Abstract

The Tall el-Hammam Excavation Project (TeHEP) is a joint scientific project between Trinity Southwest University, Albuquerque, New Mexico, USA and the Department of Antiquities of the Hashemite Kingdom of Jordan. The goal of TeHEP is to study the relationship of this immense and strategically-located site within its ancient period socio-cultural, economic and political contexts, and to ascertain its position, function and influence within those contexts.

In addition to this broader focus incorporating historical and archaeological data from neighboring sites in the southern Jordan Valley and beyond, the Project is studying the site as a microcosm of life and activity within its own local environment, seeking to determine its phases of settlement, urbanization and the reasons for its decline, destruction and/or abandonment at archaeological period interfaces.

Within this micro-context the Project seeks to shed light on how the inhabitants of Tall el-Hammam adapted to the local environment and environmental changes, and utilized available resources, enabling them to attain levels of city planning and building on a resultantly large scale, particularly during the Bronze Age.

The present report seeks to provide a general overview and introduction to the geographical, chronological, and archaeological data distilled from eight seasons of exploration and excavation at this remarkable site with emphasis on Season Eight and to foster interest in Tall el-Hammam as a significant source of present and future information regarding the history of the southern Jordan Valley and, indeed, of the southern Levant.
Introduction

The Tall el-Hammam Excavation Project (TeHEP) conducted Season Eight under the auspices of the Joint Scientific Project Agreement (signed 30 December 2010) between Trinity Southwest University and the Jordan Department of Antiquities.

Season Eight of the Tall el-Hammam Excavation Project (for previous seasons see Collins, Byers, Luddeni 2006; Collins, Byers, Luddeni, Moore 2007; Collins, Abu Dayyeh, et al 2008; Collins, Hamdan, et al 2009a; Collins, Hamdan, et al 2009b; Collins, Hamdan, et al 2010; Collins, Aljarrah 2011; Collins, Elayyan, et al 2012) was conducted from 13 January through 21 February 2013, with the authorization and support of Mr. Faris Alhmoud, acting Director General of the DoA. TeHEP Season Seven was overseen by director Dr. Steven Collins (Dean, College of Archaeology, TSU; Chief Archaeologist) and associate director Mr. Khalid Taraweneh (DoA, Karak Directorate; Senior Archaeologist), with the assistance of Mr. Gary Byers (TSU, Senior Archaeologist; Assistant Director), Ms. Carroll Kobs (TSU, Senior Archaeologist; Assistant Director), Mr. Michael C. Luddeni (TSU, Director of Photography), Mr. Daniel Galassini (Director of Videography), Dr. Carl Morgan (TSU, Field Archaeologist), Mr. Phillip Silvia (TSU, Field Archaeologist; Dr. Kennett Schath (TSU, Field Archaeologist), Dr. John Leslie (TSU, Osteologist), and Mr. Tawfiq Hunaiti (DoA, Surveyor). Mr. Adeib abu-Shmais (former DoA Archaeological Inspector of Amman; Senior Archaeologist) and Mr. Jehad Haroun (DoA Head of Excavation and Survey Sector) served as ceramic diagnosticians. Dr. Leen Ritmeyer (Cardiff University, Wales; Architectural Reconstruction Specialist, Ritmeyer Archaeological Design, Wales) joined the TeHEP Team once again toward the end of the season to continue his work on the master top plan of the site, and section and reconstruction drawings for publication.

TeHEP professional archaeologists and specialists were assisted by a team of Square Supervisors consisting of TSU graduate and doctoral students in archaeology. Volunteer excavators from the USA, Australia, Great Britain, Canada, and Germany, along with 30 local workers, rounded out the TeHEP Season Eight Team.

Tall el-Hammam (TeH) is located 12.6 km NE of the Dead Sea, 11.7 km E of the Jordan River, 8 km south of the modern village of South Shouna (the location of Tall Nimrin), and approximately 1 km SSW of the Kafrayn Dam (see Figure 1). This area of the southern Jordan Valley, particularly the eastern half of what should properly be called the Jordan Disk (the circular alluvial area north of the Dead Sea, approximately 25 km in diameter, also called the middle Ghor), lies on the crossroads of the region’s ancient N/S and E/W trade routes. Several

1 The wide, circular, flat alluvial area of the southern Jordan Valley immediately north of the Dead Sea is approximately 25 km in diameter, and split down the center by the Jordan River. The biblical term for this phenomenologically disk-shaped region is kikkar (= disk, circle), appearing as hakikkar (the disk/circle) and kikkar hayarden (disk/circle of the Jordan River). When not used geographically, kikkar refers either to a talent (flat, circular weight of metal) or a flat, circular loaf of bread. Although cognate forms of kikkar appear in virtually all ANE languages (including Akkadian, Ugaritic, and Egyptian), the term is never used in a geographical sense outside the Old Testament, but always refers to a disk-like talent or loaf. The rare, geographical usage of kikkar lies at the core of the phrases Plain (kikkar) of the Jordan River and Cities of the Plain (kikkar) as seen in Genesis 10-19. The entire area was visible from the highland hilltops near the Jordan Valley WNW of Jericho, the location of Bethel and Ai (see Genesis 13:1-12).

2 There is debate regarding whether or not some kind of traversable road or trail existed on or near the eastern and western shores of the Dead Sea by which travelers could move N and S through the Dead Sea Valley. Even though much of the terrain was difficult, it is hard to believe that at least some kind of stable footpath did not exist, affording one the opportunity to move from towns/sites near the Dead Sea shore northward into the Jordan Valley.
significant sites, all variously occupied during the high points of Levantine Bronze Age\(^3\) civilization, hug the eastern edge of the Jordan Disk beyond the spread of the ancient flood plain, bounded on the north by the throat of the Jordan Valley, and on the south by the rocky terrain of the Dead Sea area—Tall Nimrim with Tall Bleibel and Tall Mustah in close proximity, and sprawling Tall el-Hammam encircled by Tall Tahouna (NE), Tall Barakat (N), Tall Kafrayn (NW), Tall Rama (SW), Tall Mwais (SSW), Tall Iktanu (SSE), and several small un-named sites, all within a .75 to 2.7 km radius of Hammam (Glueck 1945; Ibrahim and Yassine 1988; Khouri 1988; Leonard 1992; Chang-Ho 2002). Although the ancient eastern Jordan Disk towns and villages vary site to site as to periodization, particularly during the Bronze Age, Tall el-Hammam was their connecting common denominator positioned at the center of what must surely be described as a city-state\(^6\) and a relatively large one at that.

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\(^3\) See the new archaeological period abbreviations in section, "Stratigraphy" in Collins, Hamdan, Byers, et al 2009a.
Also nearby are several large dolmen fields (Prag 1995; Aljarrah tbp) and tombs that, for the most part, remain unexcavated or robbed out. The Hellenistic, Roman, and Byzantine periods are represented architecturally at and near the site, including forts, guard towers, aqueducts, large cisterns, and by at least one monumental structure located on the S side of Tall el-Hammam near two springs, one thermal, one sweet. Tall el-Hammam is the largest of the Jordan Disk sites. It is certainly one of the largest, if not the largest, Bronze Age site in Jordan. The tall proper spreads over approximately 36 ha (360 dunams), bounded by the Wadi Kafrayn on the north and the Wadi Ar Rawda on the south, and by the main road to the E of the tall, against the foothills, and the confluence of these two wadis to the W (see Figures 1 and 2). The site footprint for general settlement is well over 400 dunams (100+ acres). These dimensions approximate the areas of the site occupied in more remote antiquity, from at least the Chalcolithic Period through the late Iron Age (there are likely period gaps in some locations on the site footprint6). There is, additionally, ample evidence of Hellenistic/E Roman/Byz Period occupation just off the upper tall to the immediate south (see Figure 2). Reports about the site from the late 19th century (Tristram 1874: 330-333; Thomson 1882: 371-376) describe an aqueduct that fed the area south of the upper tall, much of which we have identified. There also seems to have been some re-use of earlier structures on the upper tall (particularly those built initially during the Iron Age) periodically from the Iron Age through the Late Islamic Period. However, sherd from the Islamic Period are rare.

Surface surveying and excavation reveal occupation beginning at least during the Chalcolithic Period (some Neolithic material is also present in fills) and extending with detectible consistency through the Early Bronze Age, the Intermediate Bronze Age, and into the Middle Bronze Age (all with associated architecture). Late Bronze Age sherds are extremely rare in the area, and there is no discernable LBA7 architecture thus far (the only LBA sherds from around the site were found in a tomb). One of the more surprising discoveries during Season Four and confirmed through Season Seven was that the EBA city wall extended not just around the lower tall (as originally thought), but also around the entire base of the upper tall as well. Equally surprising was the fact that the MBA city fortifications were not confined to the mudbrick/earthen rampart ringing the upper tall (Parr 1968; Burke 2008; McAllister 2008), but also extended around the lower tall. During Season Five, it was discovered that the MBA city wall and rampart system, aggregately from 33m to 50m thick, buried and dwarfed the 6m-thick EBA city wall with its many towers and (likely) multiple gates (Zayadine, Najjar, and Greene 1987; Najjar 1992; Burke 2008; Falconer 2008). Also during previous seasons, detailed surface sherd of the lower tall revealed a large quantity of ceramic forms dating to the Intermediate Bronze Age (cf. Homès-Fredericq and Franken 1986: 98-114; Brown 1991; Palumbo 2008), indicating that the city likely survived the ubiquitous period-ending calamity that caused the demise of EBA cities throughout the Levant, many of which never recovered (Richard 1987; Ben Tor 1992; Finkelstein and Gophna 1993; Harrison 1997; Avner and Carmi 2001; Philip 2008).

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4 The Hammam (ar-Rawda) dolmens tend to be on the higher, flatter parts of the hills to the ESE of Tall el-Hammam, while the tombs are below them in the steeper walls of the wadis. However, there is evidence that at least a few dolmens were located very close to the tall itself, on the adjacent alluvial plain.

5 Dr. David Graves and Dr. Scott Stripling reason that this must somehow be connected to the ancient Roman city of Livias, perhaps a guesthouse or palatial structure on the eastern edge of the Livias precincts.

6 For example, the smaller Iron Age occupation, confined to the upper tall, covers approximately 12 ha.

7 See the new archaeological period abbreviations in section fV. Stratigraphy in Collins, Hamdan, Byers, et al 2009a.
This was confirmed stratigraphically and architecturally during Seasons Five, Six and Seven. Perhaps owing to Tall el-Hammam’s access to multiple water resources (the Jordan River, seasonal rainfall and wadi flows, and numerous nearby and on-site springs), residents seem to have overcome the negative factors leading to the decline and/or demise of other cities in the region (Prag 2007).

Like Tall el-Hammam, nearby Bronze Age sites such as Tall Nimrin, Tall Iktanu, and Tall Kafayn (and all others in eastern Jordan Disk area, for that matter) seem to lack discernable, or any, Late Bronze Age occupation (Dornemann 1990; Prag 1974, 1991; Strange 2008). Is the LB A gap as the Tall Nimrin excavators call it (Flanagan, McCreery, Yassine 1990, 1992, 1994, 1996) a regional phenomenon, and can TeH shed light on what caused it? The data through the first six seasons of excavation support the existence of such a gap at TeH. Whatever caused the absence of occupation at the eastern Jordan Disk sites during the LBA/IA1 timeframe did, in fact, not continue, as most sites were resettled toward the end of Iron Age 1 into Iron Age 2 (cf. Dornemann 1983). Indeed, the Iron Age 2 occupation at TeH is quite extensive, and surrounded by a 3+m thick fortification wall, perhaps casemate, at least in part. What gave rise to the site’s Iron Age city, and what brought about its demise? The answers to these questions are only beginning to be answered.

During Season Eight we concentrated our efforts on the lower tall, extending excavations in three principal locations: Field LA (the city’s southern defenses and adjacent domestic architecture), Field LS (the sacred precinct at the approximate geographical center of the lower tall), and Field LE at the base of the upper tall (NW side). Each of these segments of the excavation has yielded important results in terms of the site’s occupational profile and phasing, with some remarkable results. Throughout Season Eight we continued to examine closely and make survey notes on TeH’s many surface-visible features that are stratigraphically readable by comparison with, and physically traceable to, excavated and ceramically-dated features. A

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8 In antiquity, both the Wadi Kufrayn and the Wadi Ar Rawda/Hisban probably sustained perennial flows more often than not.

9 Tall Iktanu, 2 km to the S of Tall el-Hammam, also has strong IBA occupation, but not fortified. Although Tall Iktanu has generally been seen as a defining IBA representative in most of the relevant literature, it must now be interpreted as one of many satellites of the much larger, and fortified, Tall el-Hammam.

10 Although not much has been published on the ongoing excavation at Tall Kufrayn, our personal contact with the director of the excavation confirms that there is not an LBA architectural presence at the site. There is a strong EBA and MBA presence, as at Tall Nimrin.
substantial understanding of the layout of the Bronze Age city is now emerging, and preliminary reconstruction drawings of the EBA/IBA and MBA features at Tall el-Hammam are now available (see Figure 3 as an example).

Tall el-Hammam certainly holds key pieces of the archaeological puzzle from which a greater comprehension and appreciation of the regional history is emerging. The focus of the eighth season of excavation was to continue to identify and sound sections of the site determined to offer reasonable opportunities to expose stratigraphic sequencing on the lower tall (Area L) while, at the same time, continuing to survey, map, and document important geographical features and archaeological sites on the eastern Jordan Disk, with a view to determining the relationship of Tall el-Hammam to the territory under its hegemony and to surrounding polities.

**Methodology**

When considering its constituent components collectively, TeH is enormous. But there were five considerations in specifying the focus of the 2013 excavation season.

First, the exposure of multi-phase Bronze Age domestic and fortification architecture on lower Hammam during the previous four seasons (Trench LA) set the stage for furthering our understanding of these features by continuing to expand the excavated area during Season Eight. Field LA was originally singled out for several reasons: (a) it was adjacent to, and included, a well-defined section of the city wall(s); (b) it included several surface-visible domestic structures; (c) it was a raised area offering the potential of deep layering; (d) it had dense Bronze Age sherd scatter; and (e) it had not fallen prey to "deep plowing" agricultural activity. Indeed, previous work in this trench suggested unbroken occupation in the form of Chalcolithic, EB1-2-3, IB1-2, and MB1-2 architectural remains, but further clarification was needed. Thus, the continuation of excavations in Field LA was a priority. The eastward expansion of this trench during Season Seven led to the discovery of a monumental MBA gateway system complete with both small and large defensive towers. Season Eight had as a goal the excavation and identification of the internal gatehouse accessed through the central axis of the main gate passage.

Second, we determined to focus on a number of small probes in Field LS (the sacred precinct) in an area so far untouched by farming. Because the adjacent temple structure proper had been covered over and was now being planted in bananas, we felt that it was critical to get as wide and deep a look at the administrative area as possible.

Third, the location we have designated as Field LE had, in the past, been severely bulldozed by local farmers from the N-side base of the upper tall (Area U) N to the scarp overlooking the Wadi Kufrayn. Although from one to two meters of occupational matrix had been removed from an area measuring roughly 150x300m (the dimensions of Field LE), numerous architectural foundations were still visible across the resultant surface. The bulldozed cut along the base of the upper tall subject to erosion for least a decade since the bulldozing took place also revealed in its vertical section many stone foundations topped by several mudbrick courses. Foundations too large to be domestic, along with dense EBA, IBA, and MBA sherd scatter, led us to believe that this had been an important part of the city during the Bronze Age. It also provided the best opportunity to determine how (and when) the MBA upper city rampart was constructed over the previous EBA and IBA phases of the city. The potential for unearthing important stratigraphical data from Field LE is significant. Thus, two strategically-placed squares were planned.
Fourth, because archaeological interpretations of excavated data can often be rather two-dimensional, we knew that for the city-state of Tall el-Hammam the continued pursuance of a holistic integration of multiple lines of inquiry was imperative. The growing body of field data from surveys, excavations (in the urban center, dolmens, tombs, stone circles and menhir alignments), observations vis-a-vis landscape usage and alteration, and data from surrounding sites required continued discussion and consideration during Season Eight.

Fifth, as a result of (now) seven years of comprehensive exploration, surveying, and excavation on both upper and lower Tall el-Hammam along with the nearby megalithic field(s) and tombs we have assembled adequate data allowing us to continue the site-mapping and reconstruction drawing begun two seasons ago by archaeological architect, Dr. Leen Ritmeyer. This season we continued to incorporate new stratigraphic and architectural data into our formal site plans, section drawings, and reconstruction drawings for publication purposes.

During Season Eight, we were able to successfully address all of the methodological approaches outlined above.

Activity in Area L

Field LA: Excavation and Stratigraphic Interpretation. During Season Four we laid out a trench down the 28 N/S gridline comprised of Squares LA.28J, LA.28K, LA.28L, LA.28M, LA.28N, LA.28O, LA.28P, LA.28Q, LA.28R, and LA.28S. In previous reports, we have referred to this as Trench LA. In previous seasons Trench LA has allowed us to document several periods.

11 A note on the size of Tall el-Hammam: Our surveyed site grid now contains over 12,000 6x6m squares spreading over 43 ha.
of fortification development, as well as domestic architecture.

While Tall el-Hammam's defensive systems reveal an unbroken architectural evolution from EB2 through MB2, the adjacent domestic architecture to the immediate N of the MBA city wall provides an equally dramatic testimony of architectural evolution spanning at least 2,000 years, terminating toward the end of MB2 (ca. 1600 BCE +/-). From Season Six, Seven, and Eight we have been able to trace the integration and continuing use of older walls and rooms laterally and vertically into later walls and rooms.

During this season we extended the excavation of the domestic complex to the W, providing a wider look at a large compound consisting of several rooms and a courtyard (see Figure 4).

Trench LA has also given us a detailed look at the phases of fortification evolution from the EB2 (first city wall) through the MB1-2 (final fortifications of the Bronze Age). Ceramic reads are now relatively clear that the 30m- to 50m-thick MBA defensive wall and rampart system (built of mudbricks and interior stone stabilizer walls) was constructed during MB1 (MB IIA in the older chronologies). It is also apparent that it was continuously used (with constant maintenance and repairs) through MB2, until the final destruction of the MBA city.

During the Season Seven Trench LA was enlarged to include N/S gridlines 29 through 23, increasing its E/W width to 42m. With this widening of the trench several penetrations through the MBA city wall were observed. We soon determined that these penetrations represented not only the main entry to the city through a large gatehouse with towers, but also one of (likely) two flanking monumental towers creating a gateway system of significant proportions. During Season Eight we identified most of the structures associated with the city wall and external portions of the gateway system, and began excavating on the inside of the gate passage in order to determine the structure of the gatehouse. We were expecting to find a four-piered or six-piered gatehouse (Burke 2008). What we unearthed was unexpected and unprecedented.

The area inside the city wall has been heavily disturbed by farming, so we did not expect to find much of the gatehouse intact (we had seen a small section of it attached to the inside of the MBA city wall during the previous season, but the rest of the area did not look promising). However, the perimeter foundation wall (1.6m thick) of the gatehouse emerged virtually complete on the left side (relative to entrance from outside the gate passage) and for much of the width of the structure across the back (Thus far the back-right corner and right wall foundations seem to be missing, but perhaps portions will be found at a deeper level.) But there was no straight-access entry, and no piers. Instead, there were at least three rows of pillar-bases (upon which large wooden pillars once sat). Two of the rows aligned with the exterior wall foundation, but a third did not.

Remnants of an earlier foundation seem to align with the row of pillar-bases, suggesting that an earlier pillared building sat inside of, and separate from, the EBA/IBA city wall, and was used as a storage room or military barracks up to the time of the construction of the MBA fortifications (ca. 1900 BCE). When the MBA city wall and gateway system were built, the previous pillared structure was deconstructed and repositioned in order to attach it to the new city entrance as a gatehouse. The pillared gatehouse with a bent-axis requiring a right turn to enter the city seems to have been an attempt to preserve the architectural motif represented by the earlier pillared building associated with the previous gate system (see Figures 5, 6, 7, and 8). It seems as if it was more important to Hammam's MBA inhabitants to preserve the pillared-style construction they had inherited from their forbears than to adopt the piered-style gatehouse employed at most MBA cities in the southern Levant. What was this
seemingly-relentless cultural propensity that gave Tall el-Hammam a pillared building (EBA/IBA) and a pillared gatehouse (MBA)? Our initial research suggests that the influence was derived from Minoan Crete. Not a few archaeologists working in Jordan have already suggested that at least a segment of the ancient cultural milieu of the Transjordan during the EBA through MBA evinces a greater affinity to Crete than to Egypt or Mesopotamia (Philip 2008). Ceramic motifs at Hammam also seem to point in this direction (see Figure 9).

**Field LS: Excavation and Stratigraphic Interpretation.** Our Season Eight preseason planning included the continuation of excavations in the sacred precinct (Field LS) temple complex, but it was not to be. During the off-season local farmers re-covered the squares we had

**Figures 5** (upper left) shows Tall el-Hammam lower city gateway phases *in situ*; **Figures 6** (upper right), **7** (lower left), and **8** (lower right), show the architectural evolution of Bronze Age gateway phases.
excavated there during the past two seasons (one landowner, in particular, had agreed to leave the area open for excavations for two years— which had now expired). With that portion of Field LS removed from active status, we turned our focus to the administrative area to the W. Concerned that farming activity might soon claim it as well, we followed a salvage approach by excavating nineteen 1.5m probes across a 20x60m area in order to determine the stratigraphy across a larger expanse. We purposefully did not excavate in the squares previously begun three seasons ago that had exposed an IA2 extramural cultic center built over Bronze Age remains. We chose to follow this approach because we knew somewhat the extent and layering of that area; but what we did not know was how far those structures extended to the S and W.

The probes (see Figure 10) revealed quasi-stratified material from the MBA, IBA, and EBA, but which had obviously been disturbed in antiquity. One glaring feature of all the probes was an almost systematic lack of stone foundations. Although we knew from prior excavations that foundations from several earlier buildings extended in the direction where the probes were being worked, they were not detected there. The best working theory we have for this phenomenon is that the foundation stones were 'mined' for the construction of the Iron Age town built on the upper tall. Since, during IA2, many of the Bronze Age stone foundations were readily visible at the surface— as they are today— it would have been much easier to 'rob' them for building purposes as opposed to bringing stones from the hills to the east. This explains the mixed nature of the remaining occupational debris— broken mudbricks, 'churned' lenses of soil and ash with multi-period pottery sherds, and occasional, disconnected rows of three or four stones that likely were once parts of foundations.

Field LE: Excavation and Stratigraphic Interpretation. Walls visible in a bulldozed cut at the NW base of the upper tall helped us determine the placement of two squares. The results were remarkable for the clarity of the stratigraphy and the diversity of the architectural history of this particular location.
The first thing we encountered at the surface was a group of (what turned out to be) circular, stone-lined silos from IA2, confirmed by an abundance of ceramic evidence. They had been built into previously-existing material from the Bronze Age, including a revetment or retaining wall built of large boulders, and the wall of a monumental building (1.6m thick) with numerous mudbrick courses and wall plaster still adhering (see Figure 11). Based on associated pottery, the retaining wall and monumental wall date to the MBA timeframe. These two MBA features were built over IBA domestic structures showing signs of a significant earthquake event (also seen several seasons ago in Field LA) (see Figure 11). Earlier EBA structures are also now in view, but require further excavation for clarification.
It is important to note that Neolithic artifacts are present in the fills of Field LE.

**Stratigraphy: Insights through Season Eight**

When no sub-period designations are identified, general references to the archaeological periods use the following abbreviations: Pre-Pottery Neolithic Period = PPNP; Pottery Neolithic Period = PNP; Chalcolithic Period = CLP; Early Bronze Age = EBA; Intermediate Bronze Age = IBA; Middle Bronze Age = MBA; Late Bronze Age = LBA; Iron Age = IA; Hellenistic Period = HP; Early Roman Period = ERP; Late Roman Period = LRP; Byzantine Period = BP. Islamic Periods use the traditional designations. We are applying the following general chronology (Collins, Hamdan, Byers, et al 2009a), with new abbreviations given first:

<table>
<thead>
<tr>
<th>Period</th>
<th>Designation</th>
<th>Dates BCE</th>
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<tbody>
<tr>
<td><strong>PPNP</strong></td>
<td>PN1: Pottery Neolithic/early</td>
<td>6000 - 5500</td>
</tr>
<tr>
<td></td>
<td>PN2: Pottery Neolithic/middle</td>
<td>5500 - 5000</td>
</tr>
<tr>
<td></td>
<td>PN3: Pottery Neolithic/late</td>
<td>5000 - 4500</td>
</tr>
<tr>
<td><strong>CLP</strong></td>
<td>CL1: Chalcolithic/early</td>
<td>4500 - 4100</td>
</tr>
<tr>
<td></td>
<td>CL2: Chalcolithic/middle</td>
<td>4100 - 3800</td>
</tr>
<tr>
<td></td>
<td>CL3: Chalcolithic/late</td>
<td>3800 - 3600</td>
</tr>
<tr>
<td><strong>EBA</strong></td>
<td>EB1a: Early Bronze I/early</td>
<td>3600 - 3350</td>
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<tr>
<td></td>
<td>EB1b: Early Bronze I/middle</td>
<td>3350 - 3200</td>
</tr>
<tr>
<td></td>
<td>EB1c: Early Bronze I/late</td>
<td>3200 - 3100</td>
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<tr>
<td></td>
<td>EB2a: Early Bronze II/early</td>
<td>3100 - 3000</td>
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<tr>
<td></td>
<td>EB2b: Early Bronze II/middle</td>
<td>3000 - 2900</td>
</tr>
<tr>
<td></td>
<td>EB2c: Early Bronze II/late</td>
<td>2900 - 2800</td>
</tr>
<tr>
<td></td>
<td>EB3a: Early Bronze III/early</td>
<td>2800 - 2650</td>
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<tr>
<td></td>
<td>EB3b: Early Bronze III/middle</td>
<td>2650 - 2500</td>
</tr>
<tr>
<td></td>
<td>EB3c: Early Bronze III/late</td>
<td>2500 - 2350</td>
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<td><strong>IBA</strong></td>
<td>IB1: Intermediate Bronze/earlier</td>
<td>2350 - 2200 (old EB IV)</td>
</tr>
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<td></td>
<td>IB2: Intermediate Bronze/later</td>
<td>2200 - 1950 (old MB I)</td>
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<tr>
<td><strong>MBA</strong></td>
<td>MB1: Middle Bronze I</td>
<td>1950 - 1800 (old MB IIA)</td>
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<tr>
<td></td>
<td>MB2: Middle Bronze II</td>
<td>1800 - 1550 (old MB IIB-C)</td>
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<tr>
<td><strong>LBA</strong></td>
<td>LB1: Late Bronze I</td>
<td>1550 - 1400</td>
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<tr>
<td></td>
<td>LB2a: Late Bronze IIA</td>
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<td>LB2b: Late Bronze IIB</td>
<td>1300 - 1200</td>
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<td>IA1b: Iron 1B</td>
<td>1100 - 1000</td>
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<tr>
<td></td>
<td>IA2a: Iron IIA</td>
<td>1000 - 900</td>
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IA2b: Iron IIB 900–700 BCE
IA2c: Iron IIC 700–539 BCE
IA3: Iron III/Persian Period 539–332 BCE
Hellenistic Period 332–63 BCE
Early Roman Period 63 BCE–135 CE

The stratigraphic profile of Tall el-Hammam had long been suspected (Prag 1974, 1991; Ibrahim, Yassine, and Sauer 1988), but is now being confirmed by TeHEP. The following is, in part, a theoretical stratigraphic profile based on observations from extensive sherding, clearing and clarification of MT disturbances, and the results of scientific excavation through eight seasons. By theoretical stratigraphy we mean what is suggested by a general assessment of the ceramic indicators over the whole of the site, giving consideration to the frequency of certain period diagnostics. In other words, significant amounts of pottery from a given period would indicate, theoretically, that an architecturally-based occupation would be likely. On the other hand, rare occurrences of ceramics from a given period would suggest, theoretically, the unlikelihood of a substantial architectural complex dating to that timeframe. Of course, only excavation can reveal the actual stratigraphic profile of a given location on the site. Confirmed stratigraphy consists of ceramic indicators associated with architecture.

**Early-to-Late Islamic Periods.** These ceramic forms seem to be mixed into contexts with the latest (surface) structures on the upper and lower tall spaces. Re-use of older structures may account for this, especially in the area of the Roman/Byzantine bath complex on the lower tall (Field LR), where Umayyad pottery is fairly common. However, such sherds are extremely rare on the site as compared to Bronze and Iron Age pottery forms. Only an occasional campsite can be extrapolated from these few Islamic sherds.

**Late Hellenistic/Early Roman Period and Byzantine Period.** The Late Hellenistic and Early Roman periods are represented at the site, but play a minor role in comparison to the Bronze and Iron Age ceramic assemblages. Roman and Byzantine sherds are present, but are mostly found in two isolated locations, Field LR (monumental building) and Field UA (small guard tower).

**Iron Age 1, 2, 3.** The Iron Age city is quite extensive on the upper tall, but at this point periodization/phasing is not entirely clear. Iron I pottery is infrequent at this point, but present (such as the IA1b pilgrim flask found in Field UB). The IA2b-c monumental gateway in Field UB has an earlier phase dating to IA2a (perhaps late IA1b), with the terminal phase dating to IA2c, perhaps IA3. The principal Iron Age city at Tall el-Hammam seems to have been built during IA2a-b. IA3 (Persian Period) sherds are present-but-infrequent at this point.

**Late Bronze Age.** Material from the Late Bronze Age are systematically absent from the tall proper. However, LB2 pottery vessels were found in a nearby tomb containing vessels dating from the Chalcolithic Period through the Iron Age. Thus, some kind of LB2 presence in the area can be surmised; however, no architecture from that period is known in this vicinity of the valley E of the Jordan River.

**Middle Bronze Age.** Both MB1 and MB2 are strongly represented in the TeH ceramic repertoire (see Figure 10), typical MBA bronze weaponry, and in related fortification, monumental, and domestic architecture on both the upper and lower tall spaces. That the strongly fortified MBA city spread over most or all the site footprint is now clear.
Intermediate Bronze Age. IB1 and IB2 pottery forms appear with high frequency across the entire site. These occupants also seem to have re-built and re-used many of the previous EB2/EB3 structures including the city fortifications. IBA domestic structures are clearly confined inside the city walls, with relatively clear indications of fortification alterations (such as the blocking of one of the EB2/3 gateways).

Early Bronze Age. The EBA city of Tall el-Hammam is unmistakable and massive. On the basis of excavations during Season Five, three phases of the EBA city are clearly visible. EB1 houses protrude from under the EB2 city wall foundation and associated outer roadway. The 5.2m-thick EB2 city wall was dramatically strengthened during EB3. The EBA fortification system surrounds both the lower and upper talls (around the base of the upper tall).

Chalcolithic Period. Chalcolithic pottery forms of the Ghassulian variety are found with some frequency, as are various basalt bowl fragments. The lithic artifacts from this period are fairly common. It would be understandable if Chalcolithic residents (perhaps moving from Tuleilat Ghassul?) had come to Tall el-Hammam to take advantage of its abundant water resources. Given the immense size of the EBA city, it is in the realm of possibility that the footprint of an underlying Chalcolithic settlement at TeH might eventually come to light. Season Five has now revealed Chalcolithic architecture (broadhouses) built on bedrock.

Confirmed Stratigraphy. A Chalcolithic architectural presence is now confirmed at TeH. The EB2 occupants of the site were the original builders of the extensive fortification systems that surround both the upper and lower talls, strengthened significantly during EB3 (cf. Mazar 2002; Schaub 2007; Schaub and Chesson 2007). The Intermediate Bronze Age occupants utilized most or all of the EBA footprint, including the fortifications. Excavation on the lower tall suggests a continuous occupation from the CP through much of MB2. The Middle Bronze Age is strongly attested architecturally at TeH, particularly in its fortification ramparts and walls on both the upper and lower talls, the monumental gateway on the south side of the lower tall, and in numerous domestic contexts. No structures belonging to the Late Bronze Age or Iron Age 1 are presently known. Perhaps one structure in Field UB can be dated to late IA1b, but that identification still needs more study. The IA2 city is extensively attested by both monumental and defensive architecture, and in domestic contexts. Iron 3 seems present, but yet unconfirmed by anything more than re-use of older buildings. Hellenistic, Roman, and Byzantine architecture (re-used?) seem confirmed on the south side of the site, and perhaps in Field UA on the upper tall. Islamic structures are presently unknown, except (perhaps) some minimal re-use of earlier architecture in Field LR.

Thoughts, Conclusions, and Recommendations

The 2013 excavation season was successful in clarifying the answers to many questions remaining from previous seasons, and has also provided a good foundation for the balance of the Project. Of course, many new questions have arisen that must be answered in future seasons. Not only has the excavation proper continued to clarify a great deal on the lower tall relative to the EBA/IBA and MBA defensive systems, but also it has given us a dramatic look into the EBA, IBA, and MBA occupations on the lower tall vis-à-vis clear stratigraphic horizons, particularly with the opening of squares in Field LE.

Further, the continuation and building of relationships with local officials and land owners, the extensive exploration of area geographical features and archaeological sites, and the experience of working side by side with our colleagues from the Department of Antiquities, have
all come together to build positive expectations for the continuation of TeHEP over the remaining years of the Joint Agreement.

Eight seasons of excavation have shown that Tall el-Hammam was one of the largest cities in the S Levant from the Early Bronze Age through most of the Middle Bronze Age. It was also the urban hub of a significant city-state that controlled the trade routes coursing through the Middle Ghor from at least EB2 through much of MB2. The scale and strength of its EBA-IBA and MBA defenses attests to a strong centralized government able to maintain its urbascape successfully over a long period of time— at least 1,500 years. Every indication is that it maintained its city-state status throughout the IBA (ca. 2350–1950 BCE), including numerous satellite towns and villages, a phenomenon unique in the S Levant during this period. Architectural and artistic motifs suggest not only an affinity with certain Canaanite coastal sites (such as Tell Kabri and Ugarit), but also with Minoan Crete.

As is now widely accepted, Tall el-Hammam remains the most logical candidate for biblical Sodom based on a detailed analysis of the relevant biblical and historical materials regarding the chronology and location of the city (Tristram 1874: 330-333; Thomson 1882: 371-376; Collins 2002a, 2002b, 2002c, 2008; cf. MacDonald 2000: 45-61). Extensive research, along with archaeological data from seven seasons of excavation, are now leading many scholars to entertain or adopt this theory on its evidential merits. That the enduring and powerful presence of Tall el-Hammam and its associated towns and villages on the eastern Jordan Disk during the Bronze Age gave rise to the Cities of the Plain tradition reflected in the stories of Genesis 10-19 is a reasonable theory commensurate with all of the available geographical and archaeological data. Future tourism potential for such a site as Tall el-Hammam must not be overlooked or underestimated. From all perspectives, preservation of this highly important site is imperative.

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