

SAN ANTONIO IRRIGATION SYSTEM

Romana P. de los Reyes
Salve B. Borlagdan

This report on the San Antonio system, is divided into two major parts. The first portion describes the field site, specifically San Antonio, a barrio in the municipality of Tabaco, Albay. The topics considered in this section are only two: the source of income of the barrio and the experience of the barrio with formal organizations. The involvement of the barrio residents in formal organizations is described here because it offers a partial explanation of the presence of a conflict that currently besets one of the systems in the barrio.

The second part of this report focuses on the two systems which comprise the San Antonio irrigation system. In this section, we describe and discuss the ricefields of the system, the technical aspects of the system (water supply and the physical structures), and the management of the system (water allocation and distribution, maintenance of the system, and conflict and conflict management).

The Field Site

Barrio San Antonio lies at the northern foot of Mayon Volcano, about 7 kilometers west of Tabaco's town center. The barrio faces Mt. Masaraga on the west and another volcano, Mt. Malinao, on the northwest. There are no jeepneys nor buses which exclusively ply the Tabaco-San Antonio route. Nonetheless, the barrio is easily accessible to different towns of Albay and the neighboring province, Camarines Sur, because public transportation vehicles which go between various towns of Camarines Sur and Albay and between Manila and Albay use the so-called Sabloyon route which pass through San Antonio.

The barrio's sources of income

The two major sources of income of the barrio residents are farming and furniture-making. The barrio cropland area is planted to rice (the barrio's main crop), abaca, banana, corn, coconut, and kalamansi (citrus), and the majority of the barrio households depend on the cultivation of these crops for their living. But there are many families in San Antonio who also rely on furniture-making as a source of income. The furniture made in San Antonio are sold to local buyers or are supplied to exporters based in Legazpi or Manila. The materials used in the furniture industry of the barrio are rattan and hardwood. Rattan is brought in from Bantayan, a barrio west of San Antonio or from the province of Catanduanes, while lumber from the forest of Mayon Volcano provide the materials for the wooden furniture.

The barrio's experience with
formal organization

At present, there are six existing formal organizations in the barrio, namely, the Barrio Council, the Parish Council, the Parents-Teachers Association, the Kabataang Barangay, the Samahang Nayon, and the San Antonio Farmers Irrigators' Association. The first three organizations are older associations and have already made tangible contributions to the barrio. The Barrio Council and the Parents-Teachers' Association, for example, coordinated with an RP-US (Republic of the Philippines-United States) Bayanihan team in the construction of the barrio high school in July 1976. On the other hand, the Parish Council's major contribution to the barrio is the present concrete church. The council, under the leadership of the former parish priest, raised the funds for the construction of the church by putting up beauty contests and other fund-raising campaigns.

The Samahang Nayon, the Kabataang Barangay, and the Farmers-Irrigators' Association are more recent organizations, formed only after the imposition of martial law. Prior to the formation of these

organizations, a Farmers' Club was founded in 1964 under the initiation of a technician of the Bureau of Agricultural Extension (BAEx). A club for women called the Rural Improvement Club and a club for the youth, a 4-H Club, were also formed. These organizations lasted only for 3 years, however. The organizations became inactive soon after the BAEx technician responsible for their formation was assigned to another place.

In 1964, San Antonio was chosen as one of the pilot barrios for the government applied-nutrition program. In connection with this program, the barrio residents still recall the visit of well-known agricultural specialists from the University of the Philippines in Los Baños (UPLB). These persons inspected the crops and livestock of the barrio. The barrio residents also remember that in the same year, five farmers from Tabaco, three of whom were from San Antonio, attended a 1-week seminar on farm practices held at the UPLB campus and sponsored by the Presidential Arm on Community Development (PACD).

Two experiences with formal organizations differentiate San Antonio from the majority of barrios in the country. First, in 1969, the residents of San Antonio, under the leadership of the members of the barrio council in that year, successfully ousted from office their barrio captain who malversed some of the barrio funds intended for barrio-improvement projects. The residents are proud in telling outsiders about this achievement and of the fact that the former barrio captain had to leave San Antonio and is now residing elsewhere. Second, the residents under the guidance of a group of community organizers (COs), are involved in a court case against the Tabaco Water District's Office (TAWAD) regarding increased rates for domestic use of water.¹ Although

¹In June 1978, there were four COs in San Antonio. The COs are young (in their twenties), single men and women who, under the auspices of religious groups, are involved in the development of "selfhood among the people." As we understand it, they accomplish this goal through a process of problem-solving which consist of four steps, namely; (1) spotting the problem; (2) making the people aware of the problem; (3) getting the people to talk together to find solutions to the problem; and (4) finding ways by which these solutions can be carried out.

the case includes other Tabaco residents, initiating the protest is credited to the San Antonio residents. The legal part against TAWAD was filed by the Tabaco Water Consumers' Association (TAWACA), an association formed in a meeting held in San Antonio attended by representatives from the different barrios of Tabaco.

The Old and New Systems in San Antonio

As earlier mentioned, the San Antonio irrigation system is actually made up of two systems, the old system built by the farmers and the new system constructed by the NIA. Each of these systems has its own ricefield area. The area served by the new NIA-constructed dam on the Bañadero River is referred to by the farmers as the new ricefield area, while the fields served by the old dam, also located on the Bañadero River but downstream of the NIA-built dam, are called by the farmers as the old riceland (gurangan na oma). The old ricefields form a single, contiguous area while the fields served by the NIA-built system are sort of grouped into three areas. While the old ricefields have been in existence since the late thirties, the fields currently served by the NIA-constructed dam are composed of those cultivated since the late thirties and those which were converted into ricefields only upon the completion of the system.

The ricefield area

During the wet season, the water supply diverted by the old dam is sufficient to irrigate the 25-hectare gurangan ricefields, which are tilled by 30 farmers. During the dry season, however, the water supply decreases, notably from March to August. Hence, during this period, only 20 hectares tilled by 25 farmers have sufficient irrigation water. The other 5 hectares are still planted to rice, but these fields usually have problems obtaining irrigation.

The ricefield area served by the NIA-built system, on the other hand, cannot be differentiated in terms of the wet and dry seasons only. This is primarily because the size of the irrigated area was variable during the four crop seasons (dry 1977, wet 1977, dry 1978, and wet 1978) that the system became operational.² Thus, in the following paragraph, the ricefield area of the new system is specified for each of the four crop seasons.

During the system's first crop season (dry 1977), the irrigated fields totalled to about 23 hectares (tilled by 16 farmers). The fields then were composed of about 3 hectares near the dam (the old ricefield area) and about 20 hectares at the downstream area, or at the far end of the main canal of the system. During the second crop season (wet 1977), the 23-hectare ricefields were also planted to rice. However, during the same period, only 10 hectares of the downstream fields were sufficiently irrigated. Then at the start of the third crop season (dry 1978), about 27 hectares were able to obtain irrigation, 20 hectares of which were in the downstream area while the other 7 hectares were in the upstream area (3 in the old ricefield area and 4 at the newly-opened fields). At the close of the season, however, about 15 hectares of the downstream fields were totally destroyed because of lack of water, and as of June 1978, the farmers who cultivated these fields decided to abandon rice farming. At the beginning of the fourth crop season (wet 1978) then, the irrigated area of the NIA-built system was only 7 hectares. This hectarage would have increased during the season, however, since in June 1978 new ricefields were being opened at the upstream portion of the system.

²As with the old system, the wet season rice crop in the new system is planted from June to August and harvested from September to November. The dry season crop, on the other hand, is planted from November to January and harvested from March to May.

Technical aspects of systems

Water supply. The old system and the NIA-built system both draw water from the Bañadero River. This river starts from the springs on the slope of Mayon Volcano. After it passes by San Antonio, the river flows down to Estancia, a barrio north of San Antonio and to the neighboring town of Malinao. Thus, aside from the San Antonio ricefields, the Bañadero River also irrigates more than 100 hectares of ricefields in Estancia and Malinao.

The farmers claim that the water level at the upstream portion of the Bañadero River, or at the area close to the dam of the NIA-built system is almost always lower than the water level at the downstream portion of the river, or at the area close to the dam of the old system.³ The farmers explain that the water supply of the river at the old dam site is more abundant because the river's supply is supplemented by the numerous springs which are found in this area. When compared with the volume of water diverted by the old dam then, the NIA-built dam diverts a rather small amount of water.⁴

Moreover, while the old system gets additional water supply from the San Isidro River, the NIA-built system does not have any supplementary source. The water supply of the NIA-built system is actually supposed to be supplemented by the water from the nearby Boring spring. The spring water is supposed to be diverted by a culvert toward the main canal of the NIA-built system. As it is now, however, the water of the Boring spring is used by farmers who cultivate about 7 hectares of riceland near the system's dam. These farmers divert almost all of the spring water, hence, there is no water that flows in the culvert which is supposed to deliver the spring water into the main canal of the new system.

³Data on water flow measurements are not available.

⁴In our visit to the dam site in February, April, and June 1978, we find that the volume of water at the old dam area was greater than that found in the NIA-built system's dam area.

The physical structures. The older dam, which has been in existence since the late thirties, is made of grouted stone riprap. The constructions of the earlier temporary dam and of the present one were all done by the farmers themselves.

The main canal attached to the old dam runs for about 1 kilometer. About 12 meters of this canal (the portion immediately close to the dam) are lined with stone riprap; the rest is earthen. The canal meets with the San Isidro River and consequently diverts supplementary water from the river before it enters the old ricefield area. Somewhere within the ricefield area (situated in sitio Tinaguman of San Antonio) the canal bifurcates.

As with the dam, the canal network of the old system was built by the farmers themselves. There are 8 take-off points along the canals of the old system. Since there are 30 farmers using the system, an average of four farmers draw water from one take-off point.

The NIA-built dam, on the other hand, is situated at the site where an earlier temporary dam was located. (The temporary dam was built by the owner of a 3-hectare ricefield which was served by the water diverted by the said dam.) The new dam, including its headgate, is made of concrete. Attached to the headgate is a boxed culvert (about 10 meters long) where the main canal of the system originates. The main canal runs for about 1.75 kilometers, extending from the dam site in Barrio Boring and downhill toward sitio Basud of San Antonio. About one-third of the main canal is lined with a thin layer of grouted stone riprap. The riprapped portions are not continuous, however. Earthen or unlined parts alternate with the riprapped sections. Only one subcanal of a little more than one-fourth of a kilometer in length branches from the main canal.

The main canal and the subcanal were constructed as part of the NIA project, although, the main canal section between the dam and the overhead flume (about 1/2 kilometer) was actually existing before. This section of the main canal was then attached to the earlier temporary dam which was replaced by the NIA-built dam. Some sections of the grouted

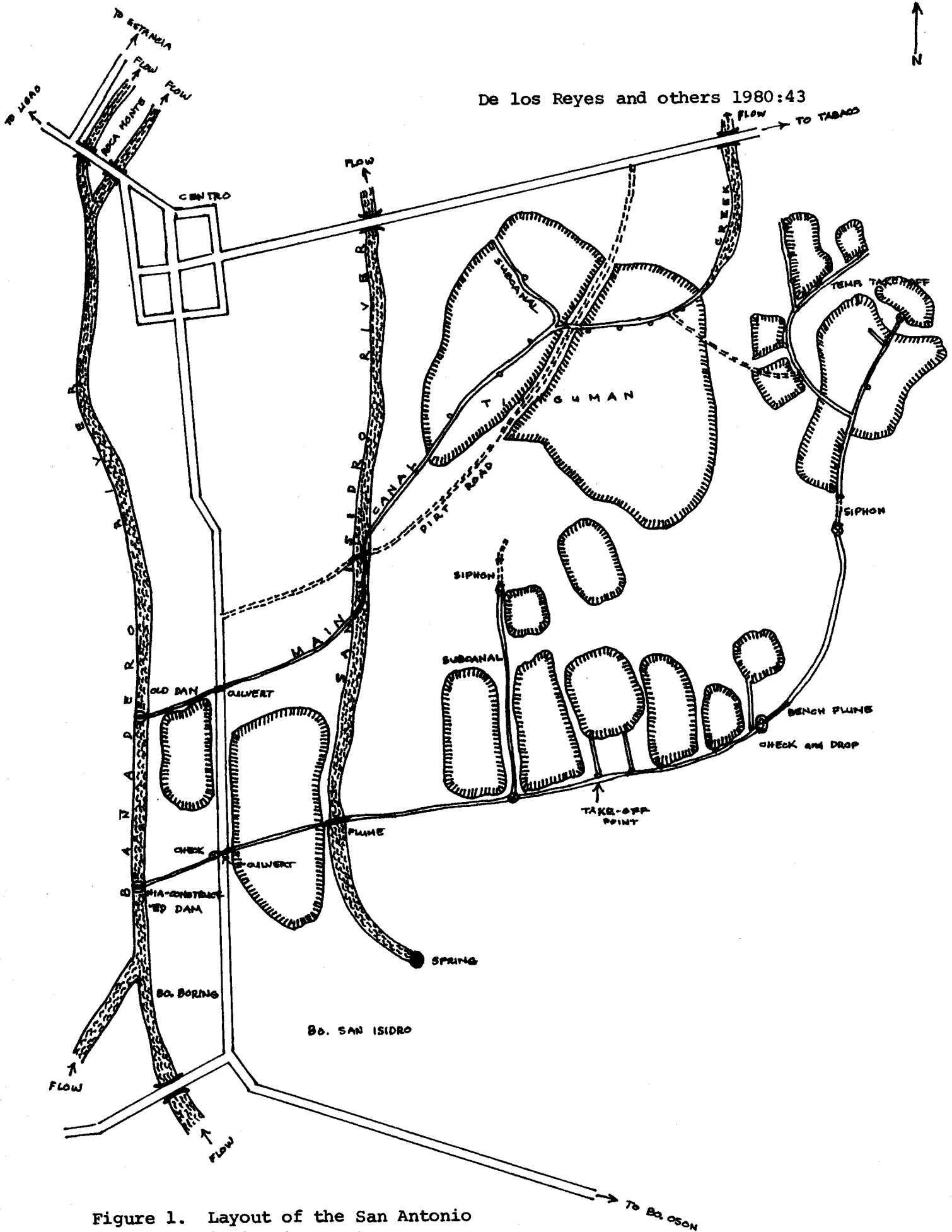


Figure 1. Layout of the San Antonio irrigation system

linings on the main canal were made as part of the NIA project, but certain portions were made by the farmers themselves. For the portions made by the farmers, they themselves provided the materials used in the riprapping job.

As of June 1978, there were 16 take-off points along the new system's main canal, some leading directly to the fields, others to short farm ditches. Only four of these take-off points were concrete. The take-off points and the farm ditches (some of which were lined with cement) were all built by the farmers themselves. It should be noted that in June 1978 not all of these take-off points were used since the downstream farmers had stopped farming. But if all of the existing ricefields in the new system were cultivated, there would only be one to two farmers served by one take-off point.

The other structures in the system were a bench flume-cum-siphon, two siphons, an overhead flume, five checks, and one check drop.⁵ All of these structures were made of cement and all were built as part of the NIA project.

Management of the system

Since some farmers who utilize the water of the old system also have fields, in the NIA-built system and those who have fields only in the old system have involved themselves with the affairs of the association of the new system, it often appears that both systems are under the management of one irrigation association, the San Antonio Farmers-Irrigators' Association (SAFIA).

The two systems, however, actually function independently of one another and are managed differently. The old system is currently managed by the farmers who have not yet organized themselves into a

⁵The siphons are not provided with wire nets at their mouths. Farmers report that because of the absence of wire nets, rocks, silt, and dirt are carried by the flowing water into the siphons, making it very difficult to remove these obstructions.

formal group. The NIA-built system, on the other hand, is directly supervised by SAFIA officials. While the old system appears to function smoothly, the performance of the NIA-built system is very poor. Moreover, the new system has become the focus of conflict between the SAFIA and the local provincial and regional NIA offices. The dispute between these two entities is focused on the turnover of the management of the NIA-built system to the farmers (to be discussed below, in section on conflict and conflict management).

Before we proceed to discuss how both systems operate in terms of water allocation and distribution, maintenance of the system, and conflict management, we will first provide a brief history of the NIA-constructed system and a description of the organizational setup and activities of the SAFIA, the association which is managing the NIA-built system.

Brief history of the NIA-constructed system. In 1975, a NIA engineer came to San Antonio and sought lodging with the family of the barrio captain. This engineer was assigned to make a survey on a proposed NIA irrigation project in Bantayan, a barrio next to San Antonio. After he had made the required survey, the engineer told the barrio captain of San Antonio that the proposed Bantayan project would be abandoned because the estimated construction cost of the proposed system was more than the funds that NIA had allotted for the project. The barrio captain immediately suggested to the NIA engineer to look into the possibility of building a smaller system in San Antonio which would cost only as much as the available funds. Then the barrio captain asked the other members of the San Antonio barrio council to a meeting, and as a group they asked the NIA engineer to recommend to the provincial NIA office that a system be built in San Antonio. The engineer considered the barrio officials' proposal and, subsequently, the same NIA engineer made the preliminary survey. After a few weeks, the barrio council was notified that NIA would construct a new system for the San Antonio ricefields.

Soon thereafter, a team of NIA engineers arrived to conduct the detailed surveys required for planning the construction of the system. To hasten the release of funds for the system's construction, the NIA personnel advised the barrio council to approach the Samahang Nayon (SN) leaders of the barrio regarding the formation of an irrigators' association. After the third meeting with the NIA representatives, the SN leaders, barrio council leaders, and farmers agreed to form an irrigators' association which they called the San Antonio Farmers-Irrigators' Association (SAFIA). The farmers agreed to organize the association because they were convinced by the NIA representatives' explanation that upon the construction of the system the irrigated rice area in San Antonio would increase and that the farmers would obtain high yields. Besides, the farmers were also told that after the construction of the system, a truck of the National Grains Authority (NIA) would always come to buy the rice they harvest.

Farmers report that two sets of plans were prepared for the system.⁶ In the first plan, the dam was to be built downstream but close to the old dam (the dam serving the gurangan fields). In the second plan, on the other hand, the dam was to be placed upstream of the old dam, but on the same site where a temporary dam, built by one of the landowners in San Antonio, was existing.

Farmers report that they disliked the second plan because the volume of water at the second site was lower than that at the first proposed site. The farmers claim that they inform the NIA men that the water supply at the lower portion of the Bañadero River was abundant throughout the year because of the various springs feeding into that portion of the river. But, as the farmers report, the NIA personnel argued that the proposed second site would also get water from a

⁶The construction of the system which began on 17 November 1975 was scheduled for completion on 22 June 1976, but the work was completed only in September 1976.

tributary spring. In addition, the NIA man told the farmers that if the dam were built on the second proposed site, it would deliver water to a larger area. Thus, in spite of the farmers' objection, the dam was built at the second site.

In terms of the conduct of the construction, the SAFIA officials report that since according to their agreement the NIA would undertake the construction of the system, the NIA had the free hand as to the hiring of the laborers. Subsequently, the NIA personnel managing the construction, particularly the foreman, decided on the hiring of the laborers. But the SAFIA officials also claim that contrary to their expectation that the San Antonio residents would be employed in the construction job, the majority of the laborers hired were from the neighboring barrios and towns. Only a few San Antonio residents were allowed to work, and those who did were employed only for a short time or they were soon laid off. Because of this, the San Antonio residents became discontented with the employment procedures of the NIA personnel. The past association officials also report that they had heated altercations with the foreman of the construction activities concerning the slow pace of work and the transfer of the system's construction materials to another NIA project. Even during the construction of the system then, the San Antonio residents had an unhappy relationship with the NIA personnel. This kind of relationship appears to explain, in part, why the number of farmers who worked on Saturdays (the week day on which the San Antonio farmers would contribute labor without any remuneration as agreed earlier by the SAFIA officials and the NIA) decreased as system construction progressed.

The irrigation association. The agreement between the NIA and the SAFIA regarding the construction of an irrigation system in San Antonio took place after the election of the first set of association officials in October 1975. At that time, the association had more than 40 members (farmers from the barrios of San Antonio, Boring, Basagan, San Isidro, and Bantayan). The association board of directors

then was composed of eight members (a president, a vice-president, a secretary-treasurer, an auditor, and four board members). This set of officials held office until 1976 or until the construction of the system was completed.

In the following year, 1977, the local NIA personnel visited San Antonio and they pointed out to the association members that membership in the association, according to the NIA bylaws given to the association in 1976, was to be limited only to farmers whose lands were part of the potential and actual service areas of the system. Consequently, the association members whose farms were located in San Isidro, Bantayan, and Basagan quit the association. Farmers who had fields only in sitio Tinaguman (the old system's field area) also withdrew from the organization. Thus, in October 1977 the membership of the association was reduced to only 24 farmers. At the second election held in the same month, a new set of officials were elected. This time, only six officials (a president, a vice-president, a secretary-treasurer, and three board members) were elected. Only two of those officials were among those chosen in 1975. One of them was the former president of the association who theoretically should not be a member of the association since his fields were located at Tinaguman. He accepted membership in the board of directors, however, since he was responsible for the agreement between the association and the NIA.

The 1977 officials then organized the association in consonance with the provisions of the NIA bylaws. Six standing committees were formed, namely: education and training committee, finance and business committee, irrigation management committee, grievances committee, audit inventory committee, and production management committee. Of all these committees, only two (the education and training committee and the irrigation management committee) were functional, but only for a short time. The education and training committee headed by Jose Oriz, a technician of the Bureau of Agricultural Extension (BAEx) and an association member,

organized a Saturday farmers' class. For two consecutive Saturdays, a number of the association members attended the lectures on modern farming practices given by invited speakers like the local personnel of BAEEx and the Bureau of Plant Industry (BPI). On the third scheduled meeting, however, the attendance decreased so the lecture was postponed and subsequently, the farmers' class was discontinued.

The irrigation management committee, which was headed by a board member attended to the task of locating a watertender. Among those whom the committee approached, only one person, Jose Balad, accepted the job. In consultation with the other association officials, the irrigation management committee drew an appointment paper for Balad. This appointment paper specified the duties and responsibilities of the watertender. The association officials also told Balad that he would soon undergo training on water management with the NIA, as stipulated by the agreement between the NIA and the association.⁷

The finance and business committee, one of the important committees for the association's operation, was headed by the association's secretary-treasurer. Unfortunately, this person neglected his job, so the fund-collection activities of the association were attended to by the other association officials. The officials were able to collect only about ₱160 in membership dues (the membership fee was ₱10). Aside from the membership fees, the association was supposed to collect an irrigation fee of 1 cavan per hectare per harvest from each member who used the system, and the fines and penalties for violating the association rules and regulations. Until June 1978, however, the association has not collected any irrigation fees nor fines.

After the formation of the committees, the association took steps to register the association with the Securities and Exchange Commission (SEC) and to secure a water-right permit. As part of meeting the

⁷The watertender did not, in fact, undergo any training with the NIA.

requirements for the SEC registration and the water-right permit, the officials asked the members to submit their residence certificates. The residence certificates were not all collected at the same time, however, because of the new requirements imposed by the government on the issuance of residence certificates and on filing the income tax returns. When the needed documents were not gathered immediately, the urgency to register with the SEC and secure a water-right permit subsequently died down.

In February 1978, the association held another election. With about 20 members present, the group elected the president, vice-president, treasurer, and two board members. The association's secretary was then appointed by the president. Of the association officials for 1978, four were among those elected in 1977, or only two (the secretary and one board member) were newly elected.⁸

Water allocation and distribution. In the old system, the farmers themselves look after the distribution and allocation of water. Farmers report that in the wet season, the dam diverts sufficient water to irrigate the system's 25-hectare ricefield area, hence, all farmers always have a share of available water during this season. In the dry season, however, when the water supply decreases, the downstream farmers may have problems obtaining the amount of water they need. Thus, during this period, the downstream farmers have to ask the upstream farmers for a share of water. Such requests are usually granted, but to make sure that water will flow into their farms, the downstream farmers have to personally watch over the flow of water.

⁸The election proceedings of the association actually depart from the provisions of the NIA bylaws. For example, contrary to the bylaws provision that the association should have a five-man board of directors, the association has always had more than five directors. Also, although the bylaws do not require a vice-president, the association chose to elect one to provide for situations where the president could not fulfill his functions.

In the new system, on the other hand, water allocation and distribution were earlier attended to by a watertender who was appointed by the association. The watertender did this job, however, for only two full cropping seasons (dry 1977 and wet 1977) and for part of the 1978 dry season. During the period that he supervised the distribution of water, the watermaster was paid ₱60 a month. His salary was not shouldered by the association but by three farmers. These farmers were Oriz, Casiles, and Bayan. As of June 1978, Oriz and Casiles had stopped farming (see Cases 1 and 2, below) while Bayan was opening a new ricefield area, thereby enlarging his earlier ricefarm.

The watertender stated that since he did not undergo any formal training on water management during the period that he attended to the water distribution in the system, he allocated the water on the basis of his own understanding. Specifically, he distributed water based on the area served by a take-off point and the age of the ricefields. For example, for ricefields which have been in existence before the construction of the NIA-built dam, that is, the fields close to the dam, the watertender allowed the take-off points serving these fields to obtain only about 1.5 inches of water. For the new ricefields at the upstream section, where the soil is not as sandy as in the downstream area, the watertender allowed the take-off point to receive 2 to 3 inches of water while for the newly-opened fields at the downstream portion he allowed a 5-inch water flow into the take-off points.

The watertender reported that for the first two crop seasons of the system's operation, his method of allocating the water was accepted by the farmers. But during the second crop season, the farmers started to alter the openings on their take-off points. The watertender explained that the major reason behind the farmers' action was the decrease of water that entered the system. Also, at this time, the system's main canal had deteriorated. For instance, the areas of the canal where the riprapped portions begin and end had become wider and deeper, hence, the water would collect into some sort of a pool along these portions

of the canal and consequently, the water that flowed after each rip-rapped portion decreased. Also, at about 3/4 kilometer away from the dam, the water fell into a drop. Here the water formed a sort of basin (in April 1978, this was about 4.5 meters deep), and from this point only a portion of the water continued toward the downstream portion of the canal. Moreover, the upstream sections of the canals had deepened about 6 feet below the level of the rice paddies. The deepening of the canals was caused by flash floods on the canal during periods of heavy rain when the watertender was unable to immediately open the headgate. Thus, the upstream farmers had to place checks on the canal to obtain water, further causing the decrease of water flow toward the downstream area.

At the start of the third crop season, the canal conditions had worsened and the volume of water reaching the downstream area, reduced to a trickle. In view of these conditions, the association officials instructed the watertender to rotate the distribution of water. The schedule that the officials decided on was for the first half of the system's field to receive water from 6 a.m. to 6 p.m., while the other half would get water from 6 p.m. to 6 a.m. The watertender was to make sure that the schedule was observed.

This arrangement was observed only for 2 days, however. All of the farmers disregarded the schedule after one of the upstream farmers diverted some water on the second night. Also, after this incident, the downstream farmers insisted that the water should be allowed to flow continuously toward the downstream area. To make sure that the downstream area would get some irrigation, the watertender controlled the flow of water into the take-off points of the upstream farms. The upstream farmers did not agree with the watertender's action and accused him of favoring the downstream farmers since after all two of the downstream farmers were the ones who paid for the watertender's salary. When the watertender became the focus of arguments between the upstream and downstream farmers, the watertender resigned. Thus, sometime in the

middle of the third crop season, the water distribution was entirely in the hands of the farmers themselves, particularly the upstream farmers. Because of their advantageous position in the system, the upstream farmers got most of the available water and the downstream farmers eventually lost their crop.

The following cases illustrate the sad experience of the downstream farmers with the NIA-built system. These farmers were among those who converted their land into ricefield just prior to the completion of the NIA-constructed system.

Case 1.

Just a year before the construction of the NIA-built system began, Jose Oriz, a technician of the Bureau of Agricultural Extension (BAEx) had his 4-hectare land (which he inherited from his mother) in sitio Basud planted to calamansi (citrus trees). In 1976, Oriz had already invested about ₱3,000 in his orchard. (He bought each calamansi seedling for ₱1 and his 4-hectare orchard had 700 trees per hectare.) In late 1976, when the NIA men and the association officials approached Oriz's mother for a right of way for the end section of the main canal which would pass through the Oriz orchard, Oriz thought of converting his orchard into ricefields. (Oriz's orchard was only 2 years old and would not produce until 5 years more.) Assured by the NIA men that his land in Basud would be reached by irrigation, Oriz immediately gave permission for the construction of the canal on his land. Then Oriz joined the association and plunged into the process of converting his orchard into ricefields.

In order to convert his orchard into riceland, Oriz borrowed ₱11,000 from his mother-in-law to augment his own resources. He hired laborers to clear his land of boulders, coconut trees and kalamansi trees. Then, he hired a tractor to level the land. For this leveling job, Oriz, entered into an agreement with the tractor owner that Oriz would give a downpayment of ₱4,000 or 50 percent of the total operation cost, while the remaining amount would be paid from Oriz's income from his ricefields.

Since Oriz aimed for a harvest of 100 to 150 cavans per hectare and eventually, at breaking the record of a 240-cavan-per-hectare harvest of a farmer in a neighboring town, he made elaborate arrangements for his ricefields. For

instance, he had his paddy field embankments riprapped to minimize the loss of water that enters his fields. Also, he reconditioned the soil by using cow and chicken manure which were carted from the various parts of the barrio and from another town. Moreover, he had his two farm ditches, lined with cement, extend perpendicularly across his ricefields so that the water would be available to all parts of the field, and he had his two take-off points on the canal cemented. For all these, Oriz spent more than ₱20,000.

When the ricefields were ready, Oriz secured a ₱1,200-per-hectare loan from the Masagana 99 program of the Philippine National Bank (PNB) in Tabaco. He got 37 bags of an assortment of fertilizers. To test which of the fertilizers benefited the soil most, he used different kinds of fertilizers for each paddy parcel. By November 1976, Oriz's field was planted to rice. In March 1977, he averaged 90 cavans per hectare, the highest among the farmers in San Antonio for that season. He was able to pay his PNB loan, retain his enthusiasm for rice-farming, and became the envy of the ricefarmers.

For his second crop, he got another loan from the PNB. At that time, however, the water reaching his fields had decreased. At the end of the season, Oriz harvested only 60 cavans from his 4-hectare ricefield. Consequently, he was not able to repay his loan from the PNB.

Not giving up, Oriz persuaded a brother-in-law whose ricefield was adjacent to his and who had already given up ricefarming (see Case 2, below) to let him plant the latter's ricefields. Thus, in December 1977, Oriz had more than 4 hectares of land planted to rice. Since he had unpaid debts with the PNB and he could not borrow from that bank again, Oriz spent his own money for the planting operations. After his fields were planted, the water that reached his farm continued to decrease and eventually his whole crop was destroyed.

In June 1978, Oriz planned to convert his ricefields into a vegetable farm. When asked about his debts with the PNB, he dismissed this with a shrug. But he also explained that the bank could not force him to pay back since the loan agreement specifically said that the repayment would be taken from his harvest. Since he had nothing to harvest, he could not pay his loan. If the PNB would pursue his case, however, Oriz believed that the bank had to arrange that the payment be deducted from the salary that he earned from BAEx.

Case 2.

The experience of Romeo Casiles, a brother-in-law of Oriz, and son of a former mayor of Tabaco, is similar to that of Oriz. Casiles's land in San Antonio was planted to kalamansi at about the same time that Oriz's land was planted to the same citrus trees. When Oriz converted his orchard to riceland, Casiles followed suit. Using his own money, he hired men to cut down the citrus trees and then secured an agricultural loan from the Development Bank of the Philippines (DBP). When the land had been converted into ricefields, he also got a ₱1,200-per-hectare loan for his 5-hectare riceland from the Masagana 99 program. He harvested his first crop at the same time Oriz did, averaging 80 cavans per hectare. Like Oriz, Casiles was also able to repay his first loan.

For his second cropping, he secured another Masagana 99 loan from the Rural Bank of Tabaco. Then he had his field planted but sometime during the season his crop was destroyed by excess water flowing from the farms in the old ricefield area.⁹ Unable to borrow again from the Rural Bank of Tabaco, Casiles joined the Masaganang Maisan program and obtained a loan from the Rural Bank of Tiwi. He had his field planted to corn but soon thereafter, a typhoon destroyed his corn crop. Unable to pay his debts, Casiles started subdividing his land and had already sold about ₱12,000 worth of his property.

Case 3.

A more tragic result that the insufficiency of water in the NIA-built system had on a farmer and his family might be seen in the case of Santos Babas, a skilled furniture-maker who shifted into ricefarming when the new system was opened. Babas had a 0.70 hectare land planted to an assortment of fruit trees, root crops, and coconuts. When he found out that the NIA-built system would reach his land, he quit furniture-making and spent all his savings in converting his land into ricefields. He was able to obtain a good harvest for his first crop. But like Oriz and Casiles, he lost his second and third crops. This time without any secure source of livelihood, Babas and his family have taken to hating the farmers upstream who are utilizing the water diverted by the NIA-built dam.

⁹The old ricefields are not contiguous to Casiles's farms, but the terrain is such that the excess water of the old ricefield area ultimately flows to a canal built by the NIA to connect the old ricefield area with the downstream portion of the new system. The water drained from the old ricefield area collects at Casiles's farm.

Maintenance of the system. In the old system, the farmers repair or clean the structures of the system whenever the need arises. The farmers themselves also raise the funds which are used to buy the materials (particularly the cement) needed in the repair of the system's structures, specifically the dam. In 1977, for example, the farmers contributed money to buy the cement used in riprapping the dam and the portion of the canal close to the dam.¹⁰ There is no fixed arrangement as to how much one farmer should contribute. As a rule, however, farmers who are economically better off give more than those who are poorer.

The farmers in the old system report that there is no particular person who lead them in the maintenance activities. Rather, when a farmer sees that part of the system is damaged, he tells the other farmers about it. After discussing what actions to take and scheduling the job, the farmers undertake the necessary task.

In the new system, on the other hand, the task of system maintenance used to be part of the watertender's job. The association, however, also required the farmers to help in maintaining the system. In 1977, for instance, the association scheduled a monthly maintenance workday. This schedule was not strictly followed, but farmers claimed that they worked as a group at least 10 days during that year. Four of these days were spent in lining with grouted stone riprap the portion of the canal below the siphons. Aside from the farmers, laborers hired by three farmers participated in the riprapping job. The cement used in riprapping was contributed by five farmers.¹¹

¹⁰Part of the cement used in the 1977 repair work was actually given by farmers who used the NIA-built system.

¹¹For this job, the farmers collected about 25 bags of cement. Not all of the cement was utilized in the riprapping job, however. The unused cement was given to the old system's farmers who used it in riprapping portions of the canal close to the old dam.

Conflict and conflict management. In the old system, the irrigation conflicts are mainly those caused by water stealing. Such disputes are usually settled by the farmers themselves. On certain occasions, however, water-theft conflicts may be brought to the attention of the barrio officials who, in turn, reprimand the offending farmer and advise the other farmer to share the available water.

In the new system, on the other hand, the disputes related to irrigation which involve only the farmers are water thefts and the leadership in the association. But a more significant conflict that besets the new system involves the farmers and the NIA. This conflict is on the turnover of the system's management to the farmers, through the association.

The water theft dispute in the NIA-built system is between the upstream and downstream farmers. This dispute began during the second crop season of the system's operation and it intensified during the third crop season. The watertender was caught in the fight between the upstream and downstream farmers over water use, and as a result, the watertender resigned from his job.

One of the questions which can be asked regarding the water theft dispute is the role played by the association officials in resolving the conflict. From all indications, the association officials did not put pressure on the upstream farmers to limit their water intake. The primary reason behind this seems to be that the association officials were powerless in invoking their positions since by doing so they would in effect claim water for their own fields. Three of the key officials of the association (the president, the secretary, and the treasurer) had fields in the downstream area.

Our conversations with the San Antonio farmers and other residents in the barrio reveal that in February 1978 (the latest election date of the association officials) the leadership of the association was contested by two groups. One of these groups, which we will call

Group A, is composed of young men in their early or mid-thirties. The core members of this group are three--all members of economically well-off and prominent families in Tabaco. Two of them are brothers, and the third person is a brother-in-law to one of the brothers. The head of this group is Oriz, the incumbent secretary of the association.

Group B, on the other hand, is composed of persons who permanently reside in San Antonio. The four-core members of this group are the incumbent president of the association, the 1976 association president, and two of the incumbent board members. All of them are related to one another, either by consanguinity or affinity. These persons are in the early forties or older. Unlike the core members of Group A who were involved in the association's affairs only after the system was constructed, the Group B core members have been involved with the association since its formation stage.

Prior to the February 1978 elections, Oriz, the leader of Group A, expressed his intention to vie for the position of association president. (It should be mentioned here that in 1977 Oriz actively participated in the association affairs. In fact, he assumed the duties of the secretary-treasurer after the person who held the position neglected his duties.) He discussed his desire with the farmers, telling them that he could do a better job as president because through his job as BAEx technician he has gained friends in the government and he knows how to deal with government agencies. He also sought the support of the 1977 president who had earlier expressed that he wanted to give up his position, and the president agreed that he would not run for a reelection.

When the other core members of Group B learned about Oriz's desire to become president, one of them invited the other members of Group B and their allies to a drinking session held the night before the election day. On this occasion, the core members of Group B convinced the incumbent president to run for reelection and they exhorted the other farmers present not to vote for Oriz. The main argument that was presented against Oriz was that he was not a resident nor native

of San Antonio. It was also discussed that if Oriz would become president he would likely direct the water into his field so he could obtain the good harvest that he had during the first crop season. It was implied in this discussion that Oriz had the highest yield during the first crop season because he instructed the watertender to keep his fields well-irrigated. After all, Oriz shouldered ₱40 of the watertender's ₱60-monthly salary.

In the election held the following day, the incumbent president was reelected. Only four farmers (about 20 attended the election) voted for Oriz. The reelected president who wanted Oriz to be part of the association then appointed Oriz as the association secretary. When Oriz learned about the election proceedings, he decided not to be involved with the association.

The dispute between the SAFIA and the NIA regarding the turnover of the management of the NIA-built system to the association may be better understood through a description of the meetings between the SAFIA and the NIA and the issues discussed during these meetings. Also discussed below are the actions which the San Antonio farmers took after the meetings and the views of the NIA personnel (who were involved with the turnover conflict) regarding the farmers' argument.

The first meeting between the SAFIA and the NIA regarding the turnover of the new system came soon after the October 1977 election of the SAFIA officials. A NIA team came to San Antonio, specifically to have the turnover papers signed by the association officials. The NIA team's visit came about a year after the construction of the system was finished or at the time when the farmers were going on their second rice crop. At this time, the fields at the downstream section of the system were already experiencing water shortage. Thus, in this meeting, the farmers aired their complaints about the inability of the system to deliver water. They stressed that while the system was supposed to serve about 265 hectares, at that time the available water could not even sufficiently serve the system's 27-hectare rice-field. The farmers argued that the system, particularly the main canal,

was poorly built and that the system's construction was far from completed. The NIA men countered that the system was complete and properly built. They also argued that the water problems encountered by the farmers were perhaps caused by the farmers' negligence in maintaining the system's structures.

The other important issue discussed at the meeting was the total cost of the construction of the system, which the NIA team said amounted to ₱125,000. When the farmers inquired as to how the money was spent, one member of the NIA team read out the various expense items and the total cost for each item. At one point, when one of the farmers questioned the reported cost for an expense item, a NIA personnel who was the foreman of the construction of the system reportedly answered the farmers in a loud voice. This person who was obviously drunk talked to the farmers while he was holding a bottle of liquor. The subsequent exchange of arguments became hostile. Then at the suggestion of one of the association officials, the farmers staged a walkout en masse, leaving the NIA team and the unsigned turnover papers behind.

The second meeting between the NIA personnel and the farmers was held in March 1978. This time, the NIA personnel came with a copy of the final financial statement on the cost of the system's construction. This document and the turnover papers were presented to the farmers through their president.

At this meeting, the farmers repeated their complaint that the system was not functioning as it should be because of defects on the system's structures, particularly on the main canal. The farmers then emphasized the fact that the irrigated fields had been reduced even to less than 10 hectares. The NIA personnel told the farmers that funds for the construction of the system had been depleted, but funds from other NIA projects could be tapped for the repair and rehabilitation of the system's canals once the formal turnover had been completed. One of the association officials then countered that the association would accept the turnover if the head of the NIA team would put in writing that additional funds would be made available for the repair

of the system's structures soon after the turnover. Since the head of the NIA team refused to put his statement in writing, the farmers argued that they would not accept the turnover of the system.

At this meeting, the farmers also again questioned some of the expense items included in the financial statement and they demanded that the receipts of all the transactions included in the financial statement be shown to them. The farmers' demand apparently irritated the head of the NIA team. He walked out of the meeting and soon other members of the NIA team followed. Thus, the meeting ended with the turnover papers still unsigned.

Before the NIA team left, they instructed the president to sign the turnover papers and to send the signed papers to the NIA office. It is interesting to note that unlike the turnover papers presented in the first meeting which bore the names of all 1977 association officials, the turnover papers left with the president in 1978 bore only his name, or required only the president's signature. Alarmed at being the sole person who would have responsibility on repaying the cost of the construction of the system, the president met with the other officials and farmers seeking their opinion on what should be done. The farmers were one in telling the president that should he sign the turnover papers he would have full responsibility of its consequences. Soon thereafter, the president sent the unsigned turnover papers back to the NIA, but he kept the copy of the financial statement.

The association officials then decided to air their complain about the NIA-built system with the regional office of the Department of Public Information in Legaspi. The officials believed that when the association's problem was made known to other people this would make the NIA act on the rehabilitation of the system. This action failed to accomplished anything, however. Subsequently, with the help of one of the COs in San Antonio, the officials drafted a letter to the editor of a Bicol weekly paper based in Naga City. In this

letter, the officials stated that they were asked to sign the turnover papers by the NIA but that they had refused to accept turnover because the system was not functioning properly. The letter also stressed that while the NIA had reported that the system was capable of irrigating about 200 hectares or more, the system was actually serving less than 10 hectares.

When the letter was passed around, however, only 14 farmers signed it. The farmers who did not sign the letter argued that the association should directly deal with the NIA and not attack it through a public letter.

As of June 1978, some officials and farmers thought that the best recourse that they could take was to request for an investigation of the records pertaining to the planning and construction of the system. Some farmers suggested that the association should write to the Secretary of the Department of Agriculture and asked for an investigation.

In our interviews with the NIA persons who were directly involved in the meetings with the SAFIA, we were told that the current state of the system should not be blamed on the NIA construction but on the management of the system by the association. They argued that the system was properly built and in fact the farmers enjoyed a good harvest during the first crop season. They further claimed that the only apparent reason why the farmers refused to accept the turnover was because the farmers did not like to repay the cost of the system.

When asked why the farmers were not given any water management training, particularly the watertender, the NIA personnel told us that the NIA had no funds for such training. One of the NIA personnel we talked to also said that even if the San Antonio farmers were trained they were so stubborn and hardheaded that the training would only be useless.

As to the farmers' demand to see the receipts and vouchers for the expenses incurred in the construction of the system, we were told that the NIA could not comply with this since the documents had been submitted to the auditor of the Commission on Audit (COA). Thus, if the farmers went to see the documents, they should make an effort to see the pertinent COA officials and not the NIA.

