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West Sussex Minerals Plan
Site D: Whitehouse Farm, Chichester.
Agricultural Land Classification
ALC Map and Report
May 1995

AGRICULTURAL LAND CLASSIFICATION REPORT

WEST SUSSEX MINERALS PLAN
SITE D: WHITEHOUSE FARM, CHICHESTER.

1. Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality for a number of sites in West Sussex. The work forms part of MAFF's statutory input to the West Sussex Minerals Plan.

1.2 Site D comprises approximately 50 hectares of land to the west of Chichester in West Sussex. An Agricultural Land Classification (ALC) survey was carried out during May 1995. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 42 borings and three soil inspection pits were described 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 a long term limitation on its use for agriculture.

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

1.4 The agricultural land at this site was under cereals and recently drilled linseed. Areas marked as Urban includes a hard-core track running across the sight, and a private dwelling in the north. Farm buildings have been mapped towards the south of the site.

1.5 The distribution of grades and subgrades is shown on the attached ALC map, the areas and extent are given in the table below. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

Table 1: Distribution of Grades and Subgrades

Grade	Area (ha)	% of Site	% of Agricultural Land
3a	4.4	8.8	9.1
3b	43.8	88.0	90.9
Urban	1.5	3.0	100% (48.2 ha.)
Farm buildings	0.1	0.2	
Total area of site	49.8	100%	

1.6 Appendix I 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 The majority of the agricultural land on the site has been classified as Subgrade 3b, moderate quality land, with soil droughtiness and topsoil stoniness as the main limitations. Soils within this mapping unit typically comprise moderately stony topsoils resting upon very stony subsoils. Consequently, these profiles show a significant restriction upon the amount of profile available water for crop growth. This can affect the level and consistency of crop yields, such that a classification of Subgrade 3b is appropriate. Furthermore, a number of topsoil stone measurements within this mapping unit found the volume of stones greater than 2cm in size to exceed 15%. Excessively stony topsoils can inhibit crop growth and establishment, and can increase production costs due to wear and tear on machinery and tyres. Towards the south of the site, soil wetness becomes the main limitation. Slowly permeable clay horizons at variable depths in the profile impede drainage to the extent that a classification of Subgrade 3a, good quality land, is appropriate given the local climatic regime.

2. Climate

2.1 The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe climatic 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 (day °C 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 However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations. The climate at this location is relatively warm and moist in a regional context, therefore the likelihood of a soil wetness limitation may be increased.

2.5 No local climatic factors such as exposure or frost risk are believed to affect the site.

Table 2 : Climatic Interpolations

Grid Reference	SU 846 060	SU 846 057
Altitude (m)	30	15
Accumulated Temperature (Day °C, Jan-June)	1516	1533
Average Annual Rainfall (mm)	796	779
Field Capacity (days)	162	159
Moisture Deficit, Wheat (mm)	115	118
Moisture Deficit, Potatoes (mm)	111	114
Overall Climatic Grade	1	1

3. Relief

3.1 The site slopes gently from north to south, lying at an altitude of approximately 15-30m AOD. Nowhere on the site do altitude or relief pose any limitation to agricultural use..

4. Geology and Soils

4.1 The published geological map (BGS, 1972) shows the majority of the site to be underlain by Valley Gravel, with a small area of London Clay mapped along the eastern edge.

4.2 The published Soil Survey map (SSGB, 1967) shows the soils on the site to comprise four distinct series. The majority of the site is mapped as the extremely flinty phase of the Strettington series. These are described as 'well drained silty brown earths with gleying developed in flinty silty drift, extremely flinty phase soils having more than about 50% of stones by volume.' (SSGB, 1967). Towards the northern boundary of the site extremely flinty phase Charity series soils are mapped, described as 'well drained fine silty and fine silty over clayey soils, some shallow over flint gravel' (SSEW, 1983). Towards the south of the site extremely flint phase Binsted series soils are mapped, described as 'silty non-calcareous gley soils developed in flinty silty head' (SSGB, 1967). On the lower land towards the southern boundary of the site, soils of the deep phase Park Gate series are mapped, these are described as 'silty gley soils developed in brickearth suffering from imperfect drainage and variably affected by groundwater' (SSGB, 1967).

4.3 Detailed field examination found the soils correlated well with the published information. The soils on the plateau area covering the majority of the site tend to be silty soils with moderately flinty topsoils and very flinty subsoils. Slightly stony silty soils showing signs of imperfect drainage were observed on the lower land towards the south of the site.

5. Agricultural Land Classification

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

Subgrade 3a

5.2 An area of lowlying land towards the south of the site has been classified as Subgrade 3a, good quality land, with soil wetness as the main limitation. Soil profiles typically comprise silt loam topsoils overlying medium silty clay loam upper subsoils, which in turn rest upon clay or silty clay lower subsoils at variable depths. Profiles are less stony than elsewhere on the site, with very slightly stony topsoils and slightly stony subsoils. Furthermore, soils in this mapping unit show signs of imperfect drainage in the form of gleying from either the topsoil or upper subsoil. A subsequent soil inspection pit dug in this mapping unit (pit no. 3) found the clay lower subsoil (commencing at 37cm) to be slowly permeable with low porosity, thereby causing a drainage impedance. The drainage characteristics observed at the location of the pit means that the described profile is assigned to Wetness Class IV, with a resultant classification of Subgrade 3b given the prevailing local climatic conditions. Yet, within this mapping unit additional soil observations found slowly permeable clays commencing at lower depths resulting in soils being assigned to Wetness Classes II and III and subsequent classifications of Grade 2

and Subgrade 3a. Therefore an overall classification of Subgrade 3a is appropriate for the land in this area of the site. Imperfectly drained soils can restrict plant and root development and may be more susceptible to structural damage through poaching by grazing livestock or trafficking by agricultural machinery.

Subgrade 3b

5.3 The majority of the agricultural land on the site has been classified as Subgrade 3b, moderate quality land, with soil droughtiness and topsoil stoniness as the main limitations. Soil augerings within this mapping unit commonly proved impenetrable below the topsoil.

5.4 Stone measurements at each auger sample point found the volume of flints in the topsoil greater than 2cm in size to exceed 15% across much of this mapping unit. Where such volumes were observed, topsoil stoniness causes a significant limitation. Excessively stony topsoils can act as an impediment to cultivation, harvesting and crop growth and also cause a reduction in the available water capacity of a soil. A high stone content can also increase production costs by causing extra wear and tear to implements and tyres.

5.5 Where topsoil stoniness is not the overriding limitation and soil augerings proved impenetrable below the topsoil, soil inspection pits (pits 1 and 2) were dug to investigate the cause of this impenetrability. At the location of the pits, the described soil profiles were found to be relatively similar. A moderately stony (25-30% total flints v/v) silt loam topsoil was found to overly a very stony (50-55% total flints v/v) medium silty clay loam upper subsoil extending to 54 and 55cm in pits 1 and 2 respectively. The lower subsoil was found to comprise a very stony (65% total flints v/v) medium silty clay loam. Profiles were well drained and assigned to Wetness Class I. Pits 1 and 2 became impenetrable to digging at respective depths of 70cm and 68cm. Therefore assumptions have had to be made regarding the nature of the soils below these depths. Given the fact that the soils are all developed from Valley Gravel deposits, it is unlikely that soils will become any less stony with depth. Thus, for the purposes of calculating profile available water, it has been assumed that the described lower subsoil extends to a depth of 120cm, with similar stone contents of 65%; this may be the best scenario as the soils may actually grade into gravel with depth. This droughtiness calculation found that there is a restriction upon the amount of profile available water for plant growth, which will in turn affect the level and consistency of crop yields. This significant droughtiness limitation is due to a combination of soil textures, stone contents, subsoil structures (which are adversely affected by high stone contents) and the local climatic regime such that a classification of Subgrade 3b is appropriate.

SOURCES OF REFERENCE

British Geological Survey (1972), Sheet No. 317, Chichester, 1:63,360 Series (drift edition).

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 Great Britain (1967), Sheet SU70 & SU80, Chichester, 1:25,000 and accompanying bulletin 'Soils of the West Sussex Coastal Plain'.

Soil Survey of England and Wales (1983), Sheet 6, Soils of South East England, 1:250,000 and accompanying legend.

APPENDIX I

DESCRIPTION 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 (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 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 including: 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. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Woodland

Includes commercial and non-commercial woodland. A distinction may be made as necessary between farm and non-farm 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 scale 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

FIELD ASSESSMENT OF SOIL WETNESS CLASS

SOIL WETNESS CLASSIFICATION

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

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 only wet within 40 cm depth for 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 present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years **or**, if there is no slowly permeable layer present 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.

Soils can be allocated to a wetness class on the basis of quantitative data recorded over a period of many years or by the interpretation of soil profile characteristics, site and climatic factors. Adequate quantitative data will rarely be available for ALC surveys and therefore the interpretative method of field assessment is used to identify soil wetness class in the field. The method adopted here is common to ADAS and the SSLRC.

[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.

APPENDIX III

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 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	**DCW** :	Deciduous Wood
HTH :	Heathland	**BOG** :	Bog or Marsh	**FLW** :	Fallow
PLO :	Ploughed	**SAS** :	Set aside	**OTH** :	Other
HRT :	Horticultural Crops				

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	**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** :	Erosion Risk	**WD** :	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
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	**SLST** :	soft oolitic or dolimitic limestone
CH :	chalk	**FSST** :	soft, fine grained sandstone
ZR :	soft, argillaceous, or silty rocks	**GH** :	gravel with non-porous (hard) stones
MSST :	soft, medium grained sandstone	**GS** :	gravel with porous (soft) stones
SI :	soft weathered igneous/metamorphic rock		

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 **ST** : strongly developed	**MD** : moderately developed
ped size	**F** : fine **C** : coarse	**M** : medium **VC** : very coarse
ped shape	**S** : single grain **GR** : granular **SAB** : sub-angular blocky **PL** : platy	**M** : massive **AB** : angular blocky **PR** : prismatic

9. **CONSIST** : Soil consistence is described using the following notation:

L : loose **VF** : very friable **FR** : friable **FM** : firm **VM** : very firm
EM : extremely firm **EH** : extremely hard

10. **SUBS STR** : Subsoil structural condition recorded for the purpose of calculating profile droughtiness : **G** : good **M** : moderate **P** : poor

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

12. **IMP** : If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropiate horizon.

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

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

15. Other notations
APW : available water capacity (in mm) adjusted for wheat
APP : available water capacity (in mm) adjusted for potatoes
MBW : moisture balance, wheat
MBP : moisture balance, potatoes

SOIL PIT DESCRIPTION

Site Name : W SUSSEX MINS SITE D Pit Number : 1P

Grid Reference: SU84800620
Average Annual Rainfall : 796 mm
Accumulated Temperature : 1516 degree days
Field Capacity Level : 162 days
Land Use : Linseed
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 30	ZL	10YR42 00	12	30	HR					
30- 54	MZCL	10YR56 00	0	50	HR				M	
54-120	MZCL	10YR66 00	0	65	HR				P	

Wetness Grade : 1
Wetness Class : I
Gleying : cm
SPL : cm

Drought Grade : 3B
APW : 85 mm MBW : -30 mm
APP : 79 mm MBP : -32 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : W SUSSEX MINS SITE D Pit Number : 2P

Grid Reference: SU84600600
Average Annual Rainfall : 796 mm
Accumulated Temperature : 1516 degree days
Field Capacity Level : 162 days
Land Use : Linseed
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 30	ZL	10YR42 00	18	25	HR					
30- 55	MZCL	10YR54 00	0	55	HR				P	
55-120	MZCL	10YR56 00	0	65	HR				P	

Wetness Grade : 1
Wetness Class : I
Gleying : cm
SPL : cm

Drought Grade : 3B
APW : 82 mm MBW : -33 mm
APP : 75 mm MBP : -36 mm

FINAL ALC GRADE : 3B
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : W SUSSEX MINS SITE D Pit Number : 3P

Grid Reference: SU84600570
Average Annual Rainfall : 796 mm
Accumulated Temperature : 1516 degree days
Field Capacity Level : 162 days
Land Use : Linseed
Slope and Aspect : 2 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 28	ZL	10YR42 52	4	6	HR					
28- 37	MZCL	10YR53 63	0	5	HR	M	MDCSAB	FR	M	
37- 57	C	10YR53 52	0	5	HR	M	WKCPL	FR	P	
57-120	C	10YR53 00	0	10	HR	M	WKCSAB	FR	M	

Wetness Grade : 3B
Wetness Class : IV
Gleying : 28 cm
SPL : 37 cm

Drought Grade : 2
APW : 142mm MBW : 27 mm
APP : 119mm MBP : 8 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	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1P	SU84800620	LIN					1	1	85	-30	79	-32	3B				DR	3B	DR120 PIT170
1S	SU84668649	CER					1	1	000	0	000	0					ST	3B	TOPSOIL STONE
2P	SU84600600	LIN					1	1	82	-33	75	-36	3B				DR	3B	DR120 PIT168
3	SU84800650	CER					1	1	000	0	000	0					DR	3B	I35 SEE1P
3P	SU84600570	LIN	S	2	28	37	4	3B	142	27	119	8	2				WE	3B	P100 AUG120
4	SU84900650	LIN					1	1	38	-77	38	-73	4				ST	3B	TOPSOIL STONE
7	SU84800640	LIN			32		2	2	61	-54	61	-50	4				DR	3B	I45 SEE 1P
8	SU84900640	LIN					1	1	47	-68	47	-64	4				ST	3B	TOPSOIL STONE
9	SU85000640	LIN			30		2	2	75	-40	78	-33	3B				ST	3A	I60
10	SU84600630	CER					1	1	000	0	000	0					DR	3B	3B TS STONE
12	SU84800630	LIN			31		2	2	58	-57	58	-53	4				DR	3B	I45 SEE1P
13	SU84900630	LIN					1	1	61	-54	61	-50	4				ST	3B	TOPSOIL STONE
14	SU85000630	LIN	E	2			1	1	57	-58	57	-54	4				ST	3B	TOPSOIL STONE
15	SU84500620	CER					1	1	000	0	000	0					DR	3B	3B TS STONE
17	SU84700620	CER					1	1	000	0	000	0					DR	3B	I32 SEE 1P
18	SU84800620	LIN			29		2	2	60	-55	60	-51	4				DR	3B	I38 SEE 1P
19	SU84900620	LIN					1	1	70	-45	70	-41	3B				DR	3B	I41 SEE 1P
20	SU85000620	LIN	E	4			1	1	48	-67	48	-63	4				ST	3B	TOPSOIL STONE
21	SU84400610	LIN					1	1	000	0	000	0					DR	3B	I32 SEE 2P
23	SU84600610	LIN					1	1	000	0	000	0					DR	3B	I32 SEE 2P
24	SU84700610	CER					1	1	73	-42	73	-38	3B				DR	3B	I40 SEE 2P
25	SU84800610	OSR					1	1	53	-62	53	-58	4				DR	3B	I30 SEE 1P
26	SU84900610	LIN					1	1	82	-33	82	-29	3B				DR	3B	I47 SEE 1P
27	SU85000610	LIN	E	4			1	1	63	-52	63	-48	4				ST	3B	TOPSOIL STONE
28	SU84400600	LIN					1	1	74	-41	74	-37	3B				DR	3B	3B TS STONE
29	SU84500600	LIN					1	1	52	-63	52	-59	4				DR	3B	I35 SEE 2P
30	SU84600600	LIN					1	1	65	-50	65	-46	3B				ST	3B	TOPSOIL STONE
31	SU84700600	WHT					1	1	53	-62	53	-58	4				ST	3B	TOPSOIL STONE
32	SU84800600	WHT					1	1	57	-58	57	-54	4				DR	3B	I40 SEE 2P
33	SU84900600	WHT	SE	3			1	1	36	-79	36	-75	4				ST	3B	TOPSOIL STONE
34	SU85000600	WHT			25		2	2	43	-72	43	-68	4				DR	3B	I30
36	SU84400590	LIN					1	1	59	-56	59	-52	4				ST	3B	TOPSOIL STONE
37	SU84500590	LIN					1	1	61	-54	61	-50	4				DR	3B	I42 SEE 2P
38	SU84600590	LIN					1	1	53	-62	53	-58	4				DR	3B	I35 SEE 2P
39	SU84700590	WHT					1	1	60	-55	60	-51	4				ST	3B	TOPSOIL STONE
40	SU84800590	LIN					1	1	60	-55	60	-51	4				DR	3B	I40 SEE 2P
41	SU84900590	WHT	E	3	25		2	2	84	-31	87	-24	3B				DR	3B	I55
45	SU84600580	LIN	S	1			1	1	52	-63	52	-59	4				DR	3B	I35 SEE 2P
46	SU84700580	LIN	S	2			1	1	62	-53	62	-49	4				DR	3B	I40 SEE 2P
47	SU84300570	SAS			S25	061	2	2	000	0	000	0					WE	2	I80 HR
48	SU84400570	SAS			30	30	4	3B	132	17	113	2	2				WE	3B	
49	SU84500570	LIN	S	3	45		1	1	115	0	128	17	3A				DR	3A	I70 HR

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
50	SU84600570	LIN	S	3	30	40	4	3B	124	9	114	3	2				WE	3B		
51	SU84700570	LIN	S	3	26	46	3	3A	111	-4	114	3	3A				WE	3A		I80 HR
52	SU84600560	LIN			30	43	4	3B	133	18	108	-3	2				WE	3B		JUST WC4
53	SU84700560	LIN			30	52	3	3A	148	33	124	13	1				WE	3A		

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1P	0-30	zl	10YR42 00						12	0	HR	30							
	30-54	mzcl	10YR56 00						0	0	HR	50		M					PIT DUG TO
	54-120	mzcl	10YR66 00						0	0	HR	65		P					70 CM
1S	0-25	zl	10YR42 00						18	0	HR	28							
2P	0-30	zl	10YR42 00						18	0	HR	25							
	30-55	mzcl	10YR54 00						0	0	HR	55		P					PIT DUG TO
	55-120	mzcl	10YR56 00						0	0	HR	65		P					68 CM
3	0-25	zl	10YR42 00						12	0	HR	22							
	25-35	mzcl	10YR54 00						0	0	HR	20		M					IMP FLINTS
3P	0-28	zl	10YR42 52						4	0	HR	6							
	28-37	mzcl	10YR53 63	10YR58 00	M		00MN00 00	Y	0	0	HR	5	MDCSAB FR	M	Y				
	37-57	c	10YR53 52	10YR58 00	M		00MN00 00	Y	0	0	HR	5	WKCPL FR	P	Y		Y		
	57-120	c	10YR53 00	10YR58 00	M		00MN00 00	Y	0	0	HR	10	WKCSAB FR	M	Y		Y		
4	0-25	mzcl	10YR41 42						18	3	HR	35							
	25-30	zl	10YR46 56						0	0	HR	45		M					IMP FLINTS
7	0-32	mzcl	10YR41 42						11	3	HR	25							
	32-45	mzcl	10YR53 43	10YR56 00	C			Y	0	0	HR	35		M					IMP FLINTS
8	0-30	mzcl	10YR41 42						16	4	HR	35							
	30-38	mzcl	10YR43 00						0	0	HR	40		M					IMP FLINTS
9	0-30	mzcl	10YR41 00						11	3	HR	20							
	30-45	c	25Y 51 00	10YR58 00	M			Y	0	0	HR	30		M					
	45-60	msl	25Y 51 61	10YR58 00	C			Y	0	0	HR	40		M					IMP FLINTS
10	0-30	zl	10YR42 00						18	0	HR	28							IMP FLINTS
12	0-31	mzcl	10YR42 41						12	3	HR	30							
	31-45	mzcl	10YR53 54	10YR56 00	C		00MN00 00	Y	0	0	HR	35		M					IMP FLINTS
13	0-26	zl	10YR42 00						17	0	HR	23							
	26-35	zl	10YR44 00						0	0	HR	30		M					IMP FLINTS
14	0-30	zl	10YR41 00						16	5	HR	35							
	30-40	zl	25Y 61 00						0	0	HR	50		M					IMP FLINTS
15	0-30	zl	10YR42 00						18	0	HR	28							IMP FLINTS
17	0-32	zl	10YR42 00						12	0	HR	22							IMP FLINTS
18	0-29	zl	10YR41 00						12	0	HR	30							
	29-38	zl	10YR53 00	10YR56 00	C			Y	0	0	HR	40		M					IMP FLINTS

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	
19	0-30	zl	10YR42 00						12	0	HR	19							
	30-41	mzcl	10YR43 44						0	0	HR	30		M					IMP FLINTS
20	0-30	zl	10YR41 00						22	8	HR	40							
	30-35	zl	25Y 61 00						0	0	HR	50		M					IMP FLINTS
21	0-32	zl	10YR42 00						12	0	HR	22							IMP FLINTS
23	0-32	zl	10YR42 00						12	0	HR	22							IMP FLINTS
24	0-30	zl	10YR42 00						13	0	HR	18							
	30-40	zl	10YR54 00						0	0	HR	30		M					IMP FLINTS
25	0-30	zl	10YR41 42						12	3	HR	25							IMP FLINTS
26	0-30	zl	10YR42 00						13	0	HR	18							
	30-40	zl	10YR44 00						0	0	HR	25		M					
	40-47	mzcl	10YR56 00						0	0	HR	35		M					IMP FLINTS
27	0-30	zl	10YR41 42						17	8	HR	30							
	30-40	zl	10YR42 00						0	0	HR	40		M					IMP FLINTS
28	0-26	zl	10YR42 00						16	0	HR	22							
	26-40	mzcl	10YR44 00						0	0	HR	25		M					
	40-47	mzcl	10YR56 00						0	0	HR	30		M					IMP FLINTS
29	0-26	mzcl	10YR42 00						15	0	HR	18							
	26-35	mzcl	10YR54 00						0	0	HR	30		M					IMP FLINTS
30	0-30	zl	10YR42 00						18	0	HR	25							
	30-40	mzcl	10YR56 00						0	0	HR	30		M					IMP FLINTS
31	0-27	zl	10YR41 00						18	7	HR	30							
	27-35	zl	10YR56 00						0	0	HR	50		M					IMP FLINTS
32	0-28	mzcl	10YR41 00						12	0	HR	20							
	28-40	mzcl	10YR42 00						0	0	HR	35		M					IMP FLINTS
33	0-25	mzcl	10YR42 00						17	5	HR	25							IMP FLINTS
34	0-25	mzcl	10YR42 00						8	0	HR	20							
	25-30	c	25Y 51 00	10YR58 00	M			Y	0	0	HR	30		M					IMP FLINTS
36	0-24	zl	10YR42 00						18	2	HR	25							
	24-35	zl	10YR56 00						0	0	HR	30		M					IMP FLINTS
37	0-27	mzcl	10YR42 00						14	0	HR	20							
	27-42	mzcl	10YR56 00						0	0	HR	25		M					IMP FLINTS

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
38	0-29	mzcl	10YR42 00						11	0	HR	18						
	29-35	mzcl	10YR56 00						0	0	HR	30		M				IMP FLINTS
39	0-32	zl	10YR41 00						17	3	HR	25						
	32-35	zl	10YR56 00						0	0	HR	40		M				IMP FLINTS
40	0-26	zl	10YR41 00						12	0	HR	20						
	26-37	mzcl	10YR54 00						0	0	HR	40		M				IMP FLINTS
41	0-25	mzcl	10YR43 53						2	0	HR	5						
	25-55	mzcl	10YR53 54	10YR56 00	C			Y	0	0	HR	20		M				IMP FLINTS
45	0-30	mzcl	10YR42 00						13	0	HR	20						
	30-35	mzcl	10YR43 00						0	0	HR	40		M				IMP FLINTS
46	0-30	mzcl	10YR41 00						11	0	HR	17						
	30-40	mzcl	10YR42 00						0	0	HR	20		M				IMP FLINTS
47	0-25	mzcl	10YR43 00	000C00 00	F				2	0	HR	5						
	25-42	zc	10YR54 00	000C00 00	C			S	0	0		0		M				
	42-60	zc	75YR53 00	000C00 00	C			Y	0	0		0		M				
	60-80	zc	75YR53 00	000C00 00	C			Y	0	0		0		P	Y		Y	
48	0-30	zl	10YR52 00						3	0	HR	5						
	30-70	zc	75YR52 00	10YR68 00	C			Y	0	0	HR	2		P			Y	
	70-100	hzcl	75YR52 00	75YR58 00	C	00MN00 00		Y	0	0	HR	2		M			Y	
49	0-30	zl	10YR42 00						4	0	HR	8						
	30-45	mzcl	10YR43 00						0	0	HR	2		M				
	45-55	mzcl	10YR52 43	10YR58 00	C			Y	0	0	HR	5		M				
	55-70	mzcl	10YR64 00	10YR68 71	C			Y	0	0	HR	10		M				IMP FLINTS
50	0-30	zl	10YR52 42	10YR58 00	F				2	0	HR	6						
	30-40	mzcl	10YR52 00	10YR58 61	C			Y	0	0	HR	5		M				
	40-100	zc	75YR52 00	75YR68 72	C			Y	0	0	HR	10		P			Y	
51	0-26	zl	10YR42 52						4	0	HR	6						
	26-46	hzcl	10YR62 00	10YR68 00	C			Y	0	0	HR	8		M				
	46-80	zc	10YR52 00	10YR68 71	C			Y	0	0	HR	10		P			Y	
52	0-30	mzcl	10YR52 00						2	0	HR	4						
	30-43	mzcl	10YR71 62	10YR68 00	C			Y	0	0	HR	2		M				
	43-120	zc	75YR62 00	10YR68 71	C	00MN00 00		Y	0	0	HR	2		P			Y	
53	0-30	zl	10YR42 00						2	0	HR	4						
	30-52	mzcl	10YR64 00	10YR58 61	C			Y	0	0	HR	2		M				
	52-120	zc	10YR64 00	10YR68 71	C			Y	0	0	HR	2		P			Y	