

# Operation and Maintenance of the Laoag Vintar River Irrigation System and the Bonga Pump No. 2

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## Introduction

The Laoag Vintar River Irrigation System (LVRIS) and the Bonga Pump No. 2 (BP#2) are two of eight irrigation systems comprising the Ilocos Norte Irrigation Service (INIS) (Table 1). LVRIS, a diversion type irrigation system, has a service area of 2,377 hectares while BP#2, a pump gravity system, has a service area of 620 hectares (Table 2).

LVRIS can irrigate 2,177 hectares during the wet season and 1,500 hectares during the dry season with a cropping intensity of about 167%. On the other hand, BP#2 is capable of irrigating 493 hectares and 233 hectares during the wet and dry seasons, respectively. It has a cropping intensity of 143%.

**Table 1.** Irrigation systems comprising the Ilocos Norte Irrigation Service. 1988.

System	Service Area (ha)	1988 Target Irrigated Area (ha)	
		Dry Season	Wet Season
Bolo RIS	420	351	378
Cura RIS	431	244	431
Dingras RIS	1081	810	970
Laoag Vintar RIS	2377	1565	2377
NMC and PAS. Ext	684	441	640
Bonga Pump No. 1	298	117	150
Bonga Pump No. 2	674	215	450
Bonga Pump No. 3	202	78	140
<b>Total</b>	<b>6154</b>	<b>3881</b>	<b>5686</b>

**Table 2.** System profiles, LVRIS and BP#2 (as of December 1986)

	LVRIS	BP#2
Municipalities covered	Vintar, Bacarra, Laoag City & Sarrat	San Nicolas & Laoag City
Source of water supply	Vintar River	Bonga River or Laoag River
Service area	2,377 ha	620 ha
Irrigated area (wet season)	2,371 ha	
Average farm size	1,132 m <sup>2</sup>	1,177 m <sup>2</sup>
No. of farmer?	14,548	
Average Yield (t/ha)		
Wet season	3.85	4.00
Dry season	3.90	4.00
No. of Irrigation association	2	1

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Table 3. Irrigation network of LVRIS.

Canals	Length (m)	Program Area (ha. 1988)		Soil Texture
		Dry	Wet	
<b>Main Canal</b>				
MTO MC-I	1350	14	15	Clay loam
MC-2	842	14	15	Clay loam
MC-3	3870	168	168	Clay loam
MC-4	6628	117	117	Loam
MC-5	3210	59	85	Loam
MC-6	4237	127	330	Clay
MC-7	3503	46	192	Clay
End MC	3819	37	75	Clay
<b>Laterals</b>				
Lat A	5664	65	82	Clay loam
Lat B	2220	58	84	Clay loam
Lat E	1960	24	25	Loam
Lat G	4420	77	87	Sandy clay loam
MTO Lat H	1285	20	88	Loam
Lat F	8650	79	381	Loam
MTO Lat F	1950	26	30	Loam
Lat F	9138	129	263	Loam
MTO Lat FI	1350	35	35	Loam
Lat FI	2206	90	208	Loam
Lat FId	3900	58	117	Sandy loam

Table 4. Irrigation network of BP#2.

Canals	Length (m)		Planted Area		Texture Soil	
			Dry	Wet		
	Drv	Wet	Rice	OC		
Main Canal	6080	9500	5	23	178	Clay
Lat C	1400	1400		10	10	Loam
Lat B	4800	5555	141		130	Loam
Lat B-extra	1200	1200	12		40	Loam
Lat B-1	4200	4200		3	10	Loam
Lat A	900	3168	5	8	7	Clay
Total			163	44	375	

## Irrigation Network

LVRIS consists of four divisions, namely, Division I, 2, 3 and 4 with service areas of 658, 685, 381 and 653 hectares, respectively. The irrigation network is composed of a 27.5-km main canal, seven laterals (Lat A, B, E, F, G, GI and H), five sub-laterals (Lat F1, F1a, F1b, F1c and F1d) and a number of closely spaced turnouts along the main canal and laterals (Table 3). The total canal length is 72.98 km.

BP#2 is composed of a 9.5-km main canal,

three laterals (Lat A, B and C) and two sub-laterals (B-extra and B-1) (Table 4). Total canal length is 25.02 km. During the dry season, only 6.0 km of the main canal is served due to insufficient water supply.

## Operation and Maintenance

LVRIS. Each of the four divisions of the system is directly supervised by a watermaster. Division I is at the upstream with cropping

intensity of 180%, 4.2% (50 hectares) of which is devoted to diversified crops. Division 4 is at the downstream with a cropping intensity of 170%, 27.9% (310 hectares) of which is programmed for other crops. Divisions 2 and 3 have cropping intensities of 169% and 133%, respectively; 18.6% (215 hectares) of the former and 22.7% (115 hectares) of the latter are programmed for diversified crops. About 690 hectares (44% of the total irrigated area) were devoted to irrigated non-rice crops during the 1985/86 dry season.

The watermaster, in consultation with the Irrigation Superintendent, supervises the scheduling and distribution of irrigation water within his division. With the assistance of ditchtenders, the watermaster oversees the proper maintenance and timely repair of irrigation canals and structures and collects irrigation fees. He settles conflicts on irrigation issues between farmers and acts as a bridge between NIA and the farmers.

Each division is divided into sections which is supervised by a ditchtender. A ditchtender is assigned an irrigation canal length of about 4.5 km. His responsibilities include cleaning, maintenance and repair of the irrigation canals and structures within his section. He assists the watermaster in the distribution and allocation of irrigation water and in the collection of irrigation fees.

LVRIS is characterized by several closely spaced turnouts along the main canal and laterals due to the area's undulating terrain. A farmer-team leader supervises opening and closing of the turnout. Unless instructed by the watermaster or the ditchtender, the farmer-team leader can open the turnouts everyday at minimum clearance.

When water supply is abundant, especially during the wet season, all laterals and sublaterals are continuously supplied. Rotation is done only within the division or section. However, during periods of low water supply, rotation by laterals is practiced on a weekly basis.

In either April or May, irrigation supply is cut-off to enable repair and maintenance work on the system.

Irrigation fees are paid either in cash or in kind. During the wet season, irrigation fee amounts to 100 kg paddy/ha or a cash equivalent of ₱350. During the dry season, irrigation fee for rice is 150 kg paddy/ha or a cash equivalent of ₱525. Irrigation fee for non-rice crops is 60% of the irrigation fee for rice, or 90 kg paddy/ha or a cash equivalent of ₱315.

Irrigation service fee collection efficiency in

LVRIS is 57.64%. LVRIS's percent viability ranges from 45-65%.

Lateral A had been turned over to an irrigators' association (IA) under NIA's stage I scheme. The IA is responsible for water allocation to areas served by the lateral. However, collection of irrigation fees is still being handled by NIA.

BP#2 . BP#2 was turned-over to the Laoag-San Nicolas IA under NIA's stage III scheme. The IA is responsible for water allocation and distribution within the system and for the collection of irrigation fees. It also takes charge of cleaning, maintenance and minor repairs of the canal network. Major repairs which require the use of heavy machinery are done by NIA upon the request of the IA. A watermaster is assigned in the area to assist the association in all activities.

An irrigation community organizer (ICO) is assigned to work with the IA. A pump operator/ditchtender is also assigned to operate the pump. Both are employees of NIA.

BP#2 has three pump units, two 200-hp pumps and one 300-hp pump. During maximum operation, the two 200-hp pumps are operated simultaneously. The two 200-hp pumps can supply water to the main canal and all laterals. The two 200-hp pumps are regularly replaced by the 300-hp pump.

Presently, only one of the two 200-hp pumps is working. This reduces the capacity of the system since the 300-hp pump cannot be operated at the same time with a 200-hp pump. Therefore, distribution of water is done on rotation by laterals.

The pumps are operated upon request and depends on the discretion of the President of the IA. One operation usually lasts for 12 hours,

Irrigation service fees can be paid either in cash or in kind. During the wet season, irrigation service fee amounts to 400 kg paddy/ha or a cash equivalent of ₱1400. During the dry season, irrigation service fee for rice areas increases to 600 kg paddy/ha or a cash equivalent of ₱2100. For areas planted to non-rice crops, the irrigation service fee is 60% that for rice or 360 kg paddy/ha or a cash equivalent of ₱1250.

Irrigation service fee collection efficiency at BP#2 is 81.51%. BP#2 has percent viability ranging from 60-80%.

Double loading is being done by some farmers where surface pumps are used for drawing water from the irrigation canals. Moreover, the area served by BP#2 has been reduced due to the acquisition of deep well pumps by farmers.