

# **Report to the Supreme Council of Antiquities on archaeological fieldwork undertaken at Medinet el- Gurob, 13-28 September 2011**

*Abstract: This article presents a report on the September 2011 season of survey and excavation undertaken by the University of Liverpool at the site of Medinet el-Gurob in the Faiyum region. The principal tasks accomplished were surface collection and analysis of pottery, field-walking for small finds, as well as auger boring in order to gain a better understanding of the subsurface remains and the ancient landscape. The project also mapped and studied areas that had been subject to illicit excavation and looting during 2011.*

## 1. Introduction

The Gurob Project is a preliminary study of the urban and funerary remains at the 'harim town' of Mi-wer (Gurob) in the Faiyum region. The principal aims of the project are (1) to produce an accurate 1:1000 map of the site as a whole, combining GIS so as to allow our growing databases of ceramics, small finds and lithics to be mapped onto the visible surface features (2) to create more detailed plans of the main points of archaeological interest in the settlement and cemeteries, (3) to produce a basic modern corpus of pottery at the site, (4) to use satellite photographs, geophysical methods, core-drilling and surface examination to gain a better understanding of the original architecture and ancient activities, as well as the relationship between the site of Gurob and its landscape and environment and (5) to excavate selected areas in order to 'ground-proof' the geophysical survey and to supplement and clarify the information available from the survey.<sup>1</sup>

The September 2011 team consisted of sixteen members: Dr Ian Shaw (University of Liverpool, UK), Jan Picton (University College London), Ivor Pridden (University College London), Virpi Perunka (University of Helsinki), Sarah Doherty (University of Cardiff), Liz Jones (University College London), Anna Hodgkinson (University of Liverpool), Hannah Pethen (University of Liverpool), Dr Rachael Dann (University of Copenhagen), Dr Ole Herslund (University of Copenhagen), Dr Ibrahim Ibrahim (Faiyum University), Dr Morag Hunter (University of Cambridge), Ashraf el-Senussi (Curator of the Kom Aushim Museum, SCA), Kamal Helmy Quftawi, Omar Faroukh, and our SCA inspector Hala Abd el-Hamed.

I would like to thank the SCA Permanent Committee, Dr Ahmed Abd-el Aal (the director of the Faiyum branch of the SCA), Dr Mohammed Ismail in the SCA Documentation Centre, Cairo, and our inspector Hala Abd el-Hamed Hassan for their generous assistance and advice in our work at Gurob in September 2011. We are also grateful to our collaborator at Faiyum University, Dr Ibrahim Ibrahim, for his assistance both in the work on site and in the logistics of our accommodation in the Faiyum.

Our principal underlying goals in the 2011 season of survey and excavation at Gurob were not only to seek confirmation of the overall layout and chronology of the settlement area of the site but also to understand the nature of Gurob as a whole. We are also aiming to gain a better understanding of the duration and nature of settlement at the site, and its relationship with the surrounding funerary remains and landscape. The six basic strands of work at the site in 2011, described below, were therefore

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<sup>1</sup> Preliminary reports on the work so far accomplished between 2005 and 2010 have been published in the following articles: I. Shaw, 'Gurob: the key to unlocking an Egyptian harem?', *Current World Archaeology* 23 (June/July 2007), 12-19; I. Shaw, 'A royal harem town of the New Kingdom: new fieldwork at Medinet el-Gurob', *Queens of Egypt*, ed. C. Ziegler (Paris: Somogy Art Publishers, 2008), 104-115; I. Shaw, 'Seeking the Ramesside royal harem: new fieldwork at Medinet el-Gurob', *Ramesside Studies in Honour of Kenneth Kitchen*, ed. M. Collier and S. Snape (Bolton: Rutherford Press, 2011), 207-17.

mapping, topographical survey, pottery surface collection (in areas SP1, NC1 and WV1, see Fig.1), small finds collection, auger boring, and mapping and study of areas of illicit excavation (see red hatched areas and specifically Pits 21 and 23 in Fig.1).



*Fig.1: Satellite image of the site with superimposed plan of the settlement area and indications (red hatching) of the extent of illicit excavation in 2011, and looters' pits 21*

*and 23, which were studied in detail. Pottery surface collection took place in squares WV1, NP1 and NC1, which had been planned as excavation areas.*

## **2. Mapping (Liz Jones and Anna Hodgkinson)**

Some 170 pits produced through illegal digging in the concession area were digitally recorded during the September 2011 season (see rough preliminary indication with red hatching in Fig.1 above). One tomb (P022) was found to still contain a pottery coffin with burial inside. Due to unsafe conditions no attempt was made to recover this material which appears to have been previously disturbed. We will return to this feature during 2012 fieldwork. In the meantime the tomb pit was backfilled

In addition to recording the location of these disturbances we have categorised the pits by significance:

Category 1: a small scrape on the surface

Category 2: a larger, but not significant hole

Category 3: a tomb-sized hole, causing significant damage, but not actually being a tomb

Category 4: a robbed tomb, but no significant damage has been done to it

Category 5: a robbed tomb requiring attention.

This data has been uploaded to the site Geographic Information System (GIS), enabling us to monitor any future illegal activity if necessary. We were able to survey the more remote areas of the concession using Leica Zeno mobile mappers (see Fig. 2) loaned by UCL; these devices are portable state-of-the-art handheld GPS mappers that capture location and attribute data quickly and efficiently, using satellite technology to acquire location on the Earth in terms of latitude and longitude, with an accuracy of 1.5m. They capture data in formats that can easily be uploaded to the GIS and are very user-friendly.



*Fig.2: Anna Hodgkinson and Liz Jones using the Leica Zeno mobile mappers.*

We had planned to excavate three new 10x10m areas of the settlement area in 2011 (see NC1, SP1 and WV1 in Fig.1), but, in the temporary absence of excavation permission (due to security problems in the Faiyum as a whole), we undertook the same process of surface pottery collection as we had in past seasons. This surface collection will allow us to compare surface and subsurface patterns of pottery date and function. It was therefore the survey team's job to stake out the corners of these squares using the total station, then to use the coordinates of the corner points from a satellite image of the site and to find these points on the ground and mark them with pegs. Collection at these sites has now drawn to a close and the pottery has been processed (see section xx below). We also staked out markers for geological augur boreholes (see section xx) and trained the geologist in using one of the Leica Zeno mobile mappers to record her more remote boreholes.

We have also spent a great deal of time recording small finds across the site, again using the total station and mobile mappers. Particularly in the area north of the 2010 kiln excavation site, a high number of clay figurines have been recovered. In addition to these activities, we have been recording other archaeological features on the site, in particular a detailed plan of Pit 23, the robber trench located outside the south-western palace enclosure wall, cleaned and recorded by Sarah Doherty (see Fig.3). The archaeological material within this trench has enabled us to add valuable data to our site plan, fulfilling one of the project's main aims.



*Fig. 3: Part of the stratigraphic section in Pit 23 recorded by Sarah Doherty.*

Another key part of the surveyor's role on site is to check control points. These are stable points whose coordinates in the site grid are known to a satisfactory degree of accuracy and precision. At Gurob these take the form of iron pegs, sunk into cement. The coordinates for all our detail (topography, small finds, boreholes etc.) are derived from angle and distance measurements taken from these control points, usually by total station. Control points are crucial to our work, so it is important that we check that they have not moved and that their visibility within the site is not obstructed. Unfortunately, some of our cemented control points from the 2009 season had been dug out, so we installed three new control points at the periphery of the concession (Fig.4) – we hope that these will be sufficiently inconspicuous so as not to attract the attention of vandals, but still visible for us in future years.



*Fig.4: Kamal Helmy Quftawi cementing in ST16, one of the new iron control points.*

Each day after fieldwork, the data from the total station and mobile mappers was processed and uploaded to the site GIS. The GIS was originally created by Claire Malleson in 2006, and is now managed by Anna Hodgkinson. GIS is a powerful computing tool for storing, analysing and visualising spatial data and attributes of this data, and the maps have been produced using the site GIS.

### **3. Topographic survey (Hannah Pethen)**

The September 2011 season included the beginning of the first topographic survey of the site. So far a 500m<sup>2</sup> area has been covered and the coordinates and heights of 3464 points have been taken (see Fig.5). These points are typically 5m apart, although certain areas have been surveyed in greater detail to provide a more precise rendition interesting features. To date these more detailed areas include the 'ramp' on the eastern edge of the escarpment leading down to the cultivation and the remains of the eastern end of the northern building of the palace. As the survey continues, the area covered will be expanded and other areas of particular interest may be surveyed in more detail.

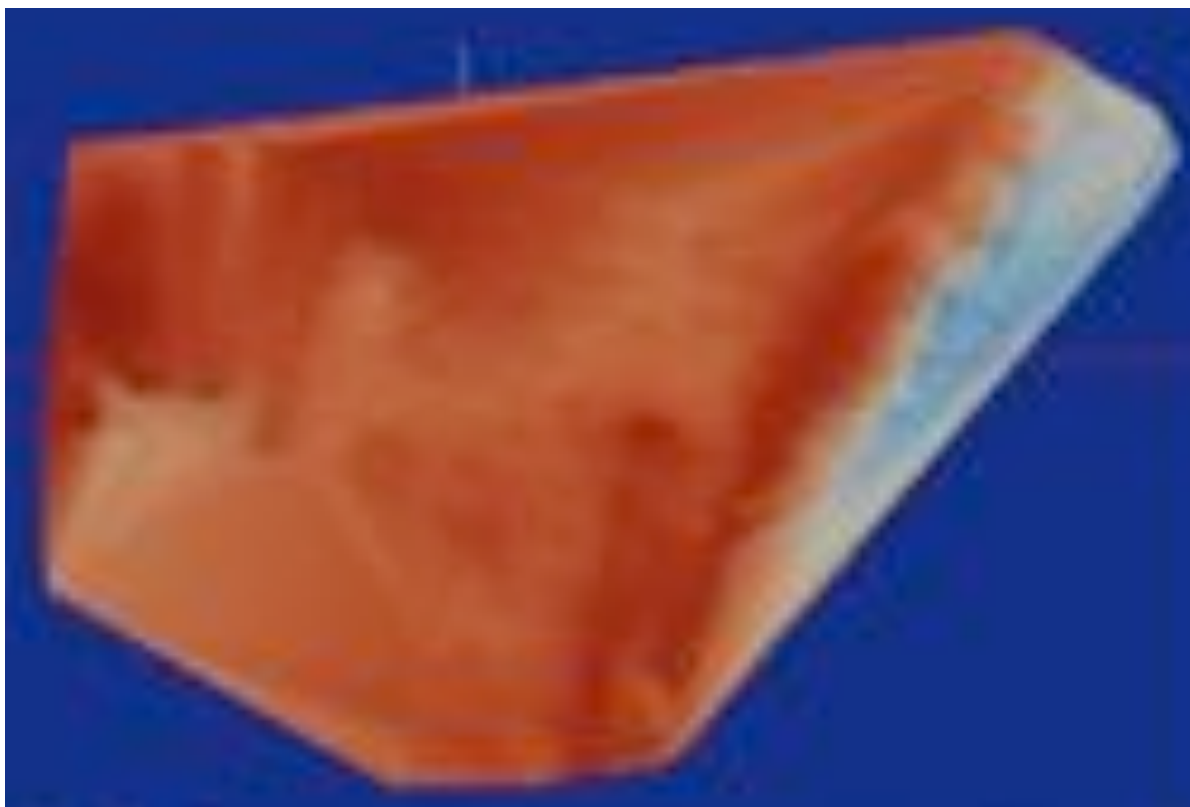


*Fig.5: The satellite image of the southern part of the site, showing the quantity of individual points taken at about halfway through the season.*

The aim of the topographic survey is to build a three-dimensional model of the topography of the site in GIS. The GIS uses an algorithm to interpolate the height of the ground between the individual points recorded in the survey, and so builds a model of the site. Later, information on the landscape around the site will be added to the model, which will also include the information on past ground levels and relict channels of the Bahr Yussef recorded during the drilling of geological boreholes around the site and across the area (see for instance Fig.?? below). The model can then be used to investigate the relationship between the modern landscape and the ancient environment.

Further topographic survey data will be taken during the final part of the season, but an interim interpolation of the current data shows promising results (see Fig.6).





*Fig.6: Interim interpolation of the current topographic survey data, covering a (darker areas are higher, and lighter areas lower).*

Like the earlier image of the surveyed area, this interpolation is orientated with north to the top. It was made using a triangulated irregular network (TIN) algorithm. Darker areas are higher and lighter areas lower, with the lowest areas in blue on the eastern part of the site adjacent to the cultivation. Despite some imperfections in the south-western, north-western and north-central parts of the image, where further survey is needed, the model clearly shows the key areas of the site. These include the lower area adjacent to the cultivation (to the east) and the ridge where Brunton and Engelbach recorded a structure known as the 'fort' and where kiln structures were excavated in 2010. A ramp (discussed in section 6 below) is located on the eastern side of the ridge and comprises a more graduated descent from the ridge to the lower area; the red line on the right of the image is pointing directly at it. The most visible archaeological feature is the eastern wall, north-east and south-east corners and part of the northern and southern walls of the northern palace building. This is visible in the centre of the model, just below a small mound.

#### **4. Pottery (Virpi Perunka, Ashraf el-Senussi, Sarah Doherty and Rachael Dann)**

This report uses the Vienna System in fabric classification.

During the 2011 season at Gurob we obtained pottery from the following areas of the site: SP1, NC1, WV1, P021, and P023.

***SP1 (area in the southern palace, where pottery was surface collected)***

The total amount of pottery from the area was about 56kg of sherds, of which roughly 50kg are Nile fabric sherds, thus indicating that the dominant pottery clays are made of Nile silt. Most sherds of the total c.56kg are non-diagnostics – the weight of diagnostic sherds is 4.5kg, which equals 115 sherds. The suggested dating for the pottery from the square is New Kingdom, and most of the pottery is of Egyptian origin except for six Canaanite sherds. Among the diagnostic sherds were Nile fabric bases from jars (e.g. four beer jar bases). The greatest number of diagnostics that can readily be grouped together derive from hemispherical bowls, of which there are 42 sherds. Typically our site is rich in amphorae and from this square in addition to the Canaanite amphorae sherds (mentioned above), both handles and rims of Egyptian amphorae were discovered.

***NC1 (area in the 'north city', where pottery was surface collected)***

The total amount of pottery from the area was about 31kg of sherds, of which roughly 28.5kg are Nile fabric sherds. Most sherds of the total c.31kg are non-diagnostics – the weight of diagnostic sherds is 3.2kg, which equals 103 sherds. The suggested dating for the pottery from the square is New Kingdom, and most of the pottery is of Egyptian origin except for four Canaanite sherds.

Among the diagnostic sherds were Nile fabric rims – these derive from 18 hemispherical bowls and there are also five bowls with inverted ledges, which are a characteristic New Kingdom bowl type. Also there were juglet rims, jar rims and a beer jar base. A total of 15 amphorae rims were discovered, as well as 20 handles made of the typical Egyptian amphorae fabric. In addition to the New Kingdom amphorae, one Ptolemaic amphora rim was recorded from this square.

***WV1 (area in the wadi to the south of the main palace enclosure, near the animal cemetery, where a workmen's village may have been located; surface pottery collected from here)***

The total amount of pottery from the area was about only 1kg of sherds, of which most are Nile fabric. The only diagnostic sherd was a modern flower pot rim.

***P021: illicitly excavated New Kingdom burial shaft; material from spoil heaps***

The pottery from this area was processed and recorded in a different way in comparison with other areas discussed in this section, as the nature of the location, and the probable origin are quite different to the other areas. Also, in terms of ceramic studies and also general archaeological interest, different kinds of questions were asked of this ceramic material; our main aim here was to get an idea of the date of the material as it would then pinpoint a possible date for the burial shaft in question. However, we obviously had to take into account that the spoil heap might include surface pottery too, and that this material might distort the overall chronological picture created by the

pottery from the tomb. In terms of ceramic studies the most interesting question was: how different are the vessel types from a tomb context in comparison to the other pottery from the site, i.e. settlement pottery?

About 500 sherds altogether were collected from the spoil heaps around the tomb shaft opening, and of these 500 sherds about 10% were diagnostic, i.e. roughly 50 sherds. In order to create a good record of what is likely to be funerary pottery, more than 30 diagnostic sherds were recorded and drawn. The suggested date for the burial on the basis of the preliminary evaluation of the tomb pottery is 19<sup>th</sup>-Dynasty, and a few indicative examples will be discussed below. As for the question of whether the funerary pottery corpus would consist of different types than the domestic pottery corpus; the answer is that the two corpuses are significantly different; the most common types of settlement pottery are so called table ware vessels (bowls, cups, dishes, plates), but these open forms are much less common in the funerary pottery corpus. The tomb pottery is instead made up of jars, bottles and other containers which would provide sustenance for the deceased. Nevertheless, there were open forms also present, for example flat-based offering bowls.

At least pieces of three vessels with decoration were found from the spoil heap; one of the most distinctive and largest of these was a rim sherd with a long surviving neck, probably from a “tall neck broad amphorae” or a “shouldered jar with tall sinuous neck” type of jar. Although this large sherd is not an exact parallel to either of those, it should be counted as a sub-type of this vessel family, characteristic of the pottery period of the late 18<sup>th</sup> to 19<sup>th</sup>-Dynasty; in favour of this argument are the similar-looking jars found at Gurob already by Petrie in the late 19<sup>th</sup> century (Petrie 1890, plate xxi, examples 42 and 43). This large sherd, about 20 cm in height, was made of marl A4 fabric and had a red slip on its exterior. Although the surface of the sherd was eroded, traces of painted decoration had survived on the outer surface, and it can be fairly safely said that the decoration was of darker red or brownish colour, with black outlines. Both the shape of this large sherd and also its decoration would suggest a 19<sup>th</sup>-Dynasty date (for decoration see discussion in Aston 1998: 57-8; for the shape of the vessel, see Aston 1998: 458-9 and Wodzinska 2010: 79-80). Unfortunately, the eroded state of the sherd makes it impossible to reconstruct the decorative motifs on the vessel’s neck; Aston (1998: 57) points out that the post-fired (polychrome) decoration is often washed off, and also that the motifs on the polychrome pottery, often made in fine marl clays, tend to differ quite substantially from the decorative motifs of the contemporary blue-painted pottery.

Other interesting examples from the spoil heap were for example the round-bodied amphorae, probably originally with two handles, although only one handle was actually found. Also, a typical Ramesside form was indicated by a rim sherd belonging to an ovoid or globular-bodied bottle, with a very thin neck (for similar examples see Wodzinska 2010: 113 and Aston 1998: 300-301, 416-17). The example from P021 is made of Nile D fabric, when in Luxor similar bottles are also made of Nile B2 fabric, and

in the Delta their material would always appear to be the favored New Kingdom Nile clay, Nile E.

A large rim-sherd of a characteristic New Kingdom vessel, the 'funnel neck jar' was also found in the tomb shaft's spoil heap. This vessel, made of marl A4 clay and red-slipped, is similar to a 19<sup>th</sup>-Dynasty example in the Petrie Museum, London, catalogue number UC 18502 . The funnel neck jar sherd discussed above was not the only one of its kind; sherds of at least three similar kinds of vessels were found in the tomb shafts' spoil heaps. This popular vessel, one of the most characteristic jar types of the New Kingdom, occurs in a number of different materials, comprising both Nile and marl clays, and two of those from the P021 spoil heaps were made of good quality Nile D fabric (for variations of the rim-neckline of the funnel neck jars, see Aston 1998: 188-93 and Wodzinska 2010: 99-10).

An interesting import was also discovered among the spoil heap pottery, namely a body sherd of a small Mycenaean stirrup jar, which was made of extremely fine, well-sorted clay; the thin-walled vessel is likely to have contained expensive liquids in small quantity, like other vessels of this kind.

Understanding the development of the site's internal chronology is something that the ceramic evidence can be very helpful in, when we compare different tombs' pottery corpuses around the site.

The funerary pottery from P021 tomb pottery will be of great help to the study of the development of most characteristic pottery types of different periods during the New Kingdom, and especially late 18<sup>th</sup>-Dynasty to the end of the 19<sup>th</sup>.

***P023: illicit excavation pit in the SW corner of the palace enclosure area; material from spoil heaps***

The total amount of pottery from the illicit digging area P023, in the southwestern corner of the palace enclosure (see Fig.1), was about 13kg of sherds, of which over 90% are Nile fabric, thus indicating that most of the pottery derives from utilitarian vessels used in daily life, rather than for example transportation/ storage vessels which often tend to be made of marl wares. Most sherds in the total weight of c.13kg are non-diagnostics – the weight of diagnostic sherds is 2.15kg, which equals 52 sherds. Most of the pottery is of Egyptian origin, except for two Canaanite sherds from the area. Among the diagnostic sherds were Nile fabric rims and bases, from bowls and jars; there was for instance one beer jar base. But the greatest number of diagnostics that can be readily grouped to a broader category are the hemispherical bowls, of which there are 20 sherds. These types of tableware vessels are usually among the most common at any settlement site, so this information is not unexpected. Although most of the P023 pottery comprised table wares, the few marl sherds recovered from the spoil heaps were from large vessels, namely amphorae, made of marl D fabric, which is the most common amphora fabric in Gurob. All pottery discussed above, from this particular area,

is of New Kingdom date as are the three body sherds of blue-painted ware, which indicated a dating roughly between the mid-18<sup>th</sup> and late 19<sup>th</sup>-Dynasty.

### 5. Small finds (Jan Picton)

In the September 2011 season, small finds were either collected from the surface or obtained from two areas of illicit digging/looting (Pits 21 and 23, see Fig.1 for locations). The surface finds had their provenances recorded in three dimensions using the total station, while those from the looters' pits were recorded primarily in terms of context (since many were found through sieving). In total 111 small finds were recorded and drawn.

Our season's work was dictated by our inability to excavate and the need to record the depredations of looters on the site. Consequently no field walks were conducted this season. The effort to record illicit digging resulted in the recovery of some burial material such as shabtis and a pottery coffin that had been smashed by the looters. The latter appears to be a distinctive vessel decorated with scenes of the Four Sons of Horus.

The majority of other finds were small broken pieces of faience, especially fragments of vessels, and unidentifiable pieces of worked stone. Despite there being no field walks a surprising number of rough clay figurines were recovered including 14 of the type known as 'woman on a bed' figures.



Fig.7: Fragment of the painted pottery coffin from the looted tomb shaft P021.

Among the more unusual finds this season were:

- The pottery coffin from the looted tomb shaft P021 (Fig.7).
- Four intact or partial wooden shabtis, also from the looted tomb shaft P021 (Fig.8).
- At least 14 fragments of 'woman on a bed' clay figurines, in which the women hold a baby to suckle at the left breast.
- One figurine showing a recumbent female with child lying along leg on left side, and a servant figure lying on the right.



*Fig.8: A painted wooden shabti from the looted tomb shaft P021.*

Among the stone fragments collected were granite, quartzite, basalt and granodiorite – none of which appear naturally at the site and indicate architectural or sculptural features that no longer survive. Two sections of limestone column were recorded lying in the cultivation, deriving from the adjacent canal.

## **6. Auger boring (Morag Hunter and Kamal Helmy Quftawi)**

### ***The 'Ramp': AS12-16***

One of the primary aims of the season was to investigate the age and potential use of a flat ramp-like structure apparently leading from the so-called 'Fort' down to the level of the current cultivation. We used a hand auger to collect the sediment underlying the ramp at three points (AS12, AS13 and AS15, see Fig.10), at a fourth site just off the end of the ramp and onto the edge of the plantation (AS14) and at a final site halfway between the main Gurob site and auger site AS11 at the Sheikh's cemetery collected in 2010 (AS16). The results of these are shown in the diagram (Fig.9) and a brief description is given below.

#### *AS12. Top of ramp. 36cm*

The site for AS12 was chosen at the potential intersection between the mud brick wall of the so-called 'Fort' building and the top of the ramp. Recovery was stopped by a large clast or rock that the auger could not pass through. However, no mud brick was collected and only one piece of New Kingdom pottery was recovered in the top 20cm. The lack of mud brick suggests that the ramp was not placed on top of the wall at a later time. Due to the nature of the technique the appearance of one sherd in the whole core is not significant, and given its age and the fact that it was collected so close to the surface it is most likely to be a result of down-hole contamination.

#### *AS15. Towards the bottom of the ramp, collected from the edge of the ramp to avoid surface debris. 110cm*

No sherd material was collected from this site. The coarse-grained nature of the sediment suggests that the ramp overlies "sterile" desert sand.

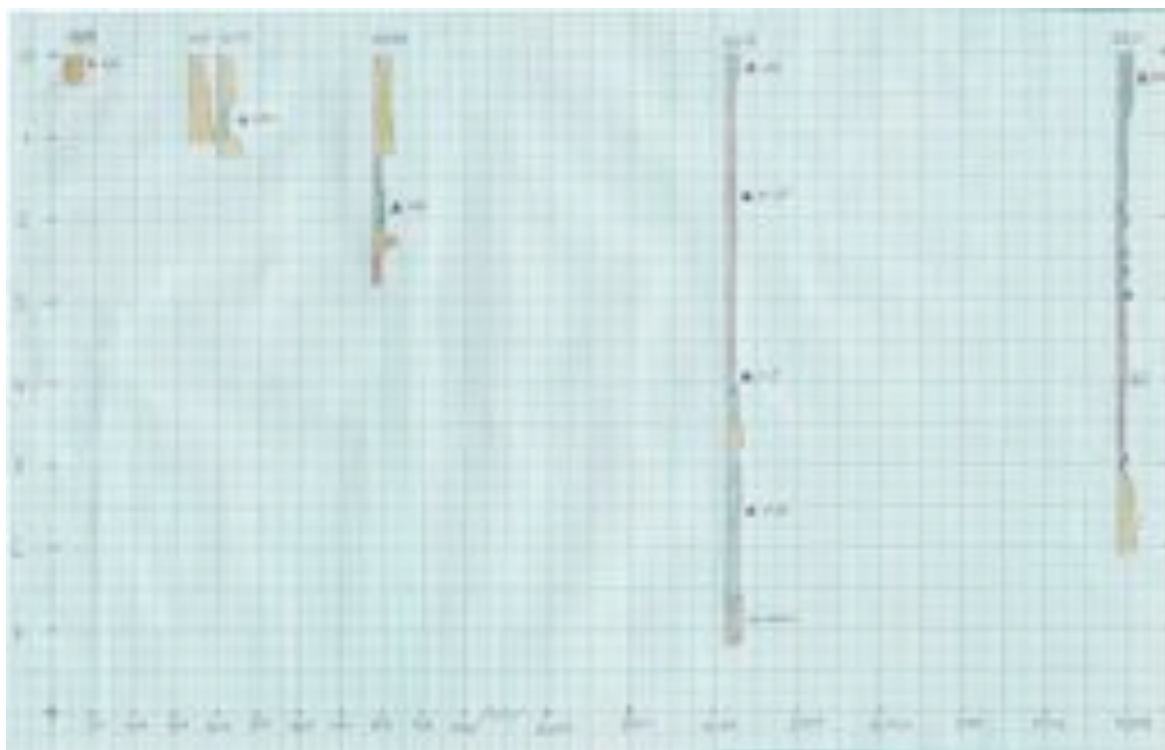
#### *AS13. Bottom part of ramp. 125cm*

Once through the gypsum crust (top 40cm), the section consists of medium fine sands overlying silt (50-100cm). These units contain charcoal and are sherd-rich. We are awaiting results on their age, if diagnostic. There is also one turret-shaped snail shell which may be consistent with water. Coarse to very coarse

grained sands with no sherds were collected from 100cm to the bottom and are consistent with desert sands deposited before the main site was built.

*AS14. Just off the bottom of the ramp. 280cm*

The current water table is only 20cm below the surface at this site. The top 85cm are fine to medium sands, just like the surface sediment. From 95-120 we collected coarse desert sands. Silt and clay collected from 120—220 are rich in New Kingdom sherds. From 240cm the auger encountered stiff orange yellow tafl clay complete with gypsum or anhydrite crystals.



*Fig.9: Augers taken along the ramp and into the cultivation.*

*AS16. In the plantation, half way from Gurob site to Sheikh's tomb. 720cm*

The first 50cm of this section collected stiff agricultural clay. Brown and organic, rich with sherds and debris from the surface worked in by ploughing. Sherds were still recovered to a depth of 70cm, and these may represent more ancient deposits. Stiff brown clay, rich in organic matter, but also containing chalk balls from the roots of plants, and the odd smooth snail shell fragment, is consistent with grassland on a flat flood plain. A few of the samples recovered contained First Intermediate Period (FIP) sherds. Other sherds were New Kingdom or indeterminate. From 380-640 the mud is much siltier with shiny flakes of mica and many rhyzoconcretions. A FIP sherd was also recovered from this part of the



section. 650 to the bottom of the section consists of alternating layers of brown and black fine grained sand with no rhyzoconcretions. This is consistent with anoxia where conditions were less favourable for plants to grow, possibly in a channel(?).

In conclusion, the ramp appears to have been built onto 'sterile' desert sands. It may therefore be contemporaneous with the palace and 'fort' sites. It does not seem to have descended into a river channel, but the current cultivation area was certainly wetter at some time in the New Kingdom preceding the construction of the ramp. There was also human activity on the floodplain during the First Intermediate Period, consistent with the construction of the tombs on the eastern edge of the Gurob site. Silt and fine grained sand at the base of the plantation section (AS16) suggest significant flooding of the plain at this time.

***The wadi area to the north: AS17-18***

The second aim of the season was to investigate whether the wadi area to the north of the site might once have been a harbour or lake of some kind. We augered in two sites, one at the edge of the wadi (AS17) and the second in the wadi itself (AS18).

*AS17. Small Owl site, Eastern edge of the wadi, by the road, auger started 35cm down from the desert surface. 150cm*

This section was below the water table from the start. Coarse desert sand rich in sherds dominates the first 110cm of this section. The base of the section in particular is also very rich in bone material, although bone fragments are found from 50 to 110 cm. After 110cm the auger encountered stiff, dry orange tafl and no more sherds or bone was found. The bone is richest just overlying the tafl suggesting it originally lay on top of this surface before being covered in desert sands at a later date. There is some evidence from Petrie that this area of the site was littered with human bones 100 years ago and it is quite possible that this is what we have encountered. The sherds are all consistent with dating to the New Kingdom.

*AS18. Western side of the wadi, but within the confines of the wadi itself. 230cm*

After collecting the surface sand (20cm) we collected 40 cm of brown clay before augering through tafl to the base of the section.

The wadi is underlain by pure stiff clay with only the occasional pebble and a few polished very coarse sand grains. This clay is in fact what keeps the wadi wet. Water cannot drain into the underlying clay and so ponds on the surface where it creates salts through evaporation. The clay itself is dry despite being below the water table. There are no sediments to suggest that the wadi has ever been a harbour and it is very unlikely



Figure 10. Satellite image of the site showing the locations of augers AS12-18.

that the water table was ever high enough for the wadi to contain a significant body of water.

We also measured a section on the east side of the shaft of looted tomb P022. The shaft is 3m deep and dug into tafl. Most significant was a horizontal bed of cobbles 80cm above the top of the entrance to the chamber. This layer almost certainly represents a previous desert surface although it is not possible to say how long ago. The tafl below the cobbles is well consolidated. There is some evidence of sand disturbance with a well-cemented covering of sand on the tafl just below the cobbles. The tafl above the cobbles is less well consolidated and the beds within it also dip by 15° to the north.

This may mean that the tafl was deposited into a slight depression or that this less well consolidated material represents some sort of back fill within the shaft. However, I think the layering seems to be at too fine a scale for this. There is a significant piece of organic/plant material towards the top of the tafl at 206cm. The top 60 cm of the shaft wall consists of cm scale bedded medium and coarse/very coarse-grained desert sands, probably deposited over a long period of time. The bedding is consistent with deposition of the sand into a depression over the shaft as it cures down on all four sides of the shaft. The layering of coarser and medium grained layers may represent flash floods interspersed with wind-blown deposits. A New Kingdom amphora sherd was collected close to the contact between the tafl and the desert sands, suggesting that the sands were perhaps deposited since the New Kingdom.

## **8. Summary**

In the seventh full season of work at Gurob we made excellent progress on several elements of our overall long-term plan for the site: mapping, pottery surface collection, and auger boring, as well as inaugurating a topographical survey project which will enhance our ability to understand the relationship between the landscape and human activities at the site. Unfortunately, however, we were also obliged to devote a significant portion of our time this year to the recording of areas of illicit excavation. We are of course grateful to the SCA and tourist police for their continued help and support in all of this work.

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