Proposed Borrow Pit at Polegate, East Sussex

Statement of Physical Characteristics
August 1995

Resource Planning Team
Guildford Statutory Group
ADAS Reading

ADAS Reference: 4107/148/95
MAFF Reference: EL 41/01275
LUPU Commission: 02134

STATEMENT OF PHYSICAL CHARACTERISTICS

PROPOSED BORROW PIT AT POLEGATE, EAST SUSSEX

Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 37.3 ha of land at Polegate, East Sussex. The survey was carried out during August 1995.

2. The survey was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) Land Use Planning Unit, Reading in connection with a proposed borrow pit. This land is currently the subject of a planning application for clay extraction and a statement of physical characteristics has been prepared. This survey supersedes previous ALC surveys on this land.

3. The work was conducted by members of the Resource Planning Team in the Guildford Statutory Group in ADAS. 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. The soil resources on the site have also been described.

4. At the time of survey the land use on the site was linseed.

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. A map at a scale of 1:10,000 illustrates the soil resources found on the site.

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	% agricultural area
3b	37.0	99.2	100.0
Urban	0.2	0.5	
Non-Agricultural	0.1	0.3	
Total survey area	37.0		100.0
Total site area	37.3	100.0	

7. The fieldwork was conducted at an average density of one boring per hectare. A total of 39 borings and three soil pits were described. The survey work was undertaken during one of the driest summers on record. Consequently, the hard and dry subsoil conditions resulted in not all of the profiles being sampled to full auger depth (120 cm).

8. All of the land has been classified as Subgrade 3b, moderate quality, because of significant soil wetness and workability limitations. Heavy clay loam and heavy silty clay loam topsoils overlie clay and silty clay subsoils. The subsoils are slowly permeable and act to cause poor soil drainage conditions. The interaction between the heavy textured topsoils and impeded drainage with the comparatively wet local climatic regime (on a regional basis) acts to restrict the flexibility of cropping, stocking and cultivations. In addition, the flatter, lower-lying land in the south of the site is likely to be subject to flooding. This may have a detrimental effect on plant growth and yield, and may give rise to soil management problems.

Factors Influencing ALC Grade

Climate

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

10. 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).

Table 2: Climatic and altitude data

Factor	Units	Values
Grid reference	N/A	TQ 598 045
Altitude	m, AOD	10
Accumulated Temperature	day°C	1522
Average Annual Rainfall	mm	829
Field Capacity Days	days	174
Moisture Deficit, Wheat	mm	115
Moisture Deficit, Potatoes	mm	111

11. 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.

12. 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 (AT0, January to June), as a measure of the relative warmth of a locality.

13. The combination of rainfall and temperature at this site mean that there is no overall climatic limitation. Local climatic factors such as exposure and frost risk are not believed to adversely affect the site. The site is climatically Grade 1. However, climatic factors do interact with soil factors to influence soil wetness and droughtiness limitations. The proximity of the South Downs means that at this locality the average annual rainfall and field capacity days are comparatively high, for the south-east. Such factors will increase the likelihood of soil wetness limitations.

Site

14. The highest land occurs in the north of the site and lies at approximately 15 m AOD. The land then falls gently through gradients of 1-2° to lie at approximately 5 m AOD immediately to the north of the Willingdon and West Langney Sewer. The land in the south of the site is flat, and its low-lying nature and proximity to various water courses means that it is thus likely to be prone to flooding.

Geology and soils

15. The published geological information for the site (BGS, 1979) shows the entire site to be underlain by Weald Clay. Drift deposits of alluvium are shown to overlie the clay to the south of the Willingdon and West Langney Sewer.

16. The published soils information for the site (SSEW, 1983) shows most of the site as the Wickham 1 Association. These soils are described as 'slowly permeable seasonally waterlogged fine silty over clayey, fine loamy over clayey and clayey soils' (SSEW, 1983). Soils to the south of the Willingdon and West Langney Sewer are shown as the Newchurch 2 Association. These soils are described as 'deep stoneless mainly calcareous clayey soils. Groundwater controlled by ditches and pumps. Flat land. Risk of flooding in places' (SSEW, 1983). Soils on the site were found to be consistent with those of the Wickham 1 Association, with a risk of flooding to the south of the Willingdon and West Langney Sewer.

Agricultural Land Classification

17. 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, page 1.

18. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix III.

Subgrade 3b

19. All of the land classified as Subgrade 3b, moderate quality, is restricted by significant soil wetness and workability limitations, resulting from soils derived from the Weald Clay. To the south of the Willingdon and West Langney Sewer, topsoils comprise shallow non-calcareous heavy clay loams and heavy silty clay loams, which are possibly organic. These directly overlie clay or silty clay subsoils which are poorly structured and of plastic consistence (see footnote page 6). Pit 2, which represents such profiles, found these subsoils to be slowly permeable and poorly structured (strongly developed very coarse angular blocky peds of firm consistence). Given the local climatic regime this results in poor soil drainage

conditions, as indicated by gleying from the topsoil. Consequently, these profiles are assigned to Wetness Class IV (see Appendix II). The interaction between the heavy textured topsoils and poor soil drainage status with the relatively wet prevailing local climate means that this land is classified as Subgrade 3b. The land will be subject to significant restrictions on the flexibility of cropping, stocking and cultivations.

20. Land to the south of the Willingdon and West Langney Sewer is also likely to be prone to flooding due to its flat, low-lying nature and proximity to water courses. Flooding has a detrimental effect on crop growth and yield, and may give rise to soil management problems. It is possible that the risk of flooding could downgrade this land to Grade 4, poor quality. However, due to the lack of detailed site specific data (regarding the frequency and duration of flooding) the land has been retained in Subgrade 3b.

21. The slightly higher land on the site is also limited by soil wetness and workability. Although the topsoils and subsoils are of similar texture and colour to those south of the Willingdon and West Langney Sewer, the upper subsoils were drier and less plastic. From Pit 3, which represents such profiles, the upper subsoil was found to be slowly permeable and poorly structured (massive peds of very firm consistence). At approximately 55 cm depth, the pit passed into a plastic clay with similar structure to that found in Pit 2. This profile is also assigned to Wetness Class IV and consequently placed into Subgrade 3b.

22. Due to the very dry subsoil conditions at the time of survey some of the auger borings on the slightly higher land could not be penetrated below the topsoil. Consequently, Pit 1 was dug to assess subsoil conditions. The upper subsoil was found to comprise a heavily gleyed clay which due to the dry conditions could not be assessed for structural characteristics. However, the similarities in colour and texture between this upper subsoil and that of Pit 3 means that the soil peds are most likely to be massive. Consequently, it has been assumed that the upper subsoil of Pit 1 is both poorly structured and slowly permeable. At approximately 40 cm depth, Pit 1 passed into a slightly paler gleyed clay, which was also found to be slowly permeable and poorly structured (moderately developed coarse angular-blocky peds of firm consistence). At approximately 70 cm depth this profile passed into a plastic clay (strongly developed coarse angular-blocky peds). Due to gleying from the topsoil and slowly permeable clay from below the topsoil this profile is also assigned to Wetness Class IV, and is thus placed into Subgrade 3b.

Soil Resources

Soil Units : Consideration for Restoration

23. The following section describes the pattern of topsoils and subsoil resources on the site, and provides and illustration (see also attached plan) of the soil resources available for restoration is shown on the attached plan. Due to the natural variability of soils, the thickness and volumes of topsoil and subsoil units given below should be treated with caution. In general terms, all the available existing topsoil and subsoil resources should be retained for restoration purposes. When considering these details it is important to remember that the pits were sampled to a maximum depth of 120 cm during survey work. In some cases, soil resources will extend below this depth.

Table 3: Topsoil and Subsoil Resources

Resource	Mean thickness (cm)	Texture	Area	Volume (m^3)
Topsoil (Unit A)	25	hcl, hzcl	31.3	78 250
Topsoil (Unit B)	20	hcl, hzcl	5.7	11 400
Topsoil Total				89 650
Subsoil (Unit A1)	35	c	31.3	109 550
Subsoil (Unit A2)	60	c, zc	31.3	187 800
Subsoil (Unit B)	100	c, zc	5.7	57 000
Subsoil Total				354 350

Topsoil Unit A

24. This unit comprises an average thickness of 25 cm (a range of 25 to 30 cm) of heavy clay loam or heavy silty clay loam. The soil matrix colours of this unit are dark greyish brown (10YR 4/2), greyish brown (10YR 5/2) or brown (10YR 5/3). This unit is gleyed, with yellowish brown (10YR 5/6, 10YR 5/8) and grey (10YR 6/1) mottles. This topsoil unit is non-calcareous with stone contents ranging from 0-2 % total flints > 2 mm by volume.

Topsoil Unit B

25. This unit comprises an average thickness of 20 cm (a range of 15 to 20 cm) of heavy clay loam or heavy silty clay loam, which are possibly organic. The soil matrix colours of this unit are very dark grey (10YR 3/1) or very dark greyish brown (10YR 3/2). This unit is gleyed, with yellowish brown (10YR 5/6, 10YR 5/8) and strong brown (75YR 5/6) mottles. This topsoil unit is stoneless and non-calcareous.

Subsoil Unit A

26. Subsoil Unit A is split into two layers: Unit A1 is the upper subsoil of Unit A and Unit A2 is the lower subsoil.

27. Unit A1 comprises an average thickness of 35 cm (a range of 20 to 45 cm) of clay. The soil matrix colours of this unit are typically light brownish grey (10YR 6/2), greyish brown (10YR 5/2) or brown (10YR 5/3). Unit A1 is gleyed, with yellowish brown (10YR 5/6, 10YR 5/8), brownish yellow (10YR 6/8) and grey (10YR 6/1) or light grey (10YR 7/1) mottles.

28. Unit A1 is non-calcareous, stoneless and at the time of survey was very dry. This unit is poorly structured. Soil peds tend to be massive, and of firm or very firm consistence. However, as shown by Pit 1, this unit can also have moderately developed coarse angular blocky peds, also of very firm consistence. These structures, combined with low porosity, means that this unit is slowly permeable.

29. Unit A2 unit comprises an average thickness of 60 cm (a range of 50 to 75 cm) of clay or silty clay. The soil matrix colours of Unit A2 tend to be more grey than those of Unit A1. The colours are typically light brownish grey (10YR 6/2), greyish brown (10YR 5/2) or grey (10YR 6/1, 25Y 5/1, 25Y 6/1, 05Y 6/1). Unit A2 is gleyed, with yellowish brown (10YR 5/8), brownish yellow (10YR 6/8) and yellowish red (5YR 5/6) mottles.

30. Unit A2 is non-calcareous, stoneless and plastic[1]. This unit is poorly structured, and was found to have strongly developed coarse or very coarse angular blocky peds which are of firm or very firm consistence. These structures, combined with low porosity, means that this unit is slowly permeable.

Subsoil Unit B

31. Unit B comprises an average thickness of 100 cm (a range of 100 to 105 cm) of clay or silty clay. The soil matrix colours of Unit B are greyish brown (25Y 5/2), light greyish brown (10YR 6/2), grey (25Y 5/1, 25Y 6/1, 10YR 6/1) or greenish grey (5GY 5/1). This unit is gleyed, with yellowish brown (10YR 5/8), brownish yellow (10YR 6/8) and light grey (10YR 7/1) mottles.

32. Unit B is non-calcareous, stoneless and plastic throughout. This unit is poorly structured, and all subsoils were found to have strongly developed very coarse angular blocky peds which are of firm consistence. These structures, combined with low porosity, results in poorly drained soil profiles.

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[1] A plastic soil is defined as ' a soil capable of being moulded or deformed continuously and permanently, by relatively moderate pressure, into various shapes' (Brady, 1974).

SOURCES OF REFERENCE

Brady, N (1974) *The Nature and Properties of Soils.*
Collier Macmillan: London

British Geological Survey (1979) *Sheet No. 319, Lewes, 1:50,000 Series (solid and drift).*
BGS: London.

Ministry of Agriculture, Fisheries and Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.*
MAFF: London.

Met. Office (1989) *Climatological Data for Agricultural Land Classification.*
Met. Office: Bracknell.

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

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.

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religous buildings, cemetries. 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

SOIL WETNESS CLASSIFICATION

Definitions of Soil Wetness Classes

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.

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.

Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

[1] The number of days is not necessarily a continuous period.
[2] 'In most years' is defined as more than 10 out of 20 years.

APPENDIX III

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	**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 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

SOIL PIT DESCRIPTION

Site Name : POLEGATE,PROP BORROW PIT Pit Number : 1P

Grid Reference: TQ60200420 Average Annual Rainfall : 829 mm
Accumulated Temperature : 1522 degree days
Field Capacity Level : 174 days
Land Use : Linseed
Slope and Aspect : 01 degrees S

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	HZCL	10YR42 52	0	2	HR	C				
25- 40	C	10YR62 53	0	0		C			P	
40- 68	C	10YR62 00	0	0		M	MDCAB	FM	P	
68-120	C	25Y 51 00	0	0		M	STCAB	FM	P	

Wetness Grade : 3B Wetness Class : IV
Gleying : 0 cm
SPL : 25 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 : POLEGATE,PROP BORROW PIT Pit Number : 2P

Grid Reference: TQ60000410
Average Annual Rainfall : 829 mm
Accumulated Temperature : 1522 degree days
Field Capacity Level : 174 days
Land Use : Linseed
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 20	HZCL	10YR32 00	0	0		C				
20- 70	C	25Y 52 00	0	0		M	STVCAB	FM	P	
70-120	C	25Y 52 51	0	0		M	STVCAB	FM	P	

Wetness Grade : 3B
Wetness Class : IV
Gleying : 0 cm
SPL : 20 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 : POLEGATE,PROP BORROW PIT Pit Number : 3P

Grid Reference: TQ59980448 Average Annual Rainfall : 829 mm
Accumulated Temperature : 1522 degree days
Field Capacity Level : 174 days
Land Use : Linseed
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 25	HZCL	10YR42 00	0	2	HR	C				
25- 55	C	10YR62 00	0	0		M	MASSIV	VM	P	
55-120	ZC	05Y 61 00	0	0		M	STVCAB	VM	P	

Wetness Grade : 3B Wetness Class : IV
Gleying : 0 cm
SPL : 25 cm

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

FINAL ALC GRADE : 3B
MAIN LIMITATION : Wetness

MPLE D.	GRID REF	USE	ASPECT	GRDNT	--WETNESS-- GLEY	SPL	CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	TQ59700460	LIN			0	25	4	3B		0		0					WE	3B	
1P	TQ60200420	LIN	S	01	0	25	4	3B		0		0					WE	3B	Horizon 2 dry
2	TQ59600450	LIN			0	35	4	3B		0		0					WE	3B	
2P	TQ60000410	LIN			0	20	4	3B		0		0					WE	3B	Plastic 70
3	TQ59700450	LIN			0	27	4	3B		0		0					WE	3B	
3P	TQ59980448	LIN			0	25	4	3B		0		0					WE	3B	Plastic 55
4	TQ59800450	LIN			0	25	4	3B		0		0					WE	3B	
5	TQ59900450	LIN			0	30	4	3B		0		0					WE	3B	
6	TQ60000450	LIN	S	01	0	25	4	3B		0		0					WE	3B	Plastic 25
8	TQ59600440	LIN			0	20	4	3B		0		0					WE	3B	
9	TQ59700440	LIN			0	25	4	3B		0		0					WE	3B	
10	TQ59800440	LIN			25	25	4	3B		0		0					WE	3B	
11	TQ59900440	LIN			0	25	4	3B		0		0					WE	3B	
12	TQ60000440	LIN	S	01	0	40	4	3B		0		0					WE	3B	Sandy 0-60 cm
13	TQ60100440	LIN	S	01	0	25	4	3B		0		0					WE	3B	
14	TQ60200440	LIN	SW	02			1	1	064	-51	064	-47	4				DR	3B	Imp40 Q distbd
15	TQ59700430	LIN	S	01	0	25	4	3B		0		0					WE	3B	Plastic 25
16	TQ59800430	LIN			0	25	4	3B		0		0					WE	3B	
17	TQ59900430	LIN			0					0		0					WE	3B	Imp30dry Re1P
18	TQ60000430	LIN	S	01	0	45	4	3B		0		0					WE	3B	
19	TQ60100430	LIN			0					0		0					WE	3B	Imp25dry Re1P
20	TQ60200430	LIN			0					0		0					WE	3B	Imp25dry Re1P
21	TQ60300430	LIN			0	25	4	3B		0		0					WE	3B	Imp60 dry
22	TQ60400430	LIN			0	25	4	3B		0		0					WE	3B	Imp40 dry
23	TQ59800420	LIN	SW	02	0	25	4	3B		0		0					WE	3B	
24	TQ59900420	LIN			0	20	4	3B		0		0					WE	3B	
25	TQ60000420	LIN			0	40	4	3B		0		0					WE	3B	
26	TQ60100420	LIN			0	25	4	3B		0		0					WE	3B	
27	TQ60200420	LIN			0					0		0					WE	3B	Imp30dry Re1P
28	TQ60300420	LIN	S	01	0	25	4	3B		0		0					WE	3B	Imp60 dry
29	TQ60400420	LIN	S	01	0					0		0					WE	3B	Imp25 dry Re 1
30	TQ60000410	LIN			0	20	4	3B		0		0					WE	3B	Plastic 20
31	TQ60100410	LIN			0	25	4	3B		0		0					WE	3B	
32	TQ60200410	LIN			0	27	4	3B		0		0					WE	3B	
33	TQ60300410	LIN			0	20	4	3B		0		0					WE	3B	
34	TQ60400410	LIN			0	20	4	3B		0		0					WE	3B	
35	TQ59800400	LIN			0	20	4	3B		0		0					WE	3B	Plastic 20
36	TQ59900400	LIN			15		4	3B		0		0					WE	3B	
37	TQ60000400	LIN			0	20	4	3B		0		0					WE	3B	Plastic 70
38	TQ60100400	LIN			0	20	4	3B		0		0					WE	3B	Plastic 20
39	TQ60300400	LIN			0	20	4	3B		0		0					WE	3B	
40	TQ59900390	LIN			0	20	4	3B		0		0					WE	3B	Plastic 20

AMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
1	0-25	hzcl	10YR52 42	10YR58 61	C			Y	0	0		0						
	25-70	c	10YR52 00	10YR68 71	M			Y	0	0		0		P			Y	
	70-120	c	10YR61 52	05YR56 00	M			Y	0	0		0		P			Y	
1P	0-25	hzcl	10YR42 52	10YR58 61	C			Y	0	0	HR	2						
	25-40	c	10YR62 53	10YR58 61	C			Y	0	0		0		P	Y		Y	Q massive
	40-68	c	10YR62 00	10YR68 71	M			Y	0	0		0	MDCAB FM	P	Y		Y	
	68-120	c	25Y 51 00	05YR56 00	M		00MN00 00	Y	0	0		0	STCAB FM	P	Y		Y	
2	0-25	hzcl	10YR42 00	10YR56 00	C			Y	0	0		0						
	25-35	hzcl	10YR52 00	10YR58 61	C			Y	0	0		0		M				Q spl
	35-70	c	10YR52 53	10YR68 00	M			Y	0	0		0		P			Y	
	70-120	zc	10YR61 00	10YR68 00	M			Y	0	0		0		P			Y	
2P	0-20	hzcl	10YR32 00	75YR56 00	C			Y	0	0		0						
	20-70	c	25Y 52 00	10YR58 00	M			Y	0	0		0	STVCAB FM	P	Y		Y	
	70-120	c	25Y 52 51	10YR58 00	M			Y	0	0		0	STVCAB FM	P	Y		Y	
3	0-27	hzcl	10YR42 00	10YR58 00	C			Y	0	0		0						
	27-45	c	10YR53 00	10YR58 00	C		00MN00 00	Y	0	0		0		P			Y	
	45-120	c	10YR52 00	10YR58 71	M			Y	0	0		0		P			Y	
3P	0-25	hzcl	10YR42 00	10YR58 00	C			Y	0	0	HR	2						
	25-55	c	10YR62 00	10YR68 61	M		00MN00 00	Y	0	0		0	MASSIV VM	P	Y		Y	
	55-120	zc	05Y 61 00	05YR56 00	M		00MN00 00	Y	0	0		0	STVCAB VM	P	Y		Y	
4	0-25	mzcl	10YR42 52	10YR58 61	C			Y	0	0	HR	2						
	25-40	c	10YR52 00	10YR68 00	C			Y	0	0		0		P			Y	
	40-65	c	75YR52 00	05YR56 00	C			Y	0	0		0		P			Y	
	65-80	c	75YR52 00	05YR56 00	M		00MN00 00	Y	0	0		0		P			Y	
	80-120	c	75YR52 00	05YR56 00	C			Y	0	0		0		P			Y	
5	0-30	hzcl	10YR52 53	10YR58 61	C			Y	0	0	HR	2						
	30-65	c	25Y 72 00	10YR68 00	M			Y	0	0		0		P			Y	
	65-120	zc	10YR61 00	10YR68 00	M			Y	0	0		0		P			Y	
6	0-25	hzcl	10YR53 00	10YR56 00	M			Y	0	0	HR	2						
	25-55	zc	25Y 61 00	10YR68 58	M			Y	0	0		0		P			Y	
	55-120	zc	05Y 61 00	05YR56 00	M			Y	0	0		0		P			Y	
8	0-20	hzcl	10YR42 00	10YR58 61	C			Y	0	0		0						
	20-40	c	10YR52 00	10YR58 61	C			Y	0	0		0		P			Y	
	40-120	c	10YR61 00	10YR68 00	M			Y	0	0		0		P			Y	
9	0-25	hzcl	10YR42 00	10YR58 61	C			Y	0	0		0						
	25-50	c	10YR52 00	10YR58 61	C			Y	0	0		0		P			Y	
	50-120	c	10YR61 00	10YR68 00	M			Y	0	0		0		P			Y	

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	
10	0-25	hzcl	10YR52 00						0	0	HR	2							
	25-70	c	10YR52 00	10YR68 00	M			Y	0	0		0		P			Y		
	70-120	c	10YR61 52	10YR68 00	M			Y	0	0		0		P			Y		
11	0-25	hzcl	10YR42 00	10YR58 61	C			Y	0	0	HR	2							
	25-80	c	10YR62 00	10YR68 71	M			Y	0	0		0		P			Y		
	80-120	zc	10YR61 00	10YR68 00	M			Y	0	0		0		P			Y		
12	0-25	hcl	10YR42 00	10YR56 00	C			Y	0	0	HR	2							
	25-40	scl	10YR53 00	10YR56 00	M			Y	0	0		0		M					
	40-60	c	25Y 61 53	10YR56 00	M			Y	0	0		0		P			Y		
	60-120	zc	05Y 61 00	10YR68 58	M			Y	0	0		0		P			Y		
13	0-25	hzcl	10YR42 00	10YR56 00	C			Y	0	0	HR	2							
	25-60	c	10YR62 53	10YR58 00	M			Y	0	0		0		P			Y		
	60-120	c	10YR62 52	10YR58 00	M			Y	0	0		0		P			Y		
14	0-25	mcl	10YR43 00						1	0	HR	5							
	25-40	msl	10YR43 00						0	0	HR	5		M					
15	0-25	c	25Y 52 00	75YR58 00	M			Y	0	0		0							
	25-55	zc	25Y 62 00	75YR58 00	M			Y	0	0		0		P			Y		
	55-120	zc	25Y 61 00	75YR68 58	M			Y	0	0		0		P			Y		
16	0-25	hzcl	10YR42 52	10YR58 61	C			Y	0	0		0							
	25-45	c	10YR52 00	10YR68 00	C			Y	0	0		0		P			Y		
	45-120	c	10YR53 52	10YR68 00	M		00MN00 00	Y	0	0		0		P			Y		
17	0-30	mzcl	10YR42 00	10YR58 00	C			Y	0	0		0							
18	0-25	mzcl	10YR42 00	10YR56 00	C			Y	0	0	HR	2							
	25-45	hcl	10YR53 42	10YR58 00	M		00MN00 00	Y	0	0		0		M					Q spl
	45-60	c	10YR62 53	10YR58 00	M		00MN00 00	Y	0	0		0		P			Y		borderline hcl
	60-120	c	10YR62 53	10YR58 00	M		00MN00 00	Y	0	0		0		P			Y		
19	0-25	hzcl	10YR42 00	10YR56 00	C			Y	0	0	HR	2							
20	0-25	hzcl	10YR42 00	10YR56 00	C			Y	1	0	HR	5							
21	0-25	hzcl	10YR53 00	10YR56 00	C			Y	0	0		0							
	25-60	c	10YR62 53	10YR56 00	M		00MN00 00	Y	0	0		0		P			Y		
22	0-25	hcl	10YR53 00	10YR56 00	C		00MN00 00	Y	0	0		0							
	25-40	c	10YR62 53	10YR58 00	M		00MN00 00	Y	0	0		0		P			Y		
23	0-25	hzcl	10YR42 00	10YR58 00	M			Y	0	0	HR	2							
	25-55	c	25Y 62 63	10YR58 00	M		00MN00 00	Y	0	0		0		P			Y		
	55-120	zc	25Y 62 00	10YR58 00	M		00MN00 00	Y	0	0		0		P			Y		

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	CALC
24	0-20	hzcl	10YR52 00	10YR58 61	C			Y	0	0		0						
	20-50	c	10YR52 00	10YR58 61	C		00MN00 00	Y	0	0		0		P		Y		
	50-120	c	10YR62 00	10YR68 71	M			Y	0	0		0		P		Y		
25	0-25	hzcl	10YR42 00	10YR58 61	C			Y	0	0	HR	2						
	25-40	hzcl	10YR52 00	10YR58 00	C			Y	0	0		0		M				Q spl
	40-50	c	10YR52 00	10YR58 61	C			Y	0	0		0		P		Y		
	50-120	c	10YR52 61	10YR68 00	M			Y	0	0		0		P		Y		
26	0-25	hzcl	10YR53 00	10YR56 00	C			Y	0	0	HR	2						
	25-55	c	10YR53 00	10YR68 56	M			Y	0	0		0		P		Y		
	55-120	c	25Y 61 00	05YR56 00	M			Y	0	0		0		P		Y		
27	0-30	hzcl	10YR42 00	10YR56 00	C			Y	0	0	HR	2						
28	0-25	hcl	10YR53 00	10YR56 00	C			Y	0	0		0						
	25-65	c	10YR62 53	10YR58 61	M		00MN00 00	Y	0	0		0		P		Y		
29	0-25	hcl	10YR53 00	10YR56 00	C			Y	0	0	HR	2						
30	0-20	hzcl	10YR32 00	10YR58 00	M			Y	0	0		0						
	20-70	zc	25Y 51 00	10YR58 00	M			Y	0	0		0		P		Y		
	70-120	zc	25Y 52 00	10YR58 00	M			Y	0	0		0		P		Y		
31	0-25	hzcl	10YR42 00	10YR58 61	C			Y	0	0		0						
	25-45	c	10YR52 00	10YR58 61	C			Y	0	0		0		P		Y		
	45-120	c	10YR62 00	10YR68 71	M			Y	0	0		0		P		Y		
32	0-27	hzcl	10YR42 52	10YR58 61	C			Y	0	0		0						
	27-60	c	10YR53 42	10YR58 00	C		00MN00 00	Y	0	0		0		P		Y		
	60-120	c	10YR62 00	10YR68 71	M			Y	0	0		0		P		Y		
33	0-20	hzcl	10YR42 00	10YR58 00	C			Y	0	0		0						
	20-50	c	10YR62 00	10YR68 71	M			Y	0	0		0		P		Y		
	50-120	c	10YR62 61	05YR56 00	M			Y	0	0		0		P		Y		
34	0-20	hzcl	10YR42 00	10YR58 61	C			Y	0	0	HR	2						
	20-70	c	10YR62 00	10YR68 71	M			Y	0	0		0		P		Y		
	70-120	zc	10YR61 00	10YR68 00	M			Y	0	0		0		P		Y		
35	0-20	hzcl	10YR32 00	10YR58 00	M			Y	0	0		0						
	20-120	zc	25Y 61 00	10YR58 00	M			Y	0	0		0		P		Y		
36	0-15	hcl	10YR31 00	10YR56 00	C			Y	0	0		0						
	15-40	c	10YR61 00	10YR68 00	C			Y	0	0		0		P				
	40-120	c	05GY51 00	10YR68 00	M			Y	0	0		0		P				
37	0-20	hcl	10YR31 00	10YR58 00	C			Y	0	0		0						
	20-70	c	05Y 51 00	10YR68 00	M			Y	0	0		0		P		Y		
	70-120	c	05Y 51 00	10YR68 66	M			Y	0	0		0		P		Y		

SAMPLE	DEPTH	TEXTURE	COLOUR	----MOTTLES----- COL	ABUN	CONT	PED COL.	GLEY	----STONES---- >2	>6	LITH	TOT	STRUCT/ CONSIST	SUBS STR	POR	IMP	SPL	CALC
38	0-20	zc	10YR32 00	10YR58 00	M			Y	0	0		0						
	20-70	zc	25Y 51 00	10YR58 00	M			Y	0	0		0		P			Y	
	70-120	zc	25Y 52 00	10YR58 00	M			Y	0	0		0		P			Y	
39	0-20	hzcl	10YR42 00	10YR58 00	C			Y	0	0		0						
	20-90	c	10YR62 00	10YR68 71	C		00MN00 00	Y	0	0		0		P			Y	
	90-120	c	10YR62 00	10YR68 71	M			Y	0	0		0		P			Y	
40	0-20	hzcl	10YR31 00	10YR58 00	C			Y	0	0		0						
	20-120	c	05Y 61 00	10YR68 00	M			Y	0	0		0		P			Y	