

DETAILED TRIP REPORT-1/

ISLAMABAD - PAKISTAN FEDERAL GOVERNMENT

We arrived Islamabad 12th April and met with Messrs Headrick, Agriculture Officer, Lyvers, Project Manager and Wirtz, Evaluation Officer. Headrick noted that the GOP would want to see an overall evaluation but believed that the evaluation should be province by province. We then met with Don Jones, Economist, SCS Team. He indicated that additional information is needed about the warabundi irrigation system on maize and other crops and also it may have some effect on OFWM Project future operations.

13th April we (Tileston & Mitchell) met with Messrs Art. Handly, Acting Mission Director, Wirtz, Evaluation Officer, Lyvers, Project Manager, Headrick, Agriculture Officer.

Handly noted that the OFWM Project is a complex activity with the heroic assumptions. Some of the assumptions may be erroneous and the GOP's perceptions may be different about the project than those assumed by USAID. The attitudes, activities and presumptions are different in different regions or provinces. The land leveling and watercourse activities are different. They are identifiable separately and handle different aspects.

Handly advised the evaluation team to go back to the design of the project and find out what is actually wanted. Examine the assumptions and determine if they are valid. Review the commitments, but on a more sound basis and the evaluation should be developed to provide a better understanding of the activity. The evaluation team should not get in a position where they defend the project any form. Therefore, the GOP should play a positive role in the evaluation.

One of the principal problems in Handly's opinion is how the money is channelized to the project activity. He believes that too little money is passed through to the provincial government to the implementing organizations. There is not a clean financial linkage from the federal to the provinces.



1/ Prepared by Fred M. Tileston, May 1, 1978.

In a later meeting among Headrick, Wirtz, Kango, Mitchell, Tileston and Lyvers, a discussion was devoted to what was the definition of a small farmer? Kango noted that anybody with under 25 acres of land is a small farmer conditioned by the classification of land and climate and other physical factors.

14th April Mitchell and I devoted the day to formulating an outline and how the evaluation should be conducted.

Reviewing in a preliminary way the aspects of the project, two different critical factors are emerging that affect the operation of the project. The first is the administrative. There seems to be a lack of consensus on the roles of the CSU Team and the SCS Team in the OFWM Project. Possibly the evaluation may help in determining what the roles of the two agencies would be in this activity. There would be some overlapping at the farm level, particularly in the Punjab.

The second and possibly the most important aspect was identified by both Cox and Handly that it does seem necessary to provide incentives at the provincial level in order to move the activity as rapidly as possible. The discussions do not indicate exactly what is the problem in the financial flow from the Federal Government to the Provinces. Kango indicates that there is no problem in this area. However, other officials state there is a constraint.

15th April, a meeting was held with the Chief Agricultural Advisor to CMLA, Dr. Mohd Amir, who is also Vice-Chancellor of Faisalabad University. Those attending the meeting were Messrs Kango, Headrick, Wirtz, Lyvers, Mitchell and Tileston.

The Chief Agricultural Advisor indicated ~~that~~ the University had no real farmer program. He has suggested to University to start working with 40 to 60 villages near the University and initiate activities with actual problems in the field. He noted that there are many problems and that they should address one problem and give it a major thrust.

He further noted that there is a feeling that the University does not provide meaningful results to the farmers. The central issue is

that the farmer needs more irrigation water and that water has been defined as a major constraint to crop production. Therefore, a project designed with major focus on water might have some success.

The facts are that about 15 years ago WAPDA started a SCARP program at Mona with the objective to increase water by reducing seepage. The results of this work indicated that the farmers are getting more water.

The evaluation team noted that Dr. Radosevich is going to conduct seminars on water users' associations. Radosevich is an expert on Muslim Water Law and it is hoped that he can develop association criteria that will assist in water course improvement.

Headrick, Wirtz, Lyvers, Mitchell and Tileston met in Kango's office. Mitchell asked what is the definition of a small land owner? Kango noted that in Punjab, 12-1/2 acres, in Sind 16 acres, in NWFP 12.5 acres and in Baluchistan 32 acres was considered the size of a small farm. He further noted that there is no clear legal definition of a small farmer.

Kango defined the intensity of crop. He stated, for example, that if the farmer irrigated 54 percent during the Rabi season and 27 percent during Kharif that would be considered 81 percent crop intensity. This means that the intensity could go to the conceivably 200 percent if the farmer irrigates full acreage crop for both seasons.

In summary, my impression of the meetings are that the USAID Mission has very good relation with their counterparts in the Ministry and particularly with Kango. He seems to be quite open and quite willing to cooperate on all aspects of the project. This is a good thing and should help to better cooperation and likely a better project. In this regard Kango noted that eventually the cost sharing aspect of the project should be withdrawn in order to assure the activity as a fully viable unit.

16th April, a meeting was held with Tennant, PDM, Jones, Haslem, Lyvers, Kango, S. Hassan, PDM, Mitchell and Tileston and Khalil, Agric. Engineer of OFWM Project. The subject was inspection by AID of the CFWM activity.

Kango indicated that it is difficult to satisfy the Pakistani auditors without doing a hundred percent checking and thus he could see no reason why AID should also be checking. It was explained that AID would have to do its own inspection and that would be on a statistical sampling basis. Details and criteria of the statistical sampling were explained to Kango.

## SIND PROVINCE

17th April, a meeting was held with the OFWM Director Office in Hyderabad, Sind. Akhtar Moghul Assistant Director for Sind OFWM Project noted the following :

At the present time are three OFWM teams working in the Sind Province and that possibly 25 teams will be fielded in about five years.

The project actually started in July, 1977 and ten lakh rupees were budgeted. 3.84 lakh rupees were allocated out of the ten lakh rupees during the first year. The Project Director gave up trying to get more money. Then during 1977 and 1978 the Project Director had to wait for the procurement procedures to occur before additional money was available.

By July 1978 the officials asserted that ten teams would be in the field staffed with people trained for conducting precision land leveling and on-farm water management activities.

In the previous period nine people were trained and the project was able to retain only one person. Staff come to the OFWM Project on an ad hoc basis. Sind project officials in Hyderabad indicate that the Secretary of Agriculture for Sind should regularize the staff and there could be as many as 80 government workers trained in precision land leveling in order to provide about three or four teams into the field. The project selected 40 staff out of the 80 trained and recommended 40 names to the Agriculture Department. Out of 40 recommended, the project retained 32. Due to delay in posting orders, only 15 of those are now on the board. Future prospects in staffing on the OFWM activity are not good.

Two categories of the employees posted to the OFWM Project; a) new employees, and b) employees deputed from other agencies. If the project is not made permanent activity, staff will have to go back to their respective agencies. Agriculture has not established a regular staffing pattern for the OFWM Project.

Money has also been a problem. Without any accomplishment, no money will be released and thus no money to start up the activity. According to the officials, the OFWM Project is in competition with other activities. The funds to the provinces are not posted as a line item but rather co-mingled with the other funds allocated to the provinces. Additionally with money there is a problem of release of funds. The Treasury resists the transfer of funds to commercial banks. The cost sharing payment money can or could be transferred to the Personal Ledger Account (PLA) of the director and then there would be no problem in dispensing cost-share money but the director is out of money.

Ledger forms show that 34 acres is an economic unit. One tenant usually has 16 acres, with only 16 acres of land he cannot afford leave his land to do other work. It would appear that 16 acres in the Sind is a typical tenant unit.

Some of the staff believe that the development should go on a continuous basis, i. e. each farm should join the other. The argument is that whether the farmer is a tenant or an owner he will still only be at a subsistence level. One grower family per tenant for 16 acres. The tax people figure that 32 acres is a standard farm unit.

Some water courses have a very large land holders. Most of the land in Sind is under a tenant arrangement. Tenant is a temporary land holder or user and he cannot really claim too many rights under the new land laws developing in Sind.

The intensity of cultivation was indicated by another staff member that it would be 34 percent during Rabi and 54 percent during Kharif. If the water course is improved the farmers could and want to irrigate more land under a water course and furthermore they desire to increase intensity. However, this would require additional water. It is very probable that additional water would not increase the irrigated land but would provide equitable water distribution over the land now cultivated and irrigated.

The cost share program for precision land leveling activity is now limited to assisting 5 acres. For example, if a farmer has

32 acres, the officials are suggesting two categories of reimbursements; a) if he has only 5 acres as a sole owner he could be subsidized, and b) however, the other 27 acres does need leveling and should be subsidized.

Private contractors have not been established in the precision land leveling program. A farmer with only 15 to 25 acres cannot afford to buy a tractor or do any leveling work even if he had a tractor. The Government should be earmarking tractors for the precision land leveling activity. The project staff were of the opinion that they have enough people to start the program but the Government does not have enough money to do the whole job. Therefore, commercial tractors should be allowed to operate in the program. Only about 2 percent of the farmers have tractors and they are more interested in working on their own land. They do not care to work on other people's land.

The objective of the project is to increase production. Staff are trained on all aspects of crop improvement practices. With all the improvements the project expects five to ten percent crop improvement with improved water delivery. The present water course delivery efficiency measured in Sind is 60 percent and water course improvement would raise it to 85 percent.

In discussions with the officials there were indications that the cost sharing payments are delayed. The project officials were assured by the Finance Department that 37 lakh rupees would be available. However, the plan is to allocate 2.0 lakh rupees and that would be replenished after it were exhausted. This turns into a problem that the project officials would like to see the funds are maintained at about 2 lakh rupees at all time. But when the money runs out, prolonged period is required to replenish; which means that the project is out of money during the period when replenishment is being sought.

The party proceeded to the Tando Jam watercourse construction and discussions indicated the following :

Moore explained that this watercourse is a part of the project and demonstrates two objectives; a) the facilities of the farmers and their willingness to support the program, and b) to train and support institutional requirements. The project was trying to conduct the activity with the procedures as used in the past, i. e. by using agric. engineering, extension and which was not effective.

The project is having difficulties to find facts to determine the size of the small farm holder. They are finding that the revenue records of the Irrigation Department are not adequate to establish the size of the farm holder. The records are out of date and do not even show the size of the watercourse nor where the watercourse is, so the average size of farm is difficult to determine.

Plans for implementation of the activity were developed in August, 1977. At that time the Project Director did not have adequate administrative powers. Three months were required to get funds out of the Finance Office and in late December the project was able to go to work but was in competition with farming chores. Now, the Project Director does have the financial powers to carry out the work. The water users' association is organized into informal groups and all the farmers signed the agreement of the informal association. Meetings are held with them to organize the group. The farmers organize executive committee to run the water course system. However, they do run into problems where there are different religious groups involved.

It requires many discussions before the farmers finally recognize and agree as to how to proceed.

The Irrigation Act needs to be evaluated to determine if provisions might be necessary to make the act more workable. The irrigation schedules need to be revised in order to more accurately provide for association requirements and to be able to take advantage of the improvements.

At Tando Jam about 11 miles East of Hyderabad, The W. C. system was designed by the project so the water flow of the water course would command more area. Throughout the irrigation season each farmer receives the full flow of water. We walked along a kaccha channel (earth channel) and lined section of the channel. The earth channels are good if they are constructed properly and maintained. There are problems with the farmers cutting outlets in the banks and planting trees to close to the banks.

Due to soil changes, the project did not have to use a lined canal section near the end of the watercourse. With proper bank compaction

there appears to be a very little leakage in this watercourse. However, the bank could use the little shaping to produce a more uniform cross section. The channel banks are in fairly good condition.

18th April, Moore is talking about the project. A duty of a cusec of water is 270 acres. The farmers have found that they can only irrigate 60 to 70 acres with that amount of water. They have to till the land every three years or they may lose their rights of tenancy to the land, so they cultivate land and may not even get their seeds back.

The project utilizes grading sheets to indicate that the watercourse has been improved according to standard criteria as outlined in the agreement. Forms have been developed for maintaining cost sharing register. All forms are registered and show the cost sharing for each farmer, the amount of watercourse improved and the details of the cost sharing arrangements which show the cost sharing allowance and details for each farmer involved. The Land Development Officer certifies the listing and indicates that the cost sharing is allocated to each participant involved in the land leveling cost sharing program.

In the watercourse improvement the farmers also sign up for the details of how the watercourse will be improved. The farmers provide labor for the operation of the watercourse program.

The evaluation panel noted complaints that a prolonged period is required for the farmers to get reimbursed from the cost sharing program. According to the records no payment has been made since 12th January. Why not? Apparently the payments were authorized in December. There was no satisfactory explanation for delayed payments.

Each field team includes an extension agent that works with the farmers in conducting the work. He will gain specialized training on this particular aspect of the activity. His reputation and experience will improve with time and thus form the basis of his services to the water course associations and the farmers.

The water users' associations are put together under the Irrigation Act. It may be that the irrigation schedule and project designs for the water course will not compete with the irrigation law or delivery

schedule. On the other hand, it may be necessary to ~~revise~~ the water delivery schedule after the water course is improved. Everybody on the water course is entitled to a certain amount of water for so many hours according to the schedule determined by the Irrigation Department.

An irrigation map was shown to the evaluation panel, which appeared to be the original prepared by the Irrigation Department, showing in detail the location and amount of area for each water user on the water course. Project officials noted that more attention is needed and possibly a dialogue with the Irrigation Department to properly supply the farmers with water.

There are four steps required to implement improvement on water course. First, is the improvement needed, secondly, is it over all feasible? Thirdly officials determine what are the water losses on the water course? Fourthly after the project has established that there is significant loss in the water course, the designs are prepared and approved by the farmers. The evaluation panel reviewed detailed designs of improvements that would be installed in the water course. The plan displayed the actual cost of each one of the improvements estimated in the design.

The question was asked, after the water course has been improved what will happen if the water course is not being properly maintained by the farmers? The project officials will go to the committee. They may request the Irrigation Department to take action. The question was; has Irrigation Department ever really cut the water to enforce the rules of water use? Answer - No.

There was a considerable discussion revolving around the training of extension workers and if there was really any place for them in the organization after they have been trained. It really amounts to an ad hoc arrangement. At the present time there is no definite way of utilizing these people in the government agriculture organizations.

At Nawabshah we visited the water course known as the IAL Daehoro Noi, 87-AN water course command area. On this water course there are 32 users. Length of the water course is 3,640 metres. Total length of the laterals is 1000 metres.

The project plans to line about 284 metres of the main water course and will conduct lining on about 66 metres of lateral ditches. Completed so far are one silt trap, one buffalo ~~wallow~~ and one road culvert.

The sediment trap was designed to fill in about 2 months. The sediment trap must be cleaned about every 29 days during operation of the channel way.

In this instance a new water course was constructed adjacent to the older one to achieve better alignment and also to move the new water course at least a 2 or 3 metres from the row of trees that are located on the old water course.

The question was asked, can the farmers be forced to conduct the work. Staff indicated they could notify the farmers and they would have about 30 days to conduct the work. The farmers are having difficulties in providing labor these days because they are reaping the crop and it is difficult for them to find time to assist the project. They will provide the full labor after five days, according to project officials. The farmers have to build up the channels and compact the banks and it requires a long time to do all this work. Of course, they have other work to do while they are trying to assist with the water channel improvements.

There are 57 laterals in this water course. In consultation with the land owners about one lateral for each block was selected for improvement so there would be a demonstration of improved lateral for each block.

There is one family along this reach of the channel and the operators are irrigating from four naccas (~~turnouts~~) along the channel. The project is providing the farmers two lateral improvement only along this reach of the canal and this was also done in consultation with the land owners. The largest block of land is 82 acres and the smallest is 2 acres.

This section of the canal is 2 feet wide at the bottom, 4 feet wide on the top and 2 feet in depth and is an earth lined section. It is in fairly good condition after it has been shaped by the farmers under direction of the project staff.

All the trees will be removed along this reach of the water course in order to improve and assist to properly maintain the channel banks. Along this channel the farmers and project have completed re-shaping the banks on one side only, and there are still trees on the other bank to be removed by the farmers. The project will have to wait until the trees are removed before the bank can be fully re-constructed and shaped according to the design.

This is at station 13+90 on the main watercourse, at a three way outlet. The canal at this point passes through a cut about one metre deep. The side material will be removed by a bulldozer, which will be procured by the farmers. The material removed will be collected in an alternate location because it cannot be spread upon the irrigated land, as the land is already too high elevation for proper irrigation.

This is at station 15+50 at the buffalo wallow. The final station on this watercourse is 36+50. The remainder of the water course is to be improved. The buffalo wallow is 26 feet long and 24 feet wide and 4 feet deep and is provided with a ramp for entering the water. It has a pucca (brick and concrete plaster) bottom and walls. The buffaloes do not go on the canal as they did in the past for bathing. A wire fence surrounds the wallow to prevent children from falling into the wallow.

Chaudhry Fazal a member of the farmers' association was present and we had a discussion as follows:

The farmers are too much happy with the buffalo wallow. Now people can go to a good place to get their buffaloes watered. There is no problem even when the water is stopped, the wallow remains full of water. He says that there are a number of neighbors using the wallow. There are 8-9 buffaloes using the wallow from his village. The villagers do not like to mix their buffaloes with buffaloes from other villages because strange buffaloes fight with one another. 30 buffaloes from two villages are using the wallow. 8 households from the adjacent village are using the wallow and also get some of their drinking water from this wallow. He stated it is now easier for them to irrigate. There is no question of cutting the bank as now there is a pucca nucca to irrigate from. Anybody who wants to use water lifts out the control lid and gets water from the pucca nucca.

In discussions with Baluch, a project official the following are noted :

He noted the progress of construction depends on the manpower the village can supply to conduct the work. The project cannot compel the water users to provide labor, particularly the large land owners. It is a job of the Project Director to enforce compliance or supply manpower to the project. The water users have signed an agreement and they are supposed to supply labor in accordance with the agreement. The project officials allege that the farmers frequently do not provide all the necessary labor to the project according to the agreement.

The Irrigation Department has the power to enforce agreement but do not use it. The only way the project can enforce compliance is to conduct the watercourse work and then attempt to recover costs through the Irrigation Department revenue collection.

On 10/6/77 there was a meeting held with the farmers. 22 members out of 27 on the watercourse were present and they fixed their signature and the following points were discussed. All of them agreed they are prepared to help assist with the improvement of their water course. Designs of the canal were discussed with the farmers and all the points referred above were agreed to by the farmers present. The executive committee of five members was selected and is responsible for overall action that could be taken against its own members. Now the Project Director says that he will not exercise the option of enforcement of compliance with the agreed to conditions of the arrangement.

The farmer noted above has 15 acres of land. The Chairman of the association has more than 200 acres of land under command of this water course. He has only 32 acres shown as a single operator. There is also a Pathan that has 82 acres but he is not interested because his land is waterlogged and saline. He is not interested and not cooperating with the association. It is a duty of the committee to get him agreed to supply necessary labor for his share.

About seven miles out of the Nawabshah at a precision land leveling job we met with a tenant operating 42 acres for an owner. The owner has three separate parcels of land. Three different members of the family are the owners. This site is one of their parcels not leveled. The project is staking it out and completing the job according to precision land leveling design. Legally this means that there are three owners. There is 1200 acres of precision land leveling conducted so far in the project. About 400 acres was conducted during the last season.

There are many farmers who are interested in precision land leveling with only technical assistance to help them. They are interested in the cost-sharing program when classified as a small farm holder.

We met another farmer along side the road and discussed with him the possibility of leveling his land. But he told us that the owner would have to be convinced before he could participate in the precision land leveling program. He cannot compel his owner to do the work but it would profit both of them.

At this location the farmers did not indicate a need of water course improvement. They conduct their own improvements as necessary to maintain the water courses in good shape.

Nasri noted that a more extensive program by TV might be very helpful in this area, as all the farmers watch TV during their off work hours. The TV is reaching the majority of the people in this area of Sind. The project officials are trying to get in touch with the TV people to urge them to show the benefits of the project.

The extension agent said that the program was really not visible. But on TV there may be a chance of showing the program to more people by displaying pictures, show the work done so far so that other farmers might realize the benefits. It should also be broadcast in local languages so that they could view the benefits of the project.

#### Small Contracting Suggestion for PLL

Moore noted that if the Pakistan Government earmarked tractors, say 100 to the precision land leveling job it might be a way of supporting

small contractors development. More people should be encouraged to conduct precision land leveling but cannot get into the business because there is no way of borrowing money to buy tractor. The Project has submitted to the Sind Government a contract proposal which could be used to make a loan for the contractor to buy a tractor and then another contract between the contractor and the project director which could be used under guarantee that the contractor would spend at least 60 percent of the tractor time for precision land leveling. Somebody noted that there should be incentives for the contractor but the project officials allege that there is enough profit in the precision land leveling activity that the contractor would go ahead and borrow money for the machine.

19th April, at Karachi we met with Government of Sind officials. Pirzada, P&D stated that allocation to the project would be increased if the project shows any evidence of success. The project has limitations on the rupee allocations. If it is between 2.5 - 10 million rupees then the CWD must approve the project and if it is more than 10 million rupees then they had to go to executive committee of the central government. Furthermore, if it is a provincial project, then they can go up to 10 million rupees. About 9,000 water courses are to be improved, 1500 are in the OFWM Project.

We then met with Mr. Hazrat Pasha, Joint Chief Economist, P&D Department. Pasha chaired the meeting and he noted the following :

In response to a question Pasha noted that there would be a new allotment of about 26 trainees. He thought that about 20 people would join the training course. Pasha noted that a recent problem has emerged that they were appointing 46 officers and the backup would be 15. The next training course will commence on June 1st, 1978 and officers would be appointed from that course.

According to Pasha staffing and training is one of the biggest problems to the project. They have to get the men and train them. Pasha asked for the physical position of the project and Ashraf, Deputy Director stated that they have improved 1500 metres of water courses. Three water courses are under construction and four are being considered.

There was question about the association. AID staff pointed out that the Government should experiment with establishing water users

associations. It was further questioned that what are the plans at the moment? Pasha responded that so far only informal organizations or associations have been established. It remains to be decided that how many associations would be registered under the act. The Sind government is studying the act and it should not be difficult on their part. But to educate the farmers is going to be the most difficult, insuring that what their benefits are under the act.

The water users' association is a key element and the Government is undertaking this as a demonstration or a model project. Its success depends upon the will and ability of farmers to operate associations and take initiatives. This must be given high priority.

Pasha asked who is studying this problem in the department? Is anybody working on this system? Moore noted that the department is not doing much work on associations. There is a seminar coming up this summer which will address the association idea,

Pasha then asked for the time-table of seminar. Lyvers said they are still arranging funds and it probably will be in June.

Pasha noted that canal act will help in the formation of the associations. Moore noted there may be conflict between water courses improved and the new schedule of water <sup>would</sup> be in conflict with the irrigation act.

Pasha noted that they will find out really if associations can be formed. We do not know incumbrances or adjustments in the water-courses delivery. It may be possible to do something under the existing canal act. This should be discussed with the Irrigation and Power Departments. With regard to the project someone should present the proposal to the Secretary of Irrigation in the form of a working paper so there will be something to work on.

Maybe the total quantity of water is less and more water could be diverted to the tail end. There should be saving of water and better distribution as a result of this project. Someone should develop a

working paper including all these items. Pasha further asked that what would be the time-table of their working paper? There was considerable discussion but no time-table was indicated.

Pasha asked what is the experience in Punjab? Lyvers responded there is a research project at Faisalabad University in its very beginning stage. The University is planning to investigate water users' associations and that is the thrust of their research. Also the project officials have discussed the subject with Tando Jam University so that something could be started in Sind. Pasha noted that Tando Jam University might be a possibility to conduct such research. The other problem is to determine the benefits to the farmers, with particular reference to small farmers.

Pasha noted the main question was about the small farmer, Who are small farmers and who get the benefits? We are puzzled about the definition of a small farmer. What is a small farmer so we need to take a second look at the small farmer? The small farmer is 12.5 acres in Punjab, 16.5 acres of land in NWFP. After much discussion it appeared that it is very difficult to decide who is the small farmer.

We again have to decide the size of the holdings from operational standpoint. The operational farmers are very uniform. They have good record on this with the Board of Revenue land title and all these things are shown in their records.

Pasha said, 12.5 acres is the size of land holding but 25 acres is the limit. In terms of productivity, if you want the institutional benefits to the holder then you will have to go to the operator because predominantly in Sind, most of the operators are tenants and if you want to benefit them you will have to benefit tenants. Who will really be concerned about activity, the landlord or the man doing cultivation? The landlord is interested in productivity. The farmer is interested in improved technology and improving his production. There are operators who have mechanized farms. This whole business of a large and small is not very important because the operator is the small farmer. He does most of the work. He does the whole job plus he has to pay the landlord's share and landlord also does most of the major investments. Pasha was inclined to say that investments should be beneficial to the operator as well as the owner.

Some investments must be made by the operator. If a farmer owns 3 or 4 holdings and 3-4 tenants the zamindar(owner) gets 50 percent of the crop and he is most interested in improving the crop production. Possibly the whole discussion about larger and small farmer is not relevant to this project. We should think about this. It should be based on productivity and income of the operator and larger or small farmer really does not apply. Profits for crop is divided half and half between zamindar and the operator. Major investments by the land owner and smaller investments are about 50-50. The bullock power is provided by the tenant and other major investments by the land owner. Tenant provide labor and some investments and thus the profits are about half and half. Seed and tractors are borne by the zamindar and other inputs like pesticide, fertilizer are borne by the tenant. This larger and small farmer question is not really appropriate to the beneficiaries. The tenant has security, cannot be kicked off the land and nobody can get him. The farmer wants to produce the crop and he gets half of the produce.

Lyvers discussed the proposal on precision land leveling. Pasha does not want any changes in the institutional arrangements because they have just started and in the future they would determine if changes or alternatives might be necessary.

Lyvers then broached the subject that many staff have been posted but nobody has been authorized to the staff and this is very critical. Pasha noted that there is a relaxation of rules in respect of regularization of appointments. If the project becomes successful then it might be possible to convert it into a board or corporation. There would be a meeting on this point next week to discuss the idea.

Following the meeting with Pasha we met with Mr. Kamal -Ud-Din Qureshi, Additional Secretary of Agriculture and his Assistant Mr. Dodani Deputy Secretary for development and the following points are noted.

**The discussion**

revolved around the cost sharing fund and Qureshi did not understand that payments were delayed. The Hyderabad staff allege that the payments have been delayed for over 2-1/2 months. Two lakh rupees have been allocated to the province for cost sharing. As soon as 2 lakhs are depleted there would be another 2 lakhs made available according to Qureshi. Pirzada again pointed out that there seem to be unnecessary delays in the payment of cost sharing fund. Qureshi again emphasized that as soon as they depleted the 2 lakhs they would get the replenishment of more money. The project officials again brought up the problem of the cost sharing payment and they pressed upon Qureshi that the replenishment of the fund is delayed. He told us that maximum limit is two lakh rupees. However, they pointed out in the discussion that nearing the end of the financial year the cost sharing money had not been made available.

It was also noted in the discussion that the major reason for not meeting the targets of land leveling is the lack of contracting services. Qureshi noted that the private contractor idea will be looked into more deeply. Qureshi also suggested to the project staff that if they have any problems with regard to this project they should present a working paper to him for consideration.

It appears to me (Tileston) that AID is experiencing some problem with the Sind Government financial system. There does not seem to be a direct link between the federal disbursements and the project level achievements. The funds apparently are not earmarked for a definite project at the provincial level. Both the federal officials and the provincial officials apparently do not have an appreciation of this problem

The morale of the staff in the Sind is low due to lack of stability and also the question of salary and direction of the project, nothing seems to be permanent.

This happens all too often in USAID projects. When the project is established or implemented, too short time frames and unrealistic goals are established and then the project managers and directors are under pressure to show something too soon. It is very likely that our aspirations and goals were over-amplified and with unrealistic assumptions made in the original time frame for this activity. However, this activity should be observed very carefully in the Sind province. A lot of work is really going on in Sind and the activity needs more Sind Government push on the project.

It will perhaps require considerable more time before government officials are aware that there may be problems in this area. In general, the P&D staff both at the federal and at the provincial level are aware that there are problems but operations people like Qureshi and Director of Agriculture are not too much aware and they have some problems that need to be addressed. Furthermore, it is quite possible that OFWM Project is a low priority activity. It would be interesting to ask the Sind Government to list their development activities in priority order and to determine how the project compares with others as they perceive in their development program. Unfortunately, we did not ask Qureshi this very question but it seems necessary that Lyvers could ask this to the Sind Government in order to attempt to know how the Sind Government perceives their development priorities.

With regard to funds we got no adequate answer as to why the funds could not be earmarked to the operating level. We were told by the Agricultural Advisor to CMLA that the funds are allocated. They may have, for example, 20 crore rupees and only have allocated 15 crores for development. Apparently this 15 crores are not allocated for specific activity or project and thus the Sind Government is permitted to determine allocation of rupees among its activities. We asked questions on this issue but could get no satisfactory answers. It is possible that the Mission could address this issue at the higher levels of the federal government and press upon them to indicate the procedures they are using to determine if in any way AID funds could be earmarked for specific project or activity at the provincial level.

## NORTH WEST FRONTIER PROVINCE

19th April departed Karachi arrived in Peshawar 1705 hours. In the evening we attended dinner at Kermit Larson's SCS.

According to the American working with a research project in Peshawar, if the farmers were working together without polarization they could be expected to cooperate in watercourse improvement work. The main problem of the project in the Peshawar area is conflict between tribal and settled area. If the farmers have approximately the same powers as the tribal men, chances are they would get together to reconstruct the watercourse. This is a permanent organization supporting the watercourses. Also someone has to deal with the organization in other capacities, say, for example, seed input, fertilizer input or deal with the government's executive committee. The water course itself is not enough stimulus to keep the organization together and support in a very good way.

20th April, at Peshawar OFWM Project Office, Sheikh Dost Mohd project director noted the following: That 1978 was the first operational year. The cost sharing activity is just completing the first water course. The money arrived late and there is also a need to identify more water courses that need improvement. He stated that two teams would be working next year on the water course and precision land leveling program and four more teams would follow on in later years.

He noted and the project officials indicated that land leveling is more costly in the NWFP province than in the other provinces. The land conditions of the NWFP Province are more rougher or undulating than those found in the Punjab and in Sind Provinces. In the precision land leveling work the project officials estimate about 300 cubic metres per acre of land leveling and 150 cubic metres can be cost shared. This subsidy may not be adequate cost sharing to provide incentive for precision land leveling in the NWFP due to more rougher, costly and more difficult conditions.

We departed to a water course in company with the SCS group and project officials.

We visited a project supervised water course improvement coming from the Warsak canal. This water course is located partially in a tribal area but largely in the cultivated area. Officials stated this water course is not wholly typical of water course improvement conducted in the NWFP. The question arises in our mind as to why this water course was selected for improvement since it is not typical of the other water courses that will be improved.

Whiting noted that this section of the water course is under construction. The farmers have raised the earth up in fill but not compacted as yet. It needs moisture. The PWD minor canal and water supply was terminated by PWD about 15 years ago. The project have re-opened the minor channel so a new channel is required for the beginning portion of the water course.

The water course passes through the tribal area. There are several problems. Trees are growing in the bank and to remove them, permission must be obtained from the Irrigation Department. The project officials are working in cooperation with the Irrigation Department on the tree removal program.

Larson explained there was a mogha, which was shifted and PWD is re-opening it. The project is constructing a channel to a proper cross section.

The farm acreages are 31, 38, 8, 5, and 3 acre size parcels. There are four farmers with more than 25 acres out of 29. The total land 447 acres.

This is a typical example (except for the tribal situation) of a water course in the Peshawar area. The project does not plan to relocate any portion of the channel. A silt trap is planned near the beginning as water is very silty. Within three or four days the project will be able to complete this section of the watercourse. The Irrigation PWD are reconstructing the mogha outlet. The project has designed the canal size for the full supply from a 5-1/2 inch pipe mogha outlet.

We then walked along a short section of water course passing through the tribal area. The project does not plan any improvements in this portion of the channel because the tribal people do not want technicians working near their household areas. Tribal areas are rather difficult to work in for this reason and because they have peculiar ways. The project left some pipe with the tribal people and they will install the pipe.

We are 360 metres below the mogha. There are many trees along with the banks below the left diversion on several water channels. From this point on is the settled area. The water course extends 3,500 metres beyond this point into the settled area. The project plans to improve the water course by stages. The naccas will also be improved.

On the road to another water course we inspected a precision land leveling job. The farmer has 3-1/2 acres of land who has enjoyed the benefits of the precision land leveling program. Before leveling irrigation required 28 hours, after land leveling irrigation required only 17 hours. The reduced irrigation time is beneficial to the farmer. Prior to land leveling, production was 150 maunds gur/acre and after land leveling is 205 maunds gur/acre. Three laborers were required to irrigate prior to land leveling, and after leveling only one laborer is required to irrigate.

We are now at another precision land leveling site completed last month north west of Peshawar. We are talking to farmers who are operators. The first farm is 5.28 acres and total volume of earth moved is 2,140 cubic metres, averaging 400 cubic metre/acre. Larson stated that much of the leveling amounts to over 200 cubic metre/acre. The maximum cut was 40 centimetre. Thus is a comparatively heavy job of leveling and typical of NWFP conditions. Private contractors were not available for the job. The farmer pays rent of 300 rupees a month or 30 rupees per acre for a tractor. The project pays the project tractor operator to work with the farmer's operator for the first two or three days so that the farmer's operator will receive training. In this way the project is also providing training to the farmer's operator.

At the Sari village, about 10 or 11 miles from Charsada and about 20 miles north of Peshawar. This is a private minor or canal that the village maintains. A Kaccha (earth and rock) diversion structure diverts water from the Swat river. During floods this diversion is washed away and must be annually rebuilt. There are 34 nukkas proposed to be improved in this system.

This water course is being examined by the project to determine if channel losses are sufficient to justify improvements. The next step is to measure the water losses. The diversion structure on the

river would be a large structure and probably the project does not have the facilities or the means to construct a permanent diversion. These farmers traditionally know who is entitled to water and when and how to rotate water among themselves. The water course allocation and distribution is quite complicated but the farmers have developed detailed procedures. There are about 35 farmers with maximum holdings of about 10 acres.

Inaballa extension agent noted the farmers have formed a committee with a chairman from each group on the four sub-water courses involved. Two farmers were interviewed by the evaluation panel. One owns about 12 acres of land and the other owns about 7 acres and both are village leaders. They are 100 percent ready to improve this water course according to extension agent.

This water course is typical those located in Mardan District. There may be sections where trees should be removed but removing them may antagonizes the farmers. The project officials believe that the trees should be left in place because they stabilize the channel and improve the environment.

The total length of the channels is estimated 7,000 feet. It will be necessary to design and construct a special three way diversion at the head of the sub-water courses.

There are also 34 nukkas that need improvement. The villagers would agree to cut some of the trees and help construct nukkas and the head control structure. They will provide 100 percent labor according to the extension agent. They would supply labor and the project would supply the masons for construction, as well as engineers, cement, re bar and other equipment.

We returned to Peshawar at 1530 and visited the training center. The project will train 18 people during the training session starting the following week.

## PUNJAB PROVINCE

23rd April, we left Islamabad and drove to Jhelum. Then proceeded down the left bank of Jhelum canal turning off and proceeding to Bahwal near the headquarters of the WAPDA-Mona Irrigation Research Project, about 20 miles north of Sargodha.

24th April, we departed to the field with Dr. J. Reuss and Dr. Skogerboe, CSU and the Mona research staff. We arrived at pucca lined water course which was constructed in 1974, known as tubewell-73.

The watercourse was constructed by WAPDA-Mona research project. This is the first watercourse designed for experiments with different channel structural applications. It is divided into a series of experimental sections, such as earth lined sections, concrete plaster lined brick sections, brick lined sections, etc. This experimental channel lining was constructed by a contractor. The total length of the watercourse channel 5,000 feet, the water delivery 1.78 cusec from the tubewell and 2.50 cusec from the canal. Total water delivery to the system amounts to 4.28 cusec. Crop intensity was increased from 100 to 114 percent and in the SCARP tubewell supplied area from 100 to 126 percent.

About 200 feet down the water course is an experimental site to determine the effect of land leveling and cultural treatments. After leveling the field the farmers found that they can save 30 percent irrigation time and the available water is increased about 50 percent. As a result of the land leveling and other improved practices the yields was increased from 12.21 to 16.15 maunds per acre. We saw experiment plots with various application of improved agronomic practices. There is no water users' association established as most of the improvements were constructed by the Government. The primary objective was to demonstrate various technical improvements and cultural practices of both the channel lining and in the field.

At tubewell-56, is an elevated improved water course constructed with participation of water users. This is the first of its kind in Pakistan constructed by the farmers. Canal water is mixed with tubewell water. This water course was totally rebuilt according to the proper design criteria provided to the farmers. The Mona

Project supplied material, skilled labor and supervision. The farmers supplied the unskilled labor. The project organized a water users association to assist in the management of the activity. The water course was constructed in 1975. The association hires a chowkidar to control the watercourse, allocate water, conduct minor repairs and maintenance. There are 31 owners with 880 acres of land. The crop intensity has increased from 133 to 149 percent. Total length of water course 2,000 feet.

We came to a buffalo wallow and talked with farmers. The farmers complained that there was shortage of water and said tubewell water delivery should not be closed down. The tubewell was shut down for repair during a period when they badly needed water. The program has not increased efficiency of water delivery to the farm because the tubewell supplies additional water to the delivery system which is not designed to handle the extra water. There are several issues on this. WAPDA consultants are of the opinion they can do the job without working with associations or with the farmers. The Mona Project staff state their experience indicate that watercourses could be improved, but would not be maintained properly without an association of farmers to continue the work. According to Reuss, CSU this is a recognition of a problem of on-farm water course delivery systems which has surfaced in the last three years.

We proceeded to site No. 3, Tubewell-130. It is an earthen lined channel completed five months ago with the participation of water users. The idea, is to introduce this technology in the Mona areas of the project. The Mona Project reduced the size of the supervisory team. The water course is very good. The improved type of pucca lid does not require any mud to seal it. Ad hoc farmers' association has been formed. The association has hired a chowkidar to conduct minor rehabilitation work and to control the watercourse. Munir stated there are two water courses constructed under supervision of reduced staff. The objective was to determine if water courses can be constructed properly with a reduced supervisory staff.

Watercourse No. 81. This is a low cost water course experiment. The total length of this water course 12,600 feet. There are 20 farmers and total acres of land 325. Out of 20 farmers, 4 farmers were selected to operate the water course.

Water course No. 68, it is largely a maintenance and cleaning activity. The work started on this water course on 8th August and completed on 23rd August. The total length was 10,780 feet which comes to about 11.6 feet per hour. A very good job was observed. This activity amounted largely to deferred maintenance conducted by the farmers. But, under the stimulus of the Mona Project the farmers have done a creditable job with little supervision.

We visited the Mona experimental farm which has four objectives, i. e. skimming well, water course improvement, crop variety and agronomic experiments. 25 acres of land is included in the farm. The farm has some interesting experiments on depth of water table as affecting the yield. We looked at the well skimming program on the farm consisting of skim pumping fresh water. The objective was to determine how much sweet water lying in a bed over salty water can be safely pumped.

25th April, we departed Mona to Chiniot, the headquarters of an OFWM Project Team.

We met at the office of the OFWM Project. The meeting chaired by Sadiq Cheema, Project Director and attended by Shaw, Agronomist and Twitty Engineer SCS and J. Herman, Washington, USDA, evaluation panel and project officials. The following things are noted at the meeting :

8 watercourses have been started. The target is 8 watercourses per year, provided each water course manager has four assistants. There is quite a bit of missionary work in getting the water course work started. The biggest problem is persuasion of farmers about the benefits of the program. Generally most of the farmers cooperate but a few remain uncooperative. Cheema stated there would be 8 Punjab teams established out of 10 by the end of the year and the project would field 10 teams by June 1979.

The precision land leveling activity is still a difficult activity to initiate. The project is training the precision land leveling staff and utilizing them to conduct water course improvement. As a result the precision land leveling progress is retarded. This idea is further motivated by the fact that the precision land leveling is seasonal work and the watercourse work can be continuously conducted.

The project plans to post two water course engineers on each team and adding, as required, one or more staff to the team. Cheema plans to put another area coordinator in the zone by June, 1979. The difficulty is not getting specialists. The project has most of the specialists positions filled. The problem is getting the required staff to fill out the teams. At the end of this year there will be 50 water courses completed and a total of 1,500 acres of precision land leveling completed. But, at least 50 percent more work could be accomplished, if contractors were utilized in land leveling. The project have not started with contractors' land leveling. 25 acres of farm holding is still the limit of a farm holding in order to provide a subsidy for the land leveling. The project is leveling larger owned tracts but with no subsidy provided, only technical assistance. For water course improvement, the project pays all material cost.

The project is getting their budget in due time, There are some administrative delays. For contractors and land leveling equipment the project needs special approval of the center. The project could get the money if needed to start the activity.

We departed to Bhawali to inspect a water course located about 16 miles from Chiniot.

We stopped near the mogha. Munir, Agriculture Officer for the OFWM Project explained the features of this water course. The water course was completed in July. Total length 4,168 metres, including a total area of 178 acres and the project have installed 50 structures and 4 cuverts. Delivery efficiency was increased from 65 to 89 percent and the loss of water decreased from 35 to 11 percent. There are 42 farmers on the water course, the largest farm is 28 acres and the smallest one is 1-1/2 acres, 75 percent of the farmers own 5 to 8 acres.

According to the water course coordinator, if any farmer wants to level land he must have permission from the Patwari who has to verify and approve the job. It is very complicated procedure and discourages the farmers from trying to level land. The procedure should be simplified and the inspection should take place as soon as possible after it is certified that land leveling has been completed. A khal chowkidar is employed by the farmers' association and paid 16 maunds of wheat per year usually by instalments, or an equivalent of Rs. 1,640 per year for this part-time work.

The water course supervisor noted some organizational problems in this village but the work is progressing because of the targets set by the project, compels the staff to keep pressing forward.

Mogha No. 56-R 131 on the Jhang canal. The total length of the water course 6,800 metres, command area 724 acres, the number of farmers 107 and the length of improved channel 3,577 metres. Brick concrete plaster lining was constructed for 230 metres. 37 structures constructed. Delivery efficiency was increased from 65 to 86 percent. Before improvement the channel was designed to convey 34 liters/second now it is designed to convey 100 liters/second. This is under the subsidy program and was started in January 1978. The project is conducting minor construction works on the water course, like improving the surface along with the channel edges and etc.

We walked down the water course which has been very recently constructed and the workmen are still watering the concrete plaster to properly cure it. We witnessed nearby a field being leveled by a traditional method of buck board (Karah) pulled by two bullocks. The project is providing technical assistance to this traditional leveling job. By this method the land is being precisely leveled according to specifications. The operator receives a subsidy of Rs. 20 per hour.

Chak 127-J.B., at the tail end of water course, mogha No. 236363. The total length of the water course 6,948 metres, command area 507 acres, the number of farmers 55 and the length of water course improved 584 metres. There was brick and concrete plaster lining for 150 metres, structures installed 29, major cuvert 1. Delivery efficiency was increased from 60 to 85 percent. This water course is under construction. We observed the brick work under construction and it appears to be a workman-like job.

We witnessed a farmer leveling land nearby. It is a 6 acres ownership with 2 acres being leveled. Cost sharing will be Rs. 204. The farmer borrowed his neighbor's tractor for the job. He will pay Rs. 500 for the use of the tractor, Rs. 25 for the scraper and Rs. 7 for the land plane per day.

We met two farmers on the road. One was complaining that the other is not doing his share of the job and was saying that some authority should be given to the association in order to try to solve this problem.

We then observed a large farm leveled under technical supervision of the project. There are 90 acres of land, 2 tubewells and one mogha supplying water to the unit. One farmer has four acres, one farmer one acre and the remaining 85 acres with one owner. There was no subsidy paid either for watercourse improvement or for precision land leveling due to the large size of the farm. The farmers wanted to use all the sources of water to irrigate the field and the channel ways were enlarged to accommodate the increased water flow. The farmers supplied Rs. 5,000 and the project supplied technical assistance. The farmers arranged for 14 tractors, 30 bullocks and 230 laborers and the farm was leveled in three days.

We stopped at a water course on the way to Faisalabad, Mogha No. RD-32126 Khai distributary. This water course is served by two sources, mogha and tubewell. Total delivery 78 liters/second, designed discharge 85 liters/second. The length of the main water course 3,350 metres. The efficiency before improvement 62, after improvement 85 percent. Number of farmers 58, the command area is 300 acres, total 41 improved nuccas.

The water course is under construction. The brick foundation has been constructed. There is a Government tubewell supplying the system. The villagers control the operation of the tubewell to provide their needs. The farmers were already organized into an association to operate the tubewell so an association was already organized to conduct water course improvement.

The project in this zone will complete 10 water courses by June. At the present time three are completed and other 7 are in process. The team is planning 1,800 acres of land leveling this year. We arrived at a water course supplied from Mogha No. 34668 Chak No. 2, J. B. Discharge 45 liters/second, discharge of the tubewell 40 liters/second, total discharge 85 liters/second. The designed capacity of the channel 100 liters/second. Total length of the improved water course 2,600 metres, conveyance efficiency 95 percent, command area 290 acres, number of share holders 26.

The system includes a very interesting pucca brick and concrete plaster lined silt trap, 75 feet long by 7 feet wide, with tubewell water coming in.

We arrived at the Faisalabad staff house 0600 hours on 25th April.

26th April, we met with some agricultural staff of the Faisalabad University. The names of the people are listed in 'people contacted'.

Mian Mohd Aslam, University Coordinator of OFWM Project noted that the college is now conducting unified method of research. The University is combining OFWM, Agricultural Extension and the Machinery Program in a unified approach to research on the farm.

Much of the discussion addressed the completion of the PC-1 and budget approvals. The PC-1 was revised in April, 1978. There was considerable discussion that the suggested work plans and details need to be approved by the Provincial Government.

Ashfaq Mirza, Rural Sociologist gave a short description of the activity concerned with getting farmers organized into associations. The University are initially gathering data in the first phase and in the second phase will try to organize the farmers. They try to group the villagers around a common interest. The Vice-Chancellor is urging the University to extend to the field.

There was considerable discussion concerning the fact that it requires five months to get a research project approved through ARC. The University staff thought the main problem is that ARC is senior to all research agencies and is a stumbling block to get the work done. The problem with the on-farm water management type of research or short-term research is that the staff does not like to remain permanently on this type of work. Hopefully this research will gain momentum and the associations activity will attract staff to remain more permanently. The University assigns staff to this project and can only hold them temporarily.

Qurban Ali, Agricultural Engineer for training presented a program of training for on-farm water management staff. He stated that extension type people are assigned to the on-farm teams. There are 6 agents assigned to Punjab, 4 to Sind, 2 to NWFP and there are 2 more available to Baluchistan. These people were given 4-1/2 months training.

Qurban Ali outlined the training course and emphasized that training is conducted with the farmers during the training period. Afterward the trainees are assigned to water course teams to help advise the farmers on irrigation and cultural practice. The University's aim is to have one trained agricultural extension agent with each team. Hopefully the agents would get enough training so they can manage sub-professional assistance to help them with the work and in this way the work may be amplified more rapidly.

We departed Faisalabad to look at water courses at Sumandri and Jaranwala on the way to Lahore.

We reached Sumandri OFWM Project headquarters about 30 miles south of Faisalabad, 1100 hours. We then visited a water course near the road about 4 miles from the headquarters, Chak 407 G. B. under construction. There is 20 or 25 acres in this water course. There are 55 farmers and have formed a water users association. The farmers plan to maintain this water course after the OFWM people depart. It is designed for 50 liters and now handles 28 liters/second. The number of laterals 100.

Chak No. 47-GB, water course was completed about three weeks ago and the construction is good. The water course 2,900 feet long, length of channel 9,800 feet. Command area 600 acres. We came to a precision land leveling job of four acres. On this job the scraper is out of order.

Chak No. 449 GB, mogha No. 46950-R, mogha discharge 27.3 liters, channel design 49 liters and delivery efficiency designed for 85 percent, command area 525 acres, number of farmers 68. The water course was very difficult to dig because it was full of weeds. The farmers are taking much interest in getting the job done and are working during the harvest. The total length of the water course 6,343 metres.

We arrived at a canal rest house 1300 hours for noon lunch. From here will proceed to Lahore. We stopped near Jaranwala to see some canal lining and precision land leveling lying north of Faisalabad.

Chak No. 216 Jaranwala, discharge at the mogha 43 liters/second, discharge at the tail end 24 liters/second, delivery efficiency 56 percent. The authorized discharge 42 liters/second and the canal designed for 50 liters/second, designed delivery efficiency 85 percent, total length of the water course 5,250 metres, the number of farmers 49 and total command area 375 acres. After improvement the discharge at the mogha 145 liters/second, measured discharge at the tail end after improvement 35 liters/second, the conveyance efficiency after improvement 78 percent. Number of checks 60, number of culverts two, small cuverts 6 and improved pucca lining 60 metres. The total expenditure for the material Rs. 25,800. Total estimated cost Rs. 41,219.00. This watercourse is still under construction. The farmers are working on this water course and construction started in January.

Water course No. 51148-R, Chak No. 65-GB, Jaranwala District. The total length of the water course 5,025 metres, total command area 160 hectares or 400 acres, total number of farmers 104, measured discharge 1.2 cusec, tubewell discharge 1.3 cusec. The total discharge 2.5 cusecs or 70 liters/second. Designed delivery efficiency 85 percent. This water course is under construction. The farmers have removed the old channel and are constructing the bed for a new channel. The work on the water course was started on 2nd or 3rd April. This water course will be completed by the end of May, 1978. Four watercourses are under construction in this District. The development officer stated that farmers are cooperating on this water course and are employing labor to conduct the work. The project proposes to line 375 metres of this water course.

We arrived in Lahore 2030 hours.

## LAHORE ON-FARM WATER MANAGEMENT PROJECT

27th April, the group visited the OFWM Training Center in Lahore. A training session was in progress on land leveling and on-farm water management. We joined the students in one of the class rooms and a slide show of the on-farm water management activity was presented. We toured the stores and shops and the dormitory. The students are lodged in a warehouse building.

We were told that one month training of precision land leveling and two months in the field, and second stage is water course improvement for one month and the third stage of training is field assistants special training for three weeks. In the last training session some farmers attended training for 90 days,

GIJ training officer identified the need for private contractors to become engaged in precision land leveling. He stated it is very difficult for the contractors to borrow money to buy tractors through the bank.

We returned to Cheema's office at 1030 hours for a meeting with Secretary of Agriculture in Cheema's office.

Mr. Mohd Naseem, Secretary Punjab Province noted the following. A revised PC-1 for increased staff positions has been submitted. The On-Farm Water Management activity is going forward as a project and that is why the Punjab Government views it favorably. Naseem noted under questioning, as to future of the project, that the Government has no intention of dissolving the project as the activity is firmly based and accepted by the farmers. The Government wants to extend and the only handicap is non-availability of personnel to staff up the project. The Punjab Government have approved the activity as long as farmers approve. It would be a sad thing if the staff and project would disband at the end. That progress is about as fast as desirable and could be expected in view of the constraints of personnel and other things that are retarding the project. The project is now providing 3 teams over 11 tehsils,

Vast sums are being and have been expended for water project development with really no increase in agricultural production and

time is now to capitalize on technical improvements at the farm level.

More recently the precision land leveling and the on-farm water management activity projects have moved into a new phase of a more self-sustaining nature. The Punjab Government are also trying to rejuvenate extension and are thinking about employing the Benot system of 'visit and tell' program.

The project should be institutionalized to the extent that it does not need support of the Government nor AID. Naseem believed that water users associations have the possibility of including the change agent concept to work with farmers. The program appears to be organizing the farmers enough so they can feel need for the program.

Naseem conjecturized but don't know when the farmers would realize economic benefits; they would stick together and use the associations to improve their own lot and also will develop other means to improve their economic situations. The farmers will also probably use the association means to seek other economic improvements. The program must help the farmers to organize themselves into some sort of association that can perpetuate itself in order to continue the operation and management aspects. The Punjab Government has had some poor experience with large cooperative institutions to conduct activities. These large cooperatives are really too far away from the farmers and secondly subsidies as employed now are not permanently good. It is believed that the project can continue the activity without subsidy which would be helpful to the sustained permanence of the project.

The World Bank is interested in becoming involved in the activity but wants to see how the AID project develops first to determine the possibility of success. He thought that too much money or extension of the program now may lead to bad results and there should be some restraints in the funding so that the project can develop on a more rational basis. The Irrigation Department brings the water to the water courses and has employed many civil engineers to do this but they are not much concerned with irrigation aspects beyond the mogha. There are 50,000 water courses in the Punjab and that means there is a considerable load in order to improve these

water courses to necessary standards to assure equitable distribution of the water.

Nasri brought up the evaluation proposal prepared by WAPDA. This 16 million rupees evaluation stretching over 5 years is primarily designed to evaluate the activity in place, on-going and what happens after some of the associations and activities have been established. This seems like a very costly exercise for only 48 water courses included in the evaluation. But on the other hand this may formulate the basis for expanding the project should be regarded as a study of the over all activity and is a justification and/or feasibility for projecting and more funding into the future, particularly if the World Bank can find justification for assisting the project.

The project budget for example is based on 19 crore rupees but 9 crore rupees are available to the project. Naseem noted that other departments are not able to spend their money and this project could spend up to 19 crores if it was justified which is the budget allocation under the activity.

Naseem discussed briefly and noted that individual project budgets are juggled by the provincial governments. The money does not come down to the project tied to specific projects. This is hard to do and it is impossible to tie funds because it would tie the provincial governments hands in operating their budget.

At 1230 hours we met with Mueen Afzal, Additional Chief Secretary for Development of the Punjab Government and his staff and the full evaluation team. Mitchell outlined the team's general impression Mueen responded if more money was available and project can be expanded, it could only be expanded at the expense of other projects.

He noted that 1/10th or less of the water courses are actually lined. The Government does not have resources to do the entire job. He doubted that small contractors could get going due to the large costs of establishing them. The question was asked what happens to the on-farm water management activity beyond the period of demonstration and pilot. The P&D staff responded they were doubtful about the claimed savings of water as results of on-farm water management activity.

At 1400 hours we met with CSU staff at the USAID Office and Dr. Reuss outlined briefly the CSU proposed program as follows:

1. CSU will continue to assist and advise the Mona research WAPDA activity;
2. The on-farm water management evaluation and monitoring proposal by WAPDA is to be advised by CSU. This is a long-term evaluation over 5 years. The evaluation would be before, during and after the project activity. This evaluation costs more than actual construction of the activity but it is a study of the whole activity and will provide a comparison of any improvement before and after conditions of the project;
3. The Faisalabad University and their three programs within this aspect; a) water user study, b) training program, and c) research proposals. Several components are replicates of the Mona study;
4. There are some miscellaneous activities of on-farm water management training and research center.

They need more consumptive use data and additional information from the crop research centers. There are now several locations around the country gathering consumptive use data of water on the crops. He noted that the CSU needs to reduce inputs.

On-farm water course survey under No. 2 above is followed up by a WAPDA master planning effort. CSU has advised in a limited fashion.

CSU propose to conduct complete inflow and outflow measurements of water courses total branches of the area. Now WAPDA with Mr. Trout's help is doing some of this work.

CSU is also supporting the On-Farm Water Management Project in any way possible.