THE 2021-2022 UNIVERSITY OF VIENNA EXCAVATIONS AT AL JUMAYL (JORDAN) PRELIMINARY REPORT

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Introduction

BH

Since 2019[1], the University of Vienna has undertaken archaeological research at the village of Al Jumayl, located at the southern limit of the former Byzantine diocese of Mādabā and a few km southwest of the World Heritage Site of Um er-Rasās. Since the first brief site survey in 2018, the rich diversity of the pottery assemblages, the well-preserved buildings, the number of water cisterns, and the traces of ancient agriculture have appeared to be a very promising investigation area. The intention of the research project is to understand the role of the rural settlement from a holistic perspective by addressing its anthropogenic changing landscape, built environment, material culture, land use, types of crops, water resources, environmental conditions, and economic network. The data obtained will allow us to understand how these elements influenced the development of the Byzantine and Islamic village, and whether specific conditions played an instrumental role in its demise. The subsequent excavation campaigns (2019–2022) have yielded data from a rich archaeological context in connection with layers of use, abandonment, and reuse.

The two campaigns (2021-2022), the preliminary results of which are presented here, focused on one coherent area of the Late Antique village, namely its main religious building. The structure stands on the lower terrace following the natural topography of the site (**Fig. 1)**. The relatively steep rocky slope descends towards the wadi delimiting the site from the south and features several cisterns allowing the regular harvesting of rainwater. The structures visible on the surface are mostly built from spolia and appear to be of a later date (18th to early 19th century). The ecclesiastic building stands on the western edge inside a wider rectangular enclosure; it comprises two adjacent single nave buildings each with its own apse, and a square building with several rooms to the north. Savignac, in his visit to the site around 1932, was the first to identify one of the two churches, followed by Piccirillo who saw the same building (Savignac 1936: 242; Piccirillo 1989: 260–261).

The excavation in 2021 uncovered the existence of a second adjacent sacred building, which was completely hidden by collapsed arches and thick layers of debris. The exceptional conservation of the walls, the vault corbels, and the support system of the hemispherical dome covering the presbyterium, together with the remains of the collapsed roof, allows the

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1. General view of the site (Plan by T. Leutgeb).

building to be categorized among the all-stone structures well known in the Hūrān area, but less common in the diocese of Mādabā. The church itself incorporates a significant number of *spolia*, which possibly came from earlier unidentified buildings, its internal walls were plastered, and the floor covered with mosaics, which were only partially uncovered in the 2021–2022 seasons. The research methodology focused on cleaning and delimiting the external walls and proceeded with three main tasks: the stratigraphic excavation, the survey, and the documentation of all notable features of the site (buildings, architecture, water resources, agricultural features *etc.*) through digital documentation (see below).

Stratigraphy

TL, FM, AH, EG

A preliminary stratigraphic assessment was made during the excavations of the overlapping trenches F04 and F05 in 2021 and 2022 at the site of a church set in the south-western part of Al Jumayl. In trench F04 parts of a presbyterium concluded by a semi-circular apse as well as the building's pavement were identified. F05 comprises the northern church wall, the remainder of the presbyterium and five rows of pilasters along the nave.

Following the discovery of five structural arch collapses, and due to the volume of debris and the archaeological complexity, the excavation team decided to delimit the investigation to the trench's eastern section. Therefore, all strata west of arch collapse 2.2 were left untouched for the time being. During the two excavation seasons, 101 stratigraphic entities (hereafter SE) were documented and set into a singular matrix. Finds and architectural features allowed for the preliminary subdivision of the stratigraphic model into six chronological periods.

Recent Superficial Layers

The uppermost strata consisted of mixed and disturbed debris, containing accumulated sand,

quarry stone rubble, and one loose impost (SE F04_03). The eastern area of the excavation trench was strongly affected by damage through a modern looting interface (SE F04_11). Under these circumstances, naturally, the finds assemblage consisted of incoherent material deriving from various periods, the most recent finds being plastic food packaging of the last ten years. The pottery sherds were mostly of Ottoman and Mamluk origin, corresponding to the pottery typologies collected during the on-site survey conducted prior to the archaeological investigations.

Mamluk

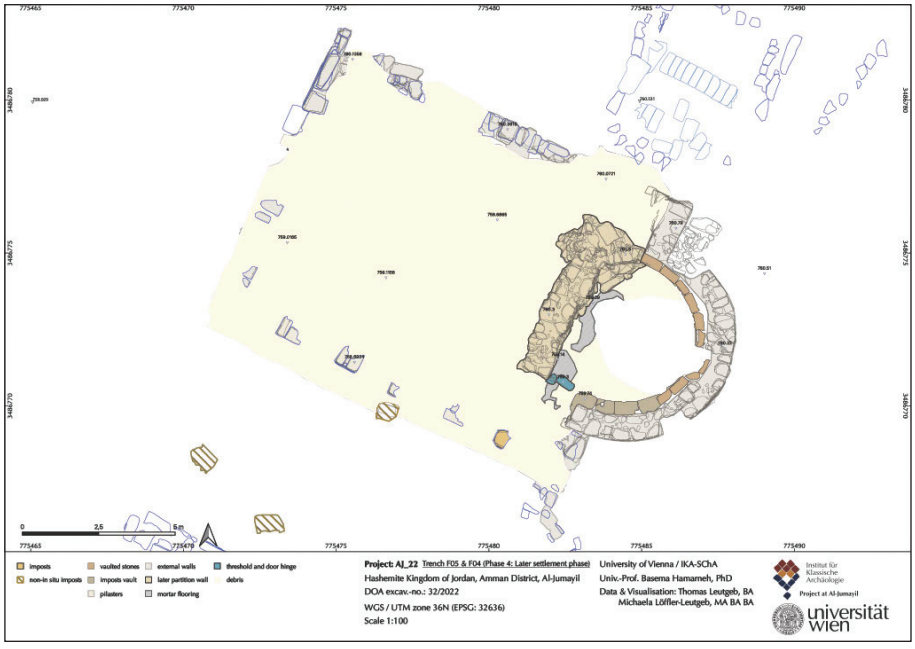
The first undisturbed layers, beginning with SE F04_07, were dated to the Mamluk period, since typical Mamluk pottery sherds were found in abundance and represented the youngest finds. Two Mamluk phases must be differentiated: the first being the collapse of then still-standing Byzantine building; the latter being a second habitation phase.

Second Habitation Phase

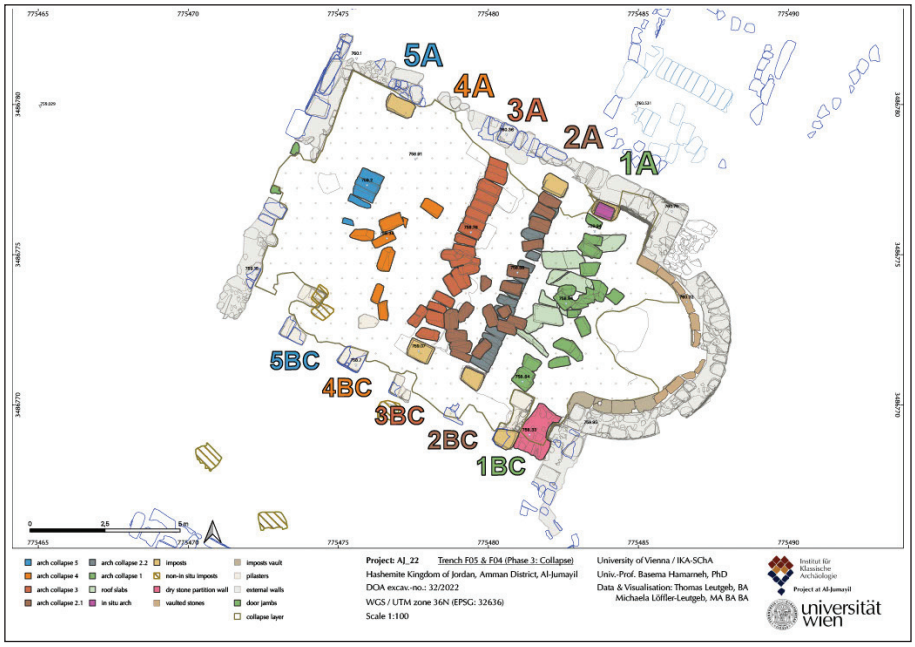
This second phase is identified by 1a dry-stone wall without proper foundation (SE F04_16) (**Fig. 2**), the remains of two lime mortar pavements (SE F04_18 and F04_19), a threshold, a door hinge (SE F04_14), and the reutilized upper section of the Byzantine apse wall (SE F04_21, F04_22, and F04_23). The eastward facing dry-stone wall running north-south (length: 5.5m; width: 1.2m; height: 1.3m) and consisting of three to six loosely layered courses of rubble of varying size was built directly above the underlying debris and the structural collapse of arch 1 (SE F05_03). Thus, the wall and the area delimited by the apse formed a separate room with its entrance facing south. The room had a lime mortar floor, however, massively damaged by the aforementioned modern looting hole, and it could be documented only in fragments. During the dismantling of wall (SE F04_16), pottery sherds of various origin were collected, again showing the wide array of archaeological periods present at the site. The most recent of these sherds have been dated to the Mamluk period.

Structural Collapse (**Fig. 3**)

Following the partial removal of (SE F05_08), the building's limits gradually became visible. Beneath the second phase, five rows of structurally collapsed arches (SE F05_03, 04, 05, 06, 07) embedded in two thick layers of debris (SE F05_02, 08) were unearthed. The debris consisted of mostly rubble, some ashlar stones, stone roof slabs, and a large number of elongated mosaic tesserae cut of local limestone. Also, some roof slabs still showed traces of elongated mosaic tesserae mixed with resistant lime mortar (see infra "Architecture").



2. View of the later settlement phase in the church (Plan by T. Leutgeb).



3. The collapsed arches and roof slabs (Plan by T. Leutgeb).

So far, the collapsed arches 1 to 3 (SE F05_03, 04, 05) have been documented at full length, respectively running north-south, from one pilaster to the other, spanning over a clear width of 6.5m. Of arches 4 and 5 (SE F05_06, 07) only the upper arch stones could be documented, with arch 5 seeming to have collapsed in a slightly less disordered manner.

The collapse of arch 1 (SE F05_03) consisted of 21 arch stones, with stone roof slabs (SE F04_25) lying below and above. Collapsed arch 2 displayed two layers of arched stones, one above the other, which were documented as arch 2.1 (SE F05_04) and arch 2.2 (SE F05_28). The former displayed 17 arched stones, and the latter 18 stones. Collapsed arch 3 (SE F05_05) had 21 arched stones, but, it has been documented only superficially. It cannot be said whether all arches collapsed simultaneously; nevertheless, the presence of Mamluk pottery within the layers surrounding the collapsed architecture of this specific part of the Byzantine building suggests this chronological range for its disintegration.

Destruction Strata

After the removal of the collapsed arches 1 (SE F05_03) and 2.1 (SE F05_04), as well as of the last few decimeteres of debris (SE F05_08) in the eastern part of the excavation trench, two extensive burnt layers (SE F05_25, 26 = SE F04_29, 31) were unearthed. The first layer (SE F05_25) consisted of blackened burnt material, mostly charcoal, which was collected for analysis. The form and aspect suggest the burning of an elongated wooden structure. The subsequent layer (SE F05_26) was of fine greyish ash. The pottery sherds within the burnt layers suggest a dating to the Fatimid period.

Abandonment layer (**Fig. 4**)

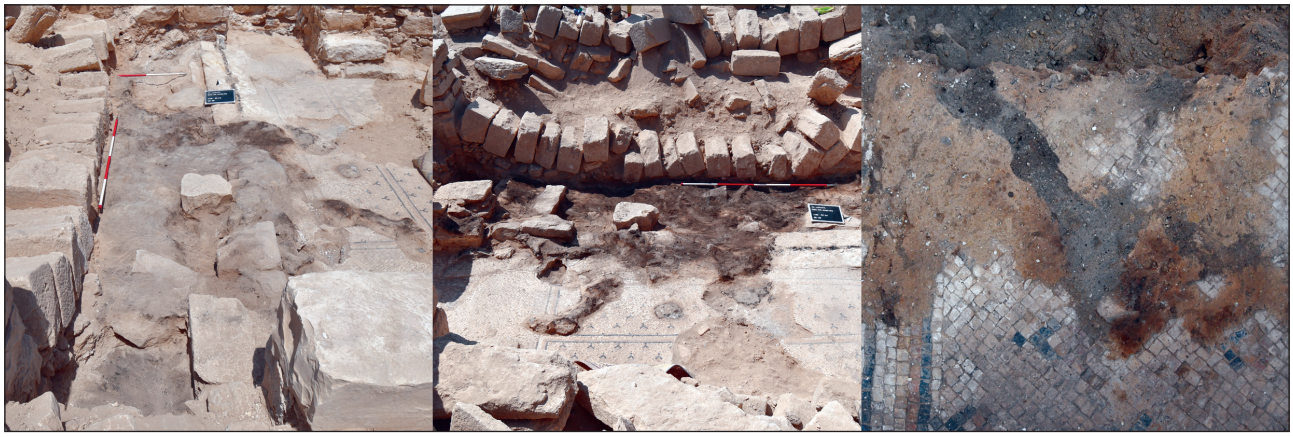
Just above the building's pavement a widespread thin layer of fine, yellowish, compacted sand (SE F05_29 = SE F04_32), fleeting in nature, was identified in various thicknesses, ranging from 0.1cm to 2cm. This was interpreted as accumulated sand, which presumably made its way into the structure after the building's abandonment. Pottery sherds and finds within this stratum also suggest a dating to the Fatimid period.

Byzantine Structures (**Fig. 5**)

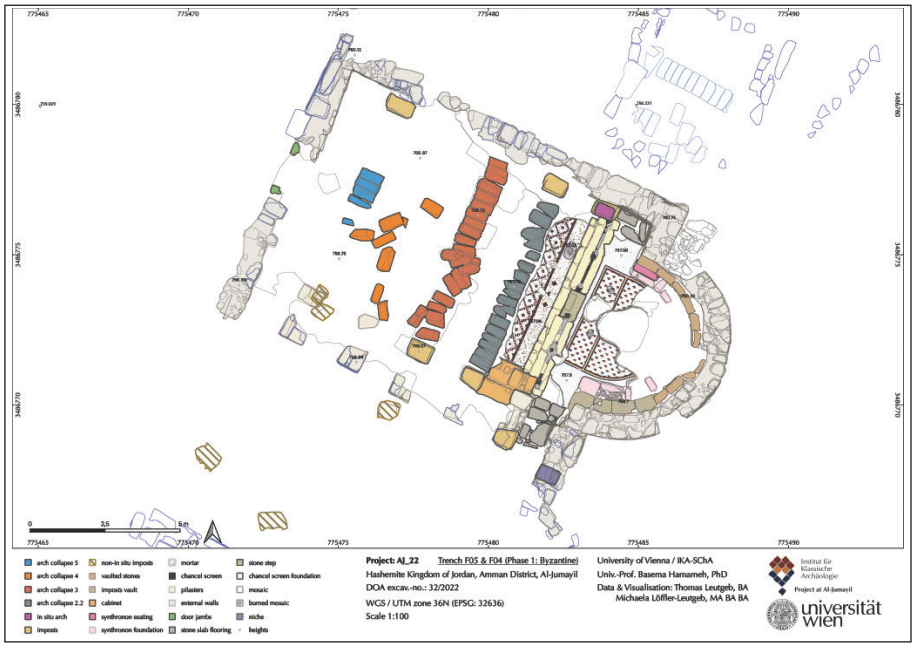
The removal of the sand stratum (SE F05_29) allowed a full view of the building, with its perimeter walls visible in elevation (3.02m in the building's north-eastern corner). The removal of the last stratum allowed a view of the mosaic floor of the presbyterium and parts of the mosaic within the nave.

Built-in Secondary Structures (**Fig. 6**)

Between pillars 1BC (SE F05_42) and 2BC (SE F05_43) on top of a slightly elevated part of the mosaic pavement (SE F05_60), and above



4. The three abandonment levels: a. burnt ash layer (SE F05_25); b. burnt charcoal layer (SE F05-26); c. drifted sand layer (SE F05-29).



5. The excavated part of the church floor (Plan By T. Leutgeb).

of the foundation (SE F05_39) for the chancel screen, a built-in structure was uncovered. It consists of a rear wall (SE F05_31) delimited by the two aforementioned pillars, a protruding wall (SE F05_30) built on the chancel screen foundation, and a horizontal, rectangular, flat stone slab (SE F05_59) with two oblong interfaces (SE F05_58), possibly a trace of the negative impressing of a now-removed object. The built-in structure showed multiple layers of fine plaster (SE F05_32). Another later addition to the original layout was a wall, constructed with loosely layered rubble, which was installed between pillar 1BC and the building's eastern outer wall. It blocked the passage to the adjacent southern second church/nave.

Original Layout

The original building's earliest layers were formed by the two mosaic pavements (SE F04_27, SE F05_56), which must have been damaged already before the abandonment of the building, since some holes (SE F05_63, 64, 69) were also covered by the fine sand layer (SE F05_29). Also, three spots where the mosaic tesserae were darkened by fire (SE F05_65, 66, 73) may have stemmed from the building's utilization timespan.

The mosaic's foundation layers can be conveniently seen in the section of the apse's central looting hole. The mosaic is embedded in fine mortar bedding or *supranucleus* (SE F04_35), rich in lime, which is set on a firm, solid, 8-10cm thick layar comprised of a mixture of

6. Built-in niche.

7. Orthophoto of the church building.

small stones and coarse mortar (SE F04_28), also known as *nucleus*). Under this, an orange-brownish, compact levelling layer (SE F04_36) of 7-11cm thickness was set above an at least 42cm thick layer of a looser, greeyish-light brown sand layer containing rubble and mortar remains (SE F04_37), which may have possibly corresponded to the *rudus*.

The mosaics and their bed stratigraphically superpose all adjacent architectural elements, most notably the foundation for the chancel screen (SE F05_39) and the synthronon (SE F05_34), as well as the slab flooring in the building's north-eastern corner (SE F05_35) and east to pillar 1BC (SE F05_36). These architectural elements lean against the building's perimeter wall, which is interconnected with pilasters 1A, 2A, and 5A. Of these, pilaster no. 1A stands out the most; atop an impost, it still preserves two stones *in-situ* showing the beginning of the curve of the arch. Hitherto, five other imposts (2A, 5A, 1C, 2B, 3B) have been found at their original place; two others, namely 5B and probably 1B (SE F04-03), were found mixed into the trench veiling debris.

The building's central focal point, the apse, is also interlocked with the adjacent walls and must have been erected, at least in part, before the foundations for the interior architecture. The apse's walls consist of a firm, layered ashlar masonry (SE F04_23), 1.95m in height, a layer of imposts (SE F04_22), and 1 to 2 layers of arched dome stones (SE F04_21) still *in-situ*. A highly disturbed niche, which could not be excavated due to its fragility, is set directly in the centere of the apse.

Architecture of the Church (**Fig. 7**)

ML

The church complex of Al Jumayl was built on the southern slope of the hill; it has an axial west-east orientation and covers an area of approximately 258 square metres. The complex is comprised of two adjoining churches. Currently, the only known entrance is located in the northern section of the

building's western wall. To the south, the complex incorporates the settlement's massive boundary wall into its structure. The eastern side is characterized by two apses of slightly differing size. The northern outer wall of the church is shared with an unspecified building complex. (Structural relations between these two complexes are still to be clarified in further research.) The outer walls of the church are made of well-dressed ashlars, although of various shapes and sizes. At the corner areas the stones are carefully interlocked. The two adjoining naves of the church complex are both the same size 7.9m wide and 11.2m long and separated by five rows of double pillars that are partly visible. The respective opposing faces of the northern and southern walls likewise display five rows of pillars. The architectural structures of the southern nave have been exposed to environmental impacts as well as looting activities. However, two pictures by Savignac document the southern naves former appearance in 1935.

Trench F04 (2021-F04) and trench F05 (2022-F05) were set over the northern part of the church complex. This area has been well preserved due to a high amount of collapsed material covering it.

The Nave

The nave is entered through a central opening in the western outer wall, where two stones of a door frame (SE F05_52) were documented. The nave is flanked by five pillars (1A to 5A) along the northern wall and, as separation elements, by five pillars (1BC to 5BC) to the south. The pillars are partly crowned by *in-situ* imposts, made of square coquina stones, with a straight, angular form that resembles traditional Nabataean/Roman style. (Netzer 2003: fig. 209, 222).

For the moment, the western part of the nave is still filled with rubble reaching the elevation of the in-situ imposts. Structurally collapsed arches have been excavated in-between the area delimited by pillars 1A+BC and 3A+BC. The arches supported the ceiling construction, which was made of elongated rectangular slabs (approximately 180×51×21cm) that were found among the collapse strata. Also, a great number of roughly cut, rectangular tesserae, which seem to have been a biproduct of mosaic work, were found within the building's rubble. By all indications, they were used as temper for roughcast. This is evident from the observation of lime mortar chunks mixed with the abovementioned tesserae. In some instances, this lime mortar plaster was found still applied to one side of the roof slabs with tesserae attached to it (**Fig. 8**).

The nave's eastern part, beginning at pilaster 2A+BC, has been excavated to the floor level, which is covered by a polychrome mosaic with geometric and floral patterns. To the south, a built-in niche (**Fig. 6**, SE F05_30, 31, 32, 58, 59) is located between pillars 1BC and 2BC. The niche (SE F05_59) is set directly above the floor mosaic (SE F05_57) and consists of a large rectangular fossiliferous limestone slab on a thin rubble bedding. Carved into the bottom slab are two rectangular indentations (IF F05_58) with lime mortar residue. The niche's eastern wall (SE F05_30) was built to the north of pillar 1B and is set on top of the two steps (SE F05_74) separating the nave from the presbyterium, while the southern wall (SE F05_31) of the niche is set between pillars 1BC and 2BC. Both niche walls are made of smaller fossiliferous limestone plates and a mixture of quarry stones. Lime mortar functions as a binding material, while the niche's interior surfaces are coated with remains of lime plaster (SE F05_32). There is no visible interconnection between both walls (SE F05_30 and 31). The niche's hypothetical western wall has not yet been excavated, since it is still covered by the arch collapse 2AB.

8. A roof slab with mortar and elongated tesserae.

The Presbyterium

Between pillars 1A and 1BC, an elongated step construction (SE F05_39, 74) of two layers of fossiliferous limestone ashlars spatially separates the northern nave from its slightly more elevated presbyterium. Recesses in the step construction's upper ashlar layer (SE F05_39) function as inlets for the chancel screen (SE F05_40), which spans the width between pillars 1A and 1BC but leaves open a central 77cm wide passage, where a stepped stone (SE F05_74) is incorporated into the substructure.

Lower edges of the black oil-shale chancel screen were found *in-situ*, fixed into the sockets and grooves by means of lime mortar (SE F05_57). Chancel screen fragments have also been found in surrounding layers (J22S-19/V-1+2, J22S-29/V-1+2). The mosaic (SE F05_27) covers most of the presbyterium and stretches into the northern apse. The mosaic is flanked to the north by a niche area (possibly used as a *prothesis* – Stankovic 2021: 336), which is slightly hidden behind pillar 1A and paved with stone slabs. To the south the mosaic ends slightly before pillar 1BC and is succeeded by a stone slab covering a connection to the presbyterium of the adjacent church. The connecting corridor also featured the remains of a later built-in arch (SE F05_20) made of small rubble stones stretching from the eastern exterior wall to pillar 1BC.

The Apse

The opening of the apse is 3.5m wide and it has a depth of 2.6m . The remaining walls of the structure are still standing to a maximum elevation of 2.8m.

The inner wall is composed of four architectural elements: the apsidal vault (SE F04_21), the imposts (SE F04_22), the substructural wall (SE F04_23), and a central niche. The remaining vault (SE F04_21) consists of cut fossiliferous limestone stones. Along the northern part of the apse, two rows of fallen vaulted stones remained *in-situ*. These cut stones measure approximately 62×37×28cm and are slightly curved inwards.

The vault stones rested on top of flat, elongated, imposts (SE F04_22), likewise made of whitish-beige, cut fossiliferous limestone. The imposts remained *in-situ* along the semi-circular structure of the apse, only being absent above the niche. The stones used here measure roughly 72×105×15cm and have a well-rounded edge facing the inside of the apsidal space. Underneath the vaulted stones, the imposts protrude about 10cm. The actual apsidal wall (SE F04_23) is preserved up to a height of 1.8m.

It is constructed of alternating layers of large, roughly worked ashlars and compensation layers containing smaller quarry stones. The bottom layer is built of large ashlar stones, measuring about 30×40×20cm. The succeeding compensation layer is executed in small rubble stones, measuring about 8×10×22cm. As a result of erosion effects, there are several voids along the structure and the joints are washed out. The apse's semi-circular central niche, due to instability resulting from erosion processes and looting activity, could only be excavated in part. Its opening is 1.1m wide, and its depth is approximately 45cm.

A synthronon (SE F05_33, 34) was found along the apsidal wall. It consists of one remaining bench stone (SE F05_33) and better-preserved foundations (SE F04_34, F05_34). The bench stone measures 90×30×25cm and leans, along with its backfill, against the apsidal wall. The underlying synthronon foundation (SE F05_34 and F04_34) is made of cut stones that protrude inwards up to 15cm. They constitute a 5cm high framing for the mosaic (SE F05_27) along the apsidal wall.

The Second Church

As mentioned, the state and location of the church on the southern side were already known from the image published in 1936 by Savignac; the eastern outer wall of the connecting corridor had a built-in niche that can be seen (SE F05_21), made of large quarry and fossiliferous limestone. The niche measuring 53cm high, 48cm wide, and 46cm deep was plastered with smooth, very fine white lime mortar, some of which remained *in-situ*. Both niches to the north and south of the southern apse might have been used as a *prothesis* (north) to store liturgical vessels and the eucharistic bread and wine, and a *diaconicon* (south) to store liturgical vestments, books, or other sacred items (Stankovic 2021: 336).

Comparable Structures and Architectural Elements

Double-apse churches are extremely unusual in the panorama of Byzantine Arabia, even though some examples have been found in Jordan, the closest being the two churches of Nitl (Hamarneh 2006) and the Church of Haufa (Abu Dalu 1994; Hamarneh 2003: 166). However, the architecture follows the regional typology: the building material is cut local stone, the inner ceiling of the structure is vaulted, and the roof is covered by flat large stone slabs (Krautheimer 1965: 102–103; Mihaljevic 2021: 312–314). The closest comparative example are the churches of Nitl, which are covered very similarly (Hamarneh 2003), some cisterns of Um er-Raṣāṣ, and several structures of Umm Al Jimāl that preserve roof slabs *in situ*.

Some *Tegulae* were found within the collapsed material (within SE F04_20, and SE F05_02, 19, 23 and 29) of the nave, the presbyterium, and the apse, but the low quantities do not suggest that the church structure was completely covered by them. Some of the building material, such as the imposts of the pillars, appear to be spolia from another building since all the lower parts are chipped off. The imposts correspond to a typical Nabataean/Roman style. Comparable pieces have, for example, been used in a Nabataean temple dated to the 1st century AD at the site of Tall Al Lāhūn (Homès-Fredericq 1989: 575–580). Later additions of architectural elements Such as the niche between pillars 1B and 2B can also be seen in the church of St. Sergius of Nitil (Hamarneh 2006). Such an addition probably had a liturgical importance that still needs to be understood. Further supplementary building activities, for example the additional arch pillar made of small rubble stones attached to the southern corner of the apsis (SE F05_20), the separating wall of rubble stones between the eastern inner wall, and the double pillar 1B/C (SE F05_19), as well as the wall built to close off the apse to the west (SE F04_16), may point to the later use of the church structures in Fatimid and Mamluk periods.

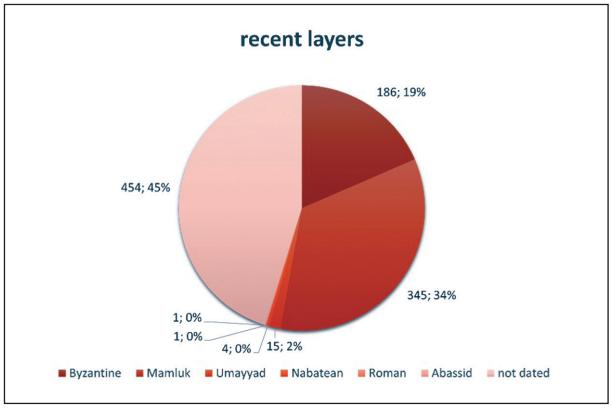
Statistics Pottery

FM

The stratigraphic units of the sections F04 and F05 are uneven. Some layers provided more pottery, while others were quite poor in finds. Relatively many sherds were recovered from layers SE F04_01 (225) and SE F05_00 (379), as well as SE F05_01 (206), which are recent layers that extend over the entire excavated area. Since these layers were partly disturbed by looting activity, a mixture of pottery from different periods –Byzantine, Umayyad, Abbasid and Mamluk– were found. (**Fig. 9**).

Of course, there were both diagnostic and non-diagnostic sherds in this area. Other layers dated as recent are (SE F04_04, 05, 06, 08, and 09). Except for (SE F04_09), from which 86 sherds were recovered, these layers contained only between 18 and 38 pottery sherds. Again, the spectrum predominantly comprised Byzantine and Mamluk pottery, with three Nabataean sherds in SE F04_06 and one Nabataean sherd and one piece of local, Byzantine terra sigillata in F04_08. In SE F04_09 there was an additional Umayyad sherd. In the entire recent strata, the Mamluk sherds make up 34%, *i.e.* approximately one third of the find material dated so far. The Byzantine sherds amount to almost one fifth (19%) of the total finds of pottery.

The next section is formed by the layers dated as Mamluk. A particularly large number of sherds (372) were recovered in SE F05_02 (= SE F04_20), which extended over the whole area of the apse. Here, too, the spectrum of finds predominantly comprises Byzantine (112) and Mamluk (138) pottery, with only 4 sherds from the Umayyad period. A wall built into the apse area during Mamluk times (SE F04_16), belonging to the second habitation phase, yielded a large number of finds in the spaces between the walls. Here 352 sherds were



9. Pottery statistics of recent layers.

recovered, again mostly of Mamluk date (208), some of Byzantine date (86) and 3 of Umayyad date. The remaining Mamluk-dated layers, which belong either to the second habitation phase (SE F04_07, F04_17, F04_18, F04_19) or to the time of the structure's collapse (SE F05_08 (= SE F04_26)), contained between 9 and 46 sherds, of which again the majority was Mamluk, followed by Byzantine sherds, and in almost all of these layers 1 to 4 Umayyad sherds were found. While Umayyad sherds account for only 1% of the total pottery finds of the layers stemming from the Mamluk period, 30% were Byzantine and nearly half of all sherds (49%) were dated as Mamluk – in addition to some sherds which still remain to be dated. (**Fig. 10**)

In the destruction horizon of the Byzantine building only two layers contained (little) pottery: SE F05_25 (= SE F04_29) with 4 sherds (of which 3 Byzantine and 1 Mamluk), and SE F04_30, from which 9 sherds were recovered. The next earlier phase is the Fatimid phase or the period of the building's abandonment. Here, 70 sherds were recovered from SE F05_29 (= SE F04_32), dating to the Byzantine, Umayyad, and Fatimid periods. Finally, from the oldest phase, that of the building's construction in Byzantine times, only a few sherds from SE F05_71 (8) and SE F04_36 (1) were recovered, almost all of which can be dated as Byzantine, and only one sherd possibly as Roman.

The pottery sherds that have been found help to date the different layers of sections F04 and F05. Not all sherds have been dated yet; a detailed examination of the finds is ongoing.

Pottery F_04

LS, IG, MTS

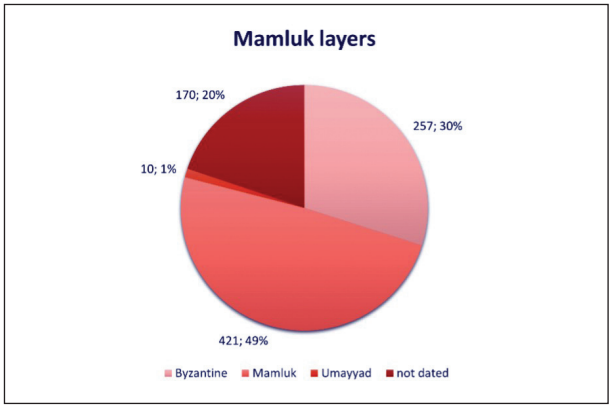
SE F04_00 (**Fig. 11 – pl. F04_1**)

In SE F04_00 a wide variety of pottery was found. The diagnostic pieces can be divided into two groups: open forms (different types of basins, plates, bowls, and cups) and closed forms (amphorae and pots). Most of the pieces of these two groups are well-fired and consist of an orange clay with small white and occasionally black inclusions. The cores of the fabric are mostly greyish and a speculative dating for the pieces J21-IV/00-2 and J21-IV/00-4, -5, -6 is to the Byzantine period. The amphora sherd J21-IV/00-3 has a light greyish colour with red painted decoration and seems to be from the Umayyad period (Hamarneh and Bianchi 2021: S_26400), while another piece can be dated to the Abbasid period (J21-IV/00-1).

Among the finds from SE F04_00 was a fine Abbasid oil lamp (J21-IV/00-7) with dark brown fabric. Only the shoulder is conserved, which bears decoration consisting of a circle with a Kufic inscription that can be reconstructed as: *Barakat Allah* (God's blessing), and a radiant zig-zag decoration on the discus. The typology of the lamp points to a possible variant of the so-called Jarash lamps (Uscatescu 2021). Another piece with a knife-cut decoration (*Kerbschnittdecor*) can probably be identified as an incense burner; it is the bottom part of a vessel with the remains of a handle, and shows traces of burning on the interior. The decoration is organized in squares, each of which is dissected by a diagonal cross and has triangles cut out of the outer layer. There are small traches of red paint within the cut lines. Parallels to this incense burner have been found in Ju'arah (Ein Hashofet) and 'Ar'arah (*Palaestine*), dating to the 6th century (Taxel and Iserlis 2014: 162–163), as well as at the Sanctuary of Lot, in Dayr 'Ayn 'Abāṭah, dating to the 8th century (Politis 2012: 184, 199, fig. 358) and in Khirbat Al Mafjar (Baramki 1942: 83, fig. 6, nos. 20-24). However, SE F04_00 reflects the recent surface layer, and a wide range of different vessels from various times can be seen as the result of erosion effects and looting activities.

SE F04_01 (**Fig. 11 – pl. F04_2**)

The oldest piece from (SE F04_01) is a bowl dating to the 1st century AD, which has a strong parallel in Nabataean fine ware (Schmid 2000

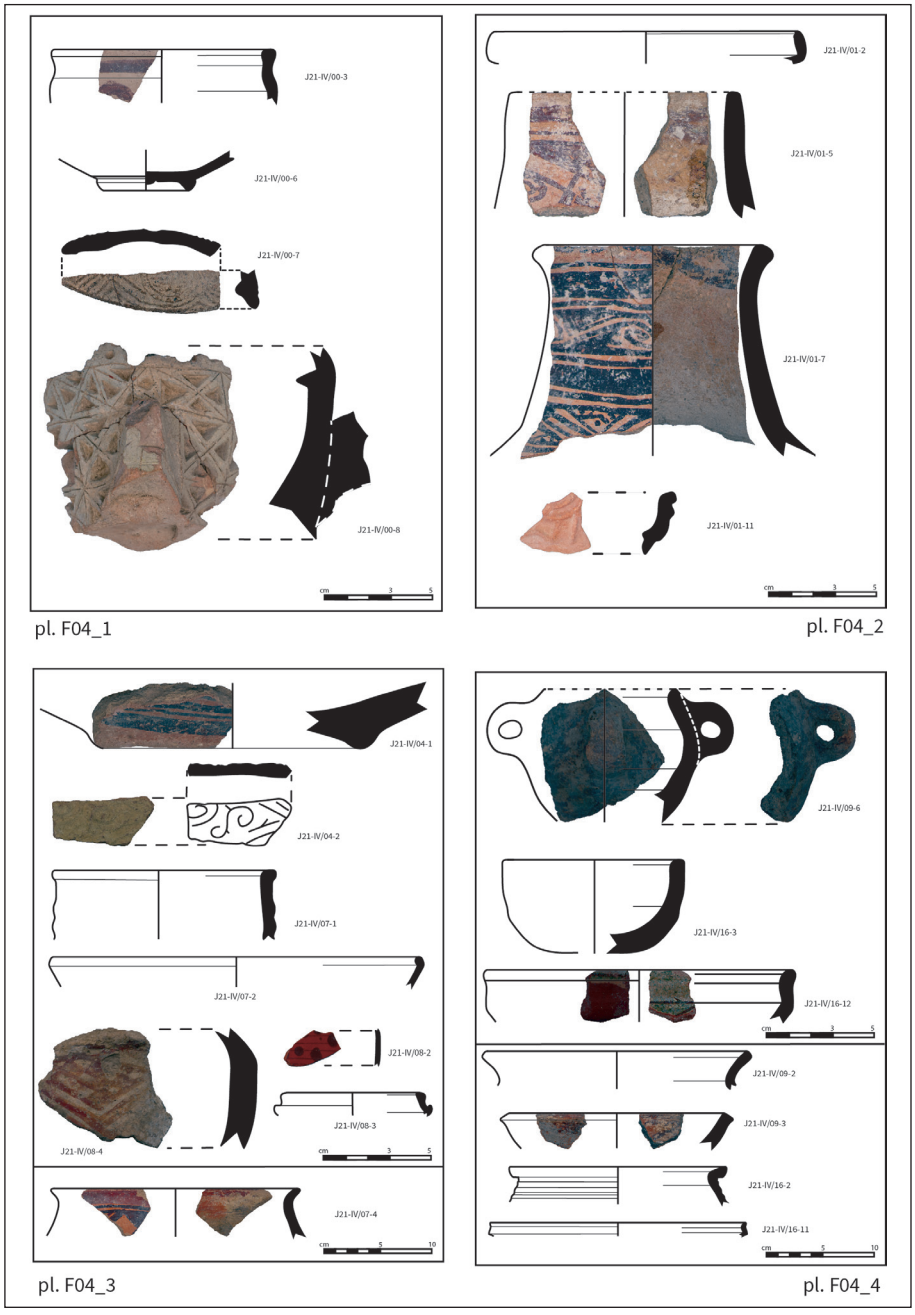


10. Pottery statistics of mamluk layers.

Abb. 101). The majority of diagnostic sherds (J21-IV/01-4, -6, -7, -14, -15) are handmade and some of these are painted in black or brown geometric patterns. The fabric has a lot of inclusions, sometimes consisting of organic material, varies in colour, and is medium- to well-fired. These pieces suggest a dating between the 6th and the 12th centuries (Peterson 2010: 136) and therefore indicate use of the site in the early middle Ages. A smaller group consisting of four pieces (J21-VI/01-1, -2, -3, -11) that are nearly homogenous in fabric and have a bright orange colour with very few, small white inclusions, can be dated to the Byzantine period. One of these, J21-IV/01-11, is an oil lamp, with a very close parallel found in Jarash that can be dated to around AD 500–550/60 (Uscatescu 2021: *cat.* 151).

SE F04_04 (**Fig. 11 – pl. F04_3**)

The finds from (SE F04_04) contained four diagnostic sherds, all bowls or jars. The dated ones belong to the 12th–13th century. J21-IV/04-1 is rim of a bowl or a jar with a diameter of 12cm. On the outside it has an orange-reddish slip with darker decorative lines



11. Plates F04_1-4.

on it. The combination of the thicker border line followed by a smaller line up towards the rest of the vessel can be compared to decorations found in Ayyubid/Mamluk patterns and can be dated to the 13th century (Khadija 1992: 354 plate 1 no. 2, no. 18).

SE F04_07 (**Fig. 11 – pl. F04_3**)

(SE F04_07) comprises a wide range of periods but mostly contains table- and common-ware pottery. Notable finds are the Nabataean bowl (J21-IV/07-2) with traces of slip only on the rim and a rim piece likely belonging to a jug-type vessel decorated with a brown and red geometric design typical of the middle Islamic period, which on its outer surface displays alternating filled and outlined triangles below a continuous line (J21-IV/07-4).

SE F04_08 (**Fig. 11 – pl. F04_3**)

(SE F04_08) contained five diagnostic sherds dating from the Nabataean to the Mamluk period. The very thin wall fragment J21-IV/08-2 has a red fabric and is decorated with dark red lines and dots on the outer surface. It can be compared to Nabataean decoration for its combination of a background of lines with a cluster of dots and possibly the remnants of a palmette design (Negev 1986: 46, C2, no. 333, 336).

Although the diameter of J21-IV/08-3 is not discernible, its unique decoration can be compared to different types of Byzantine amphorae, for example one from Mount Nebo (Hamarneh and Bianchi 2021: fig. 19-S_25187; Pappalardo 2002: 414, fig. 21-no. 22; Sanmorì and Pappalardo 1997: 408, fig. 7-no. 20.)

J21-IV/08-4 is a wall fragment, with a broken rim. Even though the diameter cannot be determined, its decoration and the outside fabric can be compared to Ayyubid/Mamluk pottery. The visible decoration, albeit damaged, shows a check-pattern with thinner double lines surrounding (Khadija 1992: 346, plate 2, no. 45).

SE F04_09 (**Fig. 11 – pl. F04_4**)

SE F04_09 contained a variety of common-ware, primarily of open vessel forms. The finds can be split into two groups: rough handmade pottery of the early to middle Islamic period with many inclusions in the fabric and well-fired wares that can be dated to the later Byzantine period. The stratum reflects materials from the collapse of the Mamluk and Byzantine buildings on site.

Two pieces are particularly notable for their large diameter and relatively good quality. J21-IV/09-3 belonged to a wheel-thrown bowl with especially even wall thickness. The piece was painted with a brown geometric design on the inside and outside of the vessel. J21-IV/09-2 was part of a large open vessel and shows a very even surface finish in addition to its wheel-thrown quality. Parallels for this vessel can be found in pots and bowls from Tall Zarʻā dating to the Byzantine-Umayyad transitional period (Kenkel 2020: 157: Kt35).

Also of note is fragment J21-IV/09-6, a large part of a handmade bowl. The material shows a large amount of air inclusions and a coarse wall that varies immensely in its thickness Similar ware has been found at other sites, such as Gharandal, albeit with horizontal handles (Walmsley and Grey 2001).

SE F04_16 (**Fig. 11/12 – pl. F04_4-5**)

This layer comprises the collapse of the Mamluk and Byzantine buildings at the site. The finds provide a highly varied spectrum of several types of pottery including fine tableware, common-ware and storage vessels reflecting several habitation periods. The oldest pieces in the stratum's assemblage date to the Nabataean period, such as J21-IV/16-11, which belonged to a rather large and finely crafted plate. The wall thickness of this piece measures roughly 3mm, typical of the early regional tableware. Similar but much smaller pieces have been found at Oboda (Negev 1986,: 61).

A further Nabataean fragment, J21-IV/16-4, has a dark reddish outside and inside; it is very wellfired and has a wall thickness of 0.2cm. In addition, the sherd has distinct decorations drawn in a shade of red darker than that of the fabric. These decorations and the wall thickness can be compared to typical Nabataean tableware (Erickson-Gini 2016: 56, fig. 10 - no. 4). The decoration can be classified as a criss-cross pattern and dots, whereby the dots are used to divide the field into different zones that then are decorated by different line patterns (Negev

1986: 44, no. 316, 317, 318).

A younger piece of tableware, J21-IV/16-12, dates to the Abbasid period. It is very smooth, even, and finely glazed. The rim is green glazed while the outside is covered by a thin white glazing with brown lines towards the bottom of the sherd, showing a horizontal line with a zigzag-design beneath it. Glazing on the inside is not preserved except on the rim area.

The body sherd J21-IV/16-14 is very wellfired and on one side shows decoration in white glaze atop green and black colouring. The green glaze seems to have covered the whole sherd whereas the black lines form a geometrical pattern. This system of decorating can be compared to sherds from the 13th century (Avissar and Stern 2005: 138, pl. V. 2, type I.1.5.1).

The common-ware likewise reflects a variety of forms. Most notable is J21-IV/16-3, a very uneven and roughly made small bowl dating to the middle Islamic period, which likely contained materials such as creams or seeds. These bowls are commonly found for this period and were often stackable (Makowski 2020: 585).

Furthermore, fragment J21-IV/16-2 provides a good example of the storage vessels commonly found in the area. The outside of the wheel-thrown jar was left rough and decorated with a vast number of horizontal linear grooves. Parallels have been found locally: for example, on Mount Nebo (Hamarneh and Bianchi 2021: 116, fig. 4).

J21-IV/16-6 is a rather uncommon piece with decoration made using a knife-cutting technique, similar to the technique used on the oil lamp from (SE F04_00).

SE F04_17 (**Fig. 12 – pl. F04_5**)

(SE F04_17) yielded four diagnostic pieces, and one decorated wall fragment. The datable pieces belong to various centuries ranging from the 6th to the end of the 12th .

Sherd J21-IV/17-1 is a diagnostic base fragment that probably belonged to a bowl or plate due to its diameter of 9cm. The outside shows a reddish glaze and the inside still shows complete coverage with a dark brown glaze and a decorative line in green glaze. This piece can be dated into the Mamluk period, as this type of glaze was very popular in the second half of the 12th century (Avissar and Stern 2005: 20, fig. 7, type I.1.6.2). Based on these comparisons, the piece could be considered a bowl rather than a plate.

The pieces J21-IV/17-4 and J21-IV/17-5 belong to one vessel, probably an amphora. It has decorative grooves on the outside and opens up at the end of the sherd into the body of the amphora. There are also traces of grooves on the inside. It can be dated into the 6th century AD (Hamarneh and Bianchi 2021: fig. 14, S_26214).

The fragment J21-IV/17-6 is an interesting diagnostic piece. The thickness of the material would suggest it belonged to an amphora, but no comparable amphora rims of similar diameter could be identified. Rather, the diameter fits much better with that of a jug or flask (Hamarneh and Bianchi 2021: fig. 28, S_26030). The sherd has decorative grooves on the outside, and the orientation is similar to flask necks as well.

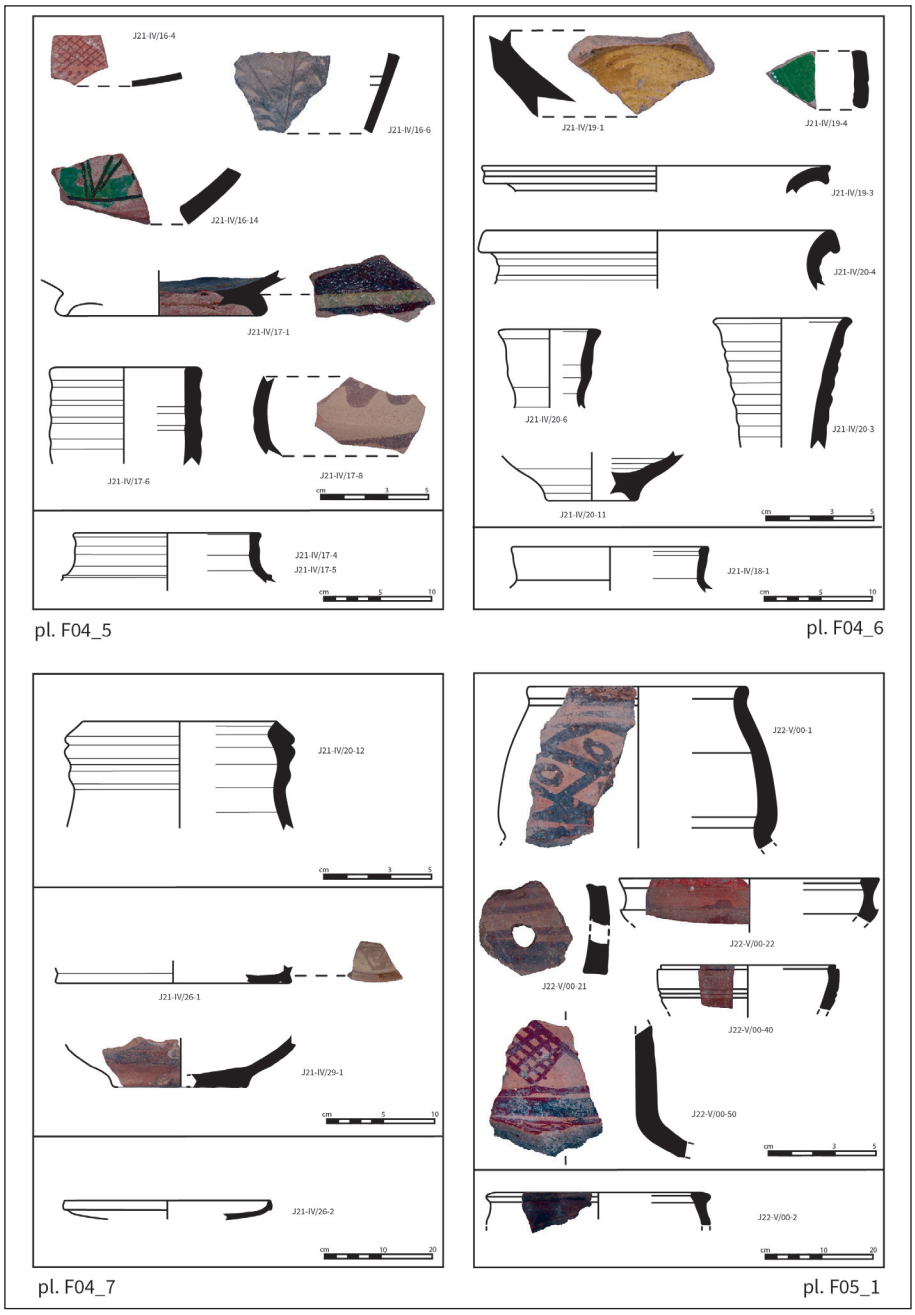
The wall fragment J21-IV/17-8 has no slip on the inside, but beige slip on the outside with brown lines and waves as decoration. The colouring can be compared to pieces from the Umayyad period dating around the 8th–9th century (Kareem 1999: fig. 7, sherd 9; Sanmorì and Pappalardo 1997: 397, no. 3). Both comparable sherds are part of jugs, so this might be a possible vessel type for J21-IV/17-8, but nothing further can be said from the sherd alone.

SE F04_18 (**Fig. 12 – pl. F04_6**)

SE F04_18 yielded only one piece of diagnostic pottery, J21-IV/18-1, which belonged to a very well- worked and even amphora of high quality.

SE F04_19 (**Fig. 12 – pl. F04_6**)

The material from SE F04_19 dates to the later Byzantine and Abbasid periods and reflects storage vessels and tableware, respectively. The Byzantine pieces include J21-IV/19-3, a very well-fired storage vessel with fine walls and decorative grooves on the outside. The Abbasid tableware encompasses two glazed pieces. J21-IV/19-1 is yellow glazed with orange patches and shows a number of grooves on the inside as well as possible burn marks. J21-IV/19-4



12. Plates F04_5-7 and F05_1.

is green glazed with a darker outside. Similar pieces are well known from the early to middle Islamic period in Jarash (Peterson 2017: 70).

SE F04_20[2] (**Fig. 12 – pl. F04_6-7**)

SE F04_20 yielded a large array of very different sherds. Bowls, amphore, plates, and pots were found and their possible dating ranges from the 5th century to the 12th–13th century. These finds included Byzantine storage vessels and common-ware, such as a very well-worked fragment of a high-quality jar (J21-IV/20-3), part of a well-worked medium-quality pot (J21-IV/20-4), a rim piece belonging to a finely worked flask with even wall thickness (J21-IV/20-6), and the partial base of a homogenous bowl with heavy traces of sinter (J21-IV/20-11), as well as a well-worked rim of an amphora. All these pieces show decorative grooves on the outside. Parallels are found regionally at Um er-Rasās (Pappalardo 2002; Sanmorì and Pappalardo 1997) and Mount Nebo (Hamarneh and Bianchi 2021: fig. 6 S_20087, fig. 13 S_26249, S_26349, S_26355).

2. SE F04_20 is stratigraphically the same as SE F05_02.

SE F04_26[3] (**Fig. 12 – pl. F04_7**)

This layer contained only six pottery sherds, which can be dated to the Byzantine and Ayyubid/Mamluk period. Only two sherds were diagnostic pieces.

The base J21-IV/26-2 has an unconventionally low foot. The decoration found on the inside, a red-brown semi-spiral on beige slip, and the colouring can be compared to Ayyubid/Mamluk-era decorative patterns (Khadija 1992, 346f., pl. II no. 40–44).

J21-IV/26-2 is a rim fragment of a plate with a diameter of 37 cm. There is residue of some sort of partial dark-grey covering, possible traces of burn, on the inside. Due to the form and fabric, it can be dated to the 6th century AD (Hamarneh and Bianchi 2021: fig. 23, S_25555).

SE F04_29[4] (**Fig. 12 – pl. F04_7**)

SE F04_29 contained a large number of undiagnostic pottery sherds, mainly dating to the Mamluk period and overwhelmingly featuring cooking ware.

The only diagnostic piece is sherd J21-IV/29-1, the base of a bowl with a diameter of 10–12cm. The outside has a reddish fabric with black decorations that are rubbed down to some degree. This piece is comparable to J21-IV/08-4 (Khadija 1992: 345). Based on the fabric, it can be dated to the Ayyubid/Mamluk period (Peterson 2018: 131).

Pottery F_05

LSt, AW, RF, LP

SE F05_00 (**Fig. 12 – pl. F05_1**)

SE F05_00 yielded a large number of pottery shards, chronologically ranging from the Nabataean/Roman to the Islamic period. Of these, only a small number of pieces are diagnostic and either of Byzantine or Mamluk date. Most of the pottery can be assigned to the domestic sphere, tableware, and cooking ware, or also for economic use, for example, a *dolium* and a pottery loom weight.

The Mamluk jar J22-V/00-1 has a diameter of 10cm and is medium fired; it can be compared to pieces from Adh DHarīh, such as DH 92 S4 C100-61 (Makowski 2020: fig. 6a). A significant difference is that the criss-cross decoration on J22-V/00-1 features circles rather than dots.

This stratum also contained a loom weight, J22-V/00-21, of Mamluk production and displaying a reddish decoration on the outside. Fragment J22-V/00-22 is a Byzantine bowl of 12cm in diameter and well fired. A parallel can be found among the Byzantine bowls at Jarash (Watson 1989: 228). The Byzantine cooking pot J22-V/00-40 is well-fired and can be dated based on parallels found in Umm Qays (Gadara) (Daszkiewicz 2014: 152–153). J22-V/00-50 is a decorated, Mamluk-period wall fragment. The decoration features a diamond shape filled with a crisscross pattern and several lines of varying thickness, comparable to some samples found at KHirbat Adh DHarīh (Makowski 2020: fig. 6d). A fragment of large Byzantine *dolium* with a diameter of 36cm, J22-V/00-2, was found.

SE F05_01 (**Fig. 13 – pl. F05_2-3**)

The chronological range of finds in SE F05_01 is quite broad, encompassing pieces from the Byzantine, Umayyad, Fatimid, and Mamluk periods. Many different forms such as tableware (plates and bowls) and cooking ware, were present.

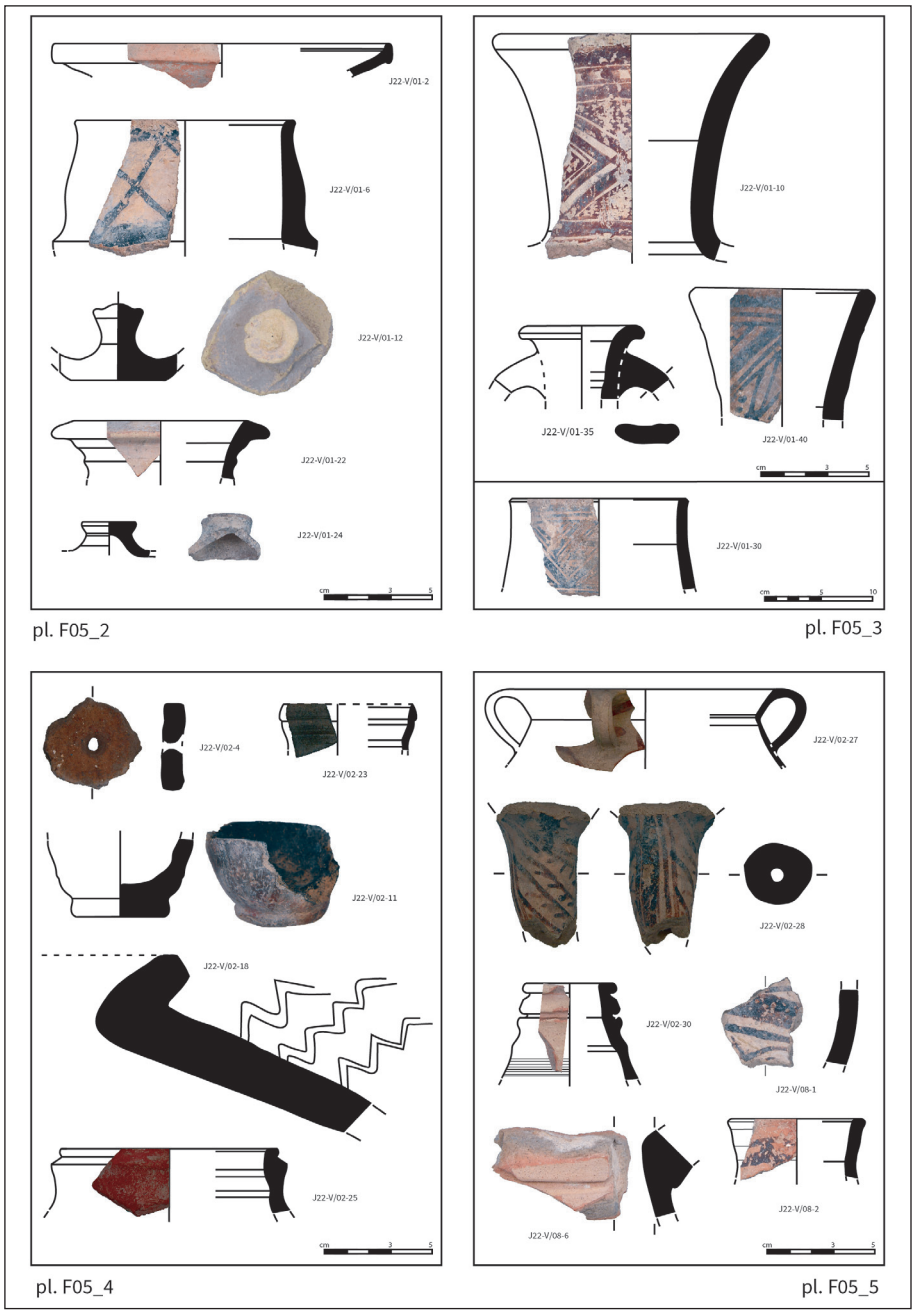
Several Byzantine pieces of different types constitute the first group. J22-V/01-2 is a rim of either of a plate or a bowl belonging to a common Byzantine type (Watson 1989: 225; Hamarneh and Bianchi, 2021: 103, 117). J22-V/01-12 and J22-V/01-24 are lids of Byzantine cooking casseroles. Both are well fired and measured about 4cm in diameter. Although only the handle of the lid is preserved, comparisons can be found in Jerusalem (Magness 1993: 215). An amphora, J22-V/01-22, with light orange fabric and small black and white inclusions, also finds parallels in the corpus of Byzantine pottery discovered in Jerusalem (Magness 1993).

A second group comprises rim sherds of Mamluk jars. Fragment J22-V/01-6 is decorated in a crisscross pattern (Makowski 2020: fig. 6b) similar to pieces from Jarash, such as J13-D-9-4, which shows an equally loose style of decoration (Peterson 2019: fig. 7.27).

The pieces J22-V/01-10, -30, -35 and -40 are parts of the neck of several jugs, displaying dark red to black geometric decoration and

3. (SE G04_26) is stratigraphically comparable to SE F05_08.

4. (SE F04_29) is the same layer as SE F05_25.



13. Plates F05_2-5.

traces of grey sinter. The fabrics are medium-fired with small- to medium-sized inclusions and some air bubbles. J22-V/01-35 preserves one handle. Especially the decorations of J22-V/01-10, -30 and -40 have similarities with a hand-made geometrically painted jug found in the north-western quarter of Jarash (Peterson 2021: fig. 20).

SE F05_02[5] (**Fig. 13 – pl. F05_4-5**)

The diagnostic ceramics uncovered in SE F05-02) consist of thirty-six pieces. Among these are four rims (J22-02/V-18, -23, -25, -30), one loom weight (J22-V/02-04), one handle (J22-V/02-27), one small cup (J22-V/02-11) and a part of a spout (J22-V/02-28). The rim J22-V/02-18 has an engraved wave decoration and can be dated to between the 6th and 8th century, similar to a jar from GHarandal (Arindela, Jordan) (Walmsley and Grey 2001: 8:21). The finds also included two pieces of Byzantine amphorettes, namely J22-V/02-23, which is of dark grey clay, and J22-V/02-25, of orange-reddish colour. A piece comparable to J22-V/02-23 was found at Mt. Nebo and

5. SE F05_02 is same as SE F04_20.

dated between the 6th and 7th centuries AD (Hamarneh and Bianchi 2021: S_20087), whereas J22-V/02-25 can be dated to between the 6th and 8th centuries AD, comparable to a jar found at Arindela (Walmsley and Grey 2001: 8:20). J22-V/02-30 is made of thick, light coloured-yellowish clay, well-fired, although without painted decoration; its clay was decorated with various protrusions, valleys, and ridges. A comparable find, a tall-necked jar from Arindela suggests a dating between the 6th and 8th centuries AD (Walmsley and Grey 2001: 8:17). J22-V/02-04 is a loom weight made of brown clay with white and black inclusions, it can be dated between the 10th and 12th centuries based on a similar example discovered at Jarash (Petersen 2017: 7.23). The last two pieces of the sample are unique: J22-V/02-11 is a small, nearly intact cup made of beige clay and displaying signs of soot on the outside and on the inside. As the cup is hand-made and has no significant decorations, it could be dated to any settlement period of the site. J22-V/02-28 is a spout comparable to a piece discovered at Khirbat Din'ila dating to the 14th–15th century (Stern 2014: fig. 4:10); made of thick, beige clay, it is decorated with geometric lines of dark brown colour.

SE F05-08[6] (**Fig. 13 – pl. F05_5**)

SE F05-08 contained eight diagnostic pieces, chronologically ranging from the Byzantine to the Mamluk period. Two of these, J22-V/08-01, -02, are wall pieces, one of very light grey clay with small black inclusions (J22-V/08-01) and one of orange-reddish clay with small white inclusions (J22-V/08-02). Both are well- fired and show remains of geometric line-decoration. Both pieces find parallels in HMGP bowl fragments discovered at Jarash (Barfod *et al.* 2019: 11-15) and dated between the 13th and 14th centuries.

J22-V/08-03 is a handle made of light orange clay with a grey-brown core and small, light brown inclusions. The design and colour allow comparison to J22-V/02-30 and a similar dating between the 6th and 8th centuries AD (Walmsley and Grey 2001, 8:17).

SE F05_19 (**Fig. 14 – pl. F05_7**)

Of the sherds from SE F05_19, the pieces J22 -V/19-1 and -3 appear to be from the Abbasid period, whereas J22-V/19-2 can be dated to the Byzantine period. The Abbasid pieces are of dark red, rusty fabric, with very small white inclusions and well- fired. J22-19/V-1 also features a common decoration consisting of carved lines (Khalil and Kareem 2002: fig. 13-no. 9). Comparable pottery for both has been found at KHirbat Yājūz, dating between the 8th and 10th centuries (Khalil and Kareem, 2002: fig. 15-no. 13). The Byzantine sherd J22-V/19-2 resembles the lower part of a cooking pot with an *omphalos* base found at Dayr ʻAyn ʻAbāṭah (Politis 2012: 186, fig. 398). With its grey fabric and the black traces of burn outside, it can be placed in the group of grey cooking pot ware (GCPW; Politis 2012: 179).

SE F0_25[7] (**Fig. 14 – pl. F05_7**)

Supplementary to the pottery finds of SE F04_29, SE F05_25 included only one piece of pottery. J22-V/25-1 is the base of a jar made of orange-reddish fabric with small white inclusions and well fired. The outside of the piece, dated to the Byzantine period, is largely burnt and covered in some places by sinter.

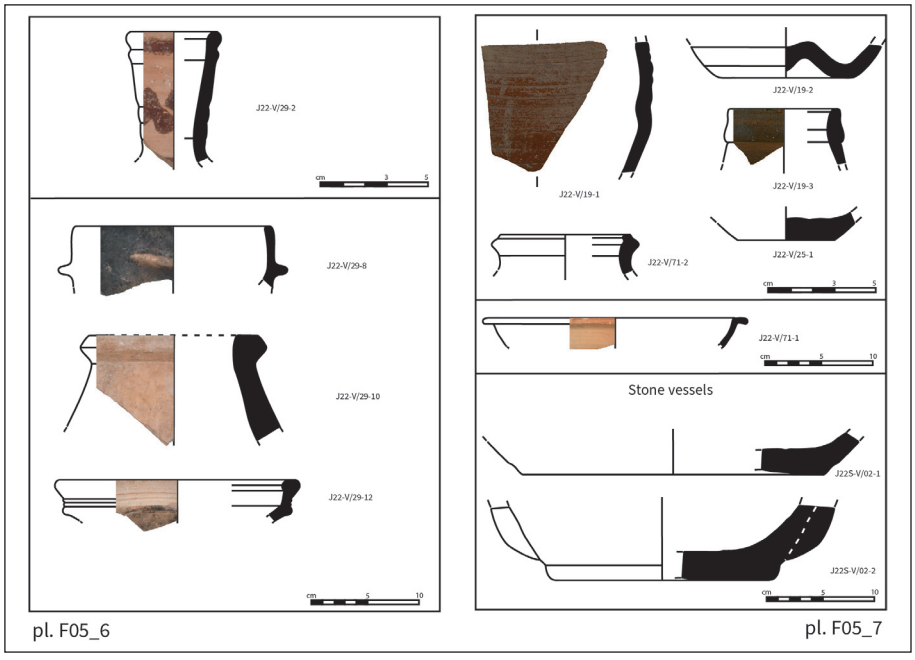
SE F05_29 (**Fig. 14 – pl. F05_6**)

SE F05_29 included several diagnostic pieces belonging to the Byzantine, Umayyad, Abbasid, and Fatimid periods. J22-V/29-10 is the rim of a Byzantine amphora of light pink clay and a slightly greyish core. The piece is very well-fired and has few small inclusions; parallels have been found at al-Burj al-Ahmar (Pringle 1986: fig. 44 – no. 15). The handmade cooking pot J22-V/29-8 is of pink clay with a black burnt surface on the outside. The piece has a small horseshoe-type handle and resembles pieces found at Adh DHarīḥ dating between the 10th and 12th centuries (Makowski 2020: 587, fig. 4).

The finds also included pieces of tableware, such as J22-V/29-2, a rim of an Abbasid juglet/jar, made of fine pink clay with small white inclusions. The outside is decorated by a dark red line under the rim, a red wavy decoration above the shoulder, and another line

6. SE F08 is stratigraphically the same as SE F04_26.

7. SE F05_25 is stratigraphically similar to SE F04_29.



14. Plates F05_6-7.

underneath the sharp ridge at the junction of the neck and body (see parallel in Khalil and Kareem 2002: fig. 15). The second tableware piece, J22-V/29-12, could possibly be the rim of a plate or bowl. It has traces of sinter on the outside and although there were no parallels of form or type, an analysis and comparison of the fabric suggest a dating in the Byzantine period.

SE F05_71 (**Fig. 14 – pl. F05_7**)

This layer contained pottery of the Nabataean/Roman and Byzantine periods, two of which are diagnostic. One is the rim of a plate (J22-V/71-1), the other the rim of an amphora (J22-V/71-2). Both pieces find parallels in Jarash and can be dated to Byzantine times (Watson 1989: 12, 225).

Small Finds

KS, ID

Domestic Objects

Zooarchaeological Finds

Concerning the zooarchaeological finds of the seasons 2021 and 2022, both excavations brought forth a broad spectrum of animal remains, including those belonging to various types of mammal such as goat/sheep, cattle, carnivores, mice, molluscs of land and marine origin, and avian species as well as pieces of horn and a presumed ostrich eggshell fragment. The total sum of fragments amounted to 665 pieces. The majority, 469 pieces, were excavated during the earlier 2021 season, while the remaining 196 fragments, including the presumed eggshell fragment, were recovered in 2022. Further research and examination are needed to specify the various faunal species and possible traces of human activity, *e.g.* the presence of cut marks on the bone surface or the possible existence of human remains among the bone samples.

Glass

Various small glass shards with similar characteristics were found during both excavation campaigns. The most prominent feature is their colouring, which spans different hues of blue, green, turquoise, grey, and white. The glass material is of fine quality with only minor inclusion of air bubbles and a smooth surface, which in some cases is covered by a silvery, shimmering slip. Some of the 51 pieces can be identified by their common decorative forms of Byzantine glassware, *e.g.* wave-shaped fragments that find corresponding parallels in vessels with ornate handles or other decorative elements in a wave-shape and with a silvery shimmer on their surfaces (Rehren, 2008: 82, plate 4; Meyer 1988: 204).

Metal

A total of twenty-six metal finds were excavated during both campaigns. They encompassed a variety of pieces that due to

their state of preservation could only in part be classified. Nine metal pieces were uncovered during the excavations in 2021. These finds comprise materials such as iron and copper, most were heavily eroded and in a poor state of preservation. Nevertheless, three pieces were identifiable as a linked chain (SE, F04_01), a metal nail (SE F04_03), and a coin (SE F04_26). The jewellery piece consists of a linked pendant and a chain of the same material.

SE F04_04 yielded a nail with rust spots and other undefined metal pieces. The coin from SE F04_26 is heavily eroded, and as a first impression, it could be a Byzantine *nominal*, but further analysis is necessary.

The campaign in 2022 brought forth seventeen metal finds, including a possible small piece of silver from SE F05_02. Interestingly, three metal pieces were found in the conflagration layer SE F05_54, which lies over the mosaic.

Jewellery

In the 2021 season, seven jewellery pieces (J210055) were found in SE F04_16, including five bracelet fragments made of different metals, which need further analysis, and two pendants. A snail shell with a hole and a button-like form with a hole in the centre were also uncovered.

Loom Weights

In 2021, two loom weights were found: one piece (SE F04_8) consists of stone with a hole in the centre and is pyramidal in shape, and the second weight (SE F04_19) made of clay has a round form and two holes, . Tow further loom weights were excavated during the 2022 campaign in SE F05_00. One is made of clay (J22-V/00-21, **FIG.12** -pl. F05_1), and the other is a stone weighing around 1kg. These artefacts indicate textile production[8].

Architectural Finds

Tesserae - Mosaic Stones

A great amount of loose mosaic tesserae was recovered from the site during both excavations. Most of these cubical stones, a total of 4121 pieces, were retrieved during the 2021 season, while the 2022 excavation brought forth 2285 pieces. The latter appeared in the archaeological context mainly in two different sizes, with primary measures of 1×1×1cm and secondary measures of 2×2×2cm. All pieces show natural earthen colouring spanning brown, black, grey, beige, and white, to a few reddish hues. Some small fragments were found stuck together with mortar in a typical mosaic layout, though some clustered fragments appeared in no apparent structure, indicating that these loose tesserae clumps may have been used in connection to the building of the church.

Industrial Finds

Slag

During the 2021 season, two slag pieces were found, including one lump (SE F04_01) with black and white inclusions defined as ceramic slag. The other one (SE F04_29) had visible rust traces on the surface, which indicates metal slag.

The excavation of 2022 unearthed only one lump of slag. The lack of magnetism shows that the piece is of ceramic origin. Further research would provide information on the composition of the slag pieces.

Various Small Finds – Stone Objects and Pipe Bowl Fragments

Another group of the small finds at Al Jumayl are various stone objects including fragments of basalt millstones and stone vessels (J22S-V/02-1, -2, fig. 13 – pl. F05_7), a polished stone sphere that might have been used as ammunition for a slingshot, two fragments of silex used for starting fire, and small pieces of presumed architectural ceramics. An especially interesting piece was found in SE F04_04 during the 2021 excavation; it appears to be a fragment of polished white stone broken into two aligning pieces with the numerals VXX carved into the surface. SE F04_08 revealed a fragment of a pipe bowl, black in colour and without special markings, presumed to be of Ottoman or later origin.

Season 2021 unearthed eleven basalt millstone fragments, while six basalt fragments used as millstones were recovered in the 2022 season, as were nine grindstones in SE F04_29.

8. Although the archaeological category of loom weights is in general rarely published, the Tall Al Mazār collection shows the development of loom weights from the Iron Age IIB to the Early Hellenistic period (Boertien 2012).

Digital Archaeology at Al Jumayl

TL

Beginning with the excavation campaigns of 2021 and 2022 at Al Jumayl, digital archaeological documentation approaches were introduced to the spatial recording process at the site. Three-dimensional documentation took place on three different levels survey , excavation , and finds – utilizing consumer grade photogrammetry and LiDAR technologies. (**Fig. 15**) At the survey level, a photogrammetric survey yielded a 3D surface model of KHirbat Al Jumayl's nucleus (23,783.4 m^2), which in turn was used to create a digital elevation model (DEM), an orthographic map, and a precise ground plan of all superficially visible structures via geographic information system software (QGIS).

Also, utilizing the iPhone 13 Pro's LiDAR sensor, three-dimensional scans of some of the site's more accessible cisterns were produced, constituting a first assessment for potential further archaeological and hydrological research.

At the excavation level, structure from motion (SFM) photogrammetry was applied as the main spatial recording method at a multiple strata scale, ensuring a holistic and fast documentation experience. Measurements were almost exclusively taken digitally in-office by means of the previously created georeferenced 3D models. At the finds level, outstanding finds were 3D-documented, supplementing the traditional recording methods of photography and hand-drawing. The added third dimension rendered depictions and reconstructions of certain artefacts more intelligible.

Conclusion

BH

The two excavation seasons at Al Jumayl presented here have yielded many important results, which still need to be addressed in detail. So far, a detailed map of the most prominent features of the site has been prepared using non-invasive methods, which provides an understanding of the topography of the settlement for future investigations. The mapping of the cisterns also gave important insights into the typology of the water supply of the site. In addition, the study of the pottery showed that the structures of the investigated area were possibly abandoned in the Fatimid period with an important phase in the early Ayyubid-Mamluk periods, which is a very important contribution to our understanding of the area in the Islamic period. More specific questions related to living and consumption patterns and other aspects of daily life, in addition to the links with sites in the surrounding areas will be addressed in future campaigns.

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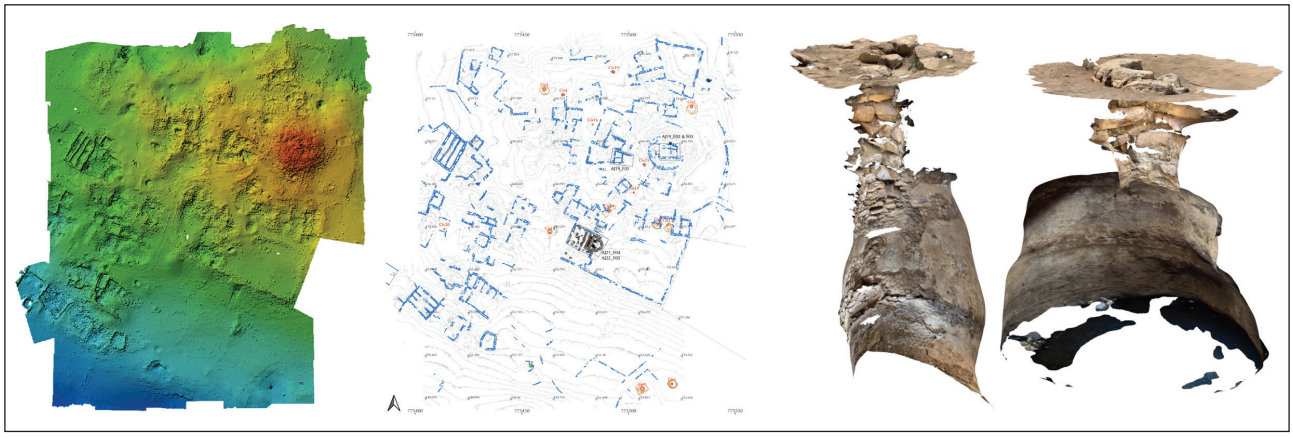

15. DEM, ground plan,and lidar scans of cisterns 12 and 5 (Plans By T. Leutgeb).

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Bibliography

Avissar, M. and Stern, E.J.
2005 *Pottery of the Crusader, Ayyubid, and Mamluk periods in Israel*. Israel Antiquities Authority, Jerusalem.

Avraham N.
1986 The Late Hellenistic and Early Roman Pottery of Nabataean Oboda Final Report; In: M. Bar-On, D. Barag, Y. Shiloh (eds.), *Qedem Monographs of the Institute of Archaeology 22*, Hebrew University of Jerusalem.

Barfod; Lichtenberger; Peterson; Raja and Ting
2019 Middle Islamic Pottery from Jerash. New Research on Ceramic Fabrics and the Implications for Production Patterns of HMGP Pottery in Northern Jordan, *Zeitschrift für Orient-Archäologie* 12: 140-167, DAI Orient-Abteilung, Berlin.

Baramki, D.C.
1942 The Pottery of Kh. El Mefjer; *QDAP* 10/2–3: 65-103.

Bujard, J.
1996 Les Èglises Géminées de la Forteresse de Kastron Mefaa/Umm er-Rasas (Jordanie); *Les Églises doubles et les Familles d'Églises, Antiquité Tradive* IV: 172–177.

Boertien, J.H.
1981 Weaving at Tell Mazar: The loomweights, Pp. 1–27 in K. Yassine and E.J. Steen (eds.), *Tell El-Mazar II: Excavations on the Mound 1977–1981: Field I, BAR International Series, 2430*.

Daszkiewicz, M.
2014 Provenance Study of Hellenistic, Roman and Byzantine Kitchen Wares from the Theatre-Temple Area of Umm Qais/Gadara, Jordan, Pp. 147-158 in B. Fischer-Genz, Y. Gerber and H. Hamel (eds.), *Roman Pottery in the Near East: Local Production and Regional Trade*, Oxford.

Erickson-Gini, T.
2016 Excavations at the Nabataean Site of 'En Tamar, *'Atiqot* 87: 49–71.

Hamarneh, B. and Bianchi, D.
2021 The Pottery of the Monastic Complex of Mt Nebo—North Wing: Typology and Chronology. Pp. 97–122 in R. Ployer and D. Svoboda-Bass (eds.), *Magnis Itineribus. Festschrift für Verena* Gassner. Wien, .

Homés-Fredericq, D.
1989 Un Temple Nabatéen à Lehun (Jordanie), Pp. 575–580 in de Mayer (ed.), *Archaeologia Iranica et Orientalis. Miscellanea in honorem Louis Vanden Berghe II*, Gent.

Taxel, I. and Iserlis, M.
2014 Two-Part Ceramic Incense Burners in Late Roman and Byzantine Palestine: Technological, Regional and Ethno-Religious Aspects, Pp. 159–169 in Fischer-Genz B., Gerber Y. and Hammel H. (eds.), *Roman Pottery in the Near East. Local Production and Regional Trade*, Oxford.

Kareem, J.
1999 Nabataean to Abbasid Pottery from the First Season of Excavations at Khirbat Nakhil, Jordan. *Levant* 31.1: 191–202.

Kenkel, F. and Hoss, S.
2020 *Tall Zira'a: The Gadara Region Project (2001–2011), Final Report, Hellenistic to Umayyad Period (Strata 8–3) Ceramic, Glass and Metal Finds. Vol. 6*, Jerusalem, Amann and Wuppertal: Deutsches Evangelisches Institut für Altertumswissenschaft des Heiligen Landes and Biblisch-Archäologisches Institut Wuppertal.

Khadija, L.
1992 Designs on Painted Ayyubid/Mamluk Pottery from Rujm el-Kursi, 1990 Season, *ADAJ* 46: 345–357.

Krautheimer, R.
1965 *Early Christian and Early Byzantine Architecture*.

McDaniel, J.
2006 The Small Finds, Pp. 293–305 in S. Parker, J.W. Betlyon (eds.), *The Roman Frontier in Central Jordan: Final Report on the Limes Arabicus, 1980–1989*. 2. Washington.

Magness, J.
1993 *Jerusalem Ceramic Chronology. Circa 200–800CE*. Sheffield: Sheffield Academic Press.

Makowski, P.
2020 Preliminary Remarks on the Pottery from the Last Phases of Occupation at Dharih, Southern Jordan (Late 10th-20th Centuries). Pp. 583–596 in A. Otto, M. Herles, K. Kaniuth, L. Korn and A. Heidenreich (eds.), *Proceedings of the 11th International Congress on the Archaeology of the Ancient Near East*. Wiesbaden.

Mihaljević, M.
2021 Religious Architecture; Pp. 309–330 in: Schwartz (ed.), *The Oxford handbook of Byzantine Art and Architecture*, Oxford.

Negev, A.
1986 *The Late Hellenistic and Early Roman Pottery of Nabataean Oboda: Final Report*. Jerusalem: Hebrew University of Jerusalem.

Netzer, E.,
2003 Nabatäische Architektur: Insbesondere Gräber und Tempel, *Sonderbände der Antiken Welt, Zaberns Bildbände zur Archäologie*, Mainz.

Pappalardo, C.
2002 Il Cortile a Sud della Chiesa di S. Paolo ad Umm al-Rasas—Kastron Mefaa in Giordania. *Late Antiquity* 52: 385-440.

Peterson, A.
2017 Medieval Pottery from Jerash: the Middle Islamic settlement. Pp. 67–73 in A. Lichtenberger and

R. Raja (eds.), *Gerasa/Jerash from the Urban Periphery*. Aarhus.

2017 Middle Islamic Ceramics in Context from the North West Quarter of Jerash. Pp. 117–157 in A. Lichtenberger and R. Raja (eds.) *Middle Islamic Jerash (9th century–15th century): Archaeology and History of Ayyubid-Mamluk Settlement.* Vol. 3. Turnhout.

2021 Middle Islamic Ceramics in Context from the Northwest Quarter of Jerash, Pp. 117–157 in: Lichtenberger (ed.), *New Insights from Middle Islamic Ceramics from Jerash*, Vol. 8.1.

Politis, K.D.

2012 *Sanctuary of Lot ar Deir ʻAin ʻAbata in Jordan. Excavations 1988–2003*, Amman.

Pringle, D.

1986 *The Red Tower (al-Burj al-Ahmar). Settlement in the Plain of Sharon at the Time of the Crusaders and Mamluks—A.D. 1099–1516*, Britisch School of Archaeology in Jerusalem, London.

Sanmorì, C. and Pappalardo, C.

1997 Ceramica dalla Chiesa di San Paolo e dalla Cappella dei Pavoni—Umm al-Rasas. *Late Antiquity* 47: 395–428.

Sauvignac, R.

1936 Sur les Pistes de Transjordanie Meridionale, *Revue Biblique* 45: 235–260.

Schmid, S.

2000 Die Feinkeramik der Nabatäer, Typologie, Chronologie und Kulturhistorische Hintergründe, *Terra Archaeologica* IV.

Stancović N.

2021 Devotional Practices and the Development of Church Building; Pp. 331–350 in: Schwartz (ed.), *The Oxford Handbook of Byzantine Art and Architecture*, Oxford.

Stern E.J.,

2014 The Crusader, Mamluk and Early Ottoman-Period Pottery from Khirbat Din'ila: Typology, Chronology, Production, and Consumption Trends, *ʻAtiqot* 78: 71–104.

Torgë, H.

2022 Pottery and Stone Objects from the Abbasid–Fatimid Periods at Ramla, *ʻAtiqot* 108: 333–380.

Uscatescu, A.

2021 Pottery and Oil Lamps from the Northwest Quarter of Jerash, Pp. 53–227 in A. Lichtenberger and R. Raja (eds.), *Glass, Lamps, and Jerash Bowls: Final Publications from the Danish-German Jerash Northwest Quarter Project III*.

Walmsley, A.G. and Grey, A.D.

2001 An Interim Report on the Pottery from Gharandal (Arindela), Jordan. *Levant* 33: 139–164.

Watson, P.M.

1989 Jerash Bowls: Study of a Provincial Group of Byzantine Decorated Fine Ware. *Syria. Archèologie, Art et histoire*, Vol. 66: 223–261, Institut Francais du Proche-Orient.