2005 Final Report for the Pyla-*Koutsopetria* Archaeological Project

I. Introduction and Season Goals

Introduction

The Pyla-*Koutsopetria* Archaeological Project (PKAP) is a diachronic, intensive archaeological investigation of a 5 sq km area on the southern coast of Cyprus. The area under investigation stretches from the eastern outskirts of the city of Larnaca to the western limits of the British base at Dhekelia. The overall aim of the project is to determine the relationship between the material culture of this stretch of coastline and other coastal sites on the island, inland sites in the vicinity of Larnaca, and the Eastern Mediterranean more generally. We are pursuing two lines of inquiry in a multi-year research program: 1) to define the limits and nature of the substantial Late Roman site in this area through a variety of archaeological methods, including intensive survey, analysis of wall paintings, and core sampling; and 2) to contextualize this material in terms of the settlement history of this micro-region from the prehistoric period to the present by expanding the survey area inland in subsequent seasons.

2005 Season Goals

The goals for the 2005 season were fourfold:

1) To complete archaeological fieldwork in the area of Koutsopetria, with special attention to the northeastern part of our survey area immediately to the south and west of the Kokkinokremos ridge. For a more complete break down of field work see Section II-III.

2) To process all finds from the 2004 field season. This includes washing, analysis, photography and the first steps toward cataloguing all artifacts. For a summary of our finds analysis see Section IV.

3) To begin the analysis of the wall paintings excavated by Maria Hadjicosti in the 1990s. For the preliminary report on this work see section V.

4) To take core samples from the in filled harbor and begin the analysis of their chronology. A summary of these results will be provided by

II. Archaeological Survey Work in 2005 (W.R. Caraher and D.K. Pettegrew)

Archaeological fieldwork during the 2005 field season was directed toward finishing the survey of the extensive Roman site of Pyla-*Koutsopetria* on the coastal plain. Our goal for the season was to complete the surface survey and documentation of the site in its immediate coastal environment. Following from this goal, fieldwork during the 2005 season comprised four facets of work:

1) Intensive gridded survey (40 x 40 m) over a broad Late Roman artifact scatter of moderate to high density on the coastal plain.

2) Intensive Discovery Unit survey using much larger units (average size of 5,000 sq. meters) in the low-density 'harbor' areas on the coastal plain, as well as the height of Vigla above the site of Pyla-Koutsopetria;

3) The mapping, photographing, and documenting of the numerous cut stone and architectural features at the site of Pyla-Koutsopetria;

4) Reconnaissance work on the plateau north of the coastal site of Pyla-Koutsopetria extending to the new highway.

These different facets of work are described in greater detail in the subsections below.

1. Intensive Gridded Survey on the Coastal Plain of Koutsopetria

The principal focus of fieldwork activities in July 2005 was completing the 40 x 40 m. gridded surface survey of the Roman coastal site of Pyla-Koutsopetria. We began this survey in the summer of 2004 with 187 grid squares immediately east and west of the Early Christian Basilica at Koutsopetria (excavated by Dr. Maria Hadjikosti), as well as south and east of the water treatment facilities. A full and lengthy explication of the rationale, methodology, and principles of the grid work, survey, and artifact collection strategies guiding this survey can be found in the final report for the PKAP 2004 field season.

Grid Squares 188-252

In 2005, we surveyed 65 additional grid squares, bringing our total number of gridded units to 252. Our reason for surveying additional grid squares this season was to further define the limits of the extensive artifact scatter associated with the site of Koutsopetria. Field work in 2004 had defined the western, southern, and northern borders of the high-density artifact scatter, but we were unable to define the eastern and northeastern borders of the site by the end of last season. Consequently, the focus of our work in 2005 was in areas of moderate to high artifact density south and southwest of Kokkinokremos. Since we wanted to determine the extent of artifact distributions in this area, our basic procedure was to grid units over the entire area of high-density units. When densities declined and trail off, as they do to the south, in the low-lying sandly coastal area, we felt justified in not continuing our grid squares. Our grid can be seen spatially in Map 1, which shows the distribution of artifacts across the coastal plain.

Our results confirm the importance of the additional grid squares surveyed this season, for moderate artifact densities continued to the northeast [FN: artifact densities of 'sites' in the eastern Mediterranean are typically defined as those having 3,000 to 5,000 artifacts / ha. Artifact densities immediately east of the excavated site of Koutsopetria averaged about 6,000 artifacts / ha. Some units surveyed in 2005 below Kokkinokremos were as high as 5,000 artifacts / ha]. As a result of surveying these additional grid squares, we can now refine our knowledge about the size and nature of this extensive coastal site [See Caraher, Moore, and Pettegrew, RDAC]. Although the highest artifact densities are limited to the area immediately east and west of the excavated basilica (an area of above 18 hectares), artifacts continue in moderate density over a much broader area. The total area covered by our site—including both high and moderate density units—is well above 30 hectares. [FN: The amount of area covered by our gridded collection is actually substantially larger—ca. 40 ha—because we surveyed additional grid squares until we had reached off-site density levels, signifying the trailing off of cultural material and the visible boundaries of the site]

Gridwork and Geographic Information Systems: Procedures and Problems

As with survey procedures, the principles of gridding (including the size and bearing of grid squares) followed procedures established in 2004. We were able to reestablish the grid by using the four permanent metal datum points that were set into the ground at the conclusion of the 2004 season, for which we had recorded detailed information (Cf. 2004 Final Report). Using Datum #11, the southeast corner of Grid Unit 151 and located immediately southwest of Kokkinokremos, we established a grid to the east with Units 187-196. We also used Datum #11 as the main point from which all other new relative datum points were set.

This first new datum we established was Datum #14 and was located 200 meters east of Datum #11 on the same grid north line, at the southwest corner of Grid Square #197. It was set because it afforded a much better mapping view in all directions than did D11. D14 was used to map in Grid Square #s 198-212, 224-230, and 241-247. This datum was not a permanent datum but marked only by an orange flag. Some relative angles for this new datum:
---Relative to Datum #14, the tip (at center) of the zebra column is located 204° 09' 50" east of grid north.
---There is a Military Firing Range Keep Out sign 30 meters to the west of D14; relative to D14, the western metal post of this sign is 282° 53' 00" east of grid north.
---The first electrical pylon west of the gravel road (running along the golf course) lies 181 meters east of D14; relative to D14, the northern vertical tripod of this tower is located 105° 55' 15" east of grid north.

Using Datum #14, we established a final datum (#15) further to the south in order to lay grid units over the south and southeast borders of the site. D15 was located 120 meters grid south and 80 meters grid west of D14, at the southwest corner of Grid Square #225. This was used to grid in Unit #s 213-223 and 231-240 and 252. This datum was not a permanent datum but marked only by an orange flag.

Finally, we used a hand-held Trimble GeoXM GPS unit to map in the corners of Grid Square #s 248-251.

The main procedural difference between this year and the previous season is that we employed hand-held GPS units (Garmin 12; Garmin Geko 201; and a Trimble GeoXM) in the field and took GPS points in the center of every grid square, recording the UTM number on the survey unit sheet. This procedural change had two significant results: 1) It allowed us to import our physical grid onto digitized regional maps with Geographic Information Systems software (ArcGIS 9.0), thereby creating a digitized version of our spatial data; and 2) consequently, it allowed us to resolve some inaccuracy and imprecision in the representation of the grid in the GIS. The following discussion will elaborate on three main problems and their resolutions resulting from a cross-check of the grid with GPS units.

In the final report for 2004, we posited that our grid was oriented at a bearing of 356 degrees east (or 4 degrees west) of magnetic north. In 2005, however, the use of GPS units in the field and the importing of UTM coordinates into the GIS indicated on the contrary that our grid ran due north-south (0 / 360 degrees), a difference of four degrees from our estimation in 2004. Our misreading of orientation in 2004 was a simple mistake based on the imprecision of our instruments: the hand-held compasses (Suunto) which we used to measure our orientation relative to grid north are well known to have potential errors of magnitude up to five degrees.[FN: the digital theodolite that we used to establish the grid—a Topcon Digital Theodolite DT-05—does not contain a compass but only measures angle; consequently, it cannot be employed to establish relationship to magnetic north] This misread did not affect the layout of the physical grid, which remained consistent relative to itself, but did influence our translation of the grid into digital form. The use of GPS units, then, significantly helped to correct for a simple error of measurement; certainly, using a full transit with compass would also aid in creating more accurate grids.

Secondly, fixing the orientation of the grid in the GIS, and taking UTM coordinates of fixed physical points in the field (e.g., roads, signposts, buildings, metal datum pipes) helped in correcting the compounding imprecision that results from establishing a grid over 1.5 km of space using blunt measuring instruments. Every new datum point contributes to and compounds mapping error, and instruments like Bushnell Laser Range Finders are accurate only to 1-2 meters. The frequent use of GPS units and the production of UTM coordinate data in the field helped to place us on the digitized map (in the GIS) and showed that our imprecision had added up to only about 10-15 meters across 1.5 km of space, i.e., our physical grid was only about 10-15 meters off from where it should be [Since this error is distributed across a distance so long, it does not greatly affect the interpretation of our data].

Finally (and similarly), by taking UTM coordinates of fixed points, we were also able to resolve a mistake made in the gridding process last year. During the final week of the 2004 season, it occurred to us that we had made a mistake in our reckoning of how our grid corresponded to the digitized map in the GIS. We became aware of the problem in two ways. In using the GIS, the location of the grid in digitized space did not correspond exactly to where we knew units were in the field—e.g., a grid square through which a road ran during survey did not contain the road when translated into the GIS—but was slightly askew, suggesting that we had made a simple mistake in recording. This was confirmed in the field over subsequent days of survey when we accidentally field walked several grid squares twice. The mistake was a simple one—we misrecorded the location of one of our datum points (probably D9 or 10) relative to the point from which that datum point had been set—but we did not correct it fully until we obtained UTM points this season. As a result of correcting for this mistake, we ascertained that the following grid squares have two sets of numbers, corresponding to original survey and their resurvey. In all cases, it is advisable to accept the 'resurvey' units as the better data set since we confirmed these points with UTM coordinates. The following are the renumbered units:

222 (resurvey of Grid Square 171)
223 (resurvey of Grid Square 176)
231 (resurvey of Grid Square 178)
232 (resurvey of Grid Square 180)

240 (resurvey of Grid Square 129)
252 (resurvey of Grid Square 130)

Additionally, it is worth noting that there is no Grid Square #92, nor is there a Discovery Unit #548. These two unit numbers were cancelled during the 2005 field season.

A preliminary analysis of the data from gridded survey is discussed in the Results section below.

2. Intensive "Discovery Unit" Survey in Low-Density Areas

It became clear at the end of the 2004 field season that we had surveyed most of the moderate to high density areas of the coastal plain surrounding Koutsopetria. Our main objective in the 2005 season was to totally finish gridding all areas of substantial artifact density on the coast and to define the eastern and southeastern borders of the Koutsopetria site. In doing this, we decided that we needed to account for the lower-density 'off-site' / 'non-site' artifact scatters west (west of the gravel road that runs north to Pyla and splits off to Vigla) and southeast of the site (the low-lying ancient harbor area west of the round-about to Dhekeleia and immediately north of the coastal roads, but generally south of the electrical lines). Reconnaissance survey in 2003 and gridded survey in the past two seasons (2004 and 2005) showed conclusively that artifacts in these areas were much sparser and fewer than the rest of the site. It did not make sense to survey these areas with the same intensity (i.e., 40 x 40 m grid squares) as we did the site of Koutsopetria, but we also did not feel justified in ignoring this area altogether in anticipation that we would not find anything. Our solution was to establish much larger "discovery units" that could be used to cover greater tracts of area more efficiently.

The Discovery Units surveyed in the 2005 field season included those in the low-lying harbor area (502-536, 547, 549) and those west of the gravel road to Pyla (537-546). Artifacts in both of these areas were exceptional and few, although densities were higher to the west. We suspect that the few artifacts recovered from the low-lying area in the southeast do not represent ancient habitation but the artifact smear resulting from plowing the higher artifact densities to the north, or are recent in date. The fact of very low artifact densities in the southeast along the coastal road is certainly compatible with an interpretation of this area as ancient harbor that has in-filled in recent millennia, especially since moderate to high artifact densities ring the slightly higher ground at the base of the slopes south and southeast of Kokkinokremos and probably indicate pre-modern beach fronts. The lower densities west of the gravel road to Pyla may represent small farmsteads or habitations west of the large coastal harbor at Koutsopetria.

Finally, we also surveyed one discovery unit (501) in the high-density area on the heights of Vigla above Koutsopetria. The artifacts from this unit are not predominantly Late Roman but have a broader diversity of periods represented, probably because this area possesses a great vantage point toward the sea to the south and coasts to east and west.

The principles of Discovery Unit Survey are similar to those employed for our grid squares (see Caraher, Moore, and Pettegrew, forthcoming). Teams of field walkers spaced at intervals of 10 meters examine a 2 meter wide swath thereby giving a 20% sample of the area of every unit. Fieldwalkers count all pottery, tile, lithics, and other artifacts (e.g., ground stone and bangers and glass), but *collect* only unique objects according to the chronotype system. Field teams also collect other kinds of data, including information about vegetation, visibility, and features. As with the grid square data, the counts can be used to measure changes in density across a region.

The only significant difference between our Discovery Unit Survey and the Gridded Collection is that discovery units are on average much larger (ca. 5,000 sq. meters) than Grid Squares (1,600 sq. meters). The larger discovery unit size is consistent with the typical size of survey units (often 3,000-10,000 sq. meters) employed by siteless survey projects in the Eastern Mediterranean. Although larger survey units create data sets with much lower resolution, they do allow quicker and more efficient coverage of the landscape because there is less paperwork; moreover, rather than map out units precisely with a transit (a very time consuming activity), units can be quickly mapped with hand-held GPS units. If in future years, we conduct a broader archaeological survey of the micro-region surrounding Koutsopetria, we will certainly employ larger discovery survey units as the basic unit of data collection.

3. The Feature Project (Brian Willis and Mike Fronda)

The Feature Mapping project was charged with identifying, locating, and mapping features within the Pyla-Koutsopetria Archaeology Project's survey area using a combination of GIS and GPS. Features were identified broadly as any object or area of archaeological interest. These areas were primarily various architectural (e.g. walls, cut blocks) or industrial (e.g. andesite) objects. Additional features were added to the list of potential features as we came across them in the field. By the end of the 2005 season we identified the following feature types and assigned them and abbreviation to be used when filling out the feature forms: wall (W), wall series (WS), floor (F) ancient cut block (CB), cut gypsum block (CBG), cut marble block (CBM), andesite block (AB), column (CM), column base (CMB), column capital (CMC), column shaft (CM), other architectural elements (AE), olive press (OP), press weight (PW), stone anchor (SA), basin (BSN), large mortar and building stone blocks (MRT), stone pile/scatter with cut blocks (ST), well/well cap (WC), and check dam (CD).

All features were located, measured, and recorded on PKAP Feature Mapping Forms: GPS coordinates, length, width/diameter, and height. Nearly all features were digitally photographed and additional details about feature location, shape, and remarkable characteristics were kept in a notebook; digital photo image files and relevant notebook pages were also recorded on the PKAS Feature Mapping Forms. Most features were recorded as points in space using the GPS unit. However, certain features implied one or two dimensions (walls are roughly lines, scatters/piles are roughly lines, ovals, circles, etc.). For wall and stone scatter features, we tended to take one GPS point (the end of a wall or stone scatter, etc.) and associate all subordinate features (e.g. the cut blocks or gypsum that might lie within a stone pile) with that GPS. This method, however, introduced a number of difficulties, and we were compelled to change or methodology a number of times in the first week of mapping (see paragraph 2). Certain features falling under the stone scatter category were piled in a mound, rather than scattered. These stone piles were recorded with a

GPS point in the center, with a diameter measurement being recorded instead of length.

The Feature Mapping project during the 2005 season built on the work of Brian Willis, who during the 2004 season mapped with GPS all of the cut blocks and large fragments of gypsum in the survey area. It was decided to expand this method to include a wider range of features, as noted above. It was also decided to remap all of the gypsum that was mapped in 2004, in order for a more internally consistent methodology. The original goal of the 2005 Feature Mapping project was to associate every feature—ideally every cut block—with a discreet GPS point. The bulk of the features lie within the "red flags," so we had to work around the British Sovereign Base's range schedule. Therefore, on the first day of mapping (July 16) we decided to work along the modern coastal road east of Gate 5, where a series of walls are visible within the scarp. We recorded about two dozen features on the first day using this method.

By the end of the first day, two serious methodological problems presented themselves. First, larger features (such as walls and stone scatters) often contain multiple smaller features (usually cut blocks), which made more difficult both the measuring of and getting discreet GPS points for each feature. Second, we did not photograph features with a stadia rod on the first day. Therefore, on the second day of mapping (July 18) we decided to modify our methodology. First, we decided to take only a single GPS point for a large feature and give the same location to all smaller features that were incorporated within that larger feature. In the case of wall or stone scatter features, we took a point either at the end or the middle of the feature and measured its length and compass bearing from that point (in the case of walls or stone scatters, which were broadly linear or oval in shape), or a diameter (if the stone scatter was broadly round). Thus, it was possible for a single GPS point to be associated with multiple features. Second, all features recorded on the first day were re-recorded using the new methodology and re-photographed with stadia rod. Third, while working the same area as July 16, the team found additional features. Fourth, changes to methodology, additional features, and the desire to re-use GPS data from the first day of mapping necessitated re-numbering many of the features. Therefore, Mike Fronda made relevant changes to the notebook and feature forms, and as a result the first 14 pages of the notebook contain numerous corrections and cross-references.

This methodology worked well until the team began mapping the large concentrations of features that lie along the ridges below Vigla and in the large rubble piles (stone scatter features) between the fields in the central survey area. The ridges and rubble piles contain significant concentrations of cut blocks, and a series of wall remains are visible on the ridges, especially where they have been revealed by robber pits. By July 20, when we moved on from the ridges to the rubble piles in the fields to the south, the team became seriously concerned that all of the features could not be mapped by the end of the 2005 season, and indeed there was concern that it was unrealistic to record all visible features, especially cut blocks. Therefore, after consultation with David Pettigrew, another modification to the methodology was adopted. The team decided to focus more on larger features (walls and stone scatters), taking single GPS points for each feature and associating all of the smaller features within the larger feature with that GPS point. While this was technically a continuation of our previous method, there was an important difference—since the stone scatter features we encountered were much larger (diameters in excess of 5m for the scatters around robber pits, lengths of over 40m for some of the scatter between fields). By taking fewer GPS points the team was able to record smaller features more rapidly.

After consultation with William Caraher, however, this method was modified for the final time. On the one hand, it became increasingly apparent that associating large numbers of features in a large space to a single GPS point could seriously skew any distribution information. On the other hand, the team had discovered that the density of features, especially cut blocks and possible cut blocks, on the site was extremely high. The more the team mapped, the more features became visible. This appeared to render the task of recording all of the features impossible with reasonable restrictions on resources. So, a final methodology was adopted. The team decided to give a discreet GPS point to every feature mapped. Larger features would be given one point, with the intention of drawing them in later using additional information on the Feature Mapping sheets and the notebook. Smaller features within larger features would be given their own GPS coordinates. To balance this more intensive method, the team decided to be more selective in identifying and mapping smaller features. Within larger structures, especially large stone scatters, only the "best" examples were recorded. These included gypsum blocks, marble, and any unusual or remarkable piece of worked stone (especially such as architectural elements, column pieces, moldings, etc.). Particular attention was also paid to identify and map any visible traces of walls or floors. However, the team did not map every potential cut block of local stone, instead recording only those with three clearly preserved dimensions. Individual cut blocks found lying outside of larger features such as walls or ST in the middle of plowed fields, and therefore remarkable because of their location, were all recorded. Lastly, we tagged and collected small but particularly remarkable features, such as andesite grinding stones or pieces of worked marble. This final method was implemented in full on July 22.

On July 22, while Brian Willis and Greg Fisher continued to map new features using the final methodology, Mike Fronda retraced the teams mapping from the previous few days. Mike used a separate GPS unit, notes, and sketches to associate discreet GPS points with many of the smaller features that had been associated with single GPS points. Mike was able to add GPS data for all of the recorded features from July 20 through July 22. It should be noted that this process was not completed for features recorded on the first few days of mapping (before July 20). The team decided that it was more important to continue mapping the rest of the site than to return to previously mapped locations. It may be desirable to return at a future time to these features (numbers 1-104), to make sure that each feature has a discreet GPS point. However, since the densities of features in those areas were generally lower than the areas mapped on July 20 and later, the team does not feel that feature distribution data has been significantly compromised.

Despite the scope of the project and the departure of Mike Fronda, the feature team which now included Greg Fisher and Jordan Haines, who were led by Brian Willis, were able to complete the feature mapping project. The feature mapping project was completed on July 27th, and a total of 541 features were recorded (see Map 2). The majority of the features recorded were cut blocks, which were distributed throughout the entire portion of the site east of the ancient harbor. The second most common feature was cut blocks of gypsum, which are mainly distributed in the stone scatters between the fields which are immediately east of the excavated area. The wall features were most common to, but not limited to the ridge immediately south of Vigla, the ridge that runs along the ancient harbor, and in the raised circular area that is in the middle of a field east of the excavated area.

The majority of the features can be grouped into different areas geographically, and some of these geographical areas seem to have significant archaeological significance. The attatched map shows the breakdown of the features into areas of greatest density. The significance of these areas will be discussed in more detail later in this report, and are identified on the map at the end of this report.

Area A: Ridge bordering Ancient Harbor, East of Road running to the water treatment plant.

Area B: Ridge immediately south of Vigla.

Area C: Raised Circular Area in the middle of a field south of Vigla.

Area D: South eastern portion of the site before you reach the ancient harbor, running parallel with the modern coastal road.

Area E: This area includes the area of the site which was previously excavated, as well the area immediately to the west.

Several conclusions about the features, feature areas, and the PKAP survey area can be made. There are five major areas of archaeological interest. Obviously the excavated area towards the western area of the site, and the immediate area around it is significant (AREA E). There is some evidence of walls to the west of the excavated area, but there is not the large density of cut stone blocks that can be found in the eastern portion of the site.

There also appears to be several other and perhaps equally important archaeological areas throughout the site. Large concentrations of features, including what appear to be a series of walls can be found on the ridges south of Vigla (AREA B). There are two particular exposed walls which stand out as being significant, both of which were discovered during the 2004 field season. On the eastern part of the ridge is a wall series which forms a "T," and is oriented east-west, with the T pointing north. Towards the west the side of a wall is exposed and is running roughly north-south. There are not a large number of cut blocks in this area, and only a couple of gypsum blocks, one of which is among the largest found in the entire site.

Along the ridge to the east of the road which divides the main portion of the site and the area which is believed to be a harbor (AREA A), there are some wall features which where discovered during the 2004 field season, as well as a new series of walls which were discovered during the 2005 season. There are several gypsum blocks in this area, as well as what appears to be a portion of a column shaft.

In a circular raised area south of the ridges of Vigla (AREA C), a striking collection of cut blocks and very large gypsum blocks can be found. Wall remains are clearly visible in this raised area, gypsum blocks and fragments were found in large numbers in the proximate rubble piles, and a remarkable piece of worked marble (Feature 222) was recorded and collected nearby. It also appears that there is evidence of wall construction using brick in this area, which is extremely rare for the eastern Mediterranean. This all suggest that possibly an important building stood at or near this area.

The last major area of interest is the portion of exposed wall which can be found by and runs along the coastal road to the south of the site (Area D). There is not much to say about this feature, other than that it features several very clearly cut blocks. Another unique feature can be found in this region, slightly to the north. There is an exposed section of flooring on the slope of a hill. While there are a significant number of exposed walls throughout the site, this is the only clear example of an exposed floor.

The remaining features, and also the largest densities of features were found in the rubble piles between fields. These areas do not have as immediate an association with significant architectural features such as walls as the four areas of the site previously discussed. Presumably, farmers have moved blocks from the fields. However due to the size of some of the blocks, these features can not have been moved very far due to the amount of effort that would be required to do this. The blocks on the ridges are closer to their original location, since those areas are not under cultivation so the blocks will not have ended up on the ridges as the result of plowing. Moreover, it is unlikely that farmers would have cleared their fields by carrying heavy blocks uphill to the ridges. It is possible that the farmers would have tended to move blocks downhill into rubble piles between fields rather than uphill onto ridges, explaining the very larger concentration of cut blocks and stone scatter between fields.

Despite the relative plainness of most of the features recorded, the cut blocks share some intriguing characteristics For example, there appears to some regularity in the dimensions of the cut blocks, and several categories of sizes. A closer examination of this tendency when the feature data has been entered into an electronic database may reveal a good deal about local building techniques.

While some cut blocks were categorized as architectural elements, others while displaying some traces of other architectural elements did not yield enough evidence to warrant specific classification. A large number of these architectural elements and possible architectural elements appear to have been portions of a threshold. One of the Gypsum blocks found along the coastal road to the south of the site appears to be a doorjam. Another gypsum block found in one of the stone scatters to the east of the excavated area appears to be a doorjam as well. There were several cut blocks which appear to have decorative grooving on one face, and one cut block is actually a small basin. It can be concluded that after the mapping of all apparent features, the majority of the cut blocks which feature other architectural elements are associated with entryways and doors.

Some of the features that were discovered during the 2005 season may shed some light on work that was done in the 2004 season. There were some possible olive press related features discovered, including possible pieces of the press itself, and at least one other possible press weight. The press weight discovered during the 2004 season was noted and mapped again, but extensive notes and photographs were not taken due to the attention it was given during the previous season. One of the possible olive presses appears to be too large to be such, but clearly has a man made hole drilled through the middle. This particular feature can be found along the western side of the road by the gate 5 entrance to the site.

While Gypsum was found in fairly large quantities (including some very large cut blocks), very little marble was found. Most pieces of marble which were discovered were very small, broken, and only 3 or 4 centimeters thick. Only one fairly intact piece of marble was found, which was significantly larger than the others, but still not very large. This suggests use as revetment or flooring. There are several explanations for this. One, marble is rare on the island of Cyprus in general and had to be exported. Two, since the majority of marble found is small and broken, more of it could lie below the surface or within the numerous stone scatters of the site. Third, since marble is generally regarded as rare in Cyprus, it could have been looted from the site over time.

Despite the large number of cut blocks, there appeared to be relatively few clear architectural elements, especially those which shown signs of a building being of great importance (columns, capitals, etc.). One might speculate that the relative lack of decorative elements suggests that the coastal site was overall a modest settlement. A number of features may relate to olive processing, consistent with a small, "industrial" village. There is enough evidence to suggest that this village had at least one other fairly important building besides the basilica which was previously excavated, but evidence of the identity of such a building is lacking. One of the things that was surprisingly lacking among the features was any signs of inscriptions, or other signs of writing such as graffiti.

In conclusion, it is clear that the density of features, especially various types of building material, is very high throughout the portion of the site to the west of the ancient harbor. In fact, greater scrutiny of the site was rewarded with the mapping and recording of a significant number of cut blocks, walls, and other features. Although the PKAP staff already recognized that cut blocks, gypsum blocks, and other architectural features were distributed throughout the site, the Features Mapping Project brought much more of this material to light. It shows the concentration of certain features into specific area and allows a geographical breakdown of the material at the site. The recorded measurements for the various types of features, specifically cut blocks, will allow for the breaking down of features even further. Analysis of the data will no doubt confirm the visual observations of the feature mapping team, that there are several different categories of size for the cut stone blocks, and allow further breakdown of this broad feature type. One oddity about the features was noticed, which is that the largest concentrations of cut stone blocks and other architectural elements do not correspond very well with the location of the exposed wall features. One of the things unable to be accomplished during the 2005 field season due to the constraints of time and manpower, was more detailed drawing and recording of the wall features throughout the site. It is the recommendation of the feature mapping team that this be one of goals for the 2006 season, as well as the possibility that the areas running along the modern coastal road be examined again as well. Brian Willis does not think that these areas were walked as carefully and with the same scrutiny as the other areas of the site. It is his opinion that there will not be any significant features found in this area, and if there are they would have been moved significantly due to the construction and maintenance of the modern road.

4. Reconnaissance Work

In the final week of fieldwork in the 2005 season, Dr. W.R. Caraher, Dr. R.S. Moore, and D.K. Pettegrew drove north from the coastal plain of Koutsopetria in order to briefly examine some of the ridges between the plain and the new east-west highway. Our objective was to get an idea of the types of terrain and cultural material present in the micro-region surrounding the site of Koutsopetria and to determine whether the artifact densities on the ridges were as high as they were on the coast. Our cursory examination of the ridges revealed that although there were scattered ceramic artifacts (broken pottery and tile) inland north of the coast, they did not appear to be continuous and they constituted a threshold of density well below those of the Late Roman harbor site of Koutsopetria.

III. Results of Fieldwork (William R. Caraher and David K. Pettegrew)

At this point we can only offer tentative results on the basis of total densities collected over two field seasons (2004 & 2005). In five weeks of archaeological survey, we counted 20, 352 artifacts from our 252 gridded units and 49 larger discovery units. We have not fully completed the processing of the artifacts collected according to our sampling strategy, but we have made significant headway and will finish this in the 2006 study season. A summary of the findings based on the processed artifacts from the 2004 and 2005 season will be presented in the next section. Here we will offer preliminary statements about artifact densities and site interpretation.

Artifact Patterning at Pyla-Koutsopetria

Fieldwork in 2005 defined the eastern and southern borders of the site of Pyla-Koutsopetria. While numerous techniques and interpretations are possible for defining the edge of an scatter of artifacts, most, if not all, suggest a decline in density toward the east and west of our site. It is now possible to discuss our site in terms of artifact density; in the future this analysis will be refined with the analysis of our finds data, the preliminary analysis of which is provided in Section IV.

Immediately to the south of the modern sewage treatment plant there is a well defined break in the distribution of artifacts. This break extends over 20 units for more than 120 meters. While there may yet be a geomorphological interpretation for this drop in density, it at present appears to mark an spatial interruption in the deposition of artifacts for our unit suggesting that the main scatter of artifacts associated with the excavated basilica is a discrete unit of space from the distribution of artifacts further to the northeast.

By unit 120, however, artifact density resumes albeit at a much lower level. Moreover, a preliminary analysis of finds suggests that this material dates somewhat earlier than the material collected in the immediate proximity of the basilica. The units to the north and east of the sewage treatment plan, at the base of the Mavropilos and Kokkinokremos ridge also tend to show a different patterning of artifacts than those units in proximate to the excavated area. In the northeastern area, artifact densities appear to be grouped into discrete areas around units of locally exceptional density (e.g. 154, 188, 223, 120, 129). The higher density nodes do not approach the sustained density found near the excavated area with the highest density northeastern unit still falling below the mean density for grid near the excavated area (5000 artifacts per hectare vs. 6000 artifacts per hectare), nor do they appear in a regular pattern. While any interpretation of this material is tentative in the extreme, it is perhaps reasonable to conclude that the northeastern units do not represent the same "site" as those near the excavated basilica. It is possible to imagine that these units represent an earlier settlement in the area or even a more general pattern of less nucleated activity areas stretched along the coast of Larnaka bay.

Artifact densities to the south decline steeply as we move into the sandy, alluvial soils of the infilled embayment. The only areas densities in the top half of units were those associated with the modern road, and the densities recorded in these units were likely tied to local dumping of soil and debris. Further west, however, near the western edge of our survey area and the beginning of the built-up eastern suburbs of Larnaka, there were several units with potentially significant artifact densities. The fields in this area, however, were greatly disturbed with clear evidence for leveling and cutting by bulldozer. It is also likely that localized dumping due to their proximity to several significant secondary road inflated artifact totals this area. Unfortunately some fields in this area could not be surveyed as they were under cultivation. In general, however, there is insignificant evidence to suggest any continuation of artifact density either to the south, toward the coastal Pleistocene marine terrace known as Koukouphoukthia or to the west toward Larnaka.

Total Circle Collection (Hoovering)

As discussed in the 2004 final season report, teams in 2004 completed a very intensive collection of artifacts in 10 grid squares through *total collection circles*. In 10 grid squares, we exacted a 5% sample of surface through more rigorous 'vacuuming' or 'hoovering' collection. That is, rather than collect artifacts by chronotype (as is standard for our survey method), we collected *all* artifacts found within the bounds of a circle with a radius of 5.1 meters by combing the ground carefully. Because so much care was taken to collect 100% of the artifacts within a circle, these ten circles required 30 minutes to an hour of survey time whereas normal field walking procedures required only about 10 minutes. Hence, although total collection circles sample a smaller area of surface, they constitute a far more intensive and rigorous mode of artifact recording. Total collection circles were done in acknowledgement of the limitations of large site survey strategies, and were specifically intended to reveal artifacts underrepresented by our artifact sampling strategy, allowing us to bring into finer resolution the chronological and functional character of the site.

Although we were unable to complete the ceramic analysis of the finds from these intensive experiments, which would allow a check on our chronotype sampling strategy, we did make a preliminary sort and count of the artifacts that can be compared to our standard 20% density sample. The following table displays the counts of pottery using these two methods for grid squares of different density thresholds (low, moderate, high)—a 20% sample of the grid square using normal field walking procedures, and hyper-intensive survey of a 5% area of the grid square employing much more exhaustive 'vacuuming' procedures [FN: tile counts are excluded from the following table].

Grid Square #	Density Threshold	Intensive Survey Count (20% sample)	Circle Collection Count (5% sample)	Percent Increase / Decrease
18	High	338	248	-26.6%
40	Moderate	92	303	+329.3%
45	Low	15	44	+293.3%
53	Low	15	10	-33.3%
71	High	395	664	+168.1%
85	Low	3	14	+466.7%
120	Low	55	83	+150.9%
127	Moderate	87	195	+224.1%
141	Low	13	36	+276.9%
154	Moderate	160	230	+143.8%

The table above provides interesting insight into the relationship between field methodology and artifact densities. In only two grid squares (No. 18 and 53) did the total circle collection give lower overall counts than normal fieldwalking procedures, and in both of these cases the percentage difference (26.6% and 33.3% fewer artifacts for total collection) was not very substantial. The predominant pattern to emerge from these experiments, on the other hand, is that hoovering of a smaller percentage of a typical grid square actually produces a more substantial corpus of artifacts. In three squares (71, 120, 154)—one with low density threshold, one with moderate, and one with high—the increase is only a modest 43-68%, but in the other five units, the increase is quite substantial (224-467%).

The conclusion that we can draw, then, from this data is that total collection circles with more exhaustive hoovering in most cases produces a more robust quantity of artifacts than does normal fieldwalking; in half the units, hoovering produced a much more substantial quantity than typical fieldwalking. In this experiment, then, although hoovering examined a much smaller amount of the surface of the grid unit, it typically produced much greater quantity than our field walking procedures. Whether the additional quantity of pottery counted through more intensive and time-consuming methods like hoovering is ultimately justified depends upon the analysis of the finds. This we will ascertain next season.

IV. Processing and Analysis of Finds from the 2004-5 Survey (R. Scott Moore, Susan Phillips, and Greg Fisher)

1. 2005 Processing

The ceramics were processed this season in a similar fashion to the ones processed in the summer of 2004. When the ceramics were brought in from the field they were washed and allowed to dry. After the ceramics had been allowed to dry completely, they were presorted into several gross categories, such as handles, rims and distinctive body sherds. These categories were then placed into smaller bags and stored in the larger unit bag. I felt that this presorting saved me time (~5-8 minutes) during my formal read of the unit. When I read the unit pottery I divided the pottery into discrete categories using our chronotype system. Each batch was then recorded on a form for future entry into our ceramic databases. For each batch I recorded the number of sherds, fabric color, weight in grams, body part, types of decoration, its chronotype designation and any unusual characteristics such as inclusion color or size. To speed up the process several standard abbreviations were used. For surviving ceramic body part I used: BS for body sherd, H for handle, R for rim, T for toe and E for edge (tile). For decoration I used: S for slipped, G for glazed, I for incised, R for rouletted, C for combed, P for painted, and Ri for ridged (tiles). During the reading of the pottery I pulled any diagnostic sherds (handles, rims, toes and decorated body sherds) for cataloguing, photographing and scanning for future study. These sherds were given a specific catalogue number based on its unit and batch. For example, a handle from unit 12 that was in batch 13 would be assigned the catalogue number 12.13. If more than one sherd from a unit was catalogued, they would be distinguished by the letters A,B, C, etc at the end of the unit-batch number, such as 12.13A or 12.13B.

2. Ceramic Interpretation of 2005 Pottery Analysis

The ceramic processing continued this season and 122 units were processed. While the analysis of this ceramic data has not yet been completed, several observations based on the initial reading of the pottery can be made. First, the lower level of the site, surrounding the excavations of Dr. Maria Hadjicosti, continue to be fairly uniform in producing large numbers of Late Roman sherds, the majority dating to the 4^{th} to 7^{th} centuries AD. This assemblage is composed mainly of coarse body sherds, both from storage and utilitarian vessels. The primary storage vessel at the site seems to be the Late Roman 1 amphora. A significant number of LR1 handles were found in several different fabrics this season at Pyla-Koutsopetria. There have been very few Late Roman imported amphora or Late Roman 2 amphora discovered so far. There is also very little cooking ware from any period in the assemblage examined so far. The Late Roman finewares processed this summer were mainly late Cypriot Red Slip (CRS) forms (form 9). Several CRS basins from the 6^{th} and 7^{th} centuries AD wereprocessed this summer. There were several Phocaean Red Slip Ware (PHW) rims in the examined units, but far fewer African Red Slip (ARS) sherds. Both the PHW and ARS forms were later forms from the 5^{th} to 7^{th} centuries AD.

Earlier periods (Iron Age, Hellenistic and Early Roman) were more strongly seen in the landscape, mainly through the presence of finewares such as Eastern Sigilatta A, Hellenistic Black Glaze, Hellenistic Color Coated Wares and Black Painted White Slipped Wares. In addition to the finewares, several archaic storage handles dating to the 7^{th} to 4^{th} centuries BC were discovered in units from the lower level. Later periods, from the Byzantine to the present, were once again conspicuously absent from the sampled pottery, strengthening the hyposthesis that the site was not reinhabited after its destruction/abandonment in the 7^{th} century AD.

The pottery from the eastern area of the survey area presented a different ceramic signature. The units closer to Kokkinokremnos had a higher percentage of Hellenistic material than other areas of the site, perhaps indicating settlement movement. The eastern areas out in the possible harbor area had little pottery and most of it was nondescript coarse wares that in many instances were very water worn. As the units approached the road they increasingly contained modern ceramics and refuse.

One unit of pottery from Vigla was examined and it contained mainly Iron Age and Hellenistic material with some Early and Late Roman material. There were also several Archaic storage handles and several Hellenistic amphora toes.

I also had a chance to examine the floor packing material from the floor of the "Medieval Building". The majority of the material was composed of Late Roman tiles and coarse wares indicating a *terminus ante quem* of 5th – 7th centuries AD, ensuring that the building was post Late Roman.

Future Work

The remaining 103 units of pottery, mainly smaller bags of sherds, and 10 total collection circles from 2004 still need to be read. In addition, a more intensive study of the catalogued artifacts needs to be conducted. A selection of the more diagnostic artifacts needs to be made for final publication. These artifacts need to be re-photographed and illustrated, perhaps with the help of illustrators recommended by Dr. Maria Hadjicosti. I would also like to undertake a more intensive study of some of handles, the archaic storage vessels, Late Roman 1 amphorae, and Koan amphorae since all are present in a range of fabrics. A comparison of our material with *comparanda* from other sites such as Kopetra would also be useful in identifying our pottery.

3. Artefact Registry Final Report

Work began in the Larnaca Museum on 27 July, with an inventory of the 2004 artefacts, to determine all units and the correct number of bags representing those units. Several anomalies from 2004 were noted. Unit 10 and Unit "22" were stored separately and identified as 'problem' Units. Neither of these was rectified during the 2005 season, and will need to be addressed during the 2006 season. Both have been kept aside for this purpose. Two large bags labeled as Unit 22 have been relabeled in red to indicate they should be treated as Unit 21. It is noted that there are currently two other bags which have been read and catalogued as Unit 22. The Lab registry sheets pertaining to Unit 22 are noted as only partially keyed, indicating that this unit needs to be addressed, perhaps by the Field Survey team. Two artifact bags from Unit 10 were also set aside implying an anomaly with this unit, though the reason for this is not yet apparent.

The 'Read' pottery from 2004 was separated from the 'Unread' units, and similarly, the 'Unread' washed from the unwashed. These units were then washed with toothbrushes and dried in lots on plastic bags, then returned to numerical order with the Unread units. (It should be noted that small units containing few artefacts were, on occasion, dried on plastic plates. However, this is not recommended practice, as these have the potential to upturn if caught in a gust of wind, risking the loss of vital information).

All units were given new Tyvek labels inside the bags. Tyvek labels are impervious by water, insects or tearing, and have been used to protect the unit information for all artifact bags from field seasons to date. Label information includes the project name, region of survey unit, unit number, date, DU method (eg: DU10) and the number of bags collected from the unit. It should be noted that Grabs have not received Tyvek tags, and this should be done during the 2006 season, once a method for registering Grabs has been developed.

The 2004 units containing read pottery were sorted, removing diagnostic sherds with batch labels for imaging. Diagnostic sherds included all handles, rims and bases as well as particularly diagnostic body sherds such as those with roulette or painted treatment. All bone, glass and metal artifacts were also removed and re-bagged by category for preservation, as these materials are particularly fragile. This process was continued with each newly read unit.

The 2005 museum work saw the intensive labeling and imaging of diagnostic artifacts, creating a corpus for the PKAP catalogue.

Artefacts were labeled using a base coat of clear (or white) acreloid and numbered with the unit and batch number using black ink. The artifact number is determined by a combination of the unit number, followed by a period, and the batch number (and sub-batch number, if required), for example, “246.4A”. This becomes the artefact’s unique number. After several tests of ink and archival ink pens, it was determined that a stylus with a size 104 nib provided the clearest label. Large artifacts were labeled using a size 103 nib. A clear top coat of acreloid was used to seal the ink. Tests also verified that ink was removable using acetone. Acreloid and ink are both fast drying and this meant that large batches of artifacts could labeled at one time.

In addition to artifacts retrieved from the 2004 read pottery, Dr Scott Moore continued to ‘pull’ diagnostic sherds as units were read, and assigned batch numbers to these. The unit and batch number form the permanent artifact ID.

Once labeled, artifacts were then sent to be imaged. Batches were divided between photography and scanning, some of which were imaged both ways. In general, artifacts to be scanned were determined by shape and size. ‘Flat’ artifacts such as rims, bases, some tiles and body sherds et c.,were scanned using a HP Scanjet 4070. These were scanned at a resolution of 300, and recorded in the scan log by the unique artifact number (using an underscore instead of a period and Dr. Scott Moore’s ‘reader’ number “_1”). If a profile or reverse image of that artifact was also scanned, the images were identified as a multiple using a suffix of ‘a’, ‘b’, et c. This exact number was used to label the image in the scanning album, for example, 39_12_1b. Where possible, rim profiles were also scanned in order to provide addition diagnostic information.

Artifacts that were determined not suitable for scanning were directed towards photography. The vast majority of these were handles, but also larger artifacts such as some worked stone and large diagnostic sherds. Greg Fisher, McGill University, was responsible for artifact photography, and has provided a separate report. A photography log containing the unique artifact number, provided a complementary record of imaged artifacts to that of the scanning log, so that a complete list of imaged, ie: catalogued, artifacts could be determined at the end of the season. The merging of this list shows that 616 artifacts were labeled and imaged during the 2005 season, creating a solid basis for the PKAP catalogue. For a complete report on artifact photography see below.

An inventory of all unit bags shows those units which have been read and those yet to be read. These units have been separated into fruit crates (numbered 1 -23) and labeled according to status. Crate numbers 1-8 are read/uncatalogued, 9-12 are catalogued, and 13-22 are unread. (Crate #22 also contains the anomaly bags of Units 10 and 21/22). Units are grouped numerically and these are indicated on the Tyvek label on the front of each crate. Crate #23 is marked ‘Misc’ and this contains Grabs, Bone, Glass and Metal artifacts. All crates are now stored in the locked cabinets at the Larnaca museum, though it is noted that storage space is at a premium, and this volume will need to be revised during 2006. Other project materials stored with the crates, include artifact bags, wash tubs, paper, labels, field tools et c. A complete inventory of PKAP project items was created and exists as an Access list.

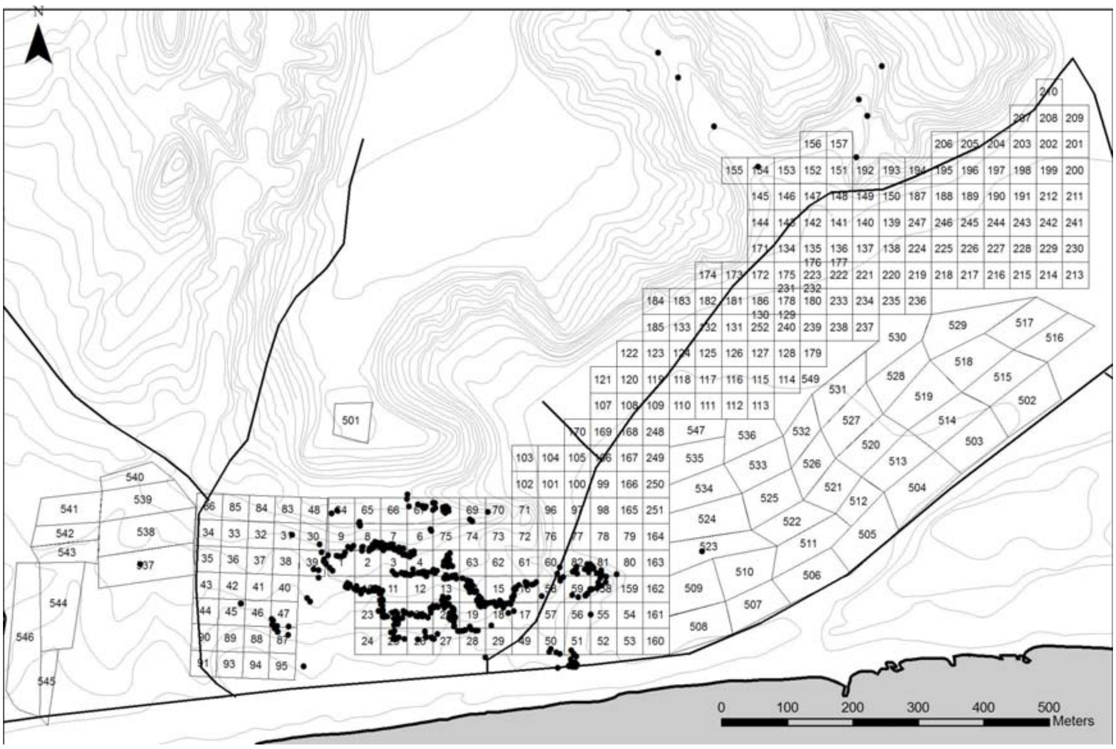
4. Photographing Artifacts

Artifacts

Artifacts (glass, ceramic) are photographed using a tripod, digital camera, and a piece of wood covered with a matte cloth clipped to each side with bulldog clips. The photo area is formed between the Kodak color scale and the cm scale to the top and bottom. The artifact is photographed with its tag number from which ever angles are required: e.g. the artifact may be photographed flat, in cross section, etc. The macro setting may be used on the digital camera. No flash should be used. The artifacts are photographed outside in the shade and it is prudent to stop up or doing as required to ensure that the color on both artifact and color scale are vivid. The camera should be at whatever distance above the cloth is required to adequately frame the subject matter.

Figures:

Map 1. The Distribution of Artifacts across the site of Pyla-*Koutsopetria*.



Map 2. The Distribution of Features across the site of Pyla-*Koutsopetria*