

**ANNEX E**

*Water Management and O&M Practices*

**THE STUDY ON JALAU IRRIGATION SYSTEMS  
AND RURAL AREA DEVELOPMENT PROJECT**

**ANNEX E**

**Water Management and O&M Practices**

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## 1. PRESENT CONDITIONS

### 1.1 Organization and Function

The national irrigation systems (NIS) are one of the main responsibility areas of the NIA where the available service areas are over 1,000 ha. All NISs are managed by Irrigation Superintendents (IS) with their respective staff, depending on the size of the areas being managed (IS II > 4,000 ha and IS I < 4,000 ha). These NISs are under the direct supervision of the Regional Systems Management Division. The organizational charts of NIA Region VI Office and Jalaur-Suague River Irrigation System (JSRIS) Office are shown in Figures E.1.1 and E.1.2, respectively, and the JSRIS office manages the Jalaur proper RIS, Jalaur extension RIS and Suague RIS. The JSRIS office has technical, administrative and financial sections to function exclusively for the RIS and consists of five (5) main sections, namely Operation and Maintenance (O&M), Institutional Development, ISF Collection, Administrative and Equipment & Project Implementation Sections headed by an Irrigation Superintendent II (Ref. Figure E.1.2). The O&M, Equipment & Project Implementation and ISF Collection Sections are concerned with the water management and O&M activities.

The O&M Section has responsibility on the water management and O&M works for each RIS. There are 44 field O&M staff headed by three (3) engineers, namely Operation and Maintenance Engineers in the Jalaur proper RIS and the Suague RIS (Ref. Figure E.1.2). The O&M field staff consist of Water Resources Facilities (WRF) Technicians, WRF Operators and WRF Tenders. These staff are under the supervision of Operation and Maintenance Engineers in each RIS.

At the field level of the RIS, the irrigation service areas are normally divided into divisions of approximately 700-900 ha which are managed by the Water Resources Facilities (WRF) Technicians (Water Master) with two or three WRF Tenders (Ditch Tenders) depending on the size of the irrigation division and length of canals (WRF Tenders are normally assigned to a canal with 3.5 km length or 250-300 ha-irrigation service area). The diversion dam area is managed by the WRF Operator (Gate Keeper).

There are 11 irrigation divisions and 15 IAs in Jalaur proper RIS, and 4 irrigation divisions and 5 IAs in Suague RIS as shown in Figure E.1.3.

Presently, the WRF Technicians are responsible for system operation activities, maintenance of canals, and also act as collectors of Irrigation Service Fee (ISF) in their respective areas or division. The WRF Tenders are also deputized as assistant ISF bill collectors, as shown in Table E.1.2 (Table 2) and summarized below.

RIS	No. of NIA O&M Staff (WRF Technicians & Tenders) *1	No. of NIA O&M Staff deputized as assistant ISF bill collectors
Jalaur proper RIS	30	25
Suague RIS	11	8
Total	41	33

Note : \*1 : One team leader (WRF Technician) and one assistant team leader (WRF Tender) of Division 8, 9, 10 & 11 are excluded.

Source : NIA JSRIS Office

In addition, the ISF collection is carried out by the irrigators' association through the Type II Contract between NIA and IA.

In some divisions, there are no WRF Technicians but only WRF Tenders who are designated to discharge the former's functions. This improper work assignment of the O&M staff results in low O&M performance. The present NIA O&M staff are shown in Table E.1.3.

The O&M staff are presently divided into two functional groups: (i) the operations group and (ii) the maintenance group. The operations group undertakes the water delivery, gates operation, and other functions related to water delivery. Discharge measurements are likewise the function of this group. The maintenance group is tasked to clean and maintain the canal systems of the RIS. However, other canals are being maintained by the IAs through the Type I Contract granted by NIA. Hence, actual O&M activities are being done by O&M staff in coordination with the IAs.

In keeping track with the current trend of operation and maintenance activities, a monthly meeting between NIA and IA Officers is held regularly and this is supplemented by seasonal NIA-IA Operation and Maintenance Conference.

In the Jalaur proper RIS, one team leader (WRF Technician) and one assistant team leader (WRF Tender) from O&M staff are designated to coordinate the proper water delivery among the IAs and farmers in Division 8, 9, 10 & 11 (downstream area), and with the upstream area (Division 1, 2 & 3) and the midstream area (Division 4, 5, 6 & 7).

The JSRIS office has its own O&M equipment. Its equipment maintenance is done by the Regional Equipment Division personnel since only few mechanics are available in the JSRIS office.

## **1.2 Water Management Practices**

### **1.2.1 Water Delivery and Distribution Schedule**

The cropping calendar is prepared by the Irrigation Superintendent and staff of the JSRIS office on the basis of the probable water supply and rainfall. This is discussed and presented to the IAs for their guidance. In this manner, the farmers in the area are made aware of the timing of planting as scheduled by the JSRIS office. However, the cropping calendar is presently not being followed by the farmers because of the following reasons (Ref. Table E.1.1 (Table 12) and Annex B / result of farm household interview survey (Table B.2.5 / Question 90)) :

- (i) water delivery is not sufficient and stable due to water management problem and shortage of water supply from the river,
- (ii) water delivery is started regardless of farmers' preparedness to start their farming activities on time due to financial constraints, and
- (iii) farmers are doing advance planting in anticipation of high benefits as well as water shortage at the end of the dry cropping season (Jan.-Feb.) particularly in the downstream area.

Presently, the JSRIS office cuts off the water delivery after the second (dry) crop. The cut-off date is disseminated to the farmers for them to stop planting after the dry crop to avoid the possibility of crop failure. This practice is a standard operating procedure of the JSRIS office to give time for proper checkup and repair of structures and gates. This maintenance procedure is applied by NIA to all national irrigation systems (NIS), but due to the demands of some farmers and IAs, water delivery is sometimes extended in the project area.

The present schemes of water delivery and distribution schedule by system are as follows:

(a) Jalaur proper RIS

Continuous irrigation is adopted when water supply is available for all the system. However, rotational irrigation by laterals is implemented whenever intake discharge is very low and rainfall is inadequate. This schedule, except for the whole water delivery period, is not officially informed to the farmers and beneficiaries.

- Starting : May 16, 1997
- Stopping : March 15, 1998

(b) Suague RIS

Rotational irrigation is adopted in four RIS divisions with a duration of 3-day water delivery schedule for each area, and a 9-day interval before water returns to the first area. However, continuous irrigation is applied when water supply is available for all the divisions. This schedule, except for the whole water delivery period, is not officially informed to the farmers and beneficiaries.

- Starting : May 15, 1997
- Stopping : March 1, 1998

In some cases, these schedules are not followed by farmers due to insufficient water supply. This is also caused by inaccurate estimation of water supply due to the absence of proper measuring devices in the canals.

### 1.2.2 Water Management Practices

Intake discharge from the river is being recorded through the staff gauges. Normally, an annual calibration of intake discharge must be done to come up with a reliable discharge in the main canal. However, due to the shortage of competent technical staff and calibration equipment, intake discharge are not calibrated regularly. With the rapid siltation in the main canal, erroneous readings are obtained. No record of river discharge is being done at present. Thus, it is very difficult to conduct an effective water management in the system.

The IAs play a very important role in water management. Water delivery and distribution schedule, and cropping calendar and pattern are jointly determined by the O&M personnel, Institutional Development group and the IA officers through their Board of Directors (BOD) during the NIA-IA O&M conferences. Three types of conferences are held every cropping season, as summarized below:

- (i) NIA-IA O&M planning - which is conducted approximately one month before the start of wet cropping season. During this planning session, water delivery and cropping calendar and pattern are determined.
- (ii) NIA-IA mid season assessment - which is conducted after the area has been totally planted to evaluate the outcome of land soaking/land preparation activities, and implement program for crop maintenance.
- (iii) NIA-IA post-harvest season evaluation - which is conducted after the area has been totally harvested to evaluate the outcome of the season's operation activities, and prepare plans and programs for the succeeding cropping season.

The JSRIS adopts a sequential start for land soaking during the initial release of irrigation water (usually during the months of April and May) until the entire area of the system is totally soaked with water.

### **1.3 Operation and Maintenance Practices**

#### **1.3.1 Current O&M Method for Existing Facilities**

##### **(a) O&M method for diversion dam**

Dam-site areas and gates at diversion dam are being operated and maintained by the WRF Operators assigned in the area. Their specific responsibilities includes the maintenance of records on intake discharge, rainfall, water level elevation, and maximum and minimum flood elevations. However, the recording of intake discharge is not being done properly due to absence of proper measuring device.

##### **(b) O&M method for the gates and structures**

Control structures and gates along the main canal and laterals are being operated and maintained by the WRF Technicians and WRF Tenders within their areas of jurisdiction. No such records as discharge and water elevations are being maintained at present.

Gates and structures are regularly checked by the maintenance crews by taking off floating debris and applying lubricants to the mechanical parts of the gates. Major repairs are scheduled whenever the physical condition of these facilities has become worst, but repairs are simultaneously conducted with water delivery by proper scheduling.

##### **(c) Maintenance method for the main and lateral canals**

Maintenance of main and lateral canals are being done by the existing WRF Tenders and the IAs with Type I contracts as shown in Table E.1.3. The WRF Tenders who are assigned to clean the canals are given 3.5 km as their section areas. Cutting of grasses along the main and lateral canals is to be done every 45 days. If there are no existing WRF Tenders in the area and no Type I contract, maintenance works are being done by the maintenance crew of the JSRIS office. The Irrigation Superintendent (IS) is grouping the WRF Tenders from several RIS Divisions to act as a maintenance crew, where each group is assigned to sections that need immediate cleaning.

The desilting works and the rehabilitation and improvement works of existing facilities in the main and lateral canals are being done under several projects such as the Irrigation Operations Support Project (IOSP) and through the General Appropriation Act (GAA). These maintenance costs are shown in Table E.1.4. The present canal desilting work are insufficient and irregular for effective water delivery due to lack of O&M budget as shown in Table E.1.5. The frequency of canal desilting work is also quite low as shown in Table E.1.1 (Table 14).

##### **(d) O&M method for on-farm facilities**

Operation and maintenance of on-farm facilities such as main farm ditch is being done by Turnout Service Area (TSA). This is directly undertaken by the Turnout Service Area Groups (TSAGs) of the IAs and individual farmers of the concerned facilities in the area (Ref. Table E.1.3). However, the TSAGs (including the other farmers) in some areas do not perform this responsibility because of unclear definition of responsibilities among the IA members and farmers.

(c) O&M manuals

The NIA has prepared "General Operation and Maintenance Manual" for all RISs and "Specific Operation and Maintenance Manual" for the Jalaur-Suague RIS as guidelines for the operation and maintenance in 1991 as a part of Irrigation Management Information System (IMIS) under IOSP I. However, these manuals are not being utilized by the O&M staff in the project area because they are not practical and easily comprehensible, and also are not widely disseminated in the systems.

The IMIS is one of components of IOSP I which has selected two RISs (i.e., Jalaur-Suague RIS and Pangiplan RIS) as the priority areas in Region VI. However, it was not implemented to the fullest due to fund constraints but has been recognized as an indispensable tool for the RIS. With experience gained during the IOSP I, the program activities would focus on generating the following data and information:

- (i) Operation aspects
- (ii) Maintenance aspects
- (iii) Collection aspects
- (iv) Expenditures
- (v) Production aspects
- (vi) Organization and training of IAs

Under the IOSP II and WRDP, IMIS is considered very important for efficient and effective management of the RIS. However, the O&M manuals prepared for the IMIS are not widely known and hence not utilized by the O&M staff in the project area. Under the IOSP II, the NIA regional staff have conducted only the training to IDOs of the JSRIS office. Under the WRDP, no actual activity is undertaken in the area. This project is still on the planning stage at the NIA central office. In general, there is no proper follow-up activities for the IMIS in the project area.

(f) O&M equipment

At present, the Jalaur-Suague RIS office has 17 units of construction and O&M equipment and 29 vehicles as shown in Table E.1.6. Of the total 46 equipment and vehicles, 40 are operative but the average use-age of these operative units exceeds 10 years.

In general, the existing operative equipment and vehicles seem to be inadequate to enable the JSRIS office to meet the effective and proper O&M requirements of the two RIS under consideration.

### **1.3.2 Budget Planning, Actual Income & Expenses and Irrigation Service Fee (ISF) Collection**

(a) Budget planning

Every year, the JSRIS prepares a budget for the next fiscal year based normally on the actual personnel salaries and wages plus other incentives, and the plans for hiring additional personnel as the case maybe. This also includes Maintenance and Other Operating Expenses, such as power, mails, supplies, and gasoline and fuel for the regular operation of the JSRIS office. The budget plan does not provide for desilting works and rehabilitation and improvement works of existing facilities in the main and lateral canals. The budget plan prepared by the JSRIS is reviewed by the Regional Manager for eventual submission to the Central Office for approval and funding.



For the projects which are being implemented in the current fiscal year, additional workers are hired based on their organizational chart approved by the NIA Regional Office. Any unexpected damages to its property will require the preparation of the Program of Work (POW) for submission to the Central Office to request for the needed budget.

In the budget preparation, the estimated expenses and income for the current year are included. In this manner, the NIA management could determine if a certain unit is viable (with surplus) or on deficit status. The estimated income for the year includes ISF collection and equipment rental from NIA projects and/or from private lessees and other government agencies, including other minor income such as certification fees, sale of scrap, and rent of office facilities.

(b) Actual income and expenses

The income of the JSRIS office includes the equipment rental from NIA projects but it cannot be used for operation and maintenance in the RIS. Such income from equipment rental is mainly utilized for the operation of the NIA Region VI office. The JSRIS office can only utilize the income from equipment rental paid by private lessees and other government agencies. However, this income is not regularly expected because the priority use of equipment is for system O&M. The actual income from equipment rental is shown in Table E.1.7. Hence, the ISF income is the main budget source of the JSRIS office, making the ISF collection the most important activity for sustaining its O&M works. The actual income and expenses of the JSRIS office are shown in Table E.1.8.

(c) ISF collection

The present level of ISF collection and its efficiency is shown in Table E.1.9. The collection efficiency of the two RIS is lower than the national average of 48% in 1995 (Ref. Table E.1.10) due to some causes as mentioned in Section 1.4 and inefficient legal procedure for non-payment of ISF as below.

Non-payment of ISF by water users contributes to the low income of the JSRIS office. Presently, there are 176 delinquent water users reported in the project area from 1993 to 1995 (Jalaur proper RIS: 147, Suague RIS: 29) as shown in Table E.1.11 and summarized below. A subpoena has been sent to these water users by the Provincial Prosecutor, but 71 of them have still not settled their back accounts to date.

Delinquent water users listed up from 1993 to 1995

RIS	Subpoena	Non-Payment of ISF after subpoena
Jalaur proper RIS	147	60
Suague RIS	29	11
Total	176	71

Source : NIA JSRIS Office

From 1995 to the present time, another 561 water users have been listed as delinquents. Of these, 547 have not paid their ISF after a letter of reminder was sent to them by the JSRIS office due mainly to inefficient legal procedure among others. The breakdown of these delinquent water users in the two RIS is shown below:

Delinquent water users listed up from 1995 to 1997

RIS	List up	Non-Payment of ISF after reminder
Jalaur proper RIS	442	434
Suague RIS	119	113
<b>Total</b>	<b>561</b>	<b>547</b>

Source : NIA JSRIS Office

The number of delinquent water users by farm size is summarized in Table E.1.11 for back accounts and Table E.1.12 for current accounts. These data show two main trends:

- (i) Water users in the downstream area tend to have a higher willingness to pay ISF than those in upstream areas, especially if they have sufficient money to pay ISF. Even if they cannot pay their ISF current accounts on time due to low production caused by insufficient water supply, they seem to exert efforts to pay their back accounts to avoid the possibility of water cut-off which the JSRIS office normally imposes on delinquent water users.
- (ii) Water users which have less than 1.0 ha and more than 5.0 ha seem to be more punctual in paying the ISF than those with farm areas between 1 - 4 ha.

It seems that the present eight-step legal procedure for non-payment of ISF is not very effective to force the delinquent water users to settle their back and current accounts with NIA on time. As shown in Figure E.1.4, this procedure takes more than five months for the Provincial Prosecutor to issue the subpoena to the delinquent water users.

#### 1.4 Main Causes of Poor Water Management and O&M Practices

The poor water management and O&M practices in the system are mainly caused by the following factors, as shown in Figure E.1.5.

##### (a) Water management

The poor water management can be mainly attributed to improper water delivery and distribution schedule. Under the present situation, the cropping calendar is not being followed by the farmers, thereby resulting in inefficient use of water. The water delivery and distribution schedule is also not properly being prepared based on the actual water availability and actual farming condition due to the absence of proper monitoring system, particularly the appropriate measuring devices for intake and river discharge.

##### (b) O&M practices

The poor O&M practices can be mainly attributed to insufficient O&M cost due to low ISF collection and inadequate O&M competence on the part of O&M staff and the IAs.

##### Insufficient O&M cost (Low collection of ISF)

Present ISF collection is lower than the actually required O&M costs, causing difficulty for the JSRIS office to allocate adequate funds for O&M work of the system facilities. Presently, the salary of the O&M personnel has not been paid regularly for two months due to lack of the JSRIS office budget. The insufficient O&M cost (low collection of ISF) is mainly caused by the following:

(i) Inefficient use of irrigation service area

Irrigation service areas are not efficiently utilized by farmers due to insufficient water supply and improper water delivery (Ref. Table E.1.1 (Table 8) and Annex B / result of farm household interview survey (Table B.2.5 / Question 81)). This contributes to low ISF collection which is not sufficient for proper O&M of the RIS.

(ii) Low farm incomes of water users

At present, most of the water users have low farm incomes due to poor paddy production that deprives them to sell enough surplus of paddy. Hence, they are mostly faced with cash flow problem that makes them unable to pay ISF, despite the fact that some of them in upstream areas can avail sufficient irrigation water for their farms (Ref. Table E.1.2 (Table 5) and Annex B / result of farm household interview survey (Table B.2.5 / Question 109)).

(iii) Low level of awareness and willingness of water users for ISF payment

At present, it seems that ISF payment is a low priority for some water users due to low level of awareness and willingness of water users for ISF payment (Ref. Table E.1.2 (Table 5) and Annex B / result of farm household interview survey (Table B.2.5 / Question 109)).

(iv) Improper evaluation of benefited area and production

At present, most of the O&M staff are assigned in the same areas for long period of time as summarized below (Ref. Table E.1.1 (Table 1)) :

RIS	Assignment period in the current area			Total (persons)
	0 - 10 years (persons)	10 - 20 years (persons)	20 years or more (persons)	
Jalaur proper RIS	4	6	22	32
Suague RIS	1	7	3	11
Total	5	13	25	43

Source : NIA JSRIS Office

This situation has developed into some kind of familiarity and relationship between the O&M staff and water users that constraints the former to conduct proper, strict and accurate evaluation of the benefited area and production to determine the ISF. Such improper evaluation is also being tolerated by the O&M staff.

In addition, there is no practical standard to evaluate the benefited area and each O&M staff uses his own individual evaluation method. This practice results in the inaccurate evaluation of the benefited areas, as reported to the JSRIS office, which are smaller than actual benefited area.

(v) Poor database management on ISF billing and collection records

The present billing works are not properly done due to shortage of competent billing clerks and insufficient training program (computer operation and management) for them. Under such situation, such billing and collection documents are also not promptly prepared by the billing clerks, and issuance of the ISF bills to the water users are not done on time after evaluation of billing and some ISF collectors start ISF collection without official billing documents. It causes non-payment of ISF by the water users.

The ISF collectors have also no clear demarcation of their area assignment to be covered for ISF collections. There is no effective checklist of water users to clarify the progress and status in the collections.

Their activities are hampered by their lack of knowledge for ISF collection caused by insufficient training and seminar program.

At present, the billing clerks are not using computer for their activities in an effective manner due to shortage of the equipment in the JSRIS office.

#### Inadequate O&M Competence (NIA & IA)

The inadequate O&M competence of NIA staff and the IAs is mainly caused by the following:

(i) Improper irrigation facilities due to deterioration / Lack of measuring devices for canal discharge

Irrigation water discharge in canals is not properly operated and recorded even at major stream points due to the absence of workable control structures. Compounding this is the deterioration of existing structures, which were constructed with improper design, and with no proper measuring devices.

Irrigation water is not supplied effectively due to siltation problem in the canals and shortage of budget for the regular desilting work.

(ii) Insufficient training program for O&M staff

The shortage of competent technical staff also causes the low O&M performance of the RIS. This can be partly attributed to insufficient training program for the O&M staff (Ref. Annex F).

(iii) Improper work load of NIA O&M staff

The improper work load assignments of the O&M staff such as WRF Technicians and Tenders affect their performance in O&M works because they could not concentrate on their normal functions.

(iv) Absence of practical O&M manuals

As mentioned earlier, the existing NIA manuals ("General Operation and Maintenance Manual" and "Specific Operation and Maintenance Manual") are not being utilized by the O&M staff because these are not practical and easily comprehensible. These manuals are also not widely known among the JSRIS staff.

(v) Illegal water diversion

Illegal diversion of irrigation water is being practiced by the water users in the upstream area. This causes difficulty for the O&M staff to conduct proper and effective operation of irrigation water delivery and distribution.

## **2. IMPROVEMENT PLAN OF WATER MANAGEMENT AND O&M PRACTICES**

### **2.1 Basic Concept**

The main purpose of the improvement plan is essentially to address the physical, technical and financial constraints confronting the NIA-JSRIS office and IAs relative to such works. This will be achieved through the following measures: (i) strengthening of the JSRIS office; (ii) improvement of the monitoring system for proper water delivery and distribution schedule; and (iii) improvement of the financial and technical capacities of the NIA and IAs for sustained O&M practices. A two-phased approach will be adopted to ensure the sustainability of water management and O&M practices in the Jalaur proper and Suague RIS, particularly after project assistance phases out. In Phase I, the implementation of Type I and II contracts by the IAs (first four years during detailed design and construction period) will be considerably improved, while Phase II will initiate the implementation of partial system management by the strengthened IAs (beginning on the fifth year of the detailed design and construction period).

The proposed improvement plan is further formulated to address the main causes of poor water management and O&M practices mentioned in Section 1, and as diagrammed in Figure E.2.1. This plan consists of the following components and activities:

- (1) Strengthening of the JSRIS office
  - (a) Restructuring of the Jalaur proper and Suague O&M sections,
  - (b) Recruitment of additional O&M staff for improved water management and O&M practices, and
  - (c) Proper work load assignment for O&M staff.
- (2) Improvement of monitoring system
  - (a) Installation of proper measuring devices for intake and river discharge, and
  - (b) Establishment of computerized system and communication system.
- (3) Improvement of financial and technical capacities of the NIA and IAs
  - (a) Improvement of the ISF collection system to ensure sufficient O&M budget to complement the improvement plans on the other components of the project as discussed on Annexes C to G. Specifically, the activities will include:
    - (i) Proper turn-over of ISF collection responsibility from the NIA deputized collectors to the IAs based on Type II contract in all IA areas in phase I and based on partial system management in phase II,
    - (ii) Improvement of ISF evaluation policy and periodic rotation (exchange and transfer) of NIA's O&M staff for accurate and fair estimation of benefited area and production,
    - (iii) Establishment of proper database management for ISF billing and collection records preparation,
    - (iv) Streamlining of legal procedure for non-payment of ISF, and
    - (v) Increase of incentives to the IAs for ISF collection.
  - (b) Adequate skills on O&M through the following:
    - (i) Preparation of practical O&M manual,
    - (ii) Development of appropriate training program for NIA JSRIS staff and the IAs, and

- (iii) Rehabilitation and improvement of irrigation facilities, installation of proper measuring devices for canal discharge and provision of sufficient O&M equipment.

## **2.2 Strengthening of the JSRIS Office**

### **2.2.1 Restructuring the O&M Sections of the JSRIS Office**

The present organization of the RIS will be strengthened to effectively meet the water management and O&M requirements in the project area, as shown in Figure E.2.2. This will envisage the establishment of two (2) separate sections: Water Management Section and O&M Section. These sections will replace the existing two (2) O&M sections of the JSRIS office for Jalaur proper and Suague RIS.

The main functions of these new sections will be as follows:

#### **(a) Water Management Section**

The section will be reorganized to compose of Hydrologist, Irrigation Engineer and Agriculturist as shown in Figure E.2.2. The main responsibility of the section will cover the preparation of water delivery and distribution schedule, and cropping calendar. These activities will be prepared by the use of meteorological and hydrological data, and field data on water discharge and farming activities recorded by the field O&M staff in the O&M Section of each RIS through the proposed monitoring system.

#### **(b) O&M Section**

The section will be composed of two units, i.e., Jalaur proper RIS Unit and Suague RIS Unit, and staffed with operation and maintenance engineers and field O&M staff as shown in Figure E.2.2. This section will handle the operation of water control structures, the maintenance of the RIS facilities and recording of field data, such as water discharge and farming activities. The information gathered will be utilized in the Water Management Section through the monitoring system, and maintenance of the RIS facilities.

### **2.2.2 Recruitment of Additional O&M Staff for Improved Water Management and O&M Practices**

Recognizing the lack of O&M staff, additional staff will be recruited to augment the present manpower, particularly in the early stages of institutional strengthening of the NIA and IAs. The personnel recruitment and assignment is contingent on the specific type of system management, as shown in Table E.2.1. The proposed types of system management under Type I and II contracts (Phase I), and partial system management (Phase II) are shown in Figure E.2.3.

#### **(a) Phase I (Type I and II contracts)**

The number of WRF Technicians and WRF Tenders will be increased from the present 8 and 35, respectively, to 15 and 42 to achieve the following standard ratios (Ref. Table E.2.1):

- (i) One WRF Technician for every RIS division (700-900 ha), and
- (ii) One WRF Tender for every 3.5 km canal length (250-300 ha).

The additional O&M staff will be hired as contractual employees up to the end of Type I & II contract implementation (Phase I), and such number is within

the approved positions by the Department of Budget and Management. For the ISF collection activities, only one (1) NIA collector will be retained in each IA area to provide continued technical assistance to the IAs during the Phase I. The services of this collector will be terminated in the Phase II as the IAs fully assume the ISF collection. This arrangement will allow the WRF Technicians and WRF Tenders to concentrate on their usual O&M works in a more effective manner.

The proposed increase of NIA O&M staff in Phase I (first 4 years of project implementation) is temporary and will be hired on contractual employment. The number of these staff will be reduced by 20% of the present number in Phase II. This proposal will be in conformity with the NIA policy regarding the employment of staff as mentioned below:

- (i) For permanent personnel, filling up of positions vacated by some staff who have recently retired is not allowed in line with the national government policy on fiscal austerity measure (Attrition law).
- (ii) For temporary / contractual personnel, the hiring of staff depends on the availability of RIS budget from ISF collection and other income, and subject to the approval of NIA central office.

Type I & II contracts shall be implemented in Phase I in all IA areas as a first step of the plan for the improvement of O&M performance of the RIS in the project area.

(b) Phase II (Partial system management)

However, the final target of the system's O&M work will be to turn over this responsibility to the IAs under a partial system management after the Phase I. In Phase II, the WRF Technicians will be retained in all the divisions. Only one (1) WRF Tender will be retained in each IA area to provide continuous technical assistance to the IAs (Ref. Table E.2.1). Hence, the O & M expenses of the RIS office will be considerably reduced at the start of Phase II.

(c) Water management

For the Water Management Section, one (1) Hydrologist and one (1) Irrigation Engineer will be newly designated or recruited to fill up the gap in the present manpower complement of the JSRIS office.

The proposed organization of water management, O&M and ISF collection Sections in Jalaur proper RIS and Suague RIS and the proposed persons responsible for the improvement plan are shown in Figure E.2.2 and Table E.2.2, respectively.

### 2.2.3 Proper Work Load Assignment for O&M Staff

The present condition on the O&M assignment, as shown in Table E.2.1, indicates the lack of O&M personnel in some divisions particularly the WRF Technicians, resulting in work overload for most of the existing personnel as mentioned in Section I.

Furthermore, most of the O&M staff are assigned in the same area for a long period of time. Under this situation, familiarity and relationships with water users have been deeply established. In many instances, accurate, fair and proper evaluation of benefited area and production as bases of ISF billing are hardly done. Some O&M staff have tolerated this flawed evaluation system. To rectify this situation, periodic rotation

(exchange and transfer) of the O&M staff assignment in the RIS will be considered to enable them to gain wider experience and exposure.

## **2.3 Improvement of Monitoring System**

### **2.3.1 Importance of Monitoring System**

The cropping schedule will be the basis for the preparation of irrigation water delivery and distribution schedule for the RIS. Monitoring system for the regular estimation of actual available water supply and assessment of actual farming condition in each RIS will serve as the bases for continued and systematic updating of the cropping calendar. Specific farming activities and conditions shall be properly clarified in the field prior to the preparation of cropping calendar by the Agriculturist of the RIS office in coordination with the IAs and MAO technicians.

For the regular estimation of actual available water supply, proper and regular data recording of the river discharge and intake discharge through the monitoring system should be done by the use of measuring devices. The installation of measuring devices will be an important part of the monitoring system to be developed by the Project, and incorporated in the practical O&M manual as discussed in Section 2.4 below.

Information dissemination on the water delivery and distribution schedules will be integrated in the IA continuing education program under the institutional development plan to cover all IA members. The JSRIS office shall also assist the IAs in informing other non-IAs water users about the detailed rotational irrigation program and the cropping calendar as well as the whole water delivery period for their proper guidance.

### **2.3.2 Proposed Monitoring System**

The proposed monitoring system will be composed of collection of field data such as farming activities, rainfall, river water level, canal water level and gate opening, data processing, and evaluation by means of wireless radio and computer as shown in Figure E.2.4. For the monitoring activities, the Water Management Section and Operation and Maintenance Section will be established as shown in Figure E.2.2.

The collected data will be transmitted by wireless radio to the RIS office on time through the communication system. The wireless radio will be set in the RIS office as a base station and carried by the field personnel such as the Operation and Maintenance Engineers, Agriculturist and the WRF Technicians, and installed at each diversion dam site and each IA office to be proposed during Phase I and II period.

The data processing consists of the conversion of collected data into the necessary dimensions required for the preparation of water delivery and distribution schedule.

The seasonal, monthly and weekly water delivery and distribution schedule will be modified and finalized based on the evaluation results at the proposed Water Management Section in the RIS office. The modification will be based on the updated cropping calendar through the proposed monitoring system in accordance with the yearly water delivery and distribution schedule prepared by the RIS office in coordination with the IAs before the wet season cropping.

The Irrigation Scheduling System will be developed to support the proposed monitoring system. The objectives of the System will be to facilitate the scheduling and operation of the irrigation system for preparing annual, seasonal, monthly and weekly irrigation schedule, water balance and delivery schedule within a short time. The



System will be a personal computer software package of integrated database for efficient operation and maintenance of the irrigation system. It will simultaneously maintain the database of hydrological data of rainfall and river discharge. Moreover, the System will give graphical information output on the computer's screen for the irrigation area, cropped area, and delivery discharge at major canals to make operation and monitoring of the irrigation system easier.

The plan will be composed of the following:

(a) Seasonal management plan

In accordance with the yearly water delivery and distribution schedule, the Water Management Section of the RIS office will prepare the seasonal management plan for the RIS. This plan will be clarified based on the available cropped area and cropping calendar.

(b) Monthly management plan

After the irrigation has started, the seasonal plan will be checked and corrected by the weekly water balance study, and monthly water delivery and distribution schedule will be prepared for each month.

(c) Weekly operation plan

This plan will be prepared for the subsequent week's operation from the result of water balance study for the previous week based on the operation monitoring records and actual farming activities. The weekly operation plan will indicate the volume of irrigation water delivery and distribution schedule at each point up to the turnout level of the field.

According to the weekly operation plan, the operation staff will be assigned at the irrigation facilities to control the irrigation water delivery and distribution as shown in Table E.2.2. The irrigation water delivery and distribution, meteorological and hydrological features, and actual farming activities in each RIS will be monitored and recorded by the Water Management and O&M Sections staff through the monitoring system.

The computers for the computerized system and the wireless radio (hand-held) sets and motorcycles for the communication system will be provided to the concerned JSRIS staff and the IAs for upgrading of the present monitoring system through the establishment of computerized system and communication system. The proposed equipment for the computerized system and communication system are shown in Table E.2.3.

The specific type of irrigation method to be adopted for the RIS will depend on the actual available water supply. Whenever necessary, proper rotational irrigation program will be prepared for both the Jalaur proper and Suague RIS to institute systematic procedure and increase irrigation efficiency as the proper irrigation water delivery and distribution schedule.

In the Suague RIS, the rotational irrigation program will be applied and promoted in accordance with the improvement plan on irrigation and drainage facilities as discussed in Annex D. It will also be periodically modified on the basis of actual water supply obtained through the monitoring system. For the sustainability of the proper rotational irrigation program, improvement of consciousness and understanding of the water users on the rotational irrigation program conducted by the RIS office in coordination with the IAs, and the strict and fair operation and monitoring of water delivery and distribution will be indispensable to avoid illegal water diversion outside of the area to be irrigated.

## 2.4 Improvement of Financial and Technical Capacities of the NIA and IAs

### 2.4.1 Improvement of the ISF Collection System and Necessary O&M Budget

#### (1) Improvement of the ISF collection system to ensure sufficient O&M budget

This component will undertake the following activities to increase the collection of ISF:

##### (a) Proper turn-over of ISF collection responsibility to the IAs

As shown in Table E.1.9, Type II contract has been applied in only one (1) irrigation division out of fifteen (15) divisions in 1996. In most of cases, the ISF collection is being done by the WRF Technicians and Tenders who are deputized as the NIA collectors. Presently, the ISF collection efficiency is too low compared with the national average regardless of the method of collection. In the case of the Jalaur proper RIS, the ISF collection efficiency of the IA with Type II contract is lower than that of the NIA's hired collectors.

However, such comparison is not conclusive due to only one (1) IA with Type II contract and the fact that training for IA members, preparation of responsible IA committee and proper incentives are not fully in place. Hence, the implementation of Type II contract for ISF collection will be pursued by the project with proper training and assistance to the IAs. This arrangement recognizes the following merits of Type II contract.

##### (i) Reduction of administration cost of the NIA and proper work load of the NIA field staff

Type II contract minimizes administrative cost of the NIA in view of reduced maintenance personnel and ISF collectors during implementation of partial system management by IA. The lower ISF collection efficiency of the IA with Type II contract in the project area compared with the NIA's hired collectors could not be totally attributed to the low technical capability of the IA but also to the following:

- the manner by which this task is introduced to the IA, i.e., treating the IA as contractor rather than partner in irrigation management,
- the low and less attractive incentives given to the IA in ISF collection,
- the lack of practical, easy-to-use manual on O&M practice, and
- the ineffectiveness of organizational development process.

Proper measures to correct and upgrade these present conditions will motivate the IA to exert more efforts to increase ISF collection efficiency and improve system operation.

##### (ii) Real meaning to the concept of farmers' participation

Type II contract gives real meaning to the concept of farmers' participation in the operation and management of the RIS which would enable the farmers' group (IA) to build up capabilities and develop a process to sustain and control the O&M of irrigation canals / facilities. Further, it will serve as an on-the-job training for the IA to undertake partial system management (partial turnover to IAs) at the appropriate time as specified in implementation schedule for strengthening of farmers' organizations (Ref. Annex F).

(iii) Confidence among IA farmer-members

Type II contract builds confidence among IA farmer-members that the government is entrusting them to carry out more responsible tasks such as system operation normally done by technical people.

(iv) Strategy to build up working capital for the IA

Type II contract offers an strategy to build up working capital for the IA if the IA shares from ISF collection would be granted at the time when there is a need for working capital.

(b) Improvement of ISF evaluation policy for accurate and fair estimation of benefited area

There is presently no standard procedure for the evaluation of benefited area, making the NIA's O&M staff to develop their own individual methods. Under this situation, the benefited areas reported to the JSRIS office are smaller than actual benefited area, and this contributes to the low billing for ISF. Active cooperation of the water users to rectify the present situation is expected to be enhanced if they will get a fair compensation for their extra efforts to report the right information on benefited area through a discount on ISF payment.

To achieve a fair and higher ISF collection, a new policy for the evaluation of ISF will be established to replace the present basis for ISF payment in order to give more incentives to the water users to pay ISF on time. For example, the production of 40 cavans/ha or more will be defined as the benefited area but the ISF will be determined as follows:

40 - 41 cavans/ha	:	50 % less of full payment
42 - 43 cavans/ha	:	40 % less of full payment
43 - 45 cavans/ha	:	30 % less of full payment
46 - 47 cavans/ha	:	20 % less of full payment
48 - 49 cavans/ha	:	10 % less of full payment
more than 49 cavans/ha	:	full payment

This new scheme for ISF collection will be properly explained and disseminated to the water users through the IAs with the support of NIA's IDOs.

(c) Establishment of proper database management for ISF billing and collection

With the use of computers, a database management for the preparation of ISF billing and collection forms will be established at the ISF Collection Section of the JSRIS office. This database will have two main file components: (i) database on water users and (ii) database on ISF billing and collection.

The database on water users will include the list of actual water users (farmers and beneficiaries), lot No., their residential addresses, the sizes of their farms, the status of ISF payment, etc.. The database on ISF billing and collection will include the evaluated benefited area in each IA/division, the back and current accounts, the status of ISF collection, the list of delinquent water users, etc.. Updating of these information will be carried out by the billing clerks in coordination with the IDOs.

Based on updated databases, the billing clerks will prepare the ISF billing documents containing the names, lot No. and addresses of water users, amount of ISF to be collected, etc. for distribution to the ISF collectors and the IAs through the IDOs within two weeks after harvest in each IA area based on evaluated benefited area reported by NIA's Agriculturist. The ISF collectors will then arrange the schedule for the collection of ISF through the respective TSAGs.

Upon receipt of the ISF payments from ISF collectors, the billing clerks will prepare ISF collection report for submission to the Irrigation Superintendent on a weekly and monthly basis. The same report will be furnished to the IAs for their dissemination to their members and as basis for the collection of their ISF incentives. Two kinds of ISF collection reports shall be prepared by the ISF Collection Section for the use of NIA and other supporting organizations, and another for the use of the IAs in popular form.

The computer should be provided to the billing clerks in order to store and process the basic data for the ISF collection, and prepare the billing and collection documents properly, systematically and promptly (Ref. Table E.2.3).

(d) Streamlining of legal procedure for non-payment of ISF

At present, the billing clerks of the JSRIS office are carrying out the legal procedure against delinquent water users as recommended by the ISF collectors, as shown in Figure E.1.4. However, it takes more than five months under normal condition to complete such procedure from the issuance of NIA's "letter of reminder" and "statement of ISF accounts" up to the preparation of "promissory note" on ISF payment by the delinquent water users through the subpoena issued by the Provincial Prosecutor. In order to accelerate the collection of ISF accounts, a streamlining of legal procedure is proposed to be applied by the JSRIS, as shown in Figure E.2.5. The proposed legal procedure against the delinquent water users is considered favorable for the government by the Legal Counsel for NIA Region VI office.

As regards the penalty on the non-payment of ISF, the present penalty charge of 1% per month for non-payment of ISF seems too low to discipline effectively the delinquent water users, because so large amount of back account of ISF are not yet paid by the delinquent water users. An alternative is to increase the penalty rate to decrease the number of non-paying water users, and heavier penalty will be imposed in case of willful neglect. However, the penalty for non-payment of ISF seems ineffective according to the results of farm household survey (36% of farmers of all the total answer consider the penalty charge ineffective.).

Accordingly, instead of increasing the penalty rate, institutional development of farmers' organizations should be done to improve their level of consciousness (awareness and willingness) to pay ISF properly and regularly. The importance of irrigation and ISF in the O&M cost to sustain the irrigation system should be understood among the water users by mutual consent. And also institutional strengthening of the IAs will be improved to raise their technical and financial capacity to pay ISF and to assume the O&M responsibility for the irrigation facilities as the partial system management (Ref. Annex F).

(e) Increase of incentives to the IAs for ISF collection

Under the present Type II contract, total current account collection from the IA during the wet and dry seasons is shared between the NIA and the IA in favor of the latter if the collection efficiency exceeds 50%. The NIA releases the computed IA share within 90 days after the year end. The IA incentive given under the operation and ISF collection contract is based on levels of collection which are as follows:

Collection efficiency (%)	Incentives to IA
0 - 50	0%
51 - 60	2%
61 - 70	5%
71 - 90	10%
91 - 100	15%

Accordingly, no incentive is given to the IA in case the collection efficiency does not exceed 50%. In order to encourage the IA to implement Type II contract and to improve the present low level of ISF collection by IA, additional incentives (e.g., 1% incentive for 41-50% efficiency and 0.5% incentive for 31-40% efficiency) will be considered for collection efficiency of less than 51%.

As stated above, the IA normally receives the above share after 90 days of the year end in the present condition. The NIA should promptly release IA share to give its members some budget for farming activities and for building up working capital for the association.

## (2) Necessary O&M budget

As mentioned in Section 1, present O&M budget (ISF collection) is lower than the actually required O&M costs. Sufficient and adequate O&M budget should be ensured in order to materialize proper and effective O&M works of the system facilities. The proposed necessary O&M budget of the JSRIS office for the O&M of Jalaur proper RIS and Suague RIS is estimated as shown in Table E.2.4 and summarized below. This estimate is divided in two phases (i.e., Phase I : implementation of Type I and II contracts by the IAs, Phase II : implementation of partial system management by IAs) as proposed in Section 2.1.

Necessary annual O&M budget for Jalaur proper RIS and Suague RIS

Description	Phase I	Phase II	
		Implementation Stage	Sustainability Stage
<b>Jalaur proper RIS (ISA : 8,820 ha)</b>			
- Necessary O&M budget (pesos 1,000)	13,009	10,175	7,708
Necessary ISF collection efficiency *1	82%	64%	49%
ISF collectible (CA) (pesos 1,000) *2	15,876	15,876	15,876
Benefited area (ha) *3			
Dry cropping	8,820ha	8,820ha	8,820ha
Wet cropping	8,820ha	8,820ha	8,820ha
<b>Suague RIS (ISA : 2,900 ha)</b>			
- Necessary O&M budget (pesos 1,000)	3,917	3,389	2,515
Necessary ISF collection efficiency *1	128%	111%	82%
ISF collectible (CA) (pesos 1,000) *2	3,060	3,060	3,060
Benefited area (ha) *3			
Dry cropping	900ha	900ha	900ha
Wet cropping	2,900ha	2,900ha	2,900ha
<b>Total of necessary O&amp;M budget (pesos 1,000)</b>	<b>16,926</b>	<b>13,564</b>	<b>10,223</b>
<b>Total of ISF collectible (CA) (pesos 1,000)</b>	<b>18,936</b>	<b>18,936</b>	<b>18,936</b>
<b>Necessary ISF collection efficiency</b>	<b>89%</b>	<b>72%</b>	<b>54%</b>

Notes : \*1: ISF collection efficiency = Necessary annual O&M budget / ISF collectible (CA)

\*2: ISF collectible (CA) estimated with benefited area (\*3) in current account.

\*3: Benefited area estimated with full irrigable area in the irrigation service area.

In the Jalaur proper RIS, necessary annual O&M budget for the proper and effective O&M works is estimated respectively for Phase I and Phase II at 13.0 million

pesos and 10.2 million pesos, and personal services budget represents 71% and 63% of all the O&M budget. The personal services budget is the biggest component of the O&M budget and this budget will be reduced by means of reduction of the number of RIS office personnel from Phase I to Phase II. If this O&M budget is only secured by ISF collection of current account, 82% and 64% of ISF collection efficiency will be required in Phase I and Phase II, respectively. These are realistic ISF collection efficiency that will be materialized through the proposed improvement plan for ISF collection as mentioned in the above section.

In the sustainability stage during Phase II in the Jalaur proper RIS, the number of O&M field staff of the O&M Section in the RIS office as technical assistance to IAs will be reduced and the necessary O&M budget will also be reduced. The necessary annual O&M budget and the necessary ISF collection efficiency for the O&M budget will be 7.7 million pesos and 49%, respectively, which are more realistically attainable.

In the Suague RIS, necessary annual O&M budget is estimated respectively for Phase I and Phase II at 3.9 million pesos and 3.4 million pesos, and personal services budget represents 69% and 64% of all the O&M budget. The personal services budget is the biggest component of the O&M budget and this budget will be reduced by means of reduction of the number of RIS office personnel from Phase I to Phase II. If this O&M budget is only secured by ISF collection of current account, 128% and 111% of ISF collection efficiency will be required in Phase I and Phase II, respectively. This means that the necessary O&M budget will exceed the ISF collectibles in current account, and the ISF collection will not be able to fill up the necessary O&M budget. As an alternative to ensure the necessary budget with ISF collection, increase of ISF collection rate (present rate = 150kg/ha and 100kg/ha in dry and wet season, respectively.) can be considered, but collection efficiency will become lower and this is not effective and realistic.

The reduction of personal services budget is the most effective way to reduce O&M cost, since the personal services budget comprises most of the O&M budget. In the sustainability stage during Phase II in the Suague RIS, the number of O&M field staff of the O&M Section in the RIS office as technical assistance to IAs will be reduced and the necessary O&M budget will also be reduced. The necessary annual O&M budget and the necessary ISF collection efficiency for the O&M budget will be 2.5 million pesos and 82%, respectively.

If the total ISF collection from both the Jalaur proper RIS and the Suague RIS will be considered to achieve the necessary annual O&M budget for both RISs, 89%, 72% and 54% of ISF collection efficiency will be required in Phase I, and the implementation stage and the sustainability stage during Phase II, respectively.

In the future, full turnover of system facilities to IAs will be made and this will eliminate the personal services cost of the RIS office out of O&M cost with the phasing out of the JSRIS office from the two RIS areas.

#### **2.4.2 Adequate O&M Competence for NIA Staff and IAs**

##### **(a) Preparation of practical O&M manual**

To guide the NIA's O&M staff and the IAs in improved O&M practices to sustain irrigation system, a practical O&M manual that is easily comprehensible shall be prepared by the project. The "General Operation and Maintenance Manual" for all RISs and "Specific Operation and Maintenance Manual" for the Jalaur-Suague RIS prepared by NIA in 1991 under IOSP I will be reviewed and considered in the preparation of O&M manual. The proposed O&M manuals will be prepared based on the work items as mentioned in Table E.2.2.

For the specific consideration of the IAs, simple pamphlets with some illustrations on O&M practices shall be prepared to make the manual more useful to them. Training and technical assistance on the application of the O&M manual will be provided to NIA's O&M staff and the IAs.

Extensive dissemination of these materials will be carried out through the continuing education program by education cluster on water management and O&M with the proper guidance of the consultant and NIA.

(b) Development of appropriate training program for NIA JSRIS staff and the IAs

A training program for both the NIA-JSRIS staff and the IAs covering the proposed monitoring system, water management, O&M practices and ISF collection will be prepared in accordance with the training plan as shown in Table E.2.5. Specifically, the preparation and application of the practical O&M manual to be developed by the project will be discussed with the water management and O&M personnel of NIA and the IAs. In addition, the billing clerks will be trained on the use of computers in the preparation of ISF billing and collection records (Ref. Annex F).

In order to perform the effective O&M works, the training program for the O&M staff should be improved to benefit all of the O&M staff by giving emphasis on on-the-job training and increasing the frequency of O&M staff meetings and seminars to provide venue for exchanges of experiences and information to improve their activity.

The training of billing clerks on computer operation and management is meant to hasten the preparation of ISF billing and collection documents. The use of computers and improved skills of billing clerks will not only shorten the time for issuance of ISF bills to the water users but also ensure accurate calculation of ISF for higher collections.

The training and seminar for the ISF collectors will also be regularly carried out to give them additional skills on improved collection practices in order to perform the effective and systematic ISF collection.

This training program will be specific feature in the proposed improvement plan comparing with the existing NIA and World Bank approach as for the improvement on the water management and O&M practices.

Provision of intensive training for O&M staff and IAs will be made by the consultant under the project fund for 5 years with emphasis on the on-the-job training by using the proposed O&M manuals. The on-the-job training will be mainly provided in order to contribute to the improvement of their regular activities directly and effectively. Extensive dissemination on the use of the O&M manuals will be carried out by education cluster on water management and O&M. Regular follow-up and technical advice on the use of the O&M manuals will be carried out by the consultant.

(c) Rehabilitation and improvement of irrigation facilities, installation of proper measuring devices for canal discharge and provision of sufficient O&M equipment

As the prerequisite conditions for effective O&M works, the following physical aspects should be done properly (Ref. Annex D).

- (i) Rehabilitation and improvement of the irrigation facilities with installation of measuring devices on the water control structures to perform accurate, proper and effective water delivery and distribution,
- (ii) Installation of settling basin to reduce siltation in the canals for effective water flow and reduction of the maintenance work (desilting) in the canals and O&M cost, and
- (iii) Provision of sufficient O&M equipment (Ref. Table E.2.3) to materialize regular maintenance of RIS facilities, i.e., maintenance of the water control structures, desilting in the canals, and maintenance of the service roads and other facilities.

Particularly, accurate measurement is a fundamental and indispensable factor for the proper operation of irrigation system, and such measuring devices should be practical for easy utilization by the O&M staff such as WRF Technicians and WRF Tenders. In addition, accurate measurement with proper recording will be able to justify water distribution discharge to the specific farm area for ISF collection.

The accurate and practical measuring devices should be installed in all of the control structures such as head gates and turnouts. The preventive maintenance of the irrigation facilities, i.e., physical maintenance such as regular desilting near measuring devices should, however, be made to be able to gather accurate information.



# Tables

Table E.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

RIS	Position	RIS	Div.	Years	Position	RIS	Div.	Years	Position	RIS	Div.	Years
Jalaur-Propel-RIS												
1	WRF Technician * 1	Jalaur-propel	1	1976 present	WRF Tender-1	Jalaur-propel	1	1976 present				
2	WRF Technician	Jalaur-propel	2	1975 present	WRF Tender-1	Jalaur-propel	2	1975 present	WRF Tender-2	Jalaur-propel	2	1974 present
3	WRF Technician	Jalaur-propel	3	1973 present	WRF Tender-1	Jalaur-propel	3	1973 present	WRF Tender-2	Jalaur-propel	3	1969 present
4	WRF Technician	Jalaur-propel	4	1973 present	WRF Tender-1	Jalaur-propel	4	1973 present	WRF Tender-2	Jalaur-propel	4	1973 present
5	WRF Technician	Jalaur-propel	5	1974 present	WRF Tender-1	Jalaur-propel	5	1974 present	WRF Tender-2	Jalaur-propel	5	1967 present
6	WRF Technician	Jalaur-propel	6	1974 present	WRF Tender-1	Jalaur-propel	6	1974 present	WRF Tender-2	Jalaur-propel	6	1974 1982 present
7	WRF Technician * 1	Jalaur-propel	7	1973 1981 1986 1980 1992 1997 present	WRF Tender-1	Jalaur-propel	7	1969 present				
8	WRF Technician * 1	Jalaur-propel	8	1978 1982 1984 1986 present	WRF Tender-1	Jalaur-propel	8	1975 present				
9	WRF Technician	Agahan	9	1980 1982 1983 1984 1987 present	WRF Tender-1	Jalaur-propel	9	1973 present				
10	WRF Technician * 1	Jalaur-propel	10	1975 1980 1987 present	WRF Tender-1	Jalaur-propel	10	1977 present	WRF Tender-2	Jalaur-propel	10	1974 1984 1997 present
11		Jalaur-propel	11	present	WRF Tender-1	Jalaur-propel	11	present				
Director Dum	WRF Operator	Jalaur	7	1978 1980 present								

[Note] \* 1: WRF Tender was deputized as acting WRF Technician.

Table E.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

RIS		Position	RIS	Div.	Years	Position	RIS	Div.	Years	Position	RIS	Div.	Years
Jalaur proper, RIS													
Team leader of Div. 8,9,10&11													
		Jalaur-proper	9	1979									
		Jalaur-proper	10	1986									
		Jalaur-proper	9	1989									
		Jalaur-proper	10	1992									
		Jalaur-exten.	2	1994									
		Jalaur-proper	8,9,10&11	1997									
				present									
Assist. Team leader of Div. 8,9,10&11													
		Jalaur-proper	9	1977									
		Jalaur-proper	11	1986									
		Jalaur-proper	9	1990									
		Jalaur-proper	8,9,10&11	1997									
				present									
Swague, RIS	Div. 1	WRF Technician	Swague	1	1979	WRF Tender-1	Burwak, Viejs	2	1976	WRF Tender-2	Swague	1	1979
					present		Swague	1	1993				present
2		WRF Technician	Swague	2	1978	WRF Tender-1	Swague	2	1974				
					present				present				
3		WRF Technician	Swague	3	1984	WRF Tender-1	Swague	3	1978	WRF Tender-2	Swague	3	1984
					present				present				present
4		WRF Technician	Swague	4	1984	WRF Tender-1	Swague	4	1975	WRF Tender-2	Swague	4	1979
					present				present				present
Diversion Dam		WRF Operator	Swague	1	1974								
			Swague		1982								
			Diemasa Dam		present								

[Note] \*1 : WRF Tender was deputized as acting WRF Technician.

Table E.1.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

Table 2 Irrigation Service Area (ISA), Turnout Service Area (TSA) and IA Contract											
RIS	IA Name	No. of W/M	No. of DT	No. of Op	IA Coven Type	ISA JSRIS Data (ha)	No. of TSA (units)	Area of TSA (ha)	No. of TSA (Div.)	Area of TSA (Div.) (ha)	
<b>Jalaur Project-RIS</b>											
1	1. SISADA	1	1	1	I&O	764	14	252	32	764	
2	2. BAZZAT	1	1	1	I	512	18	512	22	722	
3	3. JP-2	1	3	1	I	731	22	722	22	722	
4	4. JP-3	1	3	1	I	895	24	891	28	861	
5	5. JADD	1	3	1	I	947	14	572	27	947	
6	6. JIN	1	1	1	I	375	13	375	14	506	
7	7. POZA	1	3	1	I	780	10	386	14	506	
8	8. JARIFA	1	1	1	I	150	4	150	21	720	
9	9. CIDD	1	2	1	I	750	21	720	13	738	
10	10. LOIAPRO	1	1	1	I	812	13	738	24	738	
11	11. CAMP	1	1	1	I&O	738	24	738	17	813	
12	12. BAMAFA	1	1	1	I	813	9	331	8	482	
13	13. MACAPA	1	1	1	I	482	8	482	13	450	
14	14. CANROSGA	1	1	1	I	738	13	450	13	500	
15	15. PACCAPUSO	1	2	1	I	811	13	500	13	500	
<b>Division Data</b>											
	Sub-Teibi	10	20	1		8,826	224	7,800	224	7,800	
<b>Team Leader of Div. 8.9.10&amp;11</b>											
	Asst. Team Leader of Div. 8.9.10&11	1	1	1		8,826	224	7,800	224	7,800	
<b>Total Jalaur Project</b>											
		11	21	1		8,826	224	7,800	224	7,800	
<b>Sisuaru RIS</b>											
1	16. SMEVBAT	1	2	1	I&O	936	9	348	25	945	
2	17. JEBADA	1	1	1	I	617	16	617	15	660	
3	18. SMEVBAT	1	1	1	I&O	660	4	100	15	660	
4	19. AGDABASICA	1	2	1	I	640	11	560	16	550	
5	20. DIV. 4 SUAGUE	1	2	1	I	702	16	550	14	667	
<b>Division Data</b>											
	Total (Sisuaru)	4	7	1		2,955	20	2,612	20	2,612	
	Grand Total	15	28	2		11,781	244	10,412	244	10,412	

\*1: W/M: WRF Technician, DT: WRF Tender, OP: WRF Operator  
 \*2: WRF Tender was deputized as acting WRF Technician.

Table E.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

Table 3 Type of water resources for irrigation (1996) (Numbering in order of larger shared proportion)

RIS	IA Name	No. of of WM DT	Dry Cropping				Wet Cropping				Others, Specify							
			NIA Irrigation canal	Natural Creek	Groundwater	Others, Specify	NIA Irrigation canal	Natural Creek	Groundwater	Others, Specify	NIA Irrigation canal	Natural Creek	Groundwater	Others, Specify				
Jalaur Proper RIS	1. SUSADA	1	1 (G&P)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2. BAZZAT	1	1 (G&P)	2 (P)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3. JP-2	1	1 (G&P)	2 (P)	3 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	4. JP-3	1	1 (G&P)	2 (P)	3 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	5. JADD	1	1 (G&P)	2 (P)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	6. J-JIN	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	7. POZA	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	8. JABAPA	1	1 (G&P)	2 (P)	3 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	9. CIDD	1	1 (G&P)	2 (P)	3 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	10. LOJAPRO	1	1 (G&P)	2 (P)	3 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	11. CAMP	1	1 (G&P)	2 (P)	3 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	12. BAMAFA	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	13. MACAPA	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	14. CANROSCA	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	15. PACCAPUSO	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Jalaur Proper		20	1 (G&P)	20 (P)	20 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
Suague RIS	1. SMEVBAT	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	2. JERADA	1	1 (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3. AGDABASICA	1	1 (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4. SUAGUE 3	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	5. SUAGUE 4	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	6. J-JIN	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	7. POZA	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	8. JABAPA	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	9. CIDD	1	1 (G)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10. LOJAPRO	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	11. CAMP	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	12. BAMAFA	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	13. MACAPA	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	14. CANROSCA	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
	15. PACCAPUSO	1	1 (G&P)	3 (P)	2 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Suague		20	1 (G&P)	20 (P)	20 (STW)	-	-	-	-	-	-	-	-	-	-	-	-	-

(Notes) G: Gravity P: Pumping up STW: Shallow Tube Well DW: Dug Well  
 MG: Mangbean WM: Water Melon

Table 4 Kind of main irrigation method (1996)

RIS	IA Name	No. of of WM DT	a. Dry Cropping	b. Wet Cropping
Jalaur Proper RIS	1. SUSADA	1	Rotational Irrigation	Continuous Irrigation
	2. BAZZAT	1	Rotational Irrigation	Continuous Irrigation
	3. JP-2	1	Rotational Irrigation	Continuous Irrigation
	4. JP-3	1	Rotational Irrigation	Continuous Irrigation
	5. JADD	1	Rotational Irrigation	Continuous Irrigation
	6. J-JIN	1	Rotational Irrigation	Rotational Irrigation
	7. POZA	1	Rotational Irrigation	Rotational Irrigation
	8. JABAPA	1	Rotational Irrigation	Rotational Irrigation
	9. CIDD	1	Rotational Irrigation	Rotational Irrigation
	10. LOJAPRO	1	Rotational Irrigation	Rotational Irrigation
	11. CAMP	1	Rotational Irrigation	Rotational Irrigation
	12. BAMAFA	1	Rotational Irrigation	Rotational Irrigation
	13. MACAPA	1	Rotational Irrigation	Rotational Irrigation
	14. CANROSCA	1	Rotational Irrigation	Rotational Irrigation
	15. PACCAPUSO	1	Rotational Irrigation	Rotational Irrigation
Total Jalaur Proper		20	Rotational Irrigation	Continuous Irrigation
Suague RIS	1. SMEVBAT	1	Rotational Irrigation	Continuous Irrigation
	2. JERADA	1	Rotational Irrigation	Continuous Irrigation
	3. AGDABASICA	1	Rotational Irrigation	Continuous Irrigation
	4. SUAGUE 3	1	Rotational Irrigation	Continuous Irrigation
Total Suague		4	Rotational Irrigation	Continuous Irrigation

Table E.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

Table 5 Actual frequency of irrigation water supply (1996)

RIS	IA Name	No. of of WM	No. of DT	a.		c.	
				Dry Cropping	Wet Cropping		
Jalaur Project RIS Div.	1 SISADA	1	1	2 days a week	Continuous Irrigation		
	2 BAPZAT	1	1	2 days a week	Continuous Irrigation		
	3 JP-2	1	3	4 days a week	Continuous Irrigation		
	4 JP-3	1	3	2 days a week	Continuous Irrigation		
	5 JADD	1	3	3 days a week	Continuous Irrigation		
	6 JIJN	1	3	1 day a week	2 days a week		
	7 POZA	1	3	2 days a week	2 days a week		
	8 JABAPA	1	2	2 days a week	2 days a week		
	9 CIDD	1	1	2 days a week	2 days a week		
	10 LOJAPRO	1	1	2 days a week	2 days a week		
	11 CAMP	1	1	3 days a week	3 days a week		
	12 BAMAFA	1	1	2 days a week	3 days a week		
	13 MACAPA	1	1	1 day a week	3 days a week		
	14 CANRONCA	1	2	1 day a week	3 days a week		
	15 PACCAPUSO	1	2	1 day a week	3 days a week		
Total (Jalaur Project)		10	20				
Suague RIS Div.	16 SMIEMBAT	1	2	3 days a week	Continuous Irrigation		
	17 JEBADA	1	1	3 days a week	Continuous Irrigation		
	18 AGDABASICA	1	1	3 days a week	Continuous Irrigation		
	19 SUAGUE 3	1	2	3 days a week	Continuous Irrigation		
	20 DIV. 4 SUAGUE	1	2	3 days a week	Continuous Irrigation		
	Total (Suague)		4	7			

Table 6 Kind of suitable irrigation method in the personal assessment (Individual answer from all staff)

RIS	IA Name	No. of of WM	No. of DT	No. of Total Answer	Dry Cropping			Wet Cropping			
					Continuous Irrigation	Rotational Irrigation	Others Specify	Continuous Irrigation	Rotational Irrigation	Others Specify	
Jalaur Project RIS Div.	1 SISADA	1	1	2			2			1	1
	2 BAPZAT	1	1	4			4				4
	3 JP-2	1	3	4			4				4
	4 JP-3	1	3	4			3			1	4
	5 JADD	1	3	4			3			1	4
	6 JIJN	1	3	4			1			3	4
	7 POZA	1	3	4			1			3	4
	8 JABAPA	1	2	3			3				3
	9 CIDD	1	1	2			1			1	2
	10 LOJAPRO	1	1	2			1			1	2
	11 CAMP	1	1	2			1			1	2
	12 BAMAFA	1	1	2			1			1	2
	13 MACAPA	1	1	2			1			1	2
	14 CANRONCA	1	2	2			2				2
	15 PACCAPUSO	1	2	2			2				2
Total (Jalaur Project)		10	20	30	11	19	0	25	3	0	
Suague RIS Div.	16 SMIEMBAT	1	2	3			3				3
	17 JEBADA	1	1	2			2				2
	18 AGDABASICA	1	1	2			2				2
	19 SUAGUE 3	1	2	3			3				3
	20 DIV. 4 SUAGUE	1	2	3			2			1	3
Total (Suague)		4	7	11	5	6	0	0	11	0	

Table E.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

Table 7 Acceptance of rotational irrigation by Farmers and Beneficiaries in the personal assessment (Individual answer from all staff)

RIS	IA Name	No. of WM	No. of DT	No. of Total Answer	Yes	No
Jalaur Project RIS	1. 1. SISADA	1	1	2	2	
	2. 2. BAPZAT	1	3	4	4	
	3. 3. JP-2	1	3	4	4	
	4. 4. JP-3	1	3	4	4	
	5. 5. JADD	1	3	4	2	2
	6. 6. JJIN	1	3	4	2	2
	7. 7. POZA	1	3	4	2	2
	8. 8. CIDD	1	2	3	3	
	9. 9. LOIAPRO	1	1	2	1	1
	10. 10. CAMP	1	1	2	1	1
	11. 11. BAMAFA	1	1	2	1	1
Suague RIS	12. 12. CANROSCA	1	1	1	1	
	13. 13. MACAPA	1	1	1	1	
	14. 14. CANROSCA	1	1	1	1	
	15. 15. PAGCAPUSO	1	2	3	1	2
	Total (Jalaur Project)	10	20	30	21	9
Suague RIS	16. 16. SMIWBAT	1	2	3	0	3
	17. 17. JEBADA	1	1	2	0	2
	18. 18. AGDABASICA	1	1	2	2	0
	19. 19. SUAGUE 3	1	2	3	2	1
	20. 20. DIV. 4 SUAGUE	1	2	3	0	3
	Total (Suague)	5	7	12	4	8

Table 8 Satisfactory degree of irrigation water supply in the personal assessment (1996) (Individual answer from all staff)

RIS	IA Name	No. of WM	No. of DT	No. of Total Answer	WRF Tender-1			WRF Tender-2			WRF Tender-3		
					Dry Cropping	Wet Cropping	no answer	Dry Cropping	Wet Cropping	no answer	Dry Cropping	Wet Cropping	no answer
Jalaur Project RIS	1. 1. SISADA	1	1	2	80%	100%							
	2. 2. BAPZAT	1	3	4	70%	90%	100%	no answer	no answer	no answer	no answer	no answer	no answer
	3. 3. JP-2	1	3	4	80%	90%	100%	80%	90%	100%	80%	90%	
	4. 4. JP-3	1	3	4	60%	90%	100%	80%	100%	100%	85%	100%	
	5. 5. JADD	1	3	4	40%	70%		20%	90%	70%	70%	80%	
	6. 6. JJIN	1	3	4	25%	70%		50%	80%	80%	80%	80%	
	7. 7. POZA	1	2	3	50%	80%		80%	80%	80%	80%	80%	
	8. 8. CIDD	1	2	3	50%	80%		50%	80%	80%	80%	80%	
	9. 9. LOIAPRO	1	1	2	50%	80%		60%	80%	60%	80%	80%	
	10. 10. CAMP	1	1	2	20%	55%		30%	60%	40%	60%	60%	
	11. 11. BAMAFA	1	1	2	30%	60%		40%	70%				
Suague RIS	12. 12. CANROSCA	1	1	1	10%	60%							
	13. 13. MACAPA	1	2	3	30%	80%		20%	70%	20%	70%	70%	
	14. 14. CANROSCA	1	2	3	70%	100%		100%	100%	100%	100%	100%	
	15. 15. PAGCAPUSO	1	2	3	70%	100%		30%	70%	30%	70%	70%	
	Total (Jalaur Project)	10	20	30									
Suague RIS	16. 16. SMIWBAT	1	2	3	70%	100%		70%	100%	30%	100%	100%	
	17. 17. JEBADA	1	1	2	50%	80%		60%	100%	60%	100%	100%	
	18. 18. AGDABASICA	1	1	2	50%	80%		70%	100%	70%	100%	100%	
	19. 19. SUAGUE 3	1	2	3	60%	80%		50%	70%	50%	70%	70%	
	20. 20. DIV. 4 SUAGUE	1	2	3	50%	80%		50%	70%	50%	70%	70%	
Total (Suague)	5	7	12										

Table E.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

RIS	IA Name	No. of WM	No. of DT	No. of Total Answer	2.0		2.1		2.2		2.3		3.1		3.2		3.3		3.4		3.5		3.6			
					Others specify																					
Jabalpur Project RIS																										
1	1 SISADA	1	1	2																						
2	2 BAPZAT	1	3	4																						
3	3 JPR2	1	3	4																						
4	4 JPA3	1	3	4																						no answer (2)
5	5 JADD	1	3	4																						
6	6 JJJN	1	3	4																						
7	7 POZA	1	3	4																						
8	8 JABAF	1	3	4																						
9	9 CHDD	1	2	3																						
10	10 LOIAPRO	1	1	2																						
11	11 CAMP	1	1	2																						
12	12 BAKAPA	1	1	2																						
13	13 MACAPA	1	1	2																						
14	14 CANROSCA	1	2	3																						
15	15 PACCAPUSO	1	2	3																						
Total (Jabalpur Project)		10	20	30	0	11	0	11	0	0	0	0	0	2	13	0	0	0	0	2	0	0	0	0	0	0
Sugauli RIS																										
16	16 SMEWBAT	1	2	3																						
17	17 JEBADA	1	1	2																						
18	18 AGDABASICA	1	1	2																						
19	19 SUAGUE 3	1	2	3																						
20	20 DIV. 4 SUAGUE	1	2	3																						
Total (Sugauli)		4	7	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

(Notes)

1. Water cannot flow through headgate to my coverage division area
2. Water flows into my division area, but water cannot flow to my farm area due to:
  - 2-1. Illegal diversion of irrigation water in the upper portion of my division area
  - 2-2. Absence of farm ditch in my farm area
  - 2-3. Others, specify ( )
3. Water flows into my division area, but water discharge is insufficient for the crops due to:
  - 3-1. Illegal diversion of irrigation water in the upper portion of my farm area
  - 3-2. Lack of farm ditch in my farm area
  - 3-3. Choking at turnout and/or other structures
  - 3-4. Insufficient water level for my farm area
  - 3-5. Situation problem in the canal.
    - i) Main canal ( )
    - ii) Lateral canal ( )
    - iii) Main farm ditch ( )
    - iv) Others, specify ( )
  - 3-6. Others, specify ( )



Table E.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

Table 10 Drainage problem (1996)

RIS	IA Name	No. of W/M	No. of DT	Drainage Problem
Jalaur Proser RIS				
Div.				
1	1. SISADA	1	1	Lat C area / Low capability of drain
2	2. BAZZAT	1	3	Byg. Barasan, Dupitan, Puloan / Low capability of drain
3	3. JP-2	1	3	DDJ4 (Byg. Jang, Pajo, Culoh) / Low capability of drain
4	4. JP-3	1	3	Byg. Dawas, Donsat / Low capability of drain
5	5. JADD	1	3	No serious problem
6	6. JIN	1	3	Byg. Densel / Low capability of drain
7	7. POZA	1	2	Drainage culvert problem (Lat I Sta. 7+500, Lat I-3 Sta. 0+300)
8	8. JABAPA	1	1	Byg. Manpon, Cahilawan, Pajoguge / Low capability of drain
9	9. CIDD	1	1	End portion of Lat E-3a1 / Low capability of drain
10	10. LOIAPRO	1	1	Byg. Rosano, Cansilayan / Low capability of drain
11	11. CAMP	1	2	Byg. Puloan, Dumangas / Low capability of drain
12	12. BAMAFA	1	1	End portion of Lat A / Low capability of drain (Situation of farm drain)
13	13. MACAPA	1	1	No serious problem
14	14. CANROSCA	1	2	No serious problem
15	15. PACCAPUSO	1	2	End portion of Lat B-4 / Low capability of drain
Total (Jalaur Proser)		10	20	
Suaguc RIS				
Div.				
1	16. SMEVBAT	1	2	End portion of Lat A / Low capability of drain (Situation of farm drain)
2	17. JERADA	1	1	No serious problem
3	18. AGDABASICA	1	1	No serious problem
4	19. SUAGUE 3	1	2	No serious problem
5	20. DIV. 4 SUAGUE	1	2	End portion of Lat B-4 / Low capability of drain
Total (Suaguc)		4	7	

Table 11 Flood problem (1996)

RIS	IA Name	No. of W/M	No. of DT	Flood Problem
Jalaur Proser RIS				
Div.				
1	1. SISADA	1	1	Over flow from Abangay Creek
2	2. BAZZAT	1	3	Over flow from main drainage canal along the road (500m)
3	3. JP-2	1	3	Over flow from DDJ4 (Byg. Jang, Pajo, Culoh)
4	4. JP-3	1	3	Over flow from Cahilawan Creek
5	5. JADD	1	3	Over flow from Jalaur River (Byg. Balud II, Zarnaga)
6	6. JIN	1	3	No serious problem
7	7. POZA	1	2	Over flow from Inadangan Creek (Byg. Inadangan, Zarnaga)
8	8. JABAPA	1	1	Over flow from Jalaur River (Byg. Manpon, Cahilawan, Pajoguge)
9	9. CIDD	1	1	Over flow from Jalaur River (All of Divs)
10	10. LOIAPRO	1	1	Over flow from Malaysian River (Byg. Rosano, Cansilayan)
11	11. CAMP	1	1	No serious problem
12	12. BAMAFA	1	1	No serious problem
13	13. MACAPA	1	1	No serious problem
14	14. CANROSCA	1	2	Over flow from Cahilawan Creek (Byg. Cahilawichican)
15	15. PACCAPUSO	1	2	Over flow from Cahilawan Creek (Byg. Cahilawichican)
Total (Jalaur Proser)		10	20	
Suaguc RIS				
Div.				
1	16. SMEVBAT	1	2	No serious problem
2	17. JERADA	1	1	No serious problem
3	18. AGDABASICA	1	1	No serious problem
4	19. SUAGUE 3	1	2	No serious problem
5	20. DIV. 4 SUAGUE	1	2	Over flow from Cahilawan Creek (Byg. Cahilawichican)
Total (Suaguc)		4	7	

Table E.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

Table 12 Main reason of non-following authorized cropping calendar (1996) (Select only one) (Numbering in order of larger shared proportion)

RIS	IA Name	No. of WM	No. of DT	Dry cropping			Wet cropping			5. Others, specify
				1	2	3	4	5	6	
<b>Palang Pongse RIS</b>										
Div.										
1	1. NINADA	1	1							
2	2. BAPZAT									
3	3. JPS-2	1	3							
4	4. JPS-3	1	3							
5	5. JADD	1	3							
6	6. JJIN									
7	7. POZA	1	3							
8	8. JABAPA									
9	9. CIDD	1	2							
10	10. LOJAPRO	1	1							
11	11. CAMP	1	1							
12	12. BAMAPO	1	2							
13	13. MACAPA									
14	14. CASKOSCA	1	2							
15	15. PACCAPUSO	2	2							
Total (Palang Pongse)		10	20							
<b>Sungay RIS</b>										
Div.										
1	16. SIMEWBAT	1	2							
2	17. JEBADA									
3	18. AGDABASICA	1	1							
4	19. SUAGUE 3	1	2							
5	20. DIV. 4 SUAGUE	1	2							
Total (Sungay)		4	7							

(Notes)

1. Financial problem for the preparation of paddy
2. Insufficient water for the preparation of paddy
3. Advance planting to expect high benefits
4. Advance planting to avoid water shortage at the end of dry cropping season (Jan.-Feb.)
5. Others, specify ( )

Table E.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

RIS	IA Name	No. of WM	No. of DT	No. of OP	Headgate	Check structure	Turnout	Main canal	Lateral canal	Main farm ditch	Service Road	Rehabilitation			Main gate	Others, specify
												Drainage Inlet	Farm drain	Intake gate		
<b>Jalaur Project/RIS</b>																
Div.	1. SISADA	1	1	1	1	3	2				4					
	2. BAPZAT	1	1	1	1	3	2				4					
	3. JP2	1	1	1	1	3	2				4					
	4. JP3	1	1	1	1	3	2			4	5	6	7			
	5. JADD	1	1	1	1	2	1			3	5	4				
	6. LUN	1	1	1	1	2	1									
	7. POZA	1	1	1	1	1	2				3					4. Supplementary farm ditch
	8. JABAFI	1	1	1	1	2	3			4	6					
	9. CIDD	1	1	1	1	2	1			3	5	4				
	10. LOIAPRO	1	1	1	1	2	1			1	3					
	11. CAMP	1	1	1	1	2	1									
12. BAWAPA	1	1	1	1	2	1										
13. MACAPA	1	1	1	1	2	1										
14. CANKOSCA	1	1	1	1	2	1			2	5	3	4				
15. PACCAPUSO	1	1	1	1	2	1			3	5	3	4			2. Concrete block / Riverbed protection	
Divergence Date																
Total (Jalaur Project)		10	20	1												
<b>Suaque RIS</b>																
Div.	16. SMEWBAT	1	1	1	1	1	2				3					
	17. JERADA	1	1	1	1	1	1				2					
	18. AGDABASICA	1	1	1	1	1	2				4					
	19. SUAGUE 3	1	1	1	1	1	2				3					
20. DIV. 4 SUAGUE	1	1	1	1	1	4			2	3			2		3. Concrete block	
Divergence Date																
Total (Suaque)		4	2	1												

Table 13 (2): Kind of facilities which need rehabilitation, improvement, replacement (renewal) and additional new construction (Numbering in order of priority)

RIS	IA Name	No. of WM	No. of DT	No. of OP	Headgate	Check structure	Turnout	Main canal	Lateral canal	Main farm ditch	Service Road	Improvement			Main gate	Others, specify
												Drainage Inlet	Farm drain	Intake gate		
<b>Jalaur Project/RIS</b>																
Div.	1. SISADA	1	1	1	1	3	2									
	2. BAPZAT	1	1	1	1	3	2									
	3. JP2	1	1	1	1	3	2									
	4. JP3	1	1	1	1	3	2			4			5			
	5. JADD	1	1	1	1	2	1						2			
	6. LUN	1	1	1	1	2	1									
	7. POZA	1	1	1	1	1	2									
	8. JABAFI	1	1	1	1	2	3									
	9. CIDD	1	1	1	1	2	1									
	10. LOIAPRO	1	1	1	1	2	1			3			4			
	11. CAMP	1	1	1	1	2	1									
12. BAWAPA	1	1	1	1	2	1						3	2			
13. MACAPA	1	1	1	1	2	1										
14. CANKOSCA	1	1	1	1	2	1										
15. PACCAPUSO	1	1	1	1	2	1										
Divergence Date																
Total (Jalaur Project)		10	20	1												
<b>Suaque RIS</b>																
Div.	16. SMEWBAT	1	1	1	1	1	2									
	17. JERADA	1	1	1	1	1	1									
	18. AGDABASICA	1	1	1	1	1	2									
	19. SUAGUE 3	1	1	1	1	1	2									
20. DIV. 4 SUAGUE	1	1	1	1	1	4			2				2		3	
Divergence Date																
Total (Suaque)		4	2	1												

Table E.1.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

Table 13. (3) Kind of facilities which need rehabilitation, improvement, replacement (renewal) and additional new construction (Numbering in order of priority)

RIS	IA Name	No. of WM	No. of DT	No. of OP	Headgate	Check structure	Turnout	Main canal	Lateral canal	Main farm ditch	Service Road	Replacement (Renewal)			Others, specify
												Drainage Inlet	Farm ditch	Intake gate	
<b>Jalaur Project RIS</b>															
Div. 1	1. NINADA	1	1	1			1								
2	2. BAPZAT	1	1	1											
3	3. JP-2	1	1	1									2		
4	4. JP-3	1	1	1											
5	5. JADD	1	1	1											
6	6. J-IN	1	1	1											
7	7. POZA	1	1	1											
8	8. JABAPA	1	1	1											
9	9. CIDD	1	1	1											
10	10. LOIAPRO	1	1	1											
11	11. CAMP	1	1	1											
12	12. BAMAFA	1	1	1											
13	13. MACAPA	1	1	1											
14	14. CANKONCA	1	1	1											
15	15. PACCAPUSO	1	1	1											
Inversion Dam															
Total (Jalaur Project)		10	10	10											
<b>Suagui RIS</b>															
Div. 1	16. SMEWRAT	1	1	1											
2	17. JERADA	1	1	1											
3	18. AGDABASICA	1	1	1											
4	19. SUAGUE 3	1	1	1											
20	20. DIV. 4 SUAGUE	1	1	1											1. Road crossing (Lat. A. Sta. 7-242)
Inversion Dam															
Total (Suagui)		4	4	4											

Table 13. (4) Kind of facilities which need rehabilitation, improvement, replacement (renewal) and additional new construction (Numbering in order of priority)

RIS	IA Name	No. of WM	No. of DT	No. of OP	Headgate	Check structure	Turnout	Main canal	Lateral canal	Main farm ditch	Service Road	New additional construction			Others, specify
												Drainage Inlet	Farm ditch	Intake gate	
<b>Jalaur Project RIS</b>															
Div. 1	1. NINADA	1	1	1											
2	2. BAPZAT	1	1	1											
3	3. JP-2	1	1	1											
4	4. JP-3	1	1	1									3		
5	5. JADD	1	1	1											
6	6. J-IN	1	1	1											
7	7. POZA	1	1	1											
8	8. JABAPA	1	1	1											
9	9. CIDD	1	1	1											
10	10. LOIAPRO	1	1	1											
11	11. CAMP	1	1	1											
12	12. BAMAFA	1	1	1											
13	13. MACAPA	1	1	1											
14	14. CANKONCA	1	1	1											
15	15. PACCAPUSO	1	1	1											
Inversion Dam															
Total (Jalaur Project)		10	10	10											
<b>Suagui RIS</b>															
Div. 1	16. SMEWRAT	1	1	1											
2	17. JERADA	1	1	1											
3	18. AGDABASICA	1	1	1											
4	19. SUAGUE 3	1	1	1											
20	20. DIV. 4 SUAGUE	1	1	1											1. Access road to farm to Ego. Road (Lat. B). Sta. 1-400 4. Supplementary farm ditch
Inversion Dam															
Total (Suagui)		4	4	4											

Table E.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

Table 14 Frequency of the desilting works for the Canals

RIS	IA Name	No. of WM	No. of DT	No. of OP	4. Main canal	5. Lateral canal	6. Main farm ditch	7. Division dam	8. Others, specify
Jalaur Project RIS	Div.	1	1	1	1/10years	1/5years	2/1year	-	-
		2	1	1	1/5years	1/5years	2/1year	-	-
		3	1	1	1/5years	1/5years	2/1year	-	-
		4	1	1	1/5years	1/5years	1/1year	-	-
		5	1	1	1/5years	1/5years	2/1year	-	-
		6	1	1	1/5years	1/5years	2/1year	-	-
		7	1	1	1/5years	1/5years	2/1year	-	-
		8	1	1	1/5years	1/5years	2/1year	-	-
		9	1	1	1/5years	1/5years	2/1year	-	-
		10	1	1	1/5years	1/5years	2/1year	-	-
		11	1	1	1/5years	1/5years	2/1year	-	-
		12	1	1	1/5years	1/5years	2/1year	-	-
		13	1	1	1/5years	1/5years	2/1year	-	-
		14	1	1	1/5years	1/5years	2/1year	-	-
		15	1	1	1/5years	1/5years	2/1year	-	-
Overseas Dam									
Total (Jalaur Project)		10	10	10					1/10years
Suarig RIS	Div.	1	1	1	1/10years	1/10years	2/1year	-	-
		2	1	1	1/10years	1/10years	2/1year	-	-
		3	1	1	1/10years	1/10years	2/1year	-	-
		4	1	1	1/10years	1/10years	2/1year	-	-
		5	1	1	1/10years	1/10years	2/1year	-	-
		6	1	1	1/10years	1/10years	2/1year	-	-
		7	1	1	1/10years	1/10years	2/1year	-	-
		8	1	1	1/10years	1/10years	2/1year	-	-
		9	1	1	1/10years	1/10years	2/1year	-	-
		10	1	1	1/10years	1/10years	2/1year	-	-
		11	1	1	1/10years	1/10years	2/1year	-	-
		12	1	1	1/10years	1/10years	2/1year	-	-
		13	1	1	1/10years	1/10years	2/1year	-	-
		14	1	1	1/10years	1/10years	2/1year	-	-
		Overseas Dam							
Total (Suarig)		10	10	10					1/10years

Table 15 (i) Request to NIA, LGU, IA, and others for improvement of water management and operation & maintenance

RIS	IA Name	No. of WM	No. of DT	No. of OP	Request to NIA for improvement of water management and operation & maintenance
Jalaur Project RIS	Div.	1	1	1	Rehabilitation of control facilities
		2	1	1	Rehabilitation of control facilities
		3	1	1	Training and seminar for water management and O&M (Additional water resources)
		4	1	1	Sustenance of irrigation and drainage facilities
		5	1	1	Rehabilitation of control facilities
		6	1	1	Desilting in the canals (main canal and laterals)
		7	1	1	Proper instruction from NIA Engineer
		8	1	1	Rehabilitation of irrigation and drainage facilities
		9	1	1	Support of equipment for the maintenance work
		10	1	1	Desilting in the canals (laterals)
		11	1	1	Desilting in the canals (laterals)
		12	1	1	Landscaping of diversion dam site
		13	1	1	Training and seminar for water management and O&M
		14	1	1	Proper instruction from NIA Engineer
		Overseas Dam			
Total (Jalaur Project)		10	10	10	Improvement of Lit G (Bigger opening)
Suarig RIS	Div.	1	1	1	Rehabilitation of control facilities
		2	1	1	Rehabilitation of control facilities
		3	1	1	Proper instruction from NIA Engineer
		4	1	1	Rehabilitation of irrigation and drainage facilities
		5	1	1	Improvement of sluice gates
		6	1	1	Rehabilitation of control facilities
		7	1	1	Rehabilitation of control facilities
		8	1	1	Rehabilitation of irrigation and drainage facilities
		9	1	1	Rehabilitation of irrigation and drainage facilities
		10	1	1	Rehabilitation of irrigation and drainage facilities
		11	1	1	Rehabilitation of irrigation and drainage facilities
		12	1	1	Rehabilitation of irrigation and drainage facilities
		13	1	1	Rehabilitation of irrigation and drainage facilities
		14	1	1	Rehabilitation of irrigation and drainage facilities
		Overseas Dam			
Total (Suarig)		10	10	10	

Table E.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

Table 15 (2) Request to NIA, LGU, IA and others for improvement of water management and operation & maintenance

RIS	IA Name	No. of			Request to LGU for improvement of water management and operation & maintenance
		WM	DT	OP	
<b>Jalaur Project RIS</b>					
1	SISADA	1	1	-	Assistance for rehabilitation of O&M roads
2	BAFZAT	1	3	-	Well coordination with NIA
3	JP-2	1	3	-	Re-forestation of watershed
4	JADD	1	3	-	Well coordination with NIA
5	POZA	1	3	-	Well coordination with NIA
6	JABAYA	1	2	-	Well coordination with NIA
7	LOJAPRO	1	1	-	Implementation of penalties on oil illegality
8	CAMP	1	1	-	Well coordination with NIA
9	BAMAPA	1	1	-	Well coordination with NIA
10	MACAPA	1	1	-	Well coordination with NIA
11	CANOSCA	1	2	-	Well coordination with NIA
12	PAGCAPUSO	1	2	-	Well coordination with NIA
Diverson Dam					
Total (Jalaur Project)		10	20	1	
<b>Suague RIS</b>					
1	SMEWBAT	1	2	-	Financial support
2	JEBADA	1	1	-	Well coordination with NIA
3	AGDABASICA	1	2	-	Well coordination with NIA
4	SUAGUE 3	1	2	-	Well coordination with NIA
Diverson Dam					
Total (Suague)		4	7	1	

Table 15 (3) Request to NIA, LGU, IA and others for improvement of water management and operation & maintenance

RIS	IA Name	No. of			Request to IA for improvement of water management and operation & maintenance
		WM	DT	OP	
<b>Jalaur Project RIS</b>					
1	SISADA	1	1	-	Cooperation and assistance for water distribution
2	BAFZAT	1	3	-	Well coordination with NIA
3	JP-2	1	3	-	Well coordination with NIA
4	JADD	1	3	-	Implementation of Type II construct
5	JAIN	1	3	-	Cooperation in the NIA program
6	POZA	1	3	-	Well coordination with NIA
7	JABAYA	1	2	-	Well coordination with NIA
8	LOJAPRO	1	1	-	Well coordination with NIA
9	CAMP	1	1	-	Provision of RIS facilities
10	BAMAPA	1	1	-	Careful use of RIS facilities
11	MACAPA	1	1	-	Well coordination with NIA
12	CANOSCA	1	2	-	Well coordination with NIA
13	PAGCAPUSO	1	2	-	Well coordination with NIA
Diverson Dam					
Total (Jalaur Project)		10	20	1	
<b>Suague RIS</b>					
1	SMEWBAT	1	2	-	Cooperation on water management and O&M
2	JEBADA	1	1	-	Well coordination with NIA
3	AGDABASICA	1	2	-	Cooperation on water management and O&M
4	SUAGUE 3	1	2	-	Cooperation on water management and O&M
Diverson Dam					
Total (Suague)		4	7	1	

Table E.1.1 Summary of Interview Survey on NIA O&M Staff (WRF Technicians, Tenders and Operators)

Table 16 Work load (Individual answer from all staff)

RIS	IA Name	No. of W/M	No. of DT	No. of OP	No. of Total Answer	a. Too Heavy	b. Moderate	c. No so heavy	d. Others, specify
Jalaur Project RIS Div.	1. SISADA	1	1	-	2		2		
	2. BAPZAT	1	3	-	4		4		
	3. JP-2	1	3	-	4		4		
	4. JP-3	1	3	-	4		4		
	5. JADD	1	3	-	4		3		
	6. JIN	1	3	-	4		1	2	
	7. POZA	1	3	-	4		1	2	
	8. JABAF	1	2	-	3		1	2	
	9. CIDD	1	2	-	3		1	2	
	10. LOIAPRO	1	2	-	3		1	2	
	11. CAMP	1	2	-	3		1	2	
	12. BAMAFA	1	2	-	3		1	2	
	13. MACAPA	1	2	-	3		1	2	
	14. CANROSCA	1	2	-	3		1	2	
	15. PACCAPUSO	1	2	-	3		1	2	
Total Jalaur Project		10	20	1	31	10	19	2	
Suague RIS Div.	16. SMIWBAT	1	2	-	3		3		
	17. JEBADA	1	1	-	2		1	1	
	18. AGDABASICA	1	2	-	3		2	1	
	19. SUAGUE 3	1	2	-	3		2	1	
	20. DIV. 4 SUAGUE	1	2	-	3		3		
Total Suague		4	7	1	12	1	9	2	

Table 17 WRF Technicians and Tenders deputized as assistant ISF collectors

RIS	IA Name	No. of W/M	No. of DT	No. of NIA Collector #1 (O&M Staff)
Jalaur Project RIS Div.	1. SISADA	1	1	2
	2. BAPZAT	1	3	2
	3. JP-2	1	3	2
	4. JP-3	1	3	2
	5. JADD	1	3	4
	6. JIN	1	3	3
	7. POZA	1	3	3
	8. JABAF	1	2	2
	9. CIDD	1	2	2
	10. LOIAPRO	1	2	2
	11. CAMP	1	2	2
	12. BAMAFA	1	2	3
	13. MACAPA	1	2	1
	14. CANROSCA	1	2	1
	15. PACCAPUSO	1	2	2
Total Jalaur Project		10	20	25
Suague RIS Div.	16. SMIWBAT	1	2	2
	17. JEBADA	1	1	2
	18. AGDABASICA	1	2	2
	19. SUAGUE 3	1	2	2
20. DIV. 4 SUAGUE	1	2	2	
Total Suague		4	7	8

[Note: \*1: No. of NIA O&M staff (WRF Technicians and Tenders) deputized as assistant ISF collectors.]

Table E.1.2 Summary of Interview Survey on NIA ISF Collectors

RIS	Position	Years	Div.	Position	RIS	Years	Div.	Position	RIS	Years	Div.	Position	RIS	Years	Div.	Years
Jalaur-Propet RIS	Assistant Collector-1	1987 present	1	Assistant Collector-2	Jalaur-propet	1983 present	1	Assistant Collector-3	Jalaur-propet	1997 present	1					
		1978 1988 1991 present	2	Assistant Collector-2	Jalaur-propet	1993 present	2									
		1983 present	3	Assistant Collector-2	Jalaur-propet	1993 present	3									
		1983 1997 present	4	Assistant Collector-2	Jalaur-propet	1983 present	4	Assistant Collector-3	Jalaur-propet	1996 present	4	Assistant Collector-4	Jalaur-propet	1996 present	4	1996 present
		1981 1982 present	5	Assistant Collector-2	Jalaur-propet	1980 present	5	Assistant Collector-3	Jalaur-propet	1980 present	5					
		1983 present	6	Assistant Collector-2	Jalaur-propet	1986 present	6									
		1978 1981 1986	7	Assistant Collector-2	Jalaur-propet	1985 present	7									
		1990 1992 1997 present	8	Assistant Collector-2	Jalaur-propet	1990 present	8									
		1982 1983 1984 1997 present	9	Assistant Collector-2	Jalaur-propet	1987 present	9									
		1987 present	10													
		1983 present	11	Assistant Collector-2	Jalaur-propet	1990 1994 1997 present	11	Assistant Collector-2	Jalaur-propet	1990 1994 1997 present	11					
Suaque RIS	Assistant Collector-1	1981 present	1	Assistant Collector-2	Suaque	1984 present	1									
		1983 present	2	Assistant Collector-2	Suaque	1992 present	2									
		1987 present	3	Assistant Collector-2	Suaque	1983 present	3									
		1985 present	4	Assistant Collector-2	Suaque	1980 present	4									



Table E.1.2 Summary of Interview Survey on NIA ISF Collectors

Table 2. WRF Technicians and Tenders deputized as assistant ISF collector.

RIS	IA Name	No. of WM *1	No. of DT *1	No. of Total Answer	No. of NIA #2 Collector (O&M Staff)	No. of NIA #3 Collector	IA Type II Contract	No. of IA Collector
<b>Jalaur Project RIS</b>								
Div. 1	1. SISADA	1	1	2	2	3	Type II	5
2	2. BAPZAT					#3		
3	3. JP-2	3	4	2	2			
4	4. JP-3	3	4	2	2			
5	5. JADD	1	3	4	4			
6	6. J-JIN							
7	7. POZA	1	3	4	3			
8	8. JABAPA						Type II	1
9	9. CIDD	1	2	3	2	2		
10	10. LOJAPRO	1	1	2	2			
11	11. CAMP	1	1	2	2		Type II	4
12	12. BAMAFA	1	1	2	3			
13	13. MACAPA							
14	14. CANROSCA	1	1	2	1			
15	15. PACCAPUSO	1	1	2	2			
Total (Jalaur Project)		10	20	30	25	26		10
<b>Suaque RIS</b>								
Div. 1	16. SMEWBAT	1	2	3	2	2	Type II	2
2	17. JEBADA						Type II	1
3	18. AGDABASICA	1	1	2	2			
4	19. SUAGUE 3	1	2	3	2	2		
5	20. SMEWBAT	1	2	3	2	2	Type II	1
Total (Suaque)		4	7	11	8	8		4

(Notes): \*1: WM: WRF Technician, DT: WRF Tender \*2: No. of NIA O&M staff (WRF Technicians and Tenders) deputized as assistant ISF collectors. \*3: One clerk processor was deputized.

Table 3. Heavier work load in the personal opinion (Individual answer from all staff (WRF Technician and WRF Tender, etc. or ISF Collector?))

RIS	IA Name	No. of ISF collect.	No. of Total Answer	WRF Tech /Tenders	ISF Collector
<b>Jalaur Project RIS</b>					
Div. 1	1. SISADA	3	3	1	2
2	2. BAPZAT				
3	3. JP-2	2	2	0	2
4	4. JP-3	2	2	2	0
5	5. JADD	4	4	4	0
6	6. J-JIN				
7	7. POZA	3	3	3	0
8	8. JABAPA				
9	9. CIDD	2	2	0	2
10	10. LOJAPRO	2	2	1	1
11	11. CAMP	2	2	2	0
12	12. BAMAFA	3	3	2	1
13	13. MACAPA				
14	14. CANROSCA	1	1	0	1
15	15. PACCAPUSO	2	2	2	0
Total (Jalaur Project)		26	26	17	9
<b>Suaque RIS</b>					
Div. 1	16. SMEWBAT	2	2	0	2
2	17. JEBADA				
3	18. AGDABASICA	2	2	0	2
4	19. SUAGUE 3	2	2	0	2
5	20. DIV. 4 SUAGUE	2	2	0	2
Total (Suaque)		8	8	0	8

Table 4. Agreement with IA Type II contract in ISF collection

RIS	IA Name	No. of ISF collect.	No. of Total Answer	Agreement IA Type II contract
<b>Jalaur Project RIS</b>				
Div. 1	1. SISADA	3	3	3
2	2. BAPZAT			
3	3. JP-2	2	2	2
4	4. JP-3	2	2	2
5	5. JADD	4	4	4
6	6. J-JIN			
7	7. POZA	3	3	3
8	8. JABAPA			
9	9. CIDD	2	2	2
10	10. LOJAPRO	2	2	2
11	11. CAMP	2	2	2
12	12. BAMAFA	3	3	3
13	13. MACAPA			
14	14. CANROSCA	1	1	1
15	15. PACCAPUSO	2	2	2
Total (Jalaur Project)		26	26	26
<b>Suaque RIS</b>				
Div. 1	16. SMEWBAT	2	2	2
2	17. JEBADA			
3	18. AGDABASICA	2	2	2
4	19. SUAGUE 3	2	2	2
5	20. DIV. 4 SUAGUE	2	2	2
Total (Suaque)		8	8	8

Table E.1.2 Summary of Interview Survey on NIA ISF Collectors

Table 5. (1) Most important reason for Non-payment of ISF (Select two by cropping season) (Individual answer from all staff)

RIS	IA Name	No. of ISF collect.	No. of Total Answer	Wet cropping season												
				1	2	3	4	5	6	7	8	9	10	11		
Juliate Proper RIS																
Div.	1 SINADA	3	3													
	2 BAPZAT	2	2													
	3 JP-2	2	2													
	4 JP-3	4	4													
	5 JADD	4	4													
	6 JIJIN	3	3													
	7 POZA	3	3													
	8 JABAFA	2	2													
	9 CIDD	2	2													
	10 LOJAPRO	2	2													
	11 CAMP	3	3													
	12 BAMAFA	3	3													
	13 MACAPA	1	1													
	14 CANRONCA	2	2													
	15 PACCAPUSO	2	2													
	Total (Juliate Proper)	26	26													
Suague RIS																
Div.	16 SMEWHAT	2	2													
	17 JEBADA	2	2													
	18 AGDABASICA	2	2													
	19 SUAGUE 3	2	2													
	20 DIV. 4 SUAGUE	2	2													
	Total (Suague)	8	8													

Table 5. (2) Most important reason for Non-payment of ISF (Select two by cropping season) (Individual answer from all staff)

RIS	IA Name	No. of ISF collect.	No. of Total Answer	Wet cropping season												
				1	2	3	4	5	6	7	8	9	10	11		
Juliate Proper RIS																
Div.	1 SINADA	3	3													
	2 BAPZAT	2	2													
	3 JP-2	2	2													
	4 JP-3	4	4													
	5 JADD	4	4													
	6 JIJIN	3	3													
	7 POZA	3	3													
	8 JABAFA	2	2													
	9 CIDD	2	2													
	10 LOJAPRO	2	2													
	11 CAMP	3	3													
	12 BAMAFA	3	3													
	13 MACAPA	1	1													
	14 CANRONCA	2	2													
	15 PACCAPUSO	2	2													
	Total (Juliate Proper)	26	26													
Suague RIS																
Div.	16 SMEWHAT	2	2													
	17 JEBADA	2	2													
	18 AGDABASICA	2	2													
	19 SUAGUE 3	2	2													
	20 DIV. 4 SUAGUE	2	2													
	Total (Suague)	8	8													

[Notes]

1. Lower production than I expected. / insufficient budget for the next cropping.
2. I did not know how to pay ISF.
3. No information (bill) on ISF payment amount/schedule.
4. No transportation to bring money to NIA in case I pay ISF in kind.
5. No transportation to go to the office (NIA/CA) in case I collect ISF in cash.
6. No time to pay ISF.
7. I did not pay ISF due to insufficient water I received last year.
8. ISF payment is not my priority.
9. I did not pay ISF intentionally.
10. Some beneficiaries have no trust me, then they did not pay ISF to me.
11. Others, specify ( )

Table E.1.2 Summary of Interview Survey on NIA ISF Collectors

RIS	IA Name	No. of ISF collect	Request to NIA for improvement of water management
<b>Jalaur Project RIS</b>			
Div.			
1	SISADA	3	Rehabilitation of service road.
2	BARZAT	1	Training and seminar for ISF collection
3	JP-2	2	Rehabilitation of service road.
4	JP-3	2	Rehabilitation of service road.
5	JADD	4	Rehabilitation of service road.
6	J-JIN	1	Rehabilitation of service road.
7	POZA	3	Improvement of water supply.
8	JABABA	1	Improvement of water supply.
9	CIDD	2	Improvement of water supply.
10	LOJAPRO	2	Preparatoin of official ISF bills prepared by billing clerk.
11	CAMP	2	Improvement of water supply.
12	BAMAPA	3	Improvement of water supply.
13	MACAPA	1	Improvement of water supply.
14	CANKOSCA	1	Improvement of water supply.
15	PAGCAPUSO	2	Improvement of water supply.
	<b>Total Jalaur Project</b>	<b>26</b>	
<b>Suague RIS</b>			
Div.			
16	SMEWBAT	2	Improvement of water supply.
17	BERADA	1	Improvement of water supply.
18	AGDABASICA	2	Training and seminar for ISF collection
19	SUAGUE 3	2	Storie incentives for NIA collectors.
20	DIV. 4 SUAGUE	2	Improvement of water supply.
	<b>Total (Suague)</b>	<b>8</b>	

RIS	IA Name	No. of ISF collect	Request to LGU for improvement of water management
<b>Jalaur Project RIS</b>			
Div.			
1	SISADA	3	Seminar to farmers and beneficiaries as for the importance of irrigation.
2	BARZAT	1	
3	JP-2	2	
4	JP-3	2	
5	JADD	4	Agriculture extension for the merit of irrigation and importance of ISF.
6	J-JIN	1	
7	POZA	3	
8	JABABA	1	
9	CIDD	2	Agriculture extension for the merit of irrigation and importance of ISF.
10	LOJAPRO	2	
11	CAMP	2	
12	BAMAPA	3	Agriculture extension for the merit of irrigation and importance of ISF.
13	MACAPA	1	
14	CANKOSCA	1	
15	PAGCAPUSO	2	
	<b>Total Jalaur Project</b>	<b>26</b>	
<b>Suague RIS</b>			
Div.			
16	SMEWBAT	2	Agriculture extension for the merit of irrigation and importance of ISF.
17	BERADA	1	
18	AGDABASICA	2	
19	SUAGUE 3	2	
20	DIV. 4 SUAGUE	2	Agriculture extension for the merit of irrigation and importance of ISF.
	<b>Total (Suague)</b>	<b>8</b>	

Table E.1.2 Summary of Interview Survey on NIA ISF Collectors

RIS	IA Name	No. of ISF collect.	Request to IA for improvement of water management
<b>Jabab, Proggel RIS</b>			
1	1 SISADA	3	Cooperation for ISF collection.
2	2 BAPZAT	2	Cooperation for ISF collection.
3	3 JP-2	2	Cooperation for ISF collection.
4	4 JP-3	4	Implementation of Type II contract.
5	5 JADD	4	Implementation of Type II contract.
6	6 JAIN	3	Implementation of Type II contract.
7	7 POZA	3	Implementation of Type II contract.
8	8 JABAFI	2	Cooperation for ISF collection.
9	9 CIDD	2	Cooperation for ISF collection.
10	10 LOPAPO	2	Cooperation for ISF collection.
11	11 CAMP	2	More ISF collection by IA collector
12	12 BAMAFA	3	Implementation of Type II contract.
13	13 MACAPA	3	Implementation of Type II contract.
14	14 CANRONCA	1	Cooperation for ISF collection.
15	15 FAGCAPUSO	2	Cooperation for ISF collection.
<b>Total (Jabab Proggel)</b>		<b>26</b>	
<b>Suway, RIS</b>			
16	16 SMIWIBAT	2	Cooperation for ISF collection.
17	17 JEBADA	2	Cooperation for ISF collection.
18	18 AGDABASICA	2	Cooperation for ISF collection.
19	19 SUAGUE 3	2	Cooperation for ISF collection.
20	20 DIV 4 SUAGUE	2	Cooperation for ISF collection.
<b>Total (Suway)</b>		<b>8</b>	

Table E.1.3 Present NIA O&M Staff and IA Contract by Division

RIS	Name of IA	Irrigation Service Area (ISA) (ha)	Turnout Service Area Group (FSAG) (nos.)	Length of Main Canal & Laterals (km)	IA Contract	Present Conditions (1997)			
						Length of Contract (km)	Charge of WRF Tender *1 (km)	No. of WRF Tech.	No. of WRF Tender
<b>Jalaur proper RIS</b>									
Div. 1	SISADA	296	12		Type I&II	3			
	BAFZAT	512	24		Type I	9			
	(Sub-Total)	(808)	(36)	18		(12)	6	0 *2	2
Div. 2	JP-2	714	22	19	Type I	9	10	1	3
Div. 3	JP-3	892	21	10	Type I	5	5	1	3
Div. 4	JADD	572	13		Type I	4			
	J-JIN	375	8		Type I	4			
	(Sub-Total)	(947)	(21)	13		(8)	5	1	3
Div. 5	POZA	594	9		Type I	4			
	JABABA	160	1		Type II	0			
	(Sub-Total)	(754)	(10)	10		(4)	6	1	3
Div. 6	CIDD	730	14	11	Type I	6	5	1	2
Div. 7	LOJAPRO	755	13	9	Type I	7	2	0 *2	2
Div. 8, 9, 10&11									
	Team Leader							1	-
	Assistant Team Leader							-	1
Div. 8	CAMP	838	23	11	Type I&II	9	2	0 *2	2
Div. 9	BAMAPA	373	8		Type I	3			
	MACAPA	410	8		Type I	6			
	(Sub-Total)	(783)	(16)	10		(9)	1	1	1
Div. 10	CANROSCA	788	11	10	Type I	5	5	0 *3	1
Div. 11	PAGCAPUSO	811	13	11	Type I	9	2	0 *3	2
<b>Total (Jalaur proper RIS)</b>		<b>8,820</b>	<b>200</b>	<b>132</b>		<b>83</b>	<b>49</b>	<b>7</b>	<b>25</b>
<b>Suague RIS</b>									
Div. 1	SMEWBAT	387	9		Type I&II	3			
	JEBADA	608	14		Type I	7			
	(Sub-Total)	(995)	(23)	12		(10)	2	1	2
Div. 2	SMEWBAT	67	2		Type I&II	2			
	AGDABASICA	593	17		Type I	6			
	(Sub-Total)	(660)	(19)	8		(8)	0	0 *2	2
Div. 3	SUAGUE 3	543	16	12	Type I	9	3	0 *2	3
Div. 4	SMEWBAT	133	2	2	Type II	0			
	DIV. 4 SUAGUE	569	11		Type I	6			
	(Sub-Total)	(702)	(13)	8		(6)	2	0 *2	3
<b>Total (Suague RIS)</b>		<b>2,900</b>	<b>71</b>	<b>40</b>		<b>33</b>	<b>7</b>	<b>1</b>	<b>10</b>
<b>Grand-Total</b>		<b>11,720</b>	<b>271</b>	<b>172</b>		<b>116</b>	<b>56</b>	<b>8</b>	<b>35</b>

Notes: WRF Tech. : Water Resources Facilities Technician  
WRF Tender : Water Resources Facilities Tender  
\*1 : Length of canals under charge of WRF Tenders for the works equivalent to Type I contract by IA.  
\*2 : WRF Tender is acting for WRF Tech.  
\*3 : WRF Tender of Div.10 (Jalaur proper) is acting for WRF Tech. of Div.10&11 (Jalaur proper).

Source : NIA JSRIS Office

Table E.1.4 Maintenance Cost for the Existing Facilities

Year	Maintenance Cost (Pesos 1,000)					Total
	Repair	Canal Maintenance	IOSP II *1	Urgent Repair	Sub-Total	
1992	-	-	-	-	-	0
1993	-	-	-	-	-	1,057
1994	905	1,413	0	0	2,318	4,450
1995	0	1,131	12,363	0	13,494	899
1996	2,145	1,910	1,748	0	5,803	-
Total	3,050	4,454	14,111	0	21,615	6,406
						28,021

Notes: \*1 : IOSP II : Irrigation Operations Support Project II

\*2 : GAA : General Appropriation Act

Source: NIA Region VI Office

Table E.1.5 Present Canal Desilting Work

Year	RIS	Length (km)	Volume (1,000 m <sup>3</sup> )	Amount (pesos 1,000)	Main Desilting Method
1992	<u>Jalaur proper RIS</u>				
	Main Canal	-	-	-	-
	Laterals	-	-	-	-
	<u>Suague RIS</u>				
1993	<u>Jalaur proper RIS</u>				
	Main Canal	-	-	-	-
	Laterals	-	-	-	-
	<u>Suague RIS</u>				
1994	<u>Jalaur proper RIS</u>				
	Main Canal	-	-	-	-
	Laterals	15.4	9.3	446	Backhoe / Manual
	<u>Suague RIS</u>				
1995	<u>Jalaur proper RIS</u>				
	Main Canal	16.4	12.3	702	Crane-Dragline / Buldozar
	Laterals	26.2	13.1	746	Backhoe / Manual
	<u>Suague RIS</u>				
1996	<u>Jalaur proper RIS</u>				
	Main Canal	-	-	-	-
	Laterals	9.2	8.5	843	Backhoe / Manual
	<u>Suague RIS</u>				
Total	<u>Jalaur proper RIS</u>				
	Main Canal	16.4	12.3	702	Crane-Dragline / Buldozar
	Laterals	50.9	30.9	2,035	Backhoe / Manual
	<u>Suague RIS</u>				
	Main Canal	7.5	5.2	294	Crane-Dragline / Buldozar
	Laterals	34.8	15.9	895	Backhoe / Manual

Source: NIA JSRIS Office

Table E.1.6 List of Present O&amp;M Equipment

No.	Name of Equipment	Condition	Acquired	Age (years)	NIA Standard Economic Life (years)	Evaluation for use	
<b>A. Construction Equipment</b>							
1.	Crawler Crane	25 t	Operable	1978	19	9	-
2.	Bulldozer	9 t	Operable	1984	13	6	-
3.	Backhoe	0.4 m <sup>3</sup>	Operable	1992	5	10	Useful
4.	Backhoe	0.8 m <sup>3</sup>	Operable	1978	19	10	-
5.	Motor Grader	L=2.2 m	For Disposal	1987	10	7	-
6.	Motor Grader	L=3.7 m	Operable	1984	13	7	-
7.	Motor Grader	L=3.7 m	Under Repair	1995	2	7	Useful
8.	Wheel Loader	1.5 m <sup>3</sup>	Under Repair	1987	10	7	Useful
9.	Wheel Loader w/Backhoe	0.6 / 0.15 m <sup>3</sup>	For Disposal	1987	10	7	-
10.	Wheel Loader w/Backhoe	0.8 / 0.25 m <sup>3</sup>	Operable	1992	5	7	Useful
11.	Dump Truck	6 t	Operable	1975	22	8	-
12.	Dump Truck	6 t	Under Repair	1975	22	8	-
13.	Cargo Truck	6 t	Operable	1986	11	8	Useful
14.	Cargo Truck	6 t	Operable	1984	13	8	Useful
15.	Electric Generator	75 kVA	Operable	1979	18	6	-
16.	Air Compressor	3 m <sup>3</sup> /min	Operable	1992	5	6	Useful
17.	Welding Machine	220 A	Operable	1979	18	4	-
<b>B. Vehicles</b>							
1.	Pick-up Truck-1	Single Cabin, 0.75 t	Operable	1996	1	6	Useful
2.	Pick-up Truck-2	Single Cabin, 0.75 t	Operable	1983	14	6	-
3.	Pick-up Truck-3	Double Cabin, 0.75 t	Operable	1985	12	6	-
4.	Pick-up Truck-4	Single Cabin, 1 t	Under Repair	1981	16	6	-
5.	Station Wagon		Operable	1980	17	7	-
6.	Motorcycle (20 nos.)	100 cc	Operable	1990	7	5	Useful
26.	Motorcycle-21	100 cc	Operable	1984	13	5	-
27.	Motorcycle-22	100 cc	Operable	1984	13	5	-
28.	Motorcycle-23	100 cc	Operable	1980	17	5	-
29.	Motorcycle-24	100 cc	Operable	1980	17	5	-
<b>C. Office Equipment</b>							
1.	Computer w/Printer		Operable	1997	0	-	Useful
2.	Computer w/Printer		Operable	1995	2	-	Useful
3.	Radio Set		Operable	1990	7	-	Useful
4.	Grass Cutter (Office Maintenance)		Operable	1997	0	-	Useful

Source : NIA Region VI Office and NIA JSRIS Office



Table E.1.7 Actual Income from Equipment Rental

(Unit : Pesos 1,000)

Year	Actual Income from Equipment Rental			
	NIA Projects	Private & Other Government Agencies	Total	
1992	Jalaur-Suague RIS	350	324	674
	All NISs in Region VI	1,623	1,147	2,770
1993	Jalaur-Suague RIS	49	263	312
	All NISs in Region VI	540	1,101	1,641
1994	Jalaur-Suague RIS	823	193	1,016
	All NISs in Region VI	2,875	1,613	4,488
1995	Jalaur-Suague RIS	754	319	1,073
	All NISs in Region VI	2,171	1,279	3,450
1996	Jalaur-Suague RIS	3,272	91	3,363
	All NISs in Region VI	7,953	640	8,593
Average	Jalaur-Suague RIS	1,050	238	1,288
	All NISs in Region VI	3,032	1,156	4,188

Note : NIS : National Irrigation System

Source: NIA Region VI Office

Table E.1.8 Actual Income and Expenses of JSRIS Office

(Unit: Pesos 1,000)

Description	Year					Total
	1992	1993	1994	1995	1996	
<b>I. Actual Income</b>						
<b>A. ISF Collection</b>						
a. Current Account	5,029.8	4,466.2	3,981.8	3,327.1	4,603.9	21,408.8
b. Back Account	924.4	1,885.4	2,333.1	903.2	2,008.3	8,054.4
<b>Total (ISF Collection)</b>	<b>5,954.1</b>	<b>6,351.6</b>	<b>6,314.9</b>	<b>4,230.3</b>	<b>6,612.2</b>	<b>29,463.1</b>
<b>B. Equipment Rental</b>	673.7	311.8	1,015.9	1,073.5	3,362.5	6,437.4
<b>C. Other Incomes *1</b>	20.6	0.3	9.4	7.6	16.0	53.9
<b>Grand Total (Actual Income)</b>	<b>6,648.4</b>	<b>6,663.7</b>	<b>7,340.2</b>	<b>5,311.4</b>	<b>9,990.7</b>	<b>35,954.4</b>
<b>II. Actual Expenses</b>						
<b>A. Personal Services</b>						
1. Salaries	2,856.6	2,788.1	4,011.7	5,712.0	6,098.5	21,466.9
2. Wages	37.9	16.2	6.4	1.2		61.7
3. Terminal Leave	270.9	99.5	182.0		185.9	738.3
4. Medical Allowance	201.6	205.3	215.7	267.0	214.7	1,104.3
5. Meal Allowance	63.7	66.1	71.6	84.0	69.5	354.9
6. Children Allowance	69.3	73.4	77.1	92.8	79.1	391.7
7. 13th month pay + P1,000.00 Cash Gift	776.6	448.6	495.7	286.3	1,006.8	3,014.0
8. GSIS Life & Retirement *2	186.3	237.6	291.3			715.2
9. Medicare Contribution	23.1	29.5	33.9	1.3	0.2	88.0
10. Home Development Mutual Fund	38.6	37.6	74.4			150.6
11. State Insurance Premium	18.3	23.3	24.8	0.1		66.5
12. Other Personal Services	683.9	954.4	1,329.5	1,781.1	1,489.2	6,238.1
a) PERA + ACA *3	497.9	865.4	1,149.5	1,234.0	1,085.9	4,832.7
b) PIB + Loyalty Award *4	186.0	89.0	180.0	547.1	206.0	1,208.1
c) Hazard Pay					59.3	59.3
d) Anniversary Bonus					138.0	138.0
13. Uniform Allowance (Industrial Security Guard)	1.0	1.0		3.9	5.4	11.3
<b>Total (Personal Services)</b>	<b>5,227.8</b>	<b>4,930.6</b>	<b>6,814.1</b>	<b>8,229.7</b>	<b>9,149.3</b>	<b>34,401.5</b>
<b>B. Maintenance &amp; Other Operating Expenses</b>						
1. Contractual Services	217.1	244.1	266.3	177.0	54.9	959.4
2. Traveling expenses	34.6	31.4	25.2	14.1	11.1	116.4
3. Supplies/materials/parts/sundries	102.0	141.7	38.2	20.3	145.4	447.6
4. Water/Illumination & Power Services	44.0	40.3	33.8	17.0	0.1	135.2
5. Fuel and Oil for Vehicles				40.7		40.7
6. Communication Expenses				0.8		0.8
7. RATA/Other Allowances *5	8.4	13.2	32.7	23.4	46.8	124.5
8. Auditing Services	0.3	4.8				5.1
9. Rehabilitation/Repair of Equipment/Vehicles		0.3		0.6	2.4	3.3
10. Miscellaneous Expenses *6	76.9	81.8	74.7	28.4	47.9	309.7
11. Furniture/Equipment		88.0	0.5			88.5
12. Losses & Expenses on Collection in Kind	92.8					92.8
<b>Total (Maintenance &amp; Other Operating Expenses)</b>	<b>576.1</b>	<b>645.6</b>	<b>471.4</b>	<b>322.3</b>	<b>308.6</b>	<b>2,324.0</b>
<b>Grand Total (Actual Expenses)</b>	<b>5,803.9</b>	<b>5,626.2</b>	<b>7,285.5</b>	<b>8,552.0</b>	<b>9,457.9</b>	<b>36,725.5</b>
<b>Ref. Grand Total (Actual Expenses of only JSRIS)</b>	<b>5,803.9</b>	<b>5,626.2</b>	<b>6,201.4</b>	<b>7,160.8</b>	<b>8,146.9</b>	<b>32,939.2</b>

Notes: CY 1994 to 1996 includes expenses of Barotac Viejo (BV) RIS Office.  
Effective April 1994 BVRIS was merged with JSRIS.  
Data of BVRIS are included from Apr. to Dec. in 1994 and full year in 1995 & 1996.

\*1: It consists of certification fees, sale of scrap and rent of office facilities.

\*2: GSIS : Government Service Insurance System

\*3: PERA : Personal Emergency and Relief Allowance, ACA : Additional Compensation Allowance

\*4: PIB : Productivity Incentive Bonus

\*5: RATA : Representation Allowance and Transportation Allowance

\*6: It consists of insurance/registration of buildings and vehicles, irrigation share in ISF collection, fiscal allowance and collection viability bonus.

Source: NIA Region VI Office

Table E.1.9 ISF Collection by Division

RIS	Irrigation Service Area (1997) (ha)	1997				1994				1995				1996				Average ISF Collection Efficiency
		Benefited Area (ha)	ISF Collection Efficiency	No. of NIA Collectors	IA Type II Contract Collectors	Benefited Area (ha)	ISF Collection Efficiency	No. of NIA Collectors	IA Type II Contract Collectors	Benefited Area (ha)	ISF Collection Efficiency	No. of NIA Collectors	IA Type II Contract Collectors	Benefited Area (ha)	ISF Collection Efficiency	No. of NIA Collectors	IA Type II Contract Collectors	
Manantlax	14,820	5,209	39.2%	20	6,390	33.2%	20	5,983	24.9%	19	5,818	24.2%	21	2,110	1,152	2,262	24.2%	24.2%
Div. 1	808	723	31.9%	2	709	30.9%	2	723	32.9%	2	625	25.9%	2	300	115	415	27.9%	29.9%
Div. 2	714	637	38.9%	2	643	27.9%	2	591	30.9%	2	541	29.9%	2	347	149	496	37.9%	32.9%
Div. 3	892	821	41.9%	3	869	39.9%	3	780	31.9%	2	735	26.9%	2	319	154	473	27.9%	33.9%
Div. 4	647	807	39.9%	2	910	37.9%	2	934	23.9%	2	872	20.9%	2	348	256	604	27.9%	29.9%
Div. 5	734	409	35.9%	2	345	32.9%	2	401	18.9%	2	421	12.9%	2	78	81	159	15.9%	22.9%
Div. 6	730	696	32.9%	2	690	35.9%	2	688	23.9%	2	632	17.9%	2	158	144	302	20.9%	25.9%
Div. 7	755	462	49.9%	2	439	42.9%	2	568	24.9%	2	386	20.9%	2	121	101	222	21.9%	31.9%
Div. 8	838	534	39.9%	1	534	33.9%	1	508	16.9%	2	627	14.9%	2	199	19	218	20.9%	24.9%
Div. 9	783	444	46.9%	1	329	32.9%	1	309	34.9%	1	255	28.9%	1	74	69	143	17.9%	31.9%
Div. 10	788	210	64.9%	2	349	47.9%	2	273	15.9%	1	261	20.9%	1	77	22	99	14.9%	42.9%
Div. 11	811	125	60.9%	1	433	60.9%	1	148	9.9%	1	157	11.9%	1	89	42	131	21.9%	41.9%
Subtotal	2,920	2,641	28.9%	11	2,618	36.2%	8	2,481	35.2%	8	2,624	31.2%	8	1,302	624	1,921	28.2%	28.2%
Div. 1	995	728	28.9%	3	724	52.9%	2	653	45.9%	2	732	40.9%	2	583	262	845	33.9%	44.9%
Div. 2	660	662	21.9%	3	649	33.9%	2	657	39.9%	2	660	38.9%	2	336	145	481	35.9%	33.9%
Div. 3	543	546	33.9%	3	544	35.9%	2	523	37.9%	2	539	34.9%	2	258	91	349	37.9%	35.9%
Div. 4	702	685	30.9%	2	701	20.9%	2	648	20.9%	2	693	10.9%	2	128	86	214	19.9%	20.9%

Ninea : ISF : Irrigation Service Fee  
 Current Account (CA) : ISF charge for the current cropping (wet & dry) year which such cropping was done.  
 Back Account (BA) : ISF charge for the previous cropping year which ISF were not collected in the previous year.  
 ISF Collection Efficiency = ISF Actual Collection (CA) / ISF Collectibles (CA)  
 \*1 : No available data

Source : NIA JSRIS Office

Table E.1.10 ISF Collection of All NISs

Year	Region	ISF Collectibles (Pesos 1,000)	ISF Actual Collection (Pesos 1,000)			ISF Collection Efficiency
			Current Account	Back Account	Total	
1994	1	29,072	10,535	3,944	14,479	36 %
	2	41,474	24,411	4,878	29,289	59 %
	3	45,869	17,439	6,139	23,578	38 %
	4	41,874	22,547	6,316	28,863	54 %
	5	18,809	8,127	3,743	11,870	43 %
	6	48,306	14,652	9,631	24,283	30 %
	7&8	13,104	6,345	1,300	7,645	48 %
	9	12,126	5,330	780	6,110	44 %
	10	21,780	12,511	3,193	15,704	57 %
	11	41,547	21,887	3,778	25,665	53 %
	12	36,704	16,717	5,841	22,558	46 %
	MRIS	112,517	66,828	11,002	77,830	59 %
	UPRIS	128,912	58,616	5,267	63,883	45 %
	Total	592,094	285,945	65,812	351,757	47 %
1995	1	29,699	9,509	3,632	13,141	32 %
	2	41,273	23,858	5,549	29,407	58 %
	3	44,568	17,778	7,506	25,284	40 %
	4	38,062	18,060	7,885	25,945	47 %
	5	21,197	9,675	5,441	15,116	46 %
	6	43,922	14,896	8,427	23,323	34 %
	7&8	13,814	6,702	2,730	9,432	49 %
	9	11,945	6,405	2,540	8,945	54 %
	10	21,667	15,225	4,242	19,467	70 %
	*1	-	-	-	-	-
	12	34,919	15,848	6,230	22,078	45 %
	MRIS	104,542	58,059	10,049	68,108	56 %
	UPRIS	99,015	44,058	9,884	53,942	44 %
	Total	504,623	240,073	74,115	314,188	48 %
Average	1	29,386	10,022	3,788	13,810	34 %
	2	41,374	24,135	5,214	29,348	58 %
	3	45,219	17,609	6,823	24,431	39 %
	4	39,968	20,304	7,101	27,404	51 %
	5	20,003	8,901	4,592	13,493	44 %
	6	46,114	14,774	9,029	23,803	32 %
	7&8	13,459	6,524	2,015	8,539	48 %
	9	12,036	5,868	1,660	7,528	49 %
	10	21,724	13,868	3,718	17,586	64 %
	11	41,547	21,887	3,778	25,665	53 %
	12	35,812	16,283	6,036	22,318	45 %
	MRIS	108,530	62,444	10,526	72,969	57 %
	UPRIS	113,964	51,337	7,576	58,913	45 %
	Total	569,132	273,953	71,853	345,805	48 %

Notes: ISF : Irrigation Service Fee

Current Account (CA) : ISF charge for the current cropping (wet & dry) year which such cropping was done.

Back Account (BA) : ISF charge for the previous cropping year which ISF were not collected in the previous year.

ISF Collection Efficiency = ISF Actual Collection (CA) / ISF Collectibles (CA)

\*1: No available data

Source: NIA Central Office

Table E.1.11 Present Status on ISF Payment (Back Account)

(Data on Delinquent Water Users of Subpoena)					
RIS	Irrigation Service Area (ha)	No. of W/U	Status of Payment of Total Amount of ISF BA (Pesos 1,000)	Percentage	
				No. of W/U	Total Amount of ISF BA
Jalaur proper	0 - 1	26	339	18%	5%
	1 - 2	43	1,213	29%	19%
	2 - 3	38	1,649	26%	25%
	3 - 4	22	1,231	15%	19%
	4 - 5	6	436	4%	7%
	5 or more	12	1,605	8%	25%
<b>Total (Jalaur proper RIS)</b>		<b>147</b>	<b>6,473</b>	<b>100%</b>	<b>100%</b>
Suague	0 - 1	3	45	10%	3%
	1 - 2	6	190	21%	13%
	2 - 3	2	83	7%	6%
	3 - 4	9	486	31%	32%
	4 - 5	4	248	14%	16%
	5 or more	5	456	17%	30%
<b>Total (Suague RIS)</b>		<b>29</b>	<b>1,508</b>	<b>100%</b>	<b>100%</b>
<b>Grand Total</b>		<b>176</b>	<b>7,981</b>		

Notes : W/U : Water users  
BA : Back Account of ISF

(Data on Delinquent Water Users of Subpoena)				(Data on Delinquent Water Users of Subpoena)				
Irrigation Service Area (ha)	RIS / Division	No. of W/U	Status of Payment of Total Amount of ISF BA (Pesos 1,000)	Irrigation Service Area (ha)	RIS / Division	No. of W/U	Status of Payment of Total Amount of ISF BA (Pesos 1,000)	
								<b>0 - 1 ha</b>
Jalaur proper RIS / Div. 01		13	210	Jalaur proper RIS / Div. 01		5	282	
Div. 02		7	58	Div. 02		3	192	
Div. 03		3	32	Div. 03		-	-	
Div. 04		-	-	Div. 04		-	-	
Div. 05		2	29	Div. 05		9	516	
Div. 06		-	-	Div. 06		-	-	
Div. 07		1	10	Div. 07		4	218	
Div. 08		-	-	Div. 08		-	-	
Div. 09		-	-	Div. 09		1	23	
Div. 10		-	-	Div. 10		-	-	
Div. 11		-	-	Div. 11		-	-	
<b>Sub-Total (Jalaur proper RIS)</b>		<b>(26)</b>	<b>(332)</b>	<b>Sub-Total (Jalaur proper RIS)</b>		<b>(22)</b>	<b>(1,231)</b>	
Suague RIS / Div. 01		-	-	Suague RIS / Div. 01		-	-	
Div. 02		2	33	Div. 02		1	52	
Div. 03		1	12	Div. 03		-	-	
Div. 04		-	-	Div. 04		8	434	
<b>Sub-Total (Suague RIS)</b>		<b>(3)</b>	<b>(45)</b>	<b>Sub-Total (Suague RIS)</b>		<b>(9)</b>	<b>(486)</b>	
<b>1 - 2 ha</b>		<b>42</b>	<b>1,403</b>	<b>4 - 5 ha</b>		<b>19</b>	<b>684</b>	
Jalaur proper RIS / Div. 01		18	532	Jalaur proper RIS / Div. 01		0	0	
Div. 02		11	333	Div. 02		1	118	
Div. 03		6	172	Div. 03		4	237	
Div. 04		-	-	Div. 04		-	-	
Div. 05		2	57	Div. 05		-	-	
Div. 06		-	-	Div. 06		-	-	
Div. 07		3	62	Div. 07		1	81	
Div. 08		-	-	Div. 08		-	-	
Div. 09		3	57	Div. 09		-	-	
Div. 10		-	-	Div. 10		-	-	
Div. 11		-	-	Div. 11		-	-	
<b>Sub-Total (Jalaur proper RIS)</b>		<b>(43)</b>	<b>(1,213)</b>	<b>Sub-Total (Jalaur proper RIS)</b>		<b>(6)</b>	<b>(436)</b>	
Suague RIS / Div. 01		-	-	Suague RIS / Div. 01		-	-	
Div. 02		5	164	Div. 02		-	-	
Div. 03		-	-	Div. 03		-	-	
Div. 04		1	26	Div. 04		4	248	
<b>Sub-Total (Suague RIS)</b>		<b>(6)</b>	<b>(190)</b>	<b>Sub-Total (Suague RIS)</b>		<b>(4)</b>	<b>(248)</b>	
<b>2 - 3 ha</b>		<b>40</b>	<b>1,232</b>	<b>5 or more ha</b>		<b>17</b>	<b>2,061</b>	
Jalaur proper RIS / Div. 01		14	622	Jalaur proper RIS / Div. 01		3	255	
Div. 02		10	478	Div. 02		3	427	
Div. 03		6	254	Div. 03		4	765	
Div. 04		-	-	Div. 04		-	-	
Div. 05		-	-	Div. 05		1	67	
Div. 06		-	-	Div. 06		-	-	
Div. 07		5	187	Div. 07		1	91	
Div. 08		-	-	Div. 08		-	-	
Div. 09		3	108	Div. 09		-	-	
Div. 10		-	-	Div. 10		-	-	
Div. 11		-	-	Div. 11		-	-	
<b>Sub-Total (Jalaur proper RIS)</b>		<b>(38)</b>	<b>(1,642)</b>	<b>Sub-Total (Jalaur proper RIS)</b>		<b>(12)</b>	<b>(1,605)</b>	
Suague RIS / Div. 01		-	-	Suague RIS / Div. 01		2	203	
Div. 02		-	-	Div. 02		-	-	
Div. 03		-	-	Div. 03		1	96	
Div. 04		2	83	Div. 04		2	157	
<b>Sub-Total (Suague RIS)</b>		<b>(2)</b>	<b>(83)</b>	<b>Sub-Total (Suague RIS)</b>		<b>(5)</b>	<b>(456)</b>	
<b>Notes : W/U : Water users</b>				<b>Grand Total</b>			<b>176</b>	<b>7,981</b>
<b>BA : Back Account of ISF</b>				<b>Total (Jalaur proper RIS)</b>			<b>(147)</b>	<b>(6,473)</b>
<b>Source : NIA JSRIS Office</b>				<b>Total (Suague RIS)</b>			<b>(29)</b>	<b>(1,508)</b>

Table E.1.12 Present Status on ISF Payment (Current Account)

(Random 20 Data from each Irrigation Division)

RIS	Div.	Irrigation Service Area (ha)	No. of W/U	Status of Payment (nos.)								Percentage		
				1996 Dry		1996 Wet		1997 Dry		Total		Total		
				Paid	None	Paid	None	Paid	None	Paid	None	Paid	None	
Jalaur proper	1	0-1	9	5	4	4	5	6	3	15	12	56%	44%	
		1-2	8	4	4	4	4	3	5	11	13	46%	54%	
		2-3	2	0	2	0	2	0	2	0	6	0	100%	-
		3-4	0	0	0	0	0	0	0	0	0	0	-	-
		4-5	0	0	0	0	0	0	0	0	0	0	-	-
		5 or more	1	1	0	1	0	0	1	2	1	67%	33%	
		Sub-Total	20	10	10	9	11	9	11	28	32	47%	53%	
Jalaur proper	2	0-1	4	2	2	2	2	3	1	7	5	58%	42%	
		1-2	13	5	8	4	9	5	8	14	25	36%	64%	
		2-3	3	1	2	0	3	0	3	1	8	11%	89%	
		3-4	0	0	0	0	0	0	0	0	0	-	-	
		4-5	0	0	0	0	0	0	0	0	0	-	-	
		5 or more	0	0	0	0	0	0	0	0	0	-	-	
		Sub-Total	20	8	12	6	14	8	12	22	38	37%	63%	
Jalaur proper	3	0-1	4	2	2	4	0	2	2	8	4	67%	33%	
		1-2	9	8	1	4	5	6	3	18	9	67%	33%	
		2-3	4	3	1	4	0	2	2	9	3	75%	25%	
		3-4	1	0	1	0	1	0	1	0	3	0%	100%	
		4-5	2	1	1	1	1	2	0	4	2	67%	33%	
		5 or more	0	0	0	0	0	0	0	0	0	-	-	
		Sub-Total	20	14	6	13	7	12	8	39	21	65%	35%	
Jalaur proper	4	0-1	0	0	0	0	0	0	0	0	0	-	-	
		1-2	7	2	5	1	6	1	6	4	17	19%	81%	
		2-3	9	2	7	1	8	0	9	3	24	11%	89%	
		3-4	1	1	0	0	1	0	1	1	2	33%	67%	
		4-5	2	0	2	0	2	0	2	0	6	0%	100%	
		5 or more	1	1	0	1	0	1	0	3	0	100%	0%	
		Sub-Total	20	6	14	3	17	2	18	11	49	18%	82%	
Jalaur proper	5	0-1	1	0	1	0	1	0	1	0	3	0%	100%	
		1-2	12	2	10	0	12	0	12	2	34	6%	94%	
		2-3	3	2	1	0	3	0	3	2	7	22%	78%	
		3-4	2	0	2	0	2	0	2	0	6	0%	100%	
		4-5	1	0	1	0	1	0	1	0	3	0%	100%	
		5 or more	1	0	1	0	1	0	1	0	3	0%	100%	
		Sub-Total	20	4	16	0	20	0	20	4	56	7%	93%	
Jalaur proper	6	0-1	3	2	1	0	3	0	3	2	7	22%	78%	
		1-2	9	0	9	0	9	0	9	0	27	0%	100%	
		2-3	4	0	4	0	4	0	4	0	12	0%	100%	
		3-4	2	0	2	0	2	0	2	0	6	0%	100%	
		4-5	2	0	2	0	2	0	2	0	6	0%	100%	
		5 or more	0	0	0	0	0	0	0	0	0	-	-	
		Sub-Total	20	2	18	0	20	0	20	2	58	3%	97%	

Note : W/U : Water users

Source : NIA JSRIS Office

Table E.1.12 Present Status on ISF Payment (Current Account)

(Random 20 Data from each Irrigation Division)

RIS	Div.	Irrigation Service Area (ha)	No. of W/U	Status of Payment (nos.)						Percentage			
				1996 Dry		1996 Wet		1997 Dry		Total		Total	
				Paid	None	Paid	None	Paid	None	Paid	None	Paid	None
Jalaur proper	7	0-1	3	1	2	0	3	0	3	1	8	11%	89%
		1-2	7	0	7	0	7	0	7	0	21	0%	100%
		2-3	5	1	4	1	4	0	5	2	13	13%	87%
		3-4	3	0	3	0	3	0	3	0	9	0%	100%
		4-5	2	0	2	0	2	0	2	0	6	0%	100%
		5 or more	0	0	0	0	0	0	0	0	0	-	-
		Sub-Total	20	2	18	1	19	0	20	3	57	5%	95%
Jalaur proper	8	0-1	8	1	7	1	7	2	6	4	20	17%	83%
		1-2	8	1	7	1	7	0	8	2	22	8%	92%
		2-3	3	0	3	0	3	0	3	0	9	0%	100%
		3-4	1	0	1	0	1	0	1	0	3	0%	100%
		4-5	0	0	0	0	0	0	0	0	0	-	-
		5 or more	0	0	0	0	0	0	0	0	0	-	-
		Sub-Total	20	2	18	2	18	2	18	6	54	10%	90%
Jalaur proper	9	0-1	5	0	5	1	4	1	4	2	13	13%	87%
		1-2	3	1	2	0	3	0	3	1	8	11%	89%
		2-3	7	0	7	1	6	1	6	2	19	10%	90%
		3-4	3	1	2	0	3	0	3	1	8	11%	89%
		4-5	0	0	0	0	0	0	0	0	0	-	-
		5 or more	2	0	2	0	2	0	2	0	6	0%	100%
		Sub-Total	20	2	18	2	18	2	18	6	54	10%	90%
Jalaur proper	10	0-1	12	0	12	0	12	0	12	0	36	0%	100%
		1-2	5	0	5	0	5	0	5	0	15	0%	100%
		2-3	2	0	2	0	2	0	2	0	6	0%	100%
		3-4	0	0	0	0	0	0	0	0	0	-	-
		4-5	1	0	1	0	1	0	1	0	3	0%	100%
		5 or more	0	0	0	0	0	0	0	0	0	-	-
		Sub-Total	20	0	20	0	20	0	20	0	60	0%	100%
Jalaur proper	11	0-1	14	0	14	0	14	0	14	0	42	0%	100%
		1-2	2	0	2	0	2	0	2	0	6	0%	100%
		2-3	3	1	2	0	3	0	3	1	8	11%	89%
		3-4	1	0	1	0	1	0	1	0	3	0%	100%
		4-5	0	0	0	0	0	0	0	0	0	-	-
		5 or more	0	0	0	0	0	0	0	0	0	-	-
		Sub-Total	20	1	19	0	20	0	20	1	59	2%	98%
Jalaur proper	Total	0-1	63	13	50	12	51	14	49	39	150	21%	79%
		1-2	83	23	60	14	69	15	68	52	197	21%	79%
		2-3	45	10	35	7	38	3	42	20	115	15%	85%
		3-4	14	2	12	0	14	0	14	2	40	5%	95%
		4-5	10	1	9	1	9	2	8	4	26	13%	87%
		5 or more	5	2	3	2	3	1	4	5	10	33%	67%
		Total (Jalaur proper RIS)	220	51	169	36	184	35	185	122	538	18%	82%

Note : W/U : Water users

Source : NIA JSRIS Office

Table E.1.12 Present Status on ISF Payment (Current Account)

(Random 20 Data from each Irrigation Division)

RIS	Div.	Irrigation Service Area (ha)	No. of W/U	Status of Payment (nos.)						Percentage			
				1996 Dry		1996 Wet		1997 Dry		Total		Total	
				Paid	None	Paid	None	Paid	None	Paid	None	Paid	None
Suague	1	0 - 1	9	8	1	5	4	4	5	17	10	63%	37%
		1 - 2	6	4	2	3	3	3	3	10	8	56%	44%
		2 - 3	5	2	3	2	3	3	2	7	8	47%	53%
		3 - 4	0	0	0	0	0	0	0	0	0	-	-
		4 - 5	0	0	0	0	0	0	0	0	0	-	-
		5 or more	0	0	0	0	0	0	0	0	0	0	-
		Sub-Total	20	14	6	10	10	10	10	34	26	57%	43%
Suague	2	0 - 1	7	2	5	1	6	0	7	3	18	14%	86%
		1 - 2	10	5	5	8	2	5	5	18	12	60%	40%
		2 - 3	1	0	1	1	0	1	0	2	1	67%	33%
		3 - 4	0	0	0	0	0	0	0	0	0	-	-
		4 - 5	1	0	1	0	1	0	1	0	3	0%	100%
		5 or more	1	1	0	1	0	1	0	3	0	100%	0%
		Sub-Total	20	8	12	11	9	7	13	26	34	43%	57%
Suague	3	0 - 1	4	1	3	2	2	2	2	5	7	42%	58%
		1 - 2	9	4	5	5	4	1	7	10	16	38%	62%
		2 - 3	3	0	3	0	3	0	3	0	9	0%	100%
		3 - 4	3	0	3	2	1	1	2	3	6	33%	67%
		4 - 5	0	0	0	0	0	0	0	0	0	-	-
		5 or more	1	0	1	0	1	0	1	0	3	0%	100%
		Sub-Total	20	5	15	9	11	4	15	18	41	31%	69%
Suague	4	0 - 1	1	0	1	0	1	0	1	0	3	0%	100%
		1 - 2	13	2	11	2	11	1	12	5	34	13%	87%
		2 - 3	6	1	5	0	6	0	6	1	17	6%	94%
		3 - 4	0	0	0	0	0	0	0	0	0	-	-
		4 - 5	0	0	0	0	0	0	0	0	0	-	-
		5 or more	0	0	0	0	0	0	0	0	0	-	-
		Sub-Total	20	3	17	2	18	1	19	6	54	10%	90%
Suague	Total	0 - 1	21	11	10	8	13	6	15	25	38	40%	60%
		1 - 2	38	15	23	18	20	10	27	43	70	38%	62%
		2 - 3	15	3	12	3	12	4	11	10	35	22%	78%
		3 - 4	3	0	3	2	1	1	2	3	6	33%	67%
		4 - 5	1	0	1	0	1	0	1	0	3	0%	100%
		5 or more	2	1	1	1	1	1	1	3	3	50%	50%
		Total (Suague RIS)	80	30	50	32	48	22	57	84	155	35%	65%

Note : W/U : Water users

Source : NIA JSRIS Office



Table E.2.1 Proposed No. of NIA O&M Staff by Division

RIS	Name of IA	Irrigation Service Area & Laterals (ha)	Length of Main Canal (km)	IA Contract (km)	Present Conditions (1997)				Phase I				Phase II			
					Type I	Type II	WRF Tech. #1 (km)	WRF Tender	No. of WRF Tech. Tender	No. of WRF Tender	Balance of WRF Tech. Tender	No. of WRF Tech. Tender	No. of WRF Tech. Tender	No. of WRF Tech. Tender	No. of WRF Tech. Tender	No. of WRF Tech. Tender
<b>Jalaur proper RIS</b>																
Div. 1	SISADA	296	Type I&II	3												
	BAPZAT	512	Type I	9												
(Sub-Total)		(808)		(12)	6	0	*2	2	1	3	+1	1	(2)	+1	0	
Div. 2	JP-2	714	Type I	9	10	1	3	3	0	0	0	0	0	0	-2	
Div. 3	JP-3	892	Type I	5	5	1	3	3	0	0	0	0	0	0	-2	
Div. 4	JADD	572	Type I	4												
	J-JIN	375	Type I	4												
(Sub-Total)		(947)		(8)	5	1	3	1	3	0	0	0	(2)	0	-1	
Div. 5	POZA	594	Type I	4												
	JABAFI	160	Type II	0												
(Sub-Total)		(754)		(4)	6	1	3	0	0	0	0	0	(2)	0	-1	
Div. 6	CIDD	740	Type I	6	5	1	3	0	0	0	0	0	0	0	-1	
Div. 7	LOIAPRO	755	Type I	7	2	0	*2	2	*4	3	+1	+1	1	+1	-1	
Div. 8, 9, 10&11																
<b>Team Leader</b>																
<b>Assistant Team Leader</b>																
Div. 8	CAMP	838	Type I&II	9	2	0	*2	2	1	0	-1	0	0	-1	-1	
Div. 9	BAMAPA	373	Type I	3												
	MACAPA	410	Type I	6												
(Sub-Total)		(783)		(9)	1	1	1	1	3	0	+2	1	(2)	0	+1	
Div. 10	CANROSCA	788	Type I	5	5	0	*3	1	3	+1	+2	1	1	+1	0	
Div. 11	PAGCAYUSO	811	Type I	9	2	0	*3	2	3	+1	+1	1	1	+1	-1	
Total (Jalaur proper RIS)		8,520		83	49	7	25	25	11	33	+4	+8	11	15	-10	
<b>Suague RIS</b>																
Div. 1	SMEWBAT	387	Type I&II	3												
	JEBADA	608	Type I	7												
(Sub-Total)		(995)		(10)	2	1	2	1	3	0	-1	1	(2)	0	0	
Div. 2	SMEWBAT	67	Type I&II	2												
	AGDABASICA	593	Type I	6												
(Sub-Total)		(660)		(8)	0	0	*2	2	1	2	+1	0	1	(1)	-1	
Div. 3	SUAGUE 3	543	Type I	9	3	0	*2	3	1	2	+1	-1	1	+1	-2	
Div. 4	SMEWBAT	133	Type II	0												
	DIV. 4 SUAGUE	569	Type I	6												
(Sub-Total)		(702)		(6)	2	0	*2	3	1	2	+1	-1	1	(1)	-2	
Total (Suague RIS)		2,900		33	7	1	10	4	2	4	+2	-1	4	5	-5	
Grand-Total		11,720		116	56	8	35	35	15	42	+7	+2	15	20	+7	

Notes: WRF Tech. : Water Resources Facilities Technician  
WRF Tender : Water Resources Facilities Tender  
\*1 : Length of canals under charge of WRF Tenders for the works equivalent to Type I contract by IA.  
\*2 : WRF Tender is acting for WRF Technician.  
\*3 : WRF Tender of Div.10 (Jalaur proper) is acting for WRF Technician of Div.10&11 (Jalaur proper).  
\*4 : One WRF Operator is designated as acting WRF Technician and counted as a WRF Tender.  
\*5 : No. of proposed O&M staff is within the approved No. of positions by Department of Budget and Management.

Source : NIA JSRRIS Office

**Table E.2.2 Proposed Persons in Charge by Improvement Plan for Water Management and O&M practice, and ISF Collection**

Description	Person in Charge *1	
	Phase I	Phase II
<b>I. Water Management</b>		
(1) Hydrology / Meteorology Water Discharge Recording	Hydrologist (NIA) *2	
(2) Cropping Calendar / Farm Activities	Hydrologist (NIA) *2	
(3) Water Balance / Irrigation Water Requirement	Irrigation Engineer (NIA) *2	
(4) Water Delivery and Distribution Schedule	Irrigation Engineer (NIA) *2	
<b>2. O&amp;M Practices</b>		
<b>(1) Operation Work</b>		
- Operation of Water Control Structures / Measuring Water Discharge i) River Discharge ii) Intake Discharge iii) Water Delivery Discharge (Head gate) iv) Water Distribution Discharge (Turnout)	Supervision : Operation Engineers (NIA)  WRF Operators (NIA) WRF Operators (NIA) WRF Technicians / WRF Tenders (NIA) WRF Technicians / WRF Tenders (NIA) / IAs	Supervision : Operation Engineers (NIA)  WRF Operators (NIA) WRF Operators (NIA) IAs *3 IAs *3
<b>(2) Maintenance Work</b>		
- Maintenance of Water Control Structures i) Intake gate ii) Sluice gate iii) Head gate iv) Check and Turnout - Desilting (Canals, Diversion Dam, Settling Basin) - Maintenance of On-farm facilities (Main farm ditch and others) - Other Maintenance (Service Road, Other Facilities) i) Service Road ii) Other Canal Structures	Supervision : Maintenance Engineers (NIA) WRF Operators (NIA) WRF Operators (NIA) WRF Technicians / WRF Tenders (NIA) IAs *3 Equipment Section (RIS office) IAs *3  Equipment Section (RIS office) WRF Technicians / WRF Tenders (NIA)	Supervision : Maintenance Engineers (NIA) WRF Operators (NIA) WRF Operators (NIA) IAs *3 IAs *3 IAs *3 IAs *3  IAs *3 IAs *3
<b>3. ISF Collection</b>		
(1) Collection and Billing Record (Database Management)	Billing Clerks (NIA)	IA Financial unit
(2) Collection Practice	Collectors (NIA & IA)	Collectors (IA)

Notes : \*1 : Proposed number of each position will be shown in Fig. 4.4.2.

\*2 : Hydrologist and Irrigation Engineer will be newly designated in the proposed plan.

\*3 : IA has responsibility to operate and maintain the facilities in IA area with technical assistance of NIA O&M staff.

Table B.2.3 List of Proposed O&M Equipment

Name of Equipment		Required No.		Existing No.	Proposed No.	
<b>A. Construction Equipment</b>						
1.	Crane-Dragline, Crawler	16 - 25 t		0	1	
2.	Bulldozer	9 t		0	1	
3.	Backhoe	0.4 m <sup>3</sup>		1	1	
4.	Backhoe	0.8 m <sup>3</sup>		0	2	
5.	Dump Truck	6 t		0	4	
6.	Motor Grader	L=3.1 m		1	0	
7.	Roller, Vibration	3 - 5 tons		0	1	
8.	Tamper	60 - 100 kg		0	4	
9.	Concrete Mixer	0.2 m <sup>3</sup>		0	2	
<b>B. Vehicles</b>						
1.	Pick-up Truck	Double Cabin, 1.25 t	4	*1	1	3
2.	Motorcycle	100 cc	61	*2	20	41
<b>C. Office Equipment</b>						
1.	Computer w/Printer		4	*3	2	2
2.	Radio Set (41-Handheld radio / NIA : 21 *4, IA : 20)		41		0	41
3.	Grass Cutter for each IA (Canal Maintenance)		20		0	20

Notes : \*1 : Jalaur proper RIS : 3 units, Suague RIS : 1 unit  
 \*2 : WRF Technicians : 15 units, WRF Tenders : 42 units,  
 Operation Engineer (Jalaur proper RIS) : 1 unit, Maintenance Engineer (Jalaur proper RIS) : 1 unit,  
 Operation and Maintenance Engineer (Suague RIS) : 1 unit, Agriculturist : 1 unit  
 \*3 : Water Management Section : 1 unit, ISF collection Section : 1 unit,  
 Project Implementation Section : 1 unit, Administrative Section : 1 unit  
 \*4 : WRF Technicians : 15 units, WRF Operators : 2 units,  
 Operation Engineer (Jalaur proper RIS) : 1 unit, Maintenance Engineer (Jalaur proper RIS) : 1 unit,  
 Operation and Maintenance Engineer (Suague RIS) : 1 unit, Agriculturist : 1 unit

Table E.2.4 Proposed O&M Budget for Jalaur proper RIS & Suague RIS and Necessary ISF (1/3)

Description	Phase I	Phase II	
		Implementation Stage	Sustainability Stage
<b>1. Jalaur proper RIS (ISA : 8,820ha)</b>			
- Necessary Annual O&M budget (pesos 1,000)	13,009	10,175	7,708
Necessary ISF collection efficiency *1	82%	64%	49%
- ISF Collectible (CA) (pesos 1,000) *2	15,876	15,876	15,876
- Benefited area *3			
a) Dry cropping (ISF Rate : 1,080 pesos/ha) *4	8,820ha (100%) *5	8,820ha (100%) *5	8,820ha (100%) *5
b) Wet cropping (ISF Rate : 720 pesos/ha) *4	8,820ha (100%) *5	8,820ha (100%) *5	8,820ha (100%) *5
<b>2. Suague RIS (ISA : 2,900ha)</b>			
- Necessary Annual O&M budget (pesos 1,000)	3,917	3,389	2,515
Necessary ISF collection efficiency *1	128%	111%	82%
- ISF Collectible (CA) (pesos 1,000) *2	3,060	3,060	3,060
- Benefited area *3			
a) Dry cropping (ISF Rate : 1,080 pesos/ha) *4	900ha (31%) *5	900ha (31%) *5	900ha (31%) *5
b) Wet cropping (ISF Rate : 720 pesos/ha) *4	2,900ha (100%) *5	2,900ha (100%) *5	2,900ha (100%) *5
<b>Total of Necessary Annual O&amp;M budget (pesos 1,000)</b>	<b>16,926</b>	<b>13,564</b>	<b>10,223</b>
<b>Total of ISF Collectible (CA) (pesos 1,000)</b>	<b>18,936</b>	<b>18,936</b>	<b>18,936</b>
<b>Necessary ISF collection efficiency</b>	<b>89%</b>	<b>72%</b>	<b>54%</b>

Notes : \*1 : ISF collection efficiency = Necessary O&M budget / ISF collectible (CA)

\*2 : ISF collectible (CA) estimated with benefited area (\*3) in current account.

\*3 : Benefited area estimated with full irrigable area in the irrigation service area.

\*4 : ISF Rate

Dry Cropping : P8/kg x 150kg/ha x 90% (Less 10% in case of payment before deadline/Jan. 30) = P1,080/ha

Wet Cropping : P8/kg x 100kg/ha x 90% (Less 10% in case of payment before deadline/Dec. 31) = P720/ha

\*5 : ( % ) : Ratio of the benefited area to the Irrigation Service Area (ISA).

Necessary Annual O&M budget Description	(Unit : Pesos 1,000)				
	Phase I	Phase II			
		Implementation Stage	Sustainability Stage		
<b>1. Jalaur proper RIS</b>					
A. Personal Services	2,266 (71%) *1	6,432 (63%) *1	3,965 (51%) *1		
1. Salaries/Wages	5,791	4,020	2,478		
2. Other personal services	3,475	2,412	1,487		
B. Maintenance & Other Operating Expenses	246 (2%) *1	246 (2%) *1	246 (3%) *1		
C. Rehabilitation and maintenance cost for system facilities	3,497 (27%) *1	3,497 (35%) *1	3,497 (46%) *1		
<b>Total</b>	<b>13,009</b>	<b>10,175</b>	<b>7,708</b>		
<b>2. Suague RIS</b>					
A. Personal Services	2,686 (69%) *1	2,158 (64%) *1	1,285 (51%) *1		
1. Salaries/Wages	1,679	1,349	803		
2. Other personal services	1,007	809	482		
B. Maintenance & Other Operating Expenses	81 (2%) *1	81 (2%) *1	81 (3%) *1		
C. Rehabilitation and maintenance cost for system facilities	1,150 (29%) *1	1,150 (34%) *1	1,150 (46%) *1		
<b>Total</b>	<b>3,917</b>	<b>3,389</b>	<b>2,515</b>		
<b>Grand Total</b>	<b>16,926</b>	<b>13,564</b>	<b>10,223</b>		

Note : \*1 : ( % ) : Ratio of the respective budget to the total necessary O&M budget.

Table E.2.4 Proposed O&M Budget for Jalaur proper RIS & Suague RIS and Necessary ISF (2/3)

Description		Phase I		Phase II	
		Unit Rate (pesos/month)	No. Amount (P1,000/year)	Implementation Stage No. Amount (P1,000/year)	Sustainability Stage No. Amount (P1,000/year)
<b>I. Jalaur proper RIS</b>					
<b>A. Personal Services</b>			9,266	6,432	3,965
<b>1. Salaries/Wages</b>			5,791	4,020	2,478
i) Irrigation Superintendent *1		17,500	210	210	210
1) Irrigation Superintendent II			1	1	1
2) Irrigation Superintendent I			1	1	1
ii) Water Management Section *2		16,200	194	194	194
1) Agriculturist *3			1	1	1
2) Irrigation Engineer (Engineer A)			1	1	1
3) Hydrologist (Engineer A)			1	1	1
iii) Operation and Maintenance Section					
1) Operation Engineer (Engineer A) *4		7,300	88	88	88
2) Maintenance Engineer (Engineer A) *5		7,300	88	88	88
3) WRF Technicians		8,000	11	1,056	6
4) WRF Operator		6,200	74	74	74
5) WRF Tenders		5,900	33	2,336	15
iv) ISF Collection Section					
1) Agriculturist *3		-	1	-	1
2) Billing Clerks *6		3,800	3	137	0
3) Assistant Bill Collectors *7		-	15	-	0
v) Institutional Development Section					
1) Agriculturist *3		-	1	-	1
2) Institutional Development Officer		8,200	3	295	2
vi) Administrative Section *8		55,200	662	662	662
1) Cashier			1	1	1
2) Sr. Accounting Processor			2	2	2
3) Cashing Assistant			1	1	1
4) Clerk Processor			1	1	1
5) Property Officer			1	1	1
6) Industrial Security Guard			2	2	2
7) Drivers			4	4	4
8) Utility Workers			2	2	2
vii) Equipment & Project Implementation Section *9					
1) Engineer A *5		-	1	-	1
2) Engineer B		5,000	1	60	0
3) Engineering Aide		3,800	3	137	0
4) Auto Mechanic		3,800	3	137	3
5) Heavy Equipment Operator		4,200	5	252	5
6) Draftsman		2,700	2	65	0
<b>2. Other personal services *10</b>			3,475	2,412	1,487
<b>B. Maintenance &amp; Other Operating Expenses *11</b>			246	246	246
<b>C. Rehabilitation and maintenance cost for system facilities *12 (699.4 million pesos x 0.5%)</b>			3,497	3,497	3,497
<b>Total</b>			<b>13,009</b>	<b>10,175</b>	<b>7,708</b>

- Notes: \*1: Salaries of the Irrigation Superintendents are estimated on the prorated basis of the ISA of each RIS.  
(ISA: Jalaur proper RIS: 8,820ha, Suague RIS: 2,900ha, Jalaur extension RIS: 2,620ha, Borotac Viejo RIS: 1,770ha)  
Salary of Irrigation Superintendents: P14,900+P13,500=P28,400  
Jalaur proper RIS: P16,200, Suague RIS: P5,300, Jalaur extension RIS: P4,800, Borotac Viejo RIS: P2,100
- \*2: Salaries of staff in the Water Management Section are estimated on the prorated basis of the ISA of each RIS.  
Salaries of staff in the Water Management Section: P9,500 x 3=P28,500  
Jalaur proper RIS: P17,500, Suague RIS: P5,800, Jalaur extension RIS: P5,200
- \*3: Agriculturist in the Water Management Section is holding the same position in the ISF Collection Section and the Institutional Development Section.
- \*4: Salaries of the Operation Engineer for Jalaur proper & extension RIS is estimated on the prorated basis of the ISA of each RIS.  
Salaries of the Operation Engineer: P9,500  
Jalaur proper RIS: P7,300, Jalaur extension RIS: P2,200
- \*5: Engineer A (Maintenance) for Jalaur proper & extension RIS is holding the same position in the Equipment & Project Implementation Section.  
Salaries of the Maintenance Engineer for Jalaur proper & extension RIS is estimated on the prorated basis of the ISA of each RIS.  
Salaries of the Maintenance Engineer: P9,500  
Jalaur proper RIS: P7,300, Jalaur extension RIS: P2,200
- \*6: Three (3) Billing Clerks in the ISF Collection Section are designated for Jalaur proper RIS, Jalaur extension RIS and Suague RIS.  
Salaries of these Billing Clerks for each RIS are estimated on the prorated basis of the ISA of each RIS.  
Salary of Billing Clerk: P6,200  
Jalaur proper RIS: P3,800, Suague RIS: P1,300, Jalaur extension RIS: P1,100
- \*7: The WRF Tenders in the O&M Section are deputized as the Assistant Bill Collectors during Phase I.
- \*8: Salaries of staff in the Administrative Section are estimated on the prorated basis of the ISA of each RIS.  
Salaries of staff in the Administrative Section: P8,400+P7,600x2+P6,800+P6,800+P7,600  
: P8,400+P7,600x2+P6,800+P6,800+P7,600+P5,900x2+P6,100x4+P4,400x2  
Jalaur proper RIS: P55,200, Suague RIS: P18,200, Jalaur extension RIS: P16,400
- \*9: Salaries of staff in the Equipment & Project Implementation Section are estimated on the prorated basis of the ISA of each RIS.  
Salaries of staff in the Equipment & Project Implementation Section  
Engineer B (P8,200): Jalaur proper RIS: P5,000, Suague RIS: P1,700, Jalaur extension RIS: P1,500  
Engineering Aide (P6,100): Jalaur proper RIS: P3,800, Suague RIS: P1,200, Jalaur extension RIS: P1,100  
Auto Mechanic (P6,100): Jalaur proper RIS: P3,800, Suague RIS: P1,200, Jalaur extension RIS: P1,100  
Heavy Equip. Operator (P6,900): Jalaur proper RIS: P4,200, Suague RIS: P1,400, Jalaur extension RIS: P1,300  
Draftsman (P4,400): Jalaur proper RIS: P2,700, Suague RIS: P900, Jalaur extension RIS: P800
- \*10: Annual other personal services cost = (Salaries/Wages) x 0.6  
(on the basis of actual expenses in last 5 years, Ref. Table E.1.8)
- \*11: Annual maintenance & other operating expenses for JSRIS Office = P400,000  
(on the basis of actual expenses in last 5 years, Ref. Table E.1.8)  
Jalaur proper RIS: P246,000, Suague RIS: P80,900, Jalaur extension RIS: P73,100
- \*12: Rehabilitation and maintenance cost = Total direct construction cost x 0.5%

Table E.2.4 Proposed O&M Budget for Jalaur proper RIS & Suague RIS and Necessary ISF (3/3)

Necessary Annual O&M budget for Suague RIS		Phase I		Phase II		
Description	Unit Rate (pesos/month)	Implementation Stage		Sustainability Stage		
		No.	Amount (P1,000/year)	No.	Amount (P1,000/year)	
<b>II. Suague RIS</b>			<b>2,686</b>		<b>2,158</b>	
<b>A. Personal Services</b>			<b>1,672</b>		<b>1,349</b>	
<b>I. Salaries/Wages</b>			<b>68</b>		<b>68</b>	
<b>i) Irrigation Superintendent *1</b>						
1) Irrigation Superintendent II	5,700	1		1		1
2) Irrigation Superintendent I		1		1		1
<b>ii) Water Management Section *2</b>			<b>64</b>		<b>64</b>	
<b>1) Agriculturist *3</b>						
1) Agriculturist (Engineer A)		1		1		1
2) Irrigation Engineer (Engineer A)		1		1		1
3) Hydrologist (Engineer A)		1		1		1
<b>iii) Operation and Maintenance Section</b>						
<b>1) Operation and Maintenance Engineer (Senior Engineer)</b>			<b>13</b>		<b>13</b>	
1) Operation and Maintenance Engineer (Senior Engineer)	1,100	1	13	1	13	1
2) WRF Technicians	8,000	4	384	4	384	2
3) WRF Operator	6,200	1	74	1	74	1
4) WRF Tenders	5,900	9	637	5	354	0
<b>iv) ISF Collection Section</b>						
<b>1) Agriculturist *3</b>						
1) Agriculturist *3	-	1	-	1	-	-
<b>2) Billing Clerks *4</b>			<b>47</b>		<b>0</b>	
2) Billing Clerks *4	1,300	3	47	0	0	0
<b>3) Assistant Bill Collectors *5</b>						
3) Assistant Bill Collectors *5	-	15	-	0	-	0
<b>v) Institutional Development Section</b>						
<b>1) Agriculturist *3</b>						
1) Agriculturist *3	-	1	-	1	-	-
<b>2) Institutional Development Officer</b>			<b>98</b>		<b>98</b>	
2) Institutional Development Officer	8,200	1	98	1	98	1
<b>vi) Administrative Section *6</b>			<b>218</b>		<b>218</b>	
<b>1) Cashier</b>						
1) Cashier		1		1		1
<b>2) Sr. Accounting Processor</b>						
2) Sr. Accounting Processor		2		2		2
<b>3) Cashing Assistant</b>						
3) Cashing Assistant		1		1		1
<b>4) Clerk Processor</b>						
4) Clerk Processor		1		1		1
<b>5) Property Officer</b>						
5) Property Officer		1		1		1
<b>6) Industrial Security Guard</b>						
6) Industrial Security Guard		2		2		2
<b>7) Drivers</b>						
7) Drivers		4		4		4
<b>8) Utility Workers</b>						
8) Utility Workers		2		2		2
<b>vii) Equipment &amp; Project Implementation Section *7</b>						
<b>1) Engineer A *8</b>						
1) Engineer A *8	-	1	-	1	-	-
<b>2) Engineer B</b>			<b>20</b>		<b>20</b>	
2) Engineer B	1,700	1	20	0	20	0
<b>3) Engineering Aide</b>			<b>14</b>		<b>14</b>	
3) Engineering Aide	1,200	3	14	0	14	0
<b>4) Auto Mechanic</b>			<b>14</b>		<b>14</b>	
4) Auto Mechanic	1,200	3	14	3	14	3
<b>5) Heavy Equipment Operator</b>			<b>17</b>		<b>17</b>	
5) Heavy Equipment Operator	1,400	5	17	5	17	5
<b>6) Draftsman</b>			<b>11</b>		<b>11</b>	
6) Draftsman	900	2	11	0	11	0
<b>2. Other personal services *9</b>			<b>1,007</b>		<b>809</b>	
<b>B. Maintenance &amp; Other Operating Expenses *10</b>			<b>81</b>		<b>81</b>	
<b>C. Rehabilitation and maintenance cost for system facilities *11</b> (229.9 million pesos x 0.5%)			<b>1,150</b>		<b>1,150</b>	
<b>Total</b>			<b>3,917</b>		<b>3,389</b>	
						<b>2,515</b>

- Notes : \*1 : Salaries of the Irrigation Superintendents are estimated on the prorata basis of the ISA of each RIS.  
(ISA : Jalaur proper RIS : 8,820ha, Suague RIS : 2,900ha, Jalaur extension RIS : 2,620ha, Borotac Viejo RIS : 1,770ha)  
Salary of Irrigation Superintendents : P14,900+P13,500=P28,400  
Jalaur proper RIS : P16,200, Suague RIS : P5,300, Jalaur extension RIS : P4,800, Borotac Viejo RIS : P2,100
- \*2 : Salaries of staff in the Water Management Section are estimated on the prorata basis of the ISA of each RIS.  
Salaries of staff in the Water Management Section : P9,500 x 3=P28,500  
Jalaur proper RIS : P17,500, Suague RIS : P5,800, Jalaur extension RIS : P5,200
- \*3 : Agriculturist in the Water Management Section is holding the same position in the ISF Collection Section and the Institutional Development Section.
- \*4 : Three (3) Billing Clerks in the ISF Collection Section are designated for Jalaur proper RIS, Jalaur extension RIS and Suague RIS.  
Salaries of these Billing Clerks for each RIS are estimated on the prorata basis of the ISA of each RIS.  
Salary of Billing Clerk : P6,200  
Jalaur proper RIS : P3,800, Suague RIS : P1,300, Jalaur extension RIS : P1,100
- \*5 : The WRF Tenders in the O&M Section are deputized as the Assistant Bill Collectors during Phase I.
- \*6 : Salaries of staff in the Administrative Section are estimated on the prorata basis of the ISA of each RIS.  
Salaries of staff in the Administrative Section : P8,400+P7,600x2+P6,800+P6,800+P7,600  
: P8,400+P7,600x2+P6,800+P6,800+P7,600+P5,900x2+P6,100x4+P4,400x2  
Jalaur proper RIS : P55,200, Suague RIS : P18,200, Jalaur extension RIS : P16,400
- \*7 : Salaries of staff in the Equipment & Project Implementation Section are estimated on the prorata basis of the ISA of each RIS.  
Salaries of staff in the Equipment & Project Implementation Section  
Engineer B (P8,200) : Jalaur proper RIS : P5,000, Suague RIS : P1,700, Jalaur extension RIS : P1,500  
Engineering Aide (P6,100) : Jalaur proper RIS : P3,800, Suague RIS : P1,200, Jalaur extension RIS : P1,100  
Auto Mechanic (P6,100) : Jalaur proper RIS : P3,800, Suague RIS : P1,200, Jalaur extension RIS : P1,100  
Heavy Equip. Operator (P6,900) : Jalaur proper RIS : P4,200, Suague RIS : P1,400, Jalaur extension RIS : P1,300  
Draftsman (P4,400) : Jalaur proper RIS : P2,700, Suague RIS : P900, Jalaur extension RIS : P800
- \*8 : Engineer A (Maintenance) for Jalaur proper & extension RIS is holding the same position in the Equipment & Project Implementation Section.
- \*9 : Annual other personal services cost = (Salaries/Wages) x 0.6  
(on the basis of actual expenses in last 5 years, Ref. Table E.1.8)
- \*10 : Annual maintenance & other operating expenses for JSRIS Office = P400,000  
(on the basis of actual expenses in last 5 years, Ref. Table E.1.8)  
Jalaur proper RIS : P246,000, Suague RIS : P80,900, Jalaur extension RIS : P73,100
- \*11 : Rehabilitation and maintenance cost = Total direct construction cost x 0.5%

Table E.2.5 Proposed Training Plan for Water Management and O&M practice, and ISF Collection

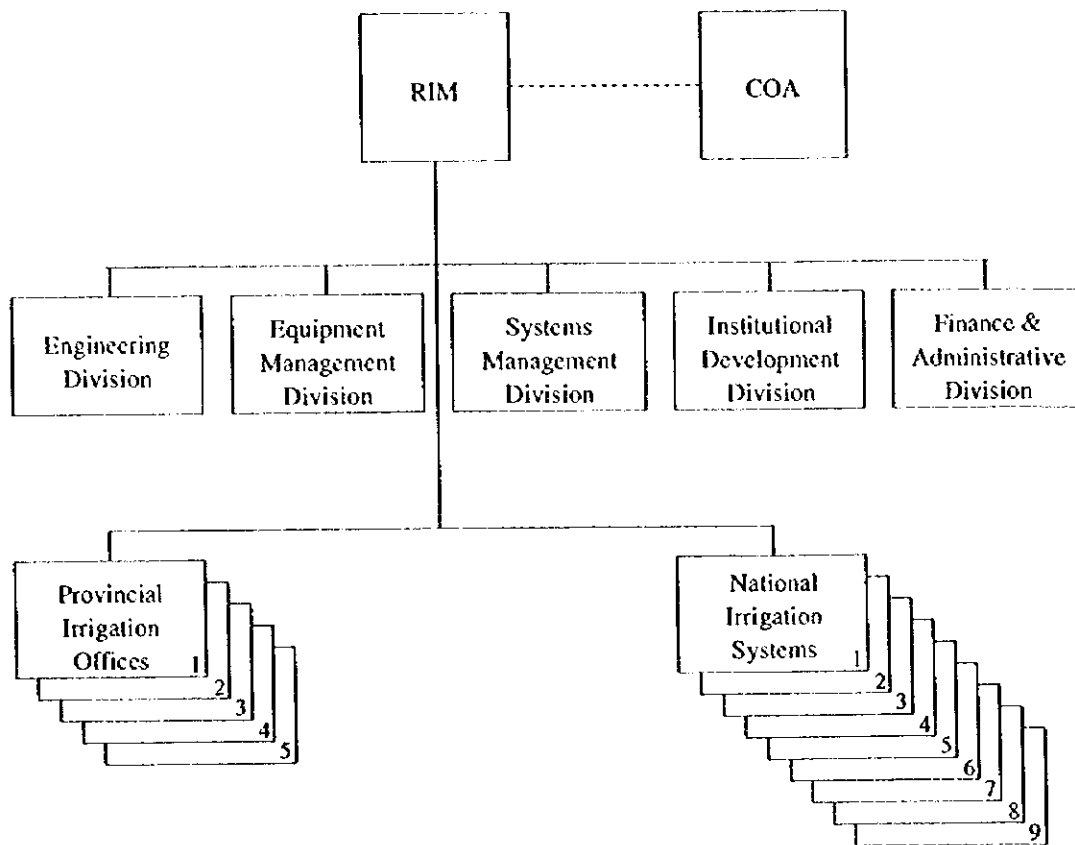
Description	Trainee	Trainer	*1 NIA Training Center	*2 Field and Office (OJT)	Project Implementation															
					Year	1	2	3	4	5	6	7	8	9	10					
Planning for the Improvement Plan of Water Management and O&M practice, and ISF Collection																				
Detailed Design																				
Construction of Project Facilities																				
O&M Manual																				
Preparation of Draft O&M Manual by consultant (O&M Expert)																				
Reverse and Finalization of O&M Manual by consultant (O&M Expert) through the actual activities																				
Rehabilitation and Improvement of Irrigation Facilities / Installation of Measuring Devices																				
Rehabilitation of NIA Regional Training Center																				
Establishment of Computerized System and Communication System																				
Procurement of O&M Equipment and Instrument for the Training																				
1. Water Management *5																				
(1) Hydrology / Meteorology	Hydrologist (NIA)	Consultant *3 (Irrigation Engineer)	○	○																
Water Discharge Recording	Irrigation Engineer (NIA)																			
(2) Cropping Calendar / Farm Activities	Operation Engineer (NIA)																			
Irrigation Engineer (NIA)	Consultant *3 (Irrigation Engineer)	○																		
(3) Water Balance / Irrigation Water Requirement	Irrigation Engineer (NIA)																			
Operation Engineer (NIA)	Consultant *3 (Irrigation Engineer)	○																		
(4) Water Delivery and Distribution Schedule	Agroclimatist (NIA)																			
MAO (Municipality)	Consultant *3 (Irrigation Engineer)	○																		
(5) Computer Operation and Management	Irrigation Engineer (NIA)																			
Hydrologist (NIA)	Consultant *3 (Irrigation Engineer)	○																		
Irrigation Engineer (NIA)																				
Agroclimatist (NIA)																				
Operation Engineer (NIA)																				
2. O&M Practices *5																				
(1) Operation Work																				
Operation of Water Control Structures /	Operation Engineer (NIA)	Consultant *3 (O&M Expert)	○																	
Measuring Water Discharge	WRF Technician (NIA)																			
(Make gate, Sluice gate, Head gate, Check and Turnout)	WRF Operator (NIA)	Operation Engineer (NIA) *4																		
WRF Tender (NIA)																				
IA																				
(2) Maintenance Work																				
Maintenance of Water Control Structures	Maintenance Engineer (NIA)	Consultant	○																	
Desilting (Canals, Diversion Dam, Settling Basin)	WRF Technician (NIA)	(O&M Expert)	○																	
Maintenance of On-farm facilities	WRF Operator (NIA)		○																	
(Main farm ditch and others)	WRF Tender (NIA)	Maintenance Engineer (NIA) *4	○																	
Other Maintenance (Service Road, Other Facilities)	IA		○																	
3. ISF Collection *5																				
(1) Collection and Billing Record																				
(Database Management)	Billing Clerk (NIA)	Consultant	○																	
Collector (NIA & IA)	Collector (NIA & IA)	(O&M Expert)	○																	
Cashier (NIA)	Cashier (NIA)																			
IDO (NIA)	IDO (NIA)																			
(2) Collection Practice																				
Billing Clerk (NIA)	Billing Clerk (NIA)	Consultant	○																	
Collector (NIA & IA)	Collector (NIA & IA)	(O&M Expert)	○																	
Cashier (NIA)	Cashier (NIA)																			
IDO (NIA)	IDO (NIA)																			
(3) Computer Operation and Management																				
Billing Clerk (NIA)	Billing Clerk (NIA)	Consultant	○																	
Cashier (NIA)	Cashier (NIA)	(O&M Expert)	○																	

Notes : \*1 NIA regional training center, Poldan  
 \*2 Field / Actual field (during proper RIS), Office : JSRIS Office  
 \*3 Consultant assigned for technical assistance in the project  
 \*4 Operation and Maintenance Engineers will be also a Trainer for WRF Technicians, Operator & Tender and IA after training by consultant.  
 \*5 Frequency of training : 1 day a week by training item (2 hours a day)  
 : 5 days a week for the Water Management  
 : 5 days a week for the O&M practice and ISF collection

# Figures



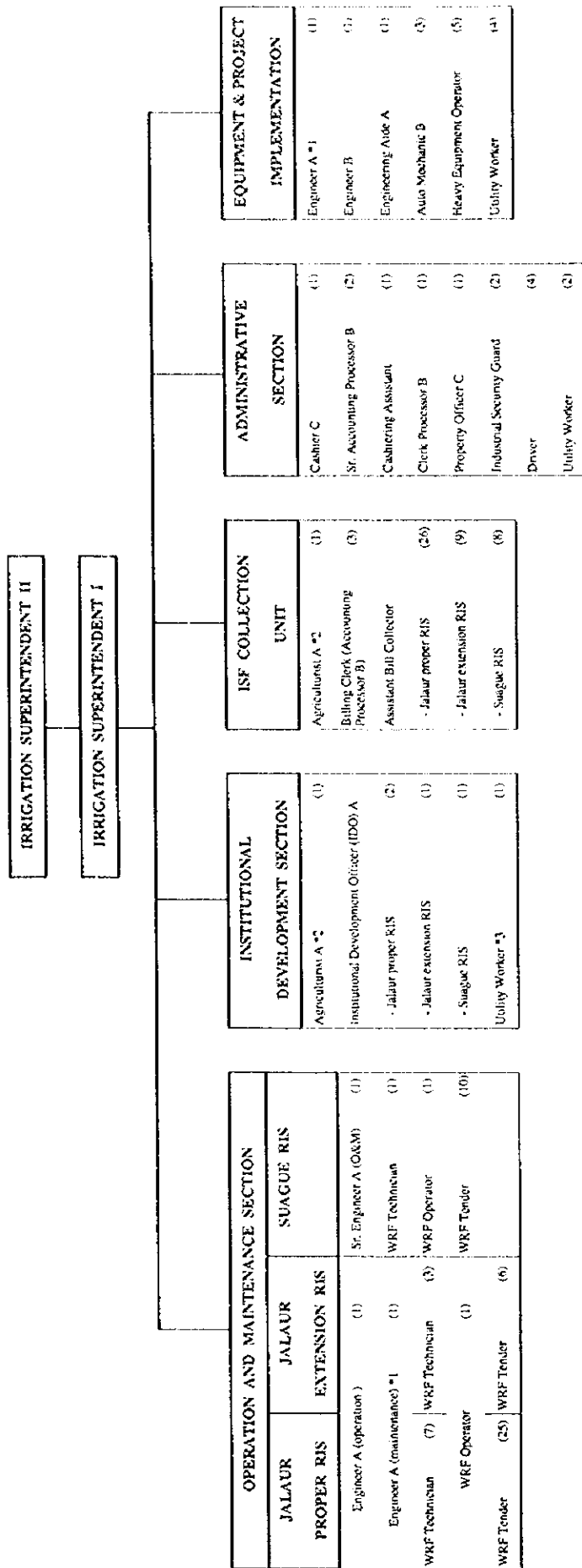




Notes : RIM : Regional Irrigation Manager  
 COA : Commission on Audit

Source : NIA Region VI Office

Figure E.1.1 Present Organizational Chart of NIA Region VI Office



Notes : WRF : Water Resources Facilities

- \*1 : Engineer A (Maintenance) for Jalaur proper & extension RIS is holding the same position in Equipment & Project Implementation Section.
- \*2 : Agricultural A in the Institutional Development Section is holding the same position in ISF Collection Section.
- \*3 : The Utility Worker in the Institutional Development Section is designated as IDO to augment the two IDOs in Jalaur proper RIS.

Source : NIA ISRRIS Office

Figure E.1.2 Present Organizational Chart of Jalaur - Suague River Irrigation System Office

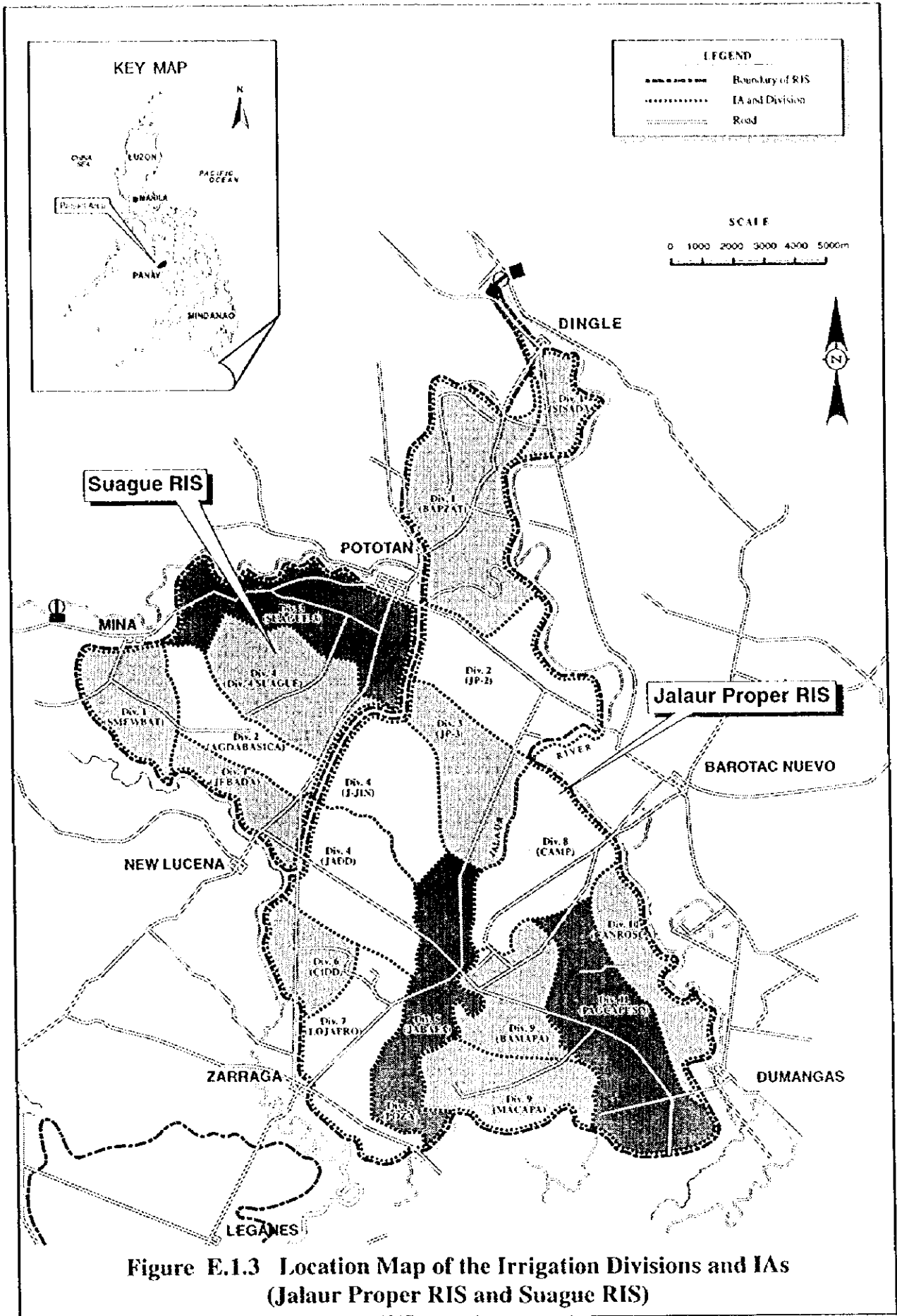
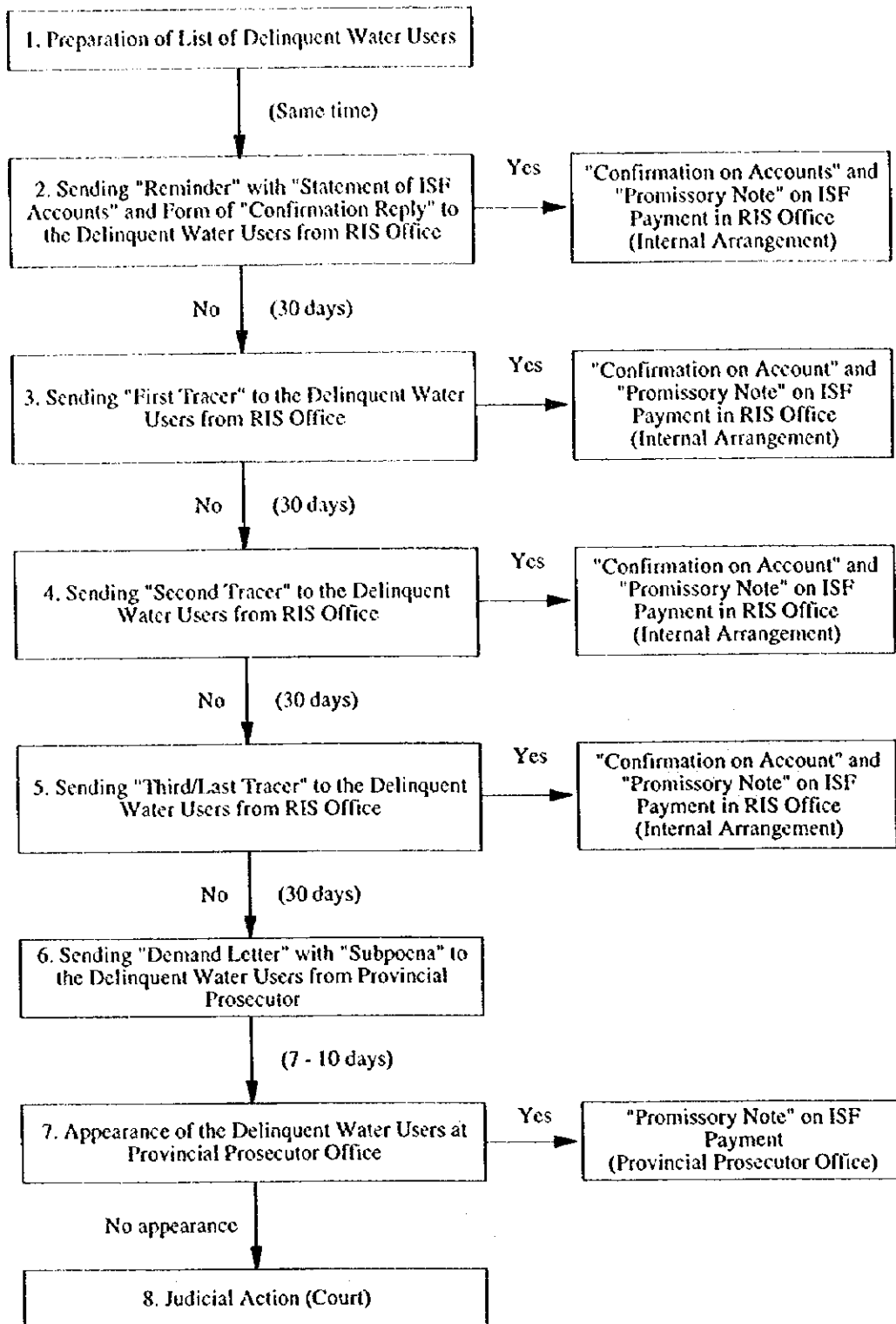


Figure E.1.3 Location Map of the Irrigation Divisions and IAs (Jalaur Proper RIS and Suague RIS)



Source : NIA JSRIS Office

Figure E.1.4 Present Legal Procedure on Non-Payment of ISF

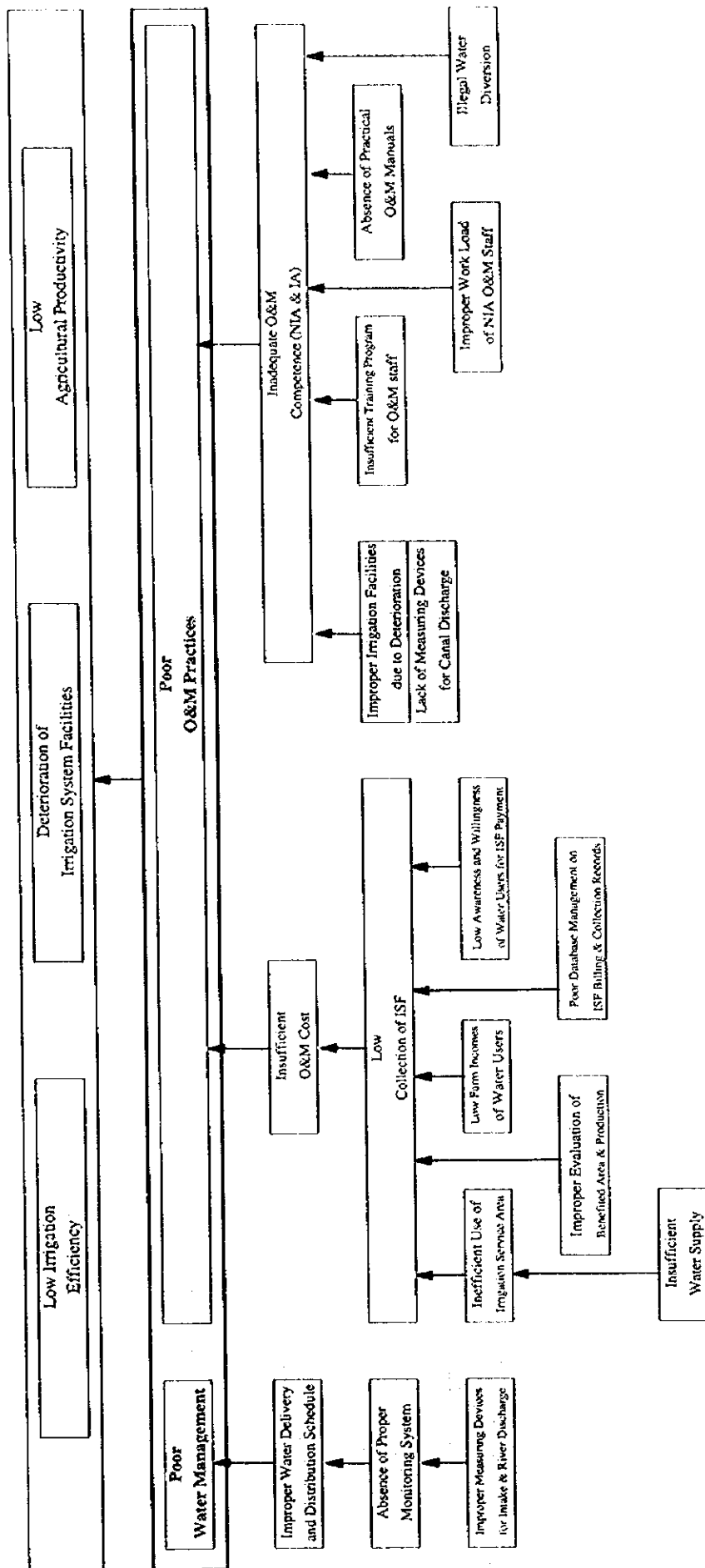


Figure E.1.5 Main Causes of Poor Water Management and O&M Practices

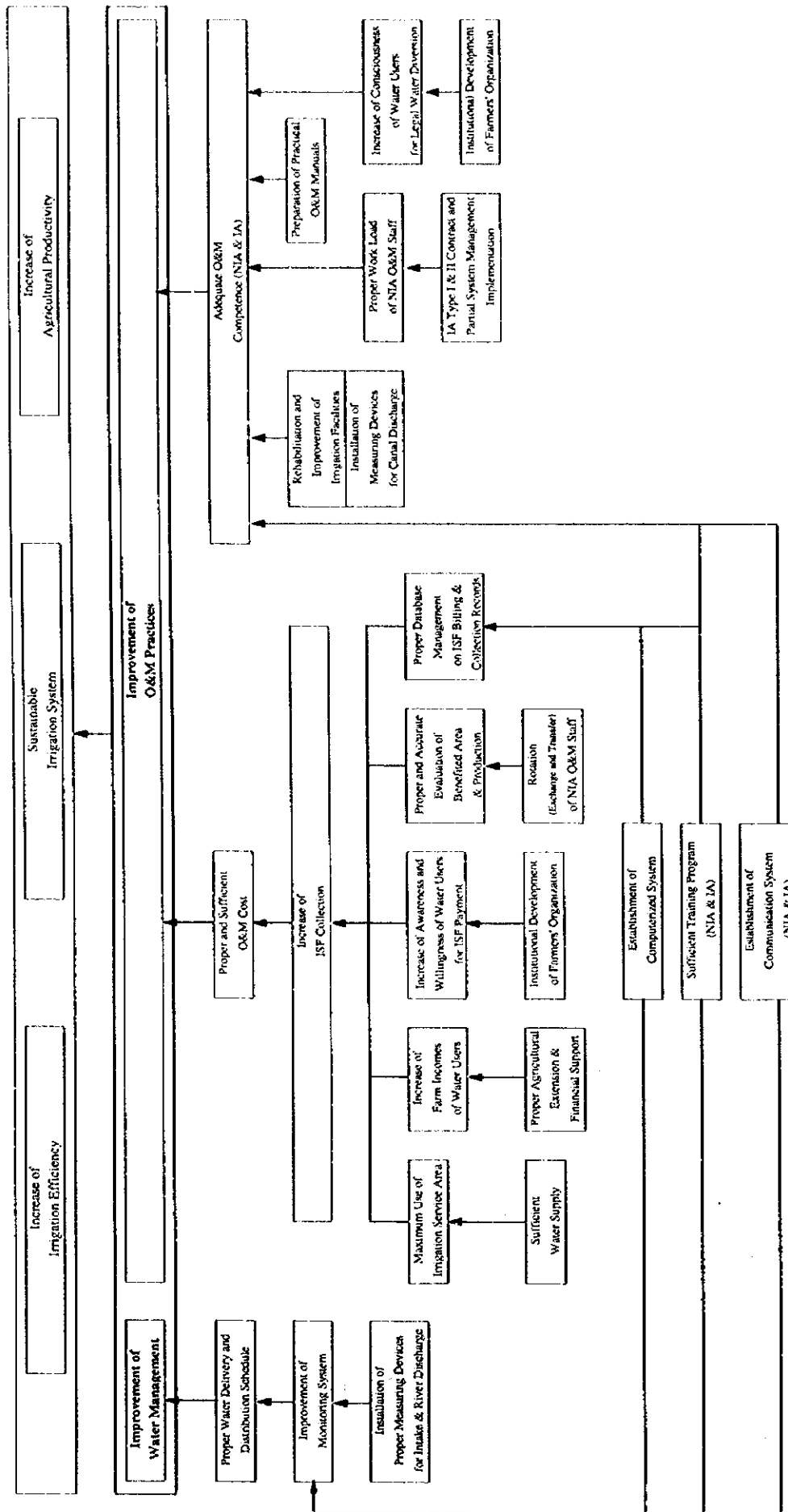
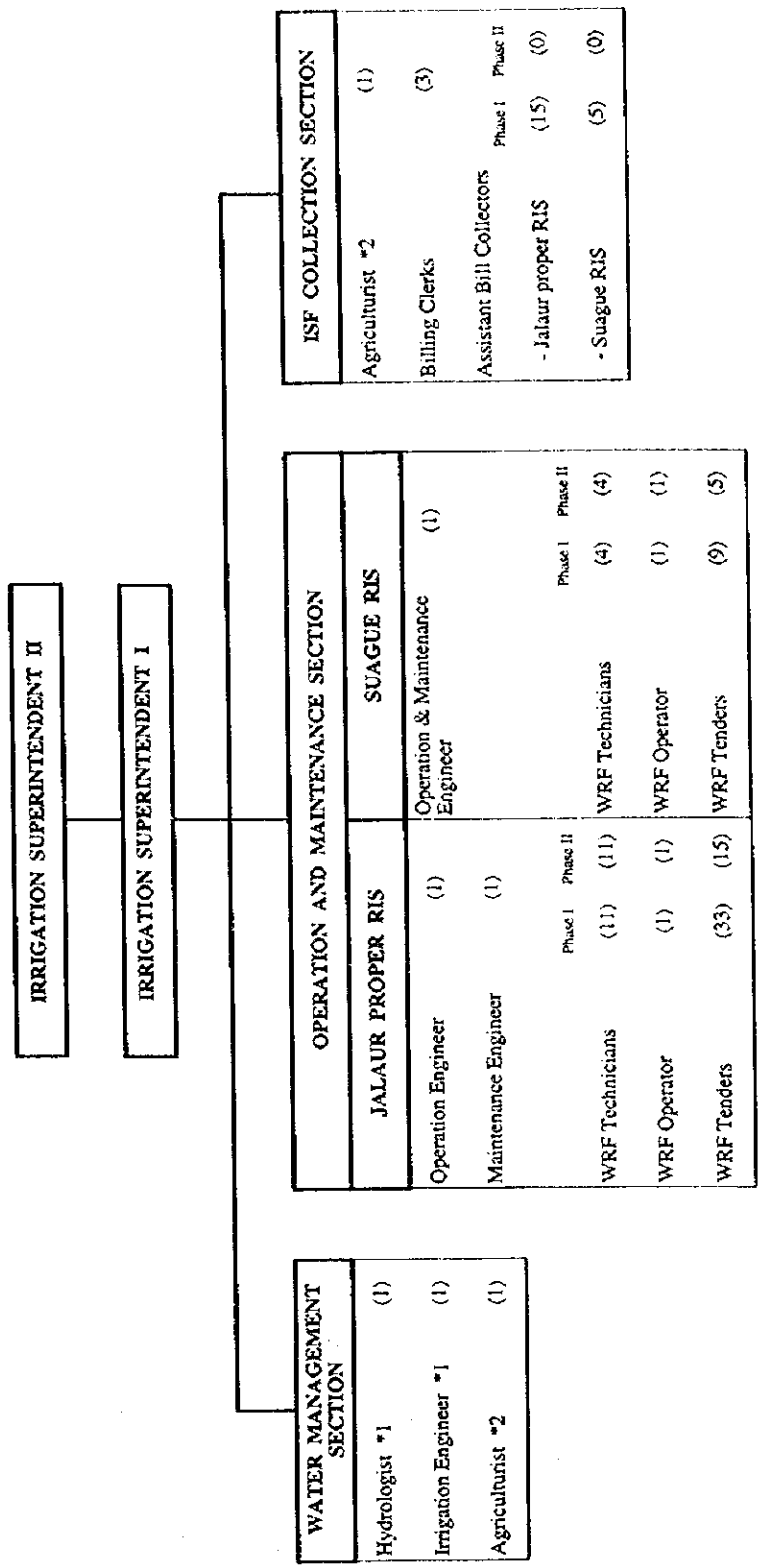


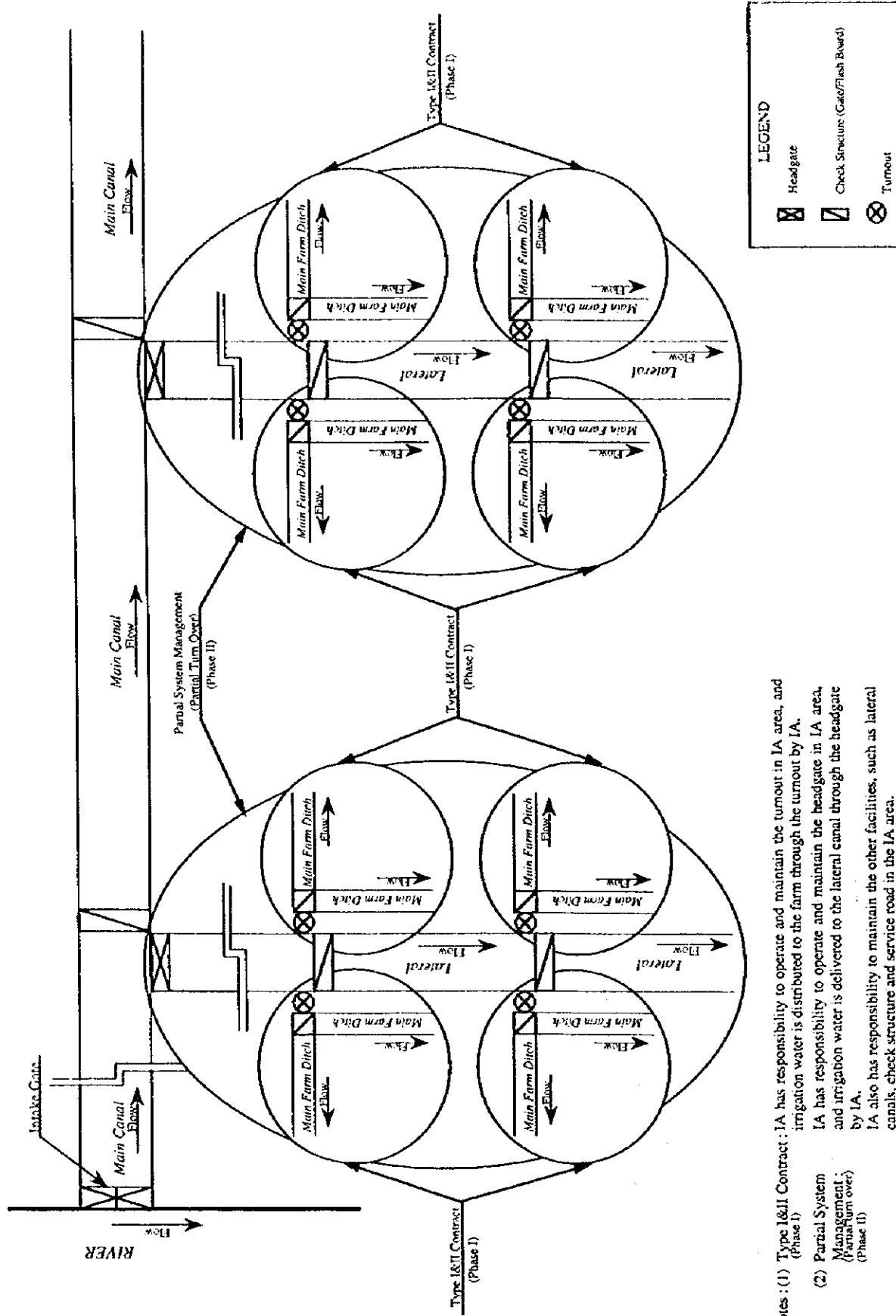
Figure E.2.1 Proposed Improvement Plan Chart for Water Management and O&M practices



Notes : \*1 : Hydrologist and Irrigation Engineer will be newly designated in the proposed plan.  
 \*2 : Agriculturist A in the Institutional Development Section is holding the same position

Figure E.2.2 Proposed Organizational Chart of Water Management, O&M and ISF Collection Sections in Jalaur proper RIS and Suague RIS





- Notes: (1) Type I&II Contract : IA has responsibility to operate and maintain the turnout in IA area, and irrigation water is distributed to the farm through the turnout by IA.
- (2) Partial System Management : (Partial turn over) (Phase I)
- IA has responsibility to operate and maintain the headgate in IA area, and irrigation water is delivered to the lateral canal through the headgate by IA.
- IA also has responsibility to maintain the other facilities, such as lateral canals, check structure and service road in the IA area.
- The contents of Phase I are also included.

Figure E.2.3 Proposed Area Concept to be covered by IA under Type I&II and Partial System Management

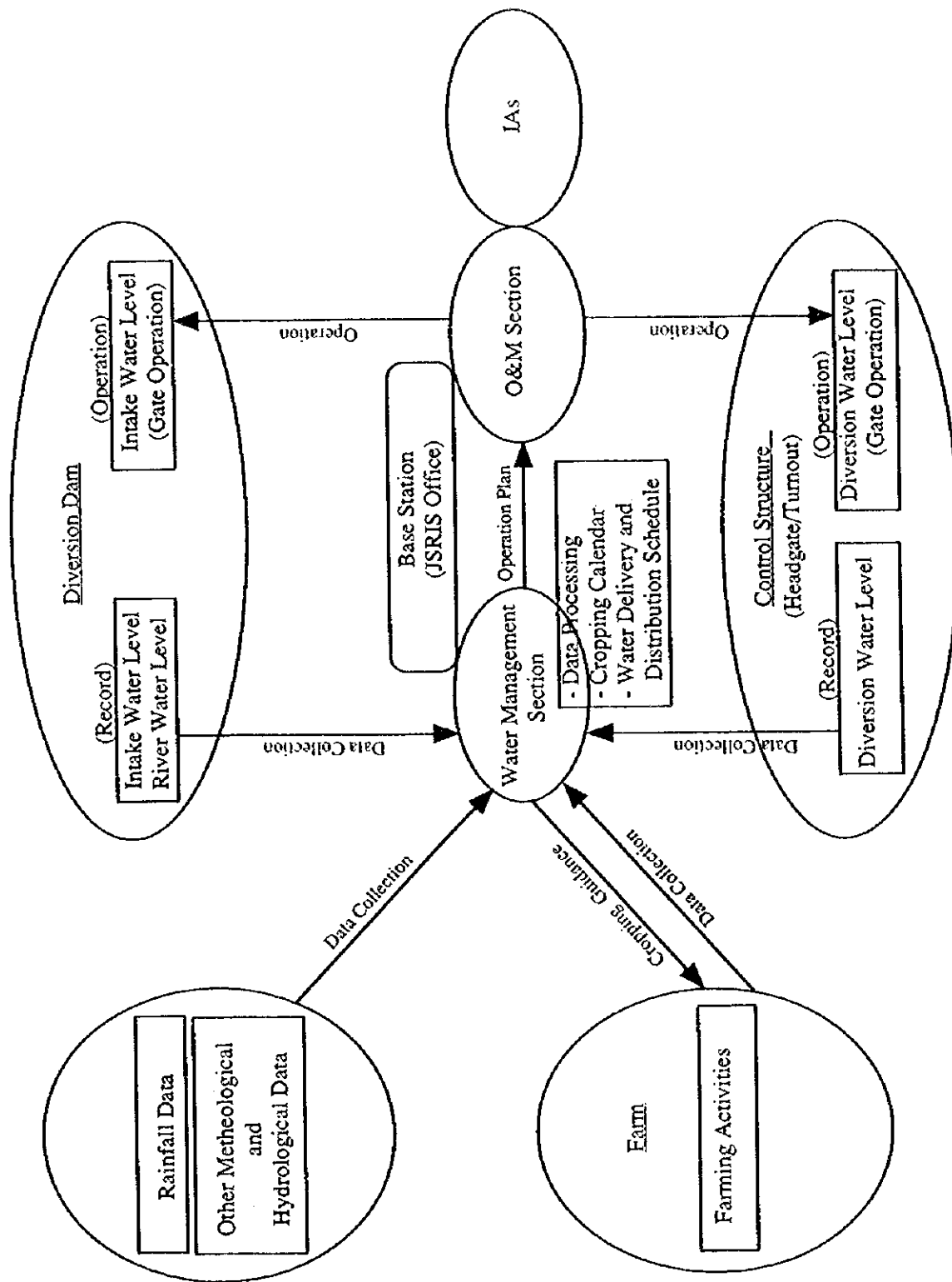


Figure E.2.4 Proposed General Concept of Monitoring System

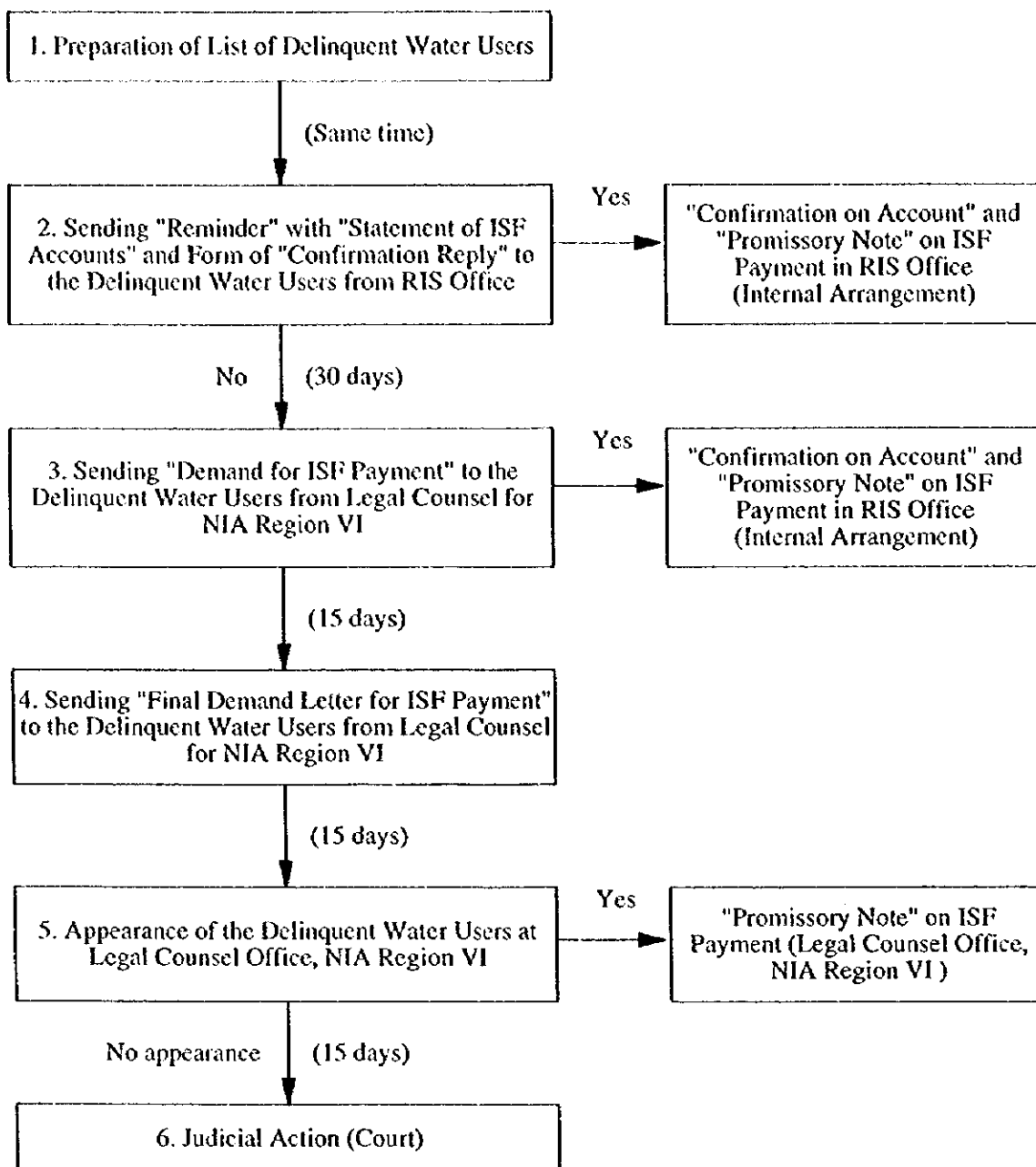


Figure E.2.5 Proposed Legal Procedure on Non-Payment of ISF