

**THE 1982 ARCHAEOLOGICAL AND
EPIGRAPHIC SURVEY OF THE
'AQABA-MA'AN AREA OF SOUTHERN
JORDAN**

by
W. J. Jobling

Introduction

The third season of the 'Aqaba-Ma'an Survey took place during January and February 1982. The project, which is funded by the Australian Research Grants Scheme of the Australian Federal Department of Science and Technology, was conducted in cooperation with the Department of Antiquities of Jordan and the British Institute in Amman for Archaeology and History.

Special thanks are due to the Director-General of Antiquities, Dr. Adnan Hadidi, for his approval of the project and his continued support. This year the representative from the Department of Antiquities was Mr. Nabil Baqa'in, Inspector of Antiquities at Kerak.

The director also wishes to express his gratitude to Mrs. C.-M. Bennett, OBE, FSA, for her continuing support and enthusiasm for the survey which was initiated at her suggestion some three years ago. This year Mrs. Bennett was able to participate in the survey for one week and supervise the sondages at Tell el Kharaza as well as give other in-field advice and guidance. Her association with, and interest in, the project are greatly appreciated.¹

Mr. Richard Morgan, a graduate in geography and historical archaeology from the University of Sydney, ably assisted the project and in particular was responsible for the photography and first draft of the map of the historical geography of the 'Aqaba-Ma'an area. This map is based on the survey work carried out over the last three seasons.

The continuing interest of Mr. Michael Macdonald in the recording and study of the Thamudic Inscriptions is also greatly appreciated.

This year a base camp was established in the village of Quweirah and special attention was given to further work on the Archaeological and Epigraphic Map of the 'Aqaba-Ma'an area (Fig. 1). The survey area extends from Ras en Naqb in the north to Aqaba and the Saudi Arabian border in the south and is bounded to the west by the Shafat Ibn Jad range and to the east by the Saudi Arabian-Jordanian border. An area of approximately 2,700 km² has been surveyed so far. Major antiquity and epigraphy sites have been noted, however the final map will include a large number of smaller sites scattered throughout the area.²

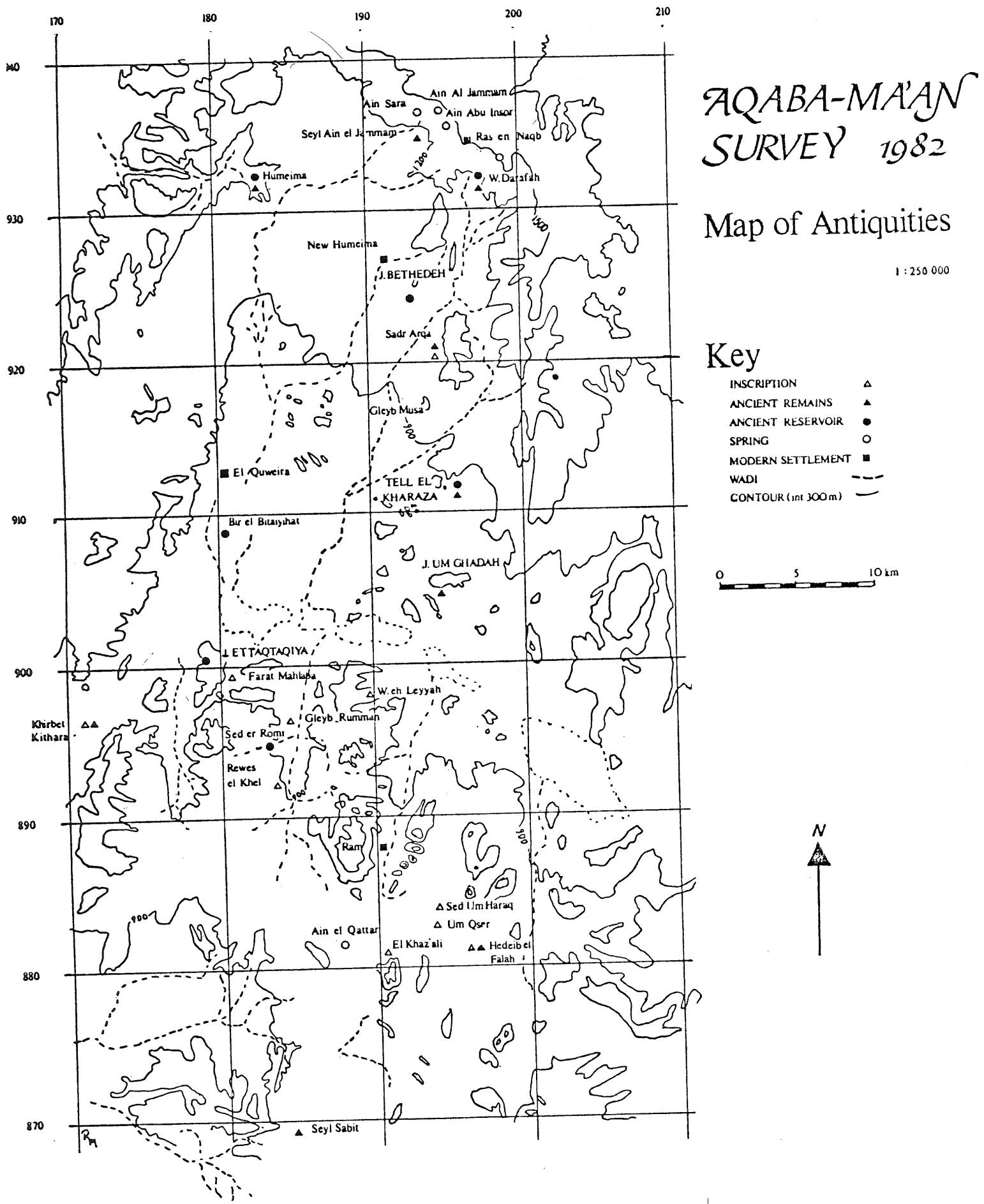
The area is characterised by huge bare sedimentary residuals which tower above the desert floor which is swept by windblown aeolian sands. The pediplane at about 900.00 m. above sea level has a large accumulation of drift sand which has developed through overgrazing and over use of the fragile soils that cover the stoney desert floor. This overgrazing has denuded the soil of its binding vegetation. The wind which blows off the Ma'an Plateau has deflated most of the topsoil. Sand dunes which pile up against the windward face of the residuals and the escarpments are the result of these processes.

In the infrequent and highly variable rainstorms steep sided gullies have formed in the relatively loose aeolian material and

¹ Miss Penny Vickers of the British Institute for Archaeology and History joined the survey in its last week and contributed substantially to the final phases of exploration and epigraphical research. Miss Elizabeth Roberts, B.A., who was appointed Research Assistant to the survey com-

pleted a bibliographical index of work done in the area.

² G. L. Harding, *Some Thamudic Inscriptions from the Hashemite Kingdom of the Jordan*, Leiden, 1952, Map page 6.



AQABA-MA'AN SURVEY 1982

Map of Antiquities

1 : 250 000

Key

- INSCRIPTION △
- ANCIENT REMAINS ▲
- ANCIENT RESERVOIR ●
- SPRING ○
- MODERN SETTLEMENT ■
- WADI - - -
- CONTOUR (int 300m) —

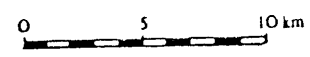


Fig. 1: The Archaeological and Epigraphic Map of the Aqaba-Ma'an area of Southern Jordan: Some Major Sites (1982)

any large boulders that may have been dislodged from the escarpment above have been moved along in the wake of this finer material which acts as a very unstable support for the size and weight of these boulders. With the quick run-off and almost total overland flow the gullies fill quickly and the *awdiyah* (wadis) flow with great force. Under the Ras en Naqb escarpment the early farmers appear to have attempted to slow, and indeed, catch some of this water by constructing barrages perpendicular to the general flow of the *awdiyah* (wadis). These sandstone block walls would have saved the destruction of their small cultivated terraces on the *wadi* floor. The *wadi* floor is the most fertile area, and if maintained adequately these barrages would have been useful as shallow dams for temporary water storage. Evaporation after a rainfall, however, would have necessitated the channelling of this water to an underground reservoir. There was no such reservoir apparent at Seyl 'Ain el Jammam but certainly there were other areas where this type of water collection and storage was being used. A good example of this procedure exists at Sadr Arqa.

Another major determinant for a desert environment is the climate. Quantitatively this can be calculated with the various moisture indices (i.e., Thornthwaite's moisture index and Koppen and Geiger's climate classification).³

In the survey area precipitation and evaporation rates determine the aridity of the area. There is a deficiency in precipitation compared with evapotranspiration thus causing the climate to be arid. It is estimated that in this regard Thornthwaite's Moisture Index would be in the vicinity of -30 to -50 (semi-arid to arid).

Another climatic factor is the high variability of present rainfall patterns. In this respect the desert rainfall is extremely irregular and unpredictable. There is a high quotient of variation, which is the ratio between the maximum and the

minimum annual rainfalls. These elements of the climate characterize this environment of blustery winds, little binding vegetation and high erosion rates during precipitation. As a result this leads to poorly developed soils, little agricultural production and irregular topography as at the present.

From a meteorological point of view rainfall is most likely to occur in the survey area when "lows" occur in the winter season over the Mediterranean Sea with a centre over Cyprus. Thus the summers tend to be dry because "highs" develop over this area. The further away the centre of the low pressure system the less rainfall occurs in the desert.

During the 1982 survey particular attention was focussed on the northern sectors of the area, between Wadi Ram and Ras en-Naqb (Pl. XXXII, 1). Together with the sondage at Tell el Kharaza, the following major sites present a profile of this area.

Khirbet Darafa (G.R. 197932)

Situated to the east of the new 'Aqaba-Ma'an road, this site appears to be part of a large antiquities complex (Pl. XXXII, 2).

A large cistern formed out of the natural stone has also been modified to include at least one large niche which appears to have been well tooled and to have held some object which was fixed in place by plaster. This niche bears some resemblance to niches at 'Ain Shalaleh in Wadi Ram and at Petra. There are several other possibly natural niches on the walls of the cistern, however they have been extremely weathered. The large well tooled niche which still has evidence of the plastering may suggest that the cistern was used as a sanctuary (Pl. XXXIII, 1).

The dimensions of the cistern are 3.50 x 4.90 x 4.60 m. and there is evidence of a carefully tooled ledge along the eastern and higher side of the cistern which suggests that there was a covering, or roof,

³ M. Evenari, *et al.*, *The Negev, The Challenge of a Desert*, Cambridge, 1971, P. 29-30.

which sloped down to the western wall. The cistern is situated so as to gain maximum advantage of the water run-off. The present depth of the cistern is 3.50 m. however there is a considerable depth of silt in the cistern which indicates that the cistern was probably much deeper. Large pieces of worked stone on the surface may have been cult stones. Several pieces of worked stone amongst the rubble in the south-west corner of the cistern may have been part of a dais associated with cultic usage connected with the large tooled niche. However such interpretations remain problematical and hence tentative. Some 250.00 m. to the south of this cistern is evidence of a series of run-off dam walls (or filter dams) which would appear to have gathered water run-off from the same hill.

Surface sharding produced a variety of Nabataean sherds of which 99% were plain which, along with surface flints and flint debitage, suggest that the site has had a long history of human occupation.

The site is close to the spring of 'Ain Darafa, situated mid-way up the Ras en-Naqb escarpment. The site is currently inhabited by Bedouin and their flocks.

Seyl Jamam (G.R. 194936)

Situated below 'Ain el Jamam in an area which has good water supplies, Seyl Jamam would appear to have been the centre of an extensive lithic industry complex (Pl. XXXIII, 2). This complex, which embraces 'Ain el Jamam is currently occupied by several Bedouin families which have moved into semi-sedentary residence because of the good water supplies and proximity of the new highway to Ma'an from whence they obtain grain supplements for their flocks and animals.

A preliminary study of the flints from Seyl Jamam would suggest that there was a lithic industry ranging from Late Paleolithic to Chalcolithic. This would seem to provide parallels which concur with observations about Ras en-Naqb

made by D.O. Henry, *et al.*⁴

'Ain 'Abu 'Insor (G.R. 195936)

Situated just above the new 'Aqaba-Ma'an roadway, this site is significant because of its spring and the large, lengthy, though badly weathered, Thamudic inscription situated on the rock face high above the spring (Pl. XXXIV; 1). The inscription is difficult to read but it should be noted that it has been pecked into the rock face. The characters are quite large and appear to have been well executed. Together with 'Ain el Jamam, these closely related sites provide evidence of good water sources which provide a relatively constant water supply for the areas at present.

Aqueducts from reservoirs fed by these springs were traced as far south as Khirbet Humeima. Initial exploration would suggest that the aquifers in the Ras en-Naqb escarpment were sources of water and the focus for the developed hydrology of the area in the later Roman and Byzantine periods.

Sadr Arqa (G.R. 192919)

Situated almost mid-way between Jebel Kharaza (G.R. 192915) and Khirbet Darafa (G.R. 197932) Sadr Arqa was found to have a large number of graves, cairns and Thamudic inscriptions.

A short distance to the west at Al Radah al Bathah is a very large water cistern still in use by the Bedouin (Pl. XXXIV, 2). This cistern is the repository of rain water run-off which is controlled by a series of silt dams which, although showing modern repair techniques, also appear to be of considerable antiquity and are probably related to the technology of water conservation associated with the construction of the water cistern. This cistern, hollowed out of the rock, is estimated to have a capacity of +100,000 litres. It was observed that even in prevailing drought conditions this cistern preserves a good supply of water.

⁴ D. O. Henry *et al.*, *An Investigation of the Prehistory and Paleoenvironments of Southern Jordan*, *ADAJ*, XXV (1981) p. 113-143.

A comprehensive epigraphical survey was conducted and twenty-three Thamudic inscription sites were recorded, copied and photographed. Some of these sites contained multiple inscriptions. It was noted that there was a distinctive variety in the style, size and medium of these inscriptions. Some inscriptions were pecked, others were incised into the rocks scattered over the floor of the *wadi*. Almost all inscriptions exhibited a considerable degree of skill in execution. There appears to be a relative regularity in the size of individual letters. It is proposed to analyse and publish a study of the typology of scripts in this area and other areas where Thamudic inscriptions were located in the 1980 and 1981 surveys of the 'Aqaba-Ma'an area.

One particularly interesting Thamudic inscription was removed for exhibition in the Kerak Museum by Inspector Nabil Baqa'in (Pl. XXXV, 1).

A tentative transliteration of this inscription is:

l.kwm لخورم

Though a short inscription it would appear to be important in that it provides evidence of a variation in the *wāw* grapheme. The usual form of this grapheme in this area is that of a circle divided per pale.⁵ However in this inscription the circle is divided per saltire and is formally the same as Phoenician-Hebrew and Aramaic *ʿet*, but does not have the same sound.⁶

Tell el Kharaza (G.R. 194911)

This site, which was located and surveyed in the 1981 survey, was the scene of an intensive week's work this year when two trial trenches were excavated under the direction of Mrs. C-M. Bennett, OBE, FSA, Director of the British Institute in Amman for Archaeology and History (Pl. XXXV, 2).

There were nineteen levels down to

the bedrock which was Level 20.

The east facing section showing levels at the western end of the sondage shows the ash layers and cut and fill features which consistently extended from the rock scarp out to the beginning of the deflation of the occupation site (Fig. 2). A regular feature of the levels was the fireplace and appearance of animal dung and bones. The pottery sherd analysis ranges from the end of the Pottery Neolithic to the end of the Middle Bronze Age. Surface sherding suggests a later use of the area during the Iron Age.

As can be seen from Table 1, the analysis of the bone fragments reveals that they were from limb extremities and a head (i.e., from those parts of the animal carcass usually subtracted and discarded in butchering). Level 12 was the exception to this observation. The bone fragments from Level 12 were those from the edible part of the carcass proper.⁷ The bone fragments indicate a preponderance of goats with two or three sheep and two gazelle. The rock scarp above the surface level of the sondage had barely discernible panels of glyptics in which occur horned animals and human figures in what are either hunting or dancing poses. This may suggest that the large overhang at Tell el Kharaza was a sacrificial site or that it was a place for the ritual slaughtering of animals.⁸

Altogether the sondage and the surface sherding would seem to suggest that this site was regularly occupied throughout antiquity and was particularly favoured by pastoral nomads.

Further exploration of Tell el Kharaza also revealed a most interesting complex of dams and well tooled water channels in the rift behind the overhang (Pl. XXXVI, 1).

Comparison of the tooling of the water channels with those at Petra suggests that they were the work of Nabataeans. Comparisons of the dams at Tell el Kharaza with those in the Wadi Rumman,

⁵ G. L. Harding *op. cit.*, Plate XXVI.

⁶ G. R. Driver, *Semitic Writing*, Oxford, 1976, Figs. 81 and 82.

⁷ The analysis of animal bones was prepared by Dr. Ilse Köhler of the University of Hanover. Dr. P. H. McCarthy, Dept. of Veterinary Anatomy, The

University of Sydney, prepared the table of the bone analyses for publication and assisted with the interpretation of the data.

⁸ S. Helms, *Jawa: Lost city of the Black Desert*, London, 1981, Appendix E.

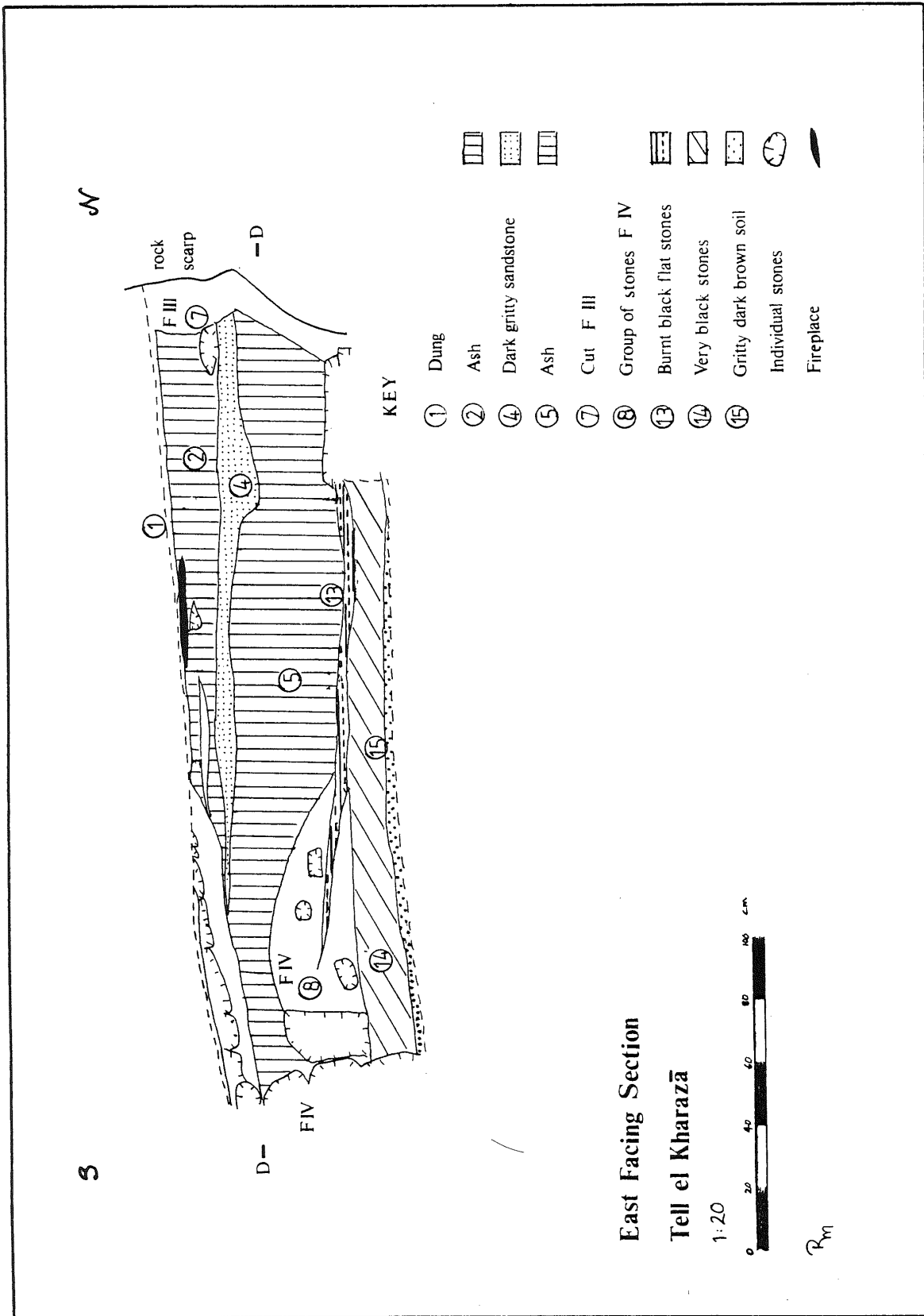


Fig. 2: Tell el Kharaza Sondage: Section.

Table 1: Tell El Kharaza 1982 Analysis of Animal Bones

<i>Stratum No.</i>	<i>Species</i>	<i>Bones</i>
1	Goat Goat Sheep/Goat	mandible) cranium) fragments rib fragments
2	Goat (neonatal/stillborn) Goat Goat Sheep/Goat Small Ruminant	metatarsus scapula pelvic fragments proximal phalanx middle phalanx metacarpus (distal epiphysis) rib fragments some burnt leg bone fragments with cutting marks
3	Goat (burnt?)	cornual process of frontal bone
7	Small Ruminant (Goat?)	atlas
9	Gazelle (?) Sheep/Goat Small Ruminant Small Ruminant	mandible proximal phalanx rib metacarpus
11	Goat Goat Sheep/Goat Sheep/Goat Small Ruminant " " " " " (neonate) " "	proximal phalanx 3 cornual processes metatarsus 3 fragments of mandible 5 molar teeth maxilla fragment 6 rib fragments scapula cervical vertebra
12	Goat " " " Goat unfused Goat " " Sheep " Sheep/Goat " " unfused	scapula metacarpus distal part of femur metacarpus metatarsus cornual process of frontal bone horn occiput fragment metacarpus middle phalanx distal part of humerus " " distal part of metatarsus

	„	distal part of tibia
	„	5 fragments of maxilla
	„	7 fragments of cranium
	„	fragments of scapula
	Gazelle (?)	distal part of metatarsus
	Small Ruminant	humerus (neonate/infantile)
	„	4 rib fragments
	„	5 molar teeth
14	Small Ruminant (?)	4 rib fragments
	„	long bone fragment
	„	vertebra fragment

and further north at Petra also suggest links with Nabataean workmanship and hydrology.

Hediebh el Fala (G.R. 196881)

Further survey work was conducted at this site which was located in the 1980 survey.⁹ More Thamudic inscriptions were found and of particular interest are those Thamudic inscriptions which are inked or painted on the rock overhang (Pl. XXXVI, 2). Two such inscriptions were identified in the 1981 survey while this year a longer and even more distinct inscription was found.

As most Thamudic inscriptions are either pecked or incised in the rock the three inscriptions which are recorded in an ink or paint-like substance should provide an important addition to our understanding of Thamudic calligraphy.¹⁰

Also located in an overhang situated some 200 metres to the west of the inscriptions was a petroglyph which is similar in many respects to the petroglyphs in the gallery at Khaz 'Ali (Pl. XXXVII, 1). This would appear to be the first example of such distinctive petroglyphs

found outside the Khaz 'Ali Gallery.¹¹

Wadi el Leyyah (G.R. 192896)

Again some time was spent in this *wadi* which forms a large bay to the west of the northern entrance of Wadi Ram. As in the 1981 survey, Thamudic inscriptions were found which appear to be additional to those recorded by the late G. Lankester Harding.¹² One of the new inscriptions was removed by Inspector Nabil Baqa'in for exhibition in the Kerak Museum (Pl. XXXVII, 2). A tentative transliteration of this inscription is as follows:

لعمص م 'Ş

A longer and philologically more significant Thamudic inscription also found in the Wadi el-Leyyah sheds light on the Thamudic grapheme formed by two concentric circles and disputed as indicating either *wāw* (و) or *gīm* (ج). (Pl. XXXVIII):

l tm's ḥsr t'sf byt wgy
لتما س حسر تفس بيت و جي

By TM's. He grieved for T'SF of the house of WGY.

⁹ W. J. Jobling, Preliminary Report on the Archaeological Survey Between Ma'an and 'Aqaba, *ADAJ*, XXV (1981) p. 109, Plates XXVII: 2, XXX: 1 and 2.

¹⁰ G. L. Harding recorded "paintings" at 'Ain Abu Nekheileh, south of wadi Ramm-vid Jordan Dept. of Antiquities Archives, Nos. A 894, A 896.

¹¹ i. J. Savignac, *Le Sanctuaire d'Allat á Iram*, RB, XLII (1933) p. 405-422, XLIII (1934) P. 572-589; XLV (1936) p. 235-262.

ii. G. L. Harding, *Some Thamudic Inscriptions from The Hashemite Kingdom of the Jordan*, Leiden 1952, p. 12-13, plate III.

¹² G.L. Harding, *op. cit.*, inscriptions p. 391-476.

The occurrence of the *wāw* and *gīm* in the last name (*wǧy*) of this inscription is evidence that the grapheme formed by two concentric circles is to be identified as *gīm*.¹³

While presuppositions about the human occupation of semi-arid and desert areas such as those contained in the survey area usually presume a minimal occupation, both epigraphic and non-epigraphic archaeological remains are frequent enough to suggest that the 'Aqaba-Ma'an area was more densely populated, at least from time to time in several places (i.e., places which were geographically and ecologically favourable).

In this regard the views expressed by J. T. Milik and M. C. A. Macdonald over the interpretation of the relationship between Nabataeans and Safaitic tribes reflected in their respective discussions of the *mrt* tribe of the Madaba area is pertinent to models of interpretation which may be generated for the inhabitants of the 'Aqaba-Ma'an area in the comparable period.¹⁴ While choosing to disagree with the view Milik holds about the settled state of the Safaitic 'Amraites Macdonald favours the view that the *mrt* were at least a semi-settled tribe and were possibly multilingual.

This view may bear comparison with M. B. Rowton's theory of the dimorphic oscillation of such tribal societies in the Ancient Near East and hence accommodate the sort of mobility implied by Milik and Macdonald.¹⁵ Such a view

about the 'Amraites and the Madaba area which is situated to the north of the 'Aqaba-Ma'an area is a tempting possibility with regard to the later periods of occupation reflected in the archaeological survey of the 'Aqaba-Ma'an area and the sociolinguistic implications of the Thamudic and Nabataean epigraphic evidence so far recorded.

To these sociolinguistic observations may be added topological and climatological considerations. W. Oxtoby, commenting on Harding's view that deposits of small prehistoric worked flints on the eastern edge of *ḥarra* districts of Syria and Jordan are evidence of a microlithic culture which flourished in these regions under climatic conditions more favourable than today, draws attention to the vexed question of paleoclimatology and the present climatology of these semi-arid and desert areas.¹⁶ According to S. A. Huzayyin the climate of the Afro-Asian desert belt has not, as W. B. Fisher argued, remained unchanged within historic time but gradually reached its present aridity in the period from the third to the sixth centuries A.D.¹⁷ While a further comparative study of the data of climate variations in the 'Aqaba-Ma'an area is necessary to fix the precise point, or points, of weather changes, there is sufficient evidence for the earlier periods of human occupation to suggest that conditions more conducive to a higher density of population occurred.¹⁸ Thus it may have been that the 'Aqaba-

¹³ Mr. Michael Macdonald and Professor F. V. Winnett have been kind enough to inspect photographs of this inscription and guide me with their comments on its significance.

¹⁴ M. C. A. Macdonald, Safaitic Inscriptions in the Amman Museum and Other Collections II, *ADAJ*, XXIV (1980) p. 185-186.

¹⁵ M. B. Rowton, Autonomy and Nomadism in Western Asia *Orientalia*, 42 (1973) p. 247-258; Urban Autonomy in a Nomadic Environment, *JNES* 32 (1973) p. 201-215; Enclosed Nomadism, *Journal of the Economic and Social History of the Orient* 17 (1974) p. 1-30; Dimorphic Structure and Topology. *Oriens Antiquus* 15 (1976) p. 17-31; Dimorphic Structure and the Problem of the Apiru Ibrim, *JNES*, 35 (1976) p. 13-20; Dimorphic Structure and the Parasocial Element, *JNES*, 36 (1977) p. 181-198. Cf. J. Henninger, Zum Frühsemitischen Nomadentum im L. Földes

(ed.), *Viehwirt-Schaft und Hirtenkultur. Ethnographische Studien*, Budapest, 1969, p. 33-68.

¹⁶ W. Oxtoby, *Some Inscriptions of the Safaitic Bedouin*, New Haven, 1968, p. 8.; Cf. S.W. Helms *op. cit.*, p. 151-6, p. 184-7, p. 229-242.

¹⁷ S. A. Huzayyin, Changes in Climate, Vegetation and Human Adjustment in the Saharo-Arabian Belt, Background Paper No. 13 in the Wenner-Gren Foundations International Symposium, *Man's Role in Changing the Face of the Earth*, W. L. Thomas (ed.), Chicago, 1956 - Fifth Impression 1967, P. 304-323.; Cf. W.B. Fisher, *The Middle East: A Physical, Social and Regional Geography*, 3rd Edition, London, 1956, P. 52-56.

¹⁸ D.O. Henry, et. al., *op. cit.*, p. 135. Cf. A.D. Crown, Towards a Reconstruction of the Climate of Palestine 8,000 BC- O BC, *J.N.E.S.* 31:4 (1972) p. 328-329 and Fig. 4.

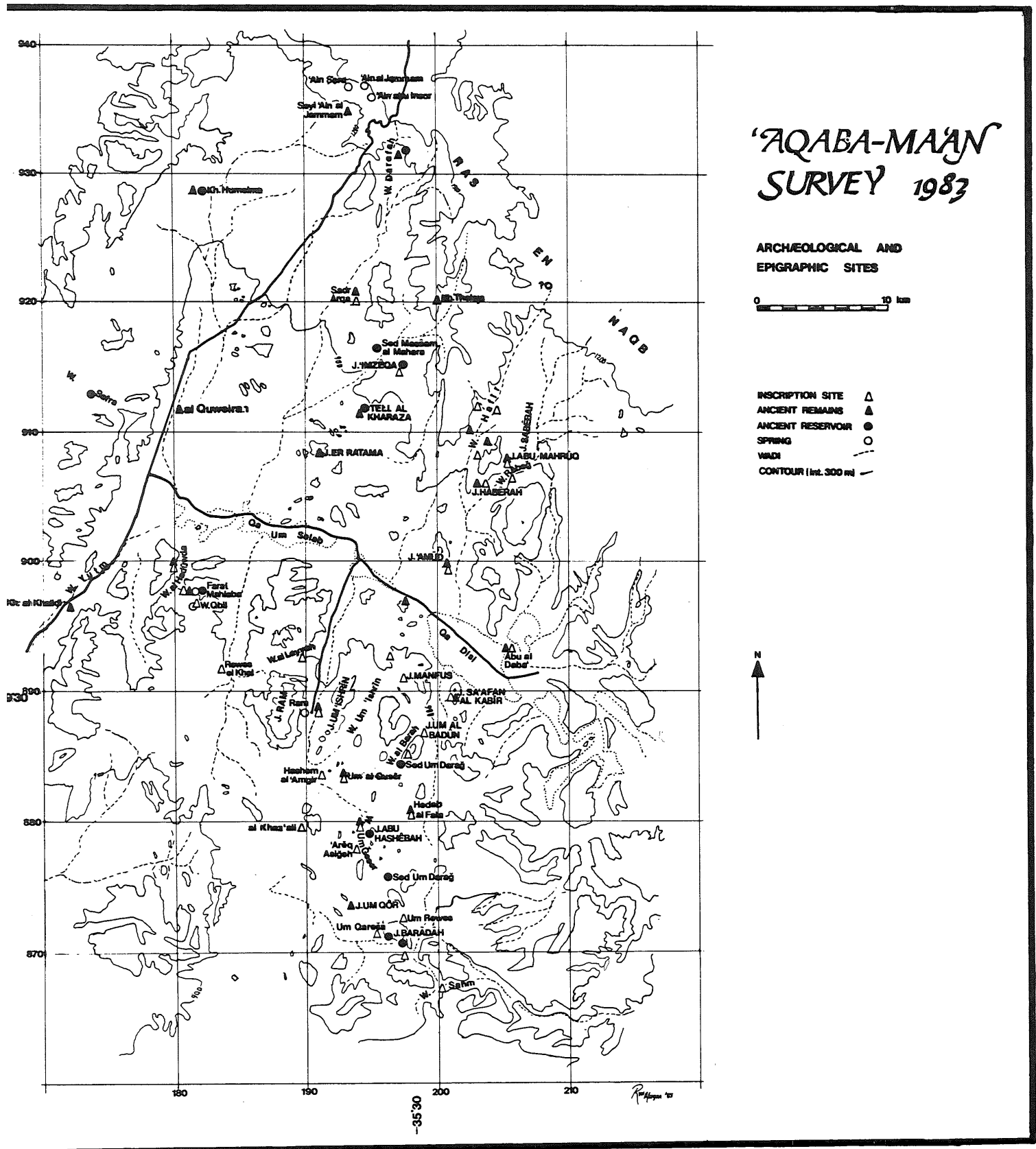


Fig. 3: The Archaeological and Epigraphic Map of the Aqaba-Ma'an area of Southern Jordan: Some Major Sites. (1983).

Ma'an area was a marginal area where minimal climate variations provoked substantial changes in man-land relationships over a long period of time.

The exploration and survey of the Nabataean type water system at Tell el Kharaza as well as the location of other water sources, catchment and storage systems in the 'Aqaba-Ma'an area provide evidence of a sophisticated interaction of man with the natural physiographic features of these arid areas in antiquity.

From the springs at 'Ain al Jamam and 'Ain ed Darafa below Ras en-Naqb in the northern end of the area under survey down to the springs, cisterns, dams, and barrages in and to the south of Wadi Ram there is evidence of a degree of hydrological engineering skill which will be the substance of a separate study arising out of the 'Aqaba-Ma'an surveys. For the present, however, as can be seen from the draft of the map of the historical geography of the area there is extensive evidence of the controlled use of surface

and underground water (Fig. 3). Though some of these sites are still in use by the local inhabitants many other sites which have fallen into disuse or which have silted up suggest that there was a higher density of occupation with use of water resources in antiquity than previously thought. It remains for further surveys and excavations to determine the precise patterns of the history of such occupation.

The 1981 and 1982 survey seasons of exploration as well as the sondages at Tell el Kharaza have provided a profile of the archaeological history of human occupation which appears to have embraced the Upper Paleolithic through to the end of the Middle Bronze Age with a continuation from the Iron Age through to the Byzantine and early Islamic periods.

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