		025 025	4	3B		0		0			WE	3B	
16	SU36502040	PGR		025 025	4	3B		0		0			WE	3B	
17	SU36602040	PGR		025 048	3	3A	133	23	110	5	2		WE	3A	Nea 32(3B we)
18	SU36802040	PGR S	04	055	1	1	91	19	99	6	3A		DR	3A	Imp65 g velly
19	SU36302030	PGR		070 070	2	2	132	22	103	2	2		WD	2	S1 gleyed 40
20	SU36502030	PGR		025 025	4	3B		0		0			WE	3B	Clay topsoil
21	SU36702030	PGR		0 030	4	3B		0		0			WE	3B	Ma y MN 50
22	SU37002030	PGR		025	1	1	82	28	63	42	3B	Y	DR	3B	Prev worked
23	SU37162030	PGR			1	1	46	64	46	59	4	Y	DR	4	140 worked
24	SU36402020	PGR		045 058	3	3A	120	10	110	5	2		WE	3A	Gr 2 we see 2P
25	SU36602020	PGR		0 025	4	3B		0		0			WE	3B	Plast c 25
26	SU37102020	PGR			1	1	39	71	39	66	4	Y	DR	4	130 wo ked
27	SU36502010	PGR		040 040	3	3A	103	7	106	1	3A		WE	3A	Imp80 g avelly
28	SU36662013	PGR		0 025	4	3B		0		0			WE	3B	Plast c 25
29	SU37002010	PGR NW	02	045 045	3	3A		0		0		Y	ST	3B	Edge of worked
30	SU36402000	PGR		040 040	3	3A	108	2	106	1	3A		WE	3A	Border 3B we
31	SU36602000	PGR		0 025	4	3B		0		0			WE	3B	Plastic 25
32	SU36702000	PGR		018	2	2	56	54	56	-49	4		DR	3B	I35Q WCIV/d
33	SU36802000	PGR NW	02	025 075	3	3A	147	37	115	10	1		WE	3A	Clay lens 75
34	SU36902000	PGR SW	04		1	1	44	66	44	61	4	Y	DR	4	Imp35 worked
35	SU36501990	PGR		0 050	3	3A	112	2	102	3	3A		WE	3A	Imp100 Prob2d
36	SU36701990	PGR		025 042	4	3B		0		0			WE	3B	
37	SU36431983	PGR		055 075	2	2	113	3	113	8	3A		WD	2	Imp85 Prob2d
38	SU36601980	PGR		025 025	4	3B		0		0			WE	3B	Q clay topso 1

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES			PED		STONES			STRUCT/ CONSIST	SUBS			CALC	
				COL	ABUN	CONT	COL	GLE	2	6	LITH		TOT	STR	POR		IMP
1	0 30	mc1	10YR43 00						2	0	HR	8					
	30-45	mc1	10YR54 00						0	0	HR	8		M			
	45-95	mc1	10YR58 54						0	0	HR	4		M			Imp 95 gravelly
1P	0 22	hc1	10YR43 00				00MN00 00		0	0	HR	2					
	22 38	c	25Y 62 00	10YR66 00	M		00MN00 00	Y	0	0	HR	2	WKCSAB	FM	P	Y	Y
	38-48	c	25Y 62 00	75YR68 00	M		25Y 61 00	Y	0	0		0	STCAB	FM	P	Y	Y
	48 58	c	25Y 51 00	10YR58 00	M		25Y 41 00	Y	0	0		0	STCAB	FM	P	Y	Y
	58-80	hc1	10YR62 72	10YR68 00	M		10YR52 00	Y	0	0	HR	5	MDCSAB	FR	M	Y	
2	0 30	mzc1	10YR43 00						14	2	HR	30					
	30 40	hc1	10YR43 00	10YR58 00	C				S	0	HR	45		M			S1 gleyed
2P	0 21	mc1	10YR43 00							0	0	HR	5				
	21 42	mc1	10YR46 00							0	0	HR	2	MDCSAB	FR	M	
	42 72	hc1	10YR44 00	10YR56 00	C				S	0	HR	1	MDCSAB	C	M		S1 gleyed
	72-85	c	10YR46 00	10YR66 00	C				S	0	HR	32		M			S1 gleyed
	85-95	hc1	10YR46 00	10YR66 00	C				S	0	HR	45		M			S1 gleyed
3	0 30	mc1	10YR42 00	10YR56 00	F					0	0	HR	2				
	30 38	c	10YR53 00	10YR56 00	F					0	0		0		M		
	38 70	c	25Y 51 52	10YR58 00	M		00MN00 00	Y	0	0		0		P		Y	Plastic
3P	0 25	mzc1	10YR43 00							0	0	HR	2				
	25 42	hc1	10YR62 63	10YR68 00	M				Y	0	HR	2	MDCAB	FM	P	Y	Y
	42 60	hc1	10YR64 00	10YR58 00	M				Y	0	HR	2	MDCAB	FM	P	Y	Y
	60 75	c	10YR72 00	75YR56 00	M				Y	0		0	WKCSAB	FM	P	Y	Y
4	0 30	mc1	10YR43 00							6	2	HR	20				
	30 60	mc1	10YR44 00							0	0	HR	20		M		
	60 68	mc1	10YR44 00							0	0	HR	40		M		Imp 68 gravelly
4P	0 26	mc1	10YR43 00							13	6	HR	30				
	26 47	mc1	10YR44 00							0	0	HR	45		FR	M	
	47 120	gh	10YR56 00							0	0		0		P		
5	0 28	hc1	10YR43 00							0	0	HR	2				
	28 65	c	25Y 51 52	10YR58 00	M		00MN00 00	Y	0	0	HR	2		P		Y	Imp 65 gravelly
6	0 25	mc1	10YR53 00	10YR58 00	C				Y	0	0	HR	2				
	25-45	hc1	10YR53 54	10YR56 00	C		00MN00 00	Y	0	0		0		M			Border mc1 not spl
	45-70	c	10YR52 00	10YR58 00	M		00MN00 00	Y	0	0		0		P		Y	
7	0 30	mc1	10YR43 00							15	6	HR	30				
	30 48	mc1	10YR54 00							0	0	HR	35		M		Imp 48 gravelly
8	0 25	mc1	10YR43 00							14	6	HR	25				
	25-42	mc1	10YR43 00							0	0	HR	50		M		Imp 42 gravelly

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES			PED		STONES		STRUCT/ CONSIST	SUBS			SPL	CALC
				COL	ABUN	CONT	COL	GLE	2	6		LITH	TOT	STR		
9	0 25	hc1	10YR42 00						0	0	HR	2				Border mc1
	25-35	c	10YR44 00						0	0	HR	2	M			Border hc1
	35-55	c	10YR53 00	10YR58 00	C	00MN00	00	Y	0	0		0	P		Y	
	55-70	c	25Y 61 63	75YR56 00	M	00MN00	00	Y	0	0		0	P		Y	
10	0 30	mc1	10YR43 00						6	0	HR	10				
	30 55	mc1	10YR54 00	10YR58 00	C			S	0	0	HR	2	M			S1 gleyed
	55-100	hc1	10YR64 00	75YR58 00	M			Y	0	0	HR	2	P		Y	Border c spl
11	0 25	mzc1	10YR43 00						14	4	HR	32				
	25-45	mc1	10YR43 00						0	0	HR	45	M			Imp 45 gravelly
12	0 25	hc1	10YR42 00						0	0	HR	2				
	25 35	c	10YR44 00						0	0	HR	2	M			
	35-45	c	10YR54 44	10YR58 51	C			S	0	0		0	M			S1 gleyed
	45 55	c	05Y 51 00	10YR58 00	M			Y	0	0		0	P			10cm wide not spl
	55 85	sc1	10YR53 00	10YR58 00	M			Y	0	0		0	M			Tending ms1
	85 120	c	25Y 51 00	10YR58 00	M			Y	0	0		0	P		Y	
13	0 30	hc1	10YR43 00						0	0	HR	2				
	30 40	hc1	10YR64 00	10YR58 00	C			Y	0	0	HR	2	M			F iable not spl
	40 120	c	10YR64 62	75YR58 00	M	00MN00	00	Y	0	0	HR	2	P		Y	
14	0 28	mc1	10YR42 52	10YR58 00	C			Y	0	0	HR	2				
	28 48	mc1	10YR63 64	10YR58 00	C	00MN00	00	Y	0	0	HR	2	M			
	48 58	hc1	10YR64 00	75YR58 00	C			Y	0	0	HR	2	M			Border mc1 not spl
	58-100	c	10YR64 00	75YR58 00	M	00MN00	00	Y	0	0		0	P		Y	
15	0 25	hzc1	10YR44 00						0	0	HR	5				
	25 70	c	25Y 64 00	10YR68 00	M	00MN00	00	Y	0	0	HR	2	P		Y	
	70 85	hc1	10YR68 00						0	0		0	M			
	85 120	hc1	10YR64 66						0	0	HR	10	M			
16	0 25	mc1	10YR42 00						0	0	HR	2				
	25-55	c	10YR51 53	10YR58 00	M			Y	0	0		0	P		Y	
	55 80	c	10YR51 00	75YR58 00	M	00MN00	00	Y	0	0		0	P		Y	
17	0 25	mc1	10YR42 00						0	0	HR	2				
	25-48	mc1	25Y 52 00	10YR58 00	C			Y	0	0		0	M			
	48-120	c	25Y 51 53	75YR58 00	M			Y	0	0		0	P		Y	
18	0 30	mzc1	10YR43 00						6	0	HR	10				
	30 55	mc1	10YR54 00						0	0	HR	15	M			
	55-65	mc1	10YR64 00	10YR68 00	C	00MN00	00	Y	0	0	HR	20	M			Imp 65 gravelly
19	0 30	mc1	10YR42 52	75YR56 00	C				0	0	HR	5				
	30 40	mc1	10YR54 00						0	0		0	M			
	40 70	hc1	10YR54 00	10YR68 00	C			S	0	0		0	M			fsc1 le ses
	70 95	hc1	10YR64 00	10YR68 00	C			Y	0	0	HR	1	P		Y	
	95-120	hc1	10YR64 00	10YR66 00	C			Y	0	0	HR	15	M		Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES			PED		STONES-			STRUCT/ CONSIST	SUBS			SPL	CALC
				COL	ABUN	CONT	COL	GLE	2	6	LITH		TOT	STR	POR		
20	0 25	c	10YR42 00				00M00 00		0	0	HR	5					
	25-70	c	25Y 51 00	10YR58 00 M			00M00 00 Y		0	0	HR	5		P			Y
21	0 30	mc1	10YR53 00	10YR58 00 C					Y	0	0	HR	2				
	30 50	c	25Y 61 63	75YR68 00 M					Y	0	0		0		P		Y
	50 70	c	25Y 61 53	75YR58 68 M			00M00 00 Y		0	0		0		P			Y
22	0 25	mc1	10YR43 00							20	7	HR	35				
	25-70	1ms	25Y 63 00	75YR58 68 M					Y	0	0		0		M		
	70 120	1ms	25Y 63 00	10YR58 00 M					Y	0	0		0		M		
23	0 30	mc1	10YR43 00							18	6	HR	35				
	30 40	mc1	10YR54 00							0	0	HR	40		M		
24	0 30	mc1	10YR43 00							0	0	HR	5				
	30 45	mc1	10YR43 00							0	0	HR	2		M		
	45-58	hc1	10YR53 00	10YR58 00 C			00M00 00 Y		0	0	HR	2		M			
	58 102	c	10YR64 00	10YR68 00 M			00M00 00 Y		0	0	HR	5		P			Y
25	0 25	mc1	25Y 51 00	75YR56 00 M					Y	0	0	HR	2				
	25-50	c	05Y 51 41	75YR58 00 M					Y	0	0		0		P		Y
	50 70	c	05Y 61 00	10YR58 00 M					Y	0	0		0		P		Y
26	0 30	mc1	10YR43 00							20	5	HR	30				
27	0 30	mc1	10YR42 00							0	0	HR	5				
	30 40	hc1	10YR54 00							0	0	HR	1		M		
	40 70	c	10YR64 00	75YR68 00 C			00M00 00 Y		0	0		0		P			Y
	70 80	hc1	10YR64 00	10YR58 00 C					Y	0	0	HR	15		M		
28	0 25	hc1	75YR41 42	10YR58 00 M					Y	0	0		0				
	25-45	c	25Y 51 52	75YR56 00 M					Y	0	0		0		P		Y
	45 70	c	05Y 41 00	10YR58 00 C					Y	0	0		0		P		Y
29	0 30	mc1	10YR43 00							20	6	HR	35				
	30 45	mc1	10YR43 00							0	0	HR	25		M		
	45 70	c	25Y 52 00	75YR56 00 M			00M00 00 Y		0	0		0		P			Y
30	0 30	mc1	10YR42 52							0	0	HR	5				
	30 40	hc1	10YR54 00							0	0		0		M		
	40 78	c	10YR64 00	75YR58 00 C			00M00 00 Y		0	0	HR	2		P			Y
	78-88	hc1	10YR64 00	10YR58 00 C					Y	0	0	HR	15		M		
31	0 25	mc1	10YR52 42	10YR58 00 C					Y	0	0	HR	2				
	25-70	c	05Y 61 00	75YR78 58 M			00M00 00 Y		0	0		0		P			Y
32	0 18	mc1	10YR42 00							0	0	HR	2				
	18 28	mc1	10YR42 41	10YR58 00 C					Y	0	0	HR	2		M		
	28 35	c	10YR51 00	10YR58 00 C					Y	0	0	HR	10		P		

Many MN concs

Prev worked

Prev wo ked
Imp 40 gravelly

Friable not spl
Imp 102 g avelly

Plastic
Wet v plastic

Prev wo ked I30

Imp 80 g avelly

Plastic
Plastic

Plastic

Imp 88 gra elly

Plastic

Imp 35 gravelly

SAMPLE	DEPTH	TEXTURE	COLOUR	-MOTTLES			PED		STONES		STRUCT/ CONSIST	SUBS			CALC		
				COL	ABUN	CONT	COL	GLE	2	6		LITH	TOT	STR		POR	IMP
33	0 25	mzc1	10YR43 00						0	0	HR	4					
	25-55	mzc1	25Y 62 63	10YR56	00	M		Y	0	0	HR	4		M			
	55-75	mc1	25Y 63 00	10YR56	00	M		Y	0	0	HR	15		M			
	75-120	hc1	25Y 63 00	75YR56	00	M		Y	0	0	HR	15		P		Y	Clay lenses
34	0 30	mc1	10YR43 00						12	4	HR	30					
	30 35	mc1	10YR44 00						0	0	HR	40		M			Imp 35 gravelly
35	0 30	mc1	10YR42 52	10YR58	00	C		Y	0	0	HR	5					
	30 50	hc1	10YR53 00	10YR58	00	C	00MNO0	00	Y	0	0	HR	10		M		
	50 65	hc1	10YR53 63	75YR58	00	C	00MNO0	00	Y	0	0	HR	15		P		Y
	65-100	c	10YR64 00	75YR58	00	M	00MNO0	00	Y	0	0	HR	10		P		Y
36	0 25	mc1	10YR52 42	10YR58	00	F			0	0	HR	5					
	25-42	hc1	10YR53 00	10YR58	00	M		Y	0	0	HR	5		M			Friable not spl
	42-80	c	25Y 53 52	75YR56	00	M	00MNO0	00	Y	0	0	HR	5		P		Y
37	0 30	mc1	10YR43 00	10YR58	00	C		S	0	0	HR	5					S1 gleyed
	30 55	mc1	10YR43 00	10YR58	00	C	00MNO0	00	S	0	0	HR	5		M		S1 gleyed
	55 75	mc1	10YR63 00	10YR58	00	C		Y	0	0	HR	2		M			
	75 85	hc1	10YR63 73	75YR56	00	M	00MNO0	00	Y	0	0	HR	5		P		Y
38	0 25	hc1	10YR42 00						0	0	HR	5					Border c
	25 60	c	10YR42 00	75YR56	00	M	00MNO0	00	Y	0	0	HR	5		P		Y