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NEW STUDIES ON THE SETTLEMENTS AND GEOGLYPHS IN PALPA, PERU

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INTRODUCTION

The valleys of Palpa and Nasca share the same cultural history, one which had its greatest expression during the Early Intermediate Period with the flourishing of the Nasca Culture (200 BC-AD 600). This region is known throughout the world for the giant ground drawings or geoglyphs that are dispersed through all the valleys and desert plains (*pampas*) that comprise the Río Grande drainage basin. Our study comparing the geoglyphs with settlements and associated artifacts in the Palpa drainage indicates that the majority of the geoglyphs were built by people of the Nasca culture, which had its largest population centers in the various valleys of the Río Grande basin and also in the valleys of Ica to the north and Acarí to the south (Figure 1).

Though renowned for its elaborate textiles, the Nasca culture is best known for its fine polychrome ceramics, which since their discovery at the start of the last century (Uhle 1913) have captured the attention and interest of the majority of investigators working on the south coast.[1] At the same time, another important group of scholars has dedicated itself to studying the geoglyphs.[2] It is only in the 1980s that there was an increase in the number of investigations into Nasca culture and in projects aimed at studying Nasca sociopolitical organization through field work involving excavations and surveys in the various valleys of the drainage (Browne 1992; Orefici 1993; Schreiber and Lancho 1988, 1995, 2003; Silverman 1986, 1987, 1990, 1993a, 1993b; Vaughn 2000).

Despite this rise in Nasca studies, a great part of the scientific literature on Nasca culture is still based on limited field work and poorly documented archaeological contexts (mainly grave lots and pottery collections), producing partial interpretations of the processes of Nasca culture and leaving holes to be filled in the culture history of the region. In this context, the Swiss-Liechtenstein Foundation for Archaeological Research Abroad, based in Zurich (FSLA) undertook the interdisciplinary Nasca-Palpa Project to study and, at the same time, conserve the valuable material remains of the region, designated by UNESCO as an example of the Cultural Patrimony of Humanity, through rigorous documentation leading to well-supported interpretations of scientific research. Thus, after the preliminary studies carried out in 1996 the authors of this article were charged with carrying out a first field season in a previously selected zone in the Palpa Valley in order to document systematically all the archaeological remains present there—both settlements and geoglyphs (Reindel 1997; Figure 2).

The objective of the 1997 investigations was to perform an archaeological survey of the study region. To this end we carried out a full-cover surface survey and excavated test pits over the course of four months. The field observations were complemented with a detailed photogrammetric documentation directed by Armin Grün that is being processed in the Swiss Federal Institute of Technology to obtain maps of the geoglyphs, the major settlements, and the topographic relief of the terrain (Reindel *et al.*

[1] Silverman (1993a:30-43) provides a complete history of research into Nasca ceramics.

[2] Aveni (1990:1-42) offers a detailed analysis of investigations carried out on the geoglyphs through the late 1980s.

2003). The specific objectives of the project were to improve the relative dating of the geoglyphs and to identify Nasca settlements that could lead us to a better interpretation of the political organization of that society.

The development of the field work included the use of airphotos from the Servicio Aerofotográfico Nacional (SAN) from 1944 and 1970, as well as color air photos at 1:5,000 scale taken especially for the project in 1997. The scale and color contrasts of these recent photos were of particular use. Site locations were plotted onto the 1:10,000 scale maps of the *Proyecto Especial de Titulación de Tierras* (PETT) of Peru's Ministry of Agriculture. We also used Instituto Geográfico Nacional (IGN) topographic maps at 1:25,000, 1:50,000, and 1:100,000 to complement other information on the study region.

THE STUDY AREA

The study zone selected to begin our research in this region is in the north part of the Río Grande basin, near the city of Palpa, where the valleys and tablelands still preserve a great quantity of geoglyphs and settlements closely related to each other (Figure 3).

The landscape of this part of the Río Grande Basin is characterized by a series of mountain chains that form the first spurs of the western slopes of the Andes. Between these mountains are the fertile valleys of the Grande, Palpa, and Viscas Rivers. One of these spurs, named the Cresta de Sacramento, forms the axis of the study zone (Figures 3, 5). This ridge is shaped like a long triangle that runs from southwest to northeast and is bounded by the Palpa and Río Grande Valleys, which join at the southwest end of the Cresta. The distance from this point to the height of Cerro Pinchango, the most prominent peak in the region, is more than 10 km. At its widest, the Cresta is almost 4 km wide and includes elevations ranging from 300 to 550 masl.

Near the confluence of the Grande, Palpa, and Viscas Rivers is an extensive, flat surface suitable for agricultural use. In prehispanic times, this area seems to have had a special attraction for the region's inhabitants, as it does today, owing to the amount of arable land as well as to the regularity of water availability throughout the year. The Río Grande is the only river in the region with year-round flow.

The Cresta thus occupies a sector in which the valleys are quite wide and where human occupation in the past was more intense. As a result, this zone has many archaeological remains, principally on the valley edges, the adjacent slopes, and the intermediate tablelands. There, one can observe a large number of settlements, cemeteries, and great complexes of figurative and geometric geoglyphs. The arable land is in the valley bottoms where there is almost no evidence of ancient constructions or of ceramics on the surface.

PREVIOUS INVESTIGATIONS

Few archaeological investigations have taken place in the Palpa zone. The first expedition was that of Julio C. Tello's team in 1927, but the reports of work carried out in Palpa have not come to light (Tello and Mejía Xesspe 1967:158). Years later, in 1946, Hans Horkheimer (1947) studied various geoglyphs and associated structures in the vicinity of the Cresta de Sacramento; he was the first to publish scientific data on the geoglyphs in the Palpa region and to call attention to their importance for developing further studies in the region (Horkheimer 1947: 62).

In 1957, William D. Strong published the preliminary results of the work done by the Columbia University expedition in 1952 and 1953 on the south coast of Peru. During this project, Strong visited various sites in the valleys of the Río Grande basin. One of the few sites he visited in Palpa was La Muña (PAP-79), which, from his description, seems to have been observed very preliminarily (Strong 1957:5).

In 1957, the intense looting of the Palpa Valley led the Patronato Nacional de Arqueología to charge Toribio Mejía Xesspe (1972, 1976) with an archaeeological investigation of the region. After a brief reconnaissance of the entire valley, Mejía

concentrated his studies on the left bank of the Palpa Valley because there he had found the majority of archaeological sites. He paid special attention to the zone between Chicchitara and and the city of Palpa (Mejía 1976: figure 1). On the right bank of the valley, Strong only studied four sites that he named Cerro Punchango A, B, C, and D.[3] Mejía did not personally visit the other sites of the Cresta de Sacramento but he saw them from a small plane, particularly the geoglyphs on the tablelands.

David Browne carried out a brief, 20-day survey in 1987 in a small sector of the middle Palpa Valley located a few kilometers northeast of the study zone for our project (Browne and Baraybar 1988). After this quick look, Browne returned in 1989 to do a more extensive archaeological survey that included part of the Palpa and Viscas Valleys and the lower section of the Río Grande to the confluence with the Ingenio Valley. There, Browne's survey zone connected with the area that Helaine Silverman had studied earlier that year (Browne 1992:77; Silverman 1993a, Silverman and Browne 1991).

Although Browne's survey area coincided partially with the area of our investigations, there are substantial differences between the objectives and field methods of the two projects (see Reindel *et al.* 1999:361). Nevertheless, the results of both investigations complement each other and provide quite a complete panorama of the study area.[4]

THE FIELD WORK

The investigations of the first season of the Nasca-Palpa Project took place between September, 1997, and March, 1998.[5] The team consisted of the authors, Klaus Koschmieder (Univertsity of Berlin), and four students from the Universidad Nacional Mayor de San Marcos and from the Pontificia Universidad Católica del Perú. The survey was carried out on foot, covering the edges of the Palpa and Grande Valleys as well as the intermediate zone – the slopes and tablelands – between them.

The registration and documentation of the sites employed a Site Registry Form that contains all of the data collected concerning the location and surroundings of each site, a description of the associated features, the site type, its cultural affiliation, etc. We complemented this documentation with sketch plans and maps as well as a detailed photographic record. At most sites we collected a representative sample of diagnostic potsherds. At 23 sites, we made a topographic and planimetric map and we dug test pits at 15 sites selected during the survey phase. The test excavations allowed us to resolve doubts concerning the temporal position of some settlements and, at the same time, to acquire more detailed knowledge of the stratigraphic position of the artifacts.

METHODOLOGY

We used site size and function to propose four categories or classes of archaeological sites for our analysis. Site function was inferred from associated features (type of architecture, presence or absence of middens, burials, etc.). Our four categories are: *monumental* (non-domestic sites with special or public architecture), *domestic* (habitation sites with related evidence), *cemeteries*, and *geoglyphs* (referred to as public-ceremonial sites). In addition, petroglyphs are found in the region. The map symbols for these four site types are squares, circles, triangles, and stars, respectively. Solid symbols indicate certainty about the function and hollow symbols indicate an approximation.

We used pottery to establish the temporal position of the sites. In this analysis, we followed the chronological schemes proposed by Menzel *et al.* (1964) for Early Horizon pottery and by Dawson (Rowe 1960) for Nasca ceramics (Figure 5), as their validity has been supported through the years, with

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[3] The current name is Cerro Pinchango.

[4] The investigations of the Nasca-Palpa Project have continued with excavations in Los Molinos and La Muña sites, among others, as well as with survey of other sections of the Grande, Palpa, and Viscas Valleys.

[5] The field work was authorized by the National Institute of Culture of Peru (Instituto Nacional de Cultura or INC) through Acuerdo N/ 270-97 of the National Archaeology Commission.

certain variations. These schemes are thus a good tool to approximate the date of the sites.[6]

In the case of the geoglyphs, except for some evident stylistic traits, the presence of associated ceramics was the most important element used to assign them dates.[7] Our supposition here is that the presence of ceramics of a particular phase on a geoglyph indicates the use of the geoglyph during that phase. Therefore, the oldest pottery would indicate (at the least) the time when the geoglyph was constructed. In a similar vein, the presence of ceramics of various phases would indicate the successive use of the geoglyph through time. The enlargements and superpositions observed on single geoglyphs clearly support this idea.[8] As a result of this method, having observed clear associations between the pottery and the geoglyphs, and also a recurring pattern of such associations, we have a high degree of confidence in the relative age assigned to each of the sites with geoglyphs.

RESULTS OF THE SURVEY

We registered 150 sites in total,[9] of which 100 (66.6%) correspond only to settlements, 26 (17.3%) only to geoglyphs, and 23 (15.3%) to sites sites that combine settlements and geoglyphs.[10] A single site (0.6%) consists just of petroglyphs, but there are two other sites (PAP-64 and -95) in which petroglyphs are associated with geoglyphs. In sum, the study area had a long prehispanic occupation from at least the Early Horizon (800 BC) to the Inca presence in the region (AD 1532). Most sites are on the edge of the valleys, on lower slopes, and in direct relation with the resources of the valley. Only some sites, those of the Early Horizon and, especially, those of the Late Intermediate Period, were established in dry quebradas, far from the valley, on the upper slopes or hilltops.

In the following sections we present a brief discussion of settlement patterns by period. For the Nasca culture, we divide the analysis by epochs. This approach seems more appropriate to us than using the stylistic phases of the pottery, given the difficulty in recognizing sites occupied during a single phase using surface collections. We don't reject the idea of doing a more detailed analysis by phase in the future, but at least for the moment we don't believe that potential results of such analysis would substantially change what we propose in this paper.

EARLY HORIZON (CIRCA 800-200 BC)

Evidence available from other valleys of the Río Grande Basin suggest that the first important occupation of the region occurred during the Late Paracas epoch, related to the Ocucaje 8 phase in the Ica Valley (Menzel *et al.* 1964; Silverman 1993b, 1994). In the Palpa zone, the only current evidence for occupations earlier than this phase is the discovery of a few potsherds from Ocucaje Phases 3, 5, and 6 in a few of the studied sites. In this context, the Jauranga site (PAP-150) is as of now the only one that offers concrete evidence of a permanent Paracas occupation related to Ocucaje Phases 5, 6-7, 8, and 9, the latter continuing into the Initial Nasca phase (Ocucaje Phase 10 and Nasca Phase 1).

The test excavations at Jauranga uncovered parts of mud walls, two burials, numerous artifacts, and other materials clearly exposed in the long stratigraphic sequence (Isla Cuadrado *et al.* 2003; Figure 6). Analysis of our 2003 excavations (Reindel and Isla Cuadrado 2004) and future excavations in other parts of the Palpa Valley will allow us to widen these contexts and to understand better the nature

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[6] For more details on the Nasca stlylistic sequence see also Gayton and Kroeber (1927), Roark (1965), and Proulx (1968, 1983).

[7] Silverman and Browne (1991:212) discuss the nature of these associations.

[8] In a few cases, when no pottery fragments were associated with a geoglyph, we also took into account the proximity of contemporary settlements when assiging a relative age; however, in such cases we used a larger time span.

[9] In reality, the number of sites is greater because there are many multi-component sites that are represented by only one number on the maps.

[10] Of these sites, five correspond to Late Intermediate Period occupations (PAP-28, -37, -49, -51, and -139) that are superimposed on Nasca geoglyphs.

of Paracas occupation in this part of the Río Grande Basin.

Considering that the best evidence that we have on the Early Horizon corresponds mainly to the last phases of the Paracas culture, we limit ourselves to presenting and discussing the sequence beginning with the Late Paracas Epoch.

Late Paracas (Ocucaje 8 and 9)

This epoch relates stylistically to Ocucaje Phase 8 (Figure 7). We found a few sherds of Ocucaje Phase 9 in sites that also have Phase 8, so we prefer to discuss the two phases together.

At this time, two areas have greater concentrations of sites, one in the La Peña de Mollake sector and the other in the Arenal sector, near the confluence of the Palpa and Grande Rivers (Figure 8). The rest of the study area only has scattered, small villages occupied by family units that would have taken advantage, in a limited form, of the resources of small sections of the valley.

In general terms, we can say that the settlements of this epoch consisted principally of small villages sited preferentially on the upper slopes, hilltops, and low spurs. With the exception of Jauranga, we rarely found sites of this epoch on the valley bottoms or edges. There are some much larger settlements that indicate the existence, at a small scale, of the first apparently public constructions, which were established in strategic places to control the resources of some sections of the valley. In this context, the sites of Pinchango Viejo (PAP-11) and PAP-77 stand out due to their location in difficult-to-reach places. Also, various defensive walls with trenches surround Pinchango Viejo. If this site were established to take advantage of the gold resources of the zone, that would explain its defensive character.

Everything appears to indicate that the first permanent occupation of the valleys occurred during Late Paracas times as a result of sustained population growth that laid the basis for a more complex sociopolitical organization. We should not be surprised at this process, if we take into account the prior development of the Paracas culture in the Ica, Pisco, and Chincha Valleys.

Finally, there is some evidence to support the idea that the first geoglyphs were built during this epoch. At Pinchango we saw a direct association between Ocucaje 8 habitation structures and geoglyphs. The sites with petroglyhs may also belong to this time or they may be even older, as is the case with various petroglyphs at the famous Chicchitara site.[11]

Transitional or Initial Nasca Phase (circa 200 BC-AD 1)

This epoch includes the Ocucaje 10 and Nasca 1 phases identified in Ica Valley materials by Menzel *et al.* (1964). At this time there are various ceramic types that represent a true transitional phase from the Early Horizon to the Early Intermediate Period. These types show gradual change from the techniques and styles of the preceding period to the style recognized formally as Nasca (see Reindel *et al.* 1999: figure 23).

The survey data indicate that almost the entire study area was occupied by small villages and lesser settlements that more than double the number of settlements of the previous epoch (Figure 9). This is true despite the fact that almost all of the right bank of the Río Grande between Arenal and Agua Rica, and the left bank between Los Molinos and Río Grande, were almost unoccupied. This fact by itself indicates a population growth that may have resulted from greater economic and social stability.

West of the confluence of the Palpa and Grande Rivers, the Arenal sector was partially abandoned during this epoch and in contrast, settlements are concentrated in the Estaquería sector on the edges and hills between the two valleys. This epoch is also the first time that the section between the settle-

[11] This site is 11 km to the northeast of the town of Palpa and has a large complex of petroglyphs that date mainly to the Late Paracas and Early Nasca Epochs. However, there are also some that exhibit Chavín influence.

ment of Río Grande and La Ranchería was occupied, coinciding with the simultaneous occupation of the hills and edges of the Viscas Valley near La Peña and the dense concentration of domestic and public settlements in Llipata (Browne 1992). Located on terraces and platforms built of cobbles and quarried stones, the settlements at this time occupied the hills as much as the valley margins.

Evidence from this epoch strongly suggests a site size hierarchy. Several sites, such as Estaquería B (PAP-73) and PAP-135, have structures of apparent public and ceremonial function associated with house terraces. We believe that these sites must have had a predominant role in the site hierarchy, as Browne (1992:79) suggests for the site on the lower slopes of the southwest side of Cerro Carapo.

The materials associated with the geoglyphs indicate that this epoch saw an increase in the construction of these lines, especially of the anthropomorphic figures found on the sides of the Cresta de Sacramento (Figure 10). The various anthropomorphic figures found on the tablelands and slopes of the San Ignacio, La Falda, and Llipata zone, all along the south side of the Palpa Valley also belong to this epoch. Previously incised on stones (*e.g.*, the Chicchictara petroglyphs), these figures were gradually represented on the lower slopes and sides of the hills and tablelands.[12]

EARLY INTERMEDIATE PERIOD (CIRCA AD 1-600)

Early Nasca (Nasca Phases 2 and 3)

Nasca Phase 2 is the one that formally defines the initial development of the social formation known as the Nasca culture, while Nasca Phase 3 represents the pinnacle of this south coast society (Figure 11). Evidence of both phases almost always occurs together on the surface of sites, so we analyze the two phases together.

The survey results indicate the presence of larger sites and an increase in the production of geoglyphs, which would suggest more stable economic and social conditions. Relative to the previous epoch, at this time we also see a slight increase in the number of sites (Figure 12), especially visible on the right bank of the Palpa Valley. We also note that during this epoch, settlement occurs for the first time on the left bank of the Río Grande Valley between the Puente Inka sector and the Panamerican South highway; the right bank of the same zone is occupied more intensely.

Domestic sites predominate in this epoch. With the exception of Los Molinos (PAP-93), we did not distinguish a dominant site in terms of size or architectural features. Everything indicates that Los Molinos played the most important role in the zone and would have been in contact with Cahuachi, the largest urban-ceremonial site of this time on the south coast (Silverman 1993a). The architecture of Los Molinos is totally new to the zone, including in particular adobe structures that define large rectangular compounds and artificial platforms that seem to have been intended for public functions.[13]

As mentioned above, in this epoch we also see a notable increase in the construction of geoglyphs (both geometric and figurative) and thus in related ceremonial activities. The potsherds observed on the majority of geoglyphs date to this epoch, and in some cases we found direct associations between geoglyphs and contemporary settlements (Figure 13).

Middle Nasca (Nasca Phases 4 and 5)

As with the previous epoch, we recovered materials of both phases together on many sites, permitting us to analyze Phases 4 and 5 as a single unit (Figure 14). As we understand it, while Nasca 4 constitutes the transitional phase and the recomposition of Nasca society after the collapse provoked by the abandonment of Cahuachi and other, lesser

[12] The majority of these figures lack a direct association with potsherds and/or settlements, so we estimated their relative age based on stylistic similarities between the figures and motifs represented on pottery or textiles.

[13] A site with similar constructions and associated geoglyphs is located near the village of Llipata, outside of the area covered by this report (see Browne 1992:110, site V907).

public centers, Nasca 5 represents the consolidation of a new political and social system that is seen in all of the valleys of the Río Grande basin.

In contrast with the previous epoch, the number of sites diminished notably in Middle Nasca (Figure 15). Various sectors of the valley were abandoned, although this change apparently did not affect the development of ceremonial activities related to the geoglyphs, which continued to be built. Some sites between the Pinchango and La Máquina sectors continued in use, and sites on the right bank of the Río Grande Valley between Loma Larga and Arenal show a notable increase of sites. This was evidently a favored zone due to the greater stability of water resources and large cultivable areas. Larger and more complex sites occur just in this zone, such as La Muña (PAP-79), which has domestic areas, adobe structures of possible residential use, and platforms associated with geoglyphs, as well as large funerary compounds that reveal a change in the structure of social relations.

While Los Molinos was almost abandoned and turned into a cemetery, La Muña and site PAP-78 seem to have taken on the dominant role in the lower part of the study zone. PAP-5 (now almost totally disappeared) would have assumed the same role in the upper part of the valley. A slight change in population size seems to have occurred during this time, producing a transfer of population to sections of the valley where there appear to have been better conditions for agriculture. As an hypothesis, we suggest that this epoch saw the beginning of the concentration of population in ever larger sites (although not as large as those of the Late Intermediate Period).

On the other hand, the total number of geoglyphs from this period is no greater than in the Early Nasca period. It appears that only a few geoglyphs were created at this time, and that most continued in use from the preceding period, or were remodeled or extended (Figure 16). The majority of geoglyphs from this period also yielded Nasca Phase 2 and 3 ceramics. Various settlements that were directly related to the geoglyphs dated to this period were also occupied in earlier periods.

Late Nasca (Nasca Phases 6 and 7)

Materials from Nasca Phase 6 are very rare, and in some cases are found in association with Nasca Phase 7 materials, for which reason we consider them together (Figure 17). It appears that Nasca Phase 6 was of very short duration, and formed a bridge between Middle and Late Nasca.

We noted that during this later phase, there was an increase in the number and size of settlements over those of the Middle Nasca period, although these were still smaller than those of the Early Nasca period (Figure 18). During this time, the right bank of the Palpa Valley, between La Peña de Mollake and La Máquina, was preferred for settlement. We noted an almost total abandonment of the land between Loma Larga and El Arenal, together with the continued lack of occupation of the left bank of the Río Grande between Los Molinos and Pauca Rastro. It appears that in this period sites were larger and brought together greater numbers of residents: for example, there are various sites (e.g., PAP-4, -16 and -66) that show signs of increased planning of their structures.

As for the geoglyphs, the Late Nasca period saw a marked decline in their number by comparison with the preceding period. In sum, it appears that most geoglyphs can be dated to earlier occupations and that few were created during this period (Figure 19). With the exception of one figure that appears to have been created during the Loro phase of the first part of the Middle Horizon, there is no evidence of any geoglyph being made later than Nasca 7.

MIDDLE HORIZON (CIRCA AD 600-1000)

Relatively little Middle Horizon material has been identified (Figure 20).[14] The majority of sites from this period are marked by the Loro style (formerly Nasca 8) of the first part of the Middle Horizon (Reindel *et al.* 1999: figure 31). In general, Loro phase ceramics are found on sites that were also

[14] The map does not show the sites that produced isolated materials from this period only.

occupied during the preceding Nasca 7 phase, indicating that there are close links between the two occupations even though Loro phase materials are distinct from classic Nasca style ceramics.[15] Most notable for Middle Horizon 2 was the recovery of isolated fragments of Wari ceramics of the Atarco and Viñaque styles from sites PAP-35, -39, -52 and -86. It was only at the last-mentioned site, where there were also local Wari ceramics and human burial remains, that there seems to have been a major Middle Horizon settlement.

For the moment, data related to the Middle Horizon are too scarce to permit one to undertake an analysis of local settlement. However, one cannot but note the apparent lack of settlements. This lack, which may, as proposed by Browne (1992:80) be due to the presence of Middle Horizon remains beneath sites of later occupation, should be examined as part of wider field research in the three linked valleys.[16] It is not probable that other valleys in the basin, such as Santa Cruz and Las Trancas, had major occupations during this time while, simultaneously, an area such as this with valuable potential resources would have remained abandoned.

Finally, as we have already noted, all signs indicate that the geoglyphs were constructed only up to the Nasca 7 Phase, with the exception of the reversed "S" shape found at site PAP-51.[17] This figure was associated with a Loro phase vessel and was superimposed on a spiral figure of the Middle Nasca period (Figure 21). Due to the presence of Middle Horizon ceramics in some of the geoglyphs, we do not eliminate the possibility that some geoglyphs had ritual or ceremonial uses during this period, although these were not as intense as during the Nasca occupation.

LATE INTERMEDIATE PERIOD (CIRCA AD 1000-1476)

The total number of Late Intermediate Period sites identified shows that the region came to be occupied gradually as it had been during Nasca times, and that there was a slight rise in population (Figure 22). This period was marked by extensive sites in which large numbers of people lived, something very different from the more dispersed settlement noted for Nasca (Figure 23). Given that studies of this period, and understanding of the materials, are very limited, it is very difficult to make specific temporal assignments for the settlements. Therefore, we discuss these sites in global terms. However, it is important to note that most of the sites appear to date from the latter part of the Late Intermediate Period (with some Inca influence), and that relatively few of the sites date to the early or middle portions of the period.

Late Intermediate Period sites are generally found a little way from the valleys, built upon small hillside terraces and inside quebradas. There are also sites that were placed on small high patches of land or on places at or near the tops of hard-to-reach hills, evidently for defensive reasons. This siting is curious because finding water in these places was not easy, which suggests that these were not habitation sites. However, save for a couple of exceptions such as PAP-28 and -37 that could have been used for the production of goods or other specialized applications, some of these sites were either temporarily or permanently occupied, which suggests that there were intra-group conflicts over control of the resources in one or other sections of the valley.

During the Late Intermediate Period relatively large, high-population residential settlements developed. It appears that sites such as Pinchango Alto (PAP-114) and Las Colcas (PAP-128) played a predominant role in the zone. We found other, smaller settlements across almost the entire study area, although we noted two concentrations in the

[15] Our 1998 excavations along the edge of site PAP-93 allowed us to identify a domestic occupation from this period. Similarly, our 1999 excavations at site PAP-92 revealed two tombs and various burials in the Loro and Chakipampa styles.

[16] Study of the three valleys was concluded in 2001 and a more complete examination is planned for a future publication.

[17] The reversed "S" design is very common in Loro phase iconography, but we note that it is also found in various phases of Nasca.

middle parts of the Palpa and Río Grande Valleys. We also noted a lack of sites between La Máquina and Estaquería (in the Palpa Valley), and between Molinos and the settled area of Río Grande (in the Río Grande Valley), possibly due to the lack of water in these sections.

LATE HORIZON (AD 1476-1532)

The Late Intermediate Period sites seem to have been occupied without major interruptions into the Late Horizon, and do not appear to have been much affected by the regional Inca presence. We found no purely Inca site. It may have been that the imperial administration held indirect control over the area's resources by means of alliances with local inhabitants.[18] The most important Inca administrative center in the region stood at La Legua, in the Ingenio River Valley, and has now almost totally disappeared.

SUMMARY AND CONCLUSIONS

The Nasca-Palpa project's first season recovered important evidence for reconstructing the region's cultural history, and in particular that of the Nasca culture. More specifically, we have been able to work on the relative dating of the Nasca geoglyphs, and on studies that give us a better understanding of the sociopolitical organization of Nasca society.

Our preliminary review of the material shows us that the zone we are studying was occupied from at least the middle of the Early Horizon (800 BC) to the Late Horizon (AD 1532). Although we recorded very few Paracas sites, we found that the Late Paracas occupation produced the first sites with stable settlement, which was greatly expanded during the subsequent Initial Nasca phase. This process continued through the Early Intermediate Period with the development of Nasca culture, when the number of settlements increased and the valleys were permanently occupied as they were until the Late Nasca period. In the Middle Horizon there was a notable fall in the number of settlements, most of which produced materials associated with the Loro and Chakipampa styles. This situation was in marked contrast to the Late Intermediate Period, during which there was a new rise in the number of sites, and a corresponding increase in site size. Finally, we should note that throughout the entire study zone, we have not indentified any pure Inca sites, although there are sites in neighboring areas that indicate there was a full-time occupation of the valleys during this period.

Our analysis of the settlements has allowed us to establish clear relationships between an occupation period and settlement patterns. It is very clear that settlements were built preferentially in the valleys, where access to resources such as water and cultivable land was most direct. In this sense, we note that the sections of the valleys with the most extensive agricultural land were almost always preferred, but it is also apparent that at various times, settlements were placed in the narrower sections of the valleys where arable land was less extensive, but where access to water was more certain.

It is also possible that geographical conditions and the presence of greater resources in one zone influenced the relative political importance of site location. In this sense, it appears that the wide swath of arable land at the confluence of the Grande, Palpa and Viscas Rivers was was particularly important during Nasca times. It is in this area that we find sites constructed for some public purpose, such as Los Molinos and La Muña. In the same fashion, we interpret the setting of Late Intermediate Period sites in locations that were strategic, but some distance from basic resources such as water and arable land, as indicating times of crisis or hostility.

As for the geoglyphs, we know that the majority of these are sited on the higher ground, valley sides, and sloping land above the valley bottoms. In the study area we have identified trapezoids and cleared areas (*campos barridos*) of enormous size, a large number of lines (straight, zig-zag, meandering, etc.), and a modest quantity of figures, mostly anthropomorphic, some geometric, and a few zoomorphic

[18] At Llipata, near the settlement of Pueblo Nuevo, we recently identified the remains of a large Inca site. This had been largely destroyed by heavy machinery in 1952.

(Figures 24-25). We also noted the superimposition of several geoglyphs (e.g., at sites PAP-50, -51 and -52), clearly indicating different construction episodes. This conclusion is reinforced by the recovery of pottery from different Nasca phases on geoglyphs at the same site.

On the basis of the pottery recovered from the surfaces of the geoglyphs, we can affirm, with a high degree of certainty, that most of them were laid out during the entire span of the Nasca culture, as part of a process that began at the end of the Early Horizon and that intensified during Initial Nasca (see also Silverman and Browne 1991). Construction of geoglyphs could have carried through into the early part of the Middle Horizon as part of the Loro style. Our studies have shown that most geoglyphs date to Early Nasca and Middle Nasca, and to a lesser extent to Late Nasca, which in general terms, accords with the conclusions reached by Hawkins (1969) following his research into the highest concentration of geoglyphs, on the Pampa de Nasca.

Susequent to this period, there is no evidence of geoglyph construction in the zone under study. The presence of fragments of Late Intermediate Period ceramics on some geoglyphs (e.g., PAP-28, -37, -49 and -51) was due to the establishment of new settlements near them. In some cases, these sites are on top of the lines, erasing portions of them. In the few geoglyphs in which we found remains of this period, we always encountered fragments or pieces of Nasca pottery in situ, which indicated that the geoglyphs were older. Furthermore, the placing of various Late Intermediate Period sites on top of others with geoglyphs showed that by this period, the geoglyphs had lost their original function and significance and evidently no longer had the value they had once had. This is not to say that during this period, ritual events could not have occurred in the geoglyphs, but they would have had a very different sense from those of the Nasca culture.

These results stand in clear opposition to those obtained by Persis Clarkson (1990; see also Clarkson and Dorn 1991), who following her examination of the geoglyphs of part of the Pampa de Nasca, stated that only the figurative geoglyphs can be ascribed to the Early Intermediate Period and that the linear geoglyphs (trapezoids and lines) were later, either from the Middle Horizon or from the Late Intermediate Period (Clarkson 1990:170).[19] Though we doubt it, it is possible that Clarkson's data refer to geoglyphs re-used in later periods, something for which there is no evidence in Palpa. The association of Nasca materials with the geoglyphs is evident in the majority of geoglyphs studied and is not open to doubt.

With respect to the function and significance of the geoglyphs, scholars have proposed various theories about aspects of these features (Aveni 1986, 1990; Hawkins 1969; Kosok and Reiche 1949; Mejía Xesspe 1940; Morrison 1978; Reiche 1968; Reinhard 1986, 1988). Although it is not the main point of this report, we consider that one of the main problems with this type of investigation is the attempt to assign a single cause to what are clearly complex cultural phenomena, as is the case with the Nasca culture. The geoglyphs that are distributed across all the river valleys in the basin have the same form and details of construction, and appear all to have been part of one project conceived and directed by specialists, rather than being the products of separate groups that shared similar practices.[20]

This last characteristic can be seen not only in the study area, but across the entire Nasca and Palpa area, in which across the full time range one can find a few basic shapes (*e.g.*, straight lines, trapezoids, spirals, etc.) that at the same time offer such a

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[19] The radiocarbon dates presented by Clarkson and Dorn (1991) show a Nasca affiliation for the Pampa de Nasca geoglyphs. However, data from Dorn must be viewed with caution because these have been criticized in the scientific literature (Beck *et al.* 1998) and Dorn himself admits that he "made two critical mistakes on the radiocarbon dating of organic matter associated with rock varnish" (Dorn 1996a:10) and that "the interpretation of radiocarbon ages associated with rock varnish is unclear" (Dorn 1996b:589). In any case, Clarkson's arguments for the later dating of the linear geoglyphs are based on ceramic evidence.

[20] See Urton (1990) and Silverman (1990) for interesting discussions of these views.

variety of details that it is not possible to find any two that are identical. The uniformity of the basic designs and construction techniques shows that the inhabitants of the basin shared certain concepts, and that there must have existed at least a class of specialists who were responsible for the design and layout of the geoglyphs. However, the variability in the final layout of the geoglyphs was due to their adaptation to the local terrain, in that the form, type and area of land available influenced the final design. We also point out here that even though the design and layout of the geoglyphs were done by specialists, their actual construction was carried out by non-specialists brought in from the local communities, which would have led to differences between the original designs and final layouts. Such differences can frequently be seen in the Nasca and Palpa geoglyphs.

An additional factor that supports the idea of common action in the construction of the geoglyphs (as is the case with pottery and textiles, among others) is that many of the trapezoids and figures are connected one to another by lines that cross the entire plain or traverse large distances, and that are not normally visible in aerial photographs. We have also noted that the changes, additions and superimpositions made over time follow the same design principles we have already discussed.

Another element in this discussion is that a brief analysis of the largest trapezoids in the zone shows that they are aligned mostly to the north (between north-west and north-east).[21] Furthermore, it can be observed that in the majority of cases (90%), the point of the trapezoid is at a higher elevation than its base. Given that these regularities cannot be casual, we consider that there was a close relationship between the orientation of the trapezoids and a possible regional practice of water management. In effect, the three rivers that come together in the Palpa region (the Grande, the Palpa and the Viscas) appear in the area toward which most of these trapezoids are oriented. Although we still do not have any concrete evidence of this, we suggest that the complex of geoglyphs created on the Cresta de Sacramento could also have played a role in ceremonies connected to water and to fertility (Reinhard 1988).

Finally, to focus on the nature of the social and political organization of Nasca culture, we should note the marked uniformity and development over time of its material culture (ceramics, textiles, geoglyphs, etc.) along with the existence of a relative hierarchy in settlements, among which we highlight sites such as Los Molinos and La Muña that would have fulfilled the role of regional administrative centers in the zone. Our analysis, when taking these factors into consideration, suggests that behind these works lay a well-organized political and social structure that could only have come into existence through the actions of a central government that was based on a state system. This conclusion is in contrast to the widely accepted theory that Nasca society consisted of a series of simple local chiefdoms (*curacazgos*) sharing common symbolic and religious roots (Carmichael 1994; Silverman 1993a; Silverman and Proulx 2002).

Our analysis of settlement patterns is still in progress and our basic information is being amplified by further studies in other sections of the valleys of the Alto Río Grande, Palpa and Viscas Rivers. More extensive fieldwork and future study, together with other projects in other valleys in the basin, would help to support the hypotheses we have laid out here. A full report in which we present the results of all the studies made by the Nasca-Palpa project is expected to be published in the near future.

Translated from the Spanish by David Fleming and Daniel H. Sandweiss

[21] A complete record and analysis of the geoglyphs in the Palpa region, particularly those on the Cresta de Sacramento, is being undertaken by Karsten Lambers of the Nasca-Palpa project as part of his doctoral research at the University of Zurich (Lambers 2004; Reindel *et al.* 2003).

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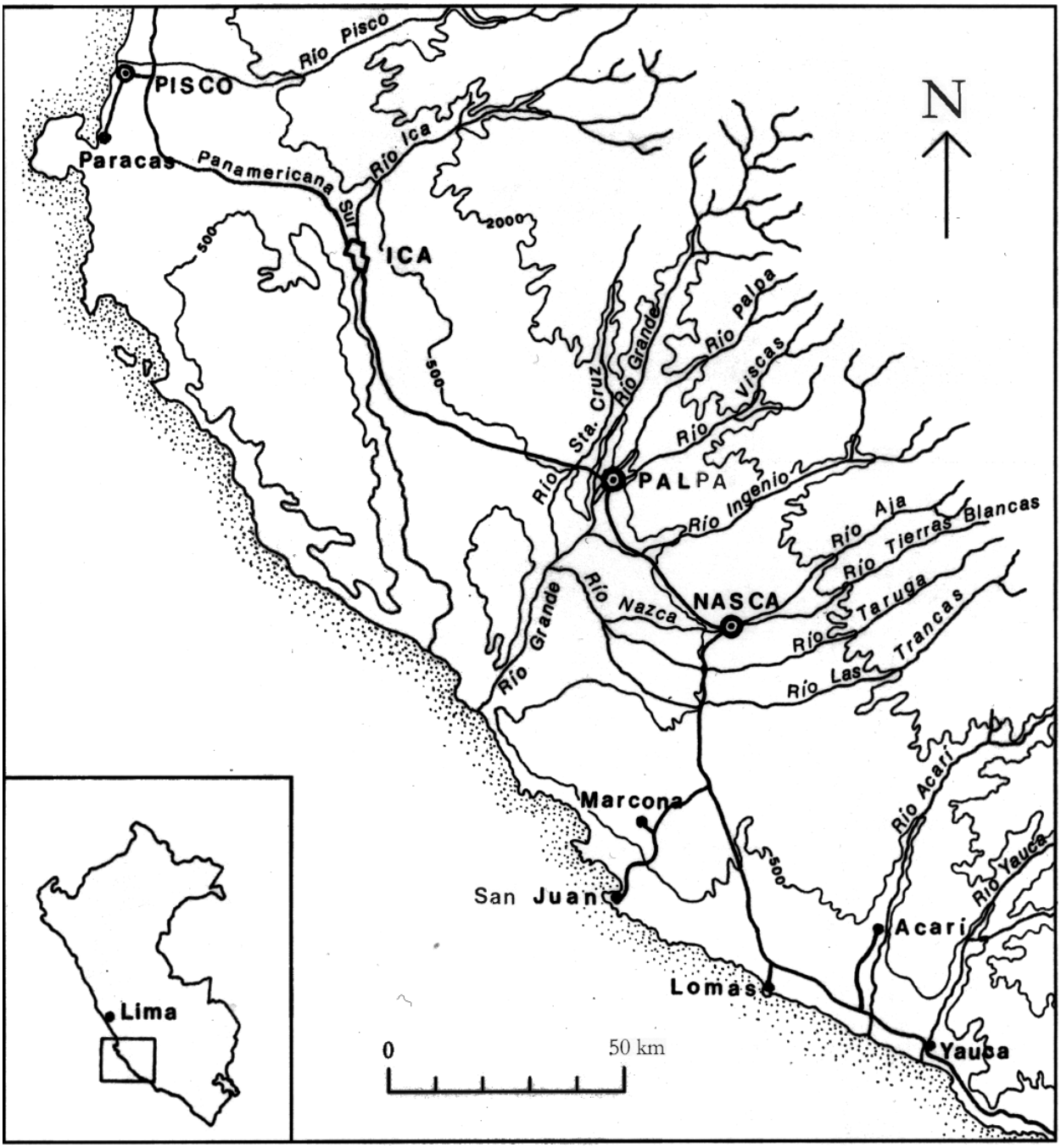

Figure 1. Map of the basin of the Río Grande showing the location of the main valleys, on the south coast of Peru (from Reindel et al. *1999)*

Figure 2. Aerial view of a section of the Palpa Valley in which can be seen the clear association of settlements and geoglyphs from the Nasca culture.

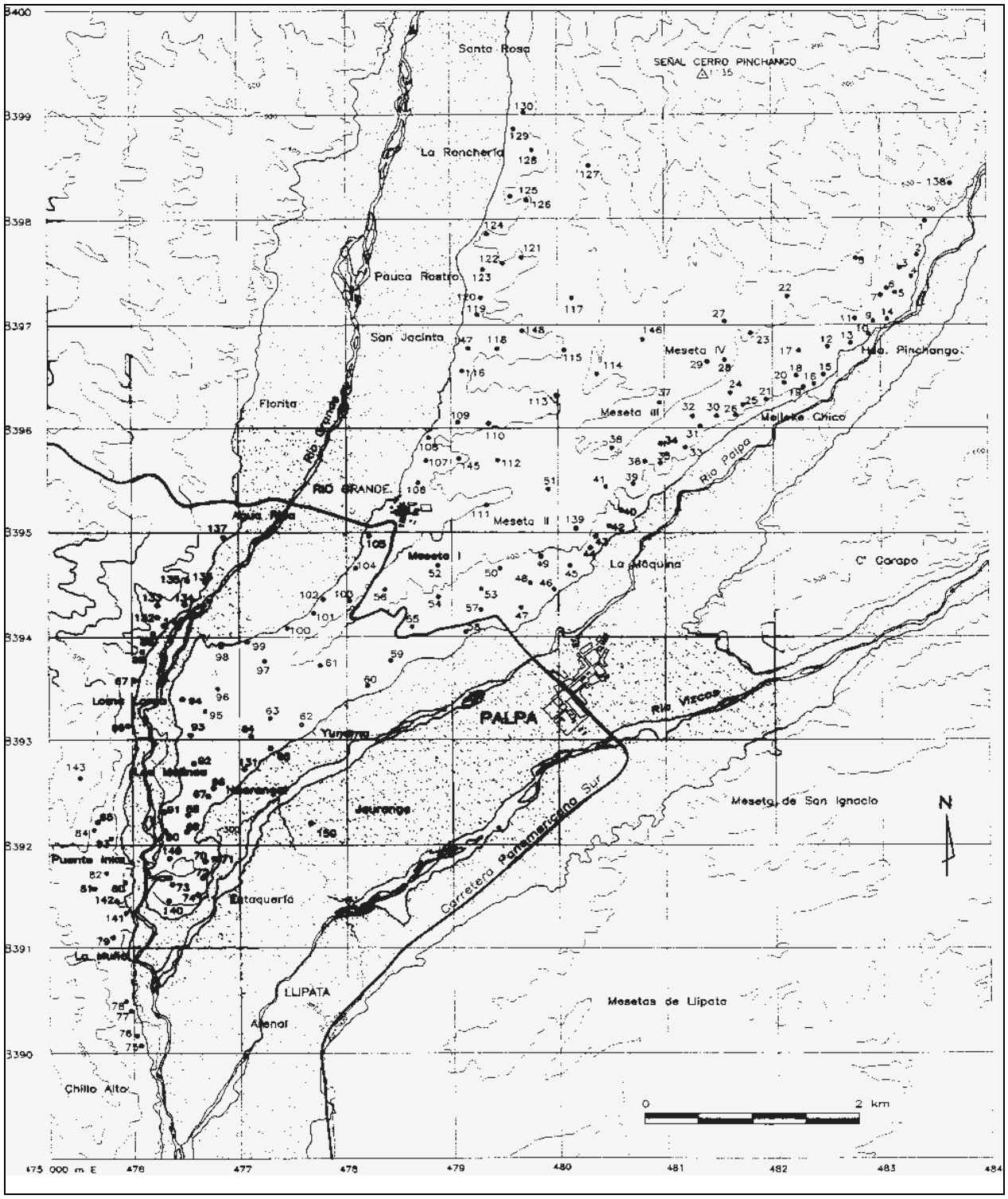

Figure 3. Map of the study zone showing the location of sites documented during the surveys.

Figure 4. Panoramic view of the study zone, with, in the foreground, the Cresta de Sacramento and the Palpa and Río Grande Valleys.

Dates	*Chronology of the Ica Valley*			*Chronology of the Palpa Valley*
	Periods	*Cultures*		
AD 1532	Late Horizon	Inca		Inca
AD 1476	Late Intermediate Period	Ica		Poroma Carrizal
AD 1000	Middle Horizon	Wari		Loro and Wari
AD 600	Early Intermediate Period	Nasca	Late	Nasca 6 and 7
			Middle	Nasca 4 and 5
			Early	Nasca 2 and 3
1 BC-AD 1	Transitional	Initial Nasca		Ocucaje 10 and Nasca 1
200 BC	Early Horizon	Paracas	Late	Ocucaje 8 and 9
			Middle	Ocucaje 5 and 6
800 BC			Early	Ocucaje 3?

Figure 5. Chronological chart summarizing the region's cultural history (based on Menzel 1977:88-89).

Figure 6. Paracas burials discovered during the excavations at Juaranga (PAP-150) in the Palpa Valley.

Figure 7. Characteristic vessels of the Late Paracas (Ocucaje 8) period, left as offerings in the Juaranga burials.

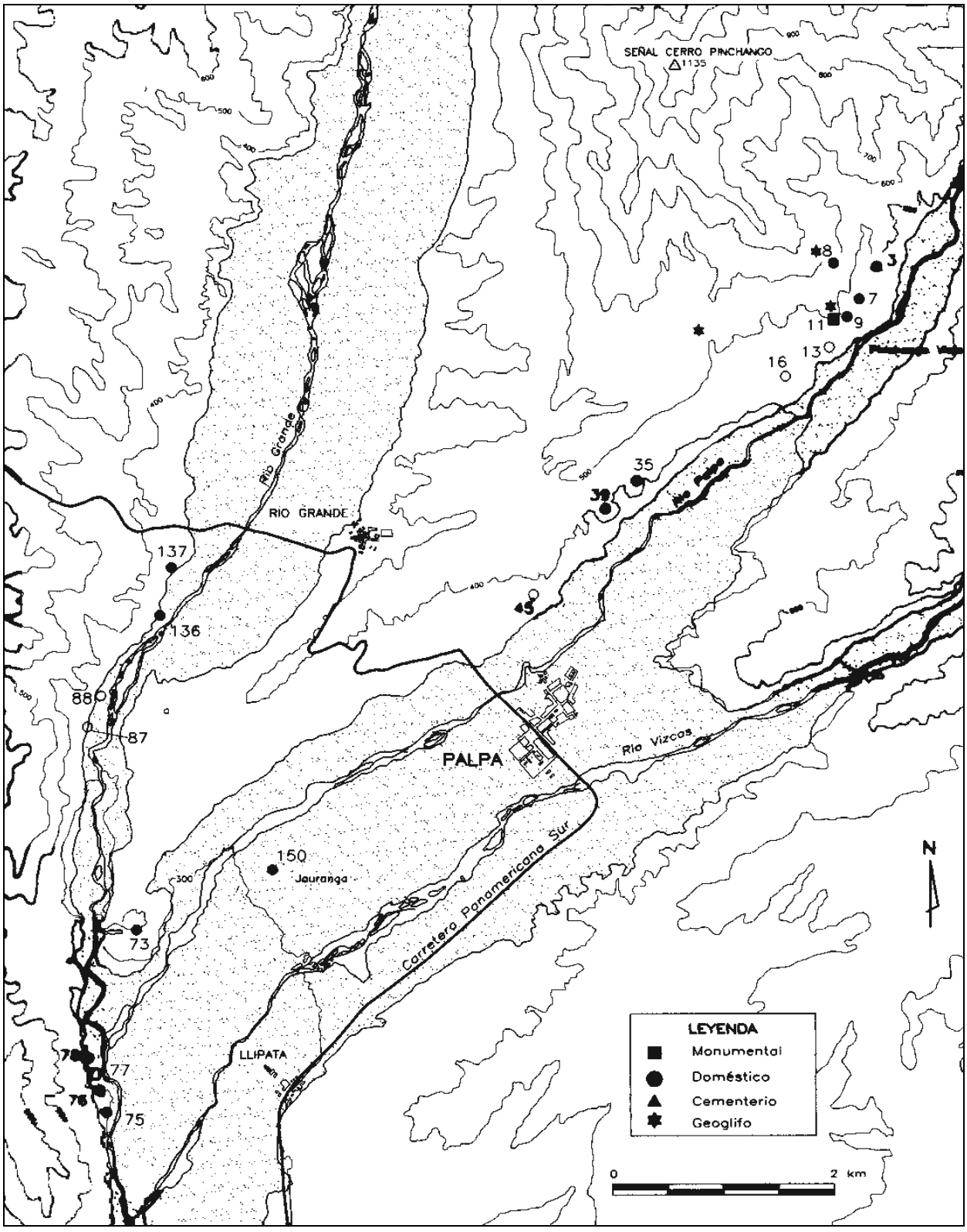

Figure 8. Location of Late Paracas sites (400-200 BC).

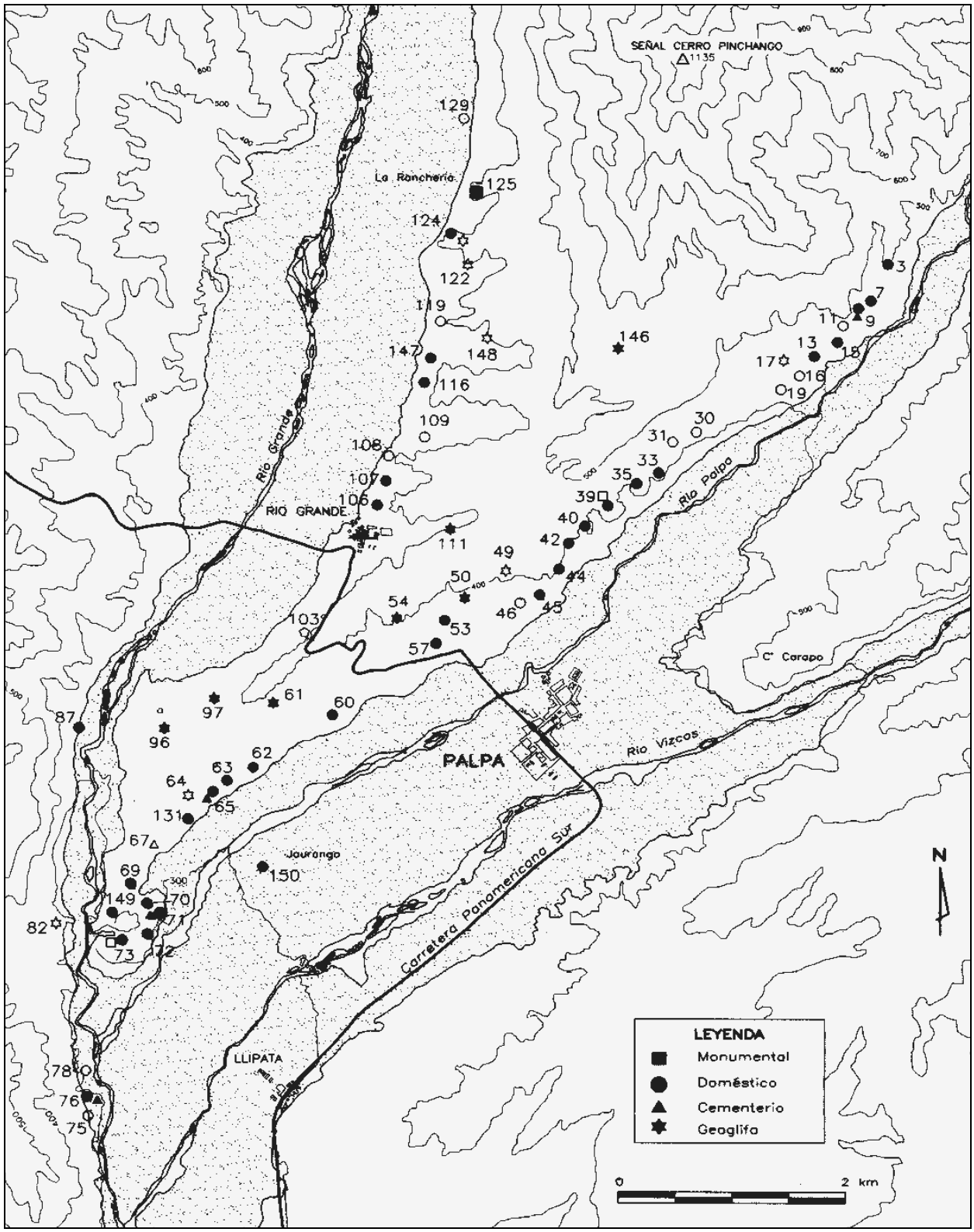

Figure 9. Location of Initial Nasca sites (200 BC-AD 1).

Figure 10. Aerial view of site PAP-50 in the zone known as "Solar Clock" (Reloj solar). *Between the geometric and figurative geoglyphs are various anthropomorphic figures that date to the Initial Nasca occupation.*

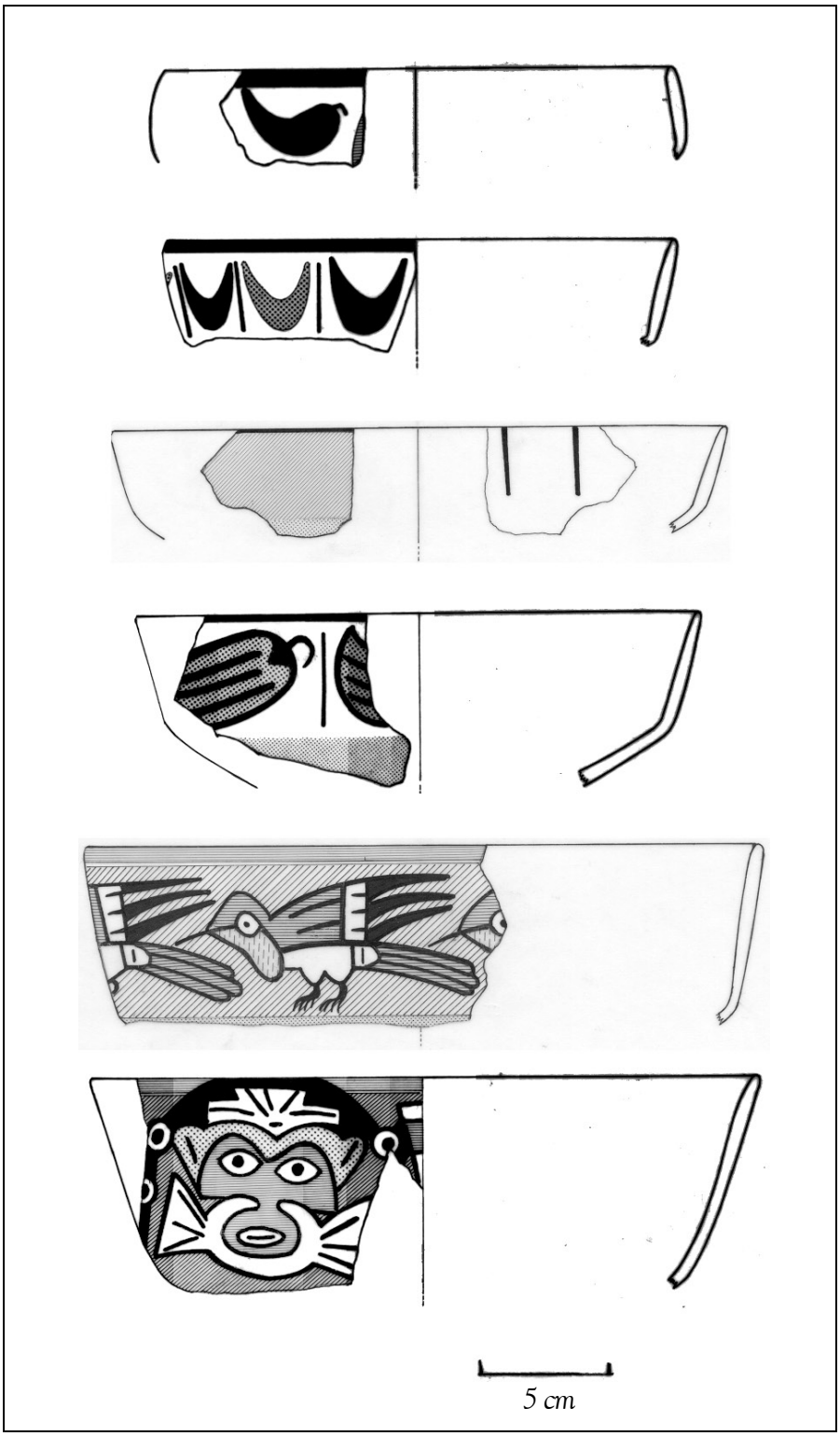

Figure 11. Fragments of ceramics characteristic of the Nasca 2 and Nasca 3 phases.

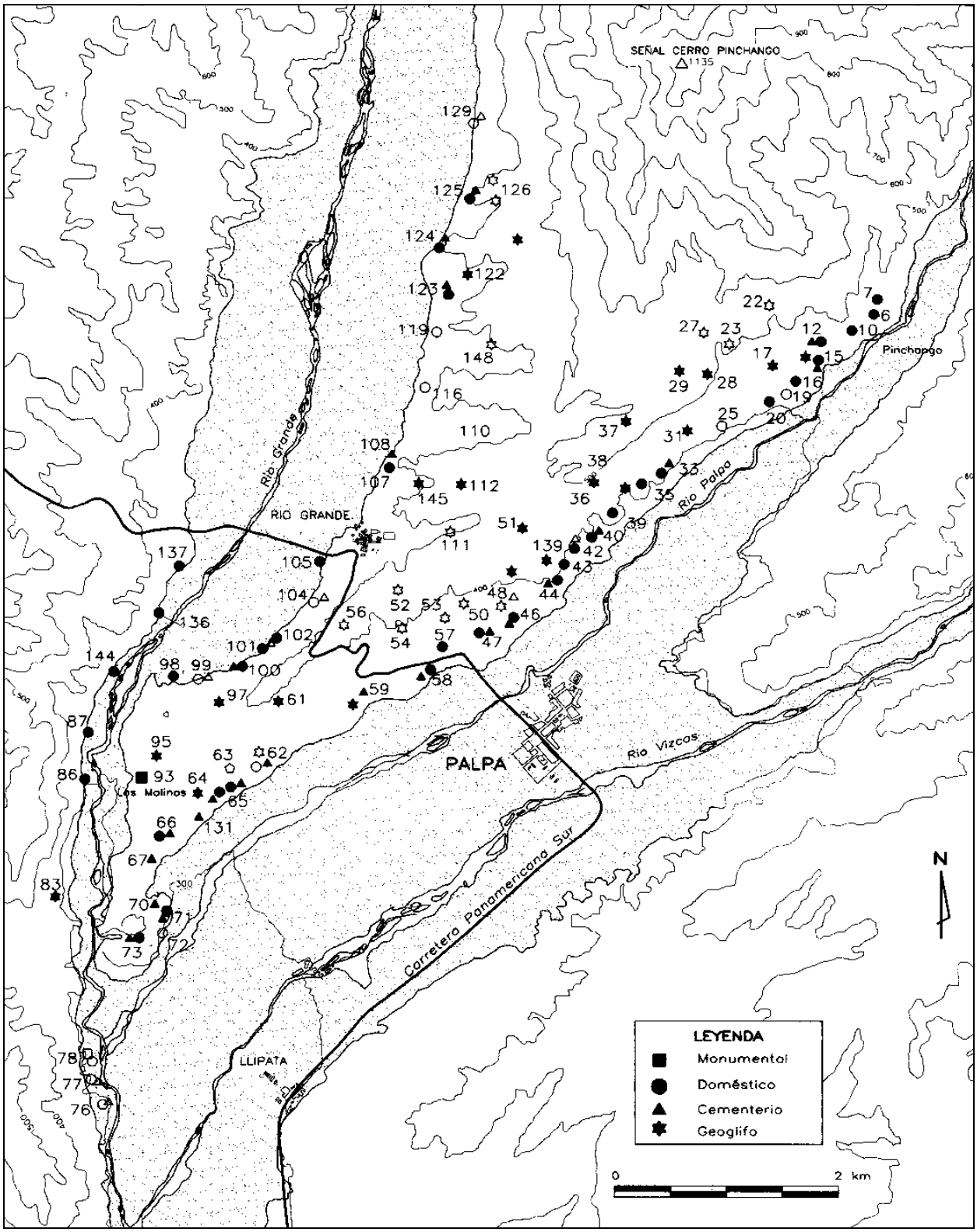

Figure 12. Location of Early Nasca sites (AD 1-200)

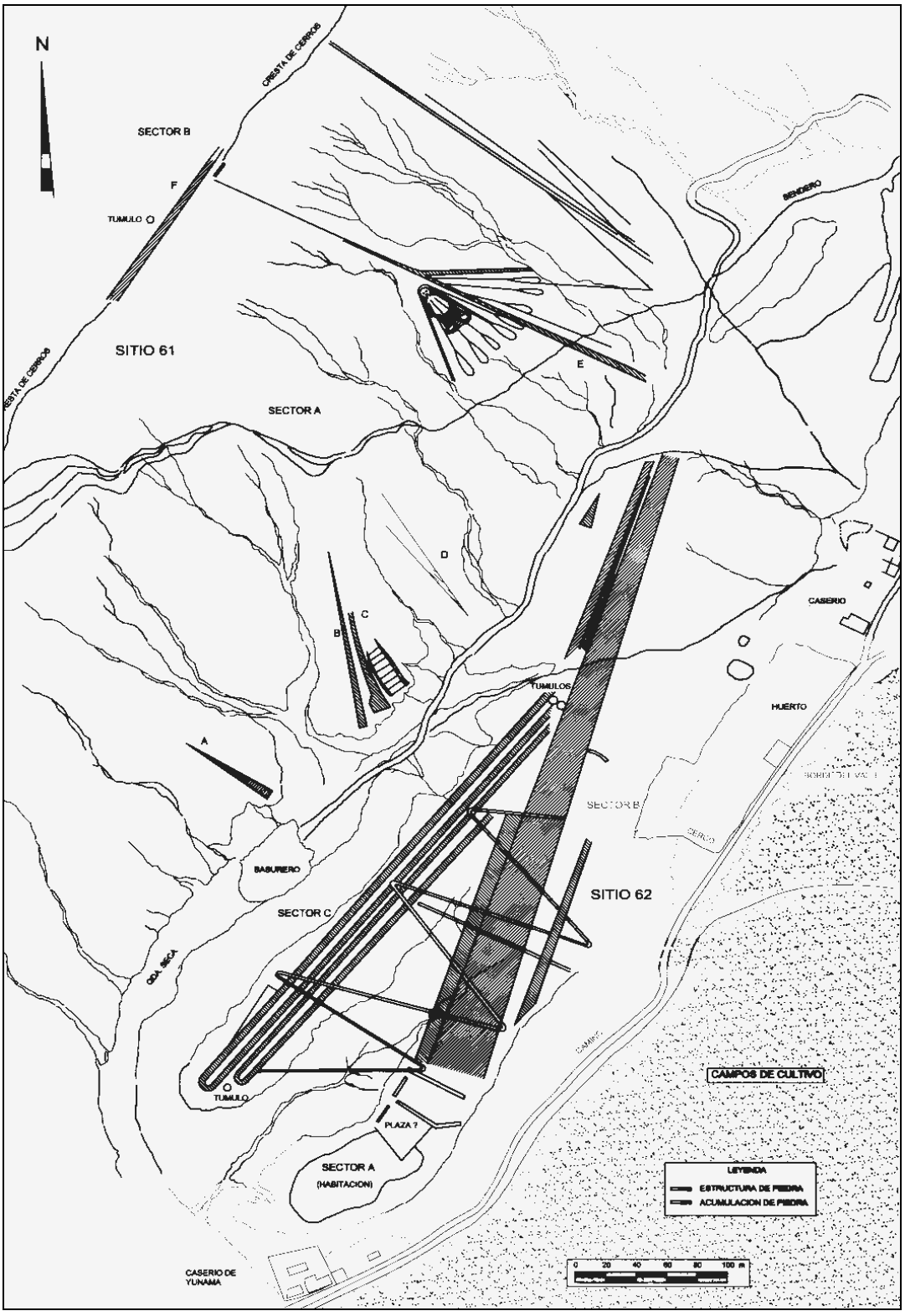

Figure 13. Schematic plans of sites PAP-61 and -62 showing a series of straight and zig-zag lines, trapezoids, and an anthropomorphic figure 36.6m in length.

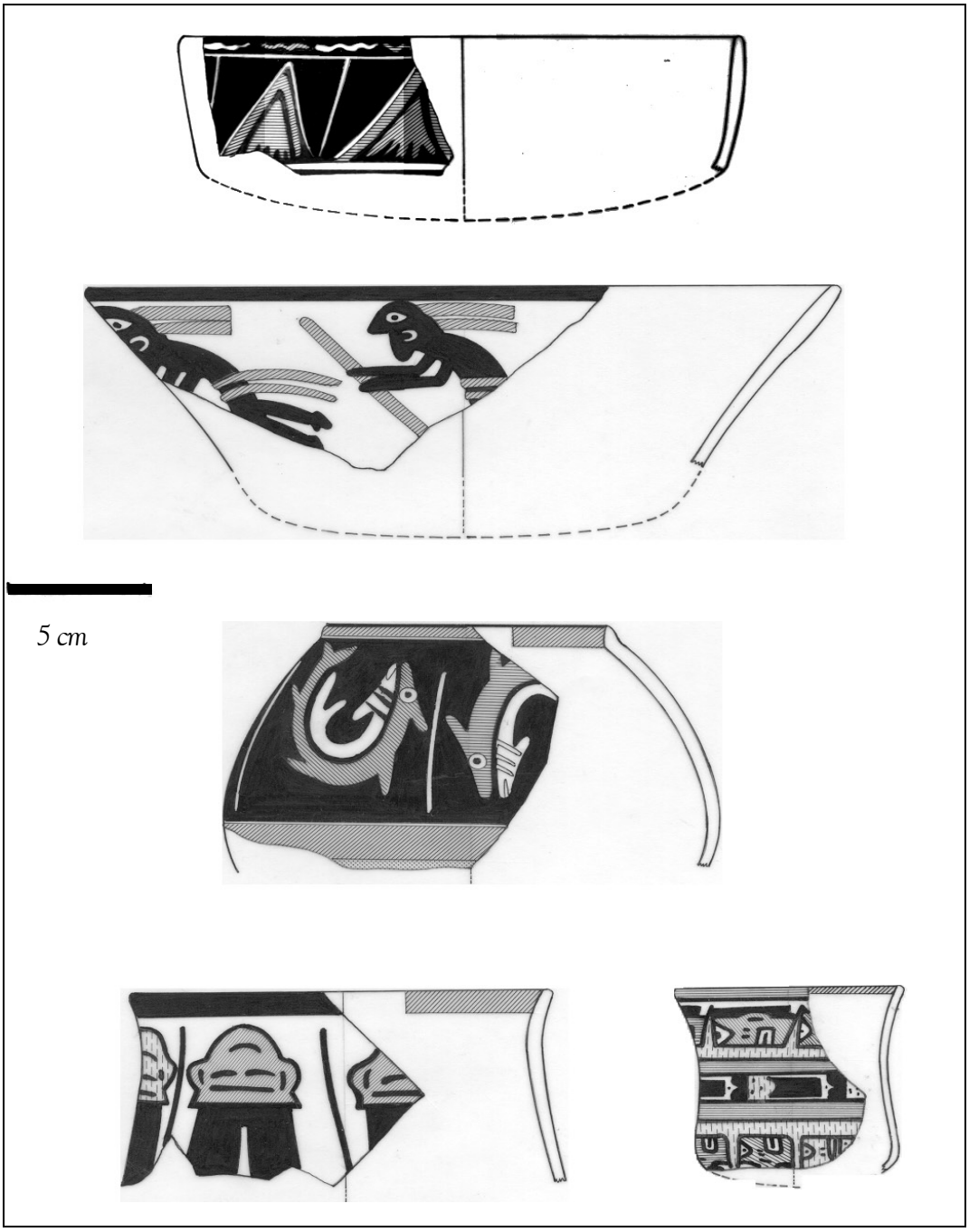

Figure 14. Fragments of ceramics characteristic of the Nasca 4 and Nasca 5 phases.

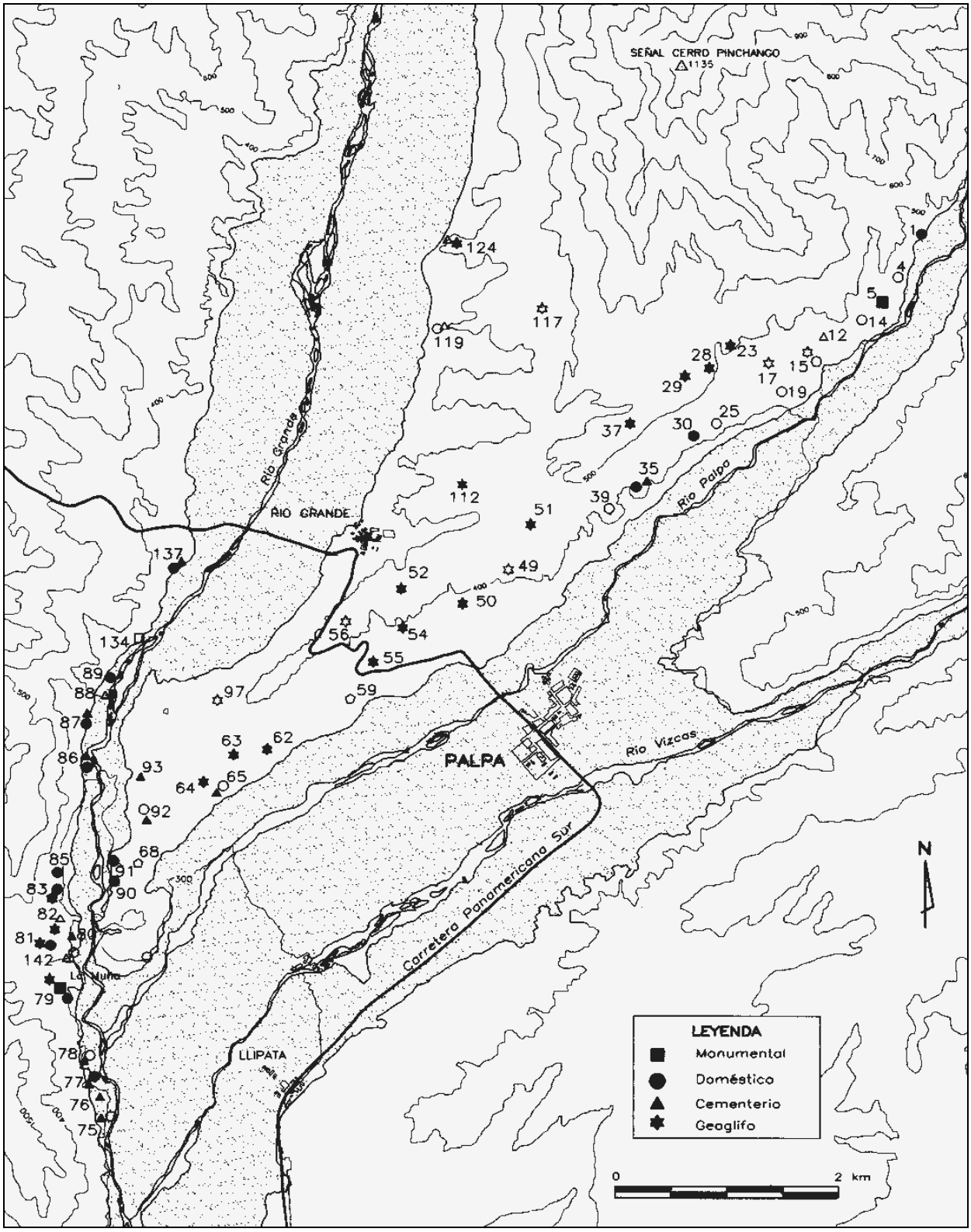

Figure 15. Location of Middle Nasca sites (AD 200-400).

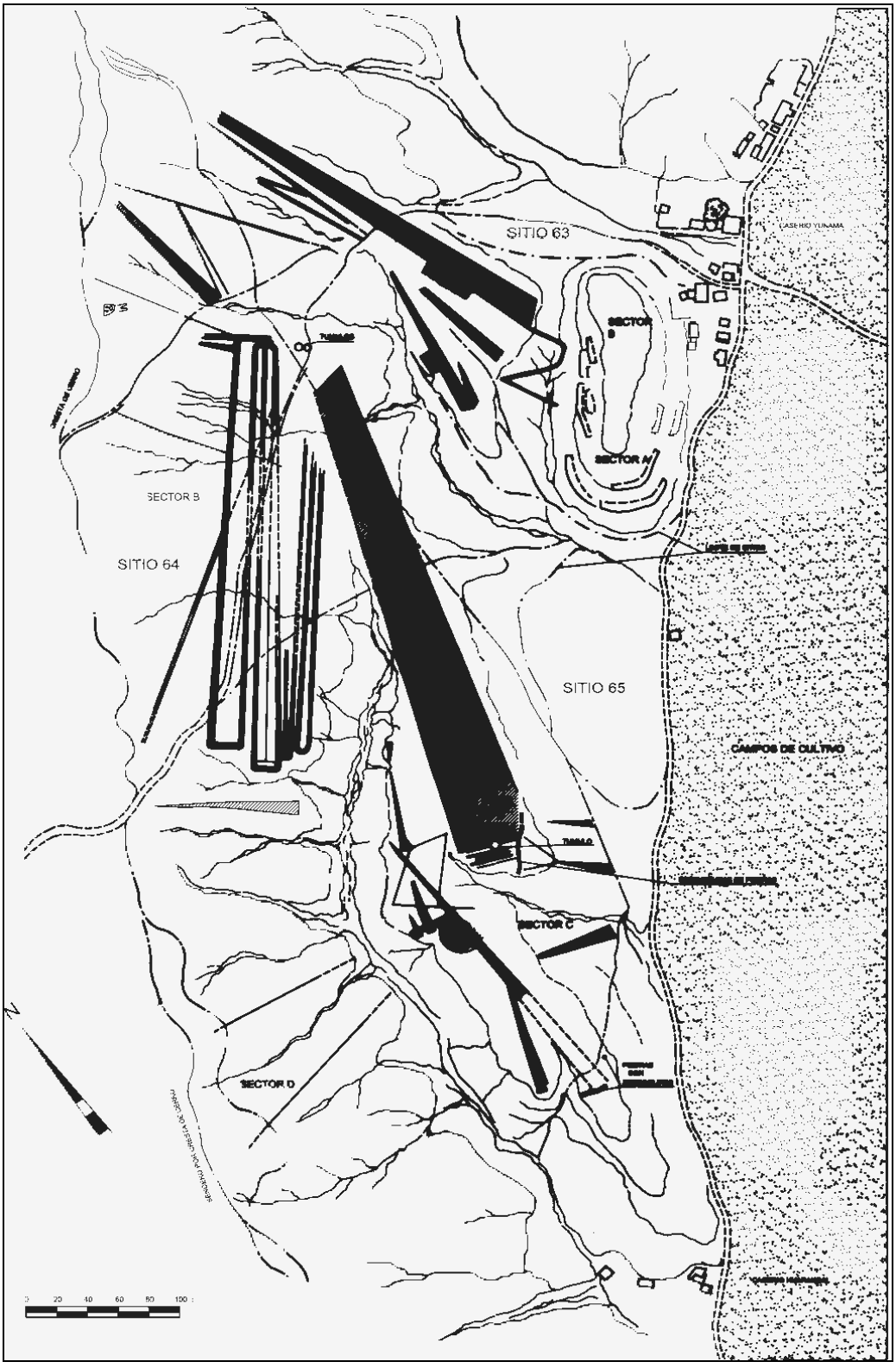

Figure 16. Schematic plans of sites PAP-63 and -64 showing a large group of lines and trapezoids directly related to Nasca habitation sites.

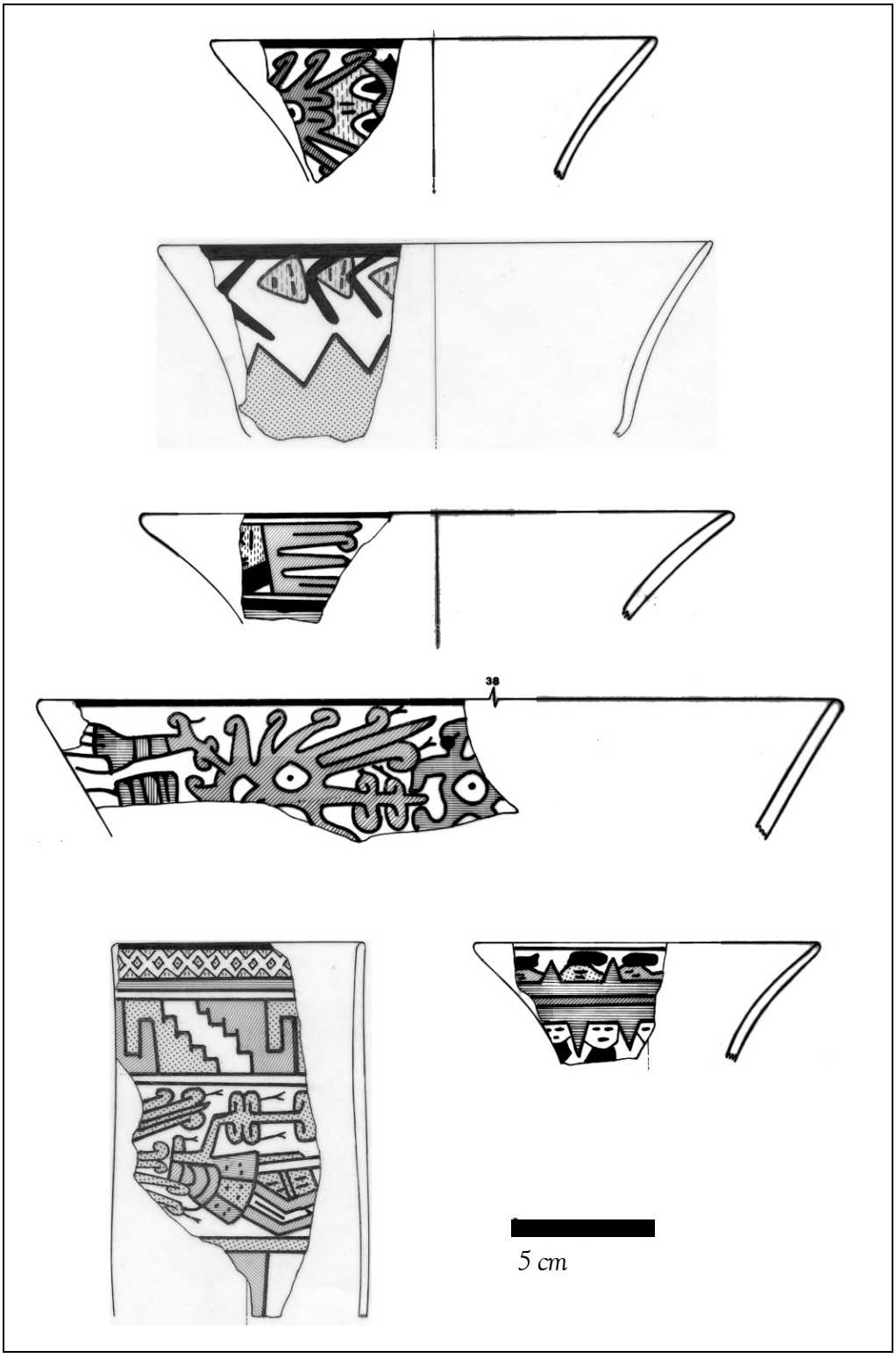

Figure 17. Fragments of ceramics characteristic of the Nasca 6 and Nasca 7 phases.

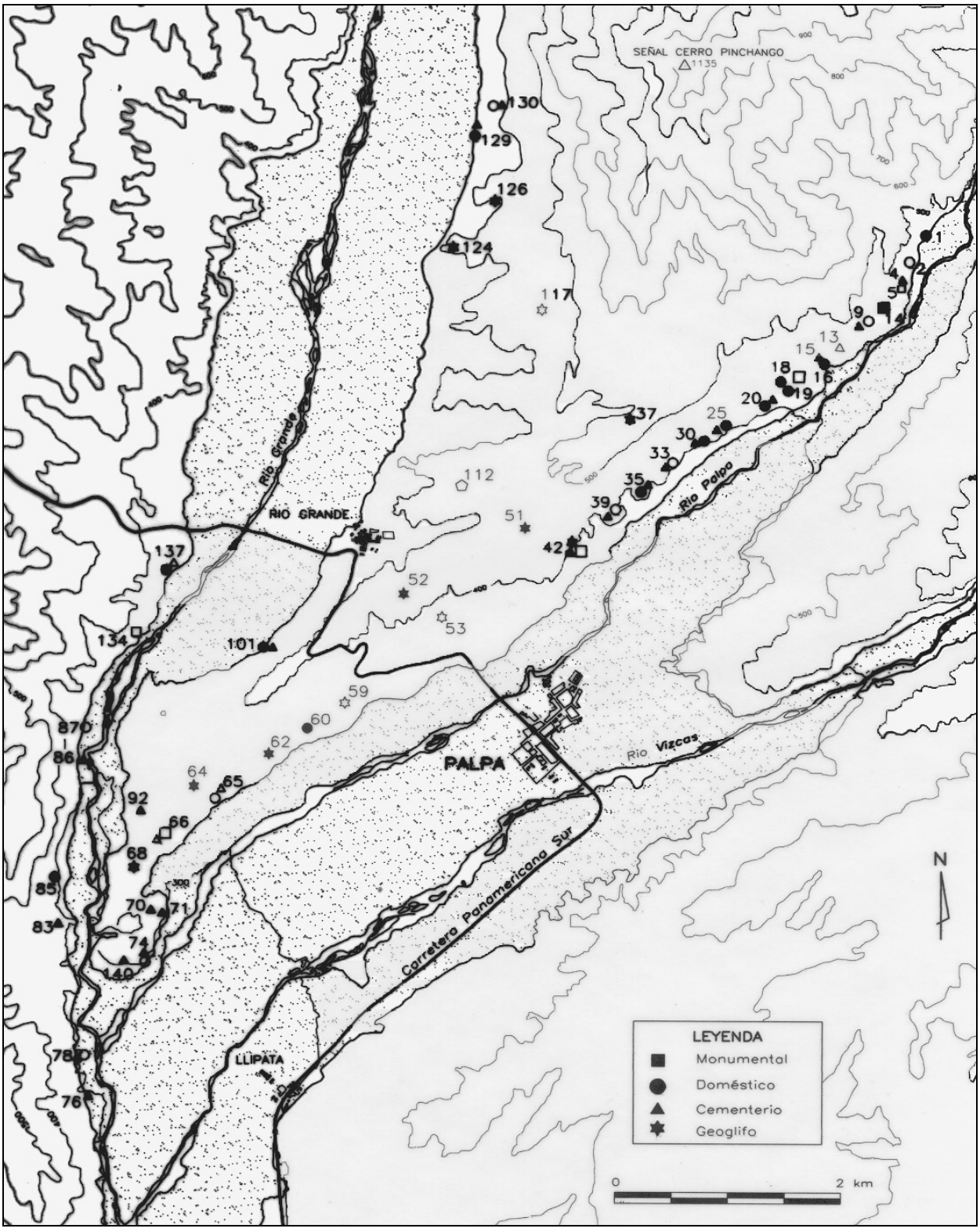

Figure 18. Location of Late Nasca sites (AD 400-600).

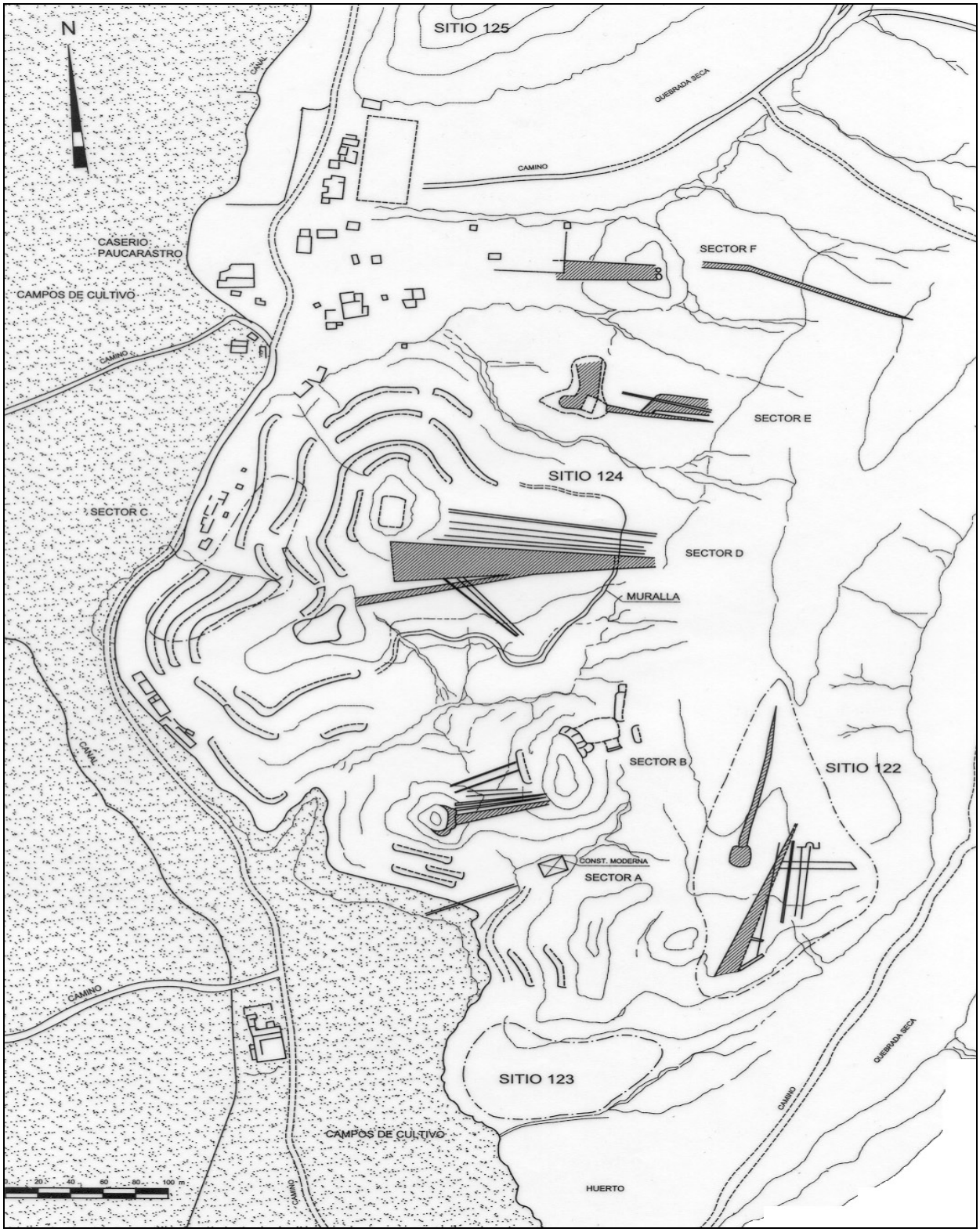

Figure 19. Schematic plan of site PAP-124 in which on can see various geoglyphs created in the Late Nasca period overlying walls and habitation terraces from the Initial Nasca period.

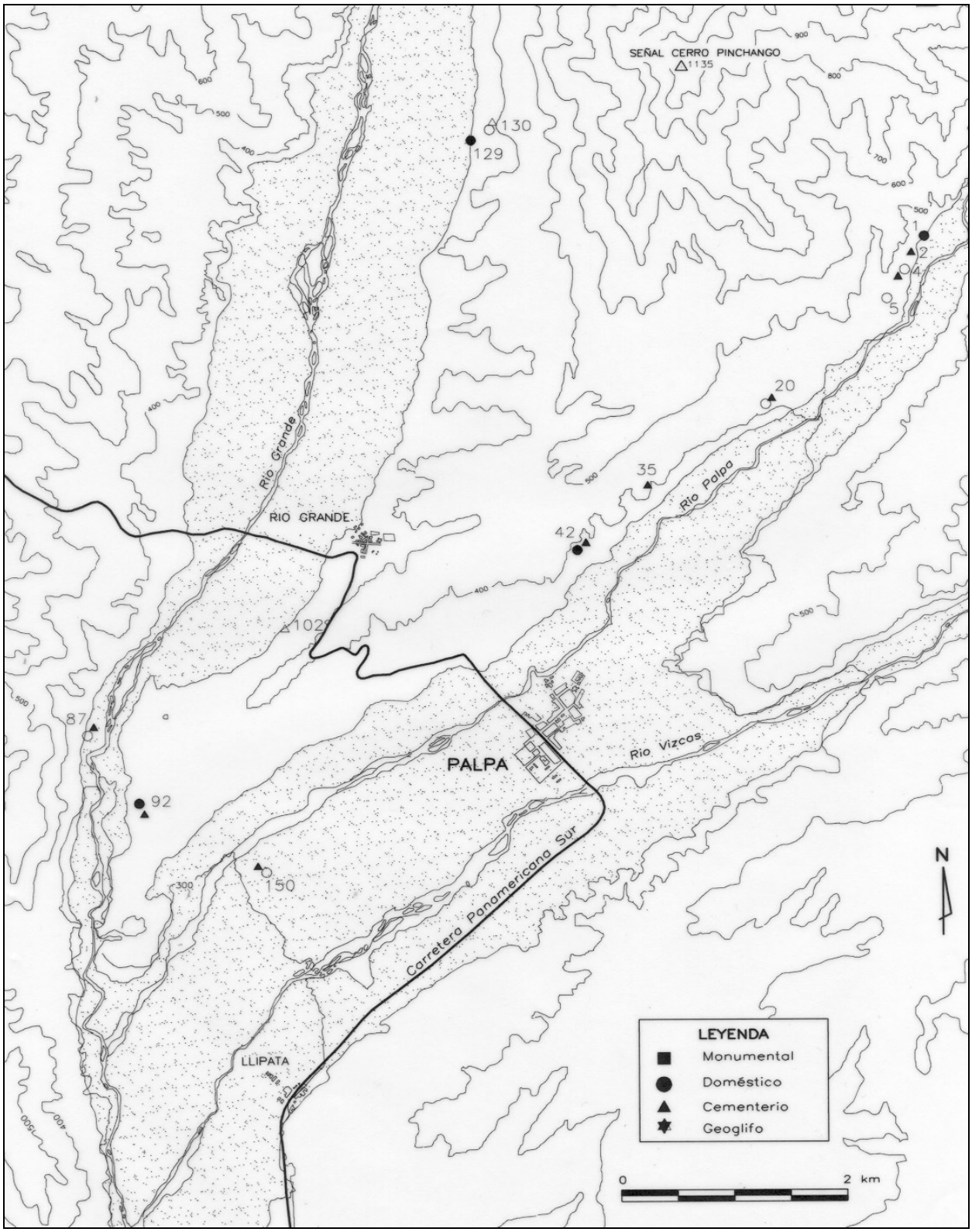

Figure 20. Location of Middle Horizon sites (AD 600-1000).

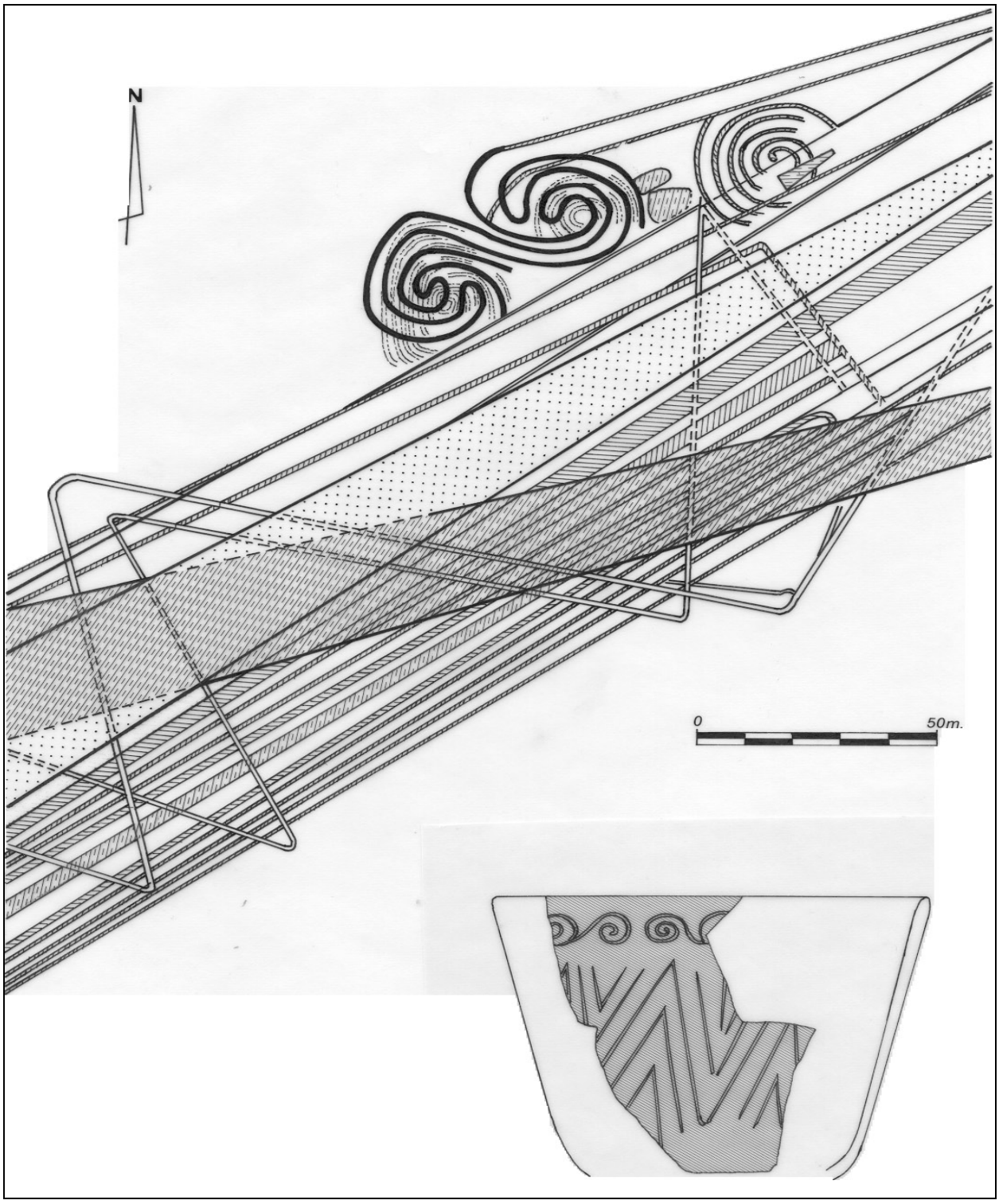

Figure 21. Figure in reversed "S" form and associated vessel identified in Sector A of site PAP-51; vessel diameter 16.5cm.

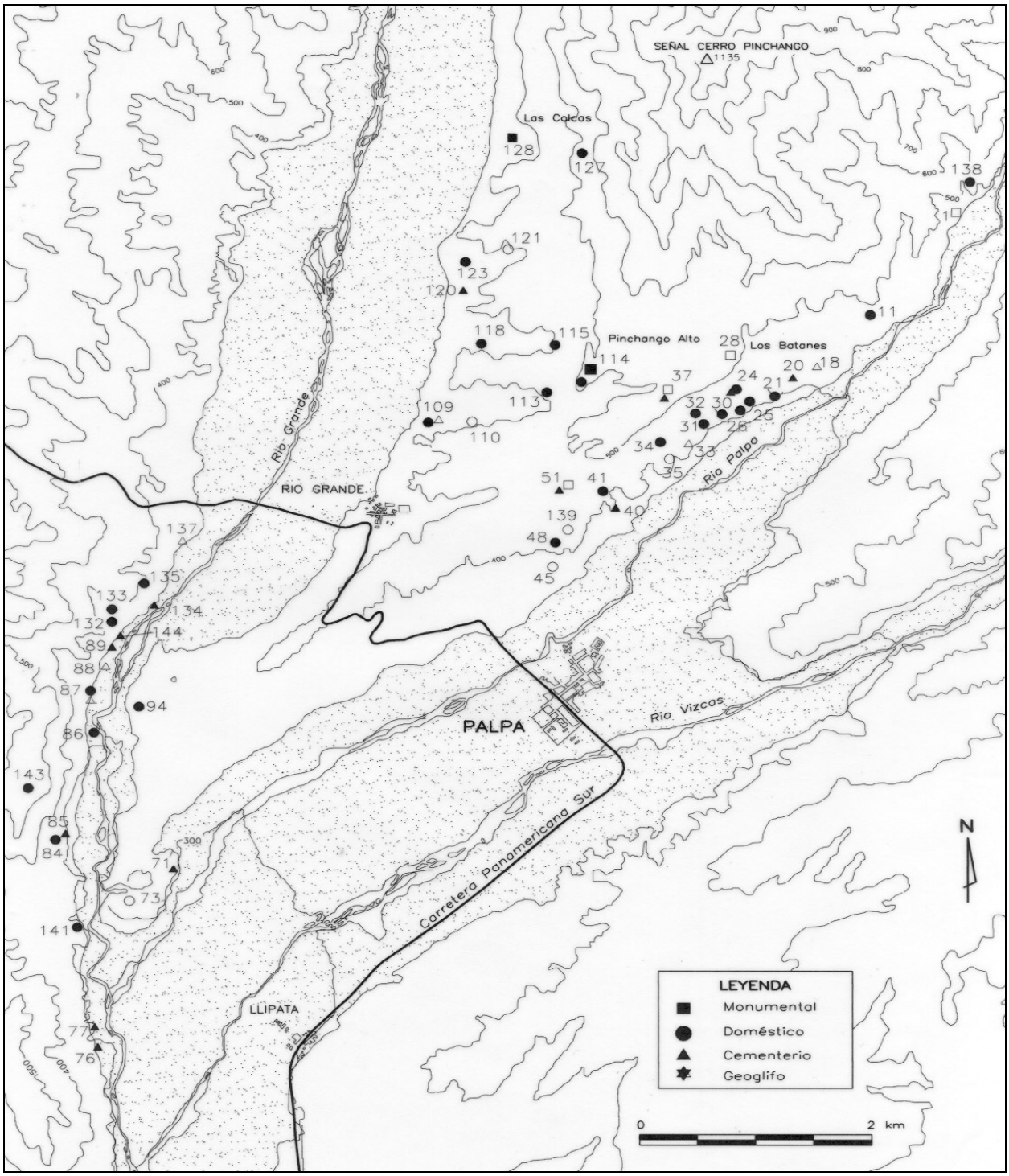

Figure 22. Location of Late Intermediate Period sites (AD 1000-1400).

Figure 23. View of the great complex of stone structures identified at site PAP-115, in the Río Grande Valley.

Figure 24. Air photo of a zoomorphic figure (whale, center) and various associated lines at the extreme south-west of site PAP-52.

Figure 25. Figure known as "El Tumi" associated with wide straight lines at site PAP-97.