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WYCOMBE DISTRICT LOCAL PLAN
Land South East of Princes Risborough, Buckinghamshire

Agricultural Land Classification
ALC Map and Report
Reconnaissance Survey

April 1999

Resource Planning Team
Eastern Region
FRCA Reading

RPT Job Number: 0305/030/99
MAFF Reference: EL 03/1404

AGRICULTURAL LAND CLASSIFICATION REPORT

WYCOMBE DISTRICT LOCAL PLAN
LAND SOUTH EAST OF PRINCES RISBOROUGH, BUCKINGHAMSHIRE
RECONNAISSANCE SURVEY

INTRODUCTION

1. This report presents the findings of a reconnaissance Agricultural Land Classification (ALC) survey of approximately 119 hectares of land, south east of Princes Risborough, in Buckinghamshire. The survey was carried out during April 1999.

2. The work was undertaken by the Farming and Rural Conservation Agency (FRCA)[1] on behalf of the Ministry of Agriculture, Fisheries and Food (MAFF). The survey was carried out in connection with MAFF's statutory input to the Wycombe District Local Plan. This survey supersedes any previous ALC information for this land.

3. The work was conducted by members of the Resource Planning Team in the Eastern Region of 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 the site was mostly under cereals with the remainder in permanent or rough grazing. The areas mapped as 'Other land' include farm buildings, trackways, a residential property, a water utility station, a recreation ground and woodland.

SUMMARY

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:25,000. 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	45.8	41.3	38.7
3a	51.7	46.7	43.7
3b	13.3	12.0	11.2
Other land	7.6	N/A	6.4
Total surveyed area	110.8	100	93.6
Total site area	118.4	-	100

[1] FRCA is an executive agency of MAFF and the Welsh Office

7. The fieldwork was conducted at an average density of approximately 1 boring per 3 hectares of agricultural land. In total, 41 borings and 4 soil pits were described.

8. The agricultural land on this site has been classified as Grade 2 (very good quality), Subgrade 3a (good quality) and Subgrade 3b (moderate quality). The principal limitation to land quality is soil droughtiness. To a lesser extent, soil wetness/workability and gradient also affect land quality.

9. All of the soils in the survey area are well drained and most overly the Lower Chalk. One of the major factors affecting land quality is the depth of soil over the Chalk. Grade 2 land contains those soils that are deepest over the Chalk or where rooting into the Chalk extends furthest because the chalk is softer. Subgrade 3a land contains those with a more limited depth of resource over the Chalk or where rooting into the harder Chalk is somewhat restricted. Both soil depth and rooting depth are critical to the amount of water that is available for use by crops. Consequently, on the subgrade 3a land over the Chalk, the soil droughtiness limitation is more significant. Part of the site contains soils developed over Chalky Head deposits. These too, experience a slight soil droughtiness limitation but also experience a workability limitation due to the heavy nature of their topsoils. This will somewhat restrict the opportunity for mechanised operations or grazing by livestock on the land

10. Most of the Subgrade 3b land is affected by a gradient limitation. Such slopes will restrict the safe and efficient use of farm machinery. A very small area of land in the south-west is also classified as Subgrade 3b, which has been disturbed in the past, with a soil profile containing building rubble.

FACTORS INFLUENCING ALC GRADE

Climate

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

12. 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	
Grid reference	N/A	SP 810 025	SP 817 031
Altitude	m, AOD	125	160
Accumulated Temperature	day°C (Jan-June)	1365	1325
Average Annual Rainfall	mm	733	745
Field Capacity Days	days	160	162
Moisture Deficit, Wheat	mm	98	94
Moisture Deficit, Potatoes	mm	87	82
Overall climatic grade	N/A	Grade 1	Grade 1

13. 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.

14. 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.

15. The combination of rainfall and temperature at this site mean that there is no overall climatic limitation. Other climatic factors such as exposure and frost risk are not believed to be significant at this site. The site is climatically Grade 1.

Site

16. The site lies at altitudes in the range 110–170m AOD, on the lower and mid-slopes of the Chiltern Hills escarpment. The land-form is typical of that associated with Middle and Lower Chalk deposits. The north-eastern boundary represents the highest land which is underlain by the Middle Chalk. The land falls steeply west and southwards and gradient limits land quality to Subgrade 3b. The Lower Chalk is typically undulating with moderate to gentle gradients; however, where dry valleys cut through the Lower Chalk, gradient can also restrict land quality to Subgrade 3b. The lowest lying land is found in the west, along Picts Lane. Nowhere on the site do microrelief or flooding affect land quality.

Geology and soils

17. The most detailed published geological information for the site (BGS, 1994) shows the highest land to be underlain by the Middle Chalk, this quickly gives way to the Lower Chalk which is mapped over most of the site. In the west, younger and older head deposits (chalky drift) cover the Lower Chalk.

18. The most detailed published soils information covering the area (SSEW, 1983) shows it to comprise two soil associations. Most of the site comprises soil of the Coombe 2 association which is described as 'well drained calcareous fine silty soils over Chalk or Chalk rubble'. Along the eastern fringes of the site soils of the Upton 1 association is mapped. This is described as 'shallow well drained calcareous silty soils over Chalk. Mainly on moderately steep, sometimes very steep land. Deeper fine silty calcareous soils in coombes and dry valleys'.

AGRICULTURAL LAND CLASSIFICATION

19. 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.

20. 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.

Grade 2

21. Very good quality land is found in two localities with soil droughtiness and soil workability the principal limiting factors. In the north of the site, the soils are well drained (Wetness Class

I) with calcareous heavy silty clay loam topsoils which may contain up to 2% total hard rock or 3% total chalk. These overlie similarly textured upper subsoils which may contain up to 10% total chalk. From 37–46cm, the heavy silty clay loam upper subsoils pass into soft marl chalk which continues to depth or becomes impenetrable to the soil auger from 55–72cm. Pit 1 (see Appendix II) is typical of these impenetrable chalky soils and confirmed that rooting into the chalk was evident at 100cm, and is likely to continue down to 120cm. Moisture balance calculations which take account of these soil properties and their interaction with the local climate indicate a minor soil droughtiness limitation, and Grade 2 is appropriate. In addition, the heavy nature of the topsoils, in the prevailing climate (160 FC Days), results in a soil workability limitation and Wetness Grade 2 is appropriate. In the south-west, two soil types are found. Pit 3 (see Appendix II) is typical of the chalky soils and is similar to pit 1, although the chalk is harder at depth and rooting less good. The other soil is most probably derived from the chalky drift deposits. These soils are well drained (Wetness Class I) with calcareous heavy silty clay loam or non-calcareous heavy clay loam topsoils which may contain up to 5% total hard chalk rock. These pass to similarly textured or clay upper subsoils which are variably stony ranging from 0–20% total hard chalk rock. These overlie similarly textured lower subsoils which may contain up to 30% total chalk or 15% total hard chalk rock. Some of these profiles were impenetrable to the soil auger from 60–75cm whilst others continue to 120cm without encountering chalk bedrock. Soil droughtiness calculations indicate a minor limitation which is combined with a soil workability limitation due to the heavy nature of the topsoil textures. A combined soil droughtiness and soil workability limitation may influence the level and consistency of yields, as well as affect the ease with which mechanised operations can be carried out or grazing by livestock.

Subgrade 3a

22 Good quality agricultural land has been classified over most of the site. A soil droughtiness restriction is the principal limitation. These soils are well drained (Wetness Class I) and comprise calcareous medium or heavy silty clay loam topsoils which may contain up to 10% flints or 15% chalk. These directly overlie chalk or pass through a very shallow heavy silty clay loam upper subsoil to the chalk beneath. From 30–78cm, the chalk was impenetrable to the soil auger. Pit 2 and 4 (see Appendix II) is typical of these soil variants and demonstrated the harder nature of the chalk. Roots were observed to depths of 70 and 75cm respectively and moisture balance calculations to this depth indicate Subgrade 3a is appropriate. The severity of the limitation will affect the level, particularly in drier years, and consistency of yield from year to year.

Subgrade 3b

23. Moderate quality land is limited by a gradient limitation. Gradients in the range 7°–11° were measured using an optical-reading clinometer; these gradients may affect the safe and efficient use of farm machinery. On the steeper slopes the potential for soil erosion is a secondary factor, causing rills and gullies with sediment burying crops down slope. Some areas of soil deposition resulting from erosion where noted around borings 26 and 31 at the time of survey (April 99).

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SOURCES OF REFERENCE

British Geological Survey (1994) *Sheet No. 237, Thame.*
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 in South East England..*
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:

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. **GLEY/SPL**: 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	**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

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	WETNESS CLASS	WETNESS GRADE	WHEAT AP	WHEAT MB	POTS AP	POTS MB	M.REL DRT	EROSN FLOOD	FROST EXP	CHEM DIST	ALC LIMIT		COMMENTS
2	SP81500410	OSR	N	1			1	2	103	8	107	22	2				WD	2	CH45CM/1P
5	SP81600400	OSR	NW	2			1	2	77	-21	79	-8	3B				WD	2	CH37CM/1P
7	SP81400390	OSR	NW	1			1	1	125	30	96	11	1				DR	3A	CH30CM/1P
10	SP81700390	OSR	SW	3			1	2	102	7	107	22	2				WD	2	CH47CM/1P
17	SP81500370	OSR	NW	1			1	2	103	8	107	22	2				WD	2	CH46 AT1P
18	SP81600370	OSR	N	3			1	2	57	-41	57	-30	3B				DR	3A	IMP36 CHALK
19	SP81700370	CER	SE	5			1	2	59	-39	59	-28	3B				DR	3A	IMP35 CHALK
20	SP81800370	CER	N	5			1	1	103	8	95	10	2				DR	2	CH29IMP90
24	SP81600350	OSR	N	2			1	1	122	24	93	6	2				DR	3A	CH29CM
26	SP81800350	CER	W	9						0		0					GR	3B	GRADIENT
31	SP81300330	PGR	NW	6			1	1	116	21	116	31	2				DR	2	CH68IMP88
37	SP81500310	PLO	NW	1			1	1	74	-24	75	-12	3B				DR	3A	CH28IMP52
41	SP81700300	CER	SW	3			1	1	91	-7	96	9	3A				DR	3A	CH36POSSGR2
42	SP80700290	CER	N	6			1	1	58	-40	58	-29	3B				DR	3A	CH26-2P/4P
43	SP81100290	CER					1	2	50	-48	50	-37	3B				DR	3A	CH25-2P/4P
48	SP81600290	CER					1	1	97	-1	92	5	3A				DR	3A	CH27IMP85
51	SP81800280	CER	S	2			1	2	56	-42	56	-31	3B				DR	3A	CH27IMP35
53	SP81200280	CER	SE	2			1	1	64	-34	64	-23	3B				DR	3A	CH30IMP40
55	SP81400280	CER	S	4			1	2	97	-1	99	12	3A				DR	3A	CH40POSSGR2
56	SP81500280	CER	E	1			1	1	88	-10	92	5	3A				DR	3A	CH27IMP73
57	SP80700270	CER	SW	2			1	1	77	-21	78	-9	3B				DR	3A	CH37IMP52
58	SP80800270	CER	S	4			1	2	61	-37	61	-26	3B				DR	3A	CH29IMP37
60	SP81000270	CER	SW	5			1	2	51	-47	51	-36	3B				DR	3A	CH25 AT2P
63	SP81300270	CER	SW	5			1	2	95	-3	99	12	3A				DR	2	CH55
66	SP81600270	CER	S	5			1	2	62	-36	62	-25	3B				DR	3A	CH30IMP40
67	SP80800260	CER	S	5			1	2	76	-22	76	-11	3B				DR	3A	CH37IMP50
68	SP80900260	CER	SW	4			1	2	105	7	113	26	2				WD	2	IMP70/3P
69	SP81000260	CER	SW	4			1	2	58	-40	58	-29	3B				DR	3A	CH30IMP60
76	SP80200250	PLO	E	2			1	2	107	9	95	8	2				WD	2	CH39IMP95
78	SP80700250	CER					1	1	91	-7	92	5	2				DR	2	AT 3P
79	SP80800250	CER	S	4			1	2	88	-10	91	4	3A				DR	2	CH40IMP60/3P
81	SP81000250	CER	S	5			1	2	77	-21	77	-10	3B				DR	3A	AT 4P
84	SP81300250	CER					1	2	152	54	115	28	1				WK	2	SEE 3P
90	SP80800240	CER	S	2			1	2	113	15	93	6	2				WD	2	CH29I108/3P
92	SP80100230	PLO					1	2	102	4	94	7	3A				WD	2	CH37I90/3P
95	SP80400230	PLO	W	3			1	2	96	-2	103	16	3A				WK	2	IMP 60
98	SP80700230	CER	NW	1			1	1	117	19	102	15	2				DR	2	CH42IMP100
104	SP80600220	PLO	N	2			1	2	138	40	113	26	1				WK	2	
105	SP80200210	PLO	N	1			1	2	141	43	112	25	1				WK	2	
107	SP80400210	PLO					1	2	141	43	118	31	1				WK	2	
114	SP80400190	PLO	NE	3			1	2	101	3	106	19	3A				WD	2	IMP 75
P	SP81500370	OSR	NW	1			1	2	132	37	103	22	1				WK	2	CH43ROOTS100

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT		ALC	COMMENTS
2P	SP81000250	CER					1	2	90	-8	92	5	3A				DR		3A	CH28ROOTS75
3P	SP80700250	CER	S	5			1	2	111	13	107	22	2				WD		2	CH55ROOTS120
4P	SP81000250	CER	S	5			1	1	90	-5	95	10	3A				DR		3A	CH37ROOTS70

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
2	0-26	HZCL	25Y 5152						0	0	HR	2						Y	
	26-45	HZCL	25Y 62						0	0		0		M				Y	
	45-120	CH	25Y 72						0	0		0		M				Y	
5	0-28	HZCL	25Y 52						0	0	HR	2						Y	
	28-37	HZCL	25Y 63						0	0		0		M					
	37-55	CH	25Y 72						0	0		0		P					
7	0-30	MZCL	10YR51						0	0	HR	2						Y	
	30-90	CH	25Y81						0	0	CH	1		M				Y	
	90-120	CH	25Y81						0	0	CH	1		M				Y	
10	0-34	HZCL	25Y 5152						0	0	CH	4						Y	
	34-47	HZCL	25Y 62						0	0		0		M				Y	
	47-68	HZCL	25Y 72						0	0	CH	30		P				Y	
17	0-34	HZCL	25Y 52						0	0	CH	3						Y	
	34-46	HZCL	25Y 53						0	0	CH	10		M				Y	
	46-72	CH	25Y 8172						0	0		0		P				Y	
18	0-28	HZCL	25Y 51						0	0	CH	15						Y	
	28-36	CH							0	0		0		P					
19	0-27	HZCL	25Y 51						0	0		0						Y	
	27-35	CH							0	0		0		P					
20	0-24	MZCL	25Y52						0	0	CH	6						Y	
	24-30	HZCL	25Y53						0	0	CH	1		M				Y	
	30-40	CH	25Y 8172						0	0		0		P				Y	
	40-90	CH	25Y81						0	0		0		P				Y	
24	0-26	MZCL	25Y 52						0	0	CH	7						Y	
	26-29	HZCL	25Y 53						0	0	CH	10		M				Y	
	29-120	CH	25Y 8153						0	0		0		P				Y	
26	0-0								0	0		0							3B GRADIENT
31	0-18	MZCL	25Y 52						0	0	CH	2						Y	
	18-68	HZCL	25Y 63						0	0	CH	15		M				Y	
	68-88	CH	25Y 8172						0	0		0		P				Y	
37	0-23	MZCL	25Y 52						0	0	CH	2						Y	
	23-28	HZCL	25Y 53						0	0	CH	10		M				Y	
	28-52	CH	25Y 8153						0	0		0		P				Y	
41	0-27	MZCL	25Y 52						0	0	CH	3						Y	
	27-36	HZCL	25Y 53						0	0	CH	10		M				Y	
	36-67	CH	25Y 8153						0	0		0		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
42	0-26	MZCL	25Y 52						8	0	CH	15						Y
	26-38	CH	25Y 81						0	0		0		P				Y
43	0-25	HZCL	25Y 52						0	0	CH	10						Y
	25-30	CH	25Y 71						0	0		0		P				
48	0-27	MZCL	25Y 52						0	0	CH	5						Y
	27-85	CH	25Y81						0	0		0		P				Y
51	0-27	HZCL	25Y 52						3	0	CH	15						Y
	27-35	CH	25Y 81						0	0		0		P				Y
53	0-30	MZCL	10YR42						0	0	CH	10						Y
	30-40	CH	10YR81						0	0		0		P				Y
55	0-25	HZCL	25Y 52						0	0	CH	5						Y
	25-40	HCL	25Y 53						0	0	CH	10		M				
	40-75	CH	25Y 71						0	0		0		P				
56	0-27	MZCL	25Y 53						3	0	CH	10						Y
	27-73	CH	25Y 81						0	0		0		P				Y
57	0-18	MZCL	25Y 52						9	0	CH	15						Y
	18-37	HZCL	25Y 63						0	0	CH	10		M				Y
	37-52	CH	25Y 8163						0	0		0		P				Y
58	0-29	HZCL	25Y 52						2	0	CH	8						Y
	29-37	CH	25Y 81						0	0		0		P				Y
60	0-25	HZCL	25Y 52						0	0	CH	5						Y
	25-30	CH	25Y 71						0	0		0		P				
63	0-30	HZCL	25Y 52						0	0	CH	5						Y
	30-55	HCL	25Y 53						0	0	CH	10		M				
	55-60	CH	25Y 71						0	0		0		P				
66	0-30	HZCL	25Y 52						0	0	HR	10						Y
	30-40	CH	25Y 71						0	0		0		P				
67	0-25	HZCL	25Y 53						7	0	CH	13						Y
	25-37	HZCL	25Y 63						0	0	CH	10		M				Y
	37-50	CH	25Y 81						0	0		0		P				Y
68	0-30	HZCL	10YR52						0	0	CH	1						Y
	30-55	HZCL	25Y 53						0	0	CH	5		M				
	55-70	CH	10YR81						0	0		0		P				
69	0-30	HZCL	10YR52						5	0	CH	15						Y
	30-35	CH	10YR81						0	0		0		P				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	
76	0-27	HCL	10YR4243						0	0	HR	3						Y	
	27-39	C	10YR54						0	0	HR	10		M				Y	
	39-95	CH	25Y 72						0	0		0		P				Y	
78	0-25	HZCL	25Y 42						0	0	CH	2						Y	
	25-78	HZCL	25Y 72						0	0		0		M				Y	
79	0-28	HZCL	25Y 53						2	0	CH	8						Y	
	28-40	HZCL	25Y 63						0	0	CH	10		M				Y	
	40-60	CH	25Y 8172						0	0		0		P				Y	
81	0-30	HZCL	25Y 52						1	0	CH	5						Y	
	30-52	CH	25Y 72						0	0		0		M				Y	
84	0-20	HZCL	25Y 52						0	0	CH	5						Y	
	20-60	HCL	25Y 53						0	0	CH	5		M					
	60-120	HCL	25Y 53						0	0	CH	10		M					
90	0-29	HZCL	25Y 53						0	0	CH	4						Y	
	29-108	CH	25Y 7281						0	0	HR	5		P				Y	V.SOFT
92	0-22	HCL	10YR4243						0	0	HR	4						Y	
	22-37	C	10YR4454						0	0	HR	5		M				Y	
	37-90	CH	25Y 72						0	0		0		P				Y	V.SOFT
95	0-28	HZCL	10YR41						5	2	CH	10						Y	
	28-60	HZCL	25Y 63						0	0		0		M				Y	
98	0-27	MZCL	25Y 4152						0	0	HR	2						Y	
	27-42	HZCL	25Y 53						0	0	HR	5		M				Y	
	42-100	CH	25Y 72						0	0		0		P				Y	
104	0-35	HCL	10YR42						0	0	HR	2						Y	
	35-65	HCL	25Y 53						0	0	CH	5		M				Y	
	65-120	CH	25Y 72						0	0		0		P				Y	
105	0-24	HCL	10YR42						0	0	HR	4						N	
	24-59	C	10YR44						0	0	HR	2		M				N	
	59-120	HZCL	10YR54						0	0	HR	15		M				Y	
107	0-30	HZCL	10YR42						0	0	HR	5						Y	
	30-65	HCL	25Y 53						0	0		0		M				Y	
	65-120	C	25Y 54						0	0	HR	10		M				Y	
114	0-28	HZCL	10YR42						0	0	HR	5						Y	
	28-65	HCL	10YR44						0	0	HR	20		M				Y	
	65-75	HCL	25Y 54						0	0	CH	30		M				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	
1P	0-29	HZCL	25Y 52						0	0	CH	3							
	29-43	HZCL	25Y 53						0	0	CH	15	MDCSAB	FR	M				
	43-120	CH	25Y 7262						0	0		0			P				PITT0100 AUG120
2P	0-28	HZCL	25Y 52						2	0	CH	12						Y	
	28-85	CH	25Y 8172						0	0		0			P			Y	PITT085 ROOTST075
3P	0-28	HZCL	10YR42						0	0	HR	5						Y	
	28-55	HZCL	25Y 72						0	0	CH	25	MDCSAB	FR	M			Y	VERY PALE
	55-86	CH	25Y 72						0	0		0			P			Y	PITT086HARDCHROOT
4P	0-24	MZCL	25Y 52						1	0	CH	4						Y	
	24-37	HZCL	25Y 6263						0	0	CH	37	MDMSAB	FR	G	N		Y	
	37-70	CH	25Y 7281						0	0		0			P			Y	PITT050 ROOTST065