

*FINAL REPORT*

*HELMAND IRRIGATION REHABILITATION*

*CONTRACT WORK PERIOD:  
1 DECEMBER 1998 - 31 MARCH 1999*

*Submitted by:*

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# INTRODUCTION

This report details the work and accomplishments during the contracted work period between 1 December 1998 and 31 March 1999. It evaluates the elements of the work related to the Boghra Canal Project in its broadest meaning both before and after the work period and lists the "lessons learned" from the experience. This report recommends future actions to be taken within the funding period to maintain the momentum generated by the work, and for future project planning. Much if not most of the information in this report has been previously documented in the field in the form of Memos and/or communicated orally to the Country Director.

Each item listed in the Scope of Work for the contracted period will be addressed but it may not be in the same order as listed in the Scope of Work. But as noted above the scope of this report is considerably wider than the initial Scope of Work. The Scope of Work can be found in the annex.

There appears to be limited or no international interest in funding infrastructure construction or reconstruction in Afghanistan, and especially in the Helmand region, because of the high levels of opium poppy cultivation. Afghanistan is perhaps the second largest producer of opium in the world. The continuing civil war and apparently the misguided international disfavor in which the Taliban government finds itself are also factors. The U.S. and U.N. narcotics agencies are the only organizations that see the solution to the narcotics problem as the rehabilitation of the irrigation system to its pre-war condition which will allow the farmers to return to their pre-war cash cropping patterns. Both the Taliban government and the area farmers have stated the same hypothesis. Only U.S. Narcotics Affairs has been able to provide funding for Helmand work to date. Narcotics were not grown in the Boghra system before the war.

Opium poppy production can be eliminated in central Helmand with the rehabilitation of the Boghra canal irrigation system combined with agricultural extension and marketing support for crops already known, understood and grown in the area. The search for new, exotic cash crop substitutes for

poppy is not necessary. The bases for this conclusion are detailed in this report.

The primary focus for this work season (Winter 1999) was on the 94 km. of the Boghra Canal from the intake off the Helmand river to where it empties into the Marja wasteway in east Marja. This focus ignored the west Marja and Shamalan (discussed later) branches of the of the Boghra Canal which also require desilting and must be addressed at a later date. The winter season is the only time the canal can be closed for work for any extended period of time, and desilting can best be done when there is no water in the canal.

The Boghra canal irrigation system, including the extensive drainage system, was built between 1946 and 1979. The primary construction was accomplished by Morrison-Knutsen Afghanistan (MKA) with both Afghan and U.S. funding followed with work by U.S.A.I.D., the U.S. Bureau of Reclamation, the U.S. Soil Conservation Service and a host of different private contractors. The result is the largest irrigation system in Afghanistan. The system received virtually no maintenance between 1979 with the Russian invasion and occupation, and 1997 when MCI did some initial desilting work at the Boghra Canal intake off the Helmand River with U.S. Narcotics Affairs funding. This initial desilting work had a major impact on the canal and the flow of water into it.

The work accomplished during this work period was through the joint effort of MCI and HAFO staff members. Helping Afghan Farmers (HAFO), is an Afghan NGO sub-contractor with past experience of working in Helmand. I have previously noted the importance of including Afghan NGOs in projects in regions where they have contacts, experience and can make a major contribution to project goals. Afghan NGOs tend to be left out of consideration for involvement by most foreign and international donors. HAFO staff made a major contribution to the work during this work period and should be included in future planning. The head of HAFO, Engineer Jawed, is originally from a village located between Girishk and the Boghra Canal intake, and was a graduate of Lashkar Gah high school before going on



to Kabul University and engineering. A brief description of key members of the project team will be found in the text below.

The work was accomplished through a combination of hand labor and heavy equipment. As will be noted below, most of the desilting work was done by hand. Because of the shortage and unreliability of heavy equipment, the project philosophy was to plan to do the work by hand. If machinery became available to work, it was placed where it could be most effective. The advantages of hand labor were: it was reliable, it was mobile and could be shifted easily from one area to the next, and it put additional incomes into the hands of the local population. This was not true of the available heavy equipment.

As a side note, the Project Manager position for this project is advertised as being headquartered in Kandahar although all project activities are in Helmand province. For a foreigner, Kandahar has many advantages. There are many U.N. offices there and also foreign NGOs, i.e., a large foreign community lives there. The Red Cross is located there and their aircraft service flies between Peshawar and Kandahar, and they provide a Thursday evening gathering place for the foreign community. Many of these organizations have radio or satellite telephone connections with the outside world. Kandahar has a large, well stocked bazaar, and is or was the second largest city in the country. MCI has a large office compound and staff house compound in Kandahar. But it takes two to three hours to travel the 138 km. between Kandahar and Lashkar Gah, the provincial capital, depending on how much punishment you and your vehicle want to take and how many stops you make. It is not far but presently the road is rough. And Lashkar Gah is where the officials live that the Project Manager must work with. Agriculture, roads, health, irrigation and the Governor who receives petitions from the farmers for help with problems that MCI is already addressing. The Foreign Affairs or Liaison office for Helmand province is there. MCI has a good staff house in Lashkar Gah.

***Recommendation:*** For time, efficiency and important local contacts, the MCI Project Manager should reside in Lashkar Gah. Helmand is where the work is and Lashkar Gah is the center.

## THE AGREEMENT

In early summer 1998, MCI and U.S. Narcotics Affairs got some 11 notable farmers from both Nad-i-Ali and Marja to sign an agreement that if they "...get assistance to rebuild and repair the intake and canal gates and desilt major parts of the Boghra canal...(they) promise to reduce opium cultivation by 80% in the next season i.e., 1998-99...(and) also promise if...(they) get assistance to repair... (their) drains... (they) will reduce opium cultivation 100% by 1999-2000." For a variety of reasons, addressed below, the farmers did not live up to the agreement during the 1998-99 cropping season.

This undated farmer agreement to reduce opium production by 80 percent within a 10 month period was flawed from the start. It stated an unrealistic goal without stating the give and take details on how and within what time frame the necessary actions would occur. A political action (the rocket attack) in August 1998 on the part of the U.S. sealed its doom.

The factors key to the failure of the agreement were:

- 1) The agreement was signed in June 1998. The poppy planting season was to occur 5 months later in October. Project funding/action was not approved until November, a month *after* planting season. From the farmers perspective, work on the canal along with other support activities were to occur within a time frame that would allow new sources of additional income to develop to substitute for the loss from the poppy crop reduction. Farmers any place in the world would not agree to eliminate their primary cash crop, the basis of the local economy, without a clear, timely, concrete alternative or substitute. There was none. Desilting work did not begin on the canal until late December 1998 well after poppy planting season. Work was well under way to replace and repair the Boghra Canal intake gates before this time but this work was and is not completed and moves slowly.
- 2) The U.S. hit an area to the northwest of the project area with a rocket attack in August 1998. The U.N., all foreign and international NGOs withdrew their projects and foreign personnel from the country in the context of perceived security problems. The farmers saw this as an indication that the work noted in the agreement would not occur. They planted poppy.

- 3) The price of raw opium doubled between May and December 1998. Inflation was rapid during this period but does not explain the price rise. They planted a lot of poppy.
- 4) The 11 farmers who signed the agreement were a combination of tribal elders and opinion leaders, notables, but within the context of Pashtun social structure, they have no real power to influence the actions of their neighbors. The Pashtun social structure is to some great extent a structure without central authority based on extended kinship groups (households) for discipline and authority that can be united vis-à-vis an outside threat (the Russians) but not much else.
- 5) The government of the Taliban was not involved in the agreement negotiations nor did they sign the agreement. After the fact, Taliban representatives in Helmand province (the governor, Mullah Abdul Bari, the head of Helmand Argandab Valley Authority HAVA (the irrigation system), Mullah Abdul Samad, and the head of the foreign affairs and liaison office Maulavi Hashim) all stated objections to foreign groups coming into Helmand with projects, signing agreements with the farmers without the government being involved. In March, after the first phase of the work was completed, the governor wrote a letter to James McHugh, U.S. Narcotics Affairs/Islamabad thanking him for the work done, requesting the work on the irrigation system to continue and inviting him to come to Lashkar Gah for discussions on an agreement to eliminate poppy from Helmand which they would enforce.

As a side note, the Taliban eliminated the cultivation of hashish in at least this south east region of the country by decree. The level of enforcement necessary is an unknown. The people fear and respect the power of the Taliban. They understand that such decrees will be enforced if necessary. Hashish was ban because it was widely used locally, unlike opium which is presently primarily an export crop.

- 6) The agreement was signed by the farmers only. No one from MCI, the U.S. embassy or the government signed this agreement that requires actions from virtually all parties to be effective.

- 7) The farmers of the region know that the days of the opium poppy crop are numbered. The rumors were that this will be the last year before reductions in opium production if not total elimination occur. Many were caught up in a "make hay while the sun shines" philosophy.

Given all of the above, 20/20 hind-sight, it is no surprise that the farmers did not live up to their agreement to reduce opium production. It would have been a surprise if they had carried out the agreement. The areas irrigated by the Boghra Canal and its tributaries actually increased production.

## THE TALIBAN

For an opium poppy eradication project to be successful, the Taliban must be involved. Perhaps the most key reason the above noted poppy reduction agreement failed was because the Taliban were not involved.

The Taliban in Helmand are not trained administrators nor technical people but they are intelligent, honest, serious and work hard to see that the role of government is accomplished as they see it. They are open to suggestions that will help their administration and the people. They appear to be strict in their administration but they are also subject to political pressures from the local populations that support them. They did not appear to be at all xenophobic in our many discussions on the many issues covered but they had a clear understanding that MCI was there to help. They approve of and support development actions of all sorts but they are skeptical of study groups and "what if" discussions, based on past experience. The Taliban need financial and technical assistance in most aspects of Helmand administration, and they know it. They do not approve of project activities coming into the region they govern without their approval and at least indirect involvement.

From the first meetings with the Taliban in the area in December 1998 to the last in March 1999, the subject of the relationship between development activities and the elimination of poppy as a crop in the region was always discussed. They raised no objections to the goal, consider poppy as an evil crop (as do the farmers), and have always agreed to enforce a poppy ban when the farmers have alternative sources of income. They will not enforce a poppy ban based on promises of some future action or unrealistic expectations. They approved of the extensive use of hand labor in the desilting and canal repair work because it provided the farmers with additional incomes and accomplished the work needed on the irrigation system. They approve of any program that will introduce or expand cash crops to replace poppy.

The Taliban provided many direct and indirect support actions for the MCI project activities during this work period. For example, in my initial discussion with Maulavi Hashim (Helmand Foreign Affairs and Project Liaison Officer) which included the farmer poppy agreement, he requested to see a copy of the agreement, which I provided. We had many follow up discussions on the

subject. On the basis of these discussions, he initiated two large public meetings with village and work leaders in Nad-i-Ali district where he addressed the issues of signing agreements and then not living up to them, and the evils of growing poppy. He discussed the relationship between the improvements being made on the Boghra canal (the MCI Project) and poppy reduction. He organized a poppy field day when many of the key officials of Helmand attended the ritual plowing up of several poppy fields in Nad-i-Ali district. Nad-i-Ali is one of the largest agricultural and administrative districts in Helmand. This action made the Taliban Radio news broadcast the following day. In Helmand, these were the first public statements and moves by the Taliban against poppy production, aside from statements by the Governor about actions against heroin processing plants.

The Taliban will not tolerate any dishonest elements in a project or graft. Their well known reactions to such dishonesty tend to be harsh. We maintained a very positive working relationship with the Taliban during this work period and they supported our activities.

The Taliban must be involved in project activities if there is to be hope for long term success.



*11 March 99 At Nad-i-Ali poppy plowing field day,  
Taliban officials in center background*

## BOGHRA CANAL DESILTING

I arrived in Helmand province on 12 December 1998. The first desilting work with hand labor began on 31 December 1998. The desilting element of the project used both hand labor and heavy equipment, and in all areas at some point a mix of the two. But most of the desilting work was done with hand labor. Except for the two Czech backhoes (UNEX), the other excavating heavy equipment proved to be too old and unreliable with frequent breakdowns. The first hand desilting work began in Nad-i-Ali on 31 December with the series three underdrains at stations 51+050, 51+818 and 53+300, involving 12 to 15 men on contract basis. The work shifted to the silt shoulders in the Boghra canal and the work force increased to some 250 day laborers by the time the canal was closed for the first time on 25 January 1999. In February, this grew into a work force of more than 2,500 men working in seven locations placed along 80 km. of the Boghra Canal.

In total, some 107,562 cubic meters of silt were removed from the Boghra Canal by some 80,000 man days of hand labor improving water flow in some 40 km. of this canal. An additional 28,123 cubic meters of silt were removed from the canal by the two UNEX backhoes in both the Nad-i-Ali and Marja areas in a total of 61 machine days improving some 15 km. of canal.

The Boghra Canal was closed for a total of 26 days: from 25 January to 2 February, and 11 February to 27 February. This limited the amount of time we could be totally effective in desilting the canal with hand labor. Before the war, this sort of maintenance work during this season kept the canal closed for 40 days. During this work period, desilting work using hand labor started before the canal was closed and continued after it was opened but was limited to work on the silt shoulders above water line. The backhoe work was not greatly effected by water in the canal.

We made a significant impact on the desilting of the Boghra canal. Both Nad-i-Ali and Marja now have more water than they have had since the Russian invasion in 1979. They have adequate water for considerable amounts of double cropping. In future years and budgets, desilting work in the main canal should continue but now the main focus should shift to desilting of the drains. Because of 20 years of silting and lack of maintenance, the drains do not function at a rate that can remove the water that we have now put into

the area. The water table is rising and both areas have problems of water logging and salt because of poor drainage. This problem began with the desilting of the Boghra intake. This year, thanks to this winter's work season, the problem will get worse.

*Recommendation: For the 1999-2000 budget, focus primarily on the drainage system. The farmers know the problem. The Taliban know the problem. Work on the drainage system will be a great lever for extracting an agreement on opium poppy reduction. They saw what we did with the canal. They know we can be effective with work on the drainage problem.*

### NAD-I-ALI: Organization, Problems and Accomplishments

The work in this area was well organized and supervised by three key men:

- Engineer Razak of HAFO is a senior and skilled surveyor/engineer, resident of Lashkar Gah, who was also involved in the Boghra Canal silt survey in early 1998. He stayed in village housing along the Boghra Canal for virtually the entire work period. Near the end of March, he re-surveyed a sample 6 km. of the canal that he had surveyed in the silt survey to measure the quantity of silt removed .
- Chief Watermaster (Mirab) Mohammad Karim, resident of Nad-i-Ali, is responsible to the government for water control, distribution and maintenance along the Nad-i-Ali section of the Boghra Canal, roughly 30 km. distance. He supervises some 40 farm-ditch watermasters who distribute water and maintain farm irrigation ditches in this large area. Nad-i-Ali irrigated and farmed some 11,432 hectares of land before the war. It appears that land presently farmed in the area will exceed this figure. Karim was the key to the successful organization of farm labor in this area. He worked with us on a full time basis.
- Engineer Sayed Jawed, Head of HAFO, worked closely with us in the organizational stage during the first month of the work period, and also in



the final weeks of the work period. He was involved in all discussions with the Taliban in this early phase that set the stage for what was to be done. He made a major contribution in these discussions raising major issues and searching for solutions. He spoke the Taliban's language, so to speak, directly to the point. I suspect that his early discussions with Mirab Mohammad Karim helped in putting him on his very productive track. Jawed heads his HAFO office and resides in Peshawar.

## WORK FORCE

The main work force in this area was organized and supervised by the first two men noted above. It numbered over 1,500 men at maximum. It was organized on the basis of the watermaster system with the Mirabs supervising the smaller work groups of up to 50 men. Organizing around this system resulted in work groups made up of men from the same villages working together to accomplish a task they normally performed together but on a smaller scale. And they were supervised by men from their areas who also normally functioned in a supervisory role for similar work.

In the beginning, the work force was recruited from the Nad-i-Ali villages but at this time of year, winter before the first rains, there are many nomad families camped along the canal in the desert. The men quickly were drawn into the labor force for the extra incomes. By the end of the work period, individuals from neighboring provinces were coming in for the work. We had a greater supply of labor than we could put to work. The limitation was supervisory staff, communications and field management.

As a side note, the Boghra Canal irrigation system has always been organized where the government was responsible for the water and maintenance of the main canals. The indigenous system of Mirabs, distribution and maintenance, comes into play once the water leaves the main canals into the farm ditches. We organized around this existing system, working directly with its personnel.

Three motorcycles were provided for Razak, Karim and Karim's deputy which allowed them to keep continuous contact with the work groups along the

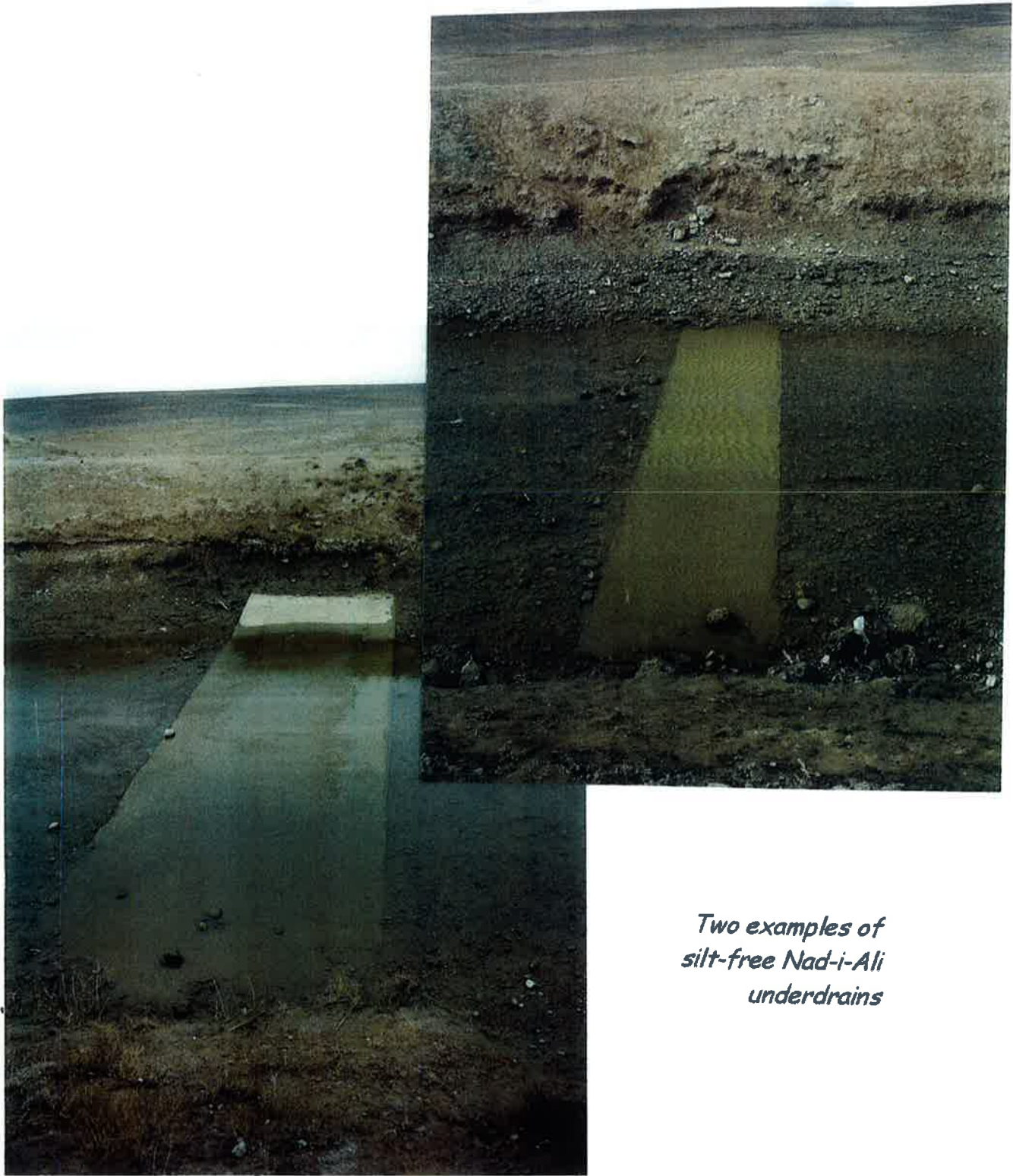
canal. In this area the work groups were not separated to any perceptible extent but appeared as one very large work force along the canal which aided in supervision.

*Recommendation: Where possible, organize the work force around an indigenous, existing organization involving the already established leadership and organizational structures. The supervision and impact of a large work force is best when this is focused as one unit. As General Custer learned the hard way in 1876, the age old tactical maxim, do not divide your forces.*

When the work areas became more distant from the home villages of the workers toward the end of the work period in March, we rented tractors to move some of the workers to and from the work site. Bicycles and walking were the primary modes of transport to and from work for most of the workers during most of the work period.

## SILT

We had assumed that the silt in the canal was somewhat evenly distributed on the sides and bottom of the canal. This was not the case in Nad-i-Ali. Virtually all the silt was deposited on the side walls of the canal and appeared as shoulders of silt, with vegetation, extending out into the canal from one to eight feet, narrowing the channel and restricting the water flow. Perhaps because of this restricted flow, the bottom of the canal was mostly to grade. In this area, the canal had originally been clay lined to reduce seepage into the desert. On the canal bottom, at least, this lining was missing, perhaps excavated out by the restricted, accelerated flow. The concrete tops of the underdrains were visible and level with the canal floor. The exception to this distribution of silt in Nad-i-Ali was in areas where the canal walls had been breached or topped by desert flood water over the 20 years of virtually no



*Two examples of  
silt-free Nad-i-Ali  
underdrains*





*Feb 1999: Boghra Canal hand labor force, Nad-i-Ali;  
Men working on silt shoulder 6-8 feet wide.*



*Feb 1999: Labor force bicycle parking lot;  
Nad-i-Ali*

maintenance. In these cases, there was silt and desert stone on the canal floor. Each rain season increased the deposit.

This irrigation system was designed to be somewhat self-cleaning but it still requires some yearly maintenance now absent for some 20 years. This designed self-cleaning mechanism, the angle of flow, combined with the source of the silt perhaps resulted in the configuration of the deposited silt noted above. This area is some 30 km. from the intake off the Helmand River with many control structures in between that act to slow the water flow. When the water slows, silt is deposited. Except perhaps in flood, most of the Helmand River silt is probably deposited before it reaches the Nad-i-Ali area.

We might assume that much of the silt found in the canal in the Nad-i-Ali area is wind blown rather than from the Helmand River. In these areas MKA built a long series of dikes parallel with the canal, even over hills. Some of them are clearly for flood water diversion and canal bank protection. But some, as Mirab Mohammed Karim pointed out, were to slow the strong seasonal winds carrying quantities of desert dust. Slowing the dust-laden winds causes some of the dust to settle in much the same way a snow fence functions with blowing snow. But these dust dikes do not stop all the dust, much of which gets deposited in the canal. The silt in this area appears to be a mix of clay and sand, the sort of mix we might expect from the desert to the west.

## SPOILS

Hand labor deposited the spoils on the edge of the canal embankment. Through Mohammed Karim, we hired 2-3 local tractors with rear dozer blades to pull the spoils piles, sometimes 4 to 6 feet high, away from the canal edge usually on to and across the service road. These local tractors with rear blades are used locally for land leveling. We then spread and smoothed this material on the service road with the MCI grader we had rehabilitated. In some areas, the farmers removed the silt from the road side to be put in and improve the fertility of their fields.





*Jan 1999: Tractor spreading the spoils of hand labor desilting near Loy Manda siphon at Km: 30+355.*





*Feb 1999: MCI grader spreading the spoils of hand labor desilting on Nad-i-Ali service road.*



*Jan 1999: MCI grader improved service road surface near Loy Manda siphon.*



In a few areas in both Nad-i-Ali and Marja, the local tractors with rear blades, and in one case with a plow, were used to loosen compacted silt in the bottom of the canal which was then removed by hand labor.



*Feb 1999: Local tractor with plow loosening compacted clay silt;  
Nad-i-Ali at Km. 55+400.*

### PRODUCTIVITY

The hand labor work force in Nad-i-Ali desilted some 23 km. of canal between 3 January and 3 March 1999, removing some 74,115 cubic meters of spoils in 52,390 man days of work averaging 1.41 cubic meters per man per day. These are the most accurate figures we generated in the use of hand labor for desilting.





*Feb 1999: Work on wide silt shoulder in Nad-i-Ali at Km. 50*



*Feb 1999: Completed segment of embankment. Note remaining shoulder of silt awaiting canal re-closure; Nad-i-Ali at Km 55+300.*

## MARJA: Organization, Problems and Accomplishments

The Chief Watermaster for Marja, Sar Malim, did not play a key role in our project. He was helpful at the start and put our staff in touch with the farm-level mirabs but he did not participate on a daily basis in the organization and supervision of the labor force. It was hinted that he was much more involved in local politics than Mohammed Karim (Chief Watermaster, Nad-i-Ali) and so stayed clear of direct involvement in the project that had the potential of focusing criticism on participants.

As in Nad-i-Ali we organized this work force around the Mirab system with the local mirabs playing the key work group supervisors roles but minus the unifying force of the Chief Mirab.

Marja is the area irrigated by the Boghra canal with the greatest drainage problems, perhaps because of the source of most of the silt: the Dasht-i-Margo desert...wind blown sand. It is the smallest of the three major agricultural areas irrigated by the canal at 8,961 hectares, a pre-war figure of land farmed.

Project staff in Marja were:

- Engineer Aziz is resident in Quetta but with family in Bolan just outside Lashkar Gah. He is chief engineer for the Korez Repair Project in Nauzad but came to Lashkar Gah when freezing weather stopped his concrete work for the season in Nauzad. He volunteered to go to Marja for 3-4 days during the last week of January to get that hand labor element organized and started and remained as head of that work team until mid-March when this phase of the desilting project ended. He resided in village housing in the work area of Marja.
- Engineer Sukur, as a HAFO sub-contractor, worked with Aziz and shared the responsibility of supervising the work groups. He resided with the Marja team in village housing for most of the work period.
- Engineer Gul Jan is an independent engineer from Lashkar Gah who also worked with Aziz in Marja, sharing supervision and management responsibilities for this large and scattered work group in this region,

residing in village housing at the work site for most of the work period. We hired Gul Jan to supplement the MCI and HAFO engineers.

### The Work Force

The work force was organized around the local watermasters (mirabs), in much the same manner as in Nad-i-Ali, with one exception. At the time the work started, 31 January 1999, with some 175 men, the mirabs proposed to start each of their work crews in sections of the canal nearest to the workers' villages. In many cases, this allowed the men to go home for their lunches. It also produced a divided work force into some 5 or 6 different groups scattered over some 10 kilometers. As the work force grew, up to 1,000 to 1,200 men, the problems of management of this work force also grew. Supervision by the mirabs of their work groups was part of the system of organization but this spread made problems for the engineering staff supervision. Although we estimated that the productivity levels in Nad-i-Ali and Marja were roughly the same, the levels of pressure on the Marja supervisory staff were greater, and there were more of them to do the same job.

There were three project motorcycles in Marja. Two for MCI/HAFO engineers Aziz and Sukur and one for a deputy of Sar Malim, the chief mirab. Gul Jan preferred to use his bicycle. Without this motorcycle transport, the management of the scattered work force in Marja would not have been possible.

***Recommendation:** Again, for impact and management of large numbers of workers, it is best to keep them concentrated in one area, given the limitations of transport, communications and personnel.*

### Silt

The silt in the Marja section of the Boghra Canal appeared to be primarily wind blown sand from the more sandy desert to the west. This silt was distributed in the canal more evenly on the sides and bottom of the canal, unlike that found in Nad-i-Ali. The tops of the underdrains were not visible even after some cleaning had been performed. In some areas, there were clear indications of the nature of the drifting sand along the canal bank. But the sand/silt was less compacted than the clay-based silt of Nad-i-Ali and easier to move.

The work in some sections of Marja was complicated somewhat by the low hills in the area, requiring the handling of the silt 2 or 3 times to get it up to the service road and away from the canal. The system of relay used by the workers was very effective.

### Spoils

We used the same system of local tractors with rear blades to move the spoils away from the canal edge and across the service roads, followed by the MCI grader to smooth the surface and improve the service road.

### Productivity

The hand labor force in Marja removed an estimated 22,810 cubic meters of silt from some 14 km. of the Boghra Canal between 31 January and 3 March 1999. I do not have accurate figures on man-days of labor for Marja during this period.





*20 Mar 99: East Marja Branch of Boghra Canal with blown sand from desert.*



*Feb 99: Marja Boghra Canal in drift area. Note sediment formations in the bottom of canal.*



*Feb 99: Silt being relayed; note cut of silt shoulder.*



*Feb 99: Silt being relayed up and out of the Boghra Canal in Marja; near Km 68.*





*Feb 99: Desilting of Boghra Canal sides and bottom  
near siphon at Km 73+962*



*Mar 99: Completed segment of Boghra canal; near Km 58.*

Note on Backhoes: Nad-i-Ali and Marja

We rented two Czech backhoes (UNEX) from HAVA for a total of 61 days (39 days for the first and 22 days for the second). The cost was about U.S. \$100. per hour of running time. These were old but not long used machines and they did not breakdown often. We were lucky. The young Taliban responsible for the machines, Hafiz Moyedin, was at the work site all day every day. He kept the machines running, fueled, serviced and insured that the operators were on duty when needed.

MCI provided a support vehicle for the 6 people associated with the operation, including Engineer Mohammed Ehsan of HAFO who kept the operating time records and insured that the cut of the canal embankment slope was correct. The fuel and maintenance vehicles were provided by HAVA. This vehicle also delivered the grader operator and his assistant to their machine. The machine operators were skilled and they kept the machines busy. One of the operators had been trained at the time of MKA who left Afghanistan in about 1957. The productivity of this equipment has been noted above.

There was a hand labor force of some 50 men following the UNEX's down the canal to smooth the rough cut surfaces, removing additional silt from the embankments and removing additional islands of silt left in the canal by the UNEX's limited reach.

*Recommendation: The first 3.942 kilometers of the east Marja branch of the Boghra canal were cleaned by the two UNEX's just before the close of this work season. Fifteen kilometers of this branch of the Boghra Canal await cleaning to the end at the Marja Wasteway. This work can and should be completed during the hot season (1999) with water in the canal. It should take about 40 days to complete. The west Marja branch should also be surveyed for work to be scheduled for winter 1999.*





*Feb 99: UNEX work on wide silt shoulder near Marja siphon at Km 58+350.*



*Feb 99: UNEX work on very wide silt shoulder near Marja siphon at Km 58+350. Remaining silt island was removed by hand labor.*



*Dec 98: East Marja branch of Boghra Canal near wasteway;  
easily cleanable by UNEX.*



*20 Mar 99: End of work. Loading UNEX on low-boy in East Marja.*

## UNDERDRAIN DESILTING

Nineteen underdrains were desilted along the Boghra Canal in both Nad-i-Ali and Marja mainly by hand labor. An additional 7 underdrain entrances and exits were cleaned by UNEX backhoes between kms. 75 and 79.

Underdrains are concrete tunnel-like structures that allow desert flood water to pass under the canal rather than pool on the up hill side of the canal putting pressure on the embankment. If these structures are not cleaned, this water has the potential of breaching the canal wall as has occurred in several places. Most of these underdrains were completely locked by silt and required considerable hand excavation to clear them. None functioned at more than 10% of the original capacity.

The average underdrain desilting involved removing some 189 cubic meters of silt or a total of 3,591 cubic meters of silt.

**Recommendation:**      *There are some 20 underdrains remaining along the Boghra canal in need of cleaning, most in the east Marja area but at least 3 large ones between Girishk and the Shamalan Canal outlet. These underdrains should be noted in the next project proposal, budgeted and receive attention during the next work period. They are important.*

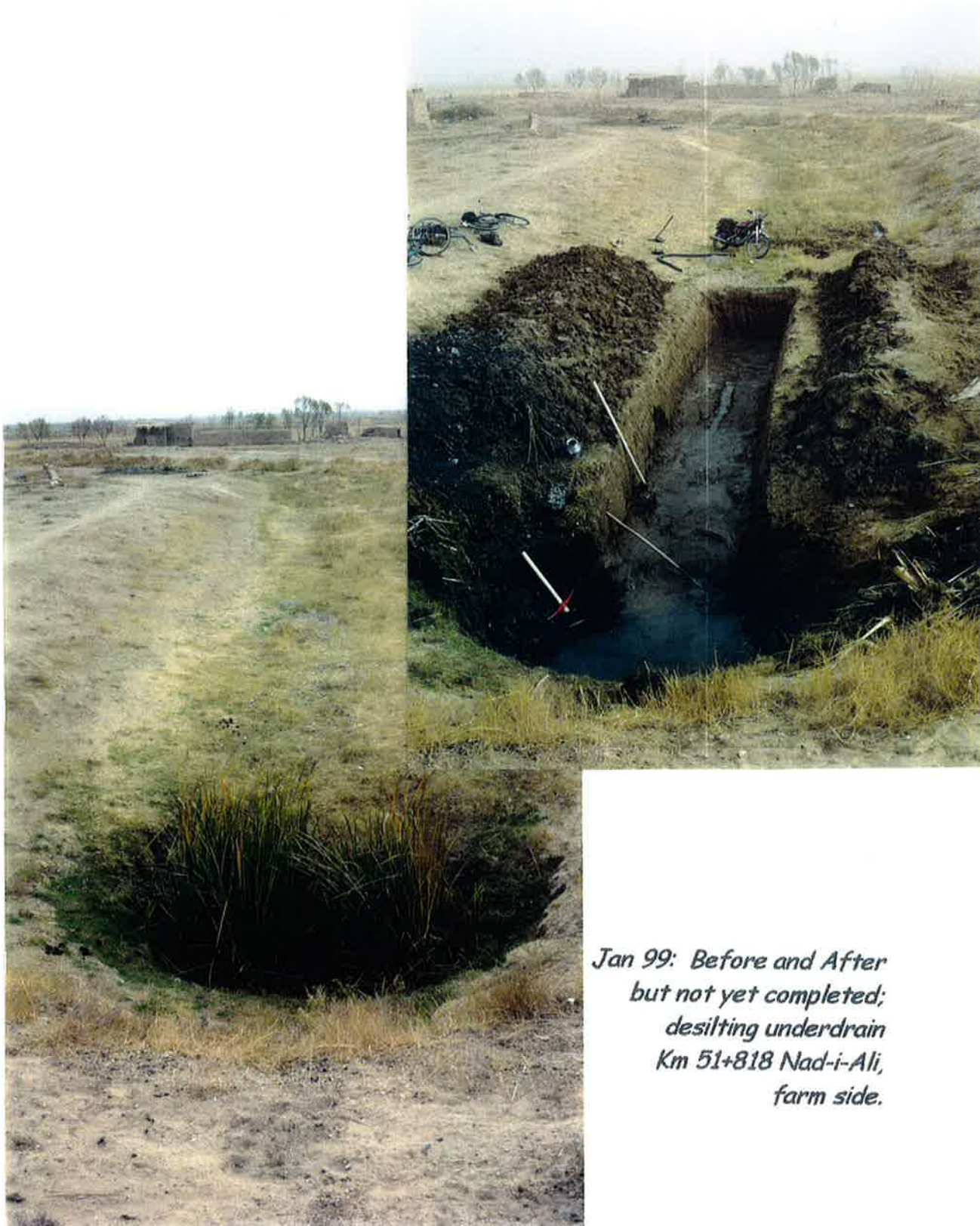




*Jan 99: Before and After views - desilting drain under farm ditch near underdrain at Km 51; Nad-i-Ali*







*Jan 99: Before and After  
but not yet completed;  
desilting underdrain  
Km 51+818 Nad-i-Ali,  
farm side.*





*Jan 99: Before and After  
but not yet completed;  
Desilting underdrain  
Km 51+818 in  
Nad-i-Ali,  
desert side.*

## OTHER DESILTING

Key MCI project staff in both desilting and canal repair were:

- Engineer Samad is the MCI Chief engineer who oversees all MCI engineering activities and was involved in all elements of this of this work period. He is also the design engineer. When not in the field, he resides in Pakistan.
- Engineer Wardak is a senior civil engineer who worked with HAVA before the war. His primary responsibility was the Weir Project but agreed to take responsibility for activities in the upper reaches of the Boghra canal during this work period. His family resides in Kabul.
- Engineer Payenda is a senior mechanical engineer who worked with and managed the Lashkar Gah cotton gin before, during and after the war, until being hired by MCI in the mid-1990's. He resides with his family in Lashkar Gah.

The first two kilometers of the Boghra Canal were partially cleaned by pushing the gravel materials to the sides of the canal using the MCI bulldozer and a small HAVA Russian bulldozer. Some of this material was removed from the canal using the two very old HAVA draglines that were frequently out of service. An estimated 10,560 cubic meters of gravel were moved. The lack of a clean sweep in this area related to the very large size of the canal in this upper area limiting the use of hand labor, and equipment failure. A frustrated Engineer Wardak did an outstanding job accomplishing his numerous tasks, desilting and construction and/or repairs of the canal wall noted below, using old equipment under constant breakdown/repair.

Some desilting using hand labor was accomplished in the area of the Girishk bridge at km.7+827 and has been included in the totals above. But without a very large work force, desilting the Boghra Canal in this area by hand where the canal has a very large cross-section would be time consuming. Some relatively new draglines are needed for this work.





*Jan 99: Before and After -- desilting of silt shoulder  
at Loy Manda siphon exit at Km 29+865*





In the areas of siphon and canal embankment repairs between km. 29+865 and km. 48, Engineer Payenda used hand labor to remove some 1,722 cubic meters of silt from the canal, included in the totals above.

*Recommendation: Desilting work at the entrance of the Boghra Canal should be budgeted every year for both inside and outside the Boghra canal intake and for the first 3 to 5 km. of the canal into which silt and gravel flow continuously.*

*Last year MCI worked on the river side of the intake removing some but not all of the 20-year build up of river gravel with great impact. This year we worked inside the canal entrance removing a similar build up. But every year the Helmand River has a flood season that brings in more gravel. This year when the river is low and work begins on the weir, discussed below, men and equipment will be within 100 meters of the area needing additional attention outside the intake. This work ought to be done.*



Jan 99: Boghra Canal intake area needing desilting;  
gravel delta in foreground.



*20 Oct 97: Detail of Boghra Canal intake area.  
Proposed weir site is on small channel, upper right.*

## THE INTAKE AND CONTROL GATES

Some funding has been made available through U.S. Narcotics Affairs for the repair and replacement of the gates and structures on the Boghra Canal. The initial focus was on the Boghra Canal intake structure which is composed of two elements: diversion gates and intake gates. This is an "L" shaped structure with the first diversion element extending out into the Helmand River channel at roughly a right angle to the flow of the river. If the three diversion gates are open, most of the river flow continues down the river. If the diversion gates are closed, this river channel flow is diverted into the Boghra Canal. In flood, these diversion gates should be open to prevent damage to the canal system through excessive flow and pressure.

The second element of the structure are the four intake gates that allow the river to flow into the canal. In flood, these gates should be at least partly closed to protect the system from excessive flow and pressure. During maintenance time, these gates will remain closed to allow the canal to empty.

Several of the gates and some of the concrete work were damaged by artillery fire during the Russian occupation. All the gates have now been repaired or replaced, the last gate being put in place on 27 January 1999. The missing lift mechanisms have been replaced and the mobile hoist on the diversion structure has been repaired. All of the lift mechanisms on the intake structure were missing by the time the Taliban government appeared. The damaged concrete work on the structure has been repaired. Although the gates and mechanisms have all been repaired or replaced, the diversion structure and its parts is not complete and does not function effectively.

Problems to be addressed:

- 1) One of the gates on the diversion structure is not in alignment and moves with difficulty.
- 2) Some of the wheels on the quadra-pied mobile hoist that moves on tracks and lifts the diversion gates are apparently mis-aligned and move with difficulty.

- 3) The first gate on the left side of the intake structure is not provided with cables as yet and cannot be opened with the newly installed lift mechanism.
- 4) The cast iron lift mechanism for the second gate on the left side of the intake structure has a crack in the frog that holds down the rotating lift shaft. And one tooth has flaked out of the primary gear wheel of the mechanism. Possible reasons for this damage are:
- (a) The mechanism was damaged when it was dropped to the floor of the canal (perhaps 30 feet) at the time of installation.
  - (b) The shaft and the mechanism were mis-aligned at the time of installation resulting in excessive pressure on the parts.
  - (c) Excessive pressure has been put on the parts because the gates' counter weights were not installed with the gates. Two of these weights have been poured (concrete with re-bar) but not put into place as of 1 April 1999.
- 5) The intake gates' counter weights need competition and placement which would allow the gates to be easily opened and closed under water pressure. One problem is that there is not a dragline or crane large enough in the area to do this important job. The large but old American made dragline located in Lashkar Gah could perhaps do the job but there is no low-boy (truck) large enough in the region to move this piece of equipment.
- 6) The come-along or chain hoist mechanism on the diversion structure is geared too low to allow the gates to be opened or closed within a reasonable time. This hoist should be replaced. It takes about three hours to open these gates to take pressure off the canal system at time of flood. This is not enough time, given that there is no early warning system up the river to warn the gate keeper/custodian, Mohammed Amin, of coming flood, and

that there is only one gate keeper who is on call 24 hours a day, 7 days a week.

Virtually every gate and control/drop structure along the Boghra Canal has been damaged and not repaired during the past 20 years of war. With all the structures, some if not all the gates and lift mechanisms are either damaged, destroyed and/or missing. Needless to say, without the various control gates properly functioning, the floods in the Helmand River over 20 years have damaged the Boghra canal system.

Part of the agreement with the farmers related to the rehabilitation of the Boghra Canal's control structures and gates. MCI has started this work but it is moving at a snail's pace. There is one technician, Mohammed Omer, with a small group of helpers. They have one tractor with a trailer and a portable electric welding machine. Given the hundreds of repair and replacement jobs on the many control gates and mechanisms along the 94 km. plus of the Boghra Canal, it will take years to have an impact on the job to be accomplished. Mohammed Omer is a skilled technician but he is not a magician. In development terms vis-à-vis the farmers and government in the region, the work progress is invisible. When I arrived at the Boghra Canal on 12 December 1998, the lift mechanisms for the gates of Wasteway #1, 10+917 km. below the intake, had just arrived. On my last visit to Kandahar to pick up some watermelon seed on 25 March 1999, the new replacement gates for the structure had just arrived. While some other small jobs had been accomplished by the gates repair team during this period, one at my request, the primary focus of the team was on the wasteway structure. They apparently passed a lot of their time waiting for the necessary parts that were being fabricated in Pakistan. This gates repair element of the project must be changed, speeded up and expanded. The following changes should be considered.

**Recommendation #1:**     *Expand the budget and hire at least 5 repair teams with perhaps 5 men on each team. The required skills on each team will determine the size of the team. Each team will have a skilled and experienced technician as head. The teams will be controlled and supervised by an experienced engineer knowledgeable of*



*the work to be done. The present team is good at repair and installation but they are not experts at alignment and adjustment, and they have little knowledgeable supervision. Each team will have the necessary mobile equipment to accomplish the tasks. One sizable crane for general use is necessary for gate removal and placement. The size of the crane would be determined by the largest job to be accomplished. Each team will have adequate transport to move personnel and equipment in a timely manner, i.e., a pickup truck. Each team will have adequate mobile shelter and facilities to allow extended stays at the work sites.*

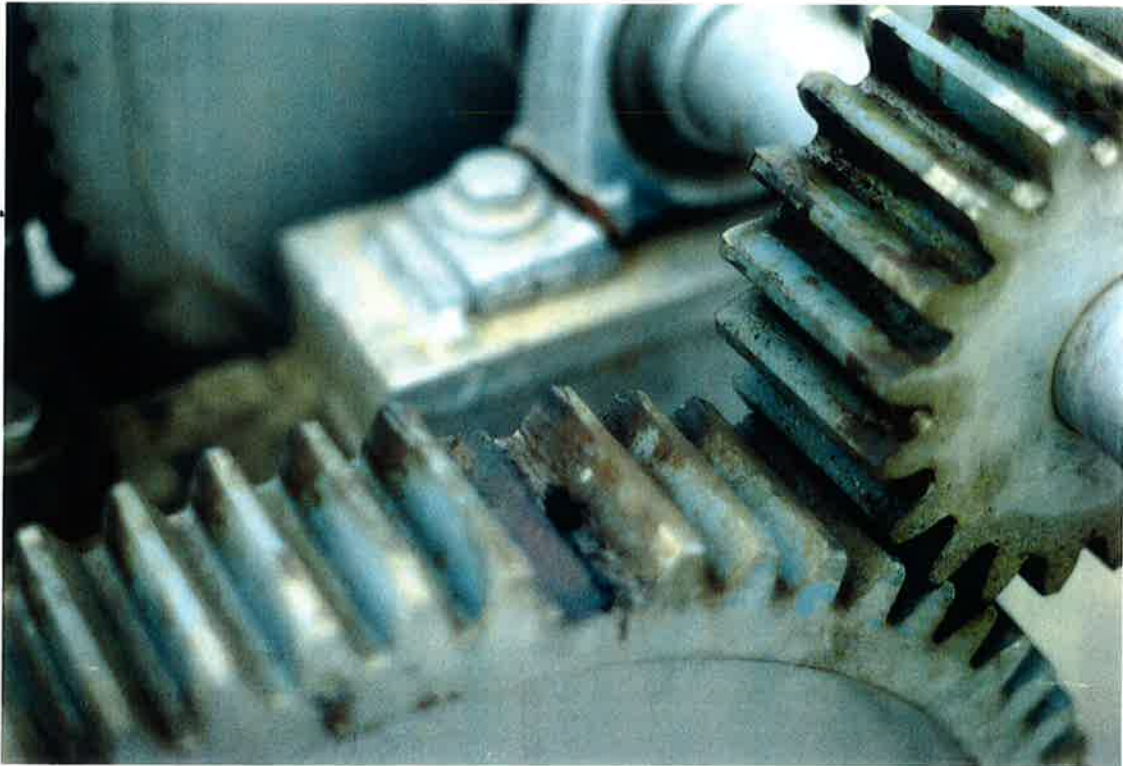
*Recommendation #2: Set up a workshop, first in Lashkar Gah to be moved later to the old MKA/HACU workshops at Chan-i-Anjir when electrical power is restored. The shop will be staffed by experienced technicians, i.e., welders, metalworker, etc. capable of making repairs and fabricating some of the smaller and less complex gates from the start. One of the present delays appears to be the rate of speed at which the Pakistani company can produce the replacement gates.*

*Recommendation #3: In addition, the workshop would function as a training school for welders and metal workers for the next generation. Many of the skilled and experienced technicians still in the region of this sort are "graybeards", older men trained as early as MKA (the 1950's) and can pass their knowledge of the irrigation systems as well as their technical skills to the next generation. HAFO is an organization with experience in setting up technical training schools that might be tapped to help with this aspect of the project. They have a long term technical training school in Ghazni and are building a second school in Kandahar.*

*This workshop/training center would start small and work on the fabrication of the smaller and less complex parts and gates. A relatively simple shop could be started with limited equipment to be added to as the needs are identified and the skills are developed.*

**Recommendation #4:** *An attempt should be made to identify or help re-establish a foundry operation in Afghanistan for the fabrication of some of the necessary parts. The gradual shift of the fabrication element of the Boghra control gates project from Pakistan to Afghanistan would have two goals: (1) To re-develop useful facilities in Afghanistan that would aid the economic recovery of the country. (2) To speed up the rehabilitation of the Boghra Canal.*

The Boghra Canal control gates repair is as important as the desilting element of the project. It must be effective and quick. Presently this element of the project is progressing too slow and should be changed.



Jan 99: Damaged lift mechanism on Boghra Canal intake



*Mar 97 - Jan 99:  
Before and After  
Boghra Canal intake  
lift mechanisms;  
MCI dozer in view.*

## BOGHRA CANAL REPAIRS

Although these repairs are not specifically mentioned in the project proposal, they are extremely important for the life of the canal and in many cases significantly contributed to the silting of the canal. In the process of desilting, it made no sense to by-pass these areas in need of repair. There are other repairs to be made along the length of the Boghra canal and should be included in the next project proposal. Problems were noted but no repairs were made along the east branch of the Boghra canal. We did not complete all the repairs needed even along the main canal. Each flood season, like this year, adds to the list of repairs needed. Virtually all of these repairs need to be done during the cold season with the canal closed, no water.

Engineer Wardak repaired 130 meters of Boghra canal embankment and service road on the left bank, 1.8 km. south of the Boghra intake structure. Roughly half the service road surface had been undercut and flaked into the Boghra canal at this point. If left unrepaired, a breach could have occurred in the embankment and flooded a large area of farm land and villages. We used HAVA dump trucks, a backhoe loader, MCI tractors, local tractors, the MCI bulldozer and an old HAVA dragline for this work. This involved an estimated total of 6,271 cubic meters of compacted fill. Some 1,755 cubic meters of debris were removed from the canal floor below this fault by hand labor and the dragline.

Engineer Wardak built a nullah inlet concrete culvert, 5.8 km. south of the Boghra canal intake, just below the Girishk power house using hand labor. (A nullah is a dry stream bed or wash that periodically floods during the rainy season.) This structure's design was approved or redesigned by MCI Chief Engineer Samad based on a design submitted by our sub-contractor HAFO. The original culvert built by MKA some 50 years ago had been washed out by flood at some point over the past 20 years, along with a retaining wall, putting much silt into the canal with each rain. This work involved some 40 cubic meters of rubble concrete and 3,509 cubic meters of compacted fill.

Engineer Wardak repaired 98 meters of canal wall and service road on the right bank of the Boghra canal, 11.2 km. south of the Boghra intake structure. The complete embankment had been washed into the Boghra canal





Dec 98 - Mar 99:  
Before and  
Under Repair;  
Damaged  
Boghra Canal  
service road and  
embankment  
at Km 1+800



at this point. We used MCI and local tractors, HAVA dump trucks and the MCI bulldozer for this work. This involved an estimated 4,743 cubic meters of compacted fill.

This is the site of Wasteway #1 on the Boghra canal and the site of a battle between the Russians and the Mujahadin in the 1980's in which a famous commander was killed. The embankments and wasteway gates were damaged at that time by Russian artillery fire. MCI is presently repairing and replacing the gates and lift mechanisms on this control structure. There is also an underdrain at this site but the damaged embankment channeled flood water from a desert nullah through the breach into the canal rather than through the underdrain. Flood water will now flow through the underdrain and down to the Helmand river as MKA had designed.

Engineers Wardak and Samad built a gabion protection structure for the barrel of the Ab Pashak siphon at km. 15+325 following a design by Chief Engineer Samad. This siphon was in the process of being excavated out and damaged by desert flood water. This work involved 1,200 cubic meters of compacted fill and 235 cubic meters of gabion stone work. HAVA dump trucks, a backhoe loader, a bulldozer, the MCI bulldozer, local tractors and a lot of hand labor were used for this work.

Engineer Payenda built a gabion protection structure for the barrel of the Loy Manda siphon at km. 29+865 following a design by Chief Engineer Samad. This siphon was also in the process of being excavated out and damaged by desert flood water. There were two places repaired on this siphon: one big and long term hole on the exit end of the siphon and a small hole that appeared with the first flood of the season this year as we were working at the site. This work involved 1,964 cubic meters of compacted fill and 173 cubic meters of gabion stone work. HAVA dump trucks, a backhoe loader, a bulldozer and a lot of hand labor was used for this work.

As previously noted, Engineer Payenda also organized a work crew of some 50 men to desilt parts of the canal in this area between km. 29+865 and 31+950. They removed 1,470 cubic meters of silt from the canal. Most of his desilting workers were from the nomad camps nearby.





*Feb 99: Damaged Ab Pashak exposed siphon under repair at Km 15+325*







*18 Mar 97: Rough water excavating Loy Manda siphon barrel at Km 29+865*



*Dec 99: Exposed Loy Manda siphon barrel*





*Jan 99: HAVA heavy equipment excavating fill for Loy Manda siphon*







Jan 99: Loy Manda siphon under repair;  
exposed siphon barrel in center.



Feb 99: Gabion-protected Loy Manda siphon barrel nearing completion.



Engineer Payenda repaired 335 lineal meters of damaged canal wall with gabion protection in 8 different locations. Three locations were near the Shamalan canal intake off the Boghra canal and lift gates at km. 31.9. Seven hand-held rockets were found in the water at this site. The local mine detection unit was informed but they did not come until after the water was back in the canal. There were no explosions. Five of the repair locations were near the Nad-i-Ali siphon at km. 46.6. This work involved a total of 2,500 cubic meters of compacted fill and 967 cubic meters of gabion stone work. Local dump trucks and tractors, an MCI tractor and a lot of hand labor were used to do this work.

This damage to the canal walls, all near concrete control structures, was caused by the uncontrolled flood water that has periodically passed through the Boghra canal over the past 20 years the result of the damaged or missing control gates along the canal beginning at the intake. This year, during the major flood of 7 February '99, the surge of flood water went down the canal and blew out a wall in the Marja area, a wall that had been previously breached on two occasions. This flood damaged some farm land before the farmers could plug the 20 foot wide hole. This emphasizes the importance of the gate repair work MCI has already started, noted above.

Engineer Payenda repaired and compacted 32 meters of canal embankment and service road on the right bank of the Boghra canal at km. 48. The compete embankment had been washed out at this point by desert flood waters at some point over the past 20 years. Additional silt was added to the canal with each rain. A local tractor with rear blade was used to loosen and remove the compacted silt from the bottom of the canal with hand labor help. A large HAVA bulldozer was used to do the fill and compaction work. This totaled 946 cubic meters of compacted fill.

Engineer Payenda repaired and re-built 695 meters of flood protection dike that helped channel desert flood water across siphon 46.6. The 32 meter break in the canal wall (noted above) was caused by flood water not being diverted by the old eroded MKA dikes at this point. This needed repair protects the canal wall from further damage. The large HAVA bulldozer was used in this work and involved moving 5,560 cubic meters of fill.



*Feb 99: Before and After - Repairs at drop structure 46+160, Nad-i-Ali*





*Feb 99: Before and After - Repairs at intake Km 47, Nad-i-Ali.  
Villager-built stone diversion wall was placed during water-short  
period of Boghra Canal.*







*Feb 99: Before and After - repairs at desert side intake 47, Nad-i-Ali*







*Feb 99: Before and After - repairs at drop structure Km 47+650, Nad-i-Ali*





*Feb 99: Before and After - repair of broken canal embankment;  
Km 48, Nad-i-Ali*







*Feb 99: Before and During - repair of 695 meters  
of old MKA diversion dikes at siphon 46+767*



The Nad-i-Ali work force began desilting 100 meters of the wasteway channel off this siphon 46.6 but stopped work when a worker dug up a land mine. The de-mining office in Lashkar Gah was notified but they did not respond for several weeks. In all, we unearthed some 10 rockets of varying sizes, a hand grenade, the land mine and a variety of unspent rounds of ammunition in the desilting work. There were no explosions.

There are 5 wasteways within the first 75 km. of the Boghra canal. Three are silted up to the point of non-use. Most gates and lift mechanisms are missing or in need of repair. These wasteways have a variety of functions, one being to use them as an emergency exit for canal water in case a section of canal must be closed for repair of a breach. At the moment there is one wasteway that could be used in case of an emergency.

***Recommendation:** In the next work period focus energy on the desilting of the wasteways and the repair of the wasteway gates. As emergency structures, the wasteways are important.*

Engineer Payenda desilted and rechanneled the wash crossing at Shovel siphon at km. 39.8. This wash becomes Chan-i-Anjir wash further down stream where the foot suspension bridge built by MKA some 50 years ago was taken out by flood on 7 February 1999. Some of the original large rocks that had been placed by MKA to protect the edges of the siphon from flood had been moved into the center of the channel by farmers to redirect the flow of flood water. These were moved back to the outer edges of the wash to protect again the service road and siphon embankment. An estimated 3,325 cubic meters of silt were removed from the center of the wash crossing to clear the channel. Some 1,808 cubic meters of compacted earth fill and gravel were placed on the edges of this embankment. This work was done by local and MCI tractors, the large HAVA bulldozer and 193 man days of hand labor. There were several other small Boghra canal repair activities in addition to the above. Only the primary activities have been detailed for this report.

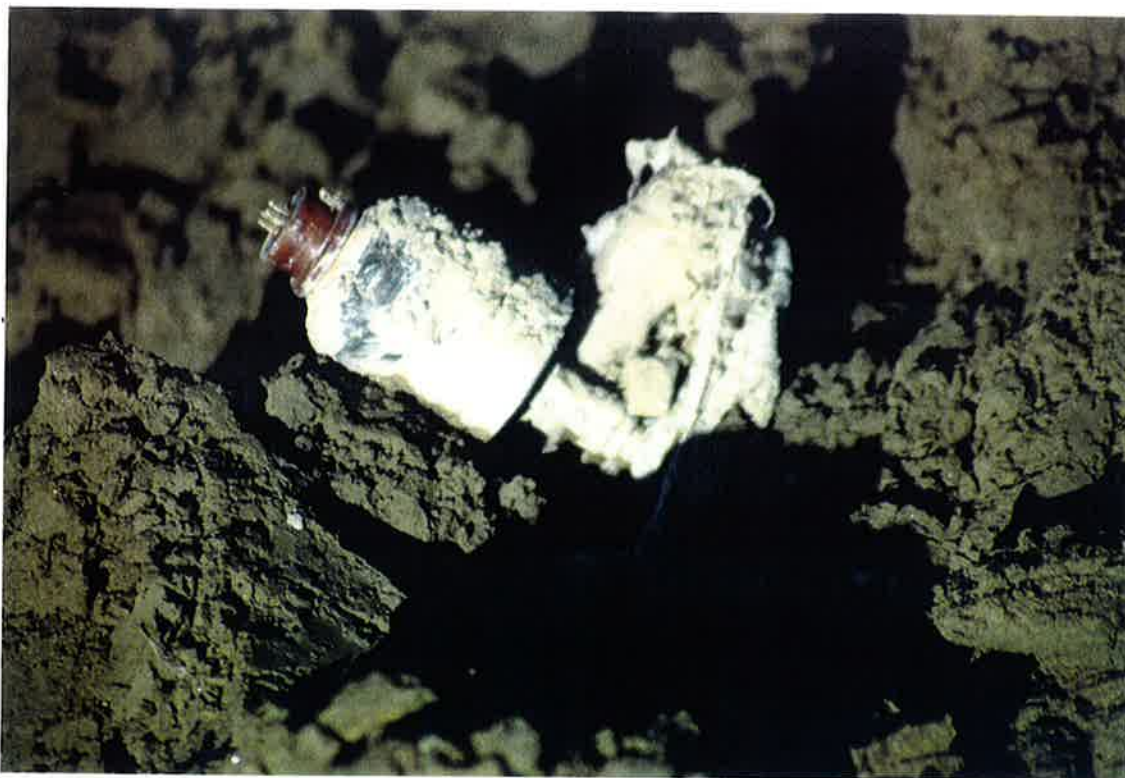




*Feb 99: Silted wasteway and gates at Km 46+617;  
work interrupted by land mine discovery.*







*Feb 99: Unearthed land mine at wasteway Km 46+617*



*Mar 99: Silted wasteway with growth at Km 70+60, Marja*

**Recommendation #1:** Many of the repairs noted above involve the use of gabion baskets and stone. Even during the work period there were apparent problems of erosion associated with these repairs and structures. MCI should monitor the condition of each of these gabion repairs on a quarterly basis to insure that new problems are not developing.

**Recommendation #2:** The foot bridge at Chan-i-Anjir wash, which has water year around, is a very important crossing for the community of Chan-i-Anjir. It is still possible to cross on the fallen bridge by climbing over the remains but this is very difficult for small children and women, many carrying babies. It is possible to cross the wash when not in flood by wading across the vehicle Irish bridge in knee to thigh deep water, again difficult/not possible for women and small children. Budget for the repair/replacement of this bridge. It would not be costly. The foundations and metal work up to the first cross beam appear to be intact. Cut it off at that point and replace the upper part of the bridge, if the engineers agree with this observation. MCI has the mobile welding machine, noted above, that can do the job. The cables are original and old but appear re-usable. Virtually all the wood planking is in place. This action would respond to an important community need. The community would likely contribute to the work if asked. It would result in a public relations coup. If the Taliban find some funds to do this repair/replacement work themselves, it will likely be a poorly executed patch-up job.

As a side note, the U.N. had funded the replacement of the wood planking for this foot bridge perhaps 18 months prior to the flood.





*Mar-Oct 97:  
Before and After  
Chan-i-Anjir  
footbridge repaired  
with UN funding*





*7 Feb 99: Flood at Chan-i-Anjir footbridge*



*15 Feb 99: Chan-i-Anjir footbridge in need of repair*

## ROADS

The MCI grader was rehabilitated for use early in the work period and at least 57 km. of service road along the canal, between Chan-i-Anjir and the Boghra canal and between Lashkar Gah and Chan-i-Anjir were graded and improved. All of the earth and gravel roads in the region need maintenance. We focused on the service roads associated directly with the desilting work along the canal and as noted, most of this work was associated with disposing of the spoils taken from the canal. In many areas, these service roads were nearly impassable when the project started. Our vehicles broke 3 leaf springs during this 4-month work period. Presently a vehicle can travel at a reasonable rate of speed from Loy Manda siphon at km. 29+865 to km. 75 at the beginning of the east branch of the Boghra canal, some 45 kms. except where the villagers have built speed bumps. The improved road surfaces have attracted additional traffic of cars and trucks that had been using desert tracks. We received many smiles and statements of thanks from regional drivers.

There are many benefits from improved road surfaces, from less damage to farm produce in the process of getting it to market to less wear and tear on vehicles and tires. And there are great benefits in improved public relations associated with a project. The cost of improving regional roads is minimal. The MCI equipment is available for use.

***Recommendation:** Budget for regional road improvement, mainly grading. In some areas some gravel fill is needed, i.e., the Lashkar Gah to Marja road. The primary road into Lashkar Gah from the Kandahar to Herat highway needs grading. This road was re-surfaced by MCI 3 or 4 years ago but has seen little maintenance. Presently most of the vehicle traffic along this road uses parallel desert tracks rather than the bumpy road surface. HAVA has a functioning road grader but few funds for anything. Discussions with the Taliban could result in a cooperative effort for regional road improvement with minimal funding.*

**NOTE:** Early in this work period, we requested HAVA to provide a limited number of dump truck loads of gravel for a section of road near the Lashkar Gah bridge. We wanted to test the MCI grader on a nearby section of road after its rehabilitation. HAVA complied, we tested the equipment and improved that section of road. As a side note, the grader blew a hydraulic line in the process and HAVA provided a replacement part within an hour of the breakdown. The Taliban proved very cooperative during this work period.



*Mar 99: Improved road and cleaned Boghra Canal, Nad-i-Ali*



## AGRICULTURE

Agricultural development and improvement is the key to any opium poppy reduction/elimination project. Until increased incomes can be realized from substitute crops to poppy, the Taliban will not have the political will to pressure the farmers to stop growing poppy. Helmand is where the Taliban get much of their political support and at present, poppy is the primary base of this agricultural economy. Until substitute sources of income for poppy are realized, the farmers of Helmand will have difficulty in shifting out of poppy and the Taliban will not force them. The starting point is with the rehabilitation of the irrigation systems in the region which will allow the farmers to grow crops during both ag seasons, i.e., the primary focus of this project. In the largest and primary agricultural areas of focus of this project, the areas irrigated by the Boghra canal and its branches, there have been two ag initiatives in substitute cropping: wheat and fruit trees.

### Wheat

The FAO supports a wheat project where improved varieties of wheat are brought in and sold to selected farmers in a seed multiplication action. The wheat is then bought from the selected farmers, cleaned and re-sold, increasing the quantities of improved seed. The farmers know the value of improved wheat, the primary consumption crop in the region. They appreciate the availability of improved seed and eagerly participate in the program. But wheat is not a cash crop substitute for opium poppy. The price paid to farmers for raw opium has doubled over the past year.

As a side note, a Taliban from the Foreign Affairs office in Lashkar Gah told me that the wheat program was not being properly run. He said that personnel from the wheat project were buying wheat off the local market, cleaning it and selling it at a higher price. Other sources indicated that in fact, wheat was being bought off the local market and re-sold. Apparently FAO did not have enough improved wheat to meet the demand. It is likely that some of the improved varieties did get on the local wheat market. It is possible that the wheat project personnel were buying this improved wheat

off the market for re-sale. But this project should be carefully monitored by at least MCI agricultural staff from outside the region to insure that only improved varieties of wheat are being bought off the local market. If the Taliban were to get involved and if the wheat in question is not of the improved varieties, the Taliban reactions could be repressive.

### Fruit trees

Improved varieties of fruit trees are seen by Helmand farmers in a very positive way. They buy and plant all that may be made available. In every weekly market and bazaar, fruit trees are available in the spring planting season. There is a good market and some farmers are planting in numbers that will eventually become a source of cash income. Many plant for their own extended household consumption. But for short term immediate cash income, fruit trees do not substitute for opium poppy. It would likely take 4 to 5 years for an orchard to begin to produce any sizable income, and this assumes a reasonably sized orchard.

### Other Cash Crops

Ideally a cash crop substitute for opium poppy would be one that the farmers already know, understand and for which there is a ready market. For immediate impact, it should be a one season crop. There are several crops already in the Helmand region that meet these criteria but need some outside support.

***Peanuts:*** This is a crop, like cotton, that for the best results and higher productivity you plant it in early spring before the wheat and poppy crops are harvested, i.e., no double cropping with poppy. But you can apparently plant later and double crop with poppy but get less production. See my memo on peanuts in the annex. According to one farmer/khan, he gets a better income from peanuts than he could from poppy.

MCI brought in some improved peanut seed last year and took a seed multiplication action on an MCI demonstration farm in Kandahar. Some of this seed was apparently sold/distributed in the Boghra canal region after my departure.

***Recommendation:** One crop year delay occurred with the MCI multiplication action with the peanut seed in Kandahar. If the product is good and there is a market, the farmers understand the seed multiplication concept. Helmand farmers commonly grow crops and save seed from the best plants for next year. For immediate impact, it is probably best to bring in an adequate amount of seed and sell/distribute it. Let the farmers decide. If the results are particularly good, bring a greater quantity of seed the following year. In cash cropping as a substitute for poppy, immediate results are required. For at least one crop year, MCI should attempt to flood the market, preceded by a very vocal information program selling the idea, with top quality, inexpensive peanut seed. It would also be advisable to attempt to expand the peanut market through contacts with the present buyers.*

Peanuts may not be for the entire Boghra area. At the moment there appears to be a concentration of peanut production in the area of the Shovel siphon at km. 39+830 where some farmers are trying to change the nature of their soil by adding sand from the wash. There were fields being prepared for peanut, according to local statements, in many areas of Nad-i-Ali and Marja but the high water table (bad drainage) and tight clay soils in some of these areas may cause problems for the crop.

There is an apparent ready market for peanuts with buyers coming in at harvest time from Herat (Iran) and Pakistan to buy the crop. The size of this market is unknown.



*Cotton:* Cotton was introduced into Helmand as a cash crop in the late 1950's or early 60's. The first cotton gin was built by British foreign aid by 1965 in Lashkar Gah. But cotton as a cash crop did not become important until the mid 1970's when the government raised the price paid to the farmers. To keep up with the explosion in production and the spread of cropping up the Helmand river, the British completed the second cotton gin in Girishk just before the Russian invasion in 1979.

Cotton is the ideal cash crop to replace poppy but help is needed to do this. The farmers know and understand cotton production, including row planting. The gins are present and one is functioning to buy and process the cotton. There is a ready international market for the cotton. Cotton production has been expanding dramatically over the past three years. See my cotton memos in the annex.

But the cotton gins need to be rehabilitated to respond to any increase in cotton production. They need spare parts and technical assistance. The Girishk gin needs the electric power to be restored from Kajaki dam. The Taliban need to set a good price for raw cotton for the farmers and be prepared to pay for the cotton when it is brought to the gin. They need administrative technical assistance. There have been long delays in payment for cotton to the farmers this harvest season. The Taliban need help in establishing a credit system for fertilizer to be re-paid by the farmer at harvest time. They need technical assistance. The Taliban need help to get back into the international cotton market, technical assistance. Before the war, the government sold cotton to Japan, China, Germany, Pakistan and England. Presently they sell only to Pakistan at reduced rates which limits their ability to pay the farmers.

Cotton is the logical cash crop to substitute for poppy but the cotton industry needs help.

We brought in a small amount (150 lbs.) of three varieties of cotton seed for this planting season and got the seeds sold/distributed to selected farmers. The MCI agriculture section in Helmand are keeping tabs on the results for future seed improvement actions.

***Recommendation:*** MCI or any other single agency is not likely to be able to take all the steps necessary to bring the cotton industry back to its pre-war status but other national and international agencies could be approached in donor meetings for aid in the variety of different fields and activities. For example, since the British built and provided technical assistance to the cotton gins before the war, perhaps they could aid in that sector.



***Mar 99: Lashkar Gah cotton gin production from part of 1998 cotton crop***

*Vegetables and Melons:* Under this project, there has been no vegetable or melon seed program in the areas irrigated by the Boghra canal. Most farmers know and understand vegetable and melon farming but there are problems related to seeds and marketing.

Several farmers planted good quality cauliflower seed this past winter and got a good crop of high quality produce. The price was good at the beginning of the harvest but quickly dropped because of the limited market. Until the roads are repaired, both winter and summer vegetable crops should be limited to produce that is not highly susceptible to bruising. The roads in the region are very rough. Markets outside the immediate region are perhaps Kandahar and certainly Pakistan. Marketing surveys and contacts need to be made to see if vegetable markets can be established.

Iran is a possible market as with the peanut market. One of the original purposes for the development of Kandahar airport in the 1950's was for the export of fruit and vegetables to the Arab countries. Presently, Ariana's only international flight is to the U.A.E. in the gulf. But is that a potential market?

*Recommendation: MCI should first consult with ACBAR/Peshawar to see if any other NGOs are working with the marketing of fruit and vegetables. Have the regional national and international markets canvassed for the potential for Helmand produce. If markets can be identified, flood the region with high quality, low cost vegetable seed for both winter and summer crops. Have experienced marketing personnel help organize a marketing organization based on local people. This would be a complex undertaking and would likely require the help of other organizations and additional funding but vegetables and melons represent a potential substitute source of income for poppy. The farmers could and would grow vegetables if there were a clear market outlet.*

We brought in a small amount (150 lbs.) of three varieties of U.S. watermelon seed for this summer crop season. MCI ag personnel will keep close tabs on



the selected farmers with the seed to see which variety does best. One variety (20 lbs.) was of hybrid seed which should produce well but without the potential for seed multiplication for next year.



*Jan 99: Top quality cauliflower*

## KOREZ REPAIR AND PROTECTION PROJECT

I did not go to this project site in Nauzad. But during the earlier phases of this work period, but Engineer Samad made several visits. By the time we had the Nad-i-Ali work force organized and growing, Engineer Aziz, engineer-in-charge of the korez project had stopped the work for the season because of the effects of freezing weather on concrete. As noted, Engineer Aziz took over the responsibility of organizing the Marja work force.

It is significant, however, that during this work period, villagers from the Nauzad area came to Lashkar Gah, the MCI office and the Governors office asking for help and submitting official petitions for additional korez work in that region. We received 4 or 5 petitions for new work in the area. In some cases, the Governor forwarded the villagers to the MCI office for action. The seasonal nature of the work was explained to the villagers and the Taliban (the Foreign Affairs Office got involved) and Engineer Aziz was called into the consultations for comment and future actions. Clearly this project has the attention of the government and the villagers both of which want the work to continue and to be expanded.

*Recommendation:*      *Additional funding should be budgeted for this activity and additional staff added for an expansion of the project.*

## THE WEIR

The diversion weir in the Helmand River near the Boghra Canal intake has been planned and designed by MCI. It is to be built on the alignment of an old MKA diversion dike built in the mid-1940's that has been eroded away by the annual floods. It is to be a partial answer to the need for the reconstruction of the old MKA dike and is designed to block a main flood-cut channel through the MKA dike and divert water toward the Boghra Canal intake. It is an important segment of the total diversion dike needed.

***Recommendation:** The design for this gabion structure to be constructed near the middle of the Helmand river bed should be reviewed and approved by an organization of experienced river channel engineers.*

The original construction was planned for the fall of 1998. It did and will require the use of some heavy equipment: bulldozer, loader, backhoe, dump truck and probably some compaction equipment. Several water pumps will be required. This equipment was not available for use in the fall of 1998. The two MCI loaders and bulldozer were broken down. The other heavy equipment later to become available through the Taliban and HAVA, was in use on a misguided government project at the Lashkar Gah bridge. MCI Engineers Wardak and Payenda were at work organizing the gathering of river stone and weaving gabion baskets respectively for the project. After some initial discussion with Engineer Wardak, he was asked to write a project work plan, which he did. It was given to MCI Chief Engineer Samad. The construction work on the weir is now scheduled to begin in the hot season in July 1999 when the river is again low. Engineer Wardak will need some additional engineering help to coordinate and supervise the different elements of this construction work. Arrangements should be made well in advance with HAVA for the required heavy equipment to insure its availability at the time needed.

By the end of March 1999, one MCI loader was operational. The MCI bulldozer was down with a second broken axle during this short work period. Generally a bulldozer should not break two axles during a 4 month period. Either the weak axles are an original design flaw, the replacement axle



fabricated in Pakistan are of inferior materials, the operator is putting too much stress on his equipment or all of the above.

As noted above, if the heavy equipment needed is in fact made available during the hot season to allow this work to start, consideration should be given also to removing some of the gravel/silt resting in the channel in front of the Boghra canal intake.



*Jan 99: Gravel delta at Boghra Canal intake*

## COMMUNICATIONS AND TRANSPORTATION

There was virtually no system of communications within Helmand or between Helmand and the outside. There was little effective communication between the various elements of the project except by land transport. This caused some delay in field operations, some misunderstandings and provided some management problems.

There is a satellite telephone system operated by the Taliban telephone office in Lashkar Gah at the one rate of some \$4.50 per minute for anywhere in the world. The satellite operator was not always at his assigned post but he was always helpful and responsive. It was possible to make an appointment and we found out where he lived for quick response. But this mode of communication always proved to be very time consuming.

Communications between the MCI offices in Lashkar Gah and Kandahar was limited to hand-carried messages or face-to-face contact. The same was true for communications between our field units scattered along 80 km. of the Boghra Canal. Motor transport became our communications link.

Early in the project we had four primary work locations along the canal and one in Lashkar Gah. We had 2 and then 3 MCI vehicles to cover the area. When Eng. Aziz closed down his korez work in Nauzad because of the cold and shifted to Marja, he brought the old MCI ambulance with him that had been his primary support vehicle. We rented two local vehicles to supplement the MCI vehicles. For about a month, HAFO provided us with their only vehicle while Eng. Jawed was in the region. The work sites expanded to seven as the heavy equipment became operational and our canal repair activities expanded. Over time, other MCI vehicles borrowed for other projects were provided but we maintained the 2 rentals to near the end of the work period. Senior supervisory staff, myself, Chief Engineer Samad and HAFO chief Eng. Jawed were in the field on a daily basis, frequently going different directions during the periods we were in Helmand.

The hand labor supervisory staff had large areas to supervise as the work groups were large and scattered. We overhauled 3 of 4 junked motorcycles found in the MCI Lashkar Gah warehouse. We borrowed 3 similar motorcycles from MCI Kandahar and made them operational. We had two new motorcycles

provided by project funding, one of which was used by the itinerate cashier when he was in the area. These old motorcycles did not look good but provided reliable transport for supervisory staff in Lashkar Gah, Nad-i-Ali and Marja. We provided 2 motorcycles to key local watermasters who worked full time with the project as organizers and supervisors with the Nad-i-Ali hand labor force. At one point we traded an old functioning motorcycle for an inoperable motorcycle from MCI ag extension worker Nek Zad of Nad-i-Ali while his was under repair. We would not have been as effective in project operations without these motorcycles. The two budgeted motorcycles were not enough. The one budgeted pickup truck was not enough. Luckily we found alternatives.

**Recommendation #1:** *A radio net should be established between the various MCI offices in the region: Quetta, Kandahar, Lashkar Gah, Girishk, Darwishan. This would result in more effective project management. Some staff appeared to be less effective without a more direct communications link. OMER (the land mine clearing group) and Handicapped International have such links out of Lashkar Gah and Kandahar respectively.*

*An alternative but perhaps more expensive system would be satellite telephone links with E-mail capability in key locations. This last could reduce costs for communications between offices with the most traffic. UNDCP has such a link out of Kandahar.*

**Recommendation #2:** *A system of mobile radios be established for operational field units. Project vehicles should have radios as well as the less mobile field units at temporary work sites. Motorola produces a pocket sized hand held set that has an effective range of up to two miles. These would have been useful for the supervisory staff working with the hand labor units in Marja that were widely scattered.*



**Recommendation #3:**     *The pool of old but operational motorcycles located in Lashkar Gah at the end of March 1999 should be maintained in operating order with regular checks and start-ups. They can be used to substitute for staff transport when servicing/repair is required and they serve as communications links until radio links are in place.*

The importance of good communication links and adequate, timely vehicle transport must not be underestimated. They are the key to effective project management. Staff at all levels can be located, supervised and moved as needed. Needed supplies, fuel and equipment can be expedited for use. Equipment breakdowns can receive quick response. Work can be more easily and quickly coordinated. Time is wasted without these things. And time is money.

## CASH FLOW

There was not an effective system for the movement of funds from the main office in Quetta to the field during this work period. The lack of an effective system of communication further complicated the problem. The regional cashier apparently resides in Kandahar and goes to Quetta when funds are needed. The funds are then hand carried in the form of Pakistani rupees to Kandahar where they are exchanged for Afghanis. This travel may be by project vehicle or public transport. The security problems involved with this method of transfer limit the amount of funds that could be moved at one time. It is likely that this system for transferring funds has been changed. This project activity put pressure on the system through the demand for a greater cash flow in a short time than apparently had been experienced in the past.

The cashier had a roving schedule, bringing funds to and from projects in the region. At some times, projects generated funds, like with the wheat sales. At other times, funds were expended, like with the Boghra Project where we required funds for payments. Luckily in the early phase of the Boghra Project, the Wheat Project had funds from its sales which we borrowed. But we never seemed to have adequate funds on hand to meet expenditures. This tended to cause some problems when we ran out of funds on several occasions half way through pay day with our hand labor force.

***Recommendation:** There is a good safe in the staff house in Lashkar Gah. At the beginning of any particular work season, at least half of the available funds budgeted for that activity should be moved to Lashkar Gah and be available in Afghanis. If heavy equipment is to be leased from HAVA, that amount of money should be in Pakistani rupees since that is the currency for payment.*

Large sums could be moved to the border by project vehicle if accompanied by a number of Frontier Constabulary levees, not the token one or two that normally go with a project vehicle. In Afghanistan, the Taliban have always offered security guards for any occasion in Afghanistan where we feel we need them. They offered to meet any payroll shipment at the border when we

were searching for a solution to this problem. But the impression is that the security problems are in the border areas of Pakistan, not in Afghanistan.



*Dec 98: 4.6+ million Afghanis  
or  
US \$100*



## OTHER CONSTRUCTION

### Shamalan

The Shamalan area is the largest of the three major agricultural areas irrigated by the Boghra canal at 14,768 hectares, a pre-war figure of land farmed. The Shamalan canal built by MKA and the S-10.7 lateral, built under the technical supervision of the U.S. Bureau of Reclamation, a major branch off the Boghra canal needs desilting and repair. Two large sections of the Shamalan canal have been washed out by the shifting Helmand River. These sections are perhaps 200 to 300 meters of wash out in each location. It may not be possible or economical to make the repairs but more and more farm land is being taken away each flood season and the irrigation system has suffered. The Shamalan irrigation system needs to be studied by a group of experienced irrigation and river channel engineers. The farmers of the area and the Taliban understand the magnitude of the problem and know that they need help. Before my departure, the Governor requested help with the Shamalan in writing.

Much of central and all of south Shamalan is irrigated from water brought to the old Shamalan channel by a Russian built intake directly off the Helmand river just north of the Lashkar Gah bridge. The main Shamalan canal ends just south of the S-10.7 lateral take-off because of the two washouts noted. The Russian intake was a mis-conceived notion that has resulted in many problems of river bank erosion near and threatening the Lashkar Gah bridge.

In the meantime, all of north and much of central Shamalan are irrigated by the S-10.7 lateral which needs to be desilted. This is a mid-sized canal that can be completely cleaned by hand labor. There are numerous repairs to be made of the canal embankments along the way in much the same way and for the same reasons as with the Boghra canal, noted above. At the end of the S-10.7 lateral, there are 3 km. of wasteway in need of desilting. The canal and wasteway can be desilted by hand in a winter work season. The 3 km. of wasteway and perhaps 1 km. of the lower end of the canal could be desilted during the hot season when water is in the canal because none of the water ever gets this far.

**Recommendation:** Budget for the desilting of the first 10.7 km. of the Shamalan canal and for the desilting of the S-10.7 lateral. Engineer Jawed of HAFO and I wrote a proposal and budget for this work more than a year ago. I am sure he would share this document with MCI if HAFO could act as sub-contractor. This proposal is also under consideration by UNDCP.



*Jan 99: Shamalan Canal washout from the north;  
arrow indicates other end of washout.*



*Jan 99: Shamalan Canal washout #2  
 Above photo from wasteway #1 looking south;  
 Below photo from canal looking north at wasteway #1*





## Marja Siphon

The Marja siphon at km. 73+962 was severely damaged by Mujahadin explosives at some time in the past. The entrance to the siphon has been restricted by the damage but it appears to function normally. The slower flow perhaps resulted in the breach in the canal wall of 7 February 99 caused by the flood surge, noted above. This breach occurred some 200 meters north of siphon 73+962 on a turn and through the left bank. This is a weak point in the canal embankment where a breach had occurred at the time the siphon was damaged.

Engineer Aziz cleaned and desilted the area around the siphon entrance and a large segment of the canal approaching this most critical area in an attempt to increase the flow through the siphon. We were expecting to find large blocks of concrete at the siphon entrance from the explosion but we did not. The repair of siphon 73+962 will likely require a full work season with the water out of the canal. A skilled construction team will need to prepare for the work well in advance. Time available for the work will be a critical factor. The damaged concrete still held in place by the re-bar will have to be removed. Damaged rebar may have to be cut out and replaced. Forms will have to be built and new concrete poured. This will have to be given time to cure before the water returns. The damage is fully photographed. An experienced engineering company with a background in irrigation canal structures may be required to insure success. This will not be a simple repair.



*Damaged Marja siphon intake at Km 73+962*



*This is what the Marja intake siphon should look like.*





*Damaged Marja siphon intake before and after desilting*







*Damaged Marja siphon intake*



*Detail of damaged Marja siphon intake top right corner*





*Detail of damaged Marja siphon intake top left corner, inside*



*Some ordnance unearthened at damaged Marja siphon*

## Lashkar Gah Bridge

The first major flood in 1999 in the Helmand river occurred on 7 February after two days of rain. The flood threatened to take out the western approach to the Lashkar Gah bridge. HAVA had heavy equipment working the morning of the 7th, pointlessly dumping gravel into the eroding approach embankment. The flood leveled the gravel levies that HAVA had previously built to divert the flood away from this right bank approach to the bridge. This mis-guided plan had required weeks of work by virtually all of the HAVA available heavy equipment and a lot of funding. The right or western bank of the Helmand river just upstream from the bridge to the Russian built intake for the Shamalan canal, about 200 meters distance, noted in the discussion of Shamalan above, has been a trouble spot for a long time, probably since the intake was built. The various Afghan governments since the Russian invasion have expended funds in attempts to stabilize the river bank at this point, without success.

On 11 February 99, HAVA Deputy Akundzada requested help with emergency protection for the bridge before the next flood. The rainy season had just started. He requested MCI gabion baskets to build a barrier to block further flood damage. HAVA knew that we were weaving these baskets for the weir project and were also using some to repair the Boghra canal. This was an emergency. I requested Eng. Payenda to survey the area to see what might be needed. He determined that about 24 lineal meters of gabion basket would be needed for the temporary protection of the bridge approach. The estimated cost was not high: \$730. MCI Eng. Payenda gave instructions on the excavation to prepare the site for the Gabion. HAVA sent a truck to our weaving yard near Girishk, 100 km. round-trip, picked up and delivered the baskets to the site on 12 February. Eng. Payenda gave instructions to the work crews on how to build the gabion structures, which were not followed. No further floods followed.

In March 1999, the Governor request additional gabion baskets to help with the site based on a plan the HAVA engineers developed for the river bank stabilization. He offered to provide the gabion wire to replace the baskets provided. We offered and he accepted a plan to help him set up his own gabion basket weaving operation. We provided some gabion weaving frames (extras) and contacts with local men who were experienced with this work.



HAVA appreciated the help and quickly began producing gabion baskets for the river bank stabilization plan near the bridge. It is clear that HAVA needs technical help with this project. They requested funding. River bank stabilization is always a hit and miss activity with rivers that experience major annual flooding, given the experience in the U.S. Given the remains of past failed attempts at stabilization at this site, the Helmand river is no exception.

*Recommendation: HAVA is presently working on a plan MCI and HAFO engineers have questioned. It is best not to get directly involved at this time. If requested and if funding were available, it might be useful to call in an experienced river bank stabilization engineer.*



*Damage at Lashkar Gah Bridge from flood of 7 Feb 99*

## Darwishan Bridge

This MCI project was not part of the Boghra Canal Project but I visited the site with HAFO Engineer Jawed in 1997 and 1998: before and after the work which is now complete. The results are impressive and I offer the before and after photos for your information.



*The target*



*After  
1998 MCI Darwishan Bridge construction  
Before*





## CONCLUSION

I have attempted to cover the primary elements of the work during the contract period in as much detail as possible. We accomplished a lot during this relatively short work period. We established a close working relationship with the Taliban officials in the area. They were impressed by the magnitude of the work accomplished as were the local farmers who are to benefit. The stage is set for an agreement with the Taliban and the farmers for an opium poppy reduction which the Taliban will enforce if necessary. The MCI team is in place and well qualified to continue the work started.

Opium poppy production can be eliminated in central Helmand but only with direct Taliban involvement. Poppy production can be eliminated by the rehabilitation of the Boghra canal irrigation system combined with agricultural extension and marketing support. The cash crops produced must be already known, understood and grown in the area. The search for new, exotic cash crop substitutes for poppy is not necessary.

I have attempted to outline the problems faced during this work period and identify potential future problems. I have made many recommendations for future actions. Hopefully, I have raised as many questions as I have provided answers. This is part of the learning process. If there is interest, I would like to be involved at some level in the future work in Helmand where I have directly and indirectly invested nearly than three decades of interest and energy. As previously noted, I would be happy to be involved in any future planning for work in Helmand, review project proposals and participate in the field with pending agreements and/or construction work. I intend to contact some of the engineering firms that built the Helmand irrigation system and attempt to generate some interest to help with some of the more complex problems faced. I intend to continue my previous contacts with institutions like Colorado State University and the University of Nebraska and hopefully generate more interest there.

If there are questions relating to any part of this report or about Helmand in general, I would be happy to attempt to address them.

*(On the following pages are photos of three farmers who volunteered to have their poppy fields plowed up.)*



*Mid-March 1999: Partially weeded poppy field of Mohammed Ayib of Nad-i-Ali  
prior to plowing up*



*The spectators to this unusual event*





*The plowed poppy field of Mohammed Ayib*



*26 Mar 99: The ploed poppy field of Mohammed Ayib  
prepared for watermelon*





*Mid-March 1999: Before and After Plowing:  
The poppy field of Abdul Qayum of Nad-i-Ali*







*Mid-March 1999: Before and After PLOWing:  
The poppy field of Abdul Manam of Nad-i-Ali*







*The poppy is also a beautiful flower!*







*The brother of Mohammed Ayib (right), who plowed up his poppy field, holding a packet of watermelon seed in his left hand and a poppy plant in his right hand standing in his neighbors poppy field, symbolically illustrates the change from poppy to a cash crop substitute. This family was our most enthusiastic participant in our poppy field plowing action. Mohammad Ayib initiated the contact and was the first of our limited volunteer group. Given the time, we could have recruited more volunteers. We were unaware of the potential until it emerged through farmer discussion. We provided him with watermelon seed as an after thought not as a pre requisite for the plowing. Helmand Valley farmers generally view poppy as evil.*

## ANNEX I: CALENDAR OF SOME KEY EVENTS

- 4 December 98: *Arrival in Quetta to begin work.*
- 6, 7, 8 December 98: *Travel to Islamabad for meetings with James McHugh of U.S. Narcotics Affairs and Angus Geddes of U.N.D.C.P. on planned work period.*
- 9, 10, 11 December 98: *Meetings with Engineer Sayed Jawed, head of Helping Afghan Farmers Organization (HAF0) on the subject of a cooperative effort during the planned work period. A sub-contract was signed.*
- 11 December 98: *Travel to Kandahar with MCI Deputy Rahmatullah and Eng. Jawed. Registration with Taliban Foreign Affairs.*
- 12 December 98: *Traveled to Girishk and Boghra Canal intake for discussions with MCI Engineer Wardak on subject of the Helmand River Weir Project.*
- 13 December 98: *Travel to Chan-i-Anjir H.A.U.A. workshops to check on status of a dragline under repair, and then on to Lashkar Gah via Nad-i-Ali for first look at poppy fields in target area.*
- 14 December 98: *Meeting with Mullah Abdul Samad, President of Helmand Argandab Valley Authority (HAUA) on subjects of plans for Boghra canal desilting work, opium poppy production in Helmand, cotton as a substitute cash crop for poppy, and heavy equipment rental. Held initial meetings with several farmer leaders who were involved in the poppy reduction agreement.*
- 15 December 98: *Travel down the Boghra canal to the end where it empties into the Marja Wasteway, some 94 km. from the Girishk intake. Initial wide observations of poppy production in both Nad-i-Ali and Marja. First meeting with Abdur Rehman, HAUA archives custodian, to request blueprints of Boghra Canal plans.*
- 16 December 98: *Visit to HAUA building to choose office space to be repaired for project use in agreement with Mullah Abdul Samad. Contracted the repair work.*
- 17 December 98: *Travel to Nad-i-Ali for first meeting with Chief Watermaster Mohammad Karim on subject of organizing a large hand labor force.*
- 18 December 98: *Meetings with MCI Engineers Wardak and Payenda on potential work schedules.*
- 19 December 98: *Ramazan (month of fasting) started. Government declared 4-day holiday.*

21 December 98: *First meeting with Marja Chief Mirab Sar Malim planning start-up work in Marja.*

*Travel to Kandahar on the occasion of the U.S. attack on Iraq. Made contacts with Handicapped International, I.C.R.C., U.N.D.C.P. and Shelter Now. Picked up survey equipment from MCI office.*

23 December 98: *Second meeting with some 20 Farmer leaders at Nad-i-Ali on subject of increased poppy production. Meeting with Mullah Abdul Kayum Akunzada, HAVA Deputy, on costs for heavy equipment rental.*

24 December 98: *Meeting with Mullah Abdul Samad agreeing on rental costs for heavy equipment.*

25 December 98: *Meetings with Engineers Samad, Payenda and Jawed on identifying small start-up work projects. HAVA office repairs completed.*

26 December 98: *Discussions with Engineer Payenda on condition of MCI field equipment (grader, compactors, motorcycles, water pumps, bulldozer, loaders), and warehouse visit.*

27 December 98: *Repair and maintenance work started on MCI grader.*

28 December 98: *Meeting with Helmand Province Governor Mullah Abdul Bahri on subjects of planned Boghra canal work, poppy production in Helmand and cotton as cash crop substitute for poppy.*

29 December 98: *Engineers Samad and Jawed and Watermaster Karim to Nad-i-Ali to identify small start-up projects, and the Boghra canal site to start the use of the HAVA backhoe in desilting.*

31 December 98: *Desilting work started on underdrain 51+050 with 6 men on piece work contract.*

2 January 99: *Old HAVA dragline repaired and delivered to Boghra canal intake at Girishk for placement of final intake gate.*

4 January 99: *Eng. Payenda, HAVA loader and 2 dump trucks at Loy Manda siphon km. 29+865. Repair work started.*

7 January 99: *In Nad-i-Ali, work continues on desilting 3 underdrains.*

8 January 99: *First Meeting with Sar Malim, Chief Watermaster of Marja.*

9-15 January 99: *Meetings in Quetta and Islamabad with Mark Pont, James McHugh and a Washington visitor on the Afghan Poppy program. Meeting with Dr. Zahur Alam, agronomist, horticulturist and director of EDC, a prominent Pakistani consulting firm on cotton*



*production and potential for Pakistani help with the Afghan cotton industry. Grader blade purchased.*

*15 January 99: Discussions in Kandahar with MCI Deputy and agriculturalist Rahmatullah resulting in procurement of watermelon and cotton seed for this crop year.*

*17 January 99: Photographic damage survey of all structures and outlets between Siphon 37+950 and Drop 50+100.*

*18-21 January 99: Ramazan holiday. Windshield survey of poppy production in Bolan and Aynak districts of Shamalan plus discussions with farmers on water problems.*

*21 January 99: MCI grader repaired, new blade installed and tested on 200 meters near Lashkar Gah bridge. Rain.*

*22 January 99: To Boghra canal intake at Girishk. Problems with repaired gates noted by custodian Mohammad Amin.*

*25 January 99: Boghra canal closed for the first time. Desilting started at Loy Manda with 30 men. MCI grader sent to Loy Manda. Work started on repairs at Shamalan intake off Boghra canal.*

*26 January 99: Nad-i-Ali desilting work force up to 250 men.*

*27 January 99: Final gate put into place on Boghra canal intake by Mohammed Omer, HAVA dragline and others.*

*28 January 99: Backhoe (UNEX) moved to Boghra canal and working in Nad-i-Ali. Hand labor force up to 400 men. MCI Grader sent to Nad-i-Ali. MCI bulldozer broke blade and HAVA dragline broken down at intake after 6 hours of work. HAVA lombay truck ran off road after delivery of UNEX.*

*30 January 99: Meeting with Taliban Foreign Affairs Maulavi Hashim on subjects of opium poppy production, cotton as substitute and the farmer agreement. Provided Hashim with a copy of the agreement.*

*31 January 99: Desilting hand labor started in Marja with 175 men under Eng. Aziz.*

*2 February 99: Boghra canal opened with little warning by officials who were under pressure from farmers. MCI grader broke down.*

*4 February 99: Nad-i-Ali work force up to 1000. MCI grader working. Rain in evening.*

*5 February 99: UNEX breakdown. Rain! No hand labor or grader working.*

*6 February 99: Rain. No hand labor. UNEX under repair.*

7 February 99: Rain, Flood in river and washes. Chan-i-Anjir foot bridge washed out. Some damage to gabion work on Loy Manda siphon. Clear by afternoon.

9 February 99: UNEX working. Break in Boghra canal bank in Marja by flood surge through canal. Gatekeeper Mohammed Amin was away.

10 February 99: To Marja to see break in canal bank being repaired by farmers with tractors and shovels under control of local Watermaster Ghulam Ghoust. No government help.

11 February 99: Rain. Boghra canal closed for second time. Request from HAVA for help with Lashkar Gah bridge flood damage.

13 February 99: Work complete at Loy Manda and 3 Shamalan intake repair sites. Seven rockets had been found at these sites. Crew moving to Siphon 46+767. UNEX broken down. MCI grader working.

15 February 99: Work started removing gravel/silt from Boghra intake to Girishk bridge using two old HAVA draglines, the HAVA Russian bulldozer and the MCI bulldozer.

16 February 99: Four sites under repair near siphon 46+767.

17 February 99: Meeting with Maulavi Hashim (Foreign affairs) who requested more help with korez system in Nauzad. Agreed to speak with workers about poppy. Work started on repair of Ab Pashak siphon 15+325 initiated by MCI Chief Eng. Samad.

18 February 99: Second UNEX delivered to Nad-i-Ali and working. Marja damaged siphon 79+962 pumped out and photographed. Three rockets plus desilted. No explosions.

19 February 99: Maulavi Hashim to Nad-i-Ali work sites. Spoke against poppy production to about 40 labor supervisors. Toured work area. Afternoon, driver crashed vehicle into empty Boghra canal. Minor injuries to driver and Eng. Gul Jan. Physical checkup at Lashkar Gah hospital.

22 February 99: Rain but laborers at work. Tested use of tractor with plow to loosen compacted silt on canal bottom in Nad-i-Ali. Land mine dug up by labor in wasteway at siphon 46+767. Work stopped. Excavation of fill for Ab Pashak siphon 15+325 completed.

24 February 99: Meeting with Governor Mullah Abdul Bari on additional gabion baskets for Lashkar Gah bridge. Then to large farmer meeting at Nad-i-Ali with Maulavi Hashim where he spoke on poppy and criticized the farmers for not living up to the agreement they signed. The farmers agreed to plow up some poppy fields as a gesture of intent.

Eng. Wardak started work desilting the canal of embankment rubble, filling/compacting 130 meters of canal embankment, left bank at km. 1+800 using an HAVA backhoe, 3 HAVA dump trucks, 2 MCI tractors,

- local tractors, an HAUA dragline, the MCI bulldozer and a lot of hand labor.*
- 26 February 99: HAUA bulldozer delivered to siphon 46+767 and started work on repairing eroded MKA diversion dikes and filling/compacting canal embankment break at km. 48.*
- 27 February 99: Boghra Canal opened, canal filled for last time.*
- 3 March 99: Eng. Payenda's work group shifted and work started at Shovel siphon Km. 39+830 desilting wash-crossing and repairing service road.*
- 5 March 99: The 2 HAUA UNEX's moved from Marja to E. Marja branch of Boghra canal and started desilting work.*
- 6 March 99: Rain. No Hand labor work. De-mining team came in response to earlier calls but problem areas (rockets) under water in canal.*
- 10 March 99: Meetings with Mohammed Karim and with Maulavi Hashim on list of farmers who have agreed to plow poppy fields and scheduled field day.*
- 11 March 99: Poppy field day: Six vehicles of Taliban officials to Nad-i-Ali for poppy field plowing. Two fields started but too wet. End to hand labor work in Nad-i-Ali. UNEX's in E. Marja buried 300 meters of farm ditch with silt from canal.*
- 12 March 99: Start hand labor to dig out Marja farm ditch. Eng. Razak starts re-survey of 6 km. of Boghra canal.*
- 15 March 99: MCI grader repairing short sections of road from Boghra canal to Chan-i-Anjir and 3 km. of the Chan-i-Anjir to Lashkar Gah road.*
- 17 March 99: MCI grader to Lashkar Gah for servicing and storage.*
- 18 March 99: End of UNEX work on East Marja branch of Boghra canal. End of hand labor work in Marja.*
- 19 March 99: Rain. To Ab Pashak, MW #1 and Boghra intake. Work coming to and end at these sites.*
- 22 March 99: Meetings with Maulavi Hashim, Governor Abdul Bari and associates on finalizing letter to James McHugh of U.S. Narcotics Affairs.*
- 24 March 99: To Kandahar for exit visa and to pick up watermelon and cotton seed that had arrived from U.S.*
- 26 March 99: To Nad-i-Ali to give watermelon seeds to farmer who had volunteered to plow 2 jiribs of poppy, and to witness an additional 2 jiribs of poppy being plowed.*



- 27 March 99: *Start Eid-i-Kurban Holidays.*
- 28 March 99: *Meeting with MCI Office manager Habibullah and MCI Nad-i-Ali extension agent Nek Zad setting procedure for watermelon and cotton seed distribution.*
- 29 March 99: *To Quetta.*
- 1 April 99: *Meetings, reports and communications at MCI office.*
- 3 April 99: *Departed for Peshawar. End of Contract.*
- 13-14 April 99: *To Islamabad and return for meeting with Mark Pont and James McHugh on Helmand project. Also meeting with UNDCP Angus Geddes.*

## **ANNEX II**

### **THE FARMER AGREEMENT**

(Official NAS Translation)

To the delegation of MCI

As you know the Bograh canal intake and gates are completely destroyed and some parts need desilting. If we get assistance to rebuild and repair the intake and canal gates and desilt major parts of the Bograh canal, we promise to reduce opium poppy cultivation by 80% in the next season, i.e., 1998-99. We also promise if we get assistance to repair our drains we will reduce opium cultivation 100% by 1999-2000.

We promise that if we get assistance in solving the problems we will stop growing opium.

*(The following are most of the signatories; some names were not legible)*

Ali Shah Khan  
Abdullah  
Haji Sardar Mohammed  
Haji Khudi Rahim  
Mohammed Sharif  
Abdullah  
Haji Atta Mohammed  
Abdul Karim





### ANNEX III

1 FEB 99

TO: THE FILES

FROM: DICK SCOTT

SUBJECT: REVIVAL OF THE COTTON INDUSTRY IN HELMAND.

**BACKGROUND:** BEFORE THE WAR, COTTON WAS THE MAIN CASH CROP IN HELMAND PROVINCE WITH TWO COTTON GINS, IN LASHKAR GAH AND GIRISHK, AND A COTTON WEAVING MILL IN KANDAHAR THAT MADE USE OF A SIZABLE PORTION OF THE COTTON PRODUCED. THE REST WAS SOLD INTERNATIONALLY.

THE GINS HAD A CREDIT PROGRAM, THROUGH A SEPARATE ORGANIZATION, FOR THE FARMERS FOR THE PROCUREMENT OF FERTILIZER TO BE REPAID AT HARVEST TIME. THE PRICE PAID TO THE FARMER FOR COTTON WAS GOOD, AND THE FARMERS SHARED IN A PORTION OF THE BY-PRODUCTS FROM THEIR COTTON OF COOKING OIL, SOAP, SEED CAKE, ETC. THE SECOND COTTON GIN IN GIRISHK WAS BUILT IN THE LATE 1970'S TO ACCOMMODATE THE INCREASE IN REGIONAL COTTON PRODUCTION THAT WAS WORKING ITS WAY UP THE HELMAND RIVER.

THE ELEMENTS OF THE AG SYSTEM FOR COTTON PRODUCTION IN HELMAND ENDED OR WERE GREATLY REDUCED WITH THE WAR, ALTHOUGH SOME FARMERS HAVE CONTINUED TO PRODUCE COTTON, THE COTTON GIN IN LASHKAR GAH HAS CONTINUED TO PURCHASE COTTON FROM THE FARMERS AND TO PROCESS IT BUT AT A MUCH REDUCED RATE WHEN THE POWER LINE WAS TAKEN OUT AND THE GIN BECAME LESS EFFICIENT WITH THE BREAKDOWN OF EQUIPMENT AND THE LACK OF SPARE PARTS AND OPERATIONAL FUNDS.

THE GIRISHK COTTON GIN STOPPED PRODUCTION IN THE EARLY 1980'S AS DID THE KANDAHAR WEAVING MILL. THE CREDIT PROGRAM WAS ONE OF THE FIRST ELEMENTS TO GO WITH THE DEPARTURE OF KEY PERSONNEL FROM THE GOVERNMENT AND THE ECONOMIC SYSTEMS OF THE COUNTRY BEGAN TO BREAKDOWN.

OPIUM POPPY HAS BECOME THE MAJOR CASH CROP IN THE REGION AND CONTINUES TO RAPIDLY INCREASE IN PRODUCTION. COTTON HAS CONTINUED TO BE PRODUCED AND PROCESSED IN THE REGION AT AN INCREASING RATE SINCE THE MID-1990'S BUT FACES MANY OBSTACLES

IN COMPETITION WITH OPIUM POPPY. THERE IS CONSIDERABLE DISSATISFACTION WITH THE PRICE PAID TO THE FARMERS FOR COTTON, PAYMENT FOR COTTON IS DELAYED FOR EXTENDED PERIODS, AND THERE IS NO CREDIT PROGRAM. IT APPEARS THAT THE HEAD OF THE COTTON GIN HAS BEEN REPLACED THIS MONTH PERHAPS BECAUSE OF CLEAR FARMER DISSATISFACTION WITH THE GIN'S DELAYED PAYMENTS. THIS PROBLEM WILL REDUCE COTTON PLANTING FOR THIS COMING SEASON.

THE PRICE PAID FOR OPIUM, ON THE OTHER HAND, HAS DOUBLED OVER THE PAST YEAR, IN LINE WITH THE DEVALUATION OF THE AFGHANI, AND IT IS POSSIBLE FOR THE FARMERS TO BE PAID, AT A REDUCED RATE, IN ADVANCE FOR A CROP AT THE TIME OF PLANTING...A FORM OF CREDIT.

BOTH THE TALIBAN GOVERNMENT AND THE FARMERS OF CENTRAL HELMAND HAVE STATED THAT OPIUM POPPY AS A CROP CAN BE ELIMINATED IF THE IRRIGATION SYSTEM CAN BE BROUGHT BACK TO PRE-WAR EFFICIENCY, WHICH AMONG OTHER THINGS WOULD ALLOW THEM TO GROW HOT SEASON CASH CROPS LIKE COTTON. THERE CAN BE LITTLE HOPE FOR OPIUM POPPY CROP REDUCTION WITHOUT A CROP THAT WILL PROVIDE A SUBSTANTIAL INCOME AND CLEAR SUPPORT FROM THE TALIBAN FOR ITS ELIMINATION.

THE OVERALL STRATEGY TO BRING COTTON BACK AS THE REGION'S MAJOR CASH CROP AND AT THE SAME TIME REDUCE AND ELIMINATE OPIUM POPPY PRODUCTION INCLUDE THE FOLLOWING:

1. A CREDIT PROGRAM FOR FERTILIZER MUST BE ESTABLISHED AT THE COTTON GIN THAT WILL PROVIDE FARMERS WITH FERTILIZER AT THE TIME THEY PICK UP THE COTTON SEED FOR PLANTING IN THE SPRING. AS IN THE PAST, THE CREDIT WOULD BE EXTENDED TO SMALL GROUPS OF FARMERS, FIVE TO TEN, TO INSURE THE SOCIAL PRESSURES NECESSARY FOR INDIVIDUALS TO MAKE THE RE-PAYMENTS. A DEFAULT BY ONE FARMER IN THE GROUP SUSPENDS THE GROUP FROM FURTHER CREDIT. EACH GROUP WOULD RECEIVE A DOCUMENT FROM THE LOCAL ADMINISTRATIVE OFFICER CERTIFYING THAT ITS MEMBERS WERE IN FACT LOCAL RESIDENTS WITH LAND. THIS CERTIFICATION FROM THE GOVERNMENT REPRESENTATIVE (TALIBAN) WOULD GO FAR TO INSURE THAT THE CREDITED AMOUNTS ARE RE-PAID.

THE LASHKAR GAH COTTON GIN AND THE GOVERNMENT WOULD HAVE TO AGREE TO A STRONG ELEMENT OF TECHNICAL ASSISTANCE TO ACCOMPANY THIS PROGRAM. WHILE SOME SUPPORT STAFF MAY STILL BE FOUND LOCALLY, THE ADMINISTRATIVE, DECISION-MAKING STAFF SHOULD BE FROM OUTSIDE, AND IN COMPLETE CONTROL OF THE PROGRAM.

2. AN IMPROVED SEED, CERTIFIED TO BE FREE OF DISEASE AND INSECTS, WOULD BE IMPORTED FROM A RELIABLE SOURCE, IN MUCH THE SAME WAY IT WAS IN 1992 BY FAO/UNDP, I AM TOLD. SEEDS SHOULD NOT BE IMPORTED FROM EITHER PAKISTAN OR ANY OF THE OLD SOVIET REPUBLICS WHERE CONTAMINATED SEED IS APPARENTLY COMMON.

THE IMPORTED VARIETY SHOULD BE A FINE, LONG STAPLE VARIETY WITH A SHORT GROWING SEASON AND FEW SEEDS. ACALA 1517-75 IS SAID TO HAVE THESE CHARACTERISTICS AND IS AVAILABLE FROM THE U.S.A., UNCONTAMINATED. A LARGE QUANTITY WOULD NOT BE REQUIRED; 5 TO 6 METRIC TONS TO START. CONTROLS WOULD BE INITIATED TO INSURE THAT THE SEED WOULD BE PLACED IN ONE LOCATION TO INSURE THAT IT IS NOT CONTAMINATED BY THE LOCAL VARIETIES.

3. THE TECHNICAL ASSISTANCE TEAM NOTED ABOVE WOULD BE RESPONSIBLE FOR SETTING THE PRICE TO BE PAID TO THE FARMERS FOR THE COTTON TO BE PRODUCED. THIS TECHNICAL ASSISTANCE WOULD ALSO BE INSTRUMENTAL IN THE SALE OF THE PROCESSED COTTON. THE PARTICIPATING FARMERS WOULD HAVE TO RECEIVE ASSURANCE THAT THEY WOULD RECEIVE PAYMENT FOR THEIR COTTON AT THE TIME OF DELIVERY TO THE GIN, AND, PERHAPS, IN A FOREIGN CURRENCY. THE AFGHANI DOES NOT HOLD ITS VALUE FOR LONG.
4. THE IMPORTED SEED WOULD BE ACCOMPANIED BY EXTENSIVE AG EXTENSION SERVICES AT THE FARM LEVEL TO INSURE THAT THE MOST EFFECTIVE FARMING PRACTICES ARE FOLLOWED. FOR EXAMPLE ALL PARTICIPATING FARMERS WOULD HAVE TO AGREE TO ROW PLANT THEIR CROP ACCORDING TO SPECIFIED INSTRUCTIONS. THIS WOULD REQUIRE CONSIDERABLE FIELD ACTIVITIES OF AG EXTENSION WITH THE FARMERS IN PREPARATION FOR THE SELECTION PROCESS FOR THE AREA TO RECEIVE THE SEED.
5. IN SUPPORT OF THIS ACTIVITY, TECHNICAL ASSISTANCE AND FUNDING WOULD NEED TO BE MADE AVAILABLE TO REFURBISH THE LASHKAR GAH COTTON GIN THAT HAS NOT SEEN EXTENSIVE MAINTENANCE FOR SOME 18 YEARS. THE GIN DOES NOT APPROACH DESIGNED CAPACITY OR EFFICIENCY. QUALITY PROCESSING OF COTTON IS NEEDED TO RECEIVE TOP DOLLAR ON THE INTERNATIONAL COTTON MARKET. THE COMBINATION OF A NEW VARIETY, PROPERLY FARMED, HARVESTED (BY HAND) AND PROCESSED WOULD INSURE A TOP QUALITY PRODUCT.

AT THE SAME TIME, THOUGHT WOULD BE GIVEN TO THE FUTURE REFURBISHMENT OF THE GIN IN GIRISHK. THIS WORK IN GIRISHK WOULD BE TO PLAN FOR THE FUTURE AS THE EXPECTED COTTON PRODUCTION WOULD INCREASE OVER TIME AND PLANTING WOULD



BEGIN TO MOVE FURTHER UP THE HELMAND VALLEY AS IT DID IN THE PAST. PRESENTLY VIRTUALLY ALL COTTON IS PRODUCED IN CENTRAL HELMAND, WHERE IT WAS INTRODUCED IN THE 1960'S.

6. CONSIDERATION/STUDY WOULD BE GIVEN TO TRANSFORMING THE GEE (COOKING OIL) PLANT TO PROCESS SUNFLOWER SEED OIL, A CASH CROP NOT PRESENTLY IN HELMAND. IT IS A CROP, HOWEVER, THAT WAS WIDELY INTRODUCED IN TURKEY IN THE 1970'S AS A REPLACEMENT CASH CROP FOR THE LEGAL OPIUM POPPY CROP BEING PHASED OUT IN SOME DISTRICTS AND PROVINCES. IT IS NOT A CROP THAT DEMANDS ANY NEW OR DEMANDING SKILLS IN FARMING OR HARVESTING.
7. SUPPORT MUST BE SOUGHT FOR THE REFURBISHMENT OF THE COTTON SPINNING AND WEAVING FACTORY IN KANDAHAR AS A RENEWED MARKET FOR HELMAND COTTON. THIS FACTORY PRODUCED GOOD QUALITY TEXTILES BEFORE THE WAR THAT FOUND A READY LOCAL MARKET. IT WOULD REDUCE THE NEED FOR SOME PRESENT IMPORTED FABRICS AND GIVE A BOOST TO THE LOCAL ECONOMY.

THIS IS A ROUGH OUTLINE OF AT LEAST SOME OF THE MAJOR ELEMENTS NEEDED IN THE PROCESS OF RE-ESTABLISHING THE COTTON INDUSTRY IN SOUTHERN AFGHANISTAN. IN ADDITION TO HELPING WITH THE RECONSTRUCTION OF AN IMPORTANT ELEMENT IN THE AFGHAN ECONOMY, THIS FOCUS ON THE COTTON INDUSTRY IS A FOCUS ON PERHAPS THE ONLY LEGAL CASH CROP FOR THE REGION THAT COULD BE PRODUCED WITHOUT LIMITATIONS AND NOT HAVE TO WORRY ABOUT OVER PRODUCTION RESULTING IN A DROP IN PRICE, AS WOULD PERHAPS BE THE CASE WITH VEGETABLES AND MELONS IN THE PRESENT ECONOMIC CONTEXT. ASSUMING SUCCESS, SIMILAR ACTIONS COULD BE FOCUSED ON OTHER PARTS OF PAST COTTON GROWING AFGHANISTAN.

THE PRIMARY TARGET OF THIS ACTION IS THE OPIUM POPPY AS A CROP IN CENTRAL HELMAND PROVINCE. THE FARMERS CANNOT BE EXPECTED TO REDUCE OR ELIMINATE THIS LUCRATIVE CROP WITHOUT A CASH CROP THAT THEY UNDERSTAND, FOR WHICH THERE IS A READY MARKET AND WILL PROVIDE A REASONABLE INCOME. COTTON IS SUCH A CROP. COTTON HAS BEEN LONG KNOWN IN HELMAND, FARMERS STILL GROW IT IN A GRADUALLY INCREASING VOLUME, THE INFRASTRUCTURE IS IN PLACE AND FUNCTIONING, IF SOME WHAT LAMELY, TO PROCESS AND SELL IT, AND IN NEARBY KANDAHAR THERE IS A SPINNING/WEAVING MILL IN NEED OF REFURBISHING TO MAKE USE OF THE FIBERS. THE TOTAL SYSTEM OF COTTON PRODUCTION AND UTILIZATION IS PRESENT, INCLUDING THE NECESSARY UNDERSTANDING OF THE PROCESSES INVOLVED BUT IT NEEDS SUBSTANTIAL HELP TO BE REVIVED.

THIS HELP MUST COME FROM A VARIETY OF SOURCES. ONE DONOR CANNOT BE EXPECTED TO FUND THE TOTAL PACKAGE OF THE COTTON

INDUSTRY REVIVAL. IN THE PAST, ELEMENTS OF THIS INDUSTRY WERE SUPPORTED BY AT LEAST THE U.S.A., ENGLAND AND GERMANY. MANY COUNTRIES, HOWEVER, ARE EFFECTED BY THE NARCOTICS TRADE THAT WOULD BE TARGETED BY THIS COMPLEX OF DEVELOPMENT ACTIONS. IF THESE COUNTRIES CLEARLY UNDERSTAND THE NATURE OF THESE DEVELOPMENT ACTIONS, PERHAPS THEY CAN BE CONVINCED TO CONTRIBUTE.

ON THE DOWN SIDE, COTTON CANNOT BE EXPECTED TO COMPETE WITH OPIUM FOR CASH INCOME. BUYERS CAN PERHAPS DOUBLE OR TRIPLE THE PRICE OF RAW OPIUM AND THE INTERNATIONAL PRICES OF OPIUM DERIVATIVES WOULD BE UNCHANGED. THE FARMERS' SHARE OF THE INTERNATIONAL VALUE OF THEIR PRODUCT IS RELATIVELY SMALL. THIS HAS IN FACT HAPPENED WITH OPIUM OVER THE PAST YEAR, RAW OPIUM DOUBLED IN VALUE, BUT PERHAPS IN RESPONSE TO THE DEFLATION OF THE AFGHANI.

## ANNEX IV

26 March 1999

To: Mark Pont, MCI/Quetta

From: Dick Scott, MCI/Lashkar Gah

Subject: 1998-99 Cotton Production

I made a visit to the Lashkar Gah cotton gin on 21 March 1999 to gather information on the last three years of cotton production in Helmand. There was one delay during the visit because they were selling cotton seed cooking oil to local people and the head of the gin apparently had to sign each application, not the most productive use of time for a cotton gin manager. Except for the Manager, who was Taliban, all other cotton gin administrators appeared to be and talked with the experience of long term gin employees. Most knew a friend of mine, Mr. Alex Robertson, the last chief-of-party of the U.K. technical assistance team before the war.

In questions on the oil and the fact that before the war some portion of the oil was given to the cotton producers, one person indicated that most of the oil now went to the army. Cotton farmers do not receive any of the by-products of the cotton they bring in, which includes oil, seed cake for animal feed, and soap.

All cotton gin employees were said to be paid the same, 600,000 afs. per month, from watchmen to engineers. This comes to \$14.35 U.S. at present Kandahar exchange rates. Not a happy circumstance. This information was offered by an engineer outside the office while being questioned.

Before the war, the cotton gin used to sell cotton to Germany, Japan, China and probably England, because the technical assistance team was from the U.K. as was the funding for the



gins' construction, both Lashkar Gah and Girishk. These days all the cotton apparently goes to Pakistan where, it was thought, the cotton was resold on the international market. They thought that they could get a better price on the international market than from Pakistan but they did not know how to get into the international market. They need help and they asked for it. Several persons have made this request at different times, including the Governor, the president of HAVA and the head of the Foreign Affairs office in Lashkar Gah.

The gin administrators said that all the proceeds from the gin remained with the gin. They did not have a separate budget from a central fund nor did the funds from cotton sales go to some central fund. All expenses are paid by the proceeds from the cotton sales: salaries, operating costs, etc. I did not think to ask if they were paid for the oil by the army.

The cotton gin had a fire on the grounds this fall that burned some 800 tons of processed cotton. I had heard about this fire on my arrival to Lashkar Gah in December and asked about the damage.

The cotton gin production figures are given below:

All numbers are in metric tons.

	Seed Finished	Cotton Distributed	Cotton Purchased	Seed Cake	Oil	Soap	Cotton
1996	299	3808	990	384	20	1028	
1997	249	6075	1681	591	37	1640	
1998	292	9024	2528	880	55	2527*	

\* This is an estimate based on raw cotton on-hand which is still being processed.

350 tons of seed are planned for distribution for this year, April 1999.

When it was pointed out that the seed distribution remained relatively constant but production increased by roughly 62 and 67 percent in each of the years, they suggested that water

availability was probably one of the variables. They indicated that seed is sometimes used for animal feed when they don't plant it. Given the delayed payments made this year as a possible influence on production, they did not speculate on what the farmers would do but said it was an unknown. They are paying the farmers for the cotton as they make sales of the processed cotton from this year.

Relative to the 1998-99 figures, it was noted that 292 tons of seed would plant 41,714 jeribs of land using average planting figures. But 9024 tons of cotton could be produced on 45,120 jeribs of land. If this is correct, then the farmers are getting seed from sources other than the cotton gin where it is free distribution or they are using seed held from the previous year. Or the figures are wrong. These figures do not take into consideration the amount of cotton being processed locally by 3 to 5 small local privately owned gins. A sizable but small percentage of Helmand cotton is likely being processed by these small gins. Given time, the level of this production could be estimated but it would take time to get the confidence of the gin owners. Their gins have been forbidden in the past by the Taliban, according to sources in a 1997 visit to Helmand.

Cotton is a long term and still viable cash crop and industry in Helmand in competition with poppy. In contrast with the production of the early 1990's when cotton production was being reduced to a fraction of what it is today, cotton production is continuing to grow. The production figures are still less than one third the pre-war levels, if my memory is correct but growing in competition with poppy. Raw opium prices were said to have more than doubled in the past year. Cotton prices paid by the cotton gin have increased perhaps at a rate to keep up with inflation. The growth in cotton production signals that the farmers still see cotton as a viable cash crop but the administrative delays in payment to the farmers for the crop will have a negative effect at some point.

The down side in the equation is that poppy and cotton can be and is doubled cropped. Poppy grows in the cool season, cotton in the hot season. Full season cotton planted in April produces more than the late planted poppy double cropped cotton but it is an agriculture pattern. Cotton production of the late planted cotton depends on the timing of the first frost. This year was very mild.

In these circumstances, MCI, as well as all other aid and narcotics agencies, should put more of their energies into agriculture activities in support of cotton in the Nad-i-Ali, Marja and Shamalan areas. These are the primary cotton producing areas in Helmand. (It was noted by one long term administrative staff member of the gin that these areas already row plant their cotton for better production.) They are also the primary and expanding opium producing areas. They are also the areas most aware of the impending change coming relative to poppy signaled by public Taliban statements during this work season. They are also the areas where narcotics production was forbidden in the past, at the times of the King and Daoud. With outside technical and agricultural help, opium poppy production can be reduced and eliminated in these areas in collaboration with the Taliban. But, keep in mind, nothing will change without Taliban involvement.

The recently imported watermelon and cotton seeds are a first small step. Except for the FAO wheat program, which is not an alternative crop for poppy, and a fruit tree program in competition with a lot of fruit tree sources in the region, nothing has been done of any significance to compete agriculturally with poppy.

As a side note, there is a persuasive rumor being circulated even among the Taliban that the wheat program ran out of quality wheat, bought wheat on the local market, cleaned it and resold it for quality wheat at higher than local prices.

Highly visible actions in agriculture must be taken to catch the attention of both the farmers and the Taliban. To date we do not have their attention in this field. They must understand that we are taking positive action in this field. A strong public relations element must accompany the development actions. The impression and known details of development action is perhaps as important as the action itself. But positive and real development actions are necessary in agriculture to accompany the work on the Boghra canal and its branches if opium poppy production is to be effected. And, again, nothing will happen without Taliban involvement. They, along with the farmers, must understand that development actions that will increase the incomes of the farmers are taking place.



Cotton should be the primary focus of these development actions for an alternative cash crop to poppy. It is a crop the farmers know and understand. There is a ready local and international market. And there is the infrastructure already in place to process this farm product. But all elements of this equation are in need of help: agriculturally, gin rehabilitation, technically and marketing.

## ANNEX V

9 March 99

To: Mark Pont, MCI/Quetta

From: Dick Scott, MCI/Lashkar Gah

Subject: Field Notes on Peanuts

Peanuts was identified as a viable cash crop in competition with opium poppy last year in discussions with Pir Sayed Musafir of Chan-i-Anjir. In recent discussions with farmers in the area of "Shovel" Siphon 39+830, it was clear that peanuts were already a major source of income in the area.

Laborers were seen in the siphon wash loading a tractor trailer with sand. This sand was to be taken to farm land in the area and mixed with the local clay based soils which results in a more productive peanut crop and eases the mechanics of hand harvesting.

Last year the price for peanuts in the shell was 45000 afs. per mon. This year the price was said to be 120,000 afs. per mon...a sizable increase. The markets appear to be both Iran and Pakistan. One driver noted that he had driven a truck load of peanuts to Nimroz, destined for the Iranian markets. Buyers come from Herat but the main markets were again said to be Iran.

There are two overlapping planting seasons for peanuts, very much like those for cotton. One planting follows wheat harvest. The earlier and more productive planting requires that the land be left unplanted through the winter wheat season. Planting begins around the first of April. This land is being prepared for planting now. Peanuts are hand planted on ridges and hand harvested with some variation of a pitchfork.

The early planting produces between 170 and 200 mon per jireb. The late planting produces about 100 mon per jireb. The early planting requires no fertilizer. The late planting, after

wheat harvest, requires urea. The crop requires four rounds of weeding.

The plant after harvest is fed to the farm animals. These plants are considered very nutritious as feed.

If these figures are near correct, peanuts planted in the early season, without fertilizer, produces more income than poppy. It is not a crop, however, that can be grown in all areas of central Helmand. I suspect that the sandy soils needed and being altered by the farmers in this area allow better drainage than than the tight clay soils of most of the other areas.

More information is needed from more sources.



## ANNEX VI

### SCOPE OF WORK

1. Continue dialogue with Taliban officials and farmers of Nad-i-ali and Marja on the relationship and expectations associated with the Boghra canal, tributaries and drains rehabilitation and the reduction of opium production.
2. Supervise the organization and work on the Boghra canal and the weir construction at the intake. Coordinate the efforts to get several (2 or 3) draglines working on Boghra de-silting activity.
3. In discussion with the MCI Country Director, decide about the role for the engineering section of HAVA to be directly involved in the rehabilitation activity. (This will require salary supplements but it does not involve great sums of funds.) This will include the use of the archives for original structure drawings and designs, and field use of whatever survey crews that might be available.
4. If not already done, coordinate timing with both HAVA and farmers for the close down and re-opening of the Boghra canal for rehabilitation work.
5. When Boghra canal is dry, have the damaged Nad-i-ali/Marja siphon pumped out and have engineers inspect damage and make proposals for repair.
6. Establish system for the measurement of productivity of dragline work... cubic meters of earth moved per day for the full work period.
7. Initiate the organization of hand labor for use in the rehabilitation work on the Boghra canal, very likely in the Nad-i-ali and Marja areas where the laborers can be the most effective. Set up a system for measuring the productivity levels of the hand labor...cubic meters moved per day, and to record sources for the hand labor.
8. In discussion with MCI Country Director, determine in what way coordination activities to involve Afghan NGOs in this rehabilitation work could be undertaken.
9. In continuing dialogue with the farmer leaders, attempt to get the farmers to contribute to the overall rehabilitation work, e.g.. Use of tractor/trailers for the removal of spoils from the service roads after it is brought up from the canal. The farmers must be urged to contribute to the rehabilitation of their own irrigation system.
10. If not already done, repair canal left bank service road and embankment about 1 km. down from the intake where some of this embankment is flaking off into the canal. This may require some stone work.
11. Initiate some level of field evaluation of past activities in Helmand irrigation as it relates to poppy reduction, vegetables, fruit trees and wheat programs. Get farmers views on these activities and farmers suggestions on what might be done to improve this aspect of the

program. Initiate discussions with farmers on other crops already in region e.g.. Peanuts for the Pakistan market and melons (already profitable crops with markets.)

12. Continue dialogue with Taliban officials and farmers on cotton as the substitute for opium. Gather statistics on past year production and compare with several years production figures already on hand. Determine what do they see as potential production in 1999.
13. Undertake general management and oversight of the entire INL program, including the activities planned for the northern areas of Helmand province.

Consultant shall complete above duties from:

Approx. December 1, 1998 through February 28, 1998.