Exploration in the Ghaggar Basin and excavations at Girawad, Farmana (Rohtak District) and Mitathal (Bhiwani District), Haryana, India

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ABSTRACT
This paper is a preliminary report of the archaeological investigation conducted in the Ghaggar Basin from March to April 2007. This research mission forms a part of the Indus Project of Research Institute for Humanity and Nature, Kyoto. This venture aims at various study purposes, such as the holistic understanding of the Harappan culture in the Ghaggar Basin including aspects such as archaeology, geology, climatology and related environmental studies. The work conducted in 2006-2007 consists of exploration along the Ghaggar River in Haryana and Rajasthan in India, and excavations at Girawad, Farmana and Mitathal with different objectives and scales of research. Along with the results of the above work, the general outline of this research project is also mentioned.

INTRODUCTION

The discovery of the Harappan Culture in the 1920’s was hailed as the most significant archaeological find in the Indian Subcontinent, mainly because it connected chronologically, the Stone Age with the Early Iron Age of this region. The excavations at numerous Harappan sites like Harappa, Mohenjodaro, Kalibangan, Lothal, Dholavira, Rakhigarhi, Kuntasi, etc. to name a few, have not only revealed various facets of this great culture, but have also enabled the reconstruction of their socio-economic organizations. The partition of India and Pakistan in 1947 was a boon in disguise for the Harappan studies in India. As almost all the known Harappan sites entered into Pakistan, the Indian archaeologists, particularly from the Archaeological Survey of India, a few from various State Departments of Archaeology and selected universities accepted the challenge to successfully find the spatial and temporal extent of the Harappan culture in the Indian territory. Because of the attempts of numerous organizations and individual scholars, approximately 1000 sites have been reported from the Indian side, which are twice the number of sites reported from Pakistan. Large number of Harappan sites (more than 1000) have been discovered in the Ghaggar-Hakra Basin, owing to the efforts of scholars like Aurel Stein, K.T. Frenchman, Rafique Mughal (in the Hakra region), A. Ghosh, J.P. Joshi, Suraj Bhan, R.S. Bisht and the Departments of History and Archaeology of Universities of Kuruksheta and M.D. University, Rohtak and the Haryana State Department of Archaeology.

A cursory glance at the distribution of Harappan sites in India reveals the highest number of Harappan sites in Haryana (350 sites), followed by Gujarat (230 sites), Punjab (147 sites), Uttar Pradesh (133 sites), Rajasthan (75 sites), Chandigarh (4 sites), Himachal Pradesh (3 sites), Delhi (1 site) and Jammu (1 site).
Fresh research work is being undertaken on the
Harappan culture in the Ghaggar Basin with a view to study the below-mentioned aspects, which have not been dealt with in great detail by the previous scholars working in this region in great detail.

1) To understand the spread of settlements and settlement pattern of the Pre and Early Harappan cultures in the Ghaggar Basin.

Even though a concentration of Harappan sites has been noticed in the Ghaggar-Hakra Basin, the Indian side has not been as systematically surveyed as it should have been. The only noteworthy work involving methodical survey and surface collection is that of Katy Frenchman in the early 1970’s (1972). A glance at the distribution pattern of the Harappan settlements shows numerous gaps in the occupation of the region, which is surely due to a biased research methodology and not because of an absence of settlements in this region. As a part of this project, efforts will be made to commence systematic survey in the areas previously unexplored and also to visit the known sites and document them systematically by collecting surface samples. This will enable in placing the sites in proper perspective and in the reconstruction of various features like the pattern of their settlements, site typology, relationship between sites, resource exploitation patterns, demographic and functional aspects.

2) Reconstruction of Holocene climatic sequence and to study the impact of climatic fluctuations on the origin and development of human cultures in the study area.

The environmental conditions during the 4th-3rd millennia BC, when agricultural communities originated and flourished in the northwest part of the country may have been different from present day if the results of some of the analysis of climatic data collected are taken into consideration. Reconstruction of Holocene climatic conditions have been made by a few scholars using the palynological data from the lakes in Rajasthan - Sambar, Didwana, Lunkaransar and Pushakar. Gurdeep Singh et al. (1971, 1974 and 1990), the pioneers in this research, have proposed five phases - Phase I (before 8000 BC) represented by wind-born sediments indicating arid climate, Phase II Pollen Zone A (8000 BC - 7500 BC) with 25mm more annual precipitation than the present, Phase III Pollen Zone B (7500 BC - 3000 BC) marked with rise in carbonized vegetable remains in the lake sediments. The Phase IV Pollen Zone C is further divided into sub-phases IVa (3000 BC - 1800 BC) characterized with a sudden increase in the rainfall, at least 50cm more than at present, detected due to the presence of Cerealia type of pollen, IVb (1800 BC - 1500 BC) marked by a short dry spell and IVc represented by a slight reversal of a relatively wet interval. The last phase, Phase V is known only from Lunkaransar with pollens reflecting condition prevalent with sand formations more or less similar to that of the present day. In short, according to Gurudip Singh, rise in rainfall around 8000 BC in Rajasthan was responsible for the emergence of cereal agriculture in northwest India around 7500 BC. An exceptionally good rainfall around 3000 BC accelerated the expansion of farm-based settlements in the region and also resulted in the prosperity of the Harappan culture. A decrease in rainfall around 1800 BC led to decline of the Harappan culture. However, Misra has rejected Singh’s theory of ‘wet’ climate due to the absence of archaeological sites in the western Rajasthan from where Singh had taken samples (Misra 1984: 461-488). He also points out that crops grown by the Harappans in the Indus and Ghaggar were essentially winter crops. These crops could be cultivated with the aid of moisture and silt provided by river floods or artificial irrigation and there is no evidence of artificial irrigation during the Harappan times.

Enzel et al. (1999) worked on the Lunkaransar, a dry salt lake in Rajasthan and the result of their work revealed that the early Holocene underwent many minor climatic fluctuations. The lake experienced
dramatic fluctuations around 6300 BP (5000 BC) when it rose to a high level and minor fluctuations continued till 5500 BP (4200 BC) when it reduced abruptly and then dried up completely by 4800 BP (3500 BC). This climatic data totally negates the idea that improved climatic conditions led to the rise of Harappan Civilization as it was in the dry and semi-arid environment that the culture flourished in India and Pakistan. Further they go on to say that it was not the summer monsoon that was responsible for an increase in lake levels but a higher winter precipitation, which could be the potential source for a change in hydrological conditions in the middle Holocene period.

The studies carried out by the two different groups in the same ecological zones of northwest India do not show identical results. Rather they contrast each other. Other scholars (Shinde et al. 2001) have also worked on the existing climatic problem and the work done in the Sambhar Lake by them has yielded results supporting the hypothesis obtained by Gurdeep Singh et al. On the basis of analysis of data they have proposed the following climatic sequence:

- 6200 BC - 4000 BC: Wet Phase
- 4100 BC - 3800 BC: Dry Phase
- 3800 BC - 2200 BC: Wet Phase
- 2200 BC - till Present: Wet phase begins to decline.

The studies carried out on the climatic conditions of the past are very few and their research strategy biased. Firstly all the earlier studies were carried out only in the north and western parts of Rajasthan and all the data collected for climate reconstruction was from the dried salt lakes in Rajasthan. Such inadequate data cannot be used for drawing meaningful conclusions. The data from lakes do not reveal general climate of the region but provide only limited information such as climatic history of the lake and its catchment areas. There is a need to carry out similar studies in different ecological zones and also in freshwater lakes and river basins. One of the aims of the Ghaggar Project is to study the history of the Ghaggar River and its impact on the early cultures that flourished there. Efforts will be made to study its active and passive phases too.

Along with hydrology and climate studies, efforts will also be made to study soil types around the major Harappan sites in the region and the distribution of natural resources. The distribution and function of the Harappan settlements in the Chautang Basin may largely have been determined by soil typology and natural resources as well (Garge 2006). The present study is focused on the effect of the soil distribution on human land-use pattern and economy of the past. A synthesis of pertinent pedological, geological and paleoenvironmental studies in the vicinity of major Harappan settlements in the Ghaggar Basin will be undertaken. Research in this respect was initiated by an Indo-French Archaeological Mission in the 1980’s (Courty 1986), which was left incomplete midway.

3) To understand regional variations of the Harappan culture in the Ghaggar Basin and study the role of the regional cultures in the development of Harappan elements. The earlier belief that the Harappan Civilization was a homogenous, has turned out to be a myth. Within the various Harappan regions are found manifestations of regional variations (‘domain’ according to Possehl (2002)). The first scholar to point out this distinction within the Harappan Civilization was J.P. Joshi (1984). However, Possehl (2002) has identified more than 7 domains on account of geography, settlement pattern data and cultural material. The excavations at Rojdi by Possehl and Raval (1989) were important from the point of view of identifying of the regional variations of the Harappan Civilization in Saurashtra. It was noticed that the material culture associated with the Harappan culture at Rojdi showed some difference when compared to materials found in the Sindh-Baluchistan region, termed by Possehl as the Sindhi Harappan Domain. This was found true for the entire Saurashtra
region. This difference was treated as a regional variation of the Harappan culture in Saurashtra and termed as Sorath Harappan (Possehl and Herman 1990). Similar regional differences in the material culture, more particularly in the ceramic assemblages of the Harappan sites in Saraswati are visible. The sites located in the Sindh-Baluchistan region have classical Harappan elements and thereby forms one distinct region within the Harappan empire.

We can attempt to explain why such variations may have occurred in the material culture of the Harappan period. A number of regional pre-/Early Harappan cultures flourished in various parts of the Harappan region, and these early cultures had contributed to the development of the Harappan elements in each of these regions. Naturally, therefore, the features of the Early Harappan cultures persisted through the Mature phase in their respective regions (Shinde et al. 2006). In the Sindh-Baluchistan area, the elements of the Early Harappan Amri-Kot Diji cultures dominated the assemblages of the Mature Harappan phase in that expanse, whereas in the Ghaggar Basin the elements of the early Siswal-Sothi continued in the Mature Harappan phase. The so-called Sorath Harappan phase evolved out of the Padri Early Phase (Shinde 1998) and hence the continuation of the Padri elements in the Harappan phases in Saurashtra. The present research will seek to explain the development of the Harappan components in the Ghaggar Basin and study the contribution of the early cultures in the making up of the Harappan civilization and its regional variation in the region concerned.

4) To study cultural processes from the Early to Late phases of the Harappan Culture. From the beginning of the Harappan tradition in the middle of the Fourth Millennium BC until its end in the middle of the Second Millennium BC, continuous cultural processes were taking place from time to time. The processes from the Early to the Mature phases (developed stage) and from Mature to Late phases (declined phase) have been identified, but the exact nature and reasons for their transformation are yet to be understood. A overlook at the distribution of the Harappan settlements suggests a heavy concentration of the Early and Mature Harappan sites and a sporadic occurrence of the Late Harappan in the Ghaggar Basin. This pattern suggests that the river was quite active during the first two phases and went dry in the last phase. The site of Farmana, which is going to be excavated on large scale, is an ideal candidate to study the cultural processes, as the pre-/Early and Mature Harappan phases are present here in a proper stratigraphical context.

5) Efforts will also be made on generating further data, so that aspects like decipherment of the Harappan script, the relationship with Rakhigarhi and Harappa, the social-economic and religious organizations, etc. will be attempted.

**ECOLOGICAL BACKGROUND**

The Ghaggar River basin lies mostly in the states of Haryana and Rajasthan. The parts of the Ghaggar Basin fall in a subtropical, semi-arid to sub-humid, continental and monsoonal type of climate with a prolonged hot period from March to October and fairly cool winters from November to March. The period from July to about mid-September is the southwest monsoon season. The natural vegetation usually found is the tropical thorn forest, consisting of plants like *Kikar*, *Jall*, and *beri*. Common shrubs are *Bans*, *Vanvar*, *Babool*, *Mallab*, *Arir*, *Phoa*, *Khip* and *Ak*. Some medicinal herbs like *Bansa*, *Kharuti*, *Bakhra* and *Dhattura* are also found. The most important natural vegetation of the area are the grasses, such as *Dhaman*, used as main fodder, ‘*Chimber’* or *Khorimber*, *Kheri* or *Kur*, Duchab, *Dub* and *Sarkanda* are also fodder grasses found growing naturally on the waste lands. The geological formation in the state of Haryana ranges from the pre-Cambrian
to the recent times and can be divided into the Aravalli system, the Siwalik system and the alluvial plains. The Aravalli Hills are the oldest formations present to the south and west of the Chautang Basin in Bhiwani, Mahendragarh and Gurgaon Districts. They are composed of quartzite, quartzitic sandstone, mica schist and crystalline limestone. The Siwalik system is located to the northeast of Chautang Basin is basically composed of sedimentary rocks. The Chautang Plain is formed from the deposition of alluvial sediments. They contain sand, silt and occasional gravel beds. The alluvium effectively conceals the solid geology of the floor. The whole expanse of the alluvial plain with relict channel beds of the Chutang and Ghaggar Rivers had occasionally shifted their beds in the Holocene times leaving interlocked alluvial plains along its receding course. These relict beds are now covered by aeolian deposits of the recent past. The thickness of the alluvium varies from 100 m to more than 400 m at places. The sediments are heterogeneous in character and are deposited on a basement of metamorphic and igneous rock of the pre-Cambrian age.

The soils of this area have been formed by aeolian and fluvial processes. The main physiographic units in this area are Chautang Flood plains and aeolian plains. The relict course of the Chautang River was filled-up with sediments causing differences in the physiographic positions. Topographically, today the Chutang Basin is flat, monotonous upland plain; the western portion of which marks gradual transition to the Thar Desert. The importance of agriculture in the economy of the region can be visualized by the fact that more than 70 % of the people reside in the villages and almost 81.3 % of the total area is actually sown. There are two main crop seasons: the kharif (June - August to September - October) and rabi (October - November to April - May). The major kharif crops are bajara, maize, jowar, cotton, rice and sugarcane. Among the rabi crops wheat, gram, barley and mustard are notable. The percentage of wheat is 36.3 % of the total area under the food grain cultivation, making it the most dominant crop of the region. Next to wheat, gram occupies 16 % of the gross cultivated area. Among other cereals are barley grown in the drier parts, and rice in the wetter and water-logged areas. The next important cereal is bajara, which is grown in the dry and sandy parts of southern Haryana. Jowar and maize, which are both cereal and fodder crops, are grown mostly in the drier and comparatively wetter parts respectively. Jowar is grown throughout the Haryana state except Hissar. Among the traditional cash crops cotton and now sugarcane are important.

Deforestation has almost driven indigenous fauna and flora of this region to extinction. Animals that once roamed this area in the not so remote past include common langur, tiger, leopard, panther, cat, the small Indian civet, the common mongoose, jackal, Indian fox, etc. Striped palm squirrel or gilehary, sahi or the Indian porcupine, the Indian Gerbille, the common house mouse and rat, are the common rodents found. Chinkara or ravine deer, blackbuck and the blue-bull (nilgai) are also found. A large number of game birds, some of them residential are found throughout the year, and some winter migratory birds. Various types of ducks and geese such as eastern grey leg goose, bareheaded goose, Brahany duck, common shell duck, pintail, common tail, mallard, blue winged teal, shoveller, common pochard, ferruginous duck, tufted duck, comb duck, large whistling teal, tree duck, partridges, quails, Indian black partridge, grey partridges, Indian yellow legged buttonquail and Indian bustard quail are resident species. Sandgrouses, particularly large pintail sandgrouse, spotted sandgrouse, Imperial or blackbellied sandgrouse visit in the winter (Sachadev et al. 1995: 11).
In the state of Haryana, all the rivers except the Yamuna are semi-perennial. The Ghaggar River system (which also includes Chautang) emerges from the lesser Himalayas and piedmonts and passes through the Indian states of Haryana and Rajasthan and then enters into the Bahawalpur region of Pakistan. The Ghaggar River when it enters the Pakistan territory is termed as the Hakra. In the rainy season, the Ghaggar River flows up to Hanumangarh, for a distance of about 465 km from its source. In the central and southern Haryana, shifting channels of the Chautang have been identified between the Ghaggar and the Yamuna. The Chautang, a major tributary of the Ghaggar, is also a seasonal stream in its upper course. The Ghaggar and Chautang Rivers, though now dry, were both important in the past mostly during the Early and Mature Harappan periods as surveys in this region have revealed a heavy concentration of sites of that period.

The Ghaggar-Hakra River has been identified as the ancient Saraswati and Chautang as Drishadvati very often referred to in the Rg Vedic period. The earliest enquiry into this problem was made by Surgeon-Major C.F. Oldham. He extensively reviewed the identification of the course of ancient rivers not only geographically but also made an attempt to reconstruct chronology of river flow on the basis of ancient literature, right from the Vedas, Puranas, Mahakavyas to the Medieval chronicles. The most important observation of Oldham was in the identification of the Sotra or Hakra as the dried up bed of the Ghaggar, which rises in the outer Himalayan ranges (now called Siwaliks) between the Sutlej and the Yamuna. "The waters of all those streams combined could never, under any imaginable
conditions, have maintained a permanent river of such magnitude as Hakra, for a distance of a more than five hundred miles beyond the furthest point to which they reach, at the times of their greatest floods" (Oldham 1874: 2).

The Chautang was a major feeder to the Ghaggar in the past, most probably until around 2000 BC. The Chautang rises in the Siwaliks, close to the Ghaggar and they flow parallel to one another for some distance, but the Chautang takes a more southerly course. It turns west, passing Hissar and the well-known archaeological sites of Siswal, Sothi, Nohar and Rakhigarhi. It joins the Ghaggar near Suratgarh with the sites of Kalibangan and Rang Mahal, occupying places of prominence at this strategic junction. Several archaeologists and geographers have argued strongly in favour of the identification of this river with the ancient Drishadvati mentioned in the Rgveda. The Ghaggar and Chautang originating in the Sirmur area, used to flow through Jind, Hansi, Hissar and then after catching Ghaggar at Hanumangarh and Cholistan desert, Pakistan, flowed southwardly, independent of the Indus River system. Either due to the uplift of the Siwaliks or some tectonic movements in the Himalayas, the feeding glacier got cut or even due to increasing aridity in Rajasthan or the adjoining areas, the moving sands choked the Saraswati and Chautang Rivers of Haryana. The relict beds are now more or less low plains. At present only the Ghaggar is a seasonal flowing river in north Haryana.

R.D. Oldham (1886: 339) has discussed the connection between the eastern Nara and the Indus in great detail and has pointed out the role of the Yamuna as a contributor to the flow of the Ghaggar. He has also expressed possibility of the bifurcation of the course of the Yamuna or Saraswati of the Vedic period in two minor drainage channels - the Sarsuti and Chitang (Chautang) (Oldham 1886: 343). Wilhelmy (1969) was the first scholar who proposed shifting of water from the Chautang to the Yamuna. D.N. Wadia has proposed that the Yamuna flowed through Punjab in the Vedic era under the name of the Saraswati. “In the course of time it took a more easterly course and merged into Ganges at Prayag. It then received the name Jamuna” (Wadia 1966). H.T. Lambrick (1964) also states that the Yamuna was at one time a contributor, by way of the ancient bed of the Chitang, itself a mile wide, slipped off the ridge to the eastward. However, the recent observation made by this team suggests that the Chautang and the Yamuna were always flowing parallel and there is no possibility of a merger between the former and latter.

Bimal Ghose et al. (1979: 446-51) on the basis of interpretation of aerial photographs and LANDSAT imagery, indicated the existence of a wide valley of the Saraswati running from Suratgarh through Anupgarh to Fort Abbas and Ahamadpur. Further from Anupgarh, another wide belt, in discontinuous patches ran southward up to Sakhi, then through the dark strip of vegetation through Khangarh, Islamgarh, Dharmi Khu, Ghantel, Shahgarh, Bubuwali and Rajar. This was the course of the Saraswati from the Himalayas to the Rann of Kutch after the river-severed relation to the Luni. Afterward the river gradually shifted westward and occupied the Wahinda and the Raini courses. This was followed by another shift westward to meet Sutlej near Ahemadpur East. The probable cause of these shifts is attributed to the advancing sand and aridity. Possibilities of mild tectonic movements are not ruled out by the authors.

Yash Pal et al. (1984: 496) on the basis of remote sensing data, noticed a peculiar feature of the old beds of the Ghaggar that it tends to flow along straight lines joined together at sharp angles. It reflects a structural control as the old Ghaggar seems to have flowed into an unstable channel controlled by the lineaments, probably enechelon faults. A little tectonic movement was sufficient to disturb its previous course and forced it into the present channel. Similar evidence has been noticed in the case of the Sutlej, as the river had left a multitude of small channels till it found its present channel. The authors have also proposed
that the Sutlej was the main tributary of the Ghaggar in the past. Probably the tectonic uplift, capture of the Sutlej by the Beas through headward erosion and extensive fault in which the river was diverted, were considered as possible reasons for the shift of the Sutlej into the Indus system. The sharp westward right angle bend in the course of Satluj near the west of Ropar, was pointed as evidence of the river capture. They further state that the other major river system contributing to the Ghaggar was the Yamuna. A map based on the satellite imagery shows that the Yamuna changed its course almost three times before it occupied the present course. Based on archaeological evidence, the authors have reconstructed chronology of the geo-cultural events in the Ghaggar Basin. The Ghaggar was considered as a living river during the pre-Harappan and the Harappan times (3200 BC - 2600 BC and 2600 BC - 2000 BC respectively). The Chautang was considered as a living river even during the Late Harappan times (Yash Pal et al. 1984: 496).

The archaeological survey carried out by the present authors in 2007 in parts of Hanumangarh and Ganganagar Districts of Rajasthan and Bhiwani and Rohtak Districts of Haryana have recorded some of the sites with the help of the GPS. Surprisingly all the sites near Anupgarh area are actually located in the Ghaggar River course. This is very interesting and suggests that the Ghaggar (Saraswati) River had dried much before the emergence of the pre-Harappan culture in this area. The true picture will emerge only when all the known and unknown sites are visited and recorded using the GPS.

Baladev Sahai suggests that tectonic movements have played a primary role in bringing about changes in river systems in northwestern Indian subcontinent. Climatic factors must have accentuated the effect but not played a major role (Sahai 1999: 128). Thussu also believes that changes in the direction of rivers could be result of combination of east-west and north-south forces related to the northward drift of the Indian peninsula. According to him, Somb and Boli - the tributaries of the present day Yamuna, were the main streams contributing to the Sarasvati. The Yamuna was flowing through the Rakshi Nala/Chautang River (Thussu 1999: 205-217). Malik and others also highlighted the evolution of the delta complex of the Sarasvati and other extinct rivers of northwest India and the role of tectonic movements and aridity. In their recent investigations of the Rann of Kachchh, they proposed that the formation of the delta complex system was a result of contribution of three rivers - Proto Shatadru (Hakra), Saraswati and Drishadvati Rivers. They also recorded evidence of a fragmentary delta near the western flank of the Nagar Parker Hill joining the relict channel of the Sukri, a branch of the Luni River. This is identified with the ancient Drishadvati. A sequence of neo-tectonics around 3500 to 3000 years ago caused a significant decrease in the flow of water in the Sarasvati and the Drishadvati, while the Shatadru was diverted towards Indus (Malik et al. 1999: 163-174).

S.P. Gupta has reviewed the available geological data and substantiated it with historical and archaeological literature (Gupta 2001: 30-5) and has strongly advocated the Sarasvati as a glacier fed river. R.S. Bisht (2002) states “the observations made and the theories propounded or conclusions drawn should remain subject to archaeological corroboration, because the palaeo-channels recorded in the imagery could belong to any point of time in the lifetime of the river system. Valdia (2002) supported the idea of continental drift being the cause for the tectonic upheavals and in turn being the cause of the hydrological changes in the northwest India. He states “the Saraswati River flowed through a wide channel, now known as the Ghaggar in the southwestern Haryana and adjoining northern Rajasthan. Its major tributary the Drishadvati, now known as the Chautang, drained the eastern uplands of Haryana. It was the floodplain of the Saraswati in which the Harappan settlements were located. More interdisciplinary work is required to understand the courses of the Ghaggar and the Chautang and their
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relation with the Harappan culture. There is a need to establish the time bracket of the active and passive phases of this important river system.

RESEARCH METHODOLOGY

Extensive as well as intensive exploration was carried out in parts of the Ghaggar Basin, particularly near the confluence of the Ghaggar and the Chautang and in and around sites like Rakhiigarhi, Mitathal and Farmana in the Haryana state. It was decided to visit the known sites and record correctly their coordinates using the GPS and to undertake systematic sampling of pottery and other artefacts from the surface and cut sections. We would like to record that most of the sites, baring a few prominent and protected ones, discovered earlier have been either damaged or flattened out by the local residents for agricultural or developmental purposes. The sites are on the verge of extinction. The survey team has tried to rescue whatever was left of these sites. Systematic collection of pottery and other artefacts from the surfaces of these sites was not possible because of their disturbed condition. The coordinates of most of the sites discovered earlier was found to be wrong and therefore the present team used the accurate GPS to record these details. Around the major archaeological sites like Farmana and Mitathal was carried out site catchment analysis, and satellite and burial sites were recorded. The data we have generated is however not enough to discuss the settlement pattern of these sites. On the basis of detailed analysis of archaeological sites and their surrounding ecological conditions, different categories of sites such as the regional centre, farming village, craft manufacture centre, etc. have been identified.

One of the important aims of the work undertaken during the 2006-07 season was to identify one site for the purpose detailed field research. In order to discover such a potential site, three sites namely Girawad, Farmana (both in Rohtak District) and Mitathal (Bhiwani District) all within the Haryana State (Figure 1) were subjected to varying degrees of excavation. The excavation work commenced at Girawad was mainly to rescue the remains from the site before it was converted into an agricultural field. The entire habitation deposit had been removed by the owner and at the base of the site were various remains visible. These features were rescued before being completely destroyed. The excavation method that was followed here was simple. The various features were all brought in properly laid and numbered grids and then they were first traced on plan and then excavated. The site of Farmana is the second largest Harappan site in Harayana, which is also under cultivation. The owners of the site were digging out the habitation soil by using mechanical devices to sell commercially. As a result, the central part of the site was badly damaged. With great difficulty the farmers were convinced to stop this destruction of the site and we managed to obtain their permission to undertake major excavation at the site by following vertical and horizontal excavation methods. The case is similar with the site of Mitathal. By using bulldozers and earth movers, the peripheral portion of the site was being completely removed when the present team visited this area in March 2007. In order to cease this destruction of the site, the Archaeological Survey of India was approached for the permission to initiate rescue work. Besides, there was a need to take a fresh sequence of the site as tremendous amount of data had been generated since its first excavation, carried out in the 1960's (Suraj Bhan 1975). In order to obtain the cultural and ceramic sequence of the site, vertical excavation in the highest portion of the so-called citadel mound was undertaken. However, due to the want of time, the excavation could not reach the natural level and therefore it was not possible to obtain a complete cultural sequence.
EXPLORATION IN THE GHAGGAR BASIN

In the course of the exploration in the Ghaggar Basin, parts of the Rohtak and Bhiwani Districts of Haryana and the Ganganagar and Hanumangarh Districts of Rajasthan were covered and 25 sites were visited, some of which already known and some new (Figure 1). Of these the following sites located in the vicinity of the site of Farmana have been studied in great detail. These sites fall in the Meham Block of the Rohtak District, which is very rich in fertile arable soil and silt, and is the chief raw material today for bricks and pottery in this region. Explorations carried out earlier by scholars like Suraj Bhan (1975), Silak Ram (1972) and more recently Vivek Dangi (2006) have brought to light around 70 sites of the Pre/Early Harappan, Mature Harappan, Late Harappan, Historical and Medieval periods. The following are the distribution of sites of different cultural periods in this region:

- Hakra culture: 3
- Early Harappan: 8
- Mature Harappan: 7
- Late Harappan: 31
- Painted Grey Ware culture: 24
- Early historical and historical periods: 24
- Medieval: 37

(Dangi in press)

The sites of Bedwa, Putti Semen and Kheri Meham located in the vicinity of the site of Farmana have been studied in great detail.

BEDWA (29°04’04” N and 76°17’45” E)

This is a burial site of the Harappan phase located in the jurisdiction of the village of the same name. The village Bedwa is located at a distance of about 13 km north of Meham town, Rohtak District. The Burial site is located about 300 m to the southwest of the present village in the sand dunes. The site was discovered accidentally when some villagers noticed

Figure 2  Burial site at Bedwa
Figure 3  Bedwa  Pottery, surface collection (ca. 1:2)

Figure 4  Bedwa  Pottery, surface collection (ca. 1:2)
Figure 5  Bedwa  Pottery, surface collection (ca. 1:2)

Figure 6  Bedwa  Pottery, surface collection (ca. 1:2)
human bones and pottery while cutting through these dunes, who then informed Appu Singh, while he was pursuing his Masters’ degree from the Department of History, M.D. University, Rohtak in 2004-05. During the course of investigation, at least 14 graves with grave goods were noticed and they were spread over an area of roughly one hectare. The bodies were laid in an extended position on their back in the north-south direction with the head towards north and near the head were placed grave goods which were mostly ceramic pots of various sizes of bowls, dish-on-stands, lota-shaped pots, perforated jars, spherical collarless pots, miniature pots and small beakers. Normally only four pots were kept in each grave, but in some cases more than four pots were also noticed. This may reflect the economic or social status of the person. Dish-on-stands found here have long stems, whereas vases are elliptical in shape. All these pots are made from very fine to slightly coarse clay on a fast wheel, treated with pink slip and perfectly fired. The majority of pots are unpainted, whereas a few painted ones bear simple black bands around their bodies.

It was also observed that some of the pots contained ash and human bone fragments. We therefore wonder whether this is the evidence of cremation of dead bodies during the Harappan period. Joshi (Joshi 1990) had also postulated that the Harappans practiced different kind of burial practices and post cremation pot burial is one of them. Chronologically, most of the pottery found from the site belonged to the Late Harappan variety (Figures 3-7), but some of the pots show the signs of early Harappan tradition. In addition to this, some elements of the Mature Harappan phase are also visible in the form of long-stemmed dish-on-stands, perforated jars and even beakers. But in totality, we may place this site to the late phase of the Mature Harappan phase and the early Late Harappan phase.

**PUTHI SEMAN (29°03′47″ N and 76°18′52″ E)**

The burial site in the jurisdiction of the village Puthi Seman, lies roughly 2 km to the west of the village.
Figure 8  Burial site at Puthi Seman

Figure 9  Puthi Seman  Excavated burial
The remains are spread over an area of roughly 1.5 ha. The village Puthi Seman is situated at a distance of about 20 km from Meham town, which also falls in Rohtak District. The evidence of the Harappan cemetery found here is exactly similar to the one found in the village Bedwa. The type of pottery found in the graves and orientation of the dead body in a pit is exactly similar as that at Bedwa. One of the burials visible in the section, was cleared by this team (Figure 9). The body was in the north-south direction and only one small lota was found surviving near its head (Figure 10). The head and pelvic portion of the dead body were placed on large flat fragments of storage jar.

Discovery of the Harappan cemeteries in the Ghaggar Basin have considerably added to our existing knowledge about the Harappan funerary practices. Considering the fact that no habitation site was found in the proximity of these burial sites, it can be surmised that they both belonged to the site of Farmana, which is a very extensive site (18 ha). Both of them fall in the catchment area of Farmana. The nature of pottery found at these burial sites is different from that found at Farmana and it is quite likely that distinct pottery was specifically manufactured for offering in the burials by the potters from Farmana. One of the interesting observations made of the burials in the Ghaggar Basin is that the burial goods consist only of pots and no ornaments or weapons have been recovered so far. This is in contrast to the evidence found at Sanauli, located close to the Ghaggar area in the Yamuna Doab. The quantity and variety of burial goods found in the Sanauli burials are quite large, which include an assortment of pots, ornaments such as carnelian and gold beads and weaponry including a copper dagger (Sharma et al. 2005-06). This variation could be the regional manifestation of the Harappan culture in the Ghaggar Basin.

KHERI MEHAM (76°22’10”N and 29°06’55”E)
The archaeological site discovered in the jurisdiction of the modern village Kheri Meham, is located roughly 500 m north of the Meham town in the Rohtak District. It is situated about 200 m north of
Figure 11  Kheri Meham  General view of the site

Figure 12  Kheri Meham  Pottery, surface collection (ca. 1:2)
Figure 13  Kheri Meham  Pottery, surface collection (ca. 1:2)

Figure 14  Kheri Meham  Pottery, surface collection (ca. 1:2)
Figure 15  Kheri Meham  Miscellaneous objects, surface collection (ca. 1:1)

Figure 16  Kheri Meham  Miscellaneous objects, surface collection (ca. 1:1)
the present village. The site is spread over an area of about 2.7 ha and its extant thickness of the cultural deposit is 1 m above the ground level. The whole site is under cultivation. It has yielded remains of the Hakra culture, the Early Harappan, Mature Harappan, Late Harappan, Historical and Medieval periods (Figures 12-16). The site is quite rich in pottery and other objects. A large number of beads and bangles of faience found at the site leads us to surmise that this was one of the manufacture centres of faience objects in this region. Other surface finds include terracotta cakes of different shapes, i.e. triangular, circular, idli-shaped and musthika, terracotta bangles, terracotta biconical beads, and hubbed wheel, beads of agate, carlilean, steatite, etc. (Dangi 2006).

MADINA

In the jurisdiction of the village Madina are situated seven different archaeological locales (Dangi 2006), of which two localities that produced Harappan pottery have been studied by the present team. They are Madina-I (76°30'15"N and 29°04'02"E) (Figure 17) about 1.5 km west of the village adjacent to the Mokhra-Minor and Madina-V (76°30'50" N and 29°33'45" E) located 2.5 km east of the village and about 800 m north of a radio station. These sites are badly damaged as they have now been converted into agricultural fields. The ceramic assemblages collected from these two sites include the Mature, Late Harappan and the Painted Grey ware pottery with associated pottery (Figures 18-23).

**EXCAVATION AT GIRAWAD (GRW)**

The site of Girawad (28°58'41" N and 76°28'47" E), one of the important pre-Harappan sites in Haryana was selected for excavation mainly to salvage the remains, which otherwise would have been lost forever. The ancient site known as ‘kheri’, lies roughly

![Figure 17 Madina General view of the site](image)
Figure 18  Madina Pottery, surface collection (ca. 1:2)

Figure 19  Madina Pottery, surface collection (ca. 1:2)
Figure 20 Madina Pottery, surface collection (ca. 1:2)

Figure 21 Madina Pottery, surface collection (ca. 1:2)
Figure 22  Madina Pottery, surface collection (ca. 1:2)

Figure 23  Madina Pottery, surface collection (ca. 1:2)
Figure 24  Madina  Miscellaneous objects, surface collection (ca. 1:1)

Figure 25  Madina  Miscellaneous objects, surface collection (ca. 1:1)
3 km to the east of the present village Girawad, falling in the jurisdiction of the Meham Block of the Rohtak District, Haryana. The village is roughly 22 km northeast of the Meham town and lies to about the same distance to the southwest of Rohtak. The ancient site, circular in plan, is an extensive single culture site spread over an area of roughly 8 hectares. This site was discovered by Vivek Dangi (2006), who has reported the presence of the Hakra, Early Harappan, Mature Harappan and Late Harappan remains from the site. However, excavations undertaken here have revealed the remains of only the Hakra Culture.

A metal road between Girawad and Samar Gopalpur runs through the site. In fact, the site had been previously dug to build this road of 1 m in thickness. The site is under the ownership of four different farmers and each one has tried to remove habitation soil and to bring it under cultivation. In this process, the entire habitation deposit has been scraped (Figures 27 and 28). The major portion of the site lies on the northern side of the metal road. When we had visited the site in early March 2007 a number of features, including a part of the mud platform, pits, large burnt patches, brick attribution and even a complete plan of a couple of fireplaces (kilns) were visible at the base of the site. The features visible on the base surface of the site are mostly confined to the southern side of the metal road. It was this area which was selected for a rescue excavation.

From the datum point 41 trenches measuring 5 m by 5 m were laid. All the trenches were located on the northern side of the datum point (Figures 26 and 29). These trenches have been given simple numerical numbers starting from 1. Trenches no.1 to 5, situated near the datum point, were not excavated, simply because the features were not visible on the surface. Trenches nos.6, 7 and 8 were located on the eastern margin of the area. They are numbered from south to
Exploration in the Ghaggar Basin

Figure 27  Girawad  General view of the site before excavation

Figure 28  Girawad  General view of the features before excavation
Figure 29 Girawad Plan of excavated features
north. Trenches nos.11, 12, 13, 16, 17, 18, 19, 22, 23, 24, 25, 27, 28, 29, 30, 31, 32, 33, 35, 36, 37, 38, 39, 40 and 41 were all located to the western side of the first line consisting of Trench nos.6 to 9. Some of the trenches in a series, with no features visible, were not excavated.

The first settlers at the site built a very strong mud platform, in which different features were made. The mud platform was visible over an area of 50 m from east to west by 30 m from north to south. All the features that have been excavated belong to the earliest occupation of the site. The ceramic assemblage found here appears to be slightly different from that of Kunal and can be dated to around the middle of the Fourth Millennium BC. The pottery from this site indicates its early stage of development as it is partly wheel-made and partly hand-made unlike the Kunal pottery, which is fast wheel-made.

Though the pottery from Girawad is similar to those reported as the Hakra Ware Culture by M.R. Mughal (1997), the regional variation can be observed in the surface treatment, decorations and shapes. Although some of the features of the pottery are similar to those found at Siswal, they also contains a lot of variations. Therefore, we preferred to term the pre-Harappan phase at Girawad as Regional Hakra Culture Tradition in the Ghaggar Basin.

The outline of the features become visible immediately after scraping the surface of the area selected for excavation. The features which have been excavated in the designated area include circular or irregular oblong shallow pit-dwellings with occasional post-holes on their peripheries, garbage and storage pits, small circular shallow depressions possibly for accommodating large jars, post-holes, full pots and storage jars survived in their bases and fire places (kilns). The functional analysis of these features is based on their nature and content. It was observed that the pit-dwellings excavated formed different complexes and each complex consisted of features like dwelling pits, storage and garbage pits, sometimes storage jars and even shallow pits identified as bases.
of large round-based pots. In all 60 different features were excavated and they were found to be associated with 13 different pit-dwelling complexes identified in the excavated area. The following are the different complexes.

STRUCTURAL REMAINS

Pit-dwelling complex no.1 (Figure 31)

(Feature nos. 1, 4, 5, 6, 37, 37A, 38, 38A and 38B)

Feature no. 1 is a shallow pit-dwelling to which were associated nos.37 and 38A (possibly garbage pits), 37a (depression for holding saddle quern), 4 (extension of pit-dwelling No. 1), 5, 6 and 38 (storage pits), and 38B (identified as the base of a water storage pot). These features are oriented 10° in the northeast-southwest direction.

Feature no.1, oblong in plan and located in Trenches nos.6, 7, 11 and 12, has been identified as a pit-dwelling of the complex. It is 2.20 m long, 3.75 m wide and 10 cm deep. Towards its northwest end, there is a circle (1.50 m in diameter), made of clay which could be identified as a base of a storage bin. It has an opening towards the eastern side which is 1.40 m wide. On the edge of the pit are noticed a number of post-holes (6 in number) located along the margin of the eastern line. Inside the pit-dwelling is a well-made, smooth and hard floor which appears to have also been plastered.

Feature no. 37 (Tr. no.6) (orientation east-west) identified as a garbage pit, is oval in plan measuring 2.50 m in length and 1.30 m in width. It is 60 cm deep. The irregular shape of the pit, the uneven base
and the presence of a large amount of pottery and bone suggest that it could be a garbage pit of the pit-dwelling complex no.1.

Feature no. 37A (In Tr. nos. 6 and 11) (orientation east-west) is located 60 cm to the west of Feature no. 37 and 60 cm to the south of the pit-dwelling Feature no. 1, is a very shallow (7 cm in depth) oval pit measuring 90 cm (north-south) and 60cm (east-west). Considering its shallow depth, it could be identified as a depression for most probably holding a saddle-quern.

Feature no. 4 (Tr. no.11) (orientation 20° northwest-southeast), located at the southwestern corner of the pit-dwelling Feature no. 1 is oblong measuring 90 cm (east-west) by 60 cm (north-south) and 35 cm deep. The surface of the base is uneven. This pit, directly connected to the pit-dwelling Feature no. 1, was probably meant for collecting dirty water resulting from the draining of the pit. The very fact that it has an uneven but smooth surface made of hard clay supports the assumption.

Feature no. 5 (Tr. no.11) is located towards the western side of Feature no.4 at a distance of 15 cm. It is circular in plan (50 cm in diameter) with perfectly vertical sides and a flat bottom. The pit is 35 cm deep. The sides and bottom are smoothened and is therefore identified as one of the storage pits of the complex.

Feature no.6 (Tr. no.11), located 24 cm to the southwestern direction of Feature no.5, is also perfectly circular in plan with a diameter of 50 cm and depth of 35 cm. It has perfectly vertical sides and a flat bottom plastered. This could be identified as another storage bin of the complex.

Feature no.38 (Tr. no.11), 25 cm to the south of Feature no.4, is circular (60 cm in diameter), cylindrical with a depth of 35 cm. The base of the pit is sagging and could have been used as the third storage pit of the complex.

Feature no.38A (Tr. no.11) (orientation 10° northeast-southwest), located 35 cm to the south of Feature no.6, is an irregular roughly oblong pit. It measures 1.35 m (east-west) by 1 m (north-south).
and tapers towards both the ends. The depth is at 30 cm and contains charred bones and a few pottery fragments. The irregular nature of the pit, its uneven sides and bottom as well as the contents lead us to believe that it was another garbage pit of the complex.

Feature no. 38B (Tr. no.11) is a very small circular pit located 68 cm to the south of Feature no.38A. It is circular with a diameter of 50 cm and a depth of 10 cm. The bottom which is slightly uneven may have been in contact with water for a considerable period as it has been hardened and has formed into clay lumps. This could be identified as a depression for holding a water storage pot with a rounded base.

**Pit-dwelling complex no. 2 (Figure 31)**

(Feature nos.7, 7A, 8, 8A and 2)

Feature no. 7 is a pit-dwelling of the complex whereas other features of the complex include storage pits (nos.2A, 7A, 8, 8A) and a garbage pit (no.2).

Feature no.7 (Tr. no.12) (orientation 300 northwest-southeast) appears to be a shallow pit-dwelling of the complex, as it is considerably large in size and at least two post-holes are visible along its margin. The northwestern part of the pit is semi-circular whereas the southern part is quite irregular in shape. Along the southeast margin it is 2.90 m broad and in the middle 2.30 m, whereas the arch of the pit-dwelling at its maximum width is 2 m. The length of the pit is 3.72 m. It is a very shallow (6 cm in depth) with a rammed floor which is uneven to some extent.

Feature no.2A (Tr. nos.7 and 12) is located 1.28 m to the east of pit Feature no.7. It is circular with a diameter of 70 cm and a depth of 15 cm. The sides and the bottom are symmetrical and smooth. This could be a shallow storage pit of the complex.

Feature no.2 (Tr. no.7) located 35 cm towards the northwestern side of Feature no.2A is circular (diameter 1.20 m) and a very shallow 10 cm depth. As it is badly eroded, its exact use cannot be identified.

Feature no.7A (Tr. no.12) is located 15 cm towards the northeastern corner of pit Feature no.7. It is slightly oval, 1.20 m (east-north) and 1.05 m (north-south). It is 25 cm deep. The sides and the bottom are smooth and symmetrical. This could be identified as another storage pit of the complex.

Feature no.8 (Tr. nos.12 and 13) is located 45 cm to the north of Feature no.7. It is a large circular pit with a diameter of 1.50 m. It is cylindrical with a flat base. The sides and bottom are smoothened. This could be the third storage pit of the complex.

Feature no. 8A (Tr. no.12), 20 cm to the north of Feature no. 7 and 50 cm to the southwest of Feature no.8, is cylindrical with a diameter of 60 cm and a depth of 30 cm. It could be a small storage pit of the complex.

**Pit-dwelling complex no.3 (Figure 31)**

(Feature nos.3 and 9)

These two circular features form one big pit-dwelling in the shape of Arabic numeral ‘8’. The other features of this complex could not be detected as they most probably lie to the north and northeast area which is unexcavated. They are oriented at 500 from northwest to southeast. The diameter of Feature no.3 is 2 m whereas that of no.9 is 3.05 m. The maximum depth of the pit-dwelling along the western edge of pit Feature no.9 is 20 cm. Feature no.2 associated with Pit-dwelling complex 2 could also be associated with this complex as it is located equidistant from both. The other features of this complex which are most probably are located in north and northeast could not be excavated as it was a part of the unexcavated area, owing to the presence of the metal road.

**Pit-dwelling complex no.4 (Figure 35)**

(Feature nos. 11, 15, 12, 13, 17 and 17A)

Feature no. 11 is the main pit-dwelling of this complex. The other features associated with this could be identified as storage pits (nos.15, 17 and 17A), a depression for holding a round base storage jar (no.12) and garbage pit (no.13).

Feature no.11 (Tr. nos.13 and 18) is a pear-shaped
Figure 33  Girwad  Feature no.7, Pit-dwelling complex no.2, from southwest

Figure 34  Girawad  Feature nos.7A, 8, 8A and 10, from south
Pit-dwelling of the complex, oriented 50° from northwest to southeast. The length of the pit is 2.90 m and the diameter of the circular portion is 2.20 m. The pit is 72 cm deep. The sides are perfectly vertical and flat at the base. Three post-holes are visible along the periphery, two near the narrow side (northwest) and one outside the southeastern end. This has been identified as a pit-dwelling, because of its large size with vertical sides, flat base all well-smoothened and the two post-holes on the periphery.

Feature no. 15 (Tr. no. 18) located 30 cm to the southwest of Feature no.11 is an oval pit oriented 10° from northeast to southeast. It measures 90 cm (north-south) by 80 cm (east-west). It is 25 cm deep. The sides and the bottom are smoothened and plastered and can therefore be identified as a shallow storage pit of the complex.

Feature no. 12 (Tr. no. 13), located 70 cm to the north of Feature no.11, is a small roughly circular pit with a diameter of 40 cm and a depth of 25 cm. It has straight sides and a concave base. This could have been utilized for holding a round bottom storage jar.

Feature no. 13 is located 1.90 m to the north of the Feature no.11. It is a circular pit with a diameter of 1.50 m. The upper part is completely eroded and only the basal portion remains. The pit contains large potsherds and charred bones. Considering the context and nature of the pit, it could be identified as the garbage pit of the complex.

Feature no. 17 (Tr. no. 19) is located 1.10 m to the northwest end of the Feature no.11. It is a cylindrical pit with a diameter of 1.25 m and a depth 15 cm. This could be identified as the base of a storage bin.

Feature no. 17A located 15 cm to the west of the Feature no.17, is irregular in shape. It is 1 m by 80 cm and is 25 cm deep. The bottom of the pit is flat and smooth. This could be identified as a container of the complex no.4.

Pit-dwelling complex no. 5 (Figure 31)

(Feature nos. 14B, 14, 14A, 14C and 40)

Feature no. 14B has been identified as a pit-dwelling
Figure 36  Girawad  Feature no.14, Pit-dwelling complexes nos.5 and 6, from south

Figure 37  Girawad  Feature no.14B, Pit-dwelling complex no.5, from east
of the complex. The other features include depressions for holding a round-base pot (nos.14C and 14A), garbage pits (nos.14 and 40) and a storage jar. The dwelling pit of the complex is small. It is quite likely that the open space available within this complex may also have been used for carrying out lot of domestic activities.

Feature no.14B (Tr. no.16), is a shallow pit that can be identified as the pit-dwelling of the complex. It is broad in the middle and tapers towards both ends. It is oriented in the north-south direction. The northern end is narrower (40 cm) than the southern end (75 cm). Its maximum width in the middle is 1.90 m. The total length of the pit is 3.10 m and 50 cm deep. The original floor of the pit which is hard, compact and smooth has survived in the northern half. Four post-holes are found associated with this pit.

Feature no.14C (Tr. no.16) is located 80 cm to the south of the southern end of pit Feature no. 14B. It is a small, circular (40 cm) shallow (7 cm depth) pit with a well made flat and smooth base. This may be identified as a depression to hold a round base jar and forms a part of this complex.

Feature no.14A (Tr. no.16) located 50 cm to the west of the northern end of Feature no.14B, is a small, circular pit (45 cm in diameter and 20 cm in depth). This also appears to take the shape of a round bottom pot as it gradually slopes towards the base thereby akin to the shape of base of the pot.

Feature no.14 (Tr. no.17) is a horseshoe-shaped pit located 1 m to the north of the northern edge of Feature no.14B. This is oriented 20° in northwest-southeast direction. It measures 2.20 m in length, 1.45 m in width and 50 cm in depth. The base which is uneven contains a number of large charred animal bones. This could be linked with this complex and may be identified as a garbage pit.

A large storage pot, lower half of which has survived, is located 1.05 m to the east of the eastern line of pit Feature no.14B. It is a part of a large globular vessel probably resembling the Hakra mud appliqué ware.

The diameter of the pot is 45 cm and has survived to a height of 25 cm.

Feature no.40 (Tr. no.22) located 2.50 m to the north of Feature no.14B, is a large circular, shallow pit with a sagging base. The diameter is 1.80 m and 30 cm deep in the middle. Originally the pit may have been used for storage as it is perfectly symmetrical and the surface is smooth but later when it fell into disuse it was used as a garbage pit as it contains a number of large animal bones and potsherds.

The dwelling pit of the complex is small. It is quite likely that the open space available within this complex may also have been utilized for an assortment of domestic activities. This open space is made of mud, which is rammed hard and plastered.

Pit-dwelling complex no 6 (Figure 31)
(Feature nos. 39, 19, 18 and 14)

Feature no.39 is identified as a pit-dwelling of the complex. Feature nos.19 and 18 could be identified as storage pits and Feature no.14 as garbage pit.

Feature no.39 (Tr. no.18) appears to be a dwelling pit of the complex as it is the largest among the pits included in the complex and has a well-made floor. It is oval in plan and measures 2 m by 1.65 m and is 12 cm in depth. The sides are perfectly vertical and the floor is horizontal and well-made.

Feature no.19 (Tr. no.24) is located to the southwest of Feature no. 39 at a distance of 65 cm. It is perfectly cylindrical, 80 cm in diameter with a flat base and is 50 cm deep. The sides and the base are plastered with clay. This appears to be one of the storage pits of the complex.

Feature no.19 (Tr. no.24) is located to the southwest of Feature no. 39 at a distance of 65 cm. It is perfectly cylindrical, 80 cm in diameter with a flat base and is 50 cm deep. The sides and the base are plastered with clay. This appears to be one of the storage pits of the complex.

Feature no.18 (Tr. no.23) to the south of pit Feature no.19 at a distance of 66 cm is another storage pit of the complex, slightly oblong in shape. It measures 1.20 m by 1 m. It is 70 cm deep. The sides of the pit are smooth and well-plastered. It appears to be a storage pit. Subsequently, after its disuse it was dumped with garbage.

The pit no.14 also appers to be a garbage pit of the
Figure 38  Girawad  Feature nos.20 and 20A, Pit-dwelling comlex no.7, from south

Figure 39  Girawad  Feature no.20A, Pit-dwelling comlex no.7, from south
complex as it contains pottery and bones. It is not very far from Feature no. 18, at 2.73 m to its east.

**Pit-dwelling complex no. 7** (Figure 35)

**(Feature nos. 20, 20A, 21, 16, 17B and 22)**

Feature nos. 20 and 22 could be pit-dwellings of this complex. Feature nos. 17B, 20A and 21 could be storage pits, and Feature no. 16 may have been used for collecting dirty water resulting from the cleaning of pit Feature no. 22.

Feature nos. 20 and 22 appear to be pit-dwellings of this complex. Feature no. 20 is situated on the baulk line of Trench nos. 24 and 25. It is slightly oval in shape, measures 2.30 m by 2.06 m and is 30 cm deep. The sides and the bottom are well made and plastered. Three post-holes are located along the periphery. Feature no. 22 is located 40 cm to the northeast of Feature no. 20. It is highly irregular in shape, mainly because of the damage to its edge owing to its proximity to the frequently used metal road. It is a shallow pit lying partially in Trench nos. 19 and 25. The pit is elongated, measuring 4.50 m from east to west and varies in width from 1.40 m towards the western side to 1.20 m in the middle and 2.70 m in the eastern side. The surface is quite uneven. It is made of rammed earth but has developed depressions at places.

Feature no. 21, lies in trench no. 25. It is perfectly circular in shape and has a diameter of 1.15 m and a depth of 60 cm. This cylindrical pit with perfectly vertical sides and flat bottom, also smoothened and plastered may have been used as storage pits for the complex.

Feature no. 20A (Tr. no. 24), situated 16 cm to the south of Feature no. 20 is slightly oblong in plan, measuring 50 cm by 40 cm with a depth of 33 cm. The sides are smooth and well-made and therefore could be a small storage pit of the complex.

Feature no. 16 (Tr. no. 18) is 1.50 m to the east of pit Feature no. 20. It is circular in plan with a diameter of 1 m and a maximum depth of 20 cm. As it is directly connected with pit Feature no. 22, it may have been used for collecting the residual dirty water resulting from the cleaning of pit Feature no. 22.

Feature no. 17B (Tr. no. 9) is a shallow circular pit located near the northern margin of Feature no. 22. It is directly connected to pit Feature no. 22 as there lies no margin between them. The diameter of the pit is 1.10 m and it has survived to a depth of 10 cm. This may have been used as a storage pit.

**Pit-dwelling complex no. 8** (Figure 35)

**(Feature nos. 42 and 43)**

Feature no. 42 is a pit-dwelling, whereas Feature no. 43 is the storage pit of this complex.

Feature no. 42 (Trench no. 24) resembles a horseshoe shape. It measures 2.95 m by 1.60 m. It is not a pit-dwelling in the real sense but can be termed as a sunken-dwelling as it is hardly 3 cm deep. Even though a depression is seen in the middle, it has a rammed smooth floor. Three post-holes are located on its periphery.

Feature no. 43 (Trench nos. 24 and 30) located by the western side of Feature no. 42, is a perfectly cylindrical pit, dug into the platform, and has a diameter of 1.10 m and a depth of 50 cm. The sides and the bottom which is slightly concave are perfectly symmetrical and smoothened by plastering with clay. This can be identified as the storage pit of this complex.

**Pit-dwelling complex no. 9** (Figure 40)

**(Feature nos. 28, 29, 31, 45 and 44)**

Feature nos. 28 and 29 were the sunken dwellings of the complex. Some domestic activities were carried out in Feature nos. 31 and 45, and Feature no. 44 was a storage pit of the complex.

Feature nos. 28 and 29 are rather sunken dwellings of this complex as they are separated by a small ridge which may have acted as a partition between them. Feature no. 28 (Trench nos. 31 and 35) is highly irregular in shape but roughly oblong in plan, oriented 30° from northeast to southwest and narrow towards...
the western end and broad towards the eastern end. It is 3.95 m long and the breadth varies from 1.95 m towards the eastern end to 75 cm towards the western end. Though the floor is well-made, hard and compact it is uneven at places, possibly due to its propinquity to the surface.

Feature no.29 (Trench nos.21 and 25) is made of two circles one large (1.50 m in diameter) and one small (80 cm in diameter). The large circle is located toward the western side and the smaller one towards the eastern side. It is positioned immediately towards the north of Feature no.28. Both are connected to each other and therefore together appear to form a slightly bigger sunken dwelling of the complex. Like Feature no.28 it is also very shallow (5 cm in depth) and has a well-made and smooth floor. On the periphery of both the sunken-dwellings are located post-holes of varying dimensions.

Feature no.31, located in Trench no.32, is situated immediately to the north of the pottery kiln. This feature is highly irregular and oriented in the east-west direction. It is 2 m long from east to west and the width varies from 1 m towards the western side to 60 cm towards the eastern side. It is survived to a depth
of 10 cm. Domestic activity would have been executed out in this pit as it has well-made smooth floors.

Feature no.45 (Trench nos.31 and 38) is also made of two slightly irregular pits connected together. It is situated 66 cm to the southwest of the pottery kiln. It is oriented in the east-west direction with a smaller circle on the western side and a bigger one on the eastern side. The total length of the pit is 2.47 m. The bigger circle is roughly oval in shape measuring 1.96 m from northeast to southwest by 1.60 m from northwest to southeast. The smaller circle has longer axis in the north-south direction measuring 1.55 m by 1 m from east to west. The maximum depth near the southwestern edge is 10 cm. Considering the nature of the floor which is hard compact and smooth, this could also have been used for some domestic activity.

Feature no.44 (Trench no.31) an oval pit measuring 2.40 m from east to west by 1.50 m from north to south) and is 35 cm deep. The sides and the bottom are perfectly symmetrical, smoothened and plastered. This could have been the storage pit of the complex. The area on the exterior of the pits in this complex is very well-made and smooth. Various activities must have been performed in this open space.

**Pit-dwelling complex no. 10 (Figure 40)**

Feature nos.27, 25, 26 and 32 could be identified as pit-dwellings of this complex and they were surrounded by Feature nos.27A, 27B, (both identified as storage pit) and 26A (for carrying out some domestic activities).

Feature no.27 (Trench nos.30 and 37) is oval in plan, which measures 4 m in length (northwest) and 2.50 m (southeast) in width. It was lined with burnt clay lumps survived at places. The floor which is at a depth of 9 cm is slightly concave in the middle. It is well-made, plastered and appears to have been a proper dwelling floor. Two post-holes are seen associated with this pit.

Feature no.27B (Trench no.30) located immediately to the northeast of Feature no.27 is directly connected
to this feature, as there is no separating line between them. The pit is circular in plan with a diameter of 80 cm and survived to a depth of 12 cm. This appears to be a small storage pit, as the sides and the bottom are well-made and plastered.

Feature no.27A (Trench no.30) is an oblong pit oriented 20° from northwest to southeast. It measures 1.20 m by 1.10 m and has a depth of 15 cm. It is vaguely pear-shaped. The sides and bottom are well-made and plastered and could have been used for domestic activity.

Feature no.26A (Trench nos.30 and 37) a semi-circular pit running in the north-south direction, is 1.80 m long and the diameter of the semicircle is 1.90 m. It is 35 cm to the southwest of Feature no.27. The pit is hardly 5 cm deep but has a well-made base which could have been utilized for some domestic activity.

Feature no.32 (Trench no.37) is located to the northwest of Feature no.26A at a distance of 15 cm. The eastern edge of the pit merges with the floor of Feature no.27. The feature is circular in plan with a diameter of 1.15 m and a depth of 7 cm. This may have been an extension of pit-dwelling Feature no.27 as they share an expansion of the same floor level.

Feature nos.25 and 26 (Trench nos.29, 36 and 37) are two circular pits joined together and located on the southwestern margin of Feature no.26A. They form a long elongated dwelling. This is very shallow, hardly 5 cm deep, but has a well-made floor. It measures 4.60 m by 2.50 m. Along the periphery are found a few post-holes.

**Pit-dwelling complex no.11 (Figure 40)**

(Feature nos.35A, 35, 34, 33A, 33B, 33)

Features nos.35A and 35 could be the main dwelling pits of the complex. Feature no.34, the garbage pit, Feature no.33A, the storage pit, Feature no.33 for domestic use and Feature no.33B, a base for a round pot, located in the proximity of the main pit-dwellings, could be associated with this complex.

Feature no.35A (Trench nos.37, 38, 44 and 45) is a highly irregular shallow pit running in the east-west
direction. It appears to be made up of three circles intersecting each other which forms three arches and curves on either ends. The total length is 5.65 m and the width varies from 2.30 m towards the eastern end, 2.60 m in the middle and 2.45 m towards the western end. The feature has a slightly concave, smooth and well-made floor which is survived now to a depth of 15 cm. Three post-holes are situated on the southern periphery. This has been identified as a dwelling pit of the complex.

Feature no.35, located immediately to the west of Feature no.35A, this appears to be an extension of the pit-dwelling Feature no.35A, as it is perfectly circular and attached to it. The large circular pit has a diameter of 2.40 m and a depth of 15 cm. The pit has a large number of charred bones and pottery pieces as well as the impressions of reed.

Feature no.33A (Trench no.38) is situated to the north of the eastern end of the pit Feature no.35A at a distance of 50 cm. It is perfectly circular (1.25 m in diameter) with perfectly vertical sides and the base perfectly flat. It is 25 cm deep. The sides and the bottom are plastered with clay. This could be the storage pit of the complex.

Feature no.33B (Trench no.38) situated 70 cm to the west of the pit Feature no.45, is a shallow circular pit with a concave base. The diameter is 47 cm and is 8 cm deep. This could have been used as a base for a
Exploration in the Ghaggar Basin

Figure 44 Girawad  Feature no.33A, Pit-dwelling complex no.11, from north

Figure 45 Girawad  Feature no.33B, Pit-dwelling complex no.9, from the above
round bottom pot belonging to complex no.9.

**Pit-dwelling complex no.12 (Figure 40)**

(Feature nos.36, 47 and 48)

Only three features of this complex have been excavated. Feature no.48, partially excavated, could be the main pit-dwelling of this complex. This complex may belong to a potter, as Feature no.36 is a pottery kiln of the complex. Feature no.47 may have been used for some domestic activities.

Feature no.36 (Trench no.46) is a small pottery kiln, roughly oval but slightly irregular in plan. It is oriented in the north-south direction, measuring 1.70 m by 1.45 m. It is survived to depth of 35 cm. It has a concave base slightly deep in the centre, and the base and the sides of the pit are burnt red. It contains a large number of broken pots of different varieties, burnt clay lumps and circular clay cushions. One of the clay cushions discovered in it has a diameter of 25 cm. It appears that the large storage jars were placed vertically on these cushions for firing. The ‘house complex’ presumably of a potter is located 30 cm to its northwestern side and is represented by two pits Feature nos.47 and 48 which have been partially excavated. These pits are located at a distance of 2.10 m.

Feature no.47 (Trench no.46), oval in plan and oriented 40° in the northwest-southeast direction, has been excavated to a length of 1.50 m. The southeastern circular end has a diameter of 1.55 m. The pit has an uneven but hard floor at a depth of 12 cm.

Feature no.48 is located immediately to the northeast of Feature no.47. This appears to be a large circular pit-dwelling, one-third area of which has been partially excavated here. The pit is lined with burnt clay lumps and is 17 cm deep. It has been excavated over an area of 1.90 m by 55 cm. The exact diameter could not be measured. As it has a rammed floor, it could possibly be used for residential purposes.

![Feature no.36, Pit-dwelling complex no.11, from south](image)
Pit-dwelling complex no. 13 (Figure 47)
(Feature nos.23, 50, 50A, 50B and 46)

This complex consisted of a pit-dwelling (Feature no.46), storage pits (Feature nos.50, 50A and 50B), a pottery kiln (Feature no.23) and a storage jar.

Feature no.46 (Trench no. 34), though disturbed to a great extent, appears to be a large circular pit, only a small crescent-shaped portion of which is visible. It is lined with clay plaster of 10 cm thick. The diameter of the crescent is 1.70 m. The clay lining of the pit was burnt red suggesting that it was perhaps destroyed by fire. This pit may have been a large pit-dwelling of the complex but the present data cannot confirm this.

The storage jar, which lies in Trench no.28, is located 70 cm east of the northeastern corner of the pottery kiln (Feature no.23) belonging to this complex. It is a large pot crushed into pieces but the circumference of the pit which is 65 cm could define the size of the jar. The pit is tapering at the base which suggests that the storage jar also was narrow towards the west. It is 40 cm deep.

Feature no.50 (Trenches nos.27 and 28) is situated 1.10 m to the south of the edge of the pottery kiln (Feature no.23). This is an oval pit measuring 1.20 m by 1.05 m. It has a depth of 45 cm. The sides and the bottom are well-plastered and could thereby be acknowledged as the storage pit of the complex.

Feature no.50A (Trench no.27) is a small, circular and shallow pit, 45 cm in diameter and 10 cm in depth. This appears to be a depression used to fit-in the base of the storage jar.

Feature no.50B (Trench no.27) is a cylindrical pit with a diameter of 50 cm and a depth of 35 cm. The sides are perfectly vertical and have a slightly concave base; both are well-made and plastered suggesting it as the storage pit of the complex.

Pottery kiln (Figures 47, 48 and 49)
(Feature no. 23)

Feature no.23 (Trench no.28) is a pottery kiln. This
Figure 48  Girawad  Feature no.23, pottery kiln, from west

Figure 49  Girawad  Feature no.23, pottery kiln, from north
pottery kiln discovered at the site, which is circular in plan and has a long rectangular fire chamber, can be associated with the Pit-dwelling complex no.13. The diameter of the circular pottery kiln is 1.30 m. It has a clay wall made of vertical clay coils, the average thickness of which is 9 cm. The wall has existed to a maximum height of 22 cm. The fluted inner surface of the fireplace is exactly similar to that of another pottery kiln (Feature no.30). Inside the kiln, almost in the centre, are located two rectangular slabs placed horizontally. The eastern slab is located 32 cm to the west of the inner edge of the kiln on its eastern side and 22 cm to the north of the southern edge of the kiln. The slab measures 45 cm in length, 27 cm in height and 13 cm in width. The other slab located on the western side is exactly parallel to the one on the eastern side but has only partially survived. This is also oriented in the north-south direction. The southern end is 25 cm to the east of the western edge. The broken piece of this stand remains to a length of 18 cm. This slab could also have been exactly similar in measurement to the one on the eastern side. The distance between the two slabs is 33 cm. The opening of this fire place is 40 cm wide. The ends project outwards towards the northeastern direction and they are both 20 cm long. The inner surface of the opening was plastered. The fire chamber, made of rough rectangular clay lumps, is 1.10 m in length from the opening edge of the fire place. It is 55 cm broad. Inside the kiln were found burnt lumps of the clay wall, which contain impressions of rice, wheat and barley.

**Pottery kiln** (Figure 50)

*Feature no.30*

Feature no.30 is another pottery kiln (Trench nos.31 and 32). This pear-shaped feature, which could be identified as a pottery kiln, is oriented 70° from northeast to southeast. The kiln is circular, 1.50 m in diameter in plan, with a long fire chamber, 1.05 m in length, located toward its northeastern side. Near its junction inclusive of the circular position, it is 90 cm wide and 45 cm wide towards its end. The kiln
was made in situ of a mud wall, 10 cm in thickness, which is survived to a depth of 50 cm. It was made by placing clay coils vertically making the inner surface look fluted. It is possible that the wall was quite high when constructed, and when it collapsed the remains accumulated inside the kiln. However the height of the original wall cannot be reconstructed at this stage. The fire chamber gradually slopes towards the central portion of the fire pit. In the centre of the feature is located a large circular stem, 65 cm in diameter, made of two courses of large bun-shaped clay lumps set in mud mortar and plastered. The burnt clay lumps found inside have traces of wheat, barley and rice in the clay, being confirmed by Drs. Saraswat and M.D Kajale (personal communication). The total length of the feature from the tip of the fire chamber to the circular end is 2.42 m. It appears that the wheat, barley and rice husks were added to the clay and used while building this feature. This could be identified as a pottery kiln as similar kilns have been reported from a number of pre-Harappan sites in India.

This kiln has been included in the Pit-dwelling complex no.9, but it appears that it belonged to a later than the features located around it. It is unlikely that any activity could have taken place in the immediate vicinity of the fire pits as the intensity of heat produced would prevent other simultaneous activities.

**Mud brick structure** (Figure 51)

At Girawad, the survey across the road revealed the presence of mud-brick walls. The wall made of bricks in the size of the typical Early Harappan ratio of 1:2:3, appears to be of a large structure as it is quite wide (1.20 m). It is survived to a length of almost 3 m. The remains of bricks were found at the base of the habitation and thus contemporary with those pit-dwelling complexes found on the other side of the dividing road. This evidence suggests that the Hakra culture people at the site have also built mud-brick houses. It is quite likely that the area south of the road was occupied by the craftsmen, particularly the potters, whereas the people of the higher social
ranking lived on the northern side of the road. The complexes occupied by the craftsmen were provided with storage facility. There was greater need of storage in the dwellings of the craftsmen as they were paid in kind for their services to the community.

**POTTERY**

Since the site of Girawad was being destroyed using bulldozers for the construction of a road, the archaeological excavations undertaken were more a salvage operation. The actual habitation deposit exposed belonged to the earliest phase of the occupation at the site with pit- or subterranean dwellings belonging to the pre-Harappan phase. Because of the use of heavy machinery at the site the ceramic assemblage had been destroyed in the sense that there are no full pots to be found in order to draw exact conclusions regarding the different types of wares at the site. However in order to overcome this drawback, minute observations have been undertaken in understanding the ceramic industry of the site.

The ceramic assemblage at the site of Girawad constitutes a Red ware industry with varied surface treatments ranging from appliqué to incised decorations and a chocolate/black slip on the body. The ceramic industry as a whole seems to be closely related to the pre-Harappan Hakra wares of the Cholistan desert (Mughal 1997) dated to a period before Kalibangan Period I, early Harappan assemblage from north Rajasthan. The assemblage has been classified on the basis of the differential surface treatments, since the fabric, fineness and shapes are similar throughout the industry. The Grey ware forms a very small part of the assemblage probably less than 1 %, while the bichrome (black and white) painted red ware accounts for an even smaller quantity.

The vessels are made of medium fine fabric without any gritty inclusions, though the presence of tempering in the form of fine sand is clearly visible. The clay is well-levigated as it gives a compact feel to the surface and the core of the pots. The vessels are made on a slow wheel with uneven striation marks in different parts and the use of luting techniques is visible in the manufacture of the complete vessel. Handmade vessels are also quite common using the ring method followed by scooping using a bamboo strip as the evidence of paring marks are clearly visible. In some cases, the rims are wheel-made with perfect striations luted to an uneven body with the finger impressions clearly visible. The vessels are light-weight, medium to thin bodied, except for storage jars which are heavy and have a thick body. In most cases the pottery has a self-slip with smooth surface, while instances of a light to bright red slip have also been noticed independent of the type of surface treatment being used.

The vessels are very well-fired probably using an open kiln, orange to brick red in colour with a completely oxidized red to orangish core, but the overall appearance is dull which could also be the result of high salinity in the soil. While the firing suggests a degree of advanced technique, the undulating surface and limited shapes of the vessels suggest that the industry has not fully evolved when compared to the Harappan period.

Since the ceramic industry predominantly constitutes of Red ware, the wares have been identified keeping in mind the distinctive surface treatment used. The ceramic assemblage of this site is closely associated with that of Bhirrana (Rao et al. 2004, 2005), which has yielded a similar industry in a stratified context and can be used to corroborate evidence at Girawad.

**Mud Appliqué ware** (Figure 52)

Mud Appliqué or Rusticated ware is basically a Red ware with a thick coat of mud mixed with sand or grit which constitutes broken pottery pieces. The vessels are made on slow wheel as is evident from the uneven striations and is often made in parts and then joined or luted together. The vessels in this category are mostly medium-sized with thin and medium thick body and large heavy-duty thick storage jars that are mostly handmade using coil method. Though the vessel has a
compact feel due to the fine well-levigated clay used, it is not well-finished with marks of scooping, paring and even finger impressions on joints.

The basic shapes include medium to large globular pots with everted, rounded, out-curved and out-turned rims with wide mouth or narrow mouth and very short neck. A large number of basins and troughs have also been found in this category including U-shaped large bowls/basins, handmade with a fluted rim and thick mud coating till the rim. Similar shapes have been reported by Mughal (1997: 64, pl. 34, nos. 2,4,5) from Cholistan in the Hakra period. The typical Early Harappan and Harappan shapes are completely absent at the site, indicating its earlier date. The mud coating is applied from below the rim on the neck to the base or from the belly to the base as is evident from sherds therefore designating both the practices. In most cases, the vessel has a self-mud slip, to smoothen the exterior, while few evidences of a light orange wash or dull red slip has also been noticed up to the belly in case of the later example.

In case of basins, there is a slip on the interior, while the exterior is rusticated or appliquéd, and in some instance the interior wall is also decorated with incised wavy/combed pattern. Flat and thick disc bases with mat impressions have also been found in this category where the disc bases belong to troughs and basins while the plain flat bases are of globular pots.

The application of the mud coating, which is more an appliqué with a thick layer of clay, sand and grit than rustication, is done before firing during the leather hard condition of the vessel, as this layer has often peeled off in places in due course of time. Interestingly several sherds indicates a post-firing mud coating as well where the coating was applied on cooking utensils and then put on the hearths probably to prevent it from becoming brittle due to overfiring. Some basins or troughs are also applied with the same coating on the interior which shows evidence of burning and is very interesting, since the author has observed this technique in use even today in Haryana. Households use similar basins or troughs for slow heating of milk.

![Figure 52 Girawad Mud Appliqué ware (ca. 1:1)](image-url)
through the day like over an open oven or slow cooker. Similar observations have also been made by T. Garge (personal communication). However the wide variety and range visible in the style of application of the mud or clay coating and the variation in the vessel variety indicate that besides being utilitarian the appliqué technique was also aesthetic in nature to the pre-Harappan community of Girawad. Due to the absence of full pots at the site, it is difficult to visualize whether the appliqué ware was also painted with black bands on the rim and the shoulder. There are various body sherds and rims painted with black bands in the same fabric as the Mud Appliqué ware, and based on the evidence from other sites like Bhirrana (Rao et al. 2004, 2005) and the Cholistan area (Mughal 1997) it can be concluded that this was also followed at this site.

Chocolate/Black Slipped ware (Figure 53)

Chocolate/Black Slipped ware is basically a well-fired Red ware, though in some cases the core is grayish showing lack of complete oxidation. The vessels are treated with a dark slip. The colour of the slip ranges from chocolate, purple, brown to black probably depending upon the constituency of the colour solution used; thinner the solution, lighter the colour, to a point that in some cases the slip is more like a wash, with the basic red colour of the vessel clearly visible below the slip. The slip sometimes used is very thick and clayish literally forming a layer on the vessel which has peeled off in many parts. In case of a very thick slip, the colour appears to be black and also gives a glossy effect but in very few instances are they burnished. However the presence of mica in the clay gives a glossy sheen to the ware. The slip is applied from the rim to the base or upto the belly, and the part below the belly is sometimes rusticated or left plain and unfinished without any surface treatment. In most cases the slip even continues till the inner lip of the rim or is applied as a band on the inner side of the rim. In some instances, the slip is applied in various tones i.e. varying from light to dark creating a self-
pattern. Similar surface treatment of the Hakra Black Burnished ware from Cholistan has been mentioned by Mughal (1997: 66). A few sherds of this ware have a painted band on the edge of the rim with diagonal strokes emanating from them, while some have a composite decoration on the neck just below the rim of a single band with connected triangle below, which are joined together with loops. However such complex decorative patterns seem to be rare in the assemblage, suggesting a preference for a thick wide bold dark band from the rim to the belly sometimes stretched to the base.

It seems that this ware has a lot in common with the Hakra Black burnished ware, as it is finer when compared to rest of the assemblage with a thin to medium thick body and a compact exterior surface because of the fine clay used. This ware is also manufactured in parts with the rim and base turned out carefully on a wheel with regular parallel striations, while the body is undulating from the interior and the exterior. The interior has paring and scooping marks along with the marks of beating/dabbing and clearly shows joint or luting marks with thick sections and finger impressions.

Most of the shapes include medium to small vessels including globular pots with a short neck, wide mouth everted or out-turned rims or globular pots or jars/vases with high neck and comparatively narrow mouths. The typical Kot Diji type pots with wide mouth, short everted rim, bulbous globular body in medium to large dimensions form an important part. Some examples of rounded and beaked rim basins or troughs and wide mouth sharply carinated shallow bowls or handis along with featureless rim U-shaped bowls have also been found, but most of the assemblage in this ware constitute of globular pots and jars/vases. Well-made thin ring bases are an important characteristic of this ware which have been manufactured on a wheel and then luted to the pot. Disc and flat bases are not uncommon either.

The Chocolate or the Black slipped ware of Girawad seems to form the finer assemblage at the site and can be identified as a deluxe or tableware with smaller serving pots and medium bowls and shallow basin like dishes. It has a lot of similarities with the contemporary site of Bhirrana and also with the Sothi black slipped ware (Dikshit 1984). Also the sites of Cholistan and the earliest phases of Amri have yielded black slipped ware, which seems to be very close in shapes and surface treatment. This ware and the surface treatment has been mentioned by Dalal (1980) during her research in the Saraswati Basin at sites like Baror, Bhirrana, Sothi and others, where she places the site at a level earlier than Kalibangan Period I. The colour of the dark slip used at all these sites seem to be ranging from dark chocolate to black at times depending upon personal perceptions of the scholar studying the pottery.

Red ware (Figure 53)

Red ware at the site seems to form the basic utility ware used for cooking and storage of both water and grains. It is a well-fired medium fabric ware which like all the other categories is both wheel-made and handmade. The rims especially are neatly and skillfully made on the wheel and joined to the body which shows careless scooping and paring marks in both, of hand modelling by the ring method or on slow wheel with undulating surface. The joint is not very well-hidden on the interior, as a thick layer of clay is clearly visible on the neck at the joint. The exterior, however, is smoothened with a self-slip and in some cases a wash or a red slip with burnishing is also present till the belly of the pot, but the former is a more common practice. The lower portion of the pot in some examples seem to be rusticated with a thick layer of clay solution before firing and such instances are a part of the mud appliqué category. The vessels have a medium thick body with flat, disc and ring bases the last being the least common of all. The disc base has been luted to the pot separately and shows hand-modelling with a careless finish and scooping marks
clearly visible. Large storage jars, basins and trough bases also have mat impressions at the bottom.

This category includes both the unpainted plain Red ware and the black painted red ware, with the only difference being in presence or absence of the black decoration. The decorative patterns are simple and unevolved, but have been executed carefully mostly on the upper body of the vessel especially the rim and the neck portion. The pigment used is black but it does not have sheen like the later phases and is under toned where the painting solution used is not very rich in the colour or is watery, since the basic red colour of the ware is visible from below the painted decoration. The designs executed are simple and geometric with the almost complete absence of any faunal or floral motifs again indicating towards its earlier ancestry and its contemporary status with the earliest phase at Kot Diji, Amri and the Hakra levels. The motifs include thin and thick bands on the rim, neck or shoulder in groups or singularly. The inner lip of the rim is often decorated with a band, circles with dots, a band with a single or interconnected loops, circles and triangles sometimes with black fillings. In some examples, the thick band is followed by two lines of loops one-inside the other and the inner loop is filled with black to create a very elegant and simple pattern either just below the rim or on the shoulder. The use of a thick band on the neck followed by groups of thin bands and hatched and latticed triangles or a simple criss-cross pattern is also common and the most intricate or complex in the whole assemblage. Groups of thin black bands are often grouped with wavy lines to give the impression of fish scales, or the eye motif pattern but are not the same as the Early Harappan and Harappan motifs, therefore probably indicating an earlier stage of their evolution.

There is not much variety in the shapes at the site as pots and basins with minor variations in size and the rim type form the basic repertoire. Large and medium globular pots with everted out-turned and out-curved rim with a wide mouth or narrow neck are most common followed by the Kot Diji type globular pots with a bulbous body and a very short neck and everted rim. The basin or troughs with rounded, beaked or square everted rims are also very common which were used for storage like the modern parallels in the region and also for heating milk as mentioned above (rusticated ware). Similar but shallower versions here seem to have been used as dishes. Everted rim with a comparatively higher neck jars have also been recovered, but they are not as evolved as the later, more elegant examples. Several handles have been recovered with a rounded body and a crescent shape which probably formed part of the jars. Large and medium sized convex or U-shaped bowls and a few handis are also present mostly painted with a band on the rim.

Some very small pots with everted rim and a narrow neck and cups/bowls with featureless rims and toy pots have also been recovered which are entirely handmade and self-slipped and not well-fired. Some of these small pots are also painted in black with a band on the lip of the rim followed by loops and circles.

One example of a holed pot (Amri) has also been recovered where the lower neck or the upper shoulder has a hole which is pre-fired and could have been used to hang with a rope tied to it.

The Red ware assemblage has also yielded sherds of fine and thin-bodied vessels sometimes with an orangish slip and bands executed in with a fine hand. However, in the absence of rim sherds and of a larger quantity, it is difficult to say more about this category until further research and analysis is done. It resembles the other categories in the method of manufacture showing undulated surface with scooping marks.

**Incised ware** (Figure 54)

Incised ware at the site is a well-fired Red ware with medium to fine fabric that is tempered with sand. The clay used is well-levigated and hence the ware has a very compact fabric fired brick red to orange
in colour. The firing technique used is the same for all the wares which is the most common, open firing kiln where the pots were piled with fuel around and between them, and fired for a long duration of time for complete oxidation resulting in the completely red core of the vessels. The pots are all without any slip, and in most cases a clayey self-slip has been applied to give a smooth exterior surface. The interior is not well-finished and is similar to the other types mentioned above. In comparison to the other wares this category of ware has a limited collection at the site but is very much a part of the repertoire in terms of firing and fabric, i.e. to say it does not seem to have been imported.

The incised decorations in this category are of two types:

1) Deep incisions using a very pointed tool probably a bone point, often used in combination with punctured marks with or without a ledge forming the border. These deep incisions are very similar to the Red incised ware from the Ahar culture, with the only difference being that the latter has a bright red slip, but the area within the design is left unslipped. The designs include parallel lines, criss-cross or hatched pattern, rows of chevrons or a group of very closely incised chevrons, single wavy line, deep incised dots etc. used in combination to form patterns. When compared to the latter, this form of decoration is executed on a more crudely formed vessel. The shapes include small globular pots or jars. Several rim sherds of basins have been found with incised marks on the lip of the rim. Handmade crescent but flat bodied handles have also been found in the same fabric that probably formed handles of the out-turned rim pots/jugs attached from the rim to mid-belly. Similar shapes have been found at Bhirrana (Rao et al. 2004: pl. 3).

2) The second type is more like the comb-incised
ware described at Kalibangan. To create this pattern, a comb-like instrument is used on the vessel in the leather-hard condition to form multiple (3 or 5) rows of horizontal or wavy pattern. The incisions are not as deep as the above type nor are they shallow as at Kayatha, they form very clear and neat patterns executed in the bold and knowing hand of the artist. One thick sherd probably of a storage jar seems to be incised with a superficial incised pattern using a bamboo strip, but it does not seem to be the common practice. The vessels in this type are well-made mostly on a slow wheel and are only treated with a self-slip on which these patterns are executed. The shapes include globular pots and storage jars along with basins and troughs incised on the exterior shoulder to belly. The Kalibangan type basins incised on the interior are almost completely absent and it seems that it was a later development in the Early Harappan phase.

Though no full pots have been recovered, it is very plausible that black bands were part of the decorative repertoire in this category especially in the comb-incised variety, since similar surface treatment has been noticed at Bhirrana and rim sherds in the same fabric have been recovered at the site. Similar pottery has been reported by Mughal in Cholistan and Frenchman in northwest Rajasthan dated to the pre-Harappan phase. Black paintings of typical Kalibangan type on the incised patterns is completely absent pointing towards the lack of any conclusive evidence in support of its relation to the Early Harappan assemblage at Kalibangan.

**Grooved or Cordoned ware (Figure 56)**

A few sherds of the red ware with a red slip show shallow, horizontal groovings on the neck and shoulder, executed on the wheel during the modeling of the pot either by skillful use of the thumb nail or a comb-like instrument. But the earlier seems more likely. The grooves though not very deep are closely spaced but there are examples of broad grooves and
both styles are more superficial and applied on a secondary clay slip of the main body which has then been applies with a red slip. Parallels can be drawn with the Kot Diji parallel striated ware and the Bhooth ware described by Possehl (1999: 629-630).

**Periano Reserve Slip ware** (Figure 55)
Periano Reserve Slip ware This ware was first identified at the site of Periano Gundai by Fairservis (1959) and spreads over a large area upto Kalibangan and now has been found at the site of Girawad probably the eastern most extremity of the influence zone of the Cholistan-Hakra cultural assemblage (Mughal, 1997). This category of surface treatment includes the application a sandy-clay coating or a slip on the surface of the leather hard vessel to give the appearance of a very smooth sand slipped exterior over which are executed broad wavy and horizontal parallel grooves in low relief with a very gentle but firm hand. The decorative element is restricted only to the secondary slipped surface and has been identified by Mughal (1997) as a "striated surface". This decorative element is common on the large, thick storage vessels which have been made by the coil method as is evident at breakage points (typically along coils), where the sandy-clay slip is clearly visible as a thick extra coating. The fabric is fine without any inclusions and has been fired very well to a brick red colour through out the thickness of the vessel.

**Bichrome painted ware** (Figure 57)
Bichrome painted red ware (use of white and black) as identified at Kalibangan and other sites forms an important part of the Early Harappan pottery assemblage but does not seem to be conspicuous at the site. A few sherds (less than 10) that have been found are tiny body sherds and seem to be more like an infiltration from the upper levels of the site due to the disturbance mentioned in the beginning. Two large rim sherds of an elongated high-necked jar/vase have been recovered which also indicate towards a later intrusion of the form.

**Grey ware**
Similar conclusions can be made regarding the Grey ware and the one sherd of a Cream slipped red ware with black bands and Black-and Red ware which are all very infrequent in the assemblage. The Grey ware has yielded some very fine and thin sherds with black decorations.

**Chronology of the site based on the ceramic study**
Based on an extensive study of the ceramic assemblage it is evident that before the recent destruction of the site, Girawad was a multi-phase site spanning the period of time from the Pre-Harappan to the Harappan. The recent destruction of the site has however removed all but the lowest levels of the site with only stray shards of later pottery being present. The lowest levels of the site have a pottery assemblage
that predates the Kalibangan I period assemblage as is shown by absence of the typical shapes, the bichrome painted decorations and the simplicity of the decorative elements and designs which include horizontal bands, loops, and triangles.

The shapes are limited and more basic in the execution of form and comprise of pots and basins that show a complete absence of typical Early Harappan shapes like vases, pedestaled vessels, dish-on stands, perforated vessels and decorative elements with floral and faunal motifs as well as the use of bichrome designs. The decorative element is aesthetically important in the assemblage but is not very evolved in complexity and composite patterns as compared to the later phases. Its most likely the settlement was agro-pastoral in nature as indicated by the large number of storage vessels of different varieties and the pit dwellings.

In the final analysis it can be concluded that the ceramic industry at Girawad is relatively closer to the Hakra levels of the Cholistan region as described by Mughal (1997) in its assemblage with similarity in shapes, surface treatment and the decorative elements which include very simple black painted designs. It seems that the site of Girawad formed the easternmost extremity of the Hakra influence in its totality as is visible from the ceramics. It is very difficult to pin point the exact date of the site in the absence of C-14 dates but placed stratigraphically the site is definitely earlier than the Kalibangan I phase which has elements from Amri, Kot Diji and Hakra with the early Harappan phase already in progress. The occupation at the site of Girawad can be placed around the mid-Fourth Millennium BC to the early Third Millennium BC; however, the presence of Periano Reserve slip and the grooved or cordonned ware in the upper layers of the occupation, which Mughal (1997) places in the Early Harappan phase of Cholistan indicates its upper end date. This is further emphasized as putting it later during the Early Harappan is not possible as the site with its rare bichrome sherds would lie in the midst of a continuum dominated by Bichrome pottery at this time.

**Graffiti and potters marks** (Figure 58)

A careful examination of the assemblage has also brought to light several graffiti marks and pre-firing potter's marks. The former is a secondary post firing incised mark probably indicating ownership or identifying and relating the goods contained in the vessel its probable value etc.

Four pre-firing potters marks were found, and 18 post firing graffiti marks include different symbols.

Since signs and pictographic symbols have been found through out the pre-/Early and Mature Harappan eras and even later, it is very difficult to associate the site to any phase on the basis of graffiti marks especially as none of the marks resemble the typical Harappan symbols, though there is some superficial similarity. The sprig of barley, the pine tree, the opposed triangles, etc. do resemble other such from various sites such as Balakot and Kalibangan, but these are common symbols with many minor variations and may not be useful for dating the assemblage or for understanding any cultural associations.

**OTHER FINDS** (Figures 59 and 60)

Earlier survey carried out by Vivek Dangi (2006) has brought notice to objects like a couple of gold beads, a copper arrow head, a copper chisel, fragment of fish-hook and many other undefined copper objects, 20 beads of steatite, etc. The excavations have yielded a few steatite microbeads, terracotta globular beads, crude bone tools, perforated and unperforated pottery discs, terracotta bangle fragments, stone sling balls, copper rods, stone querns, pounders and terracotta cakes.
Figure 59  Girawad  Bone tools (ca. 1:1)

Figure 60  Girawad  Terracotta bangles (ca. 1:1)
The ancient site of Farmana (29°02’22"N and 76°18’21"E) that falls in the jurisdiction of three different villages, Farmana, Seman and Bhaini Chandrapal (Bada Bahen), all fall in the Mehem Block of the Rohtak District, and are locally known as Darksh Khera. Since a major portion of the sites lies in the jurisdiction of Farmana village, it is treated as a part of that village. The site was discovered by Suraj Bhan (1974: 125), who reported the presence of Early Siswal (Early Harappan) remains. Subsequently, Surinder Singh (1989: 17) who studied this site in great details estimated its spread over an area of 250 m by 250 m, reporting the presence of the Early Harappan, the Mature Harappan, the Late Harappan, the O.C.P (Ochre-Coloured pottery) and the Early Historic remains at the site. Vivek Dangi (2006) calculates the total area of the site to around 15 hectares and the habitation deposit to around 3 m in thickness. In the course of the exploration, Dangi collected Bichrome and Chocolate-slipped wares, Early Harappan pottery, some with graffiti marks, Harappan, Late Harappan, PGW and Early Historical ceramic assemblages. Few potsherds of pre-Harappan Hakra culture were also recovered from this site (Kumar 2005-06: 197). Besides pottery,
objects recovered from the surface of this site include a complete spear head of copper, copper rods, beads of agate, carnelian, faïence, steatite and terracotta, the Rohri chert blades and cores, hubbed wheels, fragment toy-cart frame, bull figurines, terracotta triangular, ‘8’-shaped, idli-shaped cakes, and faïence and terracotta bangles of the Harappan period were also found.

No doubt, this is the second most important Harappan site in Haryana, which is spread over an area of 18 ha (Figure 61), the figure of which is estimated on the basis of our own survey. It is roughly 25 km away from the site of Rakhigrihi, the largest Harappan site in India, and could be directly connected to it by trade. Farmana is quite big in size and qualifies to be termed as a town or small city. The site is extremely rich in cultural material and appears to have played an important role, both in the social and economic organizations of the Harappans.

One of the aims of the excavation was to study the cultural development from the pre-Harappan to the Mature Harappan in this region and to study the contribution of the pre-Harappan in the making of the Harappan regional manifestations in the Ghaggar basin.

A couple of index trenches at different places within the site were selected for excavation. The first index trench was laid on the highest point of the site, which is to the north of the datum point of the site. It was located 20 m to the north and 5 m to the west of the datum point. The second trench was located 10 m further north from the first index trench and the third index trench 20 m further north and 10 m west from the second index trench. The trenches were given simple Arabic numbers starting from the trench located at the highest point. Excavations could not be continued down in the lower levels in Trench nos. 1 and 2, because of the discovery of brick architecture in them, whereas we managed to reach to the natural soil in Trench no. 3. It was possible to obtain a complete stratigraphy and cultural sequence in all these three trenches in a step manner.
The excavations revealed two distinct cultural periods; Period I - the Hakra Culture and Period II - the Mature Harappan. Since the upper deposit had been removed in the process of converting this site into agricultural land, no remains of the Late Harappan, PGW and Early Historic periods were found in the excavations. The extant habitation deposit at the site was 2 m, in which were found 8 habitation layers. On the basis of the nature of the layer and the content, it appears that layers (7), (7a) and (8) belong to the Hakra phase (total thickness 50 cm). Layer (6) appears to be a transition from the Hakra to the Mature, whereas the first five layers belong to the Mature Harappan period. This will have to be confirmed through the study of the ceramic assemblage.

PERIOD I - REGIONAL HAKRA CULTURE TRADITION
Remains of Hakra culture were excavated in the Index Trench no. 3 at the site. The presence of the Hakra culture was confirmed on account of the ceramic assemblage and pit-dwellings similar to those found at Girawad and Bhirrana in the Fatehabad District of Haryana (Rao et al. 2004). The exact extent of the Hakra culture phase at the site cannot be ascertained at this stage. Excavation in the Index Trench no.3 had yielded some features, one typical pit-dwelling and pottery usually associated with the Hakra Culture. They are as follows.

Features in Layer (8) in Trench no.3 (Figure 63)
Three storage pots and one small cylindrical storage pit were discovered in the western half of this trench. The two pots and the storage pit in the section were straight in a line.

Of the two pots in the section, one is located at a distance of 1.70 m to the north of the southwestern corner. The pot is partially visible. It is a globular storage pot of medium size in Red ware. The other pot

Figure 63   Farmana   General view of Index Trench no.3, from south
**Figure 64** Farmana  Cross-section of pit-dwelling, Index Trench no.3, from south

**Figure 65** Farmana  Pit-dwelling, Index Trench no.3, from west
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is 35 cm in a straight line to the north of the first pot. It is of a similar kind, having been later filled in with burnt clay lumps.

The cylindrical storage pit which is located at a distance of 45 cm to the north of the second pot is circular in plan. It has a diameter of 37 cm and is 50 cm deep. Sides are perfectly vertical and the bottom slightly concave. This could be identified as a small storage pit which was at a later time used for dumping materials.

The third pot located 45 cm to the east of the cylindrical storage pit is similar to the other two pots. It is also globular, slightly thick in section, having a circumference of 45 cm.

It appears that the lower halves of all the three pots were probably placed in a depression. The surface of the clay lined concavity in which the individual pots were placed is burnt red. It is quite likely that an attempt was made to harden the surface of the recesses by burning them.

**Pit-dwelling in Index Trench no. 3 (Figures 64 and 65)**

Along the northern section was found an oblong pit (the major portion of the pit lies to the north of the trench which was left undug). It is located 1.50 m to the east of the western section. The pit is oriented 40° from southwest to northeast. It is 3.20 m long and excavated to a width of 90 cm. The pit was dug by the earliest occupants of the site at the base of layer (8) into the natural soil. The sides are perfectly vertical and smooth whereas the base is slightly concave in the middle. Two post-holes are noticed along the southern margin. Taking into account the existence of the post-holes and well-made sides and bottom, it appears to be a pit-dwelling, exactly similar to those found in the earliest occupation level at Kunal.

**Pottery of Period I**

The repertoire of pottery found in Period I is compared to that of Girawad. The nature of pottery and certain shapes are exactly similar to that of the Hakra culture pottery at Girawad and therefore the pottery from Farmana has not been elaborately discussed here.

The Hakra culture pottery in general is made on either slow turntable or wheel, treated with either slip or is unslipped, made from fine clay and well-fired. The various wares found at the site include wares like Mud Appliqué, Incised (either shallow or deep), Chocolate slipped, Plain and Painted Red wares. In all these different categories, the shapes that are common include vases, bowls, globular pots, small globular pots with handles and cups. Storage jars are rarely found.

The characteristic shapes in the Mud Appliqué ware include medium-size storage jars and small globular pots with slightly flared-out or everted rims. The Incised ware at the site is represented in two distinct categories - superficially incised decorations in combed pattern and deeply incised haphazardly decorated patterns. The shapes found in this category include wide-mouthed basins, *lota*-shaped pots, handled globular pots and convex-sided bowls. The incised decorative linear or curvilinear patterns are found mostly on the outer surface, but in case of wide-mouthed pots, on the inner surface as well. It is also observed that the incised patterns in both the varieties of this ware are confined to the upper half, between the rim and waist portions, and sometimes they are bound by horizontal black painted bands.

The Chocolate slipped ware, one of the characteristic wares of this culture, is found in considerably good quantity. The chocolate slip on the external surface is confined to the upper half of the vessel. The common shapes include globular pots, straight-sided vases, *lota* and bowls.

The Red ware, both plain and painted, is close to the Harappan Red ware. It is sturdy, made from very fine clay and well-baked. Some pots are painted in black with simple geometric bands. Small vases, globular pots, storage jars, basins and occasionally bowls are some of the important types in this ware.

It should be stated that most of the Hakra pottery
Figure 66  Farmana  Structure no.1, Trench no.2, from east

Figure 67  Farmana  Pottery in situ associated Structure no.1, Trench no.2, from south
from Period I continues, albeit in small quantity, in Period II (Mature Harappan) at the site. The other material remains found in this period include micro- and disc beads of steatite, terracotta beads and shell and terracotta bangles.

**PERIOD II - MATURE HARAPPAN**

The Mature Harappan period at the site marks the culmination of the cultural process at the site, which is reflected in their settlement pattern and cultural material. The entire area of 18 hectares was occupied during this period suggesting an expansion of the population. Elaborate remains of well-built and planned brick structures, superior ceramic assemblages, presence of seal and sealing, and rich cultural material excavated in a limited area, all point towards a flourishing in this period. The Mature Harappan phase can tentatively be dated to between 2400 - 2200 BC on the basis of seal and ceramic assemblages found in the excavations.

**Structures**

The remains of a few mud-brick structures excavated from the Mature Harappan levels at the site point to the adoption of modicum of planning. The brick-size used is typical Mature Harappan in the ratio of 1:2:4. Two structural phases have been excavated. Structure no.1 belongs to the early phase (c. 2400 - 2200 BC) and Structure no.2 of the late phase (2200 - 2000 BC). These phases are identified on the basis of their relative positions in the stratigraphy. The other features like construction method, brick size, nature and the type of raw material used for construction are common in both the phases. The description of structures is as follows.

**Structure no.1 (Trench no.2) (Figure 66)**

At the base of layer (3) a mud brick structure which is oriented 30° in the southeast-northwest direction was encountered. It is a roughly rectangular residential structure. It is survived only by its foundation. The structure is almost complete as all its four walls have been excavated. From the inner side it measures 3.60 m from north to south by 2.60 m from east to west. The northern wall of the structure, which is survived by a single course, is 2.20 m long, 30 cm wide and has existed to a height of 34 cm (inclusive of foundation). The house was provided with a broad foundation which is visible in this particular wall as well as in the eastern and western walls. Two post-holes are visible on top of the northern wall.

The southern wall has been exposed along the southern section. There appears to be an entrance (65 cm wide) in the southwest corner of the structure. The total length of the wall is 2.65 m and is 35 cm broad. The foundation and the course of the wall are symmetrical and are overlying each other unlike the northern wall. The bricks were set in yellow mud mortar. The southeast corner of the structure has been damaged by later pits.

The eastern wall, 4.45 m in length and 70 cm broad is survived to a height of 50 cm. Two courses of mud bricks of the wall have survived. One post hole on the inner side of the wall is noticed. The western wall of the structure which exists in a fine condition is 3.85 m long and 40 cm broad. It has survived to a total height of 22 cm. This wall continues beyond its corner towards the northern side suggesting the presence of multiple rooms.

The floor of the structure has been damaged, but some portions on the outer side of the structure, which can be associated with this structure, are well-made with bricks and clay. Inside the structure almost at the center, a typical Harappan steatite seal was discovered (Figure 68). The seal has a symbol of the water buffalo and a few Harappan letters on top. Outside the northern wall of the structure are the remains of a large dish-on-stand and a couple of medium-sized globular pots (Figure 67). In all probability this is a domestic structure, of which only one chamber has been excavated.
Structure no.2 (Trench nos.1, 1A, 1A1 and 1B, sealed by layer 1) (Figures 69 and 70)

This structure, rectangular in plan, is a large multi-roomed brick structure, which is oriented 30° from northwest to southeast. The orientation of this structure is in alignment with Structure no. 1 which belongs to the early phase.

The main structure is divided into two parts by a partition wall. On the northeastern side of the main structure is a broad and large rectangular platform.

At a later stage, the original walls were thickened by adding more brick courses on the outer side. Also in a later stage the western wall was extended further to form another complex. Two construction phases of this structure can be clearly identified.

**Early construction phase**

The original structure lies over an area of 6.20 m by 4.20 m. All the four walls of the structure are intact, having been exposed. The structure has been divided
Figure 69  Farmana  General view of Structure no.2, Trench nos.1, 1A, 1A1 and 1B, from north

Figure 70  Farmana  General view of Structure no.2, Trench nos.1, 1A, 1A1 and 1B, from northwest
into two parts by a partition wall, which is located at a distance of 3.07 m from the inner edge of the northern wall and 1.20 m to the north of the southern wall. The chamber located on the northern side has been named 2A and one on the southern side as 2B. The partition wall is 2.65 m in length from east to west and 50 cm in breadth. Two brick courses set in yellow clay mortar of the wall are visible. The wall has existed to a height of 25 cm.

**Structure no.2A** (Figure 71)
The northern part of the structure termed 2A is roughly squarish in plan measuring 3.05 m from north to south by 2.80 m from east to west, from the inner edge of the walls. This relatively large room may have been used for dwelling.

**Structure no.2B** (Figures 71 and 72)
To the south of the partition wall is located a small chamber-like room measuring 2.80 m from east to west by 1.20 m from north to south, from the inner edge. This component of the structure appears to be a bath-room of the house, as the eastern part of this chamber over an area of 1.10 m from east to west by 1.20 m from north to south is lined with wedge-shaped burnt bricks and one vertical course along the inner phase of the partition wall on the northern side, which is plastered with coating of fine yellow clay of 7 cm in thickness. Thus, this part of the room appears to have been made water-proof. In the remaining portion of this room covering an area of 1.48 m from east to west by 0.96 m from north to south was prepared a floor of mud bricks. There appears to be a small mud platform by the side of the bathroom which was also plastered with a coating of yellow clay. Along the edge of the partition wall at a distance of 45 cm from the inner face of the western wall was made a small bench-like feature of a single vertical course of mud brick. It runs parallel to the wall to a length of 1.05 m and 27 cm in breadth.

**Later phase of Structure no.2A (Trench nos.1 and 1A)**
In the later phase of Structure no.2A, a lot of new additions were made. The western wall was thickened further by adding three horizontal courses of brick on the outer edge. The added wall is 55 cm broad. This addition does not end at the southwestern corner of the original structure (early phase), but continues further towards the south. It is exposed to a total length of 13.20 m. There is no uniform pattern followed for the construction of the wall as some bricks are placed vertically and some in a horizontal manner in the same course. A similar form of extension is noticed in the northern wall. The additional wall incorporated to the original in the later phase has survived to its full width of 55 cm. The total width of the wall is now 1.30 m.

**Platform no.2** (Figures 74 and 75)
Parallel to the eastern wall of Structure no.2 on the outer side, a thick mud platform was added. It is 5.32 m long and 2.55 m in its maximum width. Four courses of bricks of the platform are visible in the eastern section. The edge of the platform is nicely made by arranging bricks vertically all along the edge, whereas inside, some lines of brick are arranged vertically and some horizontally. Two large post-holes are found in the platform. This platform can be associated with Structure no.2.

**Structure no. 2C**
This structure labelled 2C is a room included to the original structure at a later stage. The floor of this room is well rammed and plastered, and is located at a depth of 40 cm from the top of the surviving platform.

**Platform no. 1**
To the southern side of Structure no.2 was added a roughly squarish platform. This is oriented in the same direction as that of Structure no.2. The brick lining along the periphery is arranged vertically all
Figure 71    Farmana  General view of Structure nos.2A and 2B, from west

Figure 72    Farmana  Close view of the bath-room in Structure no.2B, from north
Figure 73  Farmana  Close view of the bath-room in Structure no.2B, from north

Figure 74  Farmana  Platform no.2 with post-holes, from north
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Figure 75  Farmana  Platform no.2, from north

Figure 76  Farmana  Pottery, surface collection (ca. 1:2)
Figure 77  Farmana  Incised ware, surface collection (ca. 1:2)

Figure 78  Farmana  Grey ware, surface collection (ca. 1:2)
Figure 79  Farmana  Carnelian beads from excavation (ca. 1:1)

Figure 80  Farmana  Terracotta animal figurine from excavation (ca. 1:1)
along. The size of the bricks are similar to that used for Structure no.2. This platform is separated from Structure no.2 by a gap of 60 cm. It appears that this platform was built simultaneously along with Structure no.2, as the original western wall continues to form the original western edge of the platform. The dimension of the platform measures 5.55 m from east to west by 4.22 m from north to south. A later pit measuring 1.78 m from north to south by 2.65 m from east to west has damaged a part of the platform. The exact function of these two platforms cannot be easily identified, as the contents have been lost because of the disturbances caused by ploughing. However considering the modern parallels, it is quite likely that a lot of activities were carried out on this platform.

Platform no.3 (Trench no.1E)
To the south of Platform no.1 at a distance of 43 cm is located yet another platform almost parallel and symmetrical to Platform no.1 and Structure no.2. A very small portion measuring 1.45 m from north to south by 1.50 m from east to west has been excavated in the northwestern quadrant of Trench no. 1E. The platform was destroyed partly by a later pit. The pit, oval in shape and oriented roughly from northwest to southeast measures 1.25 m by 90 cm. It is 35 cm deep. The sides and the bottom are irregular and could have been used later as a garbage pit. Since a maximum portion of this platform lies further south in an unexcavated area, the other details and dimensions cannot be given at present.

Excavated materials (Figures 68, 76-80)
The Mature Harappan pottery found at the site bears affinity to the classical Harappan pottery in terms of the fabric and shapes. The painted motifs, however, are much fewer compared to those found on the classical Harappan pottery. A limited quantity of Grey ware sherds is noteworthy (Figure 78).

Besides the typical squarish steatite seal with incised water buffalo symbol and letters, the discovery of a clay sealing embossed with a unicorn and Harappan letters, are some of the noteworthy finds of this season (Figure 68). A large number of terracotta bangle fragments, a few shell and faïence bangle fragments, beads of faïence, steatite, plain and etched carnelian (Figure 79), agate, paste, shell and terracotta, terracotta animal figurines (Figure 80), a few copper fragments, bones tools, large number of triangular terracotta cakes, mustika, grinding stones, etc. form the repertoire of the artefacts found in the excavation.

EXCAVATION AT MITATHAL (MTL)
The village of Mitathal is located roughly 12 km to the southwest in the tehsil and district of Bhiwani. It is one of the major villages of Haryana with a population well over 10,000. The ancient site at Mitathal (28°53’31”N and 76°10’8”E) is located roughly 1.5 km to the southeast of the district headquarters Bhiwani. The site is represented by two mounds separated by a narrow gully (Figure 82). Excavation at Mitathal was initiated mainly for a revised understanding of the site’s cultural sequence. This was mandatory as the cultural sequence provided by the earlier excavator Suraj Bhan (1968) may have required modification, as a lot of new data on the pre-, Early, Mature and Late Harappan periods had been excavated from many sites in this region, therefore requiring the need to put the cultural sequence in proper perspective. In order to achieve the above objectives, it was decided to dig one index trench in the centre of the main mound which was identified by the earlier excavator as the citadel mound. The index trench was located towards the south, 20 m away from the datum point (Figure 84). This trench could not be excavated till the natural levels due to want of time. Only four layers were confirmed. In the upper levels in layer (2) was noticed a circular furnace.
Figure 81 Mitathal General view of the site

Figure 82 Mitathal General plan of the site
Figure 83  Mitathal  Remains of faience kiln

Figure 84  Mitathal  General view of the Index Trench, from east
Figure 85  Mitathal  Furnace, from south

Figure 86  Mitathal  Clay bin, from north
Figure 87  Mitathal  Saddle quern, surface collection

Figure 88  Mitathal  Pottery, surface collection (rim diameter 12.8 cm)
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Figure 89 Mitathal Pottery, surface collection (rim diameter 8.0 cm)

Figure 90 Mitathal Pottery, surface collection (bottom diameter 5.6 cm)
Figure 91 Mitathal Copper/bronze bangles, surface collection (ca. 1:1)

Figure 92 Mitathal Faience bangles, surface collection (ca. 1:1)
STRUCTURAL REMAINS (Figures 84-86)
A furnace discovered in the southern half of the index trench is located at a depth of 68 cm from the datum point (Figures 84 and 85). It is positioned almost in the middle of two quadrants, 1.68 m to the east of the western section and 1.23 m to the north of the southern section. It is perfectly circular in plan with a diameter of 85 cm. It has a small opening measuring 20 - 22 cm on the southern side. The circular wall of the furnace has survived to a maximum height of 23 cm, which is made of clay which has been burnt red due to constant use. The average thickness of the wall is 5 cm. Inside the furnace at the base and also on the sides were the remains of slag most probably that of faïence production.

It should be stated here that Mitathal was most probably a major centre of faïence production in this area as the site is littered with fragments of faïence articles, mostly bangles. The northwestern part of Mound B may have been the area occupied by the craftsmen involved in the faïence production. It is here on the surface that were noticed remains of half a dozen, either circular or semicircular and squarish or rectangular furnaces as well as a heap of faïence slag, a result of the production (Figure 83). The earlier excavator Suraj Bhan had also propounded a similar hypothesis on the basis of the evidence of similar furnaces found during excavation.

The excavation continued in the northern half of the trench in the lower levels. It was ceased at a depth of 1.69 m from the datum point. In the northwest quadrant at a depth of 1.59 m was discovered a slightly oblong clay bin (Figures 84 and 86). It is located 20 cm to the east of the western section and 28 cm to the south of northern section. It measures 1.05 m from east to west and 88 cm from north to south and is lined with clay plaster 5 cm thick. It is 90 cm deep. The inner surface of the clay bin was smoothened, and the remains of rice in the clay lumps retrieved from the inside clearly indicate its function as a storage bin for grains.

In the eastern section facing west is noticed a circular pit situated on the surface of the mound indicating its position in the relative chronology. It belongs to the last occupational phase at the site, i.e. the Late Harappan. The pit is visible in the section. It is 75 cm to the south of the northern section. It is a funnel-shaped pit, broad on the top, 1.50 m in diameter and 70 cm at the base. The total depth of the pit is 65 cm from the surface of the mound. The pit appears perfectly symmetrical and was probably a storage pit. It was most likely filled in with clay after it fell into disuse, as it contains evidence of compact clay.

As the index trench is not yet excavated to the natural level, the pottery analysis has not been done as yet. The site is very rich in cultural material. The exploration carried out at the site has yielded at least half a dozen copper bangles fused together (Figure 91), a large amount of potsherds including a few complete pots of the Late Harappan period (Figures 88-90), scores of faïence bangle fragments (Figure 92), terracotta beads and wheels, saddle querns (Figure 87) and pounders of sandstone, beads of faïence, carnelian and steatite. Mr. Tejas Garge, who visited the site in March 2007, discovered a rectangular Late Harappan steatite seal at the site. This seal has a few Harappan letters engraves on its surface.

CONCLUDING REMARKS
The Ghaggar and Hakra Basin, no doubt one of the most important fertile regions and well-watered, was most favourable for human occupation right from pre-Harappan times. The Ghaggar River and one of its major tributaries Chautang, very often identified as ancient rivers Saraswati and Drishdvati respectively, have played important role and it is believed that there were flourishing settlements on their banks as long as they were active. It is also believed the the river went dry around the beginning of the Second Millennium BC. The data on the settlement pattern of the pre-Harappan and Harappan cultures, including their
precise coordinates, have shown that some of the sites are right in the middle of the course of the Ghaggar River. This is significant as it indicates that either the river course was not so wide or that it went dry before pre-Harappan times. However, more data is required on this aspect.

The site of Girawad is extremely interesting as this appears to be close to the eastern periphery of the Hakra Culture. This is the second Hakra Culture site in Haryana after Bhirrana which has been excavated systematically. Though Carbon 14 dates are not available, it could be dated to the late Fourth Millennium BC on the basis of its comparison with Bhirrana. The data on architecture from Bhirrana and Girawad suggests that the Hakra culture people lived mostly in pit-dwellings, which were shallow. Each pit-dwelling consisted of other features like storage pit, garbage pit, water pits and storage pots. It appears that the open space available in each cluster was used for carrying out some domestic activities. Similar kinds of clusters are built by casual labourers in parts of central India and the Deccan region even today. The discovery of pit-dwellings and also traces of mud-brick structures at Girawad is significant as it indicates that both pit-dwellings and permanent structures in the form of rectangular mud-brick architecture were in use simultaneously. There is an indication from Girawad that the Hakra Culture was a class-structured society. The pit-dwelling complexes excavated at Girawad were most probably occupied by craftsmen, mainly potters as the discovery of three pottery kilns would indicate. The area on the other side of the road where the remains of mud-brick structures were noticed could have been occupied by higher ranked people.

The discovery of three pottery kilns in such a small excavated area at Girawad suggests that it was one of the major pottery manufacturing sites of the Hakra culture in the middle to late of the Fourth Millennium BC. It is quite likely that Girawad supplied pottery to a number of other small sites located in its proximity.

A few sherds of the Periano Reserved ware, usually confined to the Balochistan area in the west, and now found at Girawad suggest that the people of Girawad had cultural or trading contacts with far-off regions.

The site of Farmana is an ideal candidate for the study of cultural processes from pre-Harappan to the Harappan as it has the required cultural sequence. The Hakra culture found at the base of the site is similar in all respects to that found from Girawad.

It was observed at Farmana that the Incised ware and Chocolate-slipped ware of the Hakra Culture continued into the Mature Harappan period at the site. There are indications that the pre-Harappan culture in this region has contributed substantially to the making up of the Harappan society. The continuation of the traits of the pre-Harappan culture into the Harappan period at the site could have resulted in the formation of a regional manifestation of the Harappan Culture in the Ghaggar Basin. This aspect will be dealt with in greater details in future.

The Mature Harappan phase at Farmana appears to be extremely rich, as the discovery of structural remains, pottery and seals would indicate. The glimpses of the modicum of planning and strong and well-built brick structures at the site surely indicate that the Mature Harappan phase at the site was most prosperous. Extremely thick walls of the structure are also all indicator of the building of double-storeyed houses at Farmana. Farmana appears to have developed from modest beginning into a town in the Mature Harappan times. It could have played an important role in the region, all aspects which need to be investigated in future.

The site of Mitathal, which is on the verge of getting extinct, is equally important to understand the cultural process from the pre-Harappan times through the Mature Harappan to the Late Harappan period. The role of the local culture in the development of some of the Harappan elements has to be studied. Mitathal appears close to the source of raw material required to produce faience as the evidence of its
manufacture would indicate. In future, this aspect will need proper investigation.

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