

I. 5 OTHER FACILITIES

I. 5.1 Existing Facilities

There is no social facility at the Tagumpay home lot area. However, there are some existing social facilities in the nearby Barangays of Inagawan and Kamuning. These facilities are however, far from the Study Area. It is rather difficult for the beneficiaries of the Study Area to use these existing facilities. (refer to Figure I.5.1)

I. 5.2 Proposed Development Plan

In the allocated government space at the Tagumpay home lot area, a public market, an elementary school, a barangay hall, a health center and a recreational space are proposed. However, in the other two (2) village areas, only a barangay hall is proposed. For other rural activities, the beneficiaries of the other villages will have to use the social facilities proposed at the Tagumpay area. (refer to Figure I.5.2)

a) Public Market

The produce of the farmers may be brought and sold at the proposed public market which may be opened daily or once a week. The proposed market will have four (4) building modules (9 m wide and 40 m long). The total space for the facility would be 4,500 sq.m to be paved by concrete. Each module will have the following space:

- 1) Meat and fish
- 2) Vegetables and fruits
- 3) Daily goods
- 4) Others such as clothes, etc.

b) Elementary School Building

The present school building has only one classroom. This can not meet the incoming number of pupil in the Study Area.

Four (4) classrooms, with a scale of 8 m wide and 7 m long each, will be provided. In one building there will be two (2) classrooms, hence, two (2) buildings, are proposed. One building will be proposed for the use of the teachers and other purposes. The total school area is 1.7 ha. This area has already been allocated by the DAR.

Other necessary tools and instrument will also be proposed. The necessary number of school teachers and staff should be provided by the government to satisfy the requirements of the school.

The provision of a higher school level, the secondary school and/or high school may not be justifiable within Tagumpay Area at this time because of the existence of a high school, located in Aborlan, which the beneficiaries can avail of. This facility can be utilized by the students who will graduate from the elementary school at the Tagumpay Area.

c) Health Center

To maintain the farmer and his family's health, a healthcenter is proposed to be introduced at the Tagumpay Area. The other beneficiaries of the other villages can also use the health center. The local government should provide the necessary number of doctors, nurses and midwife to work in the center. The center would be a concrete building, 8 m wide and 7 m long. The center would require 3,000 sq.m of land including parking space, inner roads, etc.

d) Barangay Hall

For the beneficiaries to have good communications, a Barangay hall is proposed. The hall will not only serve as a meeting place but also as a multi purposes facility for various activities of the Barangay. The hall which will be 8 m wide and 6 m long will basically be a reinforced concrete structure. The land needed for the hall will be about 2,700 sq.m including parking space, inner roads, etc. The necessary tools and instrument should be provided by concerned persons/agencies.

e) **Multi Purpose Pavement**

Part of the main village road will be paved by concrete to serve as multi-purpose pavement for the beneficiaries. The pavement can also be utilized as solar drying place for agricultural product, etc. The proposed pavement will have a concrete thickness of 20 cm with reinforcing bars with a total length of 200 m on each village road. The pavement width of 6 m is the same as the road way of the main village road.

f) **Recreational Facility**

To provide recreation and promote camaraderie among the beneficiaries, one basketball court and related facilities will be proposed to be provided in the public space. There is a basketball court at present, however the court is not paved. The basketball court would be paved with concrete, and may also be utilized as solar drying facility during day time and/or when not in use for other purposes.

Figure I.5.1 Location map of Existing Social Facilities (in and nearby the Tagumpay Settlement Area)

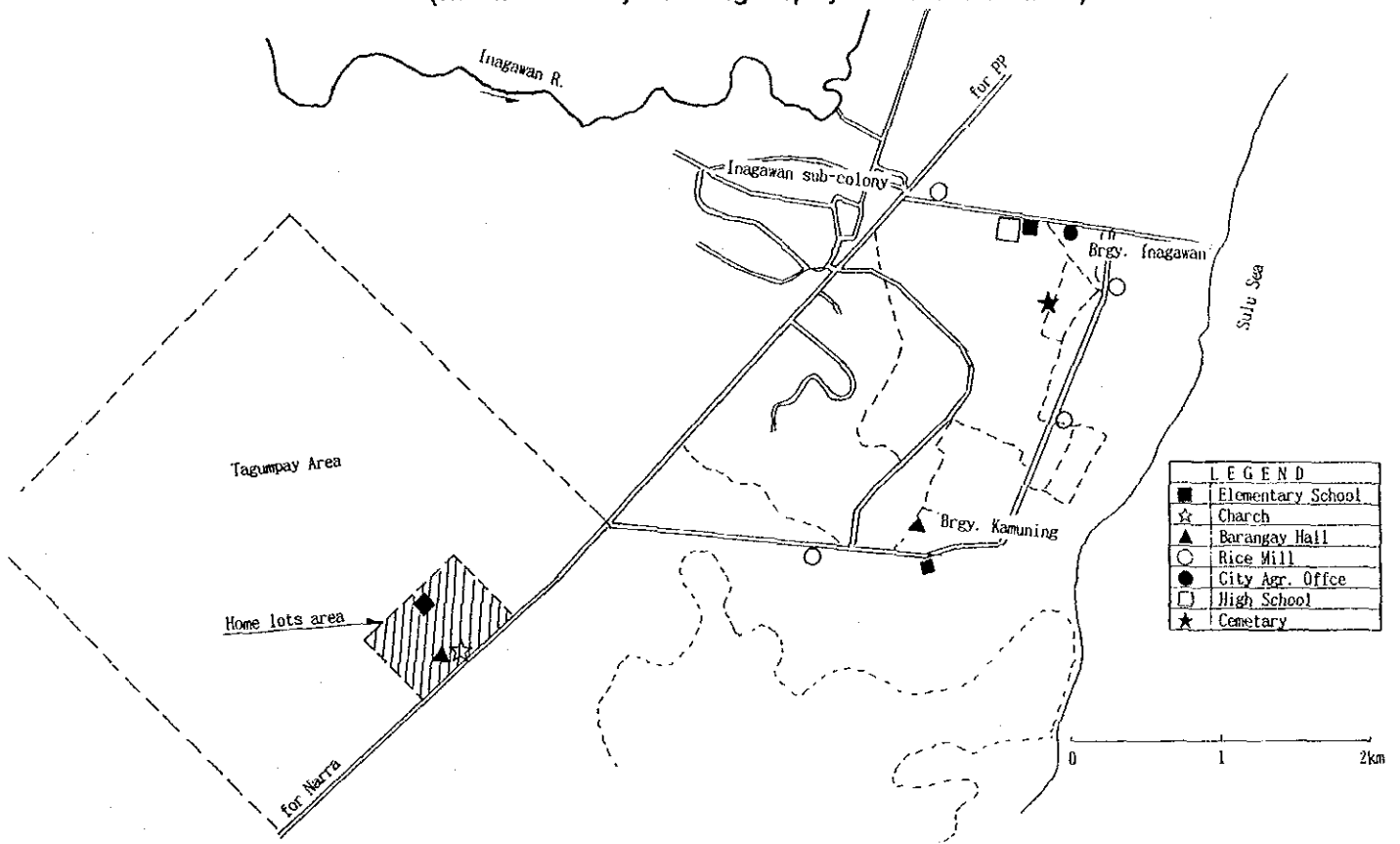
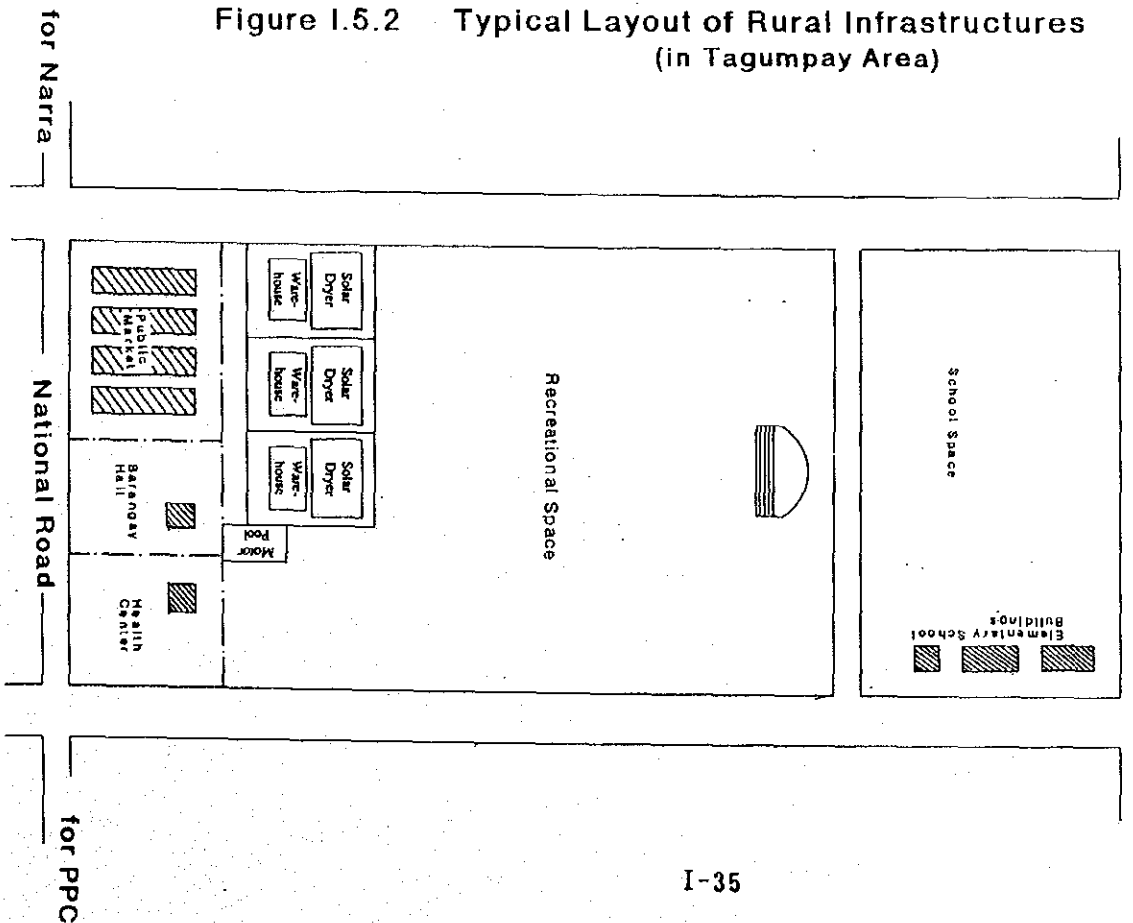


Figure I.5.2 Typical Layout of Rural Infrastructures (in Tagumpay Area)



APPENDIX J. FARMER'S ORGANIZATION

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J. 1 PRESENT CONDITION

There are two (2) types of farmers organization in the Study Area, namely the auto savings group (ASGs) and the cooperatives. The active farmer's organization presently operating in the Study Area are as follows:

1) The Auto Savings Group

- Purok Maligaya Auto Savings CARP Beneficiaries Organization
- Tagumpay Youth Movement Auto Savings Group
- Samahang Nagkakaisa Auto Savings Group
- Sariling Sikap Auto Savings Group
- Samahang Magkakatibahay Auto Savings Group
- Tagumpay CARP Farmer's Saving Association

2) The Cooperative Group

- Matagumpay Agrarian Reform Multi-Purpose Cooperative
- Tagumpay Agrarian Auto Savings Credit Cooperative

J. 1. 1 Auto Savings Group

The auto savings group (ASG) is a joint project of DAR and the Food and Agricultural Organization-Technical Support to Agrarian Reform and Rural Development (FAO-TSARRD). The main purpose of the ASGs are to form self reliant organizations by forming farmers into groups for savings mobilization. These ASGs are being used in implementing group generating projects such as retail trade/store, livestock dispersal/raising and gardening.

The auto savings group was introduced by DAR at the Tagumpay Settlement Area in 1992. The existing agrarian reform beneficiaries of the area were encouraged to organize into groups to save money on their own way. Their savings were used as capital for whatever economic project they intend to do.

There are six (6) ASGs in the Study Area and collects 1.5 to 5.0 pesos per week from the members to sustain their income generating projects. The

savings groups have a total of 144 members and a savings of more than 60,000 pesos.

In the Study Area, the leaders and members of the ASGs were trained by DAR to be good members and effective leaders. Different trainings were conducted to obtain maximum participation and increase awareness of the importance of the group. In the process, members learned to work as a group and also the simple techniques of entrepreneurship as these groups engaged in income generating activities as retail stores and others.

J. 1.2 Cooperatives

There is one multi-purpose cooperative in the Study Area with a total membership of 27. This cooperative was organized to mediate financing between the farmers/members and the bank (particularly, the Land Bank of the Philippines, LBP) for farm loan purposes. Through the efforts of the cooperative, a solar drier with an area of 38.4 sq.m., paved with concrete and a warehouse (about 70 sq.m.) was constructed in the Study Area. However, due to some organization problems, these post harvest facilities have not been maintained properly. The cooperative is at present not very active and the members and other leaders are awaiting some interventions to reactivate the organization.

The DAR, having noted that the auto savings groups have shown considerable success in terms of money saved and profitable economic activities, deemed it proper to organize these ASGs into a cooperative. Active members of the ASGs were encouraged to form a new cooperative, hence, the new cooperative, the Tagumpay Auto Savings Credit was organized in February 1994. The cooperative is still in its formation stage and at present in the process of drafting their constitution and by-laws. It is envisioned that at least 60% of the Tagumpay area beneficiaries will become members of this cooperative. The objectives and purposes for which the cooperative was formed were as follows:

- To promote the cooperative as a way of life for improving the social and economic well-being of the farmer;

- To encourage thrift and savings mobilization among members;
- To create funds and grant loans to members for productive purposes;
- To provide related services to enable its farmers to maximize the benefits from such loans;
- To serve as savings and loan facility of ASGs and all agrarian reform beneficiaries within the Study Area;
- To work with the cooperative movement, non-government and government organizations and entities in the promotion and development of cooperative and in carrying out government policies;
- To serve as channel of government and non-government services to be provided to the agrarian reform beneficiaries.

This cooperative can therefore be tapped and fully organized into a multi-purpose cooperative by DAR to promote the effective participation of the farmer beneficiaries of the Study Area in the operation and maintenance of the projects and facilities to be provided, specifically, the post harvest facilities.

J. 2 FARMER'S ORGANIZATION PLAN

J. 2. 1 Objective

To promote the effective participation of the farmer beneficiaries in the operation and maintenance of the projects and facilities to be provided and to support farmer's activity to increase income, it is necessary that farmers organization relevant to farmer's specific activity be organized and/or strengthened even prior to the implementation of the project.

The basic objective of the Farmers Organization Plan is the development of the farmer beneficiaries at the Tagumpay Settlement Area and its outlying areas into viable, organized, self reliant and productive community, sharing resources for their mutual benefits. Farmers associations such as those related to operation and maintenance of irrigation facilities as Irrigators Associations (IAs), organizations related to farmers needs, as multi-purpose cooperative, the functions of which shall include but not be limited to functions dealing with marketing of agricultural products, purchasing of inputs to obtain more collective bargaining power, management of post harvest facilities, etc. and, organizations related to the domestic water supply system as water users associations (WUA) shall be organized, accordingly.

Since the beneficiaries are simple farmers with limited skills and experiences in agricultural production, initially, the farmers organization in the Study Area will be activity specific. The IAs will only include actual cultivators of land within the proposed irrigation system while the WUA will include all farmers/households who will directly benefit from the village water supply system. The multi-purpose cooperative shall include all eligible farmers (whether irrigated or rainfed farmers) within the Study Area who will be encouraged to join the association to avail of post harvest facilities to be provided and the benefits of volume sales and volume purchase of agricultural inputs and others.

Another reason for organizing specific and simple associations is the nature of the proposed projects in the Study Area where the agricultural development calls for different cropping pattern during the wet and dry season and on areas with different land slope due to limitations of water and topography. Irrigated paddy will only be introduced during the wet season in

areas with slope ranging from 0 to 3%. However, in upland areas (slope of 3 to 8%), the crops to be introduced are vegetables and others. Other type of crops needing less water, will also be introduced during the dry cropping season. Due to these circumstances, the post harvest facilities to be provided such as the warehouse, the solar dryer, transportation vehicle, tractor, trailer, etc, will not only be used by the irrigated paddy farmers but also by the other crop growing farmers. This is one reason why the IA organization was not given the responsibility of operating and managing the post harvest facilities. Membership of the multi-purpose cooperative will thus encompass all types of farmers within the Study Area. Organizing these farmers into one umbrella organization and/or cooperative at this period might complicate the organizational system. However, eventually in the near future, when the IA, the WUA and the multi-purpose cooperative which have been strengthened and/or organized have become fully operational and have gained the necessary disposition, skills, leadership potentials and funds, they can interface or merge into one single multi-purpose cooperative.

J. 2. 2 General Plans and Activities

The DAR will tap the NIA in the development of the IAs as it has already established a system for developing the IAs. The NGO to be contracted by DAR shall be responsible for the development and strengthening of the cooperative while the Local Water Utilities Administration (LWUA) may be tapped by DAR to initially organize and train the WUA.

Since the assistance to be provided to the farmers entails basic organization and training, the following activities shall be undertaken for each of the organizations:

- 1) Establishing and/or strengthening of the specific organizations by:
 - assisting in the development of organization vision, mission and goals;
 - identifying and developing organization leaders;
 - assisting the organizations in the formulation of its standard operations, rules and guidelines and eventually its bylaws and constitutions.

- 2) Training the leaders and members on the following aspect:
 - team building and leadership;
 - communication skills;
 - problem solving and decision making skills;
 - basic organization management skills;
 - accounting, auditing and financial management;
 - credit management;
 - skills/technology training.

- 3) Assisting in the preparation and establishing of the organization's structural units as to:
 - procedures for the various operations of the organization
 - financial and management systems

- 4) Establishing the linkages of the organizations/associations within the Study Area and other concerned government agencies/entities.

The DAR will coordinate the initial organizational activity to avoid confusion and duplication. Initially, the DAR together with the NGO prepares the strengthening and/or development of the multi-purpose cooperative for the management of the post harvest facilities after which the NIA prepares for the establishment of the IA for the management and operation of the irrigation facilities. The DAR with the assistance of LWUA will also prepare the development of the WUA. (refer to Figure J.2.1)

During all these period of organization and preparation, DAR will have to coordinate and incorporate complementary activities and will function as intermediary and/or coordinator of the various organizations/agencies involved with the farmers organization to avoid confusion and/or duplication.

J. 2. 3 Irrigators Associations (IA)

To increase agricultural production, irrigation facilities are necessary. However, the construction of irrigation facilities would entail the provision of maintenance and operation systems to ensure its long life and sustainability. Since the farmers are the end users of irrigation facilities, they should be made

aware that the maintenance and operation of the facilities are their responsibility. It is therefore necessary to establish an irrigators association (IA) even before the completion of the facilities. The IAs when organized are expected to operate and maintain the system, to supervise the equitable distribution of water and to collect the required irrigation fees/charges. (refer to Figure J.2.2 for typical IA).

The DAR will initially identify the farmer beneficiaries, the actual owner cultivators of the land within the irrigation system. The DAR will tap the services of the National Irrigation Administration (NIA) in the organization of the farmers and in the provision of the various trainings needed to develop their capabilities to manage and maintain the irrigation system.

The specific activities that will be undertaken towards the development of the IA are as follows:

A) First Year

- 1) Preparatory Activities (5 months)**
 - Orientation of project implementors
 - Orientation of farmer beneficiaries
 - Fielding of Institutional Development Officers (IDO)
 - Pre-irrigators association meeting
 - Identification of farmer beneficiaries
 - Membership drive campaign

- 2) Establishment of the Organization (1 month)**
 - Organization of the IA
 - IA general orientation and training
 - Preparation of by-laws
 - Ratification of amended by-laws
 - Associations' first general election
 - Organization of the O & M personnel

- 3) Training of leaders, key persons and members (by batches) on the following aspects, to strengthen the organization and to help the officers/members in the development and establishment of the association's operation system. (3 months)**

- Team building and leadership
- Communication skills
- Problem solving and decision making skills
- Basic organizational management skills
- Basic accounting, auditing and financial management

B. Second Year

4. Second training, specifically for leaders and key persons (which shall include onsite trainings and field visits) on the basic skills and technology related to the operation and maintenance of the system, as follows: (6 months)
 - Cropping calendar and cropping pattern
 - Maintenance and delivery of water
 - Delivery and distribution of water
 - Collection of irrigation service and association fees
 - Financial management

5. Planning and organization of the O&M (3 months)
 - Planning of the O & M activities
 - Organization of the system and management
 - Planning of the system management
 - Drafting of the association's arrangement with DAR/NIA

6. Preparatory Operation Activities (4 months)
 - Assessment and evaluation

Since the organizational structure have been established and the trainings already undertaken, the association leaders/members will now be able to assess and evaluate what has been done and make additional preparations or revisions, if any. At this stage, there will be a series of discussions with DAR/NIA and other agencies concerned regarding the actual operation and maintenance of the project.
 - Association test run of the system
 - Assessment, evaluation and planning of the system and management after the test run

- Establishment of linkage with other organizations or associations within the Study Area and other concerned government agencies/entities
 - Management responsibility is turned over to the association, with guidance and assistance from DAR/NIA
7. Association Capability Building (2 months)
- IA evaluation and assessment of performance
 - Audit of IA financial records
 - Continuous training of farmer beneficiaries (by batch) on the operation and maintenance aspect by the farmer leaders and/or DAR/NIA
 - Full management responsibility is turned over to the Irrigators Association and the pull out of the Institutional Development Officer (IDO)

Eventually, when the Irrigators Association have become fully operational and have gained the necessary disposition, skills, leadership potentials and funds, they can venture into other farmer related activities, such as volume acquisition of farm inputs, marketing of farm produce, acquisition and management of post harvest facilities, lending activities, etc., and/or merge and interface with the multi-purpose cooperative to be developed and organized by DAR-NGO in the Project Area.

The operation and maintenance cost of the IA is estimated at about 238 thousand pesos annually. (refer to Table J.2.1)

J. 2. 4. Water Users Association (WUA)

With the provision of the village water supply, there is a need to organize a water users association (WUA) to ensure project success, measured in terms of functioning facilities, utilization of facilities and its impact on the health and economic status of women and their families. (refer to Figure J.2.3 for typical WUA).

The WUA maybe organized during construction stage to ensure that the members will gain information, technology and management systems for the community.

The WUA will be incharge of the operation and maintenance of the system and the collection of water charges. Eventually, after the members have attained the technology and skills and the necessary income to pay other charges and bills, the WUA will be able prepare plans to upgrade the village water system from level II to level III.

Necessary training and skills would be provided to the leaders/members to ensure the success and continuity of the project. The DAR may tap the Local Water Utilities Association (LWUA) and/or the NGO to provide orientation and skills training to the WUA.

Activities to be undertaken to sustain the continuous functioning of the facilities are as follows:

1. Establishment of the Organization (6 months)
 - Orientation of farmer beneficiaries
 - Pre-association meeting
 - Membership drive campaign
 - Organization of the association
 - Preparation of the by-laws and ratification of amended by-laws
 - Election of officers
 - Organization of the O&M personnel
2. Training of officers and key personnel regarding operation and maintenance activities (3 months)
 - Operation of the facility
 - Cleaning and repair of the facility
 - Collection of water charges
 - Simple accounting and financial management
3. Training to strengthen the WUA, specifically to improve leadership qualities. (3 months)

The operation and maintenance cost for the WUA is estimated at 246 thousand pesos annually. (refer to Table J.2.2)

J. 2. 5 Cooperative Development

The existing farmers organization in the Study Area, the auto savings and the cooperative groups will be strengthened and assisted to make sure that the farmers are efficiently organized prior to implementation. The farmers will be properly oriented to be able to manage the operation and maintenance of the facilities and systems to be established in the Study Area, specifically, the post harvest facilities.

The existing organizations shall be encouraged to eventually organized into one federation of farmers organization, a multi-purpose cooperative, to particularly take care of the post harvest facilities to be provided under the project and to undertake additional activities which shall include but not limited to marketing of agricultural products, purchase of inputs, provision of credit and others. (refer to Figure J.2.4 for typical multi-purpose cooperative).

Like other DAR projects in the country, the responsibility of developing the farmer beneficiaries into viable partner agencies for the implementation of the facilities and systems will depend on the NGO to be contracted by DAR. The DAR together with the NGO will implement the cooperative development component of the project. After proper orientation and organization, various education and training will be conducted for the farmer leaders and members. The learning will enable the farmer beneficiaries to perform their task efficiently as new owner-cultivators.

Again, like other DAR projects (ongoing and proposed) the activities to prepare the farmers to become fully organized and prepared to accept responsibilities to operate, manage and maintain a system/facility will take about three (3) years and would include the following:

- a) **First Year : Organization and reorganization**
- b) **Second year: Capability building and entrepreneurial training**

c) Third Year : Capability building and enterprise development

The organization and reorganization activities shall include among others the following activities:

- Orientation of DAR/NGO/NIA
- Deployment of community organizers in the Study Area
- Community organizers evaluation of existing farmers association
- Basic cooperative orientation and organizing
- Selection of farmer representative for immersion activity
- Pre-immersion orientation, coordination with host representative
- Post-immersion assessment
- Training on basic cooperative orientation
- Conduct of pre-membership education seminar, organization of ad hoc committee
- Orientation of ad hoc committee
- Drafting and review of articles of cooperatives and by-laws
- Presentation and approval of drafted articles of cooperation and by-laws
- Registration with the Cooperative Development Authority
- Organizational meeting, election of officers
- Installation of simple accounting systems, cooperative monitoring and evaluation system
- First training for the board of members
- Strategic development planning workshop for the board of directors and other committee members
- Community consultations, formulation of the five year development plan.

The second year which will be devoted to capability building and entrepreneurial training shall comprise of the intensive training to be provided to the members and officers which will provide them the necessary skills to operate and maintain the post harvest facilities. The third year will provide the farmers with the necessary skills and tools to improve cooperative policies,

monitor projects, assess and evaluate activities and specific skills to venture into other income generating activities as marketing of produce, buying of inputs, seeds and others.

The estimated annual cost to operate and maintain the multi-purpose cooperative is 408 thousand pesos. (refer to Table J.2.3)

J. 2. 6 Federation of Farmers Organization

The eventuality of forming one single farmers organization in the project area in the near future, cannot therefore be ignored. As mentioned beforehand, when the IA, WUA and the multi-purpose cooperative have become operational and have gained the necessary disposition, skills, leadership potentials and funds, they can interface or merge into one single farmers organization. A federation of farmers organization is envisioned in the project area because of the fact that the majority of the farmer beneficiaries will have become members, not only of one (1) farmers organization but maybe two (2), if not all of the organizations to be established in the Study Area.

The following strategies shall be applied in the formation of the farmer's organizations into one federation of farmers organization.

1. During the initial organization and strengthening stage of the IAs, WUAs and the multi-purpose cooperative, the idea of forming into one single cooperative will have to be introduced and instilled in the training of the farmers.
2. A quarterly participative evaluation will enable the farmer organizations to become aware of their development, strengths, weaknesses and capacity to interact with the different organizations / entities within their area. It is during this evaluation period when the need to organize into one single organization will be encouraged. However, the decision to form one single organization will have to come from the farmers themselves and should never be imposed by DAR or the NGO contracted by DAR to assist the farmers.
3. Since farmers training and extension work would be a continuing process even after the completion of the project, immersion activities be reinforced. Hence, members of the different farmers organizations will undergo immersion activities in cooperatives

which have established and successful systems which have the functions of the three (3) different organizations (the IA, WUA and the multi-purpose cooperative).

4. Once the farmers have decided to form into one federation of farmers organization, the DAR with the assistance of other concerned agencies, will have to assist the organizations in the formation, reorganization and strengthening of the farmers federation.
5. The general activities to be undertaken for the organization of the federation are:
 - reorganization and reorientation
 - strengthening of capabilities of cooperative leaders and members through continuous training
 - developing and strengthening business activities of its members by training of farmer leaders on rice/palay trading business, input (fertilizers and chemicals) business, marketing of produce (rice, vegetables, fruits, etc) processing of produce, etc.
 - strengthening relationship and establishing of linkages with other cooperatives/farmer groups, government and non-government agencies outside the project area to assist in the production and marketing of produce.

J. 2. 7 Extension and Research & Training Program

There exist in the province of Palawan agricultural related research and training institutions which can support the proposed agricultural development plans and programs of the Study Area. The Palawan Experimental Station and the Philrice can be tapped to conduct and carry out necessary technical researches specifically on the crops recommended for the Study Area like beans, vegetables and fruit trees. These institutions can provide extension and guidance on the specified crops recommended, directly to the farmers, or to the extension worker and/or to the NGO partner. The technology training program of the different institutions can be incorporated into the training program to be provided by the NGO to the farmer beneficiaries.

The Palawan National Agricultural College can be a good training ground for would-be farmers. Since the school is only about a few kilometers from the Study Area, the young farmers of the area have more chances of attending the program. It has experimental fields and 21 Bayanihan Centers scattered throughout Palawan which aims to extend improved agricultural educational and livelihood opportunities to young farmers. Unfortunately, these services are not available in the Study Area. The local government and/or other concerned agencies may be tapped to provide assistance to the young farmers of the area to provide necessary assistance in the form of scholarships and/or funds for deserving students who would want to study in the nearby school to afford them the opportunity to improve their agricultural techniques and livelihood opportunities.

The NGO partner or the Inagawan extension workers can provide the opportunity to bring the farmers to the nearby Luzviminda-Mangingisda Agricultural Center (about 22 km away from the Study Area) managed by the LGU, where a nursery farm, carabao pool, vegetable and cash crops are planted and a model farm home lot is put up for demonstration purposes. Also, model farms can be developed with the assistance of the extension worker or the local government for farmers to see, gain and acquire actual and practical knowledge and skills on farming technology.

Since only one extension worker covers both barangays Kamuning and Inagawan, where the Study Area is located, another extension worker which shall focus on other crops such as vegetables, fruits and animal husbandry is recommended to be provided with the implementation of the project.

J. 2. 8 Women in Development

Women in the rural areas play many and varied roles not only in the rural household but also in the farm production activities. This is also true of women in the Study Area. Aside from the farm production activities and the regular household activity of cooking, caring for the children, washing, cleaning, etc., women in the Study Area also perform the task of fetching water for household consumption. Women carry water by hand or over the head at an average distance of about 140 m and a maximum of 1,000 m and gather about six (6) to ten (10) cans of water a day, usually very early in the morning or late

in the afternoon. It takes about 10 to 20 minutes to fetch a can of water. The women are usually assisted by their young children who are at times deprived of their play and study hours because of the duty to assist their mother in the fetching of water.

During the dry season, from January to April, the task of women and children becomes harder, since most of the sources of water within the home lot area dries up or have less water. Women and children are forced to fetch water from the spring located farther away from their home areas, an area between 500 meters to 1 km depending on the location of the home area. These makes the work of women doubly taxing, for they have to walk five (5) to ten (10) times farther, spending longer hours a day fetching water. Making six (6) to ten (10) trips a day, the effect on women's energy and health is very severe.

Also, during the dry season, women and children proceed to the open spring bringing along all things to wash, such as, clothes, utensils, animals, etc. and do all the washing and bathing in the spring. Quality of water, thus, becomes affected during this period and becomes unfit for drinking. To get quality water, women have to haul water for drinking during the early part of the day when human activity are less.

Due to contaminated water, women and children become more prone to water borne diseases like diarrhea, skin diseases and the like affecting their health conditions.

Due to lack of family labor and/or income sources, women are also engaged in the whole process of agricultural production, like planting, weeding, harvesting, drying, etc., either in own farm or in other farms. During the period of farm activity, women wake up very early in the morning so that the usual household activity of cleaning, cooking, fetching water are completed prior to working in the farm.

Women's role and participation in the development process should not therefore be ignored because of the multi-faceted role they play in the activity and development of the household economy. Any development that will take place will always affect them as prime users and/or beneficiaries.

Women's organization must be developed and organized to assist in the operation and maintenance of the facilities in the Study Area. Specifically, women's involvement in the village water supply system is very important to enable them to play meaningful roles in the management of the system. The village water system would mean for women improved working conditions due to lesser hours spent for hauling water and therefore improved income due to more free time for more economic and productive endeavors. Also, the involvement of women in the cooperative/farmer's organization would be encouraged. Women's participation will enhanced women's leadership qualities and improved educational qualities and skills through training as members or officers or caretakers.

Activities recommended to involve women are:

1. Invitation of women to meetings/activities related to the project.

During the organization of the IA, the WUA and the multi-purpose cooperative, the farmer and his wife and other adult members of the family (men and women alike) should be invited to attend/join the meetings/activities. Specially during the initial organization stage, they can be very helpful in the initial organization of the associations, as secretaries, mediators, and even leaders, etc.

2. Development of special training modules for women.

Since it is expected that membership of the organizations / associations to be organized in the Study Area would also be composed of women, specifically in the WUA and the multi-purpose cooperative, training modules on some specific activities be focus on women, as possible women's contribution in the progress of the organization, seminar on health and nutrition to promote dietary improvements, extension services on agricultural techniques applicable to women, etc.

3. Assigning of specific tasks/committee to women

Specific committees such as Education and Training, Credit Lending and Assistance, Collection, Income Generation and others may be assigned specifically to women, to give them more responsibility and to enhance their leadership qualities.

4. Encouraging women to put up simple income generating activities

With the provision of facilities like the village water supply system and electricity, the improvement of roads and the presence of barangay/multi purpose hall, women will have greater opportunity to engage in more productive work. The women in the community maybe organized to acquire some simple skills like dressmaking or fish drying or coconut byproduct processing, handicraft or others from which they can gain additional income. Outside groups may be tapped to provide the necessary skill, through DAR, or NGO or other agencies/entities concerned.

Table J.2.1
Estimated Operation and Maintenance Cost
of
Irrigators Association at Tagumpay Area

Item	Unit Cost	Qty	No. of Months	Amount
1. Allowance				
President	500	1	6	3,000
Vice-President	400	1	6	2,400
Secretary	300	1	6	1,800
Treasurer	300	1	6	1,800
Operations Manager	300	1	6	1,800
Sector Leader	300	1	6	1,800
Bookkeeper	300	1	6	1,800
Collector	400	1	6	2,400
Sub-total				16,800
2. Wages				
Water Tender	4,125	3	3	37,125
Gate Keeper	3,250	6	3	58,500
Ditch Tender	3,025	6	3	54,450
Sub-total				150,075
3. Temporary Labor	110	5	5/day	2,750
4. Repairs & Others (30% of 1 to 3)				50,887
5. Supplies & Materials (10% of 1 to 3)				16,962
Over Total				237,474
Total Number of Farmers	530/2.94 = 180 farmers			

* Repair - pertains only to minor repair works and which shall refer to cost of tools and materials for cleaning the system and food for the members when they participate in voluntary work.

** Refers to receipts, papers, pencils, forms, bookkeeping records, including transport and others.

Table J.2.2
Estimated Operation and Maintenance Cost
of
Water Users Association at Tagumpay Area

Item	Unit Cost	Qty	No. of months	Amount
1. Allowance/Salary/etc.				
a. Allowance				
President	500	1	12	6,000
Vice-President	300	1	12	3,600
Secretary	300	1	12	3,600
Treasurer	300	1	12	3,600
Bookkeeper	300	1	12	3,600
Sub-total				20,400
b. Salary/Wages				
System Operator	850	2	12	20,400
Meter Reader/Collector	500	1	12	6,000
Sub-total				26,400
2. Electricity	3.75		38,016*	142,560
3. Other exp. (repair etc.) (1 plus 2) X 30 %				56,808
Total				246,168
Number of Members	460			
Unit Cost per Household	45 pesos/household/month			

* 2.2 kw X 6 hours X 30 days X 8 units X 12 mo/ = 38,016

Table J. 2. 3 Estimated Operation and Maintenance Cost of Multi-Purpose Cooperative at Tagumpay Area

Particulars	Number	Rate	Month No.	Amount
A. Salaries & Wages				
I. Management Personnel				
Operations Manager	1	2,500	6	15,000
Assistant Manager	1	2,000	6	12,000
Bookkeeper/Typist	1	1,500	6	9,000
Janitor/Messenger	1	1,200	6	7,200
Auditor (Honorarium)	1	500	6	3,000
Sub-total				46,200
II. Labor Force				
1. Rice Mill				
Operator	1	2,000	6	12,000
Helper	1	1,000	6	6,000
2. Mechanical Dryer Op.				
Hand Tractor Operator	1	2,000	6	12,000
3. Hand Tractor				
Operator	3			18,000
(20% of P1,500/ha x 20 ha x 3)				
4. Rice Thresher (2 units)				
Driver Operator	2			36,000
(20% of 30 days x 200 cav x 6% x P250 x 2)				
5. Transportation Vehicle				
Truck Driver	3			18,000
(P 200 x 30 days x 3)				
Truck Helper	2			18,000
(P 50/cav x 200 cav/day x 30 days x 6)				
6. Warehouse				
Warehouseman	1	1,500	6	9,000
Helper	2	1,000	6	12,000
Sub-Total Labor Force				141,000
Total Salaries & Wages				187,200
B. Office Supplies				
(200 x 6 months)				
C. Light and Water				
1. General use (100 km x P3.75/kw x 6mo)				
				2,250
2. Rice Mill				
(35km x 8 hrs x 60days x P3.75/km/0.8)				
				78,750
3. Mechanical Dryer				
(8km x 8 hrs x 60days x P3.75/km/0.8)				
				13,500
4. Water: general use				
50cum = P47 plus (40w x P4.75/km x 6mo.)				
				1,422
Total for Light & Water				95,922

Particulars	Number	Rate	Month No.	Amount
D. Repair & Maintenance				
I. Equipment				
1. Hand Tractors (3 units)				
(1% of total acquisition cost of 8,775,000)				
				187,750
2. Warehouse/Motorpool				
(0.5% of total acquisition cost of 3,157,000)				
				15,785
Total of Repair & Maintenance				
				103,535
E. Diesel, Oil & Lubricant				
1. Hand Tractors (3 units)				
Diesel: 10 lit/day x P7.00/lit x 30days x 3 units				
				6,300
Oil : 20% of diesel cost				
				1,260
Lubricant: 10% of diesel cost				
				630
2. Rice Thresher (2 units)				
Diesel: 20 lit/day/30 days x P7.00/lit. x 2 units				
				8,400
Oil : 20% of diesel cost				
				1,680
Lubricant: 10% of diesel cost				
				840
3. Transportation Vehicle (3 units)				
Diesel: 20 lit/day x P7.00/30days x 3 units				
				12,600
Oil : 20% of diesel cost				
				2,520
Lubricant: 10% of diesel cost				
				1,260
4. Portable Conveyor				
Gasoline: 51 lit/day x P10.00/lit. x 60days				
				3,000
Oil : 20% of diesel cost				
				600
Lubricant: 10% of diesel cost				
				300
Total of Diesel, Oil & Lubricant				
Total of A to E				39,390
F. Miscellaneous				
5% of cost of A to E				
				21,362
Overall Total				448,609
Number of farmers: 1,124 x 0.9 = 1,010				

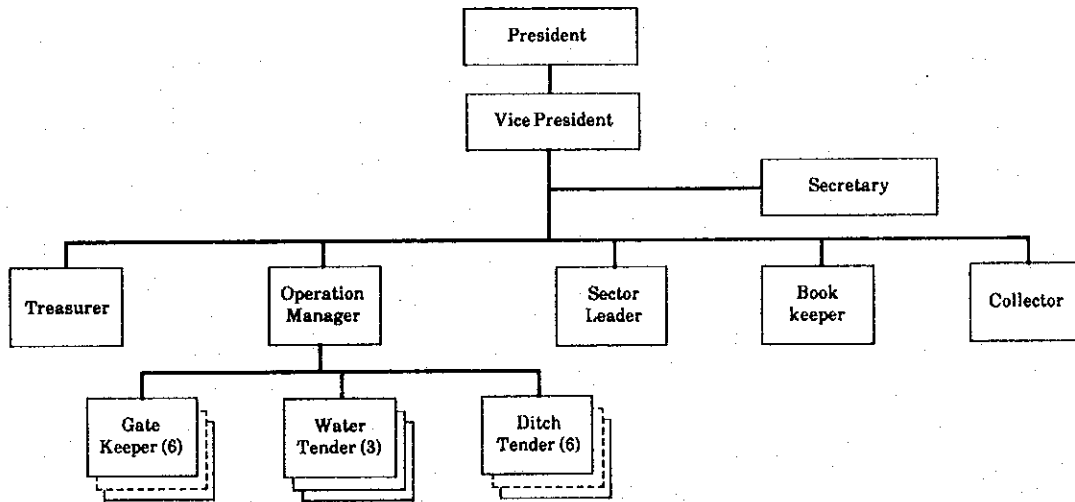
Note: Salaries and/or allowances were not allocated to the officers and members of the cooperative. When the cooperative shall have become stable with steady income, salaries and/or allowances will be allocated, accordingly.

Figure J. 2. 1 Tentative Schedule to Establish Farmers Organization

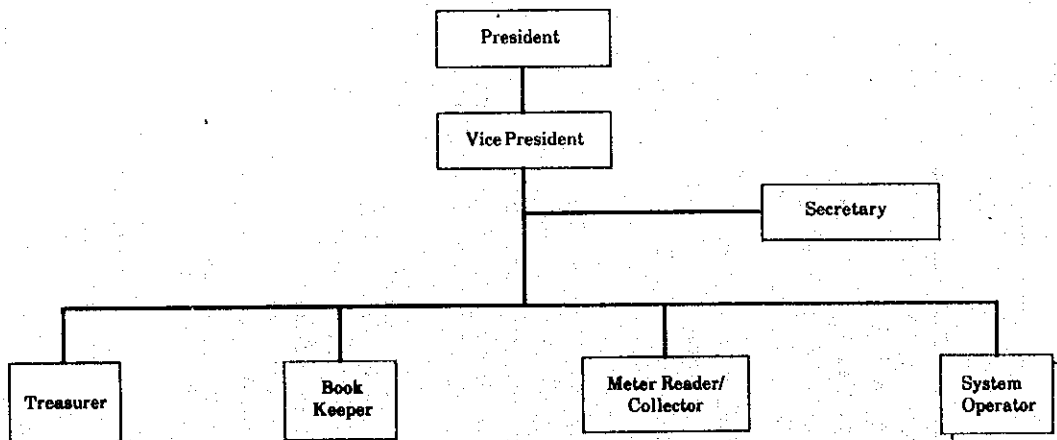
Item	1st year				2nd year				3rd year				4th year			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
A. Post F/S																
1. Eval. of F/S																
2. Preparatory Works and Budgetary Arrangement																
3. D/D																
B. Construction Stage																
1. First Stage																
2. On-Farm Facilities																
3. Second Stage																
C. Farmers Organization																
1. Multi-Purpose Cooperative																
- Organization & Reorganization																
- Capability Bldg & Entrepreneurial Training																
- Capability Bldg & Enterprise Development																
2. Irrigators Association																
- Preparatory Activities																
- Estab. of the Organization																
- General Training																
- Skills Training																
- Organization of the Structure																
- Prep. Operation Activities																
- Capability Building																
3. Water Users Association																
- Estab. of the Organization																
- Training																
- Capability Building																

Note: Preparatory works/Orientation by DAR and/or Agencies concerned
 ----- Farmer's organization
 Operation

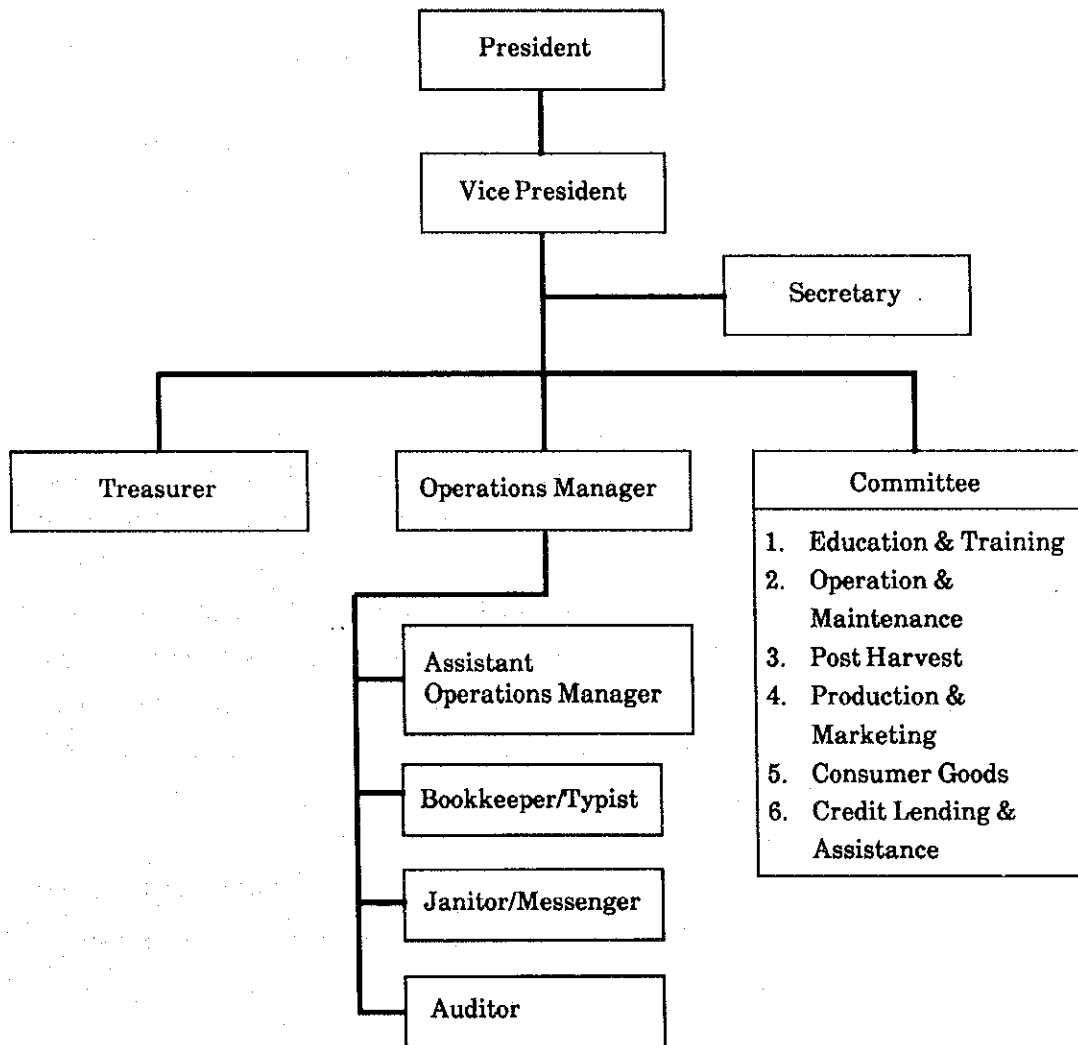
**Figure J. 2. 2 Typical Organization Chart
of
Irrigators Association**



**Figure J. 2. 3 Typical Organization Chart
of
Water Users Association**



**Figure J. 2. 4 Typical Organization Chart
of
Multi-Purpose Cooperative**



J. 3. Local Cost Estimate

J. 3. 1 General

The local cost consists of the cost to be spent by the GOP for the implementation of the project which shall include operation and maintenance of the Project Management Office (PMO), the cost for the institutional development component, and construction cost of on-farm facilities. The total cost allocated by the GOP for the first three years (prior to and during implementation stage) is about 12.8 million pesos. (refer to Table J.3.1)

J. 3. 2 Composition of Project Cost

a) Project Management Office

With the implementation of the project, the PMO shall be established at the provincial level to coordinate and facilitate activities of the project during the pre-construction and construction period, and to monitor and evaluate activities of the project after construction period. The PMO will be operational for a period of five (5) years, three (3) years during the pre-construction and construction period and two (2) years after construction period. After the fifth year, the functions of the PMO will be transferred to the DAR Central Office, particularly to the PDMS Monitoring Division.

The total cost allocated for the PMO office for the first three (3) years is about 1.95 million pesos and for next years about 0.65 million pesos annually. (refer to Tables J.3.1 and J.3.2)

b) Institutional Development Component

The total cost allocated for institutional development for the first three (3) years is about 4.55 million pesos while for the next years, about 0.23 million pesos annually. Intensive organization and training will be given to the farmers during the first three (3) years through the NGO to be contracted by the DAR. After the completion of project, continuous training and development will still be provided to the farmers by the DAR and other concerned agencies.

Expenditures for the monitoring of the farmers organizations shall also be taken from this cost allocation. (refer to Tables J.3.1 and J.3.2)

c) On-Farm Facilities

The on-farm facilities which consist of turnout, main farm ditch, supplementary farm ditch, division box, farm drain, cross culverts, check and drop will be provided to the farm lots. The cost for said items will form part of the GOP cost amounting to 6.3 million pesos. (refer to Table J.3.1)

Table J. 3. 1 Estimate of Local Cost
(w/in Three (3) Years)

(unit: 1'000 pesos)

Items	Year 1	Year 2	Year 3	Total
1. Project Management Office				
a. Wages	330	330	330	990
b. TEV, Fuel and Oil	200	200	200	600
c. Sundries	120	120	120	360
Sub-Total	650	650	650	1,950
2. Institutional Development Component				
a. Contractual Services	1,800	1,500	1,000	4,300
b. Sundries	120	80	50	250
Sub-Total	1,920	1,580	1,050	4,550
3. On-Farm Facilities	-	500	5,800	6,300
Total	2,570	2,730	7,500	12,800

Table J. 3. 2 Estimate of Local Cost
(after Three (3) Years)

(unit: 1'000 pesos)

Items	Year 4	Year 5 ...
1. Project Management Office		
a. Wages	330	330 ...
b. TEV, Fuel and Oil	200	200 ...
c. Sundries	120	120 ...
Sub-Total	650	650 ...
2. Institutional Development Component		
a. Contractual Services	150	150 ...
b. Sundries	80	80 ...
Sub-Total	230	230 ...
Total	880	880 ...

APPENDIX K. COST ESTIMATE

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K. 2 Composition of Project Cost	K-7
K. 3 Project Cost	K-10
K. 4 Alternative Study	K-38

K.1 Unit Cost

Basic unit prices of major labor and construction materials, and unit construction costs of major works are adopted from the current unit prices and unit costs of NIA as of January 1994. (refer to Tables K.1.1 to K.1.3)

Foreign and local currency portion on major construction materials are separated based on NEDA's information as follows;

Materials	Foreign (%)	Local (%)
Aggregate	80	20
Lumber	40	60
Reinforcing bar/ Nail/ Hardware	90	10
Cement	80	20
Asphalt/ Bituminous	80	20
Fuel	80	20
R.C. products	70	30
Steel plate/ Angle/ Pipe	90	10
Equipment	80	20

The exchange rate employed for the cost estimate is US\$1.00 = P26.00 = ¥ 100.00.

Table K.1.1 Basic Unit Costs

Item	Description	Unit	Unit Cost	As of January 1994 Remarks
			(Peso)	
Labour	Common Labour	day	110.90	
	Steelman	day	173.89	
	Carpenter	day	215.71	
	Foreman	day	234.92	
	Mason	day	200.12	
	L. E. Operator	day	200.12	light equipment
	H. E. Operator	day	224.78	heavy equipment
	Driver Mechanic	day	207.31	
Material	Cement	bag	211.60	40 Kg/bag
	Sand	cu.m	438.80	5 km hauling
	Gravel	cu.m	448.05	5 km hauling
	Boulder	cu.m	462.55	5 km hauling
	Diesel Fuel	l	13.15	
	Tie Wire	kg	43.65	
	Form Lumber	cu.m	38.50	
	CWN	kg.m	35.65	common wire nail
	Plywood	pc	856.05	
	RSB	kg	25.65	reinforce steel bar
4' THK CHB	pc	8.65	4' thick concrete hole block	

Source : NIA Palawan Provincial Office

Table K.1.2 Unit Costs for Construction Works

Works	Description	Unit	Unit Cost (Peso)	As of January 1994 Remarks	
(1) Earth works	Structure W/dewatering	cu.m	66.95		
	Excavation	cu.m	44.35	By manpower	
		cu.m	62.30	Mechanized aspect	
	Common Excavation	cu.m	36.95	By manpower	
	Side Borrow	cu.m	36.95	By manpower	
	Haul Borrow	cu.m	162.80	5 Km hauling	
	Road Surfacing	cu.m	169.95	5 Km hauling	
	Clearing & Grubbing	sq.m	11.65	By manpower	
	Main Farm Ditch	m	27.75	By manpower	
		/Drainage Ditch			
	Supplemental Farm Ditch	m	18.50	By manpower	
(2) Embankment/Backfill works	Backfill Structure	cu.m	36.95	By manpower	
	Filter drain	cu.m	611.85		
	Gravel blanket	cu.m	488.70		
	Dry boulder riprap	cu.m	518.00		
	Cofferdam	cu.m	49.45		
(3) Concrete works	Concrete Class A	cu.m	5844.40	3000 PSI/RSB 40 kg PSI:pond per square inch	
		ditto	cu.m	6538.50	/Diversion work 3000 PSI/RSB 40 kg
		Class B	cu.m	2615.35	/Canal, Road work Plain concrete
	4' thick CHB Lining	sq.m	496.05		
(4) Pipe works	RCP ϕ 18' \times 1.00m	pcs	1203.70		
	ϕ 24' \times 1.00m	pcs	1989.75		

Source : NIA Palawan Provincial Office

Table K.1.3 Unit Costs Ceiling for Construction Works

Works	Description	Unit	Unit Cost (Peso)	As of January 1994 Remarks
(1) Earthworks				
1. Clearing & Grubbing				
1-1	Dense vegetation	sq.m	26.90	1480 trees/ha or more
1-2	Medium vegetation	sq.m	16.30	990-1480 trees/ha
1-3	Light vegetation	sq.m	11.00	less than 990 trees
1-4	No vegetation	sq.m	5.70	/ha
2. Canal Excavation				
2-1	Common (Manual)	cu.m	46.10	
2-2	Common Excavation (Using dozer)	cu.m	27.25	for excavation & stockpile
2-3	Common Excavation (Using dozer)	cu.m	42.35	excavated materials to be used for embankment within 200 m
2-4	Common Excavation (Using backhoe)	cu.m	35.15	
2-5	Bouldery	cu.m	95.35	
2-6	Indurated	cu.m	94.85	
2-7	Rock	cu.m	332.10	
3. Structure Excavation				
3-1	Canal Structures Common (Manual)	cu.m	73.75	
3-2	Canal Structures Common (Mech.)	cu.m	43.70	
3-3	Dam (Common)	cu.m	90.45	
3-4	Bouldery	cu.m	100.55	
3-5	Indurated	cu.m	121.15	
3-6	Rock	cu.m	347.90	
4. Structure Backfill				
4-1	Canal Structures (Manual)	cu.m	49.20	
4-2	Canal Structures (Mech.)	cu.m	38.15	
4-3	Dam	cu.m	77.80	
5. Road Surfacing Materials				
5-1	Quarrying, Loading, Spreading, Watering	cu.m	72.55	
5-2	Hauling			
	AHD=1 km	cu.m	34.50	
	AHD=3 km	cu.m	52.65	
	AHD=5 km	cu.m	74.20	
	AHD=7 km	cu.m	95.70	

Source: NIA Central Office

Table K.1.3 Cont'd

Works	Description	Unit	Unit Cost (Peso)	Remarks
6. Embankment Construction & Compaction				
6-1	Spreading, Watering and Compaction	cu. m	31.30	
6-2	Borrow Materials at Quarry and Load	cu. m	42.75	
6-3	Hauling			
	AHD=1 km	cu. m	40.65	
	AHD=2 km	cu. m	51.40	
	AHD=3 km	cu. m	66.35	
	AHD=4 km	cu. m	81.30	
	AHD=5 km	cu. m	96.20	
7. Side Borrow		cu. m	38.15	
8. Hauling for Embankment				
	AHD=1 km	cu. m	51.35	
	AHD=2 km	cu. m	62.10	
	AHD=3 km	cu. m	77.05	
	AHD=4 km	cu. m	92.00	
	AHD=5 km	cu. m	106.95	
9. Hauling for Waste				
	AHD=1 km	cu. m	47.83	
	AHD=2 km	cu. m	57.25	
	AHD=3 km	cu. m	70.35	
	AHD=4 km	cu. m	83.40	
	AHD=5 km	cu. m	96.50	
10. Gravel Blanket		cu. m	660.70	73.75+1.31G
11. Filter Drain		cu. m	734.45	147.50+1.31G
12. Boulder Riprap		cu. m	894.64	260.45+1.25B+0.125G
(2) Concrete Works				
13. 3,000 PSI Concrte				
13-1	Canal Structure	cu. m	6555.16	1067.16+11.25C+0.62 5S+1.25G+1.25P+31.25L
13-2	Bridge Structure	cu. m	7949.01	1042.01+11.25C+0.62 5S+1.25G+0.94P+75.00L
13-3	Dam Structure	cu. m	5484.50	879.16+11.25C+0.625 S+1.25G+0.50P+25.00L
14. 2,400 PSI Concrte				
14-1	Dam Structure	cu. m	4139.02	638.95+10.00C+0.625 S+1.25G+0.125P+11.50L
14-2	Canal Lining	cu. m	3810.44	619.50+10.00C+0.625 S+1.25G+6.25L

Source: NIA Central Office

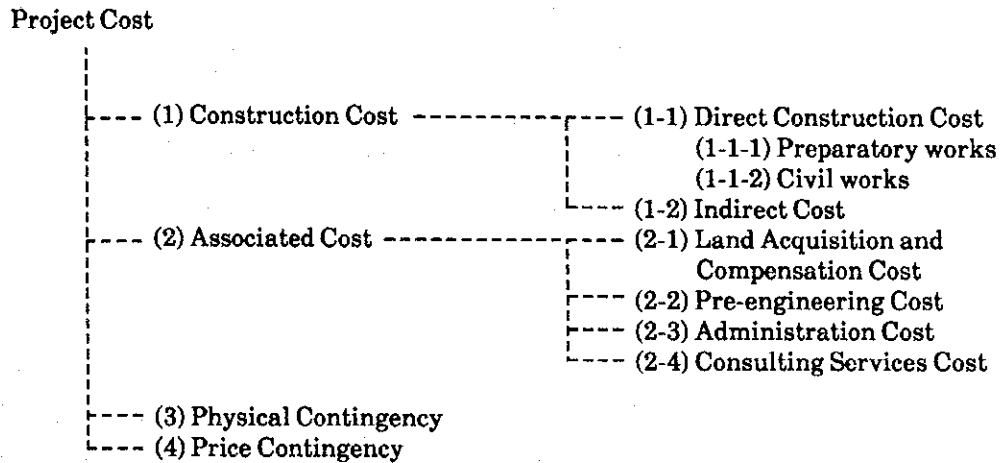
Table K.1.3 Cont'd

Works	Description	Unit	Unit Cost (Peso)	Remarks
(3) Masonry Works				
15.	Rubble Masonry	cu.m	3137.38	404.19+5.62C+0.310S +0.625G+1.19B+15L
16.	Grouted Riprap	cu.m	2321.77	383.60+5.25C+0.440S +0.125G+1.250B
(4) Pipe Works				
17. Supply and Delivery				
17-1	18' Dia .RCP	pc	553.93	1.25RPC
17-2	24' Dia .RCP	pc	796.90	1.25RPC
17-3	30' Dia .RCP	pc	939.15	1.25RPC
17-4	36' Dia .RCP	pc	1112.06	1.25RPC
17-5	42' Dia .RCP	pc	1336.80	1.25RPC
18. Installation				
18-1	18' Dia .RCP	pc	443.14	73.62+0.49C+0.025S +0.050G+4.56R+3L
18-2	24' Dia .RCP	pc	637.52	108.91+0.81C+0.044S +0.087G+5.65R+4L
18-3	30' Dia .RCP	pc	751.32	131.00+0.95C+0.050S +0.100G+6.24R+5L
18-4	36' Dia .RCP	pc	889.65	131.00+1.19C+0.062S +0.125G+7.51R+6L
18-5	42' Dia .RCP	pc	1069.44	180.56+1.41C+0.075S +0.157G+8.49R+7L
(5) Metal Works and Misc. Works				
19. Reinforcing Steel Bars				
19-1	Furnish & Stockpile	kg	32.06	1.25R
19-2	Cut, bend & place	kg	4.50	

Source: NIA Central Office

K. 2 Composition of Project Cost

The project cost is estimated with the following components;



a) Preparatory Work Cost

The cost for preparatory works includes costs for temporary works (access roads, coffer dam, diversion channels, water supply, electric wiring, protection facilities for environmental pollution, contractor's camp facilities, drainage facilities, etc.), preparation of shop drawings, laboratory tests, etc.

b) Civil Work Cost

The civil work cost covers costs for building and installation of facilities and devices comprising of labor, construction materials, fuel and depreciation of equipment costs.

c) Indirect Cost

The indirect cost includes the over-head, profit, mobilization and demobilization cost, and tax. According to DPWH's information, Order No.30 series of 1991, these costs excluding tax are as follows;

Direct Construction Cost	OCM	Indirect Cost (%)		
		Profit	MOB/DEMOB	Total
Up to 1.0 M.P	13	15	2	30
Above 1.0 M.P to 5.0 M.P	12	14	2	28
Above 5.0 M.P to 10.0 M.P	12	13	2	27
Above 10.0 M.P to 20.0 M.P	11	12	Separate Pay Item	23
Above 20.0 M.P to 50.0 M.P	11	11		22
Above 50.0 M.P	10	10		20

Note: OCM : Overhead Construction Management
MOB/DEMOB : Mobilization and Demobilization
M.P : Million pesos

d) Land Acquisition and Compensation Cost

The costs for land acquisition of facilities and reservoir, resettlement works and cost for damage to improvements will be included under this item.

e) Pre-engineering Cost

The Pre-engineering cost means necessary costs for topo-survey, meteorological and hydrological observation, geological investigation, etc. to be conducted prior to and/or during the detailed design stage.

f) Administration Cost

The administration cost contains salaries and wages of offices, miscellaneous costs for administration, fuel and light expenses, water charge, etc. during the implementation period. 10 % of the total construction cost is generally adopted as administration cost.

g) Consulting Services Cost

The expenditure for detailed design for facilities, preparation of tender documents and supervision works during implementation stage will be required especially for water resources works as consulting cost.

h) Physical Contingency

Physical contingency will be estimated with 3 to 7% of the base cost which is the sum of construction cost and associated cost in accordance with NEDA's guideline.

i) Price Contingency

Price escalation will be estimated at 1% per annum for the foreign currency portion and 5 % per annum for the local currency portion as suggested by NEDA.

K.3 Project Cost

The project costs based on the estimate conditions described above are summarized in Table K.3.1 to K.3. 2.

Table K.3.1 Summary of Project Cost (stage I)

Description	Total Cost (' 000 peso)			Remarks
	Total	F/C	L/C	
1. Construction Cost				
1.1 Water Resources	203,280	131,476	71,804	
1.2 Irrigation and Drainage Facilities	36,923	24,301	12,622	
1.3 Farm to Market Roads (Main 1-4)	19,562	12,905	6,657	
1.4 Social Infrastructures	12,218	8,424	3,794	
1.5 Post Harvest Facilities	16,949	11,866	5,083	
Sub-total	288,932	188,972	99,960	
2. Association Cost				
2.1 Pre-engineering Cost	14,447	8,668	5,779	5 % of 1.
2.2 Administration Cost	28,893	11,557	17,336	10 % of 1.
2.3 Consulting Services Cost	28,893	17,336	11,557	10 % of 1.
Sub-total	72,233	37,561	34,672	
Total (1. to 2.)	361,165	226,533	134,632	
3. Physical Contingency	25,282	15,857	9,424	7 % of 1.to2.
4. Price Contingency	28,880	7,272	21,608	3 % of 1.to3.F/C 15 % of 1.to3.L/C
Grand Total	415,327	249,662	165,664	

Table K.3.2 Summary of Project Cost (stage II)

Description	Total Cost (' 000 peso)			Remarks
	Total	F/C	L/C	
1. Construction Cost				
1.1 Water Resources	525,090	355,960	169,130	
1.2 Irrigation and Drainage Facilities	---	---	---	
1.3 Farm to Market Roads (Lateral)	38,349	25,053	13,296	
1.4 Social Infrastructures	43,347	17,119	26,228	
1.5 Post Harvest Facilities	24,608	18,421	6,187	
Sub-total	631,394	416,553	214,841	
2. Association Cost				
2.1 Pre-engineering Cost	31,570	18,942	12,628	5 % of 1.
2.2 Administration Cost	63,139	25,256	37,884	10 % of 1.
2.3 Consulting Services Cost	63,139	37,884	25,256	10 % of 1.
Sub-total	157,849	82,081	75,767	
Total (1. to 2.)	789,243	498,634	290,608	
3. Physical Contingency	55,247	34,904	20,343	7 % of 1.to2.
4. Price Contingency	421,193	85,366	335,827	16 % of 1.to3.F/C 108 % of 1.to3.L/C
Grand Total	1,265,683	618,905	646,778	

Table K.3.3 Construction Costs for Water Resources (Site EuM)

Description	Unit	Quantities	Total Cost		Foreign Currency		Local Currency		Remarks
			Unit Rate (Peso)	Amount (' 000 P)	Unit Rate (Peso)	Amount (' 000 P)	Unit Rate (Peso)	Amount (' 000 P)	
1. Dambohy									
1.1 Excavation									
Clearing & Grubbing	sq. m	11300	11.00	124.3	0.00	0.0	11.00	124.3	
Excavation									
Common	cu. m	16700	90.45	1510.5	67.84	1132.9	22.61	377.6	
Bouldery	cu. m	6900	100.55	693.8	75.41	520.3	25.14	173.5	
Indurated	cu. m	16800	121.15	2035.3	90.86	1526.4	30.29	508.9	
Rock	cu. m	2200	347.90	765.4	243.53	535.8	104.37	229.6	
1.2 Embankment									
Core zone									
Spre. Compa.	cu. m	49400	31.30	1546.2	23.48	1159.9	7.82	386.3	
Borr. Haul.	cu. m	49400	83.40	4120.0	62.55	3090.0	20.85	1030.0	
Random zone									
Spre. Compa.	cu. m	32700	31.30	1023.5	23.48	767.8	7.82	255.7	
Borr. Haul.	cu. m	---	83.40	0.0	62.55	0.0	20.85	0.0	
Boulder Riprap	cu. m	4100	894.64	3668.0	635.20	2604.3	259.44	1063.7	
Filter Drain	cu. m	3000	734.45	2203.4	543.49	1630.5	190.96	572.9	
1.3 Foundation Treatment									
Curtain Grouting	m	1050	3000.00	3150.0	1920.00	2016.0	1080.00	1134.0	
Others	10. L.S %			315.0		201.6		113.4	
1.4 Intake Facility									
3,000 PSI	cu. m	2000	5484.50	10969.0	2690.36	5380.7	2794.14	5588.3	
Currugated Steel Pipe									
φ 2.00 m	m	220	20000	4400.0	16000	3520.0	4000.00	880.0	
Butterfly Valve φ 500mm	unit	1	483000	483.0	386400	386.4	96600.00	96.6	
Sluice Valve φ 500mm	unit	1	260000	260.0	208000	208.0	52000.00	52.0	
1.5 Miscellaneous Works	20 L.S %	1.4		7453.5		4936.1		2517.3	
Sub-total				44720.8		29616.8		15104.1	
2. Spillway									
2.1 Earth Works									
Clearing & Grubbing	sq. m	4500	11.00	49.5	0.00	0.0	11.00	49.5	
Excavation									
Common	cu. m	16900	90.45	1528.6	67.84	1146.5	22.61	382.1	
Bouldery	cu. m	1600	100.55	160.9	75.41	120.7	25.14	40.2	
Indurated	cu. m	8500	121.15	1029.8	90.86	772.3	30.29	257.5	
Rock	cu. m	2700	347.90	939.3	243.53	657.5	104.37	281.8	
Backfill									
Common	cu. m	1000	77.80	77.8	58.35	58.4	19.45	19.4	
Embankment									
Core Zone									
Spre. Compa.	cu. m	25200	31.30	788.8	23.48	591.7	7.82	197.1	
Borr. Haul.	cu. m	25200	83.40	2101.7	72.71	1832.3	10.69	269.4	
Boulder Riprap	cu. m	1600	894.64	1431.4	635.20	1016.3	259.44	415.1	
2.2 Concrete Works									
Dam Concrete	cu. m	2400	4139.02	9933.6	2690.36	6456.9	1448.66	3476.8	
Rubble Masonry	cu. m	3400	3137.38	10667.1	2133.42	7253.6	1003.96	3413.5	
3,000 PSI	cu. m	4200	5484.50	23034.9	3345.54	14051.3	2138.96	8983.6	
2.3 Gate Works									
Corrugated Steel Pipe									
φ 3.00 m	m	20	28600	572.0	22880	457.6	5720	114.4	
Gate									
□ 3.5×3.5m	L.S	1	1040000	1040.0	832000	832.0	208000	208.0	
□ 2.5×2.5m	L.S	1	530000	530.0	424000	424.0	106000	106.0	
2.4 Miscellaneous Works	20 L.S %	2.3		10777.1		7134.2		3642.9	
Sub-total				64662.5		42805.2		21857.3	

Table K.3.3 Cont'd

Description	Unit	Quantities	Total Cost		Foreign Currency		Local Currency		Remarks
			Unit Rate (Peso)	Amount (' 000 P)	Unit Rate (Peso)	Amount (' 000 P)	Unit Rate (Peso)	Amount (' 000 P)	
3. Open Channel									
3.1 Excavation									
Clearing & Grubbing	sq. m	10700	11.00	117.7	0.00	0.0	11.00	117.7	
Excavation	cu. m	71000							1.00
Common	cu. m	28400	90.45	2568.8	67.84	1926.7	22.61	642.1	0.40
Indurated	cu. m	35500	121.15	4300.8	90.86	3225.5	30.29	1075.3	0.50
Rock	cu. m	7100	347.90	2470.1	243.53	1729.1	104.37	741.0	0.10
3.2 Miscellaneous Works	20	L. S	%3.1	1891.5		1376.2		515.2	
Sub-total				11348.9		8257.5		3091.4	
4. Preparatory Works									
4.1 Access Roads	Km	5	1000000	5000.0	500000	2500.0	500000	2500.0	
4.2 Screening Plant	L. S	1	15000000	15000.0	7500000	7500.0	7500000	7500.0	
4.3 Reservoir Clearing	ha	8	25000	200.0	12500	100.0	12500	100.0	
4.4 Care of River 1	L. S	1	1000000	1000.0	500000	500.0	500000	500.0	
4.5 Others	20	L. S	%1.3	24146.4		16135.9		8010.5	
4.6 Mobilization & Construction Facilities	2	L. S	%1.45	3321.6		2148.3		1173.3	
Sub-total				48668.0		28884.2		19783.8	
Total (1. to 4.)				169400.2		109563.7		59836.5	
5. Indirect Cost (OCM & Profit.)	20		%1.4	33880.0		21912.7		11967.3	
Total (1. to 5.)				203280.2		131476.5		71803.8	

Table K.3.4 Construction Costs for Water Resources (Site Eu)

Description	Unit	Quantities	Total Cost		Foreign Currency		Local Currency		Remarks
			Unit Rate (Peso)	Amount ('000 P)	Unit Rate (Peso)	Amount ('000 P)	Unit Rate (Peso)	Amount ('000 P)	
1. Dambooby									
1.1 Excavation									
Clearing & Grubbing	sq. m	68300	11.00	751.3	0.00	0.0	11.00	751.3	
Excavation		140300							1.00
Common	cu. m	84200	90.45	7615.9	67.84	5712.1	22.61	1903.8	0.60
Bouldery	cu. m	7000	100.55	703.9	75.41	527.9	25.14	176.0	0.05
Indurated	cu. m	42100	121.15	5100.4	90.86	3825.2	30.29	1275.2	0.30
Rock	cu. m	7000	347.90	2435.3	243.53	1704.7	104.37	730.6	0.05
1.2 Embankment									
Core zone	Spre. Compa.	cu. m	242700	31.30	7596.5	23.48	5698.6	7.82	1897.9
	Borr. Haul.	cu. m	214070	83.40	17853.4	62.55	13390.1	20.85	4463.4
Random zone	Spre. Compa.	cu. m	245200	31.30	7674.8	23.48	5757.3	7.82	1917.5
	Borr. Haul.	cu. m	228800	83.40	19081.9	62.55	14311.4	20.85	4770.5
Boulder Riprap	cu. m	25800	894.64	23081.7	635.20	16388.2	259.44	6693.6	
Filter Drain	cu. m	23800	734.45	17479.9	543.49	12935.1	190.96	4544.8	
1.3 Foundation Treatment									
Curtain Grouting	m	6400	3000.00	19200.0	1920.00	12288.0	1080.00	6912.0	
Others	10 L.S %			1920.0		1228.8		691.2	
1.4 Miscellaneous Works									
	20 L.S %			1.1-1.3		26099.0		18753.5	7345.5
Sub-total				156594.0		112520.8		44073.2	
2. Spillway									
2.1 Earth Works									
Clearing & Grubbing	sq. m	17000	11.00	187.0	0.00	0.0	11.00	187.0	
Excavation		81800							1.00
Common	cu. m	40900	90.45	3699.4	67.84	2774.7	22.61	924.7	0.50
Bouldery	cu. m	4100	100.55	412.3	75.41	309.2	25.14	103.1	0.05
Indurated	cu. m	12300	121.15	1490.1	90.86	1117.6	30.29	372.6	0.15
Rock	cu. m	24500	347.90	8523.6	243.53	5966.5	104.37	2557.1	0.30
Backfill	Common	cu. m	19400	77.80	1509.3	58.35	1132.0	19.45	377.3
2.2 Concrete Works									
3,000 PSI	cu. m	11860	5484.50	65046.2	3345.54	39678.1	2138.96	25368.1	
2.3 Miscellaneous Works									
	20 L.S %			2.1-2.2		16173.6		10195.6	5978.0
Sub-total				97041.4		61173.6		35867.8	
3. Outlet and Others									
3.1 Concrete Works									
3,000 PSI	cu. m	7600	5484.50	41682.2	3345.54	25426.1	2138.96	16256.1	
3.2 Gate Works									
H.P. Gate	φ 500 mm	gate	1	5625000	5625.0	4500000	4500.0	1125000	1125.0
J.F. Gate	φ 500 mm	gate	1	8125000	8125.0	6500000	6500.0	1625000	1625.0
Gate	□ 3.5×3.5m	L.S	2	1040000	2080.0	832000	1664.0	208000	416.0
	□ 2.5×2.5m	L.S	1	530000	530.0	424000	424.0	106000	106.0
Corrugated Steel Pipe									
φ 2.00 m	m	240	20000	4800.0	16000	3840.0	4000	960.0	
φ 3.00 m	m	350	28600	10010.0	22880	8008.0	5720	2002.0	
3.3 Miscellaneous Works									
	20 L.S %			3.1-3.2		14570.4		10072.4	4498.0
Sub-total				87422.6		60434.5		26988.1	
4. Preparatory Works									
4.1 Access Roads	Km	3	1000000	3000.0	500000	1500.0	500000	1500.0	
4.2 Screening Plant	L.S	1	15000000	15000.0	7500000	7500.0	7500000	7500.0	
4.3 Reservoir Clearing	ha	29	25000	725.0	12500	362.5	12500	362.5	
4.4 Care of River 1	L.S	1	1000000	1000.0	500000	500.0	500000	500.0	
4.5 Others	20 L.S %			1.3		68211.6		46825.8	21385.8
4.6 Mobilization & Construction Facilities	2 L.S %			1.4-5		8579.9		5816.3	2763.5
Sub-total				96516.5		62504.6		34011.9	
Total (1. to 4.)				437574.6		296633.6		140941.0	
5. Indirect Cost(OCM & Profit.)									
	20 L.S %			1.4		87514.9		59326.7	28188.2
Total (1. to 5.)				525089.5		355960.3		169129.2	

Table K.3.5 Construction Cost for Irrigation and Drainage Facilities

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate ('000 P)	Amount ('000 P)	Unit Rate ('000 P)	Amount ('000 P)	Unit Rate ('000 P)	Amount ('000 P)	
1. Construction Cost									
1.1 Canal	2-1. Main Canal	sets	1	16167	16167	10735	10735	5432	5432
	3-1. Lateral-A	sets	1	1888	1888	1183	1183	705	705
	4-1. Lateral-B	sets	1	3159	3159	1980	1980	1179	1179
	5-1. Lateral-C	sets	1	782	782	504	504	278	278
	6-1. Lateral-D	sets	1	150	150	101	101	49	49
	7-1. Lateral-E	sets	1	1374	1374	978	978	396	396
1.2	Preparatory works	(30%)		7056		4644		2412	
1.3	Indirect Cost	(20%)		6115		4025		2090	
Sub Total				36691		24150		12541	
1.5	Drainage Main-A, B	sets	1	161	161	105	105	56	56
1.6	Preparatory works	(20%)		32		21		11	
1.7	Indirect Cost	(20%)		39		25		13	
Sub Total				232		151		80	
Total				36923		24301		12621	

Table K.3.5a Direct Construction Cost for Main Canal

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
2-1. Main Canal									
2-2.	Open channel	sets	1	13585111	13585111	9108544	9108544	4476567	4476567
2-3.	Siphon	sets	1	1055397	1055397	674073	674073	381324	381324
1. Diversion	TYPE-1	sets	7	22438	157066	14162	99134	8276	57932
	TYPE-2	sets	0	11471	0	7069	0	4402	0
	TYPE-3	sets	2	9808	19616	6048	12096	3760	7520
2. Check	TYPE-1	sets	3	40026	120078	24905	74715	15121	45363
	TYPE-2	sets	1	35883	35883	22257	22257	13626	13626
	TYPE-3	sets	2	29923	59846	18508	37016	11415	22830
3. Road Crossing	TYPE-4	sets	0	20603	0	12776	0	7827	0
	φ 800	sets	8	35689	285512	21746	173968	13943	111544
	φ 600	sets	0	34024	0	20761	0	13263	0
	φ 450	sets	2	21157	42314	12694	25388	8463	16926
4. Drainage Crossing	φ 300	sets	0	9583	0	5647	0	3936	0
	φ 1000 × 2	sets	0	105627	0	67023	0	38604	0
	φ 1000	sets	0	71015	0	45299	0	25716	0
	φ 800	sets	0	57102	0	36633	0	20469	0
5. Drop	φ 600	sets	9	44635	401715	28684	258156	15951	143559
	TYPE-1	sets	9	45093	405837	27850	250650	17243	155187
	TYPE-2	sets	0	12885	0	8247	0	4638	0
Total				16168375		10735997		5432378	

Table K.3.5a Cont'd

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
2-2. Open channel (Main canal)									
1. Earth works									
Excavation	B. D. 11t	cu. m	31996	27.26	872210	21.26	680234	6.00	191976
	B. H. O. 6m3	cu. m	7316	35.15	257156	27.42	200604	7.73	56552
	Manpower	cu. m	656	46.10	30241	0.00	0	46.10	30241
Backfill	B. D. 11t	cu. m	0	38.15	0	28.61	0	9.54	0
	B. H. O. 6m3	cu. m	2100	38.15	80115	28.61	60081	9.54	20034
	Manpower	cu. m	0	49.20	0	0.00	0	49.20	0
Embankment	B. D. 11t	cu. m	24000	100.26	2406240	75.19	1804560	25.07	601680
	B. H. O. 6m3	cu. m	0	35.15	0	27.42	0	7.73	0
	Manpower	cu. m	0	46.10	0	0.00	0	46.10	0
Spilling		cu. m	35884	70.35	2524438	52.76	1893239	17.59	631199
Bottom Facing		sq. m	4704	5.70	26812	0.00	0	5.70	26812
Slope Facing		sq. m	14112	5.70	80438	0.00	0	5.70	80438
Road Surfacing		cu. m	2352	72.55	170637	54.41	127972	18.14	42665
Clearing		sq. m	41550	11.00	457050	0.00	0	11.00	457050
2. Concrete Works									
2400PSI Concrete		cu. m	1753.02	3810.43	6679774	2476.78	4341854	1333.65	2337920
Total					13585111		9108544		4476567

Table K.3.5a Cont'd

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
2-3. Shiphon (Main canal)									
1. Earth works									
Excavation	B. H. O. 6m3	cu. m	2871	35.15	100914	27.42	78722	7.73	22192
	Manpower	cu. m	0	46.10	0	0.00	0	46.10	0
Backfill	B. H. O. 6m3	cu. m	2425	38.15	92505	28.61	69373	9.54	23132
Embankment	B. H. O. 6m3	cu. m	0	35.15	0	27.42	0	7.73	0
	Manpower	cu. m	0	46.10	0	0.00	0	46.10	0
Spilling		cu. m	446	70.35	31389	52.76	23541	17.59	7848
Bottom Facing	Manpower	sq. m	522	5.70	2975	0.00	0	5.70	2975
Slope Facing	Manpower	sq. m	1211	5.70	6902	0.00	0	5.70	6902
2. Concrete Works									
3000PSI Concrete		cu. m	10	6555.16	64817	3867.54	38242	2687.62	26575
2400PSI Concrete		cu. m	15	3810.43	58086	2476.78	37756	1333.65	20330
RCP-φ 1000		m	290	2406.24	697809	1470.48	426439	935.76	271370
Total					1055397		674073		381324

Table K.3.5b Direct Construction Cost for Lat-A Canal

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
3-1. Lateral-A(Canal)									
3-2. Open channel	sets	1	848059	848059	545338	545338	302721	302721	
3-3. Siphon	sets	1	678073	678073	411094	411094	266979	266979	
1. Diversion	TYPE-1	sets	0	22438	0	14162	0	8276	0
	TYPE-2	sets	0	11471	0	7069	0	4402	0
	TYPE-3	sets	3	9808	29424	6048	18144	3760	11280
2. Check	TYPE-1	sets	0	40026	0	24905	0	15121	0
	TYPE-2	sets	0	35883	0	22257	0	13626	0
	TYPE-3	sets	0	29923	0	18508	0	11415	0
	TYPE-4	sets	2	20603	41206	12776	25552	7827	15654
3. Road Crossing	φ 800	sets	0	35689	0	21746	0	13943	0
	φ 600	sets	0	34024	0	20761	0	13263	0
	φ 450	sets	0	21157	0	12694	0	8463	0
	φ 300	sets	7	9583	67081	5647	39529	3936	27552
4. Drainage Crossing	φ 1000 × 2	sets	0	105627	0	67023	0	38604	0
	φ 1000	sets	0	71015	0	45299	0	25716	0
	φ 800	sets	0	57102	0	36633	0	20469	0
	φ 600	sets	1	44635	44635	28684	28684	15951	15951
5. Drop	TYPE-1	sets	0	45093	0	27850	0	17243	0
	TYPE-2	sets	14	12885	180390	8247	115458	4638	64932
Total				1888868		1183799		705069	

Table K.3.5b Cont'd

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
3-2. Open channel (Lateral-A)									
1. Earth works									
Excavation	B. D. 11t	cu. m	3431	27.26	93529	21.26	72943	6.00	20586
	B. H. O. 6m3	cu. m	2292	35.15	80563	27.42	62846	7.73	17717
	Manpower	cu. m	200	46.10	9220	0.00	0	46.10	9220
Backfill	B. D. 11t	cu. m	0	38.15	0	28.61	0	9.54	0
	B. H. O. 6m3	cu. m	0	38.15	0	28.61	0	9.54	0
	Manpower	cu. m	0	49.20	0	0.00	0	49.20	0
Embankment	B. D. 11t	cu. m	924	100.26	92639	75.19	69475	25.07	23164
	B. H. O. 6m3	cu. m	200	35.15	7030	27.42	5484	7.73	1546
	Manpower	cu. m	0	46.10	0	0.00	0	46.10	0
Spoiling		cu. m	5723	70.35	402612	52.76	301945	17.59	100667
Bottom Facing		sq. m	1134	5.70	6463	0.00	0	5.70	6463
Slope Facing		sq. m	3213	5.70	18314	0.00	0	5.70	18314
Road Surfacing		cu. m	600	72.55	43529	54.41	32645	18.14	10884
Clearing		sq. m	8560	11.00	94160	0.00	0	11.00	94160
2400PSI Concrete	cu. m	0	3810.43	0	2476.78	0	1333.65	0	
Total				848059		545338		302721	

Table K.3.5b Cont'd

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
3-3. Siphon (Lateral-A)									
1. Earth works									
Excavation	B. H. O. 6m3	cu. m	1960	35.15	68893	27.42	53743	7.73	15150
	Manpower	cu. m	0	46.10	0	0.00	0	46.10	0
Backfill	B. H. O. 6m3	cu. m	1841	38.15	70245	28.61	52679	9.54	17566
Embankment	B. H. O. 6m3	cu. m	0	35.15	0	27.42	0	7.73	0
	Manpower	cu. m	0	46.10	0	0.00	0	46.10	0
Spoiling		cu. m	119	70.35	8349	52.76	6262	17.59	2087
Bottom Facing	Manpower	sq. m	637	5.70	3630	0.00	0	5.70	3630
Slope Facing	Manpower	sq. m	1535	5.70	8747	0.00	0	5.70	8747
2. Concrete Works									
3000PSI Concrete		cu. m	4	6555.16	28356	3867.54	16730	2687.62	11626
2400PSI Concrete		cu. m	13	3810.43	49154	2476.78	31950	1333.65	17204
RCP-φ 450		m	330	997.06	329029	565.00	186450	432.06	142579
-φ 300		m	160	697.94	111670	395.50	63280	302.44	48390
Total					678073		411094		266979

Table K.3.5c Direct Construction Cost for Lat-B Canal

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
4-1. Lateral-B(Canal)									
4-2. Open channel	sets	1	2123035	2123035	1335888	1335888	787147	787147	
4-3. Siphon	sets	1	403306	403306	243934	243934	159372	159372	
1. Diversion	TYPE-1	sets	0	22438	0	14162	0	8276	0
	TYPE-2	sets	0	11471	0	7069	0	4402	0
	TYPE-3	sets	6	9808	58848	6048	36288	3760	22560
2. Check	TYPE-1	sets	0	40026	0	24905	0	15121	0
	TYPE-2	sets	0	35863	0	22257	0	13626	0
	TYPE-3	sets	0	29923	0	18508	0	11415	0
	TYPE-4	sets	3	20603	61809	12776	38328	7827	23481
3. Road Crossing	φ 800	sets	0	35689	0	21746	0	13943	0
	φ 600	sets	0	34024	0	20761	0	13263	0
	φ 450	sets	0	21157	0	12694	0	8463	0
	φ 300	sets	7	9583	67081	5647	39529	3936	27552
4. Drainage	φ 1000 × 2	sets	0	105627	0	67023	0	38604	0
Crossing	φ 1000	sets	0	71015	0	45299	0	25716	0
	φ 800	sets	0	57102	0	36633	0	20469	0
	φ 600	sets	10	44635	446350	28684	286840	15951	159510
5. Drop	TYPE-1	sets	0	45093	0	27850	0	17243	0
	TYPE-2	sets	0	12865	0	8247	0	4638	0
Total					3160429		1980807		1179622

Table K.3.5c Cont'd

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
4-2. Open channel (Lateral-B)									
1. Earth works									
Excavation	B. D. 11t	cu. m	9600	27.26	261696	21.26	204096	6.00	57600
	B. H. O. 6m3	cu. m	6372	35.15	223975	27.42	174720	7.73	49255
	Manpower	cu. m	600	46.10	27660	0.00	0	46.10	27660
Backfill	B. D. 11t	cu. m	0	38.15	0	28.61	0	9.54	0
	B. H. O. 6m3	cu. m	0	38.15	0	28.61	0	9.54	0
	Manpower	cu. m	0	49.20	0	0.00	0	49.20	0
Embankment	B. D. 11t	cu. m	0	100.26	0	75.19	0	25.07	0
	B. H. O. 6m3	cu. m	600	35.15	21090	27.42	16452	7.73	4638
	Manpower	cu. m	0	46.10	0	0.00	0	46.10	0
Spoiling		cu. m	15972	70.35	1123629	52.76	842682	17.59	280947
Bottom Facing		sq. m	2376	5.70	13543	0.00	0	5.70	13543
Slope Facing		sq. m	6732	5.70	38372	0.00	0	5.70	38372
Road Surfacing		cu. m	1800	72.55	130590	54.41	97938	18.14	32652
Clearing		sq. m	25680	11.00	282480	0.00	0	11.00	282480
2400PSI Concrete		cu. m	0	3810.43	0	2476.78	0	1333.65	0
Total					2123035		1335888		787147

Table K.3.5c Cont'd

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
4-3. Shiphon (Lateral-B)									
1. Earth works									
Excavation	B. H. O. 6m3	cu. m	1080	35.15	37961	27.42	29613	7.73	8348
	Manpower	cu. m	0	46.10	0	0.00	0	46.10	0
Backfill	B. H. O. 6m3	cu. m	1012	38.15	38622	28.61	28964	9.54	9658
Embankment	B. H. O. 6m3	cu. m	0	35.15	0	27.42	0	7.73	0
	Manpower	cu. m	0	46.10	0	0.00	0	46.10	0
Spoiling		cu. m	68	70.35	4755	52.76	3566	17.59	1189
Bottom Facing	Manpower	sq. m	351	5.70	2000	0.00	0	5.70	2000
Slope Facing	Manpower	sq. m	846	5.70	4819	0.00	0	5.70	4819
2. Concrete Works									
3000PSI Concrete		cu. m	6	6555.16	39448	3867.54	23274	2687.62	16174
2400PSI Concrete		cu. m	7	3810.43	27434	2476.78	17832	1333.65	9602
RCP-φ 450		m	200	997.06	199412	565.00	113000	432.06	86412
- φ 300		m	70	697.94	48855	395.50	27685	302.44	21170
Total					403306		243934		159372

Table K.3.5d Direct Construction Cost for Lat-C Canal

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
5-1. Lateral-C(Canal)									
5-2. Open channel	sets	1	407422	407422	267441	267441	139981	139981	
5-3. Siphon	sets	0	0	0	0	0	0	0	
1. Diversion	TYPE-1	sets	0	22438	0	14162	0	8276	0
	TYPE-2	sets	2	11471	22942	7069	14138	4402	8804
	TYPE-3	sets	2	9808	19616	6048	12096	3760	7520
2. Check	TYPE-1	sets	0	40026	0	24905	0	15121	0
	TYPE-2	sets	0	35883	0	22257	0	13626	0
	TYPE-3	sets	0	29923	0	18508	0	11415	0
	TYPE-4	sets	2	20603	41206	12776	25552	7827	15654
3. Road Crossing	φ 800	sets	0	35689	0	21745	0	13943	0
	φ 600	sets	0	34024	0	20761	0	13263	0
	φ 450	sets	0	21157	0	12694	0	8463	0
	φ 300	sets	3	9583	28749	5647	16941	3936	11808
4. Drainage Crossing	φ 1000 × 2	sets	0	105627	0	67023	0	38604	0
	φ 1000	sets	0	71015	0	45299	0	25716	0
	φ 800	sets	0	57102	0	36633	0	20469	0
	φ 600	sets	3	44635	133905	28684	86052	15951	47853
5. Drop	TYPE-1	sets	0	45093	0	27850	0	17243	0
	TYPE-2	sets	10	12885	128850	8247	82470	4638	46380
Total				782690		504690		278000	

Table K.3.5d Cont'd

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
5-2. Open channel (Lateral-C)									
1. Earth works									
Excavation	B. D. 11t	cu. m	1391	27.26	37918	21.26	29572	6.00	8346
	B. H. O. 6m3	cu. m	558	35.15	19613	27.42	15300	7.73	4313
	Manpower	cu. m	218	46.10	10049	0.00	0	46.10	10049
Backfill	B. D. 11t	cu. m	0	38.15	0	28.61	0	9.54	0
	B. H. O. 6m3	cu. m	178	38.15	6790	28.61	5092	9.54	1698
	Manpower	cu. m	0	49.20	0	0.00	0	49.20	0
Embankment	B. D. 11t	cu. m	0	100.26	0	75.19	0	25.07	0
	B. H. O. 6m3	cu. m	3149	35.15	110686	27.42	86345	7.73	24341
	Manpower	cu. m	0	46.10	0	0.00	0	46.10	0
Spoiling	cu. m	1811	70.35	127403	52.76	95548	17.59	31855	
Bottom Facing	sq. m	961	5.70	5477	0.00	0	5.70	5477	
Slope Facing	sq. m	3286	5.70	18730	0.00	0	5.70	18730	
Road Surfacing	cu. m	654	72.55	47447	54.41	35584	18.14	11863	
Clearing	sq. m	2119	11.00	23309	0.00	0	11.00	23309	
2400PSI Concrete	cu. m	0	3810.43	0	2476.78	0	1333.65	0	
Total				407422		267441		139981	

Table K.3.5e Direct Construction Cost for Lat-D Canal

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
6-1. Lateral-D(Canal)									
6-2. Open channel	sets	1	88127	88127	63008	63008	25119	25119	
6-3. Siphon	sets	0	0	0	0	0	0	0	
1. Diversion	TYPE-1	sets	0	22438	0	14162	0	8276	0
	TYPE-2	sets	0	11471	0	7069	0	4402	0
	TYPE-3	sets	2	9808	19616	6048	12096	3760	7520
2. Check	TYPE-1	sets	0	40026	0	24905	0	15121	0
	TYPE-2	sets	0	35883	0	22257	0	13626	0
	TYPE-3	sets	0	29923	0	18508	0	11415	0
	TYPE-4	sets	1	20603	20603	12776	12776	7827	7827
3. Road Crossing	φ 800	sets	0	35689	0	21746	0	13943	0
	φ 600	sets	0	34024	0	20761	0	13263	0
	φ 450	sets	0	21157	0	12694	0	8463	0
	φ 300	sets	1	9583	9583	5647	5647	3936	3936
4. Drainage Crossing	φ 1000 × 2	sets	0	105627	0	67023	0	38604	0
	φ 1000	sets	0	71015	0	45299	0	25716	0
	φ 800	sets	0	57102	0	36633	0	20469	0
	φ 600	sets	0	44635	0	28684	0	15951	0
5. Drop	TYPE-1	sets	0	45093	0	27850	0	17243	0
	TYPE-2	sets	1	12885	12885	8247	8247	4638	4638
Total				150814		101774		49040	

Table K.3.5e Cont'd

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
6-2. Open channel (Lateral-D)									
1. Earth works									
Excavation	B. D. 11t	cu. m	343	27.26	9350	21.26	7292	6.00	2058
	B. H. 0. 6m3	cu. m	0	35.15	0	27.42	0	7.73	0
	Manpower	cu. m	0	46.10	0	0.00	0	46.10	0
Backfill	B. D. 11t	cu. m	0	38.15	0	28.61	0	9.54	0
	B. H. 0. 6m3	cu. m	0	38.15	0	28.61	0	9.54	0
	Manpower	cu. m	0	49.20	0	0.00	0	49.20	0
Embankment	B. D. 11t	cu. m	0	100.26	0	75.19	0	25.07	0
	B. H. 0. 6m3	cu. m	1372	35.15	48225	27.42	37620	7.73	10605
	Manpower	cu. m	0	46.10	0	0.00	0	46.10	0
Spoiling	cu. m	343	70.35	24129	52.76	18096	17.59	6033	
Bottom Facing	sq. m	294	5.70	1675	0.00	0	5.70	1675	
Slope Facing	sq. m	833	5.70	4748	0.00	0	5.70	4748	
Road Surfacing	cu. m	0	72.55	0	54.41	0	18.14	0	
Clearing	sq. m	0	11.00	0	0.00	0	11.00	0	
2400PSI Concrete	cu. m	0	3810.43	0	2476.78	0	1333.65	0	
Total				88127		63008		25119	

Table K.3.5f Direct Construction Cost for Lat-E Canal

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
7-1. Lateral-E(Canal)									
7-2. Open channel	sets	1	1164020	1164020	848002	848002	316018	316018	
7-3. Siphon	sets	0	0	0	0	0	0	0	
1. Diversion	TYPE-1	sets	0	22438	0	14162	0	8276	0
	TYPE-2	sets	0	11471	0	7069	0	4402	0
	TYPE-3	sets	7	9808	68656	6048	42336	3760	26320
2. Check	TYPE-1	sets	0	40026	0	24905	0	15121	0
	TYPE-2	sets	0	35883	0	22257	0	13626	0
	TYPE-3	sets	1	29923	29923	18508	18508	11415	11415
	TYPE-4	sets	1	20603	20603	12776	12776	7827	7827
3. Road Crossing	φ 800	sets	0	35689	0	21746	0	13943	0
	φ 600	sets	0	34024	0	20761	0	13263	0
	φ 450	sets	1	21157	21157	12694	12694	8463	8463
	φ 300	sets	2	9583	19166	5647	11294	3936	7872
4. Drainage Crossing	φ 1000×2	sets	0	105627	0	67023	0	38604	0
	φ 1000	sets	0	71015	0	45299	0	25716	0
	φ 800	sets	0	57102	0	36633	0	20469	0
	φ 600	sets	0	44635	0	28684	0	15951	0
5. Drop	TYPE-1	sets	0	45093	0	27850	0	17243	0
	TYPE-2	sets	4	12885	51540	8247	32988	4638	18552
Total				1375065		978598		396467	

Table K.3.5f Cont'd

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
7-2. Open channel (Lateral-E)									
1. Earth works									
Excavation	B. D. 11t	cu. m	7317	27.26	199461	21.26	155559	6.00	43902
	B. H. 0. 6m3	cu. m	2338	35.15	82179	27.42	64107	7.73	18072
	Manpower	cu. m	298	46.10	13737	0.00	0	46.10	13737
Backfill	B. D. 11t	cu. m	0	38.15	0	28.61	0	9.54	0
	B. H. 0. 6m3	cu. m	58	38.15	2212	28.61	1659	9.54	553
	Manpower	cu. m	0	49.20	0	0.00	0	49.20	0
Embankment	B. D. 11t	cu. m	0	100.26	0	75.19	0	25.07	0
	B. H. 0. 6m3	cu. m	2153	35.15	75677	27.42	59035	7.73	16642
	Manpower	cu. m	0	46.10	0	0.00	0	46.10	0
Spoiling	cu. m	9837	70.35	692032	52.76	519000	17.59	173032	
Bottom Facing	sq. m	1349	5.70	7689	0.00	0	5.70	7689	
Slope Facing	sq. m	4592	5.70	26174	0.00	0	5.70	26174	
Road Surfacing	cu. m	894	72.55	64859	54.41	48642	18.14	16217	
Clearing	sq. m	0	11.00	0	0.00	0	11.00	0	
2400PSI Concrete	cu. m	0	3810.43	0	2476.78	0	1333.65	0	
Total				1164020		848002		316018	

Table K.3.5g Direct Construction Cost for Main Drainage Canal A&B

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
8. Main Drainage-A, B									
8.1 Excavation	A-1	cu. m	238	35.15	8350	27.42	6514	7.73	1836
	A-2	cu. m	418	35.15	14678	27.42	11450	7.73	3228
	A-3	cu. m	230	35.15	8097	27.42	6317	7.73	1780
	B-1	cu. m	162	35.15	5694	27.42	4442	7.73	1252
	B-2	cu. m	274	35.15	9616	27.42	7502	7.73	2114
8.2 Spoiling	A-1	cu. m	238	70.35	16714	52.76	12535	17.59	4179
	A-2	cu. m	418	70.35	29377	52.76	22032	17.59	7345
	A-3	cu. m	230	70.35	16207	52.76	12155	17.59	4052
	B-1	cu. m	162	70.35	11396	52.76	8547	17.59	2849
	B-2	cu. m	274	70.35	19247	52.76	14435	17.59	4812
8.3 Slope Facing	A-1	sq. m	612	5.70	3488	0	0	5.70	3488
	A-2	sq. m	986	5.70	5620	0	0	5.70	5620
	A-3	sq. m	368	5.70	2097	0	0	5.70	2097
	B-1	sq. m	510	5.70	2906	0	0	5.70	2906
	B-2	sq. m	646	5.70	3682	0	0	5.70	3682
8.4 Bottom Facing	A-1	sq. m	180	5.70	1026	0	0	5.70	1026
	A-2	sq. m	348	5.70	1983	0	0	5.70	1983
	A-3	sq. m	160	5.70	912	0	0	5.70	912
	B-1	sq. m	90	5.70	513	0	0	5.70	513
	B-2	sq. m	228	5.70	1299	0	0	5.70	1299
Total					162902		105929		56973

Table K.3.6 Construction Cost for Farm-to Market Road

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency	
			Unit Rate (' 000 P)	Amount (' 000 P)	Unit Rate (' 000 P)	Amount (' 000 P)	Unit Rate (' 000 P)	Amount (' 000 P)
1. Construction Cost								
1.1 Farm to Market Road (Main 1~4)	sets	1		15776		10407		5369
1.2 Preparatory works	(3%)			526		347		179
1.3 Indirect Cost	(20%)			3260		2151		1110
<u>Sub Total</u>				<u>19562</u>		<u>12905</u>		<u>6658</u>
1.4 Farm to Market Road (Lateral 1~19)	sets	1		30927		20204		10723
1.5 Preparatory works	(3%)			1031		674		357
1.6 Indirect Cost	(20%)			6391		4175		2216
<u>Sub Total</u>				<u>38349</u>		<u>25053</u>		<u>13297</u>
<u>Total</u>				<u>57911</u>		<u>37958</u>		<u>19955</u>

Table K.3.6a Direct Construction Cost for Main Farm-to Market Road

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
2. Farm to Market Road (Main)									
2.1 Earth works									
Excavation	B. D. 11t	cu. m	51920	27.26	1415339	21.26	1103819	6.00	311520
	Manpower	cu. m	6245	46.10	287894	0.00	0	46.10	287894
Embankment	B. D. 11t	cu. m	18172	100.26	1821924	75.19	1366352	25.07	455572
Bottom Facing		sq. m	94400	5.70	538080	0.00	0	5.70	538080
Slope Facing		sq. m	25488	5.70	145281	0.00	0	5.70	145281
2.2 Road Surfacing									
Embankment (shoulder)		cu. m	4720	49.20	232224	0.00	0	49.20	232224
Quarrying, Loading Spreading, Watering		cu. m	18880	72.55	1369743	54.41	1027260	18.14	342483
2.3 Drainage									
Side Dich	300B*300H	cu. m	3816	2321.77	8859873	1625.24	6201915	696.53	2657958
Road Crossing	φ 1000×2	sets	2	105627	211254	67023	134046	38604	77208
	φ 1000	sets	3	71015	213045	45299	135897	25716	77148
	φ 800	sets	1	57102	57102	36633	36633	20469	20469
	φ 600	sets	14	44635	624890	28684	401576	15951	223314
<u>Total</u>					<u>15776649</u>		<u>10407498</u>		<u>5369151</u>

Table K.3.6b Direct Construction Cost for Lateral Farm-to Market Road

Description	Unit	Q'ty	Total Cost		Foreign Currency		Local Currency		
			Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	Unit Rate (Peso)	Amount (Peso)	
3. Farm to Market Road (Lateral)									
3.1 Earth works									
Excavation	B. D. 11t	cu. m	52560	27.26	1432785	21.26	1117425	6.00	315360
	Manpower	cu. m	12614	46.10	581505	0.00	0	46.10	581505
Embankment	B. D. 11t	cu. m	42048	100.26	4215732	75.19	3161589	25.07	1054143
Bottom Facing		sq. m	175200	5.70	998640	0.00	0	5.70	998640
Slope Facing		sq. m	63072	5.70	359510	0.00	0	5.70	359510
3.2 Road Surfacing									
Embankment (shoulder)		cu. m	11680	49.20	574656	0.00	0	49.20	574656
Quarrying, Loading		cu. m	35040	72.55	2542151	54.41	1906526	18.14	635625
Spreading, Watering									
3.3 Drainage									
Side Dich	300B*300H	cu. m	7709	2321.77	17898524	1625.24	12528975	696.53	5369549
Road Crossing	φ 1000×2	sets	1	105627	105627	67023	67023	38604	38604
	φ 1000	sets	9	71015	639135	45299	407691	25716	231444
	φ 800	sets	5	57102	285510	36633	183165	20469	102345
	φ 600	sets	29	44635	1294415	28684	831836	15951	462579
Total					30928190		20204230		10723960

Table K.3.7 Construction Cost for Social Infrastructures

Table K.3.7a Construction Cost for Social Infrastructures (Stage I)

Description	Total Cost (' 000 peso)			Remarks
	Total	F/C	L/C	
1. Direct Construction Cost				
1.1 Village Water Supply	10,182	7,020	3,162	8 Blocks
Sub-total	10,182	7,020	3,162	
2. Indirect Cost (OCM & Profit.)	2,036	1,404	632	20 % of 1.
Total (1. to 2.)	12,218	8,424	3,794	

Table K.3.7b Construction Cost for Social Infrastructures (Stage II)

Description	Total Cost (' 000 peso)			Remarks
	Total	F/C	L/C	
1. Direct Construction Cost				
1.1 Village Road	14,301	5,166	9,135	8,006 m
1.2 Village Drain	4,027	1,504	2,523	1,405 m
1.3 Rural Electrification	2,059	1,382	677	48 ha
1.4 Elementary School	680	272	408	1 psc
1.5 Health Center	735	302	433	1 psc
1.6 Public Market	7,977	3,492	4,485	1 psc
1.7 Multi-purpose Pavement	3,978	1,485	2,493	400 m
1.8 Barangay Hall	383	150	233	1 psc
1.9 Recreational Facilities	1,983	513	1,470	1 psc
Sub-total	36,123	14,266	21,857	
2. Indirect Cost (OCM & Profit.)	7,224	2,853	4,371	20 % of 1.
Total (1. to 2.)	43,347	17,119	26,228	

**Table K.3.7c Direct Construction Cost
for Village Water Supply Facilities**

Description	Quantity	Total Cost		Foreign Cost		Local Cost		Remarks
		Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	
1. Deep Well Works								
Mobilization & Demobilization	LS		130.0		78.0		52.0	
Hole to hole set up	Tim-	4	165000	660.0	82500	330.0	82500	330.0
Drilling/Casing Inst.	m	350	3250	1,137.5	2925	1,023.8	325	113.7
Electric Line	km	1.5	223766	335.6	223766	335.6	0	0.0
Sub-merged Pump 32 mm	set	5	103250	516.3	103250	516.3	0	0.0
Casing VU 100mm	m	350	492	172.2	492	172.2	0	0.0
Total				2,951.6		2,455.9		495.7
2. Pipe Line Work								
2.1. Feeder Canal L=0.21 km								
Cut	m3	244	73.75	18.0	22.1	5.4	51.65	12.6
Sandbed	m3	11	673	7.4	201.9	2.2	471.1	5.2
Backfill								
Manual	m3	117	49.2	5.8	4.9	0.6	44.3	5.2
Machine	m3	116	38.15	4.4	26.7	3.1	11.45	1.3
Pipe								
SPGW 40 mm	m	210	628	131.9	565.2	118.7	62.8	13.2
Jointing	LS	(10%)		13.2		11.9		1.3 of pipe
Sub-Total				180.7		141.9		38.8
Appurt. Struts.	LS	(30%)		54.2		42.6		11.6 of 2.1
Total				234.9		184.5		50.4
2.2. Distribution Line L=3.75 km								
Cut	m3	3,567	73.75	263.1	22.1	78.8	51.65	184.3
Sandbed	m3	188	673	126.5	201.9	38.0	471.1	88.5
Backfill								
Manual	m3	1,690	49.2	83.1	4.9	8.3	44.3	74.8
Machine	m3	1,689	38.15	64.4	26.7	45.1	11.45	19.3
Pipe								
VU 150mm	m	0	1130	0.0		0.0		0.0
VU 125mm	m	0	783	0.0		0.0		0.0
VU 100mm	m	20	485	9.7	460.8	9.2	24.2	0.5
VU 75mm	m	310	323	100.1	306.9	95.1	16.1	5.0
VU 50mm	m	738	159	117.3	151.1	111.5	7.9	5.8
VU 40mm	m	1162	125	145.3	118.8	138.0	6.2	7.3
VW 25mm	m	1520	156	237.1	148.2	225.3	7.8	11.8
Jointing	LS	(10%)		61.0		57.9		3.1 of pipe
Sub-Total				1,207.6		807.2		400.4
C. Faucet								
Concrete (RFC)	m3	4,307	5844.4	25.2	1753.3	7.6	4091.1	17.6
Valve dia 25 mm	pcs	118	2520	297.4	2394	282.5	126	14.9
SGP 25 mm	m	220	156	34.3	148.2	32.6	7.8	1.7
Sub-Total				356.9		322.7		34.2
Appurt. Struts.	LS	(30%)		362.3		242.2		120.1 of pipe
Total				1,926.8		1,372.1		554.7
Elevated Tank Works	plc	5	250000	1,250.0	75000	375.0	175000	875.0
G. Total per 5 Blocks				6,363.3		4,387.5		1,975.8
Per Block				1,272.7		877.5		395.2
Cost for 8 Blocks				10,181.6		7,020.0		3,161.6

Table K.3.7d Direct Construction Cost for Village Roads

Description	Unit	Quantity	Total Cost		Foreign Cost		Local Cost		Remarks
			Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	
A. Main Village Road (L= 967 m)									
A.1. Earth Works									
Stripping	m2	14505	16	232.1	8.0	116.0	8.0	116.1	
Cutting for Road	m3	347.4	27	9.4	13.5	4.7	13.5	4.7	
Excavation (ditch)	m3	678.8	46	31.2	4.6	3.1	41.4	28.1	
Sub-Total				272.7		123.8		148.9	
A.2. Concrete & Riprap Works									
Grouted riprap	m3	580.2	518	300.5	103.6	60.1	414.4	240.4	
Concrete Pav.	m3	134.4	2615	351.5	784.5	105.4	1830.5	246.1	
Iron bar	kg	6720	26	174.7	20.8	139.8	5.2	34.9	
Gravel Pavement	m3	1547.2	170	263.0	51.0	78.9	119.0	184.1	
Sub-Total				1,089.7		384.2		705.5	
A.3. Appurtenant Structures									
	LS	(40%)		545.0		203.2		341.8 of A1 to 2	
Total				1,907.4		711.2		1,196.2	
B. Village Road (L= 7,039 m)									
B.1. Earth Works									
Stripping	m2	70390	16	1,126.2	8.0	563.1	8.0	563.1	
Cutting for Road	m3	1689.6	27	45.6	13.5	22.8	13.5	22.8	
Excavation (ditch)	m3	4941.4	46	227.3	4.6	22.7	41.4	204.6	
Sub-Total				1,399.1		608.6		790.5	
B.2. Concrete & Riprap Works									
Grouted riprap	m3	4223.4	518	2,187.7	103.6	437.5	414.4	1750.2	
Concrete Pav.	m3	856	2615	2,238.4	784.5	671.5	1830.5	1566.9	
Iron bar	kg	42800	26	1,112.8	20.8	890.2	5.2	222.6	
Gravel Pavement	m3	11262.4	170	1,914.6	51.0	574.4	119.0	1340.2	
Sub-Total				7,453.5		2,573.6		4,879.9	
B.3. Appurtenant Structures									
	LS	(40%)		3,541.0		1,272.9		2268.1 of B1 to 2	
Total				12,393.6		4,455.1		7,938.5	
G.Total				14,301.0		5,166.3		9,134.7	

Table K.3.7e Direct Construction Cost for Village Drains

Description	Unit	Quantity	Total Cost		Foregin Cost		Local Cost		Remarks
			Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	
Village Drain (L= 1,405 m)									
1. Earth Works									
Excavation	m3	986.3	62	61.2	31.0	30.6	31.0	30.6	
SS finishing	m2	2388.5	27	64.5	2.7	6.4	24.3	58.1	
Sub-Total				125.7		37.0		88.7	
2. Road Crossing (n=17)									
RCP 24'	pcs	170	1434	243.8	286.8	48.8	1147.2	195.0	
Concrete Base	m3	40.8	2615	106.7	784.5	32.0	1830.5	74.7	
Wet masonry	m3	204	2322	473.7	464.4	94.7	1857.6	379.0	
Sub-Total				824.2		175.5		648.7	
3. Drops (n=14)									
R. Concrete	m3	140	6539	915.5	1961.7	274.7	4577.3	640.8	
Iron bar	kg	11200	63	705.6	50.4	564.5	12.6	141.1	
Wet masonry	m3	168	3137	527.0	627.4	105.4	2509.6	421.6	
Sub-Total				2,148.1		944.6		1,203.5	
4. Misceraneous	LS	(30%)		929.4		347.1		582.3	of 1 to 3
Total				4,027.4		1,504.2		2,523.2	

Table K.3.7f Direct Construction Cost for Rural Electrification

Description	Quantity	Total Cost		Foreign Cost		Local Cost		Remarks
		Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	
1. Materials								
Anchor, etc.	pcs	28	500	14.0	400.0	11.2	100.0	2.8
Attachment, Guy	pcs	28	80	2.2	64.0	1.8	16.0	0.4
Bolt DBL Upset	pcs	51	77	3.9	61.6	3.1	15.4	0.8
Bolt, Oval Eye 10'	pcs	66	68	4.5	54.4	3.6	13.6	0.9
Bolt, Machine 8'	pcs	52	25	1.3	20.0	1.0	5.0	0.3
Bolt, SNGL upset 8'	pcs	38	54	2.1	43.2	1.6	10.8	0.5
Clamp, Hot line	pcs	6	284	1.7	227.2	1.4	56.8	0.3
Clamp, Loop deadend	pcs	148	59	8.7	47.2	7.0	11.8	1.7
Clamp, Deadend	pcs	8	530	4.2	424.0	3.4	106.0	0.8
Clamp, Guy STRET	pcs	64	90	5.8	72.0	4.6	18.0	1.2
Clevis	pcs	74	50	3.7	40.0	3.0	10.0	0.7
Conductor, bare	pcs	20700	24	496.8	19.2	397.4	4.8	99.4
Conductor, comprs	pcs	120	63	7.6	50.4	6.0	12.6	1.6
Connector	pcs	18	200	3.6	160.0	2.9	40.0	0.7
Cutout w/ L.Break	pcs	6	4768	28.6	3814.4	22.9	953.6	5.7
Insulator, Pin Type	pcs	18	72	1.3	57.6	1.0	14.4	0.3
Insulator, spool	pcs	137	25	3.4	20.0	2.7	5.0	0.7
Insulator, spool 3'	pcs	36	43	1.5	34.4	1.2	8.6	0.3
Insulator, suspens.	pcs	16	270	4.3	216.0	3.5	54.0	0.8
Nut, eye	pcs	36	55	2.0	44.0	1.6	11.0	0.4
Nut eye, lock	pcs	201	7.5	1.5	6.0	1.2	1.5	0.3
Pin, pole t.	pcs	14	120	1.7	96.0	1.3	24.0	0.4
Rod Anchor 7'	pcs	32	230	7.4	184.0	5.9	46.0	1.5
Rod Armor	pcs	117	164	19.2	131.2	15.4	32.8	3.8
Rod, 10'	pcs	24	210	5.0	168.0	4.0	42.0	1.0
Splice	pcs	14	203	2.8	162.4	2.3	40.6	0.5
Transformer	pcs	4	34000	136.0	27200.0	108.8	6800.0	27.2
Washer	pcs	219	8	1.8	6.4	1.4	1.6	0.4
Wire, Tie	ft.	926	2.4	2.2	1.9	1.8	0.5	0.4
Wire, Ground	ft.	786	2.0	1.6	1.6	1.3	0.4	0.3
Wire, Guy	ft.	1600	5.8	9.3	4.6	7.4	1.2	1.9
Others	LS	(5%)		39.5		31.6		7.9 of 1
Total				829.2		663.3		165.9
2. Timber Material								
Pole, wood 30/5	pcs	70	3074	215.2	614.8	43.0	2459.2	172.2
Pole, wood 35/5	pcs	2	3924	7.8	784.8	1.6	3139.2	6.2
Anchor log	pcs	4	386	1.5	77.2	0.3	308.8	1.2
Crossarm, wood	pcs	2	599	1.2	119.8	0.2	479.2	1.0
Total				225.7		45.1		180.6
3. Labor								
Total	LS	(30%)		316.5		212.5		104.0 of 1 to 2
Total	pcs			316.5		212.5		104.0
G.Total for 32 ha per ha				1,371.4		920.9		450.5
				42.9		28.8		14.1
Total Cost for 3 Villages A=48 ha				2,059.2		1,382.4		676.8

Note: Source: PALECO

Table K.3.7g Direct Construction Cost for Elementary School

Description	Quantity	Total Cost		Foreign Cost		Local Cost		Remarks
		Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	
1. Site Work/Earth works								
Soil poisoning	m2	144	27	3.9	5.4	0.8	21.6	3.1
Excavation	m3	18	37	0.7	7.4	0.1	29.6	0.6
Backfill	m3	11	37	0.4	7.4	0.1	29.6	0.3
Gravel Bedding	m3	18	489	8.8	97.8	1.8	391.2	7.0
Total				13.8		2.8		11.0
2. Concrete & Masonry Works								
Rainforced Concrete	m3	58	6539	379.3	1961.7	113.8	4577.3	265.5
6' Thk CHB	m2	30	600	18.0	480.0	14.4	120.0	3.6
RSB	kg	1200	27	32.4	24.3	29.2	2.7	3.2
Total				429.7		157.4		272.3
3. Carpentry Work	LS	(25%)		107.4		39.4		68.0 of 2
4. Tinemetry Works	m2	188.1	270	50.8	135.0	25.4	135.0	25.4
5. Door & Windows	m2	33	750	24.8	375.0	12.4	375.0	12.4
6. Painting & Floor finish	m2	521	70	36.5	49.0	25.5	21.0	11.0
7. Forms and etc.	LS	(15%)		16.8		9.5		7.3 of 4-6
G. Total				679.7		272.4		407.3

Note: Source: City Government

Table K.3.7h Direct Construction Cost for Health Center

Description	Unit	Quantity	Total Cost		Foregin Cost		Local Cost		Remarks
			Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	
1. Site Work/Earth works									
Soil poisoning	m2	3000	27	81.0	5.4	16.2	21.6	64.8	
Excavation	m3	20	37	0.7	7.4	0.1	29.6	0.6	
Backfill	m3	10	37	0.4	7.4	0.1	29.6	0.3	
Gravel Bedding	m3	20	489	9.8	97.8	2.0	391.2	7.8	
Total				91.9		18.4		73.5	
2. Housing & Fence									
Concrete House	m2	56	5357	300.0	2678.5	150.0	2678.5	150.0	
Fence	m	220	30	6.6	24.0	5.3	6.0	1.3	
Concrete Pavement	m3	24	3810	91.4	1143.0	27.4	2667.0	64.0	L=40m
Total				398.0		182.7		215.3	
3. Equipment	LS	(50%)		245.0		100.6		144.4	of 1 to 2
G. Total				734.9		301.7		433.2	

Note: Source: City Government

Table K.3.7i Direct Construction Cost for Public Market

Description	Unit	Quantity	Total Cost		Foregin Cost		Local Cost		Remarks
			Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	
1. Site Work/Earth works									
Soil poisoning	m2	4500	27	121.5	5.4	24.3	21.6	97.2	
Excavation	m3	40	37	1.5	7.4	0.3	29.6	1.2	
Backfill	m3	20	37	0.7	7.4	0.1	29.6	0.6	
Gravel Bedding	m3	40	489	19.6	97.8	3.9	391.2	15.7	
Total				143.3		28.6		114.7	
2. Housing & Fence									
Concrete House	m2	1440	3500	5,040.0	1750.0	2,520.0	1750.0	2,520.0	
Fence	m	270	40	10.8	32.0	8.6	8.0	2.2	
Concrete Base	m3	540	3810	2,057.4	1143.0	617.2	2667.0	1,440.2	L=2700 m2
Total				7,108.2		3,145.8		3,962.4	
3. Equipment	LS	(10%)		725.2		317.4		407.8	of 1 to 2
G.Total				7,976.7		3,491.8		4,484.9	

Table K.3.7j Direct Construction Cost for Multi Purpose Pavement

Description	Quanty	Total Cost		Foregin Cost		Local Cost		Remarks
		Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	
1. Site Work/Earth works (L=400 m)								
Excavation	m3 840	37	31.1	7.4	6.2	29.6	24.9	T=35 cm
Gravel Bedding	m3 360	489	176.0	97.8	35.2	391.2	140.8	T=15 cm
Total			207.1		41.4		165.7	
2. Pavement								
R. Concrete	m2 480	6555	3,146.4	1966.5	943.9	4588.5	2202.5	T=20 cm
R. Bar	kg 24000	26	624.0	20.8	499.2	5.2	124.8	50 kg/m3
Total			3,770.4		1,443.1		2,327.3	
G.Total			3,977.5		1,484.5		2,493.0	

Table K.3.7k Direct Construction Cost for Barangay Hall

Description	Quantity	Unit	Total Cost		Foreign Cost		Local Cost		Remarks
			Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	
1. Site Work/Earth works									
Soil poisoning	m2	2700	27	72.9	5.4	14.6	21.6	58.3	
Excavation	m3	20	37	0.7	7.4	0.1	29.6	0.6	
Backfill	m3	10	37	0.4	7.4	0.1	29.6	0.3	
Gravel Bedding	m3	20	489	9.8	97.8	2.0	391.2	7.8	
Total				83.8		16.8		67.0	
2. Housing & Fence									
Concrete House	m2	48	4200	201.6	2100.0	100.8	2100.0	100.8	
Fence	m	210	30	6.3	24.0	5.0	6.0	1.3	
Concrete Pavement	m3	24	3810	91.4	1143.0	27.4	2667.0	64.0	L=40m
Total				299.3		133.2		166.1	
G.Total				383.1		150.0		233.1	

Note: Source: City Government

Table K.3.71 Direct Construction Cost for Recreational Facility

Description	Unit	Quantity	Total Cost		Foreign Cost		Local Cost		Remarks
			Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	Rate (peso)	Amount (' 000 P)	
1. Earth Works									
Cleaning	m2	40800	5.7	232.6	0.6	24.5	5.1	208.1	
2. Basketball court									
Concrete Base	m2	285	2615	745.3	784.5	223.6	1830.5	521.7	
Bakhold	LS	(15%)		111.8		33.5		78.3	of 2
Sub-Total				857.1		257.1		600.0	
3. Stage	LS	(40%)		435.9		112.6		323.3	of 1 to 2
4. Misceraneous	LS	(30%)		457.7		118.3		339.4	of 1 to 3
Total				1,983.3		512.5		1,470.8	

Table K.3.8 Construction Cost for Post Harvest Facilities

Table K.3.8a Construction Cost for Post Harvest Facilities (Stage I)

Description	Unit Quantities	Total Cost		Foreign Currency		Local Currency		Remarks
		Unit Rate (Peso)	Amount (' 000 P)	Unit Rate (Peso)	Amount (' 000 P)	Unit Rate (Peso)	Amount (' 000 P)	
1. Warehouse	house	1	1578500	1578.5	315700	315.7	1262800	1262.8 25×14 m
2. Motor Pool	house	1	1578500	1578.5	315700	315.7	1262800	1262.8 25×14 m
3. Solar Dryer	yard	1	350000	350.0	70000	70.0	280000	280.0 20×30 m
4. Rice Thresher	unit	2	182000	364.0	163800	327.6	18200	36.4 1 t/hr
5. Rice Mill Unit	unit	1	3900000	3900.0	3510000	3510.0	390000	390.0 0.5 t/hr
6. Mechanical Dryer	unit	1	481000	481.0	432900	432.9	48100	48.1 2.4 t
7. Transportation Vehicle	unit	3	1040000	3120.0	936000	2808.0	104000	312.0 4 t
8. Portable Conveyer	unit	1	169000	169.0	152100	152.1	16900	16.9 Engine
9. Hand Tractor	unit	3	176800	530.4	159120	477.4	17680	53.0 6 ps air
10. Trailer	unit	3	70200	210.6	63180	189.5	7020	21.1 0.5 t
11. Miscellaneous	LS	15	10.	1842.3		1289.8		552.5
Total (1. to 11.)				14124.3		9888.7		4235.6
12. Indirect Cost(OCM & Profit.)	LS	20	11.	2824.9		1977.7		847.1
Total (1. to 12.)				16949.2		11866.5		5082.7

Table K.3.8b Construction Cost for Post Harvest Facilities (Stage II)

Description	Unit Quantities	Total Cost		Foreign Currency		Local Currency		Remarks
		Unit Rate (Peso)	Amount (' 000 P)	Unit Rate (Peso)	Amount (' 000 P)	Unit Rate (Peso)	Amount (' 000 P)	
1. Warehouse	house	2	1578500	3157.0	315700	631.4	1262800	2525.6 25×14 m
2. Motor Pool	house	—	1578500	0.0	315700	0.0	1262800	0.0 25×14 m
3. Solar Dryer	yard	2	350000	700.0	70000	140.0	280000	560.0 20×30 m
4. Rice Thresher	unit	4	182000	728.0	163800	655.2	18200	72.8 1 t/hr
5. Rice Mill Unit	unit	1	3900000	3900.0	3510000	3510.0	390000	390.0 0.5 t/hr
6. Mechanical Dryer	unit	—	481000	0.0	432900	0.0	48100	0.0 2.4 t
7. Transportation Vehicle	unit	7	1040000	7280.0	936000	6552.0	104000	728.0 4 t
8. Portable Conveyer	unit	2	169000	338.0	152100	304.2	16900	33.8 Engine
9. Hand Tractor	unit	7	176800	1237.6	159120	1113.8	17680	123.8 6 ps air
10. Trailer	unit	7	70200	491.4	63180	442.3	7020	49.1 0.5 t
11. Miscellaneous	LS	15	10.	2674.8		2002.3		672.5
Total (1. to 11.)				20506.8		15351.2		5155.6
12. Indirect Cost(OCM & Profit.)	LS	20	11.	4101.4		3070.2		1031.1
Total (1. to 12.)				24608.2		18421.5		6186.7

K. 4 Alternative Study

Table K.4.1 shows the construction costs of potential water resources sites for the purpose of alternative study. The operation and maintenance cost for pump station is estimated as follows;

Operation and maintenance cost for pump station is composed of the following costs.

- Electric charge for pump operation
- Wages for pump operators
- Maintenance cost for pump
- Replacement cost of pump

1) Annual electric charge

Unit price : 3.7 Peso/KWH
Consumption : $190 \text{ KW} \times 2 \text{ Units} \times (5 \text{ months} \times 30 \text{ days} \times 8 \text{ H}) \times 0.5 = 228,000 \text{ KWH}$
Annual cost : $3.7 \times 228,000 = 0.84 \text{ M Peso/year}$

2) Annual wage

Unit price : 15,000 Peso/month (including overhead and other expenditure)
Operator : 2 persons \times 12 months = 24 months
Annual cost : $24 \times 15,000 = 0.36 \text{ M Peso/year}$

3) Annual maintenance cost

Purchase cost of pump : 45,000,000 Peso(3 sets)
Annual rate of maintenance fee : 1 % of purchase cost
Annual cost : $45,000,000 \times 1 \% = 0.45 \text{ M Peso}$

4) Replacement cost

90,000,000 Peso per 20 years

5) Total operation and maintenance cost

The O&M cost for 50 years project life in present value is estimated by the following equation.

$$\text{Peso} = C \cdot \frac{1 - r^n}{r^n \cdot (1 - r)} = 1.65 \text{ M Peso} \times 18.26 = 30.12 \text{ M Peso}$$

Where

Peso ; total O&M cost in present value

C ; Annual O&M cost (0.84 + 0.36 + 0.45 = 1.65 M Peso)

r ; Annual interest (1 + 0.05 = 1.05)

n ; Project life (50 years)

The total replacement cost in present value is as follows;

1st replacement ; $90.0 \text{ M Peso} / 1.05^{20} = 33.92 \text{ M Peso}$

2nd replacement ; $90.0 \text{ M Peso} / 1.05^{40} = 12.78 \text{ M Peso}$

Total 46.70 M Peso

∴ Grand total of O&M cost 76.82 M Peso

Table K.4.1 Construction Cost for Potential Water Resources Sites

Description	Unit	Unit Cost (Per Sq)	Site E1		Site E2		Site D		Site C		Site L1		Site E3		
			Quantities	Amount ('000 P)	Quantities	Amount ('000 P)	Quantities	Amount ('000 P)	Quantities	Amount ('000 P)	Quantities	Amount ('000 P)	Quantities	Amount ('000 P)	Quantities
L. Bamboey															
2.1 Excavation	sq m	11.00	107800	1177.0	48200	751.3	43700	440.7	20209	222.2	16100	174.1	11300	124.2	
2.1.1 Clearing & Grubbing	sq m	11.00	107800	1177.0	48200	751.3	43700	440.7	20209	222.2	16100	174.1	11300	124.2	
2.1.2 Earth Works	cu m	42.50	42500	1806.2	140300	5911.9	406000	1708.3	51600	2178.2	90900	3868.5	16700	707.5	
2.1.3 Miscellaneous Works	cu m	90.45	42700	3862.2	143000	7815.9	46600	3672.3	5900	470.3	17700	696.5	18700	1510.5	
2.1.4 Foundation Treatment	cu m	100.35	382300	38448.4	10600	702.3	243000	24304.0	23800	2394.2	51600	8193.9	8900	890.0	
2.1.5 Concrete	cu m	123.15	17100	2097.7	42100	5196.4	40800	4318.7	10300	247.8	1760	921.9	16800	2051.3	
2.1.6 Reinforcement	cu m	347.90	430	1498.0	7000	2415.3	81200	28243.5	10300	3582.4	0	0.0	2300	765.4	
2.1.7 Barr. Wall	cu m	31.30	380200	11274.3	242700	7598.3	—	—	—	—	37000	1158.1	49400	1544.2	
2.1.8 Random zone	cu m	82.40	322340	26593.8	214070	17833.4	—	—	—	—	—	—	49400	4100.0	
2.1.9 Random Fill	cu m	31.30	257300	8053.5	245200	7674.8	—	—	—	—	—	—	32700	1023.5	
2.1.10 Boulder Riprap	cu m	83.40	228000	18765.0	228800	19041.3	—	—	—	—	—	—	—	0.0	
2.1.11 Filter Drain	cu m	77.80	25800	2001.7	25800	2001.7	—	—	—	—	—	—	—	0.0	
2.1.12 Concrete Forks	cu m	734.45	46900	34445.7	23800	17475.9	—	—	—	—	—	—	1000	734.5	
2.1.13 Dam Concrete	cu m	4135.02	—	—	68900	285778.5	—	—	19200	79489.2	—	—	—	0.0	
2.1.14 Rubble Masonry	cu m	3137.38	—	—	177300	558330.0	—	—	23400	73414.7	—	—	—	0.0	
2.1.15 Spillway Concrete	cu m	5484.50	—	—	11300	61974.9	—	—	11000	60329.5	—	—	—	0.0	
2.1.16 Grouted Riprap	sq m	2321.77	—	—	—	—	—	—	—	—	—	—	—	0.0	
2.1.17 Curtain Grooving	m	3000.00	1500	4500.0	6400	19200.0	—	—	4000	12000.0	—	—	1650	4950.0	
2.1.18 Consolidation Grooving	m	3000.00	—	—	—	—	—	—	2600	7800.0	—	—	—	0.0	
2.1.19 Cut-off Wall (to 0.6 m)	sq m	12800.00	640	8000.0	—	—	—	—	—	—	—	—	—	0.0	
2.1.20 Others	sq m	10 x	—	—	—	—	—	—	—	—	—	—	—	0.0	
2.1.21 Miscellaneous Works	sq m	30 x 11.74	—	—	—	—	—	—	—	—	—	—	—	0.0	
2.1.22 Sub-total			—	—	—	—	—	—	—	—	—	—	—	—	
2.1.23 Spillway			—	—	—	—	—	—	—	—	—	—	—	—	
2.2 Earth Works	sq m	11.00	17000	187.0	17000	187.0	—	—	—	—	—	—	—	—	
2.2.1 Clearing & Grubbing	sq m	11.00	17000	187.0	17000	187.0	—	—	—	—	—	—	—	—	
2.2.2 Excavation	cu m	42.50	53800	2283.5	40900	3699.4	—	—	—	—	—	—	—	—	
2.2.3 Common	cu m	100.35	10800	1086.9	4100	412.3	—	—	—	—	—	—	—	—	
2.2.4 Boulder	cu m	123.15	21500	2654.7	12300	1496.1	—	—	—	—	—	—	—	—	
2.2.5 Indurated	cu m	347.90	21500	7478.9	24500	8321.8	—	—	—	—	—	—	—	—	
2.2.6 Rock	cu m	77.80	19400	1540.4	19400	1503.3	—	—	—	—	—	—	—	—	
2.2.7 Common	cu m	31.30	—	—	—	—	—	—	—	—	—	—	—	—	
2.2.8 Core Zone Spillway	cu m	83.40	—	—	—	—	—	—	—	—	—	—	—	—	
2.2.9 Barr. Wall	cu m	684.64	—	—	—	—	—	—	—	—	—	—	—	—	
2.2.10 Boulder Riprap	cu m	83.40	—	—	—	—	—	—	—	—	—	—	—	—	
2.2.11 Concrete Forks	cu m	5484.50	12100	6601.2	11840	65044.2	—	—	—	—	—	—	—	—	
2.2.12 Dam Concrete	cu m	4135.02	—	—	—	—	—	—	—	—	—	—	—	—	
2.2.13 Rubble Masonry	cu m	3137.38	—	—	—	—	—	—	—	—	—	—	—	—	
2.2.14 Miscellaneous Works	sq m	30 x 11.74	—	—	—	—	—	—	—	—	—	—	—	—	
2.2.15 Sub-total			—	—	—	—	—	—	—	—	—	—	—	—	
2.3 Outlet and Others			—	—	—	—	—	—	—	—	—	—	—	—	
2.3.1 Concrete Forks	cu m	5484.50	800	27422.5	7600	41882.3	—	—	—	—	—	—	—	—	
2.3.2 Gate Forks	gate	5623000	1	5623.0	1	5623.0	—	—	—	—	—	—	—	—	
2.3.3 M.P. Gate	gate	8125.0	1	8125.0	1	8125.0	—	—	—	—	—	—	—	—	
2.3.4 J.P. Gate	gate	483000	1	4830.0	1	4830.0	—	—	—	—	—	—	—	—	
2.3.5 Butterfly Valve	unit	246000	1	24600.0	1	24600.0	—	—	—	—	—	—	—	—	
2.3.6 Sluice Valve	unit	1040000	1	10400.0	1	10400.0	—	—	—	—	—	—	—	—	
2.3.7 Gate	gate	1630000	1	16300.0	1	16300.0	—	—	—	—	—	—	—	—	
2.3.8 Intake Gate	gate	350000	1	3500.0	1	3500.0	—	—	—	—	—	—	—	—	
2.3.9 Corrugated Steel Pipe	m	20000	360	7200.0	210	4200.0	—	—	—	—	—	—	—	—	
2.3.10 Others	m	28100	130	3718.0	350	10010.0	—	—	—	—	—	—	—	—	
2.3.11 Miscellaneous Works	sq m	20 x 53.17 x 2	—	—	—	—	—	—	—	—	—	—	—	—	
2.3.12 Sub-total			—	—	—	—	—	—	—	—	—	—	—	—	
2.3.13 Miscellaneous Works	sq m	20 x 53.17 x 2	—	—	—	—	—	—	—	—	—	—	—	—	
2.3.14 Sub-total			—	—	—	—	—	—	—	—	—	—	—	—	

Table K.4.1 Cont'd

Description	Site E1		Site E2		Site P		Site C		Site LD		Site Fud			
	Unit	Cost	Quantities	Amount	Remarks	Quantities	Amount	Remarks	Quantities	Amount	Remarks	Quantities	Amount	Remarks
	(Peso)	('000 P)	('000 P)	('000 P)	('000 P)	('000 P)	('000 P)	('000 P)	('000 P)	('000 P)	('000 P)	('000 P)	('000 P)	('000 P)
4. Pumping Station														
4.1 Concrete Works														
3,000 PSI	cu.m	5484.50							350	1919.6			0.0	0.0
Operation House	sq.m	7500							90	675.0			0.0	0.0
4.2 Operation House	sets	3000000							3	90000.0			0.0	0.0
4.3 Pump w/installation	L.S	3750000							1	3750.0			0.0	0.0
4.4 Steel Pipe	20 KxL	4.4							L.S	19266.9			0.0	0.0
4.5 Miscellaneous Works										115613.5			0.0	0.0
Sub-total														
5. Open Channel														
5.1 Excavation														
Clearing & Grubbing		11.00												
Excavation	cu.m	90.45										10700	117.7	1.00
Common	cu.m	121.15										71000	2568.8	0.40
Indurated	cu.m	547.90										28400	4300.8	0.50
Rock	cu.m	547.90										35900	4300.8	0.50
5.2 Miscellaneous Works	20 KxL	5.1										7100	2470.1	0.10
Sub-total												L.S	1891.5	0.0
6. Preparatory Works													11348.9	
6.1 Access Roads	Km	1000000	3	3000.0									5000.0	5000.0
6.2 Screening Plant	L.S	1500000	1	15000.0									15000.0	15000.0
6.3 Reservoir Clearing	ha	25000	36	900.0									235.0	200.0
6.4 Care of River 1	L.S	1000000	1	1000.0									1000.0	1000.0
Care of River 2	L.S	3000000											0.0	0.0
Bypass Tunnel D=6.0 m		2500000											0.0	0.0
6.5 Others	20 KxL	95650.8											87500.0	87500.0
6.6 Mobilization & Construction Facilities	2 KxL	8578.9											46103.1	46103.1
Sub-total													L.S	321.6
Total (1. to 6.)													L.S	48468.0
7. Leading Canal														189400.2
Canal 1 (Site C to D)		40000												0.0
Canal 2 (Site D to M.C)		20000												0.0
Canal 3 (Site E1 to M.C)		10000												0.0
Sub-total														0.0
Total														6700.0
Grand Total														176100.9

