The Belize Valley Archaeological Reconnaissance Project

A Report of the 2014 Field Season

Edited by Julie A. Hoggarth & Jaime J. Awe

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Volume 20

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Editors' Note

Archaeological excavations and survey in 2014 continued with BVAR's regional focus, investigating the development and decline of Belize Valley polities from the Preclassic to Postclassic periods at the sites of Lower Dover, Cahal Pech, and Baking Pot.

Research at Lower Dover continued to focus on exploring the palace and acropolis area of the site. Guerra and Collins' (Chapter 1) excavations in Plaza C revealed an in-filled room, with a low vaulted entrance. Analysis of materials from these excavations suggests that the final activities in this area date to the Terminal Classic period. Vertical excavations in Plaza E suggest initial construction in the Early Classic period, with the final use of that area also in the Terminal Classic period. Excavations in Plaza M at M59 (Rawski, Chapter 2) uncovered the remains of a low structure that likely supported a perishable superstructure. Excavations in Plaza B at the site (Barrillas, Chapter 3) revealed three construction episodes, with ceramics including Belize Molded Carved types suggesting the final activities in this area also date to the Terminal Classic. Settlement survey continued in the southern and western areas of the site (Petrozza and Biggie, Chapter 4), with a test excavation in M-001 revealing Middle Preclassic construction and a Late Classic burial.

Excavations in Cahal Pech's site core continued in 2014, complemented with survey and excavation in the peripheral settlement groups. Santasilia discusses the discovery of a seventeenth tomb in Str. B1 in the site core (Chapter 5). Other excavations in this structure also revealed red stucco that likely came from a mask on the exterior of Str. B1-8 West. Douglas and Brown (Chapter 6) continued their multi-year excavations in Plaza H uncovering Terminal Classic construction in that area. Peniche May's excavations of Str. B5 revealed the masonry terminal architecture of that structure, while exploring the earliest construction of that structure (Chapter 7). Like adjacent Str. B4, B5 features early construction during the Cunil period, with later constructions during the Late Preclassic, Early Classic, and Late Classic periods. Lopez Johnson supervised excavations at Str. B7, with terminal architecture identified in X. Excavations in the A1/A2 alleyway, west of Plaza A, revealed extensive Terminal Classic deposits (Kollias, Chapter 8). These features have been recovered across the site and are likely the result of post-abandonment rituals. Peniche May and colleagues (Chapter 9 and 10) detail continued excavations in Plaza G at the site, resuming those conducted over the past few years. Ebert (Chapter 11) discusses the advances in the settlement survey at Cahal Pech, using a new method for analyzing the lidar data to understand spatial and social organization in the settlement (Chapter 12). The final two Cahal Pech reports focus on artifact analyses from the site, with DeLance (Chapter 13) analyzing figurines from a variety of sites investigated by BVAR, and Ebert's (Chapter 14) pXRF analysis on obsidian from Cahal Pech and Lower Dover.

Archaeological investigations in the royal palace complex at Baking Pot resumed in 2014, with the extension of the 2013 excavations revealing a sweatbath attached to the back of Str. B1 (Hoggarth and Sullivan, Chapter 15). Excavations on top of adjacent B17 revealed low architecture, with diagnostic Terminal Classic artifacts (Sullivan and

Hoggarth, Chapter 16). DuMenil's ceramic analysis from the Lubul Huh group concludes the volume (Chapter 17), detailing the relative chronology for the construction of the group.

BVAR's 2014 field season benefitted from the help of a number of individuals and establishments. We would like to thank Hode's Restaurant, Mana Kai Cabins, Pacz Inn, Lower Dover Field Station, and Shell Gas station. The owners and employees of these establishments were essential in the housing, transport, and daily lives of the BVAR staff and students. In addition, we would like to acknowledge the 2014 field school students, staff, and local assistants.

We graciously thank Doug Tilden for supporting the Cahal Pech excavation and consolidation work, which was funded by the Tilden Family Foundation. Various other funding sources, such as the Alphawood Foundation and the National Science Foundation are noted for individual chapters. BVAR 2014 staff included: Dr. Jaime Awe, Derek Barillas, Antonio Beardall, Michael Biggie, Linda Brown, Renee Collins, Lisa DeLance, Dr. John Douglas, Leann DuMenil, Cameron Griffith, Rafael Guerra, Dr. Julie Hoggarth, Jillian Jordan, G. Van Kollias, Dr. Ashley McKeown, Nancy Peniche May, Michael Petrozza, Christy Pritchard, Jim Pritchard, Zoe Rawski, Catharina Santasilia, C. Mat Saunders, Myka Schwanke, Norbert Stanchly, Kelsey Sullivan, and Dr. Marc Zender. We offer our thanks for the support of the Belize Institute of Archaeology for permission to excavate all three sites.

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EXCAVATIONS AT LOWER DOVER'S PALACE COMPLEX: RESULTS OF THE 2014 FIELD SEASON

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INTRODUCTION

In the summer of 2014, the Belize Valley Archaeological Reconnaissance (BVAR) project continued archeological investigations in the palace complex at the site of Lower Dover, Unitedville, Cayo District, Belize. These excavations included test pits in Plaza C and Plaza E of the Palace complex to the west of the site core (Figure 1). Lower Dover is on the property of William and Madeline Reynolds in the Village of Unitedville, 7 miles east of San Ignacio. It is located on the southern bank of the Belize River directly across from Barton Ramie, approximately 6 km east of Baking Pot and 3 km west of Blackman Eddy. The site is bordered on the north by the Belize River, on the east by Lower Barton Creek and on the west by the Upper Barton Creek (Guerra and Morton 2011; Guerra 2011). The ceremonial center consists of 9 formal and 2 informal plaza groups with 56 structures, including one ballcourt (Figure 1), and a possible aguada just north of Plaza A.

PREVIOUS RESEARCH

Archaeological investigations have been conducted at surrounding sites as far back as the 1920's (Ricketson: 1929), including Floral Park (Willey et al. 1956), Blackman Eddy (Driver and Garber 2004), and Barton Ramie (Willey et al. 1956, Gifford et al. 1976), but it is unknown what connections and relationships these sites had with Lower Dover. In 2010 the Belize Valley Archaeological Reconnaissance Project initiated archaeological research at Lower Dover. The preliminary research focused on site mapping and developing site chronology. Previous research at Lower Dover identified two distinct phases of occupation dating to the latter part of the Late Classic period (A.D. 800 - 1000) at Plazas A and G (Guerra 2012; Arksey et al. 2011). Wolfel et al (2009) identified one scroll foot on the surface of Plaza F, indicating possible Early Postclassic occupation or activity of the plaza and structures. The 2012 and 2013 excavations at Plaza F indicated that the area was built and used in the Late Classic Period, with an abandonment in the Terminal Classic and a partial reoccupation in the Postclassic Period (Guerra et al. 2013,

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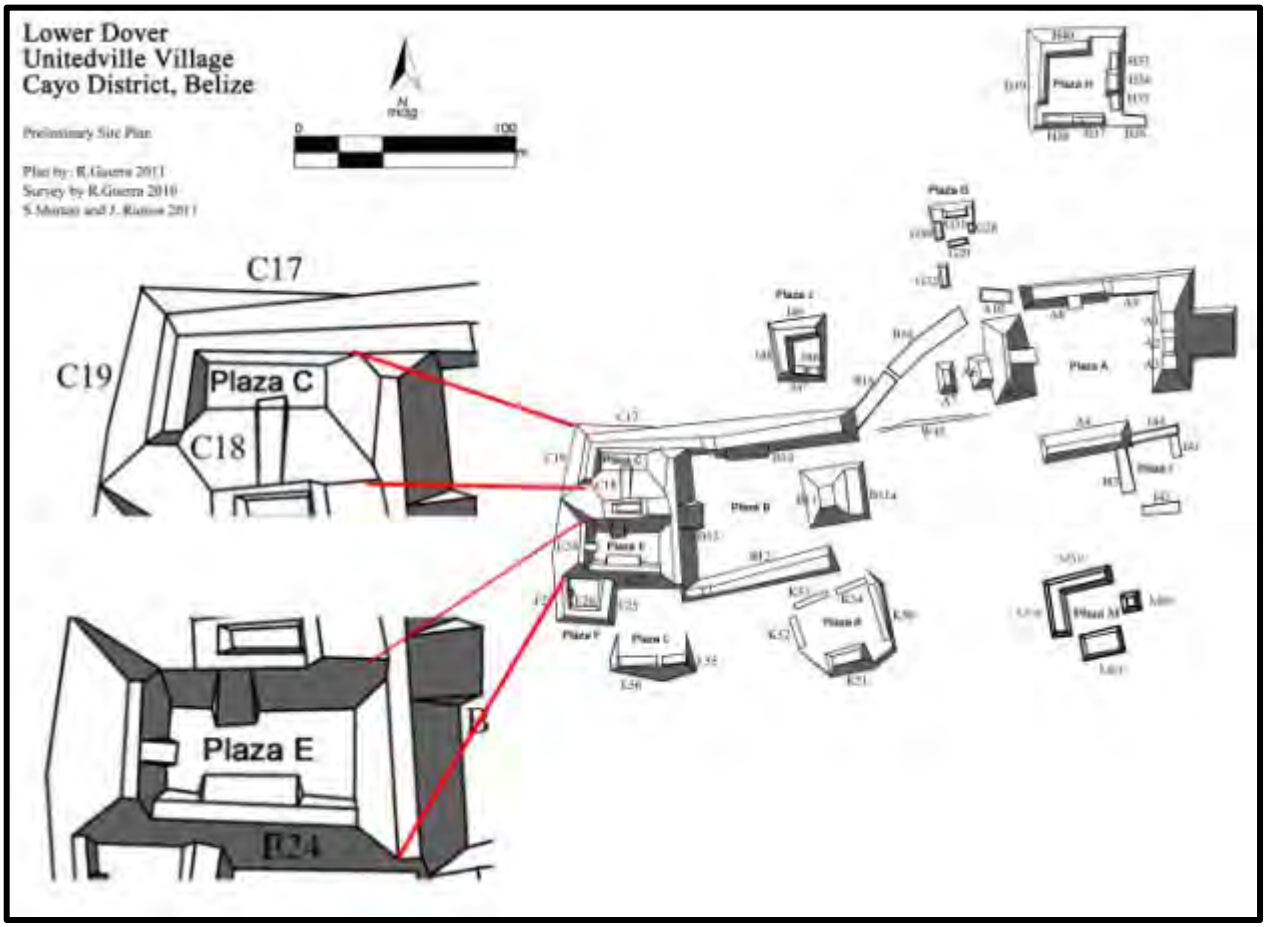


Figure 1: Lower Dover site core plan with Plaza E and C demarcated.

2014).

METHODOLOGY

In the 2014 filed season excavations were focused in the palace complex at Lower Dover, primarily in Plaza C and Plaza E. Plaza C is the northernmost plaza group of the complex and Plaza E is the largest group on the south end of the complex (Figure 1). Excavations at Plaza C were oriented at identifying the architectural component of the terminal phase occupation as well as determining the temporal use of the final construction and occupation phase within the plaza. Excavations in Plaza E were designed to identify the terminal phase construction as well as a chronological determination of the construction phases in the group.

The data presented below are the results of the 2014 field season.

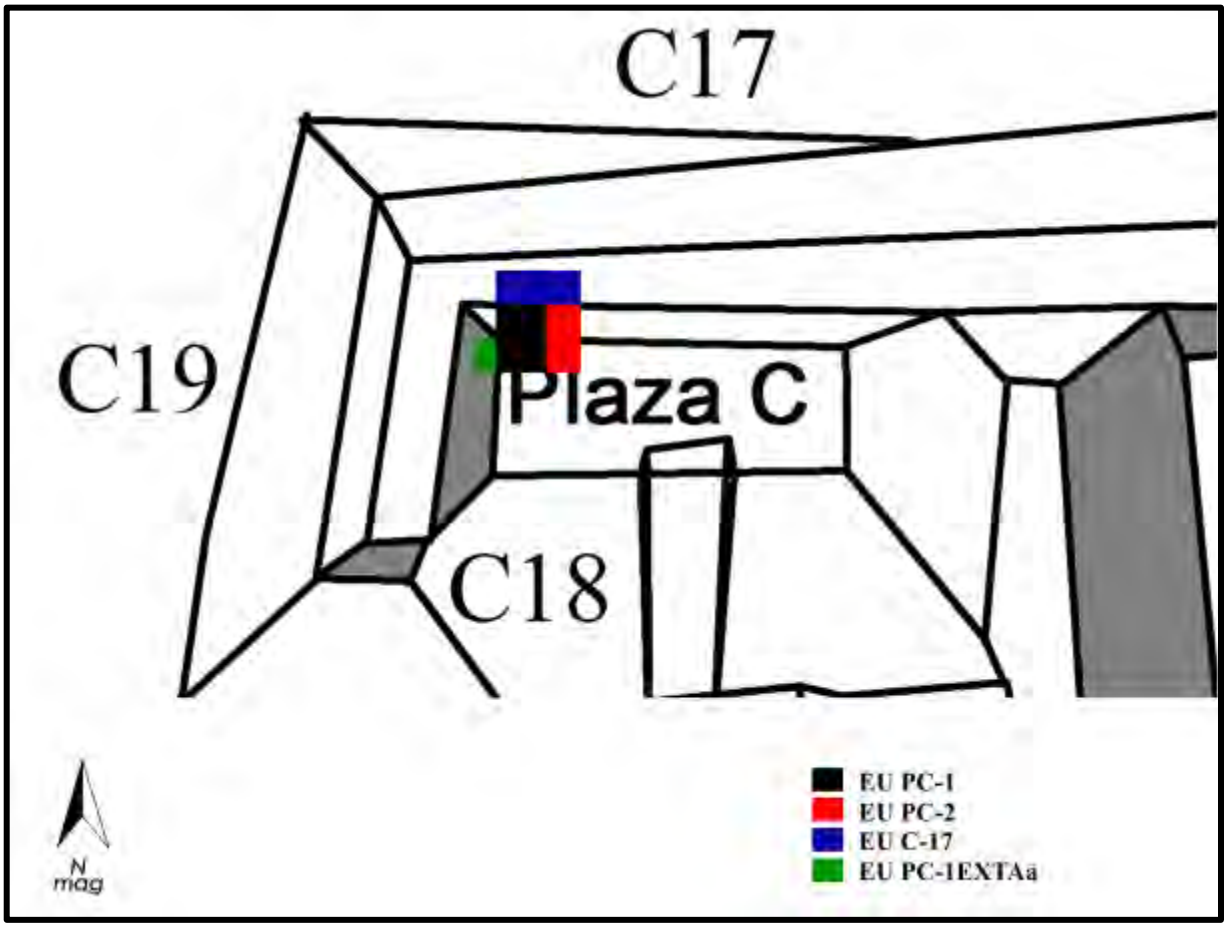


Figure 2: Plaza C plan with units.

RESULTS FROM EXCAVATIONS

Plaza C

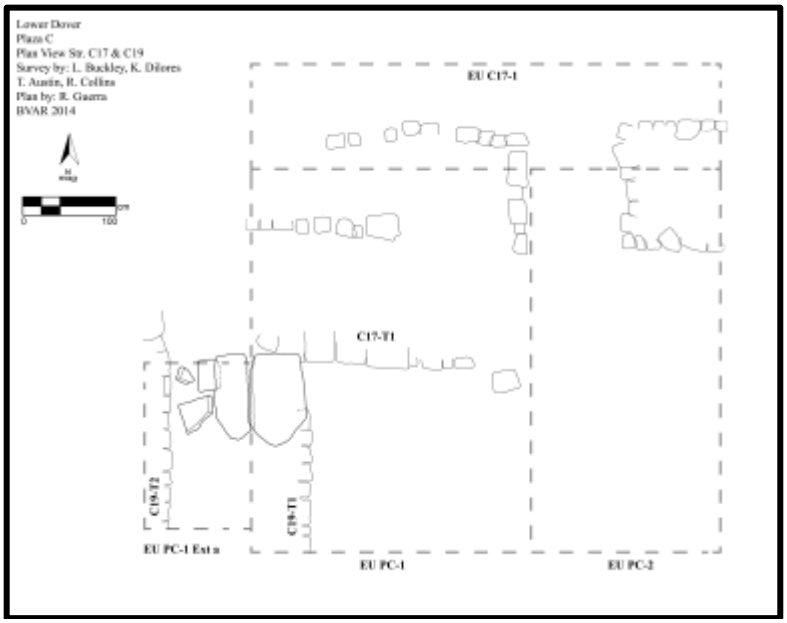
Plaza C lies to the north of the palace complex and measures 8.04m x 20.66m. This group forms the northernmost boundary of the complex. Two excavation units were initiated along the northwest corner of the group to identify the terminal phase construction and collect material remains associated with the final occupation period. This corner was chosen to avoid excessive debris resulting from collapse of the larger structures to the east and west of the group. These units were designated as excavation units PC-1 to the west and PC-2 to the east respectively (Figure 2). PC-1 measured 3m by 4m and encompassed the plaza area to the south, terrace one of Structures C19 along the west and extended to the north to the summit of structure C17. PC-2 measured 2m x 4m and encompassed the plaza area along the south and extended to the north to the summit of structure C17.

Units PC-1 and PC-2 uncovered the plaza floor at 62 cm below the present ground surface along the southern portion of the unit. At 60 cm from the western edge of the unit, the

Figure 3: Photographs of corbelled feature in Plaza C.

basal terrace (C19-T1) of structure C19 was exposed. C19-T1 was comprised of 8 courses of cut limestone blocks measuring a height of 90 cm. This feature extended from the southern edge of the unit for a distance of 2 meters to the north where it abutted the basal terrace of structure C17 (C17-T1). Both terraces formed the northwest corner of the plaza. In this corner at approximately 25 cm above the plaza floor a deposit of broken ceramics was exposed and extended approximately 65 cm to the east along C17-T1 and to the west into a partially in-filled feature resembling a corbelled vault (Figure 3). The partially in-filled feature was recorded at the northern end of C19-T1 and included a capstone and vault stones measuring approximately 90 cm in height (Figure 3). Initial interpretation of the feature indicated that it may have been an entrance into a sweat bath and the feature was excavated as an extension of Unit PC-1 (Unit PC-1 ext1a). Excavation of this feature is discussed below. C17-T1 extended the entire length of both units in an easterly direction of at a distance of 5 meters and 5 courses of cut limestone blocks along the NW corner of the plaza and terminating with only 3 courses along the eastern edge of the units. At the summit of the units two features were exposed with facing stones along the southern face. In addition a 1 meter alley was exposed between these two features. Both features were identified as the basal courses of a superstructure at the summit of structure C17 (Figure 4). The alley was identified as the door entrance into the super structure. Since the units did not encompass the entire superstructure, an extension to the north (C17-1), encompassing the whole summit of structure C17 was established in order to expose the architectural feature.

Excavation of unit C17-1 exposed the full extent of the alley as well as the interior walls of the superstructure, unfortunately, the northern summit edge of structure C17 has collapsed and the interior of the room is missing. The southern walls of the summit platform measures 103.6 cm and extends to the east and west of the unit. Due to time constraints, the remaining unexposed portion of the summit platform was not investigated.



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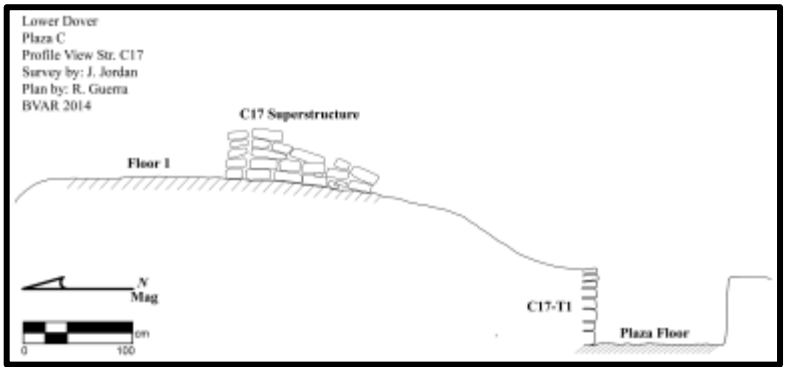

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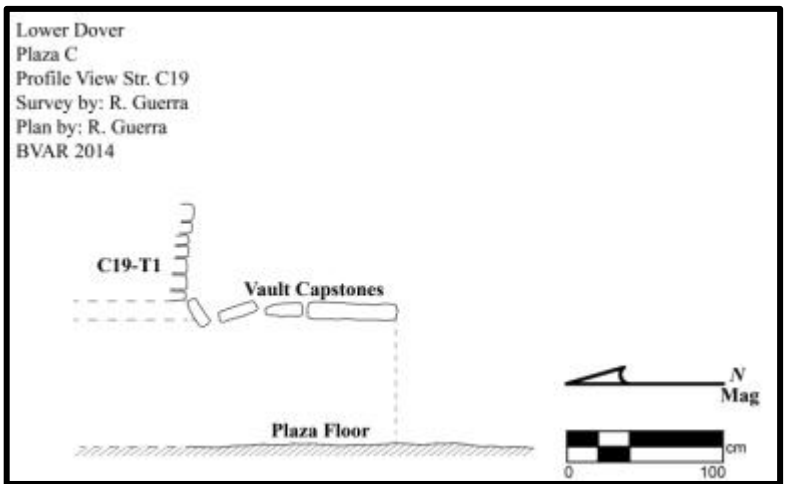

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Figure 4: a.) Plan view of excavations in Plaza C. b.) Profile of Structure C17. c.) Profile of Structure C19.

Figure 5: Photo of C19-T2 showing collapsing capstones below the terrace.

Excavation of PC-1 ext.1a was initiated from an easterly direction into the feature to the west. Due to the size of the feature, excavation of the feature was redirected from above by extending unit PC-1 to the west for 125 cm. This excavation allowed access to the feature from above and also identified the remains of a second terrace on structure C19 (C19-T2). C19-T2 was located at 150 cm west of C19-T1 and consisted of 8 courses of cut limestone block measuring 75 cm in height. Excavation along the top of C19-T1 revealed a total of 3 partially collapsed capstone. These capstones were removed and excavations continued within the vaulted feature and exposed a layer of broken ceramics at approximately 15 cm above the plaza floor. No other cultural material was recovered from this feature. At approximately 90 cm below the vault stone the plaza floor was exposed. In addition inspection of C19-T2 indicated that the vaulted feature continued to the west below the terrace and very likely formed a passage between structures C17 and C19 (Figure 5). Additional excavations below the plaza floor were not initiated but it is very likely that this feature is part of a filled in passage along the northwest corner of the plaza. This feature is reminiscent of the passage way located at the northwest corner of Plaza A at Cahal Pech. Future excavations will determine if this assumption is accurate.

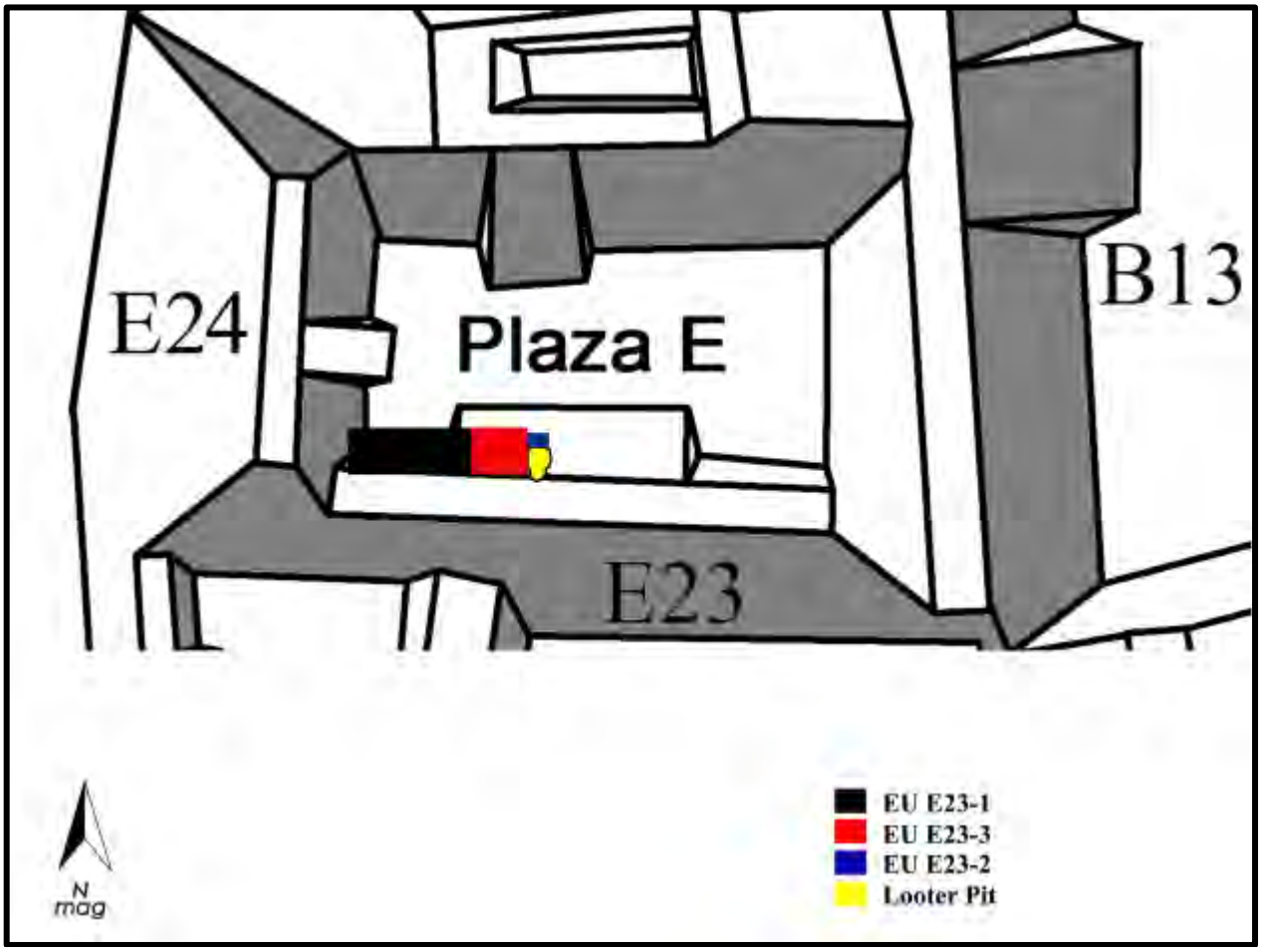
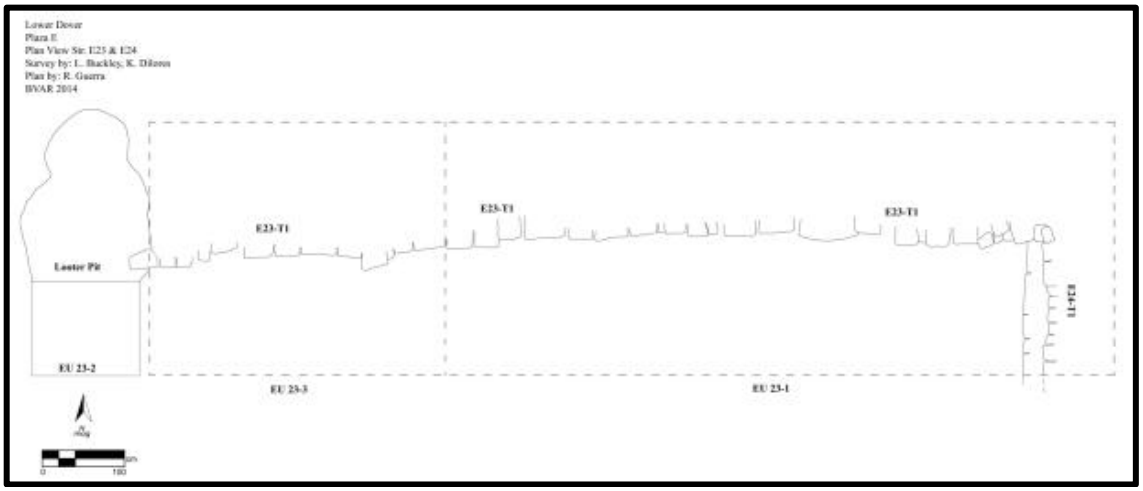


Figure 6: Plaza E with excavation units.

All units were excavated as a single cultural level as no cultural features were evident between the plaza floor and the present ground surface. Artifact counts for each unit are presented in Table 1 below. Initial ceramic analyses of the material recovered from all the Plaza C units indicate that they are from the Terminal Classic period and included sherds of Belize Red plate and vases, Platon Punctated Incised, Cayo unslipped Jars and Tutu Camp striated Jar (Gifford 1976).

Plaza E

Excavations in Plaza E were initiated to identify the architectural component of the southern structure in the group (Str. E23) as well as to recover material remains related to the terminal phase occupation. In addition a unit was initiated within an existing looter pit in order to identify the stratigraphic sequence of construction in the plaza. These units were separated into horizontal exposures, Unit E23-1 and E23-3, and vertical exposure, Unit E23-2 (Figure 6). Units E23-1 and E23-3 were established along the base of structure E23 running west from the western edge of a looter pit to the presumed edge of the basal terrace of structure E24. Both units extended from the plaza to the south for a distance of 3 meters. This allowed for the full recovery



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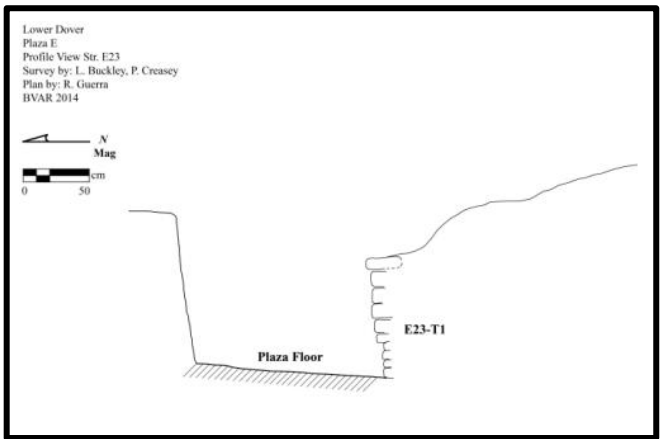

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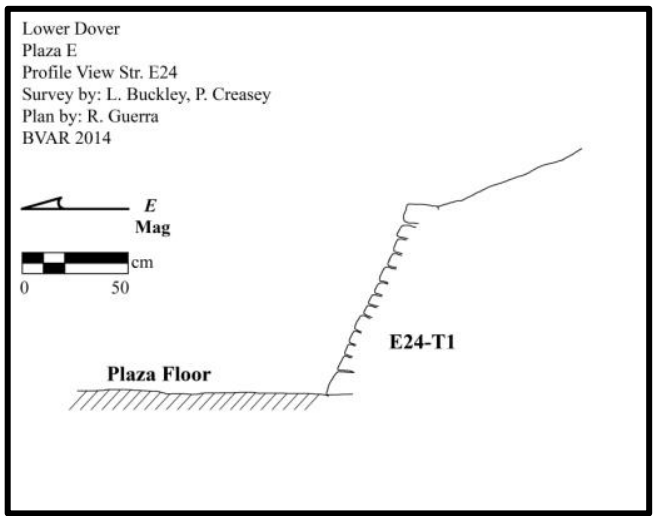

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Figure 7: a.) Planview of excavations. b.) Profile View of Structure E23 c.) Profile view of E24-T1.

of artifacts along the base of the structure. Unit E23-1 measures 7 meters long by 3 meters wide and unit E23-3 measures 3.6 meters long by 3 meters wide. In 2012 and 2013, the excavations in Plaza F indicated that the humic layer covering collapsed architecture contained a ceramic component of the early to middle Postclassic period. This layer was interpreted as a reuse of the plaza area after site abandonment (Guerra et al. 2013). As such both units were excavated in two discrete levels in order to identify any possible reuse of the plaza after the site was abandoned. Level 1 encompassed the removal of a dark black humic layer that exposed the collapsed architecture of the basal terrace of the structure. Level 2 of these units included collapsed architecture and a light brown sandy loam matrix that covered the plaza floor. Although these units were excavated as discrete levels, the ceramic composition of each level indicated that there was no reuse of this plaza after the building started to collapse.

At approximately 160 cm south of the northern edges of the unit, the basal terrace of structure E23 (E23-T1) was exposed. This platform extended from the edge of the looter pit, to the west for 1060 cm where it abutted the basal terrace of structure E24 (Figure 7). E23-T1 consisted of 2 or 3 courses of cut limestone blocks, except for the western most edge where both terraces met. At this point E23-T1 consisted of 9 courses of cut stone, measuring 75 cm in height. No additional terraces were found in either of the units. This is likely as a result of high levels of bioturbation at the location. Evidence of a second terrace was identified in unit E23-2 suggesting that the absence in these units resulted from the above-mentioned process. The basal platform of structure E24 (E24-T1), covered the entire width of the unit from the edge of E23-T1 to the north measuring 1.5 meters. This terrace consisted of 13 cut limestone block organized at an angle of 23 degrees from base to summit (Figure 7). Observation of 24-T1 indicates that it extended to the south behind E23-T1 indicating that structure E24 was likely built before structure E-23.

The artifacts recovered from these units are recorded in Table 2 below. These artifacts included ceramics, chert tools, obsidian fragments, partial jade beads, pyrite mosaic fragment, fresh water shell and faunal remains. Figure 8 and 9 below presents a range of the small finds found during the excavations of these units. The ceramics recovered from these units included Belize Red plates, Cayo unslipped jars, Alexanders unslipped jars,Roaring Creek plates, Platon Punctated bowls, Garbutt Creek Red bowls (Gifford 1976) and several censor fragments, including Pedregal Modeled and Miseria Appliqued (Sabloff 1975). The ceramics indicate that the final occupation of the plaza may be dated to the Terminal Classic Period.

A single vertical unit (E23-2) was initiated to the east of units E23-1 and E23-3 to encompass a looter pit. Initially the unit was commenced as a salvage operation to recover material culture and identify substructures in the building. However, the clearing of the looter pit did not identify previous construction episodes and only the terminal phase architecture, identified in the other two units were visible (Figure 10). Additionally it was noted that the construction of this architectural phase was comprised of two platform terraces built on top of large dry laid boulder fill, indicating a rapid construction phase. In the absence of substructures a vertical unit was initiated at the northern edge of the unit extending north from the base of E23-T1 measuring 1.6 meters x 1.3 meters. The unit was excavated to a depth of 222 cm below Plaza floor. At this level, the matrix consisted of reddish brown sandy clay, however due to rains, water seeped in from the baulk at a rate of 25 cm every half hour. This condition led to an

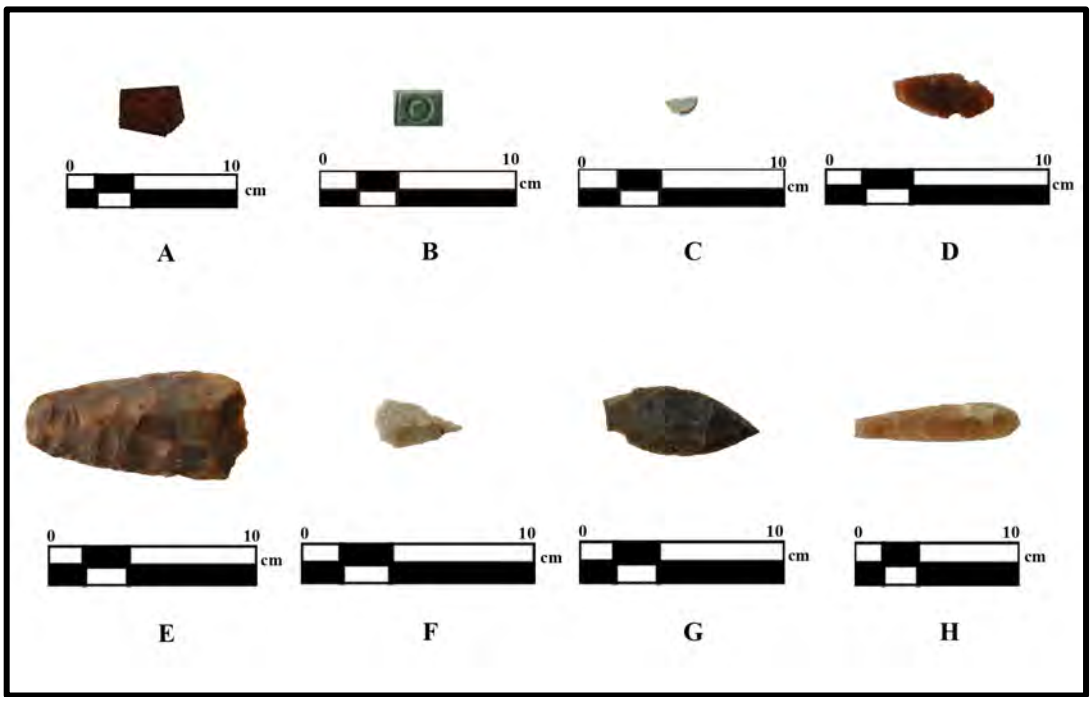

Figure 8: Lithic Small finds recovered from Structure E23. A. Pyrite mosaic piece, B. Jade Bead Fragment, C. Jadeite Bead Fragment, D. Notched Projectile Point, E. Chert Biface, F. Chert Drill, G. Chet Stemmed Projectile Point, H. Chert Biface

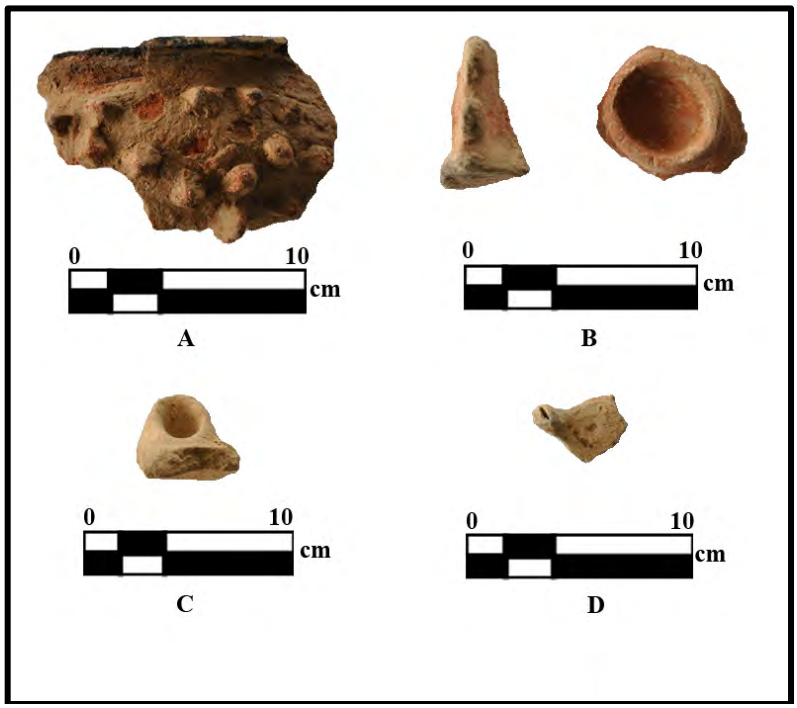

Figure 9: Ceramics recovered from Structure E23. A. Miseria Appliqued Censer Fragment, B. Pedregal Modeled Censer Fragments, C. Ceramic Spout, D. Ceramic Ocarina Fragment

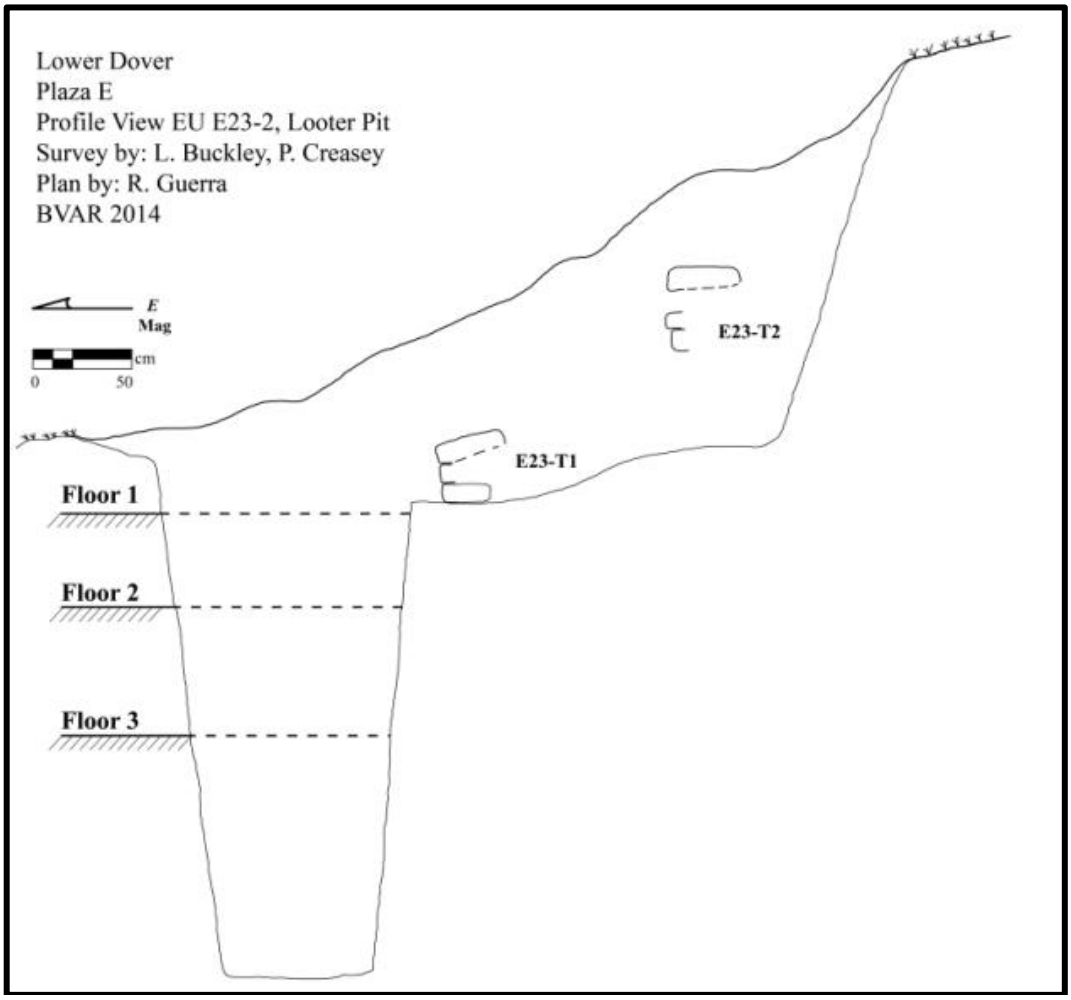

Figure 10: Profile of E23-2.

10) were identified in the unit suggesting 3 possible construction episodes. Although neither bedrock or sterile matrix were achieved, based on excavations in 2012 in Plaza G and the ballcourt, it is very likely that this lowest level was as a result of leveling of the bedrock to facilitate the construction of platforms (Guerra and Arksey 2012).

The sandy clay matrix was overlaid with a dark black loamy clay layer measuring 50 cm. This level was directly below floor 3 identified in the unit. Artifacts collected from this unit consisted of mainly chert shatter and ceramics. The ceramics recovered were predominantly body sherds of possible Late Classic to Terminal Classic period origin. However, 4 sherds with basal flanges (Figure 11) were recovered in this level and tentatively identified as Dos Arroyos Orange-polychrome (Gifford 1976), most commonly associated with the later part of the Early Classic Period. Because of the small sample size of these sherds mixed in with later ceramic complexes, the authors are tentative to associate an early classic date to this level. Given the presence of these sherds, it is likely that there may be an early classic component to the site core construction episodes. Future excavations in this and other plaza will be needed to confirm this assumption. Floor two lies at 64 cm above Floor 3 with a fill consisting of 40 cm of a red clay on top of 24 cm of a dark brown sandy loam. Artifacts recovered from this level were predominantly chert

Figure 11: Basal flange ceramics identified as Dos Arroyos Orange-polychrome.

flakes and fresh water shells, mainly jute. No identifiable ceramic materials were recovered from this level. Floor one lies at 46 cm above Floor 2 with a fill consisting of light brown loamy sand. Artifacts collected from this level included ceramics, chert, and fresh water shells. One identifiable piece of ceramic was recovered that was classified as a Mountain Pine Red ware of the early Late Classic period (Gifford 1976).

Given the sequence of floor construction, Floor 3 has been identified as associated with structure E23-1st, Floor 2 with structure E23-2nd and Floor 1 with structure E23-3rd. Floor 1 is the only floor with definitive associated architecture.

DISCUSSION AND CONCLUSION

The data presented above are a result of continuing research to define the form, and construction chronology in several plazas of the acropolis complex, elite residential area, of Lower Dover. These excavations were able to define the terminal phase architecture in Plaza C and E. In addition, horizontal excavations allowed for the recovery of cultural material associated with the final phase of occupation at both plazas. The vertical excavations in Plaza E allowed for the determination of probable construction episodes in that plaza.

The ceramic recovered from Plaza C indicate that the final occupation of this group in the palace complex date to the Terminal Classic Period. No vertical excavations were conducted in this plaza. The architectural component of this plaza indicated that Structure C17 included a partial masonry superstructure that would have supported a perishable structure. Lastly in the northwest corner of the plaza a partially filled vaulted feature was identified that resembles a passageway through structure C19.

The excavations in Plaza E recovered ceramic material associated with the Terminal Classic period indicating the last use of the plaza dates to this time period. The earliest ceramics recovered from this area indicates a possible early classic occupation, but no associated architectural components were identified. The small sample size of these ceramics is mixed with later period materials and may not be indicative of an earlier occupation.

Table 1: Lot number for the 2012 excavation units.

Site	OP	Structure	EU	Lvl	Lot	Lot Description
LWD	SR3	Plaza C	C17-1	1	C17-1	Humus
LWD	SR3	Plaza C	PC-1	1	PC-1	Humus
LWD	SR3	Plaza C	PC-2	2	PC-2	Humus
LWD	SR4	Plaza C	PC-1	2	PC-3	Collapse
LWD	SR5	Plaza C	PC-1 Ext A	1	PC-4	Humus
LWD	SR3	Plaza C	PC-1 Ext A	2	PC-5	Fill
LWD	SR3	Plaza E	E23-1	1	E23-1	Humus
LWD	SR3	Plaza E	E23-1	2	E23-2	Collapse
LWD	SR3	Plaza E	E23-2	surface	E23-3	Looter Backdirt
LWD	SR3	Plaza E	E23-2	1	E23-4	Fill Floor 1
LWD	SR3	Plaza E	E23-2	2	E23-5	Fill Floor 2
LWD	SR3	Plaza E	E23-2	3	E23-6	Fill
LWD	SR3	Plaza E	E23-1	3	E23-8	Fill Floor 1

Table 2.0: Artifact totals by lot number for the 2012 excavation units.

Site	OP	Structure	EU	Lvl	Lot	Lot Description	Class	Totals
LWD	SR3	Plaza E	E23-1	1	E23-1	Humus	Ce	**315**
LWD	SR3	Plaza E	E23-1	1	E23-1	Humus	Ch	**228**
LWD	SR3	Plaza E	E23-1	1	E23-1	Humus	Db	**101**
LWD	SR3	Plaza E	E23-1	1	E23-1	Humus	Fa	**6**
LWD	SR3	Plaza E	E23-1	1	E23-1	Humus	Fs	**8**
LWD	SR3	Plaza E	E23-1	1	E23-1	Humus	Ob	**4**
LWD	SR3	Plaza E	E23-1	1	E23-1	Humus	Qz	**1**
LWD	SR3	Plaza E	E23-1	2	E23-2	Collapse	Ce	**1210**
LWD	SR3	Plaza E	E23-1	2	E23-2	Collapse	Ch	**334**
LWD	SR3	Plaza E	E23-1	2	E23-2	Collapse	Db	**291**
LWD	SR3	Plaza E	E23-1	2	E23-2	Collapse	Fa	**64**
LWD	SR3	Plaza E	E23-1	2	E23-2	Collapse	Fs	**50**
LWD	SR3	Plaza E	E23-1	2	E23-2	Collapse	Gr	**4**
LWD	SR3	Plaza E	E23-1	2	E23-2	Collapse	Jd	**2**
LWD	SR3	Plaza E	E23-1	2	E23-2	Collapse	Ob	**8**
LWD	SR3	Plaza E	E23-1	2	E23-2	Collapse	Py	**1**
LWD	SR3	Plaza E	E23-1	2	E23-2	Collapse	Qz	**2**
LWD	SR3	Plaza E	E23-1	2	E23-2	Collapse	Db	**18**
LWD	SR3	Plaza E	E23-2	Surface	E23-3	Looter Backdirt	Ce	**13**
LWD	SR3	Plaza E	E23-2	Surface	E23-3	Looter Backdirt	Ch	**18**
LWD	SR3	Plaza E	E23-2	Surface	E23-3	Looter Backdirt	Fs	**1**
LWD	SR3	Plaza E	E23-2	Surface	E23-3	Looter Backdirt	Ob	**1**
LWD	SR3	Plaza E	E23-2	1	E23-4	Fill Floor 1	Ce	**176**
LWD	SR3	Plaza E	E23-2	1	E23-4	Fill Floor 1	Ch	**139**
LWD	SR3	Plaza E	E23-2	1	E23-4	Fill Floor 1	Fs	**7**
LWD	SR3	Plaza E	E23-2	2	E23-5	Fill Floor 2	Ce	**86**
LWD	SR3	Plaza E	E23-2	2	E23-5	Fill Floor 2	Ch	**126**
LWD	SR3	Plaza E	E23-2	2	E23-5	Fill Floor 2	Fa	**2**
LWD	SR3	Plaza E	E23-2	2	E23-5	Fill Floor 2	Fs	**35**
LWD	SR3	Plaza E	E23-2	2	E23-5	Fill Floor 2	Qz	**1**
LWD	SR3	Plaza E	E23-2	3	E23-6	Fill	Ca	**1**
LWD	SR3	Plaza E	E23-2	3	E23-6	Fill	Ce	**466**
LWD	SR3	Plaza E	E23-2	3	E23-6	Fill	Ch	**307**
LWD	SR3	Plaza E	E23-2	3	E23-6	Fill	Db	**18**
LWD	SR3	Plaza E	E23-2	3	E23-6	Fill	Fa	**8**
LWD	SR3	Plaza E	E23-2	3	E23-6	Fill	Fs	**51**
LWD	SR3	Plaza E	E23-2	3	E23-6	Fill	Mx	**1**
LWD	SR3	Plaza E	E23-2	3	E23-6	Fill	Ob	**2**

LWD	SR3	Plaza E	E23-2	3	E23-6	Fill	Qz	**3**
LWD	SR3	Plaza E	E23-3	1	E23-7	Humus and Collapse	Ce	**275**
LWD	SR3	Plaza E	E23-3	1	E23-7	Humus and Collapse	Ch	**6**
LWD	SR3	Plaza E	E23-3	1	E23-7	Humus and Collapse	Ch	**116**
LWD	SR3	Plaza E	E23-3	1	E23-7	Humus and Collapse	Db	**12**
LWD	SR3	Plaza E	E23-3	1	E23-7	Humus and Collapse	Fa	**9**
LWD	SR3	Plaza E	E23-3	1	E23-7	Humus and Collapse	Fs	**14**
LWD	SR3	Plaza E	E23-3	1	E23-7	Humus and Collapse	Ob	**1**
LWD	SR3	Plaza E	E23-1	3	E23-8	Fill Floor 1	Ce	**376**
LWD	SR3	Plaza E	E23-1	3	E23-8	Fill Floor 1	Ch	**43**
LWD	SR3	Plaza C	PC-1	1	PC-1	Humus and Collapse	Ce	**222**
LWD	SR3	Plaza C	PC-1	1	PC-1	Humus and Collapse	Ch	**77**
LWD	SR3	Plaza C	PC-1	1	PC-1	Humus and Collapse	Fa	**6**
LWD	SR3	Plaza C	PC-1	1	PC-1	Humus and Collapse	Fs	**5**
LWD	SR3	Plaza C	PC-1	1	PC-1	Humus	Ob	**1**
LWD	SR3	Plaza C	PC-2	1	PC-2	Humus and Collapse	Ce	**71**
LWD	SR3	Plaza C	PC-2	1	PC-2	Humus and Collapse	Ch	**27**
LWD	SR3	Plaza C	PC-2	1	PC-2	Humus and Collapse	Fs	**1**
LWD	SR3	Plaza C	PC-1 Ext A	1	PC-4	Humus	Ce	**12**
LWD	SR3	Plaza C	PC-1 Ext A	1	PC-4	Humus	Ch	**15**
LWD	SR3	Plaza C	PC-1 Ext A	1	PC-4	Humus	Ob	**1**
LWD	SR3	Plaza C	PC-1 Ext A	2	PC-5	Fill	Ce	**14**
LWD	SR3	Plaza C	PC-1 Ext A	2	PC-5	Fill	Ch	**24**
LWD	SR3	Plaza C	C17-1	1	C17-1	Humus and Collapse	Ce	**254**
LWD	SR3	Plaza C	C17-1	1	C17-1	Humus and Collapse	Ch	**10**
LWD	SR3	Plaza C	C17-1	1	C17-1	Humus and Collapse	Db	**1**
LWD	SR3	Plaza C	C17-1	1	C17-1	Humus and Collapse	Qz	**1**

ACKNOWLEDGEMENTS

I would like to thank the Belize Institute of Archaeology for their support of the Belize Valley Archaeological Reconnaissance Project. I would also like to thank Dr. Jaime Awe, Project Director, Myka Schwanke and Julie Hoggarth for their guidance and support. I would like to thank the following staff and students, Claire Ebert, Jillian Jordan, Michael Petrozza, Renee Collins, Kurt Dilores, Tucker Austin, Julian Acuna, and Neal Endacott. who provided much needed assistance in the field and assisted in the write up of this report. Lastly our gratitude goes out to the Reynolds family for allowing the continued research at Lower Dover during our field sessions.

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2014 EXCAVATIONS AT PLAZA M, LOWER DOVER

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INTRODUCTION

Plaza M

Plaza M (Figure 1) is a small plaza located within the southeast section of the ceremonial center of Lower Dover. In 2013, the plaza was discovered during a pedestrian survey of the area (Petrozza, 2013). It was examined in further detail during LiDAR analysis of the site (Guerra, 2013). The plaza group consists of four low range structures surrounding the central plaza. During the wet season, the area floods and there is significant secondary jungle growth, causing bioturbation and poor preservation conditions. In the summer field season of 2014, excavations focused on the western structure, M59. M59 is a low platform oriented roughly north/south (Figure 2).

METHODOLOGY

A temporary datum (TDPM-1) was established at the top of structure M59, measuring 138.2cm in height. The location of this datum was recorded using a Garmin handheld GPS device. Excavation unit M59-1 was established spanning the slope of the structure as well as the adjacent plaza floor to its east, with the intention of exposing the structure's terminal architecture as well as all existing plaza construction phases. Given the structure's slight deviation from a north/south orientation, unit M59-1 was aligned approximately 10˚ west of north. The unit measured 2 meters north to south and 3 meters east to west.

RESULTS OF EXCVATIONS

E.U. M59-1

Lot M59-1 was initiated to remove the humus above the architectural collapse. Opening elevations were 77cm in the northwest corner, 124cm in the northeast corner,

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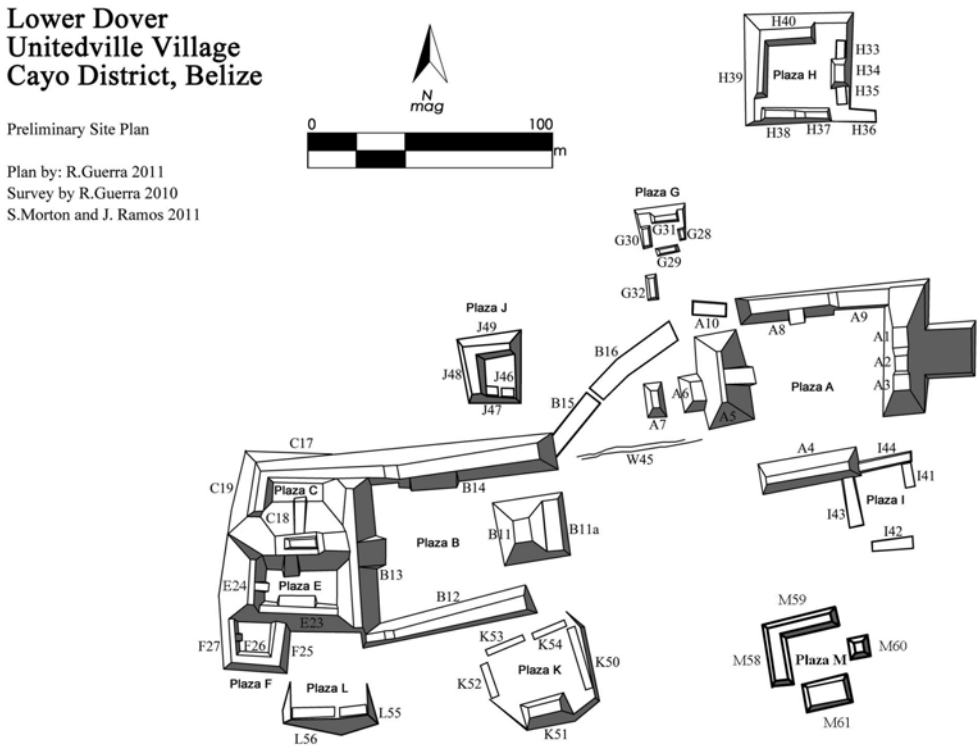

Figure 1. Lower Dover site core, showing the location of Plaza M.

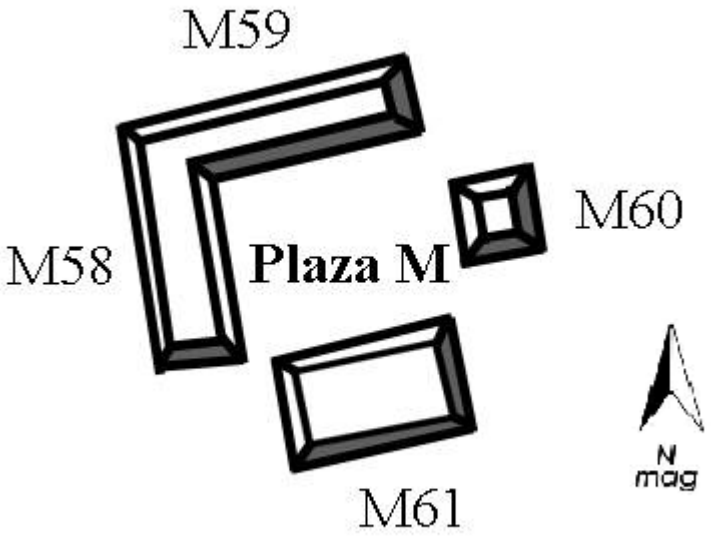

Figure 2. Location of M59 in Plaza M at Lower Dover.

Figure 3. View of architectural collapse of M59, facing southwest.

85cm in the southwest corner, 133cm in the southeast corner, and 105cm in the center. This lot consisted of dark, rich soil with a large amount of organic material including leaves, roots and small plants. Among the few artifacts uncovered were ceramic sherds, lithic debitage, and a large, broken biface. Once all humus had been removed and the terminal architecture exposed, the lot was closed.

Lot M59-2 was opened in association with the exposed collapse of structure M59. The opening elevations were 88cm in the northwest corner, 137cm in the northeast, 94cm in the southwest, 140cm in the southeast, and 103cm in the approximate center. The soil became significant lighter and less compact, and contained less organic material. This lot included cut stones in an architectural alignment running north/south, indicating the edge of the structure, as well as an alignment indicating a single step down to the plaza level. The summit of the structure consisted of cobble ballast, without any existing plaster or additional construction materials (Figure 3). The cobbles were also located in between the alignments of larger stones. Again, few artifacts were encountered, limited only to non-diagnostic ceramic sherds and chert flakes. Once the terminal architectural phase had been exposed in its entirety, the plaza segment of the unit was excavated down to the terminal plaza floor, Floor 1.This floor was identified by its cobble ballast, as no plaster was preserved.

Once the collapse had been defined and the terminal floor identified, lot M59-3 was opened, in order to continue excavations beneath Floor 1. Opening elevations for lot M59-3 were 93cm in the northwest corner, 143cm in the northeast, 93cm in the southwest, 146cm in the

Table 1. Total artifact counts by artifact class and lot.

Site	OP	Structure	EU	Lvl	Lot	Lot Description	Class	Totals
LWD	SR3	Plaza M	M59-1	1	M59-1	Humus	Ch	156
LWD	SR3	Plaza M	M59-1	1	M59-1	Humus	Ch	25
LWD	SR3	Plaza M	M59-1	1	M59-1	Humus	Db	6
LWD	SR3	Plaza M	M59-1	1	M59-1	Humus	Fs	1
LWD	SR3	Plaza M	M59-1	2	M59-2	Collapse	Ce	121
LWD	SR3	Plaza M	M59-1	2	M59-2	Collapse	Ch	40
LWD	SR3	Plaza M	M59-1	2	M59-2	Collapse	Qz	1
LWD	SR3	Plaza M	M59-1	3	M59-3	Fill floor 1	Ce	108
LWD	SR3	Plaza M	M59-1	3	M59-3	Fill floor 1	Ch	87
LWD	SR3	Plaza M	M59-1	3	M59-3	Fill floor 1	Fs	2
LWD	SR3	Plaza M	M59-1	3	M59-3	Fill floor 1	Qz	5

southeast, and 107cm in the center. As this lot was beneath Floor 1, its goal was to excavate down to Floor 2. The fill beneath Floor 1 consisted of a heavy clay with inclusions of sand and cobbles. Its color was red-orange. This fill was also almost entirely devoid of artifacts, and their frequency decreased even further as the unit went deeper. Only one sherd appeared to be diagnostic, as it was a rim sherd with an etched image of an abstract face. As this lot progressed, the clay became significantly more wet and compact, and almost impossible to excavate. It is likely that this clay was used to elevate the ground surface in order to create Plaza M, raising it above the water table. The clay began to contain some slick, dark gray inclusions, as well as significantly larger boulders, however no Floor 2 was ever reached. Excavations were terminated due to time constraints. Closing elevations were 93cm in the northwest corner, 207cm in the northeast, 93cm in the southwest, 197cm in the southeast, and 107cm in the center. The total artifacts resulting from the excavation of Plaza M can be seen in Table 1.

DISCUSSION

Given the significant amount of construction fill used to build the plaza surface up, I believe that Plaza M was constructed in a single construction phase. Although these excavations only

exposed the terminal construction sequence of structure M59, it is likely given its low profile that it was built in a single phase, like the adjacent plaza. Other structures in the plaza may have a longer construction history, such as the significantly taller northern and eastern structures, however these have not yet been excavated. As the summit of structure M59 was poorly preserved, evidence of a superstructure could not be determined. However, as it is a long, low platform, such a perishable superstructure likely did exist. Further testing of the surrounding structures and the plaza itself will lend more insight into the function of Plaza M.

ACKNOWLEDGMENTS

I would like to thank the 2014 students and staff of the Belize Valley Archaeological Reconnaissance Project, and the Belize Institute of Archaeology. Thank you to Dr. Julie Hoggarth and Rafael Guerra for their support in this research. I would also like to thank students Lori Singleton and Luke Stroth for their diligent work in Plaza M.

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LOWER DOVER EXCAVATION OF PLAZA B: UNIT B14-1

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INTRODUCTION

During the summer of 2014, excavations at the site of Lower Dover, Unitedville, Cayo District, Belize continued for the fifth season under the Belize Valley Archaeological Reconnaissance (BVAR) project. The site core of Lower Dover is located to the south of the Belize River between Upper Barton Creek and Lower Barton Creek, and is situated across from Barton Ramie, and approximately 5 kilometers east of the site of Baking Pot (Guerra 2011). The site core of Lower Dover contains one ballcourt, 9 formal plaza groups, and over 50 structures.

PLAZA B: B14-1

The area of excavation was located on the northernmost region of Plaza B on an architectural feature (B14), a long range structure. Structure B14 forms the northern boundary of the group and is located at the summit of a limestone ridge that forms the base for Plaza B (Fig 1.0). The purpose of the excavation of this unit within Plaza B was to establish a chronological sequence of construction for the structure and the plaza area of the group. The excavations of this unit were conducted from 14 July- 27 July of 2014.

Excavation

The unit for B14-1 measured 2m x 3m starting at the floor of Plaza B and extending 3m north up structure B14. All levels during excavation were determined by changes in cultural levels or matrix characteristics changes. The soil composition of the first level of B14-1 consisted of humus and collapse from the underlying structure. As excavation of this level continued, three alignments of cut stones were found that were evenly spaced starting approximately 1m from the Southern wall of the unit and ending in the Northern wall of the unit, organized in a manner that is characteristic of a set of steps (Fig. 2) forming part of a staircase. Due to bioturbation process, much of the staircase was not well preserved. A poorly preserved plaster floor of Plaza B was also uncovered in front of the southernmost set of steps at approximately 30cm below the surface of the unit. The floor appeared to abut the lowest course of the staircase, indicating that it was associated with the terminal phase of construction. Artifacts that were recovered during the excavation of this level were several ceramic sherds (including a few diagnostic pieces such as rims, flanges, and two suedo glyphs, which are a characteristic of some

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terminal classic cermaics), chert, daub, freshwater shell, and faunal remains.

In level 2 of unit B14-1 began at excavation only occurred in the southern portion of the unit on the plaster floor in front of the first set of steps measuring 1m (North/South) x 2m (East/West) in order to keep the exposed architecture intact. The soil matrix primarily consisted of ballast and limestone below the first floor. During excavation a second plaster floor was found beneath the first floor that was located approximately 50cm below the surface of the unit that was in much better condition that the previous floor. The artifacts that were recovered from this level were ceramic sherds containing some diagnostic pieces such as rims or molded-carving (indicating that these ceramics were from the Terminal Classic) on the ceramics along with chert, daub, and freshwater shell in relatively small amounts.

Excavation of level 3 of B14-1 continued in the southern area of unit on the plaster floor (1m x 2m). The soil matrix was of ballast and limestone below floor 2. As excavation continued, a third plaster floor was found nearly 6cm below the previous floor. Significantly more cultural materials were found compared to the previous level, which consisted of ceramic sherds containing both diagnostic and non-diagnostic pieces, chert, and daub.

Level 4 of unit B14-1 had a matrix that consisted of ballast and limestone below floor 3. Further excavation of the unit revealed a change in the soil matrix to a darker colored soil resembling the texture of silty clay. Due to this change in the soil composition, the levels were changed and the lot was closed. The artifacts that were recovered from this level were ceramic sherds with very few diagnostic peices, large amounts of chert, daub, and freshwater shell.

The fifth level of B14-1 in Plaza B had a matrix of was of silty clay that contained many larger stones and river cobbles evenly distributed throughout the unit. Because of this matrix composition, excavation of B14-1 was focused in the Southeast corner of the unit measuring 1m x 1m that ended in the center previous unit measurement (1m x 2m). As excavation continued, another soil change occurred that displayed a change to a dark orange/brown color that was composed of small grains of sand, which we identified as sandy-loamy-clay. Due to this, the lot was closed and the levels were changed. Minimal amounts of cultural remains were discovered, which were of ceramic sherds (with very few diagnostic pieces) and chert.

Excavations of level 6 continued in the 1m x 1m area in the Southeast corner of the unit. While further excavating the unit, bedrock was found and evenly present throughout the unit. The bedrock was located within the 1m x 1m unit below the datum at a depth of Northeast: 289cm, Northwest: 283cm, Southeast: 286cm, Southwest: 284cm, and center: 289. Once elevations, mapping, and photographs were taken, the unit was closed and backfilled.

DISCUSSION AND CONCLUSION

Through conducting excavation of the B14-1 in Plaza B, a chronology for the plaza was able to be established though interpretation of the cultural levels and changes in the matrixes that were revealed. Due to the presence of the multiple floors, we can deduce that Plaza B within the site of Lower Dover consisted of at least three phases of construction that occurred during the Terminal Classic Period, which can be determined through the characteristics of the ceramic sherds that were recovered. One such ceramic fragment that displayed the characteristics of this period was a diagnostic piece found in level 1, lot: B14-1, on 17 July, 2014 that contained a suedo glyph that measured 2.5cm X 4.5cm. Another characteristic that demonstrates that this structure was built during the terminal phase is how the plaster floor on the first level abuts the lowest portion of the staircase.

Because of the condition of structure B14, further excavation into the structure may be needed in order to better determine if the construction of the steps of B14 follow the construction phases of the floors. This would display whether or not B14 was only present during the final phase of construction within Plaza B or if earlier constructs of B14 were developed as the floors of the plaza were established.

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LOWER DOVER SETTLEMENT SURVEY 2013 FIELD SEASON

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INTRODUCTION

In the summer of 2013 survey of the Lower Dover settlement began as part of the ongoing research conducted by the Belize Valley Archaeological Reconnaissance (BVAR) project at the site of Lower Dover located in Unitedville, Cayo District, Belize. Approximately eleven kilometers east of San Ignacio, Lower Dover is situated on the southern bank of the Belize River defining the northern boundary of the site. Directly across the Belize River lies the site of Barton Ramie. Flanking Lower Dover three kilometers east is Blackman Eddy and Baking Pot six kilometers to the west (Guerra and Morton 2011).

PREVIOUS RESEARCH

Neighboring sites including Floral Park (Willey *et al.* 1965), Blackman Eddie (Driver and Garber 2004), and Barton Ramie (Willey et al. 1965; Gifford *et al.* 1976), have been researched extensively. The late Gordon Willey conducted a groundbreaking archaeological survey of the Barton Ramie site in 1956 and concluded that Barton Ramie was a settlement site which consisted of residential house mounds and was uncharacteristically devoid of a site core (Willey et al. 1965). Research at Lower Dover began in the summer of 2010. The focus of investigation included mapping the site core and establishing a site chronology. Research of the site thus far has identified two phases of occupation in the latter part of the Late Classic period (AD 700-900) (Guerra 2012), however diagnostic surface scatter in Plaza F has suggested that early Post Classic occupation or temporary reoccupation is possible (Wolfel et al. 2009). As the ongoing archaeological investigation of Lower Dover has only begun recently, it is still unknown what the temporal relationship these sites had with each other. However, this timeline suggests that the emergence of Lower Dover coincides with the abandonment of Blackman Eddy, a site that was thought to have served as Barton Ramie's administrative center from the Preclassic to the Late Classic (Garber et al. 2004:49).

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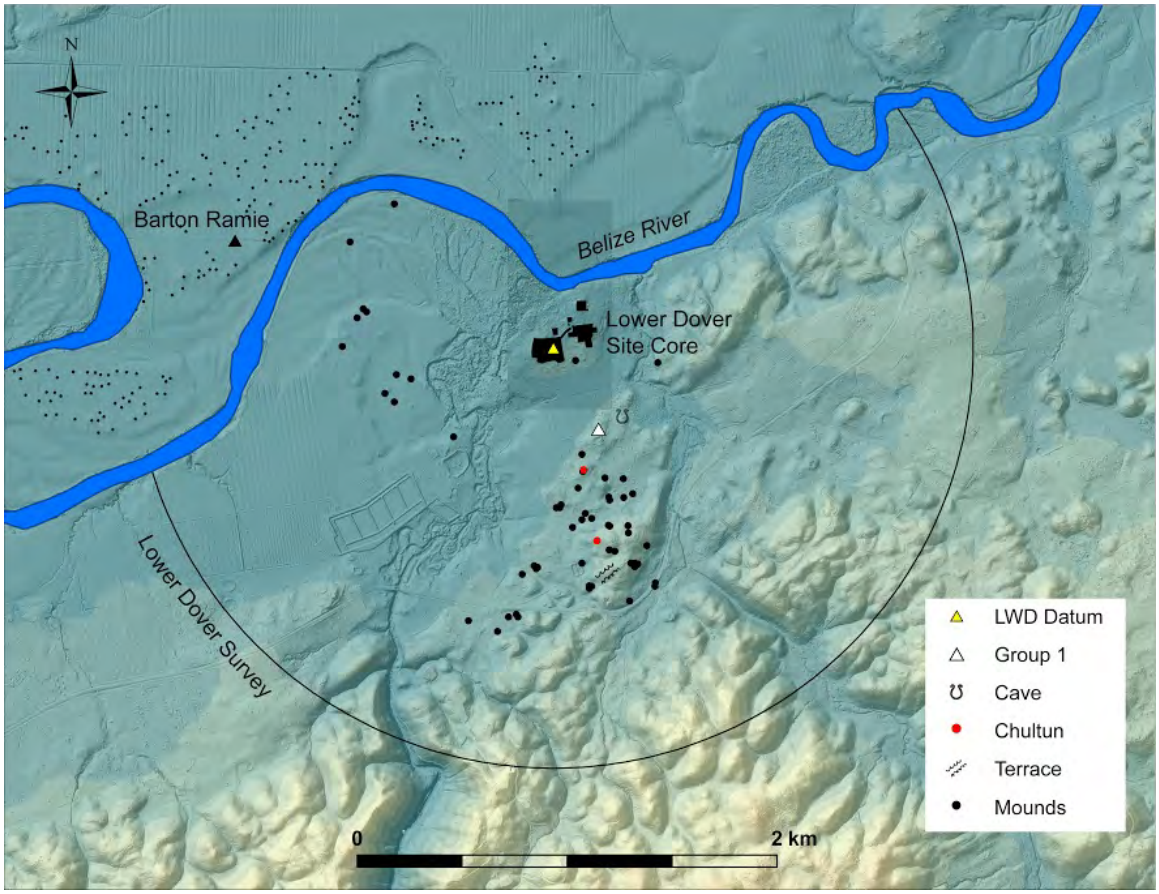

Figure 1: Lower Dover settlement

METHODOLOGY

In 2013 reconnaissance of the settlement began however, survey gained full momentum in the 2014 field season. LiDAR (Figure 1) survey data in a 3 km radius of the Lower Dover site core was used in conjunction with pedestrian survey to identify archaeological features. The site was divided into quadrants: northeast, southeast, southwest, and northwest. The center of the quadrants were based on the existing permanent datum established within the site core (South Datum, Plaza B). This datum served as the originality point at the start and end of each survey. Transects were established in each section running north and south using a survey transit.

Distance between transects varied, increasing and decreasing based on visibility in the thick jungle vegetation. Archaeological features were recorded using a handheld GPS unit and input as waypoints with an accuracy of + 3m. Features were identified as: anomalies in the corresponding terrain, areas containing a high volume of surface scatter, areas with clearly delineated architectural alignment or features identified by the LiDAR

survey and corresponding shovel tests. As features were recorded a small sample of diagnostic artifacts were collected from the surface and retrieved during shovel testing.

After calculating the architectural volume (Table 1) of the Lower Dover settlement, 20% of the structures in the settlement were selected randomly for testing. Shovel testing penetrated no deeper than 40cm and were administered at the center, or as close to the center, of each suspected residential mound identified by the survey. The diagnostic ceramic samples that were collected during the survey were analyzed and classified according to Gifford's ceramic typology of Barton Ramie. It should be noted that these shovel tests were never meant to provide a complete chronology, rather they were implemented to add a subsurface component, contributing to a preliminary timeline of the settlements terminal phase.

Shovel testing is a common component of North American Cultural Resource Management (CRM) and is often beneficial on survey in areas of development such as, a plowed field or pasture as it verifies the presence of archaeological remains. In this study its implementation was twofold; first, it allowed the researcher to ground truth the LiDAR data that was collected by the B.V.A.R project (Awe et al 2015), and second while it is a common practice to excavate house mounds to cultural 'sterile' in the Belize River Valley the scope of this survey would not allow the researcher ample time to excavate a valid sample of house mounds to contribute meaningful data for the Lower Dover settlement.

As these shovel tests did not penetrate the surface deep enough to provide a complete chronology for each individual structure, vertical excavations focused on a group in fact, the only group in the settlement area- Group 1 (Figure 2). To avoid confusion, all recorded archaeological features in the settlement were named numerically while features within the ceremonial center are named alphabetically. Group 1 was used to elicit a preliminary chronology for the settlement. Due to its restricted access and positioning it was hypothesized that the plaza was used in some ritual capacity and therefore could be excavated to establish a preliminary chronology that could justifiably represent the earliest date for occupation within the settlement.

RESULTS OF SURVEY

The survey of Lower Dover settlement yielded a plethora of archaeological data contributing to the understanding of the site. The survey located and recorded two Chultunob, two caves, agricultural terracing, and sixty other house mounds. As a result, excavation was conducted on one of the Chultunob recorded. Analysis of diagnostic surface scatter should provide a relative date of settlement occupation. The 3 kilometer radius of the boundary was met in the pedestrian survey and LiDAR survey. Of the two Chultunob recorded LWDCH2, was excavated. LWDCH2 was located along the southern boundary of the survey. With the limestone capstone intact among the artifacts retrieved were ceramics, chert, and faunal remains (Perkins *et al.* 2014).

Table 1: Architectural volume of house groups in Lower Dover settlement.

Waypoint	Arc. Volume	Waypoint	Arc. Volume
814	41.23	MK	103.53
815	59.22	ML	103.53
816	63	MM	491.15
817	57.1242	MN	131.25
818	117. 0468	MO	3675.25
819	45.85	MP	51.3
820	51.625	MQ	64.24
821	31.977	MS	24.75
830	67.13	MT	28.8288
841	84.525		
842	105.742		
843	95.55		
845	25.41		
846	41.201		
847	18.8235		
848	15.741		
850	15.732		
853	37.2172		
864	115.6381		
865	35		
866	42.34		
867	194.376		
868	47.515		
869	126		
870	83.64		
871	92.86		
872	117.52		
873	29.9367		
882	205.3888		
904	70.0128		
914	17.85		
915	36.5		
916	33		
917	53.2		
918	34.45		
919	57.75		
920	17.39		
MA	19.89		
MB	1375.14		
MC	42.96		
MD	861.06		
ME	710.437		
MF	3640.56		
MG	213.624		
MH	240.8016		
MJ	30.01		

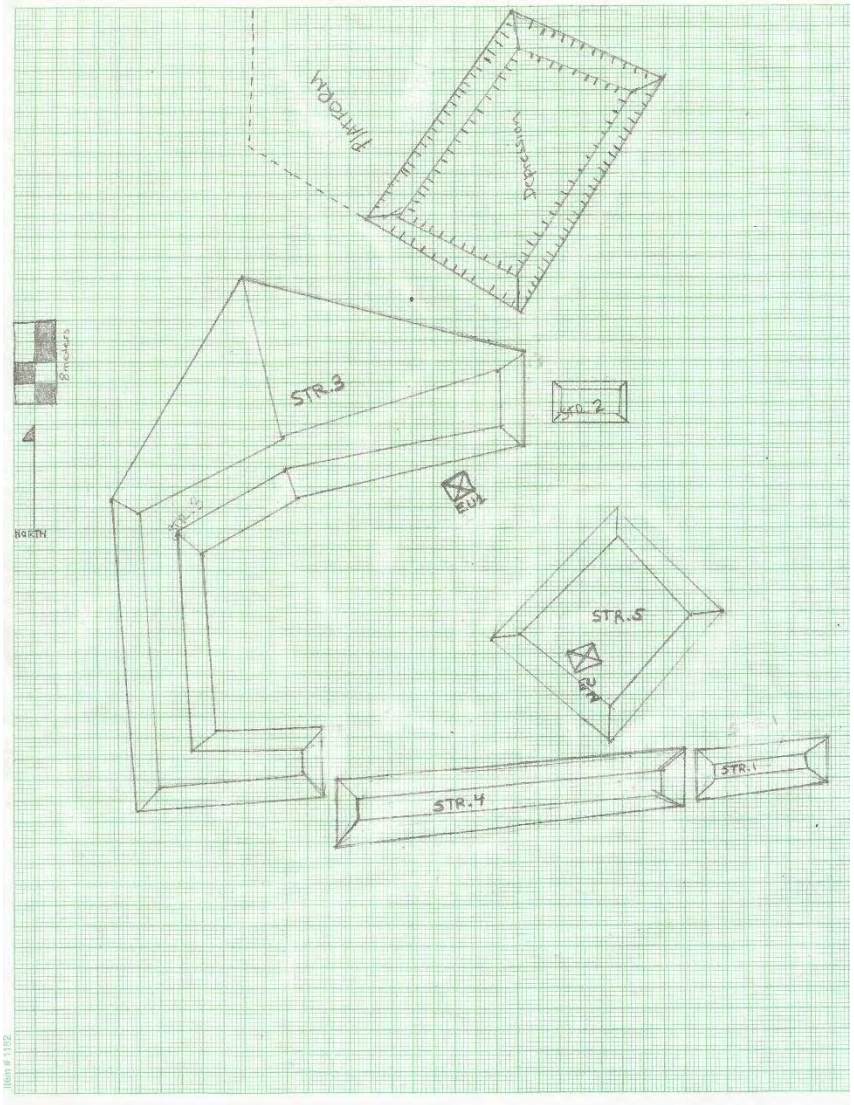

Figure 2: Tape and Compass map of Group 1 (8 meter scale bar).

RESULTS OF EXCAVATION

Group 1

Excavation Unit PL1-1

This excavation unit was 2x2 meters at its start. It was centered at the base of the northern structure at Group 1. This unit consisted of three levels the first of which ultimately reached 67cm. 20cm into excavations of the first level a poorly preserved plaster floor emerged and was photographed. The floor, devoid of architecture or any other features, including artifacts aside from jute was broken through. At the start of Level 2 the excavation unit was scaled down to 1x2 meters.

Figure 3: Jute Deposit (E.U. PL1-1)

Level 2 consisted of cobble fill devoid of any artifacts aside from jute. At this level it became apparent that the Jute was actually being brought up to the surface from an animal borough therefore, any artifacts recovered from this cobble fill were a result of bioturbation. The cobbles were around the size of a fist and very loosely packed. Its consistency could be best described as 'digging in backfill'. This fill was easily removed and lasted only 16cm. This level was relatively devoid of artifacts aside from the occasional jute, crumbled pieces of undiagnostic ceramics, and a piece of jade.

Level 2a was a huge shell deposit. This level contained an abundance of jute and various other freshwater and marine shell. The deposit was 6cm thick and in the space of 1x2 meters contained 25,085 jute (Figure 3). Among the other artifacts were various shell pendants, beads, river clam, and conch shell. This deposit was on top of another plaster floor only slightly better preserved than the previous one.

After photographing and breaking through the plaster floor Level 3 was initiated. This level was devoid of artifacts aside from a few remnants of the jute form bioturbation. This entire level consisted only of silt. Bedrock was struck at a depth of 101cm effectively ending the excavation.

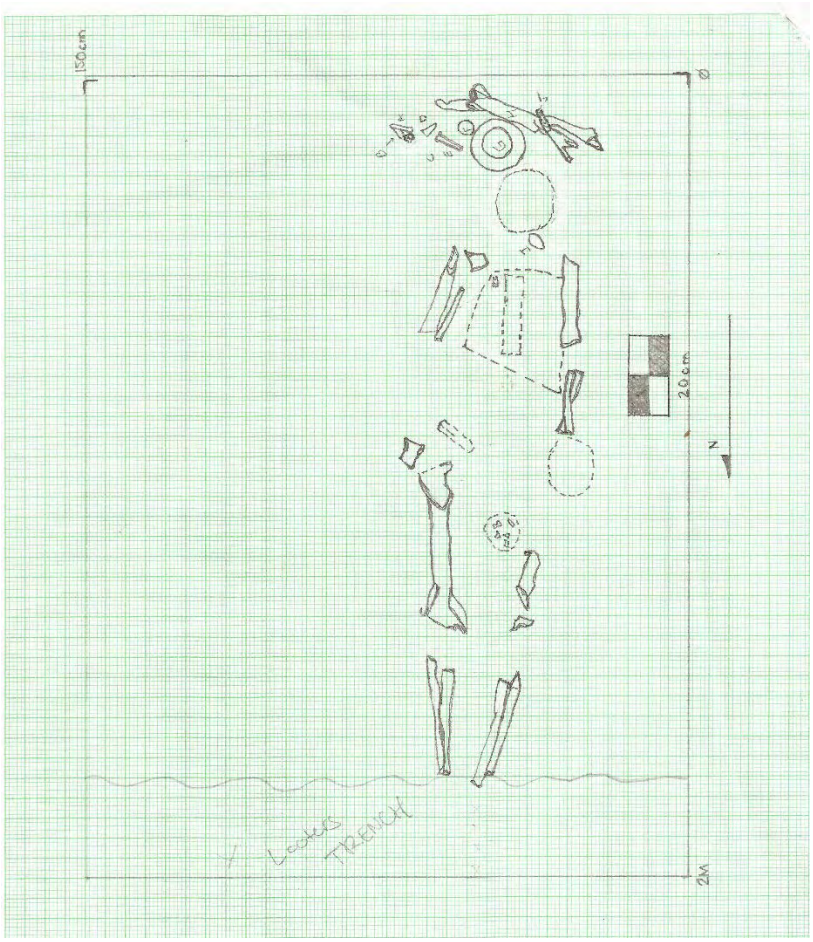

Figure 4: Drawing of burial PL1-001

After analysis of ceramic sherds that were recovered from this unit many were identified to be of the 'savanna orange' type from the "Jenny Creek" phase identified at Barton Ramie dating to the Middle Preclassic (Gifford 1976).

Looters Trench 1

The baulks of a looters trench dubbed "looters trench 1" were utilized to aid in the retrieval of more diagnostic ceramic samples in order to establish a relative date for the group. Looters Trench 1 is located on the eastern corner of structure 3. Clearly delineated plaster floors in the baulk served as the cultural levels for provenience. Samples were taken from each level and probed no more than 20cm. While this did not yield many ceramic samples a Cacao spout and handle were retrieved which subsequent analysis

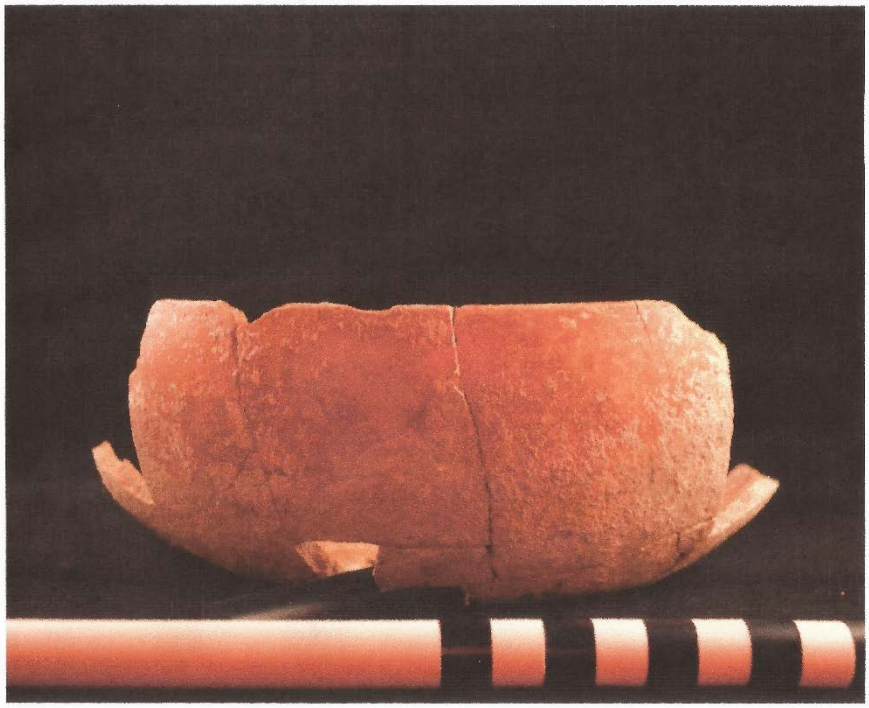

Figure 5: Partially Reconstructed Bowl (Belize Red)

identified as another 'savanna orange' type from the "Jenny Creek" phase identified at Barton Ramie (Gifford 1976).

Excavation Unit PL1-2

This excavation unit was only initiated after investigating Looters Trench 2 (LWD-PL1-2-LT-2) for ceramic material. This excavation was on the eastern structure of Plaza 1. Human remains were discovered while clearing the baulk for ceramic material. A 2x1.5 meter excavation unit was place at the edge of the looters trench and excavated vertically to safely exhume the burial, dubbed Burial PL1-001 (Figure 4). Levels on this excavation were set arbitrarily. There were no architectural features in this excavation unit until 127cm. At 127cm limestone capstones appeared above the burial. It became apparent after further excavation that the capstones had shifted thus, severely damaging the preservation of the burial in the thorax region. Resting atop these capstones was a bowl placed upside down (Figure 5). The bowl was shattered however, many of the pieces were present and was able to be partially reconstructed. This was photographed extensively. The burial was in a prone position face down with the head pointed south, left arm flexed towards the individuals face. Artifacts associated with this burial include obsidian blades, an ash temper jar, three disc shaped ornate marine shell pendants, a polished marine shell blade, drilled deer antlers, and a river clam pectoral. Whether there

Figure 6: Obsidian blades from Burial PL1-001.

were more artifacts near the individual's feet to the north is unknown, as the looters trench destroyed that section of the burial along with the bottom half of the individuals legs from the ankles down.

Burial PL1-001

The three obsidian blades were all found around the cranial region of the burial (Figure 6). They were sent to the archaeology laboratory at the Pennsylvania State University in State College PA to be sourced via pXRF (see Ebert this volume). The results of which were then compared to samples of other obsidian and sourced to El Chayal, Guatemala.

Marine shell pendants are carved and polished conch (Figure 7). Arguably, they could also be chank (*Turbinella* sp.) but are more likely to be conch. All of these pendants are approximately the same measurements roughly the diameter and width of a quarter with a slight bevel or curve as if once affixed to something cylindrically shaped. Two of the three pendants feature a 'sprocket-like' design very articulately formed with holes in their center. From afar these two pedants appear to be ear flares. However, this style is common in the Classic period (Masson and Freidel 2002). The third of the set resembles a trefoil design. However it has a striking similarity to a royal knot not unlike those discovered at Cerros (Garber 2004). Additionally found were Oliva 'tinklers'.

Most intriguing of the grave goods are the drilled deer antlers (Figure 8), after consulting Norbert Stanchly (Project faunal analyst), his initial thoughts are that they are from a brocket deer (*Mazama* sp.) and not white-tailed deer. The only type of brocket deer in the region are red brocket deer (*Mazama americana*) (N. Stanchly, personal communication, October 31, 2014). These deer antlers are drilled at their base suggesting that they were likely affixed to something. However, it is not likely that these antlers were tools or used as hunting aides, as there are no other tools associated with this burial.

Figure 7: Shell Beads from Burial PL1-001

Figure 8: Drilled Deer antlers from Burial PL1-001

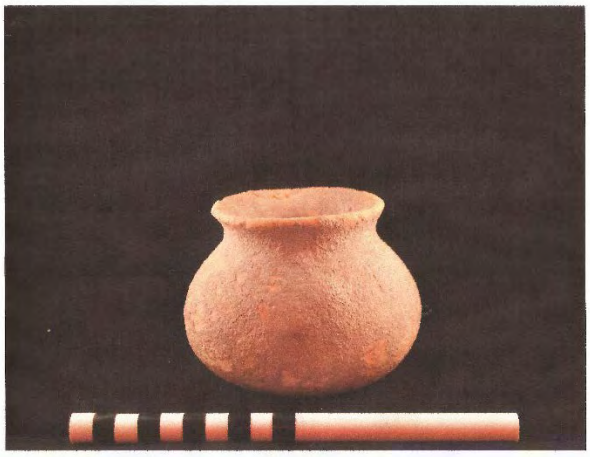

Figure 9: ‘Cayo Unslipped’ ash temper Jar from Burial PL1-001.

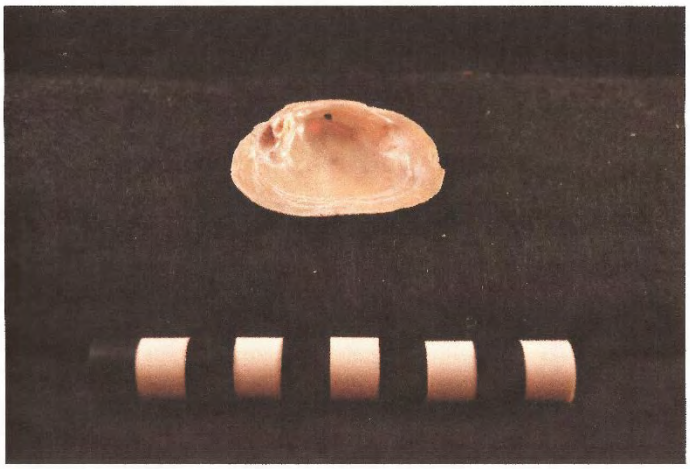

Figure 10: River Clam pendant

Figure 11: 'Savanna Orange' Middle Preclassic Cacao Spout and Handle

The ash temper jar (Figure 9) measures seven inches in height and fifteens inches in diameter. There is no slip or decoration on the jar. Therefore it probably functioned as a utilitarian vessel. Unique to this jar however is the lack of a base. The base of this jar is sunken rather than protruding which afford the jar no stability when placed on a flat surface. The jar was intact with nothing of note inside however in a poor state of preservation. As is well documented in the literature obsidian blades were used in blood-letting rituals practiced by the Maya. These three were intact and had no apparent markings or shaping to make them unique from other obsidian blades in the area.

The river clam pectoral was in situ, placed roughly a five centimeters from the individual's neck (Figure 10). The shell was not manipulated in any way aside from the drilled hole to pass the lashing through enabling the wearer to tie it around his neck.

DISSCUSSION AND CONCLUSION

2014 was a productive year in surveying the Lower Dover Settlement area. At the onset of the survey it was postulated that given Lower Dover's proximity to Barton Ramie and the latter sites absence of a site core, Lower Dover might indeed have served at some point as a ceremonial center of Barton Ramie. While further research is certainly welcomed and warranted, the evidence is consistent that this is very likely the case.

Current survey records that there is a noticeable dearth of house mound clusters in the settlement area if you do not consider Barton Ramie as part of the Lower Dover settlement that is overwhelmingly inconsistent with the neighboring archaeological sites currently at a ratio of 5.5 persons per mound the population of Lower Dover is 303, however research is ongoing.

Further, the presence of Middle Preclassic ceramics (Figure 11) in the settlement is congruent with the initial occupation of Barton Ramie. Comparatively, neighboring sites have significantly more clustering and features. It has been noted that the more alluvial soil is on the northern side of the Belize River (Willey et al. 1965) while the limestone outcroppings at the base of the Maya Mountains to the south contain a wealth of construction materials to erect monumental structures. It is interesting to consider if a large and established settlement like Barton Ramie would allow a significantly smaller group occupy a strategic area so rich in resources, during Classic Period. It is only when Lower Dover and Barton Ramie are combined do either of the sites fit within the models laid forth from a half century of archaeological research in the Belize River Valley. That said, it is highly probable, that Lower Dover settlement is an extension of the Barton Ramie settlement which was simultaneously occupied on both sides of the river while the Lower Dover ceremonial center was constructed at a later time.

ACKNOWLEDGMENTS

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THE DISCOVERY OF THE THIRTEENTH INTERMENT: EXCAVATION OF STRUCTURE B1, AT CAHAL PECH, BELIZE

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INTRODUCTION

In June 2014, excavations once more commenced at Structure B1 at Cahal Pech. Since 2011 the structure has undergone extensive investigations, in order to acquire knowledge about the different phases of construction as well as consolidating and preserving the terminal or penultimate phases. During the last four years, several burials including elaborate tombs, have been uncovered inside Structure B1. The excavations conducted in the summer of 2014 are wrapping up the investigations of Structure B1, leaving only restorations. In 2014 we have been focusing on trenching the western staircase between the unit from 2013 and to the base of the structure, where Ball excavated in the mid-1990s. We continued to expose the eastern façade, investigating the different phases of construction, above and behind the exposed steps from 2012.

This summer revealed an additional thirteenth interment at Structure B1, thus adding to the previous two burials uncovered in 1969 by P. Schmidt, the four burials uncovered in the mid-1990s by J. Ball and J. Taschek, as well as the six burials uncovered by BVAR since 2011. The burial uncovered this summer contained a female elite, in a simple crypt, approximately 5.50 meters below structure surface. The interred only had a few grave goods, but among those were a unique find, not yet uncovered elsewhere among the Maya.

BACKGROUND

Cahal Pech is a middle sized ancient Maya center located on the outskirts of modern day city of San Ignacio in western Belize, strategically placed on a hill top overseeing both the Macal and the Mopan rivers. Extensive excavations were conducted at Cahal Pech in 1988, initiated by Dr. Jaime Awe and his team with the support from the Belize Tourism Industry Association (B.T.I.A.) and UNESCO, to preserve the history of the Maya by turning Cahal Pech into a national park (Awe 1992, Awe and

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Campbell 1988). Since then, most of the site core, as well as several areas surrounding the site core, have been investigated. In 2011 funding was given to consolidate the facades of Structure B1, B2 and B3, which are known as the triadic temples, located on the eastern side of Plaza B. This prompted Dr. Awe to initiate investigations of the interior of Structure B1, as Structure B3 had been heavily looted and Structure B2 had been investigated by Dr. Awe back in 1988.

THE TOMBS AND BURIALS

Inside Structure B1, thirteen burials have been uncovered, of which eight were found in crypt-tombs and some with capstones on top (Burials: 2, 4, 7, 8, 10, 11, 12 and 13). Burials 1, 3, 5, 6 and 9, seem to be intrusive burials. Burial 1, despite being an intrusive burial dating to the Terminal Classic period, contained a fair quantity of elaborate artifacts, including several vessels of which one is very similar to one found at the Terminal Classic tomb uncovered in Plaza H in 2006. Unfortunately we have no information on Burials 3, 5, and 6 since the excavations have not been published, thus the extensiveness, information on the individuals as well as which period they belong to cannot be included for research.

In 1969, Schmidt excavated at the summit of Structure B1, where two burials had been uncovered; a Terminal Classic intrusive burial (Burial 1) as well as a Late Classic tomb (Burial 2). In the mid-1990s excavations were conducted at the western base of Structure B1, revealing four burials (thus designated Burial 3, Burial 4, Burial 5 and Burial 6). As no documentation is available on Burials 3, 4, 5 and 6 it is difficult to use them for comparison and research, but it is possible that the four burials included one tomb (J. Awe, personal communication 2014).

In 2011 a unit (B1-2WEST) was placed at the summit of Structure B1 west of where the 1969 excavations had been conducted. This unit revealed a very well preserved tomb (Burial 7) with two complete individuals as well as the feet of a 3rd individual (Santasilia 2012). Based on the scarce documentation which survived a tropical storm from the 1969s excavations suggests that there is a possible connection between Burials 2 and 7, as they both are dated to the Late Classic period and contained similar vessels, it is furthermore possible that the interred all had their heads placed towards north, and not south (which is the usual custom at Cahal Pech). However, both interments contained –as the only interments excavated so far at Cahal Pech –grave goods with engraved hieroglyphs.

Only scarce amounts of hieroglyphs have ever been found at Cahal Pech, and all are dating to the Late Classic period, besides from two rings and a pin with glyphs from Burial 7 and turtle bone with glyphs from Burial 2, graffiti has been found on the northern façade of Structure A1 (Helmke and Awe 2010). Several of the artifacts found in Burial 7 could indicate that one of the interred held the profession as a scribe and it is possible that one of the interred could be the author of the graffiti.

Furthermore, there are several indications of a possible foreign interference, pointing to that the interred in Burial 7 and probably in Burial 2 were not locals. The hieroglyphic inscriptions of Burial 2 were uncovered in 2012 when a unit was placed at the eastern side of the summit, to re-investigate the measurements of the 1969 excavation. On what was considered to be the outline of the tomb, a broken vessel was found on top of a turtle skeleton on which several hieroglyphs were engraved (Santasilia 2013). Furthermore, both interments contain similar jade bar pectorals and celts, which has not been uncovered in any of the other burials or tombs found at the sitecore of Cahal Pech. Burial 2 however, appears to have only contained one individual, whereas Burial 7 contained two complete individuals, as well as the feet of a 3rd individual (extended north), which indicate the tomb chamber had been reused (Santasilia 2012). The measurements were documented, and when, almost decomposed pieces of black plastic bag were uncovered, it was made clear that the final level of the 1969 unit had been reached. The 1969-excavations had missed the vessel to the north-east, as well as one single large boulder laying to the north-west, which after removal revealed a hole in the surface, that turned out to be the entrance to a long shaft containing two tombs (the upper one Burial 8 and the lower Burial10, both Protoclassic). Burial 8 unfortunately had collapsed on top of Burial 10, and the capstones of Burial 10 had given in, causing the whole chamber above to collapse and slide. However, Burial 8 had capstones placed on top, but not on the side as actual chamber walls.

Whilst stabilizing the western baulk close to the summit of Structure B1, human remains of an intrusive burial (Burial 9) were discovered. However, as a unit was about to be placed on the exterior of the structure, on the western façade of Structure B1, it was decided to leave the human remains undisturbed, and instead excavate them when the other unit would reach them from the other side. Burial 9 was found with two whitish double pointed bifaces. In 2011, when excavating at the summit of Structure B1, a single whitish double pointed biface had been uncovered. It is possible that the single biface belonged to the deposit of the interred, as bifaces often are found in three's, and considering the style, the colour and the location where it was found, this is very likely. Furthermore were Mount Malony vessel sherds uncovered, during both excavation seasons, fitting together, supporting the notion that the three bifaces were actually a set of three, as well as the vessel being grave goods for Burial 9.

After the removal of Burial 9, a stair-block was reached below the terminal architecture, and when excavating the stair-block, an Early Classic tomb was uncovered (Burial 11).

In 2013, a unit was placed on the western staircase next to the stair-block, which revealed another Early Classic tomb (Burial 12) containing a vessel strikingly similar to one of the vessels uncovered in Burial 7 in 2011; a polychrome ring-base basal flange vessel, adorned with images of a captive on the side. The vessel from

Burial 12 had in addition to the one from Burial 7, a fitted lid likewise decorated with the same captive as well as a presumed handle shaped like the head of a peccary (Santasilia 2014).

METHOD

Based on previous excavations, locations of the units were carefully selected. All levels inside the units were measured from a fixed datum for continuous reference. All soil was screened through ¼ inch mesh, except the soil of the burial which was screened through 1/8 inch mesh. Photographs and elevation has been recorded for each change of level. See appendix 1 for elevation as well as grave goods from Burial 13.

EXCAVATIONS

Objective of the excavations: 1. To clear the eastern façade in order to expose the terminal architecture, and then trench through the different levels of construction to investigate the architecture of Structure B1, as previous years excavations had indicated a possible staircase. 2. To investigate the remaining area on the western staircase between the units placed by BVAR in the previous years and the units placed by J. Ball. 3. To investigate the possibility of masks flanking the western staircase.

B1-7WEST

This unit was placed on the 1st platform reached from the base of the structure, extending 2.75 meters East-West reaching the 18th step, which is approximately where the unit was in 2013, on the second platform, and 2.85 meters North-South (which is the width of the stairblock). A large amount of boulders and rocks were uncovered, and we reached several floors and phases of construction. Based on excavations placed by Nancy Peniche-May (personal communication 2014), in front of the base of the structure, bedrock was supposedly 120-150 cm below plaza floor. This gave us an idea of how far the excavations had to continue in order to reach bedrock within the unit. Shortly after having removed the consolidated steps of the staircase, excavations revealed a clear division between the eastern and western part of the unit. A old potato chip container uncovered, indicated that we had reached the backfill placed by Ball, and we thus transfered focus to the eastern part of the unit (c. 155 cm). We reached the 3rd phase of construction approximately 240 cm below datum, see figure 1 for image of different levels inside the unit. Several broken floors were reached, until we reached floor 6 at approximately 400 cm below datum, which was somewhat different and had a 80 cm by 175 cm circular cut with softer dark brown fill.

The circular pit did indeed reveal another burial (13), which was more than 120 cm below the cut floor, still soft soil but containing a few large boulders. We reached another floor before encountering the burial. The individual turned out to have been placed on top of floor 7, which had had a step on the eastern side, which had been cut away, thus placing the individual on the 7th floor 550 cm below datum.

Figure 1: Unit B1-7West profile facing South-East

The loose soil eventually revealed a sherd rim, which turned out to be the top part of a 17 cm tall potstand, with quadripartite interpretations (four cacao pots, four signs, four horizontal stages). Once we exposed more of the vessel, bones started to appear. The individual was placed on its right side, facing east, with the head towards south. The human remains were somewhat articulated, but the skull had been crushed in antiquity and the remains had somewhat shifted, indicated by the finding of a rib in the second vessel uncovered, c. 15 cm from the first vessel. The second vessel is a small olla, that fits perfectly on top of the potstand.

The individual turned out to be female. This was indicated by the mandible, as well as measurements of both the femur-head and on the pelvis. The mandibular indicated that the individual had lost her teeth ante mortem. Besides from the two vessels, she had among her grave goods; two red spondylus ear spools, one jade bead (found near the mouth) as well as something rather unique: no less than 18 pyrite beads. The beads was a necklace which she had carried into the grave. The beads were rusting, and several were stuck on her mandible as well as on atlas. I have contacted several Maya scholars, and no one has heard of pyrite beads among the Maya before (personal communication 2014, J. Awe, M. Coe, K. Taube, J. Fitzsimmons and several others).

After we had uncovered the rest of the burial, we aimed for bedrock, which turned out to be another 150 cm, landing at exactly 700 cm below datum, found evenly all over the unit, indicating the Maya had leveled out bedrock before starting any constructions.

Figure 2: Burial 13

As the fill used for Structure B1 is not completely compact, caution has to be taken, not least as the structure has undergone extensive uncovering, making it more and more instable each summer, and risk of collapsing higher. We were able to tie several of the levels with levels from the 2013 season, thus connecting floors of the structure. There is also evidence that the 3rd phase of construction towards east could have been a stairblock, containing Burial 12. Floor 7, on which Burial 13 was placed, seems to be the fifth phase of construction and thus the earliest build by the Maya on this location. Only further probing will be able to reveal whether earlier structures are placed closer to the center, but that is a task for the future, as at present we do not have the means to undertake any such risky and costy excavations, jeopardizing the stability of the structure. Part of backfilling in 2014 included the large amount of undiagnostic ceramic sherds uncovered the last four years, and are thus returning them to the underworld of the Maya.

UNIT B1-3EAST

The width of this unit is based on the steps uncovered the previous year, extending 3 meters at the center, later extended both north and south to the width of the steps (see Figure 3) where a few terraces were exposed. The unit extended 11.35 meters up the slope (see Figure 4), which was cleared in order to expose the terminal

Figure 3: Panoramic view of the stairblock and northern terraces

phase of architecture, however the terminal phase was badly eroded, particularly at the center. Instead it was decided to focus on the base of the structure extending the excavation when necessary, as we were interested in following the steps, to see if a staircase would lead all the way to the top. The architecture at the base turned out to reveal several surprises and the season was spend uncovering the lower architecture.

After removing the top humus layer which contained a large amount of boulders, which we assumed could be a next step but turned out to be an eroded stairblock with moldings at the base, we thus decided to extend northwards investigating the corner. This revealed five steps next to the stairblock as well as two terraces north of the steps (see Figure 3). The inside of the stairblock revealed nothing but fine pulverized white limestone fill, which we eventually used for the limestone-cement-mix, and using it for consolidation of the structures.

C. 50 cm below datum, a floor appeared inside the stairblock, and the level was changed. The floor towards east seemed to be broken, thus deeming it necessary extend eastward and carefully take down the remains of the stairblock, so it could be restored after end investigations. Below the stairblock a line of rocks were uncovered, aligned north-south, but no floor was associated with the line of rocks. The exterior of the rocks (facing the plaza) was plastered extending 120 cm downwards, sloping slightly eastward, considered to be the penultimate phase of construction, and possibly another stairblock. Despite occasionally areas of soft soil, and broken floors, no artefacts to speak of was found and no offerings, the majority of the finds was ceramic sherds, chert, jute and the occasional figurine fragment. Bedrock outside the stairblock was reached at 335 cm below datum, which is approximately 135 cm below Plaza floor. Inside the stairblock, we decided to tunnel westward and trace a floor (4th), the tunnel led to a converse wall leaving us somewhat complexed. Unfortunately extending the tunnel would have been too dangerous at present, leaving the architecture uninvestigated for now.

Figure 4: Architecture of Eastern side of Structure B1

UNIT B1-8WEST and UNIT B1-9WEST

Test units were placed on the northern part of western façade of Structure B1 as the assumption of mask flanking the staircase needed to be investigated. Unit B1-8 West was placed on the second platform, and unit B1-9West was placed on the first platform. Unit B1-8West clearly indicated a mask with red stucco, and possibly a long snout, however, the Maya had in ancient times, as part of reconstructing the terminal phase of architecture, cut off a large part of the top of the masks, in order to create more platforms.

Unit B1-9West indicated that the penultimate phase of construction had consisted of flanking masks as well as a wider staircase than the terminal phase staircase, which is exposed at present time. We have discussed the possibility of consolidating the penultimate phase of construction as well as the terminal, in order to give the viewer/visitor a better understanding of the architecture of this incredible structure.

These units were conducted near the end of the season and will have to be reopened in 2015 for further investigations if consolidation is deemed possible.

Figure 5: Unit B1-8West: Mask

CONCLUSIONS

Four years of excavations on Structure B1 has given us an incredible insight to the elite who was living at Cahal Pech from the Protoclassic all the way to the Terminal Classic period (c. 100 -800AD). A large amount of burials have been uncovered ranging from simple to very elaborate, some containing grave goods otherwise unknown among Maya artefacts. The excavation of Structure B1 has finally helped place Cahal Pech on the map of Maya cities. The consolidation of many of the structures in the site core, is contributing to expansion of the tourism sector. The last four years excavations have added to the list of structures visible to the viewer in their authentic state; Structures B1, B2, B3, B4, B6 and B7, staircase leading from Plaza B up Structure A2, as well as the staircase leading from Plaza C, through Plaza H up to Plaza B.

ACKNOWLEDGEMENTS

Over the last four years, the excavations of structure B1 lead us to move a large quantity of dirt and rocks, as well as carefully uncovering burials, and not least restored and stabilizing the structure so it would not collapse. Many people have been part of this task, that it will be impossible to mention everybody here. But thank you to Dr. Jaime Awe, Julie Hoggarth and the rest of the BVAR crew, Hode's as well as NICH. Thank you to D. Tilden for helping me supervise excavations on the eastern side of the structure, and to J. Aimers for analysis of the two vessels found in Burial 13. These excavations would not have been possible without the loyal support of Jim Puc Sr, Jim Puc Jr, Antonio Itza, Eduardo Cunil, Jorge Can, Merle Altaro, and many many more. And not least, thank you to the Tilden Family fund, for making the restorations possible.

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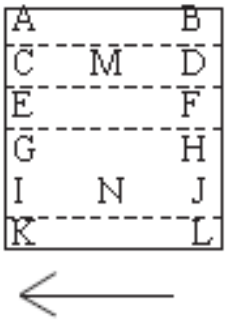
2014 The Discovery of an Early Classic Tomb: Excavations at the Western Façade of Structure B1 at Cahal Pech, Belize. In *The Belize Valley Archaeological Reconnaissance Project: A Report of the 2013 Field Season*, edited by Julie A. Hoggarth, Rafael A. Guerra, and Jaime J. Awe, pp. 35-55, (Belize Institute of Archaeology, National Institute of Culture and History, Belmopan).

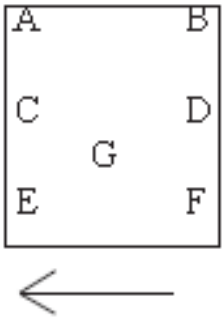
APPENDIX 1

Elevation Str. B1 E.U.: B1-7WEST 2014

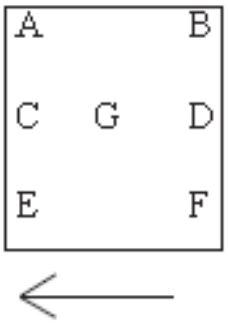
DATUM: 2cm below surface of step number 16 -all figures are below datum point



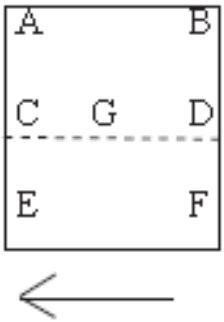
June 5th 2014 lvl. 2 (reconstructed steps)
A: 24.5 cm B: 25 cm C: 58 cm
D: 64 cm E: 89 cm F: 90 cm
G: 125 cm H: 125 cm I: 160 cm
J: 159 cm K: 171 cm L: 168 cm
M: 62 cm N: 163 cm



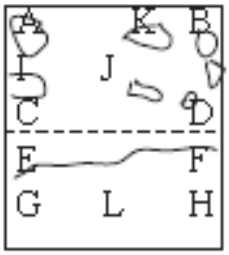
June 9th 2014 starting lvl. 3 (below removed steps)
A: 93 cm B: 85 cm C: 141 cm
D: 142 cm E: 173 cm F: 174 cm
G: 161 cm



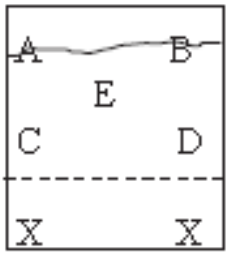
June 10th 2014 lvl. 3 (possibly 3rd phase of construction; boulders towards east)
A: 121 cm B: 95 cm
C: 143 cm D: 136 cm
E: 175 cm F: 170 cm
G: 164 cm



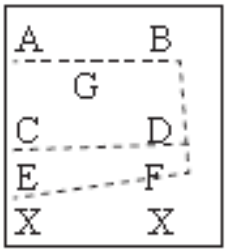
June 10th 2014 lvl. 3 (After divide between Ball backfill and our unit)
A: 172 cm B: 170 cm C: 175 cm
D: 174 cm E: 190 cm F: 190 cm
G: 179 cm



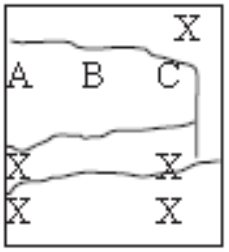
June 11th 2014 lvl. 3 (Ball and Rocks)
A: 189 cm B: 189 cm C: 210 cm
D: 193 cm E: 191 cm F: 191 cm
G: 191 cm H: 186 cm I: 194 cm
J: 203 cm K: 180 cm L: 192 cm



June 12th 2014 lvl. 3 closing, 4 opening (3rd phase of construction)
A: 244 cm B: 228 cm C: 238 cm
D: 236 cm E: 239 cm

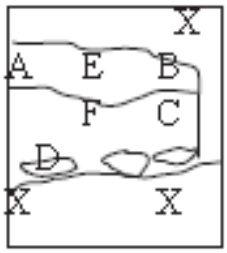


June 13th 2014 lvl. 4 closing, 5 opening (4th floor -floor 4a)
A: 293 cm B: 308 cm
C: 301 cm D: 304 cm
E: 191 cm F: 191 cm
G: 191 cm H: 186 cm I: 194 cm
J: 203 cm K: 180 cm L: 192 cm

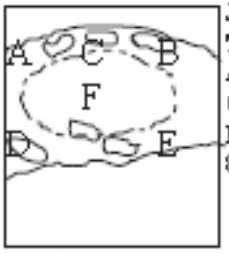


June 13th 2014 lvl. 5 (4th floor - floor 4b, not charging level)
A: 304 cm B: 312 cm
C: 306 cm

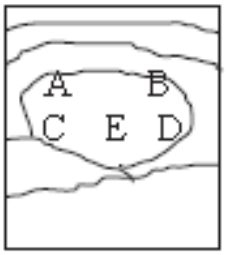
Elevation Str. B1 E.U.: B1-7WEST 2014



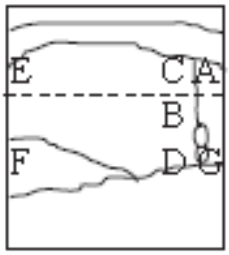
June 13th 2014 lvl. 5 closing, 6 opening (5th floor)
A: 323 cm B: 326 cm
C: 330 cm D: 326 cm
E: 328 cm F: 329 cm



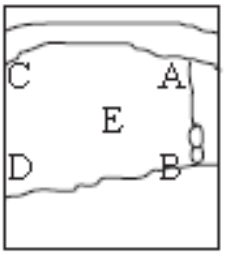
June 17th 2014 lvl. 6 closing, 7 opening (6th floor broken)
A: 397 cm B: 395 cm
C: 387 cm D: 398 cm
E: 397 cm F: 404 cm
80 cm E-W, 173 cm N-S



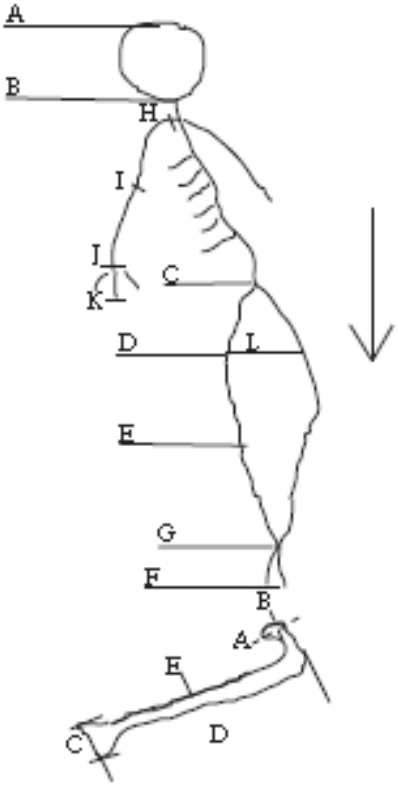
June 18th 2014 lvl. 7 close, 8 open (level of Burial 13, 7th floor)
A: 519 cm B: 514 cm
C: 521 cm D: 526 cm
E: 524 cm



June 23rd 2014 lvl. 8 (bottom of Burial 13, 7th floor, partly inside step)
A: 531 cm B: 550 cm
C: 552 cm D: 554 cm
E: 553 cm F: 554 cm
G: 555 cm



June 24rd 2014 lvl. 8
(Bedrock reached)
A: 700 cm B: 698 cm
C: 699 cm D: 699 cm
E: 701 cm



Rough sketch with measurements of the human remains:
A-B: 20 cm, A-F: 160 cm, B-F: 140 cm, C-D: 17 cm
C-F: 95 cm, D-F: 84 cm, E-F: 50 cm, B-C: 43 cm
E-G: 35 cm, G-F: 18 cm, H-I: 25 cm, H-K: 55 cm
I-J: 24 cm, J-K: 10 cm, L (width of pelvis): 28 cm

Rough sketch of measurements of the right femur
A: width of femur head: 38.57 mm, B: width of femur head: 37.28 mm, C: width of distal end of femur: 61.93 mm, D: length of femur: 40 cm, E: width of femur shaft: 36 mm.

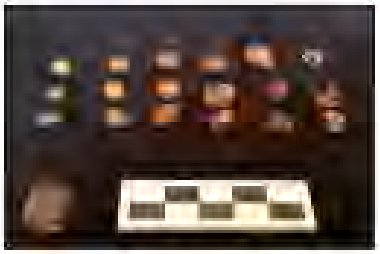
Special Finds Str. B1 Burial 13 2014 EU: 7WEST lvl 8

SPECIAL FIND #: CHP-B1-BU13.01
Pot stand: Elaborate modeled variety of Aguacate Orange
possible Kontiki Composite
Decoration: 4 cacao pots: 3 cm long, 1.7 cm wide, 3 ridges
Height: 16.6 cm,
Rim and base dia: 13.4 cm
Inner hole: 7.7 cm
Rim thickness: 1.1 cm
Width of band B: 12.5 cm
A-B: 6 cm C-D: 1.9 cm E-F: 2.2 cm
Weight: 912 g

SPECIAL FIND #: CHP-B1-BU13.02
Jar: Chan Pond Unslipped
Decoration: Punctated-incised impressions
Height: 14.3 cm
Rim dia: c. 13 cm
Max width: c. 16.5 cm
Rim thickness: 0.8 cm
Weight: 1077 g

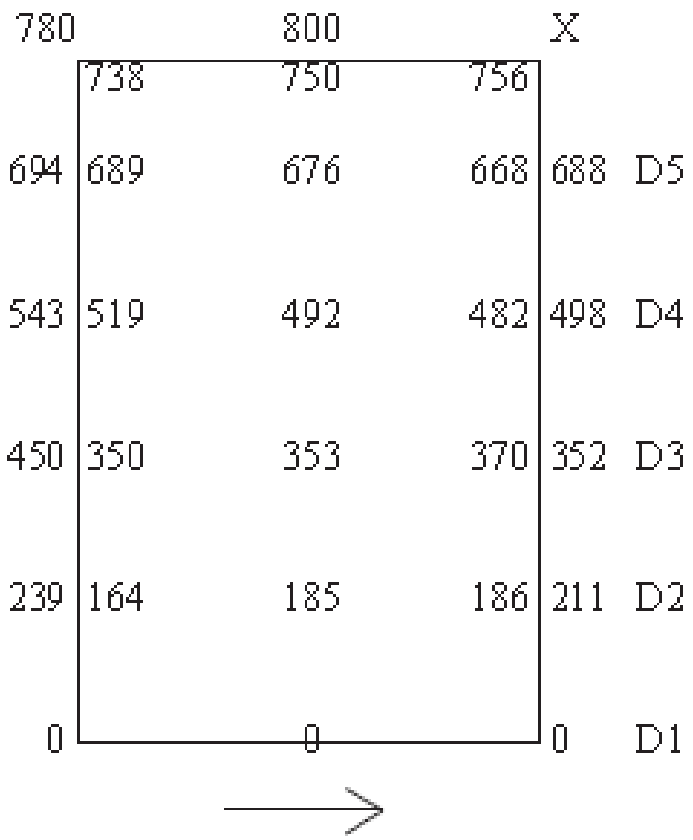
SPECIAL FIND #: CHP-B1-BU13.03
Spondylus Earflares
LEFT:
Outer dia: 2.7 -2.9 cm, Inner dia: 1.3 cm
Thickness: 0.2 cm, Weight: 3g
RIGHT:
Outer dia: 2.7-2.9 cm, Inner dia: 1.2-1.4 cm
Thickness: 0.3 cm, Weight: 3g

SPECIAL FIND #: CHP-B1-BU13.04
Jade bead
LEFT:
Outer dia: 2.7 -2.9 cm, Inner dia: 1.3 cm
Thickness: 0.2 cm, Weight: 3g
RIGHT:
Outer dia: 2.7-2.9 cm, Inner dia: 1.2-1.4 cm
Thickness: 0.3 cm, Weight: 3g



SPECIAL FIND #: CHP-B1-BU13.05
Pyrite: 18 beads and 1 square
3 beads are in a good condition the rest are between bad and poor turning into rust piles
based on the three complete beads:
Weight: < 1g
Length: 0.6-0.8 cm
Width: 0.6-0.8 cm
SQUARE:
Weight: 3g
Length and width: 1.2 cm
Thickness: 0.6 cm

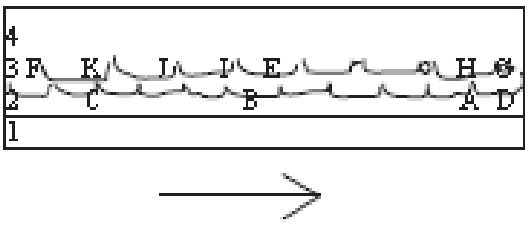
Elevation Str. B1 E.U.: B1-3EAST 2014



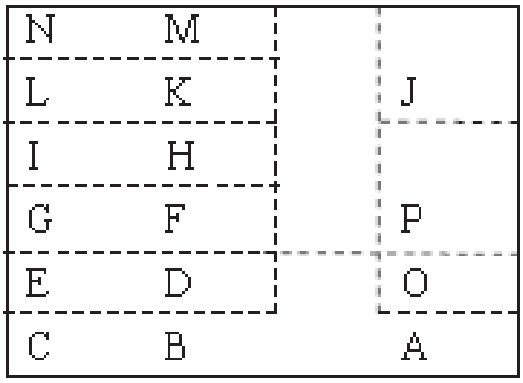
Initial unit set up for Excavation Unit B 1-3 East
(Measuring 3 m N-S, 11.55 cm E-W, up the slope)

All numbers are in cms above datum: D1

It was necessary to set up sub-datums.
D1 = 0
D2 = 2 m
D3 = 3.5 m
D4 = 5 m
D5 = 6.5 m



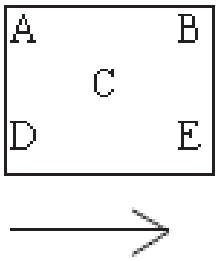
12. June 2014 lvl. 2 (Floor, stair and possible stair-block)
1: Conserved stairs from 2013 2: Penultimate floor
3: Stair 4: Possible stairblock
A: 27 cm B: 27 cm C: 29 cm D: 4 cm E: 4 cm F: 4 cm
G: 5 cm H: 35 cm I: 36 cm J: 21 cm K: 13 cm
all numbers are above datum



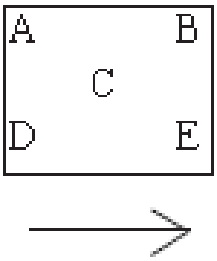
16. June 2014 lvl. 2 (Definition of penultimate phase)
A: 24 cm BD B: 24 cm BD C: 24 cm BD D: 0
E: 1 cm AD F: 37 cm AD G: 32 cm AD
H: 45 cm AD I: 66 cm AD J: 85 cm AD
K: 105 cm AD L: 94 cm AD M: 126 cm AD
N: 134 cm AD O: 5 cm AD P: 59 cm AD

BD = Below datum point
AD = Above datum point

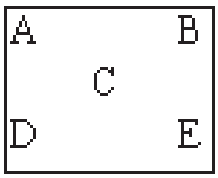
Elevation Str. B1 E.U.: B1-3EAST 2014



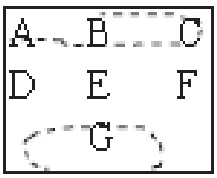
17. June 2014 lvl. 2 (opening sub-unit inside stairblock)
A: 161 cm B: 132 cm C: 156 cm D: 31 cm E: 36
All above datum



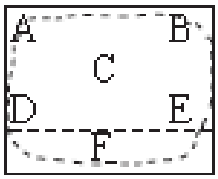
18. June 2014 lvl. 2 (apparent floor 1 under stairblock)
A: 16 cm B: 24 cm
C: 15 cm D: 15 cm E: 14 cm
All above datum



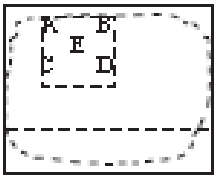
18. June 2014 lvl. 2 (apparent floor 2 under stairblock)
A: 21 cm B: 16 cm
C: 30 cm D: 25 cm E: 13 cm
All below datum



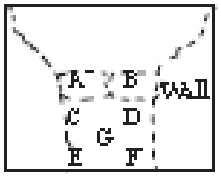
19. June 2014 lvl. 2 closing 3 opening (cut floor #3 and step under stairblock)
A: 26 cm B: 28 cm
C: 20 cm D: 50 cm E: 48 cm
F: 49 cm G: 51 cm
All below datum



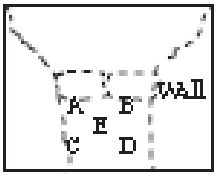
20. June 2014 lvl. 3 close 4 open (floor 4 cut on east side under stairblock)
A: 109 cm B: 105 cm
C: 111 cm D: 114 cm
E: 112 cm F: 112
All below datum



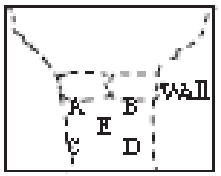
23. June 2014 lvl. 3 close 4 open (floor 4 cut on east side under stairblock)
A: 203 cm B: 203 cm
C: 208 cm D: 208 cm
E: 202 cm
All below datum



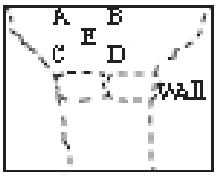
25. June 2014 lvl. 2 (tamped floor and wall outside of stairblock)
A: 135 cm B: 132 cm
C: 203 cm D: 206 cm
E: 206 cm F: 206 cm
G: 206 cm
All below datum



25. June 2014 lvl. 2 close 3 open (plaster floor outside of stairblock)
A: 259 cm B: 255 cm
C: 259 cm D: 256 cm
E: 256 cm
All below datum



30. June 2014 lvl. 4 open (bedrock floor outside of stairblock)
A: 335 cm B: 335 cm
C: 335 cm D: 335 cm
E: 335 cm
All below datum



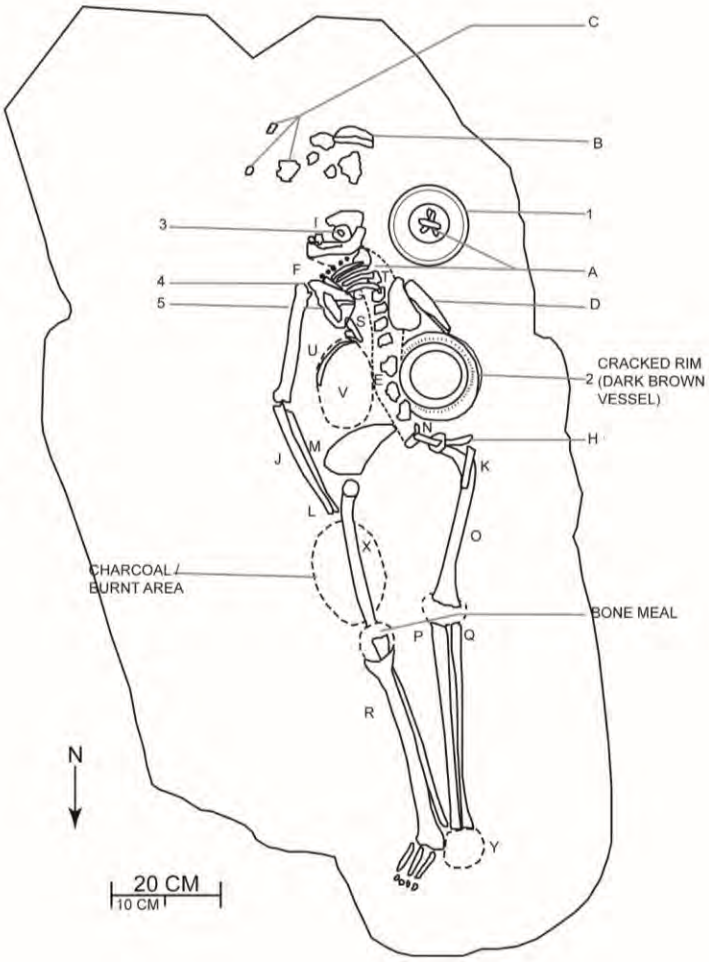
30. June 2014 lvl. 4 close 5 open (floor 5 inside of stairblock)
A: 240 cm B: 242 cm
C: 248 cm D: 245 cm
E: 242 cm
All below datum

Cahal Pech
Structure B1
BURIAL 13
EU: B1-7WEST
Level: 8
19 June 2014

Catharina E. Santasilia and Marc Zender

1: Vessel 1 (Pot Stand) 533BD
2: Vessel 2 (Pot) 536BD
3: Shell Earflare (L) 543BD
4: Pyrite beads (18, necklace), pyrite cube, 1 jade bead
5: Shell Earflare (R)

A: Rib fragments (3 found inside vessel 1)
B: Skull and fragments (539BD)
C: Teeth (incl. mandibular frag.)
D: Humerus frag. (R) and Scapula (R)
E: Vertebrae
F: Humerus (L) 540BD
G: Scapula (L -posterior view)
H: Rib
I: Maxilla and Mandible 536BD
J: Radius and Ulna (L)
K: Radius or Ulna (R)
L: Metatarsals (L: two dist., 1 prox.) 546BD
M: Ox-coxae 542-548BD
N: Pelvis (R: Ilium frag.) 543BD
O: Femur (R) 548BD
P: Tibia (R) 552BD
Q: Fibula (R) 552BD
R: Fibula and Tibia (L) 557BD
S: Sternum (w/foramen) 543BD
T: Ribs (L)
U: 8th left rib, flipped from anatomically possition
V: Ribs (L)
X: Femur (L) (femurhead: 39.28mm)
Y: Foot (R: 3 prox, 1 med. 1 dist.)



THE TERMINAL CLASSIC AT PLAZA H, CAHAL PECH: PRELIMINARY FINDINGS

John E. Douglas
University of Montana

Linda J. Brown
University of Montana

INTRODUCTION

This report summarizes the fourth season of research at Plaza H, Cahal Pech, Cayo District, Belize conducted by The University of Montana (UM), Missoula, Montana, U.S.A. under the auspices of the Belize Valley Archaeological Reconnaissance (BVAR) project and with close collaboration with BVAR director Jaime Awe, Ph.D. Between January 6 and 19, 2014, thirteen UM students worked on the project as part of a winter session course offered by UM and taught by John E. Douglas, Ph.D. and Linda J. Brown, M.A. The thirteen students were: Ashley Adams, Brandon Bachman, Nasreen Broomandkhoshbacht, Kyle Cohenour, Thomas Colligan, Lorena Craig, Allie Handley, Sarah Howerton, Samantha Merry, Ariel Peasley, Sean Smith, Kristina Walters, and Brandon White. During the session, Antonio Itza served as the lead excavator, and was assisted by Alex Alvarez and Eduardo Cunil. Nine field days were spent excavating and processing artifacts. Between June 16 and July 5, 2014, Douglas returned to map unit and alignment locations with Rafael Guerra and conduct artifact analysis. The summer activities were partially funded by a University of Montana International Programs Faculty Activity Grant.

UM/BVAR RESEARCH HISTORY AND QUESTIONS

We chose to explore Plaza H because of an unexpected discovery in 2006, which changed people's perspective of this unassuming area that lies in the northeast corner of Cahal Pech's core, to the immediate north of Plaza C and east of the northern entrance to Plaza B (Figure 1). Although the modest plaza had been easy to overlook, that changed in the summer of 2006 when BVAR excavated a high-status burial with 13 ceramic vessels

The Belize Valley Archaeological Reconnaissance Project: A Report of the 2014 Field Season, edited by Julie A. Hoggarth and Jaime J. Awe, pp. 53-86. Belize Institute of Archaeology, National Institute of Culture and History, Belmopan.

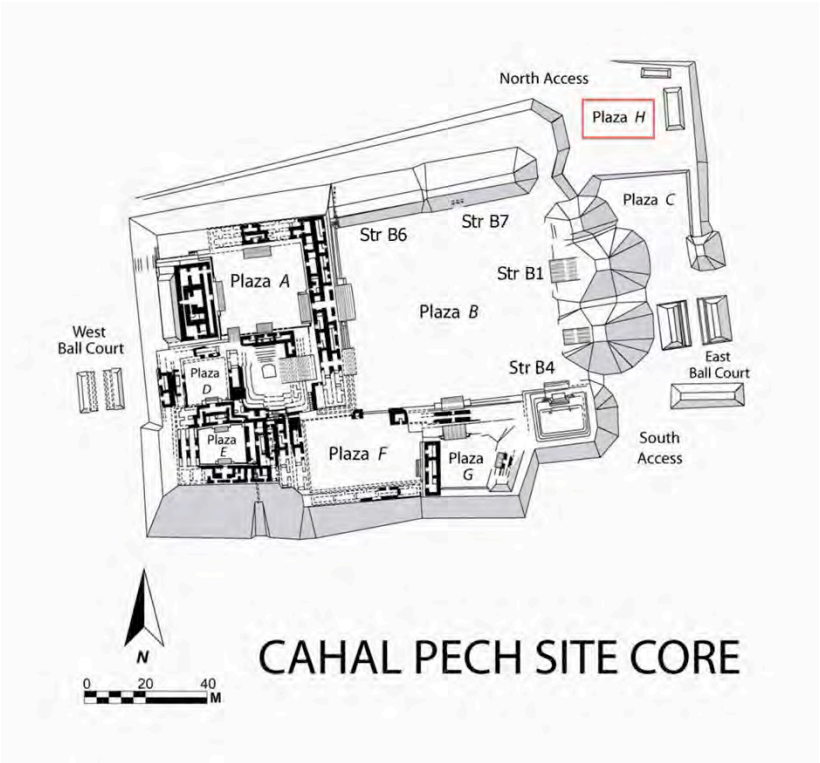


Figure 1. Cahal Pech with Plaza H in the upper right corner.

Figure 2. Interior of the Plaza H tomb taken June 2006.

Questions concerning the Terminal Classic in Plaza H:

1. What types and densities of artifacts and features are found that date to the TC use of Plaza H?
2. What activities took place during the TC, as evidenced by the artifacts and features?
3. Can the reconstructed activities be connected to a broader interpretation of plaza function?
4. Did the function of the space change in Plaza H between the Late Classic and TC? Was the occupation continuous?
5. Can TC construction activities in Plaza H be chronologically ordered?
6. What material is available for absolute dating? What contexts are these materials from? Once dates are available, what date range best defines the TC in Plaza H?
7. What happened in Plaza H after the TC abandonment?
8. Can the TC activities in Plaza H be related to the identity of the users?
9. How does TC use of Plaza H relate to TC materials found elsewhere on the Cahal Pech acropolis?
10. How do the TC patterns seen at Cahal Pech relate to other sites in the Valley and, ultimately, to the entire Mayan lowlands?

Figure 3. Current Research questions for Plaza H.

(with TC types and styles) and other exotic items in Structure H-1 (Figure 2; see also Awe 2013). The subterranean crypt, constructed of massive limestone blocks, was encountered while trenching a TC wall (Awe, personal communication, 2011). The discovery of a TC tomb and the remodeling of a Late Classic platform raised questions about how people were using Plaza H at the end of Cahal Pech's occupational history. Conversations with Awe in 2011, and knowing the constraints placed on us by a relatively short field season, we decided to work on questions involving the TC in Plaza H. We felt that our endeavors would contribute to the understanding of TC at Cahal Pech.

The 2011 research questions for Plaza H were: What types of activities were occurring in the Terminal Classic (TC) period? What is the construction history and arrangement of platforms and rooms? These questions are foundational, but have evolved through the nearly five years of excavation and analysis, and the research questions that currently motivate the project are presented in Figure 3. To provide a spatial framework for the UM/BVAR excavations, we present our current re-construction of Plaza H's TC features (Figure 4). We began in 2011 with a crude understanding of the platform mound arrangement, and each year the map has been redrawn to reflect a growing understanding of the architecture. Our 2014 excavations provided new information about the corners of several structures and we were given mapping information about C-3 excavations from 2010 (Prichard et al. 2011, Prichard, personal communication, 2014), which allowed the extent of C-3 to be more accurately estimated. Although we had substantially more data available, it remains important to note that because the plaza has not been completely stripped, the extent of the structures is inferred from the topography and limited excavations. It is to our advantage that Plaza H is within the Cahal Pech grounds, which are

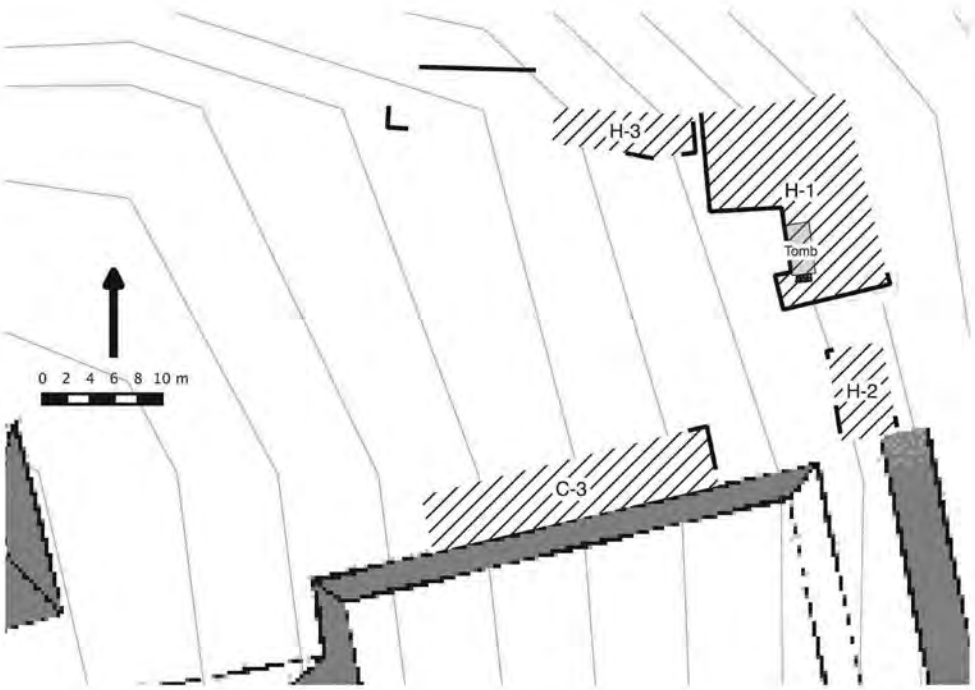


Figure 4. Plaza H Terminal Classic structure walls identified by UM/BVAR (black lines) with speculative structure plans shown by hatched areas. General surface trends are from ASTER-GTM.

routinely maintained, making the surface easily observed. However, the TC walls stand only about 30 cm high, making structural boundaries difficult to infer accurately from topography alone—and insuring that future excavations will lead to more modifications of our map. During the 2011 season, units were placed to partially uncover the north (H-3) and south (C-3) structures of Plaza H. Unit 3 (Figure 5) bisected H-3 and Plaza H. From this unit, we recovered a large quantity of lithic debitage close to the surface of the structure and in the portion of the unit that intruded into the plaza. Two parallel 1 by 3 meter units (4 and 5) bisected C-3 and Plaza H. The excavators uncovered a series of four well-plastered plaza floors, but only Unit 4 located an obvious east-west platform wall, although we had expected to see a wall running across these closely spaced units. Unit 5, one meter farther east, showed only plaster floors until the fourth floor, when a rock feature was identified in the southwestern corner of the unit, disturbing the floor. The feature was distinctly lower in elevation than the platform wall in Unit 4. Unit 6, placed south of units 4 and 5 on what was believed to be inside the platform, revealed a north-south wall on the eastern side at the same level as the Unit 4 platform wall.

In 2012, we wanted to further explore the features in units 4-6 and the eastern edge of the plaza. The subsequent work around Unit 5 demonstrated that the “rock pile” found in C-3 was

Figure 5. Locations of UM/BVAR excavations in Plaza H, 2011-14.

the northeast corner of a lower TC building foundation, which had been remodeled by replacing it with the near-surface platform wall located the previous year in Unit 4, producing a taller platform with a slightly smaller footprint; simultaneously, the plaza was raised and plastered, covering the earlier, lower TC platform corner. The corner of the last platform, found in Unit 5A, aligned with the perpendicular wall in Unit 6. Thus, we found that the TC platform C-3 did not extend as far to the east as we had believed, and that there were two phases of TC construction.

With the northeast corner of Platform C-3 defined, additional work in 2012 turned to the eastern structures (H-1 and H-2) in Plaza H. H-2 is near the southeast corner of Plaza H, and the initial purpose of Unit 7 was to see if there were walls or stonework that was connected to the structures exposed in the northeast corner of Plaza C. However, the unit simply located a section of the western platform wall of H-2 and a series of plaza floors in front of that, making it clear that H-2, like H-3 and C-3, was a stand-alone structure situated on a plaza floor raised well above the floor of Plaza C. Unit 8 was dug in H-1; the 2 m (E-W) by 3 m (N-S) unit was placed with the intention of crosscutting the west wall of H-1 and Plaza H; its northeast corner lies adjacent to the southwest corner of the tomb that was excavated in 2006.

Figure 6. H-1 tomb staircase stone fill as seen in east sidewall and part of the upright stone wall (foreground) in Units 8 B and D. Also visible are upper plaza floor (foreground) and lower plaza floor (background).

The excavation of Unit 8 located two thick, surprisingly well-preserved plaster floors and two N-S "walls," as shown in Figure 6. One "wall" consisted of stacked limestone blocks along the eastern edge of the unit, which initially was thought to indicate one phase of the construction of H-1, and a crude wall of upright boulders. Although the stacked stones along the eastern edge of the unit appeared to be a wall, the interpretation was uncertain, and its proximity to the tomb suggested several alternatives: it might be stone fill related to the excavated tomb, or even a second tomb. The upright stonewall incorporated part of the lower plaza floor in its interior, and appeared to have been built to extend H-1 about a meter west, possibly part of a remodeling event that included the reconstruction of the plaza floor and construction of the tomb.

The 2013 excavations were focused on H-1, starting from the Unit 8 excavations from the previous year. This was the only year to date when field research was conducted in both January and June (the later in conjunction with the first 2-week session of BVAR, with BVAR students). The season included a limited effort (units 12, 19) to examine the long-term construction history of the platform mound, stretching back to at least the Late Classic Period. Most of our efforts were placed in expanding Unit 8 from its 2012 boundaries. Ultimately, the units added onto the edges of Unit 8 covered about a 35 m^2 continuous area, excavated into structure H-1 and in the adjacent plaza area. All the units were terminated before reaching Late Classic materials.

The excavations that expanded from Unit 8 can be grouped into three different categories, each involving different types of deposits. First, expansion to the north and west (i.e., units 10, 11, 15, 16 Trench 10/11, Trench 10/11 interior) are within the plaza. We found two distinct floors (and some localized evidence of additional floors/plastering events) and a series of rock alignments that served as construction pens when the area had been filled when building the TC H-1 structure over the dismantled Late Classic structure. Second, expansion to the east of Unit 8 (i.e., Units 14, 14B, 17, and 18) removed deposits within the TC structure, generally down to the level of the earlier TC floor. This operation also found the staircase for the Tomb H-1-1 cut into this floor (the staircase had subsequently been filled with stacked rock). This feature in the tomb had not been uncovered during the 2006 burial excavations. The eastward expansion failed to identify the east platform wall, which came as a surprise: we were uncertain whether the platform was wider than we thought, or if the east platform wall was too subtle or disturbed to detect.

Third, in the efforts to expand the 2012 excavations in Unit 8, Units 11 and 13, to the south and east of the Unit 8, we attempted to trace the upright stones to define the southern section of the west wall and the western portion of the south wall. These efforts provided important data, but were difficult to interpret at the time. Unit 11 proved to be rather disturbed, and while it located a credible southwest corner of the structure, the wall was discontinuous and the deposits ambiguous. Unit 13, which caught a sizable boulder in its NE corner that could be a part of wall, also had large, relatively dense TC sherd deposits in its lower levels, different than the more common pattern of the densest deposits near the surface. As presented below, the excavations in 2014 provided more data from the southern edge of structure H-1 that allowed these two units to be fully interpreted.

RESEARCH DIRECTIONS FOR 2014

As noted above, there is essential continuity from 2011 onward in the primary research questions concerning the Plaza H TC occupation. However, the exact manner in which these questions were prioritized in the 2014 fieldwork was shaped be two factors related to activities occurring in 2013. The first was the difficulty in clearly identifying the southern platform wall of structure H-1 and the lack of knowledge of the east wall. H-1 is the most intensively studied platform in the plaza, yet its basic dimensions remained unknown; we wanted to address this problem. The other factor was the continued efforts to consolidate all mapping in Plaza H into a single GIS map, including unit locations, known walls and the interpretive reconstruction of the platforms (Figure 4). The reconstruction map identified where we had definitive knowledge of platform walls and corners, and where the map represented a guess based on surface ground contours. Beyond the specific case of H-1, we wanted to continue to fill these gaps in mapping these structures. The 2014 excavations were generally successful at addressing these two issues, and the details of these excavation efforts and the results are provided below. However, we begin with a brief discussion of field and initial laboratory methods.

METHODS

Units were placed to expose various features and deposits based on expectations from surface indicators and results of previous excavations. The units were generally aligned to magnetic north. Excavation units on our project have been given a sequential number within the plaza (starting with number 3); extensions and subdivisions were given letter suffixes. We excavated most deposits with hand picks and buckets, and used trowels for finer work, such as identifying floors. Students worked closely with the experienced members of the crew in evaluating and identifying fill and features.

Vertical and horizontal control during the excavation emphasized natural stratigraphy and context. At the start of each level, a level form was begun, including measuring the depth of the unit's corners with a line level from an arbitrary elevation point. Levels were halted when there was a significant change in the deposits, generally signifying architectural features: fill, walls, or floors in particular. The exception to natural levels was near the surface during the January excavations, where the change from the A horizon to lower levels tended to be gradual; first levels were ended around 10 cm. Once a level ended, closing elevations were noted on the level forms, artifact bags for the level closed up, final photographs of the level taken, and summary notes for the level made on the level form. In cases where horizontal differences were identified, units were subdivided using letter designations, with subsequent levels kept separate.

The excavation units, elevation stakes and nails, and some walls, were tied into the site coordinate system by an instrument survey conducted by Rafael Guerra with a Topcon total station in June. Guerra provided UTM coordinates for northing, easting, and elevation for all surveyed points. A master map has been developed from the four years of work and is kept in the geographical information system QGIS 2.4.

All deposits, minus large rocks and ballast stones, were screened through ¼" screen. All cultural materials were collected, with the exception of undecorated ceramic body sherds smaller than 2.5 cm, and generally bagged by raw material type. Ecofacts were also collected, such as animal bones, freshwater and marine mollusks, and charcoal (small flecks or surface finds were not kept). The retained materials were bagged by unit, level, and material type, washed (when appropriate), dried, and then repackaged for later study.

Documentation is an important part of the project. Accurate and thorough record keeping was a priority; students were given written instructions on note keeping (Douglas and Brown 2012b) and provided regular feedback on their field notebooks. Douglas and the students kept notebooks with field observations. These notebooks, along with the level forms and profiles, were retained by BVAR as part of the primary record of the excavation; PDF copies have been kept by UM. Extensive digital photography, taken with a Canon EOS Digital Rebel XTi 10

megapixel camera, was also used to document the excavations. The mug board and north arrow placed in the photographs of the units provided information on the unit, level, date, scale, and cardinal direction. The names of the photo jpg files were recorded in student notebooks and level forms to provide the full context of each photograph.

While excavating and identifying level changes, students were encouraged to tag floors and distinctive sediments observed in the sidewalls to improve the accuracy of the final profile for the units. Detailed plan maps and profiles were drawn when relevant. More information about field and laboratory procedures, including profiling, can be found in Douglas and Brown 2012b. None of the excavation units reached bedrock or sterile soil.

EXCAVATION UNITS AND FEATURES

The 2014 excavations were placed widely across the Plaza (Figure 7). Some of the excavation units were entirely within platform fill, others straddled the platform walls and nearby plaza floors, while others included only plaza floors and related fill. Compared with the 2013 excavations, excavations were more isolated and generally, because of limited size and the increasing knowledge of the area, more straightforward to interpret than the excavations from earlier seasons. We have organized our discussion by platform and how these individual excavations contribute to the interpretation of the plaza.

Structure H-1

As noted earlier, neither the south or east platform wall had been identified in the 2013 excavations. In 2014, two areas were excavated in H-1 to continue looking for the south and east walls, adding about 9.6 m^2 to the excavation total for this structure.

Units 20 and 21, each 1 m by 2 m, were placed to the east of the tomb as we hoped to bisect the east wall. However, we discovered that both were inside the structure fill. Unit 21, the more northern excavation, was lower on an erosional slope than Unit 20 and somewhat difficult to interpret, with a rather limited artifact assemblage, no clear features, but some stratigraphic changes that can be interpreted through comparison with other units. It was dug to a greater depth than any other unit in 2014: 85 cm of sediments were removed in five levels. If there was an earlier TC plaza floor underlying the later TC structure fill, as was found in all the H-1 units dug farther south, absolute elevations suggest it would have been near the top of the unit, with only a few centimeters of overburden, but no evidence of that floor was noted. Likely, the area was simply too eroded and disturbed; a historic crown cap was found in Level 2, an indicator that the upper matrix might be materials eroded from farther upslope. At the bottom of Level 2, the excavators found piecemeal traces of plaster floor, not fully recognized in their notes, that is likely the Late Classic plaza floor that is better preserved and more fully discussed below with

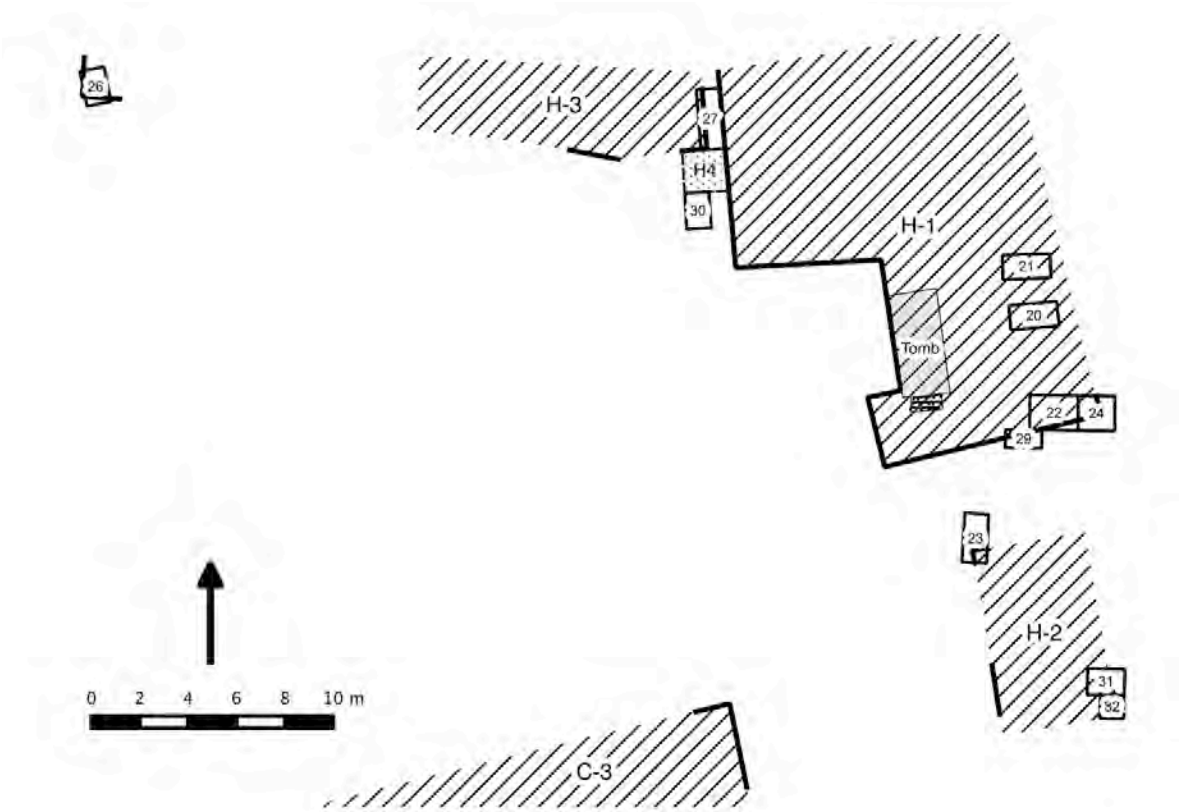


Figure 7. Units excavated in 2014 in relationship to walls and speculative platform outlines. See text for the significance of H-4, a unit excavated by Santasilia (2012).

Unit 20. Below this, beginning at the bottom of Level 4, was a darker matrix with less gravel and higher artifact counts. Level 5, the final level, consists solely of this darker matrix; after 15 cm ofthis material, the level and the unit were arbitrarily ended. This darker material may represent Late Classic platform fill. The elevation of this fill is similar in absolute elevations with the Late Classic structures of H-1, and a cursory examination of the recovered ceramics suggests they likely predate the TC.

Unit 20, just a meter to the south of Unit 21, was surprisingly different in nature. In Level 3, approximately 30 cm below the ground surface, a dark charcoal stain covered over 1m^2 on the western end (Figure 8). The stain marked an intrusive, roughly oval, pit that extended to a depth of about 65 cm below the ground surface; the feature extended outside the unit, as it was visible in the north and west wall profiles. A liter of the pit fill was retained for future study.

The dating and context of the pit feature in Unit 20 was not entirely clear. The feature was below a plaza floor, missing over the feature itself, which is at the same height as the plaza floor found in Unit 8 and other units to the south. In those other units, the equivalent floor is

Figure 8. Top of the charcoal-filled pit feature in Unit 20, visible at the top (west) portion of the unit.

clearly the earlier TC plaza floor, which was built over during the expansion of H-1 related to the construction of the tomb. Because no pit wall was visible in the upper part of the unit, this suggest a fairly shallow pit dug from a surface related to the first part of the TC occupation; the bottom of the intrusive feature ends on an earlier floor, almost certainly the final Late Classic plaza floor. This stratigraphic placement, favored by the available evidence, cannot be considered secure, because other scenarios are possible. Specifically, the absence of floor over the feature could possibly be coincidental, which means the feature might predate the TC; the absence of a pit wall above the floor could be caused by bioturbation obscuring the feature near the surface, which means the pit could have been dug after the platform was constructed. No temporally diagnostic artifacts were found in the pit fill to assist the chronological placement, but ^{14}C dates would be helpful.

The function of the feature is even more obscure. The excavators thought that the pit was a thermal feature, although there was no clear firing evidence of the pit surface to demonstrate firing occurred in place, so there is a possibility that the charcoal had been produced elsewhere

and dumped in the pit. A stone tool (a drill) was found near the bottom, but it is possible that the meager artifact collection associated with the fill had eroded from sidewalls or had been mixed from the capping fill. Only further analysis of the matrix, including identification of macrobotanical remains and possibly analysis for microplant remains and chemical signatures, might yield a better understanding of the use of this feature.

In 2013, Unit 18, located east of the tomb stairs, was excavated (Figure 9); it had been expected to intersect the east platform wall, but no evidence of that boundary was found. In 2014, Unit 22 was opened directly to the east, and once excavated another unit, Unit 24, was placed directly to the east. It was Unit 24 that finally intersected the southeast corner of the structure. To the south of Unit 18,we placed Unit 29, in order to more fully trace a low, discontinuous boulder and cobble wall outline that demonstrated that stones found in the 2013 Units 11 and 13 were, as speculated at the time, the southwest corner and part of the southern wall (Figure 9). The interior portions of the units were excavated down to the same plaza floor found in 2013 that underlies the southern TC H-1 platform and was the surface that the tomb stairs were cut into; on average, the platform fill was 22 cm above this floor and excavated in two levels.

Once the excavators saw the wall clearly in Level 2, they divided the units 22, 24, and 29 into an interior and exterior designation. The portions of these units dug outside the platform were called 22-24B and 29B. Some of the most interesting artifacts found in in 2014 came from these areas. Large sherds, some that could be refitted, were densely packed just outside the wall; an antler tine, a polished stone, a drilled shell bead, and a mano fragment are among the non-ceramic artifacts located in this context. These deposits appear very similar to the Level 3 deposits found in Unit 13 that are discussed in research report for the 2013 field season (Douglas and Brown 2014); it is likely that the materials found in units 13, 22, 24, and 29 were part of a continuous cultural deposit along the southern wall. The artifacts found in this context during the 2014 season are featured in the artifact section below. Note that this is the only surface next to a structure revealing these kinds of deposits found in Plaza H. Heavy deposits of cultural material along structure edges, especially along walls not facing the plaza, are sometimes interpreted as trash deposits from late use of the structure, retained for potential building projects (LeCount et al. 2002:46), although other explanations, such as ritual deposits or abandonment deposits (Chase and Chase 2004; Awe 2009) are possible.

Finally, we found a historic disturbance. It is in the eastern 50 cm of Unit 24, which is outside the platform wall and close to the edge of the ridge. The historic items included burned wood, crown caps, bottle glass, golf ball, panties, rag, a military rifle magazine, and a blank cartridge. These items most likely represent materials thrown close to the “edge” of the site by recent users. This eastern part of the unit was not excavated after scraping revealed the modern trash at the top in Level 1; there are no indicators of damage or disturbance farther west.

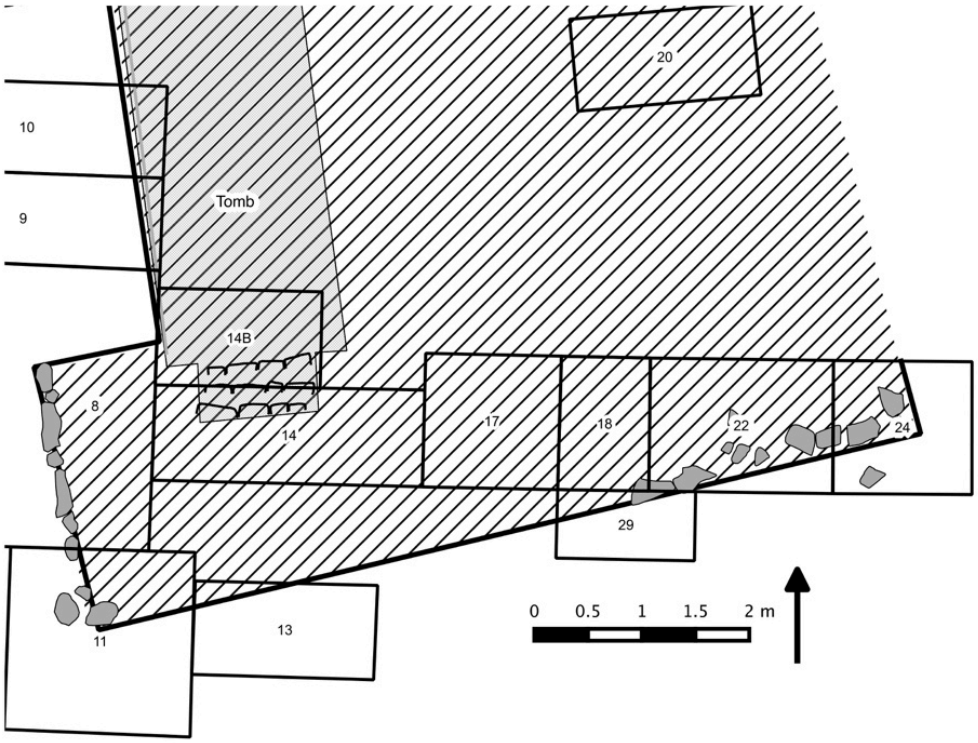


Figure 9. Southern portion of platform H-1 showing rock alignments is gray.

Structure H-2

Under the direction of Awe, students at Galen University, excavated structure H-2 (Figure 7) in May 2005. They trenched along the north, west and east walls, conducted some limited excavations within the platform, and drew a tape and compass map of the uncovered platform walls (Awe, personal communication, 2011). Unit 7 and 7A, part of 2011 UM/BVAR project, uncovered part of the west wall (Douglas and Brown 2012) but unfortunately we did were not able to locate the southwest corner.

Unit 23, a 1 m by 2 m excavation, was placed to find the northwest corner of Structure H-2. Because the walls of the structure had already been trenched, we separated Unit 23 into an A and B. Unit 23A is the southern 1 m^2 overlapping the structure and presumably the one with the most disturbance from earlier excavations, and 23B is the northern 1 m^2 that presumably was not affected by the trenching. The southeast corner of Unit 23A proved to overlap with the northwest corner H-3 a few centimeters below the ground surface; because unit boundaries included only the rough stacked wall, not the platform fill, Unit 23 did not sample the interior of the platform.

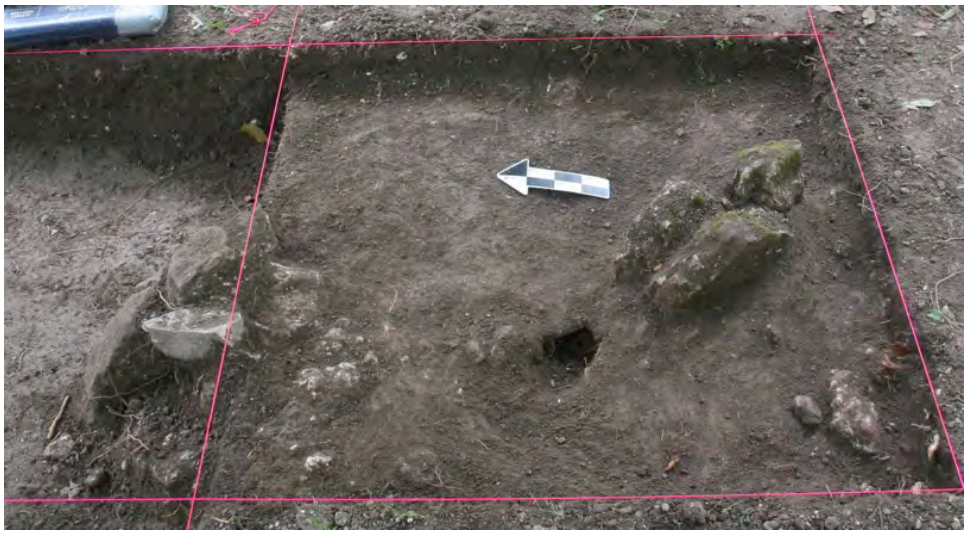


Figure 10. Rock clusters that may be part of the east wall of H-2. One cluster is mainly in Unit 31 (far left); the other is in Unit 32 (upright stones, right).

The first two levels from both contained numerous rocks, likely reflecting some combination of platform wall collapse, eroded platform fill, and recent backfill. With Level 3, we recombined A and B, because the excavation appeared to be below any disturbance; at the bottom of this level a well-defined plaster floor level was found 50 cm below the structure corner. To test below this floor, the northern portion of the unit, 23 B, was excavated; Level 4 found fill beneath the floor level and a possible second floor 15 cm below the first one. It is not clear how these levels relate to the TC construction sequence found elsewhere in the plaza; the upper floor is likely TC, the lower floor is either Terminal or Late Classic.

A second, and final effort for the season to the understand H-2 was made farther south and east. It began with a 1.5 m^2 unit intended to test the interior of the structure near its center, Unit 28, but it quickly became clear that we were digging in backfill, presumably from a test conducted during the 2005 project and the unit designation was abandoned. Immediately to the east we placed a new unit, Unit 31, 1 m by 1.5 m. The western 34 cm of Unit 31 proved to be backfill as well, making the unit effectively 1 m by 1.15 m in size. When a possible rock feature was found in Unit 31 towards the eastern edge of its southern wall, another unit was added to the south. Unit 32 was a 1 m^2 excavation.

Both of these units were shallow, 20 cm on average, and dug in two levels. Nonetheless, two rock clusters—one with a stone standing on edge—provide evidence of a shallow, disturbed, east platform wall for H-2 (Figure 10). There are two reasons to support this conclusion. First, the excavators noted matrix differences on either side of these stones, suggested that the eastern portion is a tamped earth surface and the western portion fill. Second, the alignment fits neatly with what is known of the overall structure size from the 2005 tape and compass map. However,

the shallowness of these rocks and the discontinuity troublesome for a definitive identification, and more excavation is needed to make sure that this interpretation is correct.

Structure H-1, H-3, and the Adjacent Plaza Area

Structures H-1 and H-3 are separated by a narrow gap between their walls. This part of the plaza was excavated first in 2006 by Awe (personal communication, 2011) and in 2012 by Santasilia. Santasilia's H4 unit has been of particular interest because of the unique plaza-level hearth that was found near the southeast corner of structure H-3 (Santasilia 2012:Figures 4 and 5). In considering this find, we decided to re-expose this 2 m^2 unit. The north boundary of the unit adjoins both H-3 and the "alley" between the two structures; the east boundary of the unit adjoins the west wall of H-1 (Figure 7).

Exposing Unit H4 allowed us to map the unit (Figure 7) and know fairly precisely where the hearth was located. We also were able to re-examine the final floor of the unit. Santasilia (2012:102) had noted that Level 3 was a "limestone floor" and "has a step down into the Plaza, and could provide some sort of platform."

A different interpretation of the stone "step" along the western edge of the unit was quickly apparent (Figure 11). Unlike Santasilia, we could see the Late Classic architecture exposed in the 2006 excavation to the east (re-opened and left after the 2013 season), and saw that the stones looked identical to the dismantled Late Classic Platform visible in front of the TC H-1 structure (see Douglas and Brown 2014). In fact, the alignments appeared to be the same structure, covered during the initial TC construction of Plaza H. The excavations we undertook in this area were centered on understanding the relationship of this Late Classic platform wall and the TC plaza and platforms.

After making this assessment, we laid out Unit 25 in the plaza at a location about 2.3 m south of H4, a point thought likely to find the intersection of the Late Classic wall visible in the 2006 excavations and the wall in H4. Unfortunately, it quickly became apparent that we were digging in back dirt from the 2006 excavations of H-1 (likely a channel cut into the plaza to drain rain water from the primary excavations, based on comments made by Jim Puc in June 2013). After this discovery, Unit 25 was abandoned and we decided to follow the Late Classic wall from Unit H4. Thus, we excavated Unit 30, a 0.75 m by 1.5 m (n-s) excavation immediately to the south of H4, and Unit 27, a 1 m by 2.5 m (n-s) unit immediately to the north of H4, in the alley between H-1 and H-3 (Figure 7).

Unit 30 was excavated in five levels. Two well-defined floors were located above the Late Classic structure; a third tamped earth floor, unrecognized in H4, was also recognized and treated as a level in the unit. The most striking aspect of the unit was the intense use of chipped

Figure 11. Unit 30 is in the foreground, Unit H4 in the middle, and Unit 27 at the top. Three walls are shown. The Late Classic H-1 wall, with outset, is on the floor of 30 and H4; the SE corner of TC H-3, top left; west wall of TC H-1, top right.

stone debris as fill between the floors, an aspect discussed further in the artifact section. All chipped stone recovered in the ¼" screen was retained. Level 5 was only a small part, about 30 cm of the western portion of the unit that was excavated, tracing the Late Classic structure that had been demolished down to the wall stub and covered by the TC plaza floor in this area. Unit 30 found that the Late Classic structure had an outset along the western wall that was not visible in H4 (Figure 11). Further excavations to the south, in the disturbed area (originally labeled Unit 25), by Itza, Cunil, and Alvarez, demonstrated that this wall was continuous with the Late Classic wall H-1 platform that had been exposed in 2006.

Unit 27 explored the roughly 60 cm gap between H-1 and H-3. From photographs of the H-1 wall taken during the 2006 excavations, it appeared that the area had been shallowly trenched during the work to define the final TC structure H-1 in 2006. Because of the disturbance, we did not retain the artifacts from the first level. A soil difference between the northern and southern end caused the Unit 27 to be separated into an A and B section, although it is now thought this difference was likely caused by backfill: further excavations must have

occurred in the area that were not visible in the 2006 photos. Level 2 in Unit 27A had a high percentage of chipped stone (only chipped stone larger than a quarter was saved), but the presence of a string from previous excavations was convincing evidence that this level was also backfill.

Level 3 in Unit 27A appeared to be undisturbed, and we encountered a floor about 85 cm below the ground surface, believed to be the connecting floor between the two TC structures. The excavators also encountered in the southern end of the unit roughly 90 cm of the Late Classic wall stub that was also found in H4 and 30; because that wall has a slightly more westward orientation than the TC structures, it disappears under H-3 structure wall along the west profile of the unit. Level 4, dug into the Late Classic fill, ended on a possible floor that the Late Classic structure was built over. Finally, it is worth noting that by exposing the H-1 and H-3 TC walls along the alley, the differences in construction techniques between the two buildings become apparent: the H-1 wall consists of a single row of stones, some oriented "on end" to maximize height, while H-3 is constructed of 3-4 courses of smaller stacked stones. Likely, these differences stem from different histories of these buildings. As discussed elsewhere (Douglas and Brown 2014), the western portion of H-1 shows two building phases, and the upright stones on the structure represent a mantel following earlier constructions and raising the surface. In contrast, H-3 shows only a single construction phase. We have not been able to determine the full outline of H-3.

Unit 26 and the Northwest Plaza Area

A basic, unanswered question on the TC layout of Plaza H concerns the built environment in the northwest quadrant. To add to the difficulty in interpreting this area, a fairly recent picnic pavilion with a concrete foundation was placed in this area. In 2014, we excavated Unit 26, which was 1 m by 1.5 m, and uncovered a corner marked by the intersection of two surface alignments in an eroded area immediately north and west of the pavilion. The shallow excavation, dug on average to a depth of 23 cm in two levels, revealed a double foundation wall constructed from rough cobbles Further to the north, about 5.2 m, a well-defined surface rock alignment (Figure 4), runs east to west, suggesting that TC constructions may be largely visible on this erosional surface. The discovery of a highly polished, but broken, jadeite bead next to the corner of stones in Unit 26 might possibly indicate an offering for a structure.

The corner may be the southwest corner of the H-3 structure as it is nearly aligned to a wall we uncovered in 2011 in Unit 3, which is 19 meters to the east. Nevertheless, we have conservatively chosen to deal with the corner as a separate find until more data can be collected.

Table 1. Artifact and ecofact categories found in the 2014 excavations.

Material	No. of contexts
Chert/Chipped Stone	44
Ceramics	44
Shell (freshwater or marine)	33
Obsidian	16
Special Find	9
Carbon	5
Faunal Bone	4
Metal, historic	3
Exotic	1
Granite/Ground stone	1
Matrix	1

Further efforts are needed to understand the surface rock alignment and single buried corner. Interpretations are difficult not only because of the limited excavation, but also because the northern area in question is on a highly eroded, rocky slope. The corner in Unit 26, which appears to be the bottom of the structure, is roughly 90 cm higher on the slope than some of rocks that were mapped on the northern alignment. If the surface alignment and corner found in Unit 26 are the remains of a level building platform, then the lower north alignment must have stood well over a meter high—taller than any other TC alignment in Plaza H, and something of a technical challenge, at least compared with the rest of the TC platforms. Alternatively, the structure might have been terraced. Finally, if it is part of H-3, the northern wall suggests that perhaps half of structure's width, as measure south to north, may have been lost to erosion along the crest of the ridge. Thus, in 2015 we will further explore the wall alignments in the area.

RECOVERED ARTIFACTS AND ECOFACTS

The recovered artifacts and ecofacts from the 2014 field seasons were initially washed (when appropriate) and sorted by provenience and material (Table 1). There were 44 proveniences (a specific unit and level) in 2014 (enumerated in Appendix 1); thus, the number of contexts indicates the ubiquity of categories, e.g., 100% of the contexts had chert and ceramics. More detailed examination of some of the artifacts follows.

Ceramics

In June, Douglas examined some of the collected sherds, with the aim of identifying characteristics of sherds from various areas that might help determine function and chronology. Four different contexts were examined. First, 60 sherds associated with the pit feature in Unit 20, Level 4 were evaluated, although not recorded in as much detail as the sherds found in the other contexts. Second, 93 sherds from the upper four levels of Unit 30, in the plaza near H-3 and associated with a dense deposit of chipped stone debris, were examined. Third, 1,446 sherds from the area immediately south of the platform wall of structure H-1 were examined: Unit 22, Level 2; Unit 22B/24, Level 3; Unit 29B, levels 3 and 4. The sherds from these levels, labeled "Exterior South Wall" for this section, was at about the same level as the stone alignment marking the H-1 south platform wall, and presumably accumulated against the wall—which likely stood taller during its use. The relatively large sherds from the Exterior South Wall, with more frequent conjoins than in most deposits, were studied because they appear to be deposited after the final construction of H-1, and therefore may represent the final TC activities in Plaza H. Fourth, as a comparison to these atypical assemblages, 173 sherds were analyzed from the fill of H-1. These came from Unit 17, levels 1 and 2, a 1.5 m^2 unit dug in June 2013 in platform fill. Although higher in elevation, the construction history of the Plaza indicates that this fill would have been deposited before the Exterior South Wall deposits.

Conducting the analysis, Douglas consulted with a range of specialists, including James Aimers, Jaime Awe, Laura Kosakowsky, Lisa LeCount, and Nancy Peniche May. Their assistance is gratefully recognized, but the final identifications are not the responsibility of any of these scholars. The analysis involved systematically examining the sherds under natural light and with a few essential tools: a 10X hand lens; acid squeeze bottle; digital scale; digital camera; and pliers. Attributes and typology were recorded in an Excel spreadsheet using standardized terms and measurements.

A total of 1,668 sherds were examined for paste, decoration, form, ware, and type-variety during this study. Of these, 527 of the sherds had slip or form characteristics, and were recorded in detail. Eighty percent were from the Exterior South Wall of H-1. The presentation of the results is organized by context and the corresponding size of the sherd collections. The two contexts with the smallest sherd collections are reviewed individually. A more expansive comparison of the H-1 Fill and the Exterior South Wall of H-1 contexts follows.

Unit 30: Levels 1-4 of Unit 30 contained 93 sherds weighing 258 g—about 1% of the chipped stone weight (18.9 kg) recovered from these same levels. Only calcite tempered sherds are present among the 20 sherds with form or decoration characteristics. Most of these sherds are red slipped ceramics (n = 12), likely from the Pine Ridge Carbonate group. There is one piece from the Savana Group, one piece of Mount Maloney Black, and one piece of Achote Black

Incised, a Péten Gloss ware from the Spanish Lookout Phase (Gifford 1976:248). This small collection is consistent with a plaza area created in the TC, but does not otherwise aid in understanding these levels.

Unit 20: The 60 sherds found in Level 4 of Unit 20 were from the bottom of the pit feature dug through a TC floor. The sherds included a small number of identifiable pieces: two ash-tempered sherds, five well-worn Savana Orange sherds, three Mount Maloney Black body sherds, and 13 red slipped bowl and jar sherds, likely the Pine Ridge Carbonate group. These identifications are consistent with Late Classic or TC activities.

Comparison of the H-1 Fill and the Exterior South Wall: Numerous sherds were found in these two contexts, which allowed for better comparisons and a more complete analysis. Douglas noted two modal differences between the two contexts. First, the Exterior South Wall had a higher frequency of ash-tempered ceramics, 31% (127 ash to 288 calcite), compared with 16% (12 ash to 61 calcite) from the H-1 Fill. Second, the materials along the Exterior South Wall show fewer jar forms and more open forms; 30% (n = 125) compared with 43% (n = 31) from the H-1 Fill—a significant difference (X^2 = 5.35, d.f. = 1, $p < .05$). These two modal differences are linked—most Belize Red ash ware vessels are unrestricted forms—but nevertheless help characterize the differences between the contexts.

The type-variety and group identifications (Gifford 1976) fit these modal differences, but provide additional information, particularly for chronology. Table 2 provides the basic sherd counts and Table 3 the ratios between these ceramics based on total sherd weight. It is important not to read too much into small differences between these two collections. Not only is each "context" an incomplete sample of a larger architecturally-defined division, but the Exterior South Wall comprises a much larger sample than the H-1 Fill—about six times larger, by both count and weight. The sample size differences easily explain the seemingly greater diversity of types Exterior South Wall. The results using count or weight are generally similar, strengthening the inferences. The primary difference in relying on weight is that the heavy Cayo Unslipped and Tu-tu Camp Striated storage olla sherds comprise a larger portion of both contexts.

Broadly, both ceramic collections fall into Late Classic to early TC, with the inclusion of a small number of readily identified early ceramics. Three differences are notable. Two of these are partially detectable in the modal differences presented earlier: storage jars are present in larger numbers in the H-1 Fill than the Exterior South Wall, which emphasizes forms that are primarily bowls. Further, the Belize group, the primary ash-tempered ware, is more commonly found in the Exterior South Wall. Finally, and independently of modal trends discussed above, Mount Maloney Black sherds are nearly twice as frequent in the Exterior South Wall than from the H-1 Fill. The relative frequency of Pine Ridge Carbonate group remains steady between these two contexts—the black slipped type simply replaces much of the red slipped types in the

Table 2. Counts for ceramic types identified from the H-1 Fill and Exterior South Wall contexts.

Ceramic Groups	H-1 Fill	Ext. S Wall	Total
Pine Ridge Carbonate Group			
Other/unidentified red	13	54	67
Dolphin Head	1	4	5
Roaring Creek	2	1	3
Rosario Incised		1	1
Other/unidentified no slip		11	11
Mount Maloney Black	12	97	109
Garbutt Creek		9	9
PRC Brown		2	2
Belize Red Group			
Other/unidentified	12	112	111
Platon Punctated-Incised		2	2
Vinaceous Tawny Ware			
Benque Viejo Polychrome		10	10
Petén Gloss			
Meditation Black	1		1
Meditation Black?		1	1
Teakettle Bank?			
Teakettle Bank black?		1	1
Uaxactun Unslipped			
Tu-tu Camp Striated	2	8	10
Cayo Unslipped			
Other/unidentified	14	23	39
Alexanders type Beaverdam var.		2	2
Savana Group			
Other/unidentified	1	12	13
Reforma Incised		1	1
Sierra Red group			
Other/unidentified	3	4	7
Other/unidentified			
Other/unidentified	12	60	85
Total	**73**	**415**	**488**

Table 3. Ratios of ceramic types based on weight from the H-1 Fill and Exterior South Wall contexts.

Ceramic Groups	H-1 Fill	Ext. S Wall
Pine Ridge Carbonate Group		
Other/unidentified red slip	11.9%	4.1%
Other/unidentified no slip	0.0%	3.5%
Dolphin Head	2.1%	1.1%
Roaring Creek	2.4%	0.2%
Rosario Incised	0.0%	0.3%
Mount Maloney Black	10.9%	20.6%
Garbutt Creek	0.0%	2.3%
PRC Brown	0.0%	<0.1%
Belize Red Group		
Other/unidentified	15.6%	23.1%
Platon Punctated-Incised	0.0%	0.1%
Vinaceous Tawny Ware		
Benque Viejo Polychrome	0.0%	3.2%
Petén Gloss		
Meditation Black	1.3%	0.0%
Meditation Black?	0.0%	0.1%
Teakettle Bank?		
Teakettle Bank Black?	0.0%	0.2%
Uaxactun Unslipped		
Tu-tu Camp Striated	11.3%	9.4%
Cayo Unslipped		
Other/unidentified	31.9%	7.9%
Alexanders type Beaverdam var.	0.0%	9.7%
Savana Group		
Other/unidentified	1.0%	1.1%
Reforma Incised	0.0%	0.2%
Sierra Red group		
Other/unidentified	2.5%	0.4%
Other/unidentified		
Other/unidentified	9.3%	12.6%
Total	**100.0%**	**100.0%**

exterior collection. The change shown likely is an underestimate, because small aperture, short-necked jars with flaring rims from the Pine Ridge Carbonate group were also found in greater numbers in the Exterior South Wall, but none preserved the slip: these may be Roaring Creek Red or Mount Maloney Black, although Aimers believes the latter is more likely (personal communication, 2014).

The observations made in the field also noted that the sherds were from distinctly different contexts, particularly in terms of sherd density, which was much higher in H-1's Exterior South Wall. The two collections were not quite as distinct in their breakage patterns when viewed in the lab. Since each sherd was weighed as a proxy of size, these weights also help characterize the deposits. The sherds show a similar mean (fill average, 22.5 g, s.d. = 26.1; exterior average 24.3 g, s.d. = 52.4). However, as hinted by the standard deviation, the exterior area had a few very large sherds from storage vessels (maximum single sherd weight 825 g, compared with 169 g in the interior) that provided a longer distributional "tail" of large, heavy sherds. Both contexts had a limited number of refits, generally to a single sherd, and both collections appeared to be comprised of sherds from many different vessels. However, the Exterior South Wall sherds had a higher rate of refits. A unique example of refitting from the exterior area is a partial Benque Viejo Polychrome bowl, found as 10 sherds representing both the base and wall (Figure 12) from the Exterior South Wall. The vessel had stood about 8 cm high, with an eroded surface. Overall, the density and breakage patterns suggest that the sherds along the Exterior South Wall represent a different kind of deposit than platform fill. Perhaps the Exterior South Wall sherds and other debris were allowed to accumulate against the buildings with the intention of use for building fill, a suggestion that Xunantunich researchers have employed to explain dense sherd deposits along structures at household mound groups (LeCount et al. 2002:46). However, because we do not have a pattern of deposits, only this single case, other alternatives, such as activities related to abandonment, might also be reasonably invoked.

What is clear is that the sherds from the H-1 Fill and the Exterior South Wall are different in multiple ways: paste, vessel forms, ceramic types, sherd density, sherd size, and frequency of refits. The dense sherds from the Exterior South Wall area are unlikely to be eroded pieces originating from the platform fill. The excavation context suggested that this deposit accumulated after the construction of the tomb and the final construction phase of H-1. If this relative chronology is correct, then these sherds may indicate that the abandonment of Plaza H occurred early in the upper Belize Valley TC sequence. LeCount noted (personal communication, 2014) that the Mount Maloney Black bowls from this deposit lack the late fully horizontal rims, which places them in the middle period of Mount Maloney rim changes (LeCount 1996; LeCount et al. 2002:46; Thompson 1940). If the deposits had been coeval with the last "facet" of the TC at Xunantunich, late rims on Mount Maloney bowls would be expected in "preponderance" (LeCount et al. 2002:52). The lack of "pie crust" Cayo Unslipped jar rims

Figure 12. Benque Viejo Polychrome sherds from a partial vessel, exterior of the H-1 south platform wall, interior view (Unit 22B/24B Level 3).

and the presence of Benque Viejo Polychrome pottery further suggests early/transitional TC. The dating issues and prospects for Plaza H are further reviewed in the conclusion section.

Chipped Stone

Chert flakes found in all excavated 2014 contexts; however, the number and weights are generally considerably less than the ceramics, except in units 27 and 30. These units, along with other excavations near the northwest portion of structure H-1 and the eastern portion of H-3, have noted very high flaking debris densities, consisting almost exclusively of medium to very small flakes (Awe, personal communication, 2011, concerning the 2006 excavations; Douglas and Brown 2011; Santasilia 2012).

The source and significance of these deposits of intense flaking debris is not been clear, but the 2014 excavations provided a new opportunity to understand this unusual pattern. However, Unit 27, located in the alley between H-1 and H-3, was disturbed in the upper levels where the high-density chert debris was found, and therefore we did not collect that material. At Unit 30 (located within the TC plaza near both H-1 and H-3) we collected every flake from the ¼" screen. Considering the first four levels in Unit 30—the TC plaza deposits above the Late Classic structure— there was 18.9 kg of chert chipped stone from about 0.42 m^3 of deposits. Because Unit 30 is 1.8 m south of H-3 and 0.8 m west of H-1, it shows that this material, found also on the surface of the nearby platforms (Awe, personal communication, 2011; Douglas and Brown 2011) extends into the plaza some distance. Whether the high density of chert flakes was deliberately introduced in the plaza fill when the plaza was resurfaced, had fallen or eroded into the plaza from platform activities, represents primary refuse produced in the plaza and sealed when the plaza was re-plastered, or some combination of these scenarios, is undetermined. What is clear from the dense chipped stone deposits in the first four Unit 30 levels is that the chipped

stone waste flakes were repeatedly introduced into sealed levels over the course of the TC. This is important, because it suggests that the activity of tool production was likewise continuous.

An initial examination of the chipped stone material suggests that while the debitage has sometimes been referred to as "bifacial thinning flakes," much of the material does not fit closely to a standard description (Andrefsky 2006). Instead, a variety of small to medium flakes are present. No chipped stone tools were found among the chipped stone from either Unit 27 or 30—almost all of the debitage is tiny, too small to serve as utilized flakes. To understand these materials more fully, 500 g samples of each of the four levels were exported to the US for intensive study in July. These artifacts are currently housed in a laboratory at the University of Montana awaiting study in the spring 2015 semester. In addition, Claire Ebert, a Pennsylvania State University graduate student and BVAR staff member, exported the obsidian artifacts found in 2012-2014 UM/BVAR seasons for analysis to determine geological sources (Guerra, personal communication 2015).

All the chipped stone from 2014 was examined for recognizable tools, but formal tools are rare. One tool was found that was likely associated with the deposits along the Exterior South Wall of H-1 (Unit 22, Level 2). Another tool, a drill, was recovered from the bottom of the charcoal-stained pit in H-1 (Unit 22A, Level 5). Presumably, an intensive analysis of the flakes from across the plaza would identify utilized flakes and other informal tools.

Other Artifacts

A single fragment of ground stone, part of a square in cross-section mano, was found, associated with the dense deposits along the Exterior South Wall of H-1. A range of marine shell ornaments and polished stone objects were found, but others were found in potentially disturbed or clearly disturbed contexts. Particularly when context is considered, perhaps the most important of these is a dark jadeite (chloromelanite), polished bead, found at the corner of a possible structure in Unit 26 (Figure 13). An example of a special find from a weak context is the small shell pendant found on lying on the ground surface between Unit 30 and the west wall of H-1 (Figure 14). Other special finds include a *Conus sp.* shell with two holes drilled along the outer lip, from the fill above the upper floor in Unit 23B; a small polished stone, from the deposits along the southern wall of H-1 (Unit 29, Level 2); a flat, drilled, ovoid shell bead from the level of the Late Classic structure in Unit 30 (Level 5); and a fragment of a metamorphic stone object, most likely a celt or alternatively a "wrench," from the likely disturbed Level 2 in the alley between H-1 and H-3 (Unit 27).

Figure 13. Broken jadeite bead from Unit 26B, Level 2); ticks on ruler mark 1 mm.

Figure 14. Shell pendent from surface east of Unit 30; ticks on ruler mark 1 mm.

SUMMARY AND CONCLUSIONS

Archaeologists' interpretation of Plaza H changed in 2006 with the finding of the elite TC burial. Although Plaza H is linked intimately with the grand architecture of the major public and elite structures to the southwest through its close proximity and location on the acropolis, it also lies outside the major access points to the most sacred and elite structures and is built on a diminished scale. Today, it is easy to overlook during a walking tour of Cahal Pech. Plaza H never competed with the grandeur of the major plazas, temples, palaces on the acropolis; even east of the major constructions, the ballcourt in Plaza C commanded a more central ritual value.

And yet, Plaza H must have had a role different from the communities and plaza groups that surrounded Cahal Pech, based on its relatively conspicuous location.

The TC occupation in Plaza H is the central topic of the UM/BVAR project. Perhaps the very ambiguity of the location was of value at that time: by lying outside of the central buildings subject to "desecratory termination rituals" (Stanton et al. 2008) as the Late Classic came to an end, it was safe to occupy while still claiming some of the "power of place" that surely Cahal Pech possessed. How Plaza H might fit into the larger questions of the TC have been considered in the first symposium paper on the BVAR/UM work in Plaza H (Douglas et al. 2014).

The work accomplished in 2014 has moved the goals of the overall project measurably. The architectural reconstruction for Plaza H, as drafted in Figure 4, is more accurate than previous attempts. Specific information, from new excavations or unearthing old work, has allowed previously unmapped structure corners and walls to be included. Furthermore, incorporating map points from work on structure C-3 (Prichard et al. 2011) makes estimates of the western wall of that structure more accurately placed, although it will require reviewing level forms, plan maps, and photos—or re-excavation—to fully use the 2010 project results to interpret C-3. Continued work on mapping and interpreting walls is required to fully understand the TC structural arrangement of the Plaza. The work on a corner in Unit 26, just northwest of the picnic pavilion, proved difficult to interpret, even though the single-course rough cobble corner appears undeniable. Most likely, it is the southwest corner of H-3, but this area would benefit from more work.

Understanding the activities that occurred in the plaza during the TC was advanced in 2014, although many interpretive issues are present. Feature 1 in Unit 20, the shallow charcoal-stained pit, beginning some 30 cm below the ground surface, is of interest as it is the only feature that seems likely to be associated with the earlier TC plaza floor (see the full discussion above for alternative hypotheses). However, until ^{14}C dating is applied and the contents of the pit are studied for botanical information, the feature will be an enigma. The dense deposits of small flake stone debris in Unit 30 and Unit 3 suggest that specialized chipped stone production occurred on and possibly near H-3 during the TC, and the resulting debris was incorporated into the plaza fill deposits regularly in the area. A more nuanced view of these activities will be available when the analysis of samples of this debris is completed.

Finally, the discovery of dense deposits of sherds along the Exterior South Wall of H-1 has important implications. The diversity of ceramics, the presence of ground stone, faunal remains, and other items seem to suggest a range of activities occurred on H-1 for a sufficient length of time to accumulate these goods. If this accumulation postdates the structure and the burial, as its placement seems to indicate, and if the plaza remained controlled by the buried man's lineage until its abandonment, these materials provide evidence of activities from his

descendants. Regardless, the higher frequency of Mount Maloney Black in these Exterior South Wall deposits, a type strongly associated with Xunantunich (LeCount 1996, 2010) compared with earlier deposits represented by the H-1 fill, may provide evidence of the relative greater power of Xunantunich as the TC progressed (LeCount et al. 2002).

The deposits along the Exterior South Wall of H-1 also speak to the tempo and timing of the TC at Cahal Pech. The upper Belize Valley is in a period of reappraisal of the TC chronology, making it difficult to address this issue fully. AMS radiocarbon dates from various deposits at Xunantunich (LeCount et al. 2002) suggest that the TC began by A.D. 780, ceramic assemblages changed at a quick pace, and the phase may have lasted for roughly a century, perhaps barely hanging on in its final decades. However, a recent study of direct-dated burials at Baking Pot (Hoggarth et al. 2014) indicates that the four burials thought to be TC based on ceramics are likely to pre-date A.D. 800, pushing towards an earlier and briefer TC for the upper Valley. As of this writing, a direct date from the H-1 burial by Hoggarth's team is planned (personal communication, 2014); in addition, the UM/BVAR project, funded by a faculty development fund from the Department of Anthropology, The University of Montana, has submitted the antler tine from the Exterior South Wall of structure H-1 for AMS dating. Thus, at least a few radiocarbon dates will be available soon for the TC period in Plaza H.

How much ^{14}C dating will help understand Plaza H is an open question. At present, the absence of certain TC ceramic diagnostics (specifically, late rim form Mount Maloney bowls and "pie crust" Cayo Unslipped jar rims) suggests that the activities in Plaza H must be early in the TC, suggesting an early abandonment and a short TC occupation. Yet, there is growing evidence—presented here and in previous annual reports—from the UM/BVAR project for significant ceramic and architectural changes during its occupation. Thus, the TC Plaza H history looks very dynamic. If the occupation was limited to 25 or so years—a purely speculative but not impossible range—it may be that radiocarbon dating will be of little help in understanding the Plaza's internal history, even with the use of AMS dating and Bayesian statistical techniques.

The understanding of the TC in Plaza H has increased significantly since the UM/BVAR project began in 2011; the 2014 project and analysis was important in making new discoveries and refining and consolidating the previous research. Simultaneously, knowledge of TC architecture outside of Plaza H continues to accumulate as well. Work by BVAR in Plaza C has also shown widespread modifications and remodeling of structures attributable to the TC (Awe, personal communication, 2012; Prichard et al. 2011). In the summer of 2014, evidence of similar TC remains came to light in Plaza G, once again outside the most prominent plazas (Awe, personal communication, 2015). Undoubtedly, understanding of these activities will improve. As this report is written, we are in the process of planning a fifth short season in Plaza H, which we hope will again fill some of the gaps in our understanding of the TC Maya activities at Cahal Pech.

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APPENDIX 1: SUMMARY OF EXCAVATIONS

Unit	Location	Size	Horizontal Divisions	Average Depth below surface	Levels	Comments	Excavators that kept notebooks
20	H-1 east of tomb; south of Unit 21	1 m by 2 m	Feature consisting of charcoal and dark soil in a pit was identified in the western portion of the unit, designated A in level 5	49 cm (to bottom of feature)	5 levels; level 5 divided into A & B	Isolated cut stone block found in the SW corner near the bottom of the unit	Craig, Smith
21	H-1 east of tomb; north of Unit 20	1 m by 2 m	None	85	5 levels	Relatively uniform first four levels with poorly preserved floor; level 5, likely Late Classic, is darker with more artifacts.	Bachman, Broomand
22	H-1, eastward extension of Unit 18	1.5 m by 2 m	Part of the Unit is south of H-1 platform wall; excavated separately as 22b-24b after level 2.	22	2 levels		Peasley, Colligan, Adams, Howerton
23A	NW corner H-2 and adjacent plaza; immediately south of 23B	1 m by 1 m	None	58	3 levels; last level combined with 23B	Includes NW corner of structure (not excavated); area previously trenched to follow wall	Walters, White, Cohenour

23B	Adjacent plaza area to the NW corner of H-2; immediately north of 23A	1 m by 1 m	Encountered H-2 corner (not excavated)	72	4 (level 3 combined with 23A)	Separated from 23A before excavation because the area presumably wasn't affected by trenching	Walters, White, Cohenour
24	H-1, eastward extension of Unit 18; encountered southern platform wall	1.5 m by 1.5 m	Part of the Unit is south of H-1 platform wall; excavated separately as 22b-24b after level 2.	22	2 levels	Eastern 50 cm had a dense deposit of recent trash, deposited along the edge of the ridge. This was not excavated after scraping the top in Level 1.	Peasley, Colligan, Adams, Howerton
22B-24B	Outside south wall H-1	1.5 m by 2.9 m	None	12	Level 3 only	Heavy trash midden against wall	Douglas
25	H1-H3					Void unit--backfill from the 2006 H-1 excavations	Bachman, Broomand
26	Southwest corner of a structure	1 m by 1.5 m	A and B--inside and outside the structure wall	23	Level 1, Level 2 A and Level 2 B	Originally thought to be part of H-3, but alignment isn't correct. Could be a platform (H-4?) or perhaps some other feature.	Douglas
27		1 m by 2.5 m	A and B-- A is the southern section, B the northern 75 cm.	25	Level 1 (removed in 2006 tracing walls); levels 27A 2-4 and 27B 2-3	Level one clearly disturbed, artifacts not kept. Soil color difference was the reason for splitting, possible evidence of previous excavation? Color change doesn't otherwise make sense in this context.	Walters, White, Cohenour
28	H-2	1.5 m by 1.5 m				Void unit--backfill, likely from the 2005 Galen U work	Craig, Smith

29	H-1, southern extension of U18 & 22	0.75 m by 1.5 m	Interior of H-3 29A; south of wall 29B	24	Levels 1-2; Level 29A 3 and Level 29B 3	Located along the southern platform wall of H-2	Peasley, Colligan, Adams, Howerton
30	H-1, H-3	0.75 m by 1.5 m	After 4 full levels, Level 30A 5 is the northern 75 cm, exposing stub of Late Classic structure wall and fill	64	5 levels	Plaza floor level near both H1 and H3	Bachman, Broomand
31	H-2	1 m by 1.5 m	East 34 cm voided because of backfill, probably from the 2005 Galen U work	21	2	Excavators believe they ended on a floor. There are also rocks likely to have been part of the east platform wall of H-2	Craig, Smith
32	H-2	1 m by 1 m	Possible division between interior and exterior of platform, identified near the bottom of unit and not separated	19	2	Located to explore possible rock alignment on edge of Unit 31 immediately north--but the alignment doesn't extend much farther south. However, upright stones suggest a poorly defined east wall of platform H-2	Craig, Smith

THE CONSTRUCTION SEQUENCE OF STRUCTURE B-5, CAHAL PECH

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University of California-San Diego

INTRODUCTION

Cahal Pech is a medium-sized Maya center located in a strategic position approximately 2 km south of the convergence of the Macal and Mopan Rivers in the Upper Belize Valley. The site core includes an acropolis located in the crest of a steep hill and covers approximately one hectare (Healy et al. 2004). Of the seven plazas that constitute the acropolis, Plaza B represents the largest plaza with approximated dimensions of 50 x 30m (Figure 1). This courtyard is bordered to the east by Structures B-1, B-2 and B-3, to the west by Structure A-2, to the north by Structures B-6 and B-7 and to the south by Structures B-4 and B-5 (Awe 1992).

Str. B-5 has been investigated in previous field seasons (Awe 1992; Peniche May 2013, 2014). Although these excavations have exposed several construction phases, this range-type building is not fully understood yet. Because of that, during the 2014 field season, we decided to continue exploring Str. B-5 with the goal of refining its construction sequence and establishing its form (Figure 2).

PREVIOUS EXPLORATIONS

As many buildings in the acropolis, Structure B-5 was subject of looting during the 1980s (Awe 1992:143). Looters entered the mound from its southwestern side then curved east into the long axis of the building forming a T-shape trench. During the process of tunneling the building, looters exposed part of a masonry wall and doorway of the penultimate construction phase. In the early 1990s, Awe (1992:143-148) supervised the clearance of the looter's trench, as well as the horizontal and vertical excavations of the building platform's southwestern section. These operations were conducted in order to investigate Str. B-5's construction sequence and, particularly, the penultimate phase's form. Four constructions phases were exposed (Figure 3).

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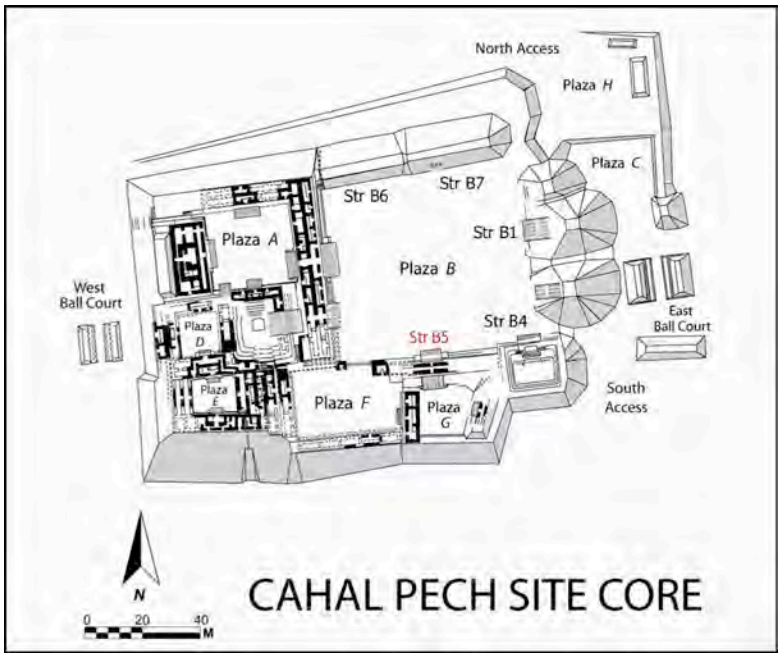

Figure 1: Map of Cahal Pech Acropolis.

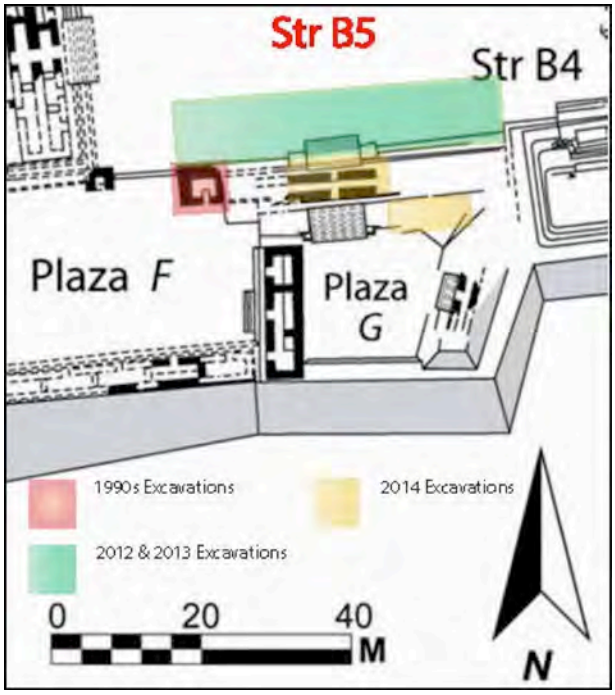

Figure 2: Location of the different areas excavated in Str. B-5.

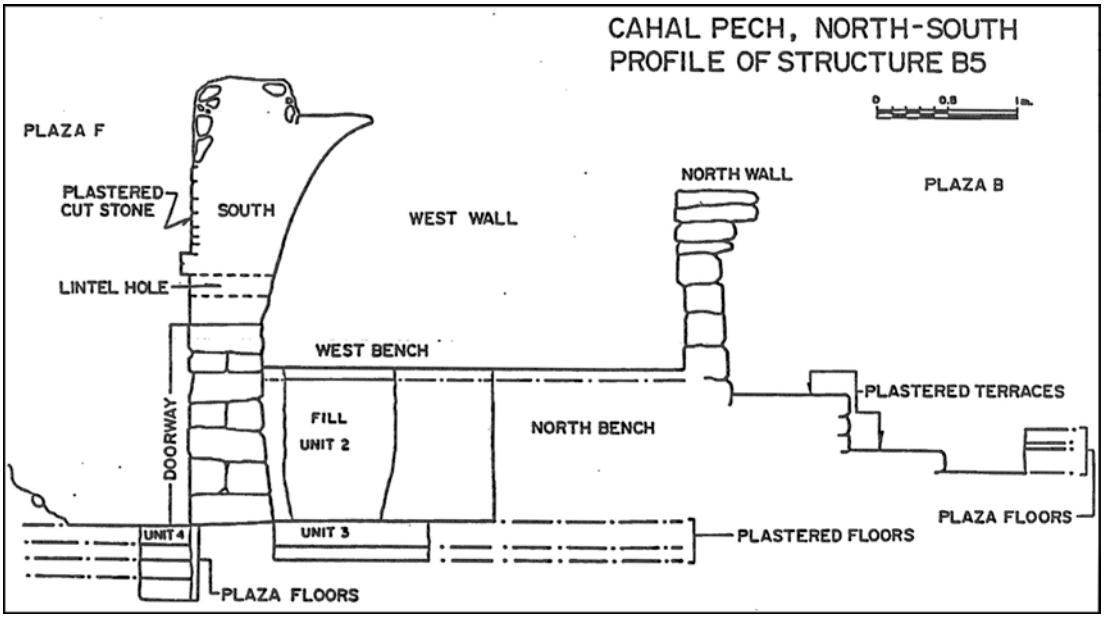

Figure 3: Cross-section profile of Str. B-5 (after Awe 1992:146).

B-5/1st and B-5/2nd were represented by two consecutive Late Preclassic floors exposed in the adjacent Plaza F (Unit 4). B-5/3rd was constructed between the Late Preclassic and Early Classic periods. This phase consisted of a vaulted, range-type building atop of a low platform. Within the building were two or perhaps three rooms. The southern room had an unusually narrow (0.56 m) and low (1.50 m) doorway facing Plaza F and three very high (1.10 m) benches. The benches bordered a short (1.60 m) and narrow (0.56 m) passageway. It has been suggested that this room functioned as a sweat-bath. The final construction phase (B-5/4th) was poorly understood because it was ill preserved due to the looting.

In 2012-13, Str. B-5 was partially investigated during the excavation of Plaza B. As a result, we exposed five construction phases in the northern section of the range-type building spanning from the Barton Creek to the Riger run phase. We also identified several Cunil and Kanluk construction phases, which are not considered in this report (Peniche May 2013, 2014). Two structures represented the earliest constructions phase dating to the Barton Creek phase. One structure was represented by a wall made of well-cut limestone blocks, ranging from 30 cm to 40 cm in length. This wall was located in the western section of Str. B-5. The other construction consisted of an east-west alignment made of roughly cut stones. These structures were resting on top of Floor 6—the last stucco floor in a sequence of replastering events that include five stucco floors built during the Late Preclassic. The following phase is represented by two plaster floors built on top of each other (Floors 4 and 5), which were also constructed during the Late Preclassic. At some moment during the Late Classic, Floor 4 served as the base of a new construction—Str. B-5's antepenultimate phase and its associated plaster floor. The total dimensions and formal characteristics of this building are unknown because it was

dismantled during the construction of the following phase. Nevertheless, based on its remains, we can deduce that the building's northern wall was at least seven courses high and rose at least 0.80 m above Floor 4. This wall was made of roughly cut limestone blocks (0.20-0.50 m in length) and wedges that were used to fill spaces between the stones. We also know that the structure had outsets and a staircase.

Later on, another plaster floor was constructed (Floor 2). This floor was not associated with any architecture but it functioned as the base for Str. B-5's penultimate construction phase and its associated stucco floor (Floor 1). Str. B-5's penultimate phase consisted of a body with two terraces, which were built using roughly cut limestone blocks and fewer wedges that the previous phase. The main body rose 1 m above Floor 2, while Terrace 1 and Terrace 2 elevated 0.64 m and 0.60 m, respectively. A staircase was attached to the main body. Str. B-5's terminal phase had three modifications. The first modification consisted of adding two stair-side outsets. Stones used to build these outsets were smaller than the rest of the building. The second modification was a step attached to the first terrace that worked as continuation of the staircase. During the third modification, two walls were attached at the eastern and western edges in order to increase the dimensions of the building. This addition extended out 80 cm from Str. B-5's wall and, although we could not determine the length of this addition, we established that it was at least 8.15 m long. The terminal construction phase was only preserved in the staircase. Therefore, we were not able to assess its formal characteristics.

During the 2014 field season, it was decided to continue the exploration of Structure B-5. The goal was to expose the superstructure in order to investigate the form of this range-type building.

METHODOLOGY

To further explore the terminal superstructure of Structure B-5, we placed an excavation unit on top of the structure, roughly at its central axis (Figures X.2 and X.4). B5-2 measured 2 x 5m and was oriented 10º west of the magnetic north. As we exposed architecture, we placed new excavation units using B5-2's northern limit as baseline. In total, we opened six units on top of Str. B-5, covering a total area of 37.25 m^2 (Figure 4). Two test pits were conducted in the superstructure in order to explore earlier phases of construction and to determine whether the architecture exposed beneath Plaza B (Peniche May 2013, 2014) continued in this area of the plaza. In addition, four excavation units were placed in Structure B-5's southern section (Figure X.4). Excavations were conducted using both cultural and arbitrary levels. Context associations followed standards established by the BVAR project (BVAR Supervisor's Manual nd.). Artifacts were collected and separated based on unit, level, lot and context. All matrices were screened through ¼-inch mesh. Collected artifacts are in the process of being analyzed and the results will be discussed in future reports.

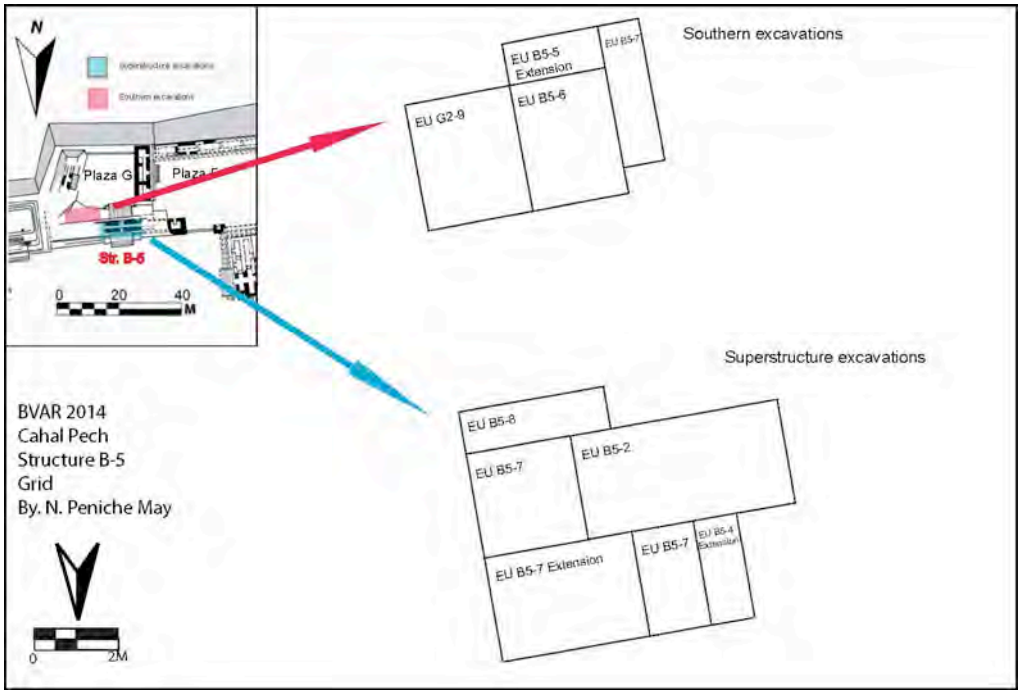

Figure 4: Grid of excavated area on top of Structure B-5.

EXCAVATION RESULTS: CONSTRUCTION SEQUENCE

As it was mentioned earlier, two test pits were conducted on top of Str. B-5. These vertical excavations allowed us to expose construction phases that have not been identified in previous investigations and, at the same time, provided data that demonstrate how complex the construction history of Plaza B was (Figures 5 and 6). In the following construction sequence, we partially connect the 2012-13 data and the information obtained during the 2014 excavations. The sequence proposed by Awe (1992) is not considered here because we could not tie it in with the most recent excavations. The difficulty of correlating the different sequences lies on the fact that the total area that occupies Structure B-5 was likely settled by, at least, two different constructions during the Late Preclassic, Early Classic and the beginning of the Late Classic. It was not until the construction of the penultimate phase that the area was integrated into one single construction. The following construction sequence does not include the Middle Preclassic architecture exposed beneath Plaza B (Peniche May 2013, 2014).

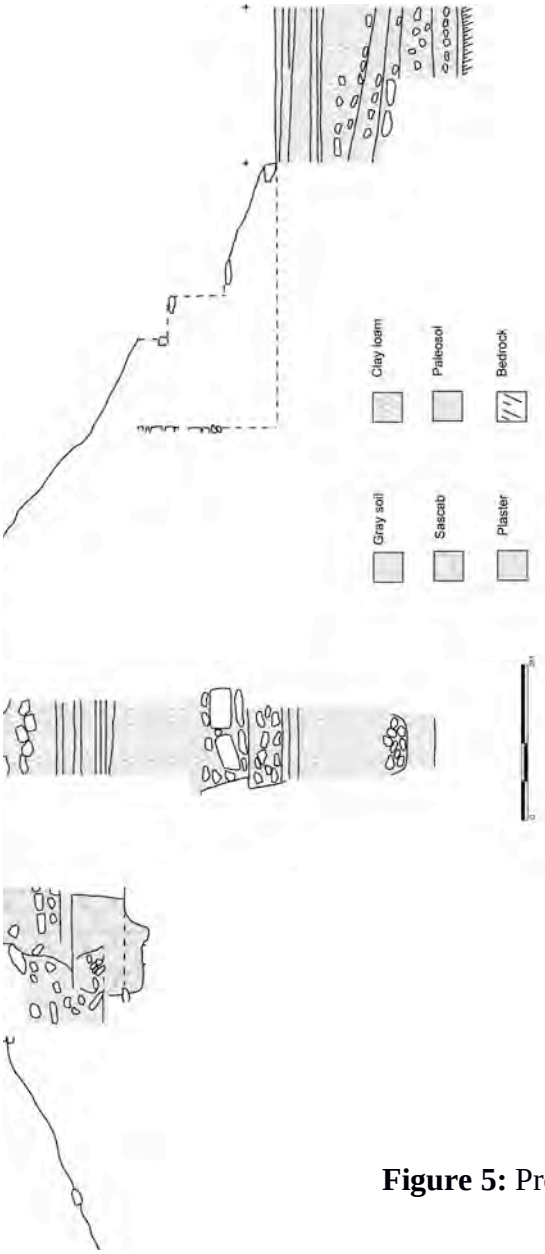

Figure 5: Profile of Structure B-5.

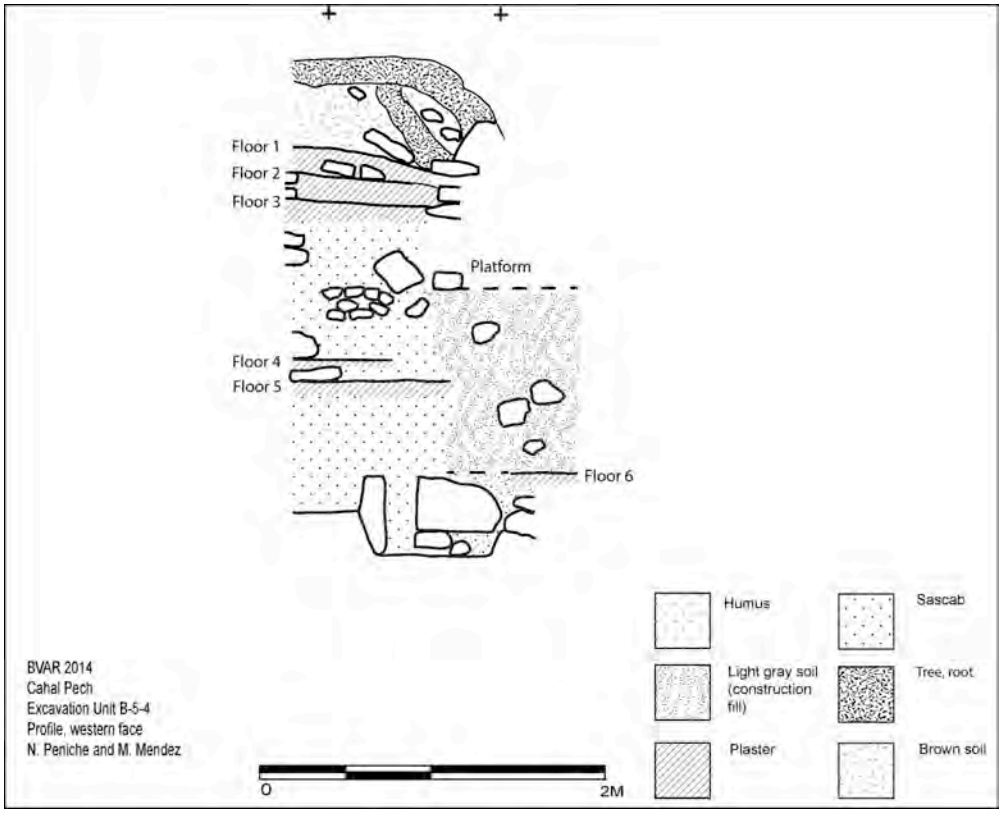

Figure 6: Profile EU B5-4

Late Preclassic construction phases

Based on data recovered in the test pits, we identified eight phases that were built during the Late Preclassic. Because of the nature of the 2014 test pits, we could not understand how the 2014 Barton Creek phases are related to the Plaza B Floors 4-10 and the buildings resting on Plaza B Floor 6, which also were constructed during the Late Preclassic. As I mentioned above, these areas may have been occupied by different constructions and, therefore, they must be explain by distinct sequences. In this section, we only describe the phases that were exposed during the excavation of the test pits (Figures 5 and 6).

Construction phase B-5/1st

This construction was exposed at the EU B5-3 and is represented by a tamped earth surface. Due to time restrictions we did not explore below this surface. Therefore, we could not assess the associated ceramic to suggest a relative chronology.

Construction phase B-5/2nd

This phase consists of a tamped earth surface that was likely constructed during the Late Preclassic period based on the ceramic uncovered below this surface (e.g., Sierra Red and Polvero Black). This tamped earth floor was exposed in EU B5-3.

Construction phase B-5/3rd

Like previous phases, B-5/3rd was only exposed in EU B5-3 and was found 1.40 m above B-5/2nd. The construction phase is represented by Floor 15, a plaster surface that was likely constructed during the Late Preclassic.

Construction phase B-5/4th

B-5/4th was located 12 cm above Floor 15 in the EU B5-3. This phase consisted of Floor 14, another plaster floor built during the Late Preclassic period.

Construction phase B-5/5th

The next construction phase, also built during the Late Preclassic, was quite interesting. It consisted of a structure with apron molding style and its associated plaster floor (Floor 13 in EU B5-3). So far, we know that the apron molding style originated around 100BC in sites like Uaxactun and Tikal. Other examples of apron molding have also been reported in Piedras Negras, Chiapa de Corzo, Cerros, Lamanai, Acanceh, Ake, and Izamal (Peniche May and Fernandez Souza 2004). Unfortunately we were not able to determine the formal characteristics of the building because it was only exposed at the northern baulk of EU B5-3.

Construction phase B-5/6th

At some point during the Late Preclassic, a plaster floor was constructed at the level of the B-5/5th's molding. Floor 12 could represent either a modification of the plaza level or another building. Because it was constructed 44 cm above Floor 13, we interpreted it as another construction phase (B-5/6th).

Construction phase B-5/7th

The following construction phase was located 24 cm above Floor 12 in EU B5-3. This phase consisted of a north-south alignment made of large blocks (approximately 50 cm in length). These blocks were carved of pink and soft limestone (Figure 7). We were no able of determine the formal characteristics of this construction because of the limited space of the excavation unit.

Figure 7: Construction phase B-5/7th represented by a north-south alignment made of pink limestone.

Construction phase B-5/8th

This construction was exposed in EU B5-3. It consisted of a stucco floor (Floor 11) that was replastered at some moment (Floor 10).

Early Classic and Late Classic construction phases

The following phases were constructed during the Early and Late Classic periods. Because of the analysis of the ceramic has not been conducted, we were not able to establish the relative chronology of each construction. As it was mentioned above, Awe's penultimate phase was assigned to the Early Classic but it could not be tied with the 2014 construction sequence. Fortunately, we did correlate the Late Classic buildings exposed in 2012-2013 with the Late Classic phases uncovered in 2014.

Construction phase B-5/9th

Construction phase B-5/9th consisted of another plaster floor, which was built 8 cm above of Floor 10. Floor 9 was covered by Floor 8. The lack of fill between those surfaces suggests that they were part of the same construction phase.

Construction phase B-8/10th

The following phase was constructed 18 cm above Floor 9. It was represented by Floor 7, a stucco floor that was also replastered (Floor 6). Floor 5 exposed in EU B5-4

Figure X.8. Construction phase B-5/12th.

may correspond to this construction phase.

Construction phase B-5/11th

Eight centimeters above Floor 6, we exposed two plaster floors that were on top of each other. While Floor 4 was fairly preserved, the condition of Floor 5 was poor. Floor 4 exposed in EU B5-4 may have been constructed as part of this construction phase, although this floor was quite thin and was not replastered.

Construction phase B-5/12th

This construction phase was only exposed in EU B5-4. It consisted of a north-south alignment made of roughly worked limestone blocks. The interior surface of the platform consisted of flat stones (Figure 8).

Late Classic construction phases

Construction phase B-5/13th

A plaster floor exposed in EU B5-3 and B5-4 (Floor 3) represented this construction phase. It is interesting to note that the floor in EU B5-4 was sunken, and partially cut. The floor in EU B5-4 also was delimited in its southern and western edges by alignments made of well-cut stones. I believe that EU B5-4 Floor 3 corresponded to the exterior surface of a superstructure, while the plaster floor in EU B5-3 represented the interior area. Although we do not have enough evidence to support this hypothesis, I believe that this possible superstructure was associated with Structure B-5/sub exposed

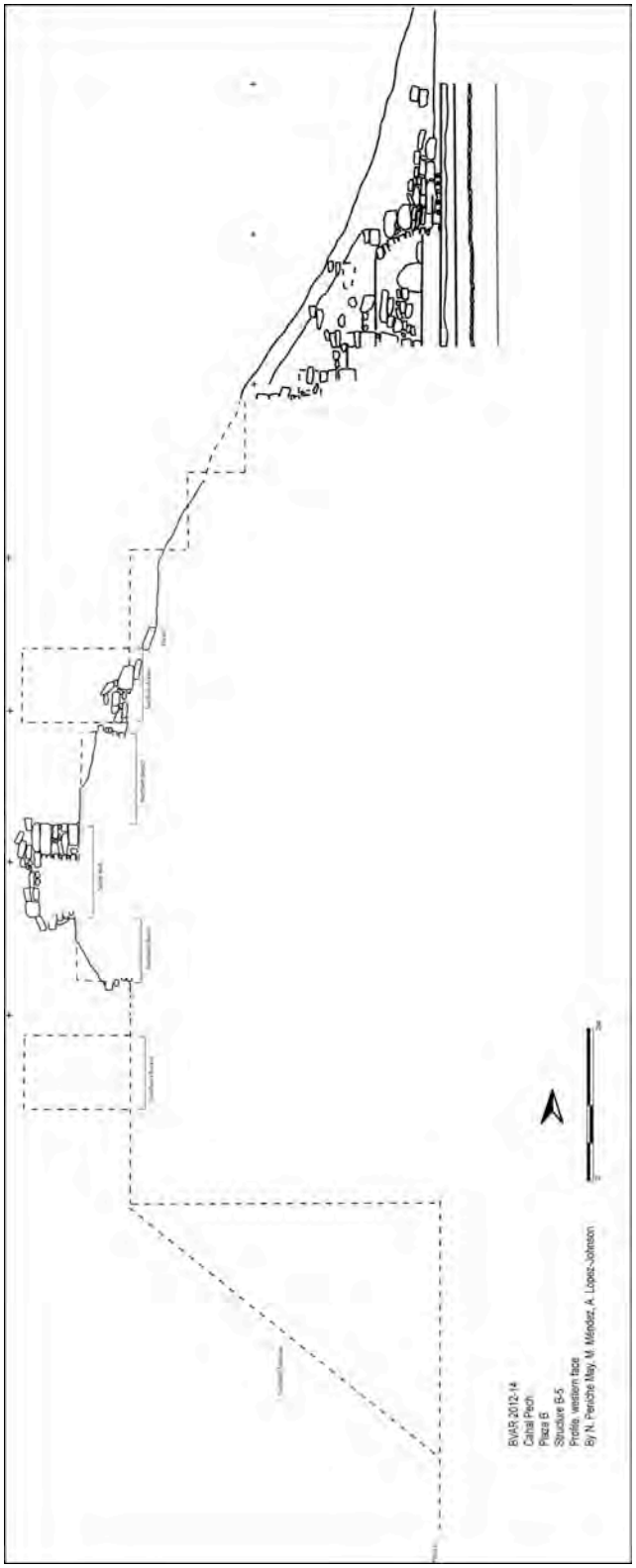

Figure 9: Cross-section of Structure B-5. Dotted lines signal reconstruction of form.

during the 2011-2013 field seasons (Peniche May 2013, 2014).

Construction phase B-5/14th

This phase corresponded to the well-preserved penultimate construction. With this construction, the different structures were unified to form a single large ranged-type building. Structure B-5/14th measured 40 m (east-west) by 17 m (north-west) and stood at least 5 m high from Plaza B level (although it was likely higher because the superstructure walls were collapsed). It counted with two staircases that faced Plaza B and Plaza G, although the main entrance seemed to be located in the northern side. In order to facilitate the description of this building, we will be divided into three sections: the northern body, the southern body and the superstructure (Figure 9).

As it was mentioned above, three terraces were exposed during the 2012 excavations of the northern section of the building. The first terrace rose 1 m above Plaza B Floor 2, while the other two terraces elevated approximately 70 cm. Based on this data, the building's total height and 2014 excavations, we estimate that the northen body counted with at least five terraces. These terraces were ca. 70 cm high and have a tread that ranged betweem 50 cm and 1 m. A staircase was attached to the northermost terrace. The dimensions and form of this feature are unknown because it was only partially excavated during the 2012 field season. We could established, however, that the staircase expanded out 1.60 m from the northernmost terrace and was flanked by two startaircase outsets.

The southern section was poorly preserved and the excavations were less extensive than the northern side. Although we still need data to corroborate it, we believe that the southern side of the structure consisted of a single body with outsets. This body stood 4 m from Plaza G level and was made of cut limestone blocks of diverse dimensions. A staircase was attached to this body and extended out 3.40 m southwards. At some moment, the southern section underwent a modification. A low terrace was added one meter out of the body.

The superstructure's formal characteristics are quite particular suggesting that B-5/14th fulfill a special, non-domestic function. We should emphasize that the superstructure was partially excavated and its southern section was poorly preserved. Therefore, we only have a glance of its form. I estimate that the dimensions of the structure were approximately 40 m (east-west) by 5 m (north-south) and it stood at least 1.20 m from its plaster floor. Our excavations only exposed the central section of this building, which was well-preserved despite the presence of trees.

Based on the current data, we can state that the access to the structure was not restricted. We identified two northern entrances during our excavations. The main and central access measured approximately 2.80 m. The second access was located 1.80 m eastwards and measured 1.80m. It is likely that a similar entrance was located westwards. Because the structure had a southern staircase, it is highly possible that other southern entrances had existed. The superstructure was divided into southern and northern

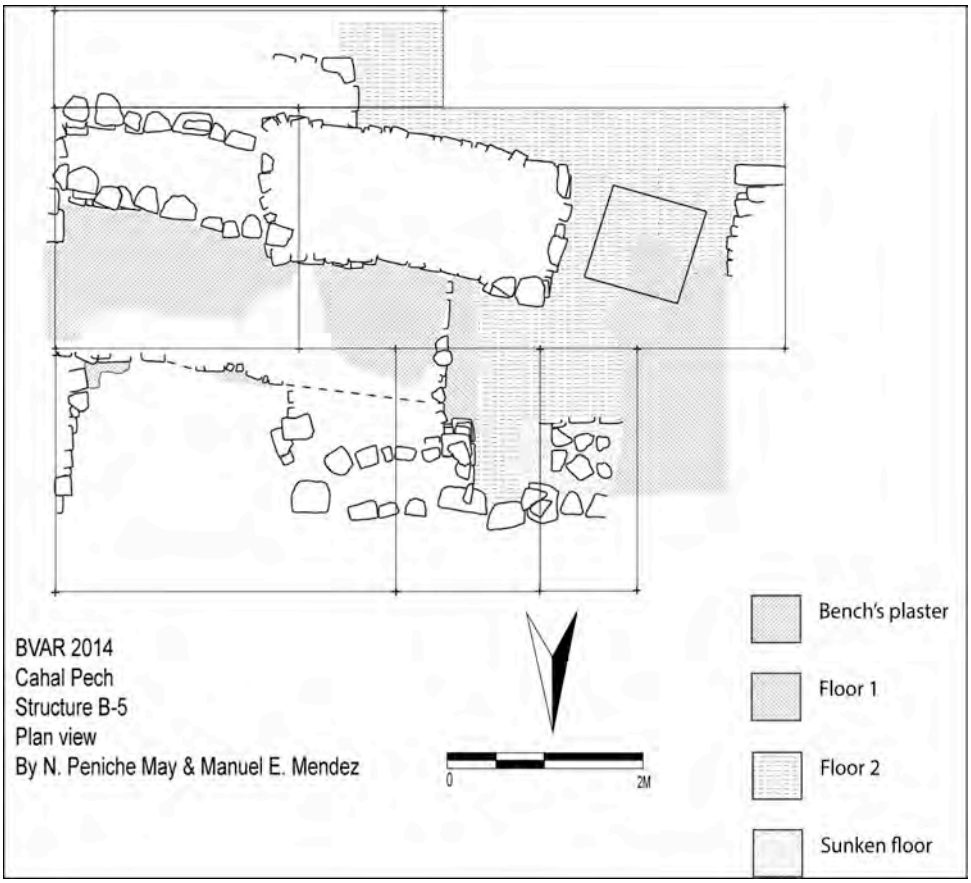

Figure 10: Plan view of Structure B-5's superstructure.

Figure 11: Structure B-5's superstructure.

Figure 12: Structure B-5's superstructure and its modifications.

sections by a 1.50-m spine wall running east-west but this spine wall did not run interruptedly, because there were points of access between the northern and southern sections, which matched up with the northern entrances. The walls were made up of well-cut stones that were resting on a well-preserved stucco floor that sloped down southwards. This surface was covered by another plaster floor (Figures 10 and 11).

The superstructure underwent several modifications. A large bench was constructed in the area that occupied the eastern access, which was delimited in part by the spine wall. Because it was partially exposed, the total dimensions of this feature were not established but it was noticed that it had an irregular form. We estimated that the northern section measured at least 4.20 m (east-west), while the southern section measured at least 3 m (east-west). In its northern axis, the bench reached a maximum dimension of 3.25 m, being shorter in its southern section. The height of the bench was approximately 58 cm from the plaster floor. The bench was covered by a thick layer of stucco, which was badly preserved in several areas of the feature. At some moment, an alignment facing north was constructed on top of the bench in order to connect the sections of the spine wall and separate completely the northern and southern sections of the bench. Later on, another alignment facing north was placed approximately 60 cm north of the first modification (Figure 12).

Construction phase B-5/15th

The last construction phase of Structure B-5 was poorly preserved. It was identified during the 2012 excavations of the staircase. At some moment during the Terminal Classic, the Late Classic staircase was dismantled and new staircase was constructed using roughly cut stones. Because of the nature of the excavations that were focused on Preclassic occupation and the poor preservation of the Terminal Classic building, we could not establish its formal characteristics.

CONCLUSIONS

As a result of the excavations conducted in several field seasons, we have gain a better understanding of the construction sequence of Structure B-5. It has been stated elsewhere that the occupation of this area started during the Cunil phase (1200-900 B.C.), when a series of domestic buildings were constructed in its northeastern section. The function of the constructed area switched to public during the late facet of the Kanluk phase (600-300 B.C.), time when the northwestern section was first occupied by a residence. All these constructions were covered by a cobbled-platform at the end of the Kanluk phase, which was later concealed by plaza floors during the Late Preclassic period (300 B.C.-A.D. 350). It was also during the Late Preclassic that the central section of Structure B-5 was first settled, although these constructions are not well understood yet. The same can be said about the Early Classic (A.D. 350-600) constructions.

Contrarily, the Late Classic (A.D. 600-90) phases are better understood, particularly the penultimate construction phase. So far, we have established that Structure B-5/14th had benches and multiple entrances facing south and north. Nevertheless, there are still questions about their morphological characteristics and, therefore, the activities conducted in this construction. On one hand, Structure B-5/14th may be a long, single-roomed building with benches and multiple entrances. Buildings with similar architectural features have been recognized as *popol nah* or council houses, which served as places where elites encountered to discuss and make decisions on the issues of the polity (Bey and May Ciau 2014). On the other hand, Structure B-5/14th may be divided into several rooms, each room with one or more entrances and benches. In this vein, the central rooms with benches may be classified as "presentation rooms," which were used to observe activities performed in Plazas B and G and preside over visiting delegations, presentations of tribute or gifts and public ritual performances such as the display of prisoners (Harrison 2003; Reents-Budet 2001). In either case, Structure B-5/14th held a special, no domestic function.

ACKNOWLEDGMENTS

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CONTINUING EXCAVATIONS ON STRUCTURE B7, CAHAL PECH: RESULTS OF THE 2014 SEASON

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INTRODUCTION

During the 2014 field season, excavations continued on Structure B7, focusing on the summit of the range-type structure. Excavations were conducted by students from the American Foreign Academic Research Program (AFAR) and the Belize Valley Archaeological Reconnaissance (BVAR). The purpose of placing units on the summit of Structure B7 was in attempts to expose any evidence of intact terminal phase architecture, allowing an evaluation of the Structure's form and possible function(s) to be made. Two looter's trenches atop Structure B7 were also cleared for examination.

Structure B7 borders the northern side of Plaza B and is a long range-type structure (Figure 1) measuring approximately 7.5 meters from the floor of Plaza B in the terminal phase. The building's basal dimensions are 18 meters north-south (Figure 2) and 35 meters east-west. The building is faced on the southern side with narrow central staircase.

PREVIOUS RESEARCH

In 2013, excavations were concentrated on exposing the basal architecture of structures B6 and B7. A total area of 52 x 5 meters was exposed, including the plaza floor, terminal architecture on both structures, an outset staircase associated with Structure B6, and a central staircase associated with Structure B7. The B7 staircase is inset and functions in the western directions with five visible steps. The architectural transition between B6 and B7 was also exposed, revealing that the two structures were connected and created the northern perimeter of Plaza B.

METHODOLOGY

All unit placement was coordinated with Dr. Jaime Awe of the Institute of Archaeology. Unit numbers continued from 2013 excavations. Six temporary datums were placed on the northern edge of the excavation. Excavations were conducted using cultural levels, all

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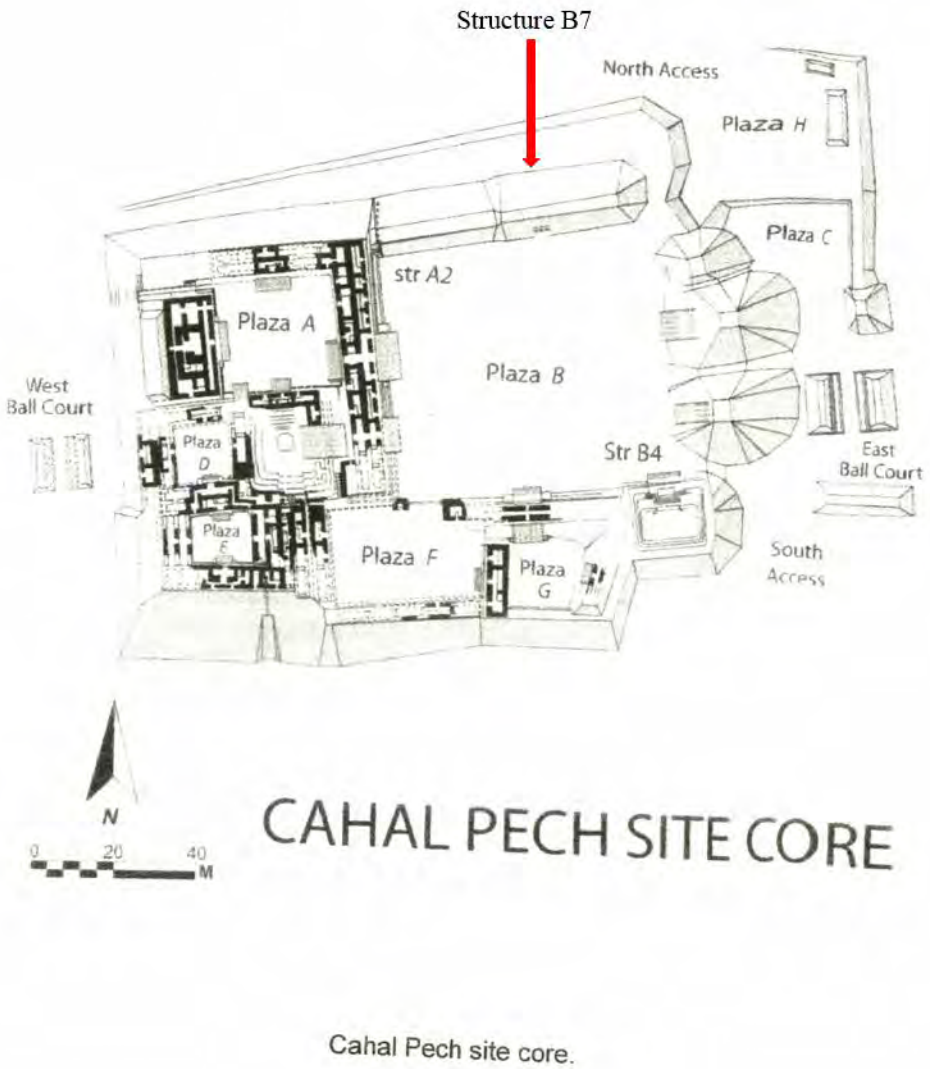

Figure 1: Map of Cahal Pech showing location of Structure B7.

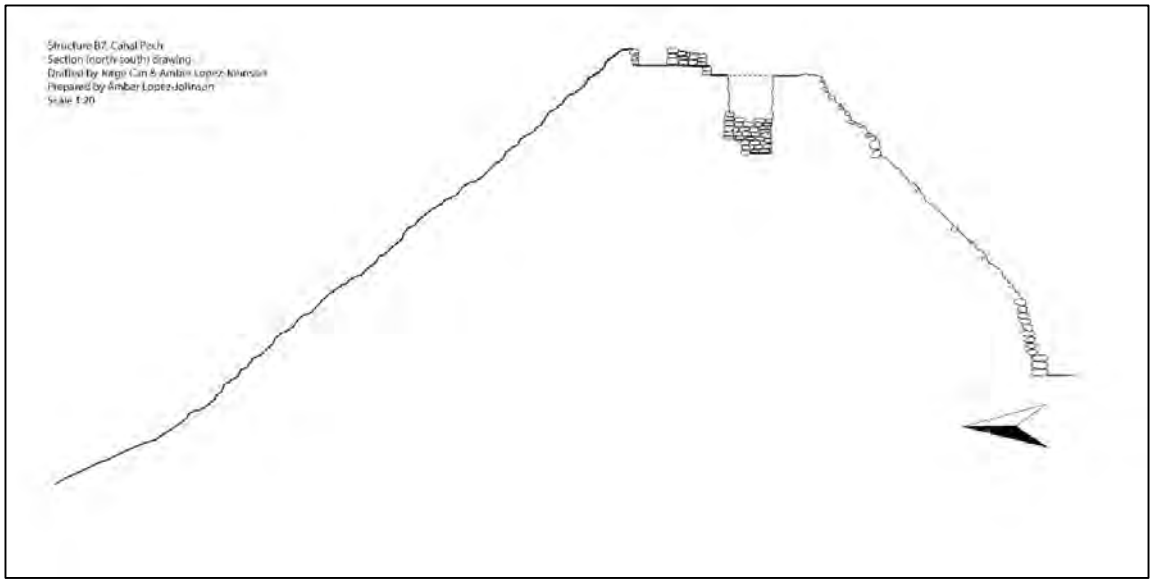

Figure 2: Section (north-south) drawing of Structure B7, showing central wall and penultimate architecture in the test pit, as well as the plaza floor and basal architecture.

matrices were sifted through ¼ inch screens, and all cultural material was collected and bagged according to unit, level and class. Collected artifacts were properly washed, photographed and inventoried in an excel spreadsheet. A complete analysis of the collected artifacts from both 2013 and 2014 excavations will be discussed in future reports.

The looter's trench on the eastern side of the summit was cleared for architectural evidence, resulting in the identification of two floors. To further explore these findings, a single 2 x 2 m unit (unit 8) was opened west of the looter's trench. Architectural evidence was exposed and subsequent units were opened on both sides of the looter's trench to follow the architectural evidence, resulting in 21 meters excavated east-west across B7's summit. The second looter's trench on the western side of B7 was also cleared for evidence and will be discussed below.

EXCAVATION RESULTS

Architecture

The central wall of the superstructure was exposed throughout the excavation and its width ranged from 97-113 cm, appearing to be somewhat narrower than an average spine wall. The southern side of the central wall was dressed with a basal molding facing towards Plaza B. However, the basal molding was not featured on the northern side of the central wall. The wall revealed three doorways and higher levelled rear rooms (Figure 3). Elevations throughout the excavation indicate that the front room floor and rear room

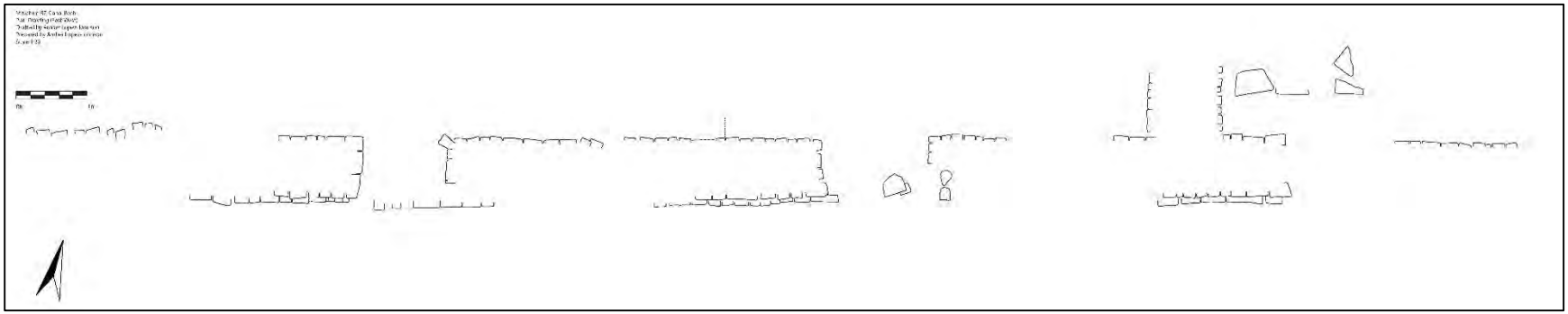

Figure 3: Plan view drawing of the superstructure's central wall showing three door ways.

Figure 4: Western looter's trench

floor was between 20-24 centimeters in height difference. As far as building sequence of the superstructure, it is evident that the front room floor was laid down first, the central wall second, and lastly, the higher levelled floor in the rear rooms.

Looter's Trenches

As previously stated, two looter's trenches on B7's summit were cleared for evidence. Initially, the looter's trench on the eastern side of the summit was cleared; most of the architectural evidence was destroyed by looter's, with the exception of the two floors, which guided our excavations for the season.

The looter's trench on the western façade of the superstructure was cleared and focused on revealing evidence of a second staircase and the corner of the superstructure's building platform. A second staircase on this western façade would allow access from B6's platform into B7's superstructure. However, the construction fill appeared to be backing masonry of the terraced wall, with no evidence of a staircase. As far as exposing a corner, we can say that it was either destroyed by looters or collapsed (Figure 4). Ultimately, we did find evidence that

Figure 5: Western looter's trench, showing two parallel rows of aligned stones and evidence of two floors.

supports the conjoined architectural transition between B6 and B7.

Large aligned stones (n/s) were uncovered, which made up the architectural wall of the western façade of B7. Unexpectedly, a second parallel row of smaller aligned facing stones were uncovered 70 cm west of the wall. Two floors were identified in the 70 cm space, the first floor was badly preserved, while the second floor was nicely plastered. Both sets of parallel stones were not sitting on top of either floors and appears to have been plastered over two phases of construction (Figure 5).

Penultimate Architecture

For dating purposes, a 1 by 1 test pit on the northern façade of the central wall was explored. Since a very limited amount of ceramic sherds were collected, the test pit continued to a depth of 170 cm. Two perpendicular walls of nicely preserved penultimate architecture that were uncovered. However, there is not enough evidence to discuss the form the penultimate architecture.

SUMMARY AND CONCLUSION

The data collected during this second year of excavation at B7 has presented some interesting information regarding its form and function. Although the whole structure has not been uncovered, some inferences can be made based on the basal and superstructure architecture.

The location of the B7 in a public plaza could advocate its public function, but this does not mean that access into the structure was entirely unrestricted. Also, the narrow inset staircase could have served to channel traffic into the building.

Spatially, the front facing room may have been an open patio space facing plaza B, while the rear rooms could have been open, allowing visibility of people approaching the site from the northern access point. The width of the central wall was unusually narrow and would not have been able to sustain a vaulted ceiling. In addition, the absence of collapsed corbelled vault stones and exterior walls reinforces this idea, and supports the idea that the wall may have supported a thatched roof instead.

The form of structure B7 can be appropriately described as a range structure, with two ranges of rooms. Based on the evidence so far, this structure may have been an administrative building in a public plaza with some restricted access into the upper terraces of the structure. It also may have served as a boundary between the northern periphery and Plaza B, monitoring the traffic of people coming into the ceremonial center. I will continue to develop more on the structure's function in my thesis, expanding on the argument for an administrative function, but for now, we have established a solid understanding of the structural form.

ACKNOWLEDGEMENTS

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EXCAVATION OF A1/A2 ALLEY, CAHAL PECH

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INTRODUCTION

This report summarizes excavations conducted by the Belize Valley Archaeological Reconnaissance Project at Cahal Pech, Cayo District, Belize during the 2014 field season. Supervising this excavation was Jaime Awe, Ph.D. and myself, George V. Kollias, MA candidate, Northern Arizona University. The 2014 season's work focused on the excavation of an elevated alley in Plaza A, between structures A1 and A2. This architectural feature has been designated A1/A2 Alley, which is used in this report and the artifact cards associated with materials recovered during excavation.

The excavation of A1/A2 Alley was conducted in two, four week sessions. The first session focused on excavating the above floor materials, the second session involved subfloor excavations of specific areas of interest. The work conducted during these session have been designated as Stage 1 and Stage 2, respectively. The excavation crew for the first session consisted of myself as crew chief, three workmen and seven BVAR students. Continuing as crew chief into the second session I was assisted by two workmen and six BVAR students. Excavations conducted in the A1/A2 Alley deliver a complete and intensive examination of this area at Cahal Pech.

Terminal Classic Ritual Activity in Plaza A

Considerable excavations were conducted by Dr. Awe in Plaza A during the 2002-2003 field seasons under the Tourism Development Project. These excavations revealed numerous ritual deposits in Plaza A that were dated to the Terminal Classic Period. These deposits, Dr. Awe has argued, are evidence of ritual activity in the Cahal Pech site core after the collapse and dispersal of the Classic Period population. The excavations conducted during the 2014 field season were conducted to supplement these earlier findings and finish the consolidation of Plaza A.

The Belize Valley Archaeological Reconnaissance Project: A Report of the 2014 Field Season, edited by Julie A. Hoggarth and Jaime J. Awe, pp. 110-122. Belize Institute of Archaeology, National Institute of Culture and History, Belmopan. © 2015

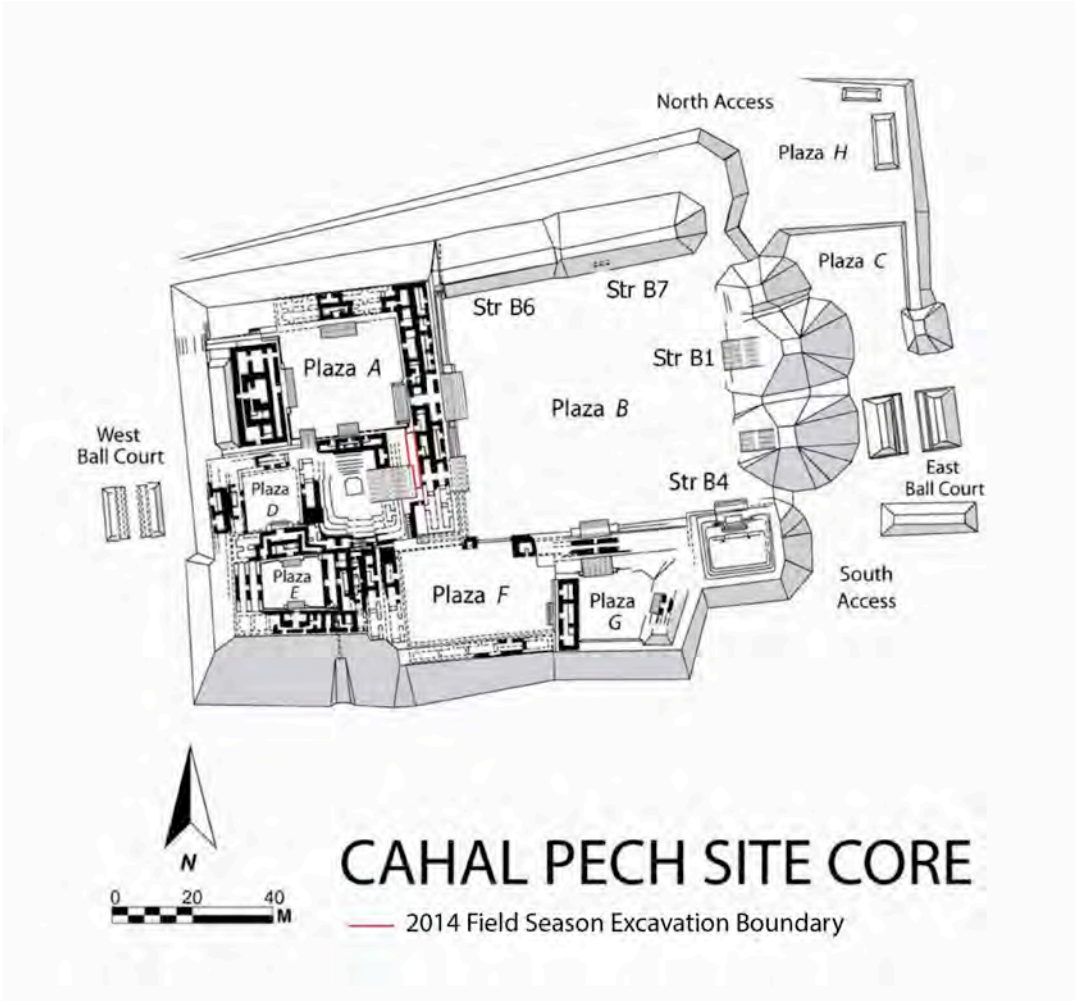

Figure 1: A1/A2 Alley excavation boundary within the Cahal Pech Site Core.

Excavation Goals

Heavy rainfall in Western Belize during January 2014 eroded areas of the eastern stairway of Structure A1 and an associated architectural feature previously unexcavated. Rainwater erosion exposed terminal classic material along a corridor between Structure A1 and A2 which was identified during a damage assessment conducted by the Institute of Archaeology. The IOA and BVAR were interested in fully exposing these Terminal Classic deposits, to determine the extent of deposited cultural material and establish a relative date for these deposits. Initial goals focused on complete excavation of the alley to the floor, cut floor features identified upon reaching the floor provided further goals to explore subsurface features.

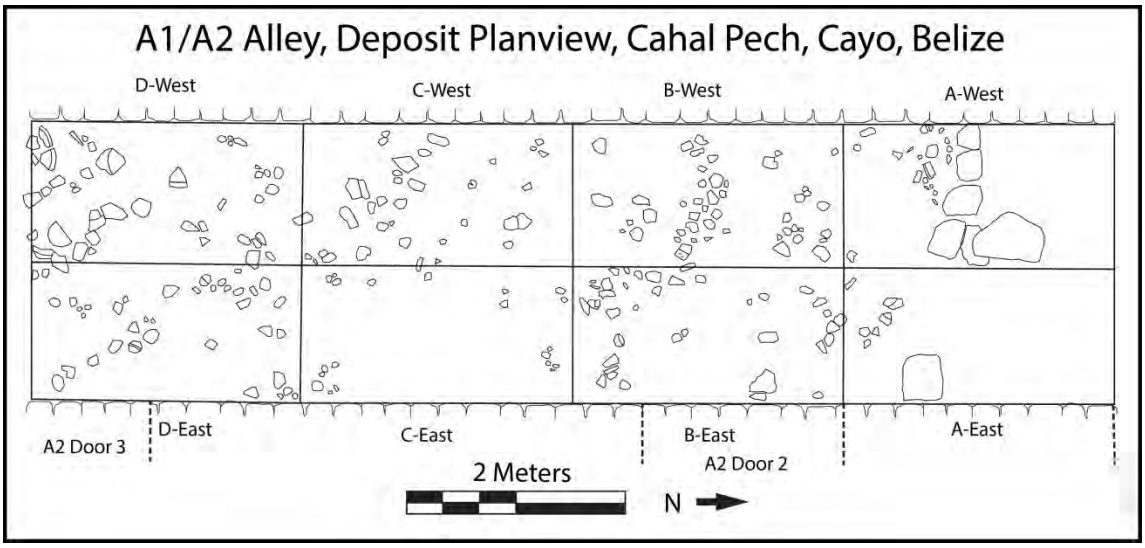

Figure 2: Planview map of the ritual deposit with unit boundaries and architecture.

Stage 1 Excavation

The first excavation stage was conducted over four weeks during the 2014 field season, between June 4 and June 27. Goals for this stage focused on reaching the first floor level of the alley and exposing the Terminal Classic deposits in-situ. The excavation area is bounded by Structure A1 and Structure A2 in an approximate North/South alignment. The excavation area measured 2m East/West by 16m North/South. A1/A2 Alley was initially subdivided into East and West designations while removing collapse material. This excavation level was designated as *Collapse* on the associated artifact cards and log. Upon reaching cultural deposits the centerline spanning North/South along the alley was subdivided into 16 excavation units measuring 1m x 2m, 8 excavation units on either side of the centerline (Figure 2). A Baseline was established at the northernmost boundary of the alley at the southern edge of A2 Door 1. These units were given alpha numeric designations 1A-East and 1A-West through 1H-East and 1H-West, as shown in Figure 1. Eastern units paralleled the base of Structure A2, while Western units paralleled Structure A1. Materials recovered from these units have been designated as *Level 1*. Excavation was conducted systematically in a North/South procedure, beginning with Units 1A-East and 1A-West. As the deposits in each unit were uncovered they were photographed and mapped as plan views. Deposited cultural material was identified in units 1A-East, 1A-West, 1B-East, 1B-West, 1C-East, 1C-West, 1D-East, 1D-West which represented a coherent deposit consisting almost entirely of ceramic materials. These units also exhibited burning patterns in the soil with associated burnt ceramics and charcoal samples which were retrieved for future analysis. The northernmost doorway of Structure A2 located in unit 1B-East exhibited burning patterns from the basal molding to approximately 15cm above the step. This may represent a ritual offering as a large quantity of burnt ceramic material was recovered from the base of the doorway and the

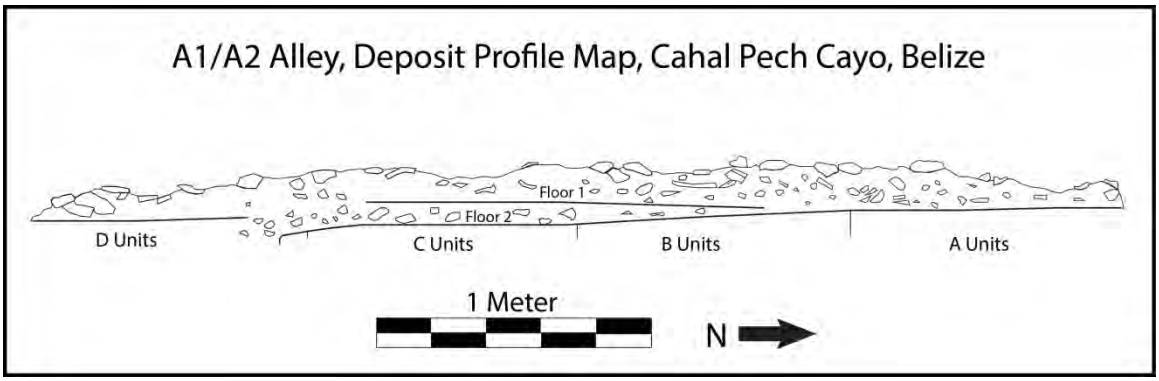

Figure 3: Profile map of the ritual deposit indicating artifact scatter and floor features.

floor immediately inside. The southernmost units, 1E-East, 1E-West, 1F-East, 1F-West, 1G-East, 1G-West, 1H-East, 1H-West, were almost entirely devoid of cultural artifacts, scattered materials in these units did not demonstrate cohesive association with the main deposit at the northern end of A1/A2 Alley. The deposit was located above Floor 1, resting on top of a layer of sediment approximating 1cm-5cm thick, suggesting the deposition of materials within the deposit occurred after the corridor had fallen out of regular use (*Awe personal correspondence*) (Figure 3). Stage 1 excavations concluded with mapping and clearing the deposit at the North end of A1/A2 Alley and finishing excavations upon uncovering the first floor.

Artifacts

A brief summary of materials recovered from Stage 1 excavations in A1/A2 Alley is provided below. Initial assessments made by myself and Dr. Awe conclude that the deposit exhibits ceramic materials typical of the Terminal Classic. The vast majority of the deposit was constituted of ceramic vessels in varying degrees of completeness, several partial vessels were recovered and further examples of nearly complete smashed vessels in-situ.

Table 1: Stage 1 Excavations Artifact Totals & Proportions

Artifact Type	Total Count	Percentage of Artifact Total
Ceramic	6398	95.83
Chert	166	2.48
Freshwater Shell	29	0.43
Marine Shell	32	0.47
Groundstone	6	0.08
Quartz	1	0.01
Cobble	3	0.04
Obsidian	18	0.26
Faunal Remains	17	0.25
Charcoal	6	0.08
Artifact Total	6676	100.00

Figure 4: Diagnostic and special ceramic finds. A ceramic finger drum (top center) and rim sherd (bottom left both feature psuedoglyphic inscriptions.

Ceramics

Ceramic materials constitute approximately 95% of the total artifacts represented in the deposit (Figure 4). Several partially intact vessels were recovered from the deposit in A1/A2 Alley. These included a Belize Red dish and bowl. Other examples include large broken rim sherds that were found aligned in-situ. Ceramic types recovered from the deposit include Belize Red, Platon Punctuated Incised, Mount Maloney, Alexander's Unslipped, Cayo Unslipped, and Myseria Applique (Gifford 1976). These types are typical of Terminal Classic deposits found at Cahal Pech during previous excavations, especially those found in Plaza A (*Awe personal correspondence*). Found in-situ in Unit 1H-West was a deposit of sherds belonging to an incensor, yet to be reconstructed, this feature is the most significant found outside the main deposit area to the north of A1/A2 Alley. Sherds resembling those found in this isolated feature were later recovered from several other units in the main deposit. A small ceramic finger drum was recovered from Unit 1C-West that exhibits a pattern of pseudoglyphs wrapped around the base. Two additional ceramic special finds include figurine heads found in the main deposit. Unit 1C-East contained the head of an anthropomorphic figure and 1A-West a human head with ear disks. These heads represent ritual offerings that were attached to full figurines before being snapped off and deposited (*Awe personal correspondence).* Several vessels recovered from the deposit have been partially reconstructed to provide examples of vessel types deposited in the northern extent of the corridor.

Figure 5: Anthropomorphic figurine head.

Figure 6: Human figurine head.

Figure 7: Chert stemmed bifacial tool.

Chert

The chert recovered from the deposit consists entirely of flake material, excluding two significant special finds. The first artifact is a medium sized stemmed bifacial tool measuring 5.5cm at the widest part of the blade, 7.5cm from the stem to the break, and 1.0cm thick. It features a notch along the blade edge that appears to have been added after the biface was already broken and may represent a ritual termination of the object (*Awe personal correspondence*). The second special find is a chert drill measuring 4.7cm from the hafting base to the drill head. The reaming chert artifacts found in the deposit consist of primary, secondary, tertiary flakes and debitage scattered evenly amongst the ceramic artifacts. Presence of every reduction stage may indicate reduction of chert on site as part of a ritual offering rather than materials transported from a workshop or refuse pile (*Awe personal correspondence*).

Obsidian

Obsidian artifacts recovered from the deposit consist entirely of prismatic blade fragments. Eighteen total blade fragments were recovered, in two isolated instances several fragments were deposited within close proximity of each other, suggesting that

Figure 8: Mano fragments found at opposite ends of the deposit.

they were placed together intentionally or represent several pieces of a full blade. Attempted fitting of these pieces has yielded no perceivable matched pieces.

Grinding Stones

Granitic grinding stones recovered in A1/A2 Alley include single handed ovular grinding stones, a fragmented mano and several metate fragments. The mano fragments appear to have constituted a single tool before being broken, one piece was found at the northernmost end of the deposit and the other in the south. Two small fragments of metate were also recovered.

Marine and Freshwater Shells

Both freshwater *jute* and marine shells were recovered during excavation of the deposit. Though many of the freshwater shells exhibit puncture holes characteristic of

Figure 9: Special find artifacts from the ritual deposit. A ceramic spindle whirl (top center) features a cross motif. A chert drill (top center) and two cobble burnishing stone (bottom left and right).

those used to extract the flesh of the *jute* none of the shells recovered exhibit any tooling or incision characteristic of jewelry.

Faunal Remains

Faunal remains found in the deposit exhibit, in some cases, burning and breakage. Several specimens have been identified as chicken and dog bone, the vast majority of the remains found were too fragmented to positively identify however (*Kirsten Green personal correspondence*). A single tooth, possibly belonging to a peccary, was found beneath the deposit in a shallow trench/cut floor feature.

Material Context & Conclusion

The archaeological materials recovered during this stage of excavation represent an assemblage of ritually deposited Terminal Classic materials. Ceramic and lithic materials, constituting the largest portion of the artifact assemblage, appear to have been deposited almost exclusively in the northern portion of this alley. The material deposit itself was not directly on the floor, but on top of 1-5cm of sterile matrix. Preliminary

ceramic dating indicates the deposit is constituted of Terminal Classic ceramics, associated materials are assumed to be deposited concurrently with these ceramics. Similar deposits excavated by Dr. Awe in Plaza A during the 2002-2003 field seasons under the Tourism Development Project have been dated to the Terminal Classic. The materials recovered in A1/A2 Alley reflect similar deposition patterns and artifact types as those excavated previously in Plaza A. This deposit is further evidence of Terminal Classic ritual activity in Plaza A and Cahal Pech after primary occupation of the site had ceased.

Stage 2 Excavation

The second session of the 2014 field season was spent investigating cut-floor features identified underneath the deposit excavated during the previous session in A1/A2 Alley. These cut-floor features where associated with Floor 1, the first floor identified underneath the deposit and sterile matrix that separated the material artifacts from the floor itself. Two units were placed to investigate these features, Unit 2 was placed 5m south of the original northern baseline established during Stage 1 Excavations, and measured 2x3m. An additional unit was placed along the northern baseline, Unit 3, which measured 2x3m. Initial expectations of these features supposed the presence of cached materials or ritual offerings. Excavations conducted in both units revealed no cached materials, but did reveal earlier construction features. Unit 2 was excavated to a depth of 3.5m below Floor 1. An architectural wall oriented East/West, with a doorway on the easternmost end, was found approximately 1m below Floor 1. Excavations continued to the floor upon which this wall was constructed approximately 2.5m below Floor 1. Additional investigation under this floor feature, Floor 5, were conducted through a 50x50cm test pit, which revealed an additional four floor construction phases. Unit 3 was excavated to a depth of 50cm, revealing previous construction features consisting of aligned facing stones and one identifiable floor feature. These features were associated with above floor stone alignments that were not part of the final construction phase, and may represent an attempt at sealing off access to the alley from the northern approach. Additional units were placed along the western face of structure A1. These units targeted areas of the basal construction that appeared to have significant damage and removal of architectural stone. These units were designated Deposit 1, 2 and 3 A1/Westside. Each of these features contained ceramic, lithic and faunal materials similar to those identified in the above floor deposit in the alley, and were located along the expanse of the deposit. Investigations in structure A2 were also conducted, which consisted of a single unit placed in the doorway designated A2 Door 2, following burning patterns associated with the deposit excavated previously. Stage 2 excavations in all units concluded upon reaching floor and architectural features beneath deposited archaeological material.

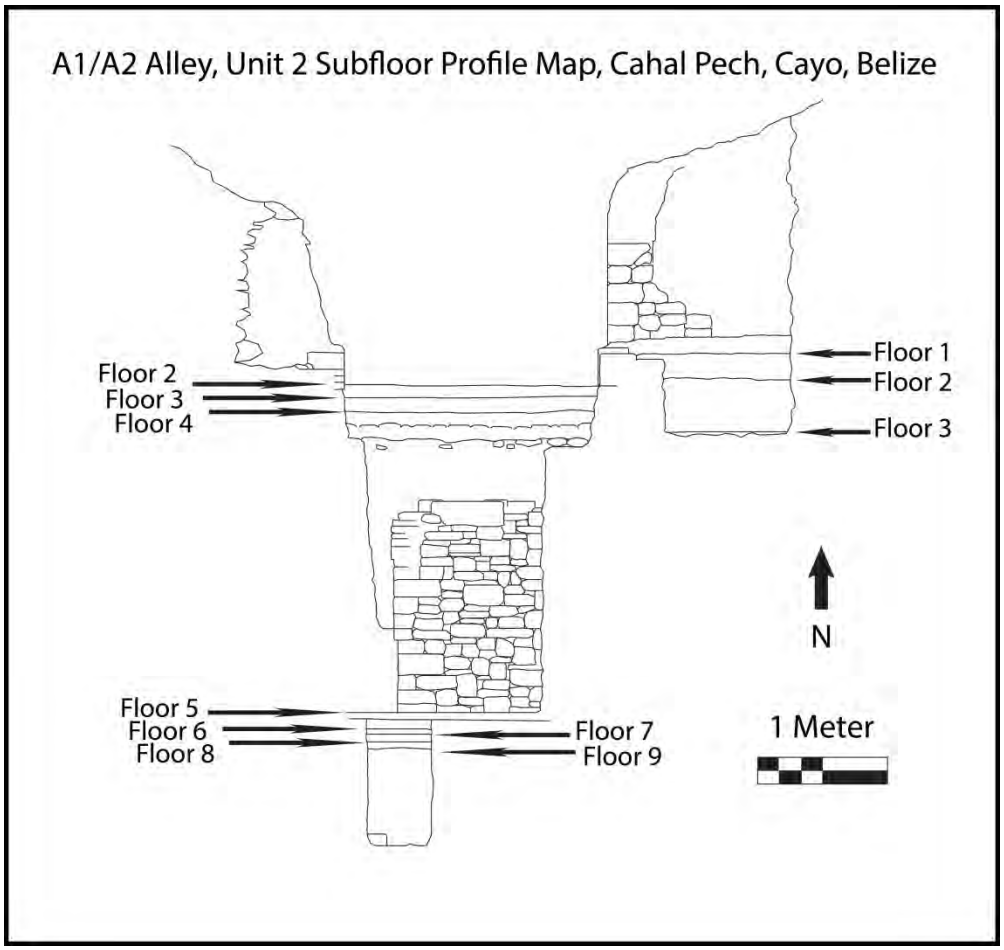

Figure 10: Profile map of Unit 2 subfloor excavations, the wall feature terminates in a doorway to the east.

Artifacts

Above floor Materials recovered during Stage 2 Excavations display similar features and pattern to those recovered in the above floor deposit excavated during Stage 1. Subfloor artifacts are associated with fill, and yielded few identifiable diagnostics. A summary of these findings is provided in Table 2.

Ceramics

Ceramic materials recovered during Stage 2 Excavations indicate association with the deposit excavated during Stage 1 Excavations. All of the ceramic material recovered from A1 Deposits 1, 2, and 3 and the unit placed in A2 Door 2 are diagnostic of the Terminal Classic. These materials are believed to have been deposited in association with the ritual activity conducted in A1/A2 Alley. Ceramic materials recovered in Unit 2 and Unit 3 subfloor excavations are associate with fill material, and yielded few diagnostic pieces which have not yet been identified.

Table 2: Stage 1 Excavations Artifact Totals & Proportions

Artifact Type	Total Count	Percentage of Artifact Total
Ceramic	1575	89.23
Chert	147	8.32
Freshwater Shell	10	0.57
Marine Shell	3	0.17
Groundstone	3	0.17
Quartz	8	0.45
Cobble	1	0.07
Obsidian	1	0.07
Faunal Remains	5	0.28
Charcoal	11	0.62
Human Tooth	1	0.07
Artifact Total	1765	100.00

Chert

Chert materials were recovered from all units. No utilitarian artifacts were recovered, the chert materials recovered consisted solely of flakes and cores with varying degrees of reduction evident. The vast majority of the chert recovered is associated with the fill material removed from Unit 2.

Obsidian

A single obsidian blade fragment was recovered from the units placed along the Westside of Structure A1. This blade exhibits similar depositional patterns to those found in the above floor deposit excavated during Stage 1.

Grinding Stones

A single grinding stone specimen was recovered from Unit 2. The large metate fragment was found on top of the wall feature, surrounded by approximately two dozen slate fragments (Figure 11).

Shell and Faunal Remains

Large quantities of both materials were recovered during Stage 2 Excavations. These materials were found in Unit 3, A2 Door2, and A1 Westside Deposits 1, 2, and 3. Indications of burning are present on a large number of these samples.

Figure 11: Metate fragment recovered from Unit 2 subfloor excavations.

Material Context & Conclusion

Archaeological materials recovered during Stage 2 Excavations expand upon the material assemblage identified during Stage 1. Materials recovered from the units placed along the west side of Structure A1 and A2 Door 2 exhibit similar depositional patterns as those identified in the above floor deposit. Identifiable diagnostic ceramics are typical of the Terminal Classic and are associated with the same depositional context as the above floor deposit. Subfloor excavations yielded few diagnostic artifacts, but did reveal earlier construction phases of Structures A1 and A2. Stage 2 Excavations provided further material evidence of Terminal Classic ritual activity in Plaza A as well as revealing earlier construction phases of this unique are of Cahal Pech.

ACKNOWLEDGEMENTS

I would first like to thank Dr. Awe for his guidance and tutorship, as well as the Belizean Government, and Institute of Archaeology for allowing us to conduct archaeological investigations at Cahal Pech. Additional thanks to all of the students who participated in my excavations, and the BVAR staff for their support and expertise. Funding for research at Cahal Pech was granted by the Tilden Family Foundation and the BVAR Field School.

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EXCAVATIONS IN PLAZA G, CAHAL PECH: 2014 FIELD SEASON

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INTRODUCTION

Cahal Pech is a medium-sized Maya center located in a strategic position approximately 2 km south of the convergence of the Macal and Mopan Rivers in the Upper Belize Valley. The site core includes an acropolis located in the crest of a steep hill (Healy et al. 2004). This acropolis is composed by seven plazas. Plaza G is located just south of Plaza B and east of Plaza F. It covers an area of approximately 15 m^2 and is bordered by Str. B-5 to the north, F-2 to the west, G-1 to the south and G-2 to the east. This courtyard has been investigated only through three small test pits (Figure 1).

In 1990, Jaime Awe conducted several test pits across the acropolis in order to assess the site core's construction sequence. As part of this research, Awe (1992:165-167) excavated a 1 x 1m test pit, which was placed at the base of Str. G-1, although the precise location is not shown. As a result, five plaza floors were exposed in Unit 1 and sterile level was reached at 1.65 m below the plaza surface. Floors 5 and 4 were placed one on top of the other and date between the Late Preclassic and Early Classic. Floor 3 was constructed during the Early Classic. Floor 2 was built between the Early and Late Classic. Floor 1 dated to the Late Classic (Figure 2).

In 2000, as part of the excavation strategy of Str. F-2, Carolyn M. Audet also explored Plaza G. Audet (2001:277) placed two test pits in this courtyard—Units 57 and 50. Unit 57 was a 2 x 3 m test pit placed in the center of Str. F-2's eastern staircase. This unit went down for approximately 1 m before excavations were ended. No further information was provided about this unit. Unit 50 was placed roughly 3 m east from the base of the eastern staircase and aligned with the middle of the stairs. This unit exposed five construction phases and went down 3.4 m below the plaza surface. G-Plaza/1st was a single course, 15 cm high wall aligned east-west. It was probably constructed during the Middle Preclassic. Plaza G/2nd was a 10-courses high retaining wall (1.86 m) that was built using large and faced limestone blocks. Plaza G/3rd was a soft plaster floor built 20 cm above Plaza G/2nd. Plaza G/4th was another plaster floor built 30 cm above Plaza G/3rd. Two burials were found under this stucco floor. Plaza G/5th was the

The Belize Valley Archaeological Reconnaissance Project: A Report of the 2014 Field Season, edited by Julie A. Hoggarth and Jaime J. Awe, pp. 123-129. Belize Institute of Archaeology, National Institute of Culture and History, Belmopan.

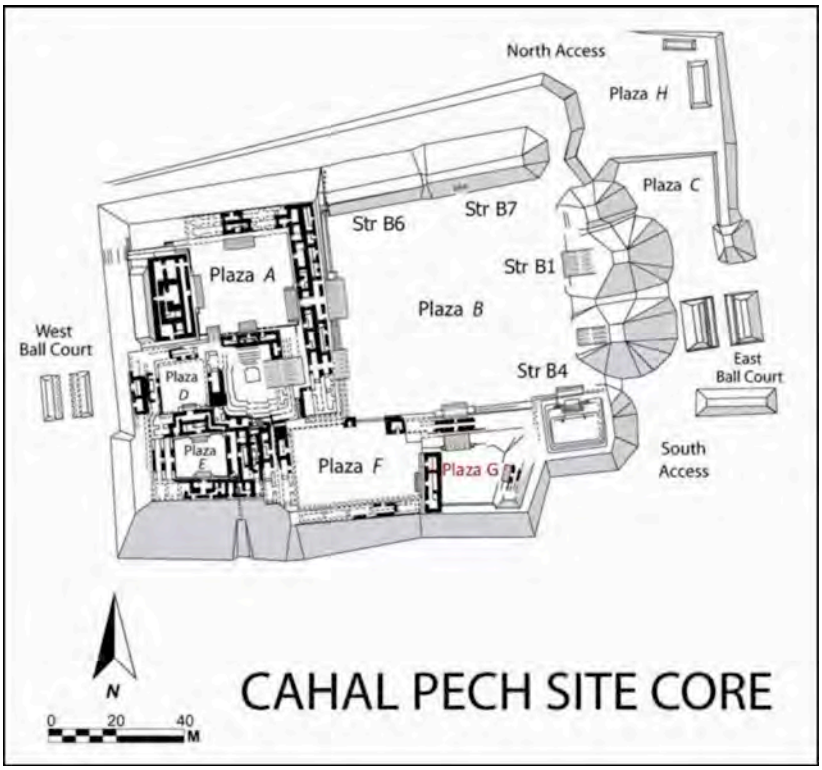

Figure 1: Map of Cahal Pech acropolis.

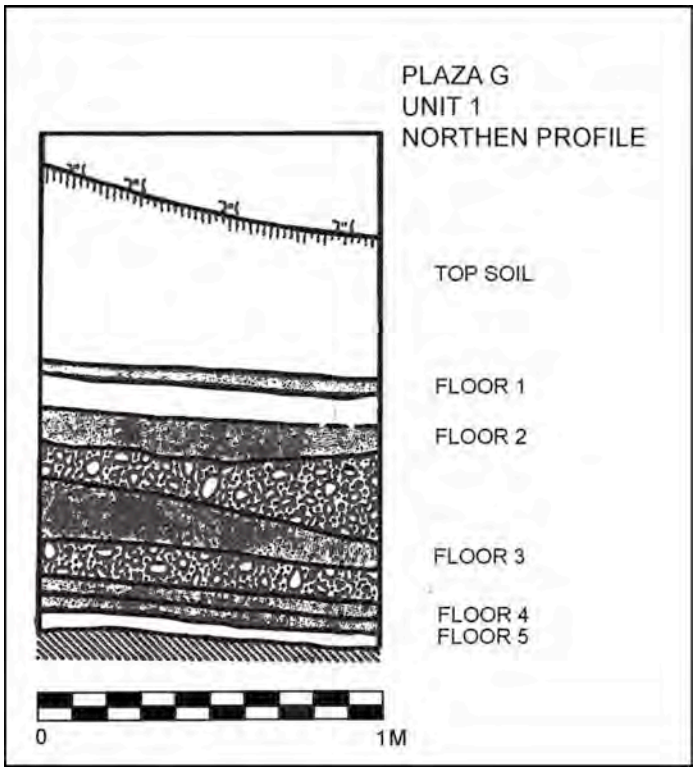

Figure 2: Northern profile of Unit 1 placed at the center of Plaza G in 1990 (Modified after Awe 1992:166).

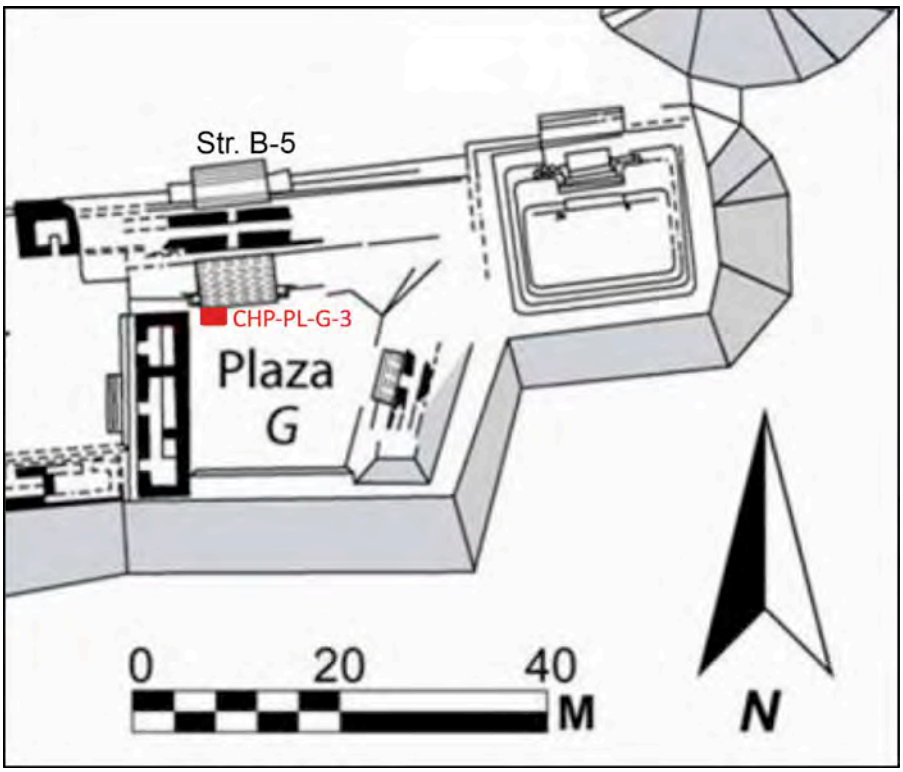

Figure 3: Map of Plaza G showing the location of EU CHP-PL-G-3.

terminal plaza floor found 20 cm above Plaza G/4th .

During the 2014 field season of the BVAR project, we decided to place a test pit close to Structure B-5 in order to explore the northern area of the courtyard. The goal was to achieve a better understanding of the plaza's construction sequence.

METHODOLOGY

In order to explore Plaza G, we placed a 2 x 2m test pit in front of Str. B-5's southern staircase (Figure 3). This excavation unit was named CHP-PL-G-3. Excavations were conducted using both cultural and arbitrary levels. Context associations followed standards established by the BVAR project (BVAR Supervisor's Manual n.d.). Artifacts were collected and separated based on level, lot and context. All matrices were screened through ¼-inch mesh. Collected artifacts are in the process of being analyzed and the results will be discussed in future reports.

EXCAVATION RESULTS

Excavation unit CHP-PL-G-3 measured 2 x 2m and went down 2.42 m below the plaza surface. We exposed twelve plaster floors that correspond to ten phases of construction spanning from the Middle Preclassic to the Late Classic (Figure 4).

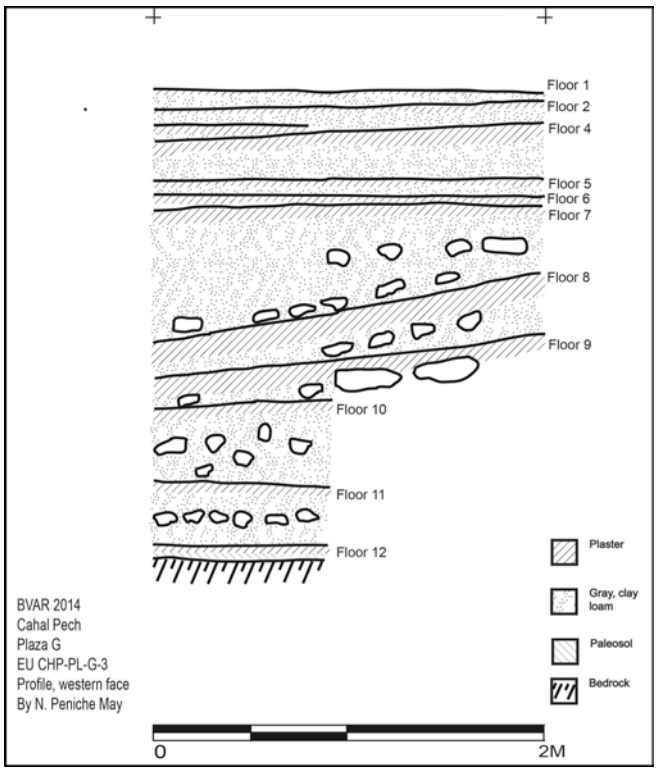

Figure 4: Profile view of excavation unit CHP-PL-G-3.

Plaza G/1st

This construction phase is represented by Floor 12. This floor is a 4 cm thick plastered surface that was constructed on top of the bedrock and paleosol. In order to build the stucco floor, the paleosol was scraped to level it with the highest point of the bedrock, which slopes up westwards. The few pottery recovered beneath Floor 12 suggests that this surface was built during the late Middle Preclassic period. Along with ceramic sherds, we also uncovered chert, freshwater shell, cobble, charcoal, and a perforated disc made of chert.

Plaza G/2nd

The next construction phase consists of Floor 11—a plaster floor built 32 cm above Plaza G/1st. This floor was 6 cm thick and was probably built during the late facet of the Middle Preclassic period. Among the materials uncovered beneath Floor 11 we can mention ceramic, chert, freshwater shell, marine shell, cobble, quartz, fauna, charcoal, and a small ball made of obsidian.

Plaza G/3rd

Plaza G/3rd consists of a 6-cm-thick plaster floor (Floor 10), which was badly preserved. Based on the associated pottery we can suggest that this floor was constructed during the Late Preclassic. Besides ceramic, we also recovered chert, freshwater shell, marine shell, cobble, slate charcoal, and a chert micro-drill.

Plaza G/4th

This construction phase is represented by Floor 9. This well preserved stucco floor is approximately 10 cm thick and is between 16 cm and 32 cm above Floor 10. The floor slopes down southwards, almost 30 degrees. Based on the ceramic uncovered beneath it, this floor was constructed during the Late Preclassic period. In addition to pottery, we recovered chert, freshwater shell, fauna, quartz, charcoal, and a smoother made of cobble.

Plaza G/5th

Plaza G/5th consists of another thick plaster floor (approximately 12 cm) that slopes down southwards. Floor 8 was between 18 cm and 32 cm above Floor 9. Based on the ceramic uncovered beneath it, this floor was constructed during the Late Preclassic period. Among the materials uncovered, we can mention ceramic, chert, freshwater shell, fauna, obsidian, quartz, slate, charcoal, and cobble.

Plaza G/6th

This construction phase is represented by two consecutive stucco floors (Floors 7 and 6). Floor 7 is a 6-cm thick stucco floor that was constructed between 36 cm to 66 cm above Floor 8. Floor 6 was built on top of Floor 7, perhaps to repair it. Both Floors 6 and 7 were poorly preserved since we only exposed their ballast. Some of the pottery recovered beneath Floor 7 was identified as belonging to the Savana Group, although it was mixed with Late Preclassic pottery. Besides ceramic, we uncovered chert, freshwater shell, marine shell, fauna, obsidian, cobble, slate, charcoal, a biface fragment, three figurine fragments, and two balls made of chert.

Plaza G/7th

In the next construction phase, another stucco floor was constructed 8 cm above Plaza G/6th (Floor 5). This floor was thin in comparison to other floors (4 cm thick) and was poorly preserved since we only exposed its ballast. Based on the pottery recovered during the excavation of this phase, we can suggest that Floor 5 was built during the Classic.

Plaza G/8th

Floor 4 represents the following construction phase exposed in the excavation unit. This stucco floor was between 3 cm and 8 cm thick and slightly sloped down southwards. At some point, Floor 4 was partially covered by another stucco floor—Floor 3. With the construction of Floor 3, the surface was leveled and, as a result, the slope disappeared. During the excavation of this construction phase, we uncovered ceramic, chert, freshwater shell, marine shell, quartz, obsidian, charcoal, a ball made of chert, and a biface fragment.

Plaza G/9th

This construction phase consists of Floor 2, which was located 10 cm above Plaza G/9th. This stucco floor was approximately 4 cm thick and was poorly preserved. Based on the pottery recovered beneath this surface, it is highly probable that this floor was built during the Late Classic. Chert and freshwater shell were also uncovered during the excavation of this context.

Plaza G/10th

Plaza G/10th represents the last construction phase exposed in the excavation unit. It consists of a 7-cm-thick plaster floor (Floor 1) located between 6 cm to 10 cm above Plaza G/9th. This well preserved stucco floor functioned as the base of Str. B-5's terminal phase built during the Late Classic. During the excavation of this context, we recovered ceramic, chert, and freshwater shell.

CONCLUSIONS

The excavation unit CHP-PL-G-3 was conducted to further explore Plaza G's construction sequence. Our main hypothesis during the 2014 field season was that the courtyard's northern area could have been occupied earlier than the southern and middle sections since it is closer to Plaza B, the earliest place of architectural construction in the site.

Based on previous excavations, we know that the southern section of Plaza G only underwent five construction phases represented by five stucco floors. The earliest plaster floor was built between the Late Preclassic and Early Classic, while the oldest one was constructed during the Late Classic (see Figure 2). Excavation of Unit 50, roughly located in the middle of the plaza, also exposed five construction phases. Unlike Unit 1, the earliest construction phase in Unit 50 was a low wall, which was probably built during the Middle Preclassic period. Unfortunately we do not have enough information to determine an early or late facet date for this architecture. The following phase consisting of a 1.86-m-high retaining wall suggests a major architectural modification either to raise the level of the plaza or construct a platform. This retaining wall was covered by three consecutive plaster floors. Unfortunately, there is not information about the possible date of construction of these construction phases.

The excavation of CHP-PL-G-3 provided irreplaceable data to achieve a better understanding of the construction history of both Plaza G and Cahal Pech acropolis. As it was mentioned above, we hypothesized that the courtyard's northern area had an earlier occupation in comparison with the southern and middle sections since it is closer to Plaza B. Our excavations did not support our hypothesis. The earliest phases of construction represented by Floors 12 and 11 were assigned to the late facet of the Middle Preclassic These floors could have been associated with the low wall exposed in Unit 50. Interestingly, the northern unit exposed a higher degree of construction activity than the middle and southern sections. Ten construction phases were exposed, although no architecture was exposed with exception of plaster floors. Likely, the multiple plaster floors were associated with the different architectural phases of Structure B-5 (see Peniche May 2015 in this volume). To date, Plaza B continues being the earliest place of architectural construction at Cahal Pech with architecture dating to the terminal Early Preclassic (1200-900BC). Plaza G did not see construction activity until the second part of the Middle Preclassic (600-300BC), when the population at the site increased and new areas at the acropolis and periphery were first settled.

ACKNOWLEDGMENTS

I would like to thank Dr. Jaime Awe, director of the BVAR project for the opportunity to work on Cahal Pech. We also thank to the BVAR students Athena Zissis, Matthew Ulmer and Marta Krzyzanska who spent four weeks excavating the test pit. Funding for research at Cahal Pech was granted by the Tilden Family Foundation and the BVAR Field School.

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EXCAVATIONS OF STRUCTURE G-2, CAHAL PECH: 2014 FIELD SEASON

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INTRODUCTION

Cahal Pech is a medium-sized Maya center located in a strategic position approximately 2 km south of the convergence of the Macal and Mopan Rivers in the Upper Belize Valley. The site core includes an acropolis located in the crest of a steep hill and covers approximately one hectare (Healy et al. 2004). Plaza G is located just east of Plaza F and south of Plaza B and covers and approximated area of 15 m^2. It is bordered by Str. B-5 to the north, F-2 to the west, G-1 to the south and G-2 to the east. Str. G-2 is 15 m long, 10 m wide and approximately 2 m high and abuts Str. B-4.

In 1989, Jaime Awe conducted the excavation of Str. G-2 in order to explore the possibility that this building contained evidence of Preclassic occupation (Awe 1992:170). A T-shaped trench (Operation G-2:1) was placed across the medial and primary axes of the building. After exposing the terminal phase architecture, a 1 x 1 m sub-unit was excavated into the center of the mound and, as result, three construction phases were revealed. G-2/1st consisted of a raised platform that supported at least one superstructure. Awe (1992:170) hypothesized that this room was a masonry building with a perishable ceiling. Below the plaster floor of the raised platform, excavators discovered a cache containing five pottery vessels nested on each other, which date to the Early Classic. G-2/1st was demolished during the construction of the following phase, G-2/2nd, that dates to the Late Classic period. The construction phase G-2/2nd was represented by a double-vaulted building set above a raised structure with a doorway that led down to Plaza G. Awe (1992) reported that doorways through the walls of the rooms provided access from the western to the eastern side of the building. Sometime after the construction of the building, a second floor and a large bench were added to the eastern chamber. G-2/3rd also was constructed during the Late Classic period and its construction meant the

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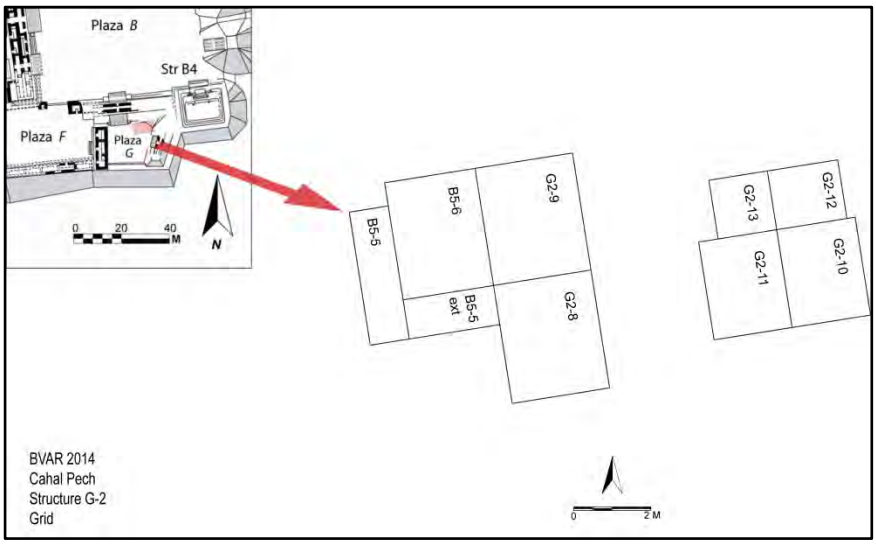

Figure 1: Grid of excavations conducted by 2014 BVAR students.

demolition of its precursor. G-2/3rd consisted of a large building platform that most probably supported a perishable building. According to Awe (1992:172), very little of the G-2/3rd architecture remained preserved.

In 2013, Structure G-2 was again subject of excavations, which were supervised by Norbert Stanchly (2014). 2013 excavation units (Units 2, 3, and 4) were placed at the southern end of the structure. The objective of these excavations was to define the extent of a Terminal Classic midden deposit discovered in the area between Structures G-1 and G-2, investigate the final use of Plaza G, and expose the terminal phase of construction of Structure G-2. As a result of the excavations, it was established that Structure G-2 "consisted of two terraces each likely having 6-7 courses of cut stones originally" (Stanchly 2014:21). At some point, a north-south running wall was added to the southern end of the building with the goal of blocking access into Plaza G from between Structures G-1 and G-2. In addition, the excavations also exposed a refuse deposit resting against terminal architecture that was interpreted as post-abandonment activities.

During the 2014 field season, excavations of Structure G-2 aimed to expose the terminal phase of the building. These archaeological activities were conducted by the Utah team supervised by Cameron Griffith, the American Foreign Academic Research (AFAR) program supervised by C. Mathew Saunders, and BVAR students supervised by the senior author and Antonio Beardall.

METHODOLOGY

To further explore the terminal construction phase of Structure G-2, the BVAR team placed six excavation units that were oriented 9º east of magnetic north—following the orientation of the building. The dimensions of the excavation units were diverse because they were established based on the excavation needs (Figure 1).

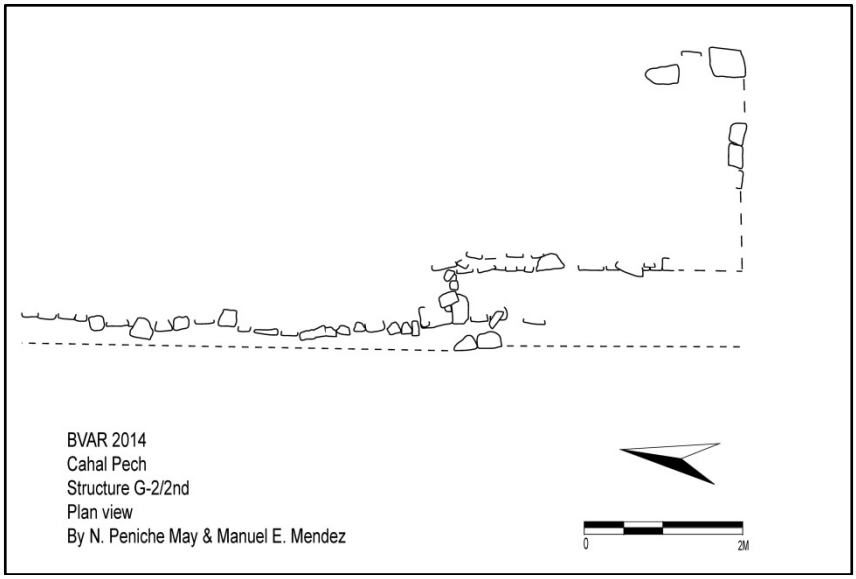

Figure 2: Plan view of Structure G-2/2nd.

We also continued exploring some units opened by Saunders and Griffith's teams in order to expose the terminal construction phase. Three small test pits were placed to explore the substructure.

Excavations were conducted using both cultural and arbitrary levels. Context associations followed standards established by the BVAR project (BVAR Supervisor's Manual n.d.). Artifacts were collected and separated based on unit, level, lot and context. All matrices were screened through ¼-inch mesh. Collected artifacts are in the process of being analyzed and the results will be discussed in future reports.

EXCAVATION RESULTS

As a result of the excavations, we identified two construction phases, which likely correspond to Awe's (1992) G-2/2nd and G-2/3rd buildings described above.

Construction phase G-2/2nd

Although the total dimensions of G-2/2nd were not established during the 2014 field season because it was partially exposed, we could determine some of its morphological characteristics. The basal platform of the building was rectangular in shape and abutted Structures B-5 and B-4. It measured 9 m north-south by at least 3.5 m east-west and rose approximately 1.70 m from its plaza floor. The northernmost section of the basal platform consisted of a wall made of cut limestone blocks ranging between 10 and 25 cm. This section rose at least 1.70 m from the plaza floor and extended 5.4 m north-south and 3.5 m east-west (Figure 2).

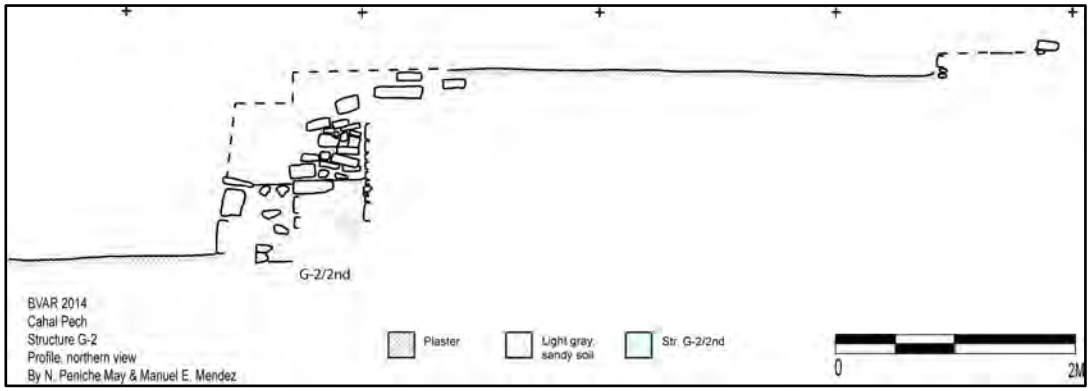

Figure 3: Plan view of Structure G-2/2nd.

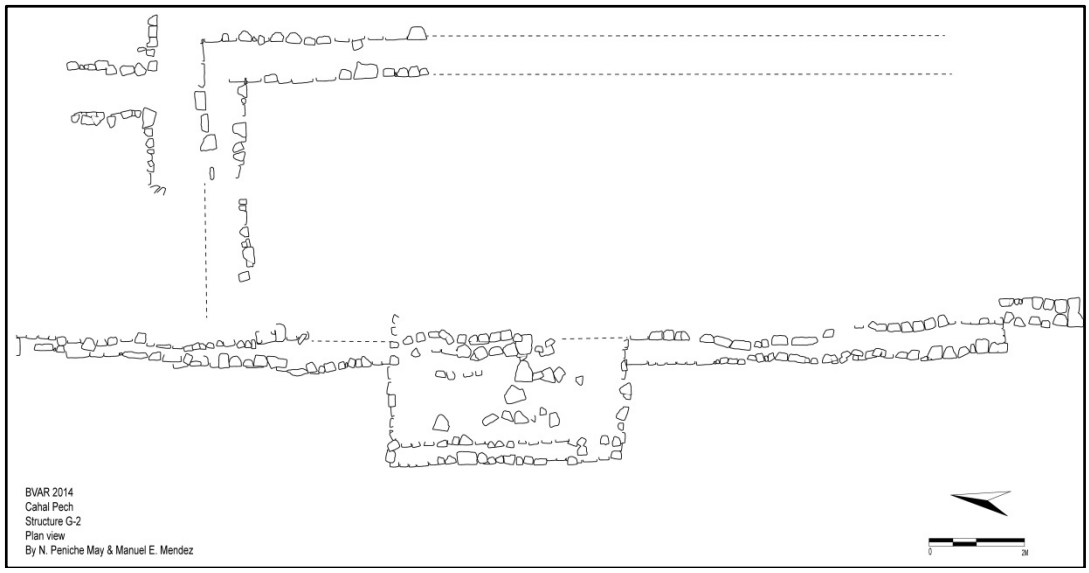

Figure 4: Plan view of Structure G-2/3st.

In the southern section, the wall went in 60 cm and extended 3.6 m north-south. In this section, the wall had three bodies, which were 30 cm, 40 cm, and 80-100 cm high, respectively. The bodies were made of cut stones of various dimensions, ranging from 12 cm to 36 cm in length. The tread of the first two bodies were 30 cm and 60 cm approximately. All treads were finished with plaster. The first body could have extended northwards but we do not have evidence to corroborate this hypothesis (Figure 3).

Construction phase G-2/3rd

During the construction of the following phase, the previous basal platform was almost completely covered and a larger building, designated G-2/3rd, was constructed. G-2/3rd consisted of a basal platform, a superstructure and a staircase (Figure 4).

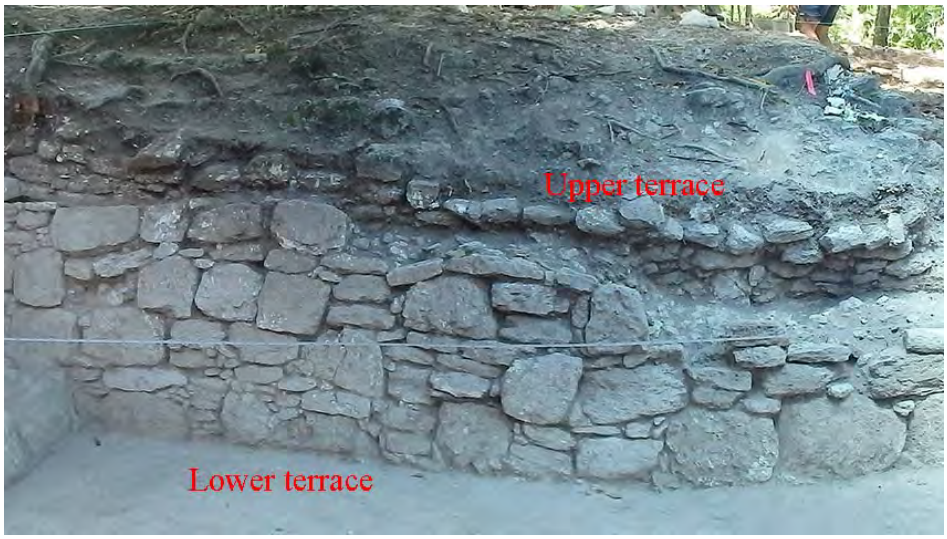

Figure 5: Northern section of Structure G-2/3rd's basal platform.

The basal platform was likely rectangular in shape. It measured 21 m north-south by at least 7.30 m east-west and rose between 1.60 and 1.80 m from the plaza floor. The basal platform consisted of two terraces. The lower terrace was approximately 1.26 m tall and was made of seven courses of cut stones. The dimensions of these stones varied. In the northern section of the terrace, the stones ranged between 20 cm and 50 cm in length and between 10 cm to 40 cm in thickness. Contrarily, in the southern section, the dimensions of the stones were fairly uniform, measuring 15-20 cm in length and 8-10 cm in thickness. The upper terrace was very interesting. In the northern section, this terrace was achieved reusing the tallest body of G-2/2nd. The upper terrace reached a height of 1.60-1.70 m from the plaza level but only five courses of stones (approximately 50 cm) were visible (Figure 5). In the southern section, nevertheless, the upper terrace consisted of six or seven courses of stones that ranged between 20 cm and 30 cm in length (Stanchly 2014). The treads of each terrace were approximately 60 cm in width.

The basal platform supported a superstructure that was only exposed at the northern section of the building. Based on the limited excavations, it was established that this construction was represented by a L-shaped platform, although further excavations at the southern section of the basal platform may expose another constructed area running east-west. If this were the case, the superstructural platform would be C-shaped. The particular form of the superstructure left a large open space on top of the basal platform. The superstructural platform measured at least 7.70 m north-south by 6 m east-west but it was likely larger. The superstructure counted with two steps that rose 26 cm approximately. Their tread was 80 cm in width. The surfaces of basal platform, treads and steps were all finished with plaster. These steps lead to an access located at the northernmost section of the excavated area (Figure 6).

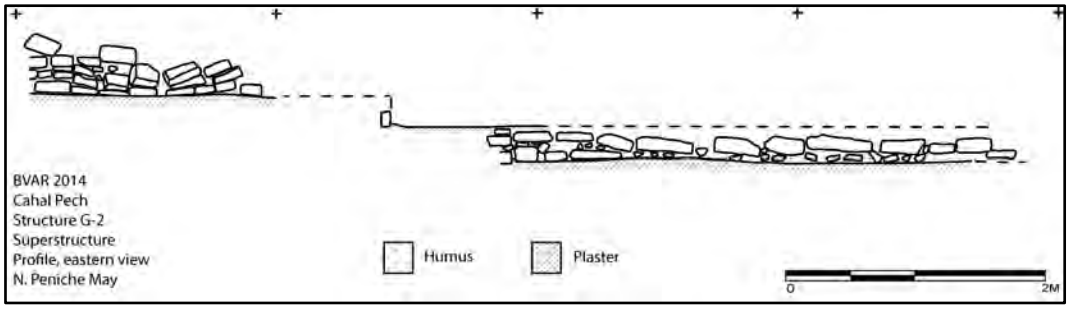

Figure 6: North-south profile of G-2/3rd's superstructure.

Figure 7: Access located at the northern section of the superstructure.

This access itself measured 90 cm in width. It was composed of two L-shaped walls consisting of four courses of well-cut stones that measured 15-30 cm in length. The walls were approximately 40 cm high but they could have been taller. They were containing fill made of rough stones and brown soil. Because the limited excavations, we could not determine where this access led to (Figure 7).

Interestingly, during the process of excavation we recovered a whole plate, classified as Belize Red. This plate was placed directly on the stucco floor of the superstructure, north of the eastern wall of the access (Figure 8).

Figure 8. Belize Red plate deposited outside G-2/3rd's access.

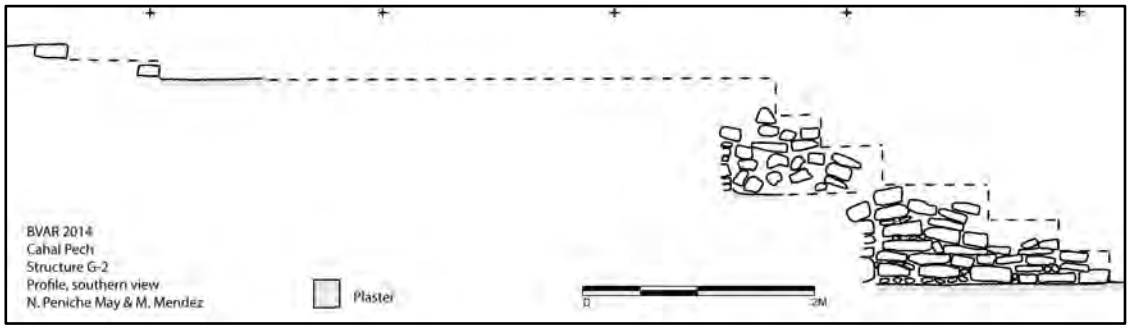

Figure 9:. East-west profile of Structure G-2/3rd.

The superstructure was accessed from Plaza G through a staircase located at the center of the building. This staircase was attached to the lower terrace of G-2/3rd and extended out 2.10 m, measuring 5 m in width. The condition of the feature was poor but it was possible to determine that it consisted of five steps. The treads of those steps varied in width. The treads of the two lower steps were 40 and 50 cm. The third one measured 90 cm. The treads of the fourth and fifth steps were 50 cm and 40 cm respectively (Figure 9). The stones that made of the staircase were cut stones that measure 15-30 cm in length and 15-40 cm in width. There was not evidence of plaster in this feature.

As Stanchly (2014) noted during his excavations, G-2/3rd underwent a small modification. A north-south running wall was added to the southern wall of Structure G-2's basal platform and Structure G-1's southeastern corner. The objective of this wall was to block access into Plaza G.

CONCLUSIONS

The 2014 excavations of Structure G-2 exposed two construction phases. Because G-2/2nd was partially exposed, we could not corroborate whether this construction consisted of a double-vaulted building with a doorway that led down to Plaza G, which was supported by a basal platform. Nevertheless we could establish that G-2/2nd was a large structure that measured 9 m north-south by at least 3.5 m east-west and rose 1.70 m from its plaza plaster floor. As it was mentioned above, this construction was almost completely covered by the terminal construction phase.

Previous excavations established that G-2/3rd consisted of a large basal platform composed of two terraces. This platform supported a perishable building (Awe 1992; Stanchly 2014). 2014 excavations corroborated that G-2/3rd consisted of a large rectangular basal platform that measured 21 m north-south by at least 7.30 m east-west and rose 1.60-1.80 m from its plaza plaster floor. The top of the basal platform was accessed from Plaza G through a five-stepped staircase. The basal platform was crowned by a superstructure that was only exposed at the northern section of the platform. This superstructure was a two-stepped platform that was L-shaped. At the northern section, an access was exposed, which was created through L-shaped walls. Currently, it was not determined where this access led to. Further excavations also will help establish whether the superstructure was L-shape or another construction was placed at the southern section of the platform.

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AIRBORNE LIDAR MAPPING AND SETTLEMENT SURVEY AT CAHAL PECH, BELIZE

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INTRODUCTION

Traditional archaeological survey methods in tropical environments have proven costly in terms of time, labor, and funds. Documentation of prehistoric sites often involve cutting transects through dense vegetation to document a small sample of archaeological features using tape and compass mapping or with a total station. Accurate and high-resolution airborne light detection and ranging (lidar) data are becoming increasingly important for the discovery and visualization of complete archaeological settlement systems in tropical environments (e.g., Hawaii, Ladefoged et al. 2011, McCoy et al. 2011; Southeast Asia, Evans et al. 2013; Mesoamerica, Chase et al. 2011, 2014, Fisher et al. 2011; Hare et al. 2014, Rosenswig et al. 2013). Airborne lidar is an active remote sensing system in which short pulses of laser energy are discharged from an aircraft towards the ground surface. Laser pulses "penetrate" vegetation to gather three-dimensional spatial data used to model the ground surface and locate possible archaeological features (Crutchley and Crow 2010; Devereux et al. 2005; Doneus and Briese 2006). Recent application of lidar survey by archaeologists has allowed for rapid acquisition of spatial data not previously possible from pedestrian survey limited by heavy vegetation.

Archaeological research using lidar data is especially active in the tropical lowlands of Mesoamerica, and two primary types of visual qualitative analyses based on lidar data have been applied to identify archaeological features. First, "bare earth" digital terrain models (DTMs) produced from lidar ground return points have been used to generate hillshade models within Geographic Information Systems (GIS) that visually highlight architectural and ecological features in three-dimensions to document monumental architecture, residential groups, and agricultural terraces at the sites of Angamuco (Fisher et al. 2011), Izapa (Rosenswig et al. 2013), and the Maya sites of and Mayapan (Hare et al. 2014) and Caracol (Chase et al. 2011, 2014). While the visual inspection of hillshade models provides a relatively detailed two-dimensional perspective of the landscape, qualitative analyses only provide general locational information. Furthermore, ground-truthing has revealed that hillshade models are affected by the nature of the ground surface and vegetation cover which can often obscure more subtle features on the ground surface (Doneus and Briese 2006; Rosenswig et al. 2013; Prufer et

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al. n.d.). A second type of analysis, slope modeling has provided an additional qualitative aid in visualizing archaeological landscapes (Prufer et al. n.d.; Rosenswig et al. 2013). At the Classic period (ca. AD 250-900) Maya site of Uxbenka, the results of seven years of pedestrian survey were compared to mounds visually identified on a hillshade and slope models. Comparisons tested the degree to which lidar detected residential settlements in low bush and secondary forest regrowth from slash-and-burn agriculture (Prufer et al., n.d.). Though documented settlements in areas of heavily vegetated were not always visible on hillshade models, slope models indicated landscape modifications that suggest the presence of prehistoric settlement. While visualization of slope can help to pinpoint the location of large architecture with steeply sloping sides (e.g., monumental architecture) or landscape modifications, it is less successful in identifying low, gently sloping features (e.g., low house mounds; Challis et al. 2011).

Lidar provides a powerful quantitative tool that can be combined with qualitative visual analyses to systematically identify and measure possible archaeological features in three dimensional. In this paper, we present a newly applied method for systematic quantitative analysis of lidar using the Topographic Position Index (TPI) at the ancient Maya site of Cahal Pech in the Belize Valley. TPI analysis has been applied to research in geography and geology (Liu et al. 2009; Jones et al. 2000; McGarigal et al. 2009; Mulder et al. 2011; Schmidt and Hewit 2004; Tagil and Jenness 2008); landscape, forest, and animal ecology (Clark et al. 2012; Coulon et al. 2008; de la Giroday et al. 2011; Dickson and Beier 2007; Fei et al. 2007; Lacki et al. 2009; Pinard et al. 2012; Podchong et al. 2009; Squires et al. 2008); and climatology (Bunn et al. 2011; Etienne et al. 2010) among other disciplines. TPI has seen less application in archaeology, through several researchers have applied the method to spatial datasets to understand regional settlement patterns in relationship to landform classes (Berking et al. 2010; De Rue et al. 2013; Patterson 2008). TPI can also be used to examine these same phenomena at smaller site-level scales to determine the exact location of archaeological features and the nature local settlement systems.

Airborne lidar survey for Cahal Pech was conducted as part of the West-Central Belize lidar survey flown in 2013 by the National Center for Airborne Laser Mapping (NCALM). The West-Central survey supplements the 2009 Caracol survey area to cover a total of 1057 km2, and includes lidar data for other major centers including Baking Pot, Lower Dover, Xunantunich, Minanha, and Las Cuevas (Figure 1; see Chase et al. 2014 for a detailed description the West-Central lidar survey). TPI analysis of lidar data for a 29 km2 area around Cahal Pech were performed on a high-resolution (1m) DTM incorporated into a GIS to classify the landscape into both slope position and landform category and record possible architectural features for targeted field reconnaissance and mapping (Gallant and Wilson 2000; Weiss 2001 Weiss 2001). During the summer field season of 2014, possible prehistoric features identified using TPI analyses were verified through pedestrian survey in three survey zones characterized by different land cover types (orchard, pasture, and forested areas). We compare the results of TPI analyses to pedestrian survey, and discuss the effectiveness of qualitative and quantitative analyses of lidar data for detecting prehistoric architecture in urban and agricultural areas.

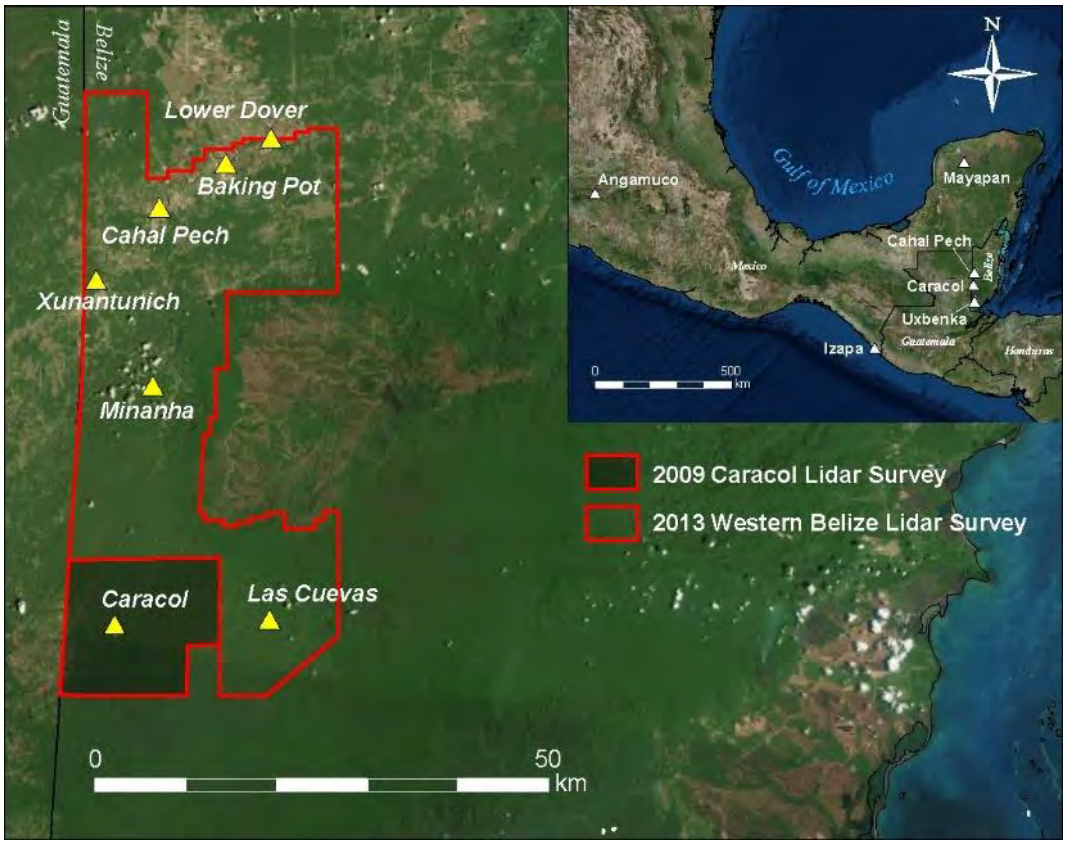

Figure 1: Map of West-central Belize Lidar Survey area with the location of sites mentioned in text.

PREVIOUS SETTLEMENT SURVEY AT CAHAL PECH

Cahal Pech is a medium-sized Maya center located outside the modern town of San Ignacio in the upper Belize Valley of the western Cayo District of Belize (Figure 2). The monumental site core is situated on top of a natural hill above the interfluvial bottomlands of the Belize Valley, approximately 2 km south of the confluence of the Macal and Mopan Rivers. Archaeological investigation has been active at Cahal Pech since the late 1980's, with ongoing survey and excavations conducted under the auspices of the Belize Valley Archaeological Reconnaissance (BVAR) project. Stratigraphic excavations conducted by BVAR in the ceremonial center have identified contexts representing the earliest settlement between 1200-900 cal BC (Awe 1992; Healy et al. 2004). Monumental architecture associated with a ruling lineage appeared at Cahal Pech in the Late Preclassic between 350 BC - AD 350 (Awe 1992; Garber and Awe 2008). Survey and excavation data suggest that Cahal Pech was an independent polity in the Belize Valley during the Classic Period, whose geographic position afforded it control over the fertile alluvial plains below the site and command of the Belize River as a natural transportation route linking the Central Peten to the Caribbean Sea (Awe 1992).

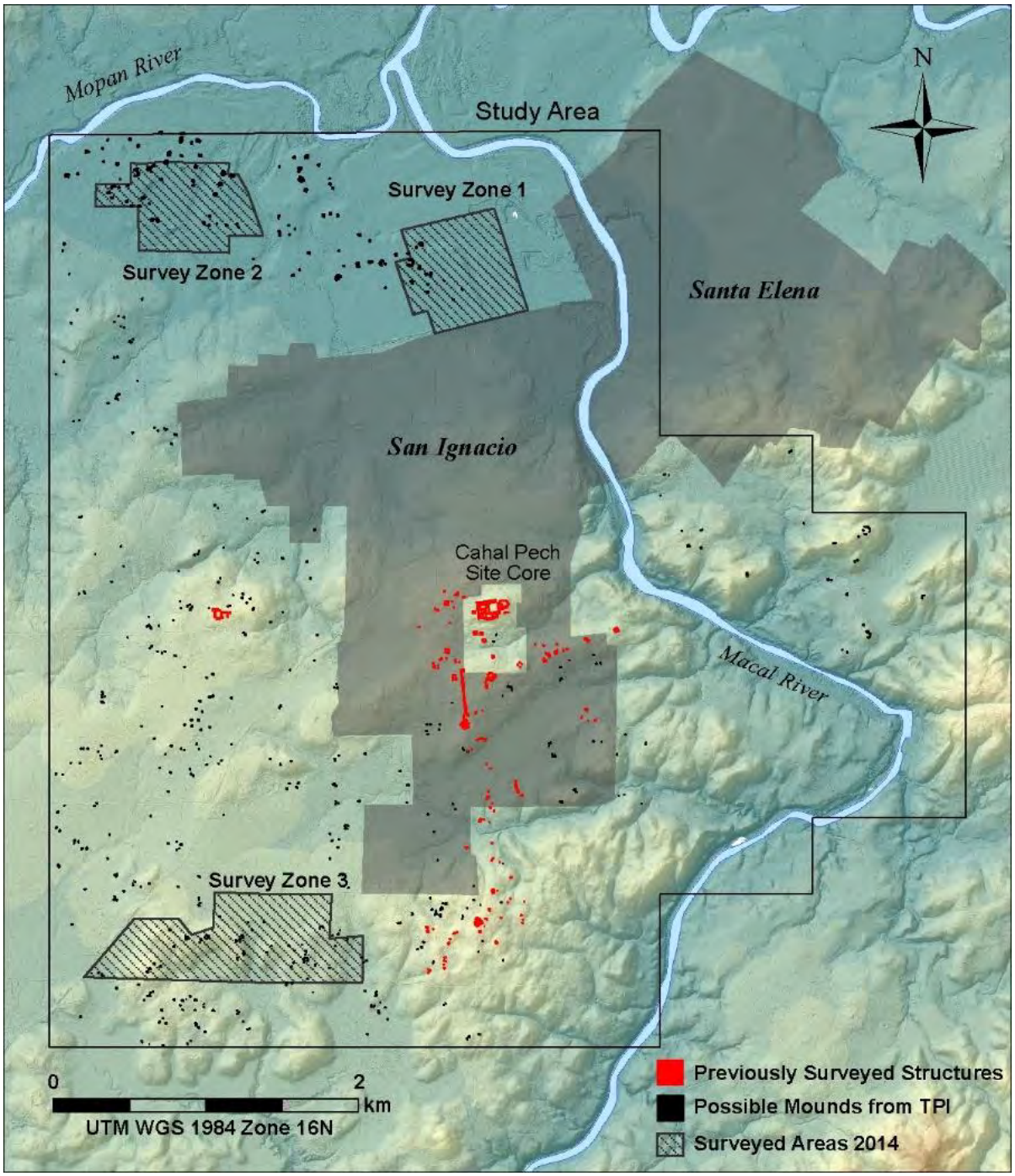

Figure 2: Map of settlement at Cahal Pech overlaid onto a hillshade model produced from lidar ground points, with study area indicated. Settlements documented from previous pedestrian survey are denoted in red, and possible mounds identified from TPI analysis of lidar are in black. Ground truthing survey zones are also indicated. Gray shading indicates the extent of the modern towns of San Ignacio and Santa Elena.

Compared to other regions in Mesoamerica documented through lidar, such as Caracol in the Chiquibul Forest Reserve (Chase et al. 2011, 2012), the Belize Valley possesses high density populations living within increasing numbers of modern towns and villages and of large-scale agricultural systems. This urban environment has presented a challenge to traditional survey methods at Cahal Pech since construction and agricultural activities have destroyed ancient ruins and vegetation patterns that hinder survey efforts. Initial settlement survey at Cahal Pech was undertaken between 1988 and 1992, and focused on documenting large residential settlements immediately south of the site core that were threatened by the construction of modern houses (Awe 1992; Awe and Brisbin 1992). The settlement survey was extended further south and west of the site core during the 2011 and 2012 field seasons (Dorenbush 2013). Radiocarbon dates and associated ceramic materials from previously documented settlements indicate that several large residential groups were founded during the Early Middle Preclassic and were occupied into the Classic Period (Awe 1992; Cheetham et al. 1993; Ebert et al. 2014; Iannone 1996; Powis 1996). The extent of settlement increased during the Classic Period as numerous small residential groups were established throughout the hinterlands of Cahal Pech (Awe 1992).

METHODS

For this study, we used the Topographic Position Index (TPI) to identify archaeological features, which we refer to as "possible mounds", around Cahal Pech. TPI analysis is a simple, repeatable method that is easily performed on spatial data within existing GIS databases (Jenness 2006). TPI analysis produces a raster, a spatial data model composed of an array of equally sized cells with cell values reflecting the difference between the elevations in a particular cell and the average elevation of cells within a specified search radius (Jenness 2006; Weiss 2001). Positive TPI values indicate that the cell is higher on average than neighboring cells, and significantly high values suggest the cell represents a high point within a specified search radius (i.e., hilltop). Negative TPI values indicate areas with lower elevation (i.e., a valley).

TPI analyses are scale-dependent (Weiss 2001). Scale is determined by the selected search radius size, which defines the number of cells considered in the calculations (Figure 3). Large-scale, regional TPI analyses can be used to identify major landform types across a region (e.g., canyons, ridge lines). Small-scale, site-level TPI analysis, on the other hand, allows for the identification of more detailed topographic features (Jenness 2006). Small-scale TPI studies are especially applicable to archaeological settlement studies since possible mounds may be represented by higher TPI values within localized study areas.

Pre-processed lidar point could data (Chase et al. 2014) for a 29 km^2 area around the Cahal Pech site core were analyzed using ArcGIS 10.2.2 using the LAS data set tools. A high-resolution (1m) DTM for the study area was created from lidar ground return points. The DTM was sub-divided into 500 m^2 sample blocks (n=96) to expedite TPI calculations within the GIS. Analyses were performed using an open access TPI extension for ArcGIS v. 9.3-10.2 (Jessness 2006). An annular (doughnut-shaped) search

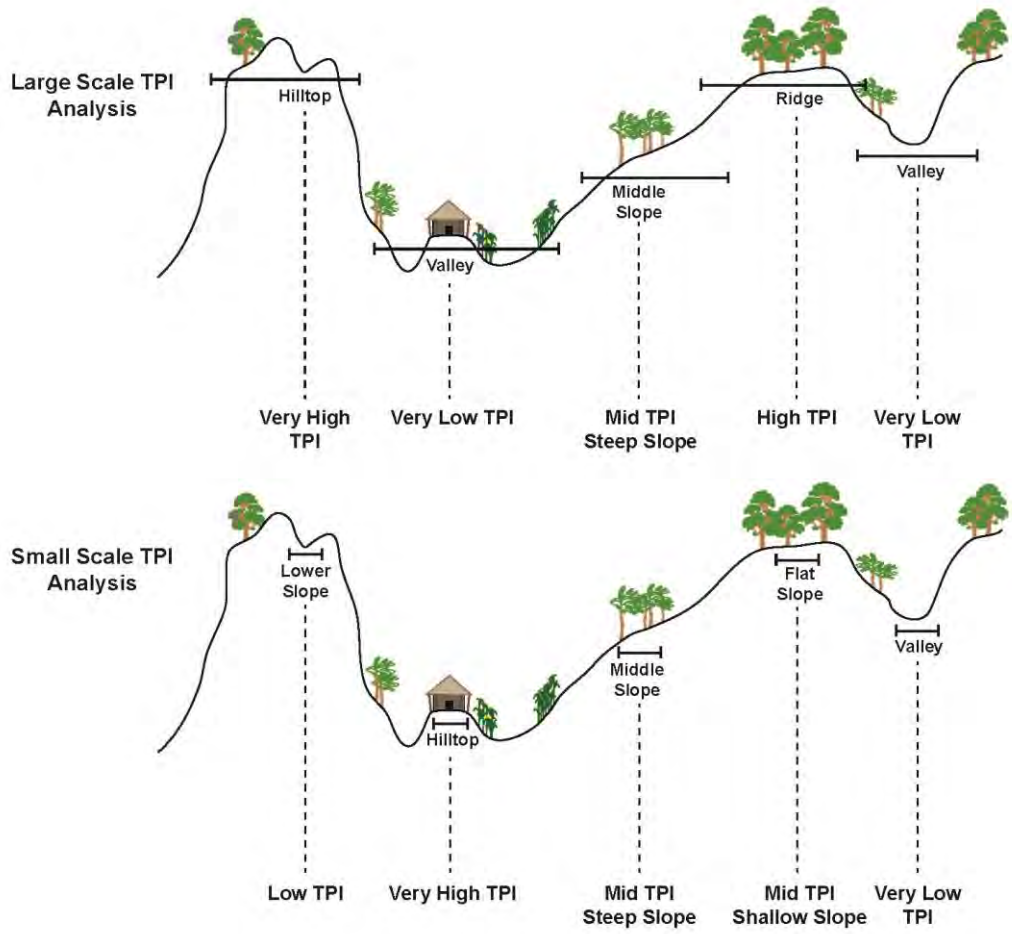

Figure 3: Comparison of expected TPI values based on large scale (top) and small scale (bottom) analyses.

area was used to classify slope position within each sub-sample block, where only cells within between 2 and 15 meters were considered in TPI calculations. These search parameters were chosen based upon the two observations. First, possible mounds that are usually less than 2m in diameter are likely too small to be constructed features. These smaller features may instead represent non-residential architecture including field houses, kitchens, and other ancillary structures. Alternatively, they may represent concentrations of sediments resulting from bioturbation (e.g., dirt pulled up by tree fall, bull-dozed areas), or locations of lower-resolution within the lidar point cloud. Second, the larger search parameter for TPI analysis since residential groups at Cahal Pech are formed by clusters of mounds within 15 m of each other, and usually located at least 15m from each other. This number was determined by performing a Buffer Analysis within ArcGIS of previously documented mound groups. The search parameters thus can identify variations of topography in each sample block, including areas with high TPI values and elevations within groups and between residential groups.

Table 1: Classification of topographic position based on standard deviations from the elevation (after Weiss 2001).

Class	Description	Breakpoints
1	Hilltop	TPI > 1 St. dev.
2	Upper slope	0.5 St. dev. < TPI ≤ 1 St. dev.
3	Middle slope	-0.5 St. dev. < TPI < 0.5 St. dev., Slope > 5°
4	Flat slope	-0.5 St. dev. < TPI < 0.5 St. dev., Slope ≤ 5°
5	Lower slope	-1 St. dev. < TPI ≤ -0.5 St. dev.
6	Valley	TPI ≤ -1 St. dev.

Table 2: Summary metrics of possible mounds identified by TPI analysis versus mounds documented through ground-truthing survey.

Survey Zone 1 - Orchard (0.48 km^2)	**TPI Analysis**	**Survey**
Number of Mounds	15	15
Average Height (m)	0.70	0.56
Average Area (m^2)	175.20	219.51
Average Volume (m^3)	81.76	35.16
Average Slope (°)	5°	3°
Survey Zone 2 - Pasture (0.45 km^2)		
Number of Mounds	39	22
Average Height (m)	1.2	0.5
Average Area (m^2)	129.7	326.76
Average Volume (m^3)	76.9	102.14
Average Slope (°)	6°	1°
Survey Zone 3 - Forest (0.76 km^2)		
Number of Mounds	49	38
Average Height (m)	1.79	1.05
Average Area (m^2)	60.12	60.73
Average Volume (m^3)	47.67	46.46
Average Slope (°)	16°	8°

The resulting TPI rasters were classified based on standard deviations from the elevation, reflecting the variability of elevation within the each sample block (Table 1). Cells with the highest values represented possible mounds, and were exported as individual shapefiles for additional spatial analyses. Northing and easting UTM coordinates were assigned for each surveyed structure and area, height, and volume calculated within the GIS (Table 2, see also Appendix A). Possible mounds were also visually examined on hillshade and slope models, and in profile to eliminate modern (e.g., houses) and natural features (e.g., tree growth/falls) that may have been identified as possible mounds. Mounds with volumes less than 8 m^3 (Ashmore 1981) or surface areas less than 25 m^2 (Yaeger 2003) were eliminated from the sample since they are likely too small to have been residences. Based on these criteria, a total of 545 undocumented possible house mounds were located to facilitate targeted field reconnaissance.

RESULTS

Preliminary ground-truthing of TPI results for Cahal Pech took place during the 2014 BVAR field season. The total surveyed area was approximately 1.69 km^2, which was divided into three survey zones to the north and southwest of the site core (Figure 4). Survey zones were selected to assess the accuracy of TPI analysis based on land cover types, and to compare TPI and survey results between developed land (orchard, pasture) and relatively undeveloped areas (forested). All three zones were relatively free of modern construction and established agricultural fields that might impede ground survey. GPS coordinates were recorded for each mound identified during systematic transects across each survey zone. Mounds were mapped using a combination of tape-and-compass and total station mapping. Surface collection was performed during ground-truthing to identify the relative date of terminal occupation based on Belize Valley ceramic typologies (e.g., Awe 1992; Gifford 1976). In some cases, surface collection was not performed because of poor ground surface visibility (e.g., in grassy pastures).

The majority of surveyed sites with diagnostic ceramic materials had terminal occupational phases dating to the Late and Terminal Classic periods (ca. AD 600-900).

Each mound documented through ground-truthing survey was labeled using a numbering system that parallels the system used for the Baking Pot settlement survey. Each group surveyed has a name consisting of "CHP-" followed by a unique number, beginning with 1. Groups that have been documented during previous settlement survey at Cahal Pech were also given a unique number (Appendix 2). A preliminary a classificatory typology of settlement types was also created for Cahal Pech based on survey results. At other Maya centers mound groups have been classified based on the number of structures in groups, arrangements around a central plaza, and architectural volume (e.g., Ashmore and Wilk 1988; Becker 2003; Hoggarth 2012; Webster and Gonlin 1988; Webster and Freter 1990). At Cahal Pech house groups are divided into seven types based on a settlement typology developed for the nearby site of Xunantunich (Ashmore et al. 1994; Ehret 1995). Types are derived from the number of mounds, their spatial layout, the presence or absence of formal patio groups and height of mounds (Table 3). The typology has been applied to other sites in the Belize Valley area to facilitate inter-site comparisons, with slight modifications based on local variability of architecture (Minanha, Iannone et al. 2006; San Lorenzo, Yaeger 2000). The primary function of the typology at Cahal Pech lies in the

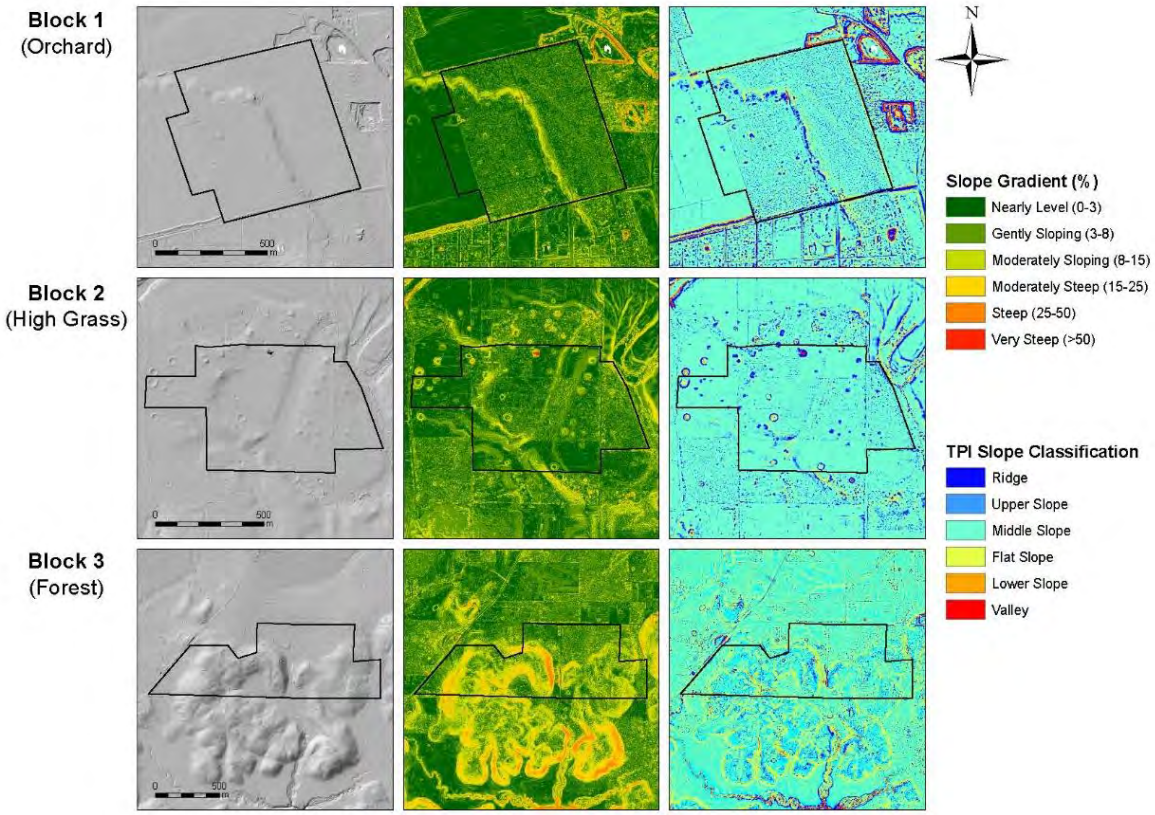

Figure 4: Comparison of hillshade model, slope model, and TPI raster for each of the three survey zones at Cahal Pech.

development of a sampling strategy for other types of settlement based research programs. There are 140 mound groups at Cahal Pech that have been documented through ground survey from 1990 through 2014. All types described above have been identified, though the most common type are single, isolated structures (*n*=58). Table 3 presents a detailed breakdown of the number of groups by types, and lists their names and "CHP-" identification numbers. Survey Zones 1 and 2 were located north of the Cahal Pech site core near the confluence of the Mopan and Macal Rivers. Zone 1 was approximately 0.48 km^2 and was located in an orange orchard. TPI analysis identified 15 possible structures in Zone 1 (refer to Table 2). Ground-truthing recorded 11 of the possible mounds in Zone 1, and also documented 4 additional mounds not identified by TPI (Figure 5). Mounds documented in the field had a larger average surface area but a smaller average volume compared to those identified by TPI. Survey Zone 2 was approximately 0.45 km^2 and located in a pasture characterized by high grass, which was actively used at the time

Table 2: Settlement typology for Cahal Pech (after Ashmore et al. 1994, Ehret 1995).

Type	Description	Surveyed Mound Groups (1990-2014)
I	Single isolated mound or platform, less than 2m in height	58
II	2-4 informally arranged mounds or platforms, all less than 2m high	30
III	2-4 mounds or platforms formally arranged around a central plaza, all less than 2m high	32
IV	5 or more, mounds or platforms formally arranged around a central plaza, all less than 2m high	7
V	5 or more mounds of platforms, with at least 2 arranged around a formal plaza, all less than 2m high	4
VI	1 or more mounds or platforms, with at least one 2-5m high	7
VII	2 or more mounds or platforms, with at least one higher than 5m	2

of survey for pasturing cows. TPI analysis identified 39 possible mounds, though ground-truthing documented only 22 mounds. Surveyed mounds in Zone 2 were lower on average than possible mounds identified by TPI, though they had larger average areas and volumes. Survey Zone 3 was approximately 0.76 km^2 and located in a forested area to the southwest of the Cahal Pech site core, and relatively little development had occurred on the land. TPI analysis identified 49 possible mounds, and survey documented 38 mounds. While surveyed mounds in Zone 3 were lower on average than possible mounds, both had roughly similar volumes.

DISCUSSION AND CONCLUSIONS

The integration of high-resolution lidar data into archaeological settlement survey has provided vital contributions to our understanding of complex archaeological landscapes in tropical regions throughout the world. Analysis of lidar data allows for the reconstruction of site organization where pedestrian survey, hampered by thick vegetation, has only documented a small sample of settlement. Settlement research using lidar in the tropics of Mesoamerica has relied primarily upon visual analysis of hillshade and slope models to identify monumental archaeological features. Large and medium sized architecture with steeply sloping sides are easily distinguishable from these types of qualitative analyses (e.g., visual identification, Chase et al. 2011, 2014, Hare et al. 2013; measuring the length of contour lines, Rosenswig et al. 2013; visual examination of slope models, Prufer et al. n.d.). Smaller mounds less than 1 m in height, which in many cases may compose the majority of archaeological features within settlement systems, are more difficult to identify. The lidar data analysis presented for Cahal Pech demonstrates the utility of quantitative spatial analysis beyond visual analysis for the identification of less prominent architectural features on the landscape. In order to identify the range of features that compose the settlement system at Cahal Pech, we performed TPI analysis on a high-resolution DTM generated from lidar ground point data at Cahal Pech within a GIS. TPI analysis at Cahal Pech provided precise metrics including location (UTM coordinates), volume, surface area, and height of mounds that were used to identify mounds for ground-truthing during survey.

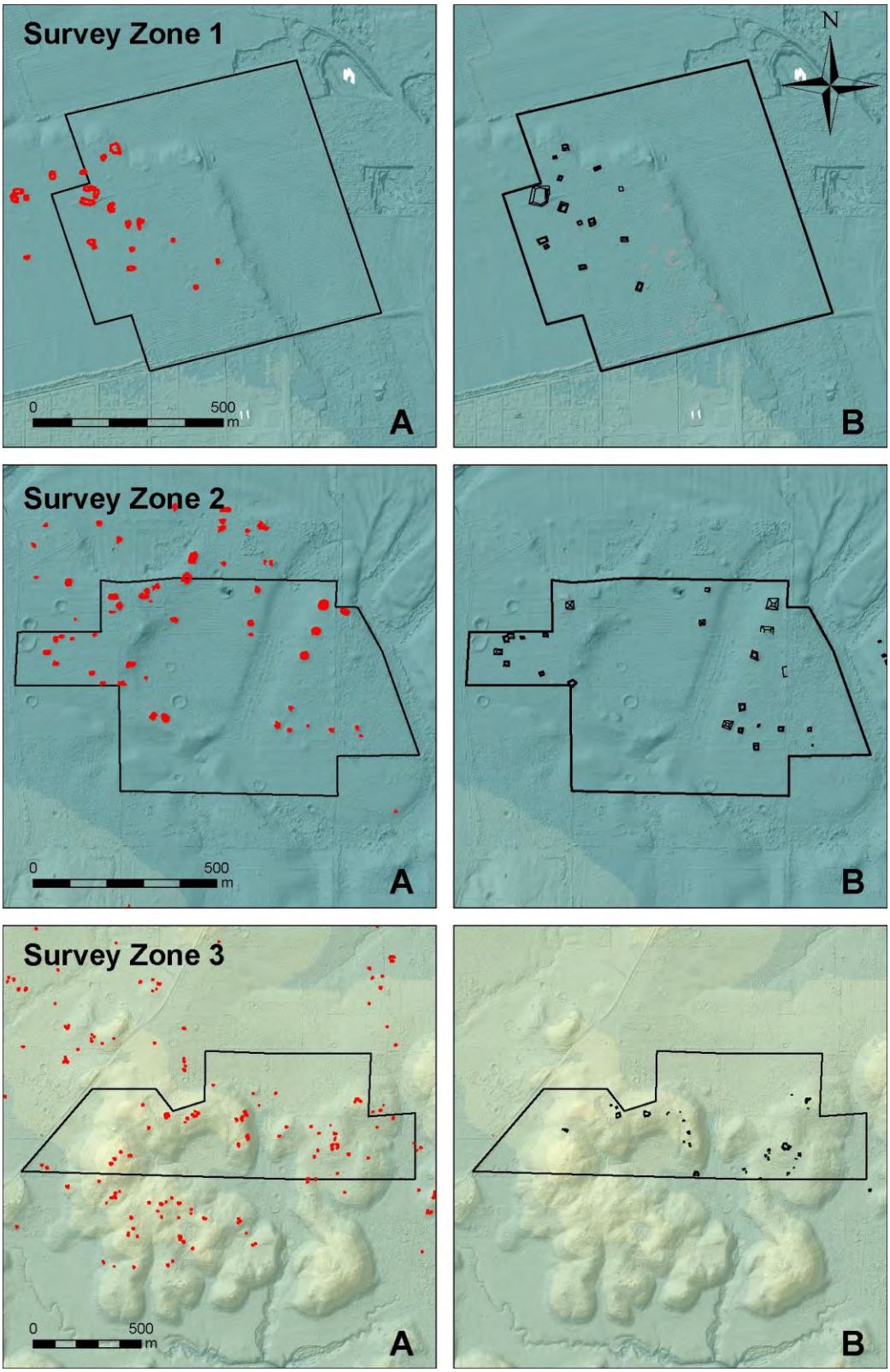

Figure 5: Comparison for each of the three survey zones of possible mounds identified by TPI (A) and actual mounds surveyed in the field (B).

Table 4: Comparison of metrics for each survey zone of possible mounds identified by TPI not found during survey, surveyed mounds not identified by TPI, mounds identified by both TPI and survey, and the percent of possible mounds not found during survey.

Survey Zone 1	**TPI Mounds not Identified during Survey**	**Surveyed Mounds not Identified by TPI**	**Mounds Identified by TPI and Survey**	**% TPI Mounds Identified during Survey**
Number of Mounds	4	4	11	**73%**
Average Height (m)	0.57	0.52	0.58	
Average Area (m^2)	62.55	188.90	230.64	
Average Volume (m^3)	16.22	46.03	31.20	
Average Slope (°)	6	2	8	
Survey Zone 2				
Number of Mounds	19	3	19	**49%**
Average Height (m)	1.53	0.36	0.52	
Average Area (m^2)	194.06	360.21	321.47	
Average Volume (m^3)	130.81	109.38	100.99	
Average Slope (°)	6	1	2	
Survey Zone 3				
Number of Mounds	30	18	20	**41%**
Average Height (m)	1.91	0.83	1.26	
Average Area (m^2)	55.35	31.97	86.61	
Average Volume (m^3)	53.67	15.32	74.48	
Average Slope (°)	17	8	18	

Analysis of lidar data at Cahal Pech compared between zones of different land cover types also illustrates some of the challenges of settlement survey in within the modern urban and agricultural landscapes, which may affect accuracy of both qualitative visual and quantitative identification of possible mounds and other archaeological features. Urban growth often destroys or covers sites. Agricultural activities, on the other hand, affects lidar data analysis and survey in two primary ways. First, the leveling of mounds during development can obscured these features. At Cahal Pech in Survey zones 1 (orchard) and 2 (pasture), surveyed mounds were lower and less sloping on average than possible mounds identified through TPI. Additionally, surveyed mounds not identified by TPI were often leveled (slope less than 3°) from agricultural activities so that they were only visible during survey (Table 4). Second, the processes of agricultural development may also create modern features that resemble ancient mounds. In the pastures of Survey zone 2 possible mounds located with TPI analysis (n=19) were often composed of mounded earth moved during constructing stock ponds.

Areas with less development, such as the forested area located in Survey zone 3, also indicated discrepancies between lidar data analysis and survey results. Ground survey documented the presence of 40 mounds, only 18 of which (41%) were identified as possible mounds by TPI. The range of TPI values in this zone within this zone, which may in turn affect the accuracy of TPI analysis for identifying actual residential mounds. Despite the ability of lidar to "penetrate" vegetation, these results suggest that DTMs created from ground points may be less reliable in forested areas compared to more open spaces like orchards. Similar issues using lidar data may be encountered at archaeological sites located in or near developing urban and agricultural areas elsewhere in the tropics.

The difference between the TPI and survey results between land cover types indicates that traditional settlement pattern study methods such as pedestrian survey, remain vital to ground-truthing all types of spatial data. Quantitative analyses of remotely sensed lidar data nonetheless provide archaeologists with an essential tool for planning more efficient, targeted, and cost-effective survey programs. Analyses of lidar data that provide accurate locations information can also aid in conservation efforts by pinpointing sites that may face destruction from modern activities to give them high-priority for investigation. Additionally, quantitative analyses like TPI might be applied for the identification and quantification of looting activities, since looters trenches may be classified as low TPI values within small-scale analyses. Future research will focus on these issues for Cahal Pech, and also compare other types of spatial data analyses that can be useful for integrating lidar and settlement research.

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APPENDIX A

Table A1: Structures identified during ground-truthing survey in Survey Zone 1 (orchard).

Structure ID	Surface Area (m^2)	Average Slope (°)	Volume (m^3)	Height (m)	Identified by TPI	Identified by Survey	Easting	Northing
Zone1-1	399.68	0.39	31.43	0.16	x	x	278874	1899014
Zone1-2	117.79	0.37	4.96	0.08	x	x	278884	1898998
Zone1-3	237.81	0.59	22.34	0.19	x	x	278979	1898944
Zone1-4	332.66	0.34	20.39	0.13		x	279128	1898893
Zone1-5	221.85	0.64	21.55	0.20	x	x	279089	1899018
Zone1-6	318.96	0.57	33.26	0.21	x	x	279004	1899063
Zone1-7	125.99	0.53	7.80	0.12	x	x	278971	1899061
Zone1-8	116.26	0.50	6.33	0.11		x	279080	1899150
Zone1-9	143.08	3.29	57.92	0.80		x	278920	1899178
Zone1-10	541.74	0.73	54.48	0.21	x	x	278928	1899102
Zone1-11	179.67	7.26	71.18	1.41	x	x	278885	1899140
Zone1-12	47.15	15.89	38.24	2.13	x	x	278884	1899126
Zone1-13	78.77	0.69	4.87	0.12	x	x	278906	1899233
Zone1-14	190.89	4.96	53.13	1.55	x	x	278934	1899259
Zone1-15	164.17	3.87	99.48	1.06		x	279017	1899204

Table A2: Structures identified during ground-truthing survey in Survey Zone 2 (pasture).

Structure ID	Surface Area (m^2)	Average Slope (°)	Volume (m^3)	Height (m)	Identified by TPI	Identified by Survey	Easting	Northing
Zone 2-1	427.98	5.25	247.06	2.12	x	x	277084	1899720
Zone 2-2	162.07	0.94	20.00	0.24	x	x	277018	1899638
Zone 2-3	85.38	1.13	9.19	0.22	x	x	276955	1899630
Zone 2-4	475.81	1.03	113.00	0.48	x	x	276917	1899630
Zone 2-5	313.59	0.96	54.21	0.34	x	x	276889	1899592
Zone 2-6	208.63	0.90	26.89	0.26	x	x	276911	1899560
Zone 2-7	141.43	1.91	33.87	0.46	x	x	277007	1899532
Zone 2-8	348.82	1.72	126.29	0.65	x	x	277091	1899505
Zone 2-9	209.39	1.30	40.11	0.38	x	x	277444	1899671
Zone 2-10	140.59	4.94	65.93	0.80	x	x	277459	1899761
Zone 2-11	871.40	1.99	497.70	1.18	x	x	277636	1899721
Zone 2-12	993.45	1.31	402.73	0.83	x	x	277621	1899645
Zone 2-13	395.90	1.26	90.71	0.51	x	x	277587	1899582
Zone 2-14	328.16	1.12	72.04	0.37	x	x	277553	1899442
Zone 2-15	496.38	0.68	74.82	0.31	x	x	277514	1899393
Zone 2-16	180.31	0.78	17.06	0.21	x	x	277550	1899378
Zone 2-17	177.51	0.75	17.26	0.20	x	x	277660	1899382
Zone 2-18	39.89	0.85	2.24	0.11	x	x	277598	1899391
Zone 2-19	265.10	0.85	37.01	0.28		x	277592	1899334
Zone 2-20	95.17	0.86	7.78	0.17	x	x	277737	1899381
Zone 2-21	21.59	0.84	0.85	0.08		x	277745	1899338
Zone 2-22	794.12	1.27	290.29	0.71		x	277680	1899540

Table A3: Structures identified during ground-truthing survey in Survey Zone 3 (F).

Structure ID	Surface Area (m^2)	Average Slope (°)	Volume (m^3)	Height (m)	Identified by TPI	Identified by Survey	Easting	Northing
Zone 3-1	45.82	2.61	11.42	0.48	x	x	277528	1894733
Zone 3-2	40.16	3.02	8.06	0.41	x	x	277522	1894724
Zone 3-3	139.55	4.13	43.65	0.89	x	x	277534	1894713
Zone 3-4	36.49	10.04	10.41	1.17		x	277370	1894763
Zone 3-5	62.59	2.03	10.51	0.32		x	277395	1894752
Zone 3-6	33.27	1.87	4.64	0.28	x	x	277401	1894722
Zone 3-7	20.06	2.20	2.06	0.21	x	x	277410	1894713
Zone 3-8	38.24	1.87	4.61	0.24	x	x	277397	1894706
Zone 3-9	381.66	8.99	611.76	3.07	x	x	277158	1894643
Zone 3-10	27.19	3.85	5.69	0.42		x	277629	1894722
Zone 3-11	23.13	3.73	4.46	0.36		x	277637	1894729
Zone 3-12	8.66	18.51	4.39	1.08		x	277688	1894731
Zone 3-13	57.41	14.60	57.93	2.18		x	277706	1894693
Zone 3-14	27.49	11.76	17.27	1.25	x	x	277733	1894585
Zone 3-15	41.25	10.97	28.70	1.41	x	x	277736	1894574
Zone 3-16	27.20	10.62	14.10	1.11		x	277708	1894593
Zone 3-17	82.30	12.01	91.98	2.47		x	277731	1894636
Zone 3-18	84.07	5.70	44.32	1.06	x	x	278243	1894538
Zone 3-19	13.42	5.59	2.66	0.42		x	278247	1894528
Zone 3-20	135.03	10.49	152.30	2.36	x	x	278195	1894571
Zone 3-21	71.05	7.60	46.75	1.33	x	x	278189	1894560
Zone 3-22	4.79	9.95	1.00	0.44	x	x	278185	1894578
Zone 3-23	84.08	10.43	89.86	2.14	x	x	278178	1894585
Zone 3-24	50.49	11.57	38.89	1.60	x	x	278165	1894566
Zone 3-25	97.30	13.07	128.54	2.60	x	x	278101	1894556
Zone 3-26	57.87	13.19	60.27	2.07	x	x	278086	1894529
Zone 3-27	7.53	12.63	2.47	0.69		x	278103	1894540

Structure ID	Surface Area (m^2)	Average Slope (°)	Volume (m^3)	Height (m)	Identified by TPI	Identified by Survey	Easting	Northing
Zone 3-28	30.80	5.85	10.16	0.55		x	278098	1894521
Zone 3-29	37.30	4.39	9.68	0.55		x	278099	1894512
Zone 3-30	68.44	3.26	17.83	0.57		x	277986	1894466
Zone 3-31	33.44	3.92	8.25	0.47		x	277996	1894453
Zone 3-32	58.51	8.56	17.18	0.97	x	x	278059	1894423
Zone 3-33	12.92	3.24	1.52	0.24		x	278216	1894473
Zone 3-34	64.72	3.76	20.28	0.63	x	x	278192	1894448
Zone 3-35	9.02	4.17	1.13	0.25		x	278186	1894440
Zone 3-36	21.76	12.98	13.84	1.25		x	278207	1894811
Zone 3-37	22.64	8.17	8.76	0.80		x	278282	1894748
Zone 3-38	267.66	7.22	157.97	1.73	x	x	278281	1894785

APPENDIX B

Table B1: Mound groups surveyed at Cahal Pech listed by "CHP-" number.

CHP- No.	Survey Year	Group Name	Easting	Northing	Mound Group Type	Number of Structures
CHP 01	2014		277423	1896880	3	4
CHP 02	2014		277357	1896891	5	5
CHP 03	2014		277358	1896919	1	1
CHP 04	2014		279017	1899205	1	1
CHP 05	2014		278866	1899132	3	2
CHP 06	2014		278933	1899259	2	2
CHP 07	2014		278992	1899063	2	2
CHP 08	2014		278059	1894422	1	1
CHP 09	2014		278244	1894535	3	2
CHP 10	2014		277990	1894459	2	2
CHP 100	1991		279510	1894958	2	2
CHP 101	1991		280077	1896139	2	2
CHP 102	1991		279988	1896158	2	2
CHP 103	1991		280033	1896135	1	1
CHP 104	1991	B-3	279295	1896187	1	1
CHP 105	1991	Boyton	279571	1895686	5	5
CHP 106	1991	C-4	279340	1896204	1	1
CHP 107	1991	Cas Pek	279101	1896905	6	6
CHP 108	1991	Chechem	279154	1896419	3	3
CHP 109	1991	Chuum 1	278053	1899513	3	4
CHP 11	2014		278216	1894473	1	1
CHP 110	1991	Chuum 2	277992	1899519	3	3
CHP 111	1991	Chuum 3	277947	1899574	3	2
CHP 112	1991	Danta	279361	1894839	3	2
CHP 113	1991	Ek-Pay	279383	1894898	3	3
CHP 114	1991	Familia	279408	1895020	3	3
CHP 115	1991	Figueroa	279106	1896592	4	5
CHP 116	1991	Gallo	279336	1895483	2	4
CHP 117	1991	Huh	279161	1894747	3	2
CHP 118	1991	Ibach	279121	1894692	2	2
CHP 119	1991	Jabato	279093	1894574	2	3
CHP 12	2014		278191	1894445	3	2
CHP 120	1991	K'ik'	279331	1896708	3	2
CHP 121	1991	Kuch	279088	1894527	3	3
CHP 123	1991	Manchich	280215	1896729	6	1
CHP 124	2014	Martinez Group	278180	1894571	6	5
CHP 125	1966	Melhado 1	279218	1898968	3	3
CHP 126	1966	Melhado 2	279227	1898767	2	3
CHP 127	1991	Mul Hool	279601	1894823	2	2
CHP 128	1991	Nax Che	280018	1896208	2	2
CHP 129	1991	Nokal	279428	1894685	3	3
CHP 13	2014		278098	1894533	3	4
CHP 130	1991	Och	279402	1895228	2	3

CHP- No.	Survey Year	Group Name	Easting	Northing	Mound Group Type	Number of Structures
CHP 131	1991	Pek Chen Tun	279236	1895305	2	3
CHP 132	1991	Pepeng	279581	1896501	3	4
CHP 133	1991	Taxin Chan	279293	1896710	3	3
CHP 134	1991	Tolok 1	279755	1896551	4	6
CHP 135	1991	Tolok 2	279822	1896588	2	2
CHP 136	1991	Tolok 3	279882	1896600	3	2
CHP 137	1991	Tolok 4	280023	1896666	2	2
CHP 138	1991	Tut	278988	1894498	2	4
CHP 139	1991	Tzinic	279389	1896412	7	8
CHP 140	2012	Tzutziiy K'in	277615	1896834	6	9
CHP 141	1991	Wamil	279407	1896555	3	3
CHP 142	1991	Zopilote	279226	1896131	7	3
CHP 143	1991	Zubin	279309	1894818	6	9
CHP 15	2014		277533	1894721	3	3
CHP 16	2014		277633	1894725	3	2
CHP 17	2014		277688	1894731	1	1
CHP 18	2014		277706	1894693	1	1
CHP 19	2014		277730	1894635	2	2
CHP 20	2014		277735	1894580	2	2
CHP 21	2014		277764	1894446	3	3
CHP 22	2014		277637	1899722	4	1
CHP 23	2014		277621	1899643	4	1
CHP 24	2014		277588	1899582	4	1
CHP 25	2014		277444	1899672	1	1
CHP 26	2014		277459	1899761	1	1
CHP 27	2014		277708	1894593	1	1
CHP 28	2014		277007	1899533	1	1
CHP 29	2014		276933	1899632	2	2
CHP 30	2014		277681	1899540	4	1
CHP 31	2014		277553	1899442	1	1
CHP 32	2014		277529	1899391	2	2
CHP 33	2014		277598	1899391	1	1
CHP 34	2014		277660	1899382	1	1
CHP 35	2014		277745	1899338	1	1
CHP 36	2014		277592	1899334	1	1
CHP 37	2014		276898	1899575	2	2
CHP 38	2014		277090	1899506	1	1
CHP 39	2014		278569	1894369	1	1
CHP 40	2014		277395	1894752	1	1
CHP 41	2014		277403	1894716	3	3
CHP 42	2014		277370	1894763	1	1
CHP 44	2014		277155	1894643	6	1
CHP 45	2014		277018	1899638	1	1
CHP 46	2014		277085	1899719	4	1
CHP 47	2014		278920	1899178	1	1
CHP 48	2014		278282	1894748	1	1
CHP 49	2014		278280	1894785	3	3
CHP 50	2014		278207	1894811	1	1

CHP- No.	Survey Year	Group Name	Easting	Northing	Mound Group Type	Number of Structures
CHP 51	1991		279348	1896661	3	3
CHP 52	1991		279067	1896541	3	2
CHP 53	1991		279102	1896544	1	1
CHP 54	1991		279321	1894756	6	1
CHP 55	1991		279351	1894794	1	1
CHP 56	1991		279459	1894845	1	1
CHP 57	1991		279592	1894862	1	1
CHP 58	1991		279612	1894953	1	1
CHP 59	1991		279436	1895024	1	1
CHP 60	1991		279527	1895109	1	1
CHP 61	1991		278975	1894771	3	2
CHP 62	1991		279014	1894773	1	1
CHP 63	1991		279452	1895209	1	1
CHP 64	1991		279401	1895336	1	1
CHP 65	1991		279384	1895470	1	1
CHP 66	1991		279400	1895572	2	3
CHP 67	1991		279375	1895631	3	3
CHP 68	1991		279375	1895674	1	1
CHP 69	1991		279380	1895835	2	2
CHP 70	1991		279256	1895944	2	2
CHP 71	1991		279332	1896014	5	5
CHP 72	1991		279031	1896496	5	6
CHP 73	1991		279738	1896629	2	2
CHP 74	1991		279826	1896634	1	1
CHP 75	1991		279140	1896916	1	1
CHP 76	1991		279090	1896982	1	1
CHP 77	1991		279173	1896964	2	2
CHP 78	1991		279151	1896880	1	1
CHP 79	1991		279216	1896946	1	1
CHP 80	1991		279038	1896866	3	2
CHP 81	1991		279126	1896777	1	1
CHP 82	1991		278922	1896750	1	1
CHP 83	1991		279171	1896525	2	3
CHP 84	1991		278010	1899645	1	1
CHP 85	1991		277928	1899620	1	1
CHP 86	1991		277977	1899603	1	1
CHP 87	2014		278928	1899102	3	2
CHP 88	2014		278906	1899233	1	1
CHP 89	2014		278876	1899008	2	2
CHP 90	2014		278979	1898945	1	1
CHP 91	1966		279163	1898993	1	1
CHP 92	1966		279254	1899011	1	1
CHP 93	1966		279140	1898944	1	1
CHP 94	2014		279089	1899018	1	1
CHP 95	1966		279332	1898850	2	2
CHP 96	2014		279128	1898893	1	1
CHP 97	1966		279200	1899098	1	1
CHP 98	2014		279080	1899150	1	1

CHP- No.	Survey Year	Group Name	Easting	Northing	Mound Group Type	Number of Structures
CHP 99	2014		277737	1899381	1	1

PRELIMINARY CATALOG AND CURATION OF FIGURINE FRAGMENTS FROM THE SITES OF CAHAL PECH, BLACKMAN EDDY, PACBITUN, SANTA RITA, BAKING POT, AND XUNANTUNICH

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INTRODUCTION

This report summarizes the preliminary collection, curation, cataloging and storing of ceramic figurine and ocarina fragments recovered from the sites of Cahal Pech, Blackman Eddy, Pacbitun, Santa Rita, Baking Pot, and Xunantunich. This research was conducted at the Cahal Pech artifact laboratory from May 30, 2014 to June 17, 2014. Overseeing this project was Director of Archaeology and the head of the Belize Valley Archaeological Reconnaissance (BVAR), Dr. Jaime Awe.

Laboratory assistance was provided by Steven Rosenberg. BVAR students who assisted with the project were: Van Kollias, Sydney Lonaker, Michael Berns, Divine Gamez, Lisa Green, and Johnnie Chuc. The purpose of this project was to collect an consolidate all available figurine fragments that have been recovered from the above mentioned sites from 1988 to 2014 and to prepare the figurines for further research to be conducted during the 2015 field season.

Three-dimensional photoscans were collected of select figurine fragments by Terrance and Virginia Winemiller. Artistic illustrations of select figurine fragments was completed by Sandor Vegh. Digital file copies were not provided to the researcher before the end of the field season, and will be collected before the 2015 field season.

BACKGROUND

Archaeological evidence situates the initial occupation of the site of Cahal Pech in the Middle Pre-Classic period, Cunil phase (c. 1000-850 B.C). Figurines dating to this period have been recovered at Cahal Pech. Social stratification, although present during the Cunil phase, began to be more pronounced during the subsequent Middle Pre-Classic Kanluk phase (850-350 B.C.) (Awe 1992). During the Kanluk phase, Cahal Pech experienced a population boom, accompanied by evidence of significant social stratification in the form of differential burial practices and concentrations of exotic goods. During the Late Pre-Classic period, the Xakal phase (350 B.C – A.D. 250), Cahal Pech rose to become one of the major centers in the Belize River Valley, complete with monumental architecture and trade relationships with both southern Peten polities and

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Caribbean traders. During the early and middle portions of the Classic period (A.D. 250 – 800), figurine production appears to have ceased at Cahal Pech. Ceramic figurines are widely acknowledged to be connected to household ritual (Marcus 1988), and as such, provide a glimpse into how households not only practiced their religion but also understood their role within their ritually based world, both before the rise and after the fall of state sanctioned religion. Although no published studies explain why there is no evidence of Classic Period figurines at Cahal Pech, it has been hypothesized that the institution of divine kingship laid claim to all ritual practices, effectively eliminating the practice of household religious ritual, to which figurines have been linked (Awe 1992; Brumfiel 1996; Marcus 1998; Marcus 2009). During the Late Classic Period (~ AD 850), the Cahal Pech site core appears to have been completely abandoned by the ruling elite. As evidenced by intrusive burials and ritual deposits, it appears that approximately 50 years after the abandonment of the site core, individuals were returning to Cahal Pech for important occasions (Awe, personal communication), possibly leaving figurine fragments in the process.

Figurine fragments were recovered during every major excavation project conducted at Cahal Pech. Based on the dates listed on the provenience cards, the earliest record of the recovery of figurine fragments was noted by David Cheetham's excavations at Plaza B at Cahal Pech (Cheetham 1992). During this same time frame, Terry Powis' 1992-1995 excavations of the Tolok group (Powis and Hohmann 1995), D. Lee's excavations at the Cas Pek group (Lee and Awe 1995), and G. Iannone's excavations at the Zubin group (Iannone 1995) all yielded a significant number of figurine fragments. By far, the greatest quantity of figurine fragments were recovered by Nancy Peniche May during her 2011-2013 excavations of Plaza B (Peniche May, personal communication).

COLLECTION

Cahal Pech Figurine Fragments

The majority of figurine and ocarina fragments recovered at the site of Cahal Pech were collected from Dr. Jaime Awe throughout the duration of the field season, while some of the figurines were temporarily removed from the Cahal Pech visitor's center for analysis. Additional figurine fragments were obtained from Nancy Peniche May after she completed her analysis of the fragments for her research project. Catharina Santasilia and Van Kollias also provided figurine fragments recovered during their excavations at the site of Cahal Pech during the 2014 field season (Santasilia, this volume; Kollias, this volume). A total of 633 figurine fragments from Cahal Pech were processed.

Blackman Eddy Figurine Fragments

The figurine fragments that were recovered at the site of Blackman Eddy were located inside artifact buckets that were stored in the Cahal Pech artifact laboratory. Each of the buckets was opened and searched by Van Kollias, Sydney Lonaker, and

myself, and all figurine fragments found within the buckets were removed for analysis. A total of 42 figurine fragments from Blackman Eddy were processed.

Pacbitun Figurine Fragments

The figurine fragments that were recovered at the site of Pacbitun were located inside artifact buckets that were stored in the Cahal Pech artifact laboratory. Each of the buckets was opened and searched by Van Kollias, Sydney Lonaker, and myself, and all figurine fragments found within the buckets were removed for analysis. A total of 7 figurine fragments from Pacbitun were processed.

Santa Rita Figurine and Vessel Fragments

The figurine fragments that were recovered at the site of Santa Rita through excavations of the Tourism Development Project (TDP) and Institute of Archaeology (IOA) were located inside artifact buckets that were stored in the Cahal Pech artifact laboratory. Each of the buckets was opened and searched by Van Kollias, Sydney Lonaker, and myself, and all figurine fragments found within the buckets were removed for analysis. A total of 27 figurine and vessel fragments from Santa Rita were processed.

Baking Pot Figurine Fragments

The majority of figurine fragments that were recovered at the site of Baking Pot were obtained from Leann du Menil after she completed her analysis of the fragments for her Masters research project (DuMenil 2014). An additional two figurine fragments recovered from Baking Pot were located inside the Cahal Pech visitor's center and were temporarily removed for analysis. A total of 14 figurine fragments from Baking Pot were processed.

Xunantunich Ocarina

A single ocarina that was recovered at the site of Xunantunich was located in the Cahal Pech visitor's center and was temporarily removed for analysis.

METHODS

Catalog Numbers

All figurine fragments were assigned catalog numbers based on the site where they were recovered and the order which they were processed. Each site was assigned a three letter code: Cahal Pech (CHP), Blackman Eddy (BME), Pacbitun (PCB), Santa Rita (STR), Baking Pot (BKP), and Xunantunich (XUN). The designated catalog number contained the site code as a prefix, followed a 5 digit numerical sequence indicating the

Figure 1: Labeled Figurine

order of processing, starting at 00001. The assigned catalog number was then noted on the accompanying artifact provenience card and was printed out on a standard inkjet printer in 6 point font. The number was then cut out from the paper and affixed to each artifact using a 50% concentration Paraloid B-72 compound base coat to which the label was affixed, and a 25% concentration Paraloid B-72 compound applied to the top of the label as a waterproof sealant (Figure 1). When figurine fragments that were assigned separate catalog numbers were later found to be part of the same figurine, the catalog number for the largest piece was taken as the primary number, and the catalog numbers of the other pieces were nullified in the database using a –Z suffix to the artifact catalog number.

Photographs

All figurine fragments were initially photographed with the accompanying artifact identification card. All figurines were photographed with a minimum of three views and without the artifact card (Figure 2). Initial photographs containing the provenience card were labeled with the catalog number that was assigned to the artifact and included the suffix –X (for example: CHP-00001-X). Subsequent multi-view photographs were labeled with the catalog number assigned to the artifact in addition to a suffix containing information about the view angle of the photograph. File name suffix 1 denotes a frontal,

Figure 2: Figurine Photographs

primary photograph, while suffix 2 indicates a posterior secondary photograph showing the catalog number placed on the artifact. Subsequent suffixes detail right, left, and vertical angles from which the photographs were taken.

Reconstruction

Fragments were pieced together in order to reconstruct figurines that had been broken. When figurine fragments fit together, they were secured in place using a 50% concentration Paraloid B-72 and left to dry overnight. When figurine fragments that were assigned separate catalog numbers were found to be part of the same figurine, the catalog number for the largest piece was taken as the primary number, and the catalog numbers of the other pieces were nullified in the database using a –Z suffix to the artifact catalog number. A total of 15 fragments were fitted to other figurine fragments.

Measurements

Standard measurements were taken of each figurine fragment. Digital calipers were used to determine length, width, and height of the figurine and measurements were noted down to the hundredth of a millimeter (mm). All measurements were taken with the anterior side of the figurine facing the researcher. The length measurement was determined as the longest portion of the figurine on the horizontal (x) axis. The height measurement was determined as the longest portion of the figurine on the vertical (y) axis. The width measurement was determined as the longest portion of the figurine on the depth (z) axis. All measurements were noted in millimeters. If the figurine was unidentifiable and the anterior side was not able to be determined, the three-dimensional measurements were taken and the largest measurement was used as an indication of the horizontal (x) axis (Figure 3).

Figure 3: Figurine Measurement Index

After measurements were taken, all figurines were weighed on a digital scale. Figurine weight was noted in grams (g) down to the hundredth of a gram. Due to the limitations of the scale, any figurine fragment over 100 grams was not able to be weighed accurately. Future work on the collection will include weight measurements for fragments that were unable to be initially measured.

Munsell Colors

The internal and surface fabrics of the ceramic figurine fragments were cataloged by color using a Munsell Soil Color Book, 2009 edition. The assigned colors were then entered into the database.

Preliminary Analysis

Preliminary analysis of the figurine fragments included an analysis of the following characteristics: form, type, morphology, body part, sex, hairstyle, clothing, position sitting or standing, eye form, ear spool presence, ear spool decoration details,

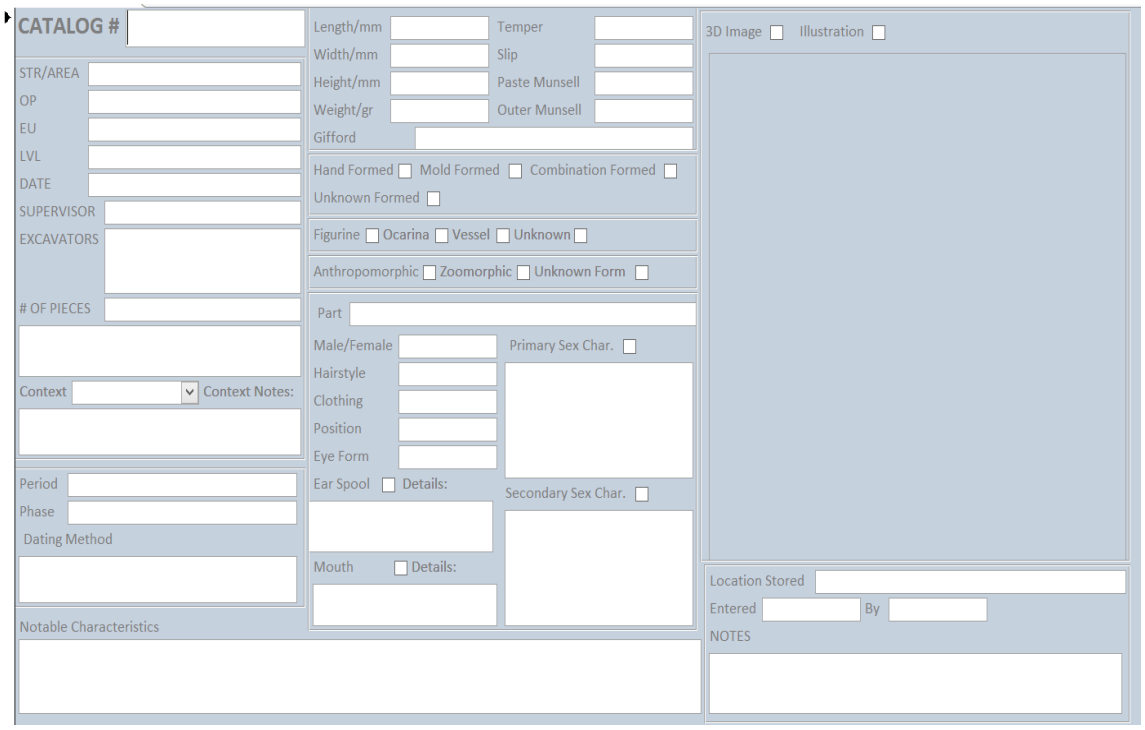

Figure 4: Figurine Database Form

mouth presence, mouth decoration details, the presence of primary sex characteristics, primary sex characteristic details, the presence of secondary sex characteristics, and the details of secondary sex characteristics.

Form was assessed by appearance as being hand-formed, mold-formed, or a combination of both. Type was assessed by appearance as being a figurine, an ocarina, or a portion of a vessel. Morphology was assessed as either anthropomorphic or zoomorphic. Primary Sex Characteristics include the presence or absence of defined breasts or genitalia. Secondary Sex Characteristics included widened hips combined with a small waist for females and overall torso shape. Characteristics that merit further exploration were noted in the database as well.

Data Entry

The provenience information along with the photographs and preliminary analysis were then entered into the Microsoft Access database (Figure 4). Provenience information including structure/area found, operation used, excavation unit, unit level, excavation date, excavation supervisor, excavation personnel along with any comments by the excavators that were noted on the accompanying artifact card, were entered into the database.

Context, Context notes, Period, Phase, and Dating Method will be completed in early 2015 by analyzing the excavation reports pertaining to the specific figurine fragments.

Table 1: Figurine Attribute Frequency

Total Anthropomorphic:	**421**
Unknown Appendage	53
Arm	40
Body	3
Ear Spool	10
Eye	9
Face	62
Foot	3
Forehead/ Hair	22
Head	10
Head and Face	42
Head and Torso	5
Leg and Torso	8
Leg	82
Shoulder	10
Torso	53
Unknown Fragment	7
Whole Figure	2
Total Zoomorphic:	**44**
Armadillo	1
Bat	2
Bird	17
Dog	1
Frog	1
Snake	3
Unidentified Zoomorphic Arm	2
Unidentified Zoomorphic Leg	2
Unidentified Zoomorphic Appendage	1
Unidentified Zoomorphic Head	12
Unidentified Zoomorphic Body	3
Unknown Form:	**238**

Storage

The figurine fragments were then stored in custom cut foam pockets inside a custom metal cabinet in order to keep the fragments both preserved and secure. Each drawer of the cabinet was numbered, and the drawer number for the artifact was noted in the database. Additionally, drawer maps were created for each drawer to assist in locating a specific figurine within each drawer. The figurine that were removed from the Cahal Pech Visitor's Center were returned before the end of the field season.

RESULTS

A full list of all of the figurine fragments that were curated can be found in Appendix A. The following table indicates the quantity of figurines by part. Not all figurine fragments were able to be identified as anthropomorphic or zoomorphic.

ACKNOWLEDGEMENTS

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CHP FIGURINE PROJECT- CONTEXT INVENTORY

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BKP-00004	M410-A	SR3	410A-7	1	12-Jul-2012	ZWEIG, C.	CHP BODEGA- #9
BKP-00005	M410A	SR3	410A-6	1	17-Jun-2012	NO DATA	CHP BODEGA- #9
BKP-00006	M410-A	SR3	410A-7	1	12-Jul-2012	ZWEIG, C.	CHP BODEGA- #9
BKP-00007	M410A	SR3	410A-4	1	26-Jun-2012	ZWEIG, C.	CHP BODEGA- #9
BKP-00008	M410A	SR3	410A-12	1	19-Jul-2012	ZWEIG, C.	CHP BODEGA- #9
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BKP-00012	M410A	SR3	410A-11	1	12-Jul-2012	ZWEIG, C.	CHP BODEGA- #9
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CHP-00004	B4	PLAZA B	PU-94-1	7	7-Jun-1994	CHEETHAM	CHP BODEGA- #1
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CHP-00007	NO DATA	TOLOK	PU-2	5	8-Jul-1994	POWIS	CHP BODEGA- #1
CHP-00008	NO DATA	TOLOK	PU-1 NORTH	4	24-May-1993	UNKNOWN	CHP BODEGA- #1

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CHP-00030	1	CAS PEK	NO DATA	NO DATA	28-Jun-1995	LEE, D.	CHP BODEGA- #1

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CHP-00033	NO DATA	PLAZA B	PU-8	5	21-Jun-1995	CHEETHAM	CHP BODEGA- #1
CHP-00034	PLAZA B	NO DATA	PU-3	8	8-Jun-1995	CHEETHAM	CHP BODEGA- #1
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CHP-00036	H1	NO DATA	12	1	9-Jan-2013	DOUGLAS	CHP BODEGA- #1
CHP-00037	TZINIC GROUP 2		NO DATA	NO DATA NO DATA	0/0/0000	NO DATA CHP BODEGA- #1	
CHP-00038	CAS PEK 1	WEST GROUP	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #1
CHP-00039	TZINIC GROUP 2		NO DATA	NO DATA NO DATA	0/0/0000	NO DATA CHP BODEGA- #1	
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CHP-00041-Z	CAS PEK 1	WEST GROUP	NO DATA	NO DATA	0/0/0000	NO DATA	
CHP-00042	TZINIC GROUP 2		NO DATA	24	0/0/0000	NO DATA	CHP BODEGA- #1
CHP-00043	TOLOK	1	1	1	0/0/0000	NO DATA	CHP BODEGA- #1
CHP-00044	C-9	ZUBIN GROUP C		C9-58	21-Aug-1994	IANNONE	CHP BODEGA- #1
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CHP-00047	B4	NO DATA	7	6	19-Feb-2002	CAROLYN	CHP BODEGA- #1
CHP-00048	B4	NO DATA	8	6	25-Jul-2006	AWE, J.	CHP BODEGA- #1
CHP-00049	B4	NO DATA	8	NO DATA	26-Jul-2006	AWE, J.	CHP BODEGA- #1
CHP-00050	TOLOK	NO DATA	4 EXTENSION	4	6-Jul-1994	NO DATA	CHP BODEGA- #1
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CHP-00063	CAS PEK #1	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #1
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CHP-00091	B4	NO DATA	7	6	19-Feb-2002	CAROLYN	CHP BODEGA- #2
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CHP-00094	B4	NO DATA	8	8	3-Aug-2006	AWE, J.	V
CHP-00095	#1 NOHOCH NA	CAS PEK	NO DATA	NO DATA	29-May-1995	LEE, D.	CHP BODEGA- #2
CHP-00096	TOLOK	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #2

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CHP-00101	B4	PLAZA B	PU-94-1	7	10-Jun-1994	CHEETHAM	CHP BODEGA- #2
CHP-00102	PLAZA B	NO DATA	PU-10	7	23-Jun-1995	CHEETHAM	CHP BODEGA- #2
CHP-00103	B4	NO DATA	7	NO DATA	1-Mar-2002	CAROLYN	CHP BODEGA- #2
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CHP-00105	NOHOCH NA	CAS PEK 1	NO DATA	NO DATA	4-Jul-1995	LEE, D.	CHP BODEGA- #2
CHP-00106	B4	NO DATA	9	6	22-Jun-2007	AWE, J.	CHP BODEGA- #2
CHP-00107	TOLOK 2	NO DATA	2	2	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00108	B4	NO DATA	8	7	1-Aug-2006	AWE, J.	CHP BODEGA- #2
CHP-00109	TOLOK 3	NO DATA	1	1	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00110	NO DATA	TOLOK-14	PU-2 NORTH	4	25-Jun-1992	POWIS	CHP BODEGA- #2
CHP-00111	TOLOK 2	NO DATA	1	1	30-May-1991	NO DATA	CHP BODEGA- #2
CHP-00112	14	TOLOK	10	4	27-Jul-1994	NO DATA	CHP BODEGA- #2
CHP-00113	TOLOK 1	NO DATA	1	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00114	B4	NO DATA	9	6	19-Jun-2007	AWE, J.	CHP BODEGA- #2
CHP-00115	B4	NO DATA	PU-94-1	7	7-Jun-1994	CHEETHAM	CHP BODEGA- #2
CHP-00116	TOLOK	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00117	B5	WEST SIDE	NO DATA	2	0/0/0000	CAROLYN	CHP BODEGA- #2
CHP-00118	B4	NO DATA	PU-94-1	7	7-Jun-1994	CHEETHAM	CHP BODEGA- #2

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00119	B4	NO DATA	8	7	31-Jul-2006	AWE, J.	CHP BODEGA- #2
CHP-00120	B4	NO DATA	7	6	20-Feb-2002	CAROLYN	CHP BODEGA- #2
CHP-00121	TOLOK 1	NO DATA	1	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00122	TOLOK 1	NO DATA	1	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00123	B4	NO DATA	P.U. 12	5	6-Aug-2007	AWE, J.	CHP BODEGA- #2
CHP-00124	TOLOK 1	NO DATA	1	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00125	B4	NO DATA	9	NO DATA	29-Jun-2007	AWE, J.	CHP BODEGA- #2
CHP-00126	H1	NO DATA	10	3	1-Jan-2013	DOUGLAS;BRO	CHP BODEGA- #2
CHP-00127	1	TOLOK	NO DATA	NO DATA	25-May-1994	NO DATA	CHP BODEGA- #2
CHP-00128	B1	NO DATA	B1-2W	7	2-Jul-2013	NO DATA	CHP BODEGA- #2
CHP-00129	PLAZA B	NO DATA	PU-94-1	7	6-Jun-1994	CHEETHAM	CHP BODEGA- #2
CHP-00130	1 NOHOCH NA	CAS PEK	NO DATA	NO DATA	27-Jun-1995	LEE, D.	CHP BODEGA- #2
CHP-00131	1 NOHOCH NA	CAS PEK	NO DATA	NO DATA	26-May-1995	LEE, D.	CHP BODEGA- #2
CHP-00132	B4	NO DATA	7	6	25-Feb-2002	CAROLYN	CHP BODEGA- #2
CHP-00133	1 NOHOCH NA	CAS PEK	NO DATA	NO DATA	7-Jun-1995	LEE, D.	CHP BODEGA- #2
CHP-00134	PLAZA A	ZUBIN	AP-12	4	11-Jun-1992	IANNONE	CHP BODEGA- #2
CHP-00135	1 NOHOCH NA	CAS PEK	NO DATA	NO DATA	3-Jul-1995	LEE, D.	CHP BODEGA- #2
CHP-00136	PLAZA B	NO DATA	PU-11	6	20-Jun-1995	CHEETHAM	CHP BODEGA- #2
CHP-00137	1	CAS PEK	NO DATA	NO DATA	8-Jun-1995	NO DATA	CHP BODEGA- #2
CHP-00138	B4	PLAZA B	PU-94-1	7	3-Jun-1994	CHEETHAM	CHP BODEGA- #2
CHP-00139	B4	NO DATA	7	6	19-Feb-2002	CAROLYN	CHP BODEGA- #2
CHP-00140	C9	ZUBIN	C9-5	7	0/0/0000	IANNONE	CHP BODEGA- #2

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00141	PLAZA B	NO DATA	PU-94-1	7	9-Jun-1994	CHEETHAM	CHP BODEGA- #2
CHP-00142	B-8	ZUBIN GROUP B		B8-31	6-Jul-1993	IANNONE	CHP BODEGA- #2
CHP-00143	PLAZA A	ZUBIN	AP-1A	4	12-Jun-1992	IANNONE	CHP BODEGA- #2
CHP-00144	A-1	ZOPILOTE	7	5	0/0/0000	CHEETHAM	CHP BODEGA- #2
CHP-00145	PLAZA B	NO DATA	PU-10	7	23-Jun-1995	CHEETHAM	CHP BODEGA- #2
CHP-00146	TZINIC GROUP 2		NO DATA	3NO DATA	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00147	ZOPILOTE	A1	7	5	1-Aug-1994	CHEETHAM	CHP BODEGA- #2
CHP-00148	TZINIC GROUP 2		NO DATA	21	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00149	B4	NO DATA	8	6	25-Jul-2006	AWE, J.	CHP BODEGA- #2
CHP-00150	B-2	NO DATA	NO DATA	13	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00151	B4	NO DATA	9	6	21-Jun-2007	AWE, J.	CHP BODEGA- #2
CHP-00152	PLAZA B	NO DATA	PU-94-1	7	9-Jun-1994	CHEETHAM	CHP BODEGA- #2
CHP-00153	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	28-Jun-1995	LEE, D.	CHP BODEGA- #2
CHP-00154	TZINIC GROUP 1		NO DATA	171	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00155	TZINIC GROUP	NO DATA	NO DATA	4	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00156	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	7-Jun-1995	LEE, D.	CHP BODEGA- #2
CHP-00157	A-1	ZOPILOTE	7	2	27-Jul-1994	CHEETHAM	CHP BODEGA- #2
CHP-00158	TOLOK	NO DATA	1	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00159	PLAZA B	NO DATA	PU-10	7	23-Jun-1995	CHEETHAM	CHP BODEGA- #2
CHP-00160	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	7-Jun-1995	LEE, D.	CHP BODEGA- #2
CHP-00161	TOLOK	NO DATA	1	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00162	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	23-Jun-1995	LEE, D.	CHP BODEGA- #2

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00163	C-9	ZUBIN	C9-5	8	26-Aug-1994	IANNONE	CHP BODEGA- #2
CHP-00164	TOLOK	NO DATA	NO DATA	NO DATA	25-May-1994	NO DATA	CHP BODEGA- #2
CHP-00165	PLAZA B	NO DATA	PU-10	7	23-Jun-1995	NO DATA	CHP BODEGA- #2
CHP-00166	PLAZA B	B4	PU-94-1	NO DATA	26-May-1994	CHEETHAM	CHP BODEGA- #2
CHP-00167	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	23-Jun-1995	LEE, D.	CHP BODEGA- #2
CHP-00168	B4	NO DATA	9	9	26-Jul-2007	AWE, J.	CHP BODEGA- #2
CHP-00169	B4	NO DATA	7 EXT SOUTH	6	7-Mar-2002	CAROLYN	CHP BODEGA- #2
CHP-00170	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	23-Jun-1995	LEE, D.	CHP BODEGA- #2
CHP-00171	1	TOLOK	1	1	0/0/0000	NO DATA	CHP BODEGA- #2
CHP-00172	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	28-Jun-1995	LEE, D.	CHP BODEGA- #2
CHP-00173	B4	NO DATA	7	6	19-Feb-2002	CAROLYN	CHP BODEGA- #2
CHP-00174	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	7-Jun-1995	LEE, D.	CHP BODEGA- #2
CHP-00175	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	7-Jun-1995	LEE, D.	CHP BODEGA- #2
CHP-00176	B4	NO DATA	9	NO DATA	12-Jul-2007	AWE, J.	CHP BODEGA- #2
CHP-00177	B4	PLAZA B	PU-94-1	NO DATA	26-May-1994	CHEETHAM	CHP BODEGA- #2
CHP-00178	B4	NO DATA	9	6	22-Jun-2007	AWE, J.	CHP BODEGA- #2
CHP-00179	B4	NO DATA	9	6	22-Jun-2007	AWE, J.	CHP BODEGA- #2
CHP-00180	B4	NO DATA	9	6	23-Jun-2007	AWE, J.	CHP BODEGA- #2
CHP-00181	B4	PLAZA B	PU-94-1	7	7-Jun-1994	CHEETHAM	CHP BODEGA- #2
CHP-00182	B4	NO DATA	9	NO DATA	12-Jun-2007	AWE, J.	CHP BODEGA- #2
CHP-00183	B4	NO DATA	7	6	18-Feb-2002	CAROLYN	CHP BODEGA- #2
CHP-00184	B4	NO DATA	7	6	19-Feb-2002	CAROLYN	CHP BODEGA- #2

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00185	B4	NO DATA	7	6	18-Feb-2002	CAROLYN	CHP BODEGA- #2
CHP-00186	B4	NO DATA	9	6	22-Jun-2007	AWE, J.	CHP BODEGA- #2
CHP-00187	1	TOLOK	2	1	30-May-1991	NO DATA	CHP BODEGA- #2
CHP-00188	B4	NO DATA	9	NO DATA	25-Jun-2007	AWE, J.	CHP BODEGA- #2
CHP-00189	B4	NO DATA	7 EXT SOUTH	6	7-Mar-2002	NO DATA	CHP BODEGA- #2
CHP-00190	B4	NO DATA	8	NO DATA	26-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00191	B4	NO DATA	PU-94-1	7	8-Jun-1995	CHEETHAM	CHP BODEGA- #3
CHP-00192	B4	NO DATA	9	NO DATA	12-Jun-2007	AWE, J.	CHP BODEGA- #3
CHP-00193	B4	NO DATA	8	NO DATA	26-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00194	B4	NO DATA	9	8	13-Jul-2004	AWE, J.	CHP BODEGA- #3
CHP-00195	B4	PLAZA B	PU-94-1	3	18-May-1994	NO DATA	CHP BODEGA- #3
CHP-00196	B4	NO DATA	8	4	22-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00197	B4	NO DATA	9	8	26-Jun-2007	AWE, J.	CHP BODEGA- #3
CHP-00198	B4	NO DATA	8	6	25-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00199	B4	NO DATA	8	NO DATA	26-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00200	B4	NO DATA	8	NO DATA	26-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00201	B4	NO DATA	8	NO DATA	26-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00202	NO DATA	TOLOK	NO DATA	4	23-Jun-1994	NO DATA	CHP BODEGA- #3
CHP-00203	B4	NO DATA	9	NO DATA	12-Jul-2007	AWE, J.	CHP BODEGA- #3
CHP-00204	PU-12	NO DATA	NO DATA	5	28-Aug-2007	AWE, J.	CHP BODEGA- #3
CHP-00205	B4	NO DATA	8	NO DATA	26-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00206	B4	NO DATA	8	6	0/0/0000	AWE, J.	CHP BODEGA- #3

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00207	B4	NO DATA	8	NO DATA	26-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00208	PLAZA B	NO DATA	PU-10	7	23-Jun-1995	NO DATA	CHP BODEGA- #3
CHP-00209	B4	NO DATA	8	NO DATA	26-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00210	B4	NO DATA	PU-94-1	7	9-Jun-1994	CHEETHAM	CHP BODEGA- #3
CHP-00211	1	CAS PEK	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #3
CHP-00212	B4	NO DATA	9	NO DATA	12-Jul-2007	AWE, J.	CHP BODEGA- #3
CHP-00213	NO DATA	TOLOK	3	5	12-Jun-1993	NO DATA	CHP BODEGA- #3
CHP-00214	B4	NO DATA	9	6	22-Jun-2007	AWE, J.	CHP BODEGA- #3
CHP-00215	B4	NO DATA	9	NO DATA	29-Jun-2007	AWE, J.	CHP BODEGA- #3
CHP-00216	NO DATA	TOLOK	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #3
CHP-00217	B4	NO DATA	9	NO DATA	25-Jun-2002	AWE, J.	CHP BODEGA- #3
CHP-00218	B4	NO DATA	9	8	19-Jul-2007	AWE, J.	CHP BODEGA- #3
CHP-00219	B4	NO DATA	9	8	18-Jul-2007	AWE, J.	CHP BODEGA- #3
CHP-00220	CAS PEK #1	NO DATA	NO DATA	NO DATA	28-Jun-1995	NO DATA	CHP BODEGA- #3
CHP-00221	B4	NO DATA	9	9	26-Jul-2007	AWE, J.	CHP BODEGA- #3
CHP-00222	A1	ZOPILOTE	7	4	0/0/0000	CHEETHAM	CHP BODEGA- #3
CHP-00223	CAS PEK #1	NO DATA	NO DATA	NO DATA	23-Jun-1995	LEE, D.	CHP BODEGA- #3
CHP-00224	B4	NO DATA	9	NO DATA	29-Jun-2007	AWE, J.	CHP BODEGA- #3
CHP-00225	B4	NO DATA	9	8	18-Jul-2007	AWE, J.	CHP BODEGA- #3
CHP-00226	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	26-Jun-1995	LEE, D.	CHP BODEGA- #3
CHP-00227	PLAZA B	NO DATA	PU-4	5	1-Jun-1995	CHEETHAM	CHP BODEGA- #3
CHP-00228	ZUBIN	NO DATA	C9-5	7	20-Aug-1994	TUT	CHP BODEGA- #3

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00229	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	22-Jun-1995	LEE, D.	CHP BODEGA- #3
CHP-00230	B4	NO DATA	PU-94-1	7	6-Jun-1994	NO DATA	CHP BODEGA- #3
CHP-00231	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	4-Jul-1995	LEE, D.	CHP BODEGA- #3
CHP-00232	CAS PEK #1	NO DATA	NO DATA	NO DATA	23-Jun-1995	NO DATA	CHP BODEGA- #3
CHP-00233	B4	NO DATA	8	8	3-Aug-2006	AWE, J.	CHP BODEGA- #3
CHP-00234	PLAZA B	NO DATA	PU-10	7	23-Jun-1995	CHEETHAM	CHP BODEGA- #3
CHP-00235	B4	NO DATA	8	6	25-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00236	5	NO DATA	1	2	0/0/0000	POWIS	CHP BODEGA- #3
CHP-00237	18	TOLOK	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #3
CHP-00238	B4	NO DATA	8	6	26-Jun-2006	AWE, J.	CHP BODEGA- #3
CHP-00239	B4	PLAZA B	PU-94-1	6	1-Jul-1994	CHEETHAM	CHP BODEGA- #3
CHP-00240	B4	NO DATA	9	6	21-Jun-2007	AWE, J.	CHP BODEGA- #3
CHP-00241	B4	PLAZA B	PU-94-1	7	7-Jun-1994	CHEETHAM	CHP BODEGA- #3
CHP-00242	B4	PLAZA B	PU-94-1	7	9-Jun-1994	CHEETHAM	CHP BODEGA- #3
CHP-00243	B4	NO DATA	8	NO DATA	26-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00244	PU- 1ST	TOLOK	14W	4	20-May-1994	NO DATA	CHP BODEGA- #3
CHP-00245	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	9-Jun-1995	LEE, D.	CHP BODEGA- #3
CHP-00246	NO DATA	TOLOK	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #3
CHP-00247	B4	NO DATA	7	6	19-Feb-2002	CAROLYN	CHP BODEGA- #3
CHP-00248	B4	NO DATA	7	12	20-Mar-2002	CAROLYN	CHP BODEGA- #3
CHP-00249	NO DATA	TOLOK	PU2- PATIO EXT1		23-Jun-1992	POWIS	CHP BODEGA- #3
CHP-00250	PLAZA B	NO DATA	PU-10	7	21-Jun-1995	NO DATA	CHP BODEGA- #3

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00251-Z	PLAZA B	NO DATA	PU-94-1	7	7-Jun-1994	NO DATA	
CHP-00252	1	CAS PEK	1	8	0/0/0000	SUNAHARA	CHP BODEGA- #3
CHP-00253	B4	NO DATA	7	6	25-Feb-2002	CAROLYN	CHP BODEGA- #3
CHP-00254	NO DATA	TOLOK	PU2- PATIO EXT1		23-Jun-1992	POWIS	CHP BODEGA- #3
CHP-00255	B4	NO DATA	7	12	20-Mar-2002	CAROLYN	CHP BODEGA- #3
CHP-00256	B4	PLAZA B	9U-94-1	8	13-Jun-1994	CHEETHAM	CHP BODEGA- #3
CHP-00257	B4	NO DATA	8	6	26-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00258	B4	NO DATA	7	12	20-Mar-2002	CAROLYN	CHP BODEGA- #3
CHP-00259	NO DATA	TOLOK	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #3
CHP-00260	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	12-Jun-1995	LEE, D.	CHP BODEGA- #3
CHP-00261	PLAZA B	NO DATA	PU-8	4	13-Jun-1995	NO DATA	CHP BODEGA- #3
CHP-00262	B4	NO DATA	8	12	8-Aug-2006	NO DATA	CHP BODEGA- #3
CHP-00263	PLAZA B	NO DATA	PU-94-1	NO DATA	26-May-1994	CHEETHAM	CHP BODEGA- #3
CHP-00264	PLAZA B	NO DATA	PU-94-1	8	21-Jun-1994	CHEETHAM	CHP BODEGA- #3
CHP-00266	B4	PLAZA B	PU-94-1	7	9-Jun-1994	CHEETHAM	CHP BODEGA- #3
CHP-00267	B4	NO DATA	9	9	26-Jul-2007	AWE, J.	CHP BODEGA- #3
CHP-00268	PLAZA B	NO DATA	PU-94-1	7	10-Jun-1994	CHEETHAM	CHP BODEGA- #3
CHP-00269	B4	NO DATA	7	6	19-Feb-2002	CAROLYN	CHP BODEGA- #3
CHP-00270-Z	NO DATA	PLAZA B	PU-3	8	8-Jun-1995	CHEETHAM	
CHP-00271	NO DATA	PLAZA B	PU-3	8	8-Jun-1995	CHEETHAM	CHP BODEGA- #3
CHP-00272	PU- 1ST	TOLOK	14W1/B	NO DATA	9-Jun-1994	POWIS	CHP BODEGA- #3
CHP-00273	B4	NO DATA	PU-94-1	7	7-Jun-1994	CHEETHAM	CHP BODEGA- #3

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00274	CAS PEK #1	STR #1	NO DATA	NO DATA	27-Jun-1995	LEE, D.	CHP BODEGA- #3
CHP-00275	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	22-Jun-1995	LEE, D.	CHP BODEGA- #3
CHP-00276	1	CAS PEK	NO DATA	10	1-Jun-1995	LEE, D.	CHP BODEGA- #3
CHP-00277	2	TOLOK	2	4	0/0/0000	NO DATA	CHP BODEGA- #3
CHP-00278	B4	NO DATA	9	NO DATA	12-Jun-2007	AWE, J.	CHP BODEGA- #3
CHP-00279	1	TOLOK	NO DATA	NO DATA	25-May-1994	NO DATA	CHP BODEGA- #3
CHP-00280	B4	NO DATA	9	8	17-Jul-2007	AWE, J.	CHP BODEGA- #3
CHP-00281	B4	NO DATA	8	NO DATA	26-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00282	14	TOLOK	10	4	27-Jul-1994	NO DATA	CHP BODEGA- #3
CHP-00283	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	19-Jun-1995	LEE, D.	CHP BODEGA- #3
CHP-00284	B4	NO DATA	8	6	24-Jul-2006	AWE, J.	CHP BODEGA- #3
CHP-00285	2	TZINIC	15	1	0/0/0000	NO DATA	CHP BODEGA- #3
CHP-00286	B4	NO DATA	9	7	27-Jun-2007	AWE, J.	CHP BODEGA- #3
CHP-00287	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	1-Jun-1995	LEE, D.	CHP BODEGA- #3
CHP-00288	B4	NO DATA	9	NO DATA	12-Jul-2007	AWE, J.	CHP BODEGA- #3
CHP-00289	B4	NO DATA	7	6	20-Feb-2002	CAROLYN	CHP BODEGA- #3
CHP-00290-Z	NO DATA	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	
CHP-00291	B4	NO DATA	7	NO DATA	20-Feb-2002	CAROLYN	CHP BODEGA- #4
CHP-00292	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	9-Jun-1995	LEE, D.	CHP BODEGA- #4
CHP-00293	CAS PEK #1	NO DATA	NO DATA	NO DATA	23-Jun-1995	LEE, D.	CHP BODEGA- #4
CHP-00294	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	12-Jun-1995	LEE, D.	CHP BODEGA- #4
CHP-00295	NO DATA	TOLOK	NO DATA	4	7-Jun-1994	NO DATA	CHP BODEGA- #

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00296	B4	NO DATA	9	NO DATA	29-Jun-2007	AWE, J.	CHP BODEGA- #4
CHP-00297	B4	NO DATA	8	6	24-Jun-2006	AWE, J.	CHP BODEGA- #4
CHP-00298	G2	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #4
CHP-00299	B4	NO DATA	8	8	3-Aug-2006	AWE, J.	CHP BODEGA- #4
CHP-00300	B4	NO DATA	9	NO DATA	12-Jul-2009	AWE, J.	CHP BODEGA- #4
CHP-00301	B4	NO DATA	PU 12	5	6-Aug-2007	AWE, J.	CHP BODEGA- #4
CHP-00302	B4	NO DATA	9	6	25-Jun-2007	AWE, J.	CHP BODEGA- #4
CHP-00303	B4	NO DATA	9	NO DATA	29-Jun-2007	AWE, J.	CHP BODEGA- #4
CHP-00304	B4	NO DATA	9	5	15-Jun-2007	AWE, J.	CHP BODEGA- #4
CHP-00305	B5	NO DATA	NO DATA	1	0/0/0000	NO DATA	CHP BODEGA- #4
CHP-00306	B4	NO DATA	8	NO DATA	26-Jul-2006	AWE, J.	CHP BODEGA- #4
CHP-00307	B4	NO DATA	8	6	24-Jul-2006	AWE, J.	CHP BODEGA- #4
CHP-00308	1	NO DATA	3	2	0/0/0000	NO DATA	CHP BODEGA- #4
CHP-00309	B4	NO DATA	8	4	22-Jul-2006	AWE, J.	CHP BODEGA- #4
CHP-00310	B4	NO DATA	8	6	25-Jul-2006	AWE, J.	CHP BODEGA- #4
CHP-00311	B4	NO DATA	8	6	25-Jul-2006	AWE, J.	CHP BODEGA- #4
CHP-00312	B4	NO DATA	PU-12	5	6-Aug-2007	AWE, J.	CHP BODEGA- #4
CHP-00313	B4	NO DATA	9	9	23-Jul-2007	AWE, J.	CHP BODEGA- #4
CHP-00314	B4	NO DATA	8	7	1-Aug-2006	AWE, J.	CHP BODEGA- #4
CHP-00315	B4	NO DATA	9	8	18-Jul-2007	AWE, J.	CHP BODEGA- #4
CHP-00316	B4	NO DATA	9	9	23-Jul-2007	AWE, J.	CHP BODEGA- #4
CHP-00317	B4	NO DATA	8	8	3-Aug-2006	AWE, J.	CHP BODEGA- #4

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00318	B4	NO DATA	9	NO DATA	28-Jun-2007	AWE, J.	CHP BODEGA- #4
CHP-00319	B2	NO DATA	NO DATA	13	0/0/0000	NO DATA	CHP BODEGA- #4
CHP-00320	B4	NO DATA	9	NO DATA	12-Jul-2007	AWE, J.	CHP BODEGA- #4
CHP-00321	B4	NO DATA	9	6	19-Jun-2007	AWE, J.	CHP BODEGA- #4
CHP-00322	B4	NO DATA	PU 12	5	6-Aug-2007	AWE, J.	CHP BODEGA- #4
CHP-00323	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	22-Jun-1995	LEE, D.	CHP BODEGA- #4
CHP-00324	A1	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #4
CHP-00325	B4	NO DATA	8	6	0/0/0000	AWE, J.	CHP BODEGA- #4
CHP-00326	B4	NO DATA	9	8	18-Jul-2007	AWE, J.	CHP BODEGA- #4
CHP-00327	B4	NO DATA	9	6	20-Jun-2007	AWE, J.	CHP BODEGA- #4
CHP-00328	B4	NO DATA	8	6	25-Jul-2006	AWE, J.	CHP BODEGA- #4
CHP-00329	B5	NO DATA	NO DATA	1	0/0/0000	NO DATA	CHP BODEGA- #4
CHP-00330	B4	NO DATA	9	8	18-Jul-2007	AWE, J.	CHP BODEGA- #4
CHP-00331	1	ZOPILOTE	7	7	0/0/0000	CHEETHAM	CHP BODEGA- #4
CHP-00332	NO DATA	PLAZA B	PU-4	4	31-May-1995	CHEETHAM	CHP BODEGA- #4
CHP-00333	B4	NO DATA	7 EXT SOUTH	6	7-Mar-2002	CAROLYN	CHP BODEGA- #4
CHP-00334	NO DATA	PLAZA B	PU-10	6	20-Jun-1995	NO DATA	CHP BODEGA- #4
CHP-00335	B4	NO DATA	8	6	25-Jul-2006	AWE, J.	CHP BODEGA- #4
CHP-00336	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	26-May-1995	LEE, D.	CHP BODEGA- #4
CHP-00337	1	TOLOK	NO DATA	NO DATA	26-May-1994	NO DATA	CHP BODEGA- #4
CHP-00338	NO DATA	TOLOK	4EXT	4	6-Jul-1994	NO DATA	CHP BODEGA- #4
CHP-00339	NO DATA	PLAZA B	PU-3	8	6-Jun-1995	CHEETHAM	CHP BODEGA- #4

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00340	B4	PLAZA B	PU-94-1	7	13-Jun-1994	CHEETHAM	CHP BODEGA- #4
CHP-00341	B4	NO DATA	9	8	18-Jul-2007	AWE, J.	CHP BODEGA- #4
CHP-00342	NOHOCH NA 1	CAS PEK	NO DATA	10	6-Jun-1995	LEE, D.	CHP BODEGA- #4
CHP-00343	B4	NO DATA	9	8	16-Jul-2007	AWE, J.	CHP BODEGA- #4
CHP-00344	B8	ZUBIN	1	1	29-May-1992	HODGESON	CHP BODEGA- #4
CHP-00345	1	TOLOK	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #4
CHP-00346	1	TOLOK	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #4
CHP-00347	1	TOLOK	PU-2	NO DATA	25-May-1994	NO DATA	CHP BODEGA- #4
CHP-00348	1	TOLOK	1	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #4
CHP-00349	14	TOLOK	10	4	27-Jul-1994	NO DATA	CHP BODEGA- #4
CHP-00350	C-9	ZUBIN	C9-5	8	21-Aug-1994	IANNONE	CHP BODEGA- #4
CHP-00351	B4	NO DATA	7	6	2-Feb-2002	NO DATA	CHP BODEGA- #4
CHP-00352-Z	B4	PLAZA B	PU-94-1	7	8-Jun-1994	CHEETHAM	CHP BODEGA- #4
CHP-00353	B4	PLAZA B	PU-94-1	7	6-Jun-1994	CHEETHAM	CHP BODEGA- #4
CHP-00354	B4	PLAZA B	PU-94-1	7	10-Jun-1994	CHEETHAM	CHP BODEGA- #4
CHP-00355	NO DATA	PLAZA B	PU-94-1	7	7-Jun-1994	CHEETHAM	CHP BODEGA- #4
CHP-00356	B4	NO DATA	7	6	18-Feb-2002	CAROLYN	CHP BODEGA- #4
CHP-00357	AI	ZOPILOTE	7	5	0/0/0000	CHEETHAM	CHP BODEGA- #4
CHP-00358	B4	PLAZA B	PU-94-1	10	29-Jun-1994	CHEETHAM	CHP BODEGA- #4
CHP-00359	C9	ZUBIN	C9-5	7	20-Aug-1994	IANNONE	CHP BODEGA- #4
CHP-00360	NO DATA	PLAZA B	PU-8	4	13-Jun-1995	CHEETHAM	CHP BODEGA- #4
CHP-00361	B4	NO DATA	7	6	19-Feb-2002	CAROLYN	CHP BODEGA- #4

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00362	B4	NO DATA	7	5	18-Feb-2002	CAROLYN	CHP BODEGA- #4
CHP-00363	4	TOLOK	1	1	0/0/0000	NO DATA	CHP BODEGA- #4
CHP-00364	B4	NO DATA	7	5	18-Feb-2002	CAROLYN	CHP BODEGA- #4
CHP-00365	NO DATA	PLAZA B	PU-10	7	22-Jun-1995	NO DATA	CHP BODEGA- #4
CHP-00366	NOHOCH NA 1	CAS PEK	NO DATA	NO DATA	28-Jun-1995	LEE, D.	CHP BODEGA- #4
CHP-00367	B4	NO DATA	7A	4	19-Feb-2002	CAROLYN	CHP BODEGA- #4
CHP-00368	NO DATA	PLAZA B	PU-10	7	22-Jun-1995	NO DATA	CHP BODEGA- #4
CHP-00369	B4	NO DATA	7	6	19-Feb-2002	CAROLYN	CHP BODEGA- #4
CHP-00370	NO DATA	TOLOK	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #4
CHP-00371	5	NO DATA	1	3	15-Jun-1995	POWIS	CHP BODEGA- #4
CHP-00372	B4	PLAZA B	PU-94-1	7	6-Jun-1994	CHEETHAM	CHP BODEGA- #4
CHP-00373	B4	NO DATA	7	6	18-Feb-2002	CAROLYN	CHP BODEGA- #4
CHP-00374	B4	PLAZA B	PU-94-1	8	15-Jun-1994	CHEETHAM	CHP BODEGA- #4
CHP-00375	NO DATA	PLAZA B	PU-94-1	7	3-Jun-1994	CHEETHAM	CHP BODEGA- #4
CHP-00376	B4	PLAZA B	PU-94-1	7	13-Jun-1994	CHEETHAM	CHP BODEGA- #4
CHP-00377	B4	PLAZA B	PU-94-1	7	7-Jun-1994	CHEETHAM	CHP BODEGA- #4
CHP-00378	NO DATA	PLAZA B	PU-10	7	23-Jun-1995	NO DATA	CHP BODEGA- #4
CHP-00379	C9	GROUP C	C9-5	9	21-Aug-1994	IANNONE	CHP BODEGA- #5
CHP-00380	A3	NO DATA	B-21	2	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00381	B4	NO DATA	7	10	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00382	B4	NO DATA	7	6	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00383	A2	NO DATA	1?	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #5

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00384	NO DATA	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00385	A3	NO DATA	NO DATA	1	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00386	NO DATA	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00387	A1	NO DATA	NO DATA	1	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00388	B4	NO DATA	7	6	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00389	NO DATA	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00390	B4	NO DATA	7	6	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00391	B4	NO DATA	7	6	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00392	NO DATA	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00393	NO DATA	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00394	NO DATA	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00395	NO DATA	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00396	NO DATA	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00397	NO DATA	NO DATA	NO DATA	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #5
CHP-00398	B2	CHP-3	B2-1	8	11-Jul-2011	PENICHE, N.	CHP BODEGA- #5
CHP-00399	B2	CHP-3	B2-2	3	18-Jul-2011	PENICHE, N.	CHP BODEGA- #5
CHP-00400	PLAZA B	SR-3	CHP-PB-PU-24	7	18-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00401	PLAZA B	SR-3	CHP-PB-PU-24	1	2-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00402	PLAZA B	SR-3	CHP-PB-PU-24	7	13-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00403	PLAZA B	CHP-3	CHP-PB-PU-24	7	16-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00404	B2	CHP-3	B2-1	8	8-Jul-2011	PENICHE, N.	CHP BODEGA- #5
CHP-00405	B2	CHP-3	B2-1	8	11-Jul-2011	PENICHE, N.	CHP BODEGA- #5

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00406	B2	CHP-3	B2-1	8	11-Jul-2011	PENICHE, N.	CHP BODEGA- #5
CHP-00407	B2	CHP-3	B2-1	9	13-Jul-2011	PENICHE, N.	CHP BODEGA- #5
CHP-00408	B2	CHP-3	B2-1	8	11-Jul-2011	PENICHE, N.	CHP BODEGA- #5
CHP-00409	PLAZA B	CHP-3	CHP-PB-PU-16	14	28-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00410	PLAZA B	CHP-3	CHP-PB-PU-16	10	20-Jun-2011	PENICHE, N.	CHP BODEGA- #5
CHP-00411	PLAZA B	CHP-3	CHP-PB-PU-16	10	19-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00412	B2	CHP-3	B2-1	7	7-Jul-2011	PENICHE, N.	CHP BODEGA- #5
CHP-00413	B2	CHP-3	B2-1	8	0/0/0000	PENICHE, N.	CHP BODEGA- #5
CHP-00414	B2	CHP-3	B2-1	8	8-Jul-2011	PENICHE, N.	CHP BODEGA- #5
CHP-00415	B2	CHP-3	B2-1	8	11-Jul-2011	PENICHE, N.	CHP BODEGA- #5
CHP-00416	PLAZA B	CHP-3	CHP-PB-PU-17	17	4-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00417	PLAZA B	STR-3	CHP-PB-PU-19	B10	6-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00418	PLAZA B	CHP-3	CHP-PB-PU-19	B9	18-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00419	PLAZA B	CHP-3	CHP-PB-PU-19	B9	18-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00420	PLAZA B	CHP-3	CHP-PB-PU-19	B9	18-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00421	PLAZA B	CHP-3	CHP-PB-PU-19	B9	18-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00422	PLAZA B	CHP-3	CHP-PB-PU-19	C16	6-Jul-2002	PENICHE, N.	CHP BODEGA- #5
CHP-00423	PLAZA B	CHP-3	CHP-PB-PU-19	8	14-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00424	PLAZA B	CHP-3	CHP-PB-PU-19	8	14-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00425	PLAZA B	SR-3	CHP-PB-PU-19	B11	17-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00426	PLAZA B	CHP-3	CHP-PB-PU-19	B8	22-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00427	PLAZA B	CHP-3	CHP-PB-PU-19	10	19-Jun-2012	PENICHE, N.	CHP BODEGA- #5

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00428	PLAZA F	SR-3	CHP-PF-PU-4	3	26-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00429	PLAZA F	SR-3	CHP-PF-PU-4	3	19-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00430	PLAZA F	SR-3	CHP-PF-PU-4	3	26-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00431	PLAZA B	NO DATA	CHP-PB-PU-17	17	6-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00432	PLAZA B	CHP-3	CHP-PB-PU-20A	11	25-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00433	PLAZA B	CHP-3	CHP-PB-PU-16	11	13-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00434	PLAZA B	CHP-3	CHP-PB-PU-19C	12	6-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00435	PLAZA B	CHP-3	CHP-PB-PU-16B	11	22-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00436	PLAZA B	CHP-3	CHP-PU-PU-16D	10	26-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00437	PLAZA B	CHP-3	CHP-PB-PU-19	9	19-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00438	PLAZA B	CHP-3	CHP-PB-PU-16	14	28-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00439	PLAZA B	CHP-3	CHP-PB-PU-16	14	28-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00440	PLAZA B	CHP-3	CHP-PB-PU-16	14	28-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00441	PLAZA B	CHP-3	CHP-PB-PU-19C	16	9-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00442	PLAZA B	CHP-3	CHP-PB-PU-19C	16	9-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00443	PLAZA B	CHP-3	CHP-PB-PU-19C	16	9-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00444	PLAZA B	CHP-3	CHP-PB-PU-19C	16	9-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00445	PLAZA B	CHP-3	CHP-PB-PU-24	7	12-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00446	PLAZA B	CHP-3	CHP-PB-PU-19C	13	4-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00447	PLAZA B	CHP-3	CHP-PB-PU-19	8	15-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00448	PLAZA B	CHP-3	CHP-PB-PU-19B	10	16-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00449	PLAZA B	CHP-3	CHP-PB-PU-19B	10	16-Jul-2012	PENICHE, N.	CHP BODEGA- #5

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00450	PLAZA B	CHP-3	CHP-PB-PU-16	A10	22-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00451	PLAZA B	CHP-3	CHP-PB-PU-24	7	24-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00452	PLAZA B	CHP-3	CHP-PB-PU-16	E10	26-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00453	PLAZA B	CHP-3	CHP-PB-PU-17	17	4-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00454	PLAZA B	SR-3	CHP-PB0PU-24	7	13-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00455	PLAZA B	CHP-3	CHP-PB-PU-22	B9	18-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00456	PLAZA B	CHP-3	CHP-PB-PU-19	B10	13-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00457	PLAZA B	CHP-3	CHP-PB-PU-16	E10	27-Jun-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00458	PLAZA B	NO DATA	CHP-PB-PU-19	B10	16-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00459	PLAZA B	NO DATA	CHP-PB-PU-19	B10	16-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00460	PLAZA B	NO DATA	CHP-PB-PU-19	B10	16-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00461	PLAZA B	NO DATA	CHP-PB-PU-19	B10	16-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00462	PLAZA B	NO DATA	CHP-PB-PU-19	B10	16-Jul-2012	PENICHE, N.	CHP BODEGA- #5
CHP-00463	PLAZA B	NO DATA	CHP-PB-PU-19	B10	16-Jul-2012	PENICHE, N.	CHP BODEGA- #6
CHP-00464	PLAZA B	CHP-3	CHP-PB-PU-13	9	13-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00465	PLAZA B	CHP-3	CHP-PB-PU-13	9	13-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00466	PLAZA B	CHP-3	CHP-PB-PU-14	10	8-Jul-2010	PENICHE, N.	CHP BODEGA- #6
CHP-00467	PLAZA B	CHP-3	CHP-PB-PU-13	10	14-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00468	PLAZA B	CHP-3	CHP-PB-PU-13	8	11-Jul-2001	PENICHE, N.	CHP BODEGA- #6
CHP-00469	PLAZA B	CHP-3	CHP-PB-PU-14	8	8-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00470	PLAZA B	CHP-3	CHP-PB-PU-14	10	8-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00471	PLAZA B	CHP-3	CHP-PB-PU-14	5	7-Jul-2011	PENICHE, N.	CHP BODEGA- #6

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00472	PLAZA B	CHP-3	CHP-PB-PU-14	10	8-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00473	PLAZA B	CHP-3	CHP-PB-PU-14	14	15-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00474	PLAZA B	CHP-3	CHP-PB-PU-14	NO DATA	13-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00475	PLAZA B	CHP-3	CHP-PB-PU-15	14	25-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00476	PLAZA B	CHP-3	CHP-PB-PU-15	14	25-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00477	PLAZA B	CHP-3	CHP-PB-PU-15	9	22-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00478	PLAZA B	CHP-3	CHP-PB-PU-15	11	25-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00479	PLAZA B	CHP-3	CHP-PB-PU-16	16	29-Jun-2012	PENICHE, N.	CHP BODEGA- #6
CHP-00480	PLAZA B	CHP-3	CHP-PB-PU-13	9	13-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00481	PLAZA B	CHP-3	CHP-PB-PU-17	17	5-Jul-2012	PENICHE, N.	CHP BODEGA- #6
CHP-00482	PLAZA C	CHP-3	CHP-PC-PU-5	8	20-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00483	PLAZA C	CHP-3	CHP-PC-PU-5	8	20-Jul-2011	PENICHE, N.	CHP BODEGA- #6
CHP-00484	PLAZA B	CHP-3	CHP-PB-PU-27	10	25-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00485	PLAZA B	CHP-3	CHP-PB-PU-27	10	25-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00486	PLAZA B	CHP-3	CHP-PB-PU-36	12	0/0/0000	PENICHE, N.	CHP BODEGA- #6
CHP-00487	PLAZA B	CHP-3	CHP-PB-PU-29	11	20-Jun-2012	PENICHE, N.	CHP BODEGA- #6
CHP-00488	PLAZA B	CHP-3	CHP-PB-PU-39	9	23-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00489	PLAZA B	CHP-3	CHP-PB-PU-31	12	12-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00490	PLAZA B	CHP-3	CHP-PB-PU-19B	10	13-Jul-2012	PENICHE, N.	CHP BODEGA- #6
CHP-00491	PLAZA B	CHP-3	CHP-PB-PU-27	8	25-Jun-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00492	PLAZA B	CHP-3	CHP-PB-PU-33C	12	9-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00493	PLAZA B	CHP-3	CHP-PB-PU-31	12	15-Jul-2015	PENICHE, N.	CHP BODEGA- #6

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00494	PLAZA B	CHP-3	CHP-PB-PU-38	6	23-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00495	PLAZA B	CHP-3	CHP-PB-PU-28	10	0/0/0000	PENICHE, N.	CHP BODEGA- #6
CHP-00496	PLAZA B	CHP-3	CHP-PB-PU-36	12	16-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00497	PLAZA B	CHP-3	CHP-PB-PU-29	NO DATA	15-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00498	PLAZA B	CHP-3	CHP-PB-PU-29	NO DATA	15-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00499	PLAZA B	CHP-3	CHP-PB-PU-38	6	30-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00500	PLAZA B	CHP-3	CHP-PB-PU-29	11	20-Jun-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00501	PLAZA B	CHP-3	CHP-PB-PU-29	13	0/0/0000	PENICHE, N.	CHP BODEGA- #6
CHP-00502	PLAZA B	CHP-3	CHP-PB-PU-29	13	0/0/0000	PENICHE, N.	CHP BODEGA- #6
CHP-00503	PLAZA B	CHP-3	CHP-PB-PU-19	C16	0/0/0000	PENICHE, N.	CHP BODEGA- #6
CHP-00504	PLAZA B	CHP-3	CHP-PB-PU-29	11	20-Jun-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00505	PLAZA B	CHP-3	CHP-PB-PU-28	3	11-Jun-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00506	PLAZA B	CHP-3	CHP-PB-PU-37	11	31-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00507-Z	PLAZA B	CHP-3	CHP-PB-PU-29	13	12-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00508-Z	PLAZA B	CHP-3	CHP-PB-PU-29	13	12-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00509	PLAZA B	CHP-3	CHP-PB-PU-29	13	12-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00510	PLAZA B	CHP-3	CHP-PB-PU-29	13	12-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00511	PLAZA B	CHP-3	CHP-PB-PU-28	12	30-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00512	PLAZA B	CHP-3	CHP-PB-PU-31	12	16-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00513	PLAZA B	CHP-3	CHP-PB-PU-36	11	17-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00514	PLAZA B	CHP-3	CHP-PB-PU-35	8	18-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00515	PLAZA B	SR-3	CHP-PB-PU-32	10	5-Jul-2013	PENICHE, N.	CHP BODEGA- #6

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00516	PLAZA B	CHP-3	CHP-PB-PU-31	12	15-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00517	PLAZA B	CHP-3	CHP-PB-PU-31	NO DATA	15-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00518	PLAZA B	CHP-3	CHP-PB-PU-31	NO DATA	15-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00519	PLAZA B	CHP-3	CHP-PB-PU-31	NO DATA	15-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00520	PLAZA B	CHP-3	CHP-PB-PU-31	NO DATA	15-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00521	PLAZA B	CHP-3	CHP-PB-PU-35	8	18-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00522	PLAZA B	CHP-3	CHP-PB-PU-35	NO DATA	31-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00523	PLAZA B	CHP-3	CHP-PB-PU-35	8	22-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00524-Z	PLAZA B	SR-3	CHP-PB-PU-28	11	3-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00525	PLAZA B	SR-3	CHP-PB-PU-28	11	3-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00526-Z	PLAZA B	SR-3	CHP-PB-PU-28	11	3-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00527	PLAZA B	CHP-3	CHP-PB-PU-29	13	0/0/0000	PENICHE, N.	CHP BODEGA- #6
CHP-00528	PLAZA B	CHP-3	CHP-PB-PU-28	11	3-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00529	PLAZA B	SR-3	CHP-PB-PU-38	6	29-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00530	PLAZA B	CHP-3	CHP-PB-PU-35	8	18-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00531	PLAZA B	CHP-3	CHP-PB-PU-35	8	18-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00532	PLAZA B	CHP-3	CHP-PB-PU-35	8	18-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00533	PLAZA B	CHP-3	CHP-PB-PU-29	11	29-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00534	PLAZA B	CHP-3	CHP-PB-PU-29	11	29-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00535	PLAZA B	CHP-3	CHP-PB-PU-29	11	29-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00536	PLAZA B	CHP-3	CHP-PB-PU-29	11	29-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00537	PLAZA B	CHP-3	CHP-PB-PU-31	12	0/0/0000	PENICHE, N.	CHP BODEGA- #6

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00538	PLAZA B	CHP-3	CHP-PB-PU-28	10	17-Jun-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00539	PLAZA B	CHP-3	CHP-PB-PU-28	10	17-Jun-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00540	PLAZA B	CHP-3	CHP-PB-PU-29	11	0/0/0000	PENICHE, N.	CHP BODEGA- #6
CHP-00541	PLAZA B	CHP-3	CHP-PB-PU-28	11	0/0/0000	PENICHE, N.	CHP BODEGA- #6
CHP-00542	PLAZA B	CHP-3	CHP-PB-PU-36	12	16-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00543	PLAZA B	CHP-3	CHP-PB-PU-28	14	2-Aug-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00544	PLAZA B	CHP-3	CHP-PB-PU-28	13	0/0/0000	PENICHE, N.	CHP BODEGA- #6
CHP-00545	PLAZA B	CHP-3	CHP-PB-PU-27	11	23-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00546	PLAZA B	CHP-3	CHP-PB-PU-27	11	23-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00547	PLAZA B	CHP-3	CHP-PB-PU-29	11	29-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00548	PLAZA B	CHP-3	CHP-PB-PU-32	11	30-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00549	PLAZA B	CHP-3	CHP-PB-PU-27	8	25-Jun-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00550	PLAZA B	CHP-3	CHP-PB-PU-36	12	16-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00551	PLAZA B	CHP-3	CHP-PB-PU-27	8	25-Jun-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00552	PLAZA B	CHP-3	CHP-PB-PU-35	8	18-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00553-Z	PLAZA B	CHP-3	CHP-PB-PU-29	13	12-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00554	PLAZA B	CHP-3	CHP-PB-PU-29	13	12-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00555	PLAZA B	CHP-3	CHP-PB-PU-29	13	12-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00556	PLAZA B	CHP-3	CHP-PB-PU-35	NO DATA	31-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00557	PLAZA B	CHP-3	CHP-PB-PU-36	12	16-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00558	PLAZA B	CHP-3	CHP-PB-PU-35	8	17-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00559	PLAZA B	CHP-3	CHP-PB-PU-28	10	14-Jul-2013	PENICHE, N.	CHP BODEGA- #6

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00560	PLAZA B	CHP-3	CHP-PB-PU-37	2	11-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00561	PLAZA B	CHP-3	CHP-PB-PU-31	12	15-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00562	PLAZA B	CHP-3	CHP-PB-PU-32	10	3-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00563	PLAZA B	CHP-3	CHP-PB-PU-28	11	30-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00564	PLAZA B	CHP-3	CHP-PB-PU-27	9	24-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00565	PLAZA B	CHP-3	CHP-PB-PU-27	9	24-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00566	PLAZA B	CHP-3	CHP-PB-PU-27	9	24-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00567	PLAZA B	CHP-3	CHP-PB-PU-27	9	24-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00568	PLAZA B	CHP-3	CHP-PB-PU-27	8	19-Jun-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00569	PLAZA B	CHP-3	CHP-PB-PU-37	11	19-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00570	PLAZA B	CHP-3	CHP-PB-PU-37	11	19-Jul-2013	PENICHE, N.	CHP BODEGA- #6
CHP-00571	PLAZA B	CHP-3	CHP-PB-PU-29	11	21-Jun-2013	PENICHE, N.	CHP BODEGA- #7
CHP-00572-Z	PLAZA B	CHP-3	CHP-PB-PU-29	11	21-Jun-2013	PENICHE, N.	
CHP-00573-Z	PLAZA B	CHP-3	CHP-PB-PU-29	11	21-Jun-2013	PENICHE, N.	
CHP-00574	PLAZA B	CHP-3	CHP-PB-PU-31	12	15-Jul-2013	PENICHE, N.	CHP BODEGA- #7
CHP-00575	PLAZA B	CHP-3	CHP-PB-PU-28	11	3-Jul-2013	PENICHE, N.	CHP BODEGA- #7
CHP-00576	PLAZA B	CHP-3	CHP-PB-PU-27	8	18-Jun-2013	PENICHE, N.	CHP BODEGA- #7
CHP-00577	PLAZA B	CHP-3	CHP-PB-PU-31	12	15-Jul-2013	PENICHE, N.	CHP BODEGA- #7
CHP-00578	PLAZA B	CHP-3	CHP-PB-PU-29	11	29-Jul-2013	PENICHE, N.	CHP BODEGA- #7
CHP-00579	PLAZA B	CHP-3	CHP-PB-PU-28	11	3-Jul-2013	PENICHE, N.	CHP BODEGA- #7
CHP-00580	PLAZA B	CHP-3	CHP-PB-PU-27	8	25-Jun-2013	PENICHE, N.	CHP BODEGA- #7
CHP-00581	PLAZA B	CHP-3	CHP-PB-PU-31	12	12-Jul-2013	PENICHE, N.	CHP BODEGA- #7

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00582	PLAZA B	CHP-3	CHP-PB-PU-37	11	18-Jul-2013	PENICHE, N.	CHP BODEGA- #7
CHP-00583	PLAZA B	CHP-3	CHP-PB-PU-37	11	18-Jul-2013	PENICHE, N.	CHP BODEGA- #7
CHP-00584	PLAZA B	CHP-3	CHP-PB-PU-29	12	11-Jul-2013	PENICHE, N.	CHP BODEGA- #7
CHP-00585	PLAZA B	CHP-3	CHP-PB-PU-40	9	1-Aug-2013	PENICHE, N.	CHP BODEGA- #7
CHP-00586	PLAZA B	CHP-3	CHP-PB-PU-29	13	11-Jul-2013	PENICHE, N.	CHP BODEGA- #7
CHP-00587	B1	NO DATA	B1-7 WEST	4	13-Jun-2014	SANTASILIA, C	CHP BODEGA- #7
CHP-00588	B1	NO DATA	B1-7 WEST	4	13-Jun-2014	SANTASILIA, C	CHP BODEGA- #7
CHP-00589	H1	NO DATA	13	1	5-Jun-2013	DOUGLAS	CHP BODEGA- #7
CHP-00590	H1	NO DATA	14	2	6-Jun-2013	DOUGLAS	CHP BODEGA- #7
CHP-00591	H1	NO DATA	17	2	12-Jun-2013	DOUGLAS	CHP BODEGA- #7
CHP-00592	PLAZA H	NO DATA	17	1	12-Jun-2014	DOUGLAS	CHP BODEGA- #7
CHP-00593	B1	NO DATA	B1 7 WEST	7	18-Jun-2014	SANTASILIA, C.	CHP BODEGA- #7
CHP-00594	B1	NO DATA	B1-7 WEST	7	18-Jun-2014	SANTASILIA, C.	CHP BODEGA- #7
CHP-00595	B1	NO DATA	B1- 3 EAST	3	19-Jun-2014	SANTASILIA, C.	CHP BODEGA- #7
CHP-00596	B1	NO DATA	B1- 2 WEST	7	28-Jun-2013	SANTASILIA, C.	CHP BODEGA- #7
CHP-00599	B4	NO DATA	12 (N. TRENCH)	6C	10-Jul-2012	ISHIHARA, R.	CHP BODEGA- #7
CHP-00600	B4	NO DATA	13 (N. TRENCH)	7	18-Jul-2012	REIKO, PUC, J.	CHP BODEGA- #7
CHP-00601	B4	NO DATA	13 (N. TRENCH)	6B	6-Jul-2012	PUC, J., REIKO	CHP BODEGA- #7
CHP-00602	B4	NO DATA	13 (N. TRENCH)	6B	6-Jul-2012	PUC, J., REIKO	CHP BODEGA- #7
CHP-00603	B4	NO DATA	SOUTH	7B	18-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00604	B4	NO DATA	SOUTH	5	15-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00605	B4	NO DATA	SOUTH	5	15-Jul-2008	GARBER	CHP BODEGA- #7

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00606	B4	NO DATA	SOUTH	5	15-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00607	B4	NO DATA	SOUTH	5	15-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00608	B4	NO DATA	SOUTH	7B	18-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00609	B4	NO DATA	SOUTH	7B	18-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00610	B4	NO DATA	SOUTH	5	15-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00611	B4	NO DATA	SOUTH	7B	18-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00612	B4	NO DATA	SOUTH	8	23-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00613	B4	NO DATA	SOUTH	5-E1	17-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00614	B4	NO DATA	SOUTH	5	15-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00615	B4	NO DATA	SOUTH	7B	21-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00616	B4	NO DATA	SOUTH	8	23-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00617	B4	NO DATA	SOUTH	6	17-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00618	B4	NO DATA	SOUTH	7B	18-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00619	B4	NO DATA	SOUTH	8B	23-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00620	B4	NO DATA	SOUTH	6	17-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00621	B4	NO DATA	SOUTH	5	16-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00622	B4	NO DATA	SOUTH	NO DATA	0/0/0000	NO DATA	CHP BODEGA- #7
CHP-00623	B4	NO DATA	SOUTH	5	16-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00624	B4	NO DATA	SOUTH	5	16-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00625	B4	NO DATA	SOUTH	5	14-Jul-2008	GARBER	CHP BODEGA- #7
CHP-00628	A1/A2 ALLEY	NO DATA	1A WEST	1	17-Jun-2014	LOPEZ-	CHP BODEGA- #7
CHP-00629	A1/A2 ALLEY		1C- EAST	1	25-Jun-2014	LOPEZ-	

CATALOG #	STR/AREA		OP	EU	LVL	DATE	SUPERVISOR	Location Stored
CHP-00630	PLAZA A	NO DATA	A2	2		0/0/0000	NO DATA	
CHP-00631	PLAZA A	NO DATA	A2	1		0/0/0000	NO DATA	
CHP-00632	PLAZA A	NO DATA	A2	1		0/0/0000	NO DATA	
CHP-00633	PLAZA A	NO DATA	A3	1		0/0/0000	NO DATA	
CHP-00634	A3	NO DATA	BR1	2		0/0/0000	NO DATA	
CHP-00635	PLAZA A	NO DATA	A2	1		0/0/0000	NO DATA	
CHP-00636	A3	NO DATA	BR1	2		0/0/0000	NO DATA	
CHP-00637	A3	NO DATA	BR1	2		0/0/0000	NO DATA	
CHP-00638	B2	NO DATA	NO DATA	1		11-Jun-2013	CAR, J.	
PCB-00001	PLAZA B	NO DATA	1	4		14-Jun-1995	POWIS	CHP BODEGA- #9
PCB-00002	PLAZA B	NO DATA	1	3		6-Jun-1995	NO DATA	CHP BODEGA- #9
PCB-00003	PLAZA B	NO DATA	1	1		24-May-1995	HEALEY,	CHP BODEGA- #9
PCB-00004	PLAZA B	NO DATA	1	3		6-Jun-1996	NO DATA	CHP BODEGA- #9
PCB-00005	PLAZA B	NO DATA	1	3		1-Jun-1995	POWIS	CHP BODEGA- #9
PCB-00006	PLAZA C	NO DATA	1	2		7-Jun-1995	HEALEY	CHP BODEGA- #9
PCB-00007	PLAZA B	NO DATA	1	4		2-Jun-1995	POWIS	CHP BODEGA- #9
STR-00001	STR. 7	NO DATA	7	1		23-Mar-2013	JC	CHP BODEGA- #9
STR-00002	STR. 7	NO DATA	7	1		23-Mar-2013	JC	CHP BODEGA- #9
STR-00003	STR. 7	NO DATA	7	1		23-Mar-2013	JC	CHP BODEGA- #9
STR-00004	STR. 7	NO DATA	7	1		23-Mar-2013	JC	CHP BODEGA- #9
STR-00005	STR. 7	NO DATA	7	1		23-Mar-2013	JC	CHP BODEGA- #9
STR-00006	STR. 7	NO DATA	7	1		23-Mar-2013	JC	CHP BODEGA- #9

CATALOG #	STR/AREA	OP	EU	LVL	DATE	SUPERVISOR	Location Stored
STR-00007	STR. 7	NO DATA	2	1	28-Mar-2013	NO DATA	CHP BODEGA- #9
STR-00008	STR. 7	NO DATA	3	1	16-Feb-2013	JC	CHP BODEGA- #9
STR-00009	STR. 7	NO DATA	8	1	0/0/0000	JC, AN	CHP BODEGA- #9
STR-00010	STR. 7	NO DATA	6	1	14-Mar-2013	JC	CHP BODEGA- #9
STR-00011	STR. 7	NO DATA	6	1	4-Mar-2013	JC	CHP BODEGA- #9
STR-00012	STR. 7	NO DATA	1	1	13-Apr-2013	JA	CHP BODEGA- #9
STR-00013	STR. 7	NO DATA	1	1	13-Apr-2013	JA	CHP BODEGA- #9
STR-00014	STR. 7	NO DATA	7	1	26-Feb-2013	NO DATA	CHP BODEGA- #9
STR-00015	STR. 7	NO DATA	7	1	26-Feb-2013	NO DATA	CHP BODEGA- #9
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CHEMICAL CHARACTERIZATION OF OBSIDIAN ARTIFACTS FROM CAHAL PECH AND LOWER DOVER, BELIZE

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INTRODUCTION

In Mesoamerica, technological and geochemical analyses of ceramics and obsidian provide valuable proxies for reconstructing production and exchange networks (for recent studies see Ebert et al. 2014; Golitko et al. 2012; Hirth et al. 2013; Moholy-Nagy et al. 2013). The highlands of Mexico and Guatemala possess most of the obsidian sources in Mesoamerica, and their chemical characterization has been well defined through several extensive studies (Cobean 2002; Cobean et al. 1991; Glascock et al. 1998; Glascock et al. 1988; Glascock et al. 1994). Though several methods are available for geochemical sourcing, including INAA and ICP-MS, portable X-ray fluorescence (pXRF) is becoming the dominant sourcing method for obsidian in Mesoamerica (e.g., Freund 2013; Glascock et al. 1998; Millhauser et al. 2011; Moholy-Nagy et al. 2013; Nazaroff et al. 2010). Sourcing using pXRF technology allows archaeologists to analyze a large number of samples at relatively high precision in a variety of field and lab settings, at little or no cost to the researcher (Shackley 2005:90).

In this study, a total of 672 obsidian artifacts from the sites of Cahal Pech and Lower Dover in the Belize Valley were technologically analyzed and geochemically sourced using pXRF to examine differences between obsidian assemblages from sites across the Belize Valley, located in west-central Belize. A sample of the obsidian assemblage from Cahal Pech (n=425) and the complete assemblage excavated from Lower Dover (n=247) were technologically analyzed and geochemically sourced. Results suggest that the inhabitants of the Belize Valley relied primarily on prismatic blades manufactured from obsidian from three primary sources (El Chayal, Ixtepeque, and San Martin Jilotepeque [SMJ]). El Chayal, located in highland Guatemala, and was the dominant source used at Cahal Pech, Lower Dover, and elsewhere in the Belize Valley (e.g., Baking Pot; George 2013). Differing amounts of obsidian from the Ixtepeque and SMJ sources in Guatemala, and the Sierra de Pachuca source in highland Mexico within the assemblages suggest that sites in the Belize Valley may have been linked in different interaction networks to procure obsidian. While this is the most comprehensive obsidian

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sourcing study from Belize Valley region of the Maya lowlands to date, future work on obsidian artifact characterization from more sites across the regions are necessary to develop a greater understanding of the of patterns of obsidian consumption and exchange networks in the Belize Valley during through time.

METHODS

The obsidian assemblages excavated from Cahal Pech and Lower Dover were technologically analyzed and subjected to geochemical sourcing using pXRF. At Cahal Pech, artifacts analyzed with pXRF were excavated from contexts within the site core (*n*=236), as well as collected during settlement survey test excavations (*n*=189). This represents only a sample of the total assemblage excavated during the BVAR project from 1990-2014. The complete obsidian assemblage from Lower Dover, and comes primarily from excavations of monumental architecture within the site core (*n*=233). A smaller number of artifacts (*n*=14) were collected in 2014 during settlement survey at Lower Dover (Petrozza, this volume). Technological lithic analysis focused on a total of 461 obsidian artifacts from site core and settlement contexts at both sites. The majority of the obsidian assemblage collected from excavations at Cahal Pech (91%) and Lower Dover (90%) is composed of prismatic blades, a pattern noted at other sites in the Maya Lowlands (e.g., Tikal, Moholy-Nagy et al. 2013; see also Golitko et al. 2012).

All obsidian artifacts technologically analyzed from the sites of Cahal Pech and Lower Dover were subjected to chemical characterization at The Pennsylvania State University using a Bruker Tracer III-V+ SD handheld XRF spectrometer with X-rays emitted from a rhodium tube. All samples analyzed with the pXRF were measured at 40 kV and 12.0 µA from an external power source, with a 12 mil Al, 1 mil Ti, and 6 mil Cu (i.e., green/obsidian) filter placed in the X-ray path. Samples were analyzed for 200 seconds. The flattest surface on the artifact was targeted to ensure that analysis of each sample included the bulk of the X-ray produced. Irregularly shaped samples were placed with the smoothest side positioned for analysis. Peak intensities for 10 elements (Mn, Fe, Zn, Ga, Th, Rb, Sr, Y, Zr, Nb) were converted to parts per million (ppm) concentrations by normalizing intensities to the Compton peak of rhodium and using Bruker's factory calibration for obsidian based on MURR standards (Glascock and Ferguson 2012; Speakman 2012).

RESULTS OF pXRF ANALYSIS

Cluster analysis of pXRF data identified three primary sources that compose the Cahal Pech obsidian assemblage: El Chayal, Ixtepeque, and SMJ (Table 1). El Chayal is the dominant type of obsidian found at the site, both in site core and settlement. Itxepeque and SMJ obsidian are found in relatively even quantities. Three artifacts were assigned to the Sierra de Pachuca source located in the highland Mexican state of Hidalgo. Two artifacts could not be assigned to an archaeologically known source despite producing

Table 1: Elemental concentrations for obsidian artifacts from Cahal Pech analyzed by pXRF in parts per million; values are rounded to the first whole number, and the relative standard deviation (%rsd) is reported as a percentage.

Source		Mn	Fe	Zn	Ga	Th	Rb	Sr	Y	Zr	Nb
El Chayal	mean	742	7126	52	18	11	151	147	21	112	10
n = 271	st dev	78	740	15	1	2	11	10	1	5	1
	%rsd	10	10	28	3	16	7	7	7	5	12
Ixtepeque	mean	515	10406	42	17	7	103	153	19	165	9
n = 69	st dev	57	1048	12	0	1	8	10	1	10	1
	%rsd	11	10	28	2	20	8	7	7	6	13
SMJ	mean	622	7641	47	18	9	119	192	17	115	8
n = 80	st dev	68	757	13	0	1	8	12	1	6	1
	%rsd	11	10	27	2	16	7	6	7	5	12
Pachuca	mean	1351	19578	312	32	24	232	3	120	957	97
n = 3	st dev	121	1703	48	4	4	18	1	8	46	6
	%rsd	9	9	16	11	16	8	22	7	5	6

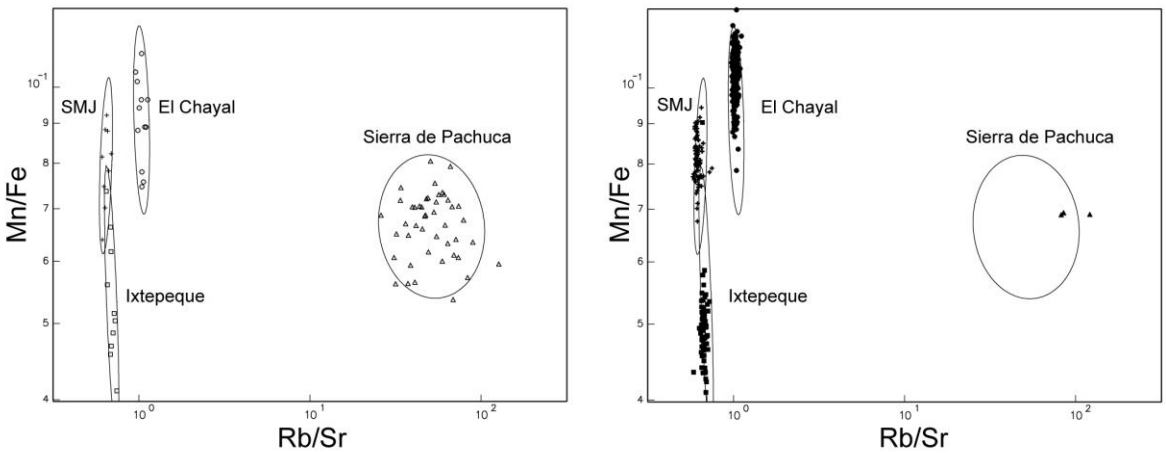

Figure 1: Bivariate plot of Mn/Fe vs. Rb/Sr log10 transformed elemental concentrations for geochemical source samples (left) and source assignments for Cahal Pech (right). Ellipses represent 90% confidence intervals for group membership.

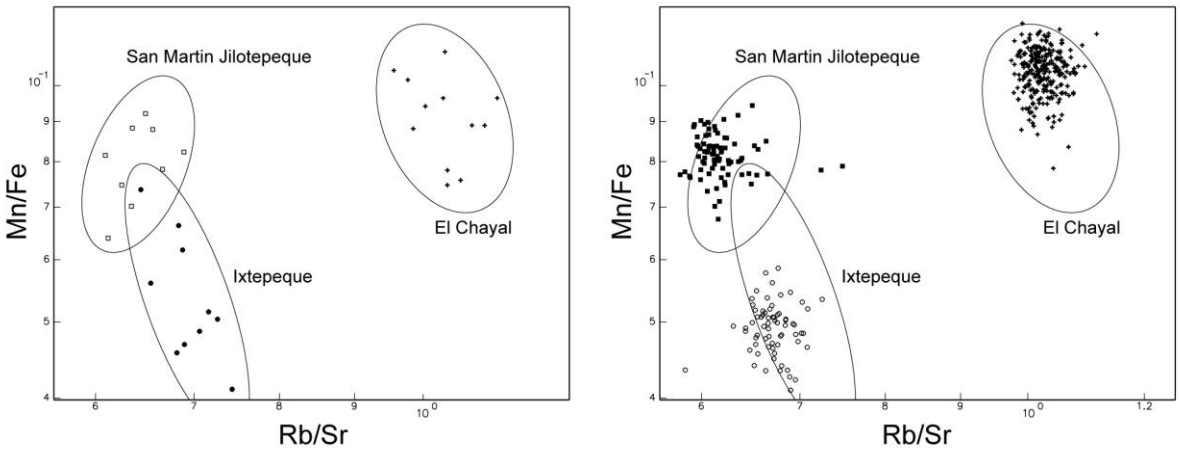

Figure 2: Zoomed in bivariate plot of Mn/Fe vs. Rb/Sr log10 transformed elemental concentrations for geochemical source samples (left) and source assignments for Cahal Pech (right). Ellipses represent 90% confidence intervals for group membership.

Table 2: Elemental concentrations for obsidian artifacts from Lower Dover analyzed by pXRF in parts per million; values are rounded to the first whole number, and the relative standard deviation (%rsd) is reported as a percentage.

Source		Mn	Fe	Zn	Ga	Th	Rb	Sr	Y	Zr	Nb
El Chayal	mean	760	7392	52	18	11	152	148	21	112	10
	st										
n = 174	dev	103	1038	17	1	2	13	12	2	6	1
	%rsd	14	14	32	4	18	9	8	7	5	14
Ixtepeque	mean	529	10827	45	18	7	103	154	19	166	9
	st										
n = 60	dev	71	1283	18	1	1	8	10	1	8	1
	%rsd	13	12	41	4	21	7	7	7	5	13
SMJ	mean	589	7550	45	18	8	113	186	17	112	8
	st										
n = 8	dev	45	742	14	0	1	6	8	1	3	1
	%rsd	8	10	31	2	17	5	4	5	3	14
Unknown	mean	1377	12924	159	26	30	275	262	40	189	26
	st										
n = 3	dev	37	498	29	2	3	4	11	2	3	1
	%rsd	3	4	18	7	11	1	4	5	2	4

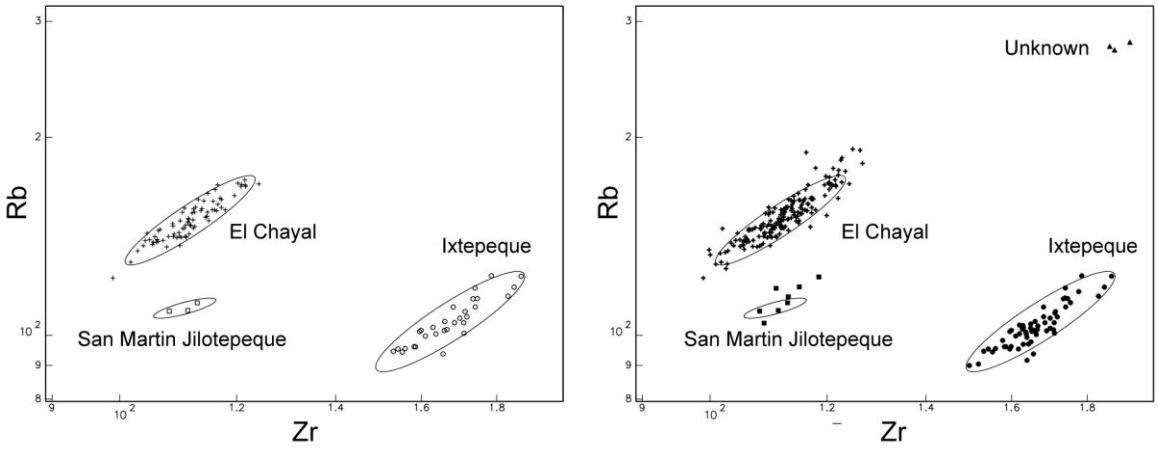

Figure 3: Bivariate plot of Rb vs. Zr log10 transformed elemental concentrations for geochemical source samples (left) and source assignments for Lower Dover (right). Ellipses represent 90% confidence intervals for group membership.

valid results from pXRF measurements. Figures 1 and 2 presents bivariate plots of source material compared to the Cahal Pech sourced obsidian artifacts. Two primary sources, El Chayal and Ixtepeque, were found to compose the Lower Dover assemblage (Table 2). A smaller number (n=8) of artifacts were assigned to the SMJ source. A fourth source, which could not be assigned, was composed of three artifacts with similar elemental concentrations. Figure 3 presents bivariate plots of source material compared to the Lower Dover obsidian artifacts.

Table 3 presents data on the different sources of obsidian used at Cahal Pech and Lower Dover between contexts (site core versus settlement). Similar proportions of El Chayal obsidian were found in the site core and settlement at Cahal Pech. Slightly more artifacts that source to Ixtepeque were recovered from surface and excavated settlement contexts compared to the Cahal Pech site core. The Cahal Pech site core also possessed higher frequencies of obsidian from the SMJ source, with most of the artifacts being finished blades recovered from Middle Preclassic contexts in Plaza B (Nancy Peniche, personal communication). Limited sourcing of obsidian from Preclassic Period contexts in the Belize Valley at the epicenters of Cahal Pech (n = 13) and Blackman Eddy (n = 42) using INAA and AAS had suggested that Cahal Pech relied exclusively on obsidian nodules and flakes from the El Chayal source during the Early Formative and Early Middle Formative, with materials from SMJ imported as finished blades during the Late Middle Formative (Awe and Healy 1994; Awe et al. 1995). In contrast, at the site of Blackman Eddy in the central Belize River Valley, obsidian from Early and Late Middle Formative levels were primarily sourced to SMJ (Kersey 2006). By the Late Formative, obsidian from all three major highland Guatemala obsidian sources are represented at Cahal Pech and Blackman Eddy in

Table 3: A comparison of obsidian sources from Cahal Pech and Lower Dover by location; the assemblage is broken down by contexts from the site core verses settlement. All percentages have been rounded off to while numbers; totals may not equal 100%.

Obsidian Source	**Cahal Pech**			**Lower Dover**		
	Site Core *n=236*	***Settlement*** *n=189*	***Total Assemblage*** *n=425*	***Site Core*** *n=233*	***Settlement*** *n=14*	***Total Assemblage*** *n=245*
El Chayal	59%	70%	64%	70%	86%	71%
Ixtepeque	14%	20%	16%	26%		24%
SJM	26%	10%	19%	3%	14%	3%
Pachuca	1%	1%	1%			
Unknown	1%	1%	0.5%	1%		1%
Total Sources	5	5	5	4	2	4

Table 4: A comparison of obsidian sources from Cahal Pech and Lower Dover by lithic technology type; the assemblage is broken down by percussion versus pressure blade technology. All percentages have been rounded off to while numbers; totals may not equal 100%.

Obsidian Source	**Cahal Pech**		**Lower Dover**	
	Percussion *n=30*	***Blade*** *n=321*	***Percussion*** *n=25*	***Blade*** *n=224*
El Chayal	81%	62%	80%	70%
Ixtepeque	11%	17%	20%	25%
SJM	3%	2%		4%
Pachuca		1%		
Unknown	6%			1%
Total Sources	4	4	2	4

varying quantities (Awe et al. 1995; Kersey 2006). Through time a more homogenous assemblage at these sites may indicate centralized control of either distribution or procurement of obsidian blades (Winter and Pires-Ferriera 1976; Santley 1993). The types of sources consumed by those in the site core of Lower Dover reflects the pattern at Cahal Pech, with El Chayal as the dominant source. Ixtepeque obsidian is found in relatively similar quantities at Lower Dover site core (24 ± 3.5% of the complete assemblage at the 80% confidence interval) compared to Cahal Pech (16 ± 2.3% of the analyzed assemblage at the 80% confidence interval), perhaps also indicating similar procurement patterns. Obsidian surface collected during reconnaissance in the Lower Dover settlement is source primarily to El Chayal, with one artifact sourced to SJM. The sample size (*n*=14) is extremely small, however, and obsidian consumed in the hinterlands of Lower Dover was likely more diverse in the past.

Table 4 presents data on the types of obsidian used at Cahal Pech and Lower Dover, and is divided into categories based on lithic technology (i.e., percussion flakes and tools versus blades). At both site blade from El Chayal compose the bulk of the assemblage (approximately 70%), with smaller percentages of blades from other Ixtepeque and SMJ. All of the obsidian artifacts sourced to Sierra de Pachuca from Cahal Pech are blades. Percussion artifacts (flakes and cores) compose only a small part of the assemblage, and obsidian blade cores and manufacturing debris are not common in either the Cahal Pech or Lower Dover assemblages suggesting that that finished blades were imported, a pattern consistent with whole-blade trade or processed-blade trade described by De Leon et al. (2009).

DISCUSSION AND CONCLUSIONS

The results from pXRF analysis indicate that the people living in the Belize Valley at Cahal Pech and Lower Dover during the Classic Period used at least four different sources of obsidian from the highlands of Guatemala and central Mexican highlands. The primary source of obsidian was the El Chayal source. Ixtepeque and San Martin Jilotepque were also relatively common sources of material at both Cahal Pech and Lower Dover, though in much smaller quantities. This pattern of obsidian consumption, with El Chayal as the dominant source, has been documented at the nearby Belize Valley site of Baking Pot, where most of the obsidian artifact assemblage (n=289) sauced using pXRF was assigned to El Chayal (Figure 3; George 2013). Smaller numbers of artifacts from Baking Pot were assigned to Ixtepeque (n=85) and SMJ (n=9).

A Shannon–Weaver diversity index was calculated for Cahal Pech, Lower Dover, and Baking Pot obsidian assemblages to reflect the number of obsidian sources from each site (richness) while taking into account how evenly artifacts are distributed among sources (equitability; Figure 3). Obsidian assemblages with more even distribution between sources have a higher diversity than assemblages with the same number of sources, but a disproportionately high abundance of a few types. Equitability independent of assemblage richness was also calculated to measure the heterogeneity of assemblages for each site. Values for equitability range from 0 to 1.0, and values approaching 1.0 indicate an even distribution of obsidian types in the complete assemblage for each site. Indices for richness and equitability were also calculated for the assemblages from the site core and settlement for each site. These values were not calculated for the assemblage from the Lower Dover settlement because of the small sample size.

The results Shannon–Weaver index calculations suggests that Cahal Pech had a more diverse assemblage that was also more evenly distributed between sources (Table 5). Values for richness and equitability in the site core and settlement are similar, suggesting that patterns of obsidian consumption did not different markedly across the site. Lower Dover has an assemblage that is less richness than the Cahal Pech assemblage. Baking Pot has the lowest richness and equitability values between the three Belize Valley sites. The results between sites in general may suggest that, while sites in the Belize Valley primarily imported obsidian from the El Chayal source, each site may have developed different methods to procure obsidian from the

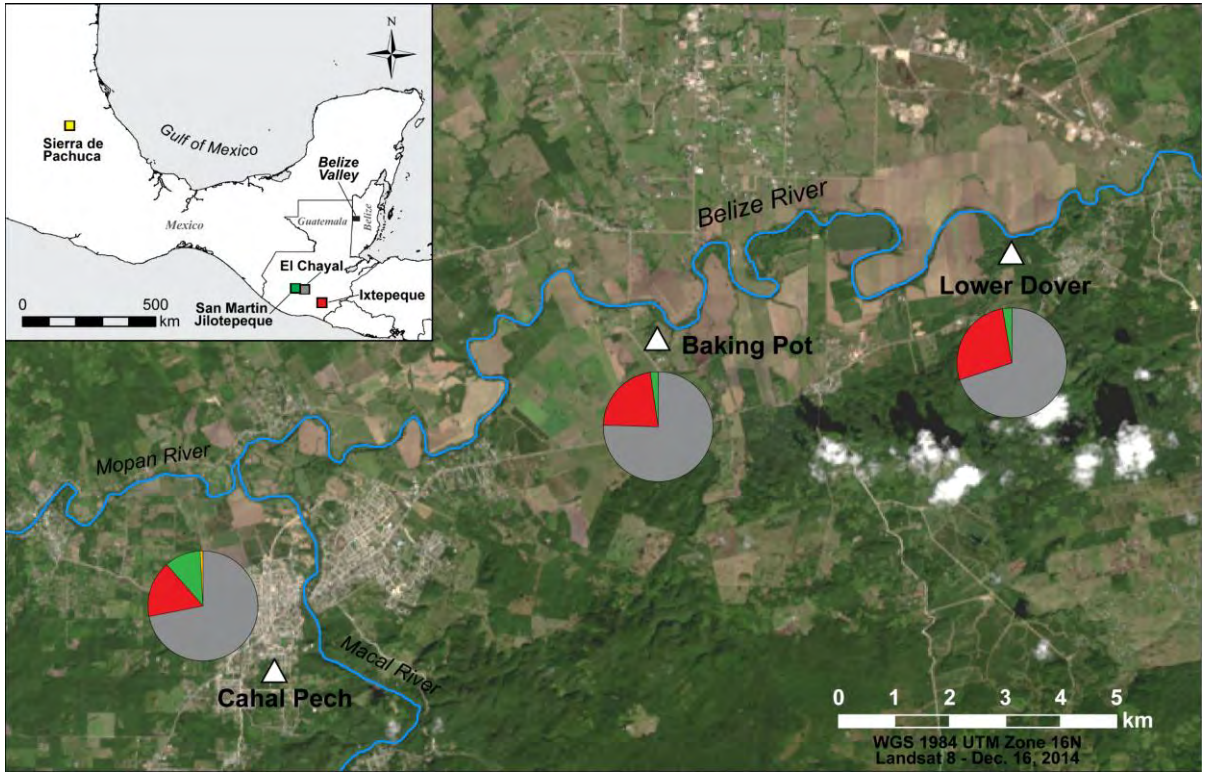

Figure 4: Map showing obsidian types by proportion from Cahal Pech, Baking Pot, and Lower Dover in the Belize Valley. Locations of obsidian sources are located in the inset.

Table 5: Shannon-Weaver Index Values of richness and equitability for the Cahal Pech, Lower Dover, and Baking Pot obsidian assemblages.

	Cahal Pech			**Lower Dover**			**Baking Pot**
	Site Core *n=236*	***Settlement*** *n=189*	***Total Assemblage*** *n=425*	***Site Core*** *n=233*	***Settlement*** *n=14*	***Total Assemblage*** *n=245*	***Total Assemblage*** *n=289*
Richness	1.0	0.85	0.93	0.77	--	0.75	0.63
Equitability	0.62	0.53	0.58	0.48	--	0.47	0.39

Ixtepeque and SMJ sources. There is also evidence for some ties between Cahal Pech and the central highlands of Mexico, which may also be present at other Belize Valley sites during the Late Classic Period (e.g., Baking Pot; Hoggarth, personal communication). Continued analyses of the complete obsidian assemblages from excavated Cahal Pech and Baking Pot is needed to better understand these nature and extent of these connections.

Portable XRF analysis of obsidian provides one of many geochemical sourcing techniques that continue to help define the extent and complexity of economic and social interaction in Mesoamerica. The results of this study suggest that the Belize Valley had strong economic connects with the highlands of Guatemala, and especially the El Chayal obsidian source during the Classic Period. Further analysis of the broader patterns of distribution of obsidian at both the regional level and the site level at Cahal Pech, Lower Dover, and Baking Pot are crucial for understanding the relationships between obsidian source locations and points of consumption both within the Belize Valley, the Maya lowlands, and elsewhere in Mesoamerica. Future work will focus on characterizing obsidian assemblages from other sites located in the Belize Valley region in order to better understand the distribution of different types of obsidian between local communities. Additionally, while most contexts date to the Classic period, diachronic information will be used to understand patterns of obsidian consumption through time. Variation in site assemblages may reveal changes in access to specific sources through time, with increasing diversity perhaps indicative of independent and overlapping economic connections between local communities.

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IT'S GETTING HOT IN THE PALACE: DISCOVERY OF A SWEATBATH IN GROUP B AT BAKING POT

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INTRODUCTION

Excavations in the palace complex of Group B at Baking Pot (Figures 1 and 2) were resumed in 2013 to understand the chronology for the collapse of political rulership and the abandonment of the ceremonial and settlement areas of Baking Pot. During the 2014 field season, excavations continued in Courtyard 4, expanding the excavation unit along Structure B1. Excavations in that location in 2013 revealed the edge of an outset structure in the northern portion of E.U. B1-100. Excavations during the 2014 season were focused on expanding the 2013 excavations, with the aim of identifying additional terminal deposits so as to date faunal remains to develop the high-resolution radiocarbon chronology.

EXCAVATION RESULTS

Excavation

Excavations in 2014 extended the units, E.U. B17-1 and E.U. B1-100, which were completed in the previous year. The new unit (E.U. B1-101) was arranged directly north of E.U. B17-1 and spanned 5m (N-S) by 4m (E-W). Continued excavations found that the outset structure was not a staircase as previously interpreted. Rather, excavation of this structure revealed an upper terrace, with a narrow interior doorway (Figure 3). Continued excavation revealed two stairs leading up to a fire pit above. The interior back wall was blackened by smoke in this area. Numerous apple snails (*Pomacea flagellata*) were found in the doorway and adjacent areas. These materials may suggest that these species were boiled and eaten as the sweatbath was heated. The northern bench appears to have been cut into, as the smooth plaster on the bench only extends across the western section of that area. However, no excavation into the unplastered area were possible due to time constraints.

Archaeological investigations have identified few sweat baths in Belize. To date,

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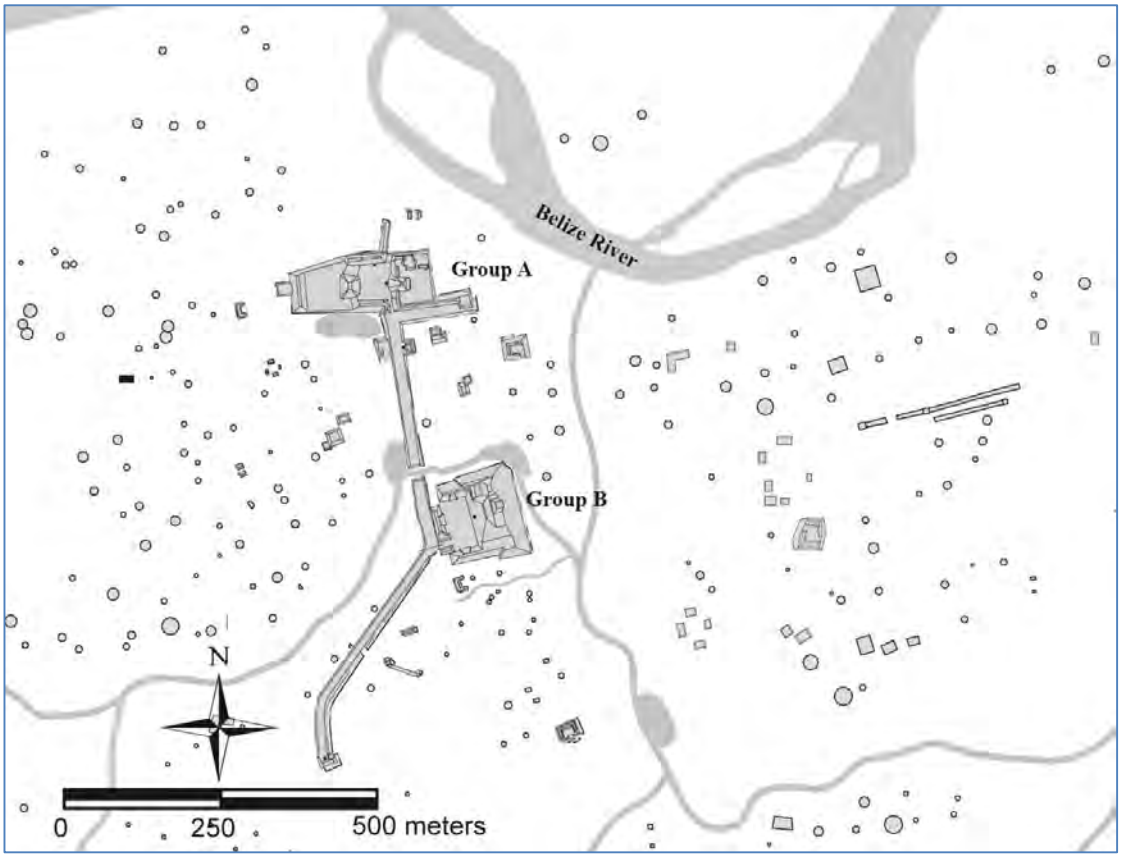

Figure 1: Map of Baking Pot site core (map by J.A. Hoggarth 2014)

only two other sweatbaths have been found in the Belize Valley. The first was at the site of Cahal Pech. Structure CX was excavated during the Tourism Development Project (TDP) excavations and conservation efforts at Cahal Pech. The second example was identified by Helmke (2006) at the site of Pook's Hill in the adjacent Roaring Creek Valley.

The Baking Pot sweatbath more closely aligns in size and form with the Pook's Hill sweat bath, as that structure is integrated within the structure, features a low and narrow doorway, and has two steps up to the back fire pit. In contrast, the Cahal Pech sweat bath lacks the two back steps and the fire pit that have been identified in the other cases. However, Awe (2015, personal communication) suggests that those features may have been present in the Cahal Pech sweat bath, as a looter's trench through the center of the structure had taken out a portion of the structure in the area where the steps would have been.

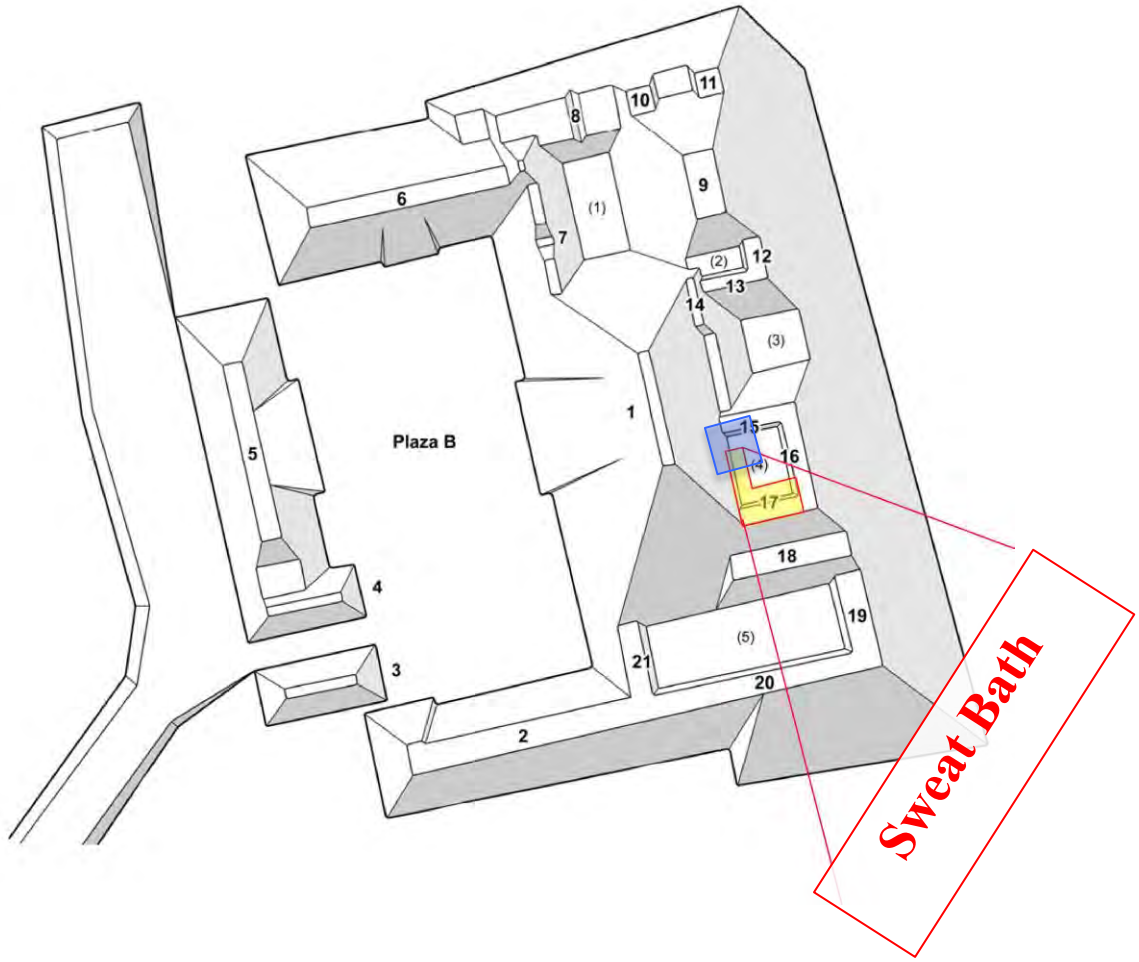

Figure 2: Location of Courtyard 4, showing location of 2013 excavations (in yellow) and 2014 excavations (in blue).

Sweatbaths have been identified at much larger and powerful centers across the Maya Lowlands, including at Palenque (Child 2007), Piedra Negras (Satterthwaite 1936), as well as smaller centers in Belize such as Cuello (Hammond and Bauer 2001) and Cara Blanca (Lucero and Kinkella 2007). Ethnographic studies have provided archaeologists with vital information to understand the function and use of sweat baths by modern Maya populations. In Tzeltal communities in Chiapas, sweatbaths were used for health purposes, to "warm the flesh and the blood" to cure sickness and disease (Groark 1997:4). One of the primary uses relates to childbirth, lactation, and fertility. Ethnohistoric accounts also suggest that sweatbaths played an important religious and

Figure 3: Top-down view of sweat bath and adjacent stair (north faces left).

Figure 4: Side view of sweat bath.

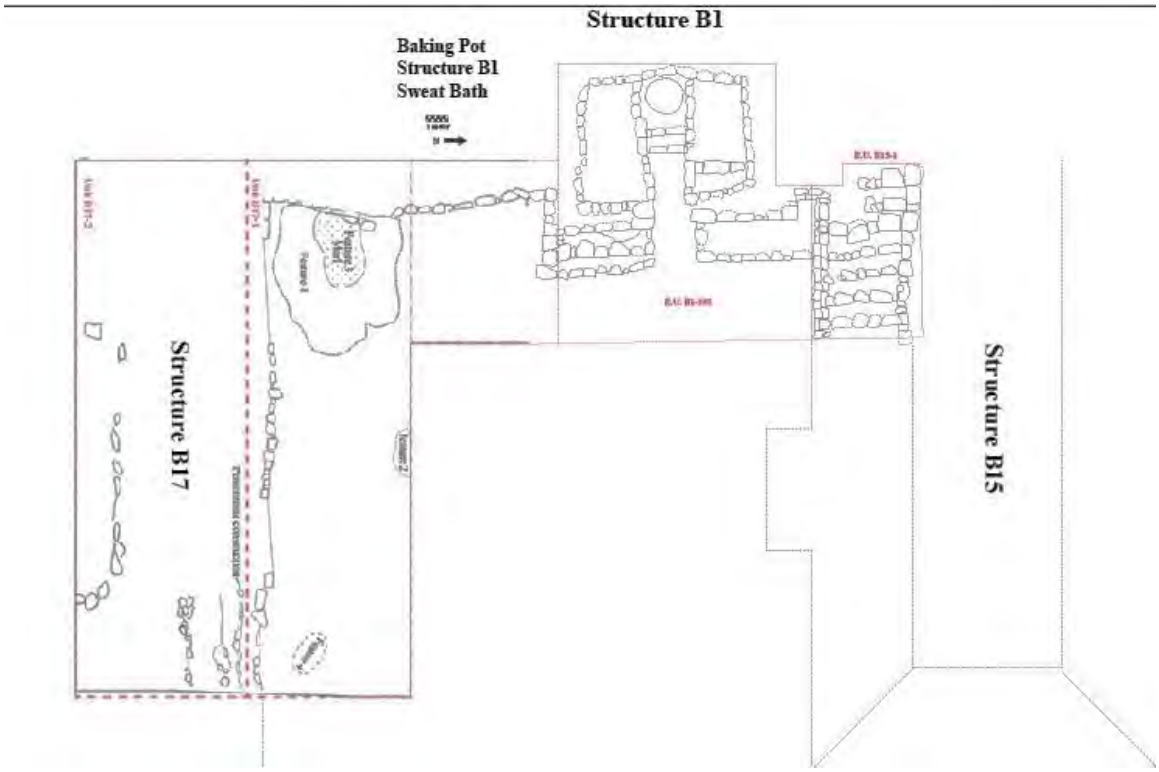

Figure 5: Plan view of E.U. B1-101, showing the sweat bath, attached stair leading into Courtyard 4., as well as the 2013 excavations of adjacent B17.

ritual role, as steambathing was associated with various deities, such as the Aztec goddess Teteoinnan, Mother of the Gods (Groark 1997).

Excavations outside of the sweat bath continued in E.U. B1-101, revealed the northeastern corner of the outset sweat bath structure, leading into an inset area where Str. B1 joined with Str. B15. Excavations in E.U. B15-1 and E.U. B15-2 on Str. B-15 revealed a stair that leads across the face of B15 (Figures 4 and 5). Time limited the full excavation of this stair all the way to the base of Courtyard 4. However, current excavations have revealed 6 steps. It is likely that this stair will hit a landing on Str. B15, with a frontal outset (or inset) stair leading into the courtyard. However, only future excavations will test this proposition.

Artifacts

Artifacts recovered on the floor of the entrance and on the interior benches of the sweat bath included ceramics, chert, obsidian, and shell. Ceramics recovered are primarily associated with the early and late facet of the Spanish Lookout ceramic complex (Table 1). This suggests a Terminal Classic date for the final use of the structure. However, charcoal samples from the fire pit were collected for radiocarbon dating and will be compared with Feature 1 from the 2013 excavations in order to narrow down the timing for the final use of Courtyard 4 and adjacent palace structures.

Table 1: Identified ceramic types from 2014 excavations.

Identified Ceramic Types
Belize Red
Cayo Unslipped: Unspecified Variety
Cayo Unslipped: Pie-Crust Variety
Daylight Orange: Darknight Variety
Garbutt Creek Red
Alexander's Unslipped

Figure 6: Special finds from E. U. B1-101.

Special finds recovered in the excavation of the sweat bath and adjoining stair included several figurine fragments, ocarina fragments, spindle whorls, shell ornaments, a limestone pestle, a butt stone, and a small bifacial chert point (Figure 6). These items suggest a ritual function, which is in-line with ethnographic examples for the use of such structures. The butt stone may have secured a perishable textile that may have closed off the front entrance to the sweat bath.

CONCLUSIONS

The discovery of a sweat bath attached to Str. B1 and adjacent to Courtyard 4 in the palace complex of Group B at Baking Pot is a notable one. Congruent with other lines of evidence, the complexity of this structure suggests that the rulers of the site invested labor and materials to construct this structure. The location of the structure, in the most restricted courtyard of the palace structure, suggests that its use was likely highly restricted only to members of the royal family. Charcoal from the fire pit is set to be radiocarbon dated in 2015 and will be compared with dates from faunal remains from Feature 1 in Courtyard 4 to understand the timing for the final use of the palace. Together, this information will help us to understand the timing of the political and demographic collapse at Baking Pot, in relation to broader climatic and cultural changes across the broader Maya Lowlands.

ACKNOWLEDGEMENTS

We would like to thank the 2014 field school students who worked at Baking Pot, along with the men and women who work at Central Farm Livestock Division for their assistance in setting up our on-site lab. We thank Mark Robinson for climbing some trees and taking the top-down photos of the sweat bath. Funding for this research was provided by the BVAR field school.

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ARCHAEOLOGICAL INVESTIGATIONS ON STRUCTURE B-17, BAKING POT: A PRELIMINARY REPORT

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INTRODUCTION

The Maya center Baking Pot is located approximately 10 km northeast of the modern town of San Ignacio, in the Cayo District of western Belize. The site core is situated just south of the Belize River, on Central Farm, a division of the Ministry of Agriculture (Figure 1).

BACKGROUND

Baking Pot, a major center in the Belize River Valley, has an extensive occupation history. It was occupied from the Middle Preclassic to the Late Postclassic periods (600 BC- AD 1300), reaching its peak in the Late Classic period (AD 600-900). The monumental site core is comprised of two groups, Group A and Group B (Figure 2). The settlement area spreads out in all directions around the site core, with hundreds of house mounds in 8 distinct groups or neighborhoods (Hoggarth, 2012). Group A is comprised primarily of public architecture, including an eastern triadic group. Group B features a mix of public and private architecture, including a complex of restricted-access courtyards, thought to be a royal residential complex. Excavations took place in courtyard

Previous Archaeological Investigations

Oliver G. Ricketson Jr. from the Carnegie Institution of Washington conducted the first excavations at Baking Pot in 1924. His excavations took place in Group A, focusing on Structure A9. Many elaborate burials were recovered this main structure of the eastern triadic group (Ricketson, 1929; Hoggarth 2012). In 1949, the Commissioner of Archaeology of Belize, A. Hamilton Anderson, conducted minimal excavations in Group B. However, his results were never published, and little is known of his work. In 1956, Gordon Willey excavated at various locations around the site, including 4 test pits, in 4 of Group B in the 2013 and 2014 field seasons.

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Figure 1: Map of Major Sites in the Belize Valley. Map by J. Hoggarth, 2011

Figure 2: Baking Pot, Belize. Map By Bevan and Helmke, amended by K. Sullivan. Featured area: Group B

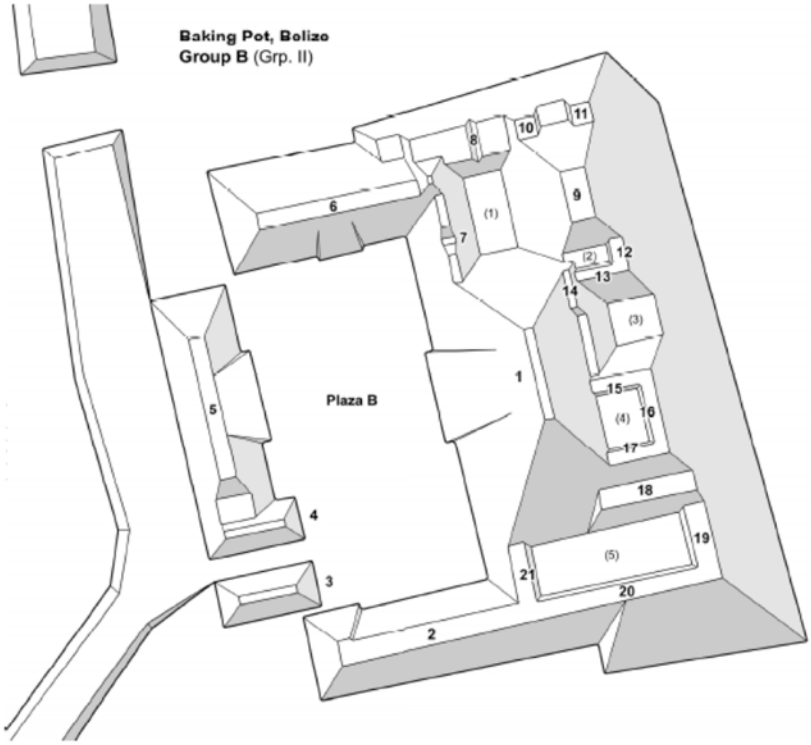

Figure 3: Group B, Baking Pot. Map by C. Helmke (2007) based on survey by J. Conlon

order to obtain material for the construction of a chronology of the site for his regional settlement research (Willey, 1965; Audet, 2000). William and Mary Bullard conducted one season of field research at Baking Pot in 1961. Their excavations were conducted in Group B, as they sought to find "exhibitable artifacts" for the Royal Ontario Museum and to understand the construction of the major structure of Group B, B-1 (Audet, 1999). Their excavation included a trench through the top of the large pyramidal structure, which is still visible today (Bullard & Bullard 1965).

BVAR Investigations

BVAR began research at Baking Pot in 1992 and has excavated at various loci throughout the site. BVAR initially focused on the survey of the site and excavations in the settlement. Several large *plazuela* groups have been excavated outside the site core, including the Bedran Group, the Atalaya Group, the Yaxtun group and Lubul Huh (Mound 410). Excavation in the Site Core, specifically in Courtyard 4 and on structures B-17 and B-1 began in 2013, conducted by Dr. Julie Hoggarth.

Courtyard 4 is small, restricted-access plaza located directly behind the largest structure in Group B, B-1 (Figure 3). Structures B-15, B-17 and the backside of B-1 enclose the courtyard, with a possible low-lying structure on the eastern side, B-16. Structure B-17 is a high platform structure, on the southern side of courtyard 4.

In the 2013 season, two units were opened to investigate structure B-17, in order to gain a better understanding of the terminal occupation and abandonment of the site core. Units B17-1 and B17-2, both 9-meter E/W by 3-meter N/S units, were placed on the top edge and the on the north side to expose the front of the structure. A cache was located at the base of Structure B-17 and in the corner at the intersection of structures B-17 and B-1. Unit B17-1 was placed on the top edge of structure B-17. Very little material was recovered from unit, although only a small amount of the humus was removed. A small amount of collapse was present, however preservation was poor. The lack of masonry construction, minimal amount of collapse and daub recovered suggest that there was likely a perishable superstructure. This unit was closed to concentrate on exposing the northern wall of the structure and recovering the cache discovered at the base. Excavations in 2013, at the base of B-17, revealed a very large, Terminal Classic deposit, which contained large amounts of ceramic materials (vessels, figurines, musical instruments, etc.) as well as chert implements, obsidian blades, a complete *metate* and other artifacts. Research in the 2014 season focused on the top of the structure.

In the 2014 field season, investigations led by Dr. Hoggarth focused on structure B-1 and it intersection with structure B-15. Excavations also took place on structure B-17, conducted by K. Sullivan.

Facing stones in a row, suggesting the possibility of a one to two course stone alignment was located on the western side of the top of structure B-17, near its intersection with structure B-1. In order to reveal how this alignment related to the construction of the structure, an initial 2-meter by 2-meter unit and two additional 1-meter by 2-meter units were placed to investigate this feature. This paper provides a preliminary report of the excavation on structure B-17 from the 2014 season.

METHODS

The research objectives for the excavations at Baking Pot in the 2014 field season were to examine the nature of the terminal occupation and establish the chronology the abandonment of the site core. Materials useful in dating were sought, including but not limited to charcoal for 14C dating and diagnostic ceramics for ceramic seriation. Additionally, excavations worked towards a more comprehensive understanding of the architectural features of Courtyard 4, specifically of structure B-1 and the adjacent structure, B-17. This research is an important component that ties into research lead by Dr. Hoggarth to establish a high-resolution chronology of the occupation of Baking Pot in the Terminal Classic through the Post Classic (Hoggarth et al, 2014). Additionally, excavations investigated the architectural features of the structures in courtyard 4.

Excavations supervised by Dr. Hoggarth extended open units from the previous research season. A five-meter north/south by four-meter east/west unit, B1-101, was placed on the backside of structure B-1, where the plaza floor and structure met. This placement was established as a continuation of units B1-100 and B-17-2 from the previous season, which were left exposed.

Three excavation units were put on top of Structure B-17. Unit B17-3 was the first unit, a two-meter by two-meter unit. The unit was placed to investigate a stone alignment, thought to be one to two courses, running east/west on top of the structure located by A. Itza. The second unit, B17-4 was immediately adjacent to the first unit, expanding to the north by one-meter. The third unit B17-5 expanded excavations to the east one-meter. This unit was placed to follow the architecture discovered in units B17-3 and B17-4.

All material recovered from the units was screened through ¼ inch screen. Excavations went through the humus, to the first cultural feature. Levels were established based on cultural stratigraphy. As the soil became drier and fine-grained, it was additionally screened through window screen, in order to catch micro-artifacts, including micro-lithics. The three units can be viewed as a single context because excavations went down to the same level and there is related architecture in all of the units.

EXCAVATION RESULTS

Excavations went down approximately 40cm in all three of the units. The architecture was covered with approximately 15cm of humus, with the remaining 25cm containing a mix of humus and collapse, as well as the architectural features. The matrix was comprised of a dark brown, sandy clay loam. The units were heavily bioturbated with lots of roots, pebbles and termite nests. However the bioturbation was primarily surficial and did not appear to have had any significant effect on the architectural features, although collapse from above, from structure B-1, may have shifted the original alignment. The units did not initially display evidence of modern disturbances, such as looting or construction. However, during excavations large amounts of charcoal were located in the humus, which is likely a result of modern burning events. No charcoal collected from this unit will be dated because it is not definitively cultural in origin.

Architecture

Within the units, three parallel alignments running E/W are present. All three alignments, comprised of faced, locally sourced limestone blocks, are facing south. Facing stones are relatively regular in size, although fairly crude. The center row is approximately 10 cm below the outer rows. Although it is not immediately clear how the three alignments relate to the overall architecture, the two outer alignments are at the same level below surface and likely represent one construction phase. This terminal construction was likely a low wall or platform, evident in these two parallel alignments (figure 4). The center row, recessed between the outer two, appears to be associated with an earlier construction phase, most likely the penultimate phase.

Figure 4: Photos of Excavation Units on Structure B-17. Photos by K. Sullivan

The full extents of the alignments are unknown, as all three appear to continue to the east, evident in aligned stones facing stones protruding from the baulk. Additional facing stones embedded in the western baulk could also be associated with these features, although they could be a result of collapse from structure B-1 as well. It is unclear how they relate to the features within the units because the alignments do not continue into the baulk, but ends near the west baulk, within the units.

Artifacts

The artifacts recovered from structure B-17 are typical of Belize valley assemblages, consisting primarily of ceramic sherds, chert (debitage and raw material) and daub (Table 1). Other lithic materials include several obsidian blades, as well as lesser amounts of quartz, granite, one piece of flaked pink limestone and one unidentified piece of lithic material that appeared flaked. Faunal remains in the assemblage were two small, burned fragments. At the center of the units, approximately 4cm below surface, a bifacial chert point was recovered, with a small fragment of marine shell and an obsidian blade. Based on the provenience of these artifacts, they are likely from a later occupation or use of the area. Further evidence for a later use of the area is bow and arrow technology in Maya culture is associated with the Post Classic period (Coe 2011). Additional special finds included 3 chert micro-blades and a chert drill bit (Table 2). Other domestic artifacts recovered include granite *mano* fragments and half of a *metate*. The assemblage does not include any artifacts exclusively associated with ceremonial use or high status individuals.

Table 1: Artifacts recovered from structure B-17

Artifact Class	Unit B17-3	Unit B17-4	Unit B17-5	Total
Ce	236	141	73	450
Ch	147	69	89	305
Db	219	272	202	693
Ob	2	3	5	10
Qz	3	13	-	16
Gr	-	-	16	16
Ls	-	-	1	1
Ms	1	-	-	1
Fa	-	2	-	2
Mx	1	-	-	1
Uk	1	-	-	1

Table 2: Special Find artifacts.

LOT #	DESCRIPTION	CLASS	S.F. #
B17-3-1	Side-notched point	Chert	B17-3-1
B17-3-1	Micro-drills (ct. 2)	Chert	B17-3-L1
B17-4-1	Micro-drill	Chert	B17-4-L1
B17-4-1	Drill bit	Chert	B17-4-L2

CONCLUSION

Preliminary in nature, these results provide insight into the construction phases on top of structure B-17 and work towards a comprehensive understanding of the architecture of structure B-17 and in courtyard 4. The full extent of masonry construction and the architectural layout of structure B-17, and the adjacent structures, remain unknown. The multiple alignments and varied depths are suggestive of multiple construction phases. However, in order to get a comprehensive picture of how these alignments relate to the entire structure, additional excavation of structure B-17 is necessary. The artifacts, though fairly limited in quantity, point to a residential context, evident in the assemblage of simple utilitarian artifacts. Artifacts recovered from future excavations will aid in the understanding of the use of the structure. With additional information about the architectural features of courtyard 4, structure b-17 and the adjacent structures, a more accurate map can be produced.

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ADDITIONAL FIGURES

Figure 7: Alternate view of units. Photo by K. Sullivan

Figure 8: Side-notched point. Photo by K. Sullivan.

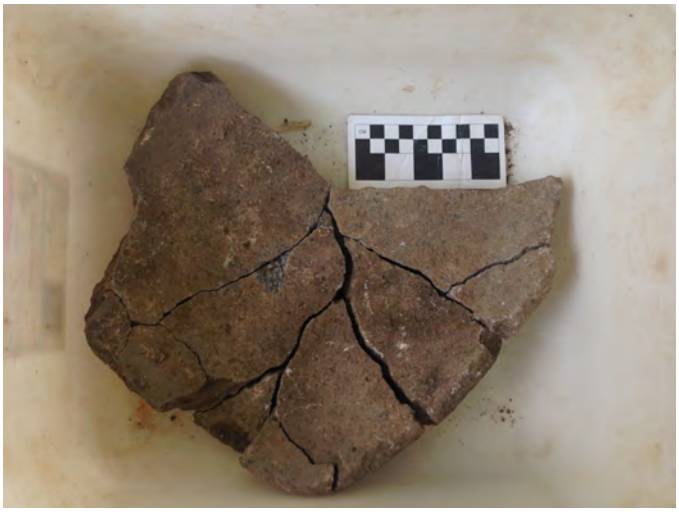

Figure 9: Refitted *metate* fragments

Figure 10: Ceramic rim sherd

Figure 11: Broken biface

INITIAL CERAMIC ANAYLSIS OF LUBUL HUH, BAKING POT

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INTRODUCTION

Baking Pot is an archaeological site located in the Cayo district of Belize, Central America that was occupied from the Late Preclassic into the Middle Postclassic periods, reaching its peak as a medium-sized kingdom at the end of the Late Classic period (Helmke and Awe 2008; Hoggarth 2012). Continued research at Baking Pot reveals that the site core was abandoned before the periphery with the latest occupations in Settlement Cluster C, east of the center of Baking Pot (Hoggarth 2012). Baking Pot is located downstream from the neighboring political capitals of Xunantunich and Cahal Pech and west of Blackman Eddy. The site is situated along the southern bank of the Belize River in the Cayo District of Belize, approximately 10 kilometers east of the modern town of San Ignacio. The environment around the valley offers a variety of natural resources valuable to the ancient Maya. Some of the resources include marine ecosystems from the coastal region to the east, granite and slate formations in the pine forests of the Maya Mountains to the south and chert and limestone outcroppings in the karstic foothills, as well as the broad leaf and pine forests.

The Baking Pot monumental center consists of two architectural groups, Group A and Group B, which are connected by a causeway approximately 306 meters in length (Helmke and Awe 2008). Group A contains two temples and three plazas, two ball courts, and long range palace structures. Group B has one temple, and one ball court as well as long range structures and was likely elite residences to the public ritual spaces of Group A (Audet 2006). The Baking Pot periphery includes 554 mounds in the 9km^2 surveyed area with peak populations occurring in the Late Classic period (Hoggarth et al. 2010).

A large housemound was located in 2007 as part of the BVAR settlement survey (Hoggarth et al 2008). Lubul Huh is located 870m to the west of Group B, 830m south of the Belize River, and only 130 west of a naturally occurring aguada. Several housemounds dotted the landscape around Lubul Huh but have since been erased from the landscape by modern agricultural methods leaving only artifact clusters in plow rows. Lubul Huh was originally mistakenly referred to as M-254 (Hoggarth et al 2008), the mound designation is actually M-410 (Zweig 2012) but was named Lubul Huh (Zweig 2013) when excavations commenced in 2011.

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PREVIOUS INVESTIGATIONS

Investigations of Lubul Huh were conducted by BVAR to consider the function and chronology of the housemound. Lubul Huh was designated as a non-royal housemound according to the size of the terminus architecture as identified by Hoggarth's (2012) typology for socioeconomic status. BVAR excavations were conducted in the 2011 and 2012 field seasons with the goal of conducting preliminary investigations on the occupational sequence as well as the socioeconomic status of the mound (Zweig 2012, 2013). The 2011 field season focused primarily on the function and chronology of the mound by means of three vertical test pits (410A-1, 410B-1, and 410P-1). In addition to continuing the three vertical units, the 2012 field season was dedicated to uncovering the terminus construction of the primary structure, 410A. Due to time constraints, the structure was not fully exposed. The exposed portion of Structure A was 18.5 meters in length and included the central staircase and the juncture with Structure B. The corners of the structure were not found and are presumed to be the width of the mound, following the line of the terminal architectural walls. Additional study is needed to determine if this is the case or if modern plowing has infringed upon the furthest corners of the structure.

METHODS

Excavations were conducted using the systematic lot and level system for recording excavation units typical of BVAR. Matrices were screened through ¼ inch mesh and separated by artifact type. Ceramics were cleaned with sponge at the lab located in front of the AIC building at Central Farms and dried, counted, and re-bagged. Further analysis included sorting ceramics into diagnostic and non-diagnostic, identifying type-variety based on Gifford (1976). Due to time constraints a random sample of ceramics were subject to type-variety.

ANALYSIS

The chronology of Lubul Huh was established by using ceramic chronology from Gifford (1976). The excavations produced both a dedicatory cache and a termination cache and the chronology was based off of these two ritual deposits. The cache found in the vertical excavation unit of the patio contained a lip-to-lip bowl configuration that is well known in cache deposits of the Belize Valley from the Preclassic into the Terminal Classic periods. The cache had a dense quantity of ceramics covering the vessels with little to no ceramics outside of the densely packed ceramic features. The result of the cache and ceramic features was a seriation that resembles a midden with an assortment of ceramics dating from the Preclassic into the Late Classic period. Ceramics from the Spanish Lookout phase were present throughout the levels (Figure 1). To further confirm the Late Classic date a random ceramics bag from below 410A-1st was examined. Out of 55 diagnostic ceramics examined, 25 were identifiable and were all of the Spanish Lookout phase. The termination deposit ceramics were almost exclusively of the Spanish Lookout phase; consisting of a large quantity of smashed ceramics, artifacts consistent with

PERIOD			BARTON RAMIE (Gifford et al. 1976)
POSTCLASSIC	Late	1500	New Town (Late Facet)
		1400	
		1300	
		1200	
	Early	1100	New Town (Early Facet)
		1000	
		900	
CLASSIC	Terminal	800	
	Late	700	Spanish Lookout

Figure 1: Classic and Postclassic Period Chronology from Gifford (1976)

bloodletting rituals, and an array of exotic and worked artifacts. The ceramics date the terminal deposit to the Spanish Lookout phase, consisting primarily of Belize Red and Cayo Group ceramics. Belize Red is believed to have been manufactured at or within close proximity to Baking Pot (Chase and Chase 2012). An abandonment dating to the Late Classic period would correspond with the abandonment of the palace complex of Baking Pot.

Level 9 (Figure 2) of 410P-1 was the lowest level in which a diagnostic ceramic was recovered but only one sherd, of the Hermitage phase, could be identified. Although Jenny Creek, Barton Creek, and Floral Park types were found in the unit the low percentages and mixing of the ceramic types makes it likely that these were part of fill. Several ceramic sherds, from different vessels, were refits between the levels, further confirming that these were from a midden used as a fill deposit. The presence of Spanish Lookout period ceramics throughout and increasing in the deposit indicate that the mound was occupied in the earliest of the Spanish Lookout (Late Classic) but ended before the New Town phase began. Three bowls were recovered from represents the heavens, the bottom bowl represents the underworld and the space between represents the earth. In the Lubul Huh dedicatory cache two bowls were lip-to-lip with a third bowl to the east. A dense ceramic deposit was located directly above the cache. The vessels were very similar to other lip to lip caching vessels. These caching vessels do not belong to a type-variety within Gifford's ceramic typology. Instead these vessels are generic caching

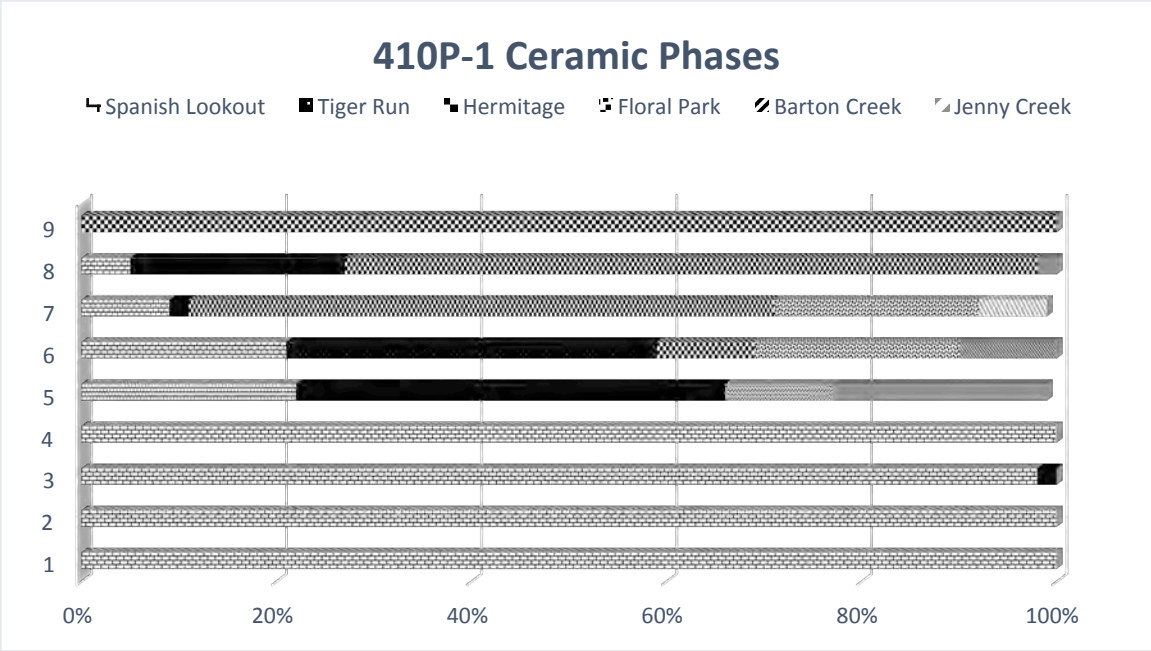

Figure 2: Type-Variety Percentages of Ceramics of 410P-1 at Lubul Huh, Baking Pot.

Table 1: Cache 1 of 410P-1.

Structure	Level	Spanish Lookout	Tiger Run	Hermitage	Floral Park	Barton Creek	Jenny Creek	Diag Total	Ce Total
410P	1	100%	-	-	-	-	-	3	33
410P	2	100%	-	-	-	-	-	31	306
410P	3	98%	2%	-	-	-	-	84	800
410P	4	100%	-	-	-	-	-	41	819
410P	5	22%	44%	-	11%	22%	-	9	302
410P	6	21%	38%	10%	21%	10%	-	42	1130
410P	7	9%	2%	60%	21%	-	7%	43	795
410P	8	5%	22%	71%	-	2%	-	41	500
410P	9	-	-	100%	-	-	-	1	24

vessels that are found from the Preclassic through the Terminal Classic periods in the Belize Valley (Awe 2014). This cache was identified to be a dedicatory lip-to-lip cache. Lip-to-lip vessel caches are common in Western Belize from the Preclassic into the Late Classic periods (Awe 2014). Lip-to-lip vessels symbolize the three levels of the cosmos, the inverted bowl

The termination deposit located across the front, eastern facing wall and staircase of structure 410A and at the intersection of structures 410A and 410B contained the majority of the ceramics recovered from Lubul Huh. The termination deposit contained 59,015 ceramics or 78% of the total termination deposit consisted of ceramics. A formal analysis was not performed due to time constraints, but a visual assessment of the ceramic artifacts during excavation and lab lead to the realization that most, or all, of the terminal deposit ceramics are squarely within the Spanish Lookout phase, with most belonging to the Cayo ceramic group.

There were many notable special find ceramics included in the terminal deposit including figurine, ocarina, and incensario fragments as well as molded or carved ceramic sherds, reworked sherds, and a ceramic rim thought to have additional ritual meaning. Most of the figurine fragments are of the head/face. Many partial figurines found are of the head/face, but some are of the body and/or appendages. The figurines found in the termination deposit of Lubul Huh are all of the head or headdress. The only figurine appendage at Lubul Huh was a jade figurine arm found in level 7 of 410A-1. Several molded and carved ceramics were also found within the termination deposit. Most of the sherds were too fragmentary to identify, but another sherd is a molded figure (Figure 3) with a simple body and a dislocated floating head. Similar figures, identified as maker's marks, have been found at a handful of sites throughout the Belize Valley. Two ceramic sherds found within the termination deposit have figures on them that likely illustrate hieroglyphics, but are too fragmentary to read. A ceramic jar neck and rim did not appear to have any uncommon markings, but is likely ritualistic due to the context in which it was found. This jar, measuring 43cm inside rim diameter, was cracked in three places but was sitting on limestone boulders that appeared to have been specifically placed in the corner, and the jar neck was on top of it. Inside the jar rim was an unbroken granite mano, another mano was directly north, and a third mano was recovered in the same context but was not immediately associated with the jar rim so the exact location is unknown. The three manos and the large jar rim can be interpreted as a ritual symbol for the three-stone place.

Figure 3. Molded Figure Ceramic, Baking Pot

CONCLUSION

The ceramic assemblage of Lubul Huh determine that the mound occupation begins and ends within the Spanish Lookout phase. A more thorough analysis, particularly of the termination deposit are highly recommended. The faunal analysis is ongoing by Norbert Stanchly and suggest a possible feasting event or similar ritual. The ceramic, and other artifact analysis of Lubul Huh was done in support of a master's thesis for the author. Further in depth analysis would only benefit and provide further understanding of the meaning of Lubul Huh within Baking Pot.

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