

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

<p>1. PROJECT TITLE</p> <p style="text-align: center;">Libmanan-Cabusao Integrated Area Development</p>	<p>2. PROJECT NUMBER</p> <p style="text-align: center;">492-0275</p>	<p>3. MISSION/AID/W OFFICE</p> <p style="text-align: center;">USAITD/Philippines</p>							
<p>4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY)</p> <p><input checked="" type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION</p>									
<p>5. KEY PROJECT IMPLEMENTATION DATES</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">A. First PRO-AG or Equivalent FY <u>76</u></td> <td style="width: 33%;">B. Final Obligation Expected FY <u>80</u></td> <td style="width: 33%;">C. Final Input Delivery FY _____</td> </tr> </table>	A. First PRO-AG or Equivalent FY <u>76</u>	B. Final Obligation Expected FY <u>80</u>	C. Final Input Delivery FY _____	<p>6. ESTIMATED PROJECT FUNDING</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">A. Total</td> <td style="width: 50%;">\$ <u>8,500,000</u></td> </tr> <tr> <td>B. U.S.</td> <td>\$ <u>3,500,000</u></td> </tr> </table>	A. Total	\$ <u>8,500,000</u>	B. U.S.	\$ <u>3,500,000</u>	<p>7. PERIOD COVERED BY EVALUATION</p> <p>From (month/yr.) <u>June 1978</u></p> <p>To (month/yr.) <u>June 1979</u></p> <p>Date of Evaluation Review: <u>August 1979</u></p>
A. First PRO-AG or Equivalent FY <u>76</u>	B. Final Obligation Expected FY <u>80</u>	C. Final Input Delivery FY _____							
A. Total	\$ <u>8,500,000</u>								
B. U.S.	\$ <u>3,500,000</u>								

B. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues, cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., algram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
<p>1. Revise current construction plans to include 300-meter extension of main canal cut-and-cover section, a wasteway, and safety facilities.</p>	NIA/PMO	8/79
<p>2. Give priority to farmer organizations for Pakyao (labor intensive) contracts. Modify contract award procedures and monitor implementation to ensure equitable payment to laborers.</p>	PMO	Continuous
<p>3. Investigate adequacy of presently designed water levels in laterals to ensure service to all areas. Take remedial action if required.</p>	F.D	9/79
<p>4. For planning purposes, clarify whether Institutional and Agricultural Development Department (I/ADD) activities presently assume the eventual institution of a wholly independent irrigators cooperative or NIA-operated system.</p>	PMO	9/79
<p>5. Complete implementation schedule and arrangements for 5-year continuation of I/ADD activities beyond December 1979. Plan should focus initial institutional development efforts on operationalizing smaller units of the irrigators association. It should identify specialist/extension staff requirements and confirm adequate budgetary support.</p>	-	9/79
<p>6. In view of (4) above determine the size and nature of government subsidies in the construction and operation of the Libmanan/Cabusao system. Incorporate these assumptions explicitly in deriving the</p>		

<p>9. INVENTORY OF DOCUMENTS TO BE REVISED FOR ABOVE DECISIONS</p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> Project Paper</td> <td><input type="checkbox"/> Implementation Plan e.g., CPI Network</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Financial Plan</td> <td><input type="checkbox"/> PIO/T</td> <td>_____</td> </tr> <tr> <td><input type="checkbox"/> Logical Framework</td> <td><input type="checkbox"/> PIO/C</td> <td><input type="checkbox"/> Other (Specify) _____</td> </tr> <tr> <td><input type="checkbox"/> Project Agreement</td> <td><input type="checkbox"/> PIO/P</td> <td>_____</td> </tr> </table>	<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	_____	<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____	<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	_____	<p>10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT</p> <p>A. <input type="checkbox"/> Continue Project Without Change</p> <p>B. <input type="checkbox"/> Change Project Design and/or <input checked="" type="checkbox"/> Change Implementation Plan</p> <p>C. <input type="checkbox"/> Discontinue Project</p>
<input type="checkbox"/> Project Paper	<input type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify) _____											
<input type="checkbox"/> Financial Plan	<input type="checkbox"/> PIO/T	_____											
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify) _____											
<input type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P	_____											

<p>11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)</p> <p style="text-align: center;"><i>David H. Smith</i> David Smith Project Officer</p> <p style="text-align: right;">OLRD <i>AJW</i> PO <i>[Signature]</i></p>	<p>12. Mission/AID/W Office Director Approval</p> <p>Signature: <i>[Signature]</i></p> <p>Typed Name: Dennis P. Barrett, Actg. Dir.</p> <p>Date: August 30, 1979</p>
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B. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR		
A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
<p>water fee which considers:</p> <ul style="list-style-type: none"> a. the likely level and timing of increases in productivity attributable to the provision of irrigation service, b. the level of water fees set by Presidential Decree, and c. prior statements of future water fees made by the PMO to project area farmers. 	PMO	1/80
<p>7. Inform farmers in the project area of:</p> <ul style="list-style-type: none"> a. estimated completion date and expected water delivery date, b. their water allocation and terminal facilities O&M responsibilities, and c. the size and derivation of the water fee described in (6) above. 	PMO/NIA	3/80
<p>8. Re-determine if scheduled project completion date of 6/30/80 is firm for USAID reimbursement purposes. If not, GOP and USAID take appropriate actions to request extension terminal date or other action.</p>	PMO/NIA	3/80
<p>9. Do in-depth review of land reform program in Libmanan and develop action plan to complete carpet coverage.</p>	MAR	12/79

13. SUMMARY

There have been further delays in construction of the physical facilities since the last evaluation (May 1978) due to heavy rains, including typhoons, as well as lack of adequate equipment and occasional shortages of cement and fuel. The physical facilities, with changes as jointly recommended herein, are adequate to provide long-term irrigation, drainage and tidal flood protection to the service area. Under a revised construction schedule which appears attainable, facilities should be completed and operational by June 30, 1980. If further delays in completion become evident by February 1980, extension of the terminal dates of request for reimbursement should be requested by the GOP and USAID.

In implementation of the organizational/institutional/training components, previous differences between the National Irrigation Administration (NIA) and the Bicol River Basin Development Program Office (BRBDPO) have been resolved, and an effective project coordination/management structure is now in place. Some difficulties remain in defining specialist and extension personnel needs and in attaining full interagency participation in staffing, but these are apparently moving toward resolution. Structural organization of farmers groups has been largely completed, but substantial work is still required to adequately prepare farmers system operation and management responsibilities.

The NIA is placing higher priority on support and development of the institutional component and is now, at the start of the final year before scheduled water delivery, finalizing the detailed implementation plan for completion of this component. The plan includes definition and scheduling of required interagency staff, the finalization of a water management plan, a water rate schedule, and a phased five-year schedule for system turnover to farmers.

It was the consensus of participants in this evaluation that it adequately reviewed the project's status and progress since the last evaluation. It reconfirmed the existence of unified project policy and direction and facilitated timely, substantive project decisions.

14. EVALUATION METHODOLOGY

This evaluation was conducted by a joint GOP-U.S. interagency team, consisting of representatives of the BRBDPO and USAID (by contract). Raymond A. Bailey and Frank Stipak were employed by USAID under contract with Public Administration Service to serve as outside members of the joint team and have been primarily responsible for writing the Evaluation Report and Project Evaluation Summary. In this effort, they have been ably assisted by other members of the team, in particular by Fernando Alsisto, Jr., Francisco Vargas, and Francisco Balitaan (contract) of the BRBDPO. The NIA Office of Special Projects (OSP) Manila and the Project Management Office at Libmanan provided associate team members. No representative was assigned by NEDA.

The primary purposes of the evaluation were to (1) determine whether the broader project design is valid or requires modification and (2) analyze and

document accomplishments and problem areas and recommend courses of action with realistic time-frames. The evaluation was based upon a review of background documents, reports and other written communications, observations at the project construction site and personal interviews with relevant personnel.

15. EXTERNAL FACTORS

The major external factor affecting construction progress during the past year has been heavy rains and typhoons which caused damage and necessitated considerable rehabilitation work. Another factor, partly external but also associated with input management and scheduling, has been the occasional scarcity of fuel and cement.

Consistent with prior evaluation recommendations, a comprehensive implementation plan is now being finalized which includes a five-year phased schedule for system turnover to an appropriate farmers organization of management of the system. It includes establishment of system costs, benefits and charges to farmers and consideration of other issues raised in the 1978 evaluation.

At sub-purpose level, problems in the acceptability of the project management structure (noted in the 1978 evaluation) have been substantially resolved. Indications are that effective interagency participation consistent with project needs will be achieved.

16. INPUTS

Occasional shortages of cement and fuel have delayed construction and will pose additional problems unless efficient administrative procedures continue to be employed to ensure timely delivery on site. Perhaps more importantly, the PMO's projection (CPM) of force account construction completion by June 30, 1980 is premised on having available a number of additional pieces of essential equipment over the next year. It is imperative that all required equipment be provided if construction is to be completed on that schedule.

Present procedures for monitoring progress, identifying problems, developing and approving remedial actions could be strengthened by delegating adequate responsibility and authority to the field. In this regard, instituting formal monthly field-level meetings by BRBDPO, USAID and PMO/NIA representatives is recommended.

In implementing the institutional, extension and agricultural development components of the project, there have been problems in establishing and maintaining a full-staffed team of qualified interagency specialists and extension personnel. Substantial progress has been made toward their solution in the year following the last evaluation. All concerned are aware of the problems that remain and are taking steps to solve them. Present problems noted by the evaluators include:

1. Understaffing and less than planned inputs for the PMO Institutional and Agricultural Development Division.
The team recommends that the Division's staffing

requirements be assessed and reaffirmed; firm budgetary support be provided; staffing be completed; and maximum authority be delegated to the deputy project manager for completing targeted activities.

2. Uncertainties, stemming largely from construction delays and the date of irrigation service initiation, have complicated decisions regarding the disciplinary mix, numbers and scheduling of interagency personnel required to complete the farmer training and institutional development program. The team recommends that all concerned agencies undertake a critical review of their program and staffing needs for appropriate action by their regional offices.

17. OUTPUTS

The physical facilities, net of rehabilitation, are now estimated to be about 77% completed. Flood and typhoon damage necessitated considerable rehabilitation work. The items discussed above, under INPUTS, also contributed to delays.

Based on the revised CPM schedule by the PMO, construction could be completed by June 30, 1980. This could be attained if there is no unusually severe typhoon damage as last year and if requisite construction equipment and materials are made available. Progress should be carefully monitored and reassessed. An in-house NIA-BRBDPO-NEDA-USAID assessment is recommended by February 1980.

Changes needed in physical facility outputs to achieve purposes are (1) extension of cut-and-cover section of the main canal for about 300 meters, adding a wasteway and safety features, (2) modifying pakyaolabor-intensive contracting, (3) including provisions in Operation and Maintenance agreements to guarantee continued viability of facilities, and (4) possible modification of water elevations in laterals if recommended field investigations disclose deficiencies.

In the institutional/training/organizational development components of the project, considerable progress has been made over the past year in the organization of farmers groups. Most Rotational Area Groups and Irrigation Districts have been organized. It is projected the remainder will be organized together with the federated Irrigators Association organized by December 1979. However, little has been accomplished in organizing Rotational Units and the smaller water management/compact farm sub-units of the Rotational Areas. Thus, the beginning of the organizational structure is now nearly in place, but many gaps remain in substance and content. These will have to be filled through training/extension efforts during the next couple of years. Training efforts to date have been concentrated more heavily upon specialists and rural leaders than on project area farmers.

18. PURPOSE/SUBPURPOSE

Purpose: "Operational irrigation and drainage system complemented by improved farmer group organization and extension services as part of a unified project effort."

Subpurpose: "The establishment of an organizational structure and management system to facilitate coordinated participation of technical agencies and local leaders in an area specific development project."

At purpose level, attainment of End of Project Status (EOPS) conditions must necessarily await completion of construction and delivery of water. However, considerable progress has been made over the past year in the formation of requisite farmer institutions. Completion of the physical irrigation system (including portions now identified as out of reach of the system) will possibly require modification of water elevations in certain laterals (para. 15).

At subpurpose level, previous evaluation reports have recorded and expressed concern with difficulties and delays encountered in "the establishment of an effective organizational structure and management system to facilitate coordinated participation of regional agencies and local leaders in an area specific development project."

This evaluation team is pleased to report that many of these difficulties have been resolved. Such problems as remain have been identified and brought openly to the surface, and all concerned (particularly NIA, BRBDPO regional line agencies and local leaders) are now conscientiously working to fully establish a regional/project level composite organizational and administrative capability. Of particular note, in this regard:

1. Conceptual differences between BRBDPO and NIA with respect to the relationships between the farmer's Area Development Team (ADT)/Area Development Council (ADC) structure and NIA's Project Management Office (PMO)/Agricultural Development Coordinating Committee (ADCC) structure no longer exist as a practical, operational concern. In practice, the ADT/ADC and the ADCC function as one composite project-level coordinating group, with the PMO as the project administrative unit.
2. The focus of NIA attention has broadened, and now places more emphasis than formerly, on support and completion of the institutional components of the project. The evaluation team recommends continuation of that support to include, in particular, full staffing and assured budgetary support of the PMO and delegation of maximum authority to the PMO for administration of the institutional component.

19. GOAL/SUBGOAL

Goal: "Increased income, equitably distributed; increased on-farm employment, and improved perceived and objective quality of life among residents of the project area."

Subgoal: "Increased rice productivity per hectare."

Progress toward goal and subgoal achievement cannot begin to be objectively measured until the project has been in operation for at least one year. Assuming construction is completed in June 1980, the first field impact evaluation should be scheduled for June 1981 (or June 1982). This project is also included as a pilot impact evaluation effort under the USAID-supported Economic and Social Impact Analysis/Women in Development (ESIA/WID) Project under NEDA.

20. BENEFICIARIES

Preliminary data indicate that the number of households will prove to be slightly lower, and the average size of landholding larger, than originally estimated. This is possibly due to the common practice in which elderly parents hold title to all of the land worked by the families of their sons and daughters. This then appears to be the single, large landholding of one household. The true number of beneficiary families should be clarified when complete beneficiary data become available.

21. UNPLANNED EFFECTS

Beyond the unplanned effects discussed in previous evaluations, certain adverse (as well as positive) effects were noted in an April 9 summary report^{1/} from interviews with selected farmers in the project area. Five farmers indicated adverse design/construction side effects including local interference with drainage, loss of existing (Handong system) irrigation water, and loss of land to road and canal construction. This evaluation team observes that the incidence of such side effects is small relative to the total population of the area. They are mainly to be of short-term nature, but appear persistent because of repeated construction delays. Most are scheduled for correction once the system is completed and tested.

22. LESSONS LEARNED

Lessons reported in previous evaluations regarding the difficulty of developing and installing regional level organizational structures and management systems for attaining full interagency coordination and participation have been reconfirmed. The increased effort, however, pays in terms of broader participation by different line agencies, local government and local institutions.

The difficulties experienced in excavating the deep excavation sections of the main canal have amply demonstrated the need for adequate pre-construction planning and field data such as topography, horizontal and vertical control and sub-surface explorations.

23. SPECIAL COMMENTS AND REMARKS

Additional details are included in a two-part joint GOP-U.S. evaluation team report dated June 22, 1979.

- I. Evaluation of Physical Facilities (13 pages and 4 figures)
- II. Organization, Management and Operating Systems (12 pages)

^{1/} Gerald C. Hickey and Robert H. Flammang, ASIA/TR/SHRD (AID/W), April 1979.

Foreword

The 1979 evaluation of the Libmanan-Cabusao IAD I Project was conducted by a joint team consisting of representatives of the BRBDPO and USAID contractors. Raymond A. Bailey and Frank Stipak ^{1/}were engaged by USAID under contract with Public Administration Service to serve as outside members of the team. The NIA Office of Special Projects and the Project Management Office provided inputs through associate representatives. NEDA did not provide a representative.

The team's report is presented in two parts. Part I deals with the project's physical facilities; Part II with its organization, management and operating systems. Mr. Stipak was primarily responsible for writing Part I, but with the able assistance of other team members and particularly Engineer Francisco Vargas of BRBDP. Valuable contributions were made by Engineers Ramon Caceres, Project Manager; Guillermo Rinosa of NIA; Paternuncio Callejas of BRBDP; Orlando Glano and Feliciano Gerdin of the PMO; Ralph Bird and Oscar Bermillo of USAID/Naga; and Keith Long, USAID Consultant.

Dr. Bailey took primary responsibility for writing Part II but also with the active support of team members Jun Alcisto and Francisco Balitaan of the BRBDP staff.

^{1/} Dr. Bailey is a senior member of the Public Administration Service (PAS) Washington headquarters staff and has broad experience in Asian rural development program implementation. Mr. Stipak, Registered Professional Engineer #8343, State of California, is a PAS Senior Consultant with extensive U.S. Bureau of Reclamation and international experience in irrigation engineering and water resource development and management.

EVALUATION TEAM MEMBERS SIGNATURE PAGE

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USAID Consultant

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SUMMARY

The primary purposes of the evaluation were to (1) determine whether the broader project design is valid or requires modification and (2) analyze and document accomplishments and problem areas and recommend courses of action and realistic timeframes. The evaluation was based upon a review of background documents, reports and communications, observations at the project construction site and personal interviews with relevant personnel.

There have been further delays in construction of the physical facilities since the last evaluation (May 1978) due to heavy rain, including typhoons, as well as lack of adequate equipment and occasional shortages of cement and fuel. Net of rehabilitation work necessitated by flood and typhoon damage, physical facilities are now estimated to be about 77% completed.

Based on a revised CPM construction schedule, physical facilities could be completed by June 30, 1980 if there is no unusually heavy typhoon damage again, as last year, and if requisite construction equipment and materials are made available. Progress should be carefully monitored, and if further delays in completion become evident by February 1980, extension of terminal dates should be requested by GOP.

The physical facilities, with changes as jointly recommended herein, are judged adequate to provide long-term irrigation, drainage and tidal flood protection to the service area. Changes needed to achieve purposes are (1) extension of cut-and-cover section of the main canal for about 300 meters, adding a waste-way and safety features, (2) modifying pakvao labor-intensive contracts, (3) including provisions in Operation and Maintenance agreements to guarantee continued viability of facilities and (4) possible modification of water elevations in laterals if recommended field investigations disclose deficiencies.

In implementation of the organizational/institutional/training components, previous differences between the National Irrigation Administration (NIA) and the Bicol River Basin Development Program Office (BRBDPO) have been resolved, and an effective project coordination/management structure is now in place. Some difficulties remain in defining specialist and extension personnel needs and in attaining full interagency participation in staffing, but these are apparently moving toward resolution.

Structural organization of the farmer groups has been largely completed, but substantial work is still required to adequately train farmers to fully assume responsibility for system operation and management.

The NIA is placing higher priority on support and development of the institutional component and is now, at the start of the final year before scheduled water delivery, finalizing the detailed implementation plan for completion of this component. The plan includes definition and scheduling of required inter-agency staff; the finalization of a water management plan, including water rates to be charged; and a phased five-year schedule for system turnover to farmers.

PART I

EVALUATION OF PHYSICAL FACILITIES

The following facilities are being constructed with necessary appurtenances to provide irrigation, drainage, and tidal protection for a service area of an estimated 3,916 hectares:

Pumping Plant	6.1 cubic meters per second, 7.6 meters Total Dynamic Head
Main Canal	12.6 kilometers
Laterals and Sub-laterals	39.4 kilometers
Interceptor Drain	6.8 kilometers
Service Roads	45 kilometers
Main and Supplementary Farm Ditches	258 kilometers
Farm Drainage Ditches	75 kilometers
Lateral Drains, including improvement of natural drains	48.8 kilometers
Tidal Protection Dikes	16.6 kilometers

Adequacy of Plan and Facilities

With the exceptions discussed below, the general plan, designs, specifications and construction procedures are adequate to provide a system which would permit long-term irrigation, drainage and tidal flood protection of the service area.

Deep Cut Reach

The present (May 1979) plans for the Main Canal include a deep-cut reach beyond Station 2+401, the present end of the cut and cover reach. The upstream portion of this reach is in a very deep cut with steep, unstable slopes of poor material. It has been subject to considerable slope erosion and slides during heavy rains since the start of construction. It is questionable whether this reach can be successfully excavated as an open canal with the continued expected occurrence of heavy rainfall. It is certain that, if so constructed, it will be a source of continued costly maintenance under operating conditions and will pose a constant threat to the operation of the main canal.

The lower portion of this reach is in a thick bed of unconsolidated sand which also presents serious problems in construction and maintenance of the canal.

Construction and maintenance problems would be considerably reduced by changing the design of this reach to a cut and cover design beyond station 2+401 for about 300 meters as determined in the field by PMO/NIA,^{1/}BRBDP^{2/} and USAID engineers.

Wasteways

Present plans for wasteways to safely discharge excess drainage inflows or operational flows are inadequate. They are insufficient in capacity and would not function if canal check-gates or lateral headgates were closed at the time of undesirable flows. In order to protect the canal from overtopping, an uncontrolled side-channel spillway wasteway should be provided upstream of Lateral B.

Safety Features

Present plans do not include safety features at entrances to the cut and cover reaches or siphons. These pose a threat to the lives of children swimming in the canal, passengers in vehicles which may, and certainly will, fall into the canals, and domestic animals such as carabao. Safety nets or cables, upstream inclined grills (trash-rack type structures) and escape ladders or hand-holds should be provided. (See "Design of Small Canal Structures" U.S. Bureau of Reclamation 1974). In addition, consideration should be given to fencing and warning signs at dangerous locations and low deflecting guardrails along heavily traveled sections of canal-bank service roads.

Water Levels

There are unconfirmed reports that the presently designed water surfaces in the lower reaches of Lateral C are too low to serve parts of the service area. This potential problem, as well as others which may exist, should be investigated by the PMO, BRBDP and USAID field-level engineers (See formal monthly meeting discussed below under Supervision and Inspection). Remedial actions, such as relift pumps or others, should be included as required.

^{1/} Project Management Office, National Irrigation Administration
^{2/} Bicol River Basin Development Program

Compaction

Present construction procedures indicate an awareness of the necessity of adequate compaction of embankments and backfill. Continued attention should be given to this requirement especially when backfilling around structures, to avoid future settlement and seepage problems.

Pakyao^{1/} Labor-Intensive Construction

The farm ditches and drains and some of the smaller laterals are being satisfactorily constructed by labor-intensive "pakyao" contracts. This practice appears desirable for several reasons: (1) There is a shortage of suitable equipment to construct these facilities (2) The earnings by local laborers benefit the area which is economically depressed with severe underemployment (3) Local participation in the construction may involve many of the local residents with a sense of identity and pride in their project and its potential for their improved economic well-being.

One problem in the past, that of laborers quitting their jobs, probably stemmed from the practice of contracting for pakyao labor with a labor contractor. In an unknown number of cases, the contractor reportedly kept a disproportionately large share of the contract payment for himself. This would understandably cause resentment on the part of the laborers and reduce their incentive to work. It is understood that attempts are now being made to contract for labor with the local farmers cooperatives and emerging irrigators' association groups. This procedure appears to have the advantage of better distribution of the funds paid as well as further increasing local identification with the facilities which they will eventually use for their immediate benefit.

In constructing embankments with pakyao labor, particular care should be exercised to obtain adequate compaction below the operating water level in a lateral or ditch or the probable water level of side-hill drainage. Hand-tampers could be beneficially used where pick-and-shovel work in dry soils results in large clods.

^{1/} Labor-contract for specific amount of work in specified time

Environmental Impact

Construction activities to date have taken reasonable precautions to minimize unavoidable adverse environmental effects as recommended in the Environmental Analysis of the Project Paper, May 1975.

Provisions for Operation and Maintenance after Construction

The Project Management Office (PMO) contemplates operating and maintaining the entire system for the first full year after completion of construction. It will utilize such portions of the existing organization and available equipment as required. In those portions of the area where local groups of farmers are already trained, they will operate and maintain their individual farm delivery and drainage systems.

Current plans are to gradually turn over operation and maintenance in stages over a 5-year period to local irrigation associations. The purpose of staging is to permit the local farmers' organizations to accumulate necessary knowledge, experience and financial reserves.

Contemplated stages of O & M turnover are as follows:

Second year of operation: Local groups comprising rotational units (20-50 hectares) operate and maintain their individual farm delivery and drainage systems beyond their lateral turn-out.

Third Year: Groups or rotational units operate and maintain the sub-lateral serving them.

Fourth year: Operation and maintenance of each principal lateral are taken over by the irrigators associations served from that lateral.

Fifth year: Turn over operation and maintenance of all facilities to an overall irrigators association.

In order to protect the government's investment and interest in the project, at each stage and after the fourth year, BRBDP or NIA should reserve the right and authority to inspect operation and maintenance procedures and enforce such remedial actions as required.

Status of Construction

Figures 1, 2 & 3 show the status of construction of all facilities in detail, as of May 15, 1979.

Figure 1 shows the location and extent of the primary facilities which were substantially constructed at one time, the portions which were subsequently significantly damaged by heavy rains and the portions which afterwards were reconstructed.

Figure 2 shows similar information for the farm distribution and drainage systems (often referred to as terminal facilities).

Figure 3 shows the present status of each facility, by reaches, and therefore the work remaining to be done. Table 1 lists the remaining work to be done by item, quantity and estimated cost.

Progress since last Evaluation, May 1978

Frequent heavy rains starting in June 1978 and typhoons in October, November and April impeded progress and caused substantial damage requiring extensive rehabilitation work.

The following work was accomplished during the period:

Pumping Plant Structure now about 75% completed.

Protection Dikes 1 & 2 completed except segment through the Municipality of Cahusao

Main Canal: Considerable excavation and removal of slides through heavy cut sections

Progress on constructing cut and cover sections

Completion of Tunnel under the railroad except for grouting

Excavation of lower reaches of canal

Laterals: Excavation, roads and structures on Laterals A & B.

Table 1: Remaining Work

Item	Quantity		Estimated Cost ₱ Million
1. Main Canal			
A. Cut & Cover	0.234	Km.	2.38
B. Deep Cut	1.87	Km.	
1. Excavation & Overhaul	101,000	cu. m.	0.69
2. Lengthening of cut & cover	675	cu.m. Class "A" concrete	1.29
3. Concrete lining	310	cu.m. Slab lining	0.14
4. Rock excavation	31,000	cu.m.	0.21
C. Remaining portion	5.8	Km.	0.79
D. Structures	514	cu.m. concrete	0.23
E. Service Roads	5.7	Km.	0.61
II. Laterals			
A. Canals	14.4	Km.	0.25
B. Service Roads	19.2	Km.	1.08
C. Structures	642	cu.m. 3000 PSI concrete	0.35
III. Protection Dike No. 2	1.38	Km.	0.045
IV. Terminal Facilities	50	Km.	0.54
V. Trash Rocks & Other Safety features	1,500	kgs. - RSB	0.016
VI. Right-of-Way & Damages	Lump sum		0.43
VII. Contingencies			0.075
VIII. Engineering & Supervision			1.55
IX. Management fee & Surcharge			0.000
X. Price Adjustment			2.79
TOTAL			<u>₱ 13.501</u>

Laterals are now about 90% completed.

Farm Ditches & Drains: now about 80% completed.

Percentage of Completion

One measure of accomplishment to date is a comparison of total costs incurred to date compared with total costs to completion. Total costs incurred to date have been ₱45.4 million. Total additional cost to complete project facilities is ₱13.5 million, including the revisions discussed above. Using these figures, the construction is 77% completed as of May 15. It should be noted that expenditures to date include considerable costs of rehabilitation due to damages by heavy rains and flooding.

Since the above figures include costs of equipment, and procurement items such as pumps, motors, steel pipes and gates, a better indication of construction activity completed to date is a comparison of expended and costs-to-complete without the inclusion of procurement items. On this basis, the construction activity is 75% completed.

Schedule for Completion

The presently estimated schedule for completion is shown on Figure 4. Assuming normal rainfall conditions and expeditious provision of funds, material, equipment and manpower as needed, construction of facilities should be completed by June 1980.

Lateral and farm ditch construction activities should be concentrated as much as practical on Lateral A and its service area. This would permit water deliveries as soon as the river diversion pumps are completed even though the main canal deep-cut construction is still not completed.

Resources Needed

Figure 4 also shows the amount and timing of funds, equipment, materials and manpower needed to complete the project.

Supervision and Inspection

The PMO is responsible for the construction of project facilities. There are some limitations on the extent of changes which he can make in the field. Significant changes must be referred to the NIA Office of Special Projects in Manila. He administers and supervises construction contracts and force account construct-

ion by his own forces. An inspection and materials testing section within his office inspects and tests all construction work whether by contractors or force-account work. The inspection activities appear to be reasonably effective.

BRBDP and USAID engineers located at the Bicol Program Office at Pili, Camarines Sur Province, also regularly make field inspections of construction activities. They do so jointly or separately but mutually discuss their findings. Their function and authority is largely advisory. They discuss their specific findings with the Project Manager and staff and exchange correspondence with the PMO on the more significant issues. An effective spirit of cooperation among the qualified individuals involved has led to smooth and effective working relationships.

The effective working relationship of the three agencies involved would be increased if: (1) the maximum practical extent of authority and responsibility would be delegated to action-level field personnel of the three agencies so as to effectively and efficiently complete project construction and (2) with such authority, the three field representatives would meet regularly, at least once a month, to review general progress, identify problems and make necessary changes. The results of such meetings would be reported with adequate justification for any changes made, to the central office of each agency. Copies of the reports, signed as noted, would be returned expeditiously to the field offices to become part of their records as evidence of no objections. Any inordinate delay, say two weeks, in returning noted copies should be considered as acceptance.

At times, when the three agency field representatives see the need for courses of action which are either beyond the capability of resources available to them or beyond their delegated authority, they should be responsible for presenting specific recommendations in their report - who, what, when, how something critical to the project should be accomplished. Copies of such reports should be returned expeditiously to the field office with approval signatures of central offices. In situations where time considerations are essential, the field representatives should indicate in their recommendation a critical date at which time, if no approval signature has been received, approval is considered given. Needless to say, this last procedure should be used sparingly and only as necessary to the successful expeditious construction of the project.

Obviously, the above suggested procedures would require the continued availability in the central offices of personnel qualified to act on the reports and recommended actions.

Causes of Delays

Considerable delays have been experienced in the construction of this project. In fact, the major bottleneck today, the deep excavation reach of the main canal, is only slightly better than a holding action--removal of slide and erosion materials from the steep excavated slopes.

Delays are primarily attributable to the following:

Repeated heavy rains including typhoons with attendant damage to previously constructed sections;

Changes in canal alignment through heavy cut reaches;

Inadequate and erroneous topographic and alignment surveys;

Inadequate and erroneous sub-surface exploration of areas to be excavated;

Administrative problems within the organization of the principal contractor for heavy excavation, HERCON;

Scarcity of critical materials such as cement for concrete structures and fuel for equipment;

Lack of enough suitable equipment for NIA's force account construction;

Occasional rights-of-way problems.

Heavy Rains

Since heavy rains in almost any season are a way of life in the Bicol Area, construction planning should have anticipated this probability and made appropriate provisions rather than optimistically assuming the best probable weather conditions. Advice from construction experts with considerable experience in heavy rainfall areas could be beneficial. To this writer, not such an expert, it appears that consideration should have been given to constructing the heavy excavation upstream so as to dispose of drainage inflows, by gravity, completing each section into as stable a section as possible while proceeding upstream. Second, drainage inflows from the uphill sides of cut sections should have been anticipated and, if possible, diverted, at least temporarily

to minimize damage to construction. Third, stable side slopes with drained berms should have been excavated as the cut deepened.

Changes in Alignment Through Heavy-Cut Reach

Changes in alignment, particularly when considerable construction effort has been expended on the original alignment, are necessarily costly in time and money. They are evidence of insufficient planning and field design data, particularly topographic and alignment surveys and sub-surface materials and geologic exploration.

Inadequate and Erroneous Topographic and Alignment Surveys

Adequate surveys are a basic necessity for planning and design. Topography obtained by aerial-photogrammetric surveys could have been useful in selecting alignments. A basic network of closed horizontal and vertical controls should have been established early throughout the area.

Inadequate and Erroneous Sub-Surface Exploration of Areas to be Excavated

Many of the problems now plaguing the excavators of heavy-cut reaches could have been anticipated and provided for if adequate sub-surface information had been obtained. A sufficient number of drill holes to at least full depth of excavation, with qualified geologists or soils experts examining the core on site, as drilled, is essential to permit a reasonably accurate prognosis of conditions to be encountered. Without it, adequate designs, construction procedures and cost estimates are almost impossible. It is the writer's impression, without adequate basis for any measure of certainty, that with adequate sub-surface exploration, a different plan concept might have evolved - a tunnel rather than excavation through the deep cut. This might have circumvented the serious problems, which heavy rains have caused.

Administrative Problems of the Principal Contractor - HERCON

The principal contractor for heavy construction was reportedly well qualified in terms of equipment capability. Reportedly, the work progress was handicapped by the repeated firing or departure of the local, on-site contractor's chief of the project. Such problems cannot, of course, always be anticipated but their experience indicates the desirability of more careful screening of potential contractor's organization and capability.

Before starting construction, the contractor should submit a PERT-CPM schedule for approval by the PMO who would then require strict adherence to the schedule.

Scarcity of Critical Materials - Cement and Fuel

Such shortages will, of course, at times, unavoidably develop. But they could be minimized with sufficiently advanced scheduling, requisitioning and an efficient responsible chain-of-responsibility organization to insure delivery on-site, as needed, if at all possible. Such procedures, if not now existent or if weak, should be established and strengthened.

Lack of enough Suitable Equipment for Force Account Construction

The above discussion of material scarcity applies equally to equipment requirements.

Rights-of-Way Problems

In one instance, a local landowner has cut constructed lateral roads and precluded construction activities in part of the area. The matter is now reportedly being resolved by NIA's legal staff in Manila. Essential to construction of these or similar facilities is expeditious right-of-way acquisition and the right of eminent domain by the government's construction agency. Except for this instance, R/W acquisition on this project has not been a serious problem and available legal procedures have been adequate.

Recommendations

1. Adequate funds should be budgeted and made available to the PMO to permit completion of construction according to the schedules shown in Figure 4. Construction progress should be carefully monitored. If it becomes apparent that the presently estimated completion date of June 30, 1980 may be further delayed, extension of terminal dates under the USAID loan agreement should be requested.
2. Adequate funds should be budgeted to permit the PhO to operate and maintain the project facilities during the initial years of operation (1980-85).
3. Current plans for construction should be revised as discussed above to include an extension of the cut and cover section for about 300 meters beyond station 2+401, a wasteway on the main canal upstream of Lateral B and safety facilities. The PMO, with assistance as required from NIA and in consultation with BRBDP and USAID field engineers, should immediately prepare any necessary designs and proceed with construction.

4. Contracts for Pakyso labor should be made with the local farmers' cooperative organizations or irrigation association rotation areas or units to the maximum extent possible. The PMO Contract Administration Section should obtain satisfactory evidence that individual laborers are receiving an equitable portion of the contract payments.
5. The presently contemplated stages of turning over operation and maintenance of the facilities to local associations during the first five years of operation should be continuously reviewed and shortened to the maximum extent possible consistent with the demonstration of technical and financial capability of the local associations. Operation and maintenance agreements should reserve the right and authority for the BRBDP or NIA to inspect procedures and enforce required remedial actions.
6. A mechanism should be developed, if none now exists, to give some form of taxing power to the local associations over property within their district so as to insure financial participation by all beneficiaries as well as to increase local incentive to protect and maintain their facilities.
7. Necessary equipment, materials and fuel should be requisitioned sufficiently in advance of anticipated needs and administrative procedures streamlined to insure timely delivery to the project area.
8. In addition to the present frequent discussions with PMO regarding particular construction items, BRBDP and USAID field-level engineers should meet at least monthly with the PMO on a formal basis to assess progress of construction, identify problems, review adequacy of plan and facilities and take remedial actions or develop recommendations. As discussed above under Supervision and Inspection, appropriate authorities and responsibilities should be delegated and reporting and approval procedures established.
9. The PMO, BRBDP and USAID field-level engineers should immediately investigate the adequacy of presently-designed water surface elevations in the laterals to serve all portions of the service area. Remedial actions, if needed, should be included in the construction. Also, Lateral A and its farm ditch system should be completed so as to be operable as soon as the river diversion pump is completed.
10. Upon completion of construction a final inspection should include trial operation of all portions of the system. Parti-

cular attention should be given to potential seepage problems around canal structures as well as through embankments.

11. On future irrigation construction projects, adequate and reliable design data, particularly topography and sub-surface material investigation, should be obtained early enough to permit satisfactory alignment and design studies and construction procedures.

PART II

EVALUATION OF ORGANIZATION, MANAGEMENT AND OPERATING SYSTEMS

In its review and assessment of the status of the organizational, institutional, managerial and agricultural development components of the project, the evaluation team has addressed what it sees as two related but somewhat distinct categories or levels of activities. The first, to oversimplify, is comprised of activities directed primarily to the establishment of an effective, institutionalized project management capability; the second, the establishment of an equally effective operational capability. The institutional mechanism of the first is the BRECC/BRBDPO/NIA/PMO/ADT/ADC/ADCC^{1/} complex; of the second, the Irrigators Association with Rotational Units and Rotational Areas, and the Samahang Nayon subdivided into compact farms. The two categories are reviewed separately, below.

Organization and Management

A central and continuing purpose of the project (re-stated as a logframe subpurpose in the 1977 special evaluation) is the establishment of an organizational structure and management system to facilitate coordinated participation of regional agencies and local leaders in an area specific development project. From the outset (both during construction and system operation) the project has encountered difficulties and delays in achieving this purpose. Some, in retrospect, trace back to a weakness in project design (corrected in subsequent IAD projects): an underestimation of the degree of behavioral change within the bureaucratic structure necessary for project implementation. Others have resulted from a series of changes in the project setting: the 1976 reorganization of the Bicol program structure; the decision at negotiations to assign primary responsibility for project management to NIA as the lead and executing agency; and the withdrawal to NIA/OSP of regional project management and implementation authority. Still others have stemmed from delays in completion of the construction component of the project.

^{1/} Acronyms, respectively, for the Bicol River Basin Coordination Committee/Bicol River Basin Development Program/National Irrigation Administration/Project Management Office/Area Development Team/Area Development Council/Agricultural Development Coordinating Council.

The historical sources of difficulties and delays have been recorded in previous evaluation reports and require no further discussion here, other than as they may continue to impede progress toward establishment of a viable organizational structure and management system to effectively administer the institutional/extension component of the project. While substantial progress has been made in the year following the last evaluation, problems persist and the purpose is still some distance from having been achieved. All concerned are aware of the problems and are taking steps to solve them.

Organizational Structure and Relationships

On paper, the organizational structure represents a superimposition of the NIA/ADCC structure upon the BRBCC/BRBDPO-ADT/ADC structure. To the evaluation team, it reflects NIA's designation as project executing agent (and primary administrator), and the de facto installation of NIA's institutionalized organizational structure as the preferred administrative system. The PMO is the project-level administrative unit. The ADCC is established as an adjunct to the PMO as a means of strengthening the access of the Project Manager, as ADCC Chairman, to the resources of ADT/ADC for utilization in this particular project. Senior line-agency personnel, most serving also on ADT/ADC, comprise the membership of ADCC, with the Head of PMO's Institutional and Agricultural Division (I/ADD) as acting chairman. In this alignment, ADCC is designated the Composite Management Group (CMG) for the institutional/extension component of the project.

During the early stages of the review of the evolution of the organizational arrangements for administration of the project, the outside members of the evaluation team shared the concerns expressed in prior evaluations, i.e., that NIA, through its PMO/ADCC structure was working in parallel but uncoordinated (and by implication, duplicative and inefficient) fashion with (and in a sense, against) the ADT/ADC on the institutional development aspects of the project. Here was apparent evidence of what these evaluators saw as a struggle between BRBDP forces, with their structural model, and the forces of NIA, seeking to install instead its institutionalized model and thereby gain greater control of project administration.

There is evidence that conceptual differences have existed, and that their resolution (e.g., payment of incentive allowances to interagency personnel and the employment of EDF contractual services)

delayed implementation of the institutional component of the project. However, this is no longer a case of interagency rivalry and competition for domination of the project. Clearly, now, the situation is one wherein capable people are conscientiously grappling with the extremely difficult substantive problems of trying to make this particular project work. It can be argued that different approaches might have been taken; that earlier and more intensive attention should have been given to the institutional component; but this is history. The ADCC exists; so, too, does the AIT/ADC. In most respects they appear to function as a combined body. The salient issue here is not one of parallelism and inefficiency, but how this composite coordinating body shall now be utilized to assemble and deliver to the project the properly-scheduled services of an optimally staffed and qualified group of interagency specialist and extension personnel.

An important point is that the focus of NIA attention has now very apparently broadened. It is still concerned, of course, with the engineering/construction components of the system, for critical problems must still be solved to complete construction on schedule. But there is now obvious awareness that successful operation of the system depends also upon completion of the institutional component, and this is now given a much higher priority than formerly on NIA's agenda. A policy decision has been taken by NIA/USP to fully test in L/C IAD, the feasibility of farmer ownership and management, and at the time of this writing a workshop (the first in a scheduled series of three) is underway to (a) finalize the construction completion schedule and (b) on this basis, finalize the implementation plan and schedule for completion of the institutional component. (In response to action decisions reached at the 1978 evaluation review, NIA distributed a draft institutional component implementation plan in September 1978. That draft plan is now being finalized.)

At this stage of developing and finalizing institutional arrangements, several fundamental organizational and administrative issues are outstanding. How these are resolved, in the opinion of the evaluators, will affect the achievement of project subpurpose, paraphrased: the establishment of an effective local/project-level management competency and system. Several of these might be treated as sub-issues or elements of the general issue of centralization vs. decentralization, and are discussed below.

Role and Function of the PMO Institutional and Agricultural Development Division (I/ADD)

Previous evaluation reports have noted that "full staffing of the Division remains incomplete," and that remains the case at this date. The explanation, variously expressed, has been that NIA/OSP and the Project Manager have been primarily concerned with physical construction, and that full support of the Division responsible for the institutional component has been relegated to secondary position. Information available to this evaluation team confirms the understaffing, relative to the table of organization positions; suggests that the morale of staff is low; and that there is considerable concern about their individual and collective future. Reportedly, the Division has been informed that its funding will terminate in December 1979, or perhaps even earlier.

Here, again, the role of I/ADD versus that of ADCC, and of both against ADI/ADC could be argued in terms of whether an indigenous project institutional management staff should have been installed and supported, or whether more reliance should have been placed on the establishment of an effective interagency management team. This, too, in the view of the evaluators is largely of historical interest and begs the real issue. Given that NIA has assumed primary responsibility for the institutional development component of the project, is it NIA policy to develop, install and leave a (decentralized) institutional management capability at the local level? If so, and the team strongly recommends implementation of this policy, then I/ADD's staffing requirements should be re-assessed and confirmed; firm budgetary support be provided; staffing be completed; and maximum authority be delegated to it for completing development of the institutional component.

Role and Function of the Economic Development Foundation (EDF)

The NIA contracted with EDF in September 1977 to take responsibility for (a) the organization of farmers, through a series of subordinate groups, into an irrigators' association and (b) the design and preparation of training modules for training of and use by interagency extension personnel. EDF is now in the third and final stage of this work (progress and status reviewed in a following section) which will be completed and the present contract (\$640,000) terminated at the end of December 1979.

The apparent reason for employing EDF to carry out the above work was a judgment by NIA that an adequate project-level inter-agency team could not be mobilized and meet the project schedule for completion of these required tasks. This decision, too, could be debated, and its net impact upon development of the institutional component argued. The important point, to the evaluators, is that EDF will have complied with its contractual obligations by the end of the year, at which time the fully staffed PMO/Interagency Team should be qualified and expected to assume full responsibility for provision of adequate support to the farmers groups.

Further in this regard, it is the impression of the evaluators that the decision to retain EDF was taken unilaterally by NIA. From one point of view such unilateral action is a managerial prerogative, but not one which is conducive to the enhancement of decentralized, local level participation and managerial capability. Moreover, particularly with respect to the institutional component, the BRPCC/BRBDPO shares responsibility, if not for project management per se, certainly for project performance. As a matter of good management practice, as well as in the interest of developing a solid local organizational structure and management competence, all key parties to the management/coordination process should be kept informed and given the opportunity to constructively contribute to the making of critical decisions. The team notes that such interchange has noticeably increased in the past month, and expresses the hope that it will be continued throughout the construction and operational periods.

Role of the NIA Irrigators' Assistance Department

This recently reorganized (formerly the Agricultural Department) unit of NIA/OSP ^{1/} has completed an in-house evaluation of the institutional aspects of L/C IAD. The immediate application of evaluation findings will include finalization of the institutional implementation plan, including establishment of water rates, an evaluation of the practicality of rotational irrigation, a phased schedule for turnover of management of the system, ^{2/} and consideration of other issues raised in the 1978 evaluation. The

^{1/} The organizational structure is currently being realigned and names of units being changed.

^{2/} Current implementation plans project a phased turnover to farmers over a five-year period following construction completion.

head of the Irrigators' Assistance Department (NIA/OSP Manila) is taking leadership in the ongoing workshops, previously mentioned, to deal with these issues.

The mandate of this Department, obviously under capable direction and well-staffed with qualified professionals, extends beyond L/C IAD itself, to the development of organizational/institutional/management models for NIA's nationwide irrigation program. Personnel of the Asian Institute of Management (AIM) are participating in this effort to develop case study materials. The establishment of the Department, and the direction and support of its program, appear to represent a relatively new institutional commitment by NIA to prepare to deal adequately with the institutional elements of its major projects, with Libmanan given high priority.

On balance, the team regards NIA's increased attention to the development of an in-house institutional capability with favor, and commends NIA management for its commitment. The challenge for L/C IAD is to incorporate the results of NIA's accelerated institutional efforts into an enhanced project-level administrative performance.

Project Operation:
Development of Farmers' Organizations

With assistance by EDF staff, considerable progress has been recorded over the past year in the organization of farmers' groups. As of May 15, toward a program target of 129, 114 Rotational Area Groups 1/ had been organized; of seven targeted Irrigation Districts, organization of five had been completed. It was projected that organization of the remaining Rotational Areas and Irrigation Districts would be completed, and the apex federation of irrigation districts (the Irrigators' Service Cooperative) organized by December 1979.

The terminology, above, is that currently used by NIA/PMO to identify the various farmers' groups comprising the organizational structure and differs somewhat from that used in other Bicol Program component projects. As currently used by PMO, the terms are defined as follows:

1 Of the 129 total, 16 are in areas now identified as non-irrigable.

1. Rotation Unit (RU). Farmers at and within supplementary farm ditch level of the irrigation system, cultivating contiguous irrigated areas of about 10 ha., and normally also comprising the compact farm group of the Samahang Nayan.
2. Rotation Area (RA). Those farmers within the main farm ditch level of the irrigation system.
3. Irrigation District (ID). A legal corporate body made of 15-16 RA's.
4. Irrigators Service Cooperative (ISC). The apex (federated) Irrigators Association.

Organizational efforts over the past year have concentrated, first, at RA level; then, as these were established, on grouping RAs into legally-constituted Irrigation Districts.

It is evident that the organization of farmers groups (RA's and ID's) has been conducted and structured largely independently of and outside the existing Samahang Nayan cooperative structure.^{1/} As the ID's are federated into the project-level irrigators' Service Cooperative it appears that the latter could become a multi-purpose cooperative, functionally linked at each level into the SN/KSN/KB cooperative system. Alternatively the first may focus on water management, and the cooperative structure on other supporting services. What, if any, significance these somewhat confusing organizational alignments have to the degree of attainment of project purpose is not clear to the evaluators. These organizational decisions are yet to be made and are likely to be modified over time as government support services change.

As noted earlier, 114 RA's have been "organized," at least to the extent that members have been identified; a quorum of members brought together at an organizational meeting; and officers elected. It appears that little has been accomplished in the formal organization of RU's as the smaller water management/compact farm sub-units of the RA's, and this must perhaps await completion of terminal facilities at supplementary farm ditch level in order to determine just who those farmers with contiguous holdings will in fact be.

^{1/} And that in this respect the installation of the NIA/ADCC system has been parallel to and uncoordinated with ADI/ADC organizational efforts. The SN System is organized on a barrio boundary basis whereas the irrigators groups are determined solely by irrigated area - multiples or portions of barrios.

Statistically, the first 72 RA's organized have the following characteristics:

Number of RA's	71
Area (ha):	
Total	2631
Average	37
Range	1-60
Number of Members:	
Total (Net of duplication)	1090
Average	20
Range	1-47

It is difficult to qualitatively assess the foregoing statements and figures. What does it mean, beyond having one's name on a membership list and having a leader/chairman, to "be organized"? At a minimum, to (a) understand the functions of the organization, (b) understand one's role in and responsibilities to the organization, and (c) personally be in agreement with the functions and willing to assume the responsibilities. By this definition, the organizational process has by no means been completed (and, we hasten to add, could not realistically have been expected to yet be complete).

Analysis of reports, discussions with PMO/ADCO/EDF and BRBDPO staff, and random interviews with farmers indicate to the team that EDF undertook its organizational role seriously. Farmers were individually identified and contacted; pre-organizational meetings were scheduled and attended by about two-thirds of the farmers; and two-thirds (whether the same group unknown) attended subsequent organizational meetings. However, discussions of BRBDPO interviewers (working with the evaluation team) with farmers listed as members of three RA's indicated no more than a spotty penetration of real understanding to individual members of the RA as an organization or of their roles and responsibilities in it. Most were aware that they were now members; some, but not all, understood something of the concept of cooperating in water use on a rotational system. All questioned on the issue of payment for the system knew there would be a water fee, but usually referred to the existing 5-3-5 cavan fee structure. A few indicated they would have some responsibility to payment of O&M costs and, somewhat surprisingly, felt they could bear the cost out of increased production. There was little awareness, however, of what that cost would be. Finally,

although credit, its use and repayment, was specifically questioned, none evidence exposure to the concept of joint/several debt repayment liability.

In summary, essential steps in creating the organizational structure for operation of the system have been completed. Not by EDF alone, as might be inferred from the above, but also by and through the training work of FMO/ADCC and interagency staff. The framework of the structure is now nearly in place, but many gaps still remain in its substance and content. Over the coming year, training/extension must fill those gaps if farmers and farmer-groups are to adequately carry their responsibilities when water becomes available as scheduled in June 1980.

Training and Extension

In general, the level and effectiveness of training efforts to date have been less than programmed. The reasons include the inherent difficulty of actually achieving full participation of interagency personnel, to which reference has repeatedly been made. This difficulty derives not only from problems in payment of incentive allowances and institutional rigidities, but also from the long-delayed delivery of water. Agency representatives ask with some validity how water management or irrigated farm management can be taught effectively without water--or the prospect of having it in the foreseeable future (most farms are still single crop rainfed). Demonstration farms as training laboratories? 1/ Yes, but participation is limited mainly to residents of those and nearby areas. And from a learning point of view (re training participation/effectiveness) a farmer's interest and motivation are not at their peak when there is no foreseeable application.

Partly as an aside, but also related to future extension activities, farmers with whom we and others (members of an Asian Institute of Management team) have talked have confirmed--virtually without exception--the above observation regarding interest/motivation and foreseeable use. There is definite interest in having water, but also a highly evident feeling of skepticism: a "we'll believe it when we see it" prevailing attitude. This suggests

1/ Varietal, fertilizer, insecticide and other planned trials have been implemented on project area demonstration farms.

that farmers should be informed honestly, completely and immediately (a first task for FMO/Extension) about the water delivery situation. What, conservatively, are their odds that water will be delivered by the 1980 target date to all areas? What must happen, and not happen, for that date to be met? What, conversely, are their chances of having to wait another year? What risks, exactly confront them?

If it should evolve that there were no chance of water delivery in 1980, all concerned with training should logically now reassess their program, schedule and personnel requirements with a view to relating program more closely to that later date. This is not likely however; hence training must be programmed to the expectation of 1980 delivery. Even so, a critical review of the program at this point in time (water delivery minus one year) would be advantageous in:

1. Drawing interagency attention to the need for their full support of the program.
2. Revising program content, scheduling and staffing as needed to meet training requirements. (Content should specifically deal with risk and risk management, i.e., management options if water not available on schedule.)

Training/extension programs to date have concentrated more heavily on specialists (training of trainers) and rural leaders than upon the masses of farmers in the project area. This should not be surprising: it is characteristic of most extension programs, particularly in their early stages. Even as programs mature there is always the tendency to "train most the most trainable." Hopefully, however, leader training has now progressed to the point where maximum emphasis can be given to the next, farmer, level. Here there is the obvious concern that farmers otherwise may not acquire the skills requisite to their participation in the system. There is also the concern, by some, that emphasis on leader training will only serve to further strengthen an emerging echelon of rural elite standing between the farmer and his full capitalization on project benefits.

Project Area and Beneficiaries

The net irrigable area to be ultimately serviced by the project has not yet been exactly identified. Estimates of the service area range from 3,873 ha (Logframe Project Output) to 4,425 ha (1978 FMO

Implementation Plan for the Institutional Component of LCIAIDP). As of May 1979, the PMO had identified high and unirrigable areas aggregating to 448 ha., leaving an estimated net irrigable area of 3,825 ha. It is suspected that additional small areas of high ground will also be found to be out of reach as the system is completed and tested, possibly reducing the net irrigable area in the completed project to 3,500 ha unless booster pumps are used.

Based on information available at this time, it appears that the number of households (beneficiaries) will prove to be lower, and the average size of landholding larger, than originally estimated. Reports by Economic Development Foundation (EDF), the contractor employed by NIA to assist in the organization of Rotational Areas, Irrigation Districts and an Irrigators' Service Cooperative in the project area, indicate that as of February 1979, 1090 farmers with total landholdings of 2630 ha had been organized into 71 Rotational Areas. The average size of landholding for this portion (about two-thirds) of the project area, if these reported figures are taken at face value, is thus about 2.4 ha; some 45% larger than the 1.66 ha originally estimated in the project design. More recent (May 1979), but less detailed, PMO records suggest that the average size of holding for the entire project area will be somewhat larger, in the range of 2.8 to 3.0 ha., and that the total number of households (including those out of reach of irrigation) will be in the neighborhood of 1500. Many of these are more likely extended family - multiple households. This will be clarified as organizations are firmed up. The data upon which the above estimates are based are judged incomplete, particularly with respect to the identification and tabulation of all farmers within the various Rotation Areas. In one RA, for example, BRBDP interviewers working with the evaluation team identified three farmers in addition to the 36 listed on the PMO roster. Given the fragmentation of holdings among two, three and possibly more RA's; and the numerous and changing tenurial and operating arrangements alone, precise identification of who is doing what, where and when is at best difficult. Current numbers must still be cautiously interpreted.

Of somewhat greater significance than the above, if the evaluation team's interpretation of EDF reports on the organization of RAs is correct, is the existence of quite large landholdings maintained by a number of farmers in the project area. Certain names appear repeatedly: here as RA Leader; there as RA Secretary-Treasurer; again as both and as the only member of one 32 ha and another 42 ha RA. A three-member RA has an average holding of 13 ha,

with its RA Leader also listed as leader of a 13-member, 41 ha RA. Two adjacent RAs with a combined total of 106 ha and 12 members (average holding 8.8 ha) are headed by the same Leader and Secretary-Treasurer, with the latter holding the same post in two other RAs; these with a total of 67 ha. and five members. Similar situations seem likely to exist to a lesser degree among other individuals who cannot be as readily identified as those cited here. This concentration provides a partial explanation for the average size of holding being larger than expected but, more important, it suggests the need for further investigation and policy decisions regarding actions to be taken.

Land Reform

BREDDP team members confirmed that targeted land reform activities have essentially been completed, except for final documentation by Manila offices and delivery of CDP's to all farmers. Additional land reform questions have been identified and will require resolution over the coming year. Delivery of CDP's and execution of leaseholds should be reconfirmed in the 1980 evaluation.