THE BĪR MADHKŪR PROJECT 2015: SITE REHABILITATION, CONSERVATION AND LAND ROUTES

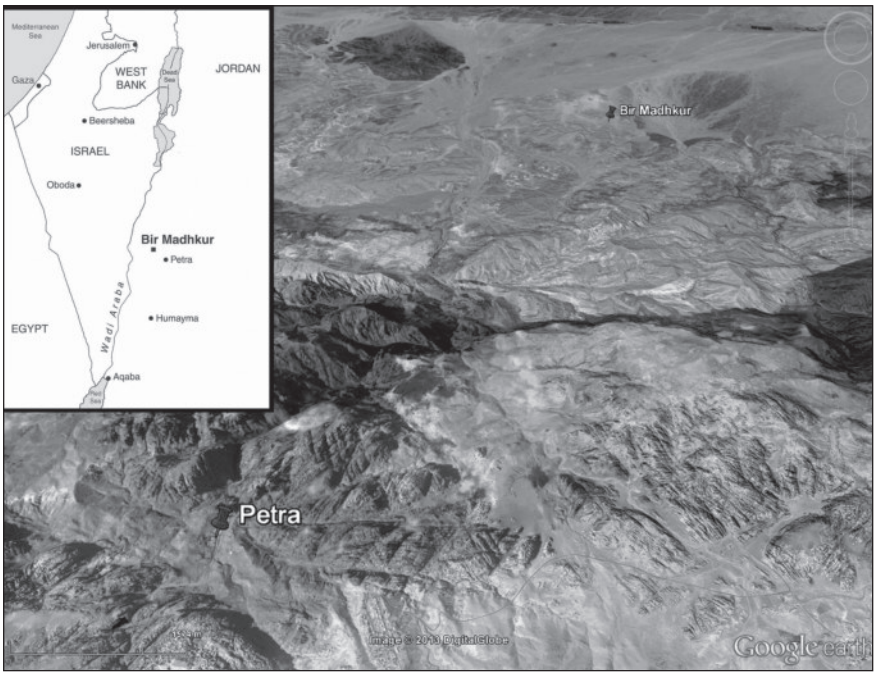
Andrew M. Smith II and Andrea Kay

Abstract

This report details the results of site rehabilitation and conservation work at Bīr Madhkūr conducted between 22 July and 20 August 2015. With the permission of the Department of Antiquities of Jordan, specific goals in 2015 were: (1) to carry out an assessment of damage caused by bulldozing when the modern village was constructed adjacent to the ancient site; (2) to produce and implement a landscape design plan that included site improvement work such as cleaning debris and rubbish from the area, removing spoil heaps from prior excavation seasons, taking steps necessary to prevent further damage to the bulldozed areas of the site, and architectural conservation. In addition to this site rehabilitation work at Bīr Madhkūr, another important goal of the 2015 season was to conduct a feasibility study to explore how to integrate Bīr Madhkūr and the region into Jordan's broader tourism network, specifically as it relates to Petra. This focused on examining and documenting one of several land routes between the two sites and assessing this route in terms of its cultural and natural heritage value. This Bīr Madhkūr Incense Route Project (BMIRP) operated as a heritage component of the Bīr Madhkūr Project (BMP) and was supported by a generous grant from USAID - SCHEP.

Introduction

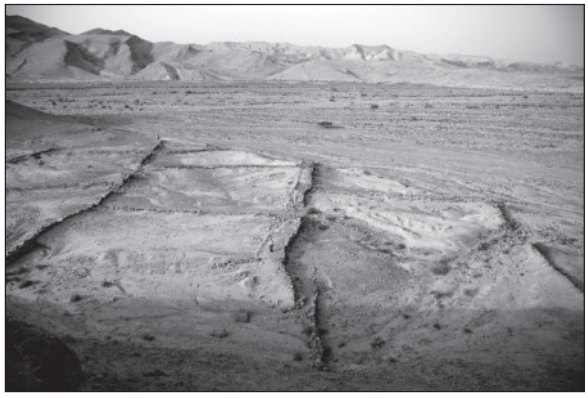
Bīr Madhkūr lies nestled in the foothills of Wādī 'Araba in southern Jordan (**Fig. 1**). The main feature at the site is a third century



1. General regional map showing location of Bīr Madhkūr.

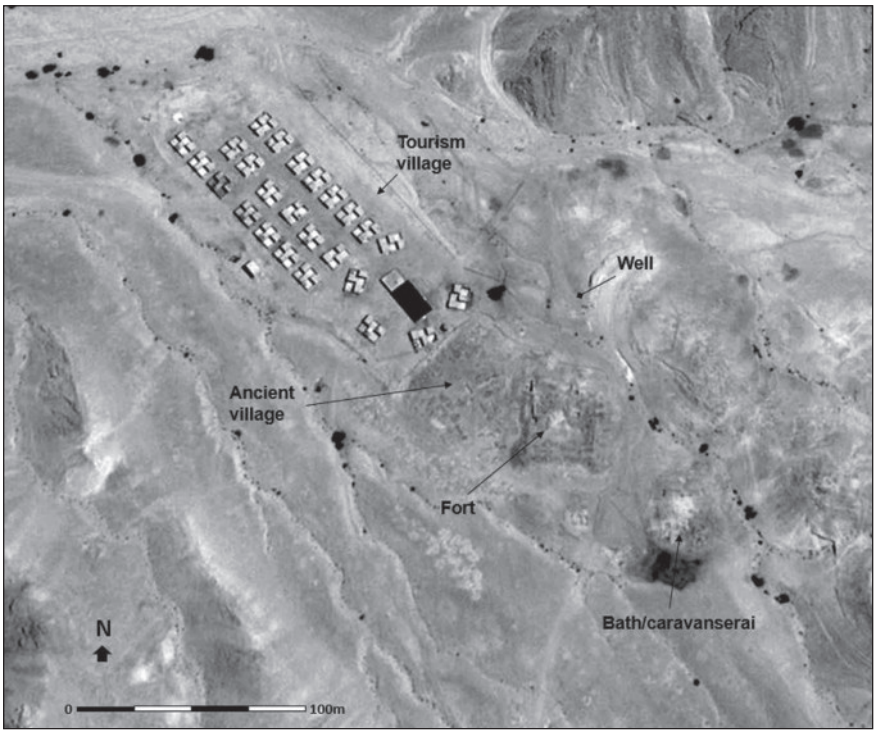
AD Roman / Byzantine fort, which measures just over 30 × 30 m (**Fig. 2**; Smith 2005, 2010a, 2010b). The fort has been but partially excavated, so it still appears mainly as a large mound of stone debris. Other features at Bīr Madhkūr that highlight the prominence of the site in antiquity include a bath building, a civilian settlement west of the fort, cemeteries and numerous other structures in outlying areas, especially on the ridge that divides the fort from the local spring (Perry 2007). The main source of water at Bīr Madhkūr is the well just north of and adjacent to the fort.

Bīr Madhkūr was not an isolated settlement. The surrounding territory, particularly in the direction of Petra, is replete with archaeological remains, which range from the more apparent caravan stations and farmhouses to smaller cairns and graves. Most impressive are the extensive remains of a vast agricultural system dating to the Classical period (**Fig. 3**; Ramsay and Smith 2013), which is comparable to the agricultural activity exhibited at Faynan to the north (Barker *et al*. 1997, 1998, 1999, 2000; Barker, Gilbertson and Mattingly 2007). Also, the ancient incense route once coursed through the region, along which Bīr Madhkūr itself served as a major way-station. As a regional, administrative hub in the Greek, Roman and Byzantine periods, situated securely in the hinterland of Petra, Bīr Madhkūr hosted soldiers who watched over and monitored the movements of a mixed population of farmers, pastoralists and transient merchants.



3. Ancient agricultural fields along the north bank of Wādī Musa.

The Bīr Madhkūr Project seeks largely to explore the complex social and economic relationships among and between these various population groups in antiquity. This is a multi-disciplinary field project in Jordan that examines the historical geography of Wādī ʻAraba through archaeological and ethnographic research. A key goal is to understand the long-term settlement history of the region, inclusive of the activities of present-day *bedouin*, so



2. Bīr Madhkūr from the air.

as to achieve a deeper understanding of how these human communities in antiquity defined themselves in relation to their environment and to one another. In a broader context, the project examines the economic relationship between Petra and its hinterland from a rural perspective.

While the Bīr Madhkūr Project is focused on investigating and preserving the cultural heritage of Jordan, the project is also designed to respond to royal initiatives to promote the economic development of Wādī ʻAraba. This is manifested, first and foremost, in our site rehabilitation and conservation efforts. In 2015, for example, we focused on integrating the ancient site with the tourism village, developing interpretive paths through the site and preserving structures along the edge of the site that were damaged when the modern village was constructed in the 1970s (see below). This is manifested also in the project's study of ancient agricultural systems in central Wādī ʻAraba, especially in analyzing the prospects for reviving ancient methods of water usage and conservation for local use. Lastly, this is manifested in our efforts to document and preserve one of several routes that connect Bīr Madhkūr with Petra, in conjunction with the development of a tourist park in Wādī ʻAraba. This work is now supported by a USAID - SCHEP grant from the American Center of Oriental Research (ACOR). Further support for this work has been provided by the Hashemite Fund for the Development of Jordan Badia, the Antiquities Coalition and The George Washington University.

Objectives and Outcomes: The 2015 Study Season

As noted, the project returned to the field for four weeks in 2015 in order to carry out site rehabilitation work at Bīr Madhkūr. Our focus was on: (1) assessing damage caused by bulldozing when the modern village was constructed; (2) developing a landscape design plan based on this assessment with an eye to future economic development; (3) the rehabilitation of one of the routes between Bīr Madhkūr and Petra. All of this work was done in close collaboration with the local community and the Department of Antiquities. A discussion of project outcomes follows.

Site Rehabilitation and Conservation

In the 1970s, when the modern village was initially built adjacent to the ancient site, a large section of the edge of the archaeological site of Bīr Madhkūr was removed. This section lies along the border of the Roman village settlement; the debris pile from the destroyed house-sections was pushed to the south-west corner of the site (**Fig. 4**). Two important observations were made immediately upon reviewing the damage caused by this activity. One was that the bulldozer destroyed nearly half of all of the rooms of the houses along the edge of the site; another was that the bulldozer undermined the structures by at least half a meter, which led to the eventual erosion of the unbulldozed sections. In order to mitigate against further erosion damage, we began construction of a terraced pathway along the edge of the site (**Fig. 4**). This had the added benefit of contributing to the landscape design by adding a section to the interpretive paths through the site (see below). Simultaneously, we began preserving the wall sections that had been exposed previously (**Fig. 5**).

4. Edge of ancient site disturbed by bulldozing in the 1970s. Note debris pile in the background.

5. Consolidation of wall sections exposed by the bulldozer cut.

Beyond general site clean-up, we also worked to remove spoil heaps from previous seasons of excavation, which had been completely sifted, in addition to the debris pile caused by the bulldozing activity along the edge of the Roman settlement. This was successful, although it was clear that the bulldozed debris pile from the 1970s could not be removed without assessing the quantity of cultural remains within it (though these remains were clearly not in any stratified context). Accordingly, we sifted some of the soil from the debris pile and discovered large amounts of pottery and other remains, but only the coins were registered. For the soil that we did not sift, we created a stone-lined container adjacent to the debris pile and had the material transferred to it for future sifting. We anticipate this serving as a training unit for student visitors to the site to learn excavation methods and techniques.

Lastly, in terms of site improvement, we began the development of pathways through the site and the creation / repair of a low-lying stone perimeter wall around the archaeological features. This will protect the archaeological features by directing the pedestrian traffic through and around the site (see below).

Landscape Design Plan for Bīr Madhkūr

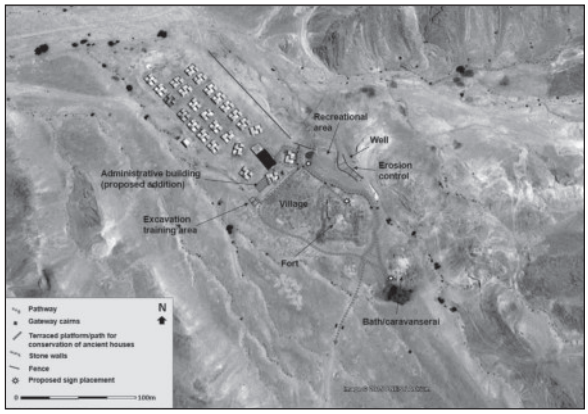
Several factors had to be considered in the landscape design plan for Bīr Madhkūr. The most important of these dealt with site preservation and the need to address ongoing threats to different elements of the site. Other factors concerned how best to integrate the ancient site with the adjacent renovated village, which was originally built in the 1970s, and how best to facilitate and direct pedestrian traffic around and through the site.

Two major threats were identified in our initial assessment and were addressed immediately. The first was erosion north of the fort that threatened the artesian well and the only tree on the site; the second was erosion along the western edge of the site where an entire section of the ancient settlement was bulldozed in the 1970s. The first threat was addressed by expanding and redirecting a drainage channel, so as to ease the runoff away from threatened areas (**Fig. 6**). This included the installation of check-dams, with the entire system following

6. Depiction of the drainage channel and check-dams to redirect water flow away from the ancient well.

the natural contours of the landscape. For the damaged section along the ancient settlement, as mentioned, it proved necessary to build an elevated terrace that could also serve as a footpath.

In building the terraced walkway along the western edge of the site, we were able to address the other two factors, *viz*. the integration of the ancient site with the tourism village and the establishment of pathways through the site. (**Fig. 7**) shows the alignment of paths established through and around the site. In terms of integrating the ancient site with the tourism village, gateways cairns were installed to direct the flow of pedestrian traffic between the two (**Fig. 8**). These cairns also serve to restrict the use of vehicles in the area (now confined to the area of the modern village) so that the area north of the site can be allocated solely to pedestrian use. Lastly, the consolidated wall of the elevated terrace enhances the aesthetic of the ancient site when viewed from the tourism village.



7. Site map of Bīr Madhkūr showing the pathways and proposed placement of signage at the site.

8. Overview of north-west corner of the site where site rehabilitation efforts focused. Note terraced pathway along the edge of the ancient site to prevent further erosion as well as the gateway cairns in the foreground.

Heritage Trail Between Bīr Madhkūr and Petra

In addition to the site rehabilitation work at Bīr Madhkūr, another important goal of the 2015 season was to conduct a feasibility study to explore how to integrate Bīr Madhkūr and the region into Jordan's broader tourism network, specifically as it relates to Petra. This involved, first and foremost, examining one of the several land routes between the two sites and assessing this route in terms of its cultural and natural heritage value. Several factors had to be considered, including: (1) route selection; (2) methods of documenting and mapping the route; (3) strategies for maintaining the route; (4) (not a direct concern in 2015) strategies for marketing the route.

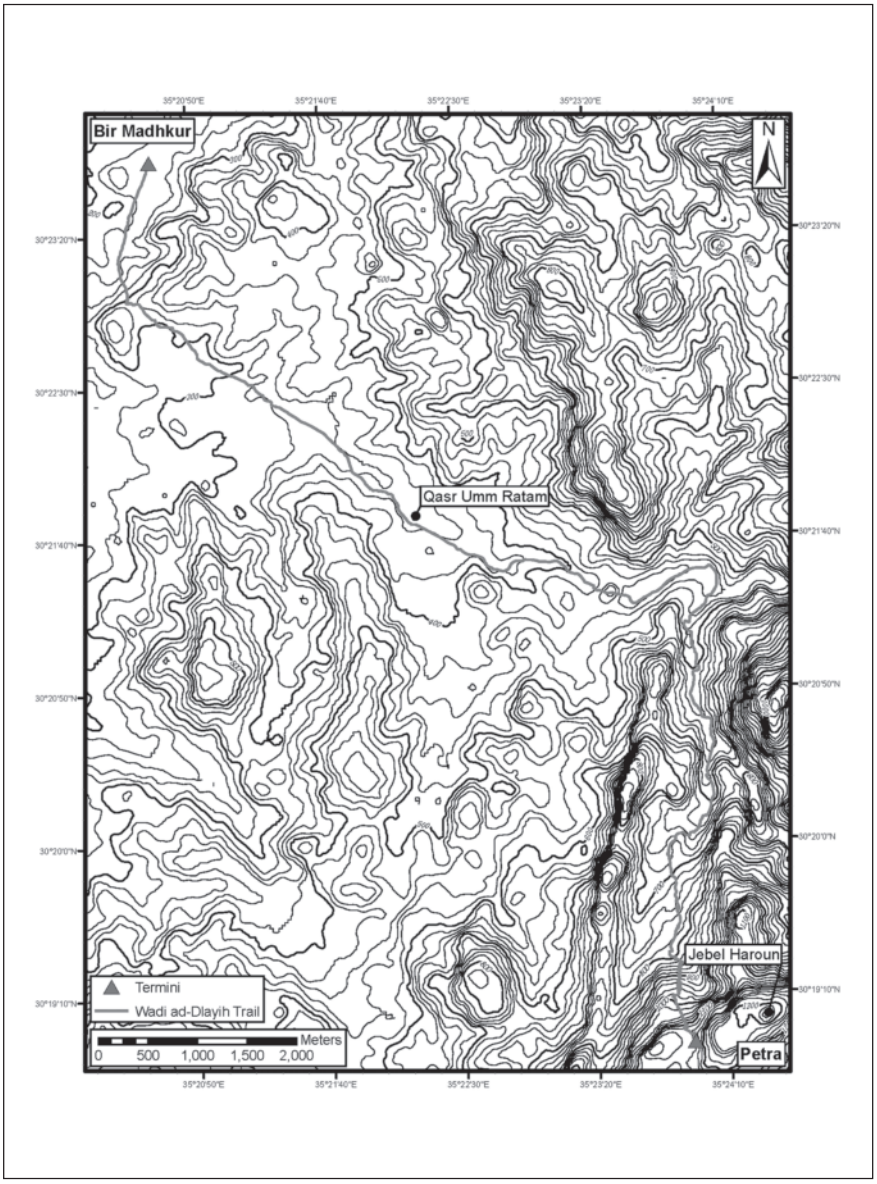
Route Selection

There are many trails that link Petra and Bīr Madhkūr. The three most prominent are: (1) the route from Petra to Khirbat Sufaysif, which is a Nabataean caravan station along the south bank of Wādī Musa (a branch of this route leads north to Qasr Umm Ratam at the confluence of Wādī Musa and Wādī Umm Ratam); (2) the route from Petra to Bīr Madhkūr *via* Umm Ratam through Wādī ad-Dlayih; (3) the route from Beidha to Bīr Madhkūr. The most accessible trail, still used today by the local population at Bīr Madhkūr, is that which passes through Wādī ad-Dlayih; it is this trail that the project plotted, described and assessed. This is also one of the more direct trails to the ancient site of Bīr Madhkūr.

Documentation and Assessment: Strategy and Methods

In terms of documenting and mapping a route between Bīr Madhkūr and Petra, an important goal was to develop a procedure that could be standardized and easily implemented. The idea was to design a template for the future documentation and assessment of additional routes in the region, and then eventually linking these routes to other prominent sites in the region (e.g. Faynan, in addition to Petra). Accordingly, a standardized form was created with which we could consistently plot the route and document features and transitions along it. Guiding this work was the decision to employ the US Forestry Service's methodology for conducting trail inventory and condition assessment, *viz*. the Trail Assessment and Conditions Survey (TRACS). According to the methods of the US Forestry Service, trail fundamentals include five key concepts that are cornerstones of trail management: trail type, trail class, managed use, designed use and trail design parameters (http://www.fs.fed.us/recreation/programs/trail-management/trail-fundamentals/). These were incorporated into our design plan; it proved useful that the US Forestry Service has a standardized TRACS - Trail Management Objectives (TRACS - TMO) form with which to capture this data. With the TRACS - TMO form as an initial template, we began designing a comparable form that was more orientated to the project area. This was a work in progress, with the form going through four iterations over the course of four weeks. Appendix A shows the final version of the form used by the project (BMIRP - TMO v4).

In terms of documenting the route, it was necessary to account for the various landforms across which the route passed (**Fig. 9**). Accordingly, the entire route was divided into 15 sections and a form was completed for each. This allowed for an assessment of the risk factors along each section, as well as the levels of difficulty and the value of each section (measured in terms of historic, scientific, aesthetic, natural and social interest). Each section was carefully plotted, with markers (i.e. stone cairns) being set up at the ends of each section as well as along the course of each section where the visibility of the trail was in



9. Map showing the trail between Bīr Madhkūr and Petra documented in 2015.

question (**Figs. 10, 11**). In addition to the trails, the markers themselves were also carefully plotted and numbered, which should facilitate future inspection and maintenance of the route.

Training Program in Trail Assessment, Repair and Maintenance

The training program in trail assessment, repair and maintenance lasted a total of four weeks, which was concurrent with the documentation and mapping of the trail itself. This training program, which followed a general presentation on mapping and mapping techniques to everyone, met with some successes. One important aspect of the training program was the successful plotting and mapping of the trail itself, which the trainees themselves

10. Trail marker on route between Petra and Bīr Madhkūr.

11. Gateway cairns for the beginning of the trail at Bīr Madhkūr.

identified. Since the forms were in English, the survey team managed the descriptions and most of the technical details. Meanwhile, the trainees assisted with the assessment of value markers along the trails (e.g. historic; scientific; aesthetic; natural; social), which was a component of their training as future guides. A significant amount of time was also spent in identifying sections that required repair and conducting hands-on work to demonstrate how the trail should appear once fully developed. This was very successful; most of the trail from Bīr Madhkūr to Wādī Musa was cleared in the four-week period. The remaining section was completed by the trainees in the months following the four-week field season. Lastly, the trainees were taught how to differentiate between trail sections, as well as being trained to set up appropriate markers to delineate the course of the trail.

There was some trial and error in the design and implementation of the training program. Several factors had to be considered beforehand and many more had to be dealt with once the training began. The most limiting factor was the lack of choice of participants from the local community. Essentially, the Bīr Madhkūr *jam'iyya* selected the pool of candidates available to us. Fortunately, many of those candidates had worked on the project in previous seasons, so there was some level of awareness of what we were doing and why. There were also varying levels of education and commitment to the goals that had to be addressed. All of these factors will be taken into consideration as we move forward with the training initiative, when future goals will be: (1) to develop an Arabic version of the BMIRP - TMO form; (2) to work with the local community on using the form; (3) to devise a training initiative that will facilitate the training of some members of the local community in the use of portable GPS surveying equipment.

Conservation Management Plan

An important projected outcome of the Bīr Madhkūr Project is to have drafted an approved conservation management plan for Bīr Madhkūr and sites in the territory of Bīr Madhkūr. This will be a collaborative effort with the Department of Antiquities of Jordan and the local community. Other, anticipated stakeholders will be the Jordan Valley Authority, the Hashemite Fund for Development of Jordan Badia, The George Washington University, the Antiquities Coalition and, through its USAID - SCHEP initiative, ACOR.

A central aspect of the conservation management plan will be to integrate Bīr Madhkūr with the numerous sites in its hinterland. The Bīr Madhkūr Project has already documented more than a thousand sites of various types after several seasons of intensive survey. An important motivation for this previous work was to get ahead of several impending development plans that threaten the cultural landscape of Wādī 'Araba, in order to be better able to assess potential impacts. These include the planned development of the Red - Dead water conveyance project, current agricultural projects initiated by the Jordan Valley Authority (already vast portions of the alluvial fan north of Bīr Madhkūr have been bulldozed), the planned development of a dam in Wādī Musa that will destroy (potentially) many hundreds of archaeological sites, and prospective mining based on recent land concessions to the east. There is also extensive looting at several regional sites as well as damage caused by erosion and other natural factors. At this time, the conservation management plan continues as a work-in-progress.

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Andrew M. Smith II
Dept of Classical and Near Eastern Languages and Civilizations
653 Rome Hall, 801 22nd St NW
The George Washington University
Washington, DC 20052
United States of America

Andrea Kay
Institute of Earth Surface Dynamics (IDYST)
University of Lausanne
Geopolis Building
CH-1015 Lausanne
Switzerland

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