

Spong Hill, Norfolk - A Report on Trace Element
Analysis of soil samples from Two Graves

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It has been shown (Keeley et al, 1977) that the presence of a body stain or "silhouette" in a grave may be associated with high levels of manganese in the darkly-stained soil, representing an accumulation of this element in relation to concentrations in the surrounding soil and, also, expected levels in body tissue and bone. This work was carried out on samples from excavations at the multi-period site ofucking, Essex (summarised in Jones, 1975). When body stains were found in graves at a similar site (Spong Hill, Norfolk), where soils are also derived from sands and gravels, it was decided to carry out comparative analyses.

Excavations at the pagan Saxon cemetery site of Spong Hill, North Elmham (G.R. TF 983195), have been going on over a period of several years under the direction of Dr C. Hills. Both cremations and inhumations have been excavated and brief summaries of the results are available (Hills, 1975 and 1976).

RegulSamples were collected by the excavators from 2 graves, as instructed by Mr P Murphy (DOE general environmentalist for East Anglia, UEA, Norwich). Grave 42 was fairly simple and sample locations are shown in Figures 1 and 2; grave goods were present. Grave 40 was considerably more complex than 42. It consisted of a large wood-lined pit partly supported by topsoil or turves at each end (Murphy, 1977 pers. comm). Within this wooden box but to one side was a rich coffin burial - unfortunately this was not central and thus the sample columns missed the burial itself, as shown in Figures 3 and 4.

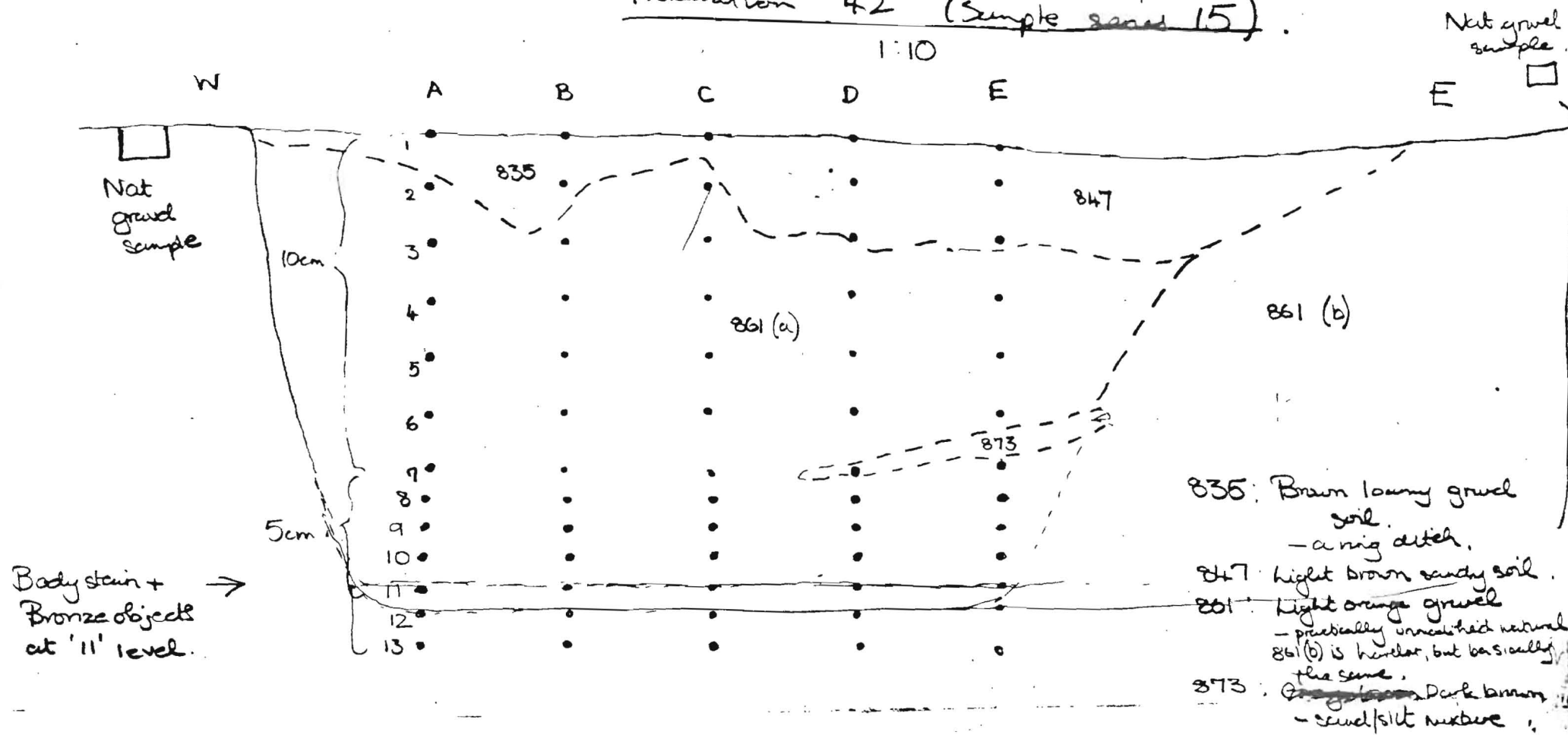
All the soil samples from Grave 40 and ten from Grave 42 were analysed by A. Saunders as part of an M.Sc. project and the details including methods used, are reported elsewhere (Saunders, 1978). Subsequently four samples from level 11 in Grave 42 and a sample of natural gravel were analysed for phosphorus, manganese and copper by X-ray ^{flu}phorescence at the University of East Anglia (by C K Winter, Environmental Sciences) on request of the author.

Results

Samples from Grave 40 were analysed by Saunders (1978) for Cobalt (Co), Copper (Cu), Iron (Fe), Manganese (Mn), Phosphorus (P), pH, moisture content and loss on ignition. Cobalt concentrations were variable but did not appear to be related to grave features. Very high copper concentrations at the base of the grave probably resulted from the presence of the grave goods, as would be expected. Iron concentrations showed little variation with depth; manganese tended to decrease with depth and levels were not obviously related to grave features. Phosphorus content was particularly high at C15 and could indicate the presence of an inhumation. pH, moisture content and loss on ignition showed little variation. The ten samples from Grave 42 which were analysed were from upper layers (1 and 6); consequently any variations in the parameters measured could not be related to the presence of an inhumation. In general, this exercise proved extremely unsatisfactory, partly due to non-coincidence of samples with expected body location and partly due to analytical difficulties (Saunders, 1978).

Subsequently 4 samples from level 11 in Grave 42 and a sample of natural gravel were analysed by XRF for P, Mn and Cu and the results are shown in Table 1.

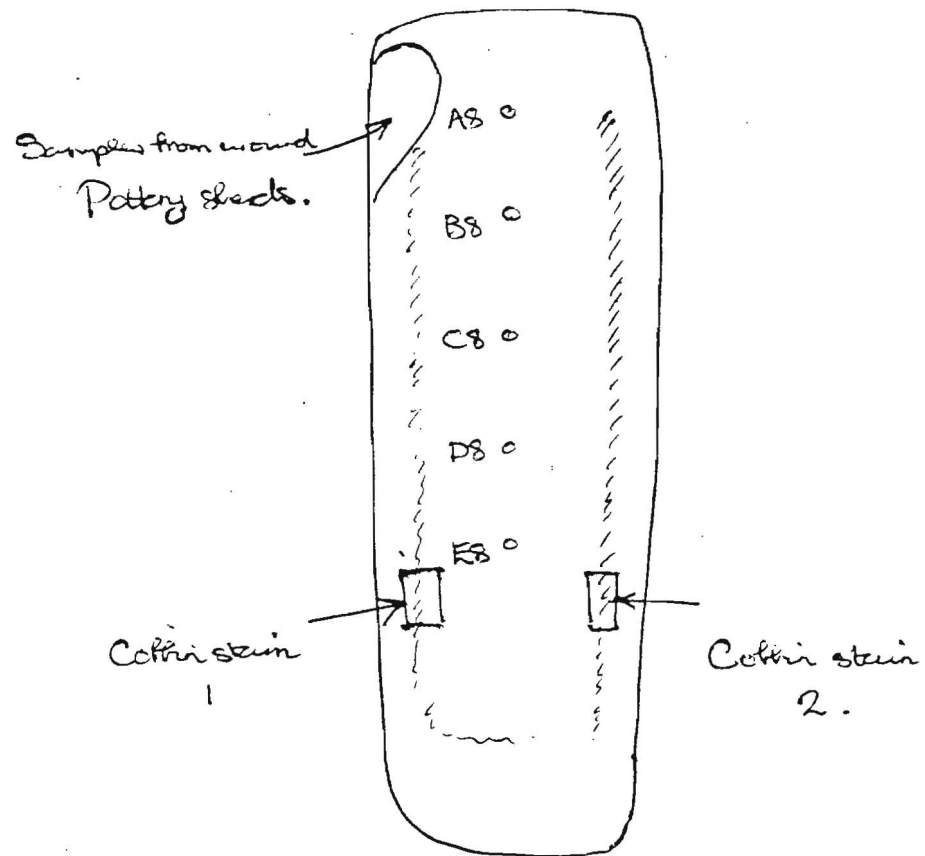
Investigation 42 (Sample series 15)
1:10



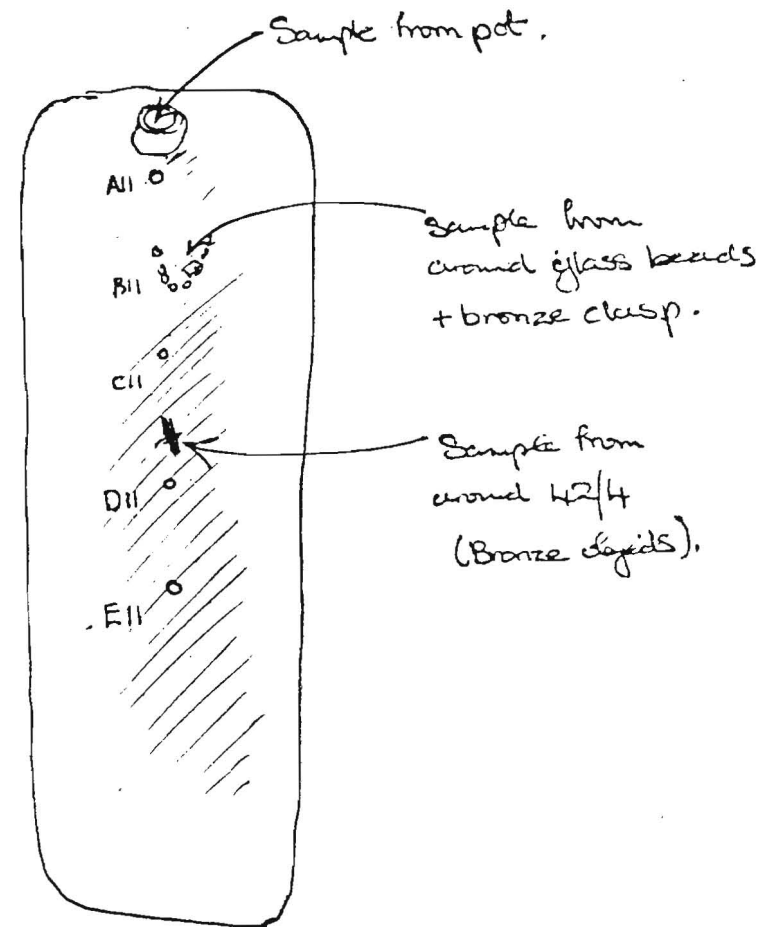
The soil is v. pebbly, so samples > 100g. were taken.

Figure 1.

Plans (Sketch). Internation 42.



Upper level.



Lower level.

Figure 2.

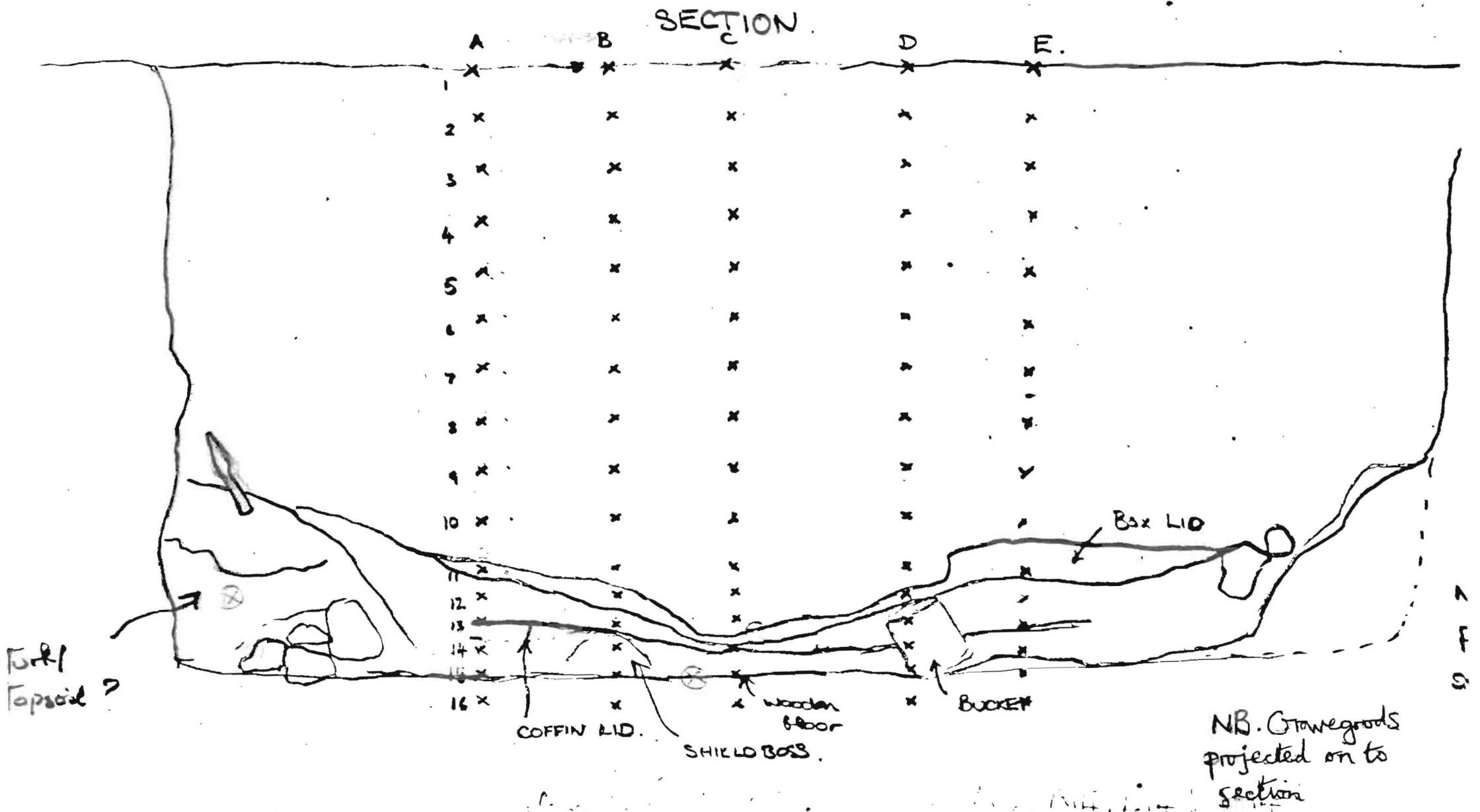


Figure 3.

Inhumation 40. 1:10

PLAN

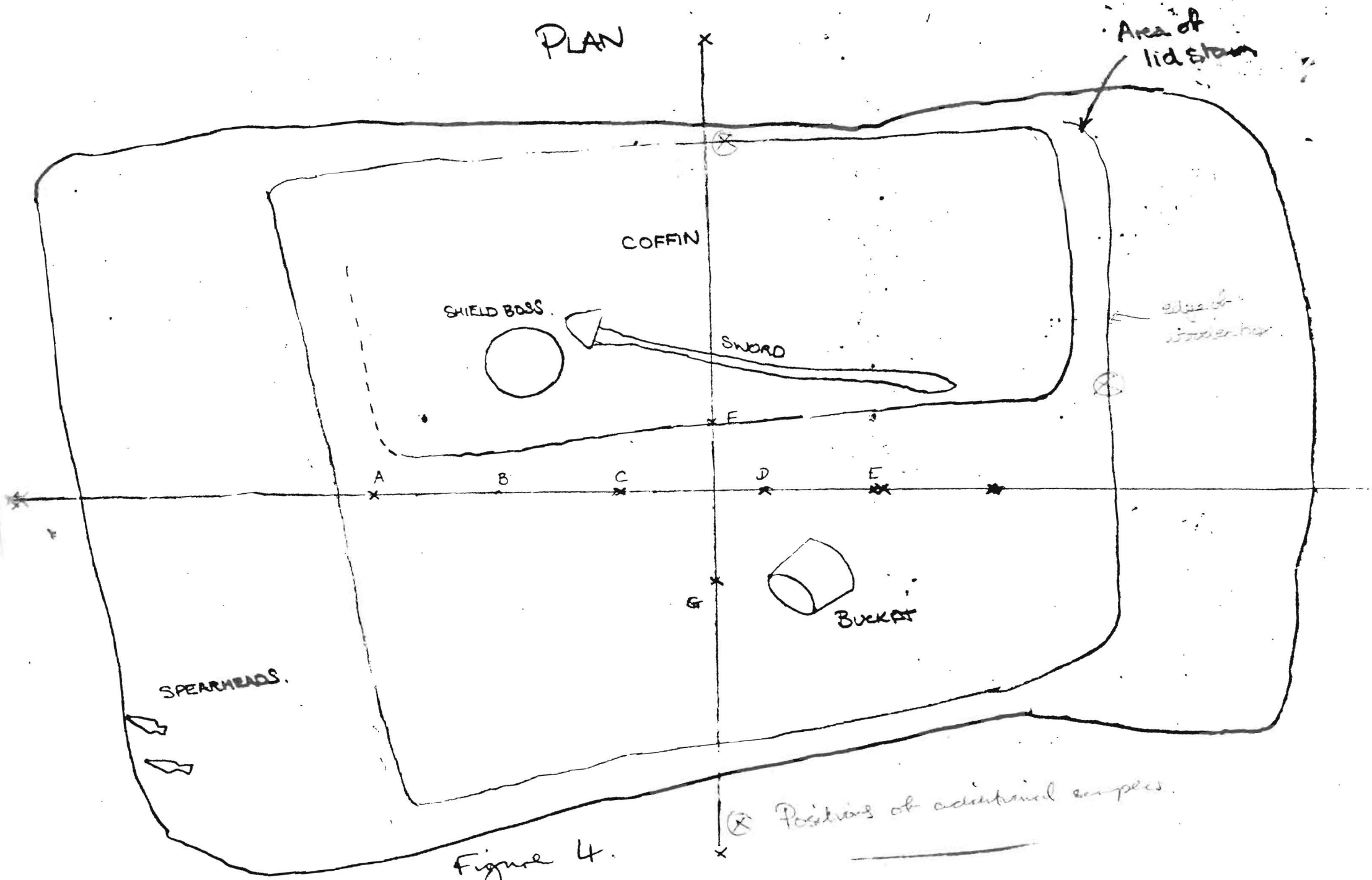


Figure 4.

Table 1

Sample	P	Mn	Cu
Natural gravel	12,941	34,320	3,421
B11	19,018	14,592	72,407
C11	16,092	17,136	12,680
D11	35,010	21,909	42,492
E11	14,137	15,061	5,040

N.B these results only show relative differences between samples not actual amounts of a given element.

Phosphorus levels in all samples from level 11 were higher than in the natural gravel; B, C and D would appear to be most likely associated with a body stain. Mn concentrations were lower than in the natural gravel and thus the Mn accumulation found at Mucking in body stains does not repeat itself here. In fact there seems to have been some loss of Mn from the system at this point. High Cu concentrations were no doubt associated with the presence of grave goods, as would be expected.

Conclusions

At Spong Hill the presence of inhumations appears to be indicated by higher levels of P than in the surrounding soil. It was confirmed that a body stain exists in Grave 42 and may exist in Grave 40, but this was less clear for reasons described previously. Mn accumulation in body stains was not found and Cu levels were completely dominated by the presence of grave goods. No further work will be undertaken on samples from Grave 40 but the full range of samples from Grave 42 will probably be investigated, as part of an ongoing research project on trace elements in bones in various states of preservation, sometime in the future.

References

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