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EAST HAMPSHIRE DISTRICT LOCAL PLAN
Land at Standford Grange Farm, Bordon

Agricultural Land Classification
ALC Map and Report

May 1998

Resource Planning Team
Eastern Region
FRCA Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

EAST HAMPSHIRE DISTRICT LOCAL PLAN
LAND AT STANDFORD GRANGE FARM, BORDON

INTRODUCTION

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 32.7 ha of land located to the east of Bordon and north of Standford, in Hampshire. The survey was carried out during May 1998.

2. The survey was undertaken by the Farming and Rural Conservation Agency (FRCA)[1] on behalf of the Ministry of Agriculture, Fisheries and Food (MAFF), in connection with its statutory input to the second review of the East Hampshire 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 the 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 agricultural land use on the site comprised ley and permanent grassland with a field to the east being prepared for a maize crop. Some of the grassland was being grazed by cattle, some fields were set aside for silage. The areas mapped as 'Other land' include a cemetery and associated car park, a school playing field, woodland, a track and a metalled roadway.

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	4.4	17.3	13.5
3a	7.6	29.8	23.2
3b	13.5	52.9	41.3
Other Land	7.2	-	22.0
Total surveyed area	25.5	100	78.0
Total site area	32.7	-	100

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

7. The fieldwork was conducted at an average density of 1 boring per hectare of agricultural land. In total, 35 borings and four soil pits were described.

8. The agricultural land at this site has been classified as Grade 2 (very good quality), Subgrade 3a (good quality) and Subgrade 3b (moderate quality). The key limitations include soil wetness, soil droughtiness and gradient. Soils vary over short distances as a result of the complex, interbedded nature of the underlying geology.

9. Two areas of Grade 2 have been identified - in the north, an arc of Grade 2 has been mapped on the gentle north facing slopes; in the east, a fringe of Grade 2 has been mapped on the lower lying land. Soil wetness and soil droughtiness are the main limitations. The soils comprise light to medium loamy topsoils, overlying similar and sandy subsoils, occasionally with clay at depth. The combination of these soil properties and the prevailing climate results in either minor soil wetness or soil droughtiness limitations; these may adversely affect crop yield, consistency of yield and crop quality. Topsoil stone contents are typically low, but, on occasions, they are also sufficient to restrict the classification to Grade 2.

10. Land of Subgrade 3a quality occurs in a single unit in the north and west of the site. The soils and principal limitations are essentially similar to those described for Grade 2 above, but the severity of the wetness and/or droughtiness restriction is greater. This is due to the soils being either more clayey (and less well drained) or coarser textured and more stony (reducing the amount of water available in the soil for uptake by plants). These soils will suffer from potentially lower and less consistent crop yields than those in the Grade 2 unit.

11. Land of Subgrade 3b quality extends across the higher land in the centre of the site and on the slopes to the east. Principal limitations include soil droughtiness, soil wetness and gradient. The majority of the soils on the higher land are moderately to very stony coarse loams and sands which, in the local climate, are significantly droughty. Land in this area is likely to produce significantly lower and less consistent yields than the better land elsewhere on the site. On the more gentle slopes in the east of the site soil wetness is significant as the soils are predominantly clayey and poorly drained. Soil wetness problems will reduce the flexibility of cropping and the opportunities for cultivation or grazing by livestock.

12. In the east of the site some steep slopes were measured, giving rise to a gradient limitation. This is sufficient to restrict the safe and efficient use of certain farm machinery such that Subgrade 3b is most appropriate in this area, irrespective of other factors such as soil quality.

FACTORS INFLUENCING ALC GRADE

Climate

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

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

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

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

Table 2: Climatic and altitude data

Factor	Units	Values		
Grid reference	N/A	SU 808 351	SU 809 352	SU 811 354
Altitude	m, AOD	75	80	85
Accumulated Temperature	day°C (Jan-June)	1453	1447	1441
Average Annual Rainfall	mm	824	828	832
Field Capacity Days	days	184	185	185
Moisture Deficit, Wheat	mm	100	100	99
Moisture Deficit, Potatoes	mm	92	91	90
Overall climatic grade	N/A	Grade 1	Grade 1	Grade 1

17. The combination of rainfall and temperature at this site mean that there is no overall climatic limitation. The site is not believed to be either frost-prone or to suffer from exposure. As such, the site may be considered as being climatically Grade 1. However, climatic factors do interact with soil properties to influence soil wetness and soil droughtiness, these being the dominant limitations here.

Site

18. The site lies at altitudes between approximately 70 and 85m AOD. The highest land is in the form of a plateau which extends through the centre of the site, and falls towards the west, north and east of the surveyed area. To the east, the gradients are sufficient to adversely affect land quality. The remaining gradients, to the north and west, are not significant in terms of the land classification. Other local factors such as microrelief and flooding are not significant at this site.

Geology and soils

19. The published geological information for the site (BGS, 1975) shows the higher land within the site to be underlain by a drift deposit of river and valley gravels. The slopes and the lower land to the west and north are underlain by Cretaceous Sandgate Beds with Cretaceous Hythe Beds in a strip towards the eastern site boundary.

20. The most detailed published soils information for the site (SSEW, 1983 and 1984) shows the whole area to comprise soils from the Shirrell Heath 1 association. These are described as 'Well drained, very acid sandy soils with a bleached subsurface horizon. Some similar soils with slowly permeable subsoils and slight seasonal waterlogging. Some sandy and coarse loamy soils affected by groundwater often with humose surface horizon' (SSEW,

1983). Soils conforming to certain aspects of this description were encountered during the survey. These are, namely, that sandy and coarse loamy soils with slowly permeable subsoils were described. In addition, sandy soils with significant stone contents were encountered during the survey.

AGRICULTURAL LAND CLASSIFICATION

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

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

Grade 2

23. Land of very good quality has been mapped in two separate units. The first is towards the north of the site on gentle north facing slopes and the second to the east on lower lying land. Principal limitations in these areas include soil wetness and soil droughtiness with topsoil stoniness significant on occasion. The soil pit, 1P (see Appendix II), although not within either unit, is broadly representative of these soils.

24. The soils typically comprise either a medium sandy loam or sandy clay loam topsoil which pass to a variable combination of similar and loamy medium sand subsoils which occasionally pass to clay towards the base of the inspected profile. Stone contents are typically slight, with up to 10% flints by volume (including 6% >2cm in the topsoil) recorded on occasion. The combination of local climatic parameters, soil texture and stone content is sufficient to reduce the amount of water available for plants to the extent that soil droughtiness is the principal limitation for some of these profiles. Soil droughtiness has the effect of reducing the level and consistency of yields, especially in drier years. Where more than 5% flints >2cm by volume were recorded in the topsoil this alone is sufficient to place a Grade 2 classification on the land as this factor increases the wear and tear on agricultural implements causing production costs to increase. It can also affect crop quality by impairing establishment and reducing the nutrient holding capacity leading to reduced plant populations especially in precision drilled crops.

25. Many of the profiles in these units also showed evidence of soil wetness. Towards the north of the site, this was in the form of gleying at moderate depths and, overall, the profiles were assessed as Wetness Class I. Towards the east of the site, gleying occurred at shallow depths (< 40cm) and often the profile was wet, at the time of survey, from between 60 and 70cm. As these profiles were coarse textured they would normally be placed in Wetness Class I but, given the depth to water, Wetness Class II is more appropriate. In the locally moist climate these factors place the soils in Grade 2 on the basis of soil wetness with topsoil workability being equally or slightly more limiting on occasions. This restriction affects the versatility of the land by slightly limiting cultivation and/or grazing opportunities if soil damage is to be avoided. It is also likely to adversely affect plant growth and therefore yield level and consistency may be reduced.

Subgrade 3a

26. Land of good quality has been mapped in a single unit to the north and west of the surveyed area. The principal limitations are soil droughtiness and soil wetness. The soils are characterised by the soil pits, 4P and 5P, but also include aspects of the other pits on the site (see Appendix II).

27. The profiles principally limited by soil droughtiness are most common and typically comprise a medium sandy loam topsoil which overlies similar and loamy medium sand subsoils. Stone contents vary from 2-5% flints by volume in the topsoil to an estimated maximum of 30% in the lower subsoil although 3-5% was more common. These textures are deficient in available water to the extent that, in the moist local climate moisture balance calculations indicate that Subgrade 3a is appropriate. Soil droughtiness may cause the level and consistency of yields to be more affected than those classified as Grade 2 as water demand by plants often cannot be matched by the supply available. These profiles were often gleyed at shallow depths, but the coarse loamy nature of the profiles means that Wetness Class I is appropriate.

28. The remaining profiles within the Subgrade 3a unit are principally limited by soil wetness. These mostly lie in the north of the unit. The profiles typically comprise a sandy clay loam or medium sandy loam topsoil which overlies similar upper subsoils passing to a clay lower subsoil which was occasionally interbedded with sandier deposits. The clay was assessed as being slowly permeable in the soil pit, 5P. This has the effect of reducing water flow through the profile to the extent that, given the local climate, Wetness Classes II and III are appropriate. The moist local climate also imposes a workability limitation on the light and medium topsoils such that Subgrade 3a has been applied in this area. Soil wetness limitations are similar although slightly more severe than those mentioned above in Grade 2. Occasional observations of both slightly better and poorer quality were assessed in this area during the survey, but their scattered location prohibits separate mapping.

Subgrade 3b

29. Land of moderate quality has been mapped in a single unit on the higher land in the centre and south of the site as well as on the slopes to the east. Principal limitations in this area include soil droughtiness, soil wetness and gradient. Soil pits 2P, 3P and 5P are typical of the soils described in this area.

30. Soil droughtiness is the predominant limitation in this unit. The profiles assessed typically comprise a medium sandy loam or loamy medium sand topsoil passing to similar subsoils. Many of the profiles were impenetrable to the soil auger between 20 and 65cm due to stones in the profile. These range from 10-15% flints by volume (including 4%>2cm) in the topsoil to a measured maximum of 59% by volume in the lower subsoil at pit 3P. Stones have the effect of further reducing the water holding capacity of the soil which in combination with the coarse loamy textures in these profiles cause moisture balances to be in the range where Subgrade 3b is appropriate in the local climate. A significant soil droughtiness limitation such as this regularly reduces crop yields.

31. Profiles within this unit which are significantly limited by soil wetness are confined to the east and north of the unit on the gentle slopes in this area. The soils typically comprise a

medium clay loam, sandy clay loam or medium sandy loam topsoil overlying gleyed and slowly permeable clay. Sometimes a narrow gleyed upper subsoil of either sandy or heavy clay loam is also present. Within the pit 5P this clay, which was often interbedded with sandy deposits, was assessed as being of poor structure and slowly permeable. These factors, within the local climate, lead to Wetness Class IV being applied and, subsequently, Subgrade 3b is appropriate. Soil wetness of this severity significantly limits opportunities for grazing and cultivations without causing damage to the soil as well as adversely affecting root development causing reductions in yield level and consistency.

32. Land of moderate quality has also been mapped in one area to the east of the site where gradients were measured in the range 7.5-10.5°. These are sufficient to adversely affect agricultural land quality as some precision farm machinery cannot be safely operated in this area.

Matthew Larkin
Resource Planning Team
Eastern Region
FRCA Reading

SOURCES OF REFERENCE

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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	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	SU81073545	LEY			36		2	3A	145	45	108	17	1				WE	3A	
4	SU81003540	LEY			32	78	2	3A	139	39	105	14	1				WE	3A	
5	SU81103540	PGR		3	32	45	4	3B	99	-1	104	13	3A				WE	3B	
6	SU81203540	PGR		6	0	30	4	3B	87	-13	93	2	3A				WE	3B	
8	SU80903530	LEY			58	70	3	3A	131	31	103	12	1				WE	3A	SL GLEY 53
9	SU81003530	LEY		2	76		1	1	139	39	102	11	1				ST	2	
10	SU81103530	LEY		2	81		1	1	111	11	104	13	2				DR	2	IMP FLINTS 90
11	SU81203530	PGR			25	25	4	3B	85	-15	91	0	3A				WE	3B	
12	SU80803520	PGR			35		2	2	111	11	83	-8	2				WD	2	4P LOC WET 60+
13	SU80903521	LEY		4	55		1	2	155	55	108	17	1				WE	2	
14	SU81003520	LEY					1	1	31	-69	31	-60	4				DR	3B	IMP 20 AS 2P
15	SU81103520	LEY					1	1	32	-68	32	-59	4				DR	3B	IMP 22 2P LOC
16	SU81223520	PLO	E	3	30		2	2	117	17	101	10	2				WD	2	WET 60+
17	SU80803510	PGR	NW	1	35		2	2	102	2	83	-8	3A				DR	3A	WET 70+
18	SU80903510	PGR	NW	5	28	45	4	3B	129	29	104	13	2				WE	3B	1P/5P LOC
19	SU81003510	LEY	W	2	35		1	1	93	-7	97	6	3A				DR	3A	IMP FLINTS 75
20	SU81103510	LEY					1	1	48	-52	49	-42	4				DR	3B	IMP 55 SLGL 30
21	SU81233510	PLO	E	2	28		2	2	150	50	108	17	1				WE	2	
22	SU80723504	PGR			32		2	2	99	-1	80	-9	3A				DR	3A	WET 65+
23	SU80803500	PGR	W	3	30	75	3	3A	106	6	76	-15	3A				WD	3A	
24	SU80903500	PGR	W	1	30		1	1	53	-47	55	-36	3B				DR	3B	IMP FLINTS 65
25	SU81003500	LEY			30		1	1	55	-45	59	-32	3B				DR	3B	IMP FLINTS 70
26	SU81103500	LEY					1	1	36	-64	36	-55	4				DR	3B	IMP FLINTS 35
27	SU81173500	PGR	E	3	32	32	4	3B	84	-16	91	0	3A				WE	3B	IMP FLINTS 65
28	SU80903490	LEY	NW	5	28		1	1	151	51	105	14	1					1	
29	SU81003490	PGR			25		2	2	75	-25	77	-14	3B				DR	3B	IMP 60 WET 50+
30	SU81103490	PGR			50		1	1	80	-20	83	-8	3B				DR	3B	IMP 65 3P LOC
31	SU81203490	PGR	NE	5	27	27	4	3B	75	-25	78	-13	3B				WE	3B	IMP FLINTS 56
32	SU81303490	PGR		0	0		2	3A	121	21	104	13	2				WE	3A	WET 63+
33	SU81003480	PGR			32		2	2	67	-33	71	-20	3B				DR	3B	IMP 70 WET 58+
34	SU81173515	PGR	W	4	32		2	2	102	2	79	-12	3A				DR	3A	
35	SU80043494	PLO			30		1	1	98	-2	80	-11	3A				DR	3A	IMP FLINTS 45
1P	SU80903510	PGR	NW	5	24	110	1	1	123	23	92	1	2				DR	2	PIT 80 AUG 120
2P	SU81103520	LEY			56		1	1	68	-32	67	-24	3B				DR	3B	PITIMP91 SLG29
3P	SU81103490	PGR			25		1	1	64	-36	59	-32	3B				DR	3B	PIT IMP 105
4P	SU80803520	PGR			35		2	2	102	2	83	-8	3A				DR	3A	P85 A120 WAT80
5P	SU80903510	PGR	NW	5	23	45	4	3B	105	5	103	12	2				WE	3B	PIT 80 AUG 120

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	0-36	SCL	10YR32						3	0	HR	5							
	36-52	SCL	25Y 62	10YR58	C	D		Y	0	0	HR	5		M					
	52-88	MSL	10YR64	10YR68	C	D		Y	0	0		0		M					
	88-120	C	25Y 62	10YR68	C	D		Y	0	0		0		M					
4	0-32	SCL	10YR32						4	0	HR	6							
	32-50	SCL	25Y 73	10YR58	C	D		Y	0	0	HR	6		M					
	50-78	MSL	25Y 72	10YR58	C	D		Y	0	0	HR	8		M					
	78-120	C	25Y 72	10YR58	C	D		Y	0	0		0		P			Y		
5	0-32	SCL	10YR32						6	0	HR	8							
	32-45	HCL	10YR53	10YR58	C	D		Y	0	0		0		M					
	45-80	C	25Y 64	10YR66	C	P		Y	0	0		0		P			Y		
6	0-30	MCL	10YR32	10YR36	C	F		Y	0	0		0							
	30-60	C	25Y 64	10YR66	C	D		Y	0	0		0		P			Y		
8	0-35	MSL	10YR32						3	0	HR	8							
	35-53	MSL	10YR54						0	0	HR	5		M			N		
	53-70	C	10YR66	10YR68	C	D		S	0	0		0		P			Y		
	70-85	SCL	10YR64	10YR68	C	P		Y	0	0		0		M			N		
	85-120	C	25Y 62	10YR58	C	P		Y	0	0		0		P			Y		
9	0-28	MSL	10YR32						6	0	HR	8							
	28-45	MSL	10YR54						0	0	HR	8		M					
	45-76	SCL	10YR53						0	0	HR	8		M					
	76-120	SCL	10YR64	10YR58	C	D		Y	0	0	HR	8		M					
10	0-35	MSL	10YR32						6	0	HR	8							
	35-57	MSL	10YR54						0	0	HR	10		M					
	57-81	MSL	10YR64						0	0	HR	5		M					
	81-90	LMS	10YR74	10YR58	C	D		Y	0	0	HR	10		M					IMP FLINTS 90
11	0-25	MCL	10YR32						0	0		0							
	25-60	C	25Y 72	10YR68	M	P		Y	0	0		0		P			Y		
12	0-35	MSL	10YR22						0	0	HR	1							4P LOCATION
	35-65	LMS	10YR52	10YR58	C	D		Y	0	0	HR	5		M					
	65-105	LMS	25Y 53	75YR58	M	D	FEW MN	Y	0	0	HR	5		M					SATURATED 60+
	105-120	MSL	25Y 53	75YR68	M	D		Y	0	0		0		M					
13	0-25	SCL	10YR32						6	0	HR	8							
	25-55	MSL	10YR54						0	0	HR	2		M					
	55-70	MSL	10YR53	10YR58	C	D		Y	0	0		0		M					
	70-120	MSL	10YR63	10YR58	C	D		Y	0	0		0		M					
14	0-20	MSL	10YR32						6	0	HR	10							IMP 20 SEE 2P

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	
15	0-22	MSL	10YR32						6	0	HR	15							IMP 22 2PLOCATION
16	0-30	MSL	10YR32						0	0	HR	3							
	30-60	MSL	10YR63 52	10YR56	C	F		Y	0	0	HR	2		M					
	60-110	LMS	10YR52 53	10YR56	C	F		Y	0	0	HR	5		M					WET
	110-120	LMS	10YR52 53	10YR58	M	D		Y	0	0	HR	3		M					SATURATED
17	0-35	MSL	10YR42						0	0	HR	2							
	35-85	LMS	25Y 53 61	10YR58 68	C	D		Y	0	0	HR	2		M					
	85-120	LMS	25Y 63 61	75YR58	M	D		Y	0	0	HR	2		M					
18	0-28	MSL	10YR33 43						0	0	HR	2							1P/5P LOCATION
	28-45	SCL	25Y 61 62	10YR68	M	D		Y	0	0	HR	5		M					
	45-65	C	25Y 61 62	75YR68	M	D		Y	0	0		0		P		Y			SLIGHTLY SANDY
	65-75	SCL	25Y 61	75YR68	M	D		Y	0	0	HR	2		M					
	75-120	C	25Y 61	75YR68	M	D		Y	0	0		0		P		Y			BORDER ZC
19	0-35	MSL	10YR32						2	0	HR	5							
	35-55	MSL	10YR53 54	10YR56	C	F		Y	0	0	HR	5		M					
	55-70	LMS	10YR53 54	10YR56	C	F		Y	0	0	HR	5		M					
	70-75	LMS	10YR64	10YR66	C	F		Y	0	0	HR	30		M					IMP FLINTS 75
20	0-30	LMS	10YR32						3	0	HR	8							
	30-55	LMS	10YR44	10YR58	C	D	COM MN	S	0	0	HR	35		M					IMP FLINTS 55
21	0-28	MSL	10YR32						0	0	HR	3							
	28-60	SCL	25Y 52 62	10YR58 46	M	D		Y	0	0	HR	2		M					
	60-90	MSL	10YR41 52	10YR58	M	D		Y	0	0	HR	2		M					
	90-120	SCL	05Y 52 53	75YR58	M	P		Y	0	0	HR	2		M					
22	0-32	MSL	10YR32						0	0	HR	2							
	32-45	LMS	25Y 51	10YR68	C	D	FEW MN	Y	0	0		0		M					
	45-85	LMS	25Y 62	10YR68	M	D		Y	0	0	HR	2		M					
	85-120	LMS	25Y 61	75YR68	M	D		Y	0	0	HR	5		M					C LENS IN LMS
23	0-30	LMS	10YR32	10YR56	F	D			0	0	HR	2							
	30-75	LMS	10YR53 62	10YR56	C	D	FEW MN	Y	0	0	HR	2		G					SEE 1P
	75-120	C	25Y 61	10YR68	M	D		Y	0	0		0		P		Y			
24	0-30	LMS	10YR32						5	0	HR	10							
	30-60	LMS	10YR53 54	10YR56	C	F		Y	0	0	HR	20		M					
	60-65	LMS	10YR53 54	10YR66	C	F		Y	0	0	HR	40		M					IMP FLINTS 65
25	0-30	LMS	10YR32						4	0	HR	10							
	30-60	LMS	10YR53 54	10YR56	C	F		Y	0	0	HR	15		M					
	60-70	LMS	10YR64	10YR68	C	F		Y	0	0	HR	40		M					IMP FLINTS 70
26	0-30	LMS	10YR32						6	1	HR	15							
	30-35	LMS	10YR56						0	0	HR	50		M					IMP FLINTS 35

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC	
27	0-32	MSL	10YR32	10YR46	F	D			6	1	HR	10							
	32-55	C	25Y 52 62	10YR56 58	M	D		Y	0	0	HR	3		P			Y		PLASTIC CLAY
	55-65	MSL	25Y 52 62	10YR58	M	D		Y	0	0	HR	20		M					IMP FLINTS 65
28	0-28	MSL	10YR32						6	1	HR	10							
	28-38	MSL	10YR53	10YR58	C	D		Y	0	0	HR	5		M					
	38-68	SCL	10YR53 41	10YR58	M	D	FEW MN	Y	0	0		0		M					
	68-120	MSL	25Y 52 62	10YR56 58	M	D	COM MN	Y	0	0		0		M					WET68+ CINTERBED
29	0-25	MSL	10YR32						5	1	HR	10							
	25-50	MSL	10YR53	10YR46	C	D		Y	0	0	HR	15		M					
	50-60	LMS	10YR53 52	10YR56 58	C	D		Y	0	0	HR	20		M					WET50+ IFLINTS60
30	0-32	MSL	10YR32						2	0	HR	10							
	32-50	MSL	10YR53						0	0	HR	10		M					
	50-65	LMS	10YR53 63	10YR56 58	C	D		Y	0	0	HR	15		M					IMP FLINTS 65
31	0-27	MCL	10YR32						5	1	HR	10							
	27-56	C	10YR53 52	10YR56 58	M	D	FEW MN	Y	0	0	HR	10		P			Y		IMP FLINTS 56
32	0-38	SCL	10YR32	10YR46	C	D		Y	0	0	HR	4							
	38-63	MSL	25Y 62	10YR56	C	D		Y	0	0	HR	2		M					MOIST
	63-120	LMS	25Y 52 62	10YR56 58	C	D		Y	0	0	HR	2		M					WET 63+
33	0-32	MSL	10YR32						6	1	HR	12							
	32-58	LMS	10YR52 53	10YR46 58	C	D		Y	0	0	HR	15		M					
	58-70	LMS	10YR52 53	10YR58	M	D		Y	0	0	HR	25		M					WET58+ IFLINTS70
34	0-30	MSL	10YR32						3	0	HR	10							
	30-45	SCL	10YR53	10YR56	C	D	FEW MN	Y	0	0	HR	10		M					IMP FLINTS 45
35	0-32	MSL	10YR32						0	0	HR	3							
	32-70	LMS	10YR53 54	10YR56	C	D		Y	0	0	HR	2		M					
	70-120	LMS	25Y 53	10YR56	C	F		Y	0	0	HR	3		M					
1P	0-24	MSL	10YR42						1	0	HR	5							PIT AT BOR 18
	24-42	MSL	10YR53 62	10YR58	C	D	10YR53	Y	0	0	HR	2	MDCSAB	FR	M	N			FEW MN
	42-110	LMS	25Y 62	10YR58	M	D	25Y 62	Y	0	0		0	MDCAB	FR	G	N			INTERBEDDED
	110-120	C	25Y 62	10YR58	M	D	25Y 62	Y	0	0		0	MDCAB	FM	P	Y		Y	
2P	0-29	MSL	10YR32 22						4	1	HR	8							PIT AT BOR 15
	29-56	LMS	10YR44 46	10YR56	C	F		S	10	0	HR	33	WKCSAB	VF	M	N			SLIGHTLY GLEYED
	56-71	LMS	10YR53 54	10YR56	C	F		Y	11	0	HR	28	WKCAB	VF	M	N			ALL STONES SIEVED
	71-91	LMS	10YR63	10YR66	C	D		Y	25	0	HR	56			M	N			IMP FLINTS 91
3P	0-25	MSL	10YR32						4	1	HR	10							PIT AT BOR 30
	25-49	LMS	10YR64 54	10YR56	C	F		Y	23	0	HR	35	MDCAB	VF	M	N			ALL STONES SIEVED
	49-78	LMS	25Y 63	10YR58 68	C	D		Y	35	0	HR	52	WKCAB	VF	M	N			
	78-105	LMS	25Y 62 61	10YR58	M	D		Y	30	0	HR	59			M	N			IMP FLINTS 105

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	
4P	0-35	MSL	10YR32						0	0	HR	1							PIT AT BOR 12
	35-54	LMS	25Y 63	10YR58	C	P	25Y 63	Y	0	0	HR	3	MDCPL	FM	M	Y			COM MN FEPAN DEV
	54-120	LMS	25Y 62	10YR58	M	D	25Y 62	Y	0	0	HR	3	WKMSAB	VF	M	N			FEW MN WATER 80
5P	0-23	MSL	10YR42						1	0	HR	5							1P 2ND FACE
	23-45	SCL	10YR53 62	10YR58	M	D	10YR53	Y	0	0		0	MDCAB	FR	M	N			FEW MN
	45-90	C	25Y 62	10YR58	M	D	25Y 62	Y	0	0		0	MDCAB	FM	P	Y		Y	PLASTIC CLAY