A2
MINERALS APPLICATION
COLDHARBOUR LANE,
THORPE, EGHAM, SURREY
STATEMENT OF SITE PHYSICAL
CHARACTERISTICS
ALC & SOIL RESOURCE MAPS
OCTOBER, 1993

STATEMENT OF SITE PHYSICAL CHARACTERISTICS

COLDHARBOUR LANE, THORPE, EGHAM, SURREY

Summary

1.1 In October, 1993, a detailed Agricultural Land Classification (ALC) was made on approximately 15 hectares of land north of Coldharbour Lane, east of the village of Thorpe in Surrey. The information obtained during this survey forms the basis of the following statement of site physical characteristics.

1.2 The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS in response to a commission by MAFF's Land Use Planning Unit to provide information on the quality and physical characteristics of the agricultural land affected by a proposed sand and gravel extraction with subsequent infilling and restoration to an agricultural use.

1.3 The table below provides the details of the grades found across the site and shows that all of the land has been classified as 'best and most versatile agricultural land', here comprising Grade 2 and Subgrade 3A.

Table 1 : Distribution of Grades and Sub-grades

Grade	Area (ha)	%of Site	% of Agricultural Area
2	5.3	37.6	37.9
3A	8.7	61.7	62.1
Urban	0.1	0.7	100% (14.0 ha)
Total	14.1 ha	100%	

1.4 The distribution of the ALC grades is shown on the attached map. The information is presented at a scale of 1:5,000; it is accurate at this level but any enlargement would be misleading. This map supercedes any previous ALC information for this site.

1.5 The classification has been made using MAFF's revised guidelines and criteria for grading the quality of agricultural land. These guidelines provide a framework for classifying land according to the extent to which its physical or chemical charactristics impose long-term limitations on its use for agriculture.

1.6 The fieldwork was carried out with an observation density of approximately one per hectare. A total of 14 borings and 2 soil pits was examined.

1.7 At the time of survey the land use on the site was a mixture of permanent grass and grass ley.

1.8 A general description of the grades and sub-grades is provided as an appendix. 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.

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 conditiions.

2.2 The main parameters used in the assessment of the overall climatic limitation are annual average rainfall, as a measure of overall wetness, and accumulated temperature, 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. 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.

Table 2 : Climatic Interpolations

Grid Reference :	TQ027690
Altitude (m) :	15
Accumulated Temperature (days) :	1501
Average Annual Rainfall (mm) :	672
Field Capacity (days) :	138
Moisture Deficit, Wheat (mm) :	117
Moisture Deficit, Potatoes (mm) :	112
Overall Climatic Grade :	1

Relief

3.1 The site is flat and lowlying, at an altitude of approximately 15 metres.

Geology and Soil

4.1 The relevant geological sheet for the site (Geological Survey of Great Britain, 1981) shows the underlying geology to be Floodplain Gravel. There is no published soils information for this site.

4.2 In the eastern half of the site, medium textured topsoils overlie clay subsoils which become stony and impenetrable at shallow depths. To the west, similar topsoils overlie subsoils that become heavy at depth but which extend beyond 1 metre with little stone content.

Agricultural Land Classification

5.1 Table 1 provides the details of the area measuements 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 is shown on the attached sample point map.

Grade 2

5.3 Soils on the western fringe have been placed in this grade. Soil droughtiness is the key limitation. The augering of this land revealed that the soil resource

extends consistently to 1.2 metres. Typically, the soils exhibit Medium Clay Loam or Heavy Clay Loam topsoil textures overlying an upper subsoil band of Heavy Clay Loam which grades into a Clay lower subsoil. The stone content is negligible throughout and the structures in the subsoil are described as moderate. There is no soil pit in this map unit but the structures are assessed as no worse than those in the subsoil of Pit 2 before it becomes stony. The profiles are placed in Wetness Class I. There is either no signs of significant wetness or the soils may exhibit gleying below 40cm.

5.4 The textures, structures and stone contents combine to create a slight droughtiness limitation. There is insufficient water available in the profile to qualify for a higher grade. This slight limitation will reduce the average level of yields on this land as well restrict the range of crops that can tolerate such conditions.

Subgrade 3A

5.5 The land in the eastern half of the site has been placed in this grade. Soil droughtiness is the key limitation. The augering of these soils revealed that a stony lower subsoil prevented deep penetration. As a result, two pits have been described to illustrate the soils that occur in this unit. Details of the pit descriptions are attached as an appendix.

5.6 Typical profiles exhibit Medium Clay Loam topsoils which directly overlie Clay subsoils which become impenetrable between 50-68 cm. The soils are relatively stone-free down to this impenetrable layer. The profiles are placed strictly in Wetness Class I but there is clear evidence of seasonal waterlogging which may suggest Wetness Class II as a more accurate reflection of the wetness status of the soils. During augering, the clay subsoils were described as typically gleyed just below 40 cm and exhibiting poor structures with low porosity. However, the subsoils were not described as slowly permeable because they were less than 15 cm thick before the stony layer below was encountered. The detailed description of Pit 1 reveals a slight variation on this, with evidence of gleying coming in above 40 cm but with the clay subsoils not clearly exhibiting poor structures.

5.7 Where the soil profile became impenetrable to the auger, stone contents may be as high as 50%. This is still a soil resource which is mostly a Clay with a high degree of small flint stones that can be exploited by crop roots for extra reserves of moisture. However, even during pit digging, the stony subsoil could not be excavated to any great degree. As a result, the droughtiness assessment has been made on the basis of the depth of resource that could be described. Roots were observed to the depth of the pits (approximately 80 cm) but is not clear as to whether they may be able to extend deeper in search of water.

5.8 The soils information down to 80 cm (texture, structure, stone content) suggests that this land cannot be graded higher than Subgrade 3a as a result of a moderate droughtiness limitation. The yields and range of crops here will be more restricted than those on the eastern half of the site.

Soil Resources : Topsoil

6.1 'Topsoil' is described as the organic-rich surface layers. One topsoil unit has been identified across the site which is typically a 27 cm thick Medium Clay Loam. The topsoil is typically dark grey brown (10YR 41 and 42) with a negligible stone content and a weakly developed coarse subangular blocky structure. A total topsoil resource of 37,800m^3 is available.

Soil Resources : Upper Subsoil

7.1 'Subsoil' relates to the non-organic-rich subsurface horizons. three upper subsoil units have been identified across the site although, in detail, the subsoils are quite variable. A total upper subsoil resource of 44,000m^3 is available.

7.2 **Upper Subsoil Map Unit A**
In the east of the site a Clay upper subsoil of approximately 30 cm thickness exists. Pit 1 is located in this map unit and is typical of the soils that occur here. The Clay is dark grey brown or brown in colour (10YR42 or 7.5YR53) with very few stones but with clear evidence of gleying. The structures however are permeable and are described as moderately developed coarse subangular blocky.

7.3 **Upper Subsoil Map Unit B**
Pit 2 is located in a small area of Heavy Clay Loam upper subsoils that are approximately 40 cm thick. The soils range from grey brown to yellowish brown (10YR52 to 10YR54), have very few stones and show no evidence of soil wetness. A range of subsoil structures exist from moderately developed coarse subangular blocky to strongly developed medium prismatic, both of which are permeable.

7.4 **Upper Subsoil Map Unit C**
In the west of the site a mixture of Heavy Clay Loam and Medium Clay Loam textures are present and are approximately 30 cm thick. These horizons are typically brown (10YR53) with a negligible stone content and little or no evidence of soil wetness. The subsoil structures are permeable and have been assessed as moderate in condition.

Soil Resources : Lower Subsoil

8.1 Three lower subsoil units have been identified and are coincident with the upper subsoil map units. A total lower subsoil resource of 52,800m^3 is available.

8.2 **Lower Subsoil Map Unit A**
Pit 1 illustrates the stony nature of the lower subsoils in the east of the site. The auger borings in this area were frequently impenetrable at shallow depths. The soils are brown (7.5YR53) Clays with stone contents up to 50%. Roots are able to penetrate at least 20 cm into this layer but it was not possible to excavate below to see if the soil resource continued to depth. The volumetric figures quoted for this horizon are therefore believed to be the minimum available.

8.3 **Lower Subsoil Map Unit B**
Only a very thin lower subsoil resource exists in this area as illustrated by Pit 2. The soils are greyish brown (10YR52) Heavy Clay Loams with stone contents of approximately 20%. roots are able to penetrate at least 15 cm into this horizon but it was not possible to excavate below to see if the soil resource continued. The volumetric figures quoted for this horizon are therefore believed to be th minimum available.

8.4 **Lower Subsoil Map Unit C**
In the east of the site a deep Clay lower subsoil is available to depth. This map unit is variable in detail. The soils range in colour (10YR64, 44 and 52) but consistently have low stone contents and only limited evidence of wetness at depth in the form of gleying. All of the horizons are permeable and have been assessed as moderate in structure.

APPENDIX I

DESCRIPTION OF THE GRADES AND SUB-GRADES

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 on 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. When more demanding crops are grown yields are generally lower or more variable than on land in grades 1 and 2.

Sub-grade 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.

Sub-grade 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 (eg. 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 very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture : housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including : private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland.

Agricultural Buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg. polythene tunnels erected for lambing) may be ignored.

Open Water

Includes lakes, ponds and rivers as map sclae permits.

Land Not Surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above, eg. buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will be shown.

APPENDIX II

REFERENCES

* 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.

* Geological Survey of Great Britain (1981), Sheet No.269, Windsor, 1:50,000

APPENDIX III

DEFINITION OF SOIL WETNESS CLASSES

Wetness Class I

The soil profile is not wet within 70cm depth for more than 30 days in most years.

Wetness Class II

The soil profile is wet within 70cm depth for 31-90 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 90 days, but not wet within 40cm depth for more than 30 days in most years.

Wetness Class III

The soil profile is wet within 70cm depth for 91-180 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 70cm for more than 180 days, but only wet within 40cm depth for 31-90 days in most years.

Wetness Class IV

The soil profile is wet within 70cm depth for more than 180 days but not wet within 40cm depth for more than 210 days in most years or, if there is no slowly permeable layer within 80cm depth, it is wet within 40cm depth for 91-210 days in most years.

Wetness Class V

The soil profile is wet within 40cm depth for 211-335 days in most years.

Wetness Class VI

The soil profile is wet within 40cm depth for more than 335 days in most years.

(The number of days is not necessarily a continuous period. 'In most years' is defined as more than 10 out of 20 years.)

APPENDIX IV

SOIL PIT AND SOIL BORING DESCRIPTIONS

Contents :

* Sample Point Map
* Soil Abbreviations : Explanatory Note
* Soil Pit Descriptions
* Database Printout : Boring Level Information
* Database Printout : Horizon Level Information

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 : COLDHARBOUR LANE THORPE Pit Number : 1P

Grid Reference: TQ02856905 Average Annual Rainfall : 672 mm
Accumulated Temperature : 1501 degree days
Field Capacity Level : 138 days
Land Use : Ley
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 30	MCL	10YR41 00	0	1		WCSAB
30- 40	C	10YR42 00	0	1	C	MCSAB
40- 56	C	10YR42 00	0	2	C	MCSAB
56- 75	C	75YR53 00	0	50	C	

Wetness Grade : 2 Wetness Class : II
Gleying :030 cm
SPL : No SPL

Drought Grade : 3A APW : 98 mm MBW : -19 mm
APP : 106mm MBP : -6 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : COLDHARBOUR LANE THORPE Pit Number : 2P

Grid Reference: TQ02556915 Average Annual Rainfall : 672 mm
Accumulated Temperature : 1501 degree days
Field Capacity Level : 138 days
Land Use : Permanent Grass
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	MOTTLES	STRUCTURE
0- 28	MSL	10YR42 00	0	1		WCSAB
28- 43	MCL	10YR52 00	0	1		MCSAB
43- 68	HCL	10YR54 00	0	1		SMP
68- 80	HCL	10YR52 00	0	20		

Wetness Grade : 1 Wetness Class : I
Gleying :000 cm
SPL : No SPL

Drought Grade : 3A APW : 110mm MBW : -7 mm
APP : 113mm MBP : 1 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Droughtiness

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL	FLOOD	EROSN	EXP	FROST	DIST	CHEM	LIMIT	ALC	COMMENTS
1	TQ02806920	LEY		040			1	1	91	-26	97	-15	3B							DR	3A	IMPQDRWE
1P	TQ02856905	LEY		030			2	2	98	-19	106	-6	3A							DR	3A	ROOT75
2	TQ02406910	PGR		045			1	1	141	24	117	5	2							DR	2	NOSPL
2P	TQ02556915	PGR		000			1	1	110	-7	113	1	3A							DR	3A	IMP
3	TQ02506910	PGR		000			1	1	85	-32	85	-27	3B							DR	3A	IMPX3QDR
4	TQ02806910	LEY		045	065		2	2	121	4	115	3	3A							DR	2	IMP G2WE
5	TQ02906910	LEY		045			1	1	96	-21	106	-6	3B							DR	3A	IMPQDRWE
6	TQ02406900	PGR		068			1	1	155	38	117	5	2							DR	2	
7	TQ02506900	PGR		000			1	1	148	31	117	5	2							DR	2	NOSPL
8	TQ02606900	PGR		078			1	1	142	25	118	6	2							DR	2	NOSPL
9	TQ02706900	LEY		000			1	1	85	-32	86	-26	3B							DR	3A	IMPX2QDR
0	TQ02806900	LEY		042			1	1	83	-34	83	-29	3B							DR	3A	IMPX2QDR
1	TQ02906900	PGR		022			2	3A	97	-20	110	-2	3A							WE	3A	IMPQDRWE
12	TQ03006900	PGR		030	050		3	3B	141	24	114	2	2							WE	3B	
3	TQ02506890	PGR		075			1	1	147	30	118	6	2							DR	2	NOSPL
14	TQ02606890	PGR		070	070		2	2	154	37	116	4	2							WE	2	G2 DR

COMPLETE LIST OF PROFILES 28/10/93 COLDHARBOUR LANE THORPE

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	0-22	mcl	10YR42 00						0	0	HR	1						
	22-40	c	10YR53 00						0	0	HR	1		M				
	40-50	c	10YR53 00	000C00 00	C			Y	0	0		0		M				
	50-60	c	10YR53 00	000C00 00	C			Y	0	0		0		P	Y			
1P	0-30	mcl	10YR41 00						0	0	HR	1	WCSAB	FR				
	30-40	c	10YR42 00	75YR44 00	C		10YR41 00	Y	0	0	HR	1	MCSAB	FM	M	Y		
	40-56	c	10YR42 00	75YR44 00	C		10YR41 00	Y	0	0	HR	2	MCSAB	FM	M	Y		
	56-75	c	75YR53 00	000C00 00	C			Y	0	0	HR	50		M				
2	0-28	mcl	10YR53 00						0	0	HR	1						
	28-45	mcl	10YR52 00						0	0		0		M				
	45-65	c	10YR52 00	000C00 00	C			Y	0	0		0		M				
	65-120	c	10YR52 00	000C00 00	M			Y	0	0		0		M				
2P	0-28	msl	10YR42 00						0	0	HR	1	WCSAB	FR				
	28-43	mcl	10YR52 00						0	0	HR	1	MCSAB	FR	M	Y		
	43-68	hcl	10YR54 00				10YR52 00		0	0	HR	1	SMP	FM	M	Y		
	68-80	hcl	10YR52 00						0	0	HR	20		M				
3	0-28	mcl	10YR43 00						0	0	HR	1						
	28-42	mcl	10YR43 00						0	0	HR	1		M				
	42-50	c	75YR43 00	000C00 00	F				0	0	HR	1		M				
4	0-25	mcl	10YR43 00						0	0	HR	1						
	25-45	hcl	10YR53 00						0	0	HR	1		M				
	45-65	c	10YR53 00	000C00 00	C			Y	0	0		0		M				
	65-100	c	10YR52 00	000C00 00	C			Y	0	0		0		P				Y
5	0-28	mcl	10YR42 00						0	0	HR	1						
	28-45	c	10YR53 00						0	0	HR	1		M				
	45-55	c	10YR52 00	000C00 00	C			Y	0	0	HR	1		M				
	55-65	c	10YR52 00	000C00 00	C			Y	0	0		0		P	Y			
6	0-28	mcl	10YR42 00						0	0	HR	1						
	28-42	hcl	10YR53 00						0	0	HR	1		M				
	42-68	hcl	10YR63 00	000C00 00	F				0	0		0		M				
	68-120	mzcl	10YR64 00	000C00 00	C			Y	0	0		0		M				
7	0-25	mcl	10YR42 00						0	0	HR	1						
	25-60	mcl	10YR53 00						0	0		0		M				
	60-80	hcl	10YR54 00						0	0		0		M				
	80-90	hcl	10YR54 00						0	0		0		M				
	90-120	c	10YR44 00	000C00 00	C				0	0	HR	1		M				
8	0-28	mcl	10YR42 00						0	0		0						
	28-50	hcl	10YR53 00						0	0		0		M				
	50-78	c	10YR53 00						0	0		0		M				
	78-120	c	10YR52 00	000C00 00	C			Y	0	0		0		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
9	0-25	mcl	10YR32 00						0	0	HR	1						
	25-45	hcl	10YR43 00						0	0	HR	1		M				
	45-52	c	10YR43 00						0	0	HR	15		M				
10	0-22	mcl	10YR32 00						0	0	HR	1						
	22-42	c	10YR52 00	000C00	00	F			0	0	HR	1		M				
	42-50	c	10YR52 00	000C00	00	C		Y	0	0	HR	2		M				
11	0-22	mcl	10YR43 00						0	0	HR	1						
	22-58	c	10YR53 00	000C00	00	C		Y	0	0	HR	1		M				
	58-65	c	10YR52 00	000C00	00	C		Y	0	0	HR	1		P	Y			
	65-68	c	10YR52 00	000C00	00	C		Y	0	0	HR	10		M	Y			
12	0-30	hcl	10YR42 00						0	0		0						
	30-50	c	10YR53 00	000C00	00	C		Y	0	0		0		M				
	50-65	c	10YR53 00	000C00	00	C		Y	0	0		0		P	Y		Y	
	65-85	c	10YR54 00	000C00	00	C		Y	0	0		0		M			Y	
	85-120	c	25Y 64 00	000C00	00	M		Y	0	0		0		M			Y	
13	0-35	mcl	10YR42 00						0	0	HR	1						
	35-48	mcl	10YR53 00						0	0	HR	1		M				
	48-75	hcl	10YR54 00						0	0		0		M				
	75-120	c	10YR53 00	000C00	00	C		Y	0	0		0		M				
14	0-30	mcl	10YR42 00						0	0	HR	1						
	30-55	hcl	10YR52 00						0	0	HR	1		M				
	55-70	msl	10YR46 00						0	0		0		M				
	70-90	c	10YR52 00	000C00	00	C		Y	0	0		0		P	Y		Y	
	90-120	msl	10YR56 00	000C00	00	C		Y	0	0		0		M			Y	