

# ANCIENT MONUMENTS LABORATORY

## REPORT

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Soil Report on Culver St., Colchester

R I Macphail, March 1984

During the autumn (1982) excavation of the Roman and Prehistoric levels of Culver St (excavator, Nick Smith, Colchester Archaeological Trust Ltd), possible cover loam material was found overlying the local, probable, outwash sands parent material. The site occurs in the centre of the town, near the top of the hill. Roman levels (157) overlie this cover loam material, which has Bronze Age features cut into it, and has Iron Age pottery in its upper levels (EL300). A number of questions were posed by the archaeologists concerning a) the nature of the cover loam, b) its pedogenic character, c) evidence for on-site agriculture and d) evidence for possible Bronze Age erosion.

Methods The soil profile was described and sampled for bulk and micropedological analyses - in the latter case undisturbed samples were removed from layers EL300 and EL350 in monolith tins. Large (5 x 5cm) thin sections were made, and grain size, pH, loss on ignition and organic carbon analyses using standard methods (Avery and Bascomb, 1974) were carried out (see acknowledgements). Thin sections were described according to Bullock, et al (in press).

Results The analytical data shows that levels EL300 and EL350 have an alkaline pH - presumably gained from calcareous materials (probably chiefly mortar) present in the overlying Roman layers. Grain size analysis suggests large increments of silt and small increments of clay, to the medium sandy "outwash" sands substrate, have produced the "cover loam" levels. Cover loam sensu stricto has been mapped in the immediate vicinity of Colchester (Catt, 1977, 1978), which actually occurs in an area of gleyic argillic brown earths (Wix Association) developed on glacio-fluvial drift (ie the 2C horizon material) over Eocene clay (Hodge, et al 1983). To the north and east of the city stagno gleyic paleo-argillic brown earths (Tendring Association) occur on drift material containing an aeolian component (Hodge, et al, 1983). At Culver St, it appears that cover loam has been mixed with the underlying sandy draft, probably during the late Devensian (Catt, 1979).

The organic matter analysis (Table 1) and the thin section studies (see Micromorphological Descriptions) suggest that levels EL300 and EL350 are lower subsoil horizons. They relate to soils which have tended to move downslope - disrupted coatings in EL350 indicate minor soil transport. A pedogenic history of probable argillic brown earth development in an upper (now eroded off) soil may be envisaged - as parent material laminae have concentrated clay deposition (illuviation) in the C2 horizon. The occurrence of limpid coatings succeeded by mainly dusty coatings suggest a woodland cover was followed by clearance and soil disturbance (Slager and van der Wetering, 1977; Courty and Federoff, 1982). Such disturbance could relate to the prehistoric truncation of the soil.

Mottles within the upper level (EL300) relate to ferro-manganiferous nodular formation around organic rich "old root channel". The fabric of the two horizons (C and C2 horizons) has a thin content of organic matter which may be associated with organic matter washed in from the Roman levels above. However, the "old root channels" are possibly earlier, correlating with the argillic brown soil formation.

Evidence for on-site agriculture is only circumstantial. No "plough pan" type fabric was present. However, the evident truncation of the profile and the indications of soil disturbance (ie dusty clay coatings) indicate a history of cultivation is a distinct possibility.

The presence of Iron Age artefacts and coarse charcoal in level EL300 suggest possible pre-Iron Age soil erosion, and probable minor soil loss prior to the Roman accumulations.

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Soil Profile Description: Culver St, Colchester

depth, cms.

(157: Roman Levels)

- C            Brown (7.5 YR4/4) moderately weak sandy loam; massive; few small  
0-20        pieces of pottery; very low in humus; many root traces; charcoal  
(EL300)     present; fine ferro-manganiferous coatings and mottles; gradual,  
             smooth boundary.
- C2            Brown (7.5YR5/4) weak sandy silt loam; massive; stone free; very  
20-48        low in humus; few root traces; very few fine ferro-manganiferous  
(EL350)     mottles; few very thin cutans, in narrow bands; abrupt, smooth  
             boundary.
- 2C            Strong brown (7.5YR5/8) weak, structureless medium sand; iron pans  
48 +        present.

Analytical Data

Table 1

% Grain Size

Horizon	pH	%loss on ignition	%Org. Carbon	Clay	VFZ.	MZ.	CZ.	Silt	VFS.	FS.	MS.	CS.	VCS.	Sand
C1 layer EL300	8.1,	0.65,	0.24,	<u>14</u> ,	2,	16,	11,	<u>29</u> ,	8,	10,	30,	6,	2,	<u>56</u>
C2 layer EL350	8.0,	0.62,	0.15,	<u>11</u> ,	4,	21,	1,	<u>44</u> ,	10,	9,	19,	5,	2,	<u>45</u>
2C	7.8,	0.45,	<b>ND</b> ,	<u>6</u> ,	2,	0,	0,	<u>2</u> ,	0,	26,	60,	3,	1,	<u>90</u>

Colchester Culver St., Micromorphological Description

C EL300: 0-20 cms

Structure: weak coarse blocky to massive; channel microstructure: Porosity: 10-15%; very dominant medium (450  $\mu$ m), interconnected, elongate channels; frequent medium  $\mu$ ughs: Mineral: Coarse/Fine: limit at 50  $\mu$ m (silt): Coarse/Fine: 60/40: Coarse very dominant moderately sorted fine and medium sand size quartz; few very coarse; subangular to subrounded; very few very coarse flint: very few, very fine to very coarse opaques and sharp-edge nodules: Fine: (very dominant angular to subangular silt-size; quartz; well sorted): a) very dominant very pale brown; b) with frequent very dark brown (PPL); a) very pale orange; and b) brown to black (RL); a) speckled; b) opaque: Organic: Coarse: very few charcoal fragments: Fine a) very few charcoal; common amorphous organic matter; cells; grass phytoliths present: b) charcoal as (a); dominant amorphous organic matter: Groundmass: a) grey "silasepic"; porphyric: b) weak "silasepic"; porphyric (compacted): Pedofeatures: Excrements: very few possible extremely thin, organic fragments or excrements: Textural: very rare, extremely thin (10  $\mu$ m) mineral grain, clay coatings: Depletion: possible depletion of most fabric of iron: Amorphous: frequent diffuse to clear ferro-manganiferous nodules (fabric b); including organic matter replacement: generally unpreferred:

C2 EL350: 20-48cms

Structure: medium subangular blocky and massive; channel microstructure: Porosity: 10-15%; as above: Mineral: Coarse/Fine: 50/50: Coarse (as above): Fine: a) very dominant as above (a): b) very few, as (b) above: c) frequent (common in lowest 2cms) pale brown (PPL); orange (RL); limpid; horizontally banded every 400  $\mu$ m: Organic: very rare charcoal; common amorphous organic matter. Groundmass: a) as (a) above; b) as (b) above: c) dark brownish; moderately high birefringence; moderately striated; porphyric; Pedofeatures: Textural: in fabric c), bands of finer material (micas present; see Fabric) here frequent clay coatings; in voids, channels and as plasma infills; very few limpid; dominant moderately dusty: Fabric: area of bands - fabric c) it is compacted; has better structure, contains more clay and micas than soils above includes fragments of oriented clay: Amorphous: area b) as above: c) dominant clear ferruginous impregnation of fine material; few ferro-manganiferous nodules.