

# MADABA PLAINS PROJECT: EXCAVATIONS AT TALL AL-‘UMAYRĪ, 2016

*Douglas R. Clark and Kent V. Bramlett*

## Introduction

An eighteenth season of excavation by the Madaba Plains Project at Tall al-‘Umayrī occurred between 22 June and 27 July 2016. It was sponsored by La Sierra University in consortium with Burman University (Alberta, Canada), Pacific Union College (California, USA), Mount Royal University (Alberta, Canada), and Walla Walla University (Washington State, USA). Full reports have already been published for the first ten seasons in nine volumes (first season [1984]: Geraty *et al.* 1989; second season [1987]: Herr *et al.* 1991; third season [1989]: Herr *et al.* 1997; fourth season [1992]: Herr *et al.* 2000; fifth season [1994]: Herr *et al.* 2002; sixth and seventh [combined 1996 and 1998]: Herr *et al.* 2015; eighth season [2000]: Herr *et al.* 2017; ninth season [2002]: Herr *et al.* 2019; and tenth [2004]: Herr *et al.* 2020).

Preliminary reports have also been published (first season [1984]: Geraty 1985; Geraty *et al.* 1986, 1987; second season [1987]: Geraty *et al.* 1988, 1989, 1990; third season [1989]: Younker *et al.* 1990; Herr *et al.* 1991; LaBianca *et al.* 1995; fourth season [1992]: Younker *et al.* 1993; Herr *et al.* 1994; fifth season [1994]: Younker *et al.* 1996; Herr *et al.* 1996; sixth season [1996]: Younker *et al.* 1997; Herr *et al.* 1997; seventh season [1998]: Herr *et al.* 1999, 2000; eighth season [2000]: Herr, Clark and Trenchard 2001, 2002; ninth season [2002]: Herr and Clark 2003, 2004; tenth season [2004]: Herr and Clark 2005a, 2005b; eleventh season [2006]: Herr and Clark 2008a, 2008b; twelfth season [2008]: Herr and Clark 2010, 2013; thirteenth season [2010]: Clark and Bramlett 2011, 2012a, 2012b; fourteenth season [2011] and fifteenth season [2012] combined reports: Clark

and Bramlett 2017; sixteenth season [2013 (week-long geophysical research season)] and seventeenth season [2014] combined reports: Bramlett and Clark [in press]). For a summary report of the first 12 seasons (1984-2008), see Herr and Clark 2009; Clark 2011; and Herr 2011 in Clark *et al.* 2011.

In the 2016 season, a team of 15 Jordanians and 35 foreigners participated in the fieldwork and camp activities of the interdisciplinary project at al-‘Umayrī, located 12km south of ‘Ammān’s Seventh Circle on the Queen Alia Airport Highway, at the turnoff for Amman National Park (**Fig. 1**).

In the first season (1984) four fields of excavation were opened (Fields A, B, C and D) (**Fig. 2**). During the second season (1987) three of the four were expanded (Fields A, B and D), one was completed to bedrock (Field C), and two new fields were opened (Fields E and F). In the third season (1989) one field expanded (Field A), three fields reopened old squares and expanded slightly (Fields B, D and F), another reduced excavation from two squares to one (Field E), and a new field was opened on the northern slope as a series of three soundings (Field G). In the fourth season (1992) three fields deepened previously opened squares (Fields A, D and F), one deepened existing squares while expanding by one square (Field B), and two fields were discontinued (Fields E and G). During the fifth season (1994) one field deepened (Field A), another expanded and deepened (Field B), and one was added (Field H). In the sixth season (1996) three fields expanded (Fields A, B and H). The tomb excavations on the southeastern slopes of the *tall*, already begun under the hinterland survey in



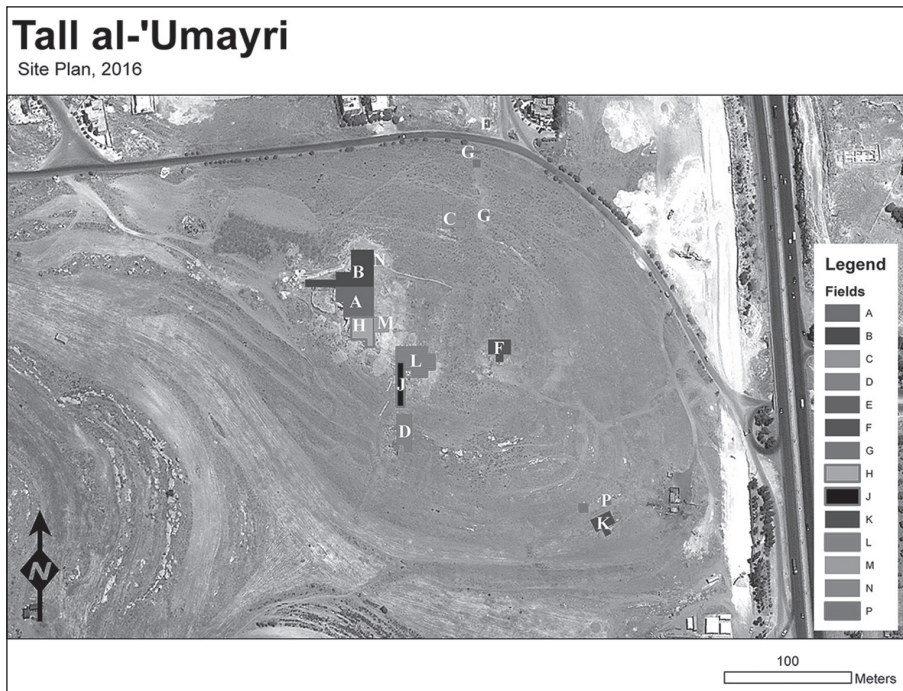
1. Aerial View of al-'Umayrī.

1994, became part of the al-'Umayrī *tall* excavations as Field K. During the seventh season (1998) two fields deepened their squares (Fields A and B), two expanded (Fields H and K), and a new field was opened on the southern lip of the site (Field L). In the eighth season (2000) we deepened three fields (Fields A, B and H) and expanded and deepened in two fields (Fields K and L). During the ninth season (2002) Field A was not worked, while Field B expanded to the north and continued in two other squares; Field H limited itself to the large plastered and cobbled courtyard near the northern extent of the field (next to Field A); in Field L we exposed more of the Hellenistic structure by opening two new squares and reopening one other. During the tenth season (2004) Field A deepened squares begun during the 1980s; Field B deepened three earlier squares and expanded to the north to intersect the northern edge of the site; Field H deepened earlier squares in its northern part; and Field L deepened three previous squares and opened one new square. During the

eleventh season (2006) Field A concentrated on removing balks and small areas between walls to deepen the western part of the field to late Iron I levels; one square was opened at the southwest corner of the field to examine the possible existence of a gateway. In Field B excavation concentrated on uncovering the floors of the northern extent of the remarkably well-preserved Late Bronze (LB) building. Excavation in Field H concentrated on bringing the southern part of the open-air sanctuary down to late Iron I levels. Field L, on the southern lip of the site, expanded to the east and north with three new squares.

The 2008 season saw Field A expose the third LB/Iron I building in the southern part of the field by going deeper in most squares. Field B completed the excavation of the LB building and added a square to the east with a new field designation, Field N. Field H went deeper in four squares, exposing the top of the LB/Iron I levels and locating the bottom of the southern portion of the perimeter wall. Field L went





2. Tall with fields indicated.

lower in three squares and added two more squares to the west. Additionally, a new field was opened, Field M, east of Field H in our overall goal of connecting Fields H and L. This season also marked the initiation of the use of high-resolution GPS for the location of fields, squares and architecture. It forced a slight change of orientation to align all our squares with true north and we chose to locate squares on primary grid lines, causing some squares to be smaller in their east-west measurements.

The thirteenth field season (2010) continued work in four fields (Fields A, H, L and M). Field A extended the exposure of LB/Iron I domestic structures, clearing the third building and uncovering the major portion of a fourth. Clearance of the Late Iron I sacred precinct in Field H brought the team to domestic structures post-dating the Early Iron I buildings in Field A, but preceding the precinct. Field L cleared Hellenistic remains in several balks, clarifying in the process the function of an Iron II oil press and exposing the tops of several Iron II walls. Field M cleared late Iron II paved-plaza levels surrounding what appear to be domestic buildings.

In 2011, the small team focused on Field H (continued clearance of post-Early Iron I debris in order to expose the remaining components of Early Iron Age Building M, and Field L (removal of all Hellenistic architecture in order

to expose Iron Age remains). The 2012 season saw the return of a full team, but progress was limited due to land-owner disputes. Fields excavated included A (exposing the fourth of five Early Iron I joined houses), H (completion of the clearance of Building M, a 'four-room' building), L (Late Iron II and Persian domestic remains), al-'Umayrī Survey Site 84 (excavation of a cistern), and cleaning in Field K (for the purpose of more complete photographic recording).

In 2013 a very small team recorded ground-penetrating radar (GPR) and electromagnetic imaging data in and around Field K in search of other dolmen burials. While useful, the collected data were of limited value in this quest as determined by ground-truthing in 2014. The excavated anomalies unfortunately did not lead us to more burials. The 2014 season saw the return of a full complement of staff, volunteers and laborers and resulted in the excavation of the following fields: Field H (Square 7K02 only) yielded material finds only from the Late Iron II period through Late Iron II/Persian, illustrating typical Iron Age domestic occupation; Field J, new this season, formed a step trench down the southern slope of the *tall*, connecting Field L on the acropolis and Field D down the slope and exposing in at least fragmentary fashion rampart layers forming the Late Iron Age (and possibly Late Bronze Age/Early Iron

Age) defenses on the southern perimeter of the site; Field P, also newly established this season, was located in close proximity to the Field K dolmen and associated finds from previous seasons, and provided limited ground-truthing of the 2013 GPR data and revealed bedrock with Early Bronze Age post-hole placements carved into it, but without further definition;

MPP-`Umayri Chronology		
Stratum	Period	Date
	Neolithic	
	Chalcolithic?	
Hiatus	EB IA	c 4500-3000 BC
21	EB IB	c 3000-2700 BC
20	EB II	c 2700-2500 BC
19	EB III	c 2500-2200 BC
18	EB IV	c 2200-2150 BC
17	EB IV	c 2150-2100 BC
Hiatus	EB IV-MB IIA-B	c 2100-1700 BC
16	MB IIC	c 1700-1650 BC
15	MB IIC	c 1650-1550 BC
Hiatus	LB I	c 1550-1400 BC
14	LB II	c 1400-1250 BC
Hiatus?	Late LB II	c 1250-1230 BC
13	LB/Iron I	c 1230-1200 BC
12	LB/Iron I	c 1200-1150 BC
11	Iron IA	c 1150-1100 BC
10	Iron IB	c 1050-1000 BC
9	Iron IB-IIA	c 1000-850 BC
8	Iron IIB	c 850-680 BC
Hiatus	Iron IIB/C	c 680-620 BC
7	Iron IIC	c 620-550 BC
6	Iron IIC/Per	c 550-475 BC
5	E Persian	c 475-400 BC
Hiatus	L Per- E Hel	c 400-300 BC
4	L Hellenistic	c 300- 50 BC
3	E Roman	c 50 BC-AD 135
3	L Roman	c AD 135-330
2	Byzantine	c AD 330-650
1	Islamic	c AD 650-Pres

3. al-`Umayrī Strata Chart.

and al-`Umayrī Survey Site 84 saw treatment and integration of several agricultural features including pressing installations, basins, mortars and grinders, quarry marks, water-management devices and wall lines.

Following 18 seasons, including 2016, the team feels confident in talking about final stratum numbers for the site. We think, reasonably, that no new significant settlements will be discovered beyond those we have already identified (Fig. 3).

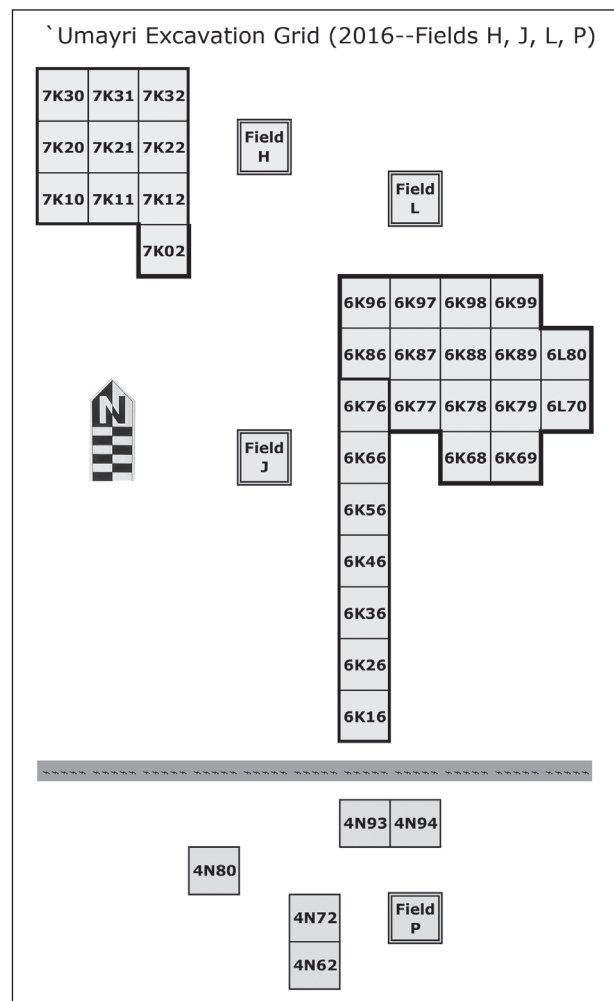
### Field H: The Southwestern Acropolis

Monique D. Vincent, Walla Walla University

Assisted by Craig Tyson, D'Youville College

#### Introduction

The goal of this season's excavation in Square 7K02 (Fig. 4) was to locate the southern perimeter wall of the LB/Early Iron I settlement, suspected to lie under Wall 2. While the 2014 season demonstrated that Wall 2 predated the



4. 2016 al-`Umayrī Grid – Fields H, J, L and P.



Late Iron II/Persian period, the probes were not deep enough to demonstrate an earlier date. The results of a small probe north of Wall 2 exposed an occupation phase equivalent to site-wide Stratum 12, as well as a contemporary wall that likely served as the settlement’s perimeter wall, Wall 46. The discovery of Stratum 12 occupation adds to our knowledge of the extent and nature of the habitation and destruction of this stratum, while continued excavation along the southwestern edge of the *tall* contributes to our understanding and refinement of the Iron Age occupational sequence at al-‘Umayrī.

Field Phase 15: Late Bronze/Early Iron I (Transitional Period? Site-wide Stratum 13?)

This new field phase was exposed in a small probe below the FP14 surfaces. A hard-packed earth layer provided a firm foundation for the later FP14 features. When excavated, this earth layer was composed of dark clay filled with small bits of *nari* (calcrete) and charcoal, well-preserved animal bones, and cobble-sized rocks. This layer may have resulted from an earlier destruction, though the contrast with the ultra-burnt FP14 destruction debris indicates less burning.

The FP15 earth layer sealed against a row of large boulders that are possibly part of a large wall. While the foundation date of this wall cannot be determined at this time, it is the earliest in a sequence of walls that demarcated the southern boundary of habitation on the acropolis.

Field Phase 14: Late Bronze/Early Iron I (Transitional Period; site-wide Stratum 12)

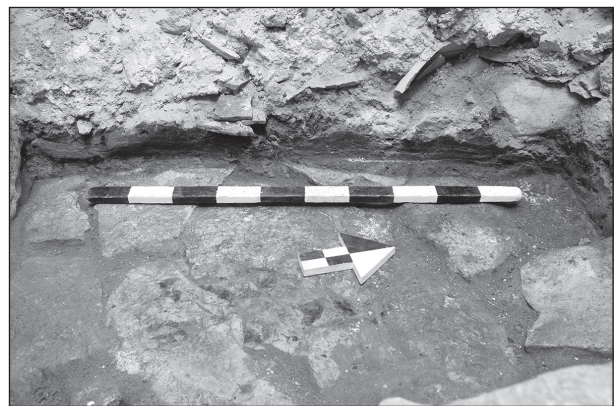
A 1.03m deep destruction layer, consisting largely of burnt mudbricks and plaster, along with stones and large pithos sherds, was instantly recognized as the same dynamic destruction previously identified in Fields B and A, and dated to site-wide Stratum 12, the LB/Early Iron I transitional period.

The beginning of FP14 in Square 7K02 occurred presumably with the construction of a large wall (E-W Wall 46) (Fig. 5). Three courses high and constructed of small and medium boulders, this wall was likely the perimeter wall of the settlement along the southern edge. Wall 47 was built perpendicular to Wall 46.

A well-constructed flagstone pavement, Surface 52 was likely built at the same time as Wall 47. The flagstones were remarkably well selected for their flatness and their fit to produce a smooth, even surface west of Wall 47 (Fig. 6). Flagstone Pavement 52 is comparable to that found in Building B in Field B as a later phase of a surface in Room B2C (Surface B7K80: 074, 75, 76; Clark 2002: 96-97). Above Surface 52 a thin clay layer sealed in the stones, forming the base layer of Earth Surface 50, with several



5. Wall Phases in Field H.



6. Flagstone Surface Sealing against Perimeter Wall.

fine laminations of clay, ash and charcoal.

East of Wall 47, Earth Surface 51 sealed against both Walls 47 and 46. A beautifully intact basalt tripod quern (B160035) was wedged deep into Surface 51 below the pottery sherds and a small hand grinder (B160038) (Fig. 7a, b). Another basalt hand grinder (B160034) and a faience spacer bead (B160018) were found in the upper parts of the destruction debris above the FP14 surfaces. The artifacts from this phase, related to food storage and preparation and textile production, allow me to suggest that this small exposed area was once part of a larger domestic structure.

At the end of the use phase of this area, the mudbricks that crowned the stone walls collapsed inward along with all of the large storage jars that must have been secured on an upper floor, in so doing completely filling the meter of destruction debris that covered this area.

#### Field Phase 13/12(?): Early Iron I Period(?)

In this Early Iron I phase, Surfaces 40 and 42 sealed against Wall 2. Cobble Surface 42 in particular was sealed against the base of the wall, with some of the cobbles wedged firmly between the wall stones. Surface 42, therefore, was likely constructed shortly after the foundation of Wall 2 and both were used in conjunction here on the very southern edge of the *tall*. Whether or not these surfaces are best matched with Field Phase 13 or 12 is difficult to tell without a direct stratigraphic connection to the main part of Field H, but the early date of the pottery makes this time period likely.

#### *Conclusion*

While the excavated probe in Field H was extremely limited in size this season, it produced results that exceeded expectations. The discovery of the LB/Early Iron I perimeter wall, Wall 46, answered questions about the exact location of the southern boundary of this settlement at the beginning of the Iron Age. Though questions about its antecedents could not yet be answered, its presence with Wall 2 does establish the nature of continual reconstruction throughout the entirety of the Iron Age in this location.

This small window into another domestic structure belonging to site-wide Stratum 12

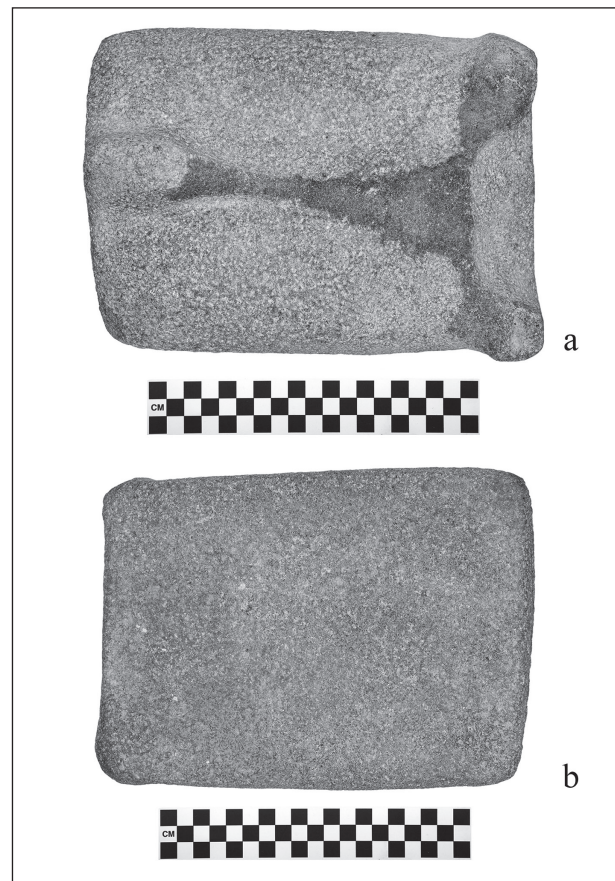
adds to the collection of structures with similar construction styles and artifact remains known from this period, the focus of the first author's dissertation research (Vincent 2016). Within the context of this larger research design, it is noteworthy that construction efforts in this part of the settlement maintained the same pattern observed in Fields B and A, using simple boulder walls and mudbricks with which to construct houses, with paved and unpaved surfaces. Parallels also appeared among groundstone implements.

#### **Field J: The Southern Slope**

Monique D. Vincent, Walla Walla University

##### *Introduction*

This season we continued excavations on the site's southern slope, reopening the top four squares of Field J. The field comprises, from top/north to bottom/south, Squares 6K76, 6K66, 6K56, 6K46, 6K36, 6K26 and 6K16; only Squares 6K76, 6K66, 6K56 and 6K46 were excavated during the 2016 season. Our goals were to continue exploring the potential fortifications



7. |a, b: Rectangular Tripod Lower Grindstone Bottom and Top.



identified at the end of the 2014 season. The discovery of bedrock in three of the squares this season provided a clear sequence of use and wash phases on the southern slope (Fig. 8).

The earliest use phase in Field J dates to the LB/Early Iron I transitional period, likely associated with site-wide Stratum 12. This phase, detected in 2014 and assigned preliminarily to the Iron I period as Field Phase 5, can now be dated with better accuracy to the transitional phase after probes established the entire sequence of rampart construction. This rampart adds to our knowledge of the fortification system at Tall al-‘Umayrī during Stratum 12, confirming that such a time-intensive and materials-expensive project was worthwhile to the inhabitants.

The next use phase with identifiable structures occurred in the Late Iron II/Persian period, when two battered walls reminiscent of a similar structure in Field B were constructed to shore up the rampart system (Herr *et al.* 2000: 90-91). This was likely part of the same later reconstruction and reuse of the earlier rampart that is mirrored on the western rampart.

It is surprising that no earlier rampart system dating to the Middle Bronze Age was discovered on the southern slope to match that found on the western slope. If it did exist, it was thoroughly disturbed by the inhabitants of the LB/Early Iron I period, whose pottery was found in all layers of the rampart down to bedrock. A second surprise this season was the absence of a perimeter wall dating to the LB/Early Iron I period at the top of the slope, similar to that found in Field B and now also in Field H (see Field H report in this article). The discovery this season of the rampart in Field L Square 6K86 provided the suggestion that the perimeter wall could be located further inward on the *tall*, and was no longer following the modern edge of the acropolis (see Field L report in this article). It is possible that later Iron Age construction extended occupation out over the earlier rampart layers, leveling them off with fill layers to do so. The only large walls found in Field J were those tipped onto the top of the slope from Field L’s Late Iron II/Persian constructions.

#### Field Phase 6: Early Bronze Age

While not representative of a true occupa-

tional field phase, the discovery of an ovoid cupule, 6K46:007, carved into the bedrock halfway down the slope requires the recognition of possible Early Bronze Age activity on the southern slope. Early Bronze Age pottery sherds were found mixed into the lower levels of *loci* excavated above bedrock throughout Field J, especially in 6K56. The Early Bronze Age occupation in Field D at the base of the slope would have made this area easily accessible to the inhabitants. Parallel phenomena in the bedrock in Field B support this scenario.

#### Field Phase 5: Late Bronze/Early Iron I Period

Continued excavation in the two uppermost squares of Field J revealed a series of earth layers used to construct a defensive rampart on the southern slope. This phase and the uppermost rampart layer were already detected in 2014 and assigned preliminarily to the Iron I period as Field Phase 5 (Vincent 2014 report). However, the pottery found in these layers is primarily dated to the transitional LB/Early Iron I period, likely associated with site-wide Stratum 12. The



8. Squares in Field J.

rampart on the southern slope ended much further up the slope than it did on the western slope.

It is remarkable that the inhabitants constructed over two meters of earth and stone fill layers to support an inclined rampart surface on the southern slope, showing a strong commitment to the settlement's fortifications. Unfortunately for them, their careful preparations did not prevent the eventual - and fiery - destruction of their settlement.

#### Field Phase 4: Late Iron II/Persian Period

The only other occupational phase identified during the 2014 season was one associated with a large stone structure at the base of the Field J slope, 6K26:003 (Vincent 2014 report). This wall was possibly intended as a means of shoring up the base of a later rampart extension, for which further evidence was discovered this season. Walls 6K56:008 and 014 were both single-row, several-course, east-west walls constructed midway down the slope. They appear to have been battered against earth layers at a slight angle upslope, possibly part of a reconstruction and reuse of the earlier rampart by the inhabitants of a late Iron Age settlement.

Wall 14 was at the southern edge of the probe, so it was not possible to explore construction on the other side of the wall. Alternatively, this wall and earth layer could be the southern extent of the LB/Early Iron Age rampart, if the earthquake can explain the ceramic contamination, as Locus 12 contained mostly LB/Early Iron Age and earlier pottery, with a few Iron I and Iron II sherds. Wall 8 was constructed in six courses to a height of 0.60m above Wall 14 and slightly offset to the north, also with a southern face (**Fig. 9**). This coarse wall could not have stood without being battered against Earth Layers 6K56:007, 009, 010 and 011 sealing against its northern side, as it was nearly impossible to keep the stones in position after excavating each course. Continued stratigraphic and typological research is required to determine similarities between these walls and those forming part of the western rampart system.

#### Field Phase 3: Late Iron II/Persian Period

Two sheet-wash or debris layers, 6K46:005 and 006, are difficult to place without accompanying architecture, and are thus assigned to the

general wash-layer phase designated as Field Phase 3 in 2014 (Vincent 2014 report). The pottery in these layers dated at the latest to the Late Iron II/Persian period. These layers were probably general wash and tumble from this period of occupation on the *tall*.

#### *Conclusion*

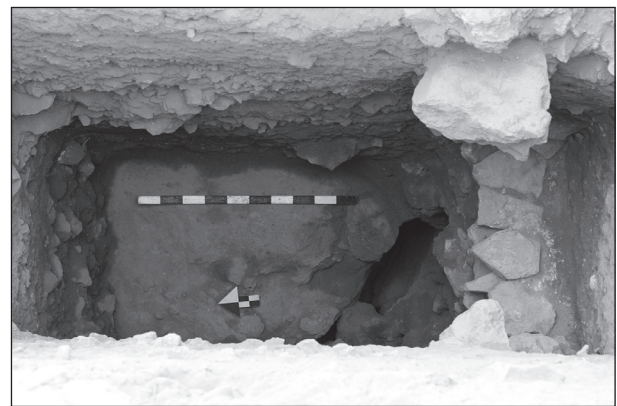
Excavation in Field J this season filled in the story of southern slope activity that we began uncovering in 2014. The identification of two main phases of fortification construction on the slope, one at the beginning of the Iron Age and one at the end, aids our understanding of the inhabitants' priorities and concerns. Fortifications were necessary to them not only on the shallow western ridge of the *tall*, but on the naturally steep southern slope as well. The effort required for hauling earth and rocks into position, and for the later construction of retaining walls, would have been considerable. While the southern slope itself was not inhabited during the lifespan of the *tall*, the fortifications constructed on its shelves represent a focal point of community organization and energy.

#### **Field L: The Southern Escarpment**

Owen Chesnut, Andrews University

#### *Introduction*

The initial purpose of the work in Field L was to explore the various architectural features visible in the transition from the top of the *tall* to the southern slope. Excavators posited a continuation in Field L of the Early Bronze Age remains found in Field D, located lower on the southern side of the *tall* and now joined by Field J. Additionally, GPR surveys conducted in the early 1990s indicated the possibility that



9. Two Battered Rampart Walls (right) in Field J 7K56.



Field L was the location of the city’s main gate, which has yet to be found.

Work in Field L during the 2016 season focused on areas on the southern perimeter of the *tall*. Square 6K86 is located on the crest of the site, adjacent to the stepped squares being excavated in Field J. Specific objectives for this season included: (1) attempting to locate and date a presumed perimeter wall in the southern portion of Square 6K86 based on the existence of megalithic stones positioned askew in the north balk of 6K76; (2) gaining insight into the Iron Age I stratigraphy in Square 6K88, expanding a probe begun during the 2012 season along Wall 14 in order to confirm the founding date in the Iron Age I, suggested during that season.

#### Field Phase 10 (Late Bronze/Early Iron I Transition)

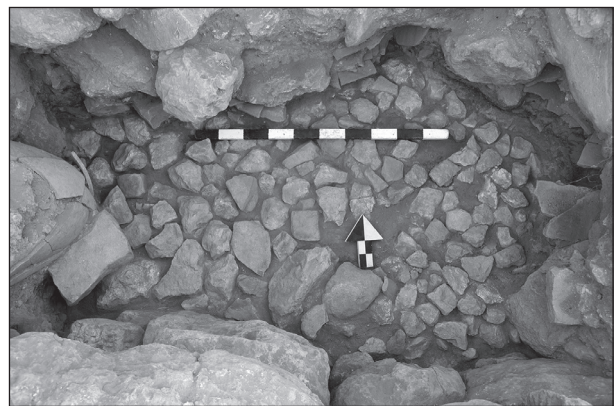
This phase was newly designated in the 2016 season, as these early levels had not been previously reached in Field L. The pottery from possible Surface 6K88:052 was somewhat mixed with LB, LB/Early Iron I transition, and Early Iron I pottery present. However, there was only a small number of diagnostics and most dated to the transitional period. This locus was called a possible surface because a large pithos was lying broken at the same level as the base of Wall 6K88:053. Around and under the pithos was a large amount of burnt grain; samples of the charred material were taken for flotation and radiocarbon dating. Hopefully results from these analyses will help tighten the date for the layer. A north-south wall was preserved seven courses high and seemed at first to be rather ephemeral, but as the probe was excavated, course upon course emerged. It appears as if the collapse and fill around it (6K88:051) shifted the upper courses, but the base level rested soundly on Surface 52. The purpose of the wall is unclear as it ended abruptly in the probe with the majority of it continuing into the balk to the north.

#### Field Phase 9 (Early Iron Age I)

The primary goal in 2016 in Square 6K88 was to clarify the Iron Age I sequence that had been revealed in a small probe in the northeast corner of a larger probe in 2012. Fill 6K88:031 and Surface 6K88:032 were still intact in most

of the larger probe, allowing easy excavation. However, excavations in the smaller probe in 2012 (6K88:036) had missed several surfaces, so as excavations continued under Surface 32 in the rest of the probe, new *loci* identifications were assigned. These *loci* consisted of a series of surfaces with inter-surface fill and tumble between. The tight sequence of surfaces with ash lenses is paralleled by those found in the Early Iron Age I phase in Field H, where a number of ovens were found in a courtyard. The pottery from each of these surfaces and fill layers in 6K88 was overwhelmingly Early Iron Age I with a few LB/Early Iron Age I transitional forms and LB forms mixed in the fill layers. All of the surfaces mentioned in this section sealed against Wall 14. This factor, along with the dating of Surface 50 to the Early Iron Age I, requires the date of Wall 14 to be changed from Iron Age I to Early Iron Age I.

The corresponding phase in Square 6K86 was found on the north side of east-west Wall 6K86:015, which divides the probe in half; two surfaces were excavated (6K86:024 and 026). Wall 15 sits on Surface 24, a beaten-earth surface dating to the Early Iron Age I. Surface 26 is located 0.10-0.15m below Surface 24 and has a similar matrix. To the north of Wall 15 there are two *loci* dating to this phase (**Fig. 10**). The first, 6K86:027, is the sub-surface for the cobble floor (6K86:023) and dates to the Early Iron Age I. The second locus (6K86:028) is located below Sub-Surface 27 and slopes sharply to the south under Wall 15. The slope angle of this locus suggests that at least Surface 24 and perhaps also Surface 26 were leveling layers created in order to place Wall 15 on stable ground. Surface 26 also seems to correspond with 6K76:009 in



10. Cobble Surface and Standing Pithos (left) in Field L 7K86.

Field J, owing to its similar elevation and make-up, and because it is the last locus before the top rampart layer. These factors suggest that during the Early Iron Age I Wall 15 might have acted as a perimeter wall for the site.

#### Field Phase 8 (Iron Age I)

In Square 6K88 Wall 14 continued in use throughout the Iron Age I and into the Iron Age II, possibly in conjunction with a pillar base to create a partially roofed courtyard. This function may have begun in the Early Iron Age I, but the stratigraphy was insufficiently clear to be definitive.

Between Walls 15 and 16 was located Fill Layer 6K86:019 which sealed against Wall 15 and ran under Wall 16, indicating that Wall 16 should be dated to the Iron Age I. Locus 19 has a different makeup to the collapse or tumble *loci* above it or to the north of Wall 15. There were almost no small or large stones, and very few bones and pottery, along with a large amount of ash and charred material mixed throughout. These factors seem to indicate that Locus 19 was exposed to the elements for a period of time and was perhaps located outside of the city, further strengthening the possibility that Wall 15 might have served as the perimeter wall in the Early Iron Age I.

#### Field Phase 7A and 7B (Late Iron I)

Located between fill dating to the Iron Age I and collapse dating to the Iron Age II is a series of *loci* dating to the Late Iron I. A storage room was discovered with the remains of at least four smashed pithoi. Wall 15 bounds the room on the south, but the destruction continues into the west and north balks, and under Wall 5. Collapse Locus 17 appears to have been the remains of a second storey or roof, as a large, burned, wooden beam was identified in the balk, along with chunks of mudbrick and stones. Objects from this locus included a very nice pestle and several grinding stone fragments. Underneath Locus 17 was a debris layer, Locus 18, consisting of several restorable vessels including three or four pithoi and a jug.

#### Field Phase 6 (Iron II)

The first few fill *loci* in 6K86 contained a majority of Iron Age II pottery, with very little

Late Iron Age/Persian mixed in. Loci 6K86:008, 012, 013 and 014 were all fills located between Wall 6K86:005 and Wall 6K86:015. Wall 5 likely dates to the Hellenistic period based on its curvilinear design and location close to the large Hellenistic farmstead to the east in Field L. As mentioned above, Wall 16 was likely built during the Iron Age I and continued in use through the Iron Age II when a wall with megalithic stones (6K86:007) was constructed on top of it. The most significant find from the Iron Age II is a stone-lined bin (6K86:009), likely used for grain storage (**Fig. 11**) although this interpretation will be dependent on the future flotation of soil samples.

#### *Conclusion*

The main goals of excavation in Area L during the 2016 season were largely met. Two walls (15 and 16) were identified in Square 6K86, with Wall 16 possibly being a perimeter wall dating to the Iron Age I. Wall 15 was constructed on two leveling surfaces dating to the Early Iron Age I, suggesting that this wall might have also been used to defend the perimeter of the site. We also identified a storage room, likely dating to the Iron IB, in the northern section of the probe in Square 6K86. In Square 6K88 five consecutive surfaces dating to the Early Iron Age I were identified and the bottom of Wall 14 was located. Based on the founding of this wall on Surface 50, it can now be securely dated to the Early Iron Age I, slightly changing the previous dating from the Iron Age I.

#### **Field P: The Southeast Shelf**

Friedbert Ninow, La Sierra University

##### *Introduction*

Field P was opened during the 2014 season on the southeastern shelf of the *tall*. Several reasons led excavators to choose this location for excavation:

- 1) Field P is in close proximity to the Field K dolmen that was initially excavated in 1994 as part of the hinterland survey and which has been dated to the Early Bronze IB period, site Stratum 21. Other features on the southern and southeastern slopes of the *tall* led to further excavations in Field K. Among the finds was a probable Early Bronze IB dolmen foundation and a partly filled cave



containing several burials from the Middle Bronze II period with multiple burials (see Herr *et al.* 2002:171ff.).

2) GPR data collected in 2013 suggested some interesting anomalies (such as possible caves, depressions, cavities or openings in the bedrock beneath the surface) in the area. This led to the opening of two squares during the 2014 season, one (4N93) directly north of the Field K dolmen and associated features and a second one (4N80) to the west. In both the 2014 and 2016 seasons, squares in Field P were separated from each other in order to ground-truth specific GPR data, leading to a stratigraphically disconnected set of excavation units. Thus, this report will focus on the squares and not the field phases, which depend to a large degree on contiguous units.

During the 2016 season, excavations continued in Square 4N80 within a probe located in the northeast corner of the square in search of the anomaly suggested by the GPR data in this area. Since the 2014 season had reached part of the bedrock, the goal was to trace further the bedrock in search of the anomaly. The 2014 excavation of Square 4N93 discovered a sharp cut of the bedrock shelf on the eastern side of the square running almost parallel to the eastern balk. Therefore, during this season Square 4N94 immediately east of Square 4N93 was opened. The goal was to explore possible openings and mortuary features cut into the bedrock. Two more probes in two different squares (4N62 and 4N72) were also opened to explore possible mortuary features.

#### Square 4N80

The objective was to extend a probe from the previous season, but bedrock appeared quickly in the southeast corner of the square (**Fig. 12**) and then everywhere in the square. Only layers of compact clay/mudbrick and a fragmentary east-west wall (4N80:012) were revealed. No indication of man-made alterations to the bedrock (such as carvings, openings, entrances to caves *etc.*) could be traced.

#### Square 4N93

Although there were stratigraphic connections between this square and newly opened Square 4N94 to the east, bedrock was reached

quickly. However, on the surface of a small bedrock shelf excavators found an installation of set stones (0.2-0.4m in length) framed with plaster for stabilization (**Fig. 13**). It is unclear what purpose this installation served, except to level a void in the bedrock. However, no surface was found to indicate how these stones related to it. As in other squares of this field, no mortuary features were found. The anomalies indicated by the GPR data can most probably be attributed to the fissures and crevices found on the surface of the bedrock.



11. Stone-lined Bin in Field L 7K86.



12. Bedrock in Probe in Field P 4N80.



13. Bedrock and Fissures in Field P 4N93 and 4N94.

### Square 4N94

Below the topsoil of Square 4N94, the same soil-layer accumulation was apparent as in 4N93: locus 4N93:026 corresponds to locus 4N94:002; and locus 4N93:027 corresponds to locus 4N94:003 (with the same soil colors). But a larger goal in opening this square was to investigate a cut in the bedrock that had appeared during the 2014 season at the eastern edge of Square 4N93, just west of the eastern balk. This cut indicated possible human activity and possible mortuary features. Once excavated to bedrock, however, it was clear that, as in the other squares of this field, the accumulation of soil layers was formed by sheet wash originating from the upper parts of the *tall*. No occupational stratum could be identified.

### Square 4N62

In search of other mortuary features, the excavators turned to the location of the Field K dolmen. The topography of the surface in this area suggested a possible additional dolmen in line towards the west. Two large boulders (possibly part of another suspected dolmen) led the excavators to open another square to the south of these boulders in line with the previously discovered dolmens. Unfortunately, it became clear that the boulders were not connected to any stones, walls or installations beneath them. The probe exposed an earth layer with mostly Early Bronze Age pottery just above bedrock.

### Square 4N72

Since Square 4N62 produced no indication of an additional dolmen or dolmen foundation, the adjacent square (4N72) was opened with a 2x5m probe along the southern side of the square. This area is in line with the dolmen foundation to the east of this square. Sheet wash formed the upper earth layers, but the layer immediately above bedrock contained mostly Early Bronze Age pottery. Again, this square did not produce any traces of mortuary features such as cave tombs, shaft tombs or megalithic dolmens.

## **al-‘Umayrī Survey Site 84**

David and Amanda Hopkins, Falls Church, Virginia

### *Introduction*

During the 2016 season excavators again returned to al-‘Umayrī Survey Site 84, following the mapping in 2014 at the site of as many as thirty agricultural features. These features in-

cluded wine presses, a small storage area, cisterns, a trough, cup holes, basins, a reservoir, a rectilinear building and an orthogonal wall. In the interlude between the 2014 and 2016 field seasons an uncontrolled fire razed much of the survey area of its wheat crop and led to the discovery of another probable rectilinear structure, a small stepped cistern, quarry marks and two possible pressing surfaces.

While this site has often been surveyed (1989; 1992; 1994; 2014), the goal of the 2016 excavation season was to document and clear as many new features as possible and to prepare exemplary features for structure-from-motion photogrammetry. Features chosen for this type of preservation include a three-part press, a reservoir, a smaller three-part press and nearby quarry marks, along with a pressing surface including basins, a possible small cistern, cup holes and post holes.

### *Mapping of Site 84 - Predominant Features*

#### Feature 4-Pressing Surface with Associated Features

Documentation beginning in the 2014 season included Feature 4: a constellation of cup holes/postholes, a pressing surface, two large possible basins and one small probable basin. Still visible is the outline of a carved pressing surface. The maximum width of the surface was 2.06m. At its greatest depth and greatest inclination, the pressing surface measured 0.1m. Feature 4A was a pressing surface with associated postholes and a cup hole; four probable postholes surrounding the pressing surface formed a rectilinear pattern above the pressing surface which may have been used to support some kind of canopy to shade the pressing process. Feature 4B was a possible basin with channel and associated cup hole. The basin itself was nearly semicircular, measuring 1.69m deep and 2.9m wide. Perhaps a pithos or similar jar was placed under the channel to capture any liquid pressed into it from above. Feature 4C was a small nearly semicircular basin with evidence of chisel marks, measuring 0.62×0.60m across. Given the beveled edges and bottom of the basin, one can theorize it was used for mashing or grinding agricultural products. Feature 4D was a large possible basin with marked limestone degradation and may, because of a lack of chisel marks, actually have only been a limestone dissolution feature.



#### Feature 5-Possible Basin

The basin measured 1.2×1.7m and had a depth of 0.6m, showing evidence of chisel marks on its surface.

#### Feature 6-Trough

Feature 6 was a trough with a nearly circular sump, built on a small limestone plateau. The sump within the trough suggests that it was used to separate solid matter from liquid and therefore refined liquid by allowing the removal of sediment.

#### Feature 10-Three-part Press

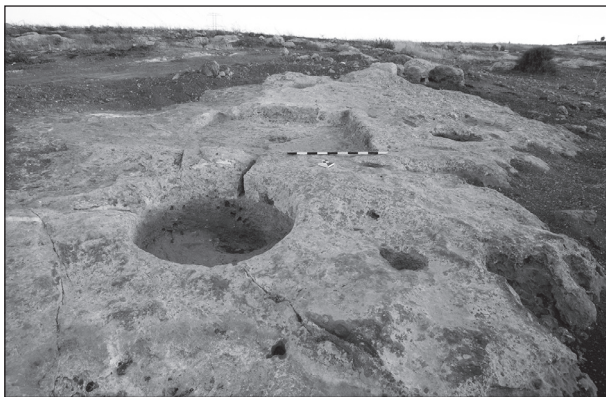
Feature 10 was a well-preserved three-part press, resting on the northern limestone shelf and boasting a large, almost perfectly circular basin 1.60m across and 0.40-0.50m deep. A smaller collecting vat that was nearly circular had a diameter of 0.70-0.65m and a depth of 0.48m. The basins were connected by a broad channel measuring 0.15×0.25m.

#### Feature 15-Press with Associated Cup Holes and Basin

Feature 15 was a two-part press composed of a nearly square pressing surface and nearly cylindrical vat connected by a deep channel (**Fig. 14**). The depth of the walls of the pressing basin varied from 0.0-0.22m and the side walls are all nearly 2m in length. The cylindrical vat measured 1.30×1.39m and is 0.48m deep. Surrounding the press were three cup holes and one basin.

#### Feature 20-Rectilinear Building

A prominent square structure (9.8×9.8m), sitting atop an outcropping of bedrock, likely served an administrative function for this very impressive wine production enterprise. It dated



14. Pressing Feature 15.

from to the 6<sup>th</sup> century BC and was constructed from very large limestone boulders most likely quarried near the site of the building itself. Earlier excavation uncovered a wealth of pottery and cultural materials (seals, a faience bead and other types of jewelry).

#### Feature 22-The Limestone Reservoir

Feature 22 constituted a large rectilinear reservoir measuring 4.9m in length by 4.3m in width, with a minimum depth of 3.1m which brings potential capacity to at least 65 cubic meters. During the 2014 season, excavators tackled the earth and debris that filled the rock-carved feature without reaching its bottom. This season, diggers were able to clear completely a 2×2m probe in the northeast quadrant of the feature. Chisel marks were found on all limestone faces of the reservoir, but no plaster. Some probable channels for water were found on the eastern face of the reservoir where the limestone is degraded. Another water channel may have existed where the stairs were located in the southeastern corner of the reservoir.

#### *Mapping of Site 84 - Recently Discovered Features*

#### Feature 31-Evidences of Quarrying

Evidence of quarrying shows the intentional shaping and removal of stone from the bedrock, leaving remnants of chisel marks. Also visible were the remains of a cut stone intended for removal.

#### Feature 32-Rectilinear Building with Threshold

This building, founded on bedrock, most likely measured 5.22×4.50m. However, the southeast corner has been lost (**Fig. 15**). A well-preserved and chiseled threshold with door socket emerged, as did large boulders of the



15. Rectilinear Building 32.

other walls, some of them quite disrupted. All pottery found within the walls of the building and on the outside of the walls dated to the late Roman period.

#### Feature 33-Circular Pressing Surface with Other Features

Feature 33 included a pressing surface with associated basin and was clearly visible, although it remains uncleared. A conical basin lay 1.20m to the south-southeast.

#### Feature 34-Cylindrical Stepped Cistern

Feature 34 was a deep cylindrical cistern with steps on the north side. It is 1.1-1.16m in diameter across its mouth. The upper layer of bedrock effectively shields the water from the sun.

#### Feature 34-Evidence of Quarrying

A long horizontal surface (8.9m) showed evidence of quarrying and stone removal. The channel on this bedrock surface was very degraded.

#### Feature 35-Possible Pressing Installation

Above Feature 22, the reservoir, lay Feature 35. This possible pressing installation remains uncleared. Still visible is the curvilinear edge of a possible pressing surface.

#### *Preliminary Conclusions*

Excavators were greatly impressed by the fullness and multiplicity of features that dominated the landscape of Site 84. There was a ubiquity of water-related, rock-cut features such as cisterns, reservoirs and basins. These extended from minor dissolution features that may have been used on an episodic basis to the massive water devices such as the reservoir that inhabitants utilized to capture everything available. This entire constellation of features leads one to believe that Iron Age viticulture depended on a significant investment in the use of water for the refinement of its grapes into wine. Later, in the Roman period, Site 84 experienced a repopulation and perhaps extenuation of its agricultural facilities. Still, they relied heavily on the capture and use of water for viticulture.

#### **Technology**

Tall al-‘Umayrī is currently undergoing negotiations connected to land-ownership issues. This has left the future of long-term excavations at the site in something of a state of flux, a situation absolutely demanding our best efforts to document and record everything possible with the best technologies available to us.

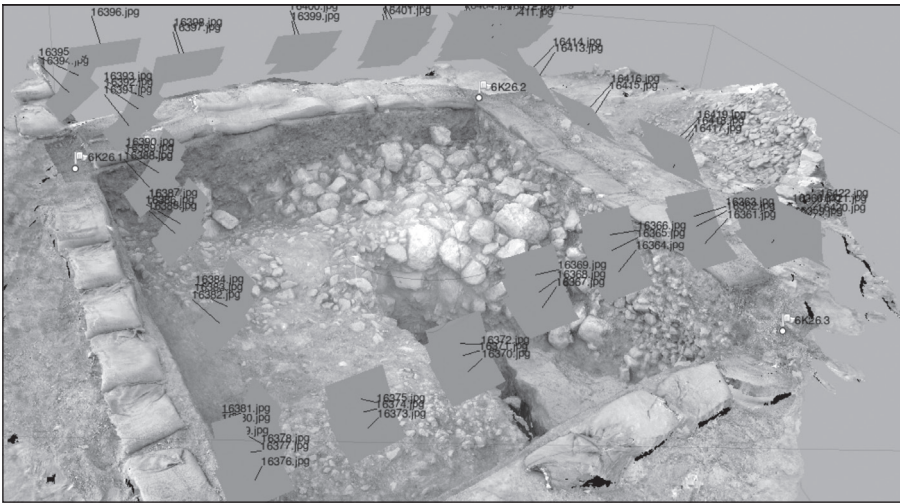
The 2016 season saw the continued use of technology intended and developed for maximum extraction of data from the excavation process, especially should the opportunity to continue research at the site become unavailable. While UAVs are no longer allowed into Jordan from outside the country, the project maintained its digital-data-driven research methods with the use of GPS, iPods and iPads for data harvesting, hand-held XRF analyses, structure-from-motion photogrammetry and further development of the online database, OpenDig, which stores and makes accessible data from the al-‘Umayrī excavations dating back to its beginning in 1984.

A systematic approach to excavation documentation was employed this season to produce a photogrammetric rendering of each excavation square every morning. A series of high-resolution photos was taken from each side of every square and processed with Agisoft’s Photoscan Pro to produce a structure-from-motion 3D model showing the daily excavation progress (see **Fig. 16**). It is anticipated that these models can be digitally stacked so that future researchers will be able to examine the daily progress and closely examine and manipulate in 3D the emergence of archaeological features to evaluate the interpretations made with improved levels of information than have hitherto been preserved. Use of this type of photography also allowed us, for the first time, to create digital balk drawings which were geo-rectified.

#### **Restoration and Preservation**

Given the nature and location of our excavation operations in 2016, there were no new architectural elements exposed which were in need of consolidation. Historically, the project has hired professional masons to assist in the complete preservation of virtually all extant architecture at the site, making research easier for archaeologists and visualization of the remains more meaningful for visitors, to say nothing





16. S-F-M.

of preserving walls, surfaces and installations from interseasonal degradation, due mostly to natural threats.

The greater challenge to the survival of cultural heritage at al-‘Umayrī is the ongoing dispute between landowners and the government (referenced above), which may leave vulnerable all exposed surfaces and architecture, and could force an end to excavation. All parties seem to be of good will and are searching for a solution that respects both the cultural heritage of Jordan represented at the site and the rights of those who have invested in the land.

### CEPU

A new initiative, partially begun in 2014 but more intensely undertaken in 2016, involved an ethnographic study of our laborers and their families in the village of al-Bunayyāt, not more than a couple of kilometers from Tall al-‘Umayrī. Carolyn Waldron and Monique Vincent in particular envisioned a process, approved by the Institutional Review Board (IRB) committee at La Sierra University, by which we could hear and record stories from our workers, many of whom over the past three-plus decades had become like family to us, they and their children who constituted the second generation of laborers. Team members engaged with the *Community Ethnographic Project at al-‘Umayrī* (Fig. 17) succeeded to some degree in collecting and collating survey information and family stories, but more work remains to complete the project.

## Community Ethnographic Project at ‘Umayri

Madaba Plains Project - Tall al-‘Umayri



17. CEPU.

### Plans for the Future

Land-ownership issues continue to plague the project at Tall al-‘Umayrī, leaving the future entirely uncertain. The worst-case scenario would be to see nothing happen on behalf of the Department of Antiquities and the land abandoned to potential development. This site deserves a century of study and permanent preservation and protection, but all of the effort put into the project to this point will be lost if al-‘Umayrī is not purchased for the people of Jordan.

### Acknowledgements

The authors of this report are indebted to Dr. Monther Jamhawi, Director General of

the Department of Antiquities. Samia Khouri, Aktham Oweidi, Muna Hiari and Salem Diab served us extremely well as representatives of the Department of Antiquities. The American Center of Oriental Research in ‘Ammān, directed by Barbara Porter and assisted by Glenn Corbett, provided invaluable help. The excavation staff was housed in al-Muqābalayn at the Amman Training College, an UNRWA vocational college for Palestinians. We give special thanks to its Principal, Dr. Qasim Abu Eid for making our safe and secure stay a genuine pleasure; to Chief Operations Officer, Mr. Mohammad Ajouri, who selflessly worked on our behalf on a daily basis; to Mohammad Ahmaro, ATC steward who was helpful to us in more ways than we can count; and to our cook, Mr. Munir Hamam, for overseeing the preparation of excellent meals. Vicky Khano of Guiding Star Travel Agency helped with many logistical and travel-related concerns. The Committee on Archaeological Policy of the American Schools of Oriental Research approved the scientific goals and procedures of the project. Staff and students at La Sierra University’s Center for Near Eastern Archaeology helped curate and record 2016 finds, with special gratitude to Kristina Reed (for curating and stipple-drawing objects) and Vera Kopecky (for providing lab photos). Thanks are also due to each member of the staff, which was divided into two sections: field excavation and camp logistics. In charge of planning and overall execution of the project were the authors, director and co-director/chief archaeologist of the project. Field supervisors and the survey site supervisor appear as authors of sections of this report. Finally, we could not have accomplished our work without the permission of landowners Dr. Raouf Abujaber and Mr. Bishara Bisharat, consortium fees from the member institutions of MPP-al-‘Umayrī, and the donations of a large number of friends of the project, including a generous grant from the Versacare Foundation in Riverside, California.

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