

# THE 2014 SEASON OF THE CHAN CHICH ARCHAEOLOGICAL PROJECT

EDITED BY

**BRETT A. HOUK**



PAPERS OF THE  
CHAN CHICH ARCHAEOLOGICAL PROJECT, NUMBER 8  
DEPARTMENT OF SOCIOLOGY, ANTHROPOLOGY, AND  
SOCIAL WORK  
TEXAS TECH UNIVERSITY • LUBBOCK, TEXAS  
2014

*Chan Chich Archaeological Project*  
 *CCAP*  
*Chan Chich, Belize - Central America*

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Belize Estates Archaeological Survey Team



Gallon Jug ♦ Belize ♦ Laguna Seca

*Chan Chich Archaeological Project*



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Cover art: Photograph of Vessel 2 from Burial CC-B11. Photo by Kelsey Herndon.





## ACKNOWLEDGMENTS

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In 2014, the Chan Chich Archaeological Project (CCAP) and the Field School in Maya Archaeology (FSMA) doubled down on research and teaching, offering two field school sessions for the first time since the 1998 season. There are many people and organizations to thank for making our summer successful. First, I would like to thank Dr. John Morris and Dr. Jaime Awe of the Institute of Archaeology (IA) for being supportive of our work and for issuing me a permit to conduct the research in 2014. As always, the other staff members at the IA helped us along the way, and they all deserve thanks. I would like to single out Brian Woodye, Delsia Marsden, and Melissa Badillo for special thanks. Melissa graciously assisted the project with passport extensions and our export permit.

It takes both a permit from the IA and permission from the landowner to conduct excavations in Belize. Therefore, I am extremely grateful to the Bowen family for allowing us to work at Chan Chich and on Gallon Jug Ranch. Alan Jeal, the general manager of Gallon Jug, supported the project in many ways and facilitated not only our work at Chan Chich but also on the survey of Gallon Jug. In addition to Alan, I would like to thank Hector Gomez and the staff of Gallon Jug Ranch for helping us with access, fuel, and many other matters. I would also like to thank Jeff Roberson, Thomas Kennerly, Yalbac Ranch, and Laguna Seca Land, LLC, for allowing us to conduct our archaeological survey on the Laguna Seca parcel and for letting us drive through Yalbac Ranch when necessary.

In 2014, the project broke in a new manager at Chan Chich Lodge and exposed him to

the wonderful world of integrating grimy archaeologists with regular guests. Marc DiBrita and his wife Carly deserve thanks for putting up with us and helping us out tremendously at every turn. Marc even ran over 100 m of coaxial cable from his house to the bar and moved his television in there so the staff could watch World Cup games when there were no guests around. My longtime friend Letty Martinez, the assistant manager of the lodge, has our utmost thanks and appreciation for going out of her way to make our stay exceptional. The lodge kindly allowed us to employ Josimar Magaña as the guide for our survey team. Josimar was tremendously helpful.

A cadre of local Belizean boys and men at various points assisted us in the field. I would like to thank Adir Cowo, Alex Ramirez, Alexis Cortez, Eric Galy, Gary Romero, Myran Ek, Celestino Corado Jacinto, and Victor Granados for all of their hard work.

The staff of Chan Chich Lodge never fails to make our stays pleasant and memorable. They are a wonderful group of people: Don Pedro Barahona, Don Eulalio Corado, Olivia Cordova, Teresa Cordova, Esmeralda de la Rosa, Kelvin de la Rosa, Emil Flota, Raul Martinez, Jose Luis (Chelis) Monroy, Don Jorge Montuy, Maritsa Montuy, Migde Perdomo, Marvin Ramirez, Elias Romero, Luis Romero, Arlene Sanabria, Jeremias (Jerry) Serminia, Don Gilberto Vasquez, and Rosario Vasquez.

Abe Rempel rented two trucks and facilitated getting the insurance modified to meet Laguna Seca's requirements. As always, his willingness to work with us and his assistance were greatly appreciated.



Staff and students watching the World Cup in the bar on Marc's television. Houk and Herndon, far right, are actually doing science as they process Structure from Motion data.

Leroy Lee of American Seismic has been a great friend of the project since 2012, and we would like to think him for his generous donation to Texas Tech University (TTU), which made the second season of the survey work possible. I would also like to thank the Office of the Vice President for Research at TTU for the Creative Arts, Humanities, and Social Sciences grant that funded our work at Structure A-15.

In 2014, a number of important consultants, visitors, and analysts aided our investigations. First and foremost is Mark Willis, who directed the Structure from Motion mapping of Structure A-15. From TTU, Gary Smith, an associate professor of architecture, joined the project for about a week to draw architectural reconstructions of the Main and Upper Plazas. I would also like to thank Dr. Fred Valdez and Dr. Lauren Sullivan, our project ceramicists, for analyzing the Back Plaza ceramics. Bruce Templeton deserves thanks for showing our lab staff some artifact photography tricks.

I would be negligent in my duties if I did not acknowledge the hard work and financial sacrifice of the project staff. Ashley Booher (TTU), Kelsey Herndon (Alabama), David Sandrock (TTU), Edgar Vazquez (TTU), and Dr. Gregory Zaro (University of Maine) supervised the fieldwork and trained the students in excavation methods, recording, mapping, and survey. I am particularly thankful to Dr. Zaro for running the show while Kelsey Herndon and I presented on the ongoing research at the Belize Archaeology and Anthropology Symposium. Returning project members Erica Gallis (George Mason University), Samantha Mitchell (TTU), Carolyn Nettleton (University of Toronto), and Tony Mouton (TTU) assisted with the excavations. Lori Phillips (Washington State University) directed the lab in 2014 and trained students in lithic analysis.

The CCAP is supported by the FSMA, a program run through Study Abroad at TTU. I would like to thank Elizabeth McDaniel and Rachel Jarnagin for dealing once again with our unique requirements. I have saved the greatest





2014 CCAP staff and Session 1 students at Cahal Pech. From left to right, sitting: Justine Hanrahan, Richard Mahurin, Jennifer Keute, Brooke Ann Coco, Cindy Rodriguez, Penny Hughes, Sarah Van Oss, Kate Waters, Alyssa Farmer, and Tanvi Mittal. From left to right, standing: Brett A. Houk, Samantha Mitchell, Ashley Booher, Edgar Vazquez, David Sandrock, Tony Mouton, Kelsey Herndon, Ashley Krauss, and Lori Phillips.



2014 CCAP staff, guest, and Session 2 students at Lamanai. From left to right, sitting: Trudy Kilgore, Carolyn Nettleton, Katherine Sinsky, Lucy Shinkfield, and Jayce Proctor. From left to right, standing: Brett A. Houk, Carly DiBrita, Paisley Palmer, Michelle Freyder, Erica Gallis, Lindsay Deaver, Casey Kellner, Karemy Valdez, and Gregory Zaro.



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thanks, however, for the students on the first and second sessions that chose this project over all the other possible field schools out there. From Session 1, they are Brooke Ann Coco, Alyssa Farmer, Justine Hanrahan, Penny Hughes, Jennifer Keute, Ashley Krauss, Richard Mahurin, Tanvi Mittal, Cindy Rodriguez, Sarah Van Oss, and Kate Waters. From Session 2, they are Lindsay Deaver, Michelle Freyder, Casey Kellner, Trudy Kilgore, Paisley Palmer, Jayce Proctor, Lucy Shinkfield, Katherine Sinsky, and Karemy Valdez.

I would also like to thank Dr. Lisa Lucero for giving the project staff a tour of the excavations at the Cara Blanca pools on Yalbac Ranch and Dr. Ellie Harrison-Buck for the tour of the excavations at Saturday Creek that same day.

Finally, we had the great pleasure of being visited by Ellie (a former CCAP staff member), her husband David Buck, and their two daughters, Eliza and Natalie, this summer. I enjoyed the opportunity to show off our straight walls and monumental architecture to them. I look forward to collaborating with Ellie and her Belize River East Archaeology project on research in the near future.

Guns up!

Brett A. Houk, December 2014



The project staff visiting Cara Blanca Pool #1, Yalbac Ranch, between field school sessions. From left to right: Carolyn Nettleton, Lori Phillips, Kelsey Herndon, Ashley Booher, and Brett A. Houk.





The project staff visiting the Belize River East Archaeology project's excavations at Saturday Creek between field school sessions. From left to right: Carolyn Nettleton, Ashley Booher, Kelsey Herndon, Lori Phillips, and Dr. Ellie Harrison-Buck, who is explaining the excavations.



# AN INTRODUCTION TO THE 2014 SEASON OF THE CHAN CHICH ARCHAEOLOGICAL PROJECT AND THE BELIZE ESTATES ARCHAEOLOGICAL SURVEY TEAM

Brett A. Houk and Gregory Zaro

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The Chan Chich Archaeological Project (CCAP) operates alongside Texas Tech University's (TTU) Field School in Maya Archaeology, a study abroad program in the tropical forest of northwestern Belize that offers students the opportunity to learn archaeological methods and techniques while contributing to an active research project. The CCAP completed its eighth season of research in 2014, and, for the first time since 1998, included two field school sessions. The extended research time allowed us to excavate in the Upper Plaza at Chan Chich for two consecutive four-week sessions and address various research agendas.

This chapter includes relevant project minutia (dates, staff, permits, funding, etc.), summaries of the 2014 excavations, and an updated description of Chan Chich's site plan and chronology, based on the results of eight seasons of research at the site by the CCAP. Finally, the chapter closes with a preview of the rest of the volume.

## PERMIT AREA

The CCAP and its regional survey component, the Belize Estates Archaeological Survey Team (BEAST), operate on slightly more than 130,000 acres of land in northwestern Belize, with the official permit area encompassing

Gallon Jug Ranch, Laguna Seca, and the northwestern corner of Yalbac Ranch (Figure 1.1). Sixteen numbered Belize Estate (BE) sites are in or near the permit area (Table 1.1). As discussed below, BE numbers are assigned to large or important prehistoric and historic sites.

The limits of the permit area were formalized with the Institute of Archaeology (IA) in June 2014. The rather complicated nature of the permit area arises from the fact that prior to the planned survey of existing seismic lines on Gallon Jug Ranch in 2013 (Sandrock 2013), Bowen and Bowen, Ltd., sold approximately 105,000 acres of the ranch to Forestland Group, retaining an irregularly shaped parcel covering approximately 28,000 acres and encompassing the headquarters of Gallon Jug Ranch, Sylvester Village, and Chan Chich Lodge. The large parcel acquired by Forestland Group is now known as Laguna Seca. Houk proposed that the permit area should include all of the former Gallon Jug Ranch. Because the boundary between Gallon Jug Ranch and Yalbac Ranch passes through the ruins of Chan Chich south of the Upper Plaza, Houk requested that the permit area include the northwestern corner of Yalbac Ranch as well to ensure that the ruins of Chan Chich would lie entirely within the permit area, despite its straddling two private properties.

Houk, Brett A., and Gregory Zaro

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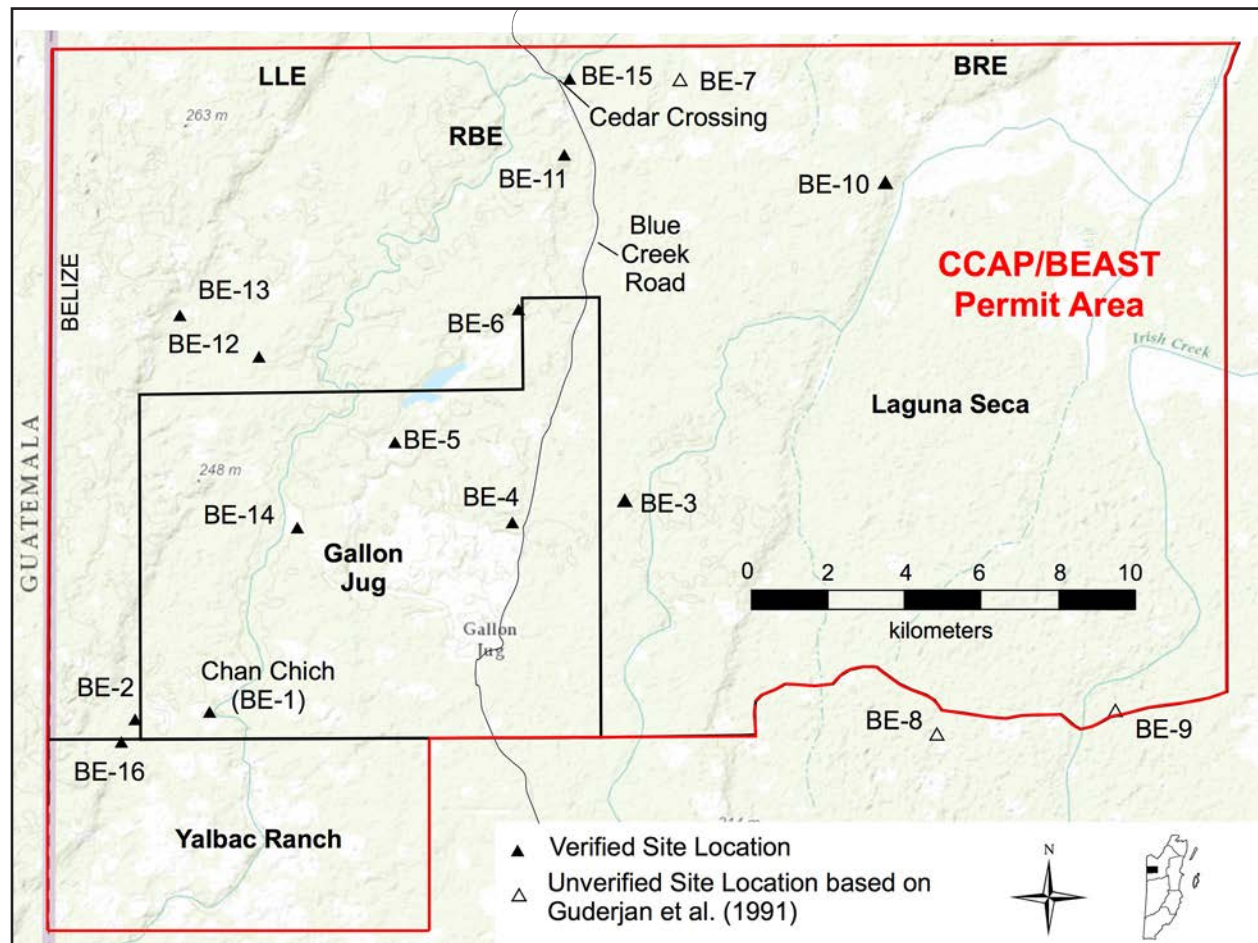


Figure 1.1. Map of the CCAP/BEAST permit area. See Table 1.1 for explanation of BE numbers. The three escarpments in the area are, from west to east, the La Lucha Escarpment (LLE), the Rio Bravo Escarpment (RBE), and the Booth's River Escarpment (BRE).

Table 1.1. List of BE Sites Shown in Figure 1.1

BE #	Site Name	BE#	Site Name
1	Chan Chich	9	Sierra de Agua
2	Kaxil Uinic (E'kenha)	10	Gongora Ruin
3	Punta de Cacao	11	Ix Naab Witz
4	Gallon Jug	12	La Luchita
5	Laguna Verde	13	Montaña Chamaco
6	Laguna Seca	14	Sylvester Camp
7	Qualm Hill ruin	15	Qualm Hill Camp
8	Wamil	16	Kaxil Uinic Village

## **PROJECT TIME LINE, STAFF, AND CONSULTANTS**

The project began on May 12, 2014, with the arrival of the project director in Belize (Table 1.2). On May 14, Mark Willis of Archaeo-Geophysical Associates (AGA), LLC, and senior project staff (Kelsey Herndon, David Sandrock, Edgar Vazquez, and Lori Phillips) arrived. On May 15, Willis and Herndon began Structure from Motion (SfM) mapping of Structures A-15 in the Upper Plaza while the remaining staff set up the lab and prepared for the arrival of the first group of students. Eleven first-time field school students, two returning students, and senior staff member Ashley Booher arrived on May 19, the start of Session 1. The first session ran for 28 days and ended on

June 16. Sandrock and Vazquez completed their research and departed prior to Session 2, which began on June 19. Session 2 included Associate Project Director Gregory Zaro, nine first-time students, and two returning students. Session 2 ended on July 17, with the departure of Zaro and the students. The project's remaining staff left Chan Chich on July 19, marking the end of the 2014 field season.

## **PROJECT FUNDING**

The TTU Field School in Maya Archaeology, a cost-sharing program run through Study Abroad, served as the primary source of funding for the 2014 season of the CCAP. The SfM mapping in the Upper Plaza was funded by a grant to Houk through the Creative Arts,

Table 1.2. Project Staff and Consultants, Sorted by Arrival Date

<b>Name</b>	<b>Role</b>	<b>Affiliation</b>	<b>Arrival</b>	<b>Departure</b>
Dr. Brett A. Houk	Project Director	TTU (Anthropology)	5-12-14	7-19-14
Mark Willis	SfM Specialist	AGA, LLC	5-14-14	5-19-14
Kelsey Herndon	Operation Director	University of Alabama (Anthropology graduate student)	5-14-14	7-19-14
Lori Phillips	Lab Director	Washington State University (Anthropology graduate student)	5-14-14	7-19-14
David Sandrock	Survey Operation Director	TTU (Anthropology graduate student)	5-14-14	6-19-14
Edgar Vazquez	Operation Director	TTU (Anthropology graduate student)	5-14-14	6-19-14
Ashley Booher	Operation Director	TTU (Anthropology graduate student)	5-19-14	7-19-14
Carolyn Nettleton	Suboperation Director		6-16-14	7-17-14
Dr. Gregory Zaro	Associate Project Director	University of Maine (Anthropology)	6-19-14	7-17-14
Eric Gallis	Suboperation Director		6-19-14	6-30-14
Gary Smith	Consulting Architect	TTU (Architecture)	7-5-14	7-11-14
Dr. Fred Valdez, Jr.	Project Ceramicist	UT-Austin (Anthropology)	--	--
Dr. Lauren A. Sullivan	Assistant Project Ceramicist	UMASS-Boston (Anthropology)	--	--

Humanities, and Social Sciences (CAHSS) grant competition sponsored by the Office of the Vice-President for Research at TTU. The second season of survey work was generously supported by a private donation to TTU earmarked for that purpose.

### **PROJECT PERMITTING**

The Institute of Archaeology (IA), part of the Belizean National Institute of Culture and History, issued Permit No. IA/H/2/1/14(09) to Houk for the excavations at Chan Chich and the survey of Gallon Jug and Laguna Seca. At the time the permit was issued, Dr. Jaime Awe was the Director of the IA, and Dr. John Morris was the Associate Director of Research and Education. The landowners of Gallon Jug Ranch and Laguna Seca also gave permission for the research. No work in 2014 took place on Yalbac Ranch.

### **AN OVERVIEW OF THE 2014 SEASON**

During the 2014 season, our efforts targeted four specific objectives. The first was the initiation of the Chan Chich Dynastic Architecture Project (CCDAP) in the Upper Plaza at Chan Chich (Figure 1.2). This effort included the SfM mapping of Structure A-15, continued excavations in the plaza itself, and excavations on the surrounding monumental structures. CCDAP spanned both sessions and is envisioned as a multi-year subproject of the CCAP. In Session 1, CCAP included excavations in the Back Plaza at Chan Chich and continued survey on the Gallon Jug and Laguna Seca properties under BEAST. In Session 2, the project conducted preliminary investigations of the two *sacbeob* and associated structures as part of a two-year study. The project afforded field school students opportunities to participate in each area of research and work in the field lab, the latter of which offered experience in artifact processing and analysis.

### **Investigations at Chan Chich**

#### ***Upper Plaza***

The investigations in the Upper Plaza inaugurated the CCDAP, which is building on previous investigations by Hubert Robichaux (1998, 2000; Robichaux et al. 2000) and Krystle Kelley (2014; Kelley et al. 2012, 2013). The goal of CCDAP is to trace the evolution of dynastic architecture and divine kingship at Chan Chich. Although Chan Chich is a medium-sized ancient Maya city it has a long history of occupation (ca. 800 BC to AD 850), and, importantly, the city was home to an early divine king in the Maya lowlands (Houk et al. 2010). This ruler was buried in Tomb 2 beneath a small shrine platform in the Upper Plaza during the Terminal Preclassic period, ca. AD 250. The Upper Plaza ultimately grew into an elevated elite acropolis, and the shrine platform was buried beneath subsequent plaza renovations. The mounds visible today date to the Late Classic period, ca. A.D. 600–850, but the two largest buildings, Structures A-15 and A-21, each have multiple looters' tunnels that penetrate deep into the mounds, revealing complicated and incomplete pictures of older phases of construction. In the case of Structure A-21, it is evident the Maya carefully infilled an older vaulted building, preserving the red-painted walls in the rooms, before expanding the structure. The deepest levels of the tunnels correspond to the elevation of the Late Preclassic plaza surface, suggesting earlier buildings may be present.

Although we now have an informed understanding about the important relationship between divine kingship and monumental dynastic architecture in the Maya lowlands during the Classic period, we still know little about the relationship between the earliest Maya kings and the oldest royal architecture. In some cases, investigators have identified early royal tombs but not early residences (e.g., Houk et

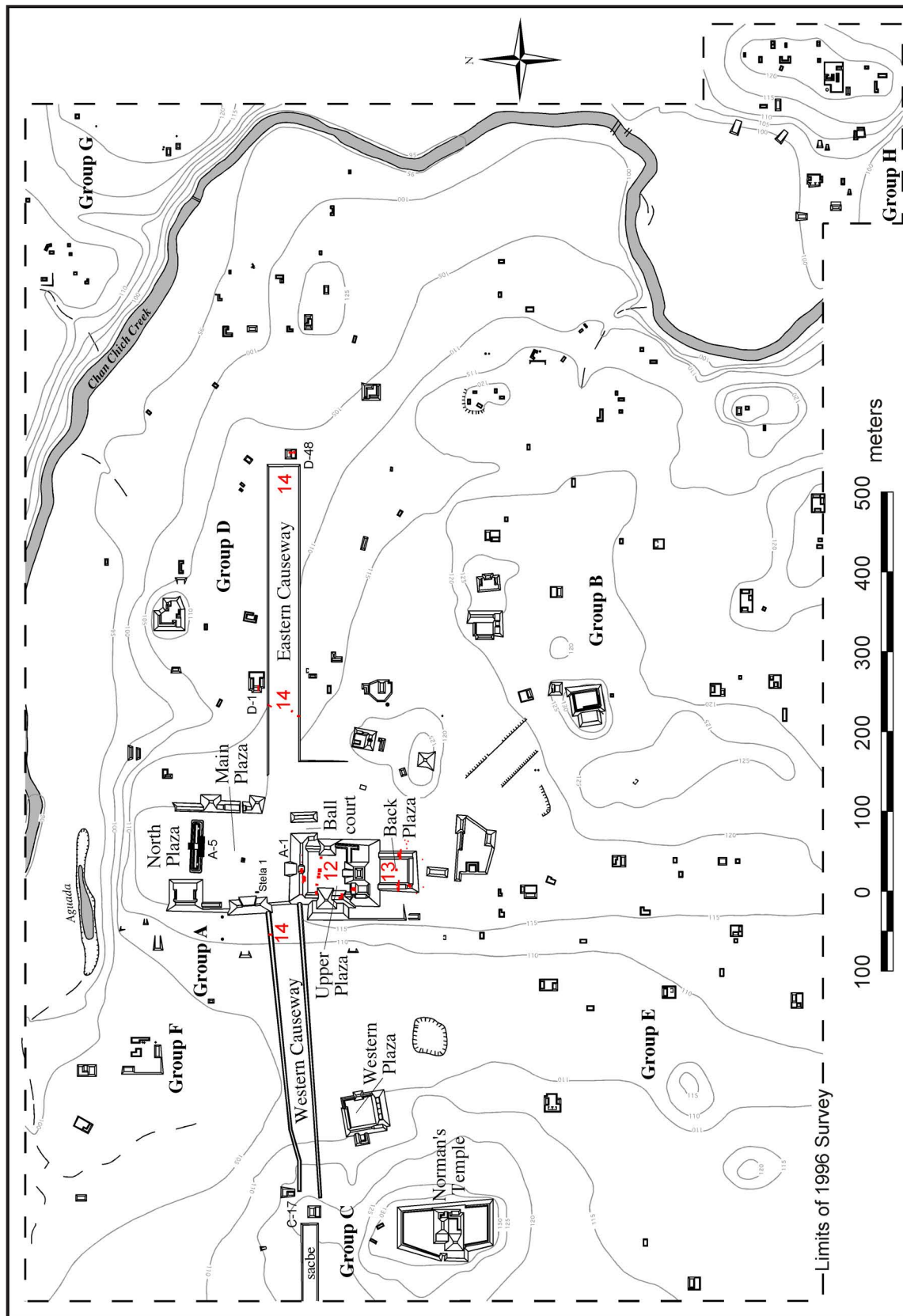


Figure 1.2. Map of 2014 investigations at Chan Chich. Numbers refer to Operations CC-12, CC-13, and CC-14.



al. 2010; Saturno 2006); in other cases we have early royal architecture, such as the Pinturas structure at San Bartolo, but no associated ruler (e.g., Saturno 2009). The purpose of the CCDAP is to explore the relationship between a Terminal Preclassic Maya king and the earliest monumental architecture at the site over the course of several seasons and to trace the evolution of the dynastic architecture from its Terminal Preclassic origins to the Late Classic period.

Changes in funerary practice and the use of monumental architecture from the Late Preclassic to the Late Classic periods “reflect profound shifts in political rhetoric and ideology” (Martin 2003:5). We know very little about how the process started, or what the early royal buildings looked like, because no project has successfully linked a Terminal Preclassic king to a royal house. Therefore, given the long-standing tradition of Maya kings’ being associated with specific royal buildings (see Fash [1998] and Fash et al. [2004] for examples from Copan and Harrison [2003] for an example from Tikal) and the concomitant changes in kingship and dynastic architecture, linking early dynastic architecture at a site with an early king is an important step in studying the evolving relationship between kings and their architectural complexes.

We propose that Chan Chich is an excellent candidate for studying the evolving relationship between Maya kingship and dynastic architecture because (a) the site has an early royal tomb, (b) its royal acropolis grew incrementally through the end of the Late Classic, and (c) looters’ tunnels into the largest structures afford an opportunity to explore the oldest monumental buildings at the site without having to excavate (and destroy) the overlying construction phases. We believe that we can use a combination of targeted excavations and 3D mapping to stratigraphically link the tomb’s construction to a specific phase of one or more

nearby monumental buildings, giving us the potential to identify the royal architecture associated with the king. With that starting point, we can then examine changes in building form, decoration, and perhaps function through time, which should relate to changes in the institution of divine kingship.

This rather ambitious effort began in 2014 with SfM mapping of Structure A-15 (Willis et al., this volume) and excavations in the Upper Plaza and on associated structures (Herndon et al., this volume). The SfM mapping reported by Willis and colleagues represents something never before tried, as far as we can tell. Willis (Figure 1.3) developed a method for mapping not only the exterior of Structure A-15, which is a large mound covered in forest, but also the looters’ tunnels and trenches that cut through the mound in the same photogrammetric model. Ultimately, we hope to use this model to move



Figure 1.3. The SfM mapping crew’s self-portrait inside a looters’ tunnel in Structure A-15. From left to right: Phillips, Willis, Herndon, and Houk.

from a limited view of exposed architectural features to a 3D reconstruction of the various architectural phases of the building. This will allow us to identify the number of different construction episodes. Moreover, we plan to use the reconstruction to develop a tunneling strategy to investigate the earliest phases of the building, particularly the phase that is associated temporally with Tomb 2.

The excavations in 2014 continued the plaza study conducted by Krystle Kelley (2014) during the 2012 and 2013 seasons, and began exploratory excavations on some of the structures surrounding the plaza as Operation CC-12. Field school students and local laborers accomplished a tremendous amount of work over the course of two sessions and added greatly to our understanding of the later phases of Structures A-1, A-18, and A-20, and exposed more of a buried platform face or wall in the northern portion of the Upper Plaza. Kelsey

Herndon and colleagues (this volume) report on the architectural discoveries and three special deposits—Burials CC-B11 and -B13 and Cache CC-C1—excavated in 2014.

Burial CC-B11 proved to be a challenging excavation that took most of the second session to complete (Figure 1.4), but it provided important information on the penultimate phase of Structure A-1. The burial and its small crypt occupied the center line of the structure beneath the central landing that provided access between the Main and Upper Plazas. With four complete ceramic vessels as grave offerings (Figure 1.5), the burial represents the second richest interment thus far documented at Chan Chich, behind the Terminal Preclassic Tomb 2 (see Houk et al. 2010). The vessels, which have not been formally analyzed by the project ceramicists (see Valdez and Sullivan, this volume), are tentatively classified as belonging



Figure 1.4. Kelsey Herndon excavating Burial CC-B11 on Structure A-1 while Lori Phillips observes. Photograph by Trudy Kilgore.





Figure 1.5. Vessel 2 from Burial CC-B11 shortly after excavators removed it from the crypt. Vessels 1 and 2 had to be removed from the crypt shortly after discovery to ensure they would not be damaged during excavations.

to the Achote Ceramic Group and dating to the Late Classic (Tepeu 1-2) period.

The work by Herndon and colleagues (this volume) also provided new information about the final phase of Structure A-1. Robichaux (2000) had speculated that the structure included two tandem range buildings with nine rooms each separated by a central landing; each building, it was hypothesized, had eight tandem rooms and one transverse room, which faced the landing. The 2014 excavations determined that there are no rooms facing the central landing, meaning that each building consists of four rooms facing the Main Plaza and four rooms facing the Upper Plaza. Neither of the rooms on the southern side of Structure A-1W that

Herndon's teams excavated contained a bench, suggesting perhaps that Structure A-1 was not a residential structure, at least in its final form.

At this point, the project ceramicists have not analyzed the ceramics from Operation CC-12. We are also waiting on the results of approximately a dozen radiocarbon samples from the Upper Plaza, which should help clarify the ages of not only the plaza floors but of Burial CC-B11, as well. Those results will be published in a revision to this report.

### ***Back Plaza***

TTU graduate student Edgar Vazquez conducted thesis research at Courtyard A-3 in 2014 as Operation CC-13. More commonly

known as the Back Plaza, this courtyard forms the southern end of the line of contiguous monumental architecture that stretches approximately 350 m from south to north. Courtyard A-3 is directly behind (south of) Structure A-15 and approximately 7 m lower in elevation than the Upper Plaza. The southern side of the Upper Plaza's platform forms the northern side of Courtyard A-3, and three structures enclose the other sides of the group. Structures A-23, A-24, and A-25 are platforms that surround the courtyard on its western, southern, and eastern sides.

Vazquez and colleagues (this volume) determined that the eastern and western buildings have at least two construction phases. In their final forms, they each supported buildings with low masonry walls that were presumably topped by perishables superstructures. The courtyard itself, however, only had one construction phase evident in a central test pit.

The function of Structure A-25 remains unknown because no artifacts were found on the floor of its summit building, and excavations encountered no architectural features other than low walls. Structure A-23, however, likely had a kitchen in its central area (Figure 1.6). Vazquez and colleagues (this volume) report finding dense concentrations of ashy soil,

numerous partially reconstructable vessels—including a large number of Tinaja Red jars (Valdez and Sullivan, this volume)—animal bone, ground stone, and broken bifaces, which may have originally been stemmed bifaces that were recycled into knives. The southern end of Structure A-23 is approximately 1.5 to 2 m taller than the rest of the mound. Excavations in this area also documented two construction phases. The oldest may have been a vaulted building based on the height of a preserved doorway jamb. In the second phase, a platform was added (or raised) in front of the building on its east side and the room associated with the doorway was infilled approximately 1 m and capped with a new floor. The portion of the wall and doorway jamb extending above the new platform and raised floor continued to be used in this later phase, but perhaps the vault, if one had been present originally, was removed. Based on ceramics on the floors of Structure A-23, the Back Plaza was occupied into the Terminal Classic period; the bulk of construction, however, took place in the Late Classic period.

#### ***Processional Architecture: Causeways and Associated Architecture***

In 2014, Ashley Booher began her thesis research on processional architecture at Chan Chich as Operation CC-14. The Eastern and



Figure 1.6. Excavations at Structure A-23.



Western Causeways enter the Main Plaza in front of Structure A-1, a massive structure with a broad stairway and central summit landing flanked by tandem-range buildings. Both of these causeways are about 40 m wide, much wider than they need to be if they only functioned as walking corridors. Attached to the eastern side of Structure A-1 is the site's ball court, which sits on the platform created by the Eastern Causeway. These four architectural elements, along with the Main Plaza itself, likely constituted the stage for a variety of performances involving processions along the causeways, spectacles on the stairs and landing of Structure A-1, and ball games (Houk 2013). The large plaza would have provided space for thousands of people to witness the events. Furthermore, at the ends of the two causeways are mounds that appear nearly identical in configuration—Structures C-17 and D-48. They both face south, and each has a small platform extending to the south.

Booher's thesis research is using the work of Angela Keller (2006) at Xunantunich as a guide. Keller demonstrated the possibility of recovering artifacts related to the functions of Maya causeways by excavating "clearing units" along the edges of the causeways where trash would have accumulated. Importantly, she found sherds from ceramic drums along both causeways at Xunantunich, but a concentration of them near Structure A-21 and the western end of Sacbe II. She also found sherds from censers in the same area, and concluded that "the rituals enacted on Structure A-21 were directly associated with musical performance along the causeways" (Keller 2006:452). She also discovered other types of artifacts along the causeways, including a chert eccentric, a pyrite mirror fragment, a marine shell pendant, a jade bead, portions of ceramic bowls, and obsidian blades. She interprets some of this debris to be bits of costumes lost during processions, but

also as the remnants of rituals conducted along the procession route.

Booher and Nettleton (this volume) report on the initial investigations of processional architecture, conducted during the second field school session. The work was hindered in part by weather and difficult digging conditions, but it was able to answer preliminary questions about causeway construction. The Eastern Causeway is a wide platform constructed in one phase with edges formed of unfaced boulders and cobbles. The Western Causeway also appears to be a single-phase construction, and Booher's team determined that—at least near the Main Plaza—the causeway is an elevated platform with parapets along its edges. Houk (2003) had previously proposed that the Western Causeway was a ground-level corridor defined by low walls, but Booher and Nettleton (this volume) encountered a layer of construction fill south of the northern parapet, indicating the causeway was originally an elevated feature. Unfortunately, the project ceramicists did not analyze the ceramics from Operation CC-14, so the ages of the causeways are unknown but assumed to be Late Classic.

Booher and Nettleton (this volume) also conducted preliminary excavations at Courtyard D-1, which is a small group adjacent to the Eastern Causeway, and at Structure D-48, the hypothesized eastern terminus shrine. In both cases, additional excavations are needed to make sense of the architecture exposed in 2014, but both areas yielded tantalizing data. Structure D-1 in Courtyard D-1 proved to be particularly confusing (Figure 1.7). Excavations documented a fairly well preserved outer wall and landing, but excavations into what we expected to be a collapse-filled room encountered a shallow burial (Burial CC-B12) only a few centimeters below the topsoil. Our working hypotheses are that the group's occupants filled in the building and then used



Figure 1.7. Photograph of Structure D-1, facing west and showing the partially preserved eastern wall of the building and patio floor at its base. The large stone in the left foreground is an inverted drain stone. Burial CC-B12 was unexpectedly discovered near the top of the mound once a new unit was opened to the west of the one shown here.

the new platform as a living surface, placing the burial beneath their new platform floor, or that the burial is in intrusive feature placed into the building after it had collapsed. A pending radiocarbon sample may clarify this picture.

Excavations at Structure D-48 could not be completed before the season ended, but it appears as if the structure has well-preserved architecture and a dense deposit of artifacts on its southern facing platform or patio. The artifacts from the single unit on the platform included hundreds of ceramic sherds, over a dozen lithic tools, and an even larger quantity of obsidian blades (Booher and Nettleton, this volume).

### **Belize Estates Archaeological Survey Team**

Supervised by David Sandrock (Sandrock and Willis, this volume), BEAST conducted survey on Gallon Jug Ranch and Laguna Seca during Session 1 of the 2014 field season. The survey work was entirely funded by a generous donation to TTU from Mr. Leroy Lee of American Seismic, LLC. In 2012 and 2013, American Seismic cut numerous seismic lines across the project area. These transects offered BEAST's crews an excellent opportunity to conduct a systematic linear survey without having to cut new survey lines.

As discussed by Sandrock and Willis (this volume), BEAST investigated three seismic lines covering nearly 33 km during the 2014 field season. The project also revisited several



sites recorded by Guderjan et al. (1991) to assess their current conditions, verify their maps, and update their locations. The survey team assigned BE (for Belize Estate) numbers to larger sites, defined as those with four or more structures, at least one of which is 4 m or taller, not within 1 km of another recorded site, and to named sites recorded by Guderjan et al. (1991).

During the 2014 field season, BEAST revisited the previously recorded sites of Punta de Cacao and Gongora Ruin, recorded 117 structures, and documented one new BE site, the mid-to-late-nineteenth century logging camp of Qualm Hill Camp (BE-15). Several historic bottles collected during the visit to Qualm Hill Camp are described by Phillips and Sandrock (this volume).

While Mark Willis was with the project for the SfM mapping of Structure A-15, he spent

a few hours one afternoon using a drone to map a cleared area of pasture near Gallon Jug (Figure 1.8). Sandrock and Willis (this volume) describe the methods and results of that effort.

Unfortunately, for the second season in a row, BEAST crews could not re-locate El Infierno, a major ceremonial center reported by the Commissioner of Archaeology in the 1970s. Using new information provided by Rafael Guerra, an employee of the Institute of Archaeology, Sandrock's teams inspected an area near the Guatemalan border, but found no indication of a large site (see Sandrock and Willis, this volume).

### **AN UPDATED DESCRIPTION OF CHAN CHICH**

Chan Chich is in western Belize, approximately 4.25 km east of the border between Guatemala and Belize (Figure 1.9). The ruins are on the



Figure 1.8. Mark Willis piloting the drone over the Gallon Jug pastures.

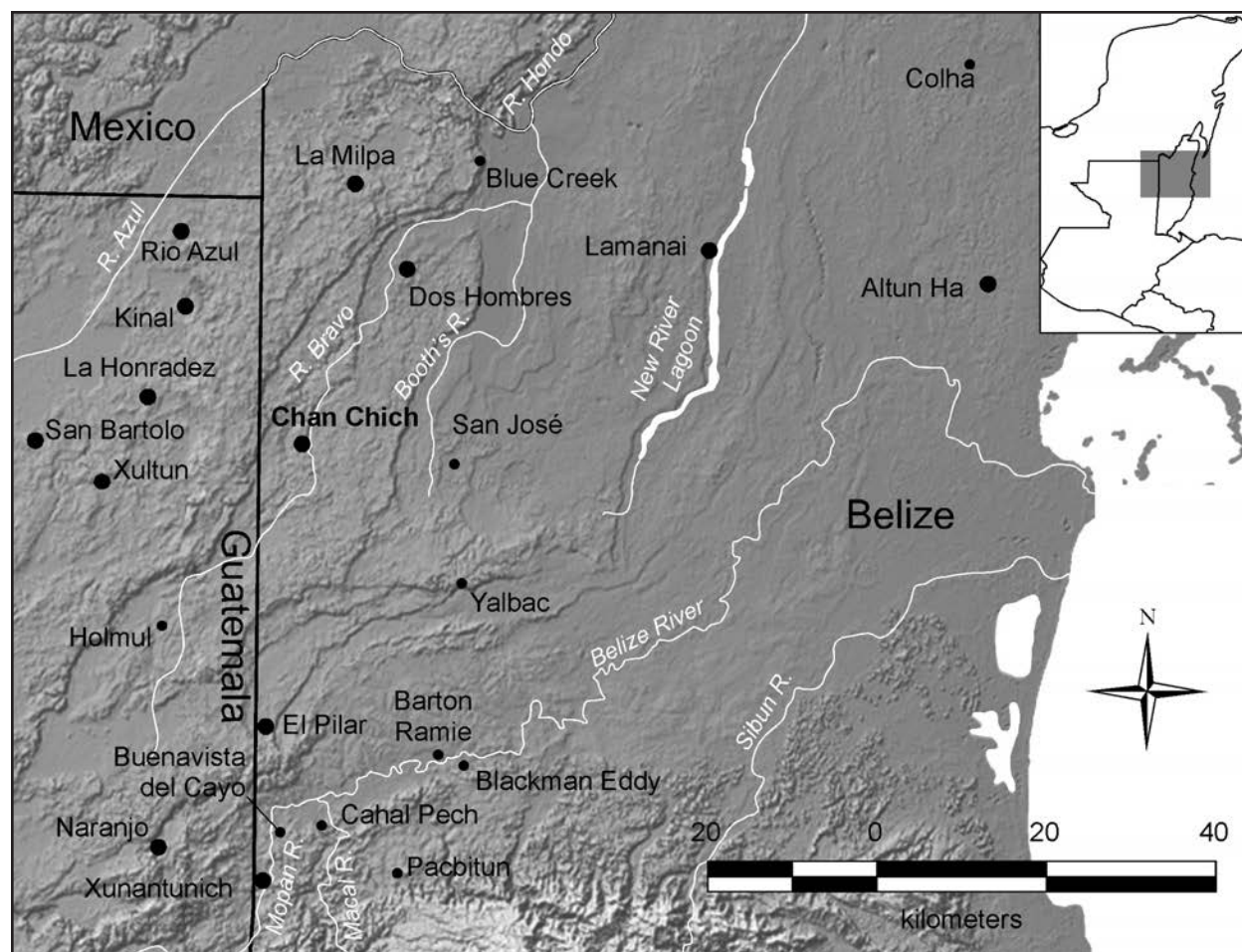


Figure 1.9. Map of north-central Belize showing the location of Chan Chich in relationship to other Maya sites.

western bank of the northward flowing Chan Chich Creek, which joins Little Chan Chich Creek a few hundred meters north of the site to become the Río Bravo. The Río Bravo is one of three rivers from which the Three Rivers adaptive region draws its name. The site occupies a physiographic zone known as the Río Bravo Terrace Lowland. Irregular bajos and hemispherical hills characterize the area.

From the tops of the mounds in the Main Plaza at Chan Chich, the steep face of the La Lucha Escarpment is visible approximately 3.75 km to the west where it abruptly rises over 100 m. The Yalbac Hills are 18 km to the south, forming the divide between the Río Hondo and Belize River watersheds and marking the southern limit of the Three Rivers adaptive

region according to Garrison and Dunning (2009).

The major architecture at the site (see Figure 1.2) is centered on the Main Plaza (Plaza A-1) and the Upper Plaza (Plaza A-2). The Main Plaza is square in plan and is the third largest plaza in the region, encompassing 13,080 m<sup>2</sup> (Garrison 2007:Table 6.3). Mounds border the plaza on all sides, but gaps between structures allowed formal and informal access points. With the North Plaza at one end and the smaller Back Plaza at the other, the contiguous series of plazas and buildings extends approximately 350 m from north to south.

Structure A-1 is the largest building at Chan Chich; it is a 70-m long tandem range building

that divides the Main Plaza from the Upper Plaza. A central landing on the summit of the building allowed access into the enclosed and private Upper Plaza, which is 7 m higher in elevation than the Main Plaza. Excavations in 2014 determined that Structure A-1 has two once-vaulted buildings on its summit. Each is a tandem-range building with four rooms facing the Main Plaza and four rooms facing the Upper Plaza (Herndon et al., this volume).

The Upper Plaza is arguably the site's acropolis and was home to the tomb of an early king at the site (Houk et al. 2010). Structure A-15 is situated across the plaza from Structure A-1 and is the tallest building at the site. Similar to the western temple-pyramid (Structure A-21), it has multiple looters' trenches and tunnels that reveal older architectural phases of unknown ages beneath the Late Classic buildings.

Two causeways enter the Main Plaza from the east and west in front of Structure A-1. Curiously, the two have different architectural styles. The Eastern Causeway is an elevated *sache* that is 40 meter wide. The Western Causeway is also elevated, at least near the Main Plaza, and has parapets defining its northern and southern edges. Excavations in 2014 determined that each causeway was built in a single construction phase (Booher and Nettleton, this volume). Pending ceramic analysis, the ages of the two causeways are unknown, but presumed to be Late Classic. The two causeways terminate at remarkably similar structures (Structure C-17 on the west and Structure D-48 on the east), which are mapped as small shrines with low platforms extending to the south.

The site's ball court is at the southeastern corner of the Main Plaza, built on a level platform that extends off the Eastern Causeway. The ball court is atypical in that its western structure is physically attached to the base of Structure A-1, while its eastern structure is freestanding. When

considered together, the two causeways with termini structures, Structure A-1, and the ball court must have been important architectural elements of ritual processions entering the Main Plaza, as noted above (Houk 2013).

Surrounding the core architecture are numerous smaller courtyards, the largest of which are the Western Plaza and Norman's Temple group. These two elite residential groups are approximately 250 m west of the Main Plaza. The Western Plaza sits at the base of a large hill, which is crowned by Norman's Temple group, a tightly enclosed courtyard with a small temple on its western edge and a range building on the north. Artificially leveled platforms extend north and south of the courtyard, and a low wall encircles the entire assemblage.

Another important group of architecture is Group H, which is located in the southeastern corner of the mapped portion of the site. Situated on the opposite bank of Chan Chich Creek over 1 km from the Main Plaza, Group H comprises small house mounds interspersed with lithic workshops, made evident by mounds of chert flakes (Houk 2014; Meadows and Hartnett 2000).

## UPDATED SITE CHRONOLOGY

In 2012, students excavating a test pit at the base of Structure 3 at nearby Kaxil Uinic discovered an Early Preclassic sherd (ca. 1100–1000 BC) that is stylistically identical to Cunil ceramics, the earliest documented ceramics in Belize (Harris and Sisneros 2012:56; Valdez and Houk 2012:68). The deposit from which the sherd was recovered had a mixture of ceramics from the Middle and Late Preclassic periods as well, but the find suggests settlement began in the Chan Chich area by the end of the Early Preclassic period. Excavations in the Upper Plaza at Chan Chich discovered a buried Middle Preclassic period midden deposit, which was dated on the basis of ceramics and a calibrated



2-sigma radiocarbon age range of 800–415 BC with an intercept of cal 770 BC (Robichaux 1998:34). To date, this represents the oldest documented cultural material at Chan Chich itself. Excavations show greater evidence of Late Preclassic occupation, as evidenced by floors and features in the Upper Plaza (Herndon et al., this volume; Kelley 2014; Kelley et al. 2012, 2013; Robichaux et al. 2000), the Main Plaza (Houk 1998; Houk 2000), Structure C-8 in the Western Plaza (Guderjan 1991:41), and Norman's Temple group (Meadows 1998).

In the Terminal Preclassic period, the builders at the site cut through the floors of the Upper Plaza and into bedrock to construct Tomb 2 (Houk et al. 2010). Kelley et al. (2013) correlate the youngest floor cut through by the tomb with a 20-cm thick compact dirt surface that covers the southern and central portions of the plaza. The tomb itself measured 3.25 m long and 0.8 m wide. It was originally sealed by 12 large capstones. A low shrine platform covered the tomb and marked its location within the plaza until a final Late Classic construction episode buried it (Kelley et al. 2013). The tomb's occupant was interred with the trappings of an early Maya king, making Tomb 2 the oldest royal burial in the Belizean side of the Three Rivers adaptive region (Houk et al. 2010).

Although Early Classic architecture and discrete deposits continue to elude excavators, Guderjan (1991:45) found two broken Early Classic polychrome bowls in a looters' camp. It is possible that one of the construction phases exposed in looters' trenches in Structure A-15 and/or Structure A-21 is from the Early Classic period, but the CCAP has not yet excavated either structure to test that hypothesis.

It is clear that Chan Chich expanded greatly in the Late Classic period, and renovations to existing buildings and the construction of new buildings and features gave the site its final form ca. AD 700 or later. The architectural

expansion included the final floors in the Upper Plaza and Main Plaza, where construction efforts completely buried older Late Preclassic features (Houk 1998, 2000; Kelley et al. 2013), and the final (perhaps only) phase of the ball court (Ford 1998). Burial CC-B11 dates the penultimate phase of Structure A-1 to the Late Classic period. The Western Plaza and Norman's Temple were both expanded during the Late Classic period (Ford and Rush 2000), and Richard Meadows and Kristen Hartnett (2000) found that the Group H lithic workshops date to the Late Classic period, as well. Pending ceramic analysis, it is likely the two *sacheob*, which both represent single-phase constructions (see Booher and Nettleton, this volume), are Late Classic features.

The site apparently went into decline during the Terminal Classic period around AD 800 before being abandoned around AD 850. Construction at the site at the end of the Late Classic was of noticeably inferior quality. At Structure A-5, the final phase of the southern stairs included robbed vault stones in the construction (Herndon et al. 2013), and the Terminal Classic occupants of Structure C-6 in the Western Plaza built a crude wall using robbed vault stones (Harrison 2000). That same structure included a Terminal Classic burial of a single adult male beneath a bench in the room. He was buried with a black-slipped anthropomorphic bowl and two shell discs (Harrison 2000:83). Vazquez and Booher (this volume) report numerous robbed vault stones used in the walls of structures in the Back Plaza, as well. Occupation continued into the Terminal Classic period in the Back Plaza based on materials found on the final floor of Structure A-23 (Vazquez and Booher, this volume).

Deposits of elite artifacts left broken on the steps to the range building in the Norman's Temple group and of the largest structure in the Western Plaza are Terminal Classic in age, likely deposited at or shortly after the time of

the site's abandonment (Houk 2011). Even though Chan Chich fell into ruin at that point, Postclassic pilgrims made periodic visits to leave offerings, including an incense burner on the stairs to Structure A-5 (Herndon et al. 2013) and another on the top of Structure A-4 (Guderjan 1991:45). At Kaxil Uinic, pilgrims propped up half of the broken stela and placed offerings of incensarios around its base, during either the Late Postclassic period or Colonial period (Houk et al. 2013).

### ORGANIZATION OF THIS VOLUME

Chapters 2 and 3 focus on this first season of investigations into the Upper Plaza's dynastic architecture. In Chapter 2, Mark Willis and colleagues describe the CAHSS-funded SfM mapping of the surfaces of and exposed looters' trenches in Structure A-15. In Chapter 3, Kelsey Herndon and co-authors

summarize the results of excavations in the Upper Plaza and at Structures A-1, A-18, A-20, A-21, and A-22. In Chapter 4, Edgar Vazquez, Ashley Booher, and Brett Houk describe the excavations in the Back Plaza. Booher and Carolyn Nettleton present the preliminary results of investigations of the processional architecture at Chan Chich in Chapter 5. David Sandrock and Mark Willis report on the second season of BEAST in Chapter 6, and Lori Phillips and Sandrock present the results of the analysis of historic bottles from Qualm Hill Camp, which BEAST collected in 2014, in Chapter 7. Phillips presents updates to the lab manual in Chapter 8. The project's ceramicists, Fred Valdez, Jr. and Lauren A. Sullivan, report on the ceramics from Chan Chich in Chapter 9 with new information from the Back Plaza excavations. Houk discusses the evolution of the project's digital database in Chapter 10 and updates the project's lists in Chapter 11.

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# STRUCTURE FROM MOTION MAPPING OF STRUCTURE A-15 AT CHAN CHICH

Mark D. Willis, Brett A. Houk, Kelsey Herndon, and Chet Walker

A component of the Chan Chich Dynastic Architecture Project (CCDAP) is the investigation of the construction history of the monumental structures surrounding the Upper Plaza. Looters cut trenches and tunnels into the two largest structures, Structure A-15 on the southern side of the plaza and Structure A-21 on the western side of the plaza, prior to the discovery of the Chan Chich in the late 1980s. The trenches and tunnels reveal that both buildings have complicated construction sequences that likely date back to the founding of the Upper Plaza. Documenting those construction sequences and identifying which phases of the two structures may be associated with the Terminal Preclassic ruler who was buried in Tomb 2 are primary concerns of the CCDAP.

As an initial step toward understanding the architectural evolution of Structure A-15, we employed a new technique for producing high-resolution maps of Maya buildings at sites under dense canopy using a digital camera and Structure from Motion (SfM) software to process the images. The purpose of our work at Structure A-15 was to create an accurate map of the mound including the complex series of looters' trenches that cut through it. Using SfM, our goals were to (a) produce a topographic map of the mound, (b) map the looters' tunnels and trenches in three-dimensions, and (c) be able to merge both data sets into a single 3D

model that could be exported and manipulated in CAD or GIS software. The work was funded by a grant to Houk through Texas Tech University's Competitive Funding Opportunity to Advance Scholarship in the Creative Arts, Humanities, and Social Sciences. Mark Willis of Archaeo-Geophysical Associates and Upper Plaza Operation Director Kelsey Herndon conducted the fieldwork with assistance from Lori Phillips between May 14 and 18, 2014.

## BACKGROUND

Structure A-15 occupies the southern end of the Upper Plaza acropolis (Figure 2.1). The structure faces north into the Upper Plaza, and two small courtyards flank it to the east and west. The southern sides of the mound and acropolis slope steeply down into the Back Plaza. The mound rises 15.1 m above the Upper Plaza and 22.1 m above the Back Plaza. At its base, it measures approximately 42 m east-west by 37 m north-south, making it the second most massive structure at the site behind Structure A-1. Looters' trenches pierce the mound in multiple places on its eastern and western sides; two trenches on the eastern side merge and continue as a tunnel that exits into another trench on the western side, several meters above another tunnel (Figure 2.2). Prior to our investigations, a mixture of large trees and low forest undergrowth covered the mound.

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2014 Structure from Motion Mapping of Structure A-15 at Chan Chich. In *The 2014 Season of the Chan Chich Archaeological Project*, edited by Brett A. Houk, pp. 21–30. Papers of the Chan Chich Archaeological Project, Number 8. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock.

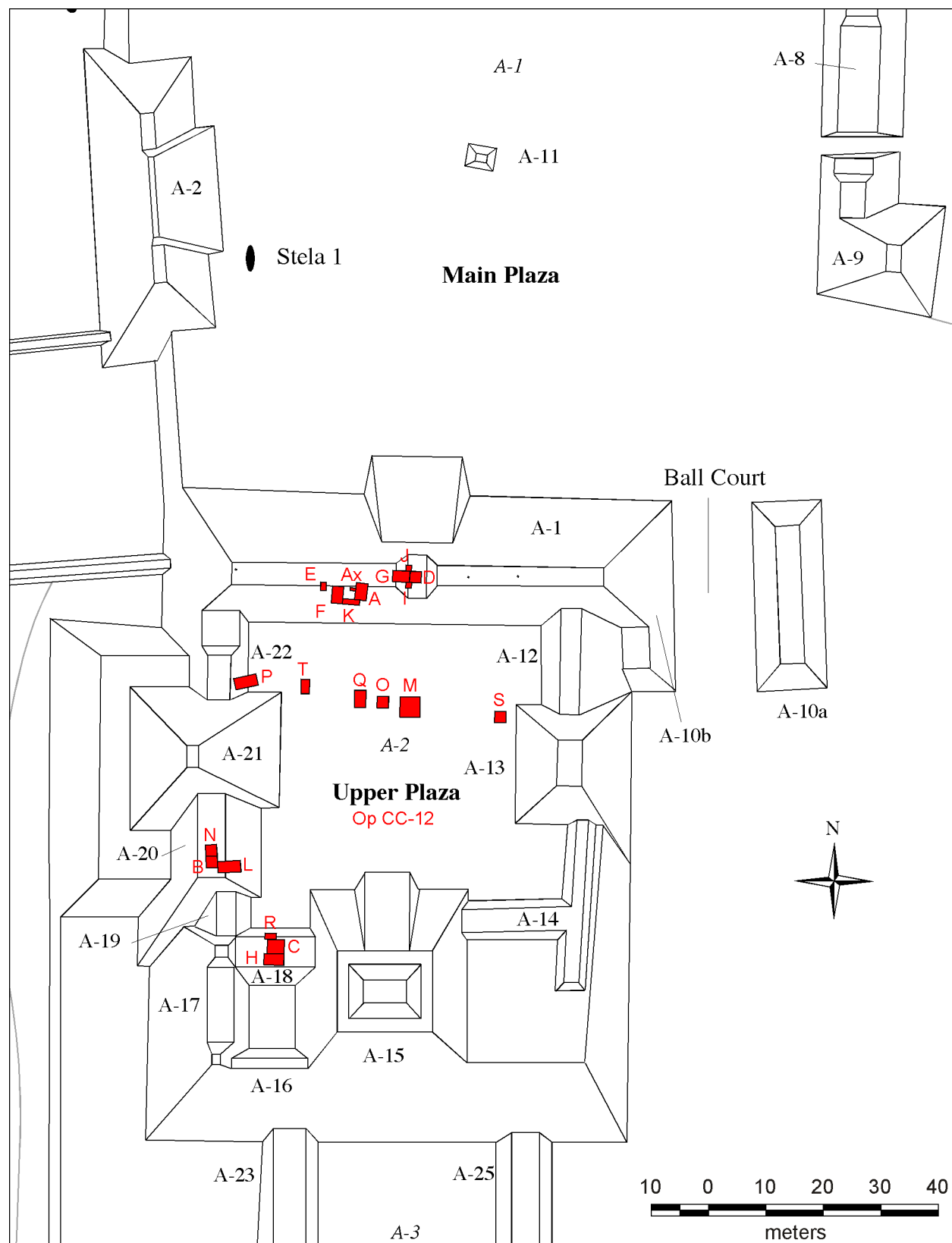


Figure 2.1. Map of the Upper Plaza at Chan Chich, Belize with 2014 excavations indicated.





Figure 2.2. Photograph of the western face of Structure A-15 by Bruce Templeton. The tunnel from the eastern trench is visible in the center of the photograph emerging from the mound above the lower tunnel that extends east from the western trench.

Typically, mounds such as Structure A-15, are mapped using a variety of standard techniques ranging from pace and compass mapping to topographic mapping using a total data station (TDS). Looters' tunnels and trenches are usually documented by carefully hand measuring and drawing to scale stratigraphy, features, and architecture, with the resulting illustration anchored in space by vertical and horizontal control usually established by a TDS. At many of the larger sites in the Maya area, irregularly shaped and often very deep looters' trenches and tunnels create special mapping challenges for archaeologists. Tunnels, in particular, are difficult to document because they require capturing three-dimensional data that traditional mapping systems typically do not record.

Previous efforts to map and document Structure A-15 include Guderjan's (1991) initial recording of the mound, which produced a rectified map and idealized cross-section of the mound; mapping by the CCAP in 1996, which refined the rectified map (Houk et al. 1996; see Figure 2.1); contour mapping of the mound as part of an effort to produce a topographic map of the entire Upper Plaza by the CCAP in 1997 (Moses 1998); and an examination of looters' trenches in the mound by the CCAP during the 1997 and 1998 seasons (Jellen 2000). The most detailed study of the architectural sequence revealed by the looters' trenches is the initial one done by Guderjan (1991), but it does not relate the architecture revealed in the trenches horizontally and simplifies the rather complicated 3D spatial arrangement of

tunnels and features into a single cross-section drawing.

## METHODOLOGY

To photo-document and map the structure, the mound first needed to be cleared of much of the understory. Prior to the arrival of the CCAP staff, workers from Chan Chich Lodge manually trimmed the plants on the structure with machetes over the course of two days before mapping began. This was the most fieldwork intensive portion of the project, and, while not mandatory, it helped with the data collections in that it allowed for the area to be walked more easily, it provided a better view of the mound, and it aided in the removal of two poisonous fer-de-lance snakes.

Willis and Herndon used the SfM modeling technique to document the mound. SfM is an imaging analysis algorithm that creates 3D shapes from a series of overlapping digital photographs (Graves and Willis 2011). In this case, we used a commercial SfM software package called PhotoScan Pro by AgiSoft, LLC to process the imagery.

Prior to collecting the photographic data, Willis and Herndon placed a series of ground control points (GCPs) on the mound at various elevations. In this case, the GCPs were white handkerchiefs held in place by small wooden stakes. The GCP's locations were recorded using a high precision differentially-corrected GPS system with an accuracy of 10 cm or less. The GCPs provide visual markers that are assigned coordinates when the 3D model of the site is finished. This allows for the map to be referenced to geographic space and for the data to integrate more easily into a GIS. Another important use for the GCPs was that in a highly vegetated area, even one partially trimmed like Structure A-15, the SfM software can have difficulty identifying unique points from one photograph to the next. As the GCPs were

bright white and stood out strongly against the vibrant green of the jungle and the dull brown of the topsoil, they gave the software strongly contrasting reference points. Houk subsequently recorded the locations of the GCPs using a TDS and tied them into the site's UTM-referenced mapping grid. As discussed in the results section below, this proved to be an important step in the process.

Data collection of the mound's surface involved two separate phases that used two slightly different approaches to collecting photographs. Willis and Herndon first photographed the outside of the mound using a ground-based method. This method is very straightforward and was accomplished by simply walking over and around the mound in a series of circles along contour lines and transects up and down the faces of the mound. While crossing the mound, the team collected several hundred overlapping photographs using a Canon 5D Mark III digital SLR. The goal of this phase was to photograph the entire structure from as many positions as possible, creating a dense catalog of overlapping images. Once this process was finished the same camera was attached to the end of an extendable painter's pole. With Willis holding the pole and Herndon remotely triggering the camera, the team used this rig to photograph the mound in the same manner as before but with the camera pointed down and about 3 m above the ground (Figure 2.3). This provided a different vantage point for the camera, which helped increase the photo coverage density. The exterior photography portion of the project took about four hours total and was completed by two archaeologists.

The walls of the looter's trenches that cut into and pass completely through Structure A-15 expose some architectural features and provide insight into the construction sequence of the mound. Mapping these trenches required a slightly different methodology. Using the Canon SLR and an LED lighting panel, Willis,





Figure 2.3. Willis and Herndon mapping the western face of Structure A-15 with the camera mounted on the painter's pole.

Herndon, and Phillips crawled through the trenches and photographed the floors, ceilings, and walls for the length of each tunnel. One archaeologist operated the camera, while the other two passed the LED panel between them to illuminate the tunnels from multiple angles (Figure 2.4). Just like the approach used on the exterior, the crew took hundreds of overlapping photos inside. The section of tunnels on the upper eastern portion of the mound where a higher tunnel meets a lower tunnel was too steep and dangerous to enter. The crew used the same pole rig to hoist the camera into these tight spots for documentation. The looter's trenches were photo-documented in about two hours.



Figure 2.4. Herndon directs the LED panel to illuminate a section of a looter's tunnel, while Willis takes photographs.



With all the photography of the outside and inside of the mound completed, the images were examined for quality. All blurry and off subject photos were removed from the data set. In the end, Willis used a total of 1,799 images to create the 3D model of Structure A-15 and processed the images using AgiSoft PhotoScan Pro on a standard desktop computer running Windows 7. The point cloud data was classified into sections based on location (exterior of structure, looters' trench, and so on) to make it more manageable. Once the individual sections were digitally complete, Willis merged the blocks of data together into one complete point cloud, which included the entire mound, inside and out. Processing the data involved some trial and error as this sort of mapping application has never been attempted using the software package. Computer processing time took approximately 100 hours with about 15 hours of human interaction. Now that this process has been completed and the workflow refined, it is predicted that the human component of the data manipulation could be shortened to under five hours with the computer processing portion time reduced to around 25 hours.

The resulting 3D model consists of a total of approximately 44,000,000 individual topographic points across the surface and through the tunnels in the mound. This model also had thousands of trees and small shrubs protruding out of the mound's 3D surface. Using a proprietary technique, the vegetation across the mound was digitally removed to expose only the mound's ground surface. The digital GCPs were then geo-referenced using the GPS data to bring the model's shape into a real world coordinate system. This allowed for a digital elevation model (DEM) and an orthographic map of the exterior of the mound to be imported into ArcGIS. In ArcGIS, Willis generated 10-cm interval contour lines (Figure

2.5). This helped reveal the external shape of the structure.

While proofing the initial map, Willis noted that the data indicated the mound was approximately 22 m tall, or 7 m taller than previous mapping efforts had measured it. Horizontally, however, the data matched earlier maps of the structure. Willis then used Houk's TDS-recorded elevations of select GCPs to geo-reference the model, correcting the vertically anomaly. While the GPS recorded accurate horizontal coordinates for the GPCs, it appears that inaccuracies in the recorded elevations resulted in severe exaggeration of the vertical scale in the model.

## **RESULTS AND DISCUSSION**

The data created from the photos of the looters' trenches allowed Willis to make an orthographic map of the walls of the tunnels (Figures 2.6–2.8). Many aspects of the building's construction are obvious in these data, although full analysis is pending and will require field checking to confirm the revealed features. Furthermore, using pole photography in the inaccessible parts of the looters' trenches revealed previously unknown architectural elements of the structure (see Figure 2.7).

SfM mapping was effectively used to map a large and complex mound at the site of Chan Chich. To the best of our knowledge, this is the first time such a large and complex 3D model has been created in a jungle setting. The usefulness of this technique is evident in that the data were inexpensive to collect and the method used off-the-shelf equipment (digital camera and a painter's pole) and commercially available software. Future analysis of the data should provide more detailed and accurate insight into the construction sequence of Structure A-15 than would have been possible using any other approach.

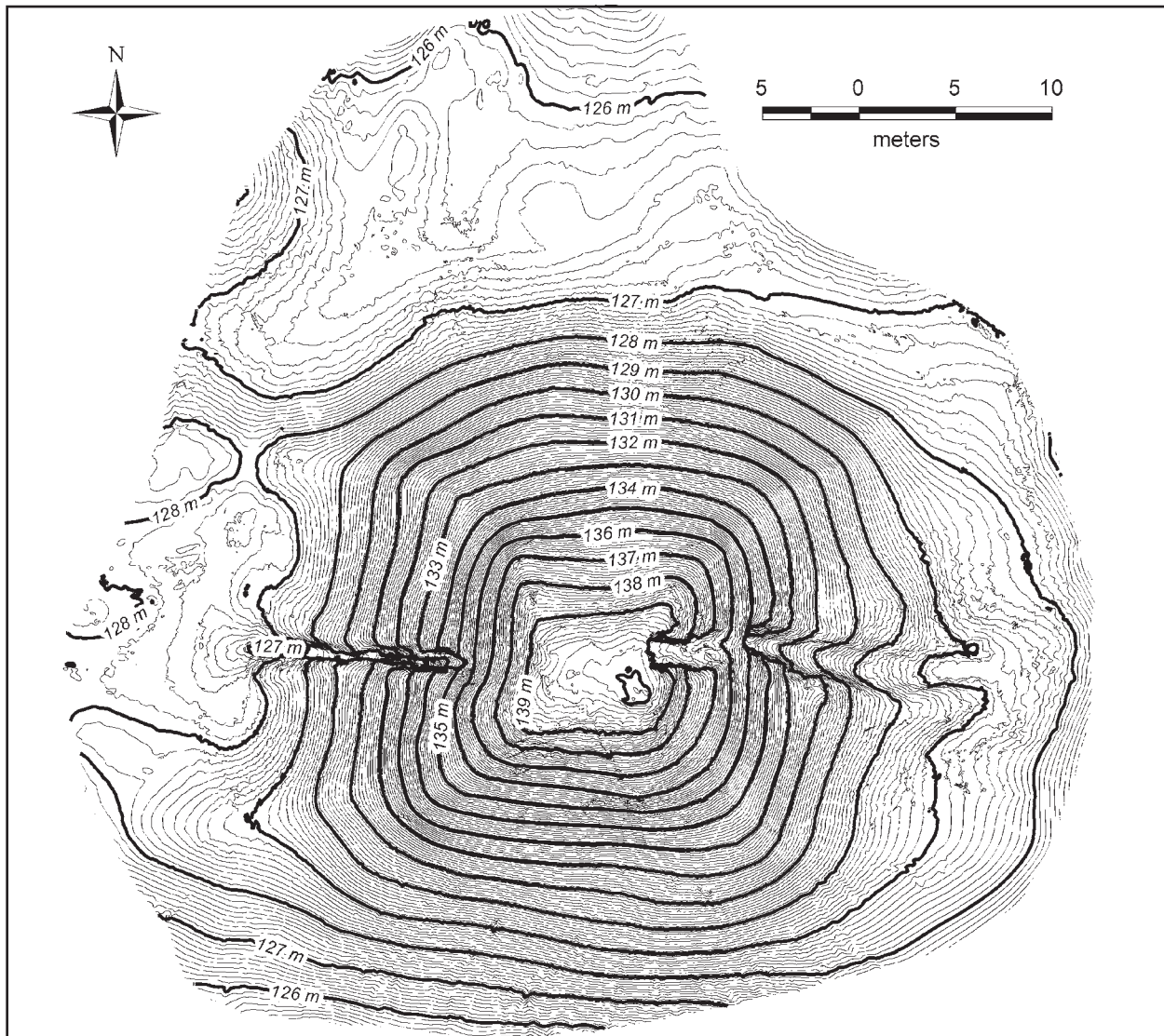


Figure 2.5. Contour map of Structure A-15 based on DEM produced from SfM data (10-cm contour interval).

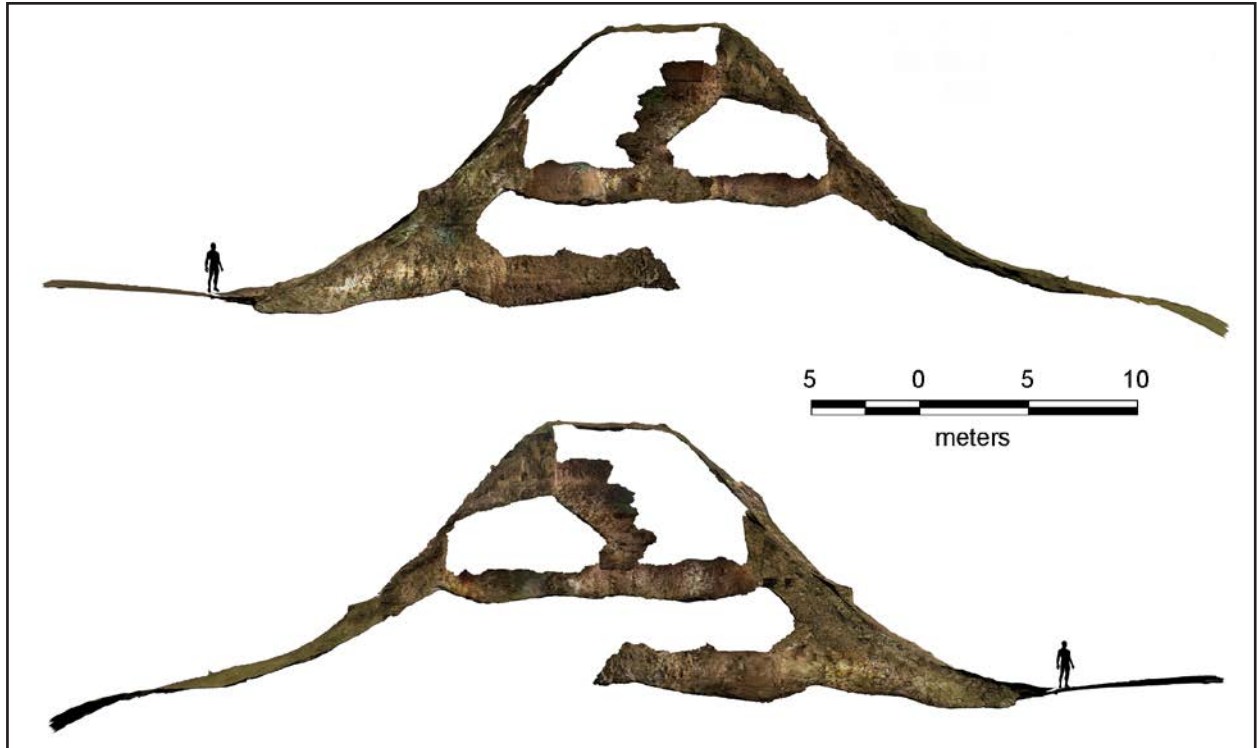


Figure 2.6. Orthographic maps of the interior walls of looters' tunnels and trenches in Structure A-15 based on SfM data. Top image is facing north. Bottom image is facing south.



Figure 2.7. Detail facing south of the interior of the uppermost trench and tunnel on the eastern side of Structure A-15 showing various architectural features. The room exposed in the tunnel (upper right in image) is not accessible and had never been documented before. The transition from trench to tunnel is indicated by the arrow.





Figure 2.8. Detail of a portion of the orthographic maps of the looters' trench and tunnel on the eastern side of Structure A-15. View to the north. The transition from trench to tunnel is indicated by the arrow.

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# THE 2014 EXCAVATIONS OF THE CHAN CHICH DYNASTIC ARCHITECTURE PROJECT

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Erica Gallis

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A focus of the 2014 Chan Chich Archaeological Project (CCAP) was to continue excavations in the Upper Plaza, with the specific goal of understanding early dynastic architecture (Houk and Zaro, this volume). The Upper Plaza is the most elevated area of the site core, built on a natural rise in the landscape. The plaza itself measures approximately 40 by 50 m and is surrounded by monumental architecture on all four sides (Figure 3.1). The larger Main Plaza lies to the north, separated from the Upper Plaza by Structure A-1, which is a functional part of both spaces and was the primary access way between the two plazas.

Prior excavations in the Upper Plaza focused on the plaza surface itself and some of the surrounding monumental architecture, including Structures A-1, A-13, and A-15 (Kelley 2014; Kelley et al. 2012, 2013; Robichaux 1998, 2000; Robichaux et al. 2000). This previous work provided necessary preliminary data to pursue the goals of the current season.

The Chan Chich Dynastic Architecture Project (CCDAP) is designed to be a multi-year project of extensive excavations of the monumental architecture surrounding the Upper Plaza and the plaza surface itself. The long-term goals of the CCDAP are to 1) create a detailed chronology of the Upper Plaza's architecture and 2) identify early architecture possibly associated

with or related to the Terminal Preclassic Tomb 2 excavated by CCAP in 1997 (Houk and Zaro, this volume). In achieving these two goals, we hope to create a better model of the relationship between changing political organization and the associated built environment. The Structure from Motion (SfM) mapping of Structure A-15 reported by Willis and colleagues (this volume) is an additional component of the CCDAP.

Operation CC-12 is the designation given to all of the 2014 excavations in the Upper Plaza. The specific tasks of the 2014 excavations of CCDAP were to 1) begin excavating some of the monumental buildings in the Upper Plaza for the purposes of determining their construction sequences and chronologies; 2) determine the extent of the potential platform buried beneath the Upper Plaza, which was initially identified in 2013 (see Kelley et al. 2013); and 3) test earlier hypotheses about the final form of Structure A-1 (see Robichaux 2000; Robichaux et al. 2000). The goals of the CCDAP and this year's excavations align with the long-term goals set forth by the CCAP (see Houk 1998).

## METHODS

Fieldwork took place over eight weeks from May 19 to July 17, 2014, and was carried out by two sessions of field school students and several local Belizean workmen. Brett A. Houk served

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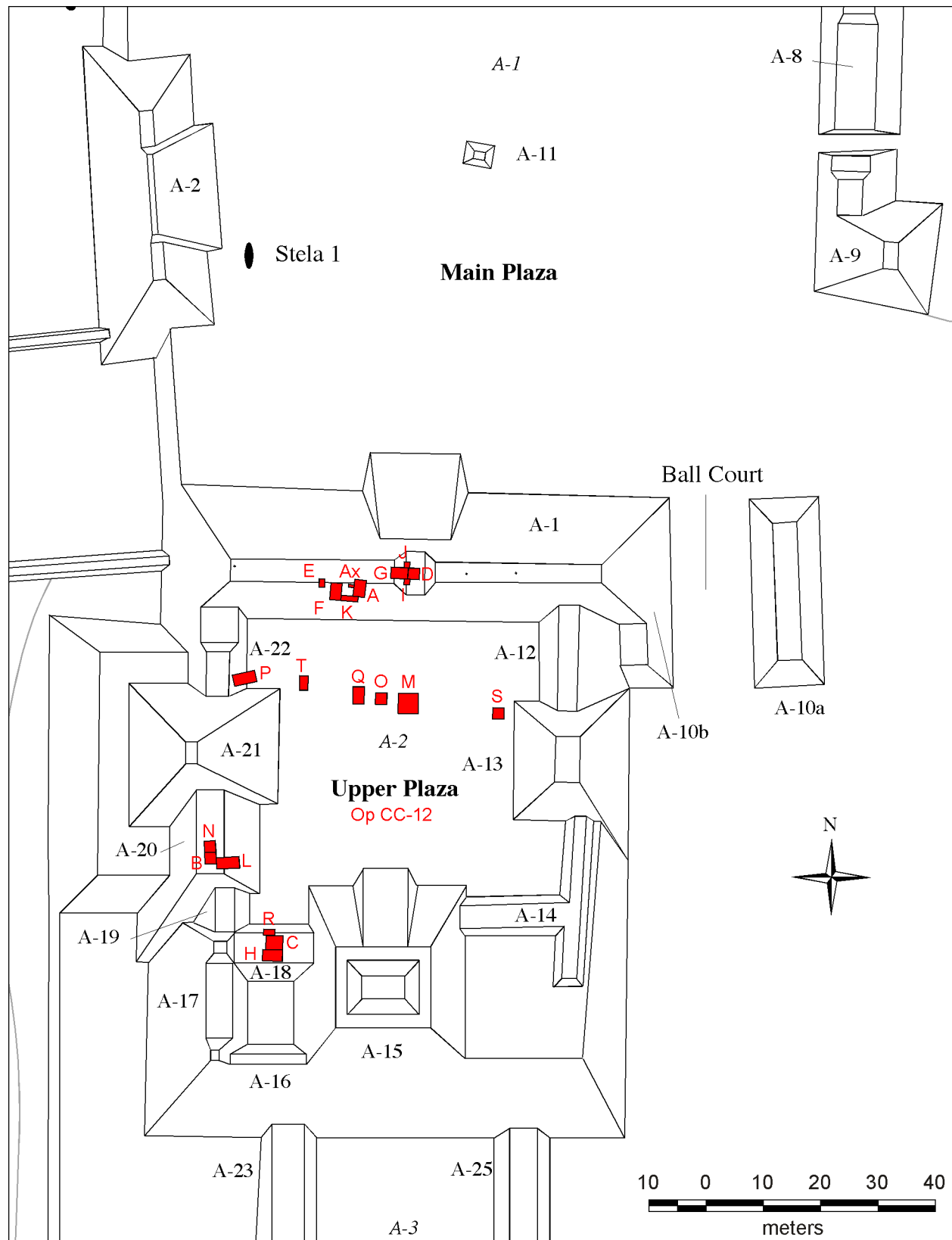


Figure 3.1. Operation CC-12 suboperations.

as the Project Director; the Operation Director was Kelsey Herndon; Gregory Zaro was Associate Project Director during the second field school session (June 19 to July 17, 2014) and directed excavations for five days (July 1 to 5, 2014) while Houk and Herndon participated in a conference in San Ignacio. Samantha Mitchell was a Suboperation Director during the first field school session (May 19 to June 16, 2014) and oversaw work in Suboperations CC-12-A, -Ax, -D, -E, and -F at various points throughout their excavations. Erica Gallis also served as a Suboperation Director during her 10-day stay (June 19 to June 30, 2014) and oversaw Suboperations CC-12-F, -K, -M, and -O at various points in their excavations.

Excavations followed the methodology laid out in the *La Milpa Core Project Field Manual* (Houk and Zaro 2011). Data were collected using a FileMaker Pro database designed specifically for CCAP, various versions of which have been used since 2012 (Houk 2012, this volume; Nettleton 2013). Crews used Structure from Motion photography to record the excavation of all lots (see Houk et al. 2013 for methods and examples from Structure A-5; Willis et al., this volume). All ceramics, lithics, and bone were collected in the field and processed in the CCAP laboratory, directed by Lori Phillips. In several cases, charcoal, plaster, and soil samples also were collected and processed in the project lab.

## EXCAVATIONS

The excavations falling under Operation CC-12 focused on

five areas of the Upper Plaza: the plaza itself, Structure A-20, Structure A-22, Structure A-18, and Structure A-1. The CCDAP opened 21 suboperations (Table 3.1; see Figure 3.1) and excavated or exposed 133 lots (Table 3.2). The results of these excavations are described below.

### Upper Plaza Surface Suboperations CC-12-M, -O, -Q, -S, and -T

Hubert Robichaux (1998) and Krystle Kelley (2014; Kelley et al. 2012, 2013) conducted prior excavations of the Upper Plaza surface in 1997 and 1998 and in 2012 and 2013, respectively. Robichaux's excavations in 1997 uncovered Tomb 2 in the southern portion of the plaza near the north base of Structure

Table 3.1. List of CC-12 Suboperations

Subop CC-12-	Structure	Size (m)	Datum	Elevation (m) of Southwest Corner
A	Structure A-1	2 x 3	A	129.495
Ax	Structure A-1	0.5 x 1	A	130.446
B	Structure A-20	2 x 2	B	129.7
C	Structure A-18	2.5 x 3	C	128.161
D	Structure A-1	2 x 2	D	129.648
E	Structure A-1	1 x 1.5	E	130.401
F	Structure A-1	2 x 3	E	128.844
G	Structure A-1	2 x 3	G	130.661
H	Structure A-18	2 x 3.5	C	127.396
I	Structure A-1	1 x 1	D	129.483
J	Structure A-1	1 x 1	D	129.596
K	Structure A-1	1 x 3	A	128.916
L	Structure A-20	2 x 4	B	129.369
M	Upper Plaza	3.5 x 3.5	M	n/a
N	Structure A-20	2 x 2	B	130.023
O	Upper Plaza	2 x 2	O	125.778
P	Structure A-22	2 x 4	P	127.79
Q	Upper Plaza	2 x 3	Q	125.775
R	Structure A-18	1 x 2	C	127.521
S	Upper Plaza	2 x 2	S	125.935
T	Upper Plaza	1.5 x 2.5	T	125.829

Table 3.2. Description of CC-12 Lots

Subop CC-12-	Lot	Description	Notes
A	1	topsoil	
	2	collapse debris	
	3	collapse debris	within 15 cm of floor CC-12-A-04
	4	floor	final phase floor inside the Theodore room
	5	wall	final phase west cross wall of the Theodore room
	6	wall	final phase spine wall within the Theodore room
	7	wall	final phase south cross wall of the Theodore room
	8	floor	floor beneath Lot CC-12-A-04
	9	floor	floor beneath Lot CC-12-A-08
Ax	1	topsoil and collapse debris	
	2	wall	west cross wall of Theodore room/east cross wall of Frederick room
B	1	topsoil	
	2	collapse debris	
	3	wall	final phase east-west running wall on top of Structure A-20
	4	wall	final phase footer of the east-west running wall on top of Structure A-20
	5	floor	either a poorly preserved plastering episode or a layer of "melted" plaster that fell from the wall
	6	floor	well preserved plaster floor beneath Lot CC-12-B-05
	7	collapse debris	collapse debris from within the room (north of the wall) that is too far south to be part of Suboperation CC-12-N
	8	floor	final phase plaster floor inside of the room
C	1	topsoil	
	2	collapse debris	
	3	wall	final phase north south running wall making up western boundary of the Guadalupe room
	4	wall	final phase east-west running wall making up the northern boundary of the Guadalupe room
	5	floor	final phase floor inside the Guadalupe room
	6	other: burned area of floor	we initially thought there was a burned area on the floor, however the entire surface is off color and may instead indicate some taphonomic process
D	1	topsoil and backfill	
	2	collapse debris	
	3	floor	final phase floor of the midline platform of Structure A-1
	4	floor	plaster filling in the cut into Lot CC-12-D-5; this plaster is beneath floor Suboperation CC-12-D-3
	5	floor	floor that was cut into. Found beneath Lot CC-12-D-3
	6	plaster	plaster that fills the cut into Lot CC-12-D-5



Table 3.2. Description of CC-12 Lots (continued)

Subop CC-12-	Lot	Description	Notes
D (cont.)	7	sub-floor fill	this lot starts with a shallow layer of charcoal-laden marl and continues down to include the dry-lay construction fill in which the obsidian cache and burial are located
	8	cache	obsidian cache consisting of 17 obsidian blades; Cache CC-C1
	9	burial	Burial CC-B11
E	1	topsoil and collapse debris	
	2	wall	final phase spine wall in the Frederick Room
	3	wall	north-south running cross wall making up western boundary of the Frederick Room.
F	1	topsoil	
	2	collapse debris	
	3	floor	final phase plaster floor inside of Frederick room
	4	topsoil	
	5	wall	eastern doorway jamb of the Frederick room
	6	wall	western doorway jamb of the Frederick room
	7	floor	penultimate plaster floor in the Frederick room
	8	construction fill	construction fill to the south of Lots CC-12-F-7/9
	9	floor	well preserved plaster floor beneath Lot CC-12-F-7
G	1	topsoil	
	2	backfill	backfill from Robichaux's 1998 excavations
	3	collapse debris	
	4	wall	The eastern end of the spine wall that runs along Structure A-1W
	5	floor	final phase floor that curves up onto the spine wall; equivalent to Lot CC-12-D-03
	6	floor	plaster surface beneath Lot CC-12-G-05
	7	floor	floor beneath Lot CC-12-G-06; only found in southern portion of subunit
	8	fill	starts with the charcoal-laden matrix beneath Lot CC-12-G-6/7 and includes the dry-lay fill beneath
H	1	topsoil	
	2	collapse debris	
	3	floor	the final phase floor of the Guadalupe room (north of the doorway)
	4	wall	north-south running wall making up the western boundary of the Guadalupe Room
	5	wall	east-west running wall on the west side of the doorway of the Guadalupe room

Table 3.2. Description of CC-12 Lots (continued)

Subop CC-12-	Lot	Description	Notes
H (cont.)	6	wall	east-west running wall on the east side of the doorway of the Guadalupe room
	7	collapse debris	collapse debris in the doorway of the Guadalupe room
	8	floor and fill	well preserved floor that rolls down from Lot CC-12-H-03 between the doorway jambs and then continues to the south; includes subfloor fill
	9	vessel	smashed vessel found on top of Lot CC-12-H-08
	10	floor	floor beneath surface Lot CC-12-H-08
	11	construction fill	
	12	construction fill	
	13	burial	Burial CC-B13
I	1	topsoil	
	2	backfill	backfill from Robichaux's 1998 excavations
	3	collapse debris	
	4	floor	final phase floor that rolls up onto the spine wall
	5	wall	the southeast corner of the spine wall
J	1	topsoil	
	2	collapse debris	
	3	floor	final phase floor north of spine wall
	4	wall	northeast corner of spine wall
K	1	topsoil and collapse debris	
	2	floor	final phase floor outside of superstructure on Structure A-1 (to the south of the south walls)
	3	wall	southern cross wall of both the Frederick room and the Theodore room
L	1	topsoil	
	2	collapse debris	
	3	wall	wall above the footer
	4	wall	footer of the wall
	5	floor	plaster floor on the outside of the room, to the south of the exposed wall
M	1	backfill	backfill from Kelley's 2013 excavations
	2	topsoil	
	3	construction fill	construction fill beneath the no longer preserved final phase surface of the Upper Plaza
	4	wall	east-west running wall/platform face beneath the final phase Upper Plaza
	5	floor	possibly the top of the compact dirt surface, but may be from walking on the dirt
	6	floor	compact dirt surface

Table 3.2. Description of CC-12 Lots (continued)

Subop CC-12-	Lot	Description	Notes
N	1	topsoil	
	2	collapse debris	
	3	floor	poorly preserved plaster floor inside of superstructure on top of Structure A-20; lot refers to both the original floor and the resurfacing episode
O	1	topsoil	
	2	construction fill	construction fill associated with the final phase plaza surface
	3	floor	compact dirt surface
	4	floor	compact dirt surface
	5	wall	east-west running wall/platform face beneath final phase plaza surface
	6	floor	compact dirt surface
	7	floor	compact dirt surface
	8	floor	compact dirt surface
	9	floor	poorly preserved plaster floor that rolls up onto cut stone wall/platform face
	10	floor	plaster floor beneath Lot CC-12-O-9
	11	floor	plaster floor beneath Lot CC-12-O-10
	12	floor	plaster floor beneath Lot CC-12-O-11
	13	floor	poorly preserved plaster surface exposed beneath Lot CC-12-O-12
	14	floor	poorly preserved plaster surface exposed beneath Lot CC-12-O-13
	15	floor	plaster surface beneath Lot CC-12-O-14
	16	floor	potential surface beneath Lot CC-12-O-15; not well preserved and many rock inclusions
	17	floor	plaster surface beneath Lot CC-12-O-16; unexcavated
P	1	topsoil	
	2	collapse debris	
	3	wall	north-south running wall of Structure A-22
	4	floor	plaster surface that runs up onto wall Lot CC-12-P-3 from the east
Q	1	topsoil	
	2	construction fill	construction fill south of the wall/platform face
	3	construction fill	construction fill north of the wall/platform face
	4	wall	east-west running wall/platform face beneath final phase plaza surface
	5	floor	plaster surface to north of wall/platform face
	6	floor	plaster surface below Lot CC-12-Q-05
	7	floor	
	8	floor	



Table 3.2. Description of CC-12 Lots (continued)

Subop CC-12-	Lot	Description	Notes
R	1	topsoil	
	2	collapse debris	
	3	wall	masonry on top of the footer CC-12-R-4; this wall makes up the northern boundary of the Guadalupe room
	4	footer	the footer located at the base of wall CC-12-R-4
	5	floor	poorly preserved plaster floor to the north of the wall CC-12-R-3/4
S	1	topsoil	
	2	construction fill	
	3	wall	east-west running wall/platform face beneath final phase plaza surface
T	1	topsoil	
	2	n/a	
	3	n/a	

A-15 (Subops CC-2-A, -C, -G, -I, and -J). The discovery of this Terminal Preclassic royal tomb is the foundation of CCDAP. Robichaux also excavated a midden in the northern portion of the plaza at the foot of the south face of Structure A-1 (Subop CC-2-H), resulting in general stratigraphic information for both the north and south portions of the plaza. Krystle Kelley's extensive excavations in 2012 and 2013 resulted in a detailed chronology and construction sequence, including the identification of a discrepancy in stratigraphy between the northern and southern portions of the plaza. In 2013 she set out to investigate these incongruent sequences. At the end of the 2013 season, excavations revealed a low-lying wall or terrace face, which was constructed with two courses of cut stones at its base and several upper courses of uncut limestone boulders; this feature separated the two conflicting stratigraphies in Subops CC-10-S and -T. Kelley (2014; Kelley et al. 2013) hypothesized that this low-lying stone feature was in fact the south face of a platform extending to the north. The 2014 season set out to further explore this enigmatic feature. Suboperations CC-12-M,

-O, -Q, -S, and -T were opened in the plaza to test the results of these earlier excavations as well as to expand upon the earlier data.

Suboperations CC-12-M, -O, -Q, and -S all revealed the remains of a low wall-like feature measuring approximately 1.25 m high, the upper courses of which are made up of large uncut limestone boulders (Figure 3.2). As evidenced in several suboperations from 2013 and this year in Suboperation CC-12-O, the basal course of stones consisted of cut limestone blocks (see discussion below). Excavations in 2014 began by reopening parts of Kelley's 2013 units to relocate the feature. Once we exposed Kelley's original section of the feature we projected it to the west and east and opened four additional suboperations (CC-12-O, -Q, -S, and -T) in an attempt to determine the feature's extent. Our excavations revealed that the feature continues at least 13 m to the east of Suboperation CC-12-M and extends at least 8.5 m to the west of Suboperation CC-12-M, but no more than 16.5 m to the west. The feature was not identified in the westernmost plaza unit, Suboperation CC-12-T, suggesting the wall or platform face terminates, perhaps



Figure 3.2. Photograph of Suboperation CC-12-O showing crude stone wall/platform face (top) and cut-stone wall/platform face (bottom), view to the north.

at a corner, or curves between Suboperations CC-12-T and -Q.

The feature itself is consistent in its composition across the four suboperations where it was exposed. The top course of the feature can be seen in several places on the modern surface of the plaza. It is made up of large uncut limestone boulders. In at least two locations, apparent vertical seams were visible. Although these seams could be coincidental, it is also possible that they reflect the remnants of a division of labor in the construction of the feature, or perhaps the result of repairs or modifications to the feature. The fill to the south of the feature in Suboperations CC-12-O, -M, and -S consisted of cobble-sized rocks and dirt. However, the fill on the southern side of the feature in Suboperation CC-12-Q changed to more dense boulder-sized rocks. This change in fill may have something to do with the construction of

the later plaza surface that ultimately buried the feature.

Because this uncut, stone feature was uncovered in the midst of a large layer of construction fill and the fact that it lacks any remains of plaster on either side, it is possible that it served as a construction pen to stabilize the final large build-up of the plaza, rather than a platform face for a platform extending to the north. Researchers at other sites in western Belize, like Cahal Pech, for example (Douglas et al. 2014), have identified similar construction pens beneath the large plaza construction phases. However, if this is the case, the cut and plastered stones beneath the upper section of uncut stones (see below) still require explanation. Furthermore, as evidenced in Suboperation CC-12-Q, the stones appear to be roughly faced towards the south, possibly lending support to its use as a platform face.

Although the results of all plaza surface suboperations are similar, excavation of Suboperation CC-12-O reached the greatest depth and offers the most detailed architectural sequence. Therefore, we draw from Suboperation CC-12-O for much of our description. As noted in Kelley's 2013 excavations, directly beneath the uncut stone feature is a plastered feature made of cut-limestone blocks measuring approximately 0.25 m high. This earlier alignment was built on top of a poorly preserved plaster surface (Lot CC-12-O-09), which curves up onto the south face of the feature in a few places but also apparently continues beneath the feature in other locations. A compact dirt surface lies south of the feature and measures approximately the same thickness as the height of the cutstone portion of the feature. This surface does not continue beneath or beyond the feature, as revealed in excavations to the north from this and earlier seasons (Kelley 2014; Kelley et al. 2012, 2013). The dirt surface measures

approximately 0.3 m thick and is made up of several layers of compact dirt. Although the compacted layers were not visible in profile, they were detected during excavation with some confidence (Lots CC-12-O-03, -04, -06, -07, and -08). This dirt surface sits directly on top of the same plaster floor that rolls up onto the plastered cut-stone portion of the feature (Lot CC-12-O-09).

In addition to the final two construction phases described above, excavators uncovered up to as many as nine earlier plaster floors as excavations continued deeper in Suboperation CC-12-O (Figure 3.3). Some of these floors (Lots CC-12-O-09, -13, -14, and -16) are poorly preserved and may represent re-plastering episodes rather than separate construction episodes. Due to time constraints, the earliest floor exposed (Lot CC-12-O-17) was not excavated; therefore, bedrock was not reached in the 2014 plaza excavations, although Kelley (2014) reached bedrock in several excavation

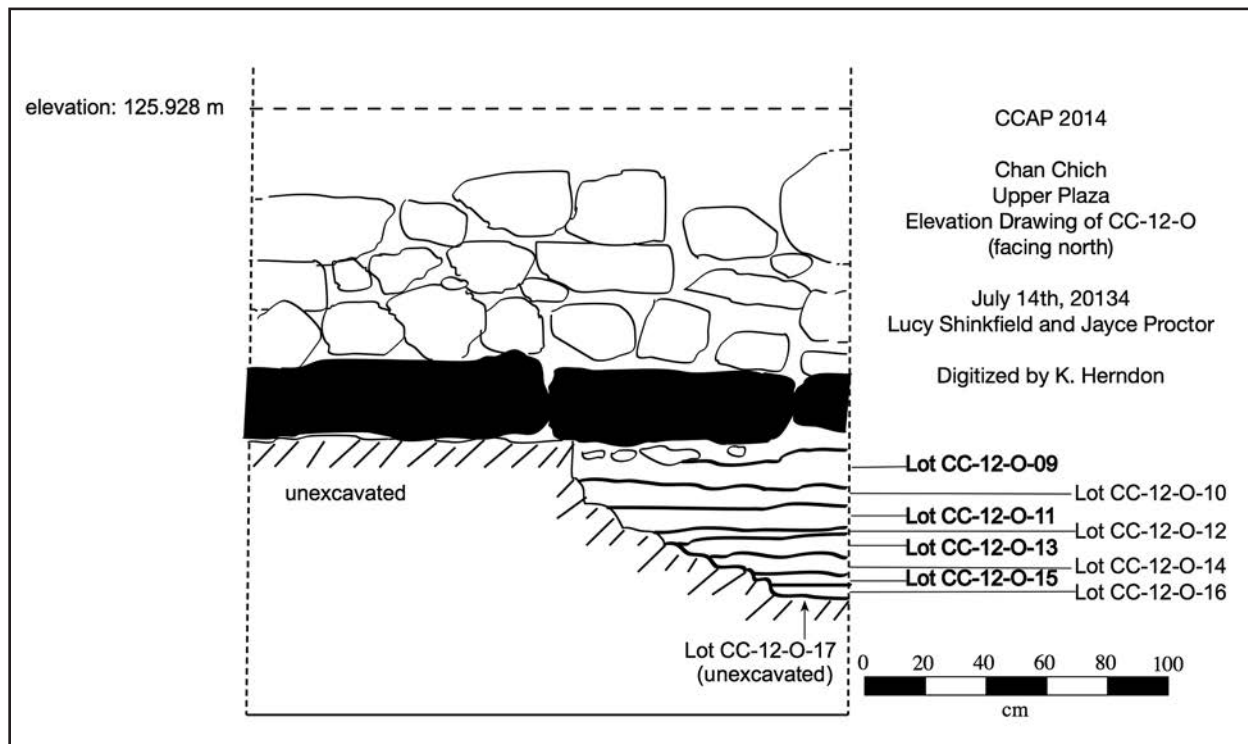


Figure 3.3. Elevation drawing showing platform face/wall, facing north, of Suboperation CC-12-O.



units. Excavations of the Upper Plaza surface revealed an extensive sequence of construction, possibly ranging from the Middle Preclassic to the Terminal Classic (based on ceramic analysis from Kelley et al. 2013).

### **Structure A-20 Suboperations CC-12-B, -L, and -N**

Structure A-20 is located in the southwestern quadrant of the Upper Plaza. It is bordered by Structure A-21 to the north and by Structure A-19 to the south. Excavations had not been conducted on this structure prior to the 2014 season of the CCAP. Consequently, we designed our excavation strategy based on architectural indicators present on the surface of the structure, namely an alignment of stones found on the summit of the mound, which turned out to be a thin, low masonry wall.

Only a portion of the final construction phase of Structure A-20 was uncovered during this season's excavations. The architecture that was revealed in Suboperations CC-12-B, -L, and -N indicates that the final form of this structure was likely a tiered platform with a room at the top. Excavation exposed the superstructure's east-west running wall (Lot CC-12-B-03), including a high footer (Lot CC-12-B-04; Figure 3.4). The portion of the wall above the footer consists of cut limestone blocks oriented horizontally. The footer measures 0.4 m high and is composed of horizontally oriented cut limestone blocks of similar size. The footer is outset from the top portion of the wall by about 5–10 cm and faced towards the south, indicating the exterior of the room. There is evidence of similar walls with footers in other areas of the site, including Structure A-13 (Robichaux 2000), the Western Plaza (Harrison 2000), Courtyard D-1 (Booher

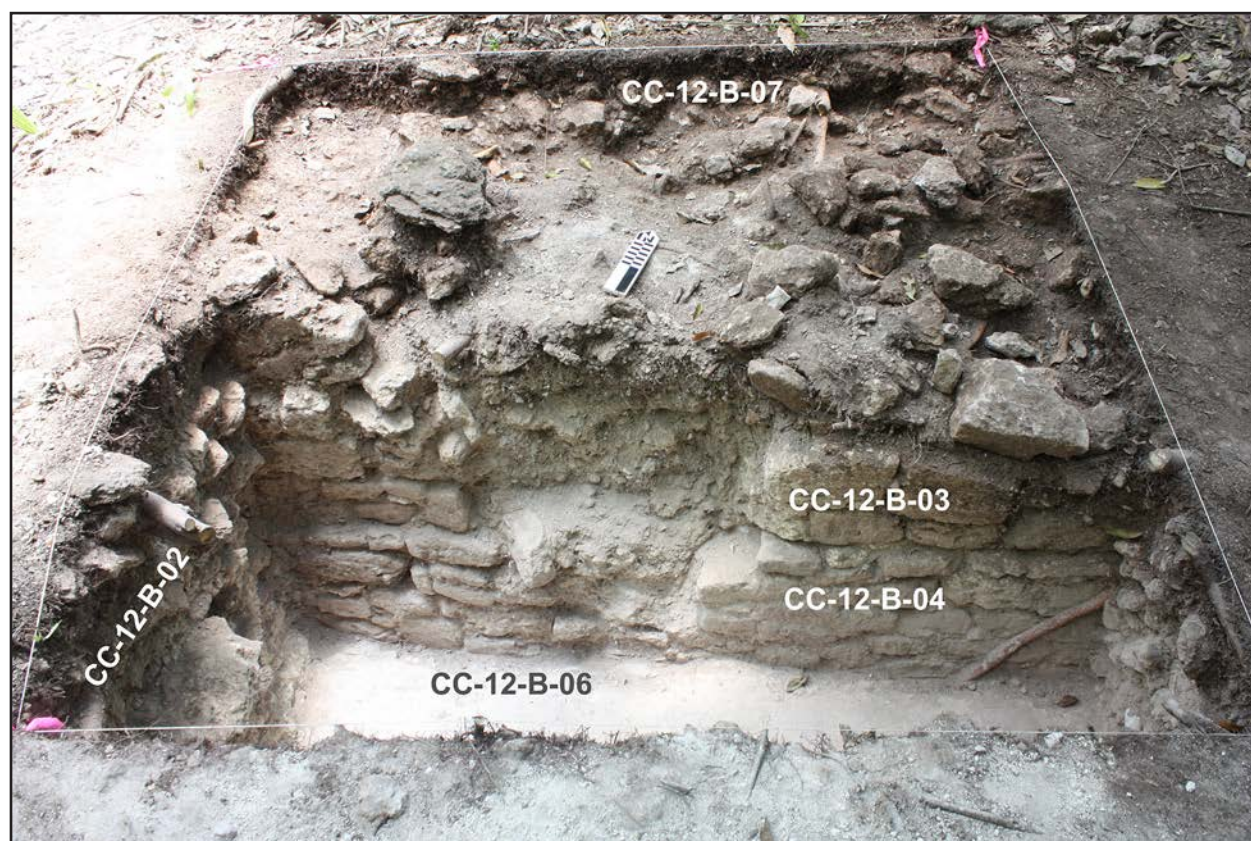


Figure 3.4. Photograph of exposed architecture in Suboperation CC-12-B, view to the north.

and Nettleton, this volume), and Structure A-18 (discussed below).

The exposed wall is relatively thin (0.75 m) as depicted in Figure 3.5, indicating that the superstructure was probably not a vaulted room but rather a low-lying masonry wall topped with a perishable structure. The final construction phase of Structure A-5's superstructure has a similar low-lying stone wall that was most likely topped by a perishable structure as well, but which lacks a footer (Herndon et al. 2013).

The exposed wall of the superstructure was moderately well preserved in Suboperation

CC-12-B, but became badly deteriorated to the east in Suboperation CC-12-L. The wall was not excavated farther to the west, but, based on surface observation, it appears to be collapsed down a steep slope on the western side of the structure, or it reaches a corner and turns to the north toward Structure A-21.

The floor on the exterior of the room was poorly preserved with large chunks of "melted" plaster adhered to it (Lot CC-12-B-05). This plaster probably fell off the outside wall and through a combination of heat, moisture, and pressure adhered to the actual floor surface (Lot CC-12-B-06). To the south of the wall,

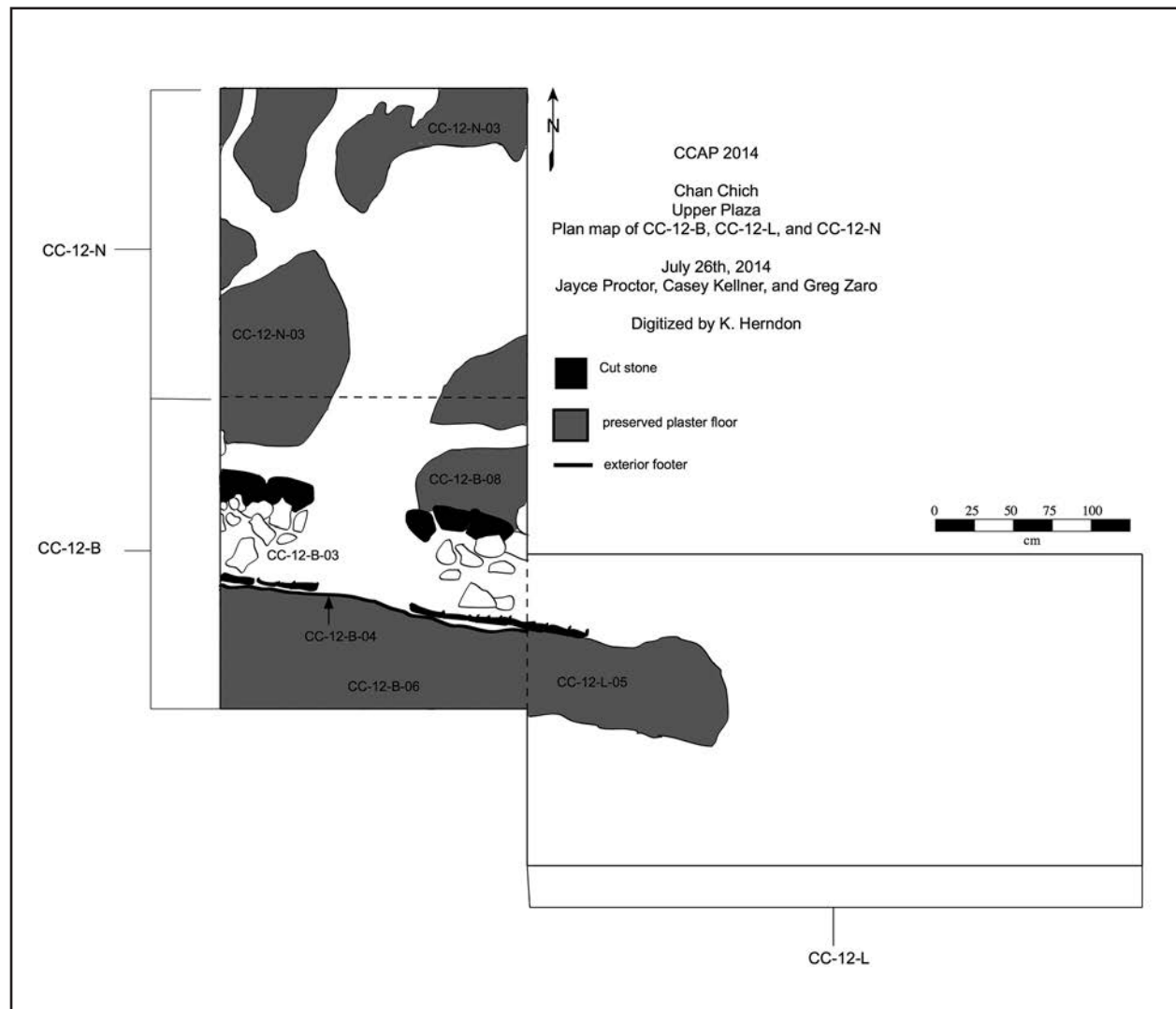


Figure 3.5. Plan map of Suboperations CC-12-B, -L, and -N.



the plaster surface at the base of the footer stones extends southward for a distance of only 50–60 cm before rolling downward (as seen in Suboperation CC-12-L), indicating a step or plastered terrace.

The interior surface of the superstructure is a very poorly preserved plaster floor (Lot CC-12-N-03). At least two plastering episodes are evident, but roots have damaged a significant portion of the surface. The floor generally covered the entire 2-x-2-m Suboperation CC-12-N. In some areas, the most recent plaster surface measures about 2 cm in thickness and directly overlies an earlier surface. The interior of the wall was only preserved in the western and eastern sections of the suboperation; the central portion was collapsed and corresponds to a blown-out portion of the wall on the south face. The 2014 excavations only exposed the final phase of Structure A-20; however, we

suspect that earlier construction episodes will be revealed with more extensive excavations.

### **Structure A-22 Suboperation CC-12-P**

Structure A-22 is located in the northwestern quadrant of the Upper Plaza. It is bordered by Structure A-1 to the north and by Structure A-21 to the south. This building had not been excavated prior to the 2014 season. Excavations of Structure A-22 revealed the remains of a north-south running wall or platform face (Lot CC-12-P-03) preserved to approximately 0.9 m high (Figure 3.6). Interestingly, this feature was made up of three distinct sections of masonry distinguished by clear seams. The first section of masonry on the northernmost portion of the feature consists of the largest stones, which are sharply cut and vary in vertical and horizontal orientation. The southern part of this section

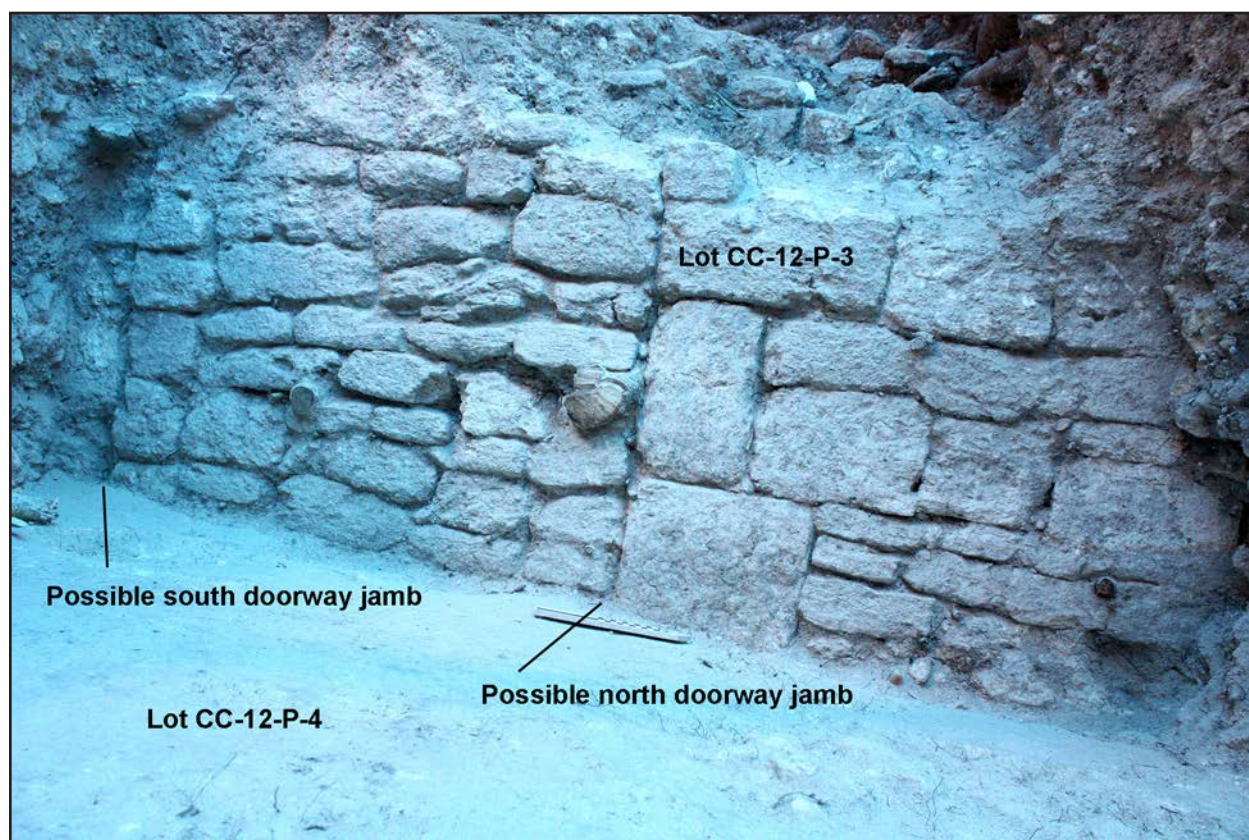


Figure 3.6. Photograph of wall/platform face exposed in Suboperation CC-12-P, view to the west.



appears to be a doorway jamb, however further excavations will be needed to confirm this hypothesis. The masonry of the northernmost section of feature is very similar to that exposed on Structure A-13 by Robichaux in his 1999 excavations (Robichaux 2000). The next section to the south consists of smaller more roughly shaped stones primarily oriented horizontally. The stones of this middle section appear to be filling a potential doorway that is 1.10 m wide. The final section, farthest to the south, is slightly recessed in relation to the middle section and also appears to include a doorway jamb; however, its similarity to the northernmost section will have to be confirmed by a more complete excavation, as only 15 cm of this southernmost section were revealed within Suboperation CC-12-P. A moderately-to-well preserved plaster surface (Lot CC-12-P-04) appears to have rolled up onto the feature, but is mostly eroded away at its base. This season's excavations revealed at least one construction episode of Structure A-22. It is possible that the seams represent an earlier doorway that was filled in at a later date and potentially used as a platform. Further excavation will likely reveal earlier construction episodes as well as elucidate the nature of the filled doorway and determine if the exposed feature is a wall or a platform face. Perhaps importantly, this feature does not have a footer.

### **Structure A-18**

#### **Suboperations CC-12-C, -H, and -R**

Structure A-18 is located in the southwestern portion of the Upper Plaza. It is bordered by Structure A-17 to the west and Structure A-15 to the east. This was the first season of excavation for this structure. Several construction phases and a buried crypt were uncovered within Suboperations CC-12-C, -H, and -R.

### ***The Guadalupe Room***

The final construction phase of this building consisted of a large room with a plastered interior and an off-center doorway on the southern portion of the building facing south into a small courtyard (Figure 3.7). This room is referred to as the Guadalupe room throughout the text. The Guadalupe room measures 1.9 m north-south and at least 2.6 m east-west; however, the full east-west extent has yet to be exposed. Several vault stones were found in collapse debris during excavation of the room, suggesting it was a vaulted structure. The plaster on the interior walls was preserved in some places; however, its consistency was very delicate and powdery. The masonry style of this structure is unclear. In places where the plaster was not preserved, the underlying matrix lacked any identifiable stonework and exhibited a consistency very similar to the collapse debris excavated from within the room.

The interior floor of the room (Lot CC-12-C-05) was well preserved and rolls down at the southern edge of the room to form a lower step within the doorway (Lot CC-12-H-08). The doorway is made up of two doorway jambs comprising stacked cut stone, and the doorway measures 1.5 m wide. The southern wall of the room is estimated to be approximately 1.2 m thick. On the floor in the doorway was a smashed vessel (Lot CC-12-H-09), likely associated with the abandonment of the Upper Plaza (Figure 3.8). Interestingly, in the profile of the east doorway jamb, a shallower surface was visible running continuous with the room surface, beneath the entire doorway jamb. There was no evidence of this floor in-between the doorway jambs during excavation, which may indicate that the ancient Maya purposefully destroyed it.

Suboperation CC-12-R exposed the northern face of the northern wall of Structure A-18 (Figure 3.9). This wall (Lot CC-12-R-03) was preserved to a height of 0.5 m, including

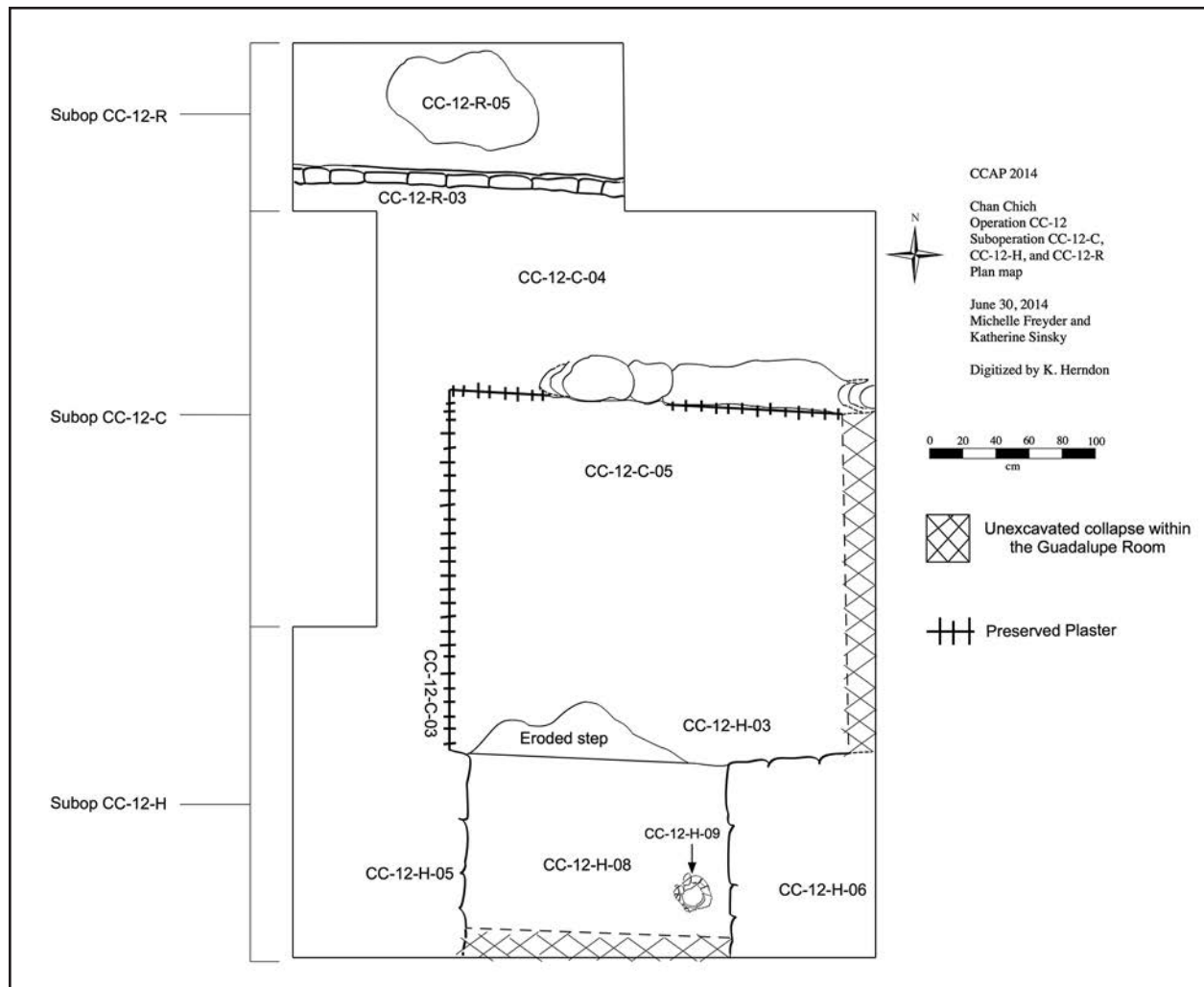


Figure 3.7. Plan map of the Guadalupe room in Subops CC-12-C, -H, and -R.

a footer (Lot CC-12-R-04) measuring 0.25 m high. The masonry of both the footer and the wall above consisted of cut limestone oriented horizontally. The footer was outset from the rest of the wall by 10 cm. The width of this north wall is 1.2 m. A poorly preserved plaster surface (Lot CC-12-R-05) was identified to the north and at the base of the footer.

### ***Burial CC-B13***

A 1-x-1-m subunit was excavated in the doorway of the room to test for earlier construction episodes. One earlier, well-preserved plaster floor (Lot CC-12-H-10) was encountered 0.60 m beneath the final phase floor. Burial CC-B13

was discovered in the fill below this earlier floor.

Excavators discovered Burial CC-B13 while excavating the chronological subunit in Suboperation CC-12-H on July 13, 2014, the second to last excavation day of the second field school session. Field school students, while excavating subfloor fill, removed an irregular limestone slab measuring 27 x 24 x 7 cm, revealing the southern end of a small crypt with the posterior of an intact human cranium visible in the partially exposed cavity (Figure 3.10). Although the size of the crypt was not known, it was clear that it extended to the north, beneath the unexcavated floor in the room in

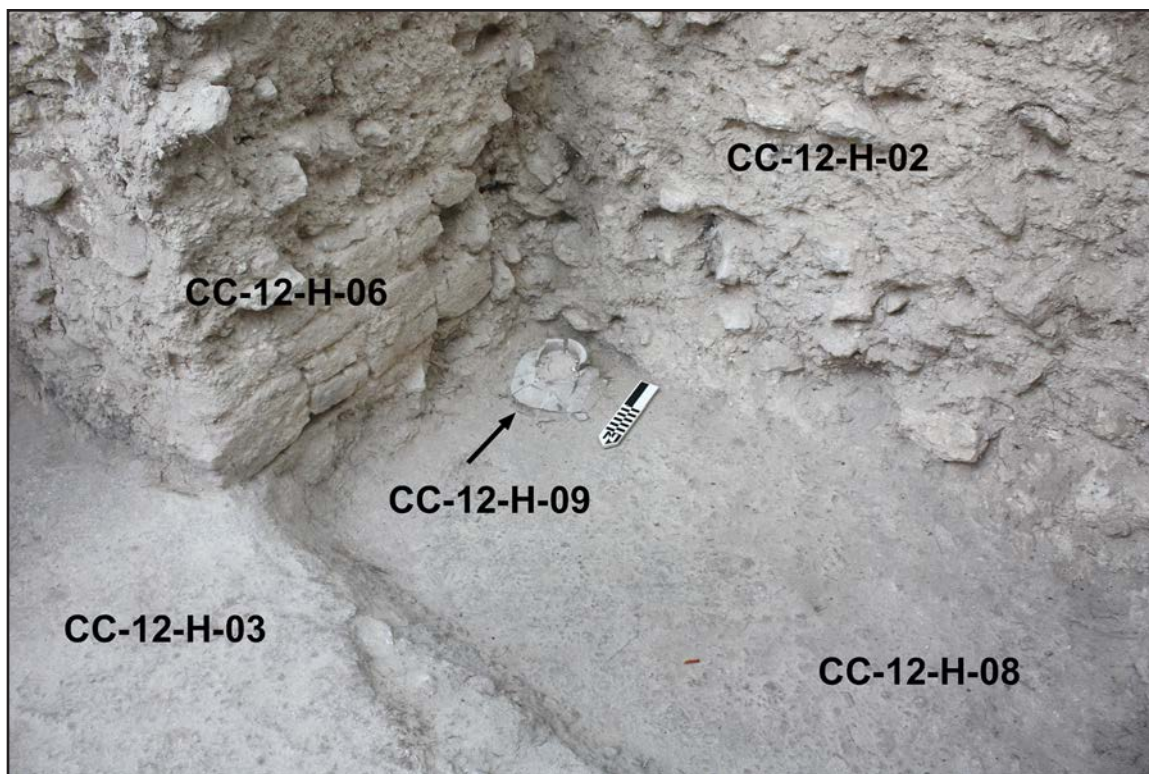


Figure 3.8. Photograph of step and smashed vessel (Lot CC-12-H-09) in the Guadalupe room.

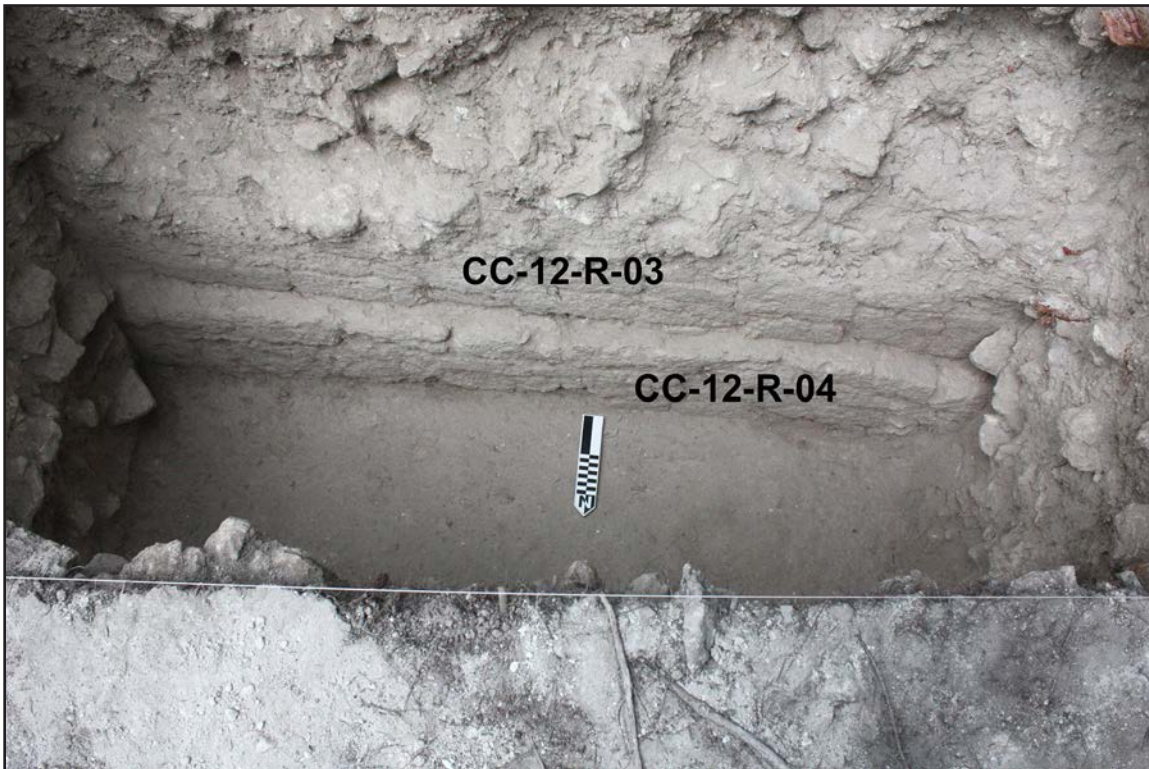


Figure 3.9. Photograph of the northern exterior wall of the Guadalupe room, uncovered in Suboperation CC-12-R.





Figure 3.10. Photograph of Burial CC-13 shortly after discovery. The top of the skull is visible beneath the second capstone. The possible southwestern side stone is visible, as well.

Suboperations CC-12-C and -H. Project staff debated the two options of either attempting to excavate the burial in the two remaining days or backfilling the unit and returning to the burial the following season. Since the burial was 3.75 m below the surface of the mound, the staff ultimately decided that excavating it was the best course of action (Figure 3.11).

The burial's placement—partially exposed in a 1-x-1-m subunit within a deep excavation pit and largely under an unexcavated and partially backfilled floor—and limited time remaining for excavations required the excavators to adapt their methods and streamline field recording (Figure 3.12). Given the complexity of the situation, Houk excavated the burial with the assistance of one or two students, who screened matrix and emptied buckets. Since traditional plan mapping would have been

too time consuming, Houk used an iPhone 5s to photograph each stage of the excavations. The photos were later processed in PhotoScan to create SfM models of each stage (Figure 3.13). As excavations progressed, Houk photographed each exposed layer of the burial on an iPad and annotated the photographs with numbers corresponding to each bone or group of bones as they were collected.

Initially, excavators leveled the subfloor fill, Lot CC-12-H-11, which covered the burial in the subunit, to allow for more room to excavate the burial (Figure 3.14). Lot CC-12-H-11 is construction fill comprising 50 percent small cobbles and 50 percent dark gray (10YR4/2) silty clay loam associated with the plaster floor above it (Lot CC-12-H-10), which is apparently part of the penultimate phase of Structure A-18. Excavations stopped at a second fill layer,



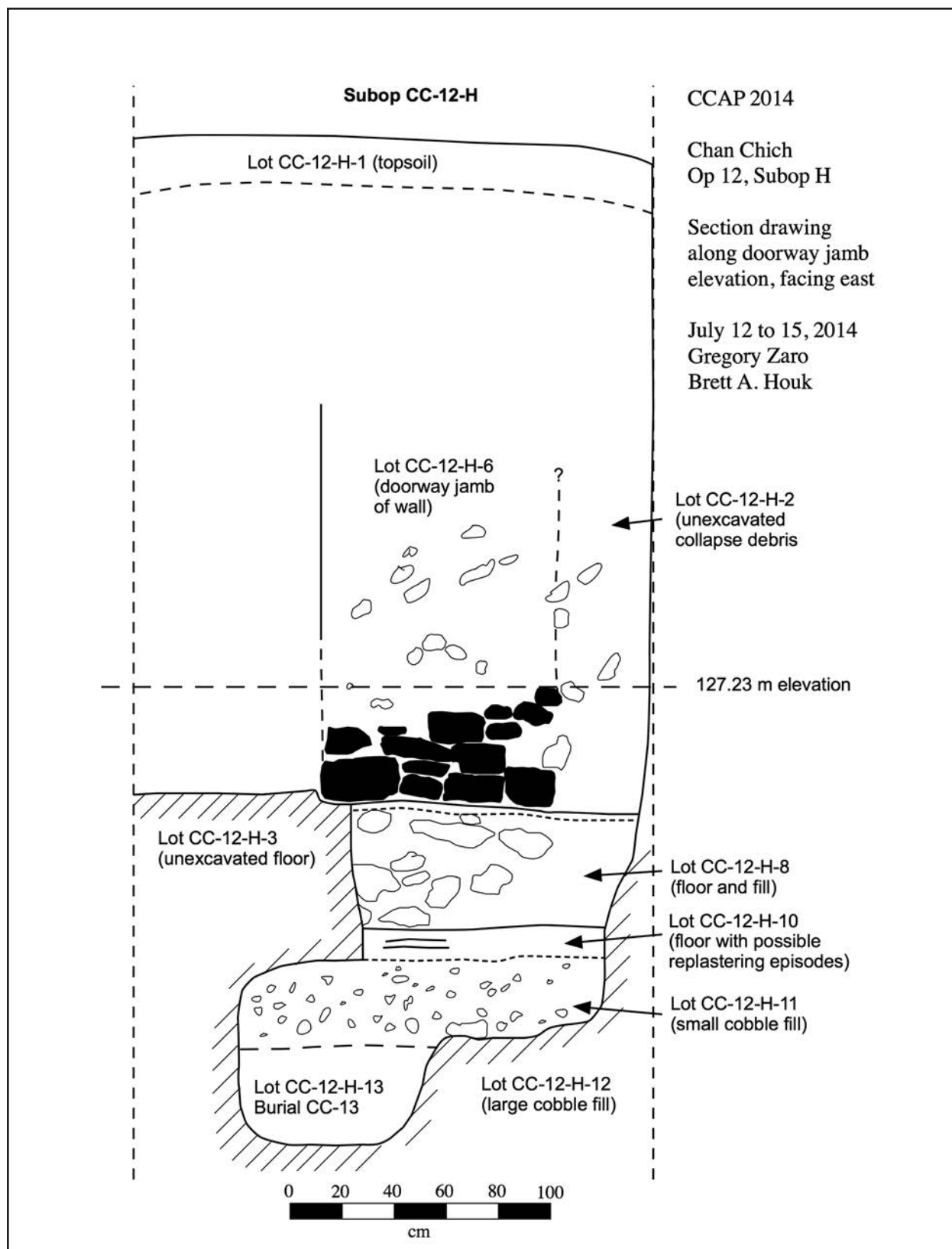


Figure 3.11. Section drawing of Suboperation CC-12-H along doorway jamb elevation.



Figure 3.12. Photograph of the project staff and students evaluating Burial CC-B13. From left to right: Gregory Zaro, Kelsey Herndon, Brett Houk, Lindsay Deaver, Katherine Sinsky (foreground). Note the partially backfilled unit in the left edge of the photograph.

designated Lot CC-12-H-12, a zone of brown (10YR5/3) clay loam with 10–15-cm diameter cobbles. The matrix's texture and color, as well as the larger size of cobbles, distinguish this layer of fill from the overlying lot. Burial CC-B13 was contained within this lot. Lot CC-12-H-12 was not excavated, so it is of unknown age and thickness.

Once the excavation area had been further uncovered, Houk exposed a second capstone, north of the first, and removed it to assess the crypt. This second capstone measured 38 x 37 x 6 cm and was found to be covering most of the skull as well as the individual's upper torso. It was immediately clear that the crypt extended

well outside of the subunit and beneath the unexcavated room in Suboperations CC-12-C and -H and that a third capstone was covering an unknown portion of the burial still covered in subfloor fill (Lot CC-12-H-11). At this point, Houk carefully covered the exposed portion of the burial crypt with wooden planks and clear plastic, and then excavated the fill above the capstone, essentially tunneling through the subfloor fill above the capstones north of the subunit. Once the fill had been removed, the third capstone, which was the largest of the three at approximately 55 x 40 x 7 cm, was cleaned, photographed and removed. The crypt had not been formally lined with side stones except perhaps for one stone at its southeastern corner when it was created (see Figure 3.10), so a moderate amount of matrix and cobbles from Lot CC-12-H-11 fell into the crypt prior to and during the capstones' removal. Particularly around the eastern edge of the crypt, this debris complicated the excavations and made full exposure of the skeletal material prior to removal impossible given the time available.

Burial CC-B13 contained the remains of a single individual, likely a robust adult male based on preliminary assessment, interred in a flexed position, lying on his left side with his hands beneath his face. His head was at the southern end of the crypt, found facing down and to the west. The burial is clearly a primary burial as all the bones were found in anatomically correct positions. Preservation ranged from moderate to good, with several bones preserved intact but exhibiting a porous, spongy texture. Few of the bones could be removed intact. Only a few teeth were recovered, none of which appeared to have been modified. Similarly, no cranial modification was noted, although the skull was not removed intact, and it was not examined in the laboratory.

The individual was buried in a small crypt within the rubble fill of Lot CC-12-H-12, but it is not clear if the crypt was excavated into

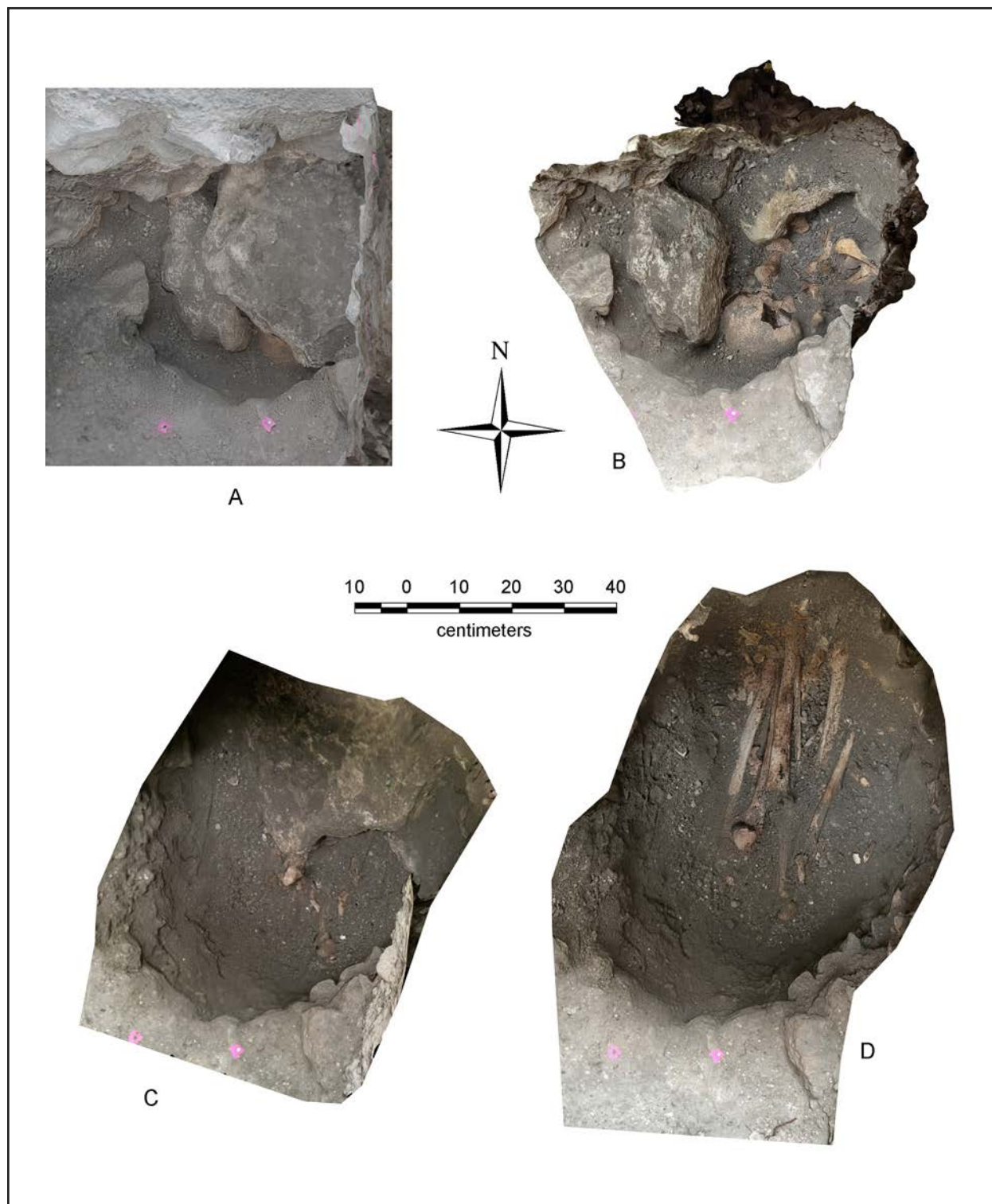


Figure 3.13. SfM orthophotos of Burial CC-B13 at various stages of excavation. The two nails marked with pink flagging tape are ground control points. A) before removal of second capstone; B) after removal of second capstone with skull still *in situ*; C) after removal of skull and scapulae; D) after removal of third capstone with arms, legs, pelvis, and spine still *in situ*.





Figure 3.14. SfM orthophoto of Burial CC-B13 immediately after the unit was prepped for the burial's excavations, view to the northeast.



the fill or created at the same time. While there was neither a formally prepared floor evident in the feature, nor formal walls to the crypt, the three capstones created a cavity that remained largely undisturbed until CCAP excavators encountered it. The estimated dimensions for the cavity are approximately 70 cm north-south, by 50 cm east-west, by 26 cm high. The crypt's cavity was located vertically between 55 and 81 cm below the top of Lot CC-12-H-10.

The matrix from the burial was fine-screened in the field, but other than a small piece of shell and a small piece of some kind of crystalline substance (both less than 1 x 1 cm in size), no artifacts were found with the skeleton. With no grave goods and the ceramics from the surrounding lots unanalyzed at this point, it is not possible to determine the age of the burial, other than to state that it is older than the final room in Structure A-18 and likely older than or the same age as Lot CC-12-H-10, the floor from the penultimate phase.

### **Structure A-1**

#### **Suboperations CC-12-A, -Ax, -D, -E, -F, -G, -I, -J, and -K**

Structure A-1 is the largest structure at Chan Chich, and it defines the boundary between the Main Plaza and the Upper Plaza. The CCAP conducted excavations at Structure A-1 in 1997, 1998, 1999 (Robichaux 1998, 2000, and Robichaux et al 2000), 2012, and 2013 (Kelley 2014; Kelley et al. 2012, 2013). Kelley's limited excavations of the southern face and Robichaux's extensive excavations of the final phase architecture provided the basis for this season's excavation design. The 2014 excavations helped to expand their results and test some hypotheses generated by this earlier work.

### **Final Phase Architecture**

Robichaux concluded after his 1997–1999 seasons that the final construction episode of Structure A-1 took the form of two large, tandem range structures, separated by a central landing. Robichaux (2000) referred to these buildings as Structure A-1W and A-1E. He estimated that each building had four rooms on either side and an additional transverse room at one end facing a central landing. These vaulted rooms were supported by a large spine wall that Robichaux estimated to be 2.85 m wide (Robichaux 2000). He also recorded the north-south-running cross-walls dividing rooms on the southern side of the western building to be 1.08 m thick and the rooms to measure 1.7 m north-south by 5.4 m east-west. Robichaux also suggested that the interiors of the rooms could contain large benches lining the walls, but that further excavations would be necessary to confirm this.

### ***The Theodore Room***

In Suboperations CC-12-A and -Ax, excavations uncovered the spine wall (Lot CC-12-A-06), the western cross-wall (Lots CC-12-A-05 and -Ax-02), and a southern wall (Lot CC-12-A-07) to a room on the southern side of Structure A-1W (Figure 3.15). We referred to this room as the Theodore room during excavations. The spine wall was uncovered in the northern portion of the unit and is well preserved with some plaster still intact. The plaster was preserved on the western portion of the wall and was hard, thick, and smooth, much like a plaster floor, and stood in stark contrast to the delicate and powdery interior room plaster identified in the Guadalupe room of Structure A-18 (see above). The western cross-wall was partially excavated when students were removing the collapse debris (Lot CC-12-A-02) before being recognized as formal masonry. However, the northern portion of this wall is well preserved where it articulates with the spine wall. The

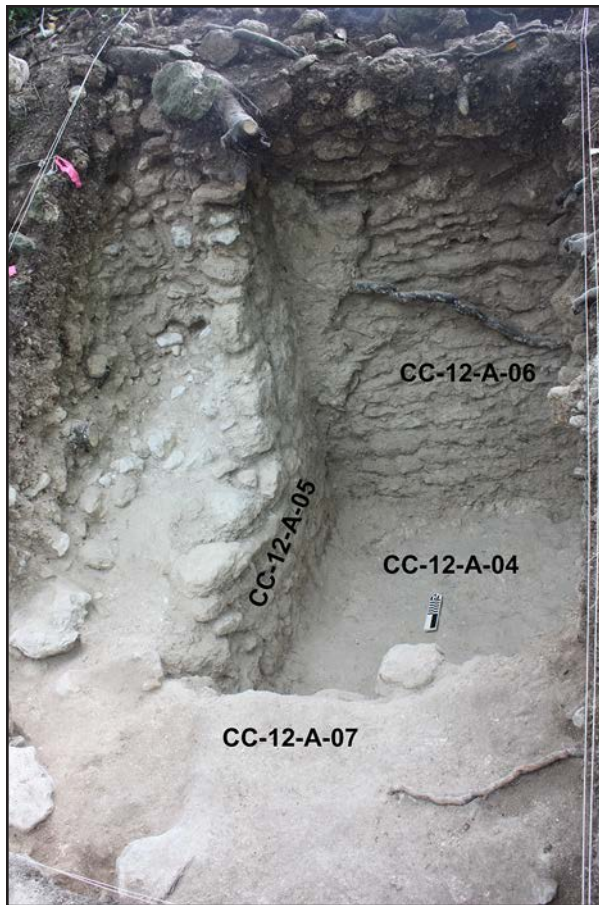


Figure 3.15. Photograph of the northwest corner of the Theodore room, exposed in Suboperation CC-12-A, view to the north.

western wall measures 2.12 m tall at its highest preserved point and consists of at least 24 courses of stone.

The southern wall of the Theodore room was poorly preserved: only four to five courses were preserved to a height of 0.56 m. The floor of this room was also poorly preserved, especially in comparison to the floor excavated in Suboperation CC-12-F (the Franklin room, discussed below). Some red-pigmented plaster was uncovered amidst the collapse debris suggesting that the inside of the room may have once been painted. The floor of the room (Lot CC-12-A-04) was a 5–10-cm thick layer of plaster overlying a 30-cm thick layer of fill consisting of small cobbles and two

earlier plaster surfaces, only one of which (CC-12-A-09) is visible in profile (Figure 3.16).

Our excavations in the Theodore Room allowed us to confirm Robichaux's room dimensions of 5.4 m by 1.7 m and the cross wall width at 1.10 m. Additionally, based on the large spine wall, the preserved height of the masonry, and the presence of vault stones in the collapse, the rooms of the final phase structure were clearly vaulted.

### ***The Frederick Room***

The north-south running cross wall that makes up the western boundary of the Theodore room also makes up the eastern cross wall of the adjacent Frederick room. The eastern and western interior walls of the Frederick room were exposed in Suboperations CC-12-Ax and -E, respectively. Based on the location of these walls, we calculated the center of the room and opened Suboperation CC-12-F accordingly. The goal of this suboperation was to look for a south-facing doorway, since previous excavations had not located doorways. Suboperation CC-12-F revealed both doorway jambs (Lots CC-12-F-05 and -06), which were made up of cut limestone blocks preserved to one or two courses high, of the hypothesized southern doorway (Figure 3.17). Only a single course of stone is preserved at the southernmost edge of each jamb, possibly indicating that the basal stones visible in both jambs represent an exterior footer along the south face of the structure (see Figure 3.17). The southern wall of the building is 0.8 m thick, and the doorway measures 1.92 m wide. The interior floor of this room was a very well preserved plaster surface (Lot CC-12-F-03) that became deteriorated immediately to the south of the doorway jambs.

### ***The Central Landing***

Suboperation CC-12-D was originally opened to expose one of the hypothesized center facing rooms (Robichaux 2000). We uncovered the

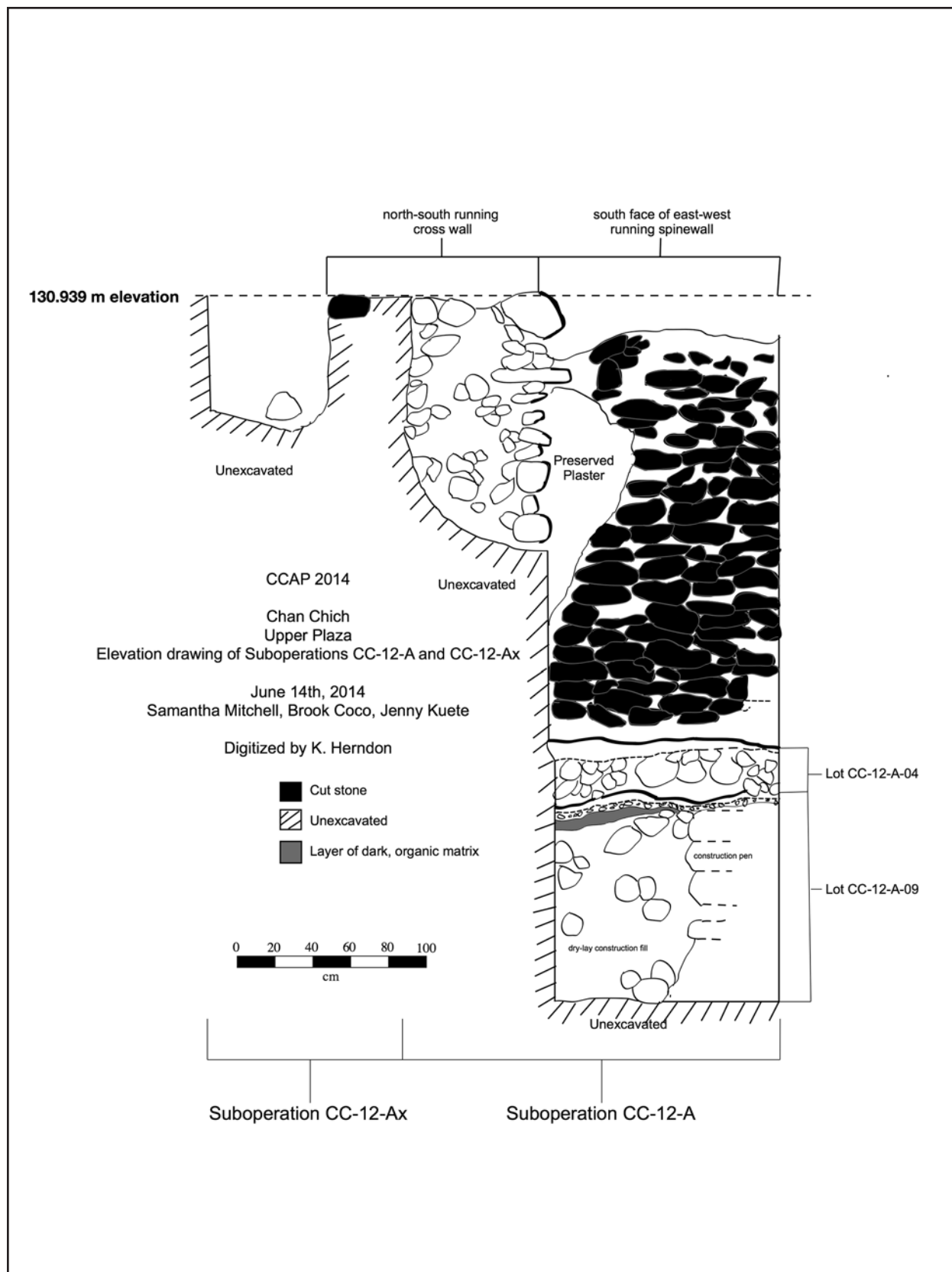


Figure 3.16. Profile of north wall of Suboperation CC-12-A.



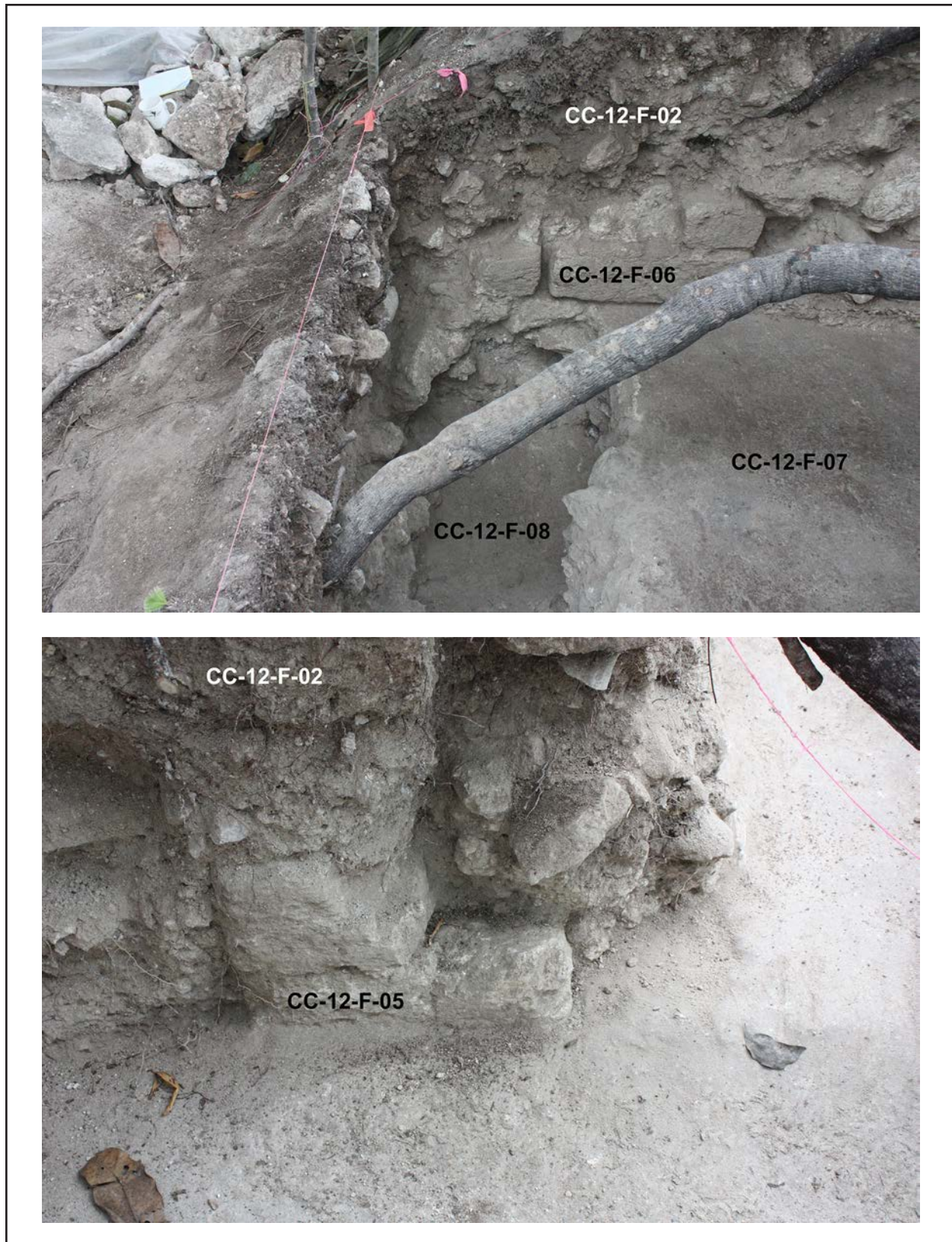


Figure 3.17. Top: photograph of the west doorway jamb of the Frederick room. Bottom: photograph of the east doorway jamb of the Frederick room.



backfill from Robichaux's excavations and exposed the final phase floor (Lot CC-12-D-03) in the entire 2-x-2-m unit (Suboperation CC-12-D). No other architectural features were found at this level within this suboperation, so we expanded our excavations to the west (Suboperation CC-12-G), where we uncovered the eastern end of the large spine wall of Structure A-1W. Suboperations CC-12-I and -J were opened to expose the north and south limits of this wall. Excavations uncovered these limits and determined the width of the spine wall to be 2.56 m, very close to Robichaux's (2000) previous estimate of 2.85 m (Figure 3.18). The final phase plaster floor (Lots CC-12-G-05 and -D-03) rolled up onto this spine wall. Most of the masonry on the eastern end of this spine wall had collapsed, with the exception of three aligned stones visible on the mound surface and the basal layer of stone on the eastern face, which was protected by a thick layer of plaster.

Robichaux actually had uncovered the basal portion of the west face of the eastern spine wall in his 1998 excavations (Robichaux et al. 2000:54–55), however he had interpreted it as a possible “high step or low platform” instead of as the basal portion of the spine wall. Based on his previous data and our exposure of the eastern end of Structure A-1W, we calculate the width of the central landing to be 2.65 m.

## Earlier Architecture

### *The Theodore Room*

Excavations continued beneath the floor of the Theodore room in a 1-x-1.1-m subunit; two earlier construction phases were found beneath floor CC-12-A-04 (see Figure 3.16). In the southern section of the subunit, beneath the fill associated with Lot CC-12-A-04, was a dark, poorly preserved, floor-like surface (Lot CC-12-A-08) with no underlying ballast. In the northern portion of the subunit, and beneath Lot CC-12-A-08 in the southern portion,

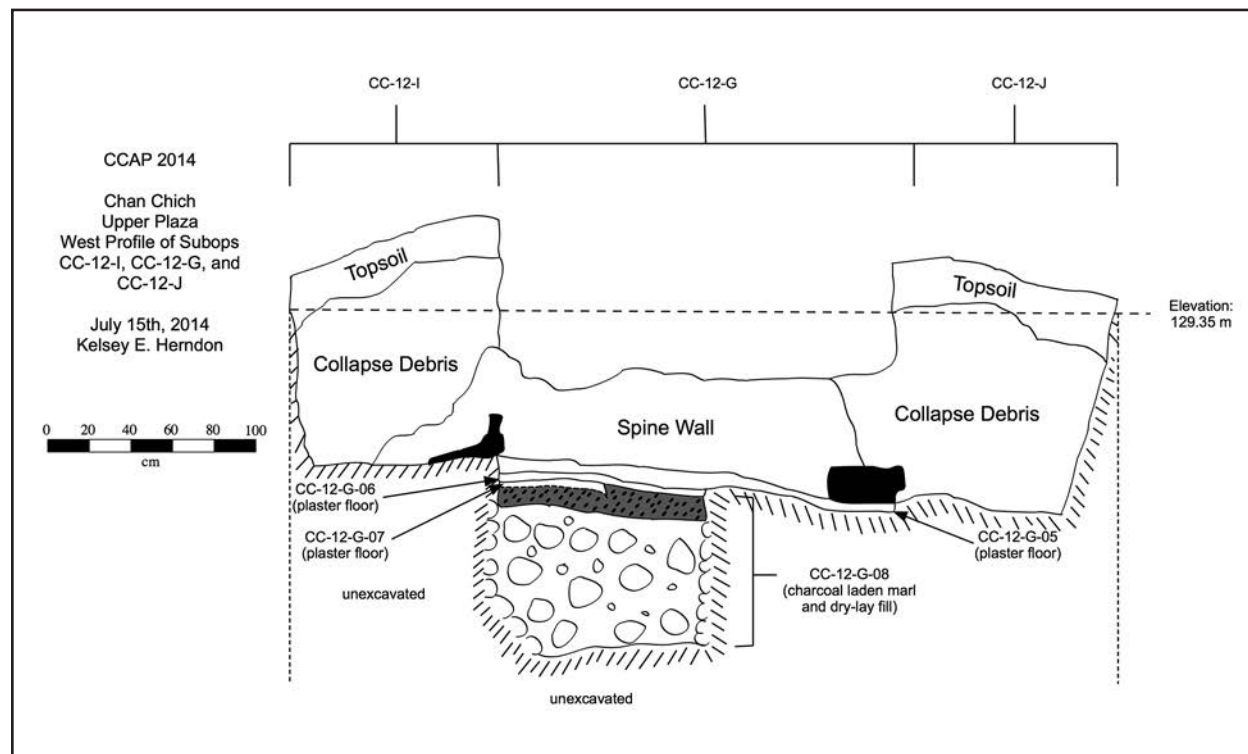


Figure 3.18. Profile of the west wall of Suboperations CC-12-G, -I, and -J.

was a decently preserved plaster floor (Lot CC-12-A-09). This floor was excavated and consisted of a layer of plaster, a very thin layer of pebble-sized ballast, a layer of dark soil, and a very thick layer of dry-laid construction fill. Within the construction fill was at least one large construction pen running north-south and measuring at least 1.0 m high. This construction pen was very similar in form to the construction pens excavated in Structure A-5 in 2013 (Herndon et al. 2013). The excavation of this subunit was closed arbitrarily without encountering older architecture beneath it due to difficulties excavating the deep layer of dry-laid fill.

### ***The Frederick Room***

Excavations continued through the final phase floor (Lot CC-12-F-03) of the Frederick Room in a 2-x-1.75-m subunit, which encompassed the doorway jambs and extended to the southern boundary of Suboperation CC-12-F.

Two earlier, well-preserved plaster floors (Lots CC-12-F-07 and -09) were identified beneath the final room floor (Figure 3.19). The floors were located directly on top of one another, with no associated ballast, but they were easily distinguishable. The earliest floor, Lot CC-12-F-09, was not excavated. The penultimate floor (Lot CC-12-F-07) continued beneath the doorway jamb, indicating that the structure may have taken a different form prior to the construction of the large tandem rooms.

### ***Central Landing***

Along the midline of Structure A-1 and beneath the final phase floor excavations encountered another well-preserved plaster floor (Lots CC-12-D-05 and -G-06), directly beneath the bottom of the final floor. This plaster surface did not roll up onto the spine wall but rather continued beneath it. This provides further support that Structure A-1 may have taken a very different form prior to the construction of the large tandem rooms. The penultimate floor also

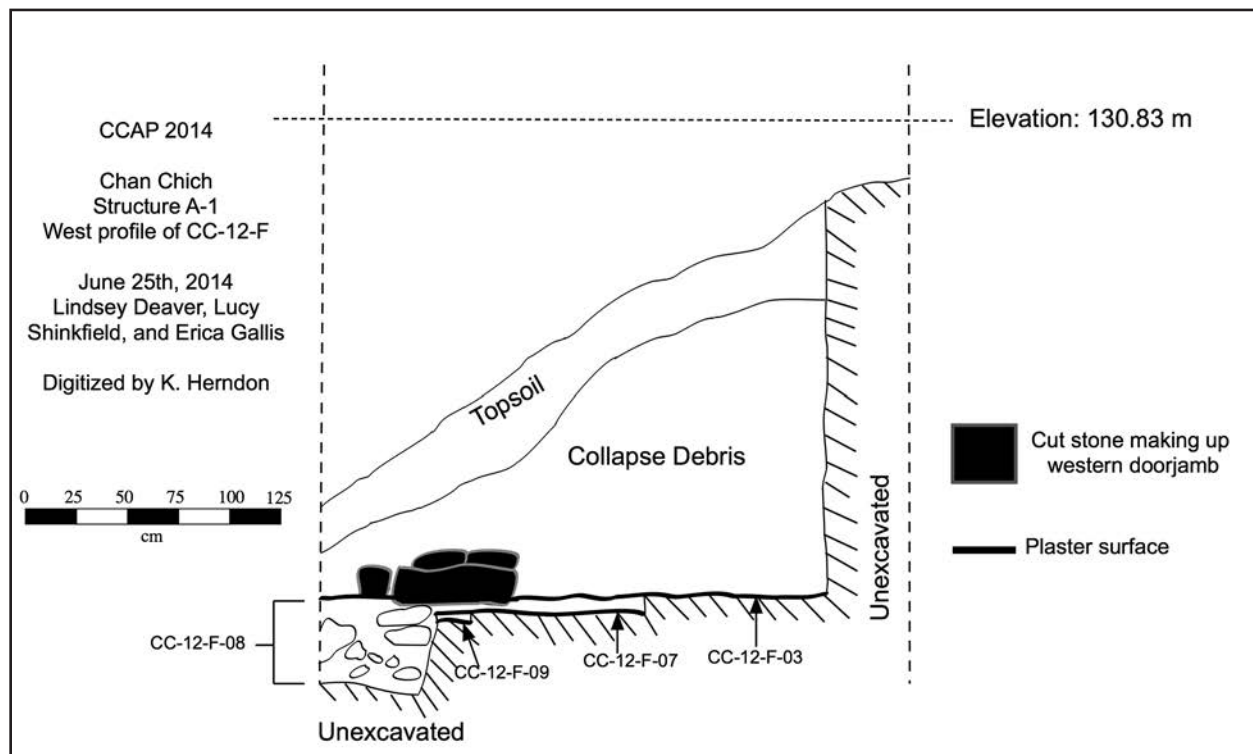


Figure 3.19. Profile of west wall of Suboperation CC-12-F.

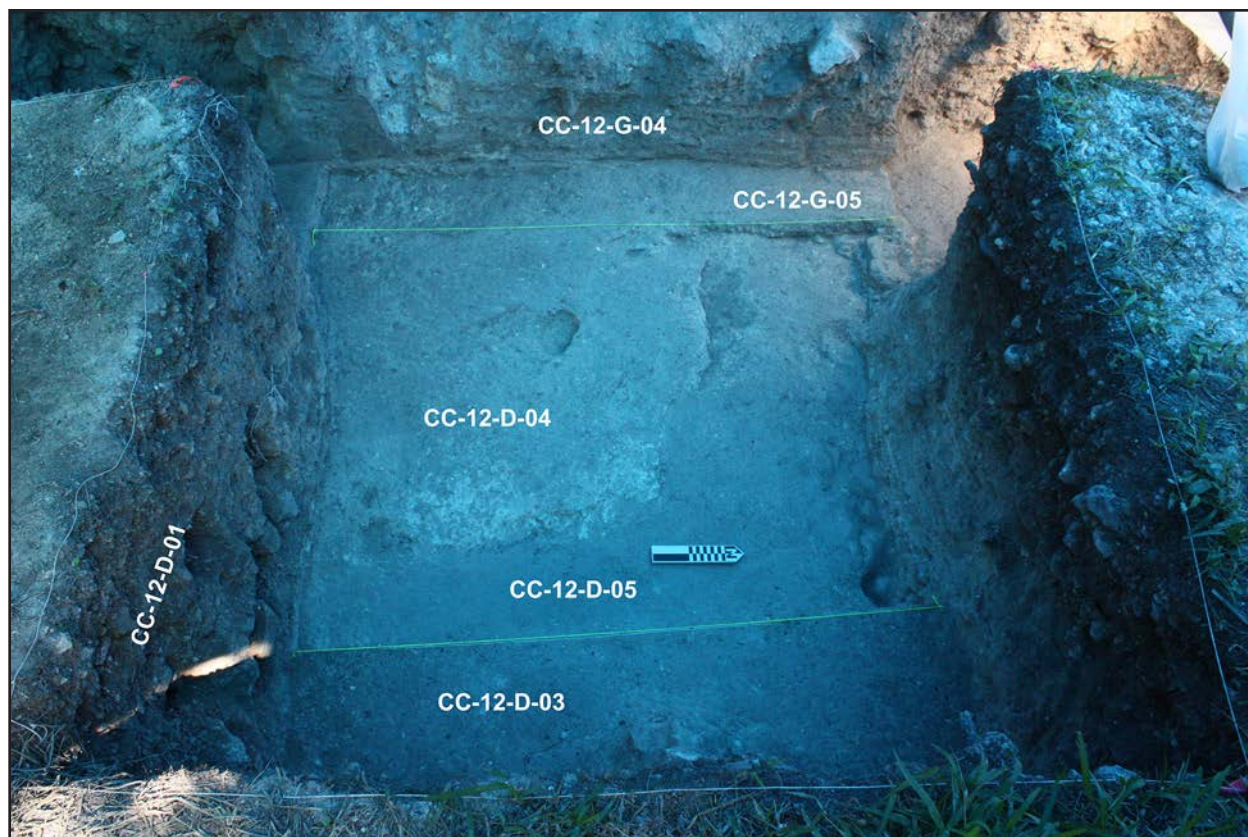


Figure 3.20. Photograph of the filled cut into Lot CC-12-D-05, view to the west.

had been cut into and filled with plaster (Lots CC-12-D-04 and -06; Figure 3.20). Within the cut excavators discovered Cache CC-C01 and a roughly constructed crypt containing Burial CC-B11 with four complete vessels.

### Cache CC-C01

Excavators discovered Cache CC-C01 after excavating a cut into floor CC-12-D-05 and beginning the removal of the matrix above and capstones of the crypt (described below). The cache consists of 17 obsidian blades ranging in size from 4 cm to 11 cm long. Initially eight obsidian blades were recognized within the fill beneath the cut; nine additional blades were found *in situ* (Figure 3.21) and we suppose that the initial eight blades were originally part of this assemblage (Figure 3.22). It is unclear if this cache was interred later or immediately after the construction of the crypt below it. There is no evidence of a later cut into Lot

CC-12-D-05/G-06, so the obsidian cache was probably interred immediately following the interment of Burial CC-B11, as the *in situ* blades were sitting on top of one of the capstones. The ventral side was up on all *in situ* blades, which was likely an intentional placement. The blades lay loose in the fill, but may have originally been buried in a perishable container.

### Burial CC-B11

Burial CC-B11 was initially discovered beneath a large, filled cut in surface CC-12-D-05/G-06 (see Figure 3.20). Excavations into the cut revealed a large void beneath what appeared to be large capstones. Through a small hole in the cavity, we initially were able to faintly identify the form of Vessel 1. Houk constructed a photography apparatus that would allow us to get a clearer view of what was inside the void before continuing excavations. He placed





Figure 3.21. Photograph of the *in situ* obsidian blades making up Cache CC-C01.

an iPhone 5s into a plastic bag, taped it to a chaining pin, and lowered it into the hole to determine the extent and contents of the void (Figure 3.23). Based on the information gleaned from the photography exploration, we identified a rather small crypt with at least two complete vessels in its southwestern corner. Because several capstones had collapsed into precarious positions, to preserve the visible vessels intact, we removed them (Vessels 1 and 2) before continuing excavations (see Houk and Zaro, this volume: Figure 1.5). The skeletal material and Vessel 3 were not uncovered until later in the excavations, after three of the southern-most vault stones had been removed and the removal of the matrix on the floor of the crypt had been initiated. A fourth vessel was later discovered beneath Vessel 3.

The crypt was capped by five capstones, upon one of which sat Cache CC-C01 (Figure 3.24). The capstones were, for the most part, unshaped; only one appeared to be a cut limestone block, measuring 0.29 m by 0.54 m by 0.15 m. The other four were slightly larger, apparently uncut limestone slabs. The capstones covered a small void measuring 0.8 m north-south by 0.6 m east-west. Uncut stacked stones formed a one-to-two-course-high, crude wall in the west and north. The rest of the crypt boundary consisted of dry-laid construction fill only, presumably associated with the construction of floor CC-12-D-05.

Inside the crypt was a single body; however, the poor preservation made it difficult to determine the exact original contents and their orientations (Figures 3.25 and 3.26). The bone that was initially visible was a fibula, which was oriented with the distal end to the north and the proximal end to the south, lying on top of a fragment of Vessel 3. Subsequent elements identified included leg bones, the intact bones of both feet, and the pelvis, all in the northern portion of the unit; several teeth were uncovered in the southern portion of the unit. The layout of the bones was suggestive of a flexed position with feet and pelvis to the north and knees and skull to the south (however, no patella or skull were present). The feet were found late in the excavation under a cut limestone block that initially appeared to be part of the wall of the crypt. However, its location on top of the feet indicates it may have been intentionally placed on the feet after interment or that it may have fallen from its original place in the wall. The teeth were scattered in the south part of the crypt, some of which were beneath Vessel 3, suggesting that the skull was located in the southern portion of the crypt and that Vessel 3 may have been placed over the head. It seems probable that the bones of the upper body, including the skull, vertebrae, ribs, arm bones, and hands, were simply poorly preserved rather



Figure 3.22. Photograph of the *in situ* obsidian blades (top) and the miscellaneous obsidian blades from (bottom) Cache CC-C01.

than removed at a later date or excluded from internment; light patches of bone residue were found in the matrix in the southern portion of the crypt, and the matrix of the southern portion of the crypt was at a lower elevation and much more moist and clay-like than the northern portion, possibly allowing water to pool. This constant pooling and drying of water may have contributed to the disintegration of the bone

that was originally located in this portion of the crypt. Preliminary osteological analysis suggests that this individual was an adult male, based on pelvis morphology and epiphyseal fusion. In total, 118 bones were mapped and excavated.

Several artifacts of note were found alongside the body. Three small obsidian microblades were found around the pelvis. Several ceramic



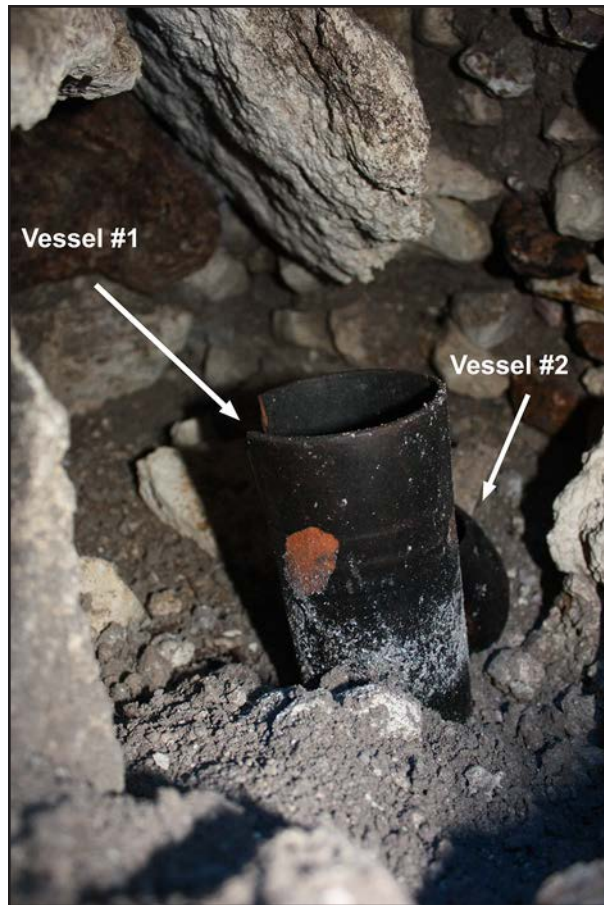


Figure 3.23. Photograph of the initial discovery of Burial CC-B11.

Figure 3.24. Photograph of the exposed capstones covering Burial CC-B11.

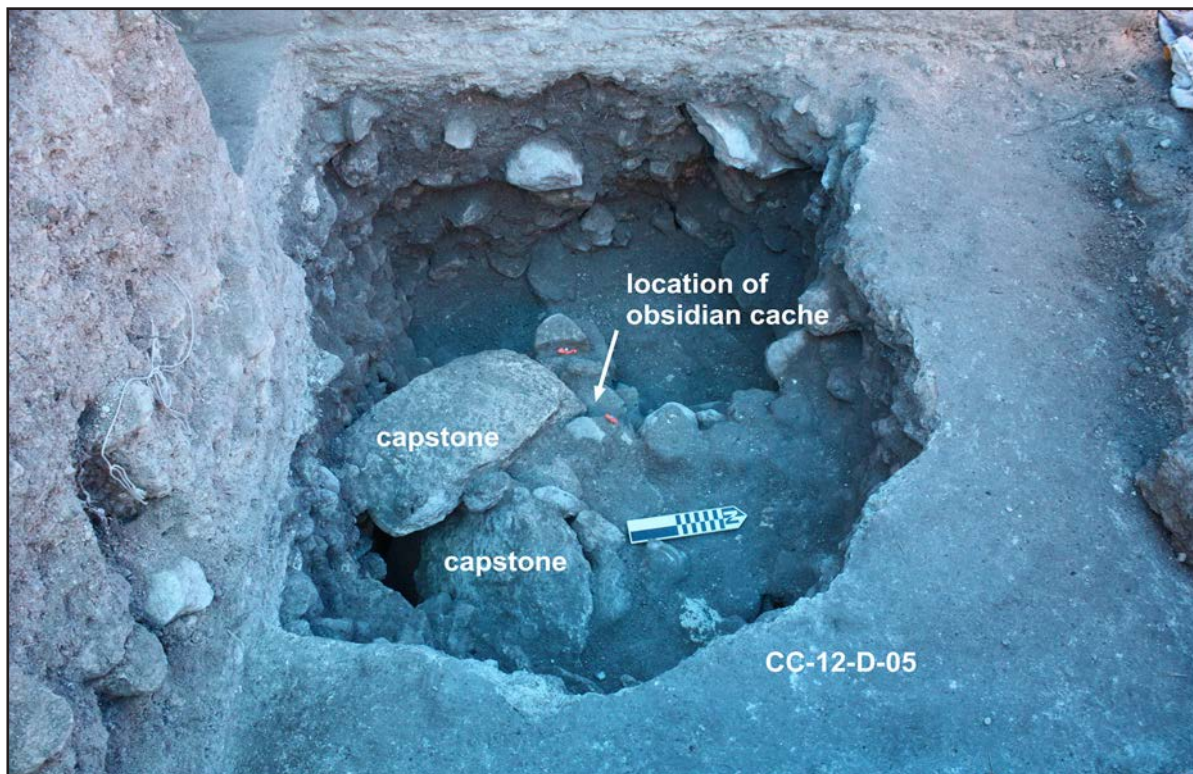






Figure 3.25. Photograph of *in situ* Burial CC-B11.

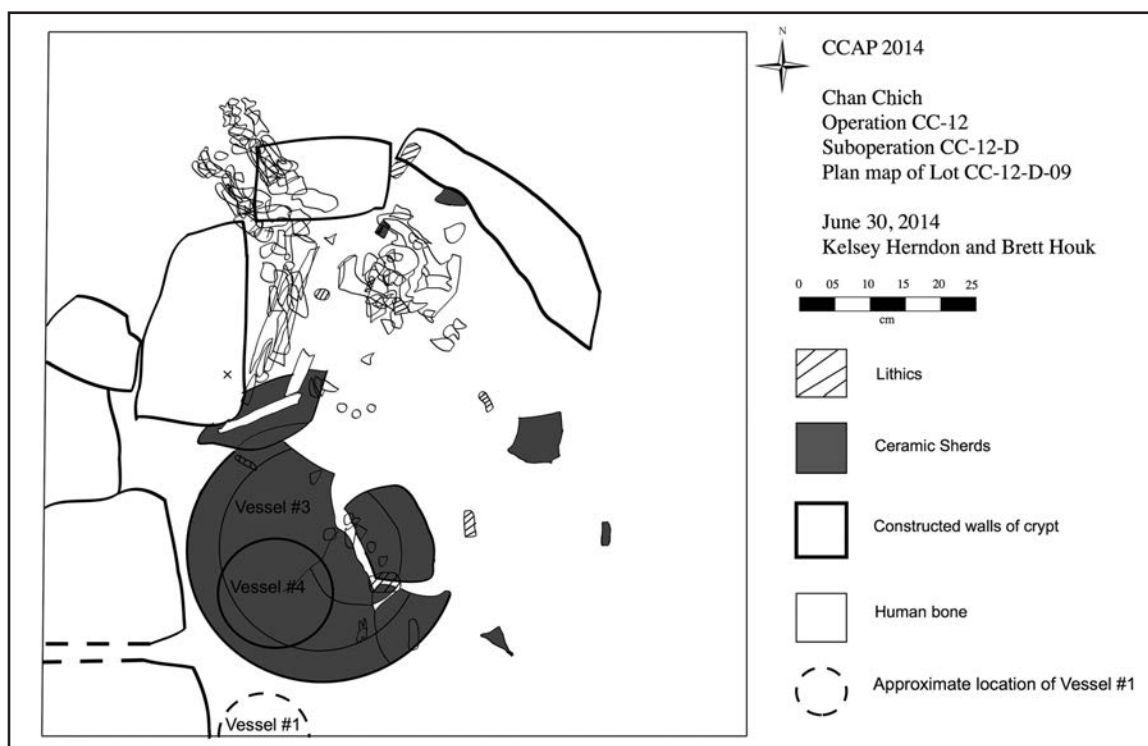


Figure 3.26. Plan map of Burial CC-B11.

sherds and lithic flakes were also found throughout the crypt. These ceramic sherds may have simply fallen in from the fill surrounding the crypt, or they may have represented the curation of powerful heirlooms. A small conch shell fragment (about 1 cm in size) was also found with the burial.

Four complete ceramic vessels were excavated from the southern portion of the crypt, near where the teeth were recovered. Vessel 1 (Figure 3.27) was the first vessel identified through a hole in the construction fill. This vessel was cylindrical in shape with an orange or red paste and black slip. It measures 27 cm high and its orifice has a diameter of 9.5 cm. There is some fine fluting towards the top of the vessel. The bottom third of the vessel was covered in the matrix of the southern portion of the crypt, and the preservation on this portion



Figure 3.27. Photograph of Vessel 1.

of the vessel is worse than the top. Inside the vessel was a sandy matrix that included many rodent bones. Preliminary zoological analysis by project lab director Lori Phillips suggests an MNI of at least three rodents, but additional analyses must be performed to determine the species.

Vessel 2, a jar with incurved sides, a restricted orifice, and a pedestal base, was located directly to the southeast of Vessel 1 (Figure 3.28). It measures 15.5 cm from top to bottom.



Figure 3.28. Photograph of Vessel 2.

Its orifice is 6.5 cm in diameter and the widest part of the jar is 12 cm across. The body of this vessel is gadrooned with top and bottom circumferential incising and seven incised double arches outlining the gadrooning.

Vessel 3 is a large plate with outcurved sides that was found inverted and placed over where we predict the head would have been. It was broken into five large sections (Figure 3.29). Two of the fragments were no longer *in situ* when excavated, suggesting some sort of disturbance after internment. This vessel measures 36 cm



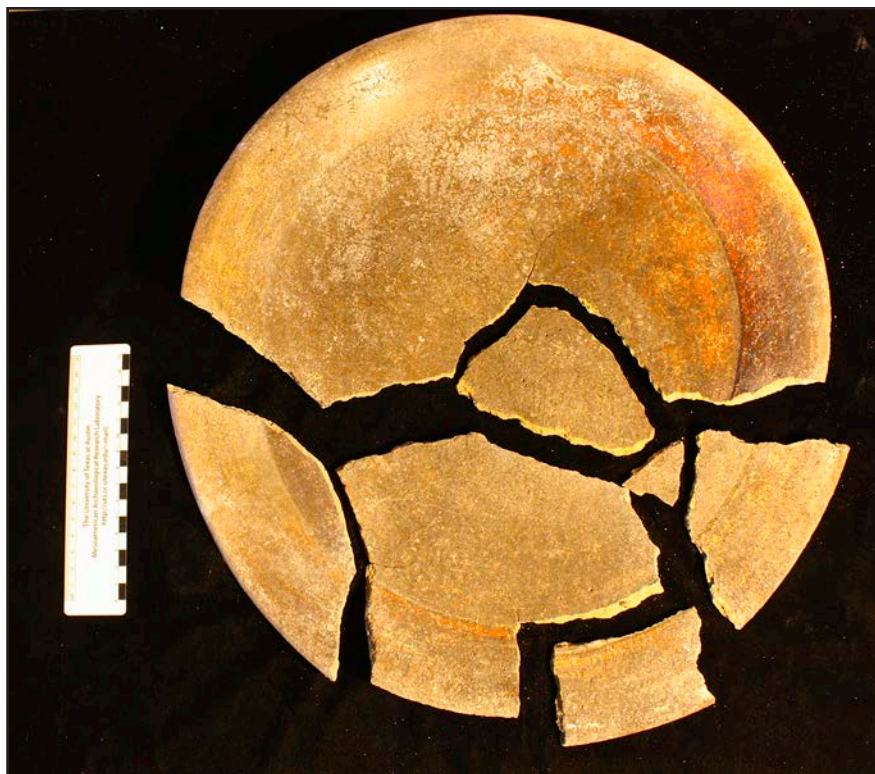


Figure 3.29. Photograph of Vessel 3.

wide and 5 cm high. It has a red paste and a black slip. Interestingly, the inside of the vessel was charred and an imprint from some type of matting was still visible (Figure 3.30). The matrix beneath the inverted Vessel 3 contained some human teeth and dense charcoal.

Vessel 4 was found right-side up beneath the inverted Vessel 3 (Figure 3.31). This is a small plain bowl with a red paste and poorly preserved black slip (Figure 3.32). It measures 10 cm high and 16 cm diameter. Inside the bowl were a sandy matrix, charcoal, and a few rodent bones.

Based strictly on photographs and SfM models of the vessels, Valdez and Sullivan (this volume) classify them as part of the Achote Ceramic Group. They fall within the Chan Chich Motmot ceramic complex of the Late Classic Tepeu 1-2 ceramic sphere, suggesting the burial dates to AD 600–800.

In sum, excavations of Structure A-1 revealed at least three construction episodes. Pending full ceramic analysis and the results of in progress radiocarbon analyses, the dates of these phases remain unknown. However, the preliminary ceramic analysis of the whole vessels suggests a terminus post quem date of Late Classic (Tepeu 2) for the penultimate phase architecture. We expect that further excavations will add to the early history of this large and complex structure.

## CONCLUSIONS AND FUTURE DIRECTIONS

The 2014 excavations in the Upper Plaza began working towards the stated goals of the CCDAP and more broadly those of the CCAP. To date, no formal ceramic analysis has been completed for the Operation CC-12 excavations and the results of a suite of radiocarbon samples that will be submitted for analysis in late 2014 are not yet available; therefore, conclusive chronology





Figure 3.30. Photograph of Vessel 3 with imprint of burned matting.



Figure 3.31. Photograph of *in situ* Vessel 4.



Figure 3.32. Photograph of Vessel 4.

across construction episodes cannot yet be presented. Structure A-18 demonstrated at least two construction episodes and contained a crypt with the remains of a single human skeleton. Excavators uncovered the final construction phase for Structure A-20, which consisted of a thin, low, stone wall with a relatively tall footer. The final construction phase was also uncovered for Structure A-22, revealing a wall or platform face with three distinct sections of masonry. The Upper Plaza surface was excavated, revealing a wall or possibly a platform face, as well as a series of dirt and plaster surfaces indicating many renovations. Finally, at Structure A-1—a primary focus of the 2014 season—excavations revealed an extensive portion of the final construction phase as well as a series of earlier construction episodes; these include the first cache ever identified at Chan Chich and a crypt with the remains of one human skeleton and four intact ceramic vessels. While we await absolute dates for the architecture in the Upper Plaza, the results of our excavations thus far suggest an extensive and complex construction history. At least one construction episode was uncovered on Structures A-20 and A-22; at least two construction episodes were uncovered on Structure A-18; at least three construction episodes were uncovered on Structure A-1; and as many as nine construction episodes were uncovered in the Upper Plaza surface. Coupled with large scale construction episodes clearly visible in looters trenches in Structures A-15 (see Willis et al., this volume) and Structure A-21, we project that further excavations will continue to reveal early monumental architecture that can be evaluated in the context of Terminal Preclassic royalty at Chan Chich.

The 2014 excavations answered many questions about the form and evolution of the Upper Plaza and surrounding architecture; however, many new questions also arose. Future excavations

in this portion of the site core should consider addressing the following:

1. Identify the form and extent of the wall/platform beneath the latest Upper Plaza surface.
2. Excavate into the filled “doorway” of Structure A-22.
3. Expand exposure of the Guadalupe room and explore how it articulates with Structure A-15.
4. Determine how the easternmost cross wall adjoins with the eastern end of the spine wall on Structure A-1W.
5. Continue excavations on all buildings to determine earlier construction sequences.

In addition to these ideas for future excavations, the analysis of ceramic and lithic artifacts and the samples collected should also be undertaken. The information provided by these data will allow for even more insight into the architectural and political development of Chan Chich.

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# RESULTS OF EXCAVATIONS AT THE BACK PLAZA (COURTYARD A-3) AT CHAN CHICH

Edgar Vazquez, Ashley Booher, and Brett A. Houk

Excavations in Courtyard A-3 took place during the first summer session of the 2014 Chan Chich Archaeological Project (CCAP). The purpose of these excavations was to analyze and understand the form, function, and chronology of Courtyard A-3, also known as the Back Plaza, at Chan Chich and its associated structures. Due to the secluded nature of Courtyard A-3 in relation to the adjacent Upper Plaza, prior to the 2014 research Vazquez (2013) speculated the courtyard may have functioned as a food preparation area for various rituals that occurred in Plaza A-2 or served as a residential area for servants or attendants who participated in the daily activities of the Upper Plaza.

## DESCRIPTION OF CHAN CHICH AND THE BACK PLAZA

The Chan Chich site core is situated on a north-south axis, which include the North Plaza, Structure A-5, the Main Plaza, Structure A-1, the Upper Plaza, Structure A-15, and the Back Plaza as the architectural spine of the site. The architectural spine extends in a 350-m long block of contiguous monumental architecture from north to south (Figure 4.1). Chan Chich is organized into four groups of structures, where the Main and Upper Plazas (A-1 and A-2) are the core architectural features (Houk et al. 1996). Group A, the largest group, includes 37 structures, three large plazas, and several smaller courtyards (Houk et al. 1996). Unlike

the Main Plaza and Upper Plaza, Courtyard A-3 lacks accessibility and public space. However, Courtyard A-3, or the Back Plaza make up part of the contiguous group of monumental architecture and arguably relate in function to the rest of the site core.

Courtyard A-3 is directly south of Structure A-15 and below the Upper Plaza. The southern side of the Upper Plaza's platform forms the northern side of Courtyard A-3, and there are three structures that enclose the other sides of the group. Structures A-23, A-24, and A-25 are range buildings or platforms that surround the courtyard on the west, south, and east sides, respectively. The courtyard itself measures approximately 29 m north-south by 34 m east-west (from the bases of the surrounding structures). Structure A-23 on the west side of Courtyard A-3 is approximately 49 m long. While Structure A-24 on the south side of the courtyard is approximately 51 m long and Structure A-25 on the east side is approximately 42 m long. These mounds are approximately 1.5 to 3 m high and 10 m wide. The vegetation of Courtyard A-3 mostly consists of upland forest with some palm trees approximately 2–4 m tall, filling the floor space in Courtyard A-3 (Houk et al. 1996).

Courtyard A-3 and its adjoining structures are roughly 10 m north of Structure A-26. Courtyard A-4 and its surrounding buildings, Structures A-27, A-28, A-29, and A-30, are

Vazquez, Edgar, Ashley Booher, and Brett A. Houk

2014 Results of Excavations at the Back Plaza (Courtyard A-3) at Chan Chich. In *The 2014 Season of the Chan Chich Archaeological Project*, edited by Brett A. Houk, pp. 69–89. Papers of the Chan Chich Archaeological Project, Number 8. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock.

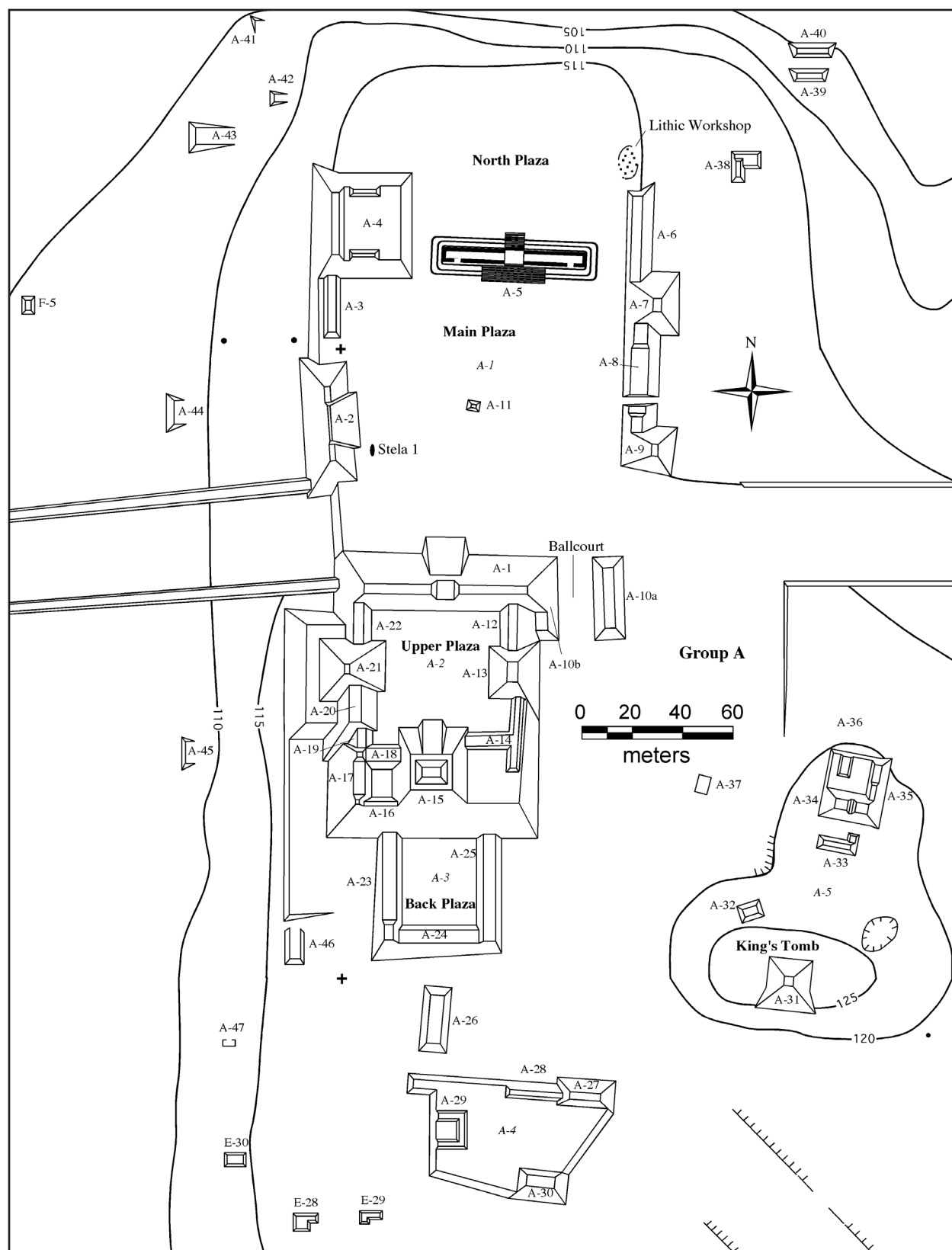


Figure 4.1. Map of Chan Chich site core.



approximately 45 m south of Courtyard A-3. Although there is no direct visible connection between both courtyards, the proximity and lack of other surrounding structures makes it probable that there were interactions between the occupants of both courtyard groups.

## **OBJECTIVES AND METHODS**

Vazquez (2013) proposed a number of research questions, which were latter refined by Houk (2014) and included in the research design for the 2014 season that was submitted to the Institute of Archaeology. The following research questions were posed to assess the form, function, and chronology of Courtyard A-3 (Houk 2014):

- How many construction episodes are present at Courtyard A-3 and what are their ages?
- During what time period was Courtyard A-3 used the most?
- What are the various ages of the surrounding structures and their construction phases?
- What is the architectural layout of each of the surrounding structures?
- Do specific structures have increased numbers of middens present behind them or near them, if any?
- Are there any visible relationships between Courtyard A-3 and Courtyard A-4 and its surrounding structures?
- How is Courtyard A-3 related to the rest of the site and specifically the Upper Plaza?

The 2014 excavations of the Back Plaza took place during the first summer session of the CCAP and lasted 28 days. Employees of Chan Chich Lodge and field school students partaking in the Texas Tech Field School in Maya Archaeology conducted the excavations.

Excavations were supervised by CCAP Project Director, Brett A. Houk, Operation Director Edgar Vazquez, and Suboperation Directors Ashley Booher and Tony Mouton. Excavation methods and recording procedures conducted in the Back Plaza followed the guidelines outlined in the *La Milpa Core Project Field Manual* (Houk and Zaro 2011), although the CCAP incorporates a FileMaker Pro relational database that uses iPads to complete necessary forms for the field electronically (see Houk, this volume).

The work was assigned Operation (OP) CC-13. After clearing undergrowth, initial suboperations in Courtyard A-3 were placed based on visual inspection of the cleared structures and courtyard area. Initial excavations were placed as close to the centerline of Structures A-23 and A-25 as possible (Figure 4.2). The amount of vegetation and fallen trees hindered excavations on the north side of Structure A-24, while amounts of collapsed debris and proximity to the lodge's visitor trails affected excavations on the southern side of the structure. Due to these factors and to attempt to optimize time management, excavations on Structure A-24 were not conducted during this field session. The initial units also included a test pit in the center of the courtyard to establish construction chronology for the area. Op CC-13 included a total of 13 suboperations. Lots in suboperations were created accordingly based on cultural material, changes in the matrix, and features. Only two lots were screened, as discussed below.

Shovel tests were proposed behind each individual structure in Courtyard A-3. The shovel tests were originally planned to be placed at 5-m intervals behind the three structures in order to create a grid extending from the base of the mounds to 10 m out from the base. The goal of the shovel tests was to look for middens, which would then be targeted with 1-x-1-m sample units. For several

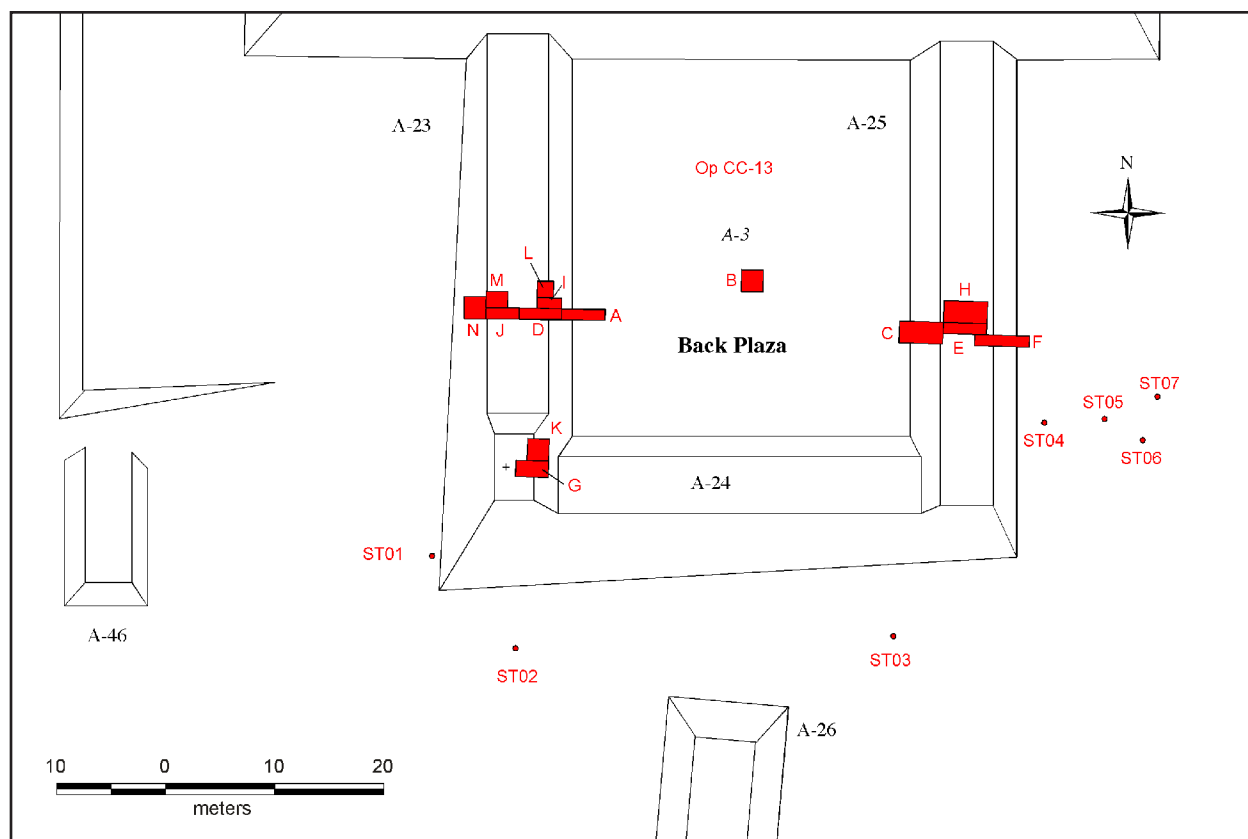


Figure 4.2. Map of excavations and shovel tests in the Back Plaza.

reasons—the time needed to dig shovel tests, limitations on shovel test placement due to Chan Chich Lodge’s visitors’ trails, and initial shovel test results—the shovel testing program was cancelled after seven tests.

Charcoal samples for radiocarbon dating were collected using aluminum foil packets, and sample forms were filled out on the iPad. Additional samples such as faunal bone were collected, given a specific sample number and taken to the lab for further analysis. Artifacts were examined, collected, and sent to the CCAP lab for analysis. Fred Valdez, Jr. and Lauren Sullivan (this volume) analyzed the ceramics from Op CC-13. The lab director, Lori Philips, and various field school students analyzed the lithics.

## RESULTS OF EXCAVATIONS

This results section outlines individual excavations opened under Op CC-13 in Courtyard A-3 (Table 4.1). The results are described and analyzed chronologically by structure or area to make it clear how adjustments were made to our excavation strategy according to the form and preservation of each individual structure. Additionally, this organization reflects the changing and developing research questions that ensued as the excavations progressed.

### Courtyard Test Pit

Suboperation (Subop) CC-13-B was a 2-x-2-m test pit located near the center of Courtyard A-3. It was opened as a test pit to establish the construction chronology for the courtyard by identifying the number of courtyard flooring episodes. The topsoil consisted of small cobble

*Results of Excavations at the Back Plaza (Courtyard A-3) at Chan Chich*

Table 4.1. List of Subops and Lots in Operation CC-14

Structure	Subop	Lot	Lot Type	Ceramic Sample Size	Temporal Affiliation	Significant Artifact Types Found
A-23	CC-13-A	1	Topsoil	13	Late Classic	1 Obsidian Blade
A-23	CC-13-A	2	Collapse Debris	85	Late Classic	
A-23	CC-13-A	3	Other Surface	No Ceramic Data	No Ceramic Data	
A-23	CC-13-A	4	Collapse Debris	31	Terminal Classic	
A-23	CC-13-D	1	Topsoil	10	Late Classic	
A-23	CC-13-D	2	Collapse Debris	28	Late Classic and Terminal Classic	
A-23	CC-13-D	3	Collapse Debris	46	Late Classic	
A-23	CC-13-D	4	Ashy Deposit	88	Late Classic	1 Mano
A-23	CC-13-D	5	Collapse Debris	2	Late Classic	
A-23	CC-13-G	1	Topsoil	44	Late Classic and Terminal Classic	
A-23	CC-13-G	2	Collapse Debris	No Ceramic Data	No Ceramic Data	
A-23	CC-13-G	3	Floor	Unexcavated	Unexcavated	
A-23	CC-13-G	4	Wall	Unexcavated	Unexcavated	
A-23	CC-13-G	5	Other Surface	5	Terminal Classic	
A-23	CC-13-G	6	Construction Fill	11	Late Preclassic	
A-23	CC-13-G	7	Construction Fill	7	Late Classic and Terminal Classic	
A-23	CC-13-G	8	Door Jamb	Unexcavated	Unexcavated	
A-23	CC-13-G	9	Wall	Unexcavated	Unexcavated	
A-23	CC-13-G	10	Floor	Unexcavated	Unexcavated	
A-23	CC-13-I	1	Topsoil	21	Late Classic	
A-23	CC-13-I	2	Collapse Debris	23	Late Classic	
A-23	CC-13-I	3	Ashy Deposit	196	Late Classic	
A-23	CC-13-I	4	Ashy Deposit	943	Late Classic	
A-23	CC-13-J	1	Topsoil	9	Terminal Classic	
A-23	CC-13-J	2	Collapse Debris	109	Late Classic	
A-23	CC-13-J	3	Ashy Deposit	91	Late Classic	1 Metate, 4 Manos
A-23	CC-13-J	4	Floor	Unexcavated	Unexcavated	
A-23	CC-13-K	1	Topsoil	5	Terminal Classic	1 Lithic Tool
A-23	CC-13-K	2	Collapse Debris	36	Late Classic	



Table 4.1. List of Subops and Lots in Operation CC-14 (continued)

Structure	Subop	Lot	Lot Type	Ceramic Sample Size	Temporal Affiliation	Significant Artifact Types Found
A-23	CC-13-K	3	Floor	Unexcavated	Unexcavated	
A-23	CC-13-K	4	Door Jamb	Unexcavated	Unexcavated	
A-23	CC-13-K	5	Wall	Unexcavated	Unexcavated	
A-23	CC-13-L	1	Topsoil	17	Terminal Classic	
A-23	CC-13-L	2	Collapse Debris	31	Late Classic	
A-23	CC-13-L	3	Ashy Deposit	32	Late Classic	
A-23	CC-13-L	4	Floor	Unexcavated	Unexcavated	
A-23	CC-13-L	5	Wall	Unexcavated	Unexcavated	
A-23	CC-13-M	1	Topsoil	11	Late Classic	
A-23	CC-13-M	2	Collapse Debris	232	Late Classic	2 Lithic Tools, 1 Obsidian Blade, 1 Spear Point, 1 Northern Belize Chert Biface
A-23	CC-13-M	3	Ashy Deposit	3 Vessels	Late Classic	2 Metates, 6 Manos, 3 Lithic Tools, 5 Obsidian Blades, 1 Spear Point
A-23	CC-13-N	1	Topsoil	55	Late Classic	1 Mano, 4 Lithic Tools
A-23	CC-13-N	2	Collapse Debris	122	Late Classic	1 Lithic Tool
Courtyard	CC-13-B	1	Topsoil	90	Late Classic	2 Obsidian Blades
Courtyard	CC-13-B	2	Construction Fill	70	Late Classic	1 Lithic Tool
A-25	CC-13-C	1	Topsoil	38	Late Classic	
A-25	CC-13-C	2	Collapse Debris	54	Late Classic	
A-25	CC-13-C	3	Construction Fill	51	Late Classic	
A-25	CC-13-C	4	Floor	45	Late Preclassic to Early Classic	
A-25	CC-13-E	1	Topsoil	24	Terminal Classic	
A-25	CC-13-E	2	Construction Fill	17	Late Classic	
A-25	CC-13-E	3	Floor	Unexcavated	Unexcavated	
A-25	CC-13-E	4	Wall	Unexcavated	Unexcavated	
A-25	CC-13-E	5	Wall	Unexcavated	Unexcavated	
A-25	CC-13-E	6	Other	Unexcavated	Unexcavated	
A-25	CC-13-F	1	Topsoil	8	Late Classic	
A-25	CC-13-F	2	Collapse Debris	42	Late Classic	
A-25	CC-13-F	3	Floor	Unexcavated	Unexcavated	
A-25	CC-13-F	4	Wall	Unexcavated	Unexcavated	
A-25	CC-13-F	5	Other	Unexcavated	Unexcavated	
A-25	CC-13-F	6	Floor	9	Late Classic	

Table 4.1. List of Subops and Lots in Operation CC-14 (continued)

Structure	Subop	Lot	Lot Type	Ceramic Sample Size	Temporal Affiliation	Significant Artifact Types Found
A-25	CC-13-F	7	Step	Unexcavated	Unexcavated	
A-25	CC-13-H	1	Topsoil	25	Late Classic	
A-25	CC-13-H	2	Collapse Debris	54	Late Classic	
A-25	CC-13-H	3	Floor	Unexcavated	Unexcavated	
A-25	CC-13-H	4	Wall	Unexcavated	Unexcavated	
A-25	CC-13-H	5	Wall	Unexcavated	Unexcavated	
A-25	CC-13-H	6	Construction Fill	101	Late Preclassic to Late Classic	
A-25	CC-13-H	7	Floor	150	Late Classic	
A-25	CC-13-H	8	Wall	Unexcavated	Unexcavated	
A-25	CC-13-H	9	Midden	91	Late Preclassic	
A-25	CC-13-H	10	Other Surface	No Ceramic Data	No Ceramic Data	
A-25	CC-13-H	11	Wall	Unexcavated	Unexcavated	
A-25	CC-13-H	12	Construction Fill	No Ceramic Data	No Ceramic Data	

fill in a clay matrix layer approximately 0.15 m thick. The next layer was approximately 0.40 m thick and consisted of larger construction fill and a clay matrix layer overlying bedrock. Bedrock is approximately 0.55 m below the surface. The presence of a single layer of construction fill suggests there was only one courtyard floor construction phase. Ceramic sherds were collected alongside two micro obsidian blades. The ceramic sherds collected date to the Late Classic, suggesting the only construction episode of the courtyard floor happened during this period.

### Shovel Test Results

A total of seven test pits was excavated and produced minimal or inconclusive results. A majority of the shovel tests excavated through collapsed debris, and each test hit bedrock, providing minimal results and artifacts. The vast amount of fallen trees and dense vegetation made it difficult to conduct all the

shovel tests originally proposed. Also, large amounts of collapsed debris from each of the three structures made following intervals of 5 m almost impossible. The shovel testing program failed to locate any middens.

### Center of Structure A-23

While conducting visual survey on Structure A-23, vault stones were visible on the surface of the mound, although the mound itself is too low to have once had a vaulted structure. There were also several robbed vault stones in individual units, which are described in each distinct suboperation. Excavations in Courtyard A-3 began on Structure A-23 with the opening of Subop CC-13-A on the centerline of Structure A-23 on its eastern side oriented east to west. This was a 1-x-4-m unit that extended from the courtyard up onto the mound. It was placed to potentially find any type of architectural alignment or features that might be followed to reveal the form of the structure and perhaps

catch a cache at the base of the structure. The location of this unit also allowed for expansion on all sides if necessary.

Excavations encountered a thick layer of collapse debris and melted plaster, which made potential floors surfaces almost indistinguishable. A platform face was discovered near the western end of the unit which sat on top of a plaster floor (Lot CC-13-A-4). The platform feature is approximately 0.20 m high and 0.75 m wide. The exposed portion of the platform was three stones high and four stones across; however, one stone was mistakenly removed prior to documentation. These were the only architectural features found in this suboperation. The platform feature and floor are the initial architectural features that slowly revealed the form of Structure A-23.

The next suboperation opened on Structure A-23 was Subop CC-13-D; it was a 1-x-4-m unit extending west from the western end of Subop CC-13-A. Subop CC-13-D was placed higher up on the mound to expose more of the platform surface found in Subop CC-13-A. The main goal of this unit was to find more architectural features pertaining to the form and possibly function of the structure.

While excavating the collapse debris (Lot CC-13-D-2) in the unit, a vault stone was uncovered in the southern wall of the unit. The vault stone was left intact since it protruded into the wall of the unit. Excavations encountered an alignment of cut stones running north to south, which formed a low wall (Lot CC-13-D-3), about 0.5 m from the eastern end of the unit under a 0.88-m thick layer of collapse debris. The low wall is approximately 0.35 m wide and 0.42 m high and is made of poorly preserved cut limestone blocks ranging in various sizes ranging from 18 cm to 30 cm wide. This wall was resting on a badly eroded plaster floor (Lot CC-13-D-3) that covered the rest of the unit to the west. As described below, we interpret this to be a floor

within a room on the structure and the wall to be the eastern wall of the room. A second vault stone was discovered in the collapse debris of Lot CC-13-D-3. The vault stone was taken out since it was not associated with any architectural features.

Directly on the northwest side of the wall, inside the room, there was a problematic deposit of ashy soil and burned limestone designated Lot CC-13-D-3. Approximately 70 ceramic sherds were found this deposit along with a ground stone fragment. The matrix was very dark gray (7.5YR3/1) and ashy. A soil sample was collected from this feature.

Subop CC-13-I was excavated north of Subop CC-13-D as a 1-x-2.5-m unit placed to follow the wall that runs north to south and expose more of the burned feature in Subop CC-13-D. After excavating through 0.30 m of collapse debris, the low wall that was originally found in Subop CC-13-D was uncovered as it continued into Subop CC-13-I as Lot CC-13-I-2. After excavating through the layer of collapse debris, a vault stone was uncovered near the north wall of the unit. The vault stone was removed after verifying it was not associated with any architectural features. More of the burned feature was also exposed in this unit, resting on the floor in the room. As excavations got deeper, the soil color progressively changed in color and texture to an ashy very dark gray (7.5YR3/1) matrix. The burned feature was assigned its own lot number (Lot CC-13-I-4) to prevent artifact contamination. Approximately 400 ceramic sherds were collected from Lot CC-13-I-4 alone. The high concentration of ceramics was located in a 0.5-x-0.5-m area near the middle of the southern end of the unit, west of the low lying wall. A second matrix sample was collected from this portion of the feature.

Subop CC-13-L, a 1.5-x-1.5-m unit, was opened directly north of CC-13-I to further uncover the low wall and burned feature. During



excavations through collapsed debris, two vault stones were discovered near the southern wall of the unit. The vault stones were taken out after verifying they were not associated with a potential architectural feature.

Both the wall and the burned feature extended into this new unit, as did the underlying plaster floor of the room (Lot CC-13-L-3, which is equivalent to Lot CC-13-I-4). There was a thick layer of collapse debris and melted plaster covering the floor, wall, and burned feature, making it difficult to accurately distinguish plaster floor from collapse. Subsequently, Subop CC-13-L was split in half and the southern end of the unit was excavated deeper to verify that we were indeed on the floor in the room. After removing the apparent floor surface (Lot CC-13-L-3), subfloor fill was

uncovered, and another plaster floor, which was labeled Lot CC-13-L-4, was discovered approximately 0.30-m below the uppermost floor. The excavations determined that eastern wall of the building actually sits on top of the older floor (Lot CC-13-L-4), which is better preserved than the one above it (Figure 4.3). The two floors and wall were the only architectural features uncovered in Subop CC-13-L.

Subop CC-13-J was a 1-x-3-m unit placed west of Subop CC-13-D; it extended from the top (middle) of the mound to the western side of Structure A-23. The goal of Subop CC-13-J was to expose more of the room discovered in Subops CC-13-D and -I and to look for additional burned features in other areas of the structure. Subop CC-13-J continued the contiguous line of units across Structure A-23

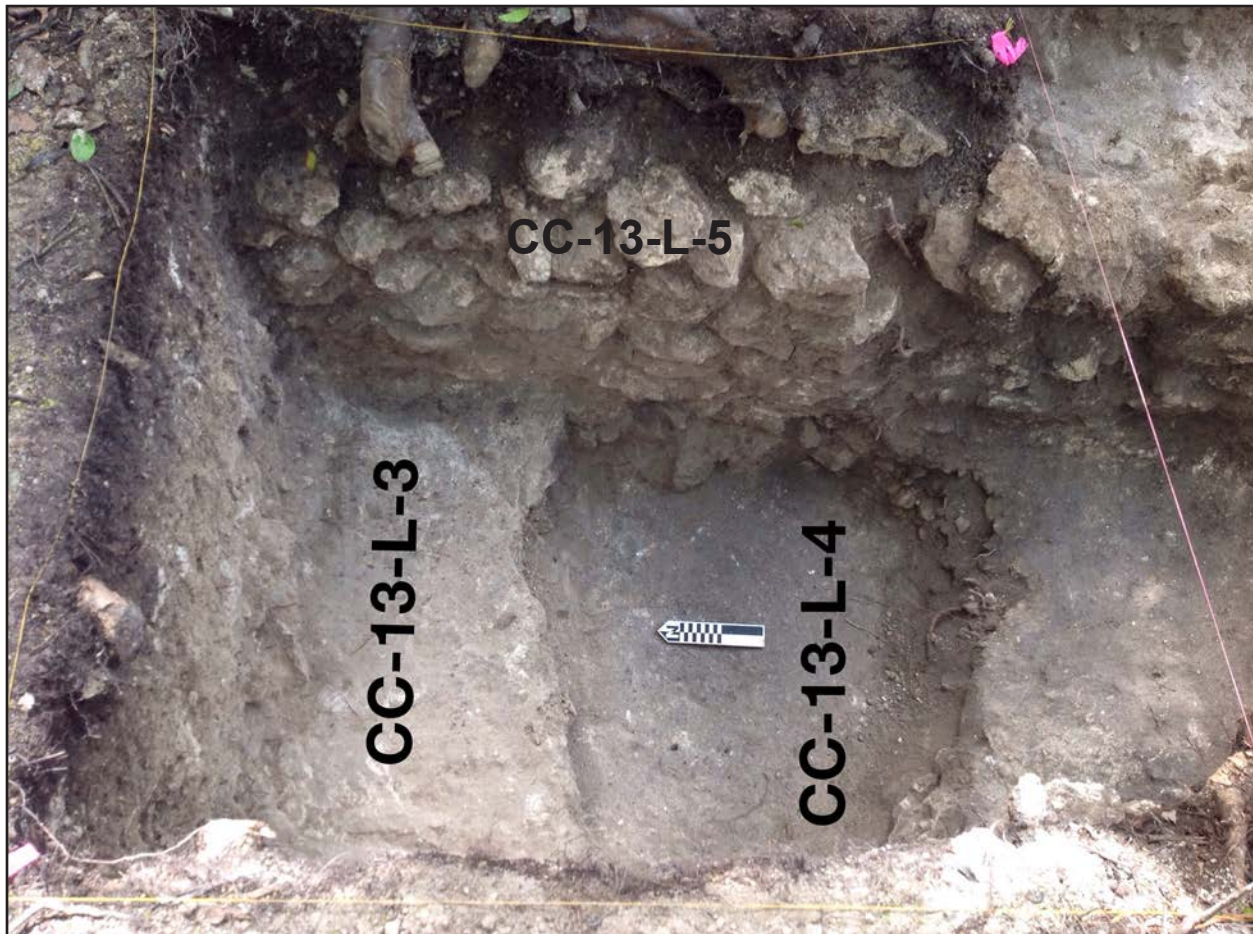


Figure 4.3. Photo of Lots CC-13-L-3 and -4 and the wall (Lot CC-13-L-5), view to the east.

that was started in Subop CC-13-A. A vault stone was discovered in the topsoil (Lot CC-13-J-1) and was removed. As with Subop CC-13-D, the unit contained approximately 0.60-m of collapse debris overlying an eroded plaster floor (Lot CC-13-J-4). No other architectural features were found in the unit during excavations, but it was later determined that excavators had accidentally destroyed a north-south oriented wall that crossed the suboperation's eastern half. Because the floor surface continued unbroken, it is clear that this wall was built on the floor. In profile, the wall is approximately 1 m wide and 0.55 m tall. As described below, this wall continued into Subop CC-13-M to the north.

There was another burned feature towards the western end of Subop CC-13-D, where the soil was a dark gray, which was similar to other suboperations. The burned feature was given its own lot number (Lot CC-13-J-3). There were approximately 100 ceramic sherds associated with this feature. Another soil sample was collected from this lot and sent to the lab for further analysis.

A mano and chert core were uncovered in the collapse debris (Lot CC-13-J-2) overlying the floor and burned feature, and a granite metate fragment was uncovered alongside six more manos on the floor surface near the northern edge of the unit. Faunal bone was found towards the southern end of the unit; a total of six pieces was collected and sent to the lab for further analysis. The most identifiable bone was an approximately 15-cm long piece of long bone, which was identified as deer bone by Lori Phillips.

Subop CC-13-M was a 1.5-x-2-m unit directly north of Subop CC-13-J on the western side of Structure A-23, oriented east to west. It was opened to expose more of the burned feature and concentration of ground stone artifacts and animal bone that were previously excavated

in Subop CC-13-J. In addition to the plaster floor exposed in other units, Subop CC-13-M exposed portions of two architectural walls. One ran directly east to west and was first noted in the profile of the northern wall of Subop CC-13-M. It is approximately 0.8 m high and composed of cut stone blocks. The second wall was uncovered in the eastern end of the unit. It ran north to south along the eastern wall of Subop CC-13-M; this feature was accidentally destroyed during excavations in Subop CC-13-J by field school students. The two walls suggest that Subop CC-13-M is situated in the northeast corner of a room.

Subop CC-13-M consisted of three different lot types, the first being top soil (CC-13-M-1), followed by collapse debris (CC-13-M-2) and another burned area (CC-13-M-3). Two vault stones were discovered in Lot CC-13-M-2, near the southwest corner of the unit. The artifacts from the collapse debris in Lot CC-13-M-2 consisted of approximately 300 ceramic sherds and rim pieces, two lithic tools, obsidian micro blade, a spear point, and a thin chert biface. There were also numerous nearly intact upside down vessels near the northeast corner of the unit (Figure 4.4). The soil started to become dark gray, similarly to the other burn features previously found and the lot was arbitrarily closed. In the burned feature, Lot CC-13-M-3, a thin chert spear point made of northern Belize chert (Houk, personal communication, 2014) with a well-defined base was uncovered, but with the top portion missing (Figure 4.5) alongside several lithic tools including bifaces and cores, two metates, six manos (Figure 4.6), 30 pieces of debitage, approximately 250 ceramic sherds, and five obsidian blades. Two complete Tinaja Red vessel rims were also found, most likely used as water jugs.

Subop CC-13-N was a 2-x-2-m unit located directly west of Subops CC-13-J and -M on the western side of Structure A-23. The purpose of Subop CC-13-N was to find the back of the





Figure 4.4. Tanvi Mittal excavating artifacts in Subop CC-13-M. Note the inverted Tinaja Red vessel (right foreground) and metate fragment (right center).



Figure 4.5. Chert spear point from Lot (Spec. # CC0756-01).

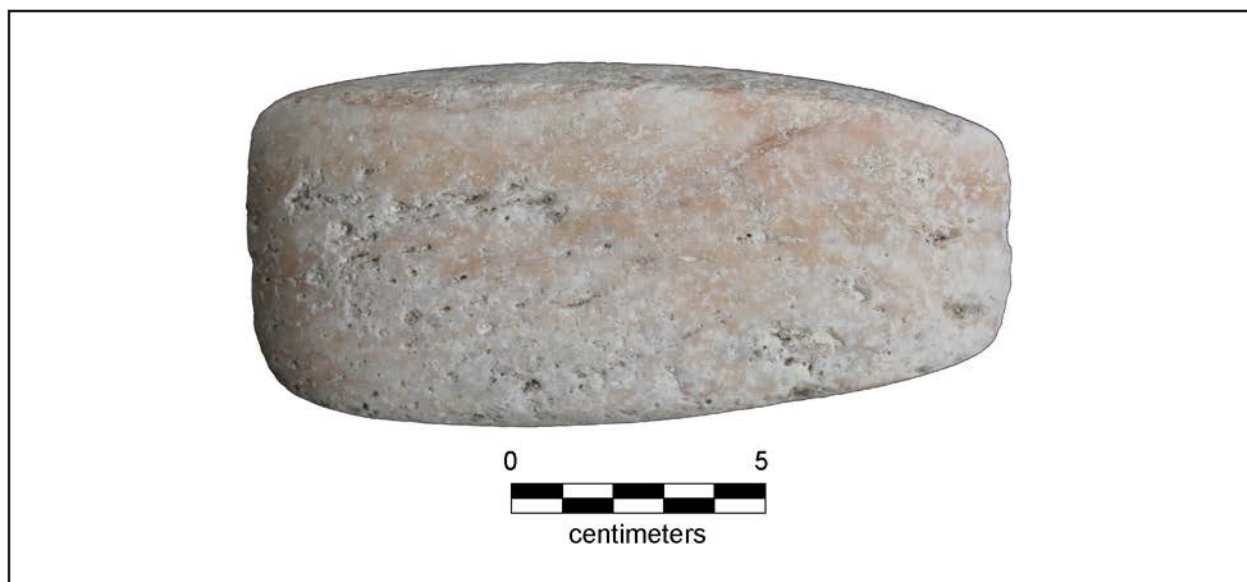


Figure 4.6. Mano from Lot CC-13-M-3 (Spec. # CC0758-04).



building and to continue exposing the burned features found in Subops CC-13-J and -M. After excavating through collapsed debris, the burned features from previous units was found not to extend into this one, and the only architectural feature found was the uppermost plaster floor, which is visible in the other suboperations. The excavations did not identify the western wall of the room or edge of the platform, which have likely collapsed down the mound. Four lithic tools including a biface and another mano were uncovered in this unit.

### **Southern End of Structure A-23**

Subops CC-13-G and -K were located on the southwestern edge of Structure A-23, where the topography of the mound is very different than elsewhere. Here the mound is approximately 3 m tall. Subop CC-13-G was a 1.5-x-3-m unit at the top of the structure coming down the east side. This subop was opened in hopes of finding intact architecture and to investigate an alignment of stones that was visible at the surface. Subop CC-13-K was a 2-x-2-m unit located north of Subop CC-13-G on the eastern slope of Structure A-23. Subop CC-13-K was opened to expand upon the architectural features found in Subop CC-13-G.

There is evidence for at least two different construction phases and a remodeling episode at the southern end of Structure A-23. The phases are discussed from oldest to most recent. The earliest documented phase of Structure A-23 is represented by a well-preserved doorway jamb (Lot CC-13-G-8) and wall (Lot CC-13-G-9) associated with an apparent floor Lot CC-13-G-10) in a room (Figure 4.7). The wall is oriented north-south and formed the eastern side of this earlier version of Structure A-23's southern end. The jamb is approximately 0.5 m wide and preserved to approximately 2 m high. It is constructed on an eroded plaster floor with an elevation of 118.6 m. This is all that is known

of this phase of construction; the southern side of the doorway was not found in the excavation units, and only a small area of the interior floor was exposed before excavations ceased. Given the height of the preserved portion of the doorway jamb, it is possible this early version of the building was vaulted. Excavations east of the door did not penetrate to the depth of the floor, so nothing is known about the exterior of the building from this phase. Because excavations did not penetrate the floor in the room, the age of this early phase is unknown.

The second construction event significantly modified the southern end of Structure A-23. It appears that the doorway was blocked off at its eastern edge with a wall (Lot CC-13-G-9) composed of roughly shaped stones that extended from the floor of the room to 1.15 m high. Only the western face of this wall was exposed in our excavations, but we interpret the wall to be perhaps a construction pen associated with a renovation of the exterior platform of the building. Inside the doorway and the room, west of this wall, the room was filled with 1.15 m of dry-laid cobble and boulder fill CC-13-G-7. The ceramics in the fill suggest a Late Classic 2 date for this phase of construction.

The fill and construction pen wall were then capped with a plaster floor CC-13-G-6 that covered the interior of the room and extended through the doorway onto an exterior platform. Excavations uncovered a step (Lot CC-13-G-4) associated with this platform near the eastern edge of Subops CC-13-G and -K (Figure 4.8). Composed of nicely cut stones, three courses high, this step extended from the southern edge of Subop CC-13-G to 3 m north, at which point it either ended or was no longer preserved.

The doorway jamb, which had originally been associated with a full-height masonry wall, was part of a half-height wall in this phase of the building (Figure 4.9). This suggests that either the earlier phase had not been vaulted

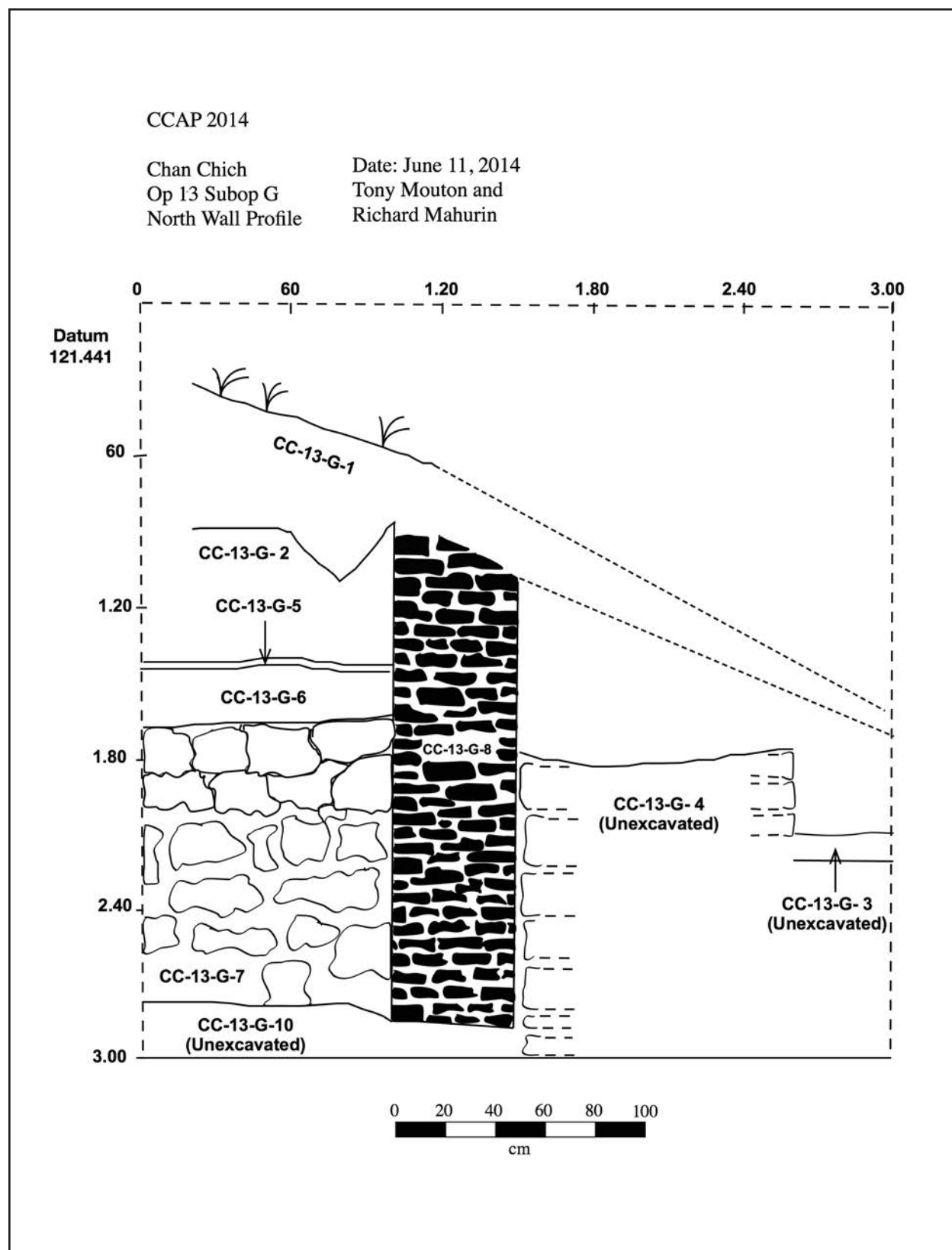


Figure 4.7 North wall profile of Subop CC-13-G.

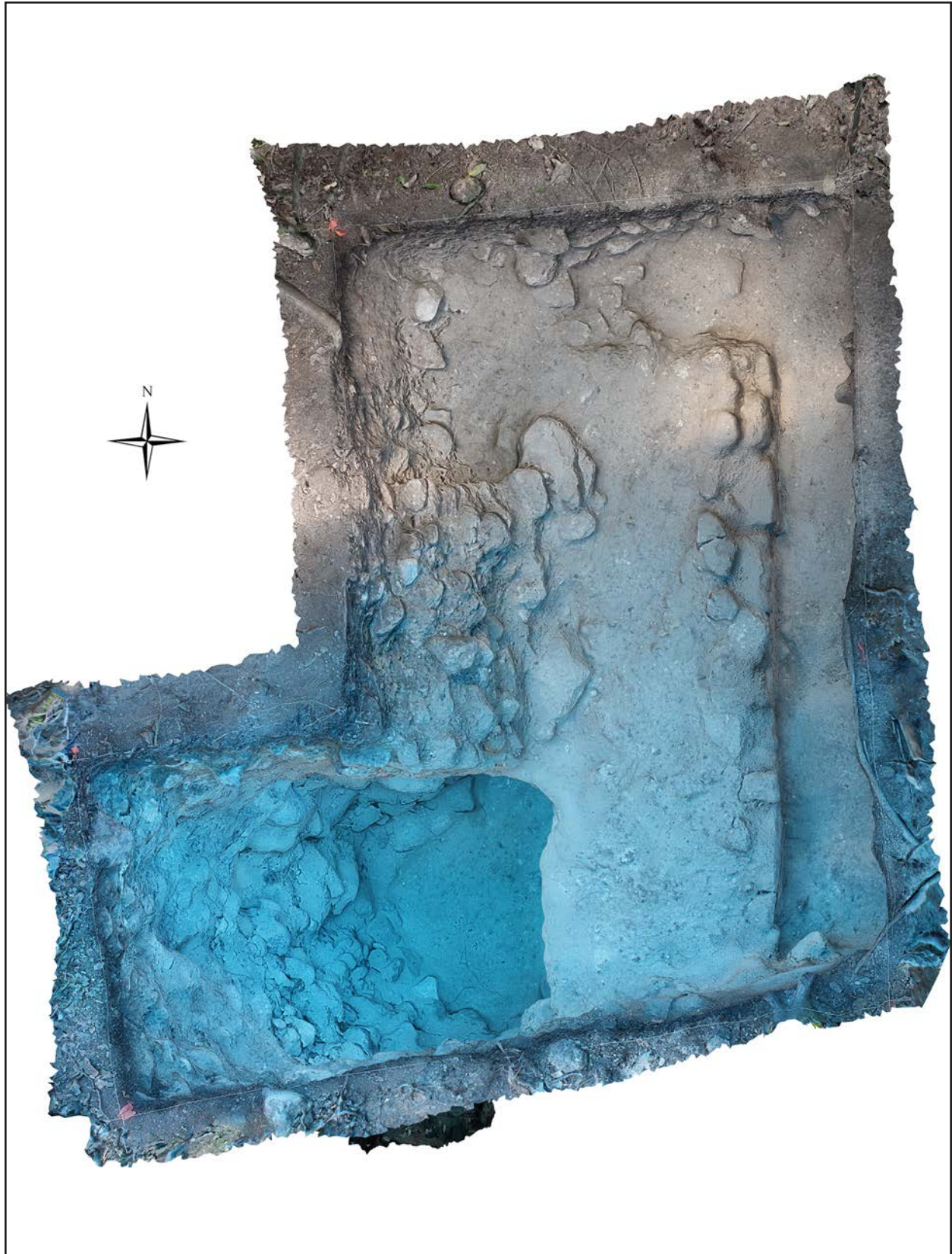


Figure 4.8. Orthophoto of architectural features in Subops CC-13-G and -K, overhead view





Figure 4.9. Photograph of the doorway jamb in Subop CC-13-G.

or that the vault was removed as part of the renovation because the newly created room—with its floor surface over 1.2 m higher than the earlier floor—would have been too low to have a vault. However, the demolition of a vaulted roof during the renovations might explain the high number of vault stones noted in other areas of the structure. The vault stones could have been recycled as construction material.

Excavations exposed the eastern face of the wall (CC-13-K-4) extending 0.5 m north of the doorway jamb before either cornering or simply becoming too poorly preserved to detect. The former alternative is more likely given the shape of the mound. This phase of the structure was remodeled at least once before abandonment. The floor in the room was covered in 1.3 m of dry-laid cobble fill, which

was capped by a poorly preserved floor. This floor was not recognized during excavations, but is clearly visible in the profiles of the unit. It appears to have extended from the western edge of the room's wall to the west, meaning a low step would have been present immediately inside the room. The material above the remodeled floor is interpreted to be entirely collapse debris.

The excavations at the southern end of Structure A-23 were challenging, but it is clear that the structure underwent at least two major construction episodes and one remodeling. The well-constructed eastern wall of the building was used in both phases, although the interior of the building must have changed considerably. With so little of the room exposed, the function of this end of the structure remains unknown.

### **Excavations on Structure A-25**

Excavations of Structure A-25 began with the placement of Subop CC-13-C on the centerline of the building. Subop CC-13-C was a 2-x-4-m unit starting at the base of the structure and extending 4 m up the incline on the west face of the mound. The suboperation was opened to potentially find a cache or other datable material, as well as to discern the architecture of the building. After excavating through collapse debris that contained several vault stones, an eroded plaster floor was encountered that covered the entire unit. The floor is not a flat surface, but instead subtly slopes up the incline of the building. Given the large size of the unit and the fact that there were not any architectural features other than the floor, we decided to narrow the scope of excavations before excavating through the floor (Lot CC-13-C-3). A 2-x-1-m subunit, was opened up inside of Subop CC-13-C. Directly underneath the floor was a layer of construction fill composed of small cobble rocks and about 30–40 cm thick. The ceramics from this fill date

this construction to Late Classic 2, ca. AD 700 to 800 (see Table 4.1). Beneath the fill was a second floor (Lot CC-13-C-4). This floor was a level surface unlike that of the first floor. Below Lot CC-13-C-4 was a thin (10 cm thick) layer of subfloor fill, then bedrock. The ceramics from this lowest level of fill include a mix of Late Preclassic and Late Classic 1 sherds, suggesting this first floor may date to ca. AD 600 to 700 (see Table 4.1). There were not any architectural features uncovered in Subop CC-13-C besides the plaster floors. It is likely that the unit was set so far to the west of Structure A-25, causing us to excavate primarily through collapse, thus limiting the ability to expose any architecture.

In an effort to link any architecture with the floor from Subop CC-13-C, Subop CC-13-E was opened adjacent to the east end of Subop CC-13-C. Subop CC-13-E was a 1-x-4-m unit, oriented east-west located on the top of Structure A-25. The northwest corner of this unit was aligned with the northeast corner of Subop CC-13-C. Based on architecture uncovered in this new unit, the excavations were expanded to the north with Subop CC-13-H, a 2-x-4 unit adjacent to the north edge of Subop CC-13-E. Similarly, Subop CC-13-F, a 1-x-5-m unit, was opened along the southeast corner of Subop CC-13-E to expose the architecture of the back (eastern) face of Structure A-25. The western meter of this unit overlapped with the eastern meter of Subop CC-13-E. The results of the combined excavations are described here. Underneath 25 cm of collapse debris, excavations revealed a north-south wall (Lot CC-13-E-4/-H-4/F-4), along the easternmost edge of the suboperations. This wall was only a few courses high (26 cm), but did contain faced stones. The wall is sitting atop a floor (CC-13-E-3/-H-3) surface that is fairly well preserved. This floor surface extends to the east under the wall, where it was exposed as Lot CC-13-F-3.

Excavations encountered an east-west wall (Lot CC-13-E-5) represented by an alignment of rocks on the south edge of the Subop CC-13-E. The southeast corner of the rock alignment appears to converge with the south edge of Lot CC-14-H-4. Excavations also exposed an inconspicuous rock alignment (Lot CC-13-E-6), located near the western edge of the unit and parallel to the east wall. This consisted of medium to large sized rocks and appeared to have no logical form or function pertaining to the architecture of the building, although we were able to determine that this seemingly disparate rock alignment extended across the combined units from south to north.

While the architecture on the front of the building was unclear, excavations in Subop CC-13-F documented a terrace platform (Lot CC-13-F-7) west and higher than the summit floor (Lot CC-13-F-6). The terrace face was only noticeable in profile. The face of the terrace had collapsed away, leaving only two rocks on top of each other in profile. To the west of this platform is a second floor (Lot CC-13-F-3) that is 8–10 cm higher than the terrace platform. To the east of the platform is a floor (Lot CC-13-F-6) that is approximately 20 cm lower than the terrace platform. Several bifaces were found along with ceramic sherds that are a part of the same vessel on the floor surface.

To gather stratigraphic information on the construction phases of Structure A-25, we excavated through a small portion (0.94 x 2.25 m) of the floor of Subop CC-13-H-3. The excavated portion of the floor became Lot CC-13-H-6. Directly underneath the floor is subfloor fill that gradually transitioned into larger rocks and voids. Ceramics from this fill include Late Preclassic through Late Classic 1 sherds. A second floor (Lot CC-13-H-7) was uncovered 20 cm below the construction fill; it contained a burned area on the east edge of the unit. The fill contained Late Classic 1-2 sherds. On the west

edge of the subunit, excavators encountered an alignment of large rocks (Lot CC-13-H-8) that is sitting on top of the floor. Further exploration of this feature clarified that the alignment does not continue westward and is indeed just a coincidental rock alignment within the fill. However, we discovered in the west profile of the expanded excavations several cut stones in an alignment, which may be part of the western platform face of the building. However, due to time constraints, we were not able to fully explore this alignment of rocks.

A midden (Lot CC-13-H-9) was found a few centimeters underneath the subfloor fill of Lot CC-13-H-7 (Figure 4.10). The midden consisted of copious amounts of *jute* shell, along with a few marine shells, ceramics, and lithics. The ceramics in this deposit were older than those above, dating to the Late Preclassic period. The matrix of the midden consisted

of dark soil that gradually turned lighter as we came closer to the bottom of the midden. The midden was 35 cm thick and overlaying a layer of probable original ground surface, which contained very little material culture and eventually became sterile. At this point, 70 cm beneath the uppermost floor (CC-13-H-6), the lot was arbitrarily terminated. The 15 ceramic sherds in this deposit (Lot CC-13-H-10) included a mix of Middle and Late Preclassic sherds.

## INTERPRETATIONS

### Interpretations of the Architecture of A-23

Structure A-23 is a low platform with a 9-m wide summit (Figure 4.11). Excavations uncovered portions of two rooms, on one the western side and a second on the eastern side of the structure. The rooms share a common floor



Figure 4.10. Photograph of subunit excavations in Subop CC-13-H with the buried midden, Lot CC-13-H-9) visible in the deepest part of the excavations, view to the southwest.



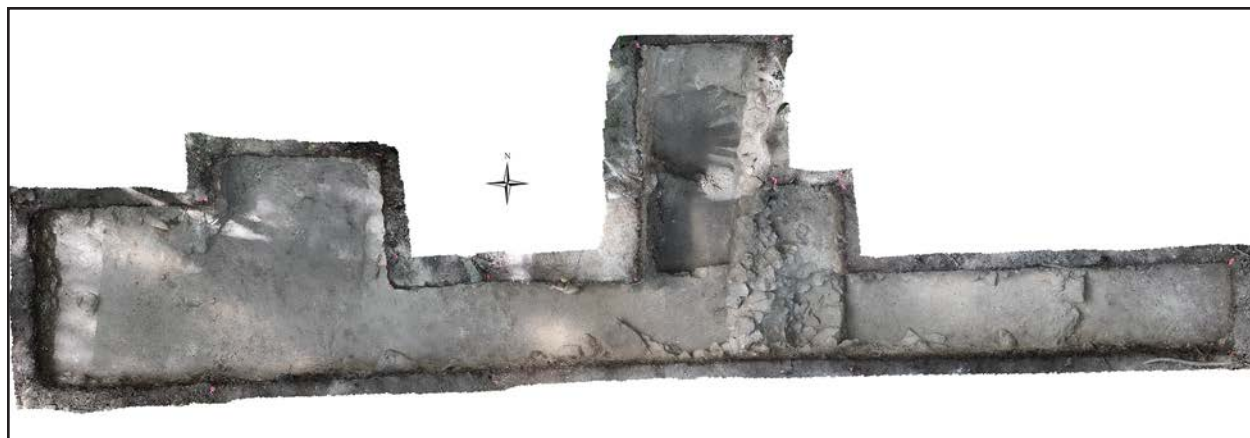


Figure 4.11. Closing orthophoto of Subops CC-13-A, -D, -I, -J, -L, -M, and -N, overhead view.

surface, and are defined by low masonry walls made of cut stones. Preservation of the walls varied, ranging from 42 cm to 87 cm high. The walls that were exposed were poorly preserved and in some instances, crudely constructed. Based on the amount of collapse debris, these walls presumably supported a perishable superstructure; the numerous vault stones that were discovered in various excavation units and during visual inspect of the mound were likely robbed from elsewhere—perhaps the structure at the southern end of the mound. Based on the ceramic analysis and ceramic data collected, the final phase of Structure A-23 was most likely constructed during the Late Classic period, but occupation and use of the structure continued into the Terminal Classic period. The structure on the southern end of Structure A-23 also fits this time frame, but without penetrating excavations into the earliest documented floor the age of the oldest exposed construction phase is unknown.

The two partially exposed rooms in the center of the mound are approximately 2 m wide; the back wall of the western room was not discovered, so the room's width is an estimate. In both rooms, dense deposits of burned matrix and artifacts provide clues as to the structure's function, which most likely served as a food preparation area. Evidence of a specialized food preparation area is abundant. Several manos

and metates were found alongside utilitarian water jugs and recycled spear points, which were used as knives. The two rooms could have functioned as kitchens for Courtyard A-3 or even the Upper Plaza.

On the southern side of the structure, excavations uncovered completely different architectural features. The architecture suggested excavations in Subops CC-13-G and -K uncovered another structure on the southern end of Structure A-23. With only two units on the structure, it is impossible to accurately estimate its size or form. However, the doorway jamb discovered was over 2 m tall suggesting an earlier version of the structure could have supported a vaulted masonry ceiling, which was not the case for the central part of Structure A-23. The architecture uncovered also suggests at least one room was present in the structure, which most likely sat on a platform serving as the base for the building. There is also evidence for at least two different major construction phases. During the first construction phase a plaster floor was built and had a wall and doorway jamb sitting on top of it. During the second construction phase the room was partially filled in and the floor surface raised by over a meter; this phase likely had mid-height walls as the foundation and a perishable structure on top or as the roof. It is possible that when the structure was filled in its stone ceiling was demolished and, the vault

stones were recycled and used elsewhere in the courtyard on Structures A-23 and A-25.

### **Interpretations of the Architecture of A-25**

As a part of the investigations of the Back Plaza, Structure A-25 was excavated to establish the form and function of the building. Excavations of Subops CC-13-E, -H, and -F yielded enough information to determine that we had uncovered part of a room on top of Structure A-25 (Figure 4.12). Both the east and south walls were low walls that presumably supported a perishable structure. The exposed walls were poorly preserved and at times poorly constructed. The east wall expanded the length of three units (3.2 m), however, until further excavations are conducted, we do not know whether or not the wall spans the entire length of the structure. Once we went through the floor associated with this room, we were able to determine that the

east wall does not continue below the floor. The north wall to the room was not uncovered so the length of the room is unknown. The west profile of Subop CC-13-H and the east profile of Subop CC-13-C, which are in the same alignment, contained pockets of construction fill and few cut stones. It is possible that just slightly outside the limits to our unit to the west of Subop CC-13-H is where the west wall is located. By placing Subop CC-13-E adjacent to Subop CC-13-C, it is possible we came through a doorway, thus missing the western wall. It is also probable, given the poor preservation in the Back Plaza that the west wall did not preserve at all. Further research will need to be conducted in order to establish the limits of the room.

Subop CC-13-F revealed two different floors separated by a terrace face on the east side of the structure. The westernmost floor (Lot



Figure 4.12. Orthophoto of architecture on Structure A-25 in Subop CC-13-H, overhead view.

CC-13-F-3) is associated with the east wall and the room that was uncovered on top of the structure. The surface to the east of the terrace (Lot CC-13-F-6) is likely a small patio or platform. It is possible that the building had several terraces, but without further excavations or comparable data from the west face of the building, that remains undetermined.

By excavating through the floor of the room on top of Structure A-25, we were able to expose earlier construction phases. Beneath the floor of Lot CC-13-H-3 is a second floor (CC-13-H-7). Since the east wall does not continue below Lot CC-13-H-3, the second floor surface represents an earlier construction phase with a different architectural configuration. Since there were not any subsequent floors uncovered, we can infer that Lot CC-13-H-7 is the earliest construction phase. This was then filled in with construction fill as a means to construct the final construction phase of the building. Beneath CC-13-H-7 was a midden dating to the Late Preclassic suggesting that Structure A-25 was possibly constructed on top of the midden in the Late Classic period.

The ceramic analysis from Subop CC-13-H shows a period of occupation from the Late Preclassic period through the Terminal Classic period. The room uncovered on top of Structure A-25 is dated to the construction during the Late Classic period and was the final phase of the building. Use of this room extended into the Terminal Classic period based on ceramics in the topsoil and collapse debris. The second floor underneath the room, Lot CC-13-H-7, was dated to the Late Classic and was probably the first construction phase. The ceramics from the midden were from the Middle to Late Preclassic suggesting that the Back Plaza was occupied, but Structure A-25 was not built until much later.

The layout of Structure A-25 and presence of rooms suggest it could have been used as a

residential area. The lack of utilitarian vessels and burned features certainly suggests Structure A-25 served a different function than that of Structure A-23, although determining its exact function given the data at hand is not possible.

## CONCLUSIONS

In summary, the 2014 CCAP excavations in the Back Plaza were successful in documenting the form, function, and chronology of Courtyard A-3 at Chan Chich and answering all the research questions previously proposed. Crews excavated fourteen suboperations including a 13 m long trenching of Structure A-23 and seven shovel tests.

Courtyard A-3 was built during a single construction phase for the courtyard itself, which consists of a plaster floor. Based on ceramic analysis and data collected, the single construction phase occurred during the Late Classic period. However, Courtyard A-3 may have been inhabited in the Middle or Late Preclassic period, but that was prior to the construction of any significant architecture. The peak of occupation for Courtyard A-3 was during the Late Classic period.

Structure A-23 contains two construction phases dating to the Late Classic period, although occupancy continued on into the Terminal Classic Period. Structure A-23 was built on a platform and contained several low walls that served as the foundation for a perishable roof. Structure A-25 also contained two different construction phases during the Late Classic period and continued to be occupied into the Terminal Classic Period. The architectural layout of Structure A-25 is less evident, but the structure was most likely built on a platform and contained several rooms and walls that served as the foundation for a perishable structure, similar to Structure A-23. However, both structures vary significantly in architectural form and function.



The presence of middens on or near structures was an important question proposed in the research design. Excavations uncovered a single midden on Structure A-25, while the shovel test project failed to locate any middens near the structures. Excavation in the Back Plaza also failed to discern any visible relationships between Courtyard A-3 and its surrounding structures and Courtyard A-4.

The material culture from Structure A-23 suggests that the structure served as a food preparation area, with numerous broken vessels, deer bones, an area containing burned

features, over a dozen manos and over half a dozen metate fragments, obsidian blades and flakes, bifaces and stone tools, and imported (broken) spears that were most likely reused as knives. While the function of Structure A-25 is less obvious, it may have served as a residential area for the inhabitants in the Back Plaza. To understand fully the function of Courtyard A-3, excavations must be conducted on Structure A-24. More excavations are necessary to understand in greater detail the form of Structure A-23 and form and function of Structure A-25.

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# RESULTS OF THE PRELIMINARY *SACBE* EXCAVATIONS AT CHAN CHICH

Ashley Booher and Carolyn Nettleton

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The 2014 season of the Chan Chich Archeological Project (CCAP) conducted the first excavations of the site's Eastern and Western Causeways (Figure 5.1). The Eastern Causeway is approximately 435 m long and the Western Causeway is approximately 380 m long. Both the Western and Eastern Causeways are elevated, although the Western Causeway is not as high. Unlike the Eastern Causeway, the Western Causeway has parapets along its margins. Both causeways are 40 m wide (Houk 1996) and converge in the Main Plaza directly in front of Structure A-1, a large tandem range building associated with the Main and Upper Plazas. Attached to the east side of Structure A-1 is the site's ball court. These architectural elements possibly formed a stage for processions along the causeways leading to public spectacles on or near Structure A-1; the Main Plaza would have been able to accommodate a large number of people to witness such spectacles (Houk 2014). A second component of this season's research on the processional architecture of Chan Chich was to begin investigations of two possible shrines, Structures C-17 and D-48, which are both similar in size and located at the ends of the two causeways.

## RESEARCH DESIGN AND METHODOLOGY

The 2014 *sache* excavations began on June 20, 2014, and spanned a four-week period.

Students participating in the Texas Tech University Field School in Maya Archaeology, along with several workers from Chan Chich Lodge, conducted the excavations. Project Director Brett A. Houk, Operation Director Ashley Booher, and Suboperation Director Carolyn Nettleton oversaw the excavations.

The primary objective of the 2014 excavations was to gather preliminary data on processional architecture at Chan Chich. The initial research questions were to assess the construction phases and ages of both causeways, to determine the architectural forms of the causeways, and to establish if there were any concentrations of artifacts along the edges of the causeways related to ritual processions. Research questions also addressed two small structures, Structures C-17 and D-48, which are both similar in size and form and are located at the termini of the Western and Eastern Causeways, respectively. We proposed to determine the form and function of both structures, and determine if any artifacts collected on or near the structures were associated with ritual processions or activities.

After conducting a visual survey of both causeways, we placed excavation units in areas with visible architecture. We proposed to place clearing units to look for artifacts swept to the edges of causeways, a strategy used with some success by Angela Keller (2006) in her work on the causeways at Xunantunich, once

Booher, Ashley, and Carolyn Nettleton

2014 Results of the Preliminary *Sache* Excavations at Chan Chich. In *The 2014 Season of the Chan Chich Archaeological Project*, edited by Brett A. Houk, pp. 91–110. Papers of the Chan Chich Archaeological Project, Number 8. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock.



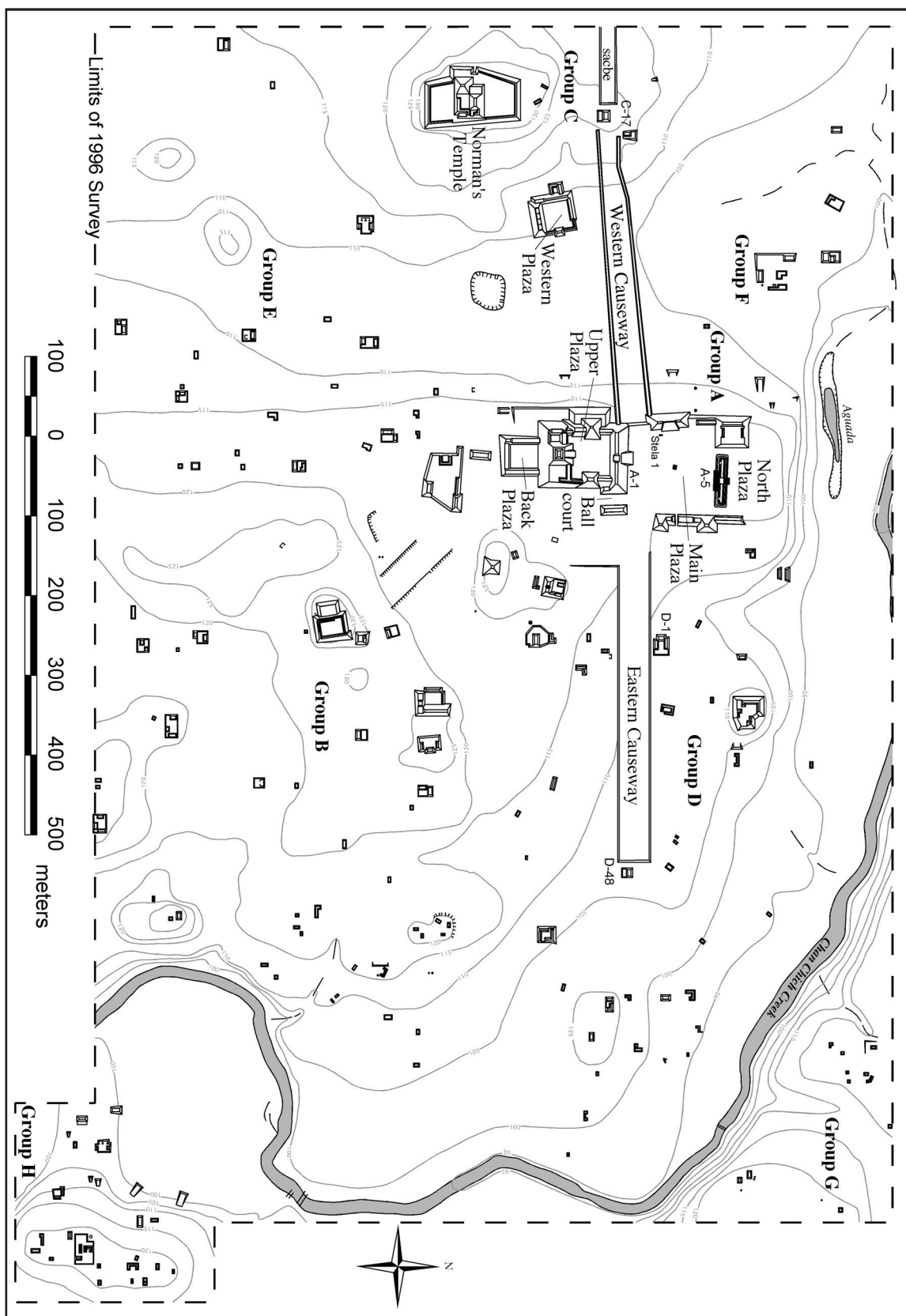


Figure 5.1. Map of Chan Chich showing the two causeways, the ball court, Courtyard D-1, and Structures C-17 and D-48, the two possible termini shrines.

the limits of the causeways were determined. Due to time constraints and unexpectedly wet conditions, we were not able to excavate any clearing units this season. In the 2015 field season, we will attempt to excavate clearing units, expecting that some will yield artifacts that had accumulated alongside the causeway associated with processions. Likewise, Structure C-17 was not excavated this season, but will be investigated in 2015.

Courtyard D-1 is located just to the north of the Eastern Causeway. Originally, the courtyard was not an element of the planned excavations for the season. Due to the close proximity between the courtyard and the Eastern Causeway, we decided to conduct testing excavations at the group. The excavations of the courtyard focused on the largest structure, Structure D-1, and the courtyard surface to obtain chronological data as well as the form and function of the courtyard, specifically as it related to the causeway.

The *sacbe* investigations were assigned Operation CC-14. All excavations and recording procedures followed the guidelines established in the *La Milpa Core Project Field Manual* (Houk and Zaro 2011). Initial suboperations were placed according to surface indications that suggested a potential to uncover the causeways' architectural features. Any additional suboperations were placed based upon new information discovered during excavations. Screening was initially conducted to collect fragmented pieces of ceramics, however, due to the low abundance of artifacts collected, the screening process was abandoned. All artifacts collected were sent back to the lab and stored. Unfortunately, analysis has not yet been conducted on this year's ceramics; it will be completed during the 2015 field season.

## SUMMARY OF EXCAVATIONS

This section describes the suboperations opened over the course of the excavation season. The section presents our excavations strategies and is organized according to the four distinct locations where excavations were conducted. Table 5.1 presents each suboperation and corresponding lots with a brief description.

Table 5.1. Suboperations and Lot Descriptions

Subop	Lot	Lot Description
CC-14-A	1	Humus
	2	Collapse Debris
	3	Wall
	4	Wall
	5	Collapse Debris
CC-14-B	1	Humus
	2	Construction Fill
CC-14-C	1	Humus
	2	Collapse Debris
	3	Wall
	4	Construction Fill
CC-14-D	1	Humus
	2	Collapse Debris
	3	Floor
	4	Floor
	5	Step
	6	Floor
	7	Wall
	8	Floor
	9	Floor
	10	Floor
CC-14-E	1	Humus
	2	Collapse Debris
	3	Construction Fill
	4	Wall
	5	Natural Ground Surface
CC-14-Ex	1	Humus
	2	Collapse Debris
CC-14-F	1	Humus
	2	Collaspe Debris
	3	Burial B-12

Table 5.1. Suboperations and Lot Descriptions  
(continued)

Subop	Lot	Lot Description
CC-14-G	1	Humus
	2	Collapse Debris
	3	Floor
	4	Step
	5	Step
CC-14-H	1	Humus
	2	Collapse Debris
	3	Floor
	4	Step
	5	Step
CC-14-I	1	Humus
	2	Floor
	3	Construction Fill
	4	Wall
	5	Floor

### Excavations of the Western Causeway

Investigations of the Western Causeway began by excavating a segment of the causeway to retrieve architectural data on the construction phases. Subop CC-14-E was a 1.5-x-4-m unit laid out in a north to south orientation to expose the northern causeway edge and the parapet; it was approximately 40 m from the edge of the Main Plaza (Figure 5.2). The location of the unit was placed to straddle the parapet and catch part of the causeway surface. The location for this unit was chosen because of visible architecture on the ground surface. Once excavations were underway, we realized that the northern edge of our unit was too close to the parapet edge, thus limiting our space to excavate. To remedy this, we laid out a 0.50-x-1-m extension (Subop CC-14-Ex) on the north edge of the unit. This not only allowed us to better expose the northern parapet, but also gave us an opportunity to excavate the northern edge of the causeway. Subop CC-14-E was partially excavated down to bedrock on the southeast side to obtain chronological data to compare

to the Eastern Causeway excavations. By excavating to bedrock, we were able to see the stratigraphy of the causeway and the sequence of events that lead to the construction of the causeway as shown by Figure 5.3. Importantly, the excavations determined that, at least where it enters the Main Plaza, the Western Causeway is elevated, though not as high as the Eastern Causeway. Houk (2003:60) had previously proposed that the causeway was a ground-level corridor defined by the two parapets. Garrison (2007:317) refers to these types of causeways as “sunken.” However, the 2014 excavations determined that the Western Causeway is actually an elevated surface with parapets on its margins comparable to the causeways at Xunantunich in form (see Keller 2006).

Subop CC-14-E comprised a thick layer of collapse debris that contained large rocks, which had to be excavated in order to uncover the causeway wall. Once the collapse debris was removed, we were able to expose the northern parapet (Lot CC-14-E-4) of the Western Causeway. The parapet measured 1.40 m thick and was preserved to a height of approximately 45 cm. It was constructed of limestone blocks that were slightly eroded away on the southern face of the parapet wall. The north side of the parapet was in much better condition than the south side. On the north edge of the wall, underneath the parapet, excavations exposed foundation stones for the causeway’s platform.

In the southern part of the unit, excavations uncovered a thin layer of marly matrix that was almost completely eroded away, below the collapse debris and extending underneath the parapet. Although recognizable during excavations, this layer was not visible in the profiles of the units; it is visible, however, beneath the parapet stones in the southern section of the unit. This layer of sediment directly aligns with the bottom of the parapet, suggesting that it is the deteriorated surface to the causeway. Beneath this surface was a



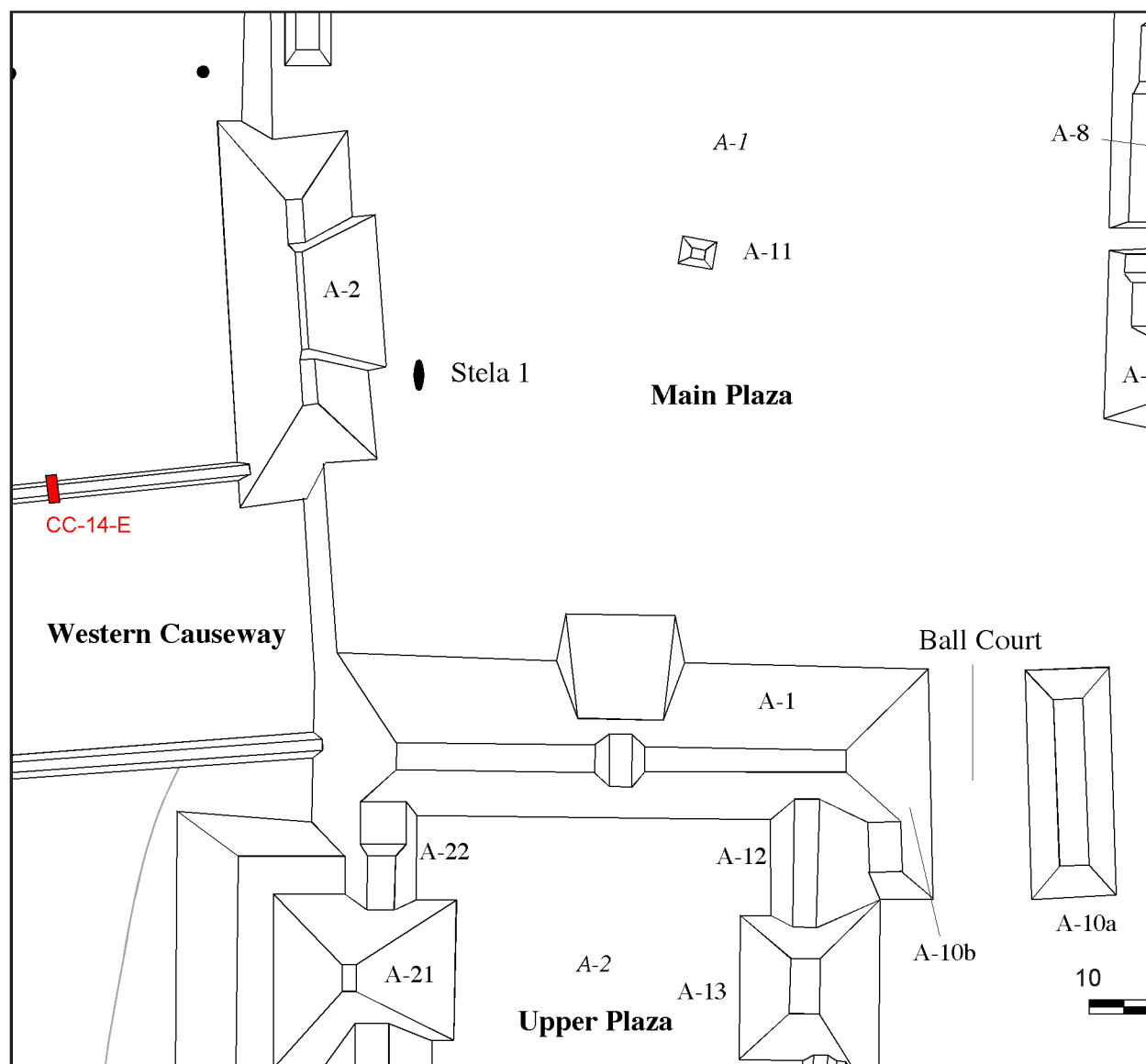


Figure 5.2. Location of Subop CC-14-E on the Western Causeway.

30–45-cm thick layer of construction fill (Lot CC-14-E-3), which lends more credence to the proposition that the layer of marly matrix was once the surface of the causeway. Beneath the construction fill was a buried soil overlying bedrock (Figures 5.3 and 5.4).

The Western Causeway yielded a considerably larger amount of artifacts as compared to the Eastern Causeway. Above the causeway surface and on either sides of the parapets, approximately 25 ceramic sherds and lithics were recovered along with two lithic tools and

two obsidian blade fragments. It is possible that these artifacts could be related to the function of the causeway since the artifacts were recovered so close to the surface and parapets. However, we cannot rule out the possibility that these artifacts could be from the fill of the collapsing parapets. Within the construction fill of the causeway, approximately 25 ceramic sherds were collected. While these artifacts do not relate the function of the causeway, they will aid in dating the causeway.

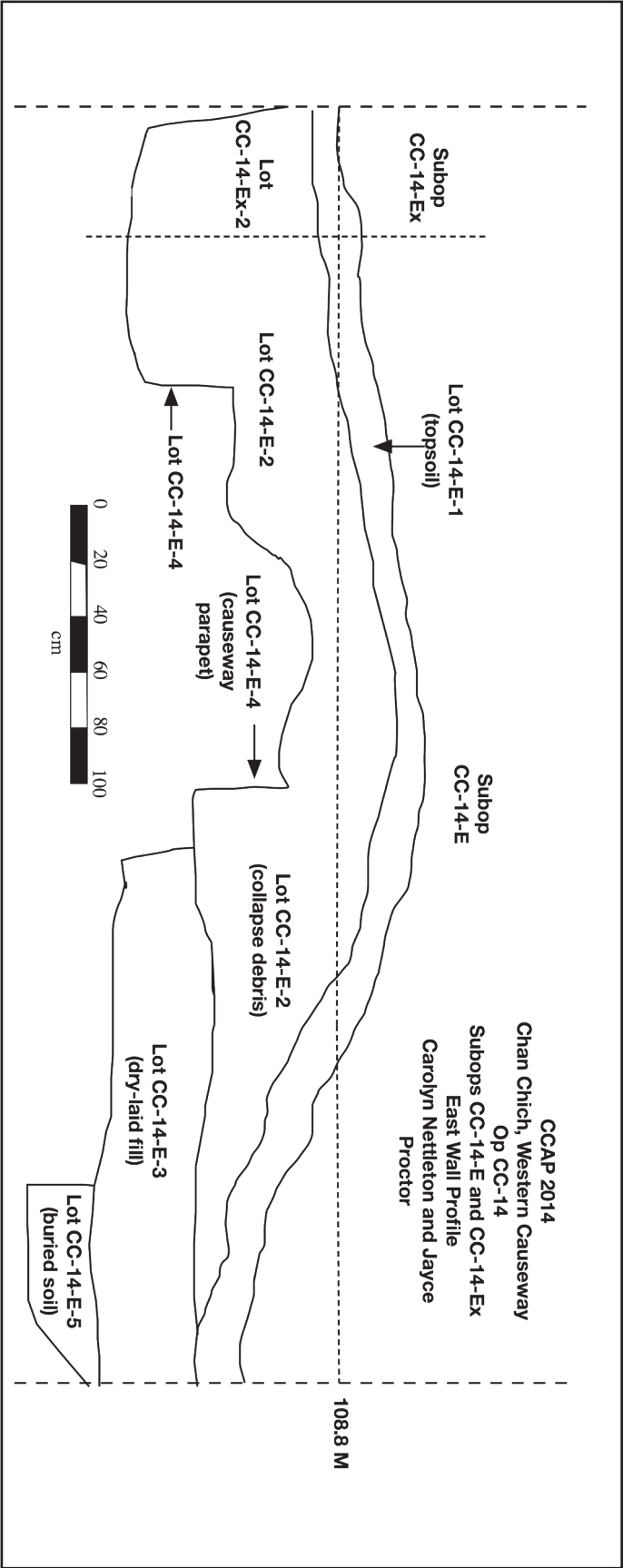


Figure 5.3. Profile of the eastern wall of Subops CC-14-E and -Ex.



Figure 5.4. Orthophoto of eastern wall of Subops CC-14-E and -Ex.

### **Excavations of the Eastern Causeway**

The investigations of the Eastern Causeway began with the opening of Subop CC-14-A to expose the architecture associated with the northern edge of the causeway. Subop CC-14-A was approximately 135 m east of the Main Plaza (Figure 5.5). The unit was located on the northern edge of the causeway and started at the causeway surface and extended 5 m to the north to catch the edge of the causeway and the ground surface to its north. We chose this location because there was visible architecture on the ground surface and the area was easily accessible. Subop CC-14-A was a 1-x-5-m long trench positioned roughly perpendicular to the causeway oriented 37 degrees east of north. After excavating through collapse debris, a possible platform face was discovered in the south end of the unit, which was designated Lot CC-14-A-3. The platform face comprised irregular stones that aligned parallel to the causeway. This rock alignment was only one course high in stones. Almost 1 m to the south of the first alignment was a second rock alignment (Lot CC-14-A-4) running in the same direction as the first. This rock alignment was better faced than the first, but was still crudely constructed. Unlike the first alignment, it was two courses high and taller than Lot CC-14-A-3, but it was also composed of uncut stones. The southernmost end of Subop CC-14-A, directly behind Lot CC-14-A-4, was construction fill (Figure 5.6) associated with the causeway's platform. The surface of the causeway was not preserved. Originally, every bucket of matrix was screened for potential artifacts, but due to the meager amount of artifacts found, the screening process was abandoned.

Apart from gathering architectural data for the causeway, a second aspect of the excavations was to determine the chronology of the causeway. Subop CC-14-B was placed in the approximate center of the causeway and excavated to bedrock to establish the causeway's

construction sequence. Directly beneath approximately 10 cm of topsoil, excavators encountered dry-laid construction fill. The construction fill averaged between 0.35 and 0.65 meters in thickness. The large discrepancy in the thickness of the construction fill was due to an undulating bedrock surface below the construction fill. From this suboperation, we were able to collect a substantial number of ceramic sherds and debitage along with one lithic tool. A charcoal sample (Sample CC-14-S02) was also collected; if processed this sample could assist in establishing an accurate date for the causeway's construction. These data indicate a single construction episode for the causeway, although the age of this construction remains unknown pending ceramic analysis and/or radiocarbon sample analysis.

To get a better understanding of the architecture and to help interpret what was excavated in Subop CC-14-A, we excavated a unit on the southern edge of the Eastern Causeway. Subop CC-14-C was a 1-x-3-m unit that was laid out perpendicular to the causeway located approximately 135 m east of the Main Plaza. At Subop CC-14-A we overestimated the limits of the causeway, thus making the unit too long and creating unnecessary volume to be excavated. For Subop CC-14-C, we shortened the unit by 2 m, which still gave us the ability to expose the architecture and the limits of the causeway without wasted effort.

The excavations of Subop CC-14-C yielded similar results as Subop CC-14-A. Toward the southern edge of the unit we uncovered a crudely built rock alignment that did not contain any faced stones. The alignment was three courses high with rocks simply stacked on top of each other. Behind the rock alignment to the north was construction fill. Once the platform face was exposed, excavations continued through the west portion of the face and through the construction fill to determine if there was a second rock alignment similar



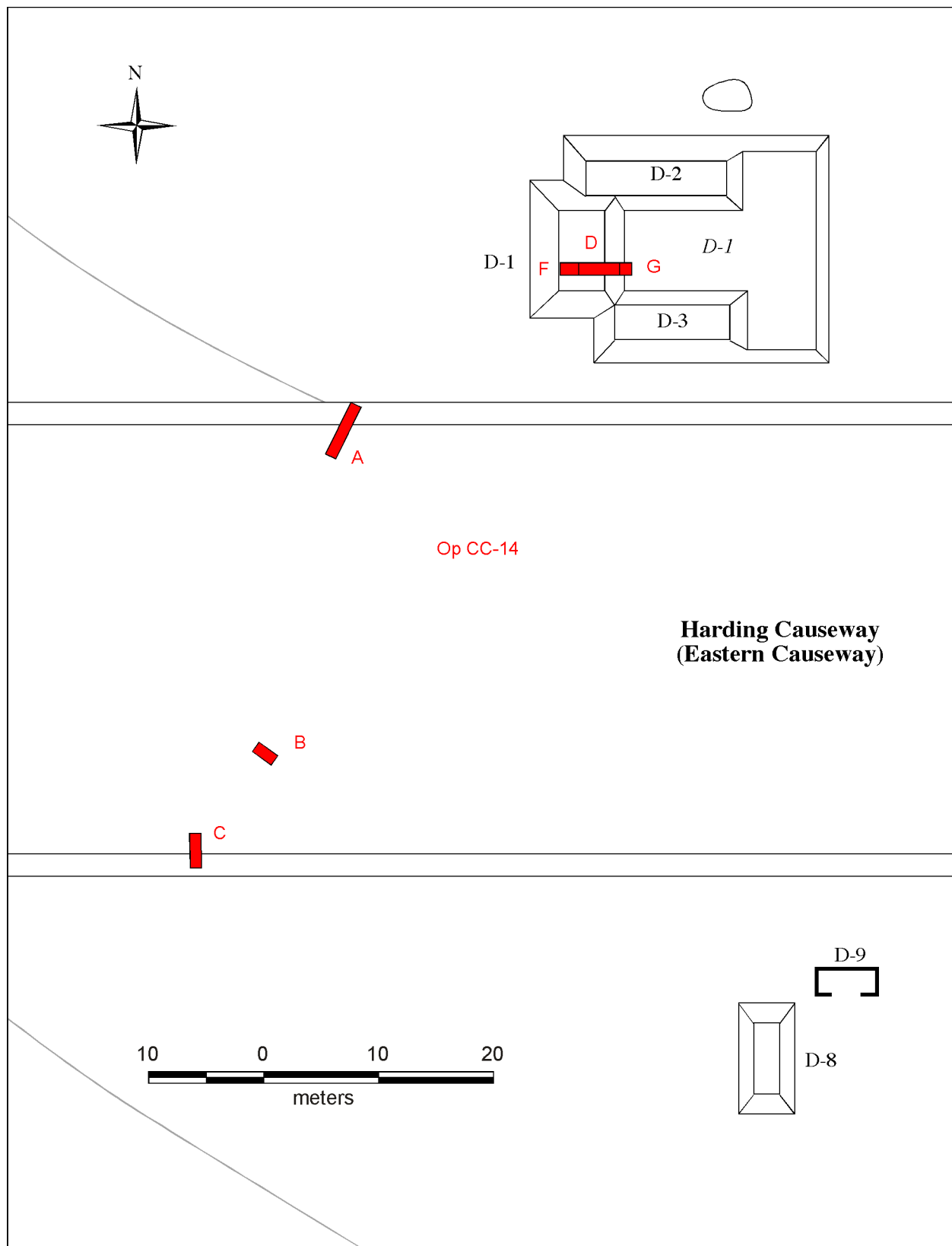


Figure 5.5. Map of excavation units on the Eastern Causeway and at Courtyard D-1.



Figure 5.6. Photo of Subop CC-14-A, facing south, showing northern edge of Eastern Causeway.

to the one in Subop CC-14-A. We excavated about 0.20 m into the construction fill before we determined that there was not a second rock alignment (Figure 5.7).

The architectural data collected from Subops CC-14-A and -C reveal the causeway's rudimentary constructed platform faces. These features functioned as retaining walls to contain the construction fill used to elevate the causeway. There is a slight difference between Subops CC-14-A and -C in the way the walls were constructed. In Subop CC-14-A we uncovered two rock alignments. It is possible that the two alignments formed one large wall, making the wall a little over 1 m thick to contain the construction fill. In

this scenario, Lot CC-14-A-3 is the northern side of wall and Lot CC-14-A-4 is the southern face of the wall. A second possibility is that the two alignments are independent of each other. The wall in Lot CC-14-A-4 is taller than the wall in Lot CC-14-3, thus these two alignments could have been stair stepped to help with stabilization. In Subop CC-14-C, we only came across one alignment of rocks, and directly behind that was the construction fill. The construction fill from both suboperations tells us that the causeway was elevated, similar to findings at the Western Causeway. Even though the architecture slightly varies between Subop CC-14-A and -C, we do know that the platform faces were crudely built, and their primary focus was to retain the construction fill. From Subop CC-14-B, we were able to determine that the Eastern Causeway had only one construction phase. Just below the ground surface is where the first, last, and only surface of the causeway would have been.

There are several distinct differences between the Eastern and Western Causeways in terms of the construction. The Western Causeway utilized parapets that were constructed from cut limestone blocks. The Eastern Causeway walls were crudely built with unfaced stones seemingly stacked on top of one another to build a coarse wall. The densities of artifacts found were also not consistent between the Western and Eastern Causeways. During excavations, investigations on the Eastern Causeway encountered little to no artifacts, while there was an abundance of artifacts collected from investigations on the Western





Figure 5.7. Photo of Subop CC-14-C, facing north, showing southern edge of Eastern Causeway.

Causeway. The difference between the scarcity of artifacts from the Eastern Causeway and the copious amount of artifacts found at the Western Causeway is still unclear, and further research may need to be conducted to reach a definitive conclusion. Despite the differences between the two causeways, a few similarities exist. The Western Causeway was built on top of construction fill, indicating that the causeway was elevated; the Eastern Causeway was found to be elevated using the same construction method. Excavations also concluded that there was only one surface to the Western Causeway, indicating one construction event; likewise, the Eastern Causeway had only one construction phase.

### **Courtyard D-1**

Courtyard D-1 is a small courtyard located just to the north of the Eastern Causeway

approximately 167 m east of the Main Plaza (see Figure 5.5). The courtyard consists of three small structures sharing a common platform. The largest mound, Structure D-1, runs north to south and faces the courtyard. Structures D-2 and D-3 are oriented east to west and face the courtyard, which is open to the east. Initially, Courtyard D-1 was not in the scope of the planned excavations for the season, but was investigated because of its proximity to the causeway.

### ***Structure D-1***

The excavations of Courtyard D-1 began with the opening of Subop CC-14-D on Structure D-1. We opened Subop CC-14-D to simultaneously expose the architecture of the structure and to determine the chronology of the courtyard. The unit was a 1.5-x-5-m trench starting from the top of the structure and



running to the base, including a portion of the courtyard surface. Excavations uncovered a well-preserved plaster floor (Lot CC-14-D-6) and the eastern wall (Lot CC-14-D-7) of Structure D-1 beneath a thick layer of collapse debris. The collapse debris included several vault stones, as well as one large cut stone (60 cm by 50 cm and 21 cm thick) and a carved drainage stone, both of which were found on the floor surface. The drainage stone, the first of its kind found at Chan Chich, is an elongated and slightly tapered limestone block with a 3 cm deep, concave channel carved down its length on one face. The exterior wall (Lot CC-14-D-7) of the building is well preserved and made of cut stones. The top stones of the wall had collapsed and fallen away, but the bottom three courses of the wall were still intact. The bottom of the wall has a 7-cm high footer, stones that are set a few centimeters outward from the wall, indicating that this is the exterior wall to the building. This is trait documented in other parts of the site including the Western Plaza (Harrison 2000), Norman's Temple courtyard (Ford and Rush 2000), and in the Upper Plaza (Herndon et al., this volume). The wall is 75 cm thick, and excavations uncovered the interior floor (Lot CC-14-D-8) surface of the room, approximately 0.17 meters higher than the exterior floor (Lot CC-14-D-6), in the western end of the unit. Figure 5.8 shows the relationships between each architectural feature along with the drainage stone and the large, collapsed rock laying on the floor surface.

The eastern end of Subop CC-14-D consists primarily of floors and steps. A step (Lot CC-14-D-5) is associated with the floor (Lot CC-14-D-6) and was very poorly preserved; it apparently stepped down to the final courtyard floor, Lot CC-14-D-3, which was inadequately preserved and impossible to recognize except in profile. Resting on top of Lot CC-14-D-3 and located in the eastern profile of the unit, were faced stones two courses high (see

below). Beneath Lot CC-14-D-3 excavations uncovered four floors of earlier construction phases that were constructed on top of each other, with only 1–3 cm of fill between each floor. Underneath the oldest excavated floor surface (Lot CC-14-D-10) is subfloor fill and construction fill with large rocks mixed into the matrix. Due to time constraints, we were not able to excavate to bedrock as previously planned before we had to close the unit. Excavations ceased at approximately 1 m below the modern ground surface.

In the west wall profile of Subop CC-14-D excavators noted an alignment of rocks that could have possibly been a cross wall that was partially excavated. On the northwest profile of the unit there are pockets of construction fill, which could indicate that there was a second cross wall on the northwest side as well. To expose these potential cross walls, we placed Subop CC-14-F adjacent to the western edge of Subop CC-14-D. Subop CC-14-F was a 1.5-x-2.25-m unit that was opened to not only expose the cross walls, but to also follow the floor from Lot CC-14-D-8 and to find the back wall of the building.

### ***Burial CC-B12***

Within the topsoil of suboperation CC-14-F, a large amount of artifacts were recovered on the surface. Approximately 25 ceramic sherds and pieces of lithic debitage were collected along with two stone tools and a marine shell. Unfortunately, we were unable to clarify the nature of the architecture or explain the apparent cross walls because immediately below the topsoil in what we assumed was collapse debris excavators encountered a burial. Designated Burial CC-B12 and Lot CC-14-F-3, this feature contained a single individual orientated east to west, with the feet located at the east and the skull at the west. The burial spanned almost the entire length of the suboperation. Most of the bones in the burial were fragmented, and



Figure 5.8. Orthophoto of Subop CC-14-D on Structure D-1, oriented west/southwest. The drain stone is the elongated cut stone in the left foreground of the image.

nearly impossible to identify. There was a total of a 156 fragmented bones including 28 teeth. The overall preservation of the bones was poor, which could be due the nature of how the individual was buried and the context of the burial. In general, the feet and hand bones proved to have the best preservation. The teeth that were collected did not show any signs of being modified. The only grave good found

associated with the burial was a broken, up-turned ceramic bowl with a black slip and three nubbin feet that was placed over the middle of the individual as depicted in Figure 5.9. Lauren Sullivan (personal communication, 2014) tentatively classifies the vessel as an Achote Black bowl, based strictly on the excavation photos and the context.





Figure 5.9. Close-up photo of single vessel with Burial (CC-B12) in Lot CC-14-F-3 on Structure D-1.

Due to the level of complexity and the corresponding amount of time it took to excavate the burial, we were not able to establish any definitive explanations for the architecture in Subop CC-14-F or to uncover the back wall to the building. However, it is possible the room that we partially exposed in Subop CC-14-D had been infilled by the Maya—or the building collapsed—and used as a platform for a later occupation of the courtyard. The burial, given its shallow depth, certainly postdates the major period of courtyard construction and use. Such a scenario would also explain the high density of artifacts on the summit of the mound.

#### ***Excavations in Courtyard D-1***

Subop CC-14-G was a 1.5-x-1.5-m suboperation placed adjacent to Subop CC-14-D on the east edge on the courtyard surface that was opened to follow the floor (Lot CC-14-D-4) and to expose

the floor that we excavated through (Lot CC-14-D-3). We also wanted to further expose the stones that are in the east profile of Subop CC-14-D and their possible relation to Structure D-1. There was a large amount of collapse debris from Structures D-1 and D-3 that had to be excavated through before we could uncover the floor surface. Excavators encountered the final courtyard floor in this new unit; this floor is represented by Lot CC-14-D-3, which was visible in the profile of Subop CC-14-D. This floor was poorly preserved and in some areas completely eroded away. We found a few ceramic sherds that appeared to be part of the same vessel, smashed on the floor, as well as an obsidian blade on the floor surface. In the southeastern corner of the floor, we collected faunal remains that included several teeth and fragmented pieces of a mandible. Lori Phillips identified the bones as deer. In the west end of the suboperation, we excavated the alignment



of rocks originally seen in Subop CC-14-D. This alignment sits on top of the floor (Lot CC-14-G-3) as seen in Figure 5.10. Once the collapse debris was removed, the stones then fell out of place and had to be removed. There was a similar alignment of rocks located in the south profile that also sat on top of the floor (Lot CC-14-G-3). This alignment presumably is the base of the Structure D-3 platform or perhaps a step associated with the structure.

***Preliminary Interpretations of the  
Architecture at Courtyard D-1***

Possibly two construction phases were uncovered for Structure D-1, with earlier phases of the courtyard floors uncovered. The ceramics have not yet been analyzed; therefore we cannot conclusively date the courtyard architecture as of yet.

Starting from the east with Subop CC-14-G, the alignment of cut stones (Lot CC-14-G-5) is a step that separates the southern edge of the courtyard and the platform of Structure D-3. The cut-stone alignment on the eastern edge of the suboperation (Lot CC-14-G-4) is an earlier step from Structure D-1 that is associated with floor CC-14-D-4. Similar to the south step, the east step separates the courtyard surface from the Structure D-1 platform.

Step CC-14-G-4 was covered over with a plaster surface (Lot CC-14-D-3) and a new step (Lot CC-14-D-5) was constructed to replace the previous step. This new step elevated the exterior platform landing (Lot CC-14-D-6) of Structure D-1 above the courtyard floor. The exterior floor (Lot CC-14-D-6) was probably a patio or small platform to the building that rolls up to the exterior wall of the building. To the west of the exterior wall is the interior floor of the building (Lot CC-14-D-8). This floor is 0.17 m higher than the exterior floor, suggesting that somewhere on the building, possibly at a doorway jamb, there is a step up to the interior floor. We did not explore the interior of the room because of Burial CC-B12.

Due to the unusual nature of where the burial was found and the construction fill surrounding the burial, we believe that this was an intrusive burial. It is possible that Structure D-1 was at one point filled in, and a platform constructed on top to support a new building with a thatched roof. The occupants of this building, living on top of the structure, may then have cut into the platform floor to bury the individual. This would explain the large amounts of construction fill surrounding the burial. Further excavations are needed to better understand the architecture of the building.



Figure 5.10. Orthophoto of the eastern profile of Subop CC-14-D.

### Structure D-48

As part of the initial investigations into the processional architecture of Chan Chich, two suboperations were opened at Structure D-48. Structure D-48 is a small, south-facing shrine

structure located 450 m east of the Main Plaza at the end of the Eastern Causeway (Figure 5.11). The shrine structure also has a small platform on the south face of the structure.

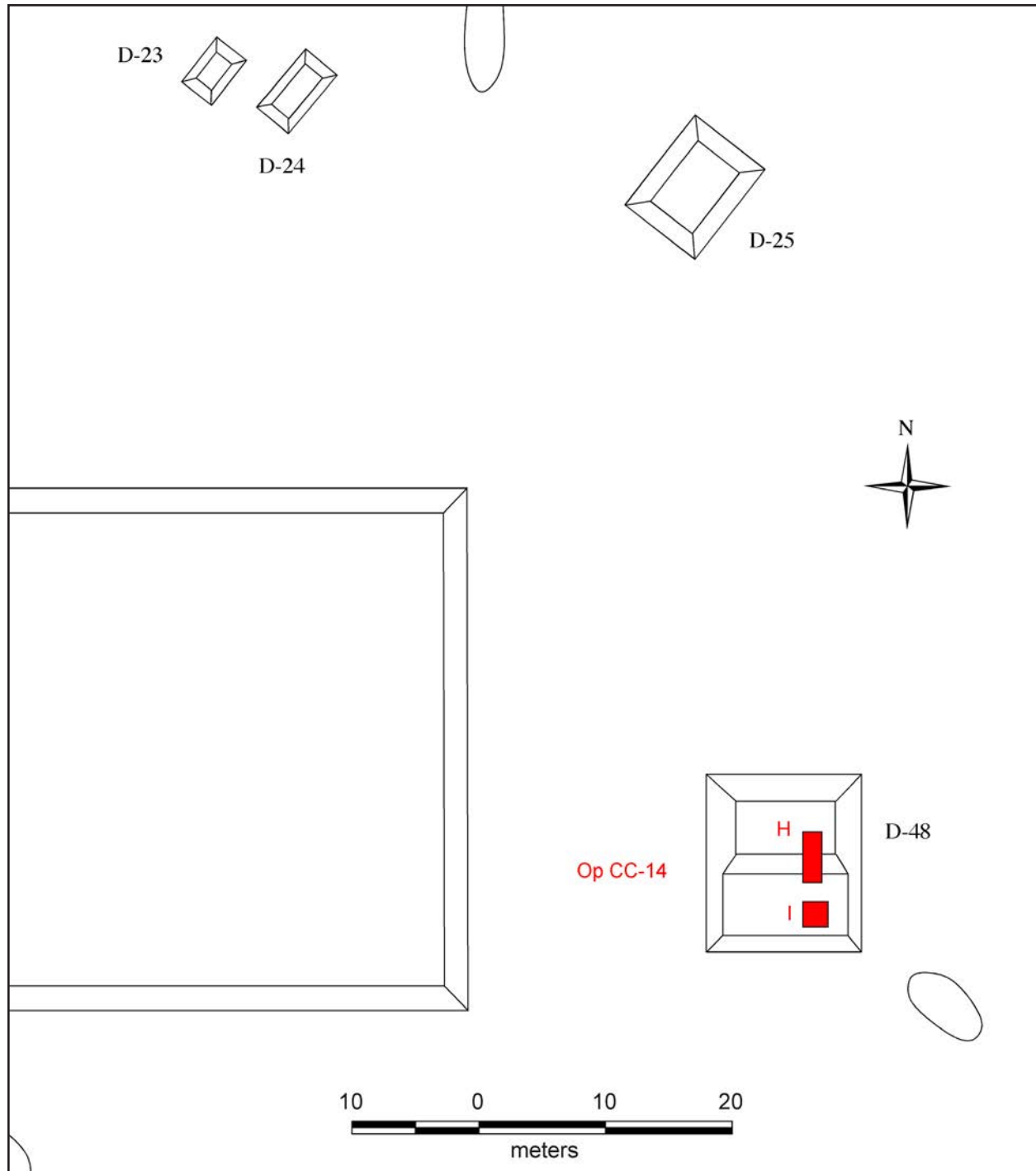


Figure 5.11. Map of excavations on Structure D-48.

### **Excavations**

Subop CC-14-H was a 4-x-1.5-m unit on the east end of the south face of Structure D-48, extending from the southern platform up the incline of the mound. This suboperation was opened to reveal the architectural form of Structure D-48's south face. Excavations followed an eroded plaster surface (Lot CC-14-H-3) beneath the collapse debris north into the unit, until the foot of a short unexcavated terrace (Lot CC-14-H-4) and a plastered, uneven horizontal surface, upon which, farther north, rested an alignment of faced limestone blocks interpreted to be a step (Lot CC-14-H-5). While the poorly preserved floor surface at the south end of the unit (Lot CC-14-H-3) had suffered some erosion and was not completely smooth, the terrace built upon it was better preserved, though still uneven and somewhat undulating. Excavations did not encounter

collapsed limestone blocks south of the Lot CC-14-H-5 alignment, blocks immediately on top of the Lot CC-14-H-5 alignment, or blocks stacked above the alignment in the West or East profiles, but additional excavations to the north are necessary to ascertain with certainty that the alignment of faced limestone blocks (Lot CC-14-H-5) on the incline of Structure D-48 corresponds to a step, rather than the foundation of a collapsed wall. Due to time constraints, the collapse debris (Lot CC-14-H-2) was not completely excavated north of this step (Lot CC-14-H-5); at the conclusion of the field season there remained an unexcavated 1-x-1.5-m portion of collapse at the north end of the unit (Figure 5.12).

A second suboperation was opened at the base of Structure D-48. Subop CC-14-I was a 2-x-2-m unit oriented north-south, situated 1 m south of Subop CC-14-H. This unit was opened



Figure 5.12. Closing of Lot CC-14-H-5 showing Subop CC-14-H, lots, and unexcavated area, view to the west.



to investigate the surface and construction sequences of the platform extending to the south of Structure D-48. The humus layer (Lot CC-14-I-1) was excavated over the entire unit averaging a thickness of approximately 10 cm. This lot contained a remarkably high concentration of ceramic fragments (including large vessel rim sherds, large body sherds, and one circular ceramic disk approximately 2 cm in diameter that may be a gaming piece), a high concentration of debitage, several fragments of obsidian blades, several bifacial tools, and three large pieces of a ground stone metate found scattered in the lot that were shown to fit together (see Table 5.2). Ceramic analysis is pending; no relative or absolute dates are yet available for this assemblage of artifacts.

The sub-floor construction rubble of a completely eroded floor (Lot CC-14-I-2) was found beneath the humus layer. A substantially smaller amount of artifacts were collected from this lot as compared to the humus layer, though material culture was still pervasive (ceramic sherds, lithic tools, debitage, obsidian blade fragments), which contributed to the retrospective discovery of the eroded, almost imperceptible, floor. Correlation between the closing elevations of CC-14-I-2 and the opening elevations of CC-14-H-3 also

aided in the discovery of this eroded floor. A thick layer of large dry-laid construction fill (CC-14-I-3) was found beneath the eroded floor (Lot CC-14-I-2). The construction fill also contained a high number of lithic tools (particularly bifacial), as well as high numbers ceramic sherds (particularly large vessel rim sherds), debitage, and obsidian fragments. On the south end of Subop CC-14-I, a poorly preserved and very rough, uneven surface (Lot CC-14-I-5) was uncovered beneath the dry-laid construction fill. Though unexcavated, this surface (Lot CC-14-I-5) was found to be penetrable and not representative of bedrock. About midway through the unit, the surface of Lot CC-14-I-5 ran into an architectural feature with a smoothly plastered vertical face cutting diagonally across the unit on the north end (Figure 5.13). It was uneven and poorly preserved on its horizontal face. Due to poor preservation and the small area of the unit, we were not able to determine if Lot CC-14-I-4 was a wall, step, or terrace. It is possible that Lots CC-14-I-4 and CC-14-I-5 represent an earlier form of architecture on Structure D-48 that was subsequently built upon, but we cannot know for certain until further research is done on the structure. Due to time constraints, excavations of Subop CC-14-I ended before it was possible to retrieve complete stratigraphic data for the

Table 5.2. Artifact Counts For Subops CC-14-I and -H

Lot	Lot Description	Ceramic Sherds	Lithic Tools	Obsidian Fragments	Debitage	Metate Fragments
CC-14-H-1	Humus	0	0	0	1	0
CC-14-H-2	Collapse Debris	25	1	0	25	0
CC-14-H-3	Floor	0	0	0	0	0
CC-14-H-4	Step	0	0	0	0	0
CC-14-H-5	Step	0	0	0	0	0
CC-14-I-1	Humus	200	4	7	50	3
CC-14-I-2	Floor	1	1	5	1	0
CC-14-I-3	Construction Fill	100	10	0	25	0
CC-14-I-4	Wall	0	0	0	0	0
CC-14-I-5	Floor	0	0	0	0	0

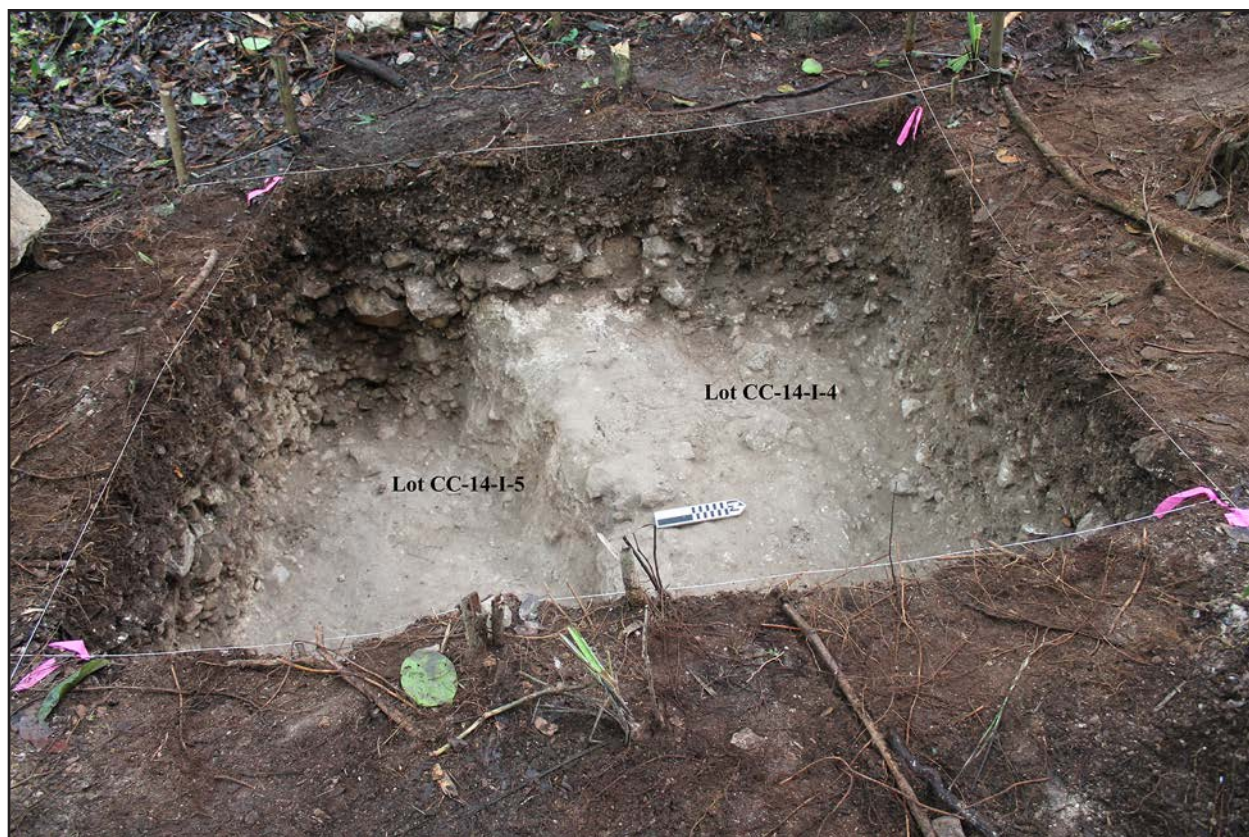


Figure 5.13. Closing photograph of Subop CC-14-I.

construction sequences of Structure D-48's southern platform to bedrock.

### ***Surface Finds***

Half of a ground stone metate (Lot CC-14-SF-1) was found on the east side of Structure D-48 to the northeast of Subop CC-14-H. Upon inspection, it was not found to have a relationship with the metate pieces found in Subop CC-14-I-1. A visual survey of the rest of Structure D-48 and the area immediately surrounding it did not reveal any other surface finds.

### ***Discussion***

Few definitive conclusions can be drawn about the architecture of Structure D-48 from this season, due to the limited scope and limited resulting data of initial excavations. Several architectural elements cannot yet be defined

without further research into the surrounding architecture and construction. A few inferences are, however, possible.

The correlation in depth between the bottom of the eroded floor (Lot CC-14-I-2) and the opening of the poorly preserved plaster surface (Lot CC-14-H-3) only 1 m north of Subop CC-14-I leads us to the interpretation that Lot CC-14-I-2 contained a completely eroded floor. The abundance of material culture above and at the bottom of Lot CC-14-I-2, (particularly ceramic sherds) and the presence of construction fill immediately under Lot CC-14-I-2 also support this interpretation. Lots CC-14-I-5, CC-14-I-4, CC-14-H-3, and CC-14-H-4 may represent a series of terraced platforms, steps, or a combination of terraces and steps leading up to Structure D-48. Further excavations are necessary to determine the architectural function of these features, and if perhaps this

tiered pattern continued up the structure incline in a series of steps to a raised platform, or if perhaps these architectural features represent isolated structural elements from a previous phase beneath a platform resurfacing upon which features such as the alignment CC-14-H-5 contributed to the construction of stone rooms. While the concentrated array of material culture (ceramic sherds, a possible ceramic game piece, bifacial lithic tools, obsidian fragments, and metate fragments) indicates conspicuous and varied activity at this structure, pending ceramic analysis and the findings of further excavations may serve to confirm ritual activity at the site. Likewise, further excavations at Structure D-48 will help to determine the function and interrelationship of architectural features.

### **CONCLUSIONS AND FUTURE RESEARCH**

This season's *sacbe* investigations provided a good foundation on which to construct the design for the 2015 season. Although we were not able to complete certain aspects of our initial 2014 research design and have many questions left unanswered, these questions can be incorporated into next season's research

goals. In total, eight suboperations were opened in four distinctly different locations. Initially, suboperations were placed to investigate architectural features visible on the ground surface. Subsequent suboperations were opened to answer questions that arose during the excavations.

During the 2015 field season, further excavations will be initiated at Courtyard D-1, as well as Structure D-48, to attain a more complete understanding of the architecture and their relationships to the causeway. Next year's investigations will also include clearing units along the Eastern and Western Causeways to look for evidence that processions took place along the causeways. We will also locate and excavate Structure C-17, the proposed shrine at the terminus of the Western Causeway to determine its architectural form and function and specifically how it relates to Structure D-48, the proposed shrine at the terminus of the Eastern Causeway. Finally, the completion of the ceramic analysis from this year's season (along with ceramic analysis from the 2015 season), will allow us to accurately date the causeways, shrine structures, and Courtyard D-1.

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# RESULTS OF THE 2014 FIELD SEASON OF THE BELIZE ESTATES ARCHAEOLOGICAL SURVEY TEAM

David Sandrock and Mark D. Willis

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During the 2014 field season, the Belize Estates Archaeological Survey Team (BEAST) conducted pedestrian survey on the Gallon Jug and Laguna Seca properties in northwestern Belize. Operating under the permit issued to the Chan Chich Archaeological Project (CCAP), the primary objective of BEAST is to update the inventory of sites in the permit area, a task originally undertaken by the Rio Bravo Archaeology Project (RBAP) directed by Thomas Guderjan (Guderjan et al. 1991). To complete this task, BEAST surveyed along seismic lines, revisited sites previously recorded by other projects, and conducted targeted survey after consulting local informants.

Survey crews, led by the senior author, conducted pedestrian survey along pre-existing lines cut by American Seismic in 2012 and 2013. These lines were originally cut to carry out exploratory studies in an attempt to discover subsurface petroleum deposits. Thanks to the cleared and mostly easy-to-access nature of the lines, archaeological survey crews were able to cover large portions of the permit area relatively quickly. Due to the rapid rate of survey afforded by the lines and the relative lack of previous, intensive archaeological surveys conducted on the property, these essentially random samples allow for a more in-depth examination of the scale and intensity of Pre-Columbian and historic occupation in the immediate area than previously possible.

More specifically, BEAST's primary research aims are to investigate Maya occupation in terms of its scale and density, and to study the interplay between settlement patterns and environmental and topographical factors. Data collected by BEAST can be compared to previous studies in the general vicinity of the project area, and will feature prominently in the senior author's master's thesis.

Following the successful aerial data collection in the Saturday Creek Extension area by the junior author and Chet Walker in early 2014 (Harrison-Buck et al. 2014), a series of Unmanned Aerial Vehicle (UAV) flights was flown in the Gallon Jug project area during the 2014 BEAST season. An open pasture located just east of the Gallon Jug sawmill was an ideal location to test the utility of the UAV, as several thousand hectares have been denuded of tall vegetation for cattle grazing and other agricultural pursuits. This cleared area provided excellent visibility, which allowed the UAV to map the ground surface in great detail.

This chapter provides an overview of the project area's physiography and previous research, as well as BEAST's survey methods. The findings of each avenue of survey precede a discussion of this season's progress. In addition, all visited and newly-recorded sites are presented in the second update to the study area's site inventory.

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2014 Results of the 2014 Field Season of the Belize Estates Archaeological Survey Team. In *The 2014 Season of the Chan Chich Archaeological Project*, edited by Brett A. Houk, pp. 111–129. Papers of the Chan Chich Archaeological Project, Number 8. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock.

## STUDY AREA

The entire project area is situated on Gallon Jug Ranch and the Laguna Seca parcel, two former properties of the Belize Estate and Produce Company (Figure 6.1). Gallon Jug Agribusiness (GJA) had overseen the 133,000-acre Gallon Jug property since the 1980s, conducting agricultural ventures (cattle, coffee) and sustainable timber harvesting until 2013 when Bowen and Bowen, Ltd. sold roughly 105,000 acres of the Gallon Jug property to Forestland Group, a part owner of Yalbac Ranch, the neighboring property to the south. This recently sold plot is now known as Laguna Seca (Sandrock 2013). The permit area also includes a buffer around Chan Chich that extends onto Yalbac Ranch, although that area

has not been investigated by BEAST (see Houk and Zaro, this volume).

## PREVIOUS INVESTIGATIONS

The first archaeological work on the former Gallon Jug Ranch was conducted by RBAP in 1987, when the project visited the Chan Chich ruins during clearing operations (Guderjan et al. 1991). RBAP returned the following year, initiating the first season of the project's surveys (Guderjan et al. 1991). Guderjan's (1991) team mapped the Chan Chich site core and documented many of the looter's trenches in the Main and Upper Plazas. In 1990, during the second season of the regional project, Guderjan (1991) returned to Chan Chich, expanding the site map and recording some

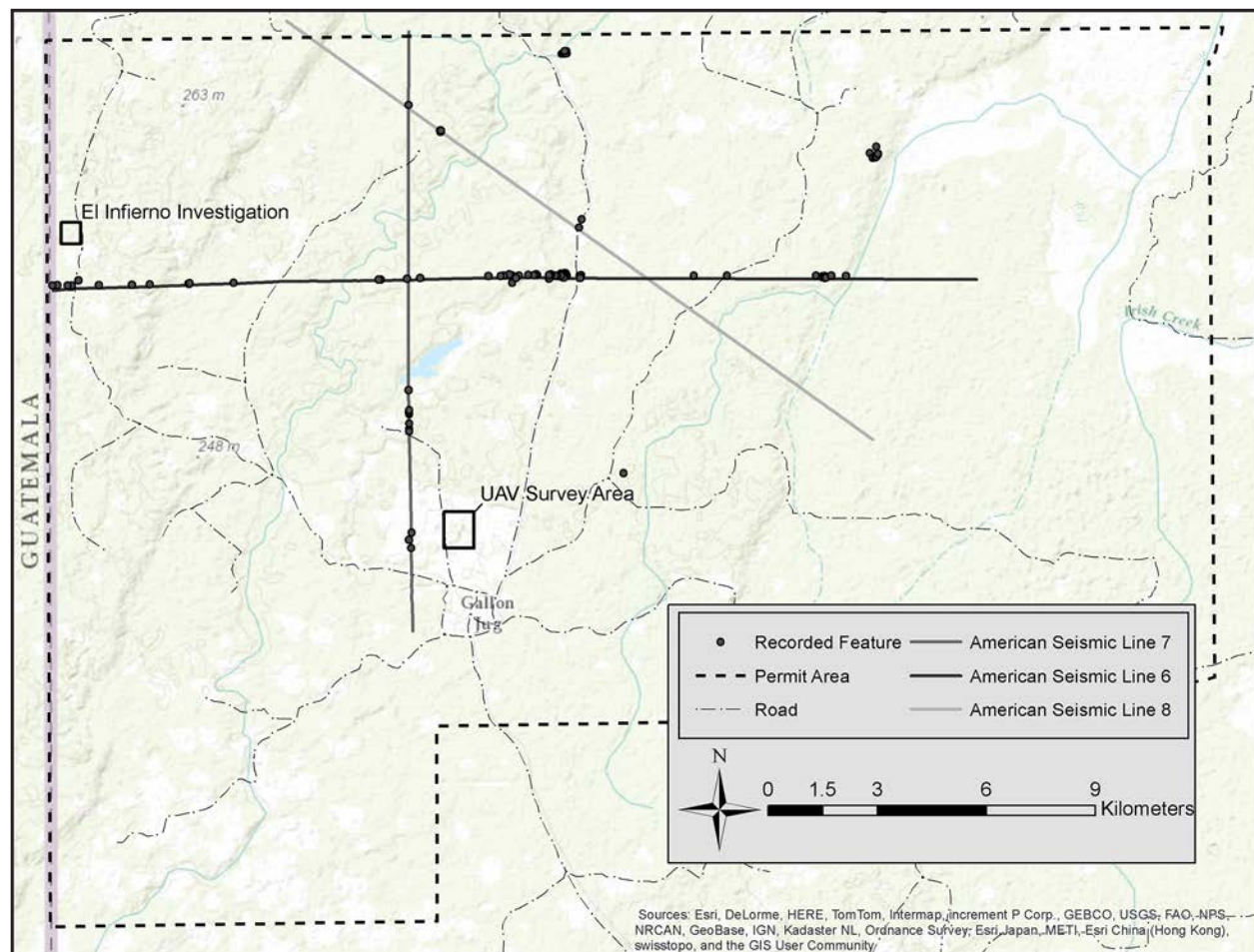


Figure 6.1. Map of the CCAP and BEAST permit area showing locations of surveys conducted in 2014.



newly discovered features. In addition to their work at Chan Chich, RBAP also conducted minor excavations around the site of Gallon Jug, reconnaissance survey, and visited many sites on the surrounding properties (Guderjan et al. 1991; Yaeger 1991).

In August 1995, Dr. Fred Valdez, Jr. led a Programme for Belize Archaeological Project (PfbAP) survey team to map walking trails around the site core at Chan Chich (Houk et al. 1996). In 1996, CCAP's first season, Houk and Robichaux (1996) mapped a 1.54-km<sup>2</sup> block around the Chan Chich site center, recording structures, elevation, and vegetation types. In the following season, CCAP conducted the first excavations at the site in the Upper and Main Plazas (Houk 2012a). Excavations continued into the 1998, 1999, and 2001 field seasons (Houk 2012a).

Hubert Robichaux subsequently investigated Punta de Cacao in the early 2000s, mapping the site core and conducting excavations (Robichaux 2002, 2005; Pruett 2003). PfbAP archaeologists returned to the Gallon Jug property in 2006, when Cackler et al. (2007) re-located the large site of Qualm Hill and a historic scatter near Cedar Crossing (see discussion of Qualm Hill Camp, in this chapter).

In 2012, Houk (2012a) re-initiated the CCAP after an 11-year hiatus. BEAST was added as a component of the project in 2013, and the senior author led BEAST crews in the first large-scale archaeological survey undertaken on the property. During its first season, BEAST crews recorded four new sites and completed over 40 km of transect survey (Sandrock 2013).

## **METHODOLOGY**

The following section is a modified version of the methodology in the 2013 BEAST field report (Sandrock 2013). In 2012 and 2013, American Seismic cleared 13 lines on varying

headings as part of exploratory studies to prospect for subsurface petroleum deposits (Figure 6.2.). Since these lines were pre-cut, mostly in fair condition, and relatively easy to access, BEAST crews were able to quickly inspect large swaths of the permit area.

Much of the survey area is forested, but all weather roads and logging roads provide access to some areas. Many of the roads on the property were originally cut by logging operations and are typically two-track dirt (mostly mud when it rains) roads approximately 5 m wide. Using these existing roads and a beastly Toyota HiLux dubbed "La Dinosauria" to gain access, BEAST conducted pedestrian survey on over 32 km of cut lines during the 2014 field season. In addition to these transect surveys, other areas on the property were targeted based on the aid of local informants and past archaeological recordings. BEAST crews typically consisted of the lead author, Josimar Magaña (our field guide), and one student.

Using the cut lines as baselines, the survey corridor included the areas visible to the either side of the baselines. Range of visibility on the transects varied based on vegetation, but survey crews encountered a range between 10 and 30 m in each direction. On average, the visible survey corridors were approximately 28 m wide, matching the expected 14-m visibility to either side of a line described by Robichaux and Houk (1996). BEAST recorded all structures within the transect, in addition to any other structures visible from mapped mounds, regardless of their visibility from the transect (Sandrock 2013).

After identifying a structure, crews used a GPS receiver to record its location, established likely boundaries for the structure, and mapped the structure using a 50-m fiberglass tape and Suunto KB-20 compass. To better examine shapes of recorded structures, crews used machetes to clear vegetation before mapping.

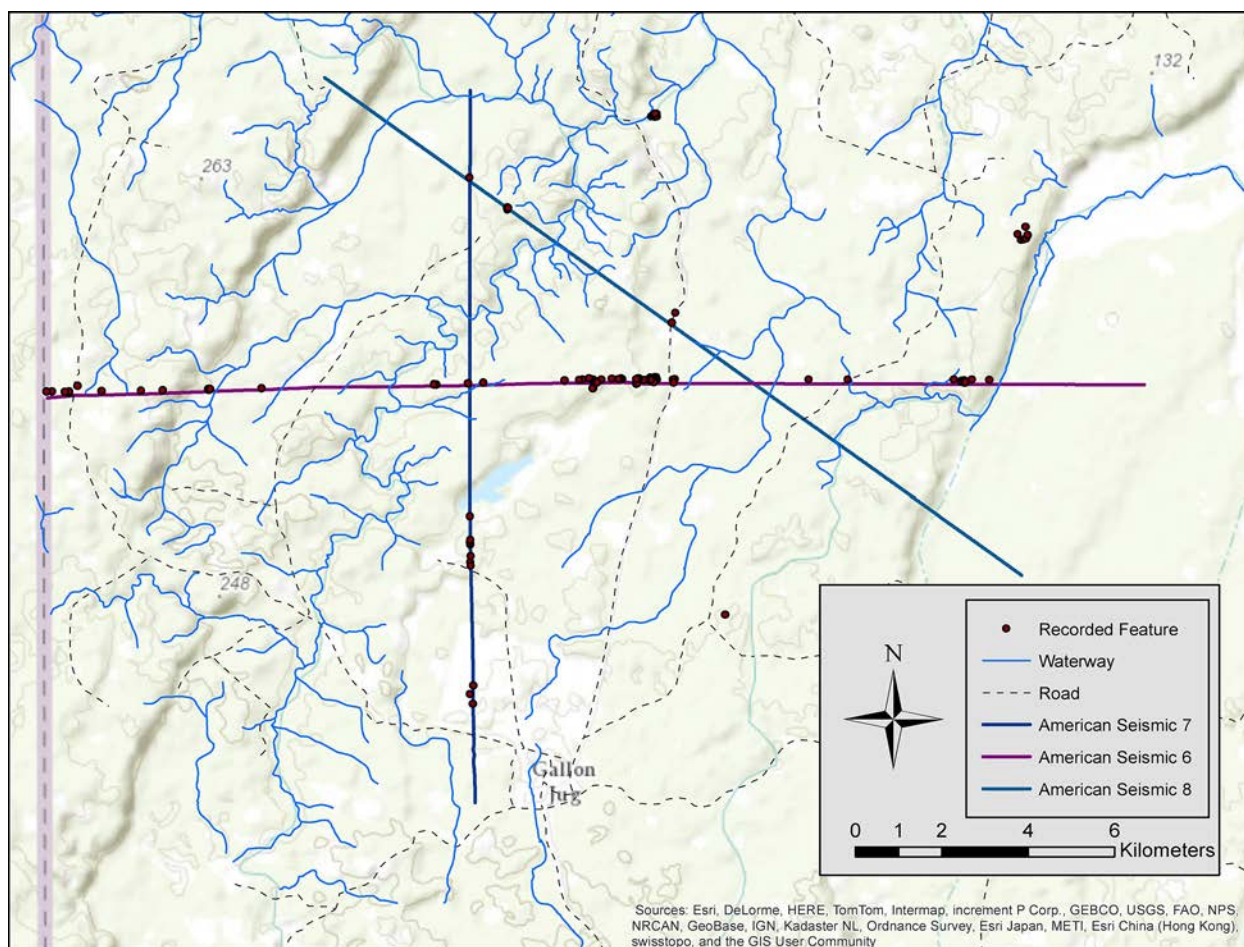


Figure 6.2. Map of American Seismic lines surveyed in 2014.

GPS points were taken using a Garmin eTrex 10, which was accurate to within 3 to 5 m even in the dense canopy found in Belize's jungles. Crews mapped structures individually and then in association, using tape and compass to establish their positional relationships. We followed the standard system of depicting mounds as rectified or prismatic shapes (Hutson 2012). Consistent with previous CCAP research, Brokaw and Mallory's (1993) vegetation types were used in classifying the areas surrounding structures.

Every structure was assigned an STR- number, and every site was recorded with its own BE- designation (for Belize Estate). BE-designations were assigned to any location considered by BEAST to be a site. Our criteria

for Pre-Columbian site designation involve: the total number of structures present (four or more), height of tallest structure (at least 4 m in total height, including the substructure), and relative isolation of the structure group (not within 1 km of another recorded site). Historic sites were assigned BE- designations if a scatter of multiple diagnostic surface artifacts older than 50 years covering more than 100 m<sup>2</sup> was identified or if the site is potentially associated with a historically important event or person.

All photos taken in the field were recorded in a photo log, including date, photographer, and direction in which the photo was taken. Surface collections were taken in several different areas. Locations of all artifacts collected were recorded using the GPS unit, and the surveyors

bagged and tagged artifacts before submission to the lab.

In post-field processing, the field maps were converted into scaled drawings using iDraw by Indeco, Inc. running on an Apple iPad 2. All geographic information system (GIS) work was carried out using ESRI's ArcGIS 10.1 Advanced Edition. Information gathered from survey and background review was recorded into the CCAP digital database using FileMaker Go (see Houk, this volume) and Institute of Archaeology site description entries were created for all sites on the property.

Although the primary target for this survey was the seismic lines, BEAST conducted separate investigations in addition to the linear survey. Planned revisits of sites previously mapped by members of RBAP during the 1988 and 1990 field seasons (see Guderjan et al. 1991) took place to examine sites' conditions, re-map the sites if necessary, and record a more accurate UTM location for each site. BEAST targeted the sites of Gallon Jug, Laguna Verde, and Laguna Seca for revisit during the 2013 field season (Sandrock 2013). During the 2014 field season, survey crews attempted to revisit or record Gongora Ruin, Punta de Cacao, the historic scatter associated with the site of Qualm Hill, and El Infierno.

Additionally, with the help of Mark D. Willis of Archaeo-Geophysical Associates, LLC, BEAST crews investigated a cleared area east of the Gallon Jug sawmill. A custom-modified DJI Phantom UAV flew six low altitude aerial photography missions over the pastures in the heart of the Gallon Jug project area. The modifications to the Phantom include the addition of a First Person View (FPV) video camera and the attachment of a Canon point-and-shoot camera. The FPV camera

allowed the ground pilot to view the project area from the drone via a video link to a pair of goggles (Figure 6.3). For the pilot, the view is the same as if he were onboard the aircraft. This real-time feedback allowed the UAV pilot to focus attention on areas of interest and maintain consistent transect spacing during flight. The attached camera was set to automatically take a photograph every four seconds while the UAV was in flight.

Prior to collecting the aerial photography data, Willis had two CCAP archaeologists place a series of Ground Control Points (GCPs) at several locations in the survey area. The GCPs were paper targets easily identifiable from the air. Each GCP's location was recorded with an Ashtech 100 differentially-correctable GPS unit. The locational accuracy of the each GCP was post-processed to have an accuracy of greater than 10 cm. However, as discovered during the post-processing of Structure from Motion (SfM) mapping at Chan Chich's Structure A-15, it is possible the GPS data are reporting inaccurate elevation data (see Willis et al., this volume). During this aerial areal survey, the UAV covered 488,000 square meters in just over an hour, collecting 545 overlapping aerial photographs (Figure 6.4). The areal footprint



Figure 6.3. Mark Willis operating the UAV during the survey of cleared pastures on Gallon Jug Ranch.



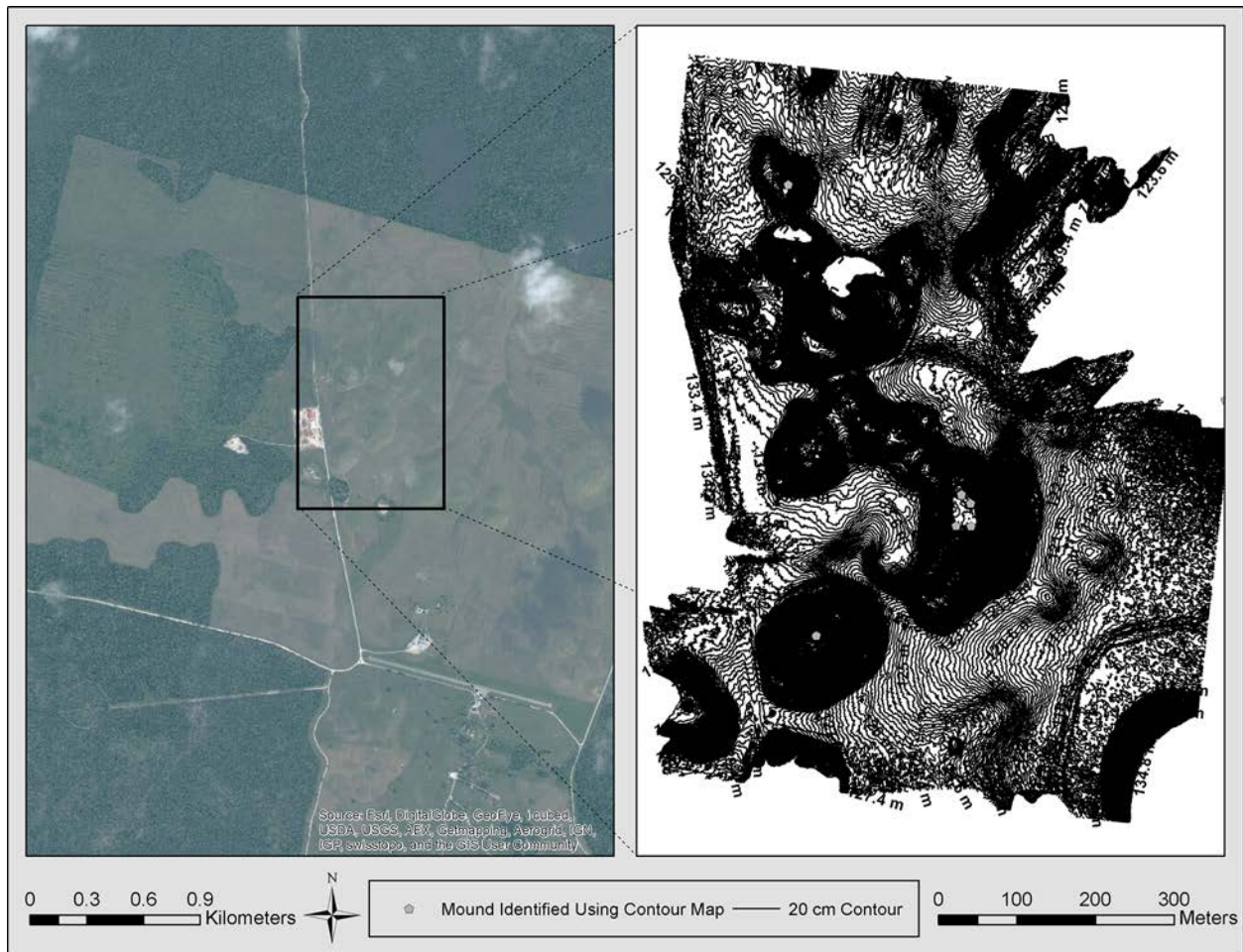


Figure 6.4. Map of area surveyed by UAV.

of the photos covered an area of 745 hectares in the mostly open pastures at the heart of the Gallon Jug project area (see Figures 6.2 and 6.4). Willis processed the data for analysis the same day it was collected.

Analysis began by reviewing each photograph and culling any that were blurry or off subject and post-processing the GPS data. The final data set included 500 photographs and seven GCPs. These data were brought into the SfM software package PhotoScan Pro, which is discussed by Willis and colleagues in Chapter 2 of this volume. A three-dimensional model of the project area was created with over 62 million topographic data points. This provided an average ground resolution of one point every 3 cm of ground surface, but many areas

were recorded in even greater detail. This result is comparable to the resolution collected by LiDAR systems but at a fraction of the cost and time.

The 3D data were exported as a Digital Terrain Model (DTM) as well as an orthographic mosaic image for review in ArcGIS. From the GIS, a hypsographic map was created with 5 cm contours and a slope model. The map allowed for the surface shape of the project area to be examined in unprecedented detail and for the presence of several Maya structures to be revealed. Using this newly created map, several potential structures were identified, and BEAST crews verified the proposed structures during pedestrian survey. Structures were mapped in

the field using the same methodology utilized by BEAST elsewhere.

## FINDINGS

In total, BEAST crews were able to cover 36.2 km of transects in addition to five additional areas of targeted survey. This section describes the results of the 2014 field season, separated by survey method, starting with the three seismic lines surveyed.

### American Seismic Line 6

American Seismic Line 6 (AS6) was surveyed in entirety during the 2014 field season. AS6 is located 6.8 km south of the Programme for Belize-Laguna Seca property boundary, 3.8 km south of American Seismic Line 1 (AS1), and

extends from the Guatemalan border for 24.2 km to the east (Figure 6.5). This line passes within 200 m of the north bank of Laguna Seca, as well as just 230 m north of Montaña Chamaco (BE-13).

Starting in the west, AS6 descends from the Guatemalan border through an area of upland forest at the top of the La Lucha escarpment. From the escarpment it descends and passes through a large section of transitional forest before reaching a *bajo* above the Rio Bravo Escarpment. Luckily for BEAST crews, the large sawgrass *bajo* encountered on AS1 was not present on AS6 (see Sandrock 2013). After crossing the Rio Bravo, the line ascends into transitional forest, which continues to the very hilly area immediately west of the Booth's River escarpment. Immediately east of the Booth's

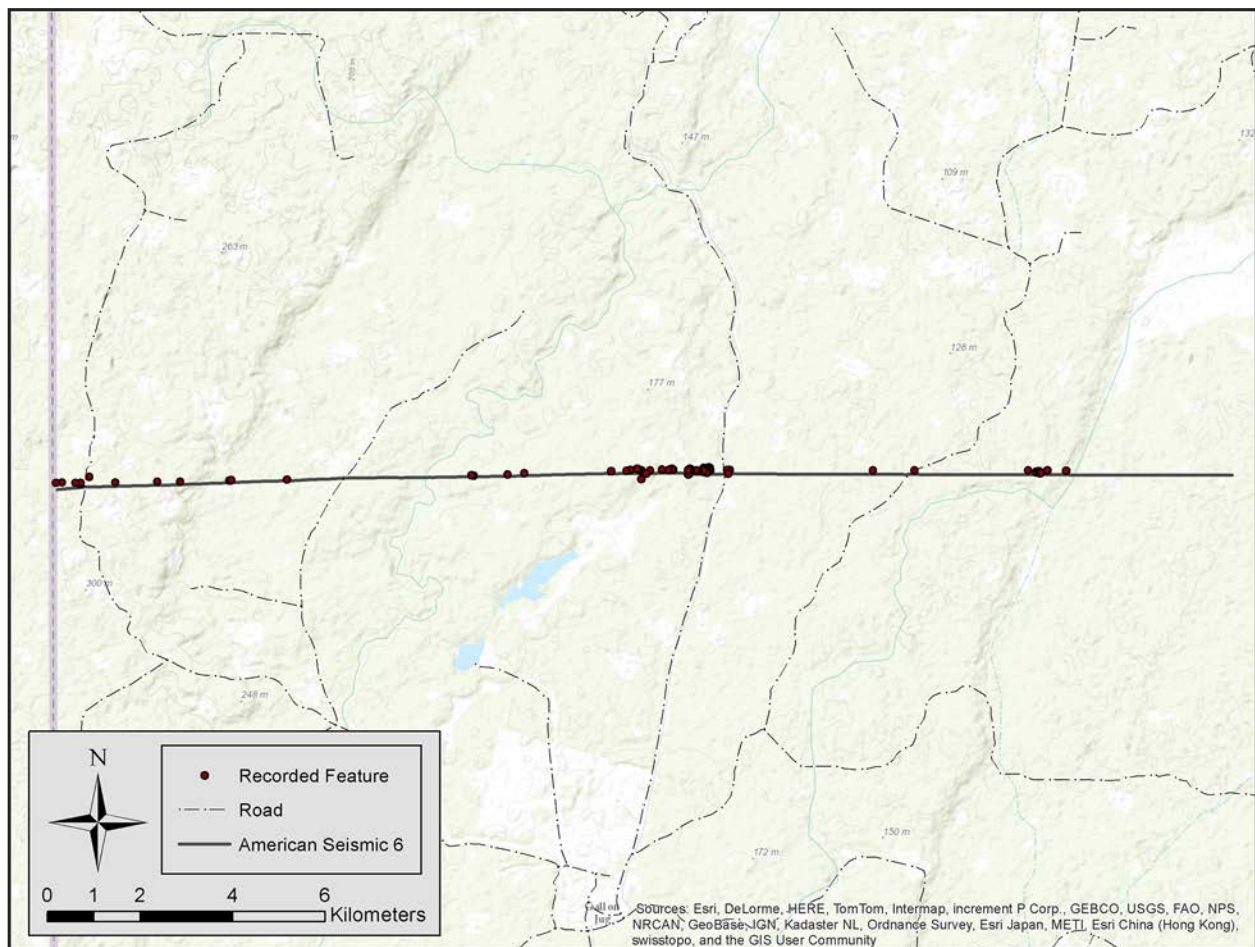


Figure 6.5. Map of American Seismic Line 6.

River escarpment, the line crosses through a large *bajo*, which was greatly extended by the particularly rainy conditions in the months prior to this field season.

Fifty-nine of the 117 structures recorded during the 2014 field season were recorded along AS6, including a large wall-like feature of unknown function (Figures 6.6 and 6.7). Originally recorded as a small wall feature (approximately 100 m long in the senior author's original notes), further inspection with Houk revealed that the feature was much larger than previously thought. This feature ranges from nearly 1.5 m to less than a 0.5 m tall, narrows and widens between 1 and 3 m across, and extends for a total of approximately 500 m in several directions (Figure 6.6). The

feature is constructed of unshaped and irregular limestone boulders. Three structures were documented within 25 m of the wall feature, including two relatively standard rectangular mounds and an irregular L-shaped mound with a small wall attached.

This feature is situated in a stand of transitional forest located in a relatively flat area with no evident nearby streams. The height, length, and varying directionality of the feature, combined with the relatively low-density occupation in the surrounding area, suggest that this feature was not defensive in nature and was possibly used for agricultural, horticultural, or perhaps animal husbandry pursuits. Although it is unclear if this area is associated with any known site center, Laguna Seca (BE-6) is located

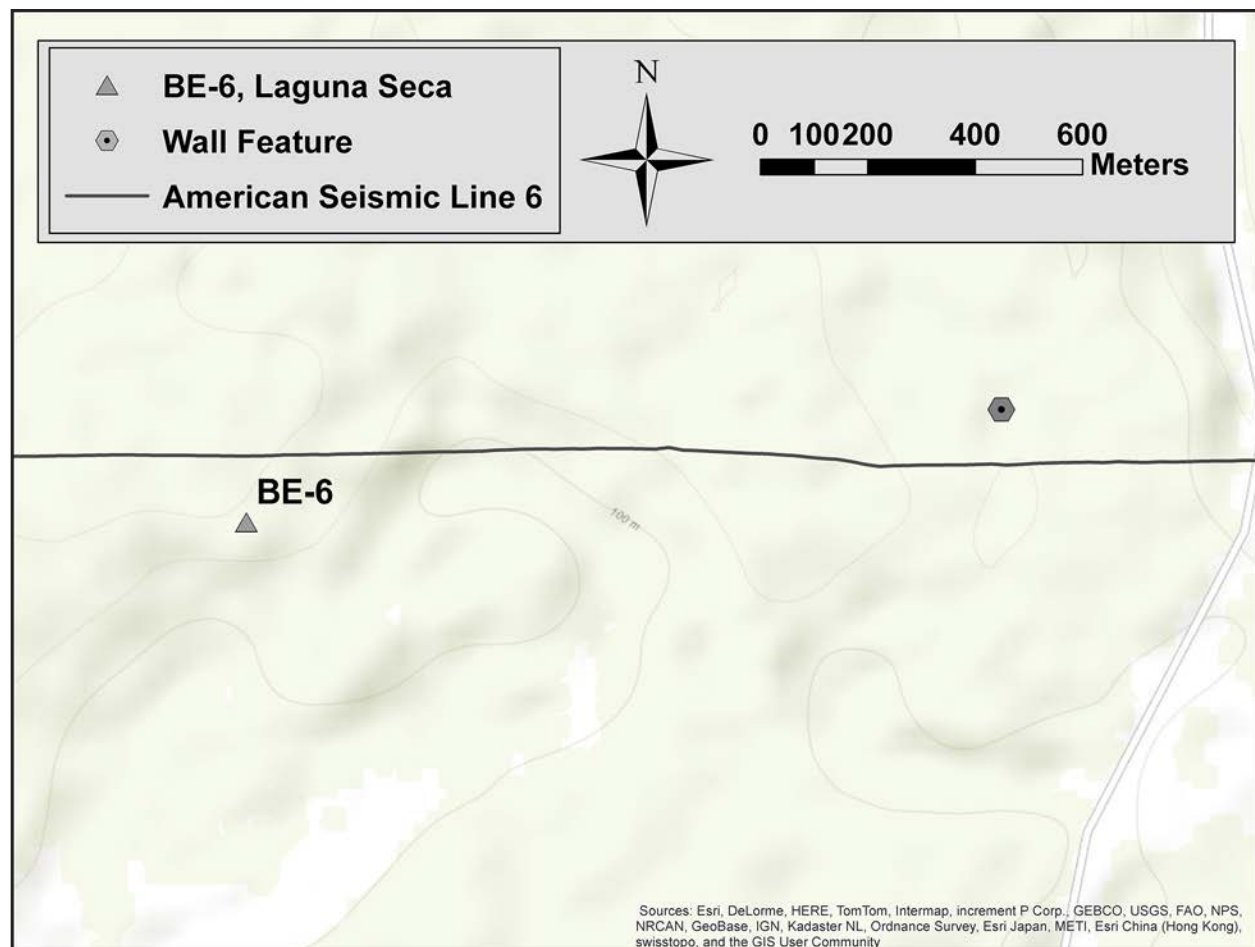


Figure 6.6. Map showing wall feature's location.



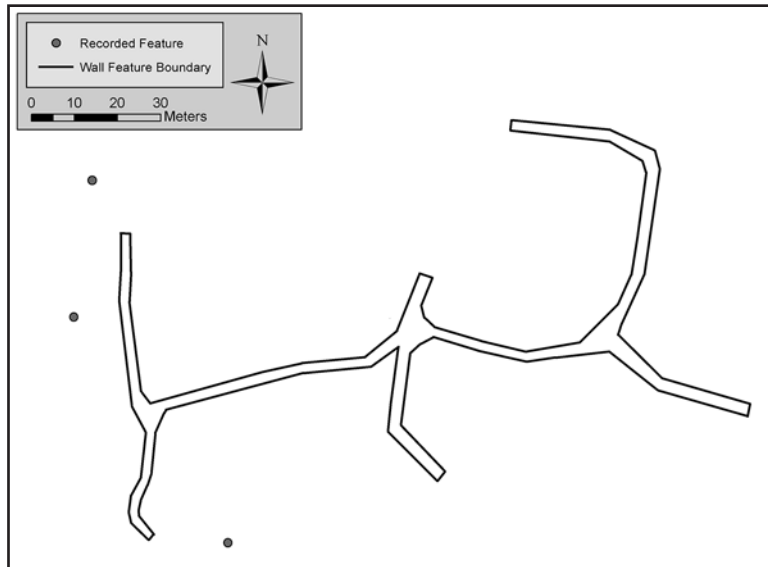


Figure 6.7. Map of wall feature. Width of feature is exaggerated.

just 1.3 km to the west. Thus, it is possible this location represents a small residential and agricultural area associated with the nearby hilltop site.

### **American Seismic Line 7**

American Seismic Line 7 (AS7) travels on a north-south axis, starting 600 m north of the road leading to Chan Chich from Gallon Jug and running north. AS7 begins approximately 9.3 km east of the Belize-Guatemala border, and extends for 15.6 km in total (Figure 6.8).

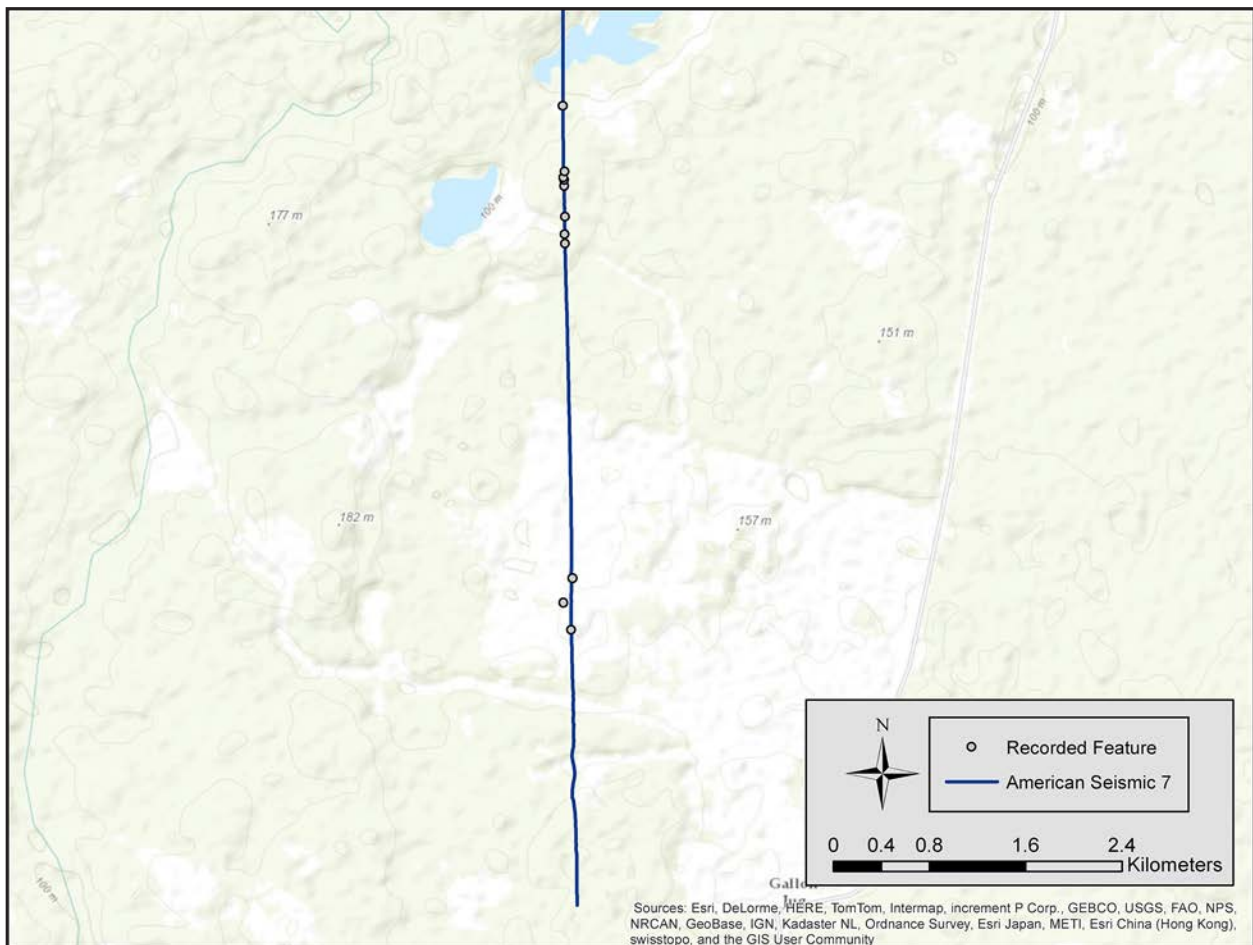


Figure 6.8. Map of American Seismic Line 7.

Heading north, AS7 starts in a patch of dense transitional forest before crossing the all-weather road leading to Sylvester Village. It then continues through the Gallon Jug Agroindustries' coffee plantation before reaching a narrow strip of transitional forest that acts as a boundary between the coffee and cattle pasture. North of the pasture is a stand of transitional forest, which extends into the clearing. North of the treed area is another cleared livestock pasture. This deforested area is strewn with sawgrass and swamp. North of the clearing, the line continues through transitional forest before encountering a small stand of upland forest, which fades into transitional forest extending to the current edge of Laguna Seca. Due to the aforementioned rainy year, Laguna Seca's waters reach much farther than maps indicate, and the line stretches directly through the grassy, flooded area.

Because of access problems (Laguna Seca's rain-based extension and a long stretch of muddy and rutted roads), BEAST crews were unable to survey beyond 4.7 km north of the Sylvester Village road. This means approximately 9.3 kilometers of AS7 was left unsurveyed. In total, 23 structures were recorded on the surveyed stretch of AS7.

### **American Seismic Line 8**

Like AS7, survey along American Seismic Line 8 (AS8) was initiated but left unfinished due to time constraints and issues with access. The northern end of this line sits on the property boundary between Programme for Belize and Laguna Seca, and extends northwest to southeast on a bearing of 300/120 degrees. AS8 terminates approximately 2.6 km east of the Booth's River escarpment, and the entire line measures 18.6 km in length (Figure 6.9). AS8 crosses AS1 at the Blue Creek road.

The northwest end of the surveyed area on AS8 crosses the Rio Bravo before extending

into a short stand of transitional forest abutting a very hilly section of upland forest. Just before and after crossing the Blue Creek road, the vegetation shifts to transitional forest, eventually giving way to *bajo* for the remainder of the surveyed portion.

Survey crews covered 7.3 km of AS8. Crews were able to reach the Rio Bravo approximately 3 km northwest of the road and survey an additional 4.3 km southeast of the Blue Creek road. In total, 36 structures were recorded on the surveyed stretch of Line 8, but approximately 11 km of the transect were not investigated.

### **Transect Survey Summary**

Over the past two field seasons, BEAST crews completed 74.2 km of linear survey along the transects and 5.19 km of survey extending away from these transects. The total linear distance for BEAST's surveys is thus 79.39 km, making the total area surveyed 2.223 km<sup>2</sup>. This figure was calculated by adding up all linear survey distances, and multiplying the total by 0.028, for the 28-m wide visual corridor prescribed by Robichaux and Houk (1996).

This portion of surveyed area includes a total of 270 structures. This figure includes structures found outside the 28-m wide transect during linear survey that were located from other structures recorded during linear survey. The dense settlement area located during survey on AS1 is an example of such an inclusion. This figure does not include structures recorded during site re-location targeted surveys, but does include all structures from Ix Naab Witz (BE-11), as it was found during transect survey.

### **Targeted Surveys**

This season, survey crews completed five separate targeted survey areas: a second attempt to locate El Infierno; revisits of Gongora Ruin, Punta de Cacao, and the Qualm Hill Camp

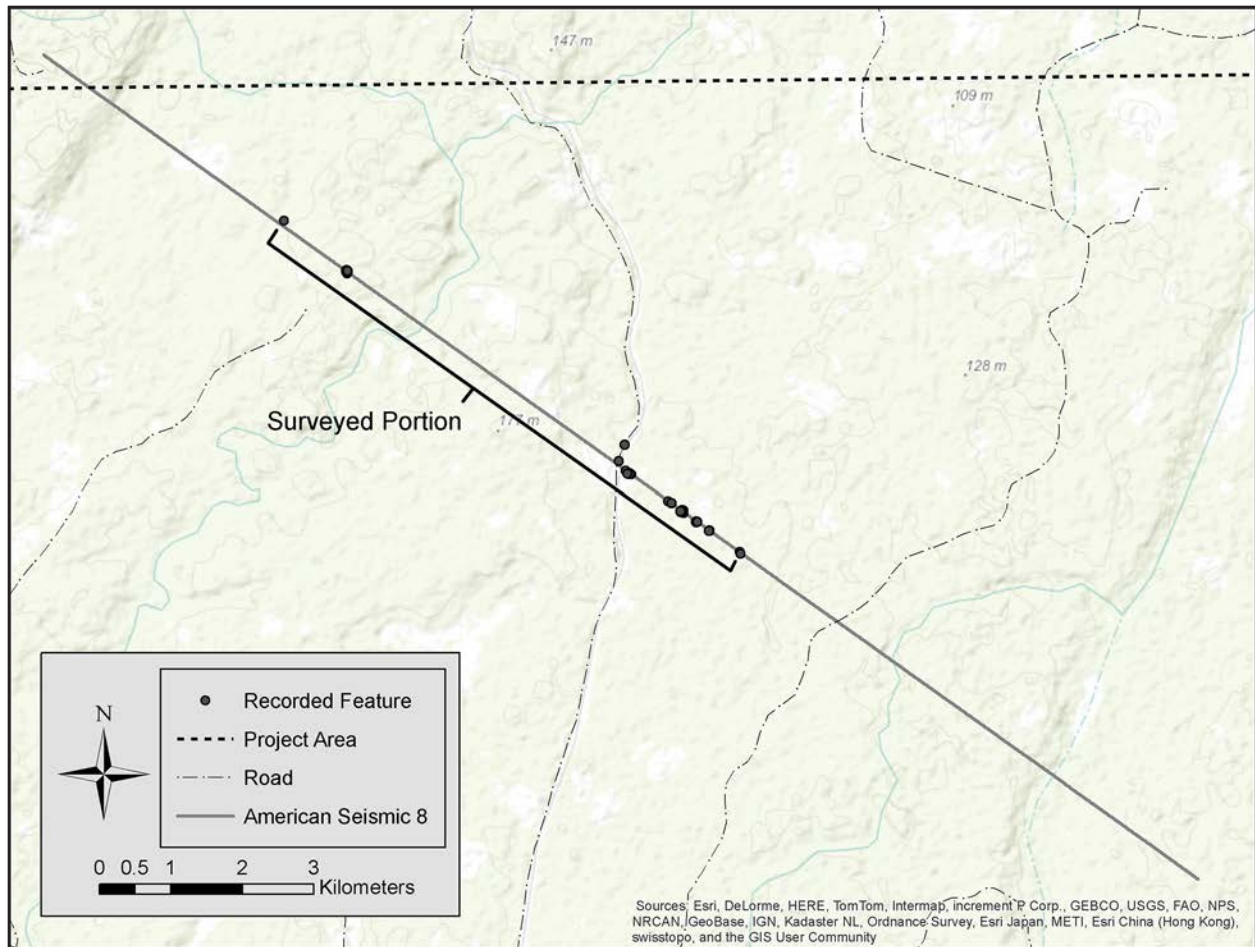


Figure 6.9. Map of American Seismic Line 8.

scatter; and a UAV-aided survey in a field northwest of Gallon Jug headquarters.

During the 2013 field season, BEAST crews unsuccessfully attempted to re-locate the site of El Infierno. This season, a second targeted area was investigated, proving to be equally fruitless. The surveyed area is located between the Belize-Guatemala border and the westernmost north-south section of logging roads on the property, approximately 9 km northwest of Sylvester Village, and 1.5 km north of AS6 (see Figure 6.2). This area was selected based on Brett A. Houk's (personal communication, 2014) consultation with Rafael Guerra of the Institute of Archaeology and a review of the Institute of Archaeology's database of known sites.

The site re-locations for Punta de Cacao, Gongora Ruin, and the Qualm Hill scatter were all successful, and are described in more detail in their respective Site Inventory sections below. The UAV-aided survey of the cleared field was also a success, with five structures on two modified hilltops identified using digital contour maps (Figure 6.10).

All of the five structures identified via UAV imaging analysis were confirmed as cultural features. These structures are divided into two areas on two separate hilltops in the open field just east of the Gallon Jug sawmill. Located approximately 1.4 km southwest of BE-4, all structures recorded during the UAV survey are most likely associated with the archaeological site of Gallon Jug (see Sandrock 2013). The westernmost structure identified was a single



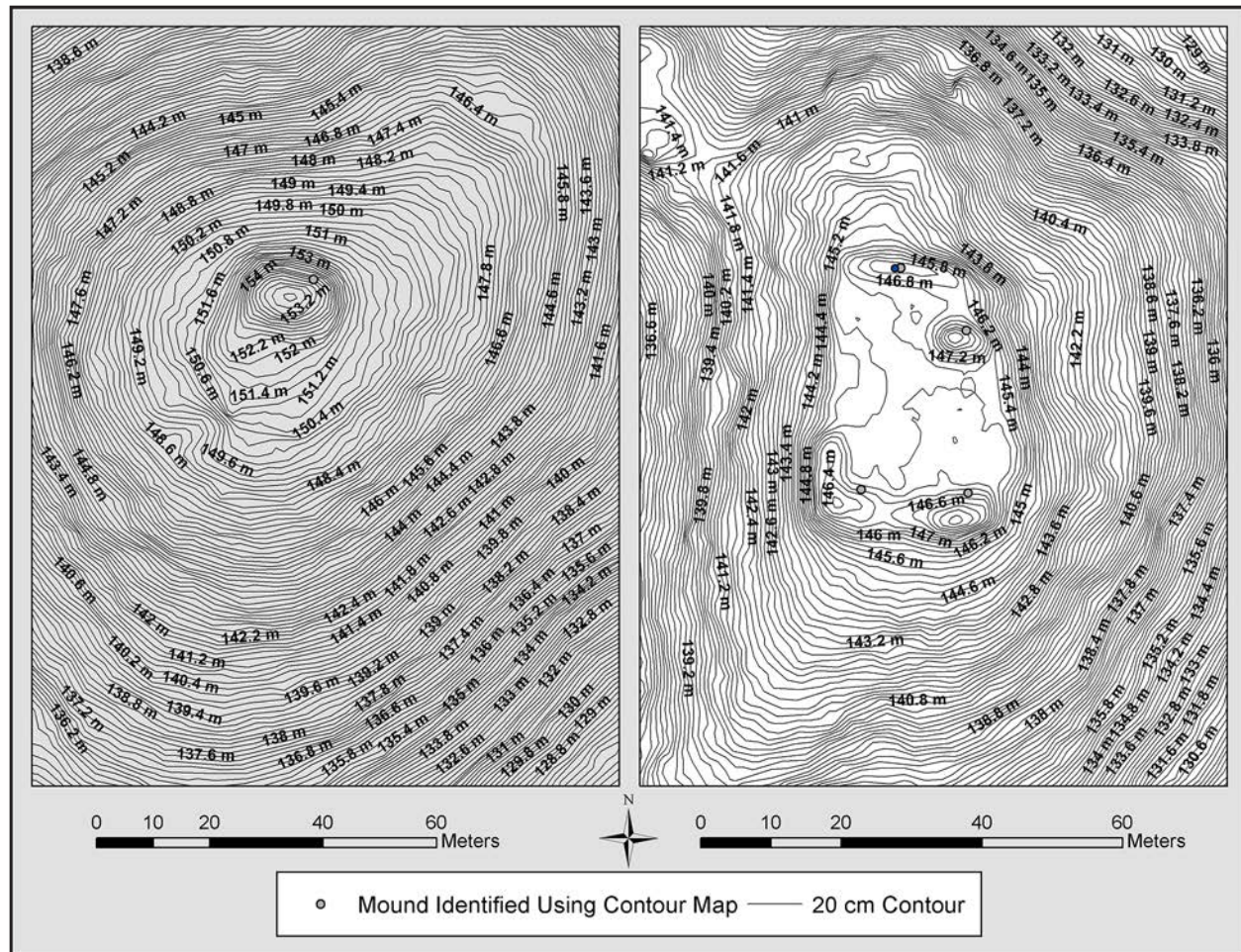


Figure 6.10. Contour maps of structures identified during UAV survey and field inspection. The western mound is on the left, and the plazuela group is on the right.

rectangular mound measuring 14 m long by 12 m wide (Figure 6.11). This structure rises roughly 2 m above the modified hilltop, which covers an additional area of approximately 16 m by 15 m. The hill is roughly 26 m tall, with a peak elevation (at the top of the structure) of 154.6 m above sea level.

The easternmost structures comprise a small plazuela group on a 25-m tall modified hilltop (Figure 6.12). All four structures were built with their backs abutting the hill slope, away from the plaza. The largest structure in this group is an irregular L-shaped structure, 15 m wide and 12 m long. All four structures are approximately 2 m tall. The entire plaza measures roughly 48 m by 33 m, and sits 143 m above sea level.

## UPDATES TO THE SITE INVENTORY

The following section includes updated entries for all BE-designated sites visited or recorded during the 2014 field season. Figure 6.13 shows the location of all BE-designated sites, including those BEAST has not visited.

### Punta de Cacao (BE-3)

The site of Punta de Cacao was originally mapped by Guderjan et al. (1991), but more detailed instrument mapping occurred during the 2001, 2002, and 2003 field seasons of Hubert Robichaux's (2005) Punta de Cacao Archaeological Project (PDCAP). Punta de Cacao represents the second largest known site in the project area, behind only Chan Chich



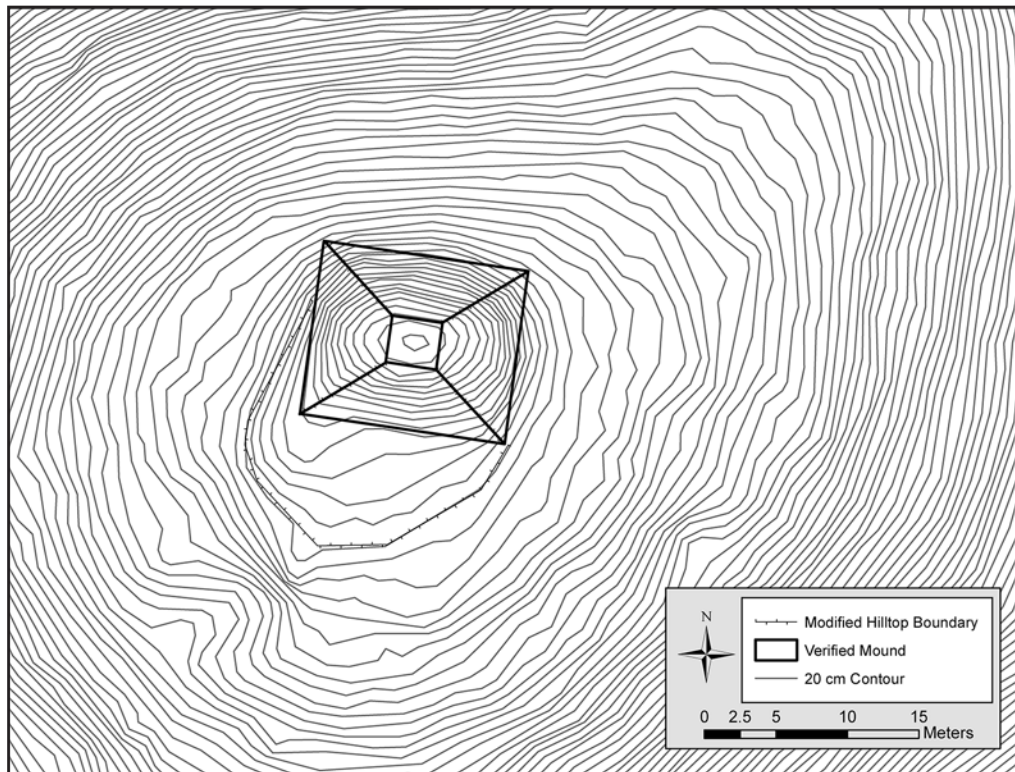


Figure 6.11. Map of westernmost structure from the UAV survey.

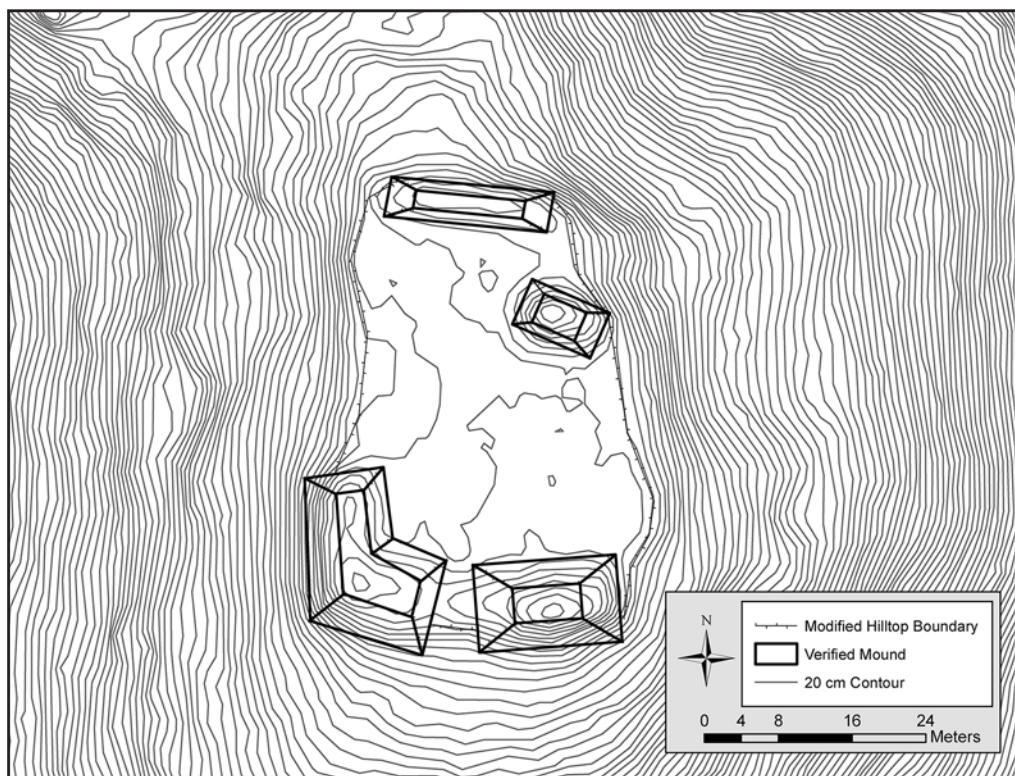


Figure 6.12. Map of the plazuela group identified during the UAV Survey.

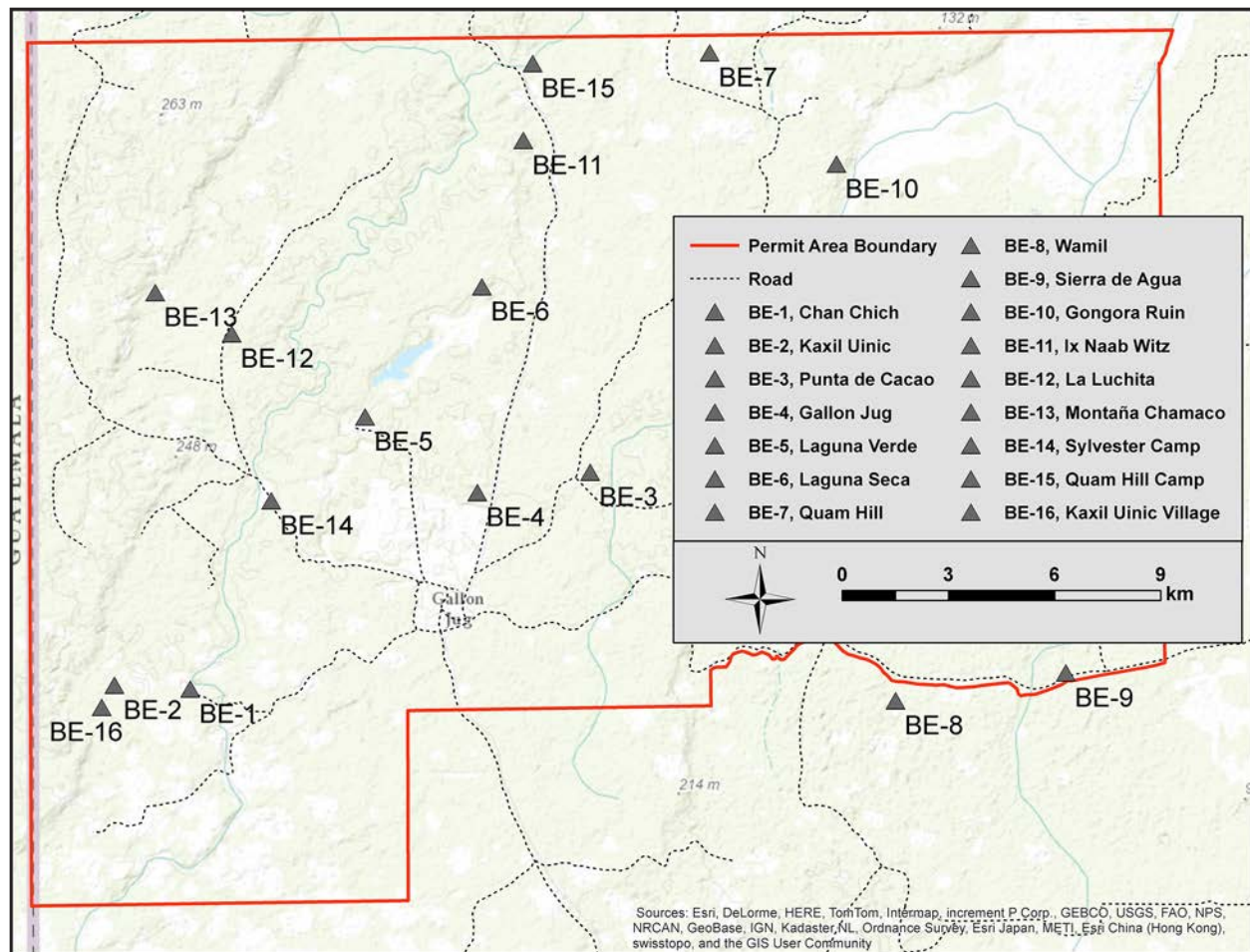


Figure 6.13. Map of all BE-designated sites.

in size. The site was named by Barry Bowen and is just 5.5 km northeast of Gallon Jug headquarters (Robichaux 2002).

The site of Punta de Cacao comprises 522 structures in total, including the site core and the 3.33 km<sup>2</sup> area surrounding the site (Robichaux 2005). Excavations date the site's occupation from the Middle Preclassic period to the Terminal Classic period (Robichaux 2005). According to Robichaux (2005), the central precinct of the site consists of the Plaza A and Plaza B complexes, and a ball court is located roughly halfway between the two complexes. Plaza A comprises three large pyramid-shaped structures and three large range structures (Robichaux 2005). Located approximately 200 m northeast of Plaza A, the

Plaza B complex represents a more elevated, more enclosed, and less accessible structure group than Plaza A (Robichaux 2005). In addition to these complexes, PDCAP recorded other various residential groups in the area (Robichaux 2005).

BEAST revisited Punta de Cacao and assessed the site's condition in 2014. Despite constant environmental encroachment by the forests' regrowth, the ruins at Punta de Cacao are still accessible and easily visible. Cut trails (marked by a wooden sign) leading off an all-weather road provide easy access to the site, which can be toured by patrons of Chan Chich Lodge and visitors to Gallon Jug. The updated UTM coordinates of the site are Zone 16N, 19 46 100 N, 28 6 728 E, at an elevation of 116



meters. Due to the overall high quality of maps created by the PDCAP and the relatively low level of degradation that has befallen the ruins in the decade since PDCAP's work at the site, BEAST did not remap the ruins or modify the existing site map.

### **Gongora Ruin (BE-10)**

Gongora Ruin overlooks the Booth's River to the east from the escarpment above, and comprises a small plaza and an associated courtyard (Guderjan et al. 1991). According to Guderjan et al. (1991), the site's largest structure rises 12 m above the plaza surface, and the site reportedly contains a single uncarved stela. Gongora Ruin is well known due to the death of a looter from the nearby village of San Felipe, who died at the site in the late 1980s or early 1990s when a trench collapsed, trapping him inside (Houk, personal communication, 2013).

Gongora Ruin was revisited by BEAST crews during the 2014 field season. Leroy Lee of American Seismic reported that his seismic survey crews had likely encountered the site and gave us an approximate location in reference to their seismic lines. Thanks to this information, the re-location of Gongora Ruin was a straightforward task.

In the more than two decades that have passed since the site was last investigated, the Belizean jungle has reclaimed the site with a vengeance. We could not locate the stela previously identified by Guderjan et al. (1991); it has likely been knocked down and buried by one of the numerous tree falls that have covered the site. BEAST recorded UTM coordinates for Gongora Ruin as Zone 16N, 19 54 400 N, 2 93 459 E, at an approximate elevation of 96 m above mean sea level. The map created by Guderjan et al. (1991) was found to be accurate and left unmodified.

### **Qualm Hill Camp (BE-15)**

The prehistoric Maya site of Qualm Hill derives its name from the historic logging camp of the same name. The Pre-Columbian site is located approximately 5 km east of the historic site. BEAST revisited Qualm Hill Camp during the 2014 field season and assigned it a new BE number, BE-15. The historic site represents a drastically different, but still important, aspect of Belize's history than does the Maya ruin.

After colonial powers claimed massive tracts of land in the New World, a series of mid-19th century conflicts saw the Maya retake land across the Yucatan. While the uprisers returned home to tend crops, the generally more organized and well-equipped European powers were able to stymie their advances, beating back the Maya. Despite this, these "Indians" continued their resistance, attacking mahogany camps and taking control of other centers in inland Belize. In 1866, an outfit led by Marcus Canul conducted a successful raid on a logging camp near modern-day Cedar Crossing, located near the Programme for Belize-Laguna Seca property line. During this battle, also referred to as the "Chichina" raid, Canul and his men killed two British loggers and took 70 men prisoner, holding them for ransom. Later that year, the British sent a detachment of troops to San Pedro in response to the raid, but this squad was swiftly defeated by residents of the town (Bolland 1992).

In the spring of 1867, at least 300 British troops climbed to the Yalbac Hills and attempted to uproot the Maya, destroying masses of Maya houses, stores, and granaries. Though defeated, the Maya returned by 1870, and in April of that year Canul's troops managed to occupy the town of Corozal (Bolland 1992). The indigenous campaign would continue for at least two more years, when Canul and 150 of his men marched on a British encampment at Orange Walk. After an intense battle, Canul's group was forced to

retreat; their leader was wounded and unable to continue. On September 1, 1872, Marcus Canul died from his battle-related injuries, and the British colony would never face another serious attack (Bolland 1992).

Using the description provided by Cackler and colleagues (2007), who reported finding the historic site en route to the prehistoric Maya ruins of Qualm Hill, survey crews were able to re-locate Qualm Hill Camp, which is evidenced by a historic artifact scatter visible from the surface. The scatter is located in a wooded area, approximately 100 m east of the Cedar Crossing bridge (Figure 6.14). The scatter spans 5 to 55 m from the west bank of the Rio Bravo, for approximately 160 m along the stream. The UTM coordinates for the approximate center of the scatter are Zone 16N, 19 57 213 N, 2 85

282 E, at an elevation of approximately 50 m above sea level.

Photos of some surface artifacts were taken, and GPS-referenced surface collections of glass bottles, ceramic fragments, and chamber pots were taken for analysis. These surface collections include seven distinct bottle types as well as historic ceramics bearing 10 different adornments (see Phillips and Sandroek, this volume). Materials observed and collected are associated with a historic lumber camp founded by the British Honduras Company in the mid 19th century (Cackler et al. 2007). Further analysis of the artifacts collected is presented in Chapter 7 of this volume.

According to Cackler et al. (2007:124), this scatter likely represents “the seasonal

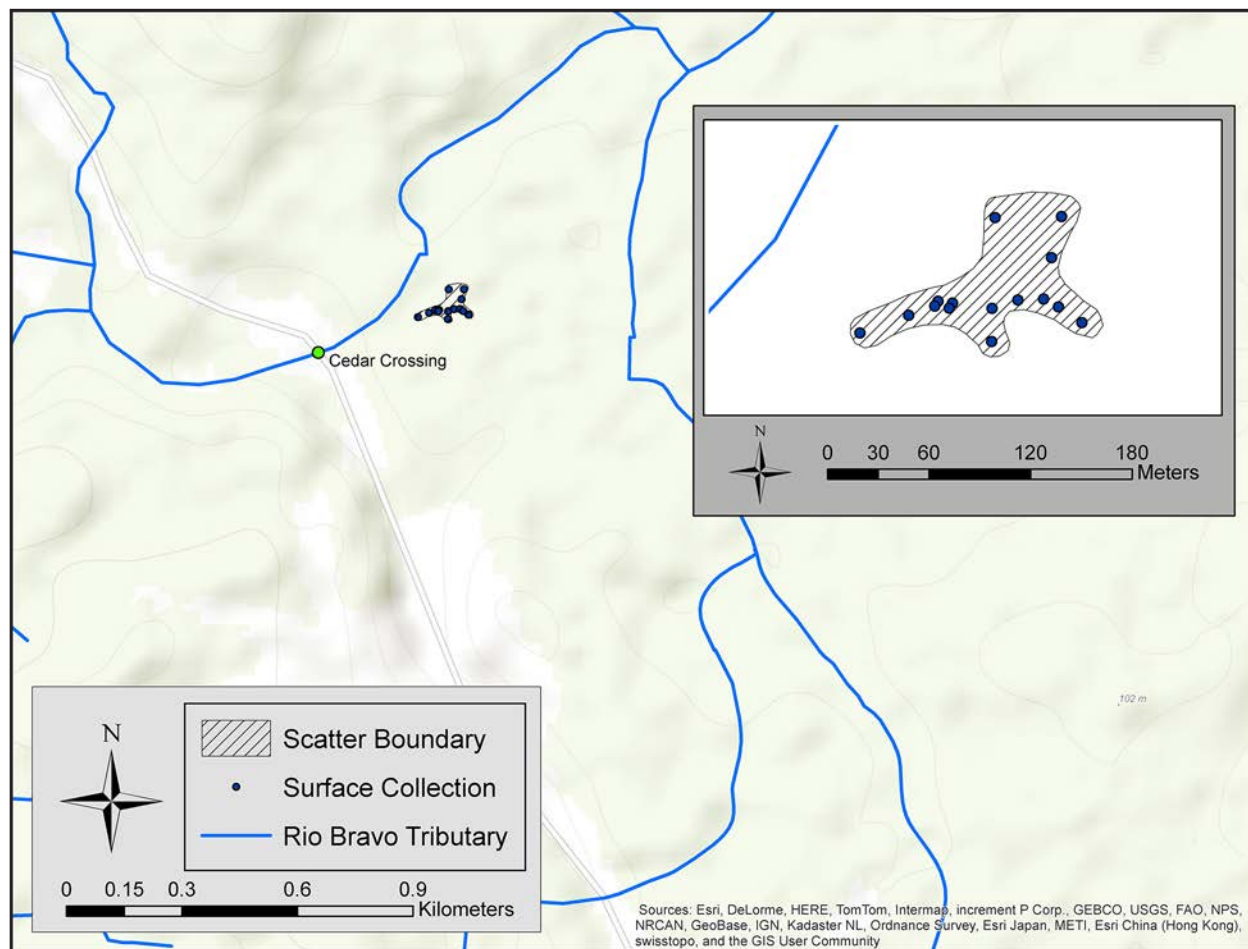


Figure 6.14. Map of Qualm Hill Camp (BE-15).

headquarters” for timber harvesting operations in the area. Additionally, the site takes on historical importance as the site of a “Chichina” Maya raid led by Marcus Canul in 1865 (Bristowe and Wright 1888:27–28). No structures were found in association with the site, but a single brick found during surface collection indicates possible construction. The site is now heavily forested, save for a few small cut trails utilized for river fishing access.

### **Kaxil Uinic Village (BE-16)**

Houk (2012b) reported on archival research on the historic Maya village of Kaxil Uinic, which is located west/southwest of Chan Chich on Yalbac Ranch. During the 2012 season, CCAP crews working at the nearby Maya ruins of the same name successfully re-located the historic village and documented a number of artifact scatters (Houk 2012b). Displaced San Pedro Maya settled Kaxil Uinic in the 1880s and lived there until being forcibly moved in 1931. The place name “Xaxe Venic” is locally applied to a small aguada, which is undoubtedly the watering hole J. E. S. Thompson (1963) visited in 1931 when he passed through Kaxil Uinic en route to Guatemala. Although BEAST did not visit Kaxil Uinic village, we assigned it a BE number based on Houk’s (2012b) report.

dearth of systematic surveys undertaken on the property.

Additionally, UAV mapping has proven to be an expedient and cost-effective method for mapping and finding prehistoric structures in the open fields of Gallon Jug. The methods utilized in this project uncovered two areas of Maya occupation with relative ease, at a fraction of the cost of other remote sensing methods. This test project has shown that similar landscapes to this should be considered for UAV survey and that some degree of field verification of the data should be undertaken to confirm the quality of the results.

It is unknown if BEAST will continue in the upcoming seasons, but it remains clear that the Gallon Jug and Laguna Seca properties contain many more Maya features and volumes of archaeological data waiting to be recorded. To date, we have barely scratched the surface.

## **DISCUSSION**

During the 2014 field season, BEAST was able to record over 36.2 km of transects and 117 structures, in addition to four successful targeted surveys at Qualm Hill Camp, Punta de Cacao, Gongora Ruin, and the fields east of the Gallon Jug sawmill (part of the Gallon Jug site’s settlement area). In total, BEAST crews have completed survey on 74.2 km of transects, recording 270 structures over two field seasons. These recordings represent a sizable contribution to the local archaeological database, especially considering the relative



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# PRELIMINARY ANALYSIS OF HISTORIC BOTTLES FROM QUALM HILL CAMP

Lori Phillips and David Sandrock

During the 2014 visit to Qualm Hill Camp (see Sandrock and Willis, this volume), the BEAST crew took photos of some surface artifacts and made GPS-referenced surface collections in the form of glass bottles, ceramic fragments, and chamber pots (Figure 7.1, Table 7.1). These surface collections include seven

distinct bottle types as well as historic ceramics bearing 10 different adornments. Materials observed and collected are associated with a historic lumber camp founded by the British Honduras Company in the mid 19th century (Cackler et al. 2007). This chapter reports on

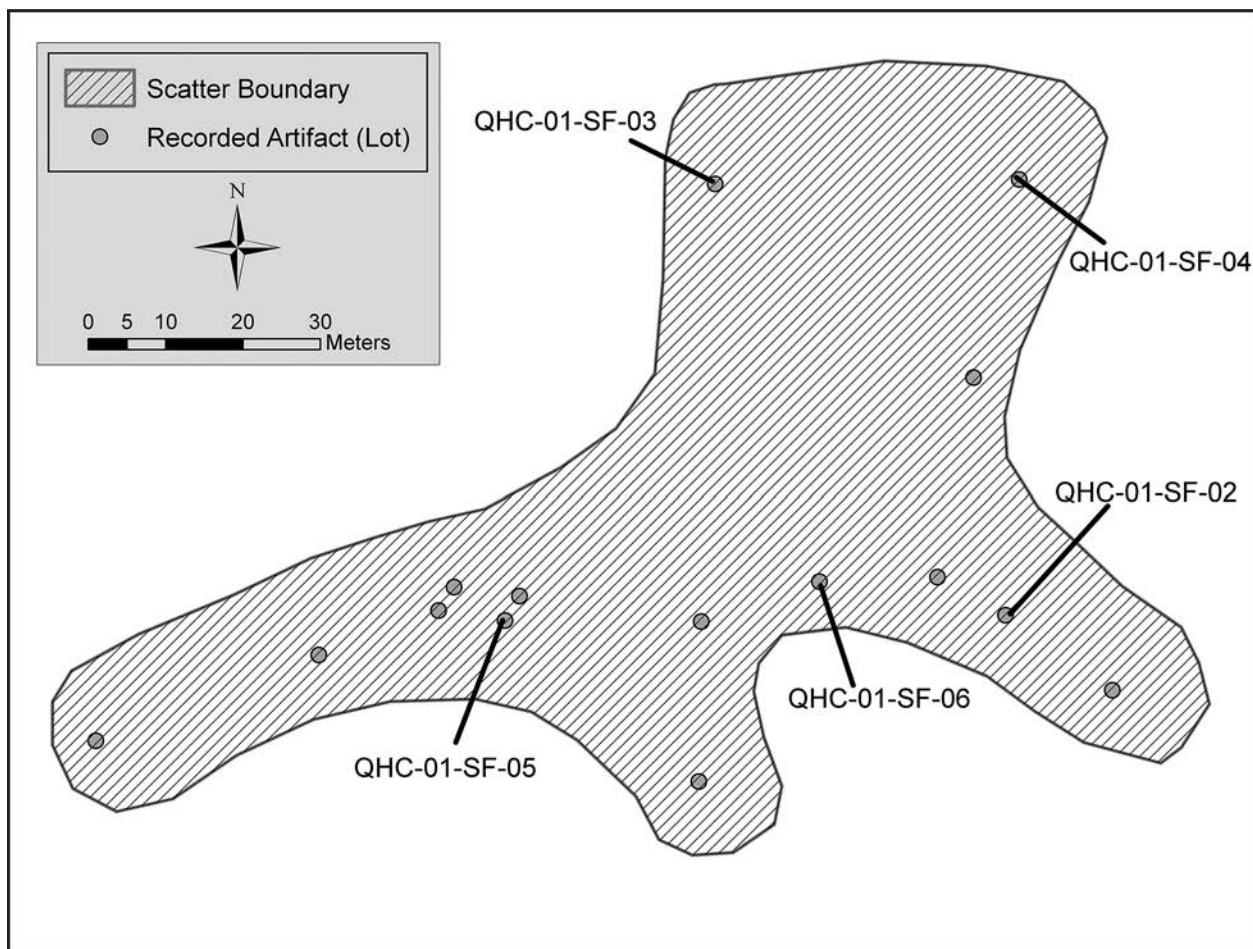


Figure 7.1. Map of Qualm Hill Camp scatter limits and surface collections.

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2014 Preliminary Analysis of Historic Bottles from Qualm Hill Camp. In *The 2014 Season of the Chan Chich Archaeological Project*, edited by Brett A. Houk, pp. 131–135. Papers of the Chan Chich Archaeological Project, Number 8. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock.

Table 7.1. Surface Collected Artifacts from Qualm Hill Camp

Lot Number	Catalog # -Spec. #	Artifact Type	GPS Coordinates
QHC-01-SF-01	QHC0591	10 historic ceramics	1957213 N, 285282 E, 50 m above sea level
QHC-01-SF-01	QHC0593	3 glass bottles	1957213 N, 285282 E, 50 m above sea level
QHC-01-SF-02	QHC0592-01	1 glass bottle	1957213 N, 285282 E, 50 m above sea level
QHC-01-SF-03	QHC0620-01	1 glass bottle	1957213 N, 285282 E, 50 m above sea level
QHC-01-SF-04	QHC0594-01	1 glass bottle	1957213 N, 285282 E, 50 m above sea level
QHC-01-SF-05	QHC0601-01	1 glass bottle	1957213 N, 285282 E, 50 m above sea level
QHC-01-SF-06	QHC0595	2 metal chamber pots	1957213 N, 285282 E, 50 m above sea level

the preliminary analysis of four of the bottles collected by Sandrock's crew.

### **HISTORIC BOTTLE ANALYSIS**

Analysis of the glass bottles recovered from survey follows the criteria provided by the Society for Historical Archaeology's "Historic Glass Bottle Identification and Information Website" webpage and outlined in Figure 8.7 of Phillips, this volume (Lindsey 2014). Due to time constraints, only four of the seven recovered glass bottles were analyzed. Analysis of the remaining bottles, ceramics, and chamber pots will be undertaken in the following season.

#### **Elliman's Embrocation (Spec. # QHC0620-01)**

The first bottle to be analyzed was a small green bottle measuring 14 x 5 x 3 cm with "ELLIMAN'S EMBROCATION" embossed on one face and "10826" embossed on its base (see Figure 7.2a).

This bottle features a possible applied lip finish and has no pontil marks or scars. The side mold seams do not reach the highest point of the bottle, and no base seam or venting marks are present. The absence of a pontil scar or mark places this bottle post 1865, and the absence of venting marks places it from or prior to 1885-1890, and the lack of a base seam places it from 1870 to the early 20th century. Based on

research outside of the bottle analysis, Elliman's Embrocation was sold beginning in the 1850s, and the company trademarked two types of medication (Elliman's Royal Embrocation and Elliman's Universal Embrocation) in 1878 (Grace's Guide 2013). With this in mind, this bottle probably dates to between 1865 and 1870.

#### **Barry's Pain Relief (Spec. # QHC0594-01)**

This is a small, clear, rectangular bottle measuring 13 x 4 x 2 cm, and embossing, present on all four faces, reads "BARRY'S PAIN RELIEF", "NEW YORK", "GUARANTEED ENTIRELY VEGETABLE", and "READ DIRECTIONS" (see Figure 7.2b). This bottle features a side mold seam that does not reach the highest point and a pontil mark. Lindsey (2014) provides no further dating information for bottles with these marks. He concludes that bottles featuring pontil marks are from or prior to 1860-1865. Attempts to find the company that manufactured "Barry's Pain Relief" were inconclusive; therefore, further refinement was not possible.

#### **Parker-Blake Co. LTD (Spec. # QHC0601-01)**

The third artifact is a large, rectangular bottle measuring 26 x 8 x 4.5 cm with "NEW



Figure 7.2. Three analyzed bottles from Qualm Hill Camp. A: Spec. # QHC 0620-01; B: Spec. # QHC0594-01; C: Spec. # QHC0601-01



ORLEANS” and “PARKER-BLAKE CO. LTD.” embossed on the lateral faces (Figure 7.2c). Analysis shows the presence of side mold seams that do not reach the highest point, no pontil mark, a tooled lip finish, no base mold seam, and no apparent venting marks (although reanalysis should occur to make sure of this). The lack of a base seam implies this bottle could be as old as 1870, but tooled lip finishes begin in the 1880s, becoming more common during the early 1900s. Information about the Parker-Blake Co. Ltd. was gleaned from personal communication with the Digital Initiatives Librarian at Loyola University, who discovered the establishment of this company occurred in 1903 (Elizabeth Kelly, personal communication to Lori Phillips, 2014). With this in mind, this bottle was probably manufactured during the early 1900s.

**A.B.C.M. Co.  
(Spec. # QHC0592-01)**

The fourth artifact is a brown, round bottle measuring 6.5 cm in diameter and 19 cm tall. It should be noted that this bottle is broken near the neck, therefore the complete height of this bottle is unknown. No embossing is present on the body but “A. B. C. M. CO.” is embossed along the perimeter of the base and “E 14” is in the center of the base. It is unknown if the vertical

mold seam reached the highest point. No pontil scar is present, the lip finish is unknown, there is no base seam, it has a cup bottom molded base, and it has no apparent venting marks. The absence of a pontil scar places this bottle after the Civil War, and the cup bottom molded base without a base seam puts this bottle around 1870 at the earliest but more likely around 1880–1920. A search for information about A. B. C. M. Co. was inconclusive, however it is possible the embossing is actually “A. B. G. M. Co.,” which would associate this bottle with the Adolphus Busch Glass Manufacturing Company. According to Lockhart and colleagues (2013:200), this company operated from 1893–1905, and later between 1907–1920.

## CONCLUSIONS

Based on the analysis of these four bottles, it would appear this site was occupied from the late 1800s to the early 1900s. When paired with the historical documents discussed earlier, these bottles show occupation at Qualm Hill Camp during the raids led by Marcus Canul and continued afterwards. Survey, excavation, and further analysis will be conducted next season in order to understand what occurred at this historically important site.

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# THE 2014 CHAN CHICH ARCHAEOLOGICAL PROJECT LAB MANUAL UPDATE

Lori Phillips

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The purpose of this update is to refine and standardize the analysis of artifacts processed by students and the lab director in the Chan Chich Archaeological Project's (CCAP) field lab. Besides analysis, no significant changes to the structure of the lab processes outlined in Nettleton (2013) have occurred. Any database changes resulting from this season are addressed by Houk (this volume).

The artifact analyses featured in this chapter are lithic, *jute*, and historic artifacts. It should be noted that many alternative analysis techniques exist and the techniques outlined here are the result of lab director experience and preference, as well as working within the constraints of field analysis.

## LITHIC ANALYSIS

Besides ceramics, lithics are the most common artifact class collected during excavation at Chan Chich and constitute the majority of analysis conducted by students and the lab director. As a result, standardization of analysis is key so any future comparison or interpretation of lithics from different seasons can occur.

### Measurements and Identification

After cataloging, lithics are classified into different forms and subforms and then analyzed through measurements of length, width, thickness, and weight, as well as identification

of use wear and retouch (Nettleton 2013). The information is recorded on an Artifact Analysis form in the FileMaker Pro Database, and each analyzed artifact is given a unique Spec. number (see Houk, this volume). Identification and measurements of these dimensions follow criteria outlined in Andrefsky (2005) and Hyde (2003).

1. Distinguishing between debitage, flake tools, cores, and tools is the first step in the analysis. Debitage constitutes unutilized flakes, shatter, and unutilized blades. Identification of flakes and blades is determined by the combination of any of the characteristics featured in Figure 8.1 and the absence of retouch or usewear (Debenath and Dibble 1994: Figure 2.3). Shatter is defined as any piece without these morphological features and the inability to distinguish proximal, distal, ventral, or dorsal orientation. Tools are pieces that have been intentionally modified and are identified by the presence of retouch and/or use wear (Hyde 2003:76), while cores are defined as pieces containing evidence of flake removal from its surface (Hyde 2003:78).
2. Distinguishing informal tools from debitage is determined by the presence of retouch or use wear. Microscopic analysis is generally the method for distinguishing use wear, but the absence of a microscope in the field

Phillips, Lori

2014 The 2014 Chan Chich Archaeological Project Lab Manual Update. In *The 2014 Season of the Chan Chich Archaeological Project*, edited by Brett A. Houk, pp. 137–144. Papers of the Chan Chich Archaeological Project, Number 8. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock.

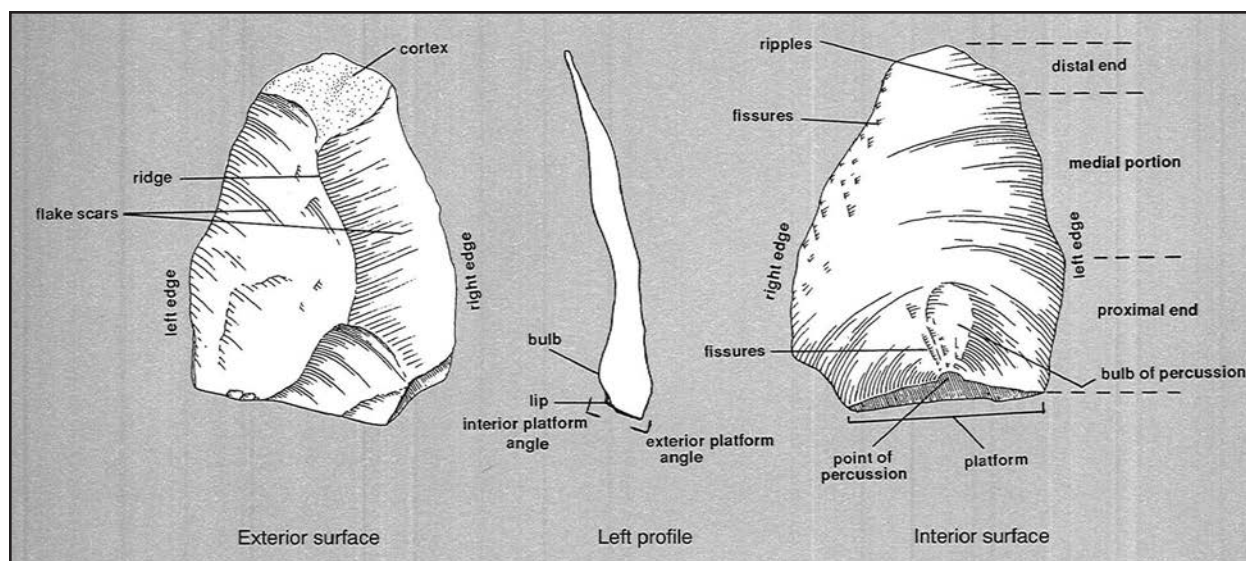


Figure 8.1. Flake landmarks (after Debenath and Dibble 1994:Figure 2.3).

constrains this. Therefore, identification of retouch was the primary characteristic for tools. Retouch is defined as the intentional removal of flakes along the margins of a lithic to create a working edge.

3. Measuring a lithic artifact involves determining its correct orientation followed by measuring its morphology as defined in Andresky (2005) and outlined in Table 8.1 and Figures 8.2 and 8.3 (Andresky 2005: Figures 5.8 and 5.9). Although not specified in Andresky, these methods have been applied to measuring ground stone lithics, such as manos and metates, as well.

Weight should be recorded in grams and rounded to the nearest 0.1 g.

### Labeling and Photography

Lithics deemed worthy of photography—mostly tools, ground stones, and obsidian—are labeled with their corresponding Spec. numbers as defined in Nettleton (2013). Labels should be written using a fine point, acid-free pen away from the edges of the lithic. This is to avoid any possible hindrance to future edge analysis. Information recorded on the Artifact Analysis Tag and in the Artifact Analysis Form follows the guidelines in Nettleton (2013).

Table 8.1. Measurements Guide (derived from Andresky 2005:99-101; 145; and 180-181.)

Artifact Type	Length	Width	Thickness
Flakes and Blades (Utilized and Unutilized)	Maximum distance from the platform to the distal end	Maximum distance perpendicular to the length	Maximum thickness from ventral to dorsal faces
Cores	Maximum linear distance		
Bifacial Tools	Longest linear measurement	Maximum distance perpendicular to the length	Maximum thickness from one face to the other
Ground Stone	Longest linear measurement	Maximum distance perpendicular to the length	Maximum thickness from one face to the other

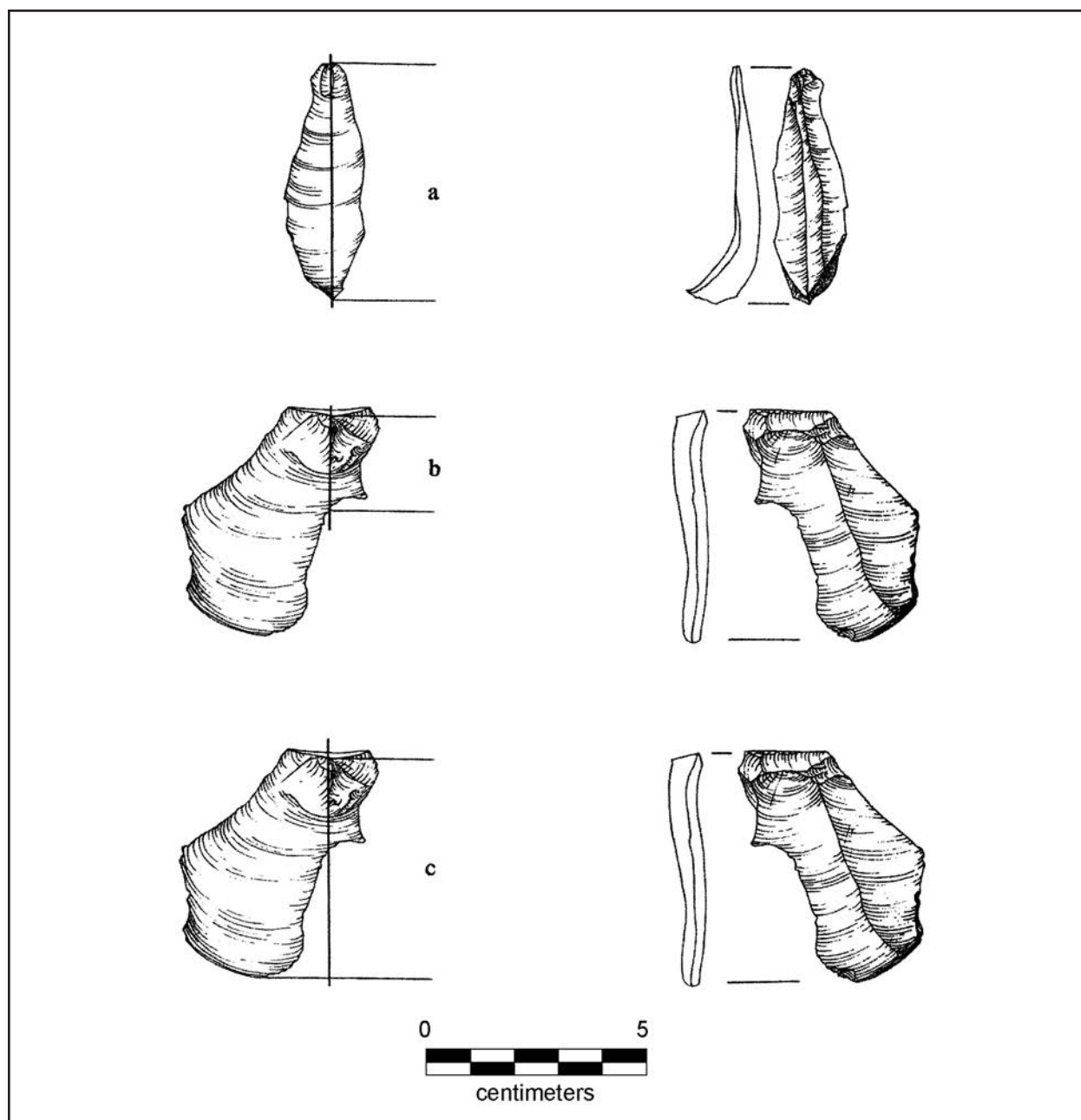


Figure 8.2. Flake length measurements: (a) length corresponding to a line perpendicular to the striking platform's width; (b) length taken on an irregularly shaped flake where the line perpendicular to the striking platform's width is less than 3 cm; (c) length measured as the maximum distance from the proximal end to the distal end along a line perpendicular to the striking platform's width (after Andrefsky 2005: Figure 5.8).

Photographs should be taken on black felt, with a scale, in natural light, supplemented by LED lights if needed. For lithic artifacts, the camera should be set on auto depth of field (or with a large f-stop) to avoid having only part of the artifact appear in focus.

To capture the detail of obsidian pieces, a platform consisting of two PVC pipes, plastic wrap overlying the two pipes, and a piece of white paper underneath the plastic wrap should be utilized (Bruce Templeton 2014, personal communication). This allows for light to pass



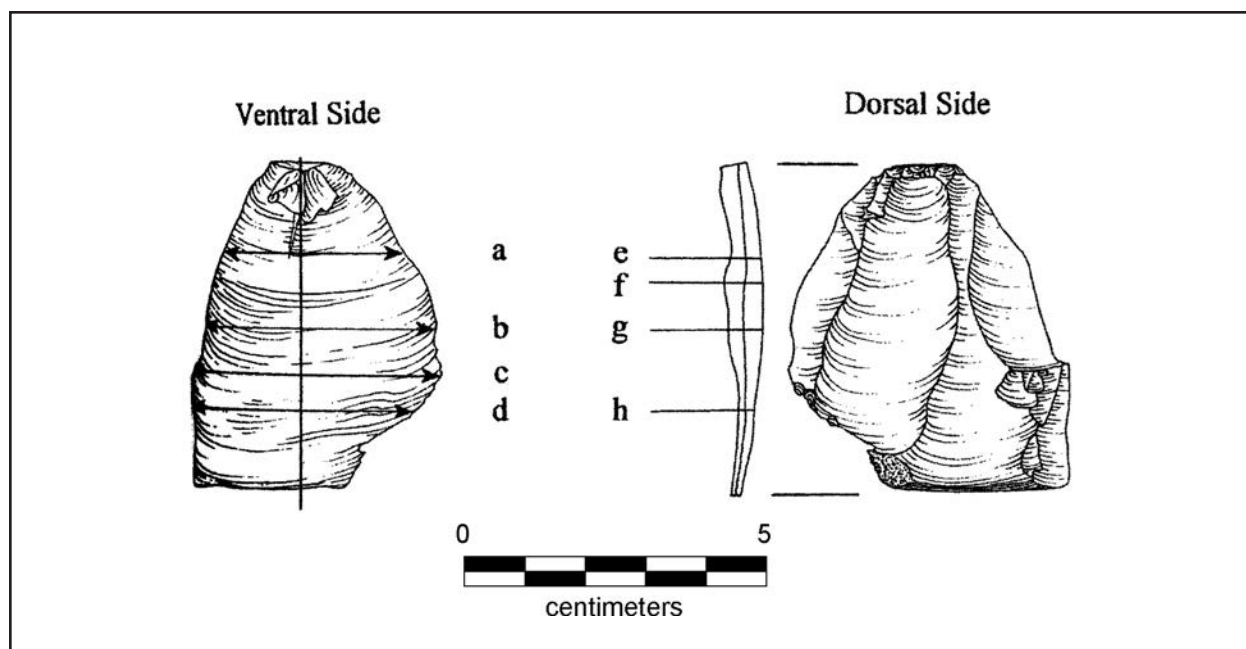


Figure 8.3. Flake width and thickness measurements: (a) flake width at 1/4 maximum length; (b) flake width at 1/2 maximum length; (c) maximum flake width; (d) flake width at 3/4 maximum length; (e) flake thickness at 1/4 maximum length; (f) maximum flake thickness; (g) flake thickness at 1/2 maximum length; (h) flake thickness at 3/4 maximum length (after Andrefsky 2005: Figure 5.9).

through the obsidian and illuminates the fine-grained details of the obsidian.

### JUTE ANALYSIS

*Jute* (*Pachychilus* species) shells are commonly found at Maya sites and have recently become a subject of interest in determining their contribution to the ancient Maya diet (Emery 1988; Healy et al. 1990; Solis 2010; Stanchly and Iannone 1997). Thus, basic analysis consisting of species identification and metric data should be documented to facilitate future research in this area.

### Species Identification

There are many species of *jute*, however two species in particular are commonly found at archaeological sites: *Pachychilus indiorum* and *Pachychilus glaphyrus* (Emery 1988; Healy et al. 1990; Solis 2010; Stanchly and

Iannone 1997). Based on Healy and colleagues (1990:171, 173), *P. indiorum* is characterized as “relatively small, very tightly coiled and smooth shelled,” while *P. glaphyrus* is “a heavy, elongate gastropod defined by the presence of conspicuous vertical plicae and revolving folds on the shell.” An example of *P. glaphyrus* can be seen in Figure 8.4 (left), along with three examples of *P. indiorum*.

### Processing and Analysis

After much trial and error, we determined that the best method for removing soil from within *jute* is to allow them to soak in clean water for a few minutes followed by lightly tapping the shell with your finger, knocking the loosened soil out via the aperture. Soil along the outside of the shell should be lightly brushed off with water and a toothbrush, and the shell allowed to dry.



Figure 8.4. *P. glaphyrus* shell (left) and three *P. indiorum* shells. Photograph courtesy of Terry Powis.

Following cleaning, drying, and cataloging, identification of species following the definitions above should occur. If identification to species is not possible, *Pachychilus* sp. should be the label used.

If complete removal of soil from within a shell is not possible, weights taken should make note of this. Length measurements can be taken from the apex to the distal end. If the distal end is missing, this should be noted in your measurements and in the comment field of the Artifact Analysis Form.

Modifications to the shell should be noted in the comments as well, particularly evidence of perforations or spire-lopping. Spire-lopped is distinguished by the removal of the apex of the *jute* (Healy et al. 1990), while the perforated shell will be characterized by holes punctured on the shell's surface (Keller 2007).

Information recorded on the Artifact Analysis Tag and in the Artifact Analysis Form follows the same guidelines outlined in Nettleton (2013). See Houk (this volume) for more information on the database.

## HISTORIC ARTIFACTS

Survey of historical sites resulted in processing an artifact category not previously dealt with by the CCAP. Therefore, the lab director

developed specific steps for processing and analyzing historic artifacts.

### Processing

Historic artifacts recovered from survey included glass bottles, ceramics, and metal pots. Washing and drying historic artifacts follows the steps outlined in Nettleton (2013), however bottles and metal artifacts must be processed differently. To remove soil from inside the glass bottles, they should be allowed to soak in buckets containing clean water and a small amount of liquid dish soap overnight. Bottles should be removed, water and soil drained, and the bottles allowed to dry the following morning. If soil still remains after the first soaking, allow the bottle to soak longer in new water and soap. Water should not be used to clean metal artifacts as this will worsen any rusting already present. Instead, soil and roots should be removed by lightly brushing a dry paintbrush over the entire artifact.

### Analysis

Analysis of ceramics and the metal pots should include documenting the height, aperture diameter, and weight of pots and the weight of ceramics. Analysis of glass bottles follows the steps outlined by the Society for Historical Archaeology's (Lindsey 2014) "Historic Glass Bottle Identification and Information Website" page. Internet permitting, the analyst should examine each bottle with the website, and subsequent webpages featuring detailed information about each step, in front of them. If Internet access is not available, the analyst may utilize the flowchart featured in Figure 8.5, which depicts each step in the analysis process. After analysis, information should be recorded on the Artifact Analysis Tag and in the Artifact Analysis Form as outlined in Nettleton (2013).

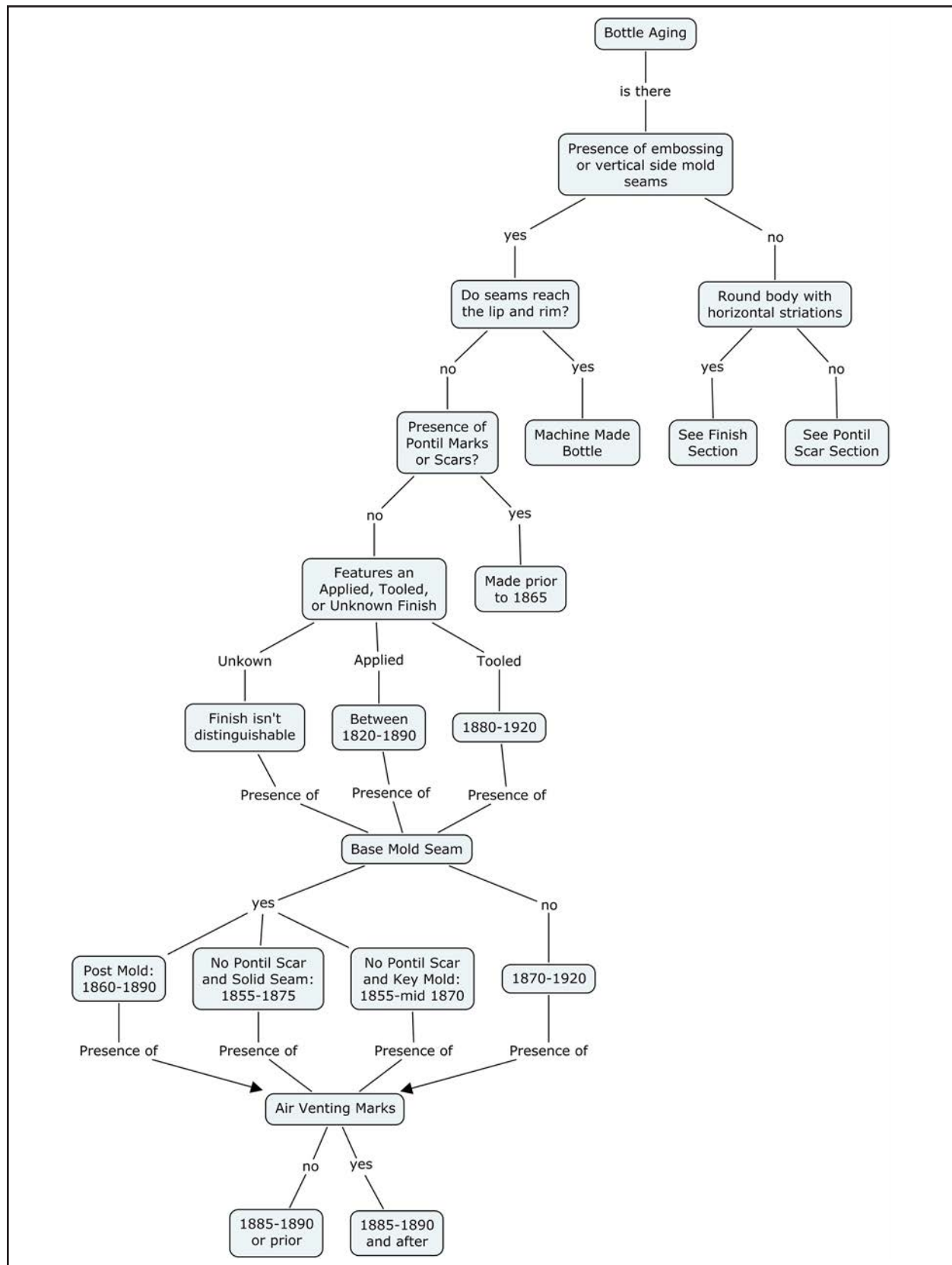


Figure 8.5. Historic bottle analysis flowchart (after Lindsey 2014.)



## DISCUSSION

The purpose of this update was to define analysis techniques for the most common artifacts students and the lab director encounter on a daily basis, as well as to make these analyses standardized so future researchers can use the recorded data. As excavation continues at Chan Chich these methods are likely to change or new methods added as new artifacts are encountered, changes in research foci occur, and new technology is introduced to fieldwork. This update is meant to be a foundation on which these future changes and analyses are based.

**Acknowledgements:** I would like to thank the Chan Chich Lodge staff for making the stay at their beautiful lodge feel like home. I

would particularly like to thank to kitchen staff for providing the plastic wrap necessary for obsidian photography and an endless supply of coffee, which made long hours of artifact analysis possible. Bruce Templeton's willingness to share his many tips and tricks for artifact photography were invaluable. His advice made capturing artifacts in finer detail possible. Finally, thank you to the CCAP staff and students for assisting in the daily lab procedures, their eagerness to learn lithic and *jute* analysis, and providing interesting conversations that made the sometimes monotonous lab tasks enjoyable.

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# THE CHAN CHICH CERAMIC COMPLEXES: A REGIONAL CONTEXT

Fred Valdez, Jr. and Lauren A. Sullivan

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Archaeological research at the ancient Maya site of Chan Chich (Houk 2013) has provided for the definition of six functionally complete ceramic complexes (Figure 9.1). The collected ceramics from seven research seasons serve to inform this study and analysis. Ceramics study on the Chan Chich Archaeological Project (CCAP) remains centered on three major objectives including 1) the establishment of a chronological sequence for the site, 2) utilizing the ceramic analysis for internal site patterns, and 3) correlating external interactions.

Ceramics collected from excavations and survey demonstrate that the Chan Chich area was occupied, to varying degrees, from the Early Middle Preclassic period (ca. 1000 BC) through the Terminal Classic period (ca. AD 850). The later Postclassic and Historic periods are also represented but are less indicative of permanent occupation, seeming to represent visitations or very short (temporary) occupations. The primary focus of this paper is to provide context to the significant Maya occupations that ranged from earliest settlement through the Terminal Classic period. A few comments are provided concerning the less well-represented Postclassic and Historic segments. We are not here validating the extent of occupation (i.e., the extent or intensity of population size), for each period, but rather how each recognized segment of Maya prehistory relates to similar components in the surrounding region. Regional interactions in

terms of degrees or levels of social, economic, and political activity and interaction are considered. Although this aspect of the ceramic analysis is always progressing, the current study serves as a status report of our current understanding and interpretation (as related to objective three above). The methodology of analysis and a summary of each significant ceramic complex are also provided.

## CERAMIC ANALYSIS METHODOLOGY

The ceramic analysis methodology applied to the Chan Chich collection has utilized the long established type:variety-mode system of analysis (Adams 1971; Gifford 1976; Sabloff 1975; Smith et al. 1960). This system of ceramic analysis has been applied with varying success at numerous sites across the Maya lowlands including Altar de Sacrificios (Adams 1971), Becan (Ball 1977), the Belize Valley (Gifford 1976), Cahal Pech (Sullivan and Awe 2013), Cerros (Robertson-Freidel 1980), Coba (Robles 1980), Colha (Valdez 1987), Cuello (Kosakowsky 1987; Kosakowsky and Pring 1998; Pring 1977), El Mirador (Forsyth 1989), K'axob (Lopez Varela 1995), Kichpanha (McDow 1997; Meskill 1992; Reese and Valdez 1987), Laguna de On (Mock 1997), La Milpa (Sagebiel 2014), Nakbe (Forsyth 1993), Northern River Lagoon Site (Mock 1994), Oxkintok (Varela 1992), Rio Azul (Adams and Jackson-Adams 2000), Santa Rita (Chase and Chase 1988), Seibal (Sabloff 1975), and the

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Long Count	Time	Major Periods	Chan Chich	Altar de Sacrificios	Barton Ramie	Colha	Cuello	El Mirador	Seibal	Tikal	Uaxactun								
10.10.0.0.0	1200	Late Postclassic			New Town	Ranas			Bayal	Caban									
	1100	Middle Postclassic				Jimba				Canos		Eznab							
	1000	Early Postclassic				Boca				Yalam									
	900	Terminal Classic				Pasion Chixoy				Spanish Lookout		Masson	Transition						
10.0.0.0.0	800	Late Classic	Pauraque	Veremos	Tiger Run	Bomba		Post Lac Na	Tepejilote	Imix	Tepu 1 2 3								
700	Motnot 1 2							Lac Na		Ix									
9.10.0.0.0	600	Early Classic	Jabiru	Salinas	Hermitage	Cobweb			Acropolis	Junco		Manik	Tzakol 1 2 3						
500														Floral Park	Blossom Park	Paixbancito	Cantutse	Cimi	Chicanel
400																			
300																			
200	Terminal Preclassic	Trogon																	
100					Late Preclassic	Jacamar	Plancha		Mount Hope	Onecimo	Cocos-Chicanel				Cascabel	Cauac			
8.0.0.0.0												AD/BC							
7.10.0.0.0																			
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Figure 9.1. Chan Chich ceramic complexes and other ceramic sequences for the Maya lowlands.

Programme for Belize Archaeological Project (PFBAP) as a regional endeavor (Sullivan 1997; 2002; Sullivan and Valdez 2000, 2006; Valdez et al. 1993).

The definitions of the various ceramic complexes for Chan Chich are based on complex content and its comparison with other sites in the Maya Lowlands and especially with sites within the Three Rivers region. The types associated with each Chan Chich ceramic complexes are provided in Table 9.1. It is the content of each complex that helps define the complex and assists with regional sphere comparisons. While the type:variety-mode system of analysis allows for the ceramics to be used as a chronological tool, which is often of immediate interest to excavators, the system also allows for direct communication between analysts at varying sites. The time segments defined for Chan Chich are correlated with certain other sites containing similar ceramics.

### **THE CERAMIC SEQUENCE**

As mentioned above, the Chan Chich ceramic sequence extends from about 1000 BC to AD 850. The six ceramic complexes that currently represent the Chan Chich sequence are functionally complete as defined by Adams (1971). The ceramic complexes are named after birds observed inhabiting the Chan Chich area.

Although the six ceramic complexes are defined as functionally complete, each complex varies in representative content and implied Maya occupation. For example, the Early Classic Jabiru Complex (Tzakol Sphere), though functionally complete, remains a poorly represented and understood complex. The Postclassic visitations that have been noted at Chan Chich, as is observed at numerous other sites (Houk et al. 2008), are represented only by censer material. As survey and excavations continue at Chan Chich and the surrounding area, acquired data will lend support to refining

the ceramic chronology. Each season of research will provide for better definitions of ceramic types, complexes, and complex facets and in turn a more confident analysis of Chan Chich's culture history.

#### **Kiskadee Complex, Early Middle Preclassic, Swasey Sphere**

The earliest occupation at Chan Chich, which begins about 1000 BC and extends to 600 BC, is called the Kiskadee Complex. This Early Middle Preclassic complex has significant ceramic types that fit well with the northern Belize Swasey Sphere. The Chan Chich Swasey Sphere ceramics are very similar to those reported from Colha (Valdez 1987, 1994), Cuello (Kosakowsky 1987; Kosakowsky and Pring 1998; Pring 1977), K'axob (Lopez Varela and McAnany 1999), Kichpanha (McDow 1997; Reese and Valdez 1985), the PFBAP region (Sullivan and Valdez 2000), and Rio Azul (Adams and Jackson-Adams 2000). Although it is important to understand that there is an intriguing overlap in similarity between the Swasey (northern Belize) and Xe (Pasion) spheres, the Chan Chich material and ceramics from the neighboring Kaxil Uinic (Houk 2012; Harris and Sisneros 2012) are also connected to the early ceramics of the Belize Valley (Awe 1992; Garber et al. 2006; Sullivan and Awe 2013). The meaning of the overlap and the connections between Chan Chich and Northern Belize as well as Chan Chich and the Belize Valley has yet to be determined.

#### **Oropendola Complex, Late Middle Preclassic, Mamom Sphere**

The Chan Chich Oropendola Complex is placed in the Mamom ceramic sphere and dates from 600 to 400 BC. The Mamom ceramic sphere, although recognized across the Maya area, displays regional variations. Similar ceramic content (and complexes) have

Table 9.1. Chan Chich Ceramic Complexes with Major Ceramic Types and Varieties

Complex	Major Types and Varieties
<b>Kiskadee Complex, Early Middle Preclassic, Swasey Sphere</b>	Consejo Red: Estrella Variety
	Ramgoat Red: Ramgoat Variety
	Chicago Orange: Nago Bank Variety
	Savannah Orange: Rejolla Variety
	Quamina Cream: Quamina Variety
	Machaca Black: Wamil Variety
	Tower Hill Red-on-cream: Tower Hill Variety
	Barquedier Grooved-incised: Barquedier Variety
	Calcutta Incised: Variety Unspecified
	Cotton Tree Incised: Cotton Tree Variety
	Unnamed Red-on-orange paste
<b>Oropendola Complex, Late Middle Preclassic, Mamom Sphere</b>	Richardson Peak Unslipped: Variety Unspecified
	Sapote striated: Unspecified (thin-wall) Variety
	Joventud Red: Palmasito Variety
	Chunhinta Black: Chunhinta Variety
	Chicago Orange: Warrie Camp Variety
	Pital Cream: Variety Unspecified
	Muxanal Red-and-cream: Lazaro Variety
	Guitara Incised: Grooved-incised Variety
	Desvario Chamfered: Variety Unspecified
	Unnamed "Belize Valley Orange Paste"
	Unnamed "Unslipped Incised Orange Paste"
	Unnamed Pink-and-red mottled
	Unnamed Red-and-black mottled and Punctated
	Unnamed Dark red w/specular hematite (?)
<b>Jacamar Complex, Late Preclassic, Chicanel Sphere</b>	Richardson Peak Unslipped: Unspecified Variety (?)
	Sapote Striated: Variety Unspecified
	Sierra Red: Sierra Variety
	Society Hall: Bound to Shine Variety
	Polvero Black: Variety Unspecified
	Flor Cream: Variety Unspecified
	Nictaa Buff: Variety Unspecified
	San Antonio Golden-brown: Variety Unspecified
	Mateo Red-on-cream: Variety Unspecified
	Puletan Red-and-unslipped: Variety Unspecified
	Laguna Verde Incised: Grooved-incised Variety
	Lechugal Incised: Macaw Bank Variety
	Repollo Impressed: Variety Unspecified
	Lagartos Punctated: Variety Unspecified



Table 9.1. Chan Chich Ceramic Complexes with Major Ceramic Types and Varieties (continued)

<b>Jacamar Complex (continued)</b>	Escobal Red-on-buff: Variety Unspecified
	Unnamed Red-and-black mottled
<b>Trogon Complex, Terminal Preclassic, Floral Park Sphere</b>	*Sapote Striated: Variety Unspecified
	Caribal Red: Variety Unspecified
	*Sierra Red: Sierra Variety
	*Society Hall: Bound to Shine Variety
	*Nictaa Buff: Variety Unspecified
	San Felipe Brown: Variety Unspecified
	Tanjoc Burnished: Variety Unspecified (?)
	*Polvero Black: Variety Unspecified
	*Escobal Red-on-buff: Variety Unspecified
	*Puletan Red-and-unslipped: Variety Unspecified
	*Repollo Impressed: Variety Unspecified
	Unnamed Red-rimmed Buff: Variety Unspecified
	Unnamed Buff Incised
	Unnamed Red-and-unslipped Punctated
	Unnamed Red Incised-and-punctated
	Unnamed Red-on-black and punctated
	Unnamed Cream-and-brown with grooved rim
<b>Jabiru Complex, Early Classic, Tzakol Sphere</b>	Hewlett Bank Unslipped: Variety Unspecified (?)
	Mopan Striated: Variety Unspecified
	Minanha Red: Minanha Variety
	Aguila Orange: Variety Unspecified
	Balanza Black: Balanza Variety
	Lucha Incised: Variety Unspecified
	Dos Arroyos Orange-polychrome: Dos Arroyos Variety
<b>Motmot Complex, Late Classic 1-2, Tepeu Sphere</b>	Zibal Unslipped: Variety Unspecified
	Encanto Striated: Folded rim variety
	Encanto Striated: Variety Unspecified
	Mountain Pine Red: Variety Unspecified
	Subin Red: Variety Unspecified
	Tinaja Red: Variety Unspecified
	Teakettle Bank Black: Variety Unspecified
	Achote Black: Variety Unspecified
	Cubeta Incised: Variety Unspecified
	Torro Gouged-incised: Variety Unspecified
	Pantano Impressed: Variety Unspecified
	Palmar Orange-polychrome: Variety Unspecified
	Unnamed Black-rimmed Red-on-brown

Table 9.1. Chan Chich Ceramic Complexes with Major Ceramic Types and Varieties (continued)

<b>Pauraque Complex, Late Classic 3, Tepeu Sphere</b>	Alexanders Unslipped: Variety Unspecified
	Encanto Striated: Everted rim Variety
	Encanto Striated: Giant Variety
	Belize Red: Belize Variety
	**Subin Red: Variety Unspecified
	**Tinaja Red: Variety Unspecified
	**Achote Black: Variety Unspecified
	Cubeta Incised: Variety Unspecified
	Cameron Incised: Variety Unspecified
	**Pantano Impressed: Variety Unspecified
	Tunich Red-on-orange: Variety Unspecified
	Yuhactal Black-on-red: Variety Unspecified
	Daylight Orange: Darknight Variety
	**Palmar Orange-polychrome: Variety Unspecified
	Ticul Thin Slate: Variety Unspecified
	Unnamed Incised (ash temper)
	Unnamed Imitation Fine Orange

\* Occur in both the Jacamar Complex (Late Preclassic) and the Trogon Complex (Protoclassic)

\*\* These types have a significant overlap between the Motmot Complex and the Pauraque Complex.

been defined at many sites including Altar de Sacrificios (Adams 1971), Colha (Valdez 1987, 1994), Cuello (Kosakowsky and Pring 1998), El Mirador (Forsyth 1989), Nakbe (Forsyth 1993), Rio Azul (Adams and Jackson-Adams 2000), Seibal (Sabloff 1975), in addition to sites directly north in the PfBAP (Sullivan and Valdez 2000). Communication at intraregional and interregional levels clearly occurred, but may have been limited particularly as compared to later phases. Although distinctions between ceramics (of similar type:variety) vary from one site to another, the differences are minor in terms of form/shape, in slip color, and/or in surface treatment. These elements, however, are consistent enough throughout the lowlands to maintain the placement of the Chan Chich Oropendola Complex in the Mamom ceramic sphere.

### **Jacamar Complex, Late Preclassic, Chicanel Sphere**

The Late Preclassic Jacamar Ceramic Complex is estimated to begin ca. 400 BC and extends to AD 150. Although the Late Preclassic is usually dated to AD 250, a separate complex is defined for the following Terminal Preclassic period because of the presence of Floral Park sphere ceramics and the excavation of a tomb at Chan Chich (Houk et. al. 2010). The Chan Chich Jacamar Complex is a nearly identical in type composition to other ceramic complexes of the same period in the Maya lowlands. The various ceramic vessel forms (bowls, jars, etc.) become very uniform in shape, slip color, and surface treatment in this period. Comparative site ceramic typology for this analysis include Altar de Sacrificios (Adams 1971), Becan (Ball 1977), Cerros (Robertson-Freidel 1980), Colha

(Valdez 1987, 1994), Cuello (Kosakowsky and Pring 1998), Dos Hombres (Sullivan 2002; Sullivan and Valdez 2000, 2006), El Mirador (Forsyth 1989), K'axob (Lopez Varela 1995), Nakbe (Forsyth 1993), Rio Azul (Adams and Jackson-Adams 2000), and Seibal (Sabloff 1975).

Based on ceramic comparisons between numerous sites, the Late Preclassic was a time of intensive and extensive communication in the lowland Maya region. This was also a time of conservative production in pottery making, but would undergo significant changes in the next phase.

#### **Trogon Complex, Terminal Preclassic, Floral Park Sphere**

The Chan Chich Terminal Preclassic complex is called the Trogon Complex and dates to approximately AD 150–250. Types defined for the Jacamar Complex (Chicanel Sphere) and for the Trogon Complex (Floral Park Sphere) have a significant overlap. The conservative and practical use of forms and slips that function well may account for some of the named ceramic types overlap between the two complexes. It is the introduction of new and sometimes elaborate forms as well as a general hardening of the ceramic slips that allows for the separation of the two complexes. The Terminal Preclassic Trogon Complex represents a period of innovation when polychrome pottery was introduced and most slips had developed from “waxy wares” to a “hard, glossy” appearance. The best example from this complex pottery is seen in Tomb 2 excavated by Robichaux and Houk (Houk et. al. 2010). This tomb contained 11 vessels that included one Sierra Red basal angle bowl, four red slipped mammiform support bowls, and one red-and-incised basal flange bowl (Valdez and Houk 1998). The contents of this tomb are similar to Tomb 5 at

Blue Creek, which included 28 vessels similar in form to the Cauac (AD 1–150) and Cimi (AD 150–250) Complexes at Tikal (Kosakowsky and Lohse 2003). The Chan Chich protoclassic ceramics compare well with similar material from other lowland sites including Altar de Sacrificios (Adams 1971), the Belize Valley (Gifford 1976), Cerros (Robertson-Freidel 1980), Colha (Meskill 1992; Valdez 1987), Cuello (Pring 1977), Kichpanha (McDow 1997; Meskill 1992), and La Lagunita (Ichon and Arnould 1985).

#### **Jabiru Complex, Early Classic, Tzakol Sphere**

The Early Classic at Chan Chich, though not well represented in the ceramic remains, is called the Jabiru Complex and is dated AD 250–600. While significant Early Classic ceramic types have been identified, the quantity of material indicates a reduced/smaller occupation than in previous phases. Although the sherd recovery of the Jabiru Complex is minor, several complete polychrome vessels were encountered from looters' activity, indicating a more significant Early Classic development than implied by sherds alone. The interpretation of a weak or minor Early Classic occupation and activity may be skewed by a sampling concern. Another possibility is a likely shift in settlement where many Early Classic occupants inhabit areas around the site rather than the core itself. Sites that compare well for the Early Classic Jabiru Complex include Altar de Sacrificios (Adams 1971), Becan (Ball 1977), the Belize Valley (Gifford 1976), Coba (Robles 1980), Colha (Meskill 1992; Valdez 1987), Kichpanha (McDow 1997; Meskill 1992), the PfBAP (Sullivan 2002; Sullivan and Valdez 2000, 2006), Rio Azul (Adams and Jackson-Adams 2000), Seibal (Sabloff 1975), and Stan Creek (Graham 1994).



**Motmot Complex, Late Classic 1-2,  
Tepeu Sphere**

The Chan Chich Late Classic 1-2 phase is represented by the Motmot Complex and currently dated to ca. AD 600–800. The Motmot Complex is equated with the northern Belize and eastern Peten ceramic developments of the Late Classic period. Tepeu 1-2 ceramic complexes similar to the Chan Chich materials are found at Altar de Sacrificios (Adams 1971), Becan (Ball 1977), the Belize Valley (Gifford 1976), Colha (Valdez 1987, 1994), Kichpanha (Reese and Valdez 1987; McDow 1997), Lamanai (personal observation, 1997), La Milpa (Sagebiel 2014), Northern River Lagoon (Mock 1994), the Programme for Belize area (Sullivan and Valdez 2000, Sullivan 2002), Rio Azul (Adams and Jackson-Adams 2000), and Seibal (Sabloff 1975). While a large number of excavated ceramics from Chan Chich date to the Late Classic Motmot Complex it must be remembered that this complex and the following Puraque Complex of the Terminal

Classic (Tepeu 3) have a significant overlap in their ceramics types.

Several well-preserved examples of Motmot Complex ceramics were recovered during the 2014 excavations. Herndon and colleagues (this volume) report the excavation of a burial (Burial CC-B11) on the center axis of the summit of Structure A-1 from the penultimate phase of the building. Associated with this burial were four complete vessels from the Achote Ceramic Group, which the authors of this chapter identified based on photographs and Structure from Motion (SfM) models of the vessels (Figure 9.2). This black slipped pottery is quite common throughout the region during the Late Classic. There were also several reconstructable Tinaja Red vessels (Figure 9.3) located in Structure A-23 in the Back Plaza. These vessels were associated with large areas of burned soil, manos, animal bone, broken knives, and a high quantity of other ceramic sherds. Preliminary analysis suggests that this



Figure 9.2. Composite image of vessels from Burial CC-B11, created by Mark Willis from SfM data. From left to right, Vessel 2, Vessel 3, Vessel 4, and Vessel 1. For scale, Vessel 1 is 27 cm tall.



Figure 9.3. Tinaja Red rims from Lot CC-13-M-03 at Structure A-23 in the Back Plaza.

area may be associated with food preparation (Vazquez et al., this volume).

### **Pauraque Complex, Late Classic 3, Tepeu Sphere**

The Late Classic 3 period ca. AD 800–850 is represented at Chan Chich by the Pauraque Complex. The Pauraque Complex comprises ceramic types known for the Terminal Classic period at many sites in the lowlands and compares favorably with complexes at the following sites: Altar de Sacrificios (Adams 1971), Becan (Ball 1977), the Belize Valley (Gifford 1976), Colha (Valdez 1987, 1994), Kichpanha (Reese and Valdez 1987; McDow 1997), La Milpa (Sagebiel 2014), Northern River Lagoon (Mock 1994), the Programme for Belize area (Sullivan and Valdez 2000, Sullivan et. al. 2007), Rio Azul (Adams and Jackson-Adams 2000), and Seibal (Sabloff 1975). Most excavations at Chan Chich thus far have encountered Terminal Classic ceramics. As noted at other sites in the region, there is a strong continuity between the Late Classic and the Terminal Classic periods (Sullivan et. al. 2007; 2013). One of the issues, as mentioned above, is the presence of ceramic types that overlap with the preceding Motmot Complex. There is also a lack of typical Terminal Classic ceramic markers such as Fine Orange, Plumbate, and other “finewares.” There are few examples of these markers at Chan Chich. The most significant ones include a partially reconstructable Fine Orange vessel and sherds from an imitation Fine Orange vessel that were associated with human skeletal material, exotic artifacts, figurine fragments, shells artifacts, obsidian blades and a jaguar canine all concentrated on the lower steps of Structures C-2 and C-6 (Sullivan et. al. 2007). It does seem, in most cases, that Terminal Classic was the last period of significant activity at Chan Chich.

### **THE CHAN CHICH CERAMIC CHRONOLOGY IN THE MAYA WORLD**

The Chan Chich ceramic complexes, based on our analysis of complex contents, provides for a beginning settlement at Chan Chich and its neighboring areas at about 1000 BC. It also seems that the region was generally abandoned between AD 800 and 900. The beginning and ending dates for significant activity are in line with many other Maya sites in the broader region and beyond. Figure 9.1 is a chronological chart that places the Chan Chich ceramic complexes in relation to other lowland sites.

The Early Middle Preclassic (1000–600 BC) and the Late Middle Preclassic (600–400 BC) complexes are certainly related to other early sites in northern Belize and northeastern Peten, but recent finds also connect the Chan Chich zone to the Belize Valley. Common pottery types and forms from these early complexes imply communication across a large region. The similarities are at a general level given the same named types, though varieties are usually distinct. At this time many cultural similarities are seen between Maya sites, but there remains a distinct site and regional variation indicating a less than complete cohesion that seems more apparent in later phases.

The Late Preclassic and Terminal Preclassic periods (400 BC–AD 250) at Chan Chich, based on the ceramics (types and varieties), were robust periods of occupation and interaction. Local sites were certainly intensively involved in the exchange of material items (ceramics), ideas/knowledge, and in the process resulting with site inventories of similar appearance and content. In many cases the similarity of artifacts extends to the point of the material culture being identical, not just similar. Much of this interaction and similarity between sites seems to extend over large regional spaces such as northern Belize and eastern Peten. It is an intensified communication during/by the



Late Preclassic period that likely assisted in reducing regional variation so apparent for the Middle Preclassic period.

Chan Chich was clearly one of the Maya cities actively involved in the trade and communications systems common throughout the Maya lowlands. Continuing from Late Preclassic developments is the Terminal Preclassic Period (Floral Park Sphere). Late Preclassic sites tend to follow one of two paths of development for the balance of the Preclassic. Some sites remained rather conservative in production and remained “Late Preclassic” while others became involved in a system of interaction represented by innovative developments at the end of the Late Preclassic period. Ceramics from many sites in the Maya lowlands have helped to define both trajectories of development. Most sites maintaining their conservative stance are said to have a Terminal Preclassic phase and seem to end or diminish occupation by AD 250. Other sites following the new developments or innovations, prospered at this time and transitioned into the Early Classic.

Early Classic (AD 250–600) ceramic artifacts follow many of the Terminal Preclassic innovations. Although the evidence for an Early Classic Chan Chich is limited, it is clear that Early Classic occupants were present and active. At this point, no satisfactory explanation has been attempted for a weak or minor presence at the Chan Chich core during the Early Classic period. It may be that as sampling is expanded by the project, the findings might help to determine a true reduction in occupation or define where Early Classic inhabitants were most active. An intriguing possibility as discussed elsewhere (Brady et al. 1998), suggests that the earliest Early Classic (Tzakol 1) may be partially represented by protoclassic developments. Should this be demonstrated, it may be understood that occupation intensity for the period is distorted by an imposed

analytical attempt to separate what are chronologically contemporaneous artifacts (in our case, pottery). Another explanation for a reduced population at the site core may be the movement of the Early Classic populace to areas in the rural zones of Chan Chich. A similar pattern has been noted from the PfBAP, a regional research project that has significant sampling from outside of site cores in the rural or peripheral/support zones for the larger settlements (Sullivan 2002).

The Late Classic (AD 600–800) and Terminal Classic (AD 800–900) at Chan Chich are represented by two ceramic complexes, the Motmot Complex and the Pauraque Complex. All areas of investigation produced ceramics of the Late Classic phase usually with Terminal Classic material near or at the surface level. Chan Chich seems to have been an active and significant participant of the Peten and northern Belize trade and exchange network. Ceramic types found at Chan Chich are easily correlated with immediate and interregional areas implying extensive and intensive communication between sites and regions.

Many of the Terminal Classic sherds are quite eroded and weathered indicating that much of it was left exposed perhaps with the abandonment of the site. The reason(s) for, and nature of Chan Chich’s abandonment remain uncertain, but whatever the causes/circumstances, it seems to be an effect for most other Maya settlements across the southern lowlands. While later Postclassic visitations with special offerings did occur, no permanent Maya occupation of Chan Chich is known after the Terminal Classic period except for the late 19th and early 20th century settlement of San Pedro Maya at Kaxil Uinic, several kilometers west of Chan Chich (see Houk 2012).

The Chan Chich ceramic chronology allows us to see the general settlement, growth, and interaction of this polity over time. The site

seems to follow a development trajectory similar to many other sites in the region and at more distant locales. The exact nature and role of Chan Chich within its regional sphere is yet to be determined, but whatever model

is configured, there is little doubt of the significance for this Maya city. The quantity and quality of the pottery alone attest to its well-positioned rulers and populace that survived and prospered for many centuries.

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# THE EVOLUTION OF THE CHAN CHICH ARCHAEOLOGICAL PROJECT'S DIGITAL DATA COLLECTION SYSTEM

Brett A. Houk

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The 2014 season of the Chan Chich Archaeological Project (CCAP) marked the third year of our implementation of a digital data collection system. This chapter presents the changes we have made to the structure our FileMaker Pro database, the changes made to our workflow, and additional data management and storage concerns that have developed since I first published about the CCAP digital data collection system in the 2012 season report (Houk 2012).

## CHANGES TO DATABASE STRUCTURE

In 2013, CCAP added a regional survey component known as the Belize Estates Archaeological Survey Team (BEAST), which necessitated changes to the FileMaker Pro database to accommodate new types of information. As a result, we added a third component to the overarching organization of the database; Survey Forms joined Field Forms and Lab Forms as the major groups of data collection forms. The hierarchy of forms did not change, per se, but the Site Summary form, which is the first form that must be filled out before data can be collected at a particular site, was expanded to include much more information and moved from Field Forms to Survey Forms. There, it was joined by several other new forms designed to record information relevant to survey-level documentation (Table 10.1).

One of the primary drawbacks to the original 2012 version of the database was that it required project personnel to enter complete Operation, Suboperation, and Lot numbers manually when creating a new form. In other words, to create a form for the first lot in Suboperation (Subop) A of Operation (Op) 1 at Chan Chich, the excavator had to type “CC-01” for the operation on the Operation form, “CC-01-A” for the suboperation on the Subop Definition form, and “CC-01-A-01” for the lot on the Lot form. The original rationale for this was to maintain unique provenience numbers in the lot field, for example, to prevent duplicate lot numbers from being assigned accidentally. In 2014, all the forms were modified to include a new field called Full Op, Full Subop, and Full Lot for the respective forms. These fields automatically populate by combining the Op, Subop, and Lot designators, allowing the archaeologist to simply enter “01” as the lot number on the form (Figure 10.3).

In 2012 and 2013 operation directors reported frustration with lost forms—data entered on a Lot form, for example, that was not there following a lab update. Although FileMaker Go does not include a “save file” option, this issue appeared to be related to data not being stored automatically. Often, the missing forms were the last ones modified before an update. To remedy this, in 2014 “Commit” and “Revert” buttons were added to the bottom of most forms

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2014 The Evolution of the Chan Chich Archaeological Project's Digital Data Collection System. In *The 2014 Season of the Chan Chich Archaeological Project*, edited by Brett A. Houk, pp. 161–168. Papers of the Chan Chich Archaeological Project, Number 8. Department of Sociology, Anthropology, and Social Work, Texas Tech University, Lubbock.

Table 10.1. FileMaker Pro Forms Used by BEAST and CCAP in 2013

Type of Form	Form Name	Purpose
Survey	Site Summary	Includes a description of the site, information on location, and portals or links to other field/survey forms including Operations, Site Map, Photolog, Survey Area, and BE #s.
	Survey Area (New)	Designed to allow survey team to record location and descriptive information on individual survey areas (transects, targeted surveys, etc.) with portals or links to Site Summary, Site Map, and Photolog.
	BE #s (New)	Value list of BE #s.
	IA Site Form (New)	Layout that reports the information from the Site Summary form in a format consistent with the Institute of Archaeology's site form (Figure 10.1).
	Site Map (New)	Records descriptive information about a site map and includes a copy of the map.
Field	Operations	Higher order form, just below Site Summary in the hierarchy, that includes a definition of the operation and portals to Subops, Burials, Caches, Photolog, and Field Drawings.
	List of Datums	Running list of datums with elevations for an operation.
	Subop Definition	Description of an individual suboperation with portals to Lot, Photolog, Field Drawings, Sample, Burial, and Cache (Figure 10.2).
	Lot	Form that has been fairly heavily revised since 2012 that collects descriptive information, records artifact recovery, documents relationship to other lots, and includes portals to Photolog, Samples, and two lab forms (Catalog and Artifact Analysis).
	Shovel Test Lot (New)	Alternate layout of Lot form that allows for shovel testing by adding a level to the lot number.
	Sample	Form required for each sample collected. Numbers are assigned consecutively by operation.
	Burial	Form required for each burial. Numbers are assigned consecutively by site.
	Individual-Burial	Form to document each individual within a burial. In other words, a burial with multiple interments requires one Burial form and multiple Individual-Burial forms.
	Cache	Form required for each cache.
	Photolog	Photolog data is initially entered in Numbers on the iPads then imported into FileMaker Pro into the Photolog form, which has a default layout as a list.
Lab	List of Closed Lots	Automatically generated list of lots that tracks field closing date and lab check in date.
	Artifact Codes	List of codes used by the Artifact Analysis form to classify artifacts.
	Artifact Catalog	Primary lab form used to move artifacts from the field provenience system into the lab processing system; generates unique Catalog numbers using a running number for the project but appends site identification codes.
	Artifact Analysis	Detailed analysis form that assigns Spec. #s to individually analyzed artifacts.
	Lot-to-Lab Bag Check In	Includes a portal to Lot forms, pulls in field artifact and sample collection information, and is used by lab staff to check artifacts brought in from the field against the reported collection.

Site Number:	Site Name:	District:	Institute of Archaeology Belize
Type of Site:		Location and Access:	
Description:			
Owner or Tenant:			
Source of Information:			
Literature:	Date of Recording:	Recorded By:	

Figure 10.1. The Site Summary form has an alternate layout that mimics the Institute of Archaeology's Site Form.

(see Figures 10.2 and 10.3). The “Commit” button essentially saves the entered data, and the “Revert” button restores the information on a form to the last time the “Commit” button was clicked.

## WORKFLOW MODIFICATIONS

As noted in the original report on the database, the biggest challenges to using FileMaker Pro and multiple iPads loaded with FileMaker Go are importing data from the iPads into the lab computer without over-writing files by mistake and then exporting new versions of the database back to each iPad (Houk 2012). Carolyn Nettleton (2013:88–91) methodized the process during the 2013 season into 48

steps. Although Nettleton (2013:91) was able to accomplish the process in approximately 20 minutes, it was still cumbersome.

The original intent—and, ultimately, the greatest complication—of the database workflow was to export full copies of the database to each iPad following each update so that excavators would have access to lab analysis data in the field. In reality, however, excavators do not need lab data until they begin to write up the results of the fieldwork. Therefore, in 2013, we modified the workflow to eliminate pushing new databases back to the iPads. The new approach is greatly simplified and eliminates




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**Chan Chich Archaeological Project**  
**Lot Form**

Chan Chich    Op **CC-12**    Subop **CC-12-H**    Lot **13**

Chan Chich Archaeological Project



Chan Chich, Belize - Central America

**Full Lot auto populates**

Lot **CC-12-H-13**

Recorder **Houk**    iPad **1**    Date Opened **7/14/2014**    Date Closed **7/15/2014**

Lot Type **Burial**    **CC-B13**    Unit Datum **CC-12-C Datum**    Datum Elevation **129.211**

**Describe Lot's Location**  
Burial was discovered while excavating for chronology beneath the step on the south side of the room exposed by CC-12-C and -H. The burial was below an earlier floor (older than the step), and a layer of fill (CC-12-H-11), cut within Lot CC-12-H-12. The burial was encountered in the northeast corner of the 1-x-1-m chronology subunit and extended to the north beneath the unexcavated area of room floor in CC-12-H.

Top			
NW	3.33	3.43	NE
SW	3.33	3.33	SE
NW	3.7	3.7	NE
SW	3.7	3.7	SE
Bottom			

**Comments, Observations, Etc.**  
See also Burial CC-13 form. Burial is of unknown age and had no grave goods. An Early Classic basal flange sherd was observed in the fill surrounding the burial, but that is not a particularly good estimate of the burials age.

**Subop is a pull down list. Op and Site auto populate based on Subop. The field archaeologist only has to enter a number in the Lot field.**

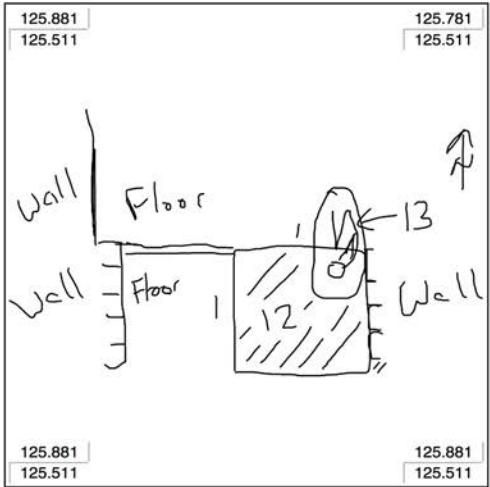
**Field Collection: Common Materials**

Material Type	Obs.	Col.	App. #	# of Bags	Lab
Bone	<input type="checkbox"/>	<input checked="" type="checkbox"/>	200	70	
Debitage	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	1	
Shell	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	1	
Other	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	1	
	<input type="checkbox"/>	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/>			

**Field Collection: Small Finds and Samples**

Material Type	ID/Sample #	App. #	# of Bags	Lab
				<input type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>
				<input type="checkbox"/>

**Sketch Map of Lot**



**Revert**    **Commit**

Figure 10.3. The Lot form layout in FileMaker Pro. The Full Lot is a new field added in 2014 that streamlines the process of creating a new lot form.

most of the errors and accidental form deletions that plagued us for two seasons.

The modified workflow is:

- At the beginning of the season, each iPad is loaded with a clean database. The operation director has the primary iPad for his or her operation; on that iPad, the operation director maintains the official copy of the higher level forms (Site Summary, Operations, and List of Datums) along with any lower level forms (Suboperation Definition, Lot, Burial, Individual-Burial, Sample, Cache, and Photolog) associated with the excavations he or she is overseeing.
- If the operation is using more than one iPad, the secondary iPads are loaded with an unofficial set of the higher order forms, which are needed to create the lower level forms and populate the datum fields, and lower levels forms associated with specific units.
- Each evening or every other day the lab director copies the databases from all of the operation's iPads and changes the file names following this example: "CCAP14 Op CC-14 Database 07-15-14 iPad 4 field to lab." The file name indicates the season, the operation, the date of the importing, and the fact that the file is the version sent from the field iPad to the lab computer.
- The lab director then imports the full database from the operation director's iPad and the lower level forms from the secondary iPads. In both cases, the "Update Matching Records Found in Set" option is selected for the import action (see Nettleton 2013:90).
- Rather than exporting a new copy of the database back to the iPads, the files are simply renamed on the iPads with the date of the importing. Each iPad then has all of

the forms that were copied over to the lab computer with no possibility of accidental deletion.

- At the end of the season, when Photologs have been completed and imported into the lab version of the database and artifact cataloging and analysis have been completed, the lab director exports a new copy of the full database to the iPads for the field staff to use in writing field reports or theses.

### **ADDITIONAL DATA MANAGEMENT CONCERNS**

Beginning in 2013, the CCAP began employing Structure from Motion (SfM) to document excavations and artifacts (Figure 10.4). As discussed by Willis and colleagues (this volume), SfM uses special software to create 3D data sets from overlapping photographs. The project first used SfM in 2013 to map Structure A-5 in the Main Plaza (Houk et al. 2013).

Using SfM generates thousands of digital images, which take up hard drive space and must be organized by subject. A secondary issue is that the lab computer is not powerful enough to run the Agisoft PhotoScan Pro software the project uses, meaning the images must be processed on the field laptop or processed after the field season has ended on a more powerful desktop machine at Texas Tech University. An additional complication we discovered with the software is that if the image files and 3D model file are moved from one hard drive to another, the 3D model will lose its links to the images, requiring the analyst to rebuild the model.

Another issue arose in 2014 based on how the project collected SfM data. Each operation is assigned a digital camera, and in 2014 we used one memory card for SfM images and another for standard excavation photos. This



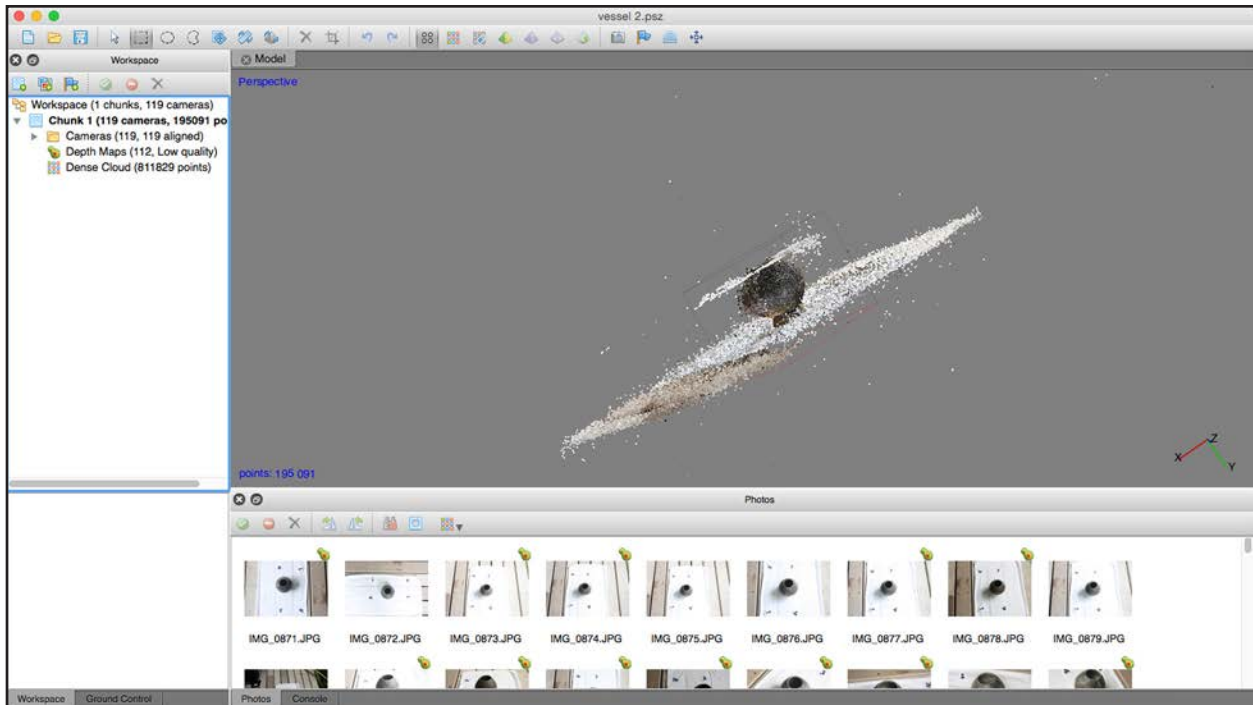


Figure 10.4. Screenshot from Agisoft PhotoScan Pro showing an in-progress model of Vessel 2 from Burial CC-B11 (see Herndon et al., this volume).

created issues with file numbering, resulting in multiple images having the same file name in some cases. To resolve this, in future seasons the same memory card will be used for both types of photos.

Based on trial and error, the project staff developed the following procedures for collecting, processing, and storing SfM data:

- Prior to taking SfM images, however, the photographer will use an iPad to create a photoboard indicating the subject (subop, lot, or artifact, for example) and noting “SfM.” The photographer will take a photo of the iPad to create a visual marker in the batch of images identify the start of the block of SfM photos before shooting the SfM images. SfM images do not need to be recorded in the photolog.
- All SfM images are stored on a dedicated portable hard drive, and that hard drive is regularly backed up onto another portable

hard drive. Memory cards are not erased unless absolutely necessary.

- Prior to building a SfM model, the photographer first creates a disk image (dmg) file and copies all the photos to that file. The Photoscan files are also saved to this disk image, which can be moved from one hard drive to another without Photoscan’s losing the links to the images.
- All SfM models are stored together and clearly named by operation and subject.

## FINAL THOUGHTS

The CCAP digital data collection system has matured and evolved over three seasons of implementation, and additional modifications will likely be made before the 2015 season. In its current form, the FileMaker Pro relational database is accomplishing everything it was originally designed to do and organizes information in a much more accessible way than

the old paper system ever could. However, the digital system has the same weakness the paper system had: it cannot enter data into itself. It is incumbent on the staff and students using the

system to be as descriptive as possible on the various forms and to be diligent in updating the forms as the season progresses.

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# THE CHAN CHICH ARCHAEOLOGICAL PROJECT: 1996 TO 2014 PROJECT LISTS

Compiled by Brett A. Houk

This chapter includes lists of sites, operations, tombs, burials, caches, and stone monuments recorded by the Chan Chich Archaeological Project (CCAP) since its inception in 1996 and the Belize Estates Archaeological Survey Team (BEAST) since 2013. It is meant to serve as a reference document for future seasons.

## SITES

Table 11.1 lists Maya sites on and near the Gallon Jug (GJ), Laguna Seca (LS), and the adjacent Yalbac (Y) properties with Belize Estate (BE) designations. As noted by Sandrock (2013) and Sandrock and Willis (this volume), BEAST assigned BE numbers to previously named sites and to newly discovered sites with four or more structures, the tallest of which must be at least 4 m high including structure and substructure or basal platform, that are not within 1 km of another recorded site BE site.

Table 11.1. Recorded BE Sites (UTM Zone 16N)

BE #	Site Name	Property	Original Source	UTM N	UTM E
1	Chan Chich	GJ	Guderjan (1991)	19 40 412	2 75 875
2	Kaxil Uinic (E'kenha)	LS	Guderjan et al. (1991)	19 40 538	2 73 381
3	Punta de Cacao	LS	Guderjan et al. (1991)	19 46 100	2 86 728
4	Gallon Jug	GJ	Guderjan et al. (1991)	~19 43 900	~2 83 450
5	Laguna Verde	GJ	Guderjan et al. (1991)	~19 47 250	~2 80 500
6	Laguna Seca	GJ/LS	Guderjan et al. (1991)	~19 50 850	~2 84 000
7	Qualm Hill (ruin)	LS	Guderjan et al. (1991)	~19 57 300	~2 87 500
8	Wamil	Y?	Guderjan et al. (1991)	~19 39 900	~2 94 900
9	Sierra de Agua	Y/LS?	Guderjan et al. (1991)	~19 40 600	~2 99 500
10	Gongora Ruin	LS	Guderjan et al. (1991)	19 54 400	2 93 459
11	Ix Naab Witz	LS	Sandrock (2013)	19 55 187	2 85 854
12	La Luchita	LS	Sandrock (2013)	19 50 011	2 77 178
13	Montaña Chamaco	LS	Sandrock (2013)	19 51 187	2 75 043
14	Sylvester Camp	GJ	Sandrock (2013)	19 45 510	2 78 128
15	Qualm Hill Camp	LS	Sandrock and Willis (this volume)	19 57 213	2 85 282
16	Kaxil Uinic Village	Y	Thompson (1963)	19 40 073	2 73 487

Houk, Brett A. (compiler)

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In addition to prehistoric sites, a number of historic sites are present in and near the BEAST survey area. Table 11.2 includes a list of those visited by the CCAP or BEAST or reported by other researchers. Significant historic sites are also assigned BE numbers.

Table 11.2. Known and Reported Historic Sites

Name	Location	Description	Source(s)
Kaxil Uinic Village BE-16	Approximately 500 m south of BE-2 on Yalbac Ranch.	In 2012, the CCAP relocated the remains of the historic Maya village and chicle camp known as Kaxil Uinic and its associated aguada. The Belize Estate Co. closed the village in 1931.	Houk (2012); Thompson (1963)
Qualm Hill Camp BE-15	Immediately west of Cedar Crossing on the west bank of the Río Bravo.	A 150-x-60-m scatter of historic artifacts that likely represents the location of Qualm Hill (or Quam, Quam Hill), which was “the seasonal headquarters of the British Honduras Company during the mid 1800s” (Cackler et al. 2007:124). Qualm is historically important as the site of a “Chichina” Maya raid led by Marcus Canul in 1865 (Bristowe and Wright 1888:27–28).	Bristowe and Wright (1888:27–28); Cackler et al. (2007:124)
El Infierno logging camp	Reportedly 1 km east of Guatemala border, northwest of Gallon Jug	This site is mentioned in reference to the location of the Maya site of El Infierno, which is described as “behind” the logging camp; no other details provided.	Guderjan et al. (1991:61)
Unnamed	Approximately 75 m southwest of BE-13, 50 m west of a swamp	BEAST located a possible abandoned <i>chiclero</i> camp, as evidenced by a small collection of bottles, in 2013.	Sandrock (2013)

## CHAN CHICH CONTROL POINTS

Table 11.3 lists the UTM coordinates for important mapping control points at Chan Chich. Most of the points described are marked with metal surveyor spikes or large nails. Elevations are given for the top of the spike or nail. All points are OPUS corrected. Although the project shot several new control points in 2014, they are not included in this list because the total data station apparently was not properly calibrated.

Table 11.3. Chan Chich Control Point UTM Coordinates

Point	Description	Northing	Easting	Elev (m)
Main Site Datum (2012)	Spike in asphalt near pavement's edge between bar and Structure A-1	1940412.85	275875.56	118.72
Structure A-1 Central Datum	Spike in central landing, summit of Structure A-1	1940390.29	275877.30	129.49
Structure A-1 East Datum	Eastern summit of mound	1940385.65	275895.98	131.76
Structure A-1 West Datum	Western summit of mound	1940395.39	275847.77	131.27
Structure A-4 Datum	Western summit of mound	1940535.23	275863.09	126.02



Table 11.3. Chan Chich Control Point UTM Coordinates (continued)

Point	Description	Northing	Easting	Elev (m)
Structure A-5 Central Datum	N1010 E1030 in local A-5 grid	1940519.90	275904.50	123.01
Structure A-5 West Datum	Western summit of mound	1940523.61	275891.81	122.95
Structure A-8 Datum	Summit of mound	1940494.17	275964.4	126.30
Structure A-9 Datum	Summit of mound	1940434.43	275958.13	126.41
Upper Plaza West Datum	East of Structure A-21	1940358.03	275857.15	125.99
Upper Plaza Southeast Datum	In southeast corner of plaza	1940337.89	275891.17	126.11

## OPERATIONS

To date, the CCAP has only conducted excavations at Chan Chich and Kaxil Uinic, but BEAST has made surface collections of isolated finds and at Qualm Hill Camp. Operations numbers are assigned sequentially by site, preceded by a site abbreviation. Thus, the first operation at Chan Chich is designated Op CC-1. Table 11.4 lists the operations that have been assigned through the 2014 season.

Table 11.4. List of Operations at Opened by CCAP and BEAST

Op	Season	Definitions	Subops	Source(s)
CC-1	1997	Excavations on the northern stairs of Structure A-1	A–C	Houk (1998)
CC-2	1997	Excavations at the Upper Plaza	A–J	Robichaux (1998)
CC-2	1998	Excavations at the Upper Plaza, including landing of Structure A-1	K–W	Robichaux et al. (2000)
CC-2	1999	Excavations at the Upper Plaza including summits of Structures A-1 and A-13	X–AK	Robichaux (2000)
CC-3	1997	Excavations at the ball court	A–E	Ford (1998)
CC-4	1997	Test pits in Group C	A–C	Meadows (1988)
CC-4	1998	Test pit in Plaza C-2	D	Ford and Rush (2000)
CC-5	1998	Excavations at Courtyard C-1	A–L	Ford and Rush (2000)
CC-6	1998	Excavations at Group H	A–F	Meadows and Hartnett (2000)
CC-7	1999	Excavations at Structure C-6	A–E	Harrison (2000)
CC-8	1999	Excavations at Structure A-11	A–B	Houk (2000)
CC-9	2001	Excavations at Plaza C-2	A–M	Unpublished field notes
CC-10	2012	Excavations at the Upper Plaza	A–F	Kelley et al. (2012)
CC-10	2013	Excavations at the Upper Plaza	G–T (plus Ix)	Kelley et al. (2013)
CC-11	2013	Excavations at Structure A-5	A–O, N–R (plus Fx)	Herndon et al. (2013)
CC-12	2014	Excavations at the Upper Plaza, Chan Chich Dynastic Architecture Project	A–T (plus Ax)	Herndon et al. (this volume)

Table 11.4. List of Operations at Opened by CCAP and BEAST (continued)

Op	Season	Definitions	Subops	Source(s)
CC-13	2014	Excavations at the Back Plaza	A–N (plus ST, seven shovel tests)	Vazquez and Booher (this volume)
CC-14	2014	Excavations associated with processional architecture	A–I (plus Ex)	Booher and Nettleton (this volume)
KU-1	2012	All excavations at Kaxil Uinic in 2012	A–H	Harris and Sisneros (2012)
SF-1	2014	Surface collections made by BEAST that were not associated with a site	SF1–SF3	FileMaker Pro database
QHC-1	2014	Surface collections made by BEAST at Qualm Hill Camp	SF	Phillips and Sandrock (this volume; Sandrock and Willis (this volume)

### SPECIAL DEPOSITS

Over the course of eight seasons of research, the CCAP has excavated one cache, one tomb, and 13 burials. Table 11.5 lists the burials thus far recorded, and Table 11.6 lists the tombs documented at the site, including a looted tomb first recorded by Guderjan (1991). Table 11.7 includes the single cache entry in the list of special deposits.

Table 11.5. List of Burials

Burial #	Season	Provenience	Context	Source(s)
CC-B1	1997	CC-4-A-3	Primary burial in Late Preclassic fill, Courtyard C-1	Meadows (1998)
CC-B2	1997	CC-2-J-6	Tomb 2, Terminal Preclassic burial in Upper Plaza	Houk et al. (2010)
CC-B3 (4, 6)	1998	CC-5-C-3, -H-2	Secondary scatter of human bone associated with surface deposit of artifacts on steps of Structure C-2; Terminal Classic (?). Burials CC-B3, -B4, and -B6 combined by Frank and Julie Saul into Burial CC-B3.	Ford and Rush (2000)
CC-B5	1998	CC-6-C-9	Late Classic (?) primary burial beneath Courtyard H-3	Meadows and Hartnett (2000)
CC-B7	1998	CC-4-D	Secondary scatter of human bone associated with surface deposit of artifacts on steps to Structure C-6; Terminal Classic (?)	Ford and Rush (2000)
CC-B8	1999	CC-7-B	Primary Terminal Classic burial beneath bench in Structure C-6	Harrison (2000)
CC-B9	2001	CC-9-G-7	Primary burial of a child in Structure C-12 patio; Late Classic (?)	Unpublished field notes
CC-B10	2012– 2013	CC-10-A-8 (extends into CC-10-G)	Primary (?) subfloor burial, poorly preserved; early Late Preclassic	Kelley et al. (2013)

Table 11.5. List of Burials (continued)

Burial #	Season	Provenience	Context	Source(s)
CC-B11	2014	CC-12-D-9	Primary burial of an adult in a small crypt in Structure A-1. The burial is associated with the penultimate construction phase and was encountered beneath the central landing on the structure. The small crypt contained four complete vessels. Likely associated with Cache CC-C1.	Herndon et al. (this volume)
CC-B12	2014	CC-14-F-3	Primary, simple subfloor (?) burial found in apparent collapse debris very close to the surface. Burial contained a single shallow Achote Black bowl with nubin feet.	Booher and Nettleton (this volume)
CC-B13	2014	CC-12-H-13	Primary burial of robust adult in a small crypt associated with the penultimate phase of Structure A-18 in the Upper Plaza. No grave goods.	Herndon et al. (this volume)

Table 11.6. List of Tombs

Tomb #	Season	Provenience	Location	Source(s)
1	--	Structure C-31	Looted tomb referred to as the King's Tomb; Late Classic (?)	Guderjan (1991)
2	1997–1999	Upper Plaza, CC-2-J-6	Tomb 2, Terminal Preclassic tomb in Upper Plaza	Houk et al. (2010); Robichaux (1998, 2000); Robichaux et al. (2000)

Table 11.7. List of Caches

Cache #	Season	Provenience	Context	Source(s)
CC-C1	2014	CC-12-D-8	Structure A-1, penultimate phase. This cache contained 17 obsidian blades, found loose but grouped together in fill, resting on one of the capstones of Burial CC-B11.	Herndon et al. (this volume)

## STONE MONUMENTS

Table 11.8 lists the stone monuments recorded within the CCAP and BEAST permit area. To date, no monuments with legible texts or dates have been found in the area. The only monument with evidence of carving is Stela 1 at Kaxil Unic (see Harris and Sisneros 2012; Thompson 1939).

Table 11.8. Recorded Stone Monuments in CCAP/BEAST Permit Area

BE #	Site	Monument	Location	Description	Source(s)
1	Chan Chich	Stela 1	Main Plaza, base of Structure A-2	Uncarved and burned stela	Guderjan (1991:43)
2	Kaxil Unic	Stela 1	Main plaza, base of Structure 3	Broken in two pieces, heavily eroded stela with evidence of carving, illegible; 1.95 m tall, 80 cm wide, 55 cm thick	Guderjan et al. (1991); Harris and Sisneros (2012:52); Thompson (1939)
		Altar 1	Main plaza, base of Structure 3	Round, limestone altar (ca. 130 cm diameter; 30 cm thick), uncarved	Guderjan et al. (1991); Harris and Sisneros (2012:56–56); Thompson (1939)
3	Punta de Cacao	Stela 1	Plaza A, near base of Structure A-5	Uncarved stela	Robichaux (2004:200)
		Possible stela or altar	Plaza A, in front of Structure A-5	Large, uncarved block of stone, 82 x 82 x 40 cm, broken into two parts.	Hartnett (2005)
4	Gallon Jug	Stela 1	Main plaza	Very small stela that may not actually be a monument, only 45 cm high	Sandrock (2013)
7	Quam Hill	Stela 1	Northeastern corner of Plaza A	Uncarved stela, laying flat; 1.8 m long, 0.6 m wide, and 0.4 m thick	Cackler et al. (2007:121)
		Altar 1	Plaza B	Broken in half, plain altar measuring 1.5 m in diameter and 1 m thick	Cackler et al. (2007:123)
10	Gongora Ruin	Stela 1	In plaza in front of Structure 1	Small, uncarved stela. Note that BEAST was unable to re-locate this monument in 2014.	Guderjan et al. (1991:81); Sandrock and Willis (this volume)
11	Ix Naab Witz	Stela 1	Upper plaza near southwestern corner of Structure 6	Small, uncarved stela, 1.05 m tall, 40–60 cm wide, 35 cm thick	Sandrock (2013)



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