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OXFORDSHIRE MINERALS PLAN
SUTTON WICK, SW BLOCK
AGRICULTURAL LAND CLASSIFICATION
ALC MAP & REPORT
DECEMBER 1993

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1.0 Summary

1.1 ADAS was commissioned by MAFF's Land Use Planning Unit to provide information on land quality on an area of land south-west of Sutton Wick near the village of Drayton in Oxfordshire. The work forms part of MAFF's statutory input to the preparation of the Oxfordshire Minerals Plan.

1.2 Approximately 18 hectares of land was surveyed in December 1993. The survey was undertaken at a detailed level of approximately one boring per hectare. A total of 14 soil auger borings and 2 soil inspection pits were assessed in accordance with MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose longterm limitations on its use for agriculture.

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

1.4 At the time of the survey the majority of the land on the site had been recently ploughed, with a small area of permanent grassland in the north-west of the site.

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

Table 1 : Distribution of Grades and Subgrades

<u>Grade</u>	<u>Area (ha)</u>	<u>% of Site</u>	<u>% of Agricultural Area</u>
3a	1.8	10.2	11.0
3b	14.6	82.5	89.0
Non agricultural area	0.1	0.6	<u>100.0</u>
Urban	0.4	2.2	(16.4 ha.)
Open water	<u>0.8</u>	<u>4.5</u>	
Total area of site	<u>17.7</u>	<u>100.0</u>	

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

1.7 The majority of land on the site has been classified as Subgrade 3b, moderate quality agricultural land, with soil wetness as the main limitation. Soils in this mapping unit are typically clay or heavy clay loam topsoils overlying a poorly structured clay subsoil. This clay subsoil significantly restricts drainage and root penetration, thus causing these soils to be assigned to Wetness Class III, with a resultant classification of Subgrade 3b. In the west of the site there is an area of Subgrade 3a, good quality agricultural land. In this area of the site soils tend to comprise heavy clay loam topsoils overlying clay. The poorly structured clay subsoil tends to be deeper in the profile than in other areas of the site, consequently these soils are assigned to Wetness Class II with a resultant classification of Subgrade 3a.

2.0 Climate

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

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

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

2.4 No local climatic factors such as exposure or frost risk affect the site. However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations. In the locality of this particular site, field capacity days are relatively low, with correspondingly high moisture deficits.

Table 2 : Climatic Interpolation

Grid Reference :	SU 487 958
Altitude (m) :	50
Accumulated Temperature (days) :	1462
Average Annual Rainfall (mm) :	597
Field Capacity (days) :	125
Moisture Deficit, Wheat (mm) :	117
Moisture Deficit, Potatoes (mm) :	111
Overall Climatic Grade :	1

3.0 Relief

3.1 The site lies at an altitude ranging between 50 and 55 metres, there are gentle slopes on some parts of the site. However, nowhere on the site do gradient or relief affect the agricultural land quality

4.0 Geology and Soil

4.1 The relevant geological sheet for the site (BGS Sheet 253, Abingdon 1971) shows the underlying geology as relatively complex. This consists of First and Second Terrace River Deposits, Kimmeridge Clay and Alluvium.

4.2 The published soils information for the area (SSEW Sheet 253, Soils of the Wantage and Abingdon District 1971) shows the soils on the site mapped as two distinct series, namely Thames and Sutton. Thames series soils are described as 'poorly drained grey mottled calcareous soils in alluvium. Sutton series soils are described as dark brown slightly stony friable calcareous sandy loams' (SSEW 1983). Detailed field examination broadly confirms this, although the soils across the site were of a poorly drained clayey nature. Furthermore, the soils on the site were found to be non-calcareous.

5.0- Agricultural Land Classification

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

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

5.3 Subgrade 3a: Approximately 2 hectares of land in the west of the site has been classified as Subgrade 3a, good quality land, with soil wetness as the main limitation. Soil profiles typically comprise heavy clay loam topsoils overlying clay, the profile becoming gleyed at approximately 55cm. A subsequent soil inspection pit (pit 2) proved that the clay lower subsoils (commencing at 55cm) have a poor substructural condition, thereby satisfying the criteria for a slowly permeable layer. It became evident from the pit that this clay subsoil impedes both drainage and root penetration and development. This causes these soils to be assigned to Wetness Class II, which when considered alongside the topsoil texture and the field capacity level (days) for the site gives a resultant classification of Subgrade 3a.

5.4 Subgrade 3b: The remainder of the site has been classified as Subgrade 3b, moderate quality land, with soil wetness as the main limitation. Soil profiles within this mapping unit show similar textural conditions as the Subgrade 3a land, albeit occasionally heavier topsoils, also showing evidence of a more significant wetness limitation. Profiles tend to be gleyed below the topsoil, and a soil inspection pit (pit 1) proved the existence of a slowly permeable clay layer at a relatively shallow depth of 27cm. Therefore these soils can be assigned to Wetness Class III, with a resultant classification of Subgrade 3b. Occasionally soils within this mapping unit become sandy at depth, yet this has no bearing on the final grading of these wet soils.

Soils with poor drainage, and associated wetness problems, cause restrictions on frequency and effectiveness of mechanised cultivations. The likelihood of damage by grazing livestock is also increased. Also, plant development, particularly rooting, is adversely affected by wet soils.

5.5 The area marked as urban is a tarmac road. The area marked as non-agricultural is a track. The open water includes a man-made fishing pond.

ADAS Ref:
MAFF Ref:

3304/253/93
EL 33/17

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 re-claimed 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 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.

REFERENCES

- * British Geological Survey (1971), Sheet No.253, Abingdon, 1:50,000
- * MAFF (1988), Agricultural Land Classification of England and Wales : Revised guidelines and criteria for grading the quality of agricultural land.
- * Meteorological Office (1989), Climatological Data for Agricultural Land Classification.
- * Soil Survey of England and Wales (1982), Sheet No.253, Soils of the Abingdon and Wantage District, 1:63,360, and accompanying publication.

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 :
- * 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 **HIRT** : 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 appropriate 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 : SUTTON WICK, SW BLOCK Pit Number : 1P

Grid Reference: SU48709473 Average Annual Rainfall : 597 mm
 Accumulated Temperature : 1462 degree days
 Field Capacity Level : 125 days
 Land Use : Bare Soil
 Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT. STONE	MOTTLES	STRUCTURE
0- 27	HCL	10YR32 00	0	1		WCSAB
27- 57	C	10YR51 00	0	1	M	MCAB
57- 70	HCL	10YR62 00	0	20	M	
70-120	LMS	10YR63 00	0	40		

Wetness Grade : 3B Wetness Class : III
 Gleying : 027 cm
 SPL : 027 cm

Drought Grade : APW : mm MBW : 0 mm
 APP : mm MBP : 0 mm

FINAL ALC GRADE : 3B
 MAIN LIMITATION : Wetness

SOIL PIT DESCRIPTION

Site Name : SUTTON WICK, SW BLOCK Pit Number : 2P

Grid Reference: SU48639480 Average Annual Rainfall : 597 mm
 Accumulated Temperature : 1462 degree days
 Field Capacity Level : 125 days
 Land Use : Bare Soil
 Slope and Aspect : 05 degrees E

HORIZON	TEXTURE	COLOUR	STONES >2	TOT. STONE	MOTTLES	STRUCTURE
0- 29	HCL	10YR42 00	0	2		MCSAB
29- 55	C	10YR54 00	0	5		MCSAB
55- 95	C	10YR53 00	0	10	M	WCSAB
95-120	C	25Y 51 00	0	2	M	MCAB

Wetness Grade : 3A Wetness Class : II
 Gleying : 055 cm
 SPL : 055 cm

Drought Grade : APW : mm MBW : 0 mm
 APP : mm MBP : 0 mm

FINAL ALC GRADE : 3A
 MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	ASPECT USE	--WETNESS--		-WHEAT-		-POTS-		M. REL		EROSN	FROST	CHEM	ALC	COMMENTS
			GRDNT	GLEYSPL	CLASS	GRADE	AP	MB	AP	MB	DRT	FLOOD	EXP	DIST	
1	SU48679500	PGR		0 025	3 3B		0		0				WE	3B	
1P	SU48709473	PLO		027 027	3 3B		0		0				WE	3B	
2	SU48809500	PLO		020 050	3 3B		0		0				WE	3B	
2P	SU48639480	PLO E	05	055 055	2 3A		0		0				WE	3A	
3	SU48909500	PLO		020 020	3 3B		0		0				WE	3B	
4	SU48709490	PLO		020 020	3 3B		0		0				WE	3B	
5	SU48809490	PLO		025 025	3 3B		0		0				WE	3B	
6	SU48609480	PLO E	05	065 065	2 3A		0		0				WE	3A	
7	SU48709480	PLO		018 018	3 3B		0		0				WE	3B	
8	SU48809480	PLO		018 018	3 3B		0		0				WE	3B	
9	SU48609470	PLO E	04	055 070	2 3A		0		0				WE	3A	
11	SU48809470	PLO		000	1 2		0		0				DR	3B	IMPEN 32
12	SU48609400	PLO E	03	030 030	3 3B		0		0				WE	3B	IMPEN 58
13	SU48709460	PLO		025 025	3 3B		0		0				WE	3B	
15	SU48709450	PLO E		018 018	3 3B		0		0				WE	3B	
16	SU48809450	PLO		025 025	3 3B		0		0				WE	3B	

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES-----			PED COL.	----STONES----			STRUCT/ CONSIST	SUBS					
				COL	ABUN	CONT		GLY	>2	>6		LITH	TOT	STR	POR	IMP	SPL
1	0-25	c	10YR32 00	10YR58	00	C		Y	0	0	0						
	25-65	c	10YR53 00	10YR78	61	M		Y	0	0	0		P	Y		Y	
	65-120	c	10YR52 00	10YR78	71	M		Y	0	0	0		P	Y		Y	
1P	0-27	hc1	10YR32 00						0	0	HR	1	WCSAB	FR			
	27-57	c	10YR51 00	75YR58	00	M		Y	0	0	HR	1	MCAB	VF	P	Y	Y
	57-70	hc1	10YR62 00	75YR56	00	M		Y	0	0	HR	20		M			Y
	70-120	lms	10YR63 00					Y	0	0	HR	40		M			Y Y
2	0-20	hc1	10YR42 00						0	0	HR	5					
	20-50	c	10YR52 00	10YR58	61	M		Y	0	0	0		P	Y			
	50-70	c	10YR63 00	10YR78	71	M		Y	0	0	0		P	Y		Y	
	70-95	sc	10YR73 00	10YR78	00	M		Y	0	0	HR	20		M		Y	
2P	0-29	hc1	10YR42 00						0	0	HR	2	MCSAB	FR			
	29-55	c	10YR54 00						0	0	HR	5	MCSAB	FR	M		
	55-95	c	10YR53 00	10YR58	51	M		Y	0	0	HR	10	WCSAB	FM	P	Y	Y
	95-120	c	25Y 51 00	10YR58	00	M		Y	0	0	HR	2	MCAB	FM	P	Y	Y
3	0-20	hc1	10YR42 00						0	0	0						
	20-80	c	10YR52 00	10YR58	61	M		Y	0	0	0		P	Y		Y	
	80-120	c	10YR63 00	10YR78	71	M		Y	0	0	0		P	Y		Y	
4	0-20	c	10YR42 00						0	0	0						
	20-60	c	10YR52 00	10YR58	61	M		Y	0	0	0		P	Y		Y	
	60-85	hc1	25Y 63 00	25Y 68	72	M		Y	0	0	HR	5		M		Y	
	85-95	sc1	25Y 64 00					Y	0	0	HR	20		M		Y	
5	0-25	hc1	10YR42 00						0	0	0						
	25-75	c	10YR52 00	10YR58	61	M		Y	0	0	0		P	Y		Y	
	75-100	sc	10YR64 00					Y	0	0	HR	20		M		Y	
6	0-25	hc1	10YR43 00						0	0	HR	2					
	25-50	c	25Y 54 00						0	0	HR	6		M			
	50-65	c	25Y 54 00	00M00	00	F			0	0	HR	6		M			
	65-120	c	25Y 53 00	10YR58	51	C	00M00	00	Y	0	0	HR	10		P	Y	Y
7	0-18	c	10YR32 00						0	0	HR	2					
	18-60	c	10YR52 00	75YR58	00	M		Y	0	0	0		P	Y		Y	
	60-75	c	10YR53 00	10YR56	00	M		Y	0	0	0		P	Y		Y	
	75-80	ms1	10YR58 00					Y	0	0	HR	20		M		Y	
8	0-18	hc1	10YR32 00						0	0	HR	2					
	18-52	c	10YR53 00	10YR58	51	M		Y	0	0	HR	15		P	Y		Y
	52-60	ms1	10YR56 00						0	0	HR	40		M			
9	0-25	hc1	10YR32 00						0	0	HR	8					
	25-55	hc1	10YR32 00						0	0	HR	15		M			
	55-70	c	10YR42 00	10YR58	00	C		Y	0	0	HR	15		M			
	70-120	c	10YR53 00	10YR58	51	M		Y	0	0	HR	5		P	Y		Y

SAMPLE	DEPTH	TEXTURE	COLOUR	-----MOTTLES-----			PED	----STONES----			STRUCT/	SUBS						
				COL	ABUN	CONT	COL.	GLEYS	>2	>6	LITH	TOT	CONSIST	STR	POR	IMP	SPL	CALC
11	0-28	hc1	10YR33 00					0	0	HR	2							
	28-32	ms1	10YR64 00					0	0	HR	40		M					
12	0-30	hc1	10YR33 00					0	0	HR	3							
	30-51	c	10YR53 00	10YR56 00	M			Y	0	0	HR	10		P	Y		Y	
	51-58	c	10YR53 00	10YR56 00	C			Y	0	0	HR	25		M			Y	
13	0-25	hc1	10YR42 00					0	0		0							
	25-70	c	10YR52 00	10YR58 61	M			Y	0	0	0			P	Y		Y	
	70-120	c	25Y 63 00	10YR78 71	M			Y	0	0	0			P	Y		Y	
15	0-18	hc1	10YR33 00					0	0		0							
	18-60	c	10YR61 00	10YR58 00	M			Y	0	0	0			P	Y		Y	
	60-120	c	10YR53 00	10YR56 00	M			Y	0	0	0			P	Y		Y	
16	0-25	c	10YR42 00					0	0		0							
	25-65	c	25Y 52 00	10YR58 61	M			Y	0	0	0			P	Y		Y	
	65-80	sc1	10YR54 00					Y	0	0	HR	20		M			Y	