8FCS 63308

41/97

Land at Padstow

Agricultural Land Classification

December 1997

Resource Planning Team
Bristol
FRCA Western Region

Job Number 41/97

MAFF Ref: EL07/1438

PADSTOW

AGRICULTURAL LAND CLASSIFICATION SURVEY

CONTENTS

PADSTOW

AGRICULTURAL LAND CLASSIFICATION SURVEY

INTRODUCTION

1. This report presents the findings of a semi-detailed Agricultural Land Classification (ALC) survey of 57.0 ha of land at Padstow, Cornwall. Field survey was based on 44 auger borings and 2 soil profile pits, and was completed in October 1997. During the survey 3 samples were analysed for particle size distribution (PSD).

2. The survey was conducted by the Resource Planning Team of FRCA Western Region on behalf of MAFF in its statutory role in the preparation of North Cornwall Local Plan.

3. Information on climate, geology and soils, and from previous ALC surveys was considered and is presented in the relevant section. Apart from the published regional ALC map (MAFF, 1977), which shows the sites at a reconnaissance scale as Grade 3, the site had not been surveyed previously. The current survey uses the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF, 1988) and therefore supersedes any previous ALC information. Grade descriptions are summarised in Appendix I.

4. There have been several previous surveys adjacent to this site, the first of which was at Trecerus, Padstow (ADAS 1995) which found mainly Grade 2, limited only by workability with heavy clay loam topsoil. Two other surveys at Trevethan Farm (Both ADAS 1996) found mainly Subgrade 3a also limited by workability with heavy clay loam topsoil, with a small area of Subgrade 3b limited by gradient. Although both the 1995 and 1996 surveys found similar soil profiles, there is climatic variation across the site due to the 175 FC Day boundary which causes the difference in ALC grade.

5. At the time of survey land cover was mainly grass and cereals. Other land which was not surveyed included residential land, farm buildings, an industrial estate and a reservoir. Small areas of land, including a steep bank, at Trevethan Farm have been planted to trees, but these have not yet become established and the areas have been included within the agricultural land survey as they could easily revert.

SUMMARY

6. The distribution of ALC grades is shown on the accompanying 1: 10 000 scale ALC map. The detail of information shown at this scale is appropriate to the intensity of field survey but could be misleading if enlarged or applied to small areas. Areas are summarised in the Table 1.

Table 1: Distribution of ALC grades: Padstow

Grade	Area (ha)	% Surveyed Area (47.5 ha)
3a	26.5	56
3b	13.6	29
4	7.4	15
Other land	9.5	
Total site area	57.0	

7. This shows that 56% of the surveyed area was found to be best and most versatile. This was Subgrade 3a limited mainly by workability. The remaining land is shown as Subgrade 3b limited mainly by wetness and larger areas of Grade 4 mainly with a more severe wetness limitation.

CLIMATE

8. Estimates of climatic variables for this site were derived from the published agricultural climate dataset "Climatological Data for Agricultural Land Classification" (Meteorological Office, 1989) using standard interpolation procedures. Data for key points around the site are given in Table 2 below.

9. Since the ALC grade of land is determined by the most limiting factor present, overall climate is considered first because it can have an overriding influence by restricting land to a lower grade despite more favourable site and soil conditions. Parameters used for assessing overall climate are accumulated temperature, a measure of relative warmth and average annual rainfall, a measure of overall wetness. The results shown in Table 2 indicate that there is no overall climatic limitation.

10. Climatic variables also affect ALC grade through interactions with soil conditions. The most important interactive variables are Field Capacity Days (FCD) which are used in assessing soil wetness and potential Moisture Deficits calculated for wheat and potatoes, which are compared with the moisture available in each profile in assessing soil droughtiness limitations. These are described in later sections. A critical boundary of 175 FC Days was found to operate to the north of Trecerus farm, with the lower values to the north and west of the line. It was felt that this should be treated with some discretion as the FC Day values generated appear to relate more to the climatic database grid points used than to the location and altitude of the points selected. For part of the area only three database grid points are available and it is in this area that lowest values of FC Days are generated.

Table 2: Climatic Interpolations: Padstow

Grid Reference		SW 910747	SW 908751
Altitude (m)		60	50
Accumulated Temperature (day °C)		1563	1574
Average Annual Rainfall (mm)		895	873
Overall Climatic Grade		1	1
Field Capacity Days		178	175
Moisture deficit (mm):	Wheat	98	100
	Potatoes	88	91

11. The site is close to the sea and some limitation due to exposure is indicated by the flagging of hedgerow trees on the more elevated parts of the site. However, it is considered that any limitation due to exposure would be only to Grade 2 and nowhere more than the limitation caused by other factors.

RELIEF

12. Altitude ranges from 20 metres below Trevethan Farm to 63 metres at the crossroads by the reservoir with mainly gentle and moderate slopes which are not limiting, although one area of steeper slopes was found below Trevethan Farm, causing limitation mainly to Subgrade 3b.

GEOLOGY AND SOILS

13. The underlying geology of the site is shown on the published geology map (IGS, 1976) as Devonian Grey Slates. This was entirely borne out by the current survey, although the parent material influences ALC grade by the depth of weathered material with respect to soil depth and droughtiness. Where the slate weathers into soft clay, this can easily give rise to heavy soil textures and restricted permeability in the subsoils.

14. Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1:250 000 (SSEW, 1983) as mainly Denbigh 2 Association with Powys Association south east of the main A389 road. Denbigh 2 Association is described as well drained fine loamy soils over slate or slate rubble with some fine loamy soils variably affected by groundwater. Powys Association is described as shallow well drained loamy soils over rock with many steep slopes and some bare rock locally. The current survey may have found steeper slopes in the areas shown as Powys Association but otherwise the soils found across the area were variable but indistinguishable in the terms of the published descriptions. Indeed, both the shallowest and the wettest profiles were equally found in both parts of the site.

AGRICULTURAL LAND CLASSIFICATION

15. The distribution of ALC grades found by the current survey is shown on the accompanying 1: 10 000 scale map and areas are summarised in Table 1. The detail of information shown at this scale is appropriate to the intensity of field survey but could be misleading if enlarged or applied to small areas.

Subgrade 3a

16. Soils in the area shown as Subgrade 3a are mainly well drained, Wetness Class I, with heavy clay loam and clay topsoil textures and limited mainly by restricted workability. This is illustrated by both pits in the 1996 surveys around Trevethan Farm where one PSD analysis found the topsoil texture to be heavy clay loam, with 28% clay.

17. It is also illustrated by Pit 2 of the current survey which found clay topsoil with 36% clay, and a further topsoil sample from ASP 18 found 35% clay. This shows that the topsoil texture over the larger current site is borderline between clay and heavy clay loam, with some variation but with clay values hovering around 35%.

18. Grading is further complicated by the presence of the 175 FC Day boundary just north of Trecerus Farm. To the north of this line any profiles with heavy clay loam topsoil, such as Pit 1 of the 1995 survey at Trecerus Farm, could be Grade 2, while to the south of this line any clay topsoil even at Wetness Class I would be Subgrade 3b.

19. However, the Subgrade 3a mapping unit shown is considered to a reasonable assessment of the variable topsoil textures taking the FC Day boundary into account. Although the 1995 survey which found some Grade 2 was perfectly correct for the area under consideration at that time, the current survey covers a larger area and has revealed further PSD data and is unable to show any extension to this area of Grade 2, particularly in view of the location of Pit 2 so close to the 1995 survey boundary. If the combined area were now to be viewed as a whole, the area previously shown as Grade 2 would be too small to be mapped and would be included in the Subgrade 3a mapping unit. This is shown on the composite map, reference D34.97 included with this report.

Subgrade 3b

20. The small area of Subgrade 3b south of Trevethan Farm is limited mainly by gradient with slopes of around 9^{o}.

21. The main area of Subgrade 3b is limited mainly by workability with clay topsoil at Wetness Class 1, or wetness with clay topsoil at Wetness II where a slowly permeable layer is found in the lower subsoil. However, this mapping unit also includes scattered borings of Subgrade 3a such as ASP 20, 21, and 23.

Grade 4

22. Two small areas of Grade 4 are shown in the north east and south east of the site where short steep banks are found.

23. The larger areas of Grade 4 are limited mainly by wetness. Profiles in these areas are poorly drained, Wetness Class IV or occasionally Wetness Class III with a slowly permeable layer in the subsoil, frequently in the upper subsoil. These areas are illustrated by Pit 1 which found a clay topsoil with gleying and slowly permeable layer from 35 cm. This profile also indicates that only Horizon 3 is slowly permeable, which in this case extends from 35 to 63 cm. Below this depth the weathering slate again becomes progressively harder and more permeable and therefore more freely draining.

P Barnett
Resource Planning Team
FRCA Bristol
December 1997

REFERENCES

ADAS RESOURCE PLANNING TEAM, (1995) Agricultural Land Classification Survey of Trecerus, Padstow Scale 1: 10 000, Reference 56.95, FRCA Bristol.

ADAS RESOURCE PLANNING TEAM, (1996) Agricultural Land Classification Survey of Padstow Scale 1: 10 000, Reference 5.96, FRCA Bristol.

ADAS RESOURCE PLANNING TEAM, (1996) Agricultural Land Classification Survey of Trevethan Farm, Padstow Scale 1: 10 000, Reference 30.96, FRCA Bristol.

INSTITUTE OF GEOLOGICAL SCIENCES (1976) Sheet 335/336 1:50 000 series Solid and Drift edition. IGS, London.

HODGSON, J M (Ed) (1997) Soil Survey Field Handbook. Soil Survey Technical Monograph No 5. SSLRC, Cranfield University.

MAFF (1977) 1:250 000 series Agricultural Land Classification, South West Region. MAFF Publications, Alnwick.

MAFF (1988) Agricultural Land Classification of England and Wales. Revised Guidelines and Criteria for grading the quality of agricultural land. MAFF Publications, Alnwick.

METEOROLOGICAL OFFICE (1989) Climatological Data for Agricultural Land Classification. Meteorological Office, Bracknell.

SOIL SURVEY OF ENGLAND AND WALES (1983) Sheet 5, Soils of South West England, 1:250 000 scale. SSEW, Harpenden.

SOIL SURVEY OF ENGLAND AND WALES (1984) Soils and Their Use in South West England, Bulletin No 14. SSEW, Harpenden.

APPENDIX I

DESCRIPTION OF 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 include 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 and horticultural crops can usually be grown but on some land in 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. Where 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 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 most 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.

Source: MAFF (1988) Agricultural Land Classification of England and Wales Revised Guidelines and Criteria for Grading the Quality of Agricultural Land, MAFF Publications, Alnwick.

APPENDIX II

DEFINITION OF SOIL WETNESS CLASSES

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile.

Wetness Class I

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

Wetness Class 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 not wet within 40 cm depth for more than 30 days in most years.

Wetness Class 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 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 and 90 days in most years.

Wetness Class IV

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

Wetness Class V

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

Wetness Class VI

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

Notes: The number of days specified is not necessarily a continuous period.

'In most years' is defined as more than 10 out of 20 years.

Source: Hodgson, J M (Ed) (1997) Soil Survey Field Handbook. Soil Survey Technical Monograph No 5, SSLRC, Cranfield.

APPENDIX III

ABBREVIATIONS AND TERMS USED IN SURVEY DATA

Soil pit and auger boring information collected during ALC survey is held on a computer database and is reproduced in this report. Terms used and abbreviations are set out below. These conform to definitions contained in the Soil Survey Field Handbook (Hodgson, 1997).

1. Terms used on computer database, in order of occurrence.

GRID REF: National 100 km grid square and 8 figure grid reference.

LAND USE: At the time of survey

WHT:	Wheat	**SBT:**	Sugar Beet	**HTH:**	Heathland
BAR:	Barley	**BRA:**	Brassicas	**BOG:**	Bog or Marsh
OAT:	Oats	**FCD:**	Fodder Crops	**DCW:**	Deciduous Wood
CER:	Cereals	**FRT:**	Soft and Top Fruit	**CFW:**	Coniferous Woodland
MZE:	Maize	**HRT:**	Horticultural Crops	**PLO:**	Ploughed
OSR:	Oilseed Rape	**LEY:**	Ley Grass	**FLW:**	Fallow (inc. Set aside)
POT:	Potatoes	**PGR:**	Permanent Pasture	**SAS:**	Set Aside (where known)
LIN:	Linseed	**RGR:**	Rough Grazing	**OTH:**	Other
BEN:	Field Beans	**SCR:**	Scrub		

GRDNT: Gradient as estimated or measured by hand-held optical clinometer.

GLEY, SPL: Depth in centimetres to gleying or slowly permeable layer.

AP (WHEAT/POTS): Crop-adjusted available water capacity.

MB (WHEAT/POTS): Moisture Balance. (Crop adjusted AP - crop potential MD)

DRT: Best grade according to soil droughtiness.

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				

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				

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)

MOTTLE COL: Mottle colour using Munsell notation.

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%+

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.

PED. COL: Ped face colour using Munsell notation.

GLEY: If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.

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 or metamorphic rock		

Stone contents are given in % by volume for sizes >2cm, >6cm and total stone >2mm.

STRUCT: The degree of development, size and shape of soil peds are described using the following notation

Degree of development	**WA:**	Weakly developed Adherent	**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		

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

SUBS STR: Subsoil structural condition recorded for the purpose of calculating profile droughtiness: **G:** Good **M:** Moderate **P:** Poor

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

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

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

CALC: If the soil horizon is calcareous with naturally occurring calcium carbonate exceeding 1% a 'Y' will appear this column.

2. Additional terms and abbreviations used mainly in soil pit descriptions.

STONE ASSESSMENT:

VIS:	Visual	**S:**	Sieve	**D:**	Displacement

MOTTLE SIZE:

EF:	Extremely fine <1mm	**M:**	Medium 5-15mm
VF:	Very fine 1-2mm>	**C:**	Coarse >15mm
F:	Fine 2-5mm		

MOTTLE COLOUR: May be described by Munsell notation or as ochreous (OM) or grey (GM).

ROOT CHANNELS: In topsoil the presence of 'rusty root channels' should also be noted.

MANGANESE CONCRETIONS: Assessed by volume

N:	None		**M:**	Many	20-40%
F:	Few	<2%	**VM:**	Very Many	>40%
C:	Common	2-20%			

POROSITY:

P: Poor - less than 0.5% biopores at least 0.5mm in diameter
G: Good - more than 0.5% biopores at least 0.5mm in diameter

ROOT ABUNDANCE:

The number of roots per $100cm^2$:		Very Fine and Fine	Medium and Coarse
F:	Few	1-10	1 or 2
C:	Common	10.25	2 - 5
M:	Many	25-200	>5
A:	Abundant	>200	

ROOT SIZE

VF:	Very fine	<1mm	**M:**	Medium	2 - 5mm
F:	Fine	1-2mm	**C:**	Coarse	>5mm

HORIZON BOUNDARY DISTINCTNESS:

Sharp:	<0.5cm	**Gradual:**	6 - 13cm
Abrupt:	0.5 - 2.5cm	**Diffuse:**	>13cm
Clear:	2.5 - 6cm		

HORIZON BOUNDARY FORM: Smooth, wavy, irregular or broken.*
* See Soil Survey Field Handbook (Hodgson, 1997) for details.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Padstow	Pit 2 (Nr ASP 7)	1° NW	PGR/LEY	Av Rainfall: 873 mm ATO: 1574 day °C	Devonian Grey Slate
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 175 Climatic Grade: 1 Exposure Grade: 2	PSD SAMPLES TAKEN
41.97	2.10.97	SW 9073 7505	PB		TS 0-25 cm : Clay (S32: Z32 : C 36%)

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size,Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	15	HCL	10YR43	9%HR< 2 cm (s+d)	0	0	-	-	-	G	MVF	-	Abrupt Smooth
2	48	C	10YR44	1%> 2 cm (s) 27%<2 cm (s+d) 28% HR	0	0	MDFSAB	FR	G	G	C/FVF	-	Abrupt Wavy
3	80+	HCL	10YR54,56	55%> 2 cm (s) 23%< 2 cm (s+d) 78%ZR	0	0	Too stony	-	(M)	(G)	FVF	-	-

Profile Gleyed From: -

Slowly Permeable Horizon From: -

Wetness Class: I

Wetness Grade: 3a

Available Water Wheat: 109 mm

Potatoes: 99 mm

Moisture Deficit Wheat: 98 mm

Potatoes: 88 mm

Moisture Balance Wheat: +11 mm

Potatoes: + 11 mm

Droughtiness Grade: 2 (Calculated to 100 cm)

Final ALC Grade: 3a

Main Limiting Factor(s): Wk

Remarks: Borderline Grade 2 (Wk) based on TS 0-25 cm
Borderline Grade 3b (Wk) on FC Days.

SITE NAME	PROFILE NO.	SLOPE AND ASPECT	LAND USE		PARENT MATERIAL
Padstow	Pit 1 (ASP 29/26)	2° E	Cereal	Av Rainfall: 895 mm ATO: 1563 day °C	Devonian Grey Slate
JOB NO.	DATE	GRID REFERENCE	DESCRIBED BY	FC Days: 178 Climatic Grade: 1 Exposure Grade: 2	PSD SAMPLES TAKEN
41.97	2.10.97	SW 9104 7442	PB		TS 0-25 cm : Clay (S29: Z33 : C 38%)

Horizon No.	Lowest Av. Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness: Size,Type, and Field Method	Mottling Abundance, Contrast, Size and Colour	Mangan Concs	Structure: Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots: Abundance and Size	Calcium Carbonate Content	Horizon Boundary: Distinctness and form
1	23	C	10YR42	10%HR (vis)	0	-	-	-	-	G	CF,VF	-	Sharp Smooth
2	35	C	2.5Y53	10%HR (vis)	0	0	MDM.FSAB	FR	G	G	FVF	-	Abrupt Smooth
3	63	C	5Y73	40%ZR (vis)	MDMO 10YR56	F (staining on slate)	WKM PL* WKCSAB	FM	P	P (low)	FVF	-	Clear Wavy
4	80+	HCL	5Y72	80%ZR (vis)	CDMO 10YR58	C (staining)	Too stony	-	(M)	(G)	VFVF	-	

Profile Gleyed From: 35

Slowly Permeable Horizon From: 35-63 cm

Wetness Class: IV

Wetness Grade: 4

Available Water Wheat: 99 mm

Potatoes: 98 mm

Moisture Deficit Wheat: 98 mm

Potatoes: 88 mm

Moisture Balance Wheat: +1 mm

Potatoes: +10 mm

Droughtiness Grade: 3a (Calculated to 85 cm)

Final ALC Grade: 4

Main Limiting Factor(s): We

Remarks: H3 "platy" structure derived from bedding of slate parent material: WKCSAB to massive structure in patches.