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NEWBURY LOCAL PLAN
SITE 10: GRAZELEY
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
JANUARY 1994

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1.0 Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on a number of sites in the Newbury District in Berkshire. The work forms part of MAFF's statutory input to the preparation of the Newbury Local Plan.

1.2 Approximately 57 hectares of land relating to site 10 west of Spencer's Wood, south of Reading was surveyed in January 1994. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 57 soil auger borings and 2 soil inspection pits were assessed in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose longterm limitations on its use for agriculture.

1.3 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS.

1.4 At the time of the survey the landuses on the site were cereal cropping and permanent grazing.

1.5 The distribution of grades and subgrades is shown on the attached ALC map and the areas are given in the table below. The map has been drawn at a scale of 1:5,000. It is accurate at this scale, but any enlargement would be misleading. This map supersedes any previous survey information for this site.

Table 1 : Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Area
3b	53.4	93.8	100.0
Non-agricultural land	0.2	0.4	
Urban	2.6	4.6	
Farm buildings	0.7	1.2	
Total area of site	56.9	100.0	

1.6 Appendix 1 gives a general description of the grades, subgrades and land use categories identified in the survey. The main classes are described in terms of the type of limitation that can occur, the typical cropping range and the expected level and consistency of yield.

1.7 All of the agricultural land on the site has been classified as Subgrade 3b, moderate quality land; with soil wetness, droughtiness and flood risk as the main limitations. Across the majority of the site the soils comprise medium and heavy clay loam topsoils which become heavier with depth. The subsoils comprise poorly structured clays that satisfy the criteria for classification as slowly permeable layers, which cause a significant drainage impedance in these soils. Soil wetness problems can result, such as structural damage through trafficking by machinery and poaching by grazing livestock. Wet soil conditions will also adversely affect crop growth and development. In the west of the site soil profiles typically comprise medium clay loam topsoils overlying heavier subsoils which become extremely stony at depth. The stony nature of these soils, in combination with soil textures, structures and the local climatic regime means that there is a significant restriction on the amount of profile available water for crop growth. In the south east of the site there is a small area of better quality land which has been downgraded since it is judged to be susceptible to flooding.

2.0 Climate

2.1 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.

2.2 The main parameters used in the assessment of an overall climatic limitation are average annual rainfall, as a measure of overall wetness, and accumulated temperature (degree days Jan-June), as a measure of the relative warmth of a locality.

2.3 A detailed assessment of the prevailing climate was made by interpolation from a 5km gridpoint dataset (Met. Office 1989). The details are given in the table below and these show that there is no overall climatic limitation affecting the site.

2.4 No local climatic factors such as exposure or frost risk affect the site. However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations. The Field Capacity Days for the site are relatively low within a national context, although the moisture deficits are at an average level.

Table 2 : Climatic Interpolation

Grid Reference :	SU 693 657
Altitude (m) :	55
Accumulated Temperature (days) :	1464
Average Annual Rainfall (mm) :	664
Field Capacity (days) :	139
Moisture Deficit, Wheat (mm) :	112
Moisture Deficit, Potatoes (mm) :	106
Overall Climatic Grade :	1

3.0 Relief

3.1 The site is gently undulating lying at an altitude ranging between 50-60 metres, rising from east to west. On no part of the site does gradient or relief pose any limitation to agricultural use.

4.0 Geology and Soil

4.1 The published geological sheet for the site (BGS 1971, Sheet 268: Reading) shows that the majority of the site is underlain by London Clay , with an area of Plateau Gravel in the west, and a band of alluvium in the south east of the site.

4.2 The published soils information for the area (SSEW 1967, Sheet 268, Soils of The Reading District) shows the soils on the site mapped as three different series. The majority is the Windsor series described as 'non-calcareous brown eocene clay with surface-water gley' (SSEW, 1967) occurs. In the west the Tidmarsh series described as 'brown earth, gravelly drift with gleying' (SSEW, 1967) has been mapped. In the south west the Wickham series described as 'non-calcareous loamy drift over eocene clay with surface-water gley' (SSEW, 1967). Detailed field examination broadly confirms this, particularly the presence of stony soils in the west of the site, the remainder showing strong evidence of poor drainage.

5.0 Agricultural Land Classification

5.1 Table 1 provides the details of the area measurements for each grade and the distribution of each grade is shown on the attached ALC map.

5.2 The location of the soil observation points are shown on the attached sample point map.

5.3 Subgrade 3b: All of the agricultural land on the site has been classified as Subgrade 3b, moderate quality land, with soil wetness, droughtiness and flood risk as the main limitations. The soils over the majority of the site show signs of a significant wetness limitation. The soil profiles typically comprise heavy clay loam topsoils with occasionally lighter textured medium clay loam topsoils in the south of the site. The topsoils tend to overlie heavy clay loam upper subsoils which in turn overlie clay lower subsoils commencing at depths of between 25-50 cm. Both the upper and lower subsoils within this mapping unit show signs of soil wetness, evidenced by gleying within these horizons. A soil inspection pit (Pit 2) was dug to assess the nature of the wetness problem. Consequently, it is evident that the clay subsoil that occurs across the majority of the site has a poor (strongly developed coarse angular blocky) substructural condition and low porosity. Therefore, this satisfies the criteria for classification as a slowly permeable layer. When considering the depth at which this slowly permeable layer is encountered, it is possible to assign the majority of the soils within this mapping unit to Wetness Class IV, occasionally to Wetness Class III where it occurs at a depth greater than 38cm. When considering a combination of the topsoil texture and Wetness Classes and the field capacity days for the site, these soils have a resultant classification of Subgrade 3b. The presence of slowly permeable layers cause a significant drainage impedance which leads to associated soil wetness problems. There are restrictions on the frequency with which these soils can be grazed by livestock, or worked effectively with agricultural machinery, due to the increased likelihood of soil structural damage. Also plant development, particularly rooting, is adversely affected by wet soils.
In the west of the site an area of land was found to be limited due to the droughty nature of the soils. A soil inspection pit (Pit 1) was dug to assess the nature of these soils. It became evident that soil profiles comprised a medium clay loam topsoil containing approximately 10% flints overlying a medium clay loam upper subsoil containing approximately 50% flints, with a layer of flint gravel resting at 47cm and extending to 78cm. Below this is a clay lower subsoil containing approximately 60% total flints. At 85cm, evidence of rooting was scarce and the pit was not dug any deeper. The soil profile is very stony below the topsoil this being reflected in the profile available water calculated to 85cm, resulting in a droughtiness classification of Subgrade 3b. It is evident that the high stone contents, soil textures and the local climatic regime means that there is a significant restriction on the amount of profile available water for plant growth. Consequently, crop yields will be restricted and inconsistent due to the unfavourable soil conditions which prevail in this area of the site.

5.4 Non-agricultural land: The area mapped as non-agricultural includes scrub land.

5.5 Urban: Areas mapped as urban include a tarmac road and private dwellings

5.6 Agricultural Buildings: These are mapped around Beech Hill Road Farm, Clappers Farm and Thurley Farm.

APPENDIX I

DESCRIPTION OF THE GRADES AND SUBGRADES

The ALC grades and subgrades are described below in terms of the types of limitation which can occur, typical cropping range and the expected level and consistency of yield. In practice, the grades are defined by reference to physical characteristics and the grading guidance and cut-offs for limitation factors in Section 3 enable land to be ranked in accordance with these general descriptions. The most productive and flexible land falls into Grades 1 and 2 and Subgrade 3a and collectively comprises about one-third of the agricultural land in England and Wales. About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4. Although less significant on a national scale such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates. The remainder is very poor quality land in Grade 5, which mostly occurs in the uplands.

Descriptions are also given of other land categories which may be used on ALC maps.

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 and horticultural crops can usually be grown but on some land in the 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.

Grade 3 - good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where 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.

APPENDIX II

FIELD ASSESSMENT OF SOIL WETNESS CLASS

Definition of Soil Wetness Classes

Wetness Class	Duration of Waterlogging[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years[2].
II	The soil profile is wet within 70 cm depth for 31-90 days in most years *or*, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but not wet within 40 cm depth for more than 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years *or*, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31 and 90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not within 40 cm depth for more than 210 days in most years *or*, if there is no slowly permeable layer within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

[1] The number of days specified is not necessarily a continuous period.

[2] 'In most years' is defined as more than 10 out of 20 years.

REFERENCES

* British Geological Survey (1971), Sheet No.268, Reading, 1:63,360

* MAFF (1988), Agricultural Land Classification of England and Wales : Revised guidelines and criteria for grading the quality of agricultural land.

* Meteorological Office (1989), Climatological Data for Agricultural Land Classification.

* Soil Survey of England and Wales (1967), Sheet 268, Soils of the Reading District, 1:63,360 and accompanying legend.

APPENDIX IV

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents :

SOIL PROFILE DESCRIPTIONS : EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a database. This has commonly used notations and abbreviations as set out below.

Boring Header Information

1. GRID REF : national 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 HRT : Horticultural Crops PGR : Permanent Pasture LEY : Ley Grass RGR : Rough Grazing
SCR : Scrub CFW : Coniferous Woodland DCW : Deciduous Woodland HTH : Heathland BOG : Bog or Marsh
FLW : Fallow PLO : Ploughed SAS : Set aside OTH : Other

3. GRDNT : Gradient as measured by a hand-held optical clinometer.

4. GLEY/SPL : Depth in cm to gleying or slowly permeable layers.

5. AP (WHEAT/POTS) : Crop-adjusted available water capacity.

6. MB (WHEAT/POTS) : Moisture Balance.

7. DRT : Best grade according to soil droughtiness.

8. If any of the following factors are considered significant, an entry of 'Y' will be entered in the relevant column.

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

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

OC : Overall Climate AE : Aspect EX : Exposure 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 : Soil Erosion Risk WD : Combined Soil Wetness/Droughtiness ST : Topsoil Stoniness

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
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 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

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

6. STONE LITH : One of the following is used.

HR : all hard rocks and stones MSST : soft, medium or coarse grained sandstone
SI : soft weathered igneous or metamorphic SLST : soft oolitic or dolimitic limestone
FSST : soft, fine grained sandstone ZR : soft, argillaceous, or silty rocks CH : chalk
GH : gravel with non-porous (hard) stones GS :gravel with porous (soft) stones

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

7. 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 VC : very coarse

- ped shape S : single grain M : massive GR : granular AB : angular blocky SAB : sub-angular blocky PR : prismatic
PL : platy

8. 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

9. SUBS STR : Subsoil structural condition recorded for the purpose of calculating profile droughtiness.

G : good M : moderate P : poor

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

11. IMP : If the profile is impenetrable a 'Y' will appear in this column at the appropiate horizon.

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

13. CALC : If the soil horizon is calcareous, a 'Y' will appear in this column.

14. 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 : NEWBURY LP,SITE 10 Pit Number : 1P

Grid Reference: SU68906568 Average Annual Rainfall : 664 mm
Accumulated Temperature : 1464 degree days
Field Capacity Level : 139 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 25	MCL	10YR42 00	0	10		
25- 47	MCL	10YR53 00	0	50		
47- 78	GH	10YR53 00	0	0		
78- 85	C	25Y 53 00	0	60	C	

Wetness Grade : 1 Wetness Class : I
Gleying :078 cm
SPL : No SPL

Drought Grade : 3B APW : 65 mm MBW : -47 mm
APP : 64 mm MBP : -42 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : NEWBURY LP,SITE 10 Pit Number : 2P

Grid Reference: SU69506580

Average Annual Rainfall : 664 mm
Accumulated Temperature : 1464 degree days
Field Capacity Level : 139 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 26	HCL	10YR42 00	0	1		
26- 35	C	25Y 53 00	0	0	M	MDCSAB
35- 60	C	25Y 53 63	0	0	M	STCAB

Wetness Grade : 3B

Wetness Class : IV
Gleying :026 cm
SPL :035 cm

Drought Grade : 3B

APW : 87 mm MBW : -25 mm
APP : 93 mm MBP : -13 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	DRT	M.REL FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	SU69106630	STB			025	035	4	3B	85	-27	91	-15	3B				WE	3B	
1P	SU68906568	PGR			078		1	1	65	-47	64	-42	3B				DR	3B	PIT85
2	SU69006620	PGR			030	045	3	3B	95	-17	104	-2	3A				WE	3B	
2P	SU69506580	PGR			026	035	4	3B	87	-25	93	-13	3B				WE	3B	
3	SU69106620	STB			030	030	4	3B	83	-29	89	-17	3B				WE	3B	
4	SU69206620	STB			028	028	4	3B	84	-28	90	-16	3B				WE	3B	
5	SU69306620	STB			025	030	4	3B	84	-28	90	-16	3B				WE	3B	
6	SU69006610	PGR			030	040	3	3A	90	-22	96	-10	3B				WE	3A	
7	SU69106610	PGR			030	040	3	3B	90	-22	96	-10	3B				WE	3B	
9	SU69206610	STB			025	040	3	3B	89	-23	95	-11	3B				WE	3B	
10	SU69306610	STB			025	030	4	3B	86	-26	92	-14	3B				WE	3B	
11	SU68906600	PGR			035	035	4	3B	85	-27	90	-16	3B				WE	3B	
12	SU69006600	PGR			030	030	4	3B	84	-28	87	-19	3B				WE	3B	
13	SU69106600	CER			026	036	4	3B	86	-26	92	-14	3B				WE	3B	
14	SU69806600	CER			025	045	3	3B	89	-23	95	-11	3B				WE	3B	
15	SU69306600	STB			022	038	4	3B	88	-24	94	-12	3B				WE	3B	
16	SU69406600	STB			025	025	4	3B	85	-27	91	-15	3B				WE	3B	
17	SU69506600	CER			022	040	3	3B	88	-24	94	-12	3B				WE	3B	
18	SU69606600	CER			025	025	4	3B	79	-33	82	-24	3B				WE	3B	
19	SU68906590	PGR			030	040	3	3B	90	-22	96	-10	3B				WE	3B	
20	SU69006590	CER			030	030	4	3B	86	-26	92	-14	3B				WE	3B	
21	SU69206590	CER			027	035	4	3B	87	-25	93	-13	3B				WE	3B	
22	SU69206590	CER			028	035	4	3B	87	-25	93	-13	3B				WE	3B	
23	SU69306590	CER			029	029	4	3B	86	-26	92	-14	3B				WE	3B	
24	SU69406590	STB			026	055	3	3A	99	-13	111	5	3A				WE	3A	
25	SU69506590	CER			028	035	4	3B	86	-26	92	-14	3B				WE	3B	
26	SU69606590	CER			030	035	4	3B	86	-26	92	-14	3B				WE	3B	
27	SU68806580	PGR			050	050	2	2	81	-31	85	-21	3B				DR	3B	IMPEN 60
28	SU68906580	PGR			026		2	2	95	-17	102	-4	3A				DR	3A	IMPEN 65
29	SU69006580	PGR			030		2	2	95	-17	101	-5	3A				DR	3A	IMPEN 60
30	SU69106580	PGR			032	032	4	3B	84	-28	87	-19	3B				WE	3B	
31	SU69206580	PLO			028	045	3	3B	91	-21	97	-9	3B				WE	3B	
32	SU69306580	CER			028	040	3	3B	89	-23	94	-12	3B				WE	3B	
33	SU69406580	CER			025	025	4	3B	83	-29	88	-18	3B				WE	3B	
34	SU69506580	PGR			028	040	3	3B	90	-22	96	-10	3B				WE	3B	
35	SU69606580	CER			045	045	3	3B	93	-19	102	-4	3A				WE	3B	
36	SU68806570	PGR			0		2	3A	78	-34	78	-28	3B				DR	3B	IMP50 SEE 1P
37	SU68906570	PGR					1	1	64	-48	64	-42	3B				DR	3B	IMP40 SEE 1P
38	SU69006570	PGR					1	1	63	-49	63	-43	3B				DR	3B	IMP38 SEE 1P
39	SU69106570	PGR			0	048	3	3A	132	20	109	3	2				WE	3A	
40	SU69206570	CER			035	045	3	3B	97	-15	109	3	3A				WE	3B	
41	SU69306570	CER	E	02	025	025	4	3B	82	-30	88	-18	3B				WE	3B	

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	DRT	M.REL FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
42	SU69406570	CER	E	02	027	027	4	3B	84	-28	90	-16	3B				WE	3B	
43	SU69506570	PGR			030	070	2	2	133	21	112	6	2				WD	2	
44	SU68906560	PGR			030	055	3	3A	90	-22	102	-4	3B				WE	3A	IMPEN 70
45	SU69006560	PGR					1	1	71	-41	73	-33	3B				DR	3B	WT30
46	SU69106560	CER	S	02	025	025	4	3B	86	-26	95	-11	3B				WE	3B	
47	SU69206560	CER	SE	02	035	035	4	3B	87	-25	96	-10	3B				WE	3B	
48	SU69306560	CER	E	01	025	035	4	3B	85	-27	91	-15	3B				WE	3B	
49	SU69406560	PGR	E	01	025	055	3	3A	107	-5	109	3	3A				WE	3A	
50	SU69506580	PGR			030	030	4	3B	93	-19	105	-1	3A				WE	3B	
51	SU69206550	CER	SE	01	030	030	4	3B	86	-26	92	-14	3B				WE	3B	
52	SU69306550	PGR	SE	01	025	048	3	3A	98	-14	110	4	3A				WE	3A	
53	SU69406550	PGR			035	035	4	3B	87	-25	93	-13	3B				WE	3B	
54	SU69506550	PGR	N	01	0	070	2	2	115	3	114	8	3A				DR	3A	
55	SU69406640	PGR			025		2	2	96	-16	106	0	3A				DR	3A	
56	SU69506640	PGR	N	01	025	040	3	3A	93	-19	105	-1	3A				WE	3A	
57	SU69506630	PGR	N	01	0	025	4	3B	80	-32	86	-20	3B				WE	3B	
58	SU69026564	PGR			038	038	4	3B	87	-25	93	-13	3B				WE	3B	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
1	0-25	hcl	10YR42 00						0	0	HR	5						
	25-35	hcl	10YR53 00	10YR58 61	C			Y	0	0		0		M				
	35-60	c	10YR52 00	10YR58 61	M			Y	0	0		0		P	Y		Y	
1P	0-25	mcl	10YR42 00						0	0	HR	10						
	25-47	mcl	10YR53 00						0	0	HR	50		M				
	47-78	gh	10YR53 00						0	0		0		P				
	78-85	c	25Y 53 00	75YR56 00	C		00MN00 00	Y	0	0	HR	60		P				
2	0-30	hcl	10YR42 00						0	0		0						
	30-45	hcl	10YR63 00	10YR58 61	C			Y	0	0		0		M				
	45-65	c	10YR52 00	10YR58 61	M			Y	0	0		0		P	Y		Y	
2P	0-26	hcl	10YR42 00						0	0	HR	1						
	26-35	c	25Y 53 00	75YR58 00	M			Y	0	0		0	MDCSAB FM	M				
	35-60	c	25Y 53 63	75YR58 00	M			Y	0	0		0	STCAB FM	P	Y		Y	
3	0-30	hcl	10YR42 00						0	0	HR	5						
	30-60	c	10YR52 00	10YR58 61	M			Y	0	0	HR	5		P	Y		Y	
4	0-28	hcl	10YR42 00						0	0	HR	5						
	28-60	c	10YR52 00	10YR58 61	M			Y	0	0		0		P	Y		Y	
5	0-25	hcl	10YR42 00						0	0	HR	5						
	25-30	hcl	10YR51 00	10YR58 00	C			Y	0	0		0		M				
	30-60	c	10YR52 00	10YR58 61	M			Y	0	0		0		P	Y		Y	
6	0-30	mcl	10YR42 00						0	0		0						
	30-40	hcl	10YR53 00	10YR58 61	C			Y	0	0		0		M				
	40-60	c	10YR52 00	10YR58 61	M			Y	0	0		0		P	Y		Y	
7	0-30	hcl	10YR42 00						0	0		0						
	30-40	hcl	10YR53 00	10YR58 00	C			Y	0	0		0		M				
	40-60	c	10YR52 00	10YR58 61	M			Y	0	0		0		P	Y		Y	
9	0-25	hcl	10YR42 00						0	0		0						
	25-40	hcl	10YR53 00	10YR58 61	C			Y	0	0		0		M				
	40-60	c	10YR52 00	10YR58 61	M			Y	0	0		0		P	Y		Y	
10	0-25	hcl	10YR42 00						0	0		0						
	25-30	hcl	10YR53 00	10YR58 61	M			Y	0	0		0		M				
	30-60	c	10YR52 00	10YR58 61	M			Y	0	0		0		P	Y		Y	
11	0-24	hcl	10YR42 00						0	0		0						
	24-35	hcl	10YR53 00						0	0		0		M				
	35-60	c	10YR52 00	10YR58 61	M			Y	0	0	HR	10		P	Y		Y	
12	0-30	hcl	10YR42 00						0	0		0						
	30-55	c	10YR52 00	10YR58 61	M			Y	0	0		0		P	Y		Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC
13	0-26	hcl	10YR42 00						0	0	HR	2						
	26-36	hcl	10YR53 00	10YR58	61	C		Y	0	0		0		M				
	36-60	c	10YR52 00					Y	0	0	HR	5		P	Y		Y	
14	0-25	hcl	10YR42 00						0	0	HR	2						
	25-45	hcl	10YR53 00	10YR58	00	C		Y	0	0		0		M				
	45-60	c	10YR52 00	10YR58	61	M		Y	0	0	HR	5		P	Y		Y	
15	0-22	hcl	10YR43 00						0	0		0						
	22-38	hcl	10YR52 00	10YR58	00	C		Y	0	0		0		M				
	38-60	c	10YR52 00	10YR58	61	M		Y	0	0		0		P	Y		Y	
16	0-25	hcl	10YR42 00						0	0		0						
	25-60	c	10YR52 00	10YR58	61	M		Y	0	0		0		P	Y		Y	
17	0-22	hcl	10YR42 00						0	0	HR	2						
	22-40	hcl	75YR52 00	10YR58	61	M		Y	0	0		0		M				
	40-60	c	10YR53 00	10YR58	61	M		Y	0	0		0		P	Y		Y	
18	0-25	hcl	10YR42 00						0	0	HR	2						
	25-55	c	10YR52 00	10YR58	61	C		Y	0	0	HR	2		P	Y		Y	
19	0-30	hcl	10YR42 00						0	0		0						
	30-40	hcl	10YR53 00	10YR58	61	M		Y	0	0		0		M				
	40-60	c	10YR52 00	10YR58	61	M		Y	0	0		0		P	Y		Y	
20	0-30	hcl	10YR42 00	10YR56	00	F			0	0	HR	1						
	30-60	c	25Y 53 00	75YR58	00	M		Y	0	0		0		P			Y	
21	0-27	hcl	10YR42 00						0	0	HR	2						
	27-30	c	10YR42 00	10YR56	00	C		Y	0	0		0		M				
	30-35	c	10YR53 00	75YR56	00	C		Y	0	0		0		M				
	35-60	c	25Y 53 00	75YR58	00	M		Y	0	0		0		P			Y	
22	0-28	mcl	10YR42 00						0	0	HR	2						
	28-35	c	10YR53 00	10YR56	00	C		Y	0	0		0		M				
	35-60	c	25Y 53 00	75YR58	00	M		Y	0	0		0		P			Y	
23	0-29	hcl	10YR42 00						0	0	HR	2						
	29-60	c	25Y 53 00	75YR58	00	M		Y	0	0		0		P			Y	
24	0-26	mcl	10YR42 00						0	0	HR	2						
	26-55	hcl	10YR53 00	10YR56	00	C		Y	0	0	HR	2		M				
	55-70	c	25Y 53 00	75YR56	58	M		Y	0	0	HR	2		P			Y	
25	0-28	mcl	10YR42 00						0	0	HR	2						
	28-35	hcl	25Y 63 00	10YR56	00	C		Y	0	0	HR	2		M				
	35-60	c	25Y 62 00	75YR58	00	M		Y	0	0	HR	2		P			Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC
26	0-30	mcl	10YR42 00						0	0	HR	3						
	30-35	hcl	10YR53 00	10YR56 00	C			Y	0	0	HR	2		M				
	35-60	c	25Y 62 00	75YR58 00	M			Y	0	0	HR	2		P			Y	
27	0-28	mcl	10YR42 00						0	0	HR	2						
	28-50	c	10YR52 00						0	0	HR	10		P				
	50-60	c	10YR52 00	10YR58 61	M			Y	0	0	HR	25		P	Y		Y	
28	0-26	mcl	10YR42 00						0	0	HR	2						
	26-45	mcl	10YR52 00	10YR58 61	C			Y	0	0	HR	5		M				
	45-65	mcl	10YR52 00	10YR58 61	C			Y	0	0	HR	15		M				
29	0-30	mcl	10YR42 00						0	0		0						
	30-45	mcl	10YR52 00	10YR58 61	C			Y	0	0	HR	5		M				
	45-60	hcl	75YR52 00	10YR58 00	M			Y	0	0		0		M				
30	0-32	hcl	10YR42 00						0	0		0						
	32-55	c	10YR53 00	10YR58 61	M			Y	0	0	HR	2		P	Y		Y	
31	0-28	hcl	10YR42 00						0	0		0						
	28-45	hcl	10YR53 00	10YR58 61	C			Y	0	0		0		M				
	45-60	c	10YR52 00	10YR58 61	M			Y	0	0		0		P	Y		Y	
32	0-28	hcl	10YR42 00						0	0		0						
	28-40	hcl	10YR43 00	10YR58 61	C			Y	0	0		0		M				
	40-60	c	10YR52 00	10YR58 61	M			Y	0	0	HR	5		P	Y		Y	
33	0-25	hcl	10YR42 00						0	0		0						
	25-60	c	10YR52 00	10YR58 61	C			Y	0	0	HR	5		P	Y		Y	
34	0-28	hcl	10YR42 00						0	0		0						
	28-40	hcl	10YR43 00	10YR58 00	C			Y	0	0		0		M				
	40-60	c	10YR52 00	10YR58 61	M			Y	0	0		0		P	Y		Y	
35	0-27	hcl	10YR42 00						0	0	HR	2						
	27-45	hcl	75YR43 00						0	0		0		M				
	45-65	c	10YR52 00	10YR58 61	M			Y	0	0	HR	2		P	Y		Y	
36	0-27	hcl	25Y 53 00	75YR56 00	C			Y	0	0	HR	5						
	27-40	hcl	10YR53 00	75YR56 00	C			Y	0	0	HR	5		M				
	40-50	hcl	25Y 53 00	10YR56 00	C			Y	0	0	HR	25		M				
37	0-28	mcl	10YR42 00						0	0	HR	5						
	28-40	hcl	10YR53 00						0	0	HR	20		M				
38	0-32	mcl	10YR42 00						0	0	HR	5						
	32-38	hcl	10YR53 00						0	0	HR	20		M				

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC
39	0-28	mcl	10YR42 00	10YR56 00	C			Y	0	0	HR	3						
	28-36	hcl	10YR53 00	10YR56-00	C			Y	0	0	HR	3		M				
	36-48	hcl	10YR53 00	10YR56 00	C			Y	0	0	HR	1		M				
	48-120	c	25Y 61 62	75YR58 00	M			Y	0	0		0		P			Y	
40	0-35	hcl	10YR42 00						0	0	HR	3						
	35-45	hcl	10YR53 00	10YR56 00	C			Y	0	0	HR	2		M				
	45-70	c	25Y 62 00	75YR56 58	M		00MN00 00	Y	0	0	HR	2		P			Y	
41	0-25	hcl	10YR42 00						0	0	HR	3						
	25-60	c	25Y 62 00	75YR58 00	M			Y	0	0	HR	2		P			Y	
42	0-27	hcl	10YR53 00	10YR56 00	F				0	0	HR	3						
	27-60	c	25Y 62 00	75YR58 00	M			Y	0	0		0		P			Y	
43	0-30	mcl	10YR42 00	10YR56 00	F				0	0	HR	5						
	30-70	hcl	25Y 62 63	75YR56 00	C			Y	0	0	HR	5		M				
	70-120	c	25Y 62 63	75YR56 58	M			Y	0	0	HR	8		P			Y	
44	0-30	mcl	10YR42 00	10YR56 00	F				0	0	HR	10						
	30-45	mcl	10YR53 00	10YR58 00	C			Y	0	0	HR	10		M				
	45-55	c	10YR53 00	10YR56 00	C			Y	0	0	HR	20		M				
	55-70	c	10YR52 00	10YR58 00	M			Y	0	0	HR	5		P	Y		Y	
45	0-25	mcl	10YR43 00						0	0	HR	10						
	25-55	mcl	10YR43 00						0	0	HR	35		M				
46	0-25	mcl	10YR43 00						0	0	HR	5						
	25-65	c	10YR53 00	10YR58 51	M			Y	0	0		0		P	Y		Y	
47	0-35	mcl	10YR43 00						0	0	HR	10						
	35-65	c	10YR52 00	10YR58 00	M			Y	0	0		0		P	Y		Y	
48	0-25	mcl	10YR43 00						0	0	HR	5						
	25-35	hcl	10YR53 00	10YR56 00	C			Y	0	0		0		M				
	35-60	c	10YR52 00	10YR58 00	M			Y	0	0		0		P	Y		Y	
49	0-25	mcl	10YR43 00						0	0	HR	5						
	25-55	mcl	10YR53 52	10YR56 00	C			Y	0	0	HR	2		M	Y			
	55-80	scl	10YR52 00	10YR58 00	M			Y	0	0	HR	1		P	Y		Y	
50	.0-30	hcl	10YR42 00						0	0	HR	2						
	30-50	c	10YR42 00	10YR58 52	C			Y	0	0	HR	2		P	Y		Y	
	50-70	c	10YR52 00	10YR58 00	M		00MN00 00	Y	0	0		0		P	Y		Y	
51	0-30	mcl	10YR43 00						0	0	HR	2						
	30-60	c	10YR53 00	10YR58 52	M			Y	0	0		0		P	Y		Y	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
52	0-25	mcl	10YR43 00						0	0		0						
	25-48	hcl	10YR53 00	10YR56 00	C			Y	0	0	HR	2		M				
	48-70	c	10YR52 00	10YR58 00	M			Y	0	0		0		P	Y		Y	
53	0-25	hcl	10YR42 00	10YR56 00	F				0	0		0						
	25-35	hcl	10YR54 00						0	0		0		M				
	35-60	c	10YR53 00	10YR58 52	M		00MN00 00	Y	0	0	HR	2		P	Y		Y	
54	0-30	mcl	10YR42 41	10YR58 00	M			Y	0	0	HR	5						
	30-70	mcl	10YR53 00	10YR56 52	C			Y	0	0	HR	2		M				
	70-90	c	10YR52 00	10YR58 00	M			Y	0	0	HR	10		P	Y		Y	
55	0-25	mcl	10YR43 00						0	0	HR	5						
	25-50	mcl	10YR53 00	10YR56 00	C			Y	0	0	HR	5		M				
	50-70	mcl	10YR53 00	10YR56-00	C			Y	0	0	HR	25		M				
56	0-25	mcl	10YR43 00						0	0	HR	2						
	25-40	hcl	10YR56 00	10YR56 00	C			Y	0	0	HR	2		M				
	40-55	hcl	10YR53 00	10YR58 52	C			Y	0	0	HR	2		P	Y		Y	
	55-70	c	10YR52 00	10YR58 00	M			Y	0	0		0		P	Y		Y	
57	0-25	mcl	10YR42 00	10YR58 00	C			Y	0	0	HR	4						
	25-40	hcl	10YR53 00	10YR56 00	M			Y	0	0	HR	4		P	Y		Y	
	40-60	c	10YR53 00	10YR58 00	M			Y	0	0	HR	2		P	Y		Y	
58	0-30	mcl	10YR42 00						0	0	HR	2						
	30-38	hcl	10YR53 00	10YR56 00	F				0	0		0		M				
	38-60	c	25Y 53 00	75YR58 00	C			Y	0	0	HR	5		P			Y	