

APPENDIX 10: ASSESSMENT OF CHARRED AND WATERLOGGED PLANT REMAINS, & CHARCOAL

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1. Introduction

1.1 Thirty seven bulk samples were recovered during the excavation, for environmental analysis. Sample sizes ranged from 10 to 30 litres.

1.2 The study of botanical material from this site will assist two of the fieldwork event aims:

- *to investigate patterns of natural resource exploitation.*
- *to determine the landscape setting of the site, its interaction with the contemporary local environment, and recover palaeo-economic indicators from features including ditches and the moat.*

2. Methodology

2.1 The samples were processed by flotation, using a Siraf flotation tank, with meshes of 0.25mm and 1.0mm to catch the flot and residue respectively. Flots which appeared to contain organic material, were stored in industrial methylated spirits, while the remaining flots, and all residues, were dried. The residues were fully sorted by eye for artefacts and biological material, except in a few cases, where substantial numbers of charred seeds and grains remained in the residue after processing. In these samples, the larger residue fraction (>2mm) was fully sorted, and the smaller retained for sorting at the post-assessment stage of the project. The flots were briefly scanned using a low-powered microscope, and the abundance, and general nature of plant macrofossils and any faunal remains were recorded, using the following scale for the number of charred items per sample:

+ = 1-10, ++ = 11-50, +++ = 51-100, ++++ = 101-1000, 1000+ = >1000.

Waterlogged plant remains were recorded as follows:

+ = present (0-5 items), ++ some (6-10 items), +++ many (11+).

2.2 Results were recorded on the MoLAS ORACLE CTRL botany database. Assessment data for the more productive samples is shown below.

2.3 Most flots were less than 100ml in volume, but where they exceeded this, 100ml sub-samples were assessed. All processed samples were included in the assessment, including four which had been assessed at the earlier evaluation stage.

3. Quantification

3.1 Charred material was recovered from most of the assessed samples. Charcoal was present in the majority, usually in the form of small fragments, although pieces large enough for species identification were recovered from six samples.

3.2 Charred cereal grains were also widespread, but in most cases there were fewer than ten grains per sample. In seven samples (from contexts [101], [166], [236], [237], [426], [589], and [601]) larger quantities, ranging from approximately 60 to over 500 grains, were found. Wheat (*Triticum* sp.), barley (*Hordeum sativum*), rye (*Secale cereale*) and oat (*Avena* sp.) grains were all seen, but wheat generally seemed to be the most abundant cereal.

3.3 Cereal chaff was very rare, although a few rachis fragments were seen in two samples. Relatively few charred weed seeds were seen in most samples, but all those with abundant grain also contained seeds of leguminous plants (Fabaceae), some of which were comparable to cultivated peas (*Pisum sativum*) and beans (*Vicia faba*), while others were smaller, and more likely to be wild vetches or vetchlings (*Vicia/Lathyrus* spp.). Several small weed seeds were also present in most of these samples. Occasional fragments of hazelnut shell were also preserved by charring.

3.4 Waterlogged preservation of plant remains was rare, but three samples (from contexts [191], [210], and [242]) included many seeds preserved in this way, as well as abundant remains of roots, bark, moss, bud scales, and in some cases alder (*Alnus glutinosa*) catkins and complete hazelnuts (*Corylus avellana*). The majority of seeds from these samples were from wetland plants such as alder, sedges (*Carex* spp.), (*Potamogeton* sp.), (*Ranunculus* subgenus *Batrachium*), and *Polygonum hydropiper*, although a few taxa from drier, disturbed ground were also present. One more sample (from [1050]) had quite abundant seeds, but their condition was poor, and a further three contained occasional waterlogged seeds and other plant remains.

3.5 The majority of samples included variable amounts of rootlets, presumably of modern origin, and the waterlogged assemblages contained occasional seeds, and in one case wheat rachis, of obviously recent vintage. It is therefore quite likely that some of the uncharred plant remains, and possibly also some of the charred material, are in fact intrusive. Further investigations into the relevant stratigraphy is necessary to assess the integrity of these deposits.

4. Provenance

- 4.1 Nearly half the samples came from pitfills, mostly of medieval date. The remaining samples were from a variety of features, including ditch and drain fills, hearths and ovens, and dumped deposits. Of those with spot-dating available, the majority of deposits were of 12th to 13th century date, with two peat layers dated to the mid 1st century, and an external dump dated to the 19th or 20th century. The seven best assemblages of charred material came exclusively from pitfills dating to the 12th to 13th centuries (groups 43, 64, 65, 96, and 216). The three samples with well-preserved waterlogged assemblages were recovered from a peat layer and two channel fills in the western part of the site (groups 52 and 53), while less well preserved remains came from a ditch fill and modern moat fill (groups 101 and 102). Other samples, from a variety of features contained too few surviving plant remains to contribute to the research objectives.
- 4.2 The condition of the charred material was generally poor, with many of the cereal grains distorted and/or fragmented. It may not be possible to identify all grains to species, but in the richer assemblages there should be sufficiently large numbers of identifiable grains. Charcoal was generally broken into fragments too small for species identification, but larger pieces were retrieved from a few samples. Waterlogged preservation was very poor in the majority of samples, but good in the three peat and channel samples mentioned above, and moderate in the ditch and moat fills. There is however, as mentioned above, a potential problem with distinguishing contemporary plant remains from intrusive material.

5. Conservation

- 5.1 The dried flots, and plant material from the residues, have no particular conservation requirements, but the flots stored in Industrial Methylated Spirit will need regular inspection and topping up of the fluid.

6. Comparative material

- 6.1 Medieval charred grain assemblages from the London area, for example those from St Mary Clerkenwell (Davis forthcoming) and 1 Poultry (Davis in prep), tend to be similar to those recovered at Parsonage Farm. Grains of free-threshing wheat were common on these sites, along with smaller quantities of barley, oats and rye. Charred seeds of wild and cultivated leguminous plants are also commonly found in this period, when they were grown for animal fodder as well as food for humans. Comparative examples from sites in Kent may also include assemblages from Darenth, Fawkham, Otford, Old Soar and Wilmington Manor.

7. Potential for further work

- 7.1 Despite the rather limited range of plant materials recovered from this site, there is potential for several of the project aims to be addressed. The seven large charred assemblages (identified in 4.1) of cereal grains, cultivated pulses, occasional other food plant remains, and weed seeds, will provide evidence on the diet of the medieval inhabitants. The very low incidence of cereal chaff in these samples suggests that this was a consumer site, importing cereals grown and processed elsewhere. This aspect of the economy can be investigated more thoroughly with full analysis of the samples. Identification of the arable weeds from these samples, and study of their habitat requirements and preferences, may provide evidence for the type of soils on which the cereals were grown, enabling suggestions to be made about their area of origin. Study of the spatial distribution of charred cereals, along with other artefactual and faunal waste materials, will contribute information on the organisation of the site.
- 7.2 The three samples with good waterlogged preservation will provide information about the palaeo-environment. This material has very little potential to contribute to questions on the economy of the site.
- 7.3 All the samples which produced identifiable charcoal were from medieval pitfills, and it is not thought that their identification would contribute to the research aims of the site.
- 7.4 Flots from the samples selected for analysis of charred remains will be sorted, and macrofossils from flots and residues identified and counted, using a low-powered microscope. Large flots will be sub-sampled, and sufficient sub-samples sorted to produce approximately 500 grains. The remaining flot will then be rapidly scanned for any new species not seen in the sub-samples. Where partially sorted residues containing charred remains have been retained, these too will be sub-sampled if necessary, and the same proportions of flot and residue sorted. Analysis of the results will include calculating the relative abundance of each cereal, and of grains, chaff and weed seeds, in each sample and within features and areas. The environmental preferences and soil requirements of weed species will also be investigated. Waterlogged seeds will also be grouped according to habitat preference.
- 7.5 The resources required to complete the recording and analysis of the ten selected samples, and preparation of a publication report, are as follows:
- Sorting and identification of charred remains from 7 flots and retained residues
 - sorting and identification of waterlogged remains from 3 samples
 - data entry
 - analysis of the assemblages, including comparison of wild and cultivated taxa within and between the samples, and interpretation of the assemblages with reference to the project aims.
 - preparation of publication report.

8. Bibliography

Davis A. forthcoming 'The plant remains.' In B. Sloane *Excavations at the Nunnery of St Mary de fonte clericorum, Clerkenwell, London* (MoLAS Monograph series).

Davis A. in prep 'The plant remains from post-Roman deposits at 1 Poultry'
(MoLAS Monograph series).

Table 21: Assessment of Charred and Uncharred Plant Remains, & Charcoal

Sample details				flot and residue details						residue		
Con-text	Con-text type	Samp no.	samp size (l)	flot size (ml)	grain	chaff	Charred seeds	Un-charred seeds	Charcoal	Comments	Size (ml)	% checked
101	Pit	1	20	100	++++	+	+++		1000+	Grain mostly wheat. Pulses + weeds. Some unsorted residue. Rootlets	1000ml	70%
166	Pit	8	20	10	+++		+++	+	1000+	Grain mostly wheat. Pulses + weeds. Few rootlets.	200ml	100%
183	Marsh deposit	11	30	250				++		Flot in IMS. Mostly rootlets. Many fine indet frags.	500ml	100%
184	Structural cut	4	20	350				+		Many roots, wood. Few hazelnut, alder catkins, weed seeds.	1000ml	100%
191	Ditch	5	15	400				+++		Flot & residue mainly plant material. Roots, moss etc. Some modern e.g. wheat rachis.	1500ml	100%
210	Ditch	6	20	200				+++		Flot & residue mainly plant material. Roots, moss etc. Some unsorted residue.	500ml	60%
236	Pit	16	20	30	++++		++	+	++++	Grain mostly wheat. Pulses + a few weeds. Some unsorted res. Rootlets, moss etc.	300ml	60%
237	Pit	13	30	50	+++	+	+++		++++	Grain mostly wheat. Pulses + a weeds. Few rootlets.	1000ml	100%
242	Marsh deposit	9	20	200				+++		Flot in IMS. Flot & residue mainly plant material. Roots, moss etc. Some unsorted res.	800ml	70%
253	Pit	23	30	20	++		+		1000+	c.10 grains, few pulses. Few rootlets.	1000ml	100%

sample details				flot and residue details						residue		
426	Pit	15	30	20	++++		++		1000+	Grain mostly wheat. Pulses + a few other	200ml	100%

										weeds. Few rootlets.		
589	Pit	22	30	20	++++		+++		1000+	Grain mostly wheat. Pulses + a few other weeds. Few rootlets.	500ml	100%
601	Pit	24	30	20	+++		++		1000+	c.60 grains. Pulses + a few other weeds. Few rootlets.	2500ml	100%
1049	Ditch	40	10	30	+			++	++	Flot mostly rootlets. Some uncharred weed seeds.	500ml	100%
1050	Ditch	41	20	50				+++		Flot in IMS. Poor condition (mould). Weed seeds, many rootlets.	700ml	80%