

UNITED STATES
BUREAU OF RECLAMATION
HELMAND VALLEY REGIONAL DEVELOPMENT PROJECT
WATER RESOURCES ADVISORY ACTIVITY
PROJECT NO. 306-11-995-090

January - March 1970, Quarterly Progress Report

Significant Accomplishments

Work continued at a normal pace during the period, with major accomplishments being achieved in maintenance of irrigation facilities and design of structures.

The PIO/T for the Bureau to use on Loan funded personnel was completed during the period, and signed by HAVA and the Mission.

The program was reviewed during the period March 1 to 3 in the Helmand Valley and in Kabul on March 5. The Program Appraisal Reports will be revised as a result of the review. Apparently no changes to be made in the presently programmed termination dates of the end of FY72 for the Water Resources Advisory Group in the Helmand Valley, and early in FY72 for the Kabul Division.

Assistance was given to two men detailed here by USAID in the preparation of specifications for equipment to be purchased under the HAVA/HACU loan. The specifications were drafted, and a draft of the invitation for bids was completed and sent to Washington and HACU for review.

Problems

Problems are the same as usual. There have been no additions to the staff of HAVA so the team effort on training has not been fully utilized.

General

Mr. Val Killin, Chief, Division of Foreign Activities, arrived in Afghanistan February 11 and departed March 3. He contributed valuable assistance in completing the loan funded PIO/T and in the program review.

PROJECT DEVELOPMENT PLANNING

The final round of ground water observations were made in the Central Arghandab from January through March 4, 1970. A total of 1,400 ground water level observations were made on wells and pits scattered throughout the area as well as those in the 28 cross-drain observation well lines situated across the Kars-Zakir drainage system.

The Kandahar office was closed on March 6, 1970, and the remaining personnel were terminated or transferred to HAVA in Lashkar Gah.

UNCLASSIFIED

The initial draft of the Central Arghandab Valley area report was initiated and parts of it had been completed by the end of March, with the remainder under preparation.

Cost estimates on the proposed drainage system in the area were completed.

Cost estimates for the construction and rehabilitation of the water distribution system were about 98% complete at the end of March. Several tables for the report were forwarded to Communication Media Division, USAID/Kabul, for reduction and reproduction. Other pertinent maps, tables and charts were being finished prior to reduction and reproduction in Kabul or U.S.A.

The Kars-Zakir Outlet drainage system discharged the following volumes of water and tonages of salines:

	<u>Acre-Feet</u>	<u>Tons</u>
January 1970	2,571	5,500
February 1970	2,062	4,702
March 1970	1,988	4,533

Since October 1968 this drainage system has discharged a total of 34,434 Acre-ft, containing 81,262 tons of salines.

DIVISION OF CONSTRUCTION AND OPERATION

HAVA Engineering Field Surveys. Progress for the past 3 months has been as follows:

Surveys on alternate alignments for the West Shamalan Canal were made to Kilometer 22 (Ainak).

Test pits have been completed and soil samples on the initial alignment have been taken and soil tests completed.

Two tellurometers were borrowed from the Afghan Cartographic Institute and two crews trained in the operation of the equipment. Precise measurements on the kilometer grid system and the control base line have been started.

Vertical control levels have been run from 11+700 on the Shamalan Canal, along the new canal location to the vicinity of Ainak, then to Drain "A" and back along Drain "A" and the edge of the desert to the beginning point at 11+700. Control elevations have been established on all permanent structures.

West 31.000 kilometer grid system base line has been laid out and temporary chained points set on the north and south grid lines (to be checked by tellurometer).

Topography was started on North Shamalan above the Marja Road, but has been slow because of lack of control in the area, and lack of experience by the crew. Training sessions are scheduled in the near future on Topographic Mapping.

In Marja the staking for drain inlet crossings in sub-block 1A was completed, and slope staking for drains 13, 12, 11, 10 and 9, in sub-block 9b1, was completed (5,195 meters).

In the Bolan area, ditch location and profile for 2,500 meters of Bolan housing irrigation was completed. East of the Shamalan Canal at Sta. 21+000 approximately 160,000 square meters of grid and grid leveling were completed.

Construction check out surveys on the Bolan Livestock Farm, on ditches, land leveling and turnout structures were completed in February.

In Lashkar Gah, cut stakes for the 24-inch pressure pipeline from 0+600 to 1+130 along Kabul Street was completed. Topography, street location, and street cross-sections were done in the new Lagan housing area.

A class in elementary surveying has been started by Mr. Mort on Thursday mornings for the new surveyors. An advanced surveying class is to be started for the experienced men.

HAVA Engineering Design Section

Shamalan-Bolan Livestock Farm--Design drawings for access culverts, Drain "A" pipe crossing, distribution boxes and turnout for new Blocks 1A and 1B have been completed and issued to the Contractor. Temporary turnout structure designs for the Livestock Farm head ditches have been completed and issued to the Contractor.

Shamalan-Bolan Research Farm--Head ditch distribution boxes and culvert design drawings have been completed and issued to the Contractor.

West Shamalan--The main lateral comparison study of alternate routes has been completed. Final design work has not been started due to the lack of sufficient field data and choice of route.

Nad-i-Ali Drains--All drain design drawings for the proposed pilot project for Nad-i-Ali rehabilitation has been completed and issued to the Contractor.

Lashkar Gah City--The 24-inch diameter pressure pipe line distribution box was relocated and new drawings were issued to the Contractor.

Darweshan, KJm 25 Channel Relocation--Design work and contract specifications have been completed.

Saraj Rehabilitation of Diversion Dam Area--The design for two radial gates to be installed in the Saraj Canal Wasteway structure at Sangin Wash has been completed.

Marja Project Block Drains--Drain designs and drawings for Blocks 9A-1, 9B-1, 8A, 8B and 8C have been completed.

Flood Damage Areas--Rehabilitation designs to increase the Kajakai Road culvert crossing by 4,000 cfs has been completed and given to the Contractor. Designs to repair a damaged flume near Kajakai have been completed and issued to the Contractor.

UNCLASSIFIED.

HAVA Engineering Construction Contract Work. Darweshan Project-Block 2E-2:
The main lateral slide gates being fabricated by Jungalok have not been received.

The 12-inch diameter border turnout gates for Bolan Research and Livestock Farms have been delivered by Jungalok and installed by HACU.

Shamulan Project Research and Livestock Farms: The land leveling and head ditch construction on the Livestock Farm was completed with exception of final checking and necessary corrections.

Control and road crossing culvert structures for the Research and Livestock Farms were in progress during the period. Leaching was started on portions of the Research Farm and irrigation was commenced on Block 1A and 2 of the Livestock Farm following the planting of alfalfa. Temporary 15-inch meter gate installations are being made at the Livestock Farm from the Bolan Lateral to the farm head ditches, pending final construction of the new Bolan lateral.

Lashkar Gab Domestic and Irrigation Systems: Most of the items of the rehabilitation have been completed. Items remaining are the delivery and installation of float control on Tank No. 5 and chlorination of the system.

Marja Farm Drains - Block 9: Excavation during the period continued. Two draglines were in use.

Nedi-Ali Drains: Three draglines were employed during the latter portion of the period in the cleaning and excavation of interceptor drains.

Karo-Zakir Drains - Kandahar: Contract forces were employed in the repair of flood damage to embankments and kiprap. Additional miscellaneous irrigation ditch crossings were also in progress.

HAVA Operations: The water supply to each major canal in the project was shut off in the following period during the quarter for the annual inspection and maintenance program:

	<u>Shut Off</u>	<u>Turned On</u>
Boghra Canal	Jan. 5, 1970	Feb. 8, 1970
Boghra Canal	Feb. 15, 1970	Feb. 21, 1970
Darweshan Canal	Dec. 29, 1969	Feb. 24, 1970
Zahir Shahi Canal	Jan. 1, 1970	Feb. 11, 1970

During the shutdown period 35 staff gages were installed, 10 radial gates were marked for gate openings for later rating, a cableway was installed at Station 25 on the Darweshan Canal, and the recorder station on the Zahir Shahi Canal was moved from Station 0+200 to Station 2+675.

A written description of all the flow measuring stations within the project was prepared at the end of the shutdown period. Mr. Goss completed his work and departed on February 19, 1970.

Since water has been returned to the system, 7 additional staff gages have been installed. A total of 4 flow discharge measurements were made in January, 10 in February and 40 in March.

Vandalism of the canal flow measuring devices is a constant problem. A pulley was stolen from the cableway at Station 40+315 on Shamalan Canal putting it temporarily out of service. The staff at Station 22+580 Shamalan has been damaged and the staff on Drain "F" has been moved. Keeping the meterwells free of rocks is a continuous job.

New capacity versus elevation tables for both Kajakai and Arghandab Reservoirs have been prepared based on the results of the 1968 sediment survey of Kajakai Reservoir. The following data is based on the revised capacities.

	Inflow (1,000 AF)		End-of-Month Content (1,000 AF)		Valve Opening (%)
	Long Term		Long Term		
	Avg.	1970	Avg.	1970	
<u>Kajakai</u>					
Jan.	205.4	229.2	492.7	610.8	3 @ 95%
Feb.	245.4	225.3	448.2	478.8	3 @ 95%
Mar.	673.1	393.0 <u>1/</u>	811.4	489.4 <u>1/</u>	3 @ 95%
<u>Arghandab</u>					
Jan.	51.6	60.6	177.6	155.7	2 @ 0
Feb.	72.1	53.6	211.3	197.5	2 @ 0-15%
Mar.	194.0	156.1 <u>1/</u>	294.6	317.3 <u>1/</u>	2 @ 15-25%

1/ Last three days of March 1970 were estimated.

The weather during the first quarter of 1970 was cooler and wetter than normal. As a result, the flow into Kajakai was less than the discharge for the period from January 1 through March 23. By maintaining the maximum valve openings through the period of low inflow, the reservoir content at the end of March is approximately 320,000 acre-feet below the long term average content for this time of the year. This additional storage will be valuable in reducing the flood spill which records indicate will begin in late April or early May, depending on the weather.

Monthly Flow Summary - First Quarter 1970

	January		February		March	
	Average Daily Flow (cfs)	Total Monthly Flow (Acre-ft)	Average Daily Flow (cfs)	Total Monthly Flow (Acre-ft)	Average Daily Flow (cfs)	Total Monthly Flow (Acre-ft)
<u>Boghra Canal</u>						
Station 10+917	658 <u>1/</u>	14,360	827 <u>1/</u>	11,480	926 <u>5/</u>	56,940
Station 31+900	266 <u>2/</u>	2,630	375 <u>2/</u>	4,430	352 <u>5/</u>	21,644
Station 56+500	136 <u>3/</u>	1,620	205 <u>3/</u>	2,440	188 <u>5/</u>	11,560
<u>Shamalan Canal</u>						
Station 0+200	389 <u>4/</u>	10,040	389 <u>4/</u>	5,390	520 <u>5/</u>	31,970
<u>Zahir Shahi Canal</u>						
Station 2+675	0	0	320 <u>6/</u>	10,795	400 <u>5/</u>	24,540
<u>Darweshan Canal</u>						
Station 0+200	0	0	Records not available			

- 1/ Boghra Canal Sta. 11 had flow 11 days in January and 7 days in February.
 2/ Boghra Canal Sta. 31 had flow 5 days in January and 6 days in February.
 3/ Boghra Canal Sta. 56 had flow 6 days in January and 6 days in February.
 4/ Shamalan Canal Sta. 0 had flow 13 days in January and 7 days in February.
 5/ Determined from partial records for month.
 6/ Zahir Shahi Canal Sta. 2+675 had flow for 11 days in January.

HAVA Maintenance. The work of cleaning the Sorkhdoz Drain continued and was completed using a Northwest 1 1/2 cu yd dragline. This drain is also known as Drain "I" in South Shamalan and is 11.4 kilometers in length.

Water was turned out of the Boghra and Shamalan system on January 5, and the winter clean up work started. The Marden Brush cutter was used to chop the weed growth on the canal banks and a heavy chain was used to smooth up the banks and remove any bank growth left by the cutter. The Gradall and a truck crane were used to remove small deposits of silt that was interrupting the smooth flow of canal water and, in some areas, the dozers were used in the bottom of the canal to smooth out the bottom and side slopes and make the canal section regular and continuous. In most instances, excavated material removed from the bottom or side slopes of the canal was used to fill in areas on the slope where needed. The Shamalan Canal was worked over from kilometer 13 to 65. The rock rip rapping below the stilling basins of drop structures was repaired and some gravel surfacing placed on the Shamalan operating road, after which the road was smoothed with the motor graders.

The water was turned out of the Darweshan Canal on December 30, 1969 and four draglines, rented from HACU, were moved into the first 13 kilometer section of the main canal. Because of flows much below designed capacity of this canal since it was constructed,

berms have been formed from heavy silt deposits along each side of the canal. The draglines excavated a portion of the material in berm just below the operating water surface of the canal and deposited it on the side slope above the old berm using the excavated materials as lining for the section above the water surface. This slightly reduced the designed capacity of the canal below the 1,000 cfs but, in as much as the canal rarely carries more than about 560 cfs, the velocity is increased so silt will be carried on through the canal. The excavated material makes good lining.

After the excavation was completed, the banks and bottom of the canal were smoothed up using a heavy chain. The operating road was bladed smooth with the motor graders.

Water was turned out of Zahir Shahi Canal in the Kandahar area on December 31, 1969. Winter maintenance was started shortly thereafter. The headgates were sandblasted and painted with five coats of a 3-component vinyl paint system.

Hand labor crews did considerable work excavating and recompacting backfill into areas where settlement caused by gypsum deposits included in the canals banks desolved and settled. The excavated areas were compacted and backfilled to the alignment and grade.

HACU, through a contract with the RGA, installed a combination check and bridge structure at kilometer 27 on Tarnak Canal. They also installed a turnout. These structures will serve an area used by the Afghan Army.

The Horden brush cutter pulled by two heavy wrecker trucks was used to clear brush and weeds from South Tarnak Canal. This section of canal was then chained and the loosened debris floated out through the wasteways.

Due to the extensive maintenance work performed last year on Boghra Canal, only a small amount of work was required this year. Dozers were used to clear the East Marja Branch Canal and a small amount of work was carried out on Boghra Canal.

Heavy rains during this report period caused extensive damage to the road system. The road from Lashkar Gah to the concrete paved road to Kandahar, and the road to Kajakai suffered extensive damage. All of the damage has now been substantially repaired.

The heavy rains also caused a high discharge of Nad-i-Ali Outlet Drain. The water ran over the headwalls and undermined the chute section. A hand labor crew and trucks were used to backfill and compact the materials under the chute section around the sidewalls and headwalls. Approximately 100 cubic meters of backfill was compacted.

The storm also caused damage to the Lagan Housing area of Lashkar Gah, and it was necessary for O & M forces to install a protective dike in this area, excavate some small drains, and repair the streets.

The O & M forces are constructing new homes for employees in the Bolan area. A drilling and blasting crew are quarrying rock for foundations, another crew is making adobe brick for the house walls, while another crew erects the buildings. During this period 465 cubic meters of rock has been excavated and most of it laid into masonry foundations for buildings, 224,834 adobe brick have been manufactured, all but 42,000 of these has been

laid into building walls. A considerable amount of excavation for footings and floor slabs has been completed.

In an area near Kilometer 16 on the Shamalan a park is being built by O & M forces and during this period 9,900 trees were planted.

The O & M repair shop continued to repair and service HAVA automotive equipment, but little progress was made in repairing the heavy equipment.

BUREAU OF RECLAMATION
IMPROVEMENT OF EXISTING IRRIGATION SYSTEMS PROJECT
PROJECT NO. 306-11-12-005

Progress Report for First Quarter CY 1970

NAQI CANAL

Design of this project, which consists of a canal spillway to relieve the canal of excess water which enters the canal from side drainage during flood season, were completed prior to this quarter. In February an Afghan Engineer was sent to the site to help the local people begin the wasteway structures. In March the Engineer returned because no funds had been collected from the local people to finance the work.

KASKOT CANAL

In February an Afghan Engineer was sent to the project to help the local people in construction of the canal relocation. He returned to Kabul during March to enter the Army. However, while at the job he was able to assemble some of the materials and equipment needed for the job. Another Afghan Engineer was assigned to the job and he and the Construction Engineer of the Bureau Team went to the job on March 17. The Bureau Engineer was able to lay out the work and to instruct the local workers in drilling and blasting.

IMAM SAHIB CANAL

This canal diverts from the Balkh River about 10 kilometers south of Masar-i-Sharif and extends west about 40 kilometers irrigating a large area south of the Balkh River. The area was visited on February 1, by Mr. Sham of the Irrigation Department and Messrs. Shumway and Ehrhardt of the Bureau Team. The problem concerned the diversion from the canal by upstream users of all the available water, leaving none for the downstream users. After considerable discussion, with the water users and the Governor, it was agreed that if the local people could agree on a distribution of the water then the Irrigation Department could design structures which would deliver the water in accordance with the distribution. The Governor said the water would be divided on the basis of area under each lateral. A typical structure consisting of a weir in the canal with a side weir to the lateral and a table of proportional weir lengths was designed and sent to the area with an Afghan Engineer to help the local people construct these weirs.

SHEFA-KALATUK CANAL

Design of the three siphons has been completed.

SHIGI CANAL

Design of the siphon has been completed. A general plan and layout of the site has not been completed to date.

SURCHARKHIAN CANAL

Plan and profile for the existing canal has been completed down to Station 6+000. This part will be enlarged to carry 4 cubic meters per second. Plan and profile for the extension has not been prepared. A preliminary layout of the lateral system was made. It appears that as this layout required many drop structures a less costly system with contour laterals should be investigated. Design of a typical one meter drop structure for the canal is about completed.

SOLAR CANAL

This project is one being considered for submission to the IBRD for financing. It consists of a canal diverting from the Pech River about three miles upstream from its confluence with the Kunar River and irrigating about 4000 jeribs. On March 11 Mr. Sham of the Irrigation Department and Messrs. Shumway and Ehrhardt of the Bureau visited the area. The main problems are the canal intake and 11 cross drainage washes all of which fail periodically. A low weir across the river and a new intake will be required along with siphons at the cross drainage locations. Mr. Sham is preparing the reconnaissance report to be submitted to IBRD with the help of the Bureau in preparing cost estimates and other factors which will go into the report.

KOHISTAN PROJECT

During the quarter about 2000 meters of canal between Tunnel No. 2 and 3 were completed. All but 300 meters of this 2000 meter reach is finished. Six combination chute-culvert structures were completed in this reach and work started on the other four.

Tunnel No. 3 was completed during this quarter and 100 lin meters of masonry wall beyond Tunnel was completed and about 1000 lin meters of canal was rough excavated.

Water was turned through Tunnel No. 2 for the first time in January.

GENERAL

Mr. Shumway left Kabul Jan. 3 and returned Jan. 12 on a trip to U.S.A. due to accidental death of his sister.

Mr. and Mrs. Nichols returned from home leave on Jan. 11.

On Jan. 20 Bureau of Reclamation team members met with Abdul Hakim, the new Minister of Agriculture and Irrigation. Discussion centered around possible reorganization of the Irrigation Department. Bureau Team was able to point out some of the shortcomings in the Department. He requested advice on improvement of the Department.

Mr. Val Killin, Chief, Division of Foreign Activities, arrived in Kabul on February 11. During his time spent in Kabul meetings were held with the Deputy Minister and the Minister of Agriculture and Irrigation.

On February 26, Dr. A. A. Bishop of Utah State University arrived in Kabul to make arrangements for the Eighth WESA Irrigation Practices Seminar. After meetings with the Mission Director and the Minister of Agriculture and Irrigation, it was agreed that the Seminar would be held in Kabul during the last part of September and first part of October 1970. During Dr. Bishop's visit meetings were held with representatives of the Irrigation Department and the Water and Soil Survey Authority to discuss the seminar and technical papers to be presented. Dr. Bishop left Kabul for Kandahar and Lashkar Gah on March 4.