

Research in 2005: South Drain and Royal Pool (South Aguada)

Background

Apart from the North Drain, the Palace and the epicenter of the site featured another canal system which has been called the South Drain ([Figure 32](#)). The investigation methodology used here was similar, consisting of trenches and ditches perpendicular to the canals and a grid of 2 x 2 m pits in the aguada's area. Excavations in the hydraulic systems south of the epicenter were carried out as part of Operation 42, defined directly to the south of Operation 4, located on structure L7-9, which functioned as access to the Palace. This operation had already been defined in 2003, when a record was made in the far south end of the acropolis terrace to install the drain pipes which come from Structure L7-9 (Barrientos, Larios y Luin, 2004).

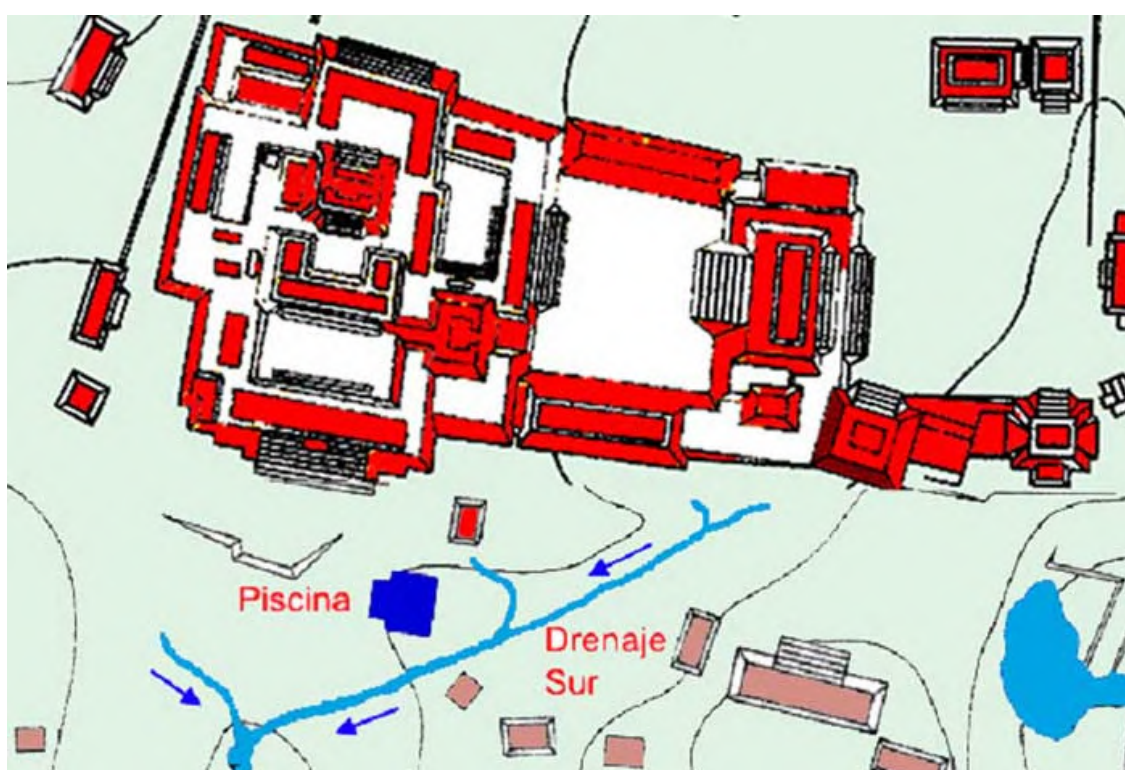


Figure 32. Map of the hydraulic systems located to the south of the epicenter (Tomás Barrientos, Luis F. Luin and Marc Wolf).

Excavations in the South Drain

The area south of the L7-38, L7-27, and L7-9 structures has a small stream which currently fills up during the rainy season, and runs toward the west, ending in the La Pasión River. However, its location in the southern end of the leveling terrace which makes up the East and South plazas of Cancuen's epicenter made it possible for this stream to function as a canal. In order to investigate this feature we dug four trenches to verify the shape and building material of the canal's sides and therefore to verify whether the stream was modified ([Figure 33](#)).

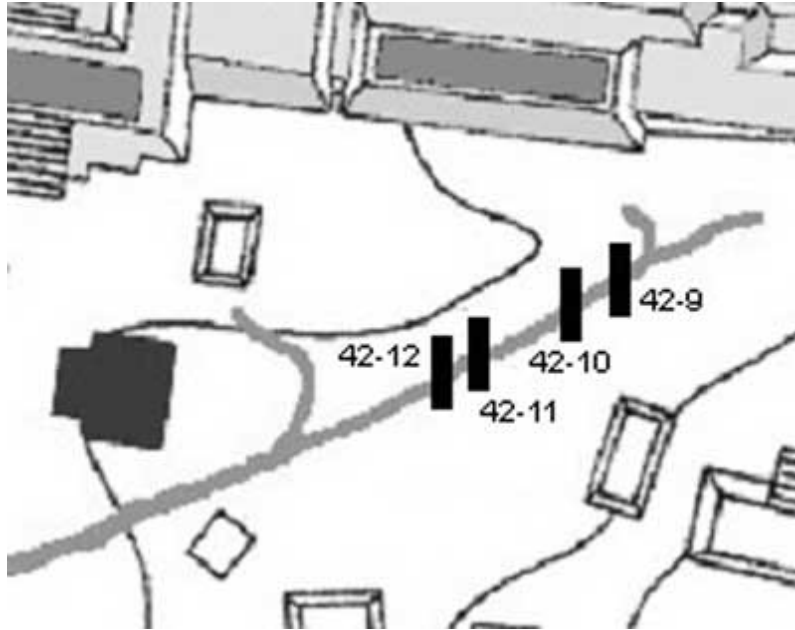


Figure 33. Location of excavation units in the South Drain (Tomás Barrientos, Luis F. Luin and Marc Wolf).

CAN 42-9 unit was located near the eastern end of the canal; in its north side we found a small wall made of faced stone, which was a little collapsed. Toward the west we set up units CAN 42-10, CAN 42-11, and CAN 42-12, which exposed clusters of big stones, but showing no order or formal alignment ([Figure 34](#)).

In general, excavations in this small canal showed the absence of containment walls on the sides, except for unit 42-9, where we could define the presence of a wall which was almost on the point of collapse.

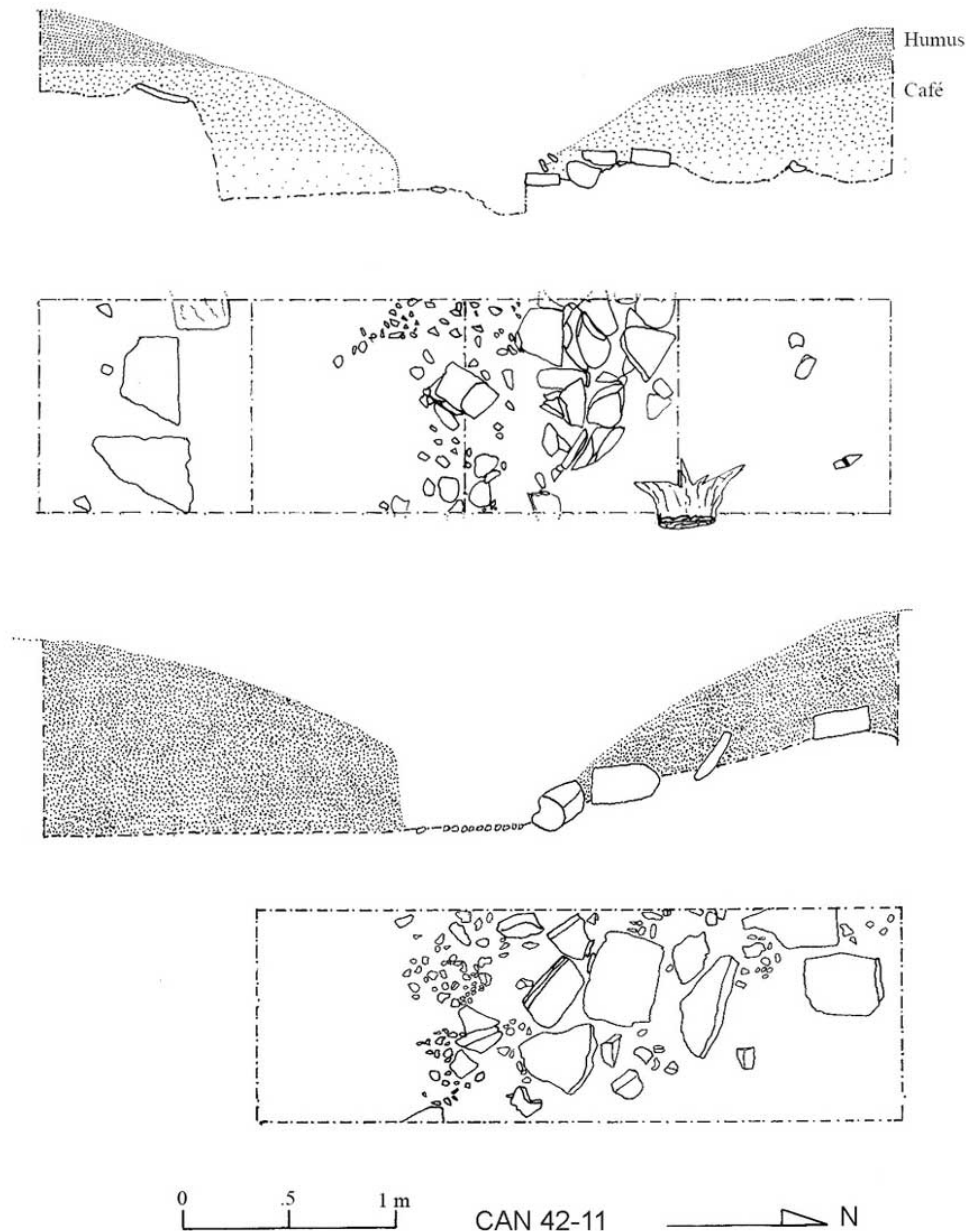


Figure 34. Plan and west profile of CAN 42-9 and CAN 42-11 units (Oswaldo Cuc).

This means that the stream's eastern end did show modifications, likely to avoid erosion of the terrace near L7-38 and L7-27 structures. The canal moves away from the epicenter, and it did not need more than a few piled-up stones in its sides and center. The presence of cultural material in all units suggests that trash accumulated because of erosion.

Excavations in the Royal Pool (South Aguada)

At the start of investigations in Cancuén we had already noticed the presence of a small aguada or water reservoir at the foot of the Palace's south entrance ([Figure 35](#)). However, this aguada superficially had a round shape, and when it dried up we could see the presence of lots of faced stone, therefore we thought its sides had

been covered with stone steps. After removing the vegetation we were not able to better define its shape, since the surrounding stones had fallen down forming a large collapsed pile inside the aguada. Some local finca growers stated that cattle used to drink water in this reservoir, which explains the great amount of moved stones, especially in its south side. Since the aguada remained with water for several months, we thought it was fed by the canal and stream conforming the South Drain.



Figure 35. Photo of the South Aguada or Royal Pool, before excavation (Tomás Barrientos).

Since this aguada had not been studied before, we did several test pits, which revealed the existence of wall lines. Therefore we decided to excavate it horizontally with a grid of 2 x 2 m pits ([Figure 36](#)). These initial excavations were carried out by Tomás Barrientos and Silvia Alvarado, having a total of six units (CAN 42-3 to 42-9). Because of the great amount of bone remains found here (both human and animal) the excavation work was continued by a team from the Guatemalan Forensic Anthropology Foundation (José Suasnívar, Heidi Quezada, and Guillermo Martínez) and by archaeologist Horacio Martínez, who performed a total of 10 pits, in order to remove the third and last stratum in the center and eastern side of the aguada. Excavations by the FAFG team included units CAN 42-13 to 42-22.

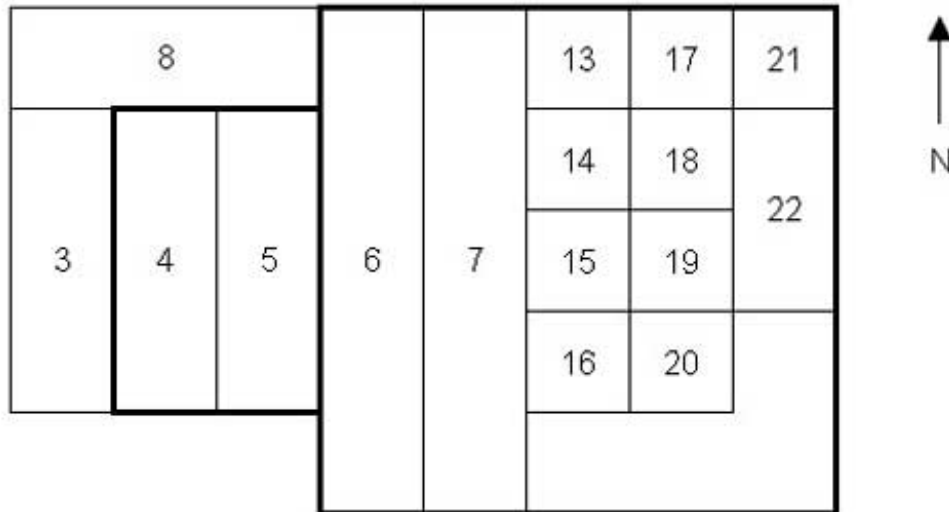


Figure 36. Drawing of the excavation units in the Royal Pool (Tomás Barrientos).

In all units a first lot was defined by the general cleaning of rubble rocks, which consisted mainly of worked stones, especially in the north and south of the aguada.

In the east and west sides the stones were of a softer yellow material, possibly as part of the building fill. Besides, in this part the perimeter wall was a little lower, indicating a greater percentage of collapsed stones toward the center of the aguada. The second lot from these units consisted of soil from under the rubble, which was a gray-colored clay with great amounts of cultural material and human and animal bones.

From the start of the excavation we noticed that the aguada did not have a round shape, as we had originally thought, but a quadrilateral shape defined by masonry walls and a slab floor. During the excavations water started to flow at a depth of approximately half a meter, indicating the presence of a water spring (Figure 37). In this way it was shown that this water reservoir functioned independently from the palace's south drain, with which it had no connection. It was also shown that this feature did not function as deposit or reservoir (aguada or cistern), but rather like a true pool that was fed by a clean water spring.



Figure 37. Photo of the excavation of the south wall of the Royal Pool (Tomás Barrientos).

Excavations started with units CAN 42-3 and 42-8, located on the outside of the west limit of the pool. Only one superficial lot was excavated, revealing a surface (possibly a floor) formed by a mixture of mid-sized limestones and sandstones.

Units CAN 42-4 and 42-5 revealed the west side of the pool. After cleaning the rubble, the west wall was defined and the northeast and southeast corners, as well as part of the north and south walls. In this area the pool is narrower, because the north and south walls have inset corners, giving the pool a stepped or "half-cross" shape. The floor consisting of big-sized slabs was also defined, although in the eastern limit of 42-5 unit we saw that this floor was interrupted by a 0.5 m-high step or banquette. The start of this banquette coincides with the inset corners of the north and south walls ([Figure 38](#)). Under the rubble we also found a great amount of utilitarian pottery (water jugs) and fragments of polychrome dishes. There was a striking amount of human bone, among which we could identify a mandible and several skull fragments, apart from long limb bones from and some ribs ([Figure 39](#)). Many fragments of white stucco and a few of red stucco were recovered, which likely covered the walls and floor. Under the rubble in the southwest corner we found a cluster of small shell and greenstone beads, apart from tubular pieces and a possible stalactite. We also found several thin beads made of red and purple *Spondylus* shell. Likewise, in this same area we found an *in situ* necklace with greenstone and shell beads. The necklace's central part consisted of a horseshoe-shaped bead made of shell and a greenstone bead in the center ([Figure 40](#)). In the northwest corner we also found a fragment of vessel rim made of alabaster with incised glyphs and a

ceramic figurine fragment with blue paint. Other artifacts included a kind of small shell mask, apart from an artifact of the same material shaped like a flower.



Figure 38. Photo of the excavation of the banquette of the Royal Pool (Tomás Barrientos).

CAN 42-6 and 42-7 units excavated part of the pool's center, where we kept finding great amounts of human bone. Likewise the quantities of *Spondylus* shell and greenstone artifacts increased, including the inside part of a *Strombus* conch shell. Among these artifacts several flint projectile points stand out.

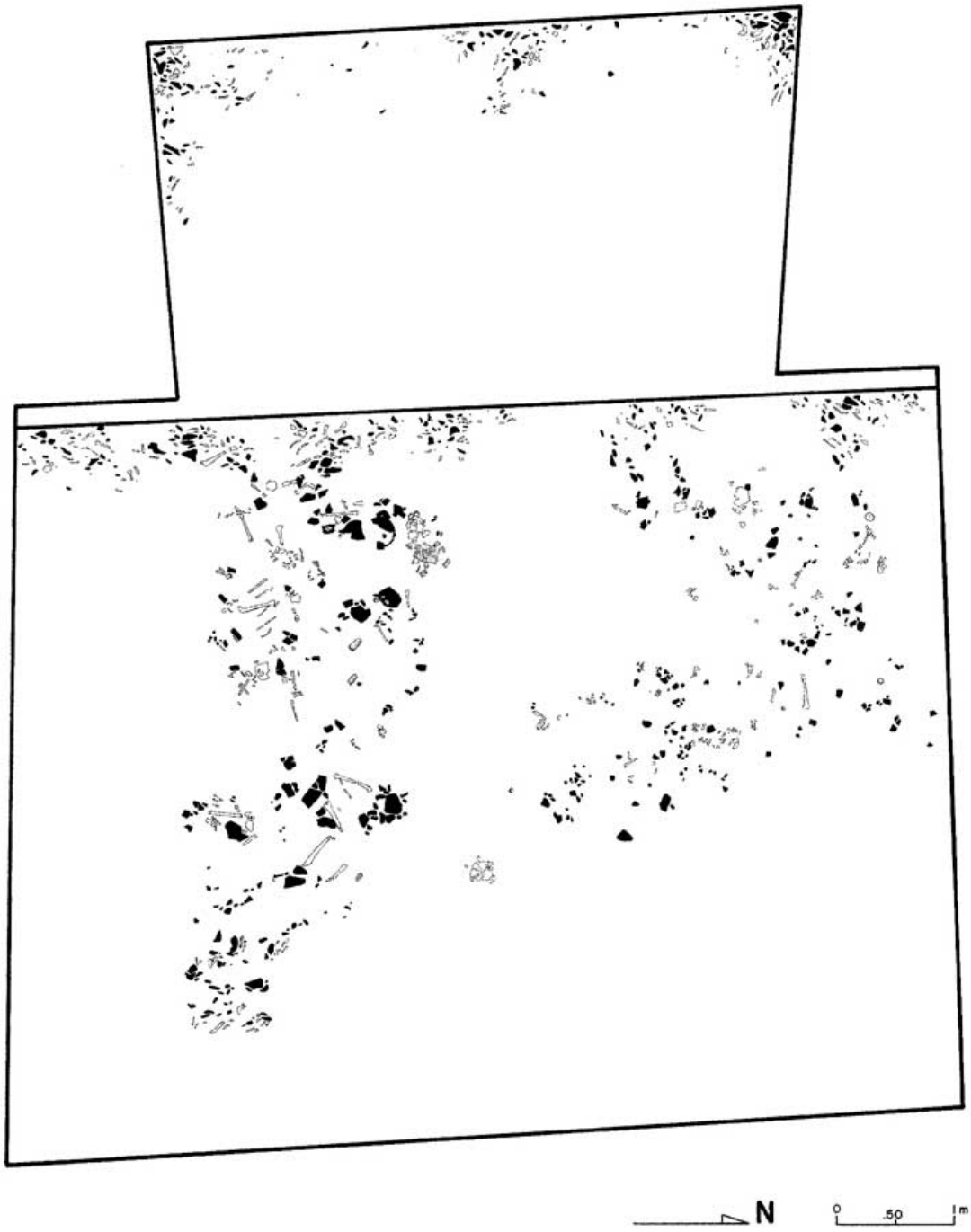


Figure 39. Plan of the Royal Pool, showing pottery, bones and other artifacts found on the bottom floor (Luis F. Luin).



Figure 40. Photo of a necklace found *in situ* in the banquette of the Royal Pool (Tomás Barrientos).

The excavations in the pool's center were finished by personnel from the Guatemalan Foundation of Forensic Anthropology, including the following units: CAN 42-13, 42-14, 42-15, 42-16, 42-17, 42-18, 42-19, and 42-20. In this part of the pool the gray clay fill reached a depth of 0.23 m, which was removed in order to expose the slab floor. The north wall had a height of 0.60-1 m, although it was quite bent toward the south.

The pool's northeastern end was exposed through units CAN 42-21 and 42-22, where there was plenty of rubble reaching a depth of 1.30 m. The second lot consisted of 0.23 m of gray clay over the slab floor. The east wall had a height of between 1 and 1.20 m.

Excavations in the pool revealed the presence of architecture around a water spring, consisting of masonry walls of faced limestone with a fill of yellowish sandstone ([Figure 41](#)). We were able to show that this feature did not function as an aguada, because the water does not come from any canal. Likewise, the presence of stone walls and slab floors covered with stucco gave it a pool or pond-like appearance ([Figure 42](#)). Its closeness to the Palace also indicates that its use could have been restricted to elite members; therefore it received the name of Royal Pool.

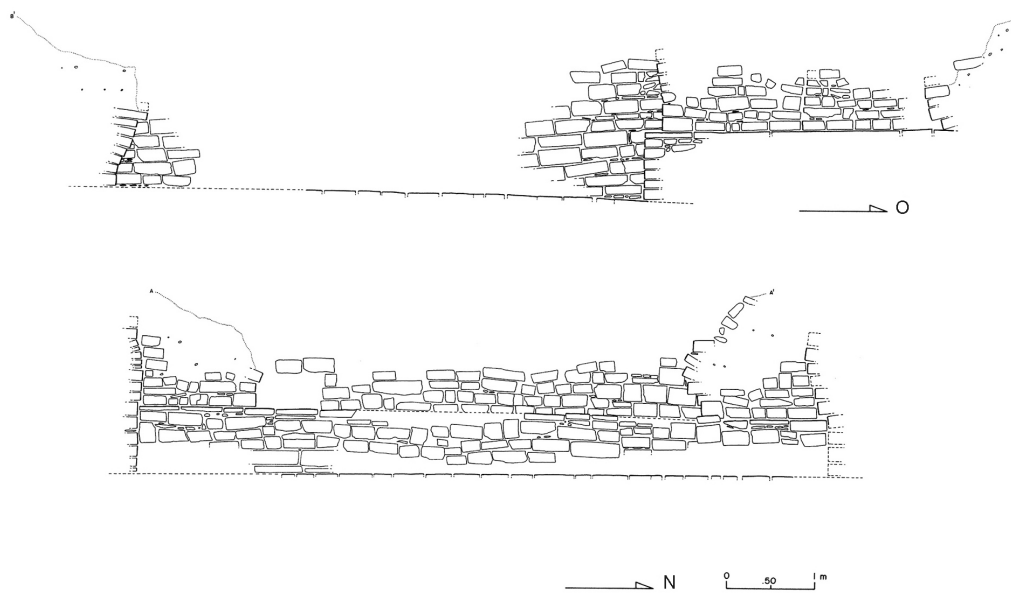


Figure 41. Profile of the west and south walls of the Royal Pool (Luis F. Luin).



Figure 42. Photo of the Royal Pool, during the end of the 2005 excavations (Tomás Barrientos).

As much as 90% of the Royal Pool was excavated during the 2005 season. It presented a series of features which undoubtedly make it a unique discovery and make it necessary to redefine it conceptually as an exceptional architectural element. Its type of construction resembles the buildings constructed during the times of the greatest ruler of Cancuén, *Taj Chan Ahk* (760-780 d.C.). Its general dimensions are

7.76 m from north to south and 9.29 m from east to west. The average height is 0.60 m on the west side and 1.20 m on the rest, although it could easily have reached 2 m in the deepest part.

The limestone blocks forming this feature are of variable size and characteristics: 0.7 x 0.29 m, 0.16 x 0.22 m, and 0.19 x 0.37 m. The pool's layout was not rectangular, since on its west side the corners are inset forming a step or half-cross shape, resembling the shape seen in most stelae from Cancuén ([Figure 43](#)). The thin end on the west side was also characterized by having a bench, where the pool is less deep. The slab floor in this banquette includes slabs of up to 2 m long.

Excavations in the pool showed evidence of a possible massacre, since great quantities of human bones were found, including skulls, limb bones, mandibles, vertebrae and ribs. Up to now we have evidence of at least 32 people, including two infants and two fetuses ([Figure 44](#)). The individuals studied so far present several evidences of trauma caused by sharp cutting instruments, including a skull fragment directly associated with a flint point. However, it has not been possible to establish with certainty whether the bodies were deposited right after being murdered or whether they correspond to a secondary deposit. In any case, the whole or dismembered bodies were thrown into the pool and later the collapsed walls fell on top of the human remains, burying them.

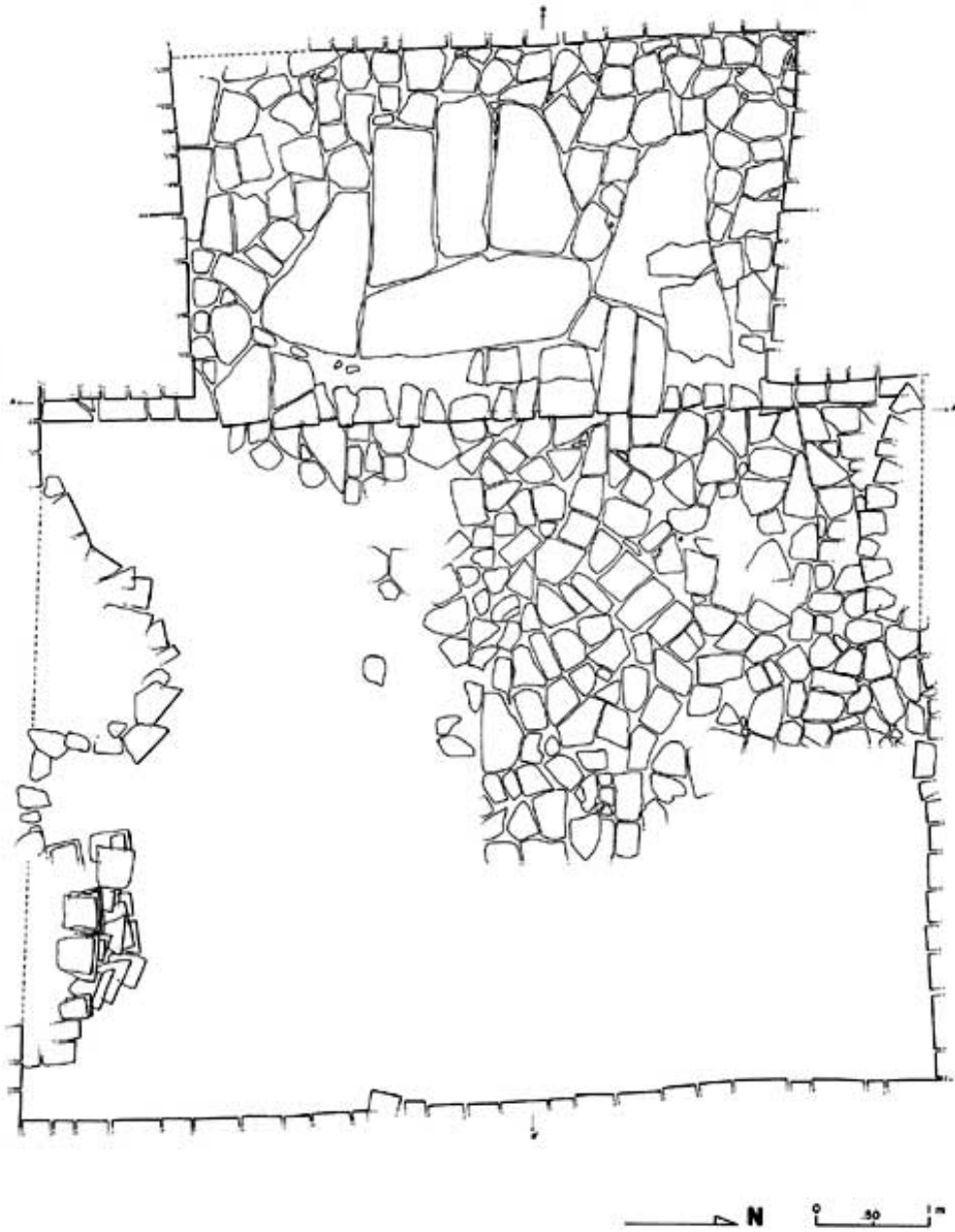


Figure 43. Plan of the Royal Pool, showing the slabs that form the bottom floor (Luis F. Luin).



Figure 44. Photo of the human bones found in the Royal Pool, as they are being analyzed in the Foundation of Forensic Anthropology of Guatemala (Alan Robinson, FAFG).

It is very important to point out that this pool shows the greatest amount of shell and greenstone ornaments so far recorded in Cancuén. The unusual amount of ornaments and other luxury items, including a necklace found *in situ* associated with several ribs, suggest that the bodies were thrown in still wearing their costumes ([Figure 45](#)). Another evidence of the massacre are 11 flint points found in the excavations of the collapse and the pit in the center of the aguada, which lends weight to the idea of a massacre and possibly of the pool's final role. The pottery associated with the human remains belongs primarily to the Late Classic, with utilitarian types such as *La Isla*, *Zapote Impreso* and *Encanto Estriado*, as well as several *Saxché-Palmar* dishes and a *Gris Fino Chablekal* imitation. However, the presence of at least two dish fragments with concave bases could indicate the beginnings of the Terminal Classic (AD 800).



Figure 45. Photo of some shell artifacts found at the bottom of the Royal Pool (Andrew Demarest).

The cleanliness and purity of the pool water suggest a ritual-ceremonial use, which could have been part of cleansing and purification rituals performed by the visitors to the palace, who came in through Structure L7-9, or Palace of the Portraits. The idea of a ritual function for the pool is supported by its shape of a half quatrefoil, which may be linked with several sacred contexts, such as the "Witz Monster's" forehead symbolizing an entrance to the underworld. It is also linked with the water lily, one of the most important symbols linked with water, which appears in the shape of the "Water Lily Monster". In some monuments, especially in Machaquilá, the half-quatrefoil symbol appears as a place name representing a place or mountain with water, because of the *ha* glyph inside it (Figure 46). Finally, the fact that the pool had clean water throughout the year, or at least most of the year, indicates that it was a source of sacred water or *Suhuy Ha'*, which may have been used in rituals performed inside the palace. It is possible that the use given to this water could have been analogous to the use given to water from caves, since it originated inside the Earth and at the foot of the palace, Cancuén's holy mountain.

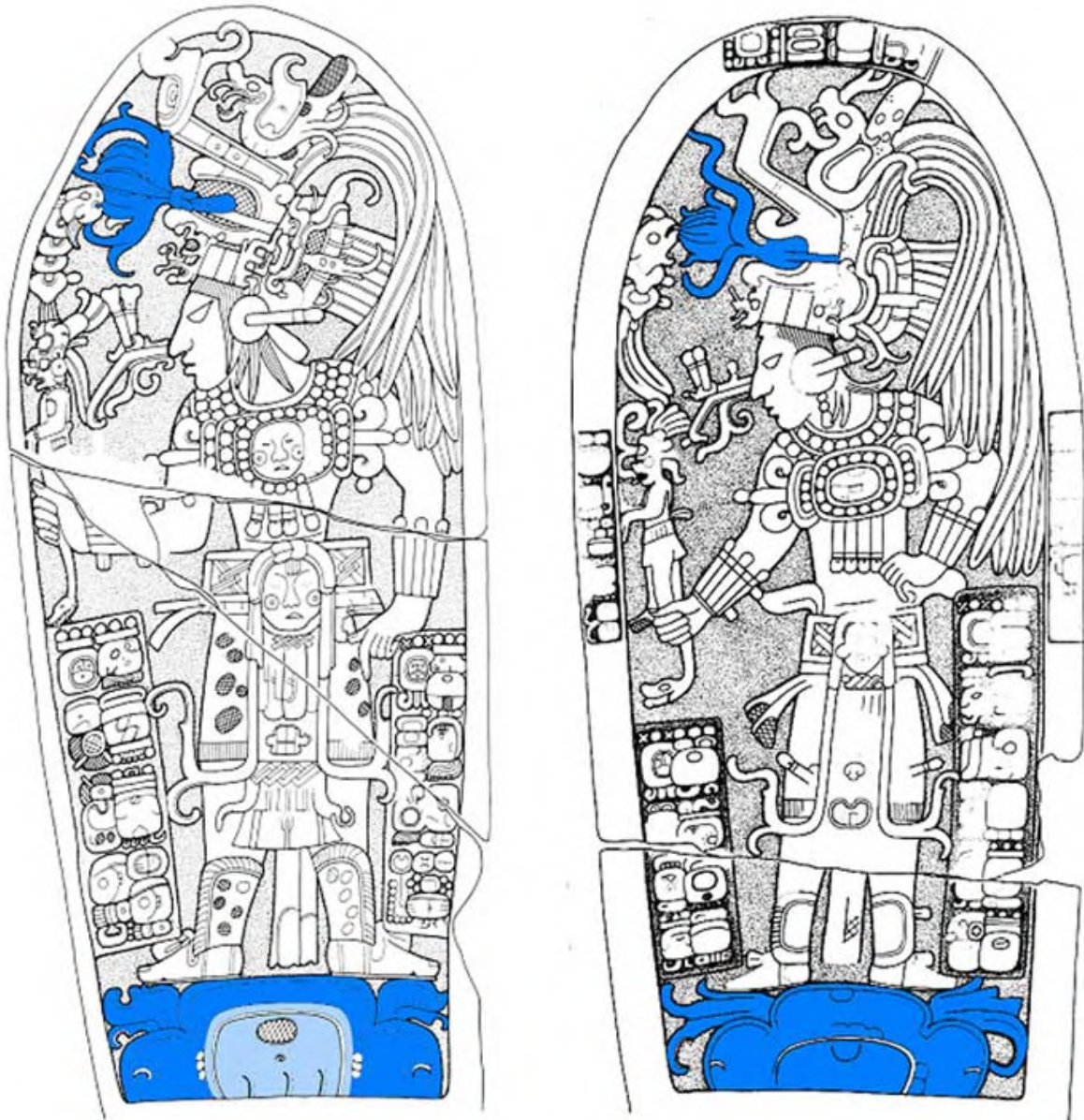


Figure 46. Stelae number 4 and 8 of Machaquilá, showing the half-quatrefoil toponym with the *ha* glyph (taken from Graham 1967).

Although almost the whole pool has been excavated in its entirety, we still have some questions about its function, since it could have functioned as water source for the nobility's domestic services. However, the most important question has to do with the identity of the people deposited inside the pool, especially to know if they belong to the royal family. Likewise, we still have to clarify the individuals' cause of death, and whether they were deposited in primary context or after being dismembered. In order to answer this we will have to wait for the finalization of the osteological, forensic, and genetic studies.

However, it has been possible to watch the pool's function after the onset of the rainy season, since it was full of water just two days after ending the excavation. The pool

has remained like this since then, keeping the same level, which proves that it functions independently from the palace's drain system.

Interpretation of hydraulic systems in Cancuén

After describing the different ways in which water was used in Cancuén, it is noteworthy that these features are of a small scale compared with monumental works like the ones in Edzná, Calakmul, or Tikal. Cancuén's canals and reservoirs show drainage, domestic consumption, and ritual functions. To the north of the palace and the ceremonial center, the presence of a water spring in the North Aguada is directly associated with early residences in the site, which means that the availability of fresh water was important for the first settlers of Cancuén. On the other hand, the construction of the North and Northeast Plazas, as well as the Main Causeway, included a drainage system using changes in the plaza levels, cesspools or drains, stone canals and modified natural streams.

Likewise, to the south of the Palace and the East Plaza, a stream was used as drain canal involving a few minimal modifications.

What is most interesting about Cancuén's aquatic features is their association with ceremonial spaces. In the case of canals located in the north, apart from their function as drains they are also associated with places of a ritual nature, as suggested by the presence of the Palace's Ball Court over a water spring. The great quality of the stonework seen in these canals might indicate that the water being collected in the North Aguada could have been used for other than domestic purposes, especially if the structures of the North Plaza and the Palace's Ball Court constitute one of the site's most important ceremonial spaces.

However, the ritual function of Cancuén's hydraulic systems is best exemplified by the existence of a pool directly to the south of the Palace's main entrance ([Figure 47](#)). The function of this pool could have been analogous to the purification rites seen in other cultures and civilizations, since it was a permanent source of sacred water. The creation of the pool with stone masonry was simultaneous with the palace's construction. Because of the style of the worked stone in its walls, the pool can be dated as part of the building program of ruler *Taj Chan Ahk*, between AD 760 and 780. This building program was directed to creating a space for diplomatic and ritual events which were vital for maintaining the city's political stability.

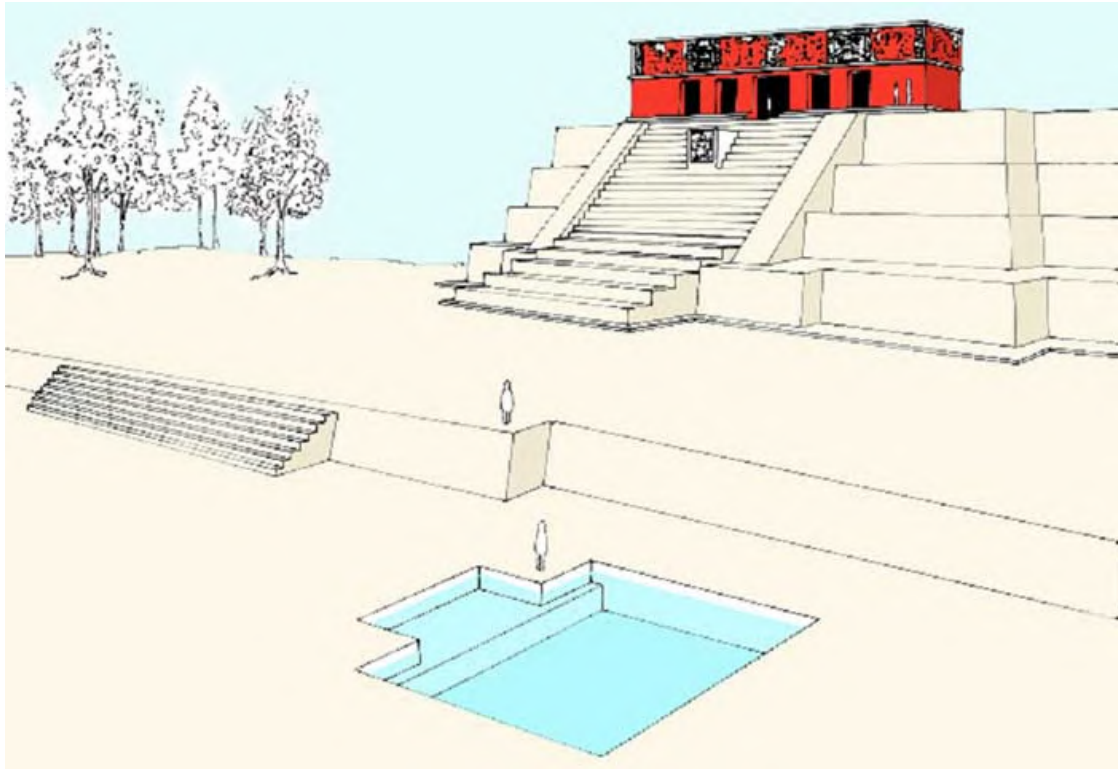


Figure 47. Reconstruction of the Royal Pool and south entrance of Cancuén's Palace (Luis F. Luin and Tomás Barrientos).

The ritual use of water in Cancuén appears in important iconographic contexts, such as Panel 3, possibly *Taj Chan Ahk's* most representative sculpture ([Figure 48](#)). In this monument the ruler is seated on a throne with the water lily monster's image, from which two of these plants sprout. The scene's framework is a quatrefoil element with water lilies in its corners, which in this case represents the main plaza of Machaquilá and is the same shape of the royal pool. Besides, *Taj Chan Ahk's* headdress includes an aquatic lily being eaten by a fish, a symbol frequently used by Maya rulers. Since the pool had a half-quatrefoil shape, this clearly shows its association with rituals of communication with the underworld and the sacred character of its waters.



Figure 48. Cancuén's Panel 3, showing aquatic symbols (Luis F. Luin and Tomás Barrientos).

If the pool had an important role in maintaining *Taj Chan Ahk's* power, it also had a leading role in Cancuén's collapse; since it was there that the remains of his descendents were deposited. The discovery of a possible royal massacre inside the pool shows its importance, since whoever perpetrated this violent act chose this specific place to lay down the bodies.

The association of the human bones with great amounts of pottery vessels and other objects points to the celebration of a termination ritual during or after the massacre. If this was the case, putting the bodies inside the site's sacred water reservoir was a way of polluting it, and therefore of ending its use.

Conclusions and general implications

The role of water in Maya cities

The importance of hydraulic systems for ancient Maya societies has been dealt with in other regions of the Maya area, including several studies that have defined the use of water in several subsistence, political, and ritual activities. These studies have also recorded a great diversity in location, scale, and building characteristics of the water management systems. The attention paid to the role played by water in the ancient Maya cities is due in great part to the studies of Vernon Scarborough about Tikal's water retention and storage systems (Scarborough and Gallopín 1991;

Scarborough 1998). Scarborough has repeatedly referred to the need for collecting water in great artificial reservoirs or aguadas, with the primary aim of the centralization of power in major Maya cities such as Tikal, Calakmul, and Caracol. In this model the lack of permanent water sources made it necessary to create a state apparatus for the construction of hydraulic systems, which were located near the main temples and palaces. The widespread use of aguadas and canals started during the Late Preclassic, in sites like Mirador, Cerros, Edzná, and Becán (Scarborough 1984).

This model has been supported by Adams (1991), Dunning (1995), and recently by Lisa Lucero (2003), who not only explains the origins of Classic Maya civilization through water control, but also its downfall (Lucero 2002). Although it has been denied that the Maya reached the characteristics of hydraulic societies as proposed by Wittfogel, this study is based to a large extent on the cities located in the northeast Petén, defined by Lucero as "regional centers". However, in the so-called "secondary centers" and "minor centers" there are small-scale hydraulic systems, or none at all. Based on her study of water reservoirs in Copán, Davis-Salazar (2003) points out that the management of water sources did not necessarily have to depend on a centralized government, since it could have been controlled by sub-elites and other sectors of society. Besides, a great part of Maya society did not depend on water management for its organization.

Several investigations of Lucero's "secondary sites" have shown that there was a great amount of decentralized hydraulic systems, such as Quiriguá's wells for domestic use (Ashmore 1984) or the system of *chultunes* and *cenotes* in the Puuc area of Yucatán (McAnany 1990). In sites like Copán (Davis-Salazar 2003), La Milpa (Weiss-Krejci and Sabbas 2002), and Kinal (Scarborough *et al.* 1994), water-harnessing systems of a much smaller scale than those of Tikal and Calakmul have been discovered, that did not necessitate a state apparatus for their creation and maintenance, and more importantly, were created during the sites' apogee, not before.

Regarding water's function for "secondary centers", Lucero claims this was not vital, since many of these were located near rivers, lakes and other permanent water sources (Lucero 2002). This means that water's role was not as important in relation to other activities like trade or political interaction if we want to explain how these centers rose as political entities. We have to consider that most Maya cities would be classified among these secondary centers, so their rise would be very different from the case of El Mirador, Tikal, and Calakmul, especially because they are not linked with hydraulic systems on a great scale.

Up to now we have taken into account the function of water-management systems to satisfy subsistence needs and for the ecological adaptation to the lowland tropical forest and to the karst area of Yucatán. In many Maya cities the availability of permanent water sources suggests a function beyond water supply for canals and reservoirs, which may have been linked with other needs, particularly of an ideological nature.

In this case there is ample evidence for water symbolism, especially its association with the underworld. Barbara Fash (n.d.) and Vernon Scarborough (1998) have

identified several elements associated with water in Maya iconography, whose context is closely linked with the power of rulers. One of the most often used symbols was the water lily, which according to Fash indicates the existence of clean water reservoirs. Another symbol is the "water mountain", the mythical place of creation which is associated with the hills that contain caves and underground rivers.

Rather than being the source of power for Maya cities, water management was one of many ritual instruments that helped to maintain the political position and sacred character of the ruler or *Kujul Ajaw*. This situation was not just of the Maya cities, since numerous cases have been recorded around the world in which water was used ritually and was very important for keeping the political control.

For instance, in the Merina society of Madagascar rulers had to perform a series of sacred baths at the start of each year, while in Bali temples were located in each one of the water sources, although it was thought that all water came from the lake in the crater, the source of the most sacred water and where the main temple was located (Scarborough 1998). Among other examples, we can mention the use of purification pools in Jerusalem's temple, as well as the ritual importance of water canals in Angkor, Tiwanaku, and the Inca Empire.

Cancuén clearly illustrates the symbolic and ritual importance of water for Prehispanic Lowland Maya societies. However, we have to point out that water management in Cancuén, besides having a ritual aspect, was also planned in order to satisfy more mundane needs, such as the proper drainage of plazas and buildings in the site's epicenter, and its possible use for domestic consumption and for irrigating agricultural fields.

The study of hydraulic systems at Cancuén has helped to understand the management of water as a means of reinforcing the ideology of power through symbols and rituals. This functioned as support of the economic system, which was based on political and trade alliances that assured the procurement and redistribution of exotic raw materials and finished products by Cancuén's artisans.

The ritual and symbolic nature of Cancuén's hydraulic systems, as well as their small scale, provide us with clear data on the role of water in the rise and downfall of Maya cities. In spite of its obvious importance in several aspects of society, we cannot explain the development of Lowland Maya civilization simply as a product of the need to manage the procurement and consumption of water. Therefore, hydraulic systems of "secondary centers" such as Cancuén show that the use of water was varied and responded to different needs in each region. It is important that Maya hydraulic models should not be based solely on monumental sites such as Tikal and Calakmul. They should also include data from "atypical" sites like Cancuén, if we want to have a complete vision of Classic-period Lowland Maya society.

The Royal Pool and Cancuén's collapse

In previous seasons we had already defined evidence for a violent end in Cancuén, based on the excavation of defensive walls around the Palace and on the presence of human bones in the area of the "port".

However, it was not until the discovery of the Royal Pool and the human remains inside it, that it was shown that the end of Cancuén's history could have been quite dramatic, possibly including the demise of the ruling family.

The archaeological record has shown scenes of war throughout the Maya area, especially in stelae and vessels, as well as such evidence as spear points. However, no direct evidence had been found of the victims of these wars. The only massive burials found in the Maya area appeared in the Salamá valley (Sharer and Sedat 1987) and in Chalchuapa (Fowler 1984), but these are early and are linked with ritual sacrifices. Therefore, there was no direct evidence of violence for the Terminal Classic which could be linked with the war processes that took place during the collapse of Lowland Maya cities. Therefore, the massacre discovered in Cancuén has very important implications for the interpretation of this city's final moment and for the whole southwestern Maya Lowlands.

Up to now forensic analysis has identified 32 individuals of both sexes and all age groups, including two children and two pregnant women. Although these analyses are still in progress, it has been shown that all individuals show signs of violence and trauma, in the form of cuts or blows. According with the pottery found in direct association, this event can be dated to the beginning of Tepeu 3 phase, around AD 800, coinciding with the abandonment of the city. This is very important, since in 2004 we found the remains of Cancuén's last ruler, *Kan Ma'x* (Barrientos *et al.* 2006b), whose offerings included ceramic types like the ones found in the pool ([Figure 49](#)). Although *Kan Ma'x*'s bones were in a very bad state of preservation, his grave was very close to the surface and without a cist or formal crypt, indicating a hurried burial possibly associated with the event of the individuals deposited in the pool. In order to link both events we are conducting ADN analysis of the 33 individuals, but we are still waiting for the results.

Finally, it is important to state that epigraphy also supports the hypothesis of the massacre of the ruling family, since the last date recorded by *Kan Ma'x* (on an incised shell in a private collection in Brussels) is May 12th, AD 800 (Fahsen and Barrientos 2006; Barrientos and Fahsen 2006), which is precisely the moment of the massacre. We also have to add that on 19th August of the same year the first event is recorded in Machaquilá for almost 40 years, since this city was dominated by Cancuén (Stela 2, dedicated by ruler *Ochk'in Kaloomte'*) (Kovacevich and Barrientos 2000).



Figure 49. Burial 77 of Cancuén, the ruler *Kan Ma'x* (Luis F. Luin and Tomás Barrientos).

If the political entity of Machaquilá was involved in the conquest and destruction of Cancuén, it is possible to date the incident of the massacre between May 12th and August 19th AD 800.

The evidence found in the Royal Pool constitutes one of the most important discoveries at Cancuén, and represents a unique context in the Maya area. The

human bones, pottery and other artifacts show that the end of this city --and probably of many more-- was of a violent nature and included the demise of the ruling family by the conquering group. This shows that many war scenes depicted in monuments, artifacts and murals are real and that the level of violence during the end of the Classic period reached heights never seen before. We hope that research in the Royal Pool will continue, so that we will be able to obtain more information about this important event. Likewise, laboratory analysis will help us to understand other aspects of the massacre that extinguished Cancuén's rulers.

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[Figure 48](#). Cancuén's Panel 3, showing aquatic symbols (Luis F. Luin and Tomás Barrientos).

[Figure 49](#). Burial 77 of Cancuén, the ruler *Kan Ma'x* (Luis F. Luin and Tomás Barrientos).

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