TABLE-VI.5 LAND HOLDING DISTRIBUTION IN THE PROJECT AREA

Municipality	Barangay that Filled Form	Land Holding Distribution of Farm Household									
		Sample (ha)					Estimation (ha)				
		0-0.9	1.0-1.9	2.0-2.9	3.0-3.9	4.0-	0-0.9	1.0-1.9	2.0-2.9	3.0-3.9	4.0-
Camalig	4	336	175	80	38	30	2,531	1,318	603	286	226
Guinobatan	3	145	28	30	40	0	2,951	570	610	814	0
Bacacay	6	171	76	32	9	27	2,197	977	411	116	347
Malinao	15	415	417	65	16	13	1,745	1,753	273	67	55
Polangui	12	465	292	204	96	26	2,808	1,764	1,232	580	157
Oas	7	533	243	80	19	3	3,216	1,466	483	115	18
Libon	8	950	123	47	23	5	3,657	473	180	89	19
Ligao	13	82	42	21	11	1	4,128	2,114	1,057	554	50
Legazpi	11	712	218	94	49	58	3,793	1,161	501	261	309
Total	69						27,026	11,596	3,350	2,882	1,181
Distribution							56 %	24 %	11 %	6 %	3 %

TABLE-VI.6 LAND TENURE IN THE PROJECT AREA

(Unit: No. of farm household)

Municipality	Barangay that Filled Form	Sample					Estimation				
		Own Cultivator	Amortizing Owner	Lease Holder	Share Tenant	Mixed Tenure	Own Cultivator	Amortizing Owner	Lease Holder	Share Tenants	Mixed Tenure
Camalig	4	60	5	235	110	0	726	60	2,845	1,332	0
Guinobatan	3	56	43	161	15	0	1,007	773	2,895	270	0
Bacacay	6	249	25	133	24	28	2,196	220	1,173	212	247
Malinao	15	75	115	560	53	20	355	544	2,649	251	95
Polangui	12	532	307	442	256	8	2,252	1,300	1,871	1,084	34
Oas	7	79	241	485	40	3	493	1,505	3,030	250	19
Libon	8	74	605	137	30	18	378	3,094	701	153	92
Ligao	3	46	33	112	201	83	765	549	1,864	3,344	1,381
Legaspi	11	20	0	158	30	0	579	0	4,577	369	0
Total	69						8,751	8,045	21,605	7,765	1,868
Distribution							18 %	17 %	45 %	16 %	4 %

TABLE-VI.7 CONSUMPTION OF FARM INPUT FOR RICE CULTIVATION IN THE PROJECT AREA

(Unit: kg/ha)

Municipality	Seed	Urea	Ammonium Phosphate	Ammonium Sulphate	N.P.K. Compound	Super Phosphate	Nutriment		
							N	P	K
Legazpi City	50	113	45	47	82	5	79	21	12
Polangui		121	47	65	60	-	84	18	8
Oas	50	65	25	25	63	-	47	14	9
Libon	64	*1	*	*	*	*	92	5	2
Ligao	50	122	42	29	95	32	81	27	13
Camalig	49	118	125	60	110	17	101	44	15
Guinobatan	59	100	75	25	175	-	87	40	25
Bacacay	65	100	96	12	136	12	82	40	19
Malinao	49	116	84	17	69	-	79	27	10
Tabaco	57	95	48	15	11	-	55	11	2
Sto. Domingo	46	50	50	-	50	-	38	17	7
Daraga	50	-	-	-	250	-	35	35	35
Average	57	91	58	27	100	6	72	25	13

1 * No data

TABLE-VI.8 PALAY YIELD OF IRRIGATED RICE IN SAMPLE SURVEY AREAS OF THE PROJECT AREA

Municipality	Harvested Area (ha)			Production (Cavan)			Average Yield (Cavan/ha)		
	1979 Dry	1979 Wet	1980 Dry	1979 Wet	1979 Dry	1980 Dry	1979 Dry	1979 Wet	1980 Dry
Libon	878	878	-	64,740	48,800	-	73	55	-
Oas	174	956	782	13,770	62,300	58,820	79	65	75
Ligao	-	763	686	-	49,910	44,530	-	65	65
Polangui	327	889	562	32,550	79,170	41,000	99	98	72
Guinobatan	10	80	70	490	5,130	4,770	49	64	68
Camalig	231	413	82	10,920	19,300	4,680	47	46	57
Daraga	-	-	-	-	-	-	-	-	-
Lagazpi City	406	592	158	20,630	29,000	9,700	51	49	61
St. Domingo	-	461	461	-	26,730	26,840	-	58	58
Bacacay	-	290	275	-	22,030	18,260	-	76	66
Malilipot	(199)		-	(3,888)		-	(195)		
Tabaco	(918)			(116,860)			(127)		
Malinao	-	981	981	-	67,130	63,380	-	68	65
Average	2,026	6,304	4,501	143,110	409,490	300,780	71	65	67

Remark: Seasonal differences in the harvested area and the production do not express the actual ones.

TABLE-VI.9 ESTIMATED PALAY PRODUCTION IN THE PROJECT AREA IN 1979

Season and Planted Condition	River Basin				Total Project Area
	Quinali (A)	Quinali (B)	Yawa	East-Northeast	
(1) Area of Palay Field (ha)					
Gross Palay Field					
- Irrigated	8,530	990	380	2,500	12,400
- Rainfed	3,870	2,010	170	3,250	9,300
Total:	12,400	3,000	550	5,750	21,700
Net (Planted) Palay Field					
- Irrigated	6,320	810	270	2,000	9,400
- Rainfed	3,050	1,590	130	2,330	7,100
Total:	9,370	2,400	400	4,330	16,500
(2) Average Yield of Palay Estimated (ton/ha)					
Wet Season Palay					
- Irrigated	3.1	3.1	2.4	2.9	3.0
- Rainfed	1.7	1.7	1.3	1.6	1.7
Dry Season Palay					
- Irrigated	3.3	3.3	2.5	3.1	3.2
- Rainfed	-	-	-	-	-
(3) Estimated Palay Production (1,000 tons)					
Wet Season Palay	24.8	5.2	0.8	9.5	40.3
Dry Season Palay	20.9	2.7	0.7	6.2	30.5
Total:	45.7	7.9	1.5	15.8	70.8

TABLE-VI.10 RESULTS OF VARIETAL AND FERTILIZER RESPONSE TESTS IN THE BICOL RICE AND CORN EXPERIMENT STATION (1979)

TEST-A:

Treatment					Yield (tons/ha)		
N (kg/ha)		P_2O_5	K_2O (kg/ha)				
Basal	Panicle Initiation	(kg/ha)	Basal	Panicle Initiation	IR-8	IR-36	IR-42
0	0	0	0	0	3.2	2.0	3.7
100	40	0	0	0	5.0	4.2	4.9
100	40	60	0	0	5.9	5.2	6.2
1002	40	0	60	0	5.5	4.6	5.8
100	40	60	60	0	7.5	6.4	7.7
100	40	60	60	30	7.7	6.5	7.9

Remark: Dry Season

TEST-B:

Variety	Growth Duration (days)	Basal N-level(kg/ha) and Yield(ton/ha)					
		0(kgN/ha)	60	90	120	150	180
IR-9	134	4.1	5.8	6.4	6.3	5.6	4.8
IR-20	118	3.0	5.0	5.7	5.4	5.3	4.9
IR-32	140	3.4	4.4	4.2	4.1	4.4	2.9
IR-36	108	3.6	4.7	5.7	5.4	5.6	5.3
IR-38	126	4.7	5.8	6.1	5.3	5.9	5.3
IR-42	135	3.8	5.4	6.4	6.4	5.9	6.6

Remark: Spacing; 20 x 20 cm, 60 kg P_2O_5/ha, spacing; 20 x 20 cm, Dry Season, Some plants are affected by Tungro disease, 30 kgN/ha was applied as top-dressing

TEST-C:

Variety	Growth Duration (days)	Basal N-level(kg/ha) and Yield(tons/ha)					
		0(kgN/ha)	30	60	90	120	150
IR-8	116	2.4	2.6	2.8	3.0	2.5	2.1
IR-20	116	3.0	4.2	3.8	3.8	3.7	2.7
IR-36	105	3.2	3.6	3.9	3.7	4.0	2.8
IR-42	131	3.4	4.1	4.3	3.8	3.7	4.0
IR-44	116	4.1	3.8	3.5	3.7	4.0	3.3
IR-46	116	3.1	3.2	3.4	3.5	3.5	3.8

Remarks: Wet season, 30 kg P_2O_5/ha, 30 kg K_2O/ha, 20 kgN/ha at panicle initiation stage, Spacing; 20 x 20 cm

TABLE-VI.11 CORN VARIETY TEST IN THE BICOL RICE AND CORN EXPERIMENT STATION (1979)

A. Dry Season, 1979

Variety	Yield (tons/ha)
DMR-1	1.4
DMR-2	1.1
Phil. DMR Composit No.2	1.5
MIT Var. 2	1.5
UPCA Var. 1	1.6
UPCA Var. 2	1.4
UPCA Var. 3	1.3
UPCA Var. 5	1.5
BPI-1	1.6
BPI-2	1.8
BPI-4	1.5
Improved Tiniquib	3.1
Phil. DMRA Composit No.1	1.7

Remark: Space; 75 x 50 cm
Fertilizer
Basal
120 kgN/ha
60 kgP_2O_5/ha
60 kgK_2O/ha
Top-dressing
30 kgN/ha
at Knee-high stage

B. Wet Season, 1979

Variety	Yield (tons/ha)
DMR-1	0.4
DMR-2	0.1
Phil. AMR Composit 2	0.3
UPCA Var. 1	0.1
UPCA Var. 2	0.5
UPCA Var. 3	0.2
UPCA Var. 5	0.3
BPI-1	0.3
BPI-2	1.1
BPI-4	0.1
Improved Tiniquib	0.4
Phil. DMR Composit No.1	0.8

Remark: Space; 75 x 50 cm
Fertilizer
Basal
60 kgN/ha
30 kgP_2O_5/ha
30 kgK_2O/ha
Top-dressing
30 kgN/ha

TABLE-VI.12 AVERAGE YIELD OF FERTILIZER FIELD TRIALS

Treatment (kg/ha)			Yield (tons/ha)	Remark
Dry Season				
N	P_2O_5	K_2O		
0	20	20	5.0	
35	20	20	5.2	Spacing; 20 x 20 cm
70	20	20	5.9	Variety; IR-36, IR-42
105	20	20	6.9	
140	20	20	7.6	
Wet Season				
N	P_2O_5	K_2O		
0	20	20	4.0	
35	20	20	4.7	Variety; IR-44
70	20	20	4.9	IR-46
105	20	20	5.6	IR-48
140	20	20	5.9	Spacing; 20 x 20 cm

TABLE-VI.13 HISTORICAL TREND OF THE LOAN OPERATION OF MASAGANA 99 IN ALBAY PROVINCE

Item	Unit	1974	1975	1976	1977	1978	1979
Amount of loan released	$x10^3$peso	21,312	19,467	9,529	4,558	16,149	14,687
Farmers loaned	person	25,038	14,883	5,014	3,701	7,105	5,643
Harvested area with credit	ha	22,967	13,522	5,649	3,898	12,883	-

TABLE-VI.14 FARM GATE PRICES OF AGRICULTURAL PRODUCTS IN ALBAY PROVINCE IN 1982

Item	Unit	Price (₱)	Item	Unit	Price (₱)
Palay (Special)	50 kg	65	Squash	100 pieces	137
" (Ordinary)	50 kg	60	Cabbage	1 kg	2
Shelled Corn (White)	50 kg	65	Sweet Potato 1 can	(14-15 kg)	9
" (Yellow)	50 kg	69	Cassava 1 can		7
Copra (Corriente)	100 kg	126	Taro 1 can		9
Matured Coconut	100 nuts	34	Ginger (Hawaian)	1 kg	6
Abaca Fiber	1 kg	2	" (Native)	"	9
Dry Coffee Beans	1 ganta	26	Peanut (Unshelled)	20 kg	99
Dry Cacao	1 ganta	59	Goat (6 months old and over)	1 Head	76
Green Banana			" (Blow 6 months)	"	40
" (Bmgulan)	100 fingers	11	Upgraded Hog (6 months old and over)	"	810
" (Lafundan)	100 pieces	9	" (Blow 6 months)	"	178
" (Lacatan)	"	14	Cattle for Slaughter	1 kg	8
" (Laba)	"	11	Carabao (Infant)	1 Head	500
Avocado	"	20	" (Adult)	"	3,000
Calamansi	"	3	Chicken (Native)	1 Bird	13
Papaya (Hawaiian)	"	164	Roaster	"	13
" (Native)	"	18	Pullet	"	9
Pine Apple	"	175	Cockerel	"	9
Water Melon	"	250	Native Chicken Egg	1 Dozen	8
Jack Fruit	1 unit	8	Egg (Other breeds)	"	8
Ampalaya (Long variety)	100 pieces	28	Dick Egg	"	8
Chayote	"	17			
Eggplant	"	17			
Tomato	1 kg	2			

Source: Provincial Office of BAEcon

TABLE-VI.15 RETAIL PRICE OF AGRICULTURAL COMMODITY IN ALBAY PROVINCE IN 1982

Agricultural Commodity	Unit	Retail Price (₱)
A) Fertilizer		
- Urea (45-0-0)	50 kg	117
- Ammonium sulfate (21-0-0)	50 kg	88
- Compound (14-14-14)	50 kg	104
- Ammonium phosphate (16-20-0)	50 kg	110
B) Agro-chemicals		
i) Pesticide		
- Sevin (50 %)	1 kg	90
- Thiodan	1 ℓ	63
ii) Fungicide		
- Manzate 250	1 kg	71
- Fungitox 120	1 ℓ	28
C) Seeds		
- Certified paddy seeds	1 kg	3
- Corn seeds	1 kg	2
- Peanut seeds	1 kg	21
D) Agricultural Machinery and Tools		
- Plow-draw by animal		
Steel	1 unit	600
Wood	1 unit	300
- Hand Rotary weeder	1 unit	60
- Thresher	1 unit	600-1,300
- Hand-tractor	1 unit	2,600-6,400

Source: Provincial Office of BAEcon

TABLE-VI.16 TRENDS OF PRICES OF PALAY AND OF CONSUMER'S PRICE INDEX

Item	Unit	1973	1974	1975	1976	1977	1978	1979	1980	Remark
1. Palay (Ordinary)	₱/kg	0.64	0.82	0.88	0.93	1.00	0.92	0.88	0.94	Bicol
2. Consumer's price index (1972=100)		115.9	163.5	169.5	186.1	204.3	222.9	267.4	-	Bicol
3. Hired labour	₱/day	3.00	4.00	5.00	8.00	-	-	-	12.00	Bicol
4. Fertilizer Urea	50 kg	-	-	72.00	-	-	-	-	96.5	

Source: 1) Palay : BEAcon, Daraga
2) Consumer's price index : NCSD, Legaspi
3) Hired labour (1973-76) : BRBDPO
4) Urea 1975 NEDA
1980 Field interview

TABLE-VII.1 IRRIGATION AREA OF EXISTING IRRIGATION SYSTEM

Description	Nos. of Existing Irrigation Systems	Location No. *1	Irrigable Area (ha)	Total irrigable area (ha)
A) The Quinali (A) River Basin				
	27 C.I.S *2	39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65	6,127	
	4 N.I.S *3		2,406	8,533
B) The Quinali (B) River Basin				
	8 C.I.S	1, 2, 3, 4, 5, 6, 8, 9	1,984	1,984
C) The Yawa River Basin				
	3.C.I.S	36, 38, 37	388	388
D) The East and North-East Area of Mayon Volcano				
	27 C.I.S	7, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 25	2,097	2,097
Total	65 C.I.S 4 N.I.S		10,596 2,406	13,002

Note: *1 Location No. shown in FIG.-3.6.1
*2 Communal Irrigation System
*3 National Irrigation System

TABLE-VII.2 INVENTORY OF EXISTING NATIONAL IRRIGATION SYSTEMS

(AS OF FEBRUARY 1980)

Name of System	Municipalities Covered	Irrigation Area (ha)	Irrigated Area (1979) Wet	Irrigated Area (1979) Dry	Type of Diversion	Sources of Water Supply	Water Right (l/sec)	Location No.
Mahaba	Ligao	516	470	470		Mahaba River		-
					D	No.1 Dam	300	
					- do -	No.2 Dam	200	
					- do -	No.3 Dam	400	
Nasisi	- do -	960	958	958	- do -	Nasisi River	1,400	-
Ogsong	- do -	400	-	-	- do -	Ogsong River	600	-
Hibiga	- do -	530	524	524		Hibiga River		-
					- do -	Hibiga Dam	350	
					- do -	Gordo Dam	120	
					- do -	Mogoasili Dam	100	
					- do -	Tatacla Dam	150	
Total		2,406	1,952	1,952				

NOTE: WBD - Washable Boulder Dam
SCD - Semi Concrete Dam
D - Concrete Dam
TBD - Temporary Brush Dam
ED - Earth Dam

TABLE-VII.3 INVENTORY OF EXISTING COMMUNAL IRRIGATION SYSTEMS (1/4)

(AS OF FEBRUARY 1980)

Name of System	Municipalities Covered	Irrigation Area (ha)	Irrigated Area (1979) Wet	Irrigated Area (1979) Dry	Type Diversion	Sources of Water Supply	Water Right (l/sec)	Location No.
Tanawan	Malinao	524	274	274	D	Lagbanog Spring		1
Matalipni	- do -	69	69	69	- do -	Matalipni Spring	104	2
Upper Estancia	- do -	37	37	37	TBD & WBD	Estancia Creek	56	3
Estancia-Labnig	- do -	527	527	527	- do -	- do -	792	4
Tuliw-Pawa	- do -	385	92	92	D	Tuliw River	578	5
(Sub-total)		(1,542)	(999)	(999)				
Bantagan	Tabaco	44	44	44	WBD	Bantagan Creek	66	6
San Antonio	- do -	172	35	35	D	Boring River	192	7
San Vicente	- do -	245	245	180	TBD & WBD	San Vicante	368	8
Lower San Antonio	- do -	153	153	153	- do -	Lower Banadere River	141	9
San Carlos-Matagbac	- do -	75	75	75	- do -	San Carlos & Matagbac R.	113	10
Pawa-Tabaco	- do -	68	68	68	D	Bon-on River	102	11
Mariroc	- do -	200	120	120	D & TBD	Mariroc River	300	12
Comun-Vson	- do -	97	97	97	TBD & WBD	Pamungsugan River	146	13
Guinobat-Panal	- do -	32	20	20	- do -	Bon bon & Mariroc R.	48	14
Bongabong	- do -	147	147	147	- do -	Bongabong River	221	15
Tagas	- do -	33	33	33	TBD	Tagas River	50	16
San Ramon	- do -	21	21	21	- do -	San Ramon River	32	17
San Lorenzo	- do -	30	20	20	ED	San Lorenzo River	45	18
(Sub-total)		(1,317)	(1,078)	(1,013)				

TABLE-VII.4 INVENTORY OF EXISTING COMMUNAL IRRIGATION SYSTEMS (2/4)

(AS OF FEBRUARY 1980)

Name of System	Municipalities Covered	Irrigation Area (ha)	Irrigated Area (1979) Wet	Irrigated Area (1979) Dry	Type of Diversion	Sources of Water Supply	Water Right (l/sec)	Location No.
San Isidro (Iraya)	Malilipot	50	50	50	WBD	San Insidro River	75	19
San Isidro (Ilawod)	- do -	10	10	10	TBD	San Insidro Spring	15	20
Tugawi	- do -	30	30	30	D	Tugawi River	45	21
Upper Tugawi	- do -	4	4	4	TBD	Tugawi River	6	22
Sta. Cruz-Tugawi	- do -	68	68	68	TBD & WBD	Tiagao River	102	23
Sta. Teresa	- do -	95	0	0	D	Sta. Teresa River	143	24
San Jose	- do -	5	5	5	WBD	San Jose River	8	25
Malilipot Poblacion	- do -	15	11	11	TBD	Nawang River	23	26
(Sub-total)		(277)	(178)	(178)				
Bonga	Bacacay	96	96	22	TBD & WBD	Ponorayon & Malinao R.	144	27
Sogod	- do -	7	7	7	TBD	Sogod Creek	11	28
Gubat-Hindi	- do -	112	112	112	- do -	Gogon River	168	29
Gogon	- do -	200	80	80	- do -	- do -	300	30
Bayandong	- do -	22	7	7	- do -	Baclayan River	33	31
Basud	- do -	22	22	22	- do -	Manaet River	33	32
(Sub-total)		(459)	(324)	(250)				
San Fernando-San Andres	Sto. Domingo	312	312	312	- do -	San Fermando River	468	33
San Antonio-Calayucay	- do -	14	14	14	- do -	Calayucay Creek	22	34
Lidog-Padang	- do -	160	160	160	- do -	Lidong Creek	198	35
(Sub-total)		(486)	(486)	(486)				

TABLE-VII.5 INVENTORY OF EXISTING COMMUNAL IRRIGATION SYSTEMS (3/4)

(AS OF FEBRUARY 1980)

Name of System	Municipalities Covered	Irrigation Area (ha)	Irrigated Area (1979) Wet	Irrigated Area (1979) Dry	Type of Diversion	Sources of Water Supply	Water Right (l/sec)	Location No.
Pawa-Rawis	Lagazpi	122	122	122	SCD	Pawa River	219	36
(Sub-total)		(122)	(122)	(122)				
Malabog	Daraga	180	180	180	TBD	Malabog River	270	37
Cullat	- do -	86	86	86	- do -	Yawa River	129	38
(Sub-total)		(266)	(266)	(266)				
Quirangay	Camlig	185	185	185	TBD	Quiraugay River	278	39
Libod-Bariw	- do -	92	92	92	D	Libod River	138	40
Tumpa-Sua	- do -	365	250	250	TBD	Tumpa-Sua River	375	41
(Sub-total)		(642)	(527)	(527)				
Tandarura-Maninila	Guinobatan	281	280	272	- do -	Quiquibang River	-	42
Ominipus-Haquiron	- do -	118	118	118	WBD	Maquiron Creek	-	43
Masarawag (Lower)	- do -	84	84	84	TBD	Masarawog River	-	44
Dona Tomasa	- do -	90	90	90	- do -	Bubulusam River	135	45
Mulod Bucad (Pequeno)	- do -	120	120	120	- do -	Muladbucad River	180	46
Mulad bucad (Grande)	- do -	125	125	125	- do -	Pangd River	188	47
Bubulusan	- do -	29	29	27	- do -	Bubulusan River	44	48
(Sub-total)		(847)	(846)	(836)				
Cabilogan	Ligao	480	450	450	TBD	Cabilogan River	675	49
(Sub-total)		(480)	(450)	(450)				

TABLE-VII.6 INVENTORY OF EXISTING COMMUNAL IRRIGATION SYSTEMS (4/4)

(AS OF FEBRUARY 1980)

Name of System	Municipalities Covered	Irrigation Area (ha)	Irrigated Area (1979) Wet	Irrigated Area (1979) Dry	Type of Diversion	Sources of Water Supply	Water Right (l/sec)	Location No.
Mayac-Benipayo	Oas	282	280	275	TBD	Quinali River	423	50
San-Isidro (Lower)	- do -	94	94	94	D	Pongpong River	141	51
South Quinali	- do -	1,174	550	550	- do -	Quinali River	1,761	52
(Sub-total)		(1,550)	(924)	(919)				
Salog-Calpe	Polangui	95	95	95	WBD	Salog River	143	53
Cabangan	- do -	118	92	92	TBD	San Francisco-Basud	138	54
San Francisco (Gabon)	- do -	280	150	150	D	San Francisco River	-	55
Agos-Sta. Cruz	- do -	400	250	400	- do -	Quinali River	600	56
Quinali (Right)	- do -	313	207	204	- do -	- do -	311	57
Quinali (Left)	- do -	90	90	74	- do -	- do -	135	58
Bukayna Kudos	- do -	100	100	100	- do -	San Francisco River	150	59
(Sub-total)		(1,396)	(984)	(1,115)				
San Miguel	Libon	75	75	75	TBD	Balagon Creek	113	60
Velasco	- do -	170	170	170	- do -	Hologan River	255	61
Banao	- do -	347	300	300	- do -	Quinali River	521	62
Nagpo	- do -	165	160	160	- do -	Nagpo River	248	63
Macabugos	- do -	18	-	-	-	-	-	64
San Agustin	- do -	430	430	405	D	Quinali River	656	65
(Sub-total)		(1,212)	(1,135)	(1,110)				
Total		10,596	8,319	8,271				

TABLE-VII.7 POTENTIAL EVAPOTRANSPIRATION

	Quinali (A)		Quinali (B)	
	Monthly PET (mm/month)	Daily PET (mm/day)	Monthly PET (mm/month)	Daily PET (mm/day)
Jan.	127	4.1	81	2.6
Feb.	123	4.4	87	3.1
Mar.	158	5.1	124	4.0
Apr.	177	5.9	138	4.6
May	167	5.4	146	4.7
June	147	4.9	123	4.1
July	167	5.4	136	4.4
Aug.	149	4.8	115	3.7
Sep.	141	4.7	108	3.6
Oct.	127	4.1	112	3.6
Nov.	105	3.5	84	2.8
Dec.	121	3.9	74	2.4
Total	1,709	4.7	1,328	3.6

TABLE-VII.8 CROP GROWTH STAGE COEFFICIENT

Days after transplanting	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
KC	0.80	0.90	0.95	1.05	1.10	1.10	1.05	1.00	0.95	0.90

Source: FAO/UNDP, Soil and Land Resources Appraisal and Training Project, 1976

TABLE-VII.9 CALCULATION OF CROP WATER REQUIREMENT (1/3)

Quinali (A) River Basin, Lower Area

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Cropping Pattern												
Potential Evapotransdiration PET	127	123	158	177	167	147	167	149	141	127	105	121
Crop Coefficient KC	0.99	1.03	0.98	0.92	0.83	0.92	1.02	1.02	0.95	0.90	0.80	0.89
PET x KC	126	127	155	163	139	135	170	152	134	114	84	108
Percolation Rate (2 mm/d) P	62	56	62	60	62	60	62	62	60	62	60	62
Cropping Intensity CI	0.89	0.99	0.67	0.17	0.11	0.58	0.97	0.94	0.50	0.06	0.03	0.42
Field Crop Requirement FC	167	181	145	38	22	113	225	201	97	11	4	71
Nursery Requirement N	11	-	-	1	6	6	1	-	-	-	2	6
Land Preparation Requirement LP	45	-	-	5	106	112	14	-	-	-	65	111
Crop Water Requirement CWR	223	181	145	44	134	231	240	201	97	11	71	188

Note: FC = (PET x KC + P) x CI, CWR = FC + N + LP

T = Transplanting, D = Drainage, H = Harvest

TABLE-VII.10 CALCULATION OF CROP WATER REQUIREMENT (2/3)

Quinali (A) River Basin, Upper Area

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Cropping Pattern												
Potential Evapotransdiration PET	127	123	158	177	167	147	167	149	141	127	105	121
Crop Coefficient KC	0.99	1.03	0.98	0.92	0.83	0.92	1.02	1.02	0.95	0.90	0.80	0.89
PET x KC	126	127	155	163	139	135	170	152	134	114	84	108
Percolation Rate (4 mm/d) P	124	112	124	120	124	120	124	124	120	124	120	124
Cropping Intensity CI	0.89	0.99	0.67	0.17	0.11	0.58	0.97	0.94	0.50	0.06	0.03	0.42
Field Crop Requirement FC	223	237	187	48	29	148	285	259	127	14	6	97
Nursery Requirement N	12	-	-	1	7	6	1	-	-	-	2	7
Land Preparation Requirement LP	51	-	-	6	119	127	16	-	-	-	74	126
Crop Water Requirement CWR	286	237	187	55	155	281	302	259	127	14	82	230

Note: FC = (PET x KC + P) x CI, CWR = FC + N + LP
T = Transplanting, D = Drainage, H = Harvest

TABLE-VII.11 CALCULATION OF CROP WATER REQUIREMENT (3/3)

Quinali (B) River Basin

Cropping Pattern	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Potential Evapotransdiration PET	81	87	124	138	146	123	136	115	108	112	84	74
Crop Coefficient KC	0.99	1.03	0.98	0.92	0.83	0.92	1.02	1.02	0.95	0.90	0.80	0.89
PET x KC	80	90	122	127	121	113	139	117	103	101	67	66
Percolation Rate (4 mm/d) P	124	112	124	120	124	120	124	124	120	124	120	124
Cropping Intensity CI	0.89	0.99	0.67	0.17	0.11	0.58	0.97	0.94	0.50	0.06	0.03	0.42
Field Crop Requirement FC	182	200	165	42	27	135	255	227	112	14	6	80
Nursery Requirement N	11	-	-	1	6	6	1	-	-	-	2	7
Land Preparation Requirement LP	47	-	-	5	115	122	15	-	-	-	72	117
Crop Water Requirement CWR	240	200	165	49	148	263	271	227	112	14	80	204

Note: FC = (PET x KC + P) x CI, CWR = FC + N + LP
T = Transplanting, D = Drainage, H = Harvest

TABLE-VII.12 MONTHLY EFFECTIVE RAINFALL AT LIBON RAINFALL GAUGING STATION

(Quinali (A) River Basin)

(Unit: mm)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL
1956	76	120	104	54	128	102	240	150	225	104	220	290	1,813
57	160	46	59	140	20	155	177	218	168	178	175	74	1,570
58	115	69	70	16	88	132	158	175	197	290	180	50	1,540
59	87	73	130	26	155	87	186	170	162	202	242	265	1,785
1960	105	65	56	54	110	148	182	170	180	180	188	190	1,628
61	12	0	47	24	150	142	200	165	132	195	121	84	1,272
62	88	66	78	30	202	205	222	163	203	68	198	58	1,581
63	10	42	8	11	87	210	110	265	161	132	124	128	1,288
64	120	50	43	114	38	162	92	120	167	148	172	230	1,456
1965	74	32	17	33	46	104	148	55	82	59	67	81	798
66	172	29	57	23	112	112	198	95	127	170	213	262	1,570
67	231	74	77	59	35	81	194	184	230	120	60	47	1,392
68	69	57	19	8	110	150	182	170	180	252	187	225	1,609
69	105	74	6	12	53	150	197	125	192	62	124	204	1,304
1970	148	130	64	50	33	82	250	215	171	208	255	150	1,756
71	157	65	120	56	238	145	230	87	100	223	106	265	1,792
72	23	66	120	22	77	185	232	249	178	140	175	122	1,589
73	26	19	24	11	33	82	145	155	205	384	241	262	1,587
74	57	102	30	31	74	256	254	78	43	207	212	210	1,554
1975	140	46	91	147	29	190	185	194	222	157	298	59	1,758
76	142	136	74	48	221	249	37	231	186	127	269	265	1,985
77	100	103	37	23	118	28	260	153	205	73	188	38	1,326
78	19	9	69	90	112	171	158	181	145	205	49	137	1,345
79	19	7	8	170	58	162	178	105	273	88	153	107	1,328
Average	94	62	59	52	97	145	184	161	172	166	176	158	1,526

Note: Rainfall records from 1956 to 1971 and from 1978 to 1979 in the above table were processed by using rainfall records observed at Guinobatan Rainfall Gauging Station.

TABLE-VII.13 MONTHLY EFFECTIVE RAINFALL AT MALINAO RAINFALL GAUGING STATION

(Quinali (B) River Basin)

(Unit: mm)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	TOTAL
1956	262	240	265	296	253	115	173	215	282	251	277	300	2,929
57	274	128	193	181	137	152	159	210	190	266	282	235	2,407
58	270	241	245	125	211	145	186	258	180	299	292	215	2,667
59	249	243	242	82	207	155	204	130	150	199	290	295	2,446
1960	154	166	105	225	241	162	107	177	255	275	293	261	2,421
61	156	76	146	212	151	175	107	205	157	257	260	249	2,151
62	237	195	155	133	247	78	201	217	265	141	276	212	2,357
63	205	254	84	83	160	227	174	285	168	180	278	265	2,363
64	268	221	113	295	155	155	124	166	280	220	272	295	2,564
1965	277	215	233	146	200	160	263	228	172	277	272	285	2,728
66	281	154	182	137	152	69	263	104	140	263	277	299	2,321
67	287	205	243	183	67	105	35	206	152	182	294	252	2,311
68	262	160	151	86	19	57	203	193	217	155	253	171	1,927
69	72	56	100	167	95	103	175	157	213	130	267	293	1,828
1970	243	237	236	218	92	182	188	176	206	293	298	278	2,647
71	271	275	258	179	270	201	272	120	131	286	274	300	2,837
72	298	147	269	124	97	225	176	260	143	180	279	268	2,466
73	227	161	93	142	141	198	271	251	241	295	295	300	2,615
74	234	250	137	113	131	251	218	125	195	283	270	281	2,488
1975	258	215	58	280	121	208	239	200	263	205	232	300	2,579
76	130	208	246	218	251	237	211	224	158	238	279	300	2,700
77	232	243	161	188	238	157	257	195	236	195	299	200	2,601
78	128	178	204	177	208	258	214	238	265	268	260	278	2,676
79	175	145	34	215	163	225	201	135	241	238	277	245	2,294
Average	227	192	173	175	167	167	197	195	204	232	277	266	2,472

Note: Rainfall records from 1956 to 1971 in the above talbe werr processed by using rainfall records observed at Sto. Domingo Rainfall Gauging Station.

TABLE-VII.14 UNIT IRRIGATION DIVERSION REQUIREMENT (1/3)

Quinali (A) River Basin, Lower Area

(Unit: l/sec/ha)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Average	Max.
1956	0.95	0.42	0.46	0.22	0.57	0.94	0	0.37	0	0.03	0.23	0	0.35	0.94
57	0.45	0.93	0.65	0.12	0.79	0.66	0.39	0	0.08	0	0.28	0.87	0.44	0.93
58	0.72	0.77	0.60	0.26	0.65	0.78	0.51	0.22	0	0	0.27	0.96	0.48	0.96
59	0.88	0.75	0.35	0.25	0.52	1.02	0.34	0.25	0.10	0	0.21	0.08	0.40	1.02
1960	0.77	0.80	0.66	0.22	0.61	0.70	0.36	0.25	0.05	0	0.27	0.39	0.42	0.80
61	1.32	1.25	0.70	0.26	0.53	0.73	0.25	0.28	0.20	0	0.33	0.82	0.56	1.32
62	0.87	0.79	0.57	0.25	0.42	0.40	0.11	0.29	0	0.04	0.26	0.93	0.41	0.83
63	1.33	0.96	0.87	0.27	0.66	0.37	0.81	0	0.11	0.02	0.33	0.65	0.53	1.33
64	0.69	0.90	0.72	0.15	0.76	0.62	0.92	0.55	0.09	0.0.	0.28	0.23	0.49	0.92
1965	0.96	1.03	0.83	0.24	0.74	0.93	0.57	0.93	0.36	0.05	0.39	0.84	0.66	1.03
66	0.38	1.05	0.66	0.26	0.60	0.89	0.26	0.69	0.22	0	0.24	0.10	0.45	1.05
67	0.04	0.74	0.57	0.21	0.76	1.05	0.29	0.17	0	0.02	0.40	0.98	0.44	1.05
68	0.99	0.86	0.82	0.27	0.61	0.69	0.36	0.25	0.05	0	0.27	0.25	0.45	0.99
69	0.77	0.74	0.88	0.27	0.73	0.69	0.27	0.52	0	0.04	0.33	0.33	0.46	0.88
1970	0.52	0.35	0.63	0.23	0.77	1.05	0	0	0.07	0	0.20	0.56	0.37	1.05
71	0.47	0.80	0.39	0.22	0.35	0.71	0.06	0.74	0.30	0	0.35	0.08	0.37	0.80
72	1.25	0.79	0.39	0.26	0.68	0.50	0.05	0	0.05	0.01	0.30	0.67	0.41	1.25
73	1.24	1.12	0.80	0.27	0.77	1.05	0.59	0.34	0	0	0.21	0.10	0.54	1.24
74	1.05	0.55	0.77	0.25	0.68	0.12	0	0.79	0.49	0	0.24	0.31	0.44	1.05
1975	0.57	0.93	0.51	0.11	0.77	0.48	0.34	0.11	0	0	0.16	0.93	0.41	0.93
76	0.56	0.31	0.59	0.23	0.38	0.16	1.26	0	0.03	0.02	0.19	0.08	0.32	1.26
77	0.80	0.54	0.74	0.26	0.59	1.34	0	0.35	0	0.04	0.27	1.01	0.50	1.01
78	1.28	1.18	0.61	0.18	0.60	0.58	0.51	0.19	0.16	0	0.41	0.61	0.53	1.28
79	1.28	1.20	0.87	0.09	0.71	0.62	0.39	0.63	0	0.03	0.30	0.73	0.57	1.28
Average	0.84	0.82	0.65	0.22	0.64	0.71	0.36	0.33	0.1	0.01	0.28	0.52	0.48	

TABLE-VII.15 UNIT IRRIGATION DIVERSION REQUIREMENT (2/3)

Quinali (A) River Basin, Upper Area

(Unit: l/sec/ha)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Average	Max.
1956	1.34	0.81	0.72	0.29	0.70	1.27	0.38	0.73	0.09	0.05	0.30	0.24	0.58	1.34
57	0.85	1.32	0.91	0.19	0.94	0.98	0.78	0.33	0.28	0.02	0.35	1.13	0.67	1.32
58	1.11	1.16	0.87	0.34	0.78	1.10	0.90	0.58	0.19	0	0.35	1.22	0.72	1.22
59	1.27	1.13	0.61	0.32	0.65	1.34	0.72	0.61	0.30	0	0.28	0.34	0.63	1.34
1960	1.17	1.19	0.93	0.29	0.74	1.02	0.75	0.61	0.24	0.02	0.34	0.65	0.66	1.19
61	1.71	1.63	0.96	0.32	0.66	1.05	0.63	0.64	0.39	0.01	0.41	1.09	0.79	1.71
62	1.27	1.18	0.83	0.32	0.55	0.72	0.50	0.65	0.17	0.06	0.33	1.19	0.65	1.27
63	1.72	1.34	1.13	0.34	0.79	0.69	1.19	0.06	0.30	0.04	0.40	0.91	0.74	1.72
64	1.08	1.29	0.98	0.22	0.88	0.95	1.31	0.91	0.28	0.03	0.35	0.49	0.73	1.31
1965	1.35	1.41	1.09	0.32	0.87	1.25	0.96	1.29	0.55	0.06	0.46	1.10	0.89	1.41
66	0.78	1.43	0.92	0.33	0.74	1.21	0.65	1.05	0.41	0.02	0.31	0.36	0.68	1.43
67	0.43	1.12	0.84	0.29	0.89	1.38	0.67	0.53	0.08	0.04	0.47	1.24	0.67	1.38
68	1.38	1.24	1.08	0.34	0.74	1.01	0.75	0.61	0.24	0	0.34	0.51	0.69	1.38
69	1.17	1.12	1.14	0.34	0.85	1.01	0.65	0.88	0.20	0.06	0.40	0.60	0.70	1.17
1970	0.91	0.74	0.89	0.3	0.90	1.37	0.32	0.35	0.27	0	0.27	0.82	0.60	1.37
71	0.86	1.19	0.65	0.29	0.48	1.03	0.45	1.10	0.49	0	0.42	0.35	0.61	1.19
72	1.65	1.18	0.65	0.33	0.81	0.82	0.44	0.15	0.24	0.03	0.35	0.93	0.63	1.65
73	1.63	1.50	1.06	0.34	0.90	1.37	0.98	0.70	0.16	0	0.29	0.36	0.77	1.63
74	1.45	0.93	1.03	0.32	0.81	1.22	0.30	1.15	0.68	0	0.31	0.57	0.73	1.45
1975	0.96	1.32	0.78	0.19	0.90	0.79	0.73	0.47	0.10	0.03	0.23	1.19	0.64	1.32
76	0.95	0.70	0.85	0.30	0.51	0.48	1.65	0.25	0.22	0.04	0.25	0.35	0.55	1.65
77	1.19	0.93	1.00	0.33	0.72	1.66	0.26	0.71	0.16	0.06	0.34	1.28	0.72	1.66
78	1.67	1.57	0.87	0.25	0.74	0.90	0.90	0.55	0.35	0	0.48	0.87	0.76	1.67
79	1.67	1.58	1.13	0.16	0.85	0.95	0.77	0.99	0	0.05	0.37	0.99	0.79	1.67
Average	1.15	1.21	0.91	0.29	0.77	1.07	0.74	0.66	0.27	0.03	0.35	0.78	0.69	

TABLE-VII.16 UNIT IRRIGATION DIVERSION REQUIREMENT (3/3)

Quinali (B) Area

(Unit: l/sec/ha)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Average	Max.
1956	0	0	0	0	0.40	1.08	0.61	0.15	0	0	0.24	0.04	0.21	1.08
57	0	0.50	0.20	0.11	0.64	0.88	0.70	0.18	0.11	0	0.23	0.31	0.33	0.88
58	0	0	0	0.17	0.49	0.92	0.53	0	0.14	0	0.22	0.39	0.24	0.92
59	0.04	0	0	0.22	0.50	0.87	0.42	0.65	0.24	0	0.22	0.06	0.27	0.87
1960	0.59	0.24	0.58	0.06	0.43	0.83	1.02	0.37	0	0	0.22	0.20	0.39	1.02
61	0.58	0.86	0.41	0.07	0.61	0.76	1.02	0.21	0.22	0	0.25	0.25	0.44	1.02
62	0.11	0.04	0.37	0.16	0.42	1.28	1.14	0.14	0	0.03	0.24	0.40	0.36	1.28
63	0.30	0	0.67	0.22	0.59	0.48	0.60	0	0.18	0.02	0.23	0.19	0.29	0.67
64	0	0	0.54	0	0.60	0.87	0.92	0.20	0	0	0.24	0.06	0.29	0.92
1965	0	0	0.04	0.15	0.51	0.84	0.05	0.07	0.17	0	0.24	0.10	0.18	0.84
66	0	0.32	0.25	0.16	0.61	1.32	0.05	0.80	0.27	0	0.24	0.04	0.34	1.32
67	0	0	0	0.10	0.78	1.13	0.85	0.20	0.23	0.02	0.22	0.24	0.31	1.13
68	0	0.28	0.39	0.22	0.88	1.39	0.42	0.28	0.02	0.03	0.26	0.57	0.40	1.39
69	0.23	0.99	0.60	0.12	0.73	1.14	0.60	0.49	0.04	0.04	0.25	0.07	0.44	1.14
1970	0.08	0	0.02	0.06	0.73	0.72	0.52	0.38	0.06	0	0.21	0.13	0.24	0.73
71	0	0	0	0.11	0.37	0.62	0	0.71	0.30	0	0.24	0.04	0.20	0.71
72	0	0.37	0	0.17	0.72	0.50	0.59	0	0.26	0.02	0.23	0.17	0.25	0.72
73	0.17	0.27	0.63	0.15	0.63	0.64	0	0	p	0	0.22	0.04	0.23	0.64
74	0.13	0	0.44	0.18	0.65	0.36	0.33	0.68	0.09	0	0.24	0.12	0.27	0.68
1975	0	0	0.78	0	0.67	0.58	0.20	0.24	0	0	0.28	0.04	0.23	0.78
76	0.74	0	0	0.06	0.41	0.43	0.37	0.10	0.21	0	0.23	0.04	0.22	0.74
77	0.14	0	0.34	0.10	0.43	0.86	0.09	0.27	0	0.01	0.21	0.45	0.24	0.86
78	0.75	0.16	0.16	0.11	0.50	0.32	0.35	0.01	0	0	0.25	0.13	0.23	0.75
79	0.47	0.38	0.88	0.07	0.59	0.50	0.44	0.62	0	0	0.24	0.27	0.37	0.88
Average	0.18	0.18	0.3	0.12	0.41	0.81	0.49	0.28	0.11	0.01	0.23	0.18	0.27	

TABLE-VII.17 IRRIGABLE AREA FOR THE NATIONAL IRRIGATION SYSTEM

(Unit: ha)

	Present		Future	
	Wet S.	Dry S.	Wet S.	Dry S.
Ogsong	300	300	600	600
Nasisi	1,350	1,350	900	900
Nahaba			700	450
Hibiga	350	350	500	500
Total	2,050	2,050	2,700	2,450

Source: Feasibility Report on the National Irrigation Systems Improvement Project, Package II, 1977

TABLE-VII.18 IRRIGATION DIVERSION REQUIREMENT AT OGSONG HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.#	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	0.8	0.5	0.4	0.2	0.4	0.2	0.2	0.5	0.1	0.0	0.2	0.2
57	0.5	0.8	0.6	0.1	0.6	0.6	0.5	0.2	0.2	0.	0.2	0.7
58	0.7	0.7	0.5	0.2	0.5	0.7	0.6	0.4	0.1	0.0	0.2	0.7
59	0.8	0.7	0.4	0.2	0.4	0.8	0.4	0.4	0.2	0.0	0.2	0.2
1960	0.7	0.7	0.6	0.2	0.5	0.6	0.5	0.4	0.2	0.0	0.2	0.4
61	1.0	1.0	0.6	0.2	0.4	0.6	0.4	0.4	0.2	0.0	0.3	0.7
62	0.8	0.7	0.5	0.2	0.3	0.4	0.3	0.4	0.1	0.0	0.2	0.7
63	1.0	0.8	0.7	0.2	0.5	0.4	0.7	0.0	0.2	0.0	0.3	0.6
64	0.7	0.8	0.6	0.1	0.5	0.6	0.8	0.6	0.2	0.0	0.2	0.3
1965	0.8	0.9	0.7	0.2	0.5	0.8	0.6	0.8	0.3	0.1	0.3	0.7
66	0.5	0.9	0.6	0.2	0.5	0.7	0.4	0.6	0.3	0.0	0.2	0.2
67	0.3	0.7	0.5	0.2	0.5	0.8	0.4	0.3	0.1	0.0	0.3	0.8
68	0.8	0.7	0.7	0.2	0.5	0.6	0.5	0.4	0.2	0.	0.2	0.3
69	0.7	0.7	0.7	0.2	0.5	0.6	0.4	0.5	0.1	0.1	0.3	0.4
1970	0.6	0.5	0.5	0.2	0.6	0.8	0.2	0.2	0.2	0.0	0.2	0.5
71	0.5	0.7	0.4	0.2	0.3	0.6	0.3	0.7	0.3	0.0	0.3	0.2
72	1.0	0.7	0.4	0.2	0.5	0.5	0.3	0.1	0.2	0.0	0.2	0.6
73	1.0	0.9	0.6	0.2	0.6	0.8	0.6	0.4	0.1	0.	0.2	0.2
74	0.9	0.6	0.6	0.2	0.5	0.3	0.2	0.7	0.4	0.0	0.2	0.4
1975	0.6	0.8	0.5	0.1	0.6	0.5	0.4	0.3	0.1	0.0	0.1	0.7
76	0.6	0.4	0.5	0.2	0.3	0.3	1.0	0.2	0.1	0.0	0.2	0.2
77	0.7	0.6	0.6	0.2	0.4	1.0	0.2	0.4	0.1	0.0	0.2	0.8
78	1.0	1.0	0.5	0.2	0.5	0.6	0.6	0.3	0.2	0.0	0.3	0.5
79	1.0	1.0	0.7	0.1	0.5	0.6	0.5	0.6	0.	0.0	0.2	0.6
Average	0.8	0.7	0.6	0.2	0.5	0.6	0.5	0.4	0.2	0.	0.2	0.5

Note: Net irrigation area = 600 ha (in future)

TABLE-VII.19 IRRIGATION DIVERSION REQUIREMENT AT NASISI HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	1.2	0.7	0.6	0.3	0.6	1.1	0.3	0.7	0.1	0.0	0.3	0.2
57	0.8	1.2	0.8	0.2	0.8	0.9	0.7	0.3	0.3	0.0	0.3	1.0
58	1.0	1.1	0.8	0.3	0.7	1.0	0.8	0.5	0.2	0.	0.3	1.1
59	1.2	1.0	0.6	0.3	0.6	1.2	0.6	0.6	0.3	0.0	0.3	0.3
1960	1.1	1.0	0.8	0.3	0.7	0.9	0.7	0.6	0.2	0.0	0.3	0.6
61	1.5	1.5	0.9	0.3	0.6	0.9	0.6	0.6	0.3	0.0	0.4	1.0
62	1.1	1.0	1.8	0.3	0.5	0.6	0.5	0.6	0.2	0.0	0.3	1.1
63	1.5	1.2	1.0	0.3	0.7	0.6	1.1	0.8	0.3	0.0	0.4	0.8
64	1.0	1.1	0.9	0.2	0.8	0.9	1.2	0.8	0.3	0.0	0.3	0.5
1965	1.2	1.3	1.0	0.3	0.8	1.1	0.9	1.2	0.5	0.1	0.4	1.0
66	0.7	1.3	0.8	0.3	0.7	1.1	0.6	0.9	0.4	0.0	0.3	0.3
67	0.4	1.0	0.8	0.3	0.8	1.2	0.6	0.5	0.1	0.0	0.4	1.1
68	1.2	1.1	1.0	0.3	0.7	0.9	0.7	0.6	0.2	0.	0.3	0.5
69	1.1	1.0	1.0	0.3	0.8	0.9	0.6	0.8	0.2	0.1	0.4	0.5
1970	0.8	0.7	0.8	0.3	0.8	1.2	0.3	0.3	0.2	0.0	0.2	0.8
71	0.8	1.1	0.6	0.3	0.4	0.9	0.4	1.0	0.5	0.0	0.4	0.3
72	1.5	1.0	0.6	0.3	0.7	0.8	0.4	0.2	0.2	0.0	0.3	0.8
73	1.5	1.4	0.6	0.3	0.7	0.8	0.4	0.2	0.2	0.0	0.3	0.8
74	1.3	0.8	0.9	0.3	0.8	0.4	0.3	1.1	0.6	0.0	0.3	0.5
1975	0.9	1.2	0.7	0.2	0.8	0.7	0.6	0.4	0.1	0.0	0.2	1.1
76	0.9	0.6	0.8	0.3	0.5	0.5	1.5	0.2	0.2	0.0	0.2	0.3
77	1.1	0.8	0.9	0.3	0.6	1.5	0.2!	0.6	0.2	0.0	0.3	0.6
78	1.5	1.4	0.8	0.2	0.7	0.8	0.8	0.5	0.3	0.0	0.4	0.8
79	1.5	1.4	1.0	0.2	0.8	0.9	0.7	0.9	0.	0.0	0.3	0.9
Average	1.1	1.1	0.8	0.3	0.7	0.9	0.7	0.6	0.3	0.	0.3	0.7

Note: Net irrigation area = 900 ha (in future)

TABLE-VII.20 IRRIGATION DIVERSION REQUIREMENT AT MAHABA HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	0.6	0.4	0.3	0.1	0.5	0.9	0.3	0.5	0.1	0.0	0.1	0.1
57	0.4	0.6	0.4	0.1	0.7	0.7	0.6	0.2	0.2	0.0	0.2	0.5
58	0.5	0.5	0.4	0.1	0.6	0.8	0.7	0.4	0.2	0.0	0.1	0.5
59	0.6	0.5	0.3	0.1	0.4	0.9	0.5	0.4	0.2	0.0	0.1	0.1
1960	0.5	0.5	0.4	0.1	0.5	0.7	0.5	0.4	0.2	0.0	0.1	0.3
61	0.8	0.7	0.4	0.1	0.5	0.8	0.4	0.4	0.3	0.0	0.2	0.5
62	0.6	0.5	0.4	0.1	0.4	0.5	0.4	0.5	0.2	0.1	0.1	0.5
63	0.8	0.6	0.5	0.1	0.6	0.5	0.9	0.1	0.2	0.0	0.2	0.4
64	0.5	0.5	0.4	0.1	0.7	0.7	0.9	0.7	0.2	0.0	0.2	0.2
1965	0.6	0.6	0.5	0.1	0.7	0.9	0.7	0.9	0.4	0.1	0.2	0.5
66	0.4	0.6	0.4	0.1	0.5	0.9	0.4	0.8	0.3	0.0	0.1	0.2
67	0.2	0.5	0.4	0.1	0.7	1.0	0.5	0.4	0.1	0.0	0.2	0.5
68	0.6	0.5	0.5	0.1	0.5	0.7	0.5	0.4	0.2	0.0	0.1	0.2
69	0.5	0.5	0.5	0.1	0.7	0.7	0.5	0.7	0.2	0.1	0.2	0.3
1970	0.4	0.3	0.4	0.1	0.7	1.0	0.2	0.2	0.2	0.0	0.1	0.4
71	0.4	0.5	0.3	0.1	0.4	0.7	0.3	0.8	0.4	0.0	0.2	0.1
72	0.7	0.5	0.3	0.1	0.6	0.6	0.3	0.1	0.2	0.0	0.2	0.4
73	0.7	0.7	0.5	0.1	0.7	1.0	0.7	0.5	0.2	0.0	0.1	0.2
74	0.6	0.4	0.4	0.1	0.6	0.3	0.2	0.9	0.5	0.0	0.1	0.3
1975	0.4	0.6	0.4	0.1	0.7	0.6	0.5	0.4	0.1	0.0	0.1	0.5
76	0.4	0.3	0.4	0.1	1.0	1.0	1.1	0.2	0.2	0.0	0.1	0.1
77	0.5	0.4	0.4	0.1	0.5	1.2	0.2	0.5	0.2	0.1	0.1	0.6
78	0.8	0.7	0.4	0.1	0.5	0.7	0.7	0.4	0.3	0.0	0.2	0.4
79	0.8	0.7	0.5	0.1	0.6	0.7	0.6	0.7	0.0	0.1	0.2	0.4
Average	0.5	0.5	0.4	0.1	0.6!	0.8	0.5	0.5	0.2	0.02	0.2	0.4

Note: Net irrigation area: Wet season = 700 ha, Dry season = 450 ha (in future)

TABLE-VII.21 IRRIGATION DIVERSION REQUIREMENT AT HIBIGA HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	0.6	0.4	0.4	0.1	0.4	0.6	0.2	0.4	0.0	0.0	0.1	0.1
57	0.4	0.6	0.5	0.1	0.5	0.5	0.4	0.1	0.1	0.0	0.2	0.5
58	0.5	0.6	0.5	0.1	0.4	0.5	0.5	0.3	0.1	0.0	0.1	0.6
59	0.6	0.5	0.3	0.1	0.3	0.6	0.4	0.3	0.1	0.0	0.1	0.1
1960	0.6	0.5	0.5	0.1	0.4	0.5	0.4	0.3	0.1	0.0	0.1	0.4
61	0.9	0.8	0.5	0.1	0.4	0.5	0.3	0.3	0.2	0.0	0.2	0.5
62	0.6	0.6	0.4	0.1	0.3	0.4	0.2	0.4	0.1	0.0	0.1	0.6
63	0.9	0.6	0.5	0.1	0.4	0.4	0.6	0.0	0.1	0.0	0.2	0.5
64	0.5	0.6	0.5	0.1	0.5	0.5	0.6	0.5	0.1	0.0	0.2	0.2
1965	0.6	0.7	0.5	0.1	0.5	0.6	0.5	0.6	0.3	0.0	0.2	0.5
66	0.4	0.7	0.5	0.1	0.4	0.6	0.3	0.5	0.2	0.0	0.1	0.2
67	0.2	0.5	0.4	0.1	0.5	0.7	0.4	0.2	0.0	0.0	0.2	0.6
68	0.7	0.6	0.5	0.1	0.4	0.5	0.4	0.3	0.1	0.0	0.1	0.2
69	0.6	0.5	0.5	0.1	0.5	0.5	0.4	0.5	0.1	0.0	0.2	0.3
1970	0.5	0.4	0.5	0.1	0.5	0.7	0.1	0.1	0.1	0.0	0.1	0.4
71	0.5	0.6	0.4	0.1	0.2	0.5	0.2	0.5	0.2	0.0	0.2	0.1
72	0.8	0.5	0.4	0.1	0.4	0.4	0.2	0.0	0.1	0.0	0.2	0.5
73	0.8	0.7	0.5	0.1	0.5	0.7	0.5	0.4	0.1	0.0	0.1	0.2
74	0.7	0.5	0.5	0.1	0.4	0.2	0.1	0.6	0.4	0.0	0.1	0.3
1975	0.5	0.6	0.4	0.1	0.5	0.4	0.4	0.2	0.0	0.0	0.1	0.6
76	0.5	0.4	0.4	0.1	0.7	0.7	0.8	0.1	0.1	0.0	0.1	0.1
77	0.6	0.5	0.5	0.1	0.4	0.9	0.1	0.4	0.1	0.0	0.1	0.6
78	0.9	0.8	0.5	0.1	0.4	0.5	0.5	0.2	0.2	0.0	0.2	0.5
79	0.9	0.8	0.5	0.1	0.4	0.5	0.4	0.5	0.0	0.0	0.2	0.5
Average	0.6	0.6	0.5	0.1	0.4	0.5	0.4	0.3	0.1	0.0	0.2	0.4

Note: Net irrigation area = 500 ha (in future)

TABLE-VII.22 CONVERSION RATIO FOR CALCULATION OF EXPECTED RIVER RUNOFF

River (Headworks)	Drainage Area 1/	Gauging Station Used		Conversion Ratio 2/
		Name	Drainage Area	
	(km^2)		(km^2)	
Cabilogan HW	122	Bobongsuran	131	0.947
Ogsong River 3/	28.2	Ogsong	11	2.564
Nasisi HW	39	Nasisi	39	1.0
Mahaba HW	6.4	Nasisi	39	0.254
Hibiga HW	5.7	Nasisi	39	0.233
Polangui River 4/	25.8	Nasisi	39	0.731

Note: 1/: Irrigation areas of the National Irrigation Systems are excluded from the drainage area. The return flow from irrigation area is not taken intooaccount.

2/: Refer to Fig.I-30.

3/: Confluence with the Nasisi River.

4/: At the existing Quinali Headworks.

TABLE-VII.23 MONTHLY MEAN DISCHARGE AT CABILOGAN HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	-	-	-	4.6	4.6	4.3	7.6	7.6	11.6	8.4	8.9	17.0
57	11.9	6.7	5.5	6.9	4.1	5.9	6.9	9.1	7.4	5.9	7.2	3.1
58	5.1	4.5	4.0	2.5	1.4	1.6	5.3	6.3	4.6	9.4	11.9	3.2
59	2.7	4.1	4.2	2.7	2.0	0.9	2.4	3.7	3.2	4.8	4.7	9.0
1960	7.0	4.9	3.9	13.0	4.5	7.2	7.8	5.6	6.6	6.7	6.9	6.1
61	6.1	4.0	3.7	4.0	4.3	5.6	4.6	6.0	8.2	6.7	6.1	7.7
62	4.1	3.5	4.0	3.7	8.7	5.5	8.3	7.9	8.7	8.1	9.1	5.0
63	3.9	3.9	3.5	2.9	2.4	5.8	7.3	8.6	7.3	6.6	6.4	5.9
64	5.4	4.5	2.7	2.9	2.6	4.1	5.2	5.9	6.8	8.4	6.1	9.9
1965	6.8	6.1	3.4	3.4	3.1	3.5	11.9	8.7	10.3	7.1	7.5	5.7
66	7.8	2.8	3.7	3.7	3.6	2.9	2.9	3.6	2.8	3.0	5.4	6.8
67	8.0	4.5	5.2	3.8	3.1	3.8	6.7	6.8	7.5	6.3	7.8	3.7
68	4.5	3.7	3.3	3.1	4.4	6.3	6.0	9.9	5.2	1.2	2.3	4.2
69	3.2	3.0	2.9	3.4	3.6	4.9	6.3	2.6	5.3	4.7	3.9	-
1970	-	-	-	3.0	1.5	-	-	-	-	8.3	5.4	-
71	5.4	3.1	2.1	1.4	4.9	2.6	8.0	-	6.3	9.7	7.1	13.3
72	11.3	6.0	6.8	5.8	5.7	9.3	8.0	8.5	11.6	7.9	-	10.0
73	6.9	4.5	4.5	3.9	4.4	11.0	8.4	-	-	-	-	-
74	-	8.7	5.7	5.3	5.2	-	6.7	4.2	4.1	6.9	8.9	6.3
1975	8.4	-	4.2	3.5	3.6	5.7	10.3	10.5	-	5.1	3.1	27.7
76	9.7	2.1	4.1	2.4	8.2	6.6	6.5	12.0	10.9	6.4	12.7	15.4
77	6.2	8.5	8.4	17.5	7.1	8.8	17.0	9.8	16.4	6.9	18.1	3.4
78	6.6	7.2	3.8	4.8	6.0	8.4	-	-	-	19.2	3.8	12.9
79	-	-	-	-	-	-	-	-	-	-	-	-
Average	6.6	4.8	4.3	4.7	4.3	5.5	7.3	7.2	7.6	7.2	7.3	8.8

Note: Drainage area = 122 km^2

TABLE-VII.24 MONTHLY MEAN DISCHARGE AT OGSONG HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	2.6	3.0	3.5	4.8	5.3	4.5	5.9	2.1	9.9	20.7	12.0	7.4
57	6.3	5.3	4.9	4.8	14.6	3.9	3.8	9.7	6.7	6.6	6.4	4.1
58	5.3	2.8	5.1	5.1	3.7	4.6	4.5	4.7	5.7	8.2	6.7	3.6
59	2.8	2.5	3.7	3.0	3.1	1.9	3.3	3.7	4.1	5.6	5.2	3.0
1960	1.2	1.4	1.3	-	-	15.4	3.5	5.2	11.1	13.9	10.9	2.4
61	2.2	1.1	3.1	2.2	2.4	1.9	2.0	2.5	1.9	3.6	2.8	3.1
62	2.6	2.2	0.5	0.7	2.7	1.3	3.9	2.8	1.4	1.7	3.2	1.5
63	0.3	0.8	0.2	0.1	0.1	2.7	1.4	0.9	1.7	2.6	3.8	1.3
64	4.3	0.4	0.2	-	1.6	0.6	0.2	0.5	0.7	4.7	3.7	2.9
1965	2.4	0.8	0.7	0.2	0.5	0.9	2.7	1.7	2.6	2.4	3.9	4.4
66	6.2	7.9	0.5	0.1	0.9	1.4	2.2	1.5	1.4	0.6	1.7	2.0
67	1.4	0.9	-	1.4	0.6	0.1	0.9	0.9	1.4	1.3	3.0	1.3
68	2.6	1.3	1.4	1.5	1.6	0.7	0.1	0.2	4.0	4.6	5.5	4.8
69	2.8	0.1	0.1	0.1	0.0	1.0	1.8	1.4	1.3	0.8	1.6	1.7
1970	0.2	2.5	0.1	0.2	0.2	0.2	0.6	1.8	0.7	2.0	1.8	1.8
71	0.8	0.6	0.9	0.1	1.6	1.4	1.3	0.1	0.3	3.5	3.1	7.1
72	2.4	0.1	0.4	1.0	0.8	2.6	2.2	2.6	4.6	2.1	2.5	1.7
73	0.9	0.1	0.1	0.4	0.5	0.2	1.4	6.6	2.5	1.3	1.5	11.5
74	0.5	4.0	3.2	0.5	0.5	5.0	3.9	0.7	6.2	10.0	16.2	5.7
1975	-	-	-	3.2	1.7	0.7	4.4	3.3	4.9	5.9	6.2	9.5
76	2.1	1.3	0.6	0.9	0.9	1.5	1.3	2.1	1.7	0.9	1.5	4.9
77	3.0	3.2	2.7	2.4	1.9	2.7	3.0	2.2	2.5	1.9	3.1	2.0
78	1.9	1.7	1.8	1.0	1.5	3.8	-	-	-	3.8	2.5	1.5
79	-	-	-	-	-	-	-	-	-	-	-	-
Average	2.5	2.0	1.7	1.6	2.1	2.6	2.5	2.6	3.5	4.7	5.3	3.9

Note: Drainage area = 28 km^2

TABLE-VII.25 MONTHLY MEAN DISCHARGE AT NASISI HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	2.0	2.0	2.3	2.0	1.3	1.0	1.3	1.5	2.5	2.0	2.7	5.0
57	5.1	2.7	2.6	2.5	2.2	1.6	1.1	1.2	1.5	2.1	3.1	2.5
58	2.3	1.8	1.7	1.4	1.5	1.6	1.8	2.0	1.7	2.9	1.4	1.3
59	1.5	1.7	2.5	2.5	3.2	2.8	1.9	1.5	1.6	2.1	2.5	2.0
1960	1.0	0.9	0.9	1.7	2.0	5.1	1.9	1.8	2.5	2.9	3.2	3.0
61	3.2	2.3	2.3	1.8	2.0	1.6	2.0	2.0	1.6	1.6	2.0	2.5
62	2.5	2.1	2.2	1.8	2.5	1.8	1.8	1.9	1.8	1.6	3.8	2.0
63	1.5	2.1	1.6	1.4	1.4	2.6	1.4	2.9	1.8	1.7	2.1	1.8
64	2.3	1.6	1.5	1.5	1.4	2.0	1.7	1.7	2.6	1.3	1.8	3.8
1965	4.0	2.6	1.7	1.3	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.5
66	1.5	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.3	1.2	1.5	2.7
67	2.7	3.0	2.5	2.3	2.2	2.1	2.2	1.8	1.0	1.5	1.5	0.9
68	1.8	1.7	1.5	1.4	1.2	1.4	1.4	1.5	2.4	1.4	6.6	1.7
69	0.9	0.9	0.8	0.8	0.9	0.8	1.1	0.9	1.1	1.1	1.3	2.7
1970	0.9	0.9	0.8	0.7	0.7	0.6	0.6	-	0.6	2.0	0.7	0.8
71	0.7	0.8	0.7	0.6	0.9	0.8	0.9	-	0.6	1.0	1.7	3.0
72	11.4	1.0	1.0	0.9	0.7	1.1	1.9	1.8	2.0	2.1	2.8	3.5
73	2.9	2.2	2.1	2.0	1.7	1.7	1.7	2.0	1.7	3.1	8.4	12.9
74	4.6	3.9	2.4	1.7	-	-	3.4	2.0	1.8	2.3	4.6	5.2
1975	0.3	0.3	0.6	1.9	1.8	1.4	2.2	2.9	2.7	2.1	1.7	5.3
76	1.3	1.3	1.1	1.2	1.0	1.1	1.3	2.1	2.8	2.3	1.8	3.7
77	2.8	3.3	2.9	3.0	2.7	2.6	2.6	0.4	1.4	1.5	1.4	1.4
78	1.7	1.7	4.0	5.6	4.2	4.0	-	-	-	4.7	4.8	-
79	-	-	-	-	-	-	-	-	-	-	-	-
Average	2.6	1.8	1.8	1.8	1.7	1.8	1.7	1.7	1.7	2.0	2.7	3.1

Note: Drainage area = 39 km^2

TABLE-VII.26 MONTHLY MEAN DISCHARGE AT MAHABA HEADWORKS

(Unit m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	0.5	0.5	0.6	0.5	0.3	0.3	0.3	0.4	0.6	0.5	0.7	1.3
57	1.3	0.7	0.7	0.6	0.6	0.4	0.3	0.3	0.4	0.5	0.8	0.6
58	0.6	0.5	0.5	0.4	0.4	0.4	0.5	0.5	0.4	0.7	0.4	0.3
59	0.4	0.4	0.6	0.6	0.8	0.7	0.5	0.4	0.4	0.5	0.6	0.5
1960	0.3	0.2	0.2	0.4	0.5	1.3	0.5	0.5	0.6	0.7	0.8	0.8
61	0.8	0.6	0.6	0.5	0.5	0.4	0.5	0.5	0.4	0.4	0.5	0.6
62	0.6	0.5	0.6	0.5	0.6	0.5	0.5	0.5	0.5	0.4	1.0	0.5
63	0.4	0.5	0.4	0.4	0.4	0.7	0.4	0.7	0.5	0.4	0.5	0.5
64	0.6	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.7	0.3	0.5	1.0
1965	1.0	0.7	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4
66	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.4	0.4
67	0.7	0.7	0.6	0.6	0.6	0.5	0.6	0.5	0.3	0.4	0.4	0.2
68	0.5	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.6	0.4	1.7	0.4
69	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.7
1970	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-	0.2	0.5	0.2	0.2
71	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-	0.2	0.3	0.4	0.8
72	2.9	0.3	0.3	0.2	0.2	0.3	0.5	0.5	0.5	0.5	0.7	0.9
73	0.7	0.6	0.5	0.5	0.4	0.4	0.4	0.5	0.4	0.8	2.1	3.3
74	1.2	1.0	0.6	0.4	-	-	0.9	0.5	0.5	0.6	1.2	1.3
1975	0.1	0.1	0.2	0.5	0.5	0.4	0.6	0.7	0.7	0.5	0.4	1.3
76	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.7	0.6	0.5	0.9
77	0.7	0.8	0.7	0.7	0.7	0.7	0.1	0.1	0.4	0.4	0.4	0.4
78	0.4	0.4	1.0	1.4	1.1	1.0	-	-	-	1.2	1.2	-
79	-	-	-	-	-	-	-	-	-	-	-	-
Average	0.7	0.5	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.5	0.7	0.8

Note: Catchment Area = 6.4 km^2

TABLE-VII.27 MONTHLY MEAN DISCHARGE AT HIBIGA HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	0.5	0.5	0.5	0.5	0.3	0.2	0.3	0.3	0.6	0.5	0.6	1.2
57	1.2	0.6	0.6	0.6	0.5	0.4	0.3	0.3	0.3	0.5	0.7	0.6
58	0.5	0.4	0.4	0.3	0.3	0.4	0.4	0.5	0.4	0.7	0.3	0.3
59	0.3	0.4	0.6	0.6	0.7	0.7	0.4	0.3	0.4	0.5	0.6	0.5
1960	0.2	0.2	0.2	0.4	0.5	1.2	0.4	0.4	0.6	0.7	0.7	0.7
61	0.7	0.5	0.5	0.4	0.5	0.4	0.5	0.5	0.4	0.4	0.5	0.6
62	0.6	0.5	0.5	0.4	0.6	0.4	0.4	0.4	0.4	0.4	0.9	0.5
63	0.3	0.5	0.4	0.3	0.3	0.6	0.3	0.7	0.4	0.4	0.5	0.4
64	0.5	0.4	0.3	0.3	0.3	0.5	0.4	0.4	0.6	0.3	0.4	0.9
1965	0.9	0.6	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
66	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6
67	0.6	-	0.6	0.5	0.5	0.5	0.5	0.4	0.2	0.3	0.3	0.2
68	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.3	1.5	0.4
69	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.3	0.3	0.6
1970	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-	0.1	0.5	0.2	0.2
71	0.2	0.2	0.2	0.1	0.2	0.2	0.2	-	0.1	0.2	0.4	0.7
72	2.7	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.8
73	0.7	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.4	0.7	2.0	3.0
74	1.1	0.9	0.6	0.4	-	-	0.8	0.5	0.4	0.5	1.1	1.2
1975	0.1	0.1	0.1	0.4	0.4	0.3	0.5	0.7	0.6	0.5	0.4	1.2
76	0.3	0.3	0.2	0.3	0.2	0.2	0.3	0.5	0.7	0.5	0.4	0.9
77	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.1	0.3	0.3	0.3	0.3
78	0.4	0.4	0.9	1.3	1.0	0.9	-	-	-	1.1	1.1	-
79	-	-	-	-	-	-	-	-	-	-	-	-
Average	0.6	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.7

Note: Drainage Area = 5.7 km^2

TABLE-VII.28 MONTHLY MEAN DISCHARGE FOR THE POLANGUI RIVER

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	1.5	1.5	1.7	1.5	1.0	0.7	1.0	1.1	1.8	1.5	2.0	3.7
57	3.7	2.0	1.9	1.8	1.6	1.2	0.8	0.9	1.1	1.5	2.3	1.8
58	1.7	1.3	1.2	1.0	1.1	1.2	1.3	1.5	1.2	2.1	1.0	1.0
59	1.1	1.2	1.8	1.8	2.3	2.0	1.4	1.1	1.2	1.5	1.8	1.5
1960	0.7	0.7	0.7	1.2	1.5	3.7	1.4	1.3	1.8	2.1	2.3	2.2
61	2.3	1.7	1.7	1.3	1.5	1.2	1.5	1.5	1.2	1.2	1.5	1.8
62	1.8	1.5	1.6	1.3	1.8	1.3	1.3	1.4	1.3	1.2	2.8	1.5
63	1.1	1.5	1.2	1.0	1.0	1.9	1.0	2.1	1.3	1.2	1.5	1.3
64	1.7	1.2	1.1	1.1	1.0	1.5	1.2	1.2	1.9	1.0	1.3	2.8
1965	2.9	1.9	1.2	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1
66	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.0	0.9	1.1	2.0
67	2.0	2.2	1.8	1.7	1.6	1.5	1.6	1.3	0.7	1.1	1.1	0.7
68	1.3	1.2	1.1	1.0	0.9	1.0	1.0	1.1	1.8	1.0	4.8	1.2
69	0.7	0.7	0.6	0.6	0.7	0.6	0.8	0.7	0.8	0.8	1.0	2.0
1970	0.7	0.7	0.6	0.5	0.5	0.4	0.4	-	0.4	1.5	0.5	0.6
71	0.5	0.6	0.5	0.4	0.7	0.6	0.7	-	0.4	0.7	1.2	2.2
72	8.3	0.7	0.7	0.7	0.5	0.8	1.4	1.3	1.5	1.5	2.0	2.6
73	2.1	1.6	1.5	1.5	1.2	1.2	1.2	1.5	1.2	2.3	6.1	9.4
74	3.4	2.9	1.8	1.2	-	-	2.5	1.5	1.3	1.7	3.4	3.8
1975	0.2	0.2	0.4	1.4	1.3	1.0	1.6	2.1	2.0	1.5	1.2	3.9
76	1.0	1.0	0.8	0.9	0.7	0.8	1.0	1.5	2.0	1.7	1.3	2.7
77	2.0	2.4	2.1	2.2	2.0	1.9	1.9	0.3	1.0	1.1	1.0	1.0
78	1.2	1.2	2.9	4.1	3.1	2.9	-	-	-	3.4	3.5	-
79	-	-	-	-	-	-	-	-	-	-	-	-
Average	1.9	1.3	1.3	1.3	1.2	1.3	1.2	1.2	1.2	1.5	2.0	2.3

Note: Drainage area = 25.8 km^2, Irrigation area of the National Irrigation Systems and drainage area upstream of the Hibiga Headworks (5.7 km^2) are excluded.

TABLE-VII.29 MONTHLY MEAN AVAILABLE DISCHARGE AT SOUTH QUINALI HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	-	-	-	10.5	9.2	6.2	13.7	9.0	23.7	31.1	22.7	28.7
57	20.9	10.9	10.3	13.6	18.2	8.5	9.5	19.1	14.7	14.6	15.6	6.5
58	9.5	5.6	8.2	8.1	4.3	4.6	8.9	11.3	11.4	20.5	19.1	4.6
59	3.2	5.1	8.6	7.3	6.5	2.7	5.6	7.1	8.0	12.5	11.5	13.1
1960	5.8	4.1	3.4	-	-	24.8	11.2	10.8	19.5	23.5	20.1	9.5
61	6.6	2.7	6.2	7.1	6.7	6.1	6.8	8.7	10.6	11.9	9.6	10.1
62	5.5	4.3	4.3	5.3	12.3	6.6	12.5	10.6	11.3	11.3	15.2	5.0
63	1.5	3.0	2.6	3.6	2.0	9.1	6.6	11.5	9.9	10.9	11.0	6.3
64	8.8	3.3	1.9	-	3.4	3.9	3.9	5.5	9.2	14.4	10.5	15.1
1965	9.4	5.4	2.6	4.0	2.4	2.0	13.0	7.9	12.6	10.5	11.3	8.4
66	13.2	7.8	2.9	4.4	3.6	2.1	4.6	3.6	4.2	4.8	7.7	10.4
67	10.8	5.2	-	6.6	3.3	2.7	7.8	8.0	9.6	9.1	10.9	2.5
68	4.9	3.2	3.0	5.1	5.0	5.5	5.7	10.0	10.9	7.2	13.5	9.2
69	3.6	1.5	1.4	3.5	2.4	3.9	7.2	2.3	7.1	6.3	5.5	-
1970	-	-	-	3.0	0.2	-	-	-	-	12.3	7.1	-
71	4.4	1.4	1.7	1.3	6.0	2.0	8.9	-	5.7	14.2	10.6	22.5
72	20.4	4.5	6.2	6.8	4.9	10.6	10.8	12.5	17.5	12.1	-	12.5
73	6.1	3.2	4.2	5.4	4.0	9.5	8.6	-	-	-	-	-
74	-	13.9	8.4	6.6	-	-	15.1	3.4	10.1	19.2	28.8	17.5
1975	-	-	-	8.0	4.4	5.5	14.9	15.3	-	13.1	10.4	39.0
76	10.2	2.7	3.4	3.6	7.3	6.4	4.6	15.4	14.8	9.6	15.2	23.0
77	8.5	12.3	11.1	22.0	9.7	9.2	21.8	10.6	19.7	10.2	21.7	3.6
78	5.3	6.0	7.5	10.7	9.5	13.5	-	-	-	27.7	9.7	-
79	-	-	-	-	-	-	-	-	-	-	-	-
Average	8.3	5.3	5.2	7.0	6.0	6.9	9.6	9.6	12.1	14.0	13.7	13.0

Note: Drainage area = 199 km^2 (excluding existing irrigation area)

TABLE-VII.30 MONTHLY MEAN AVAILABLE DISCHARGE AT QUINALI HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	1.5	1.6	2.1	2.3	1.0	0.7	1.1	1.1	2.9	2.5	3.1	6.0
57	5.4	2.1	2.3	2.8	1.6	1.2	0.8	1.2	1.5	2.5	3.4	2.0
58	1.8	1.3	1.3	1.5	1.3	1.2	1.3	1.8	1.7	3.5	1.5	1.0
59	1.1	1.2	2.4	2.8	3.1	2.1	1.4	1.1	1.7	2.5	2.8	2.3
1960	0.7	0.7	0.7	1.8	1.6	5.0	1.4	1.5	2.5	3.5	3.6	3.0
61	2.3	1.7	1.7	2.0	1.6	1.2	1.8	1.8	1.5	2.0	2.1	2.0
62	1.8	1.5	1.8	2.0	2.3	1.3	1.6	1.4	1.9	1.9	4.5	1.5
63	1.1	1.5	1.2	1.5	1.0	2.3	1.0	3.4	1.9	2.0	2.1	1.4
64	1.8	1.2	1.1	1.6	1.0	1.5	1.2	1.2	2.5	1.6	1.8	4.3
1965	3.6	2.0	1.2	1.4	1.0	1.0	1.0	1.0	1.0	1.5	1.2	1.1
66	1.2	1.0	1.0	1.4	1.0	1.0	1.0	1.1	1.1	1.5	1.6	2.6
67	2.9	-	2.2	2.6	1.6	1.5	1.8	1.6	1.1	1.8	1.4	0.7
68	1.3	1.2	1.1	1.5	0.9	1.0	1.0	1.1	2.7	1.7	7.8	1.6
69	0.7	0.7	0.6	0.8	0.7	0.6	0.8	0.7	1.1	1.3	1.2	2.7
1970	0.7	0.7	0.6	0.7	0.5	0.4	0.5	-	0.4	2.5	0.7	0.6
71	0.5	0.6	0.5	0.5	0.7	0.6	0.7	-	0.4	1.2	1.6	3.5
72	12.4	0.7	0.7	0.9	0.5	0.8	1.8	2.1	2.2	2.5	2.9	3.4
73	2.1	1.6	1.5	2.3	1.2	1.2	1.2	1.6	1.7	3.8	10.0	15.3
74	4.4	3.9	2.1	1.8	-	-	3.9	1.5	1.3	2.8	5.5	5.7
1975	0.2	0.2	0.4	2.1	1.3	1.0	1.8	2.9	3.2	2.5	1.8	5.3
76	1.0	1.0	0.8	1.3	0.7	0.8	1.0	2.2	3.1	2.8	2.0	4.3
77	2.2	3.0	2.5	3.3	2.4	1.9	2.4	0.3	1.4	1.7	1.5	1.0
79	-	-	-	-	-	-	-	-	-	-	-	-
Average	2.3	1.4	1.5	2.0	1.4	1.5	1.4	1.5	1.8	2.4	2.6	3.2

TABLE-VII.31 MONTHLY MEAN DISCHARGE AT BANTAYAN HEADWORKS

(Unit m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	-	-	-	3.5	3.5	3.2	5.7	5.7	8.7	6.4	6.7	12.9
57	9.0	5.1	4.1	5.2	3.1	4.4	5.2	6.9	5.6	4.4	5.4	2.4
58	3.9	3.4	3.0	1.9	1.1	1.2	4.0	4.7	3.5	7.1	9.0	2.4
59	2.0	3.1	3.1	2.0	1.5	0.6	1.8	2.8	2.4	3.6	3.6	6.8
1960	5.3	3.7	2.9	9.8	3.4	5.4	5.9	4.2	5.0	5.1	5.2	4.6
61	4.6	3.0	2.8	3.0	3.2	4.2	3.5	4.5	6.2	5.1	4.6	5.8
62	3.1	2.6	3.0	2.8	6.6	4.1	6.3	5.9	6.6	6.1	6.9	3.8
63	2.9	2.9	2.6	2.2	1.8	4.4	5.5	6.5	5.5	5.0	4.9	4.4
64	4.1	3.4	2.0	2.2	1.9	3.1	3.9	4.4	5.1	6.4	4.6	7.5
1965	5.1	4.6	2.6	2.6	2.4	2.6	9.0	6.6	7.8	5.4	5.6	4.3
66	5.9	2.4	2.8	2.8	2.7	2.2	4.6	2.7	2.1	2.3	4.1	5.1
67	6.0	3.4	3.9	2.9	2.4	2.9	5.1	5.1	5.6	4.8	5.9	2.8
68	3.4	2.8	2.5	2.4	3.3	4.8	4.5	7.5	3.9	0.9	1.7	3.1
69	2.4	2.3	2.2	2.6	2.7	3.7	4.7	1.9	4.0	3.6	2.9	-
1970	-	-	-	2.3	1.1	-	-	-	-	6.3	4.1	-
71	4.1	2.4	1.6	1.1	3.7	1.9	6.1	-	4.7	7.3	5.4	10.1
72	8.5	4.5	5.1	4.4	4.3	7.0	6.0	6.4	8.8	5.9	-	7.6
73	5.2	3.4	3.4	2.9	3.3	8.3	6.4	-	-	-	-	-
74	-	6.6	4.3	4.0	3.9	-	5.1	3.1	3.1	5.2	6.7	4.7
1975	6.4	-	3.1	2.6	2.7	4.3	7.8	7.9	-	3.9	2.4	20.9
76	7.3	1.6	3.1	1.8	6.2	5.0	4.9	9.1	8.2	4.9	9.6	11.7
77	4.6	6.4	6.4	13.2	5.4	6.6	12.9	7.4	12.4	5.2	13.7	2.6
78	5.0	5.4	2.9	3.6	4.5	6.4	-	-	-	14.5	2.9	9.7
79	-	-	-	-	-	-	-	-	-	-	-	-
Average	4.9	3.7	3.2	3.6	3.2	4.1	5.7	5.4	5.7	5.4	5.5	6.7

Note: Drainage area = 84 km^2

TABLE-VII.32 IRRIGATION DIVERSION REQUIREMENT AT CABILOGAN HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	1.8	1.1	1.0	0.4	1.0	1.8	0.6	1.0	0.1	0.0	0.4	0.3
57	1.1	1.8	1.3	0.3	1.3	1.4	1.1	0.4	0.4	0.0	0.6	1.5
58	1.5	1.7	1.3	0.4	1.1	1.5	1.3	0.8	0.3	0.0	0.4	1.7
59	1.8	1.5	0.8	0.4	0.8	1.8	1.0	0.8	0.4	0.0	0.4	0.4
1960	1.7	1.5	1.3	0.4	1.0	1.4	1.0	0.8	0.3	0.0	0.4	1.0
61	2.4	2.2	1.4	0.4	1.0	1.5	0.8	0.8	0.6	0.0	0.6	1.5
62	1.8	1.7	1.1	0.4	0.8	1.0	0.7	1.0	0.3	0.1	0.4	1.7
63	2.4	1.8	1.5	0.4	1.1	1.0	1.7	0.1	0.4	0.0	0.6	1.3
64	1.5	1.7	1.4	0.3	1.3	1.3	1.8	1.3	0.4	0.0	0.6	0.7
1965	1.8	2.0	1.5	0.4	1.3	1.8	1.4	1.8	0.8	0.1	0.7	1.5
66	1.1	2.0	1.3	0.4	1.0	1.7	0.8	1.5	0.6	0.0	0.4	0.6
67	0.6	1.5	1.1	0.4	1.3	2.0	1.0	0.7	0.1	0.0	0.7	1.7
68	2.0	1.7	1.5	0.4	1.0	1.4	1.0	0.8	0.3	0.0	0.4	0.7
69	1.7	1.5	1.5	0.4	1.3	1.4	1.0	1.3	0.3	0.1	0.6	0.8
1970	1.3	1.0	1.3	0.4	1.3	2.0	0.4	0.4	0.4	0.0	0.4	1.1
71	1.3	1.7	1.0	0.4	0.7	1.4	0.6	1.5	0.7	0.0	0.6	0.4
72	2.2	1.5	1.0	0.4	1.1	1.1	0.6	0.1	0.3	0.0	0.6	1.3
73	2.2	2.1	1.5	0.4	1.3	2.0	1.4	1.0	0.3	0.0	0.4	0.6
74	2.0	1.3	1.4	0.4	1.1	0.6	0.4	1.7	1.0	0.0	0.4	0.8
1975	1.4	1.8	1.1	0.3	1.3	1.1	1.0	0.7	0.1	0.0	0.3	1.7
76	1.4	1.0	1.1	0.4	2.0	2.0	2.2	0.4	0.3	0.0	0.4	0.4
77	1.7	1.3	1.4	0.4	1.0	2.4	0.4	1.0	0.3	0.1	0.4	1.8
78	2.4	2.2	1.3	0.3	1.0	1.3	1.3	0.7	0.6	0.0	0.7	1.3
79	2.4	2.2	1.5	0.3	1.1	1.3	1.1	1.4	0.0	0.1	0.6	1.4
Average	1.7	1.7	1.3	0.4	1.1	1.5	1.0	0.9	0.4	0.0	0.5	1.1

Note: Net irrigation area = 1,400 ha

TABLE-VII.33 IRRIGATION DIVERSION REQUIREMENT AT SOUTH QUINALI HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	4.1	1.8	2.0	1.0	2.5	4.1	0.0	1.6	0.0	0.1	1.0	0.0
57	2.0	4.0	2.8	0.5	3.4	2.9	1.7	0.0	0.4	0.0	1.2	3.8
58	3.1	3.4	2.6	1.2	2.8	3.4	2.2	1.0	0.0	0.0	1.2	4.2
59	3.8	3.2	1.5	1.1	2.2	4.4	1.5	1.1	0.4	0.0	0.9	0.4
1960	3.4	3.4	2.9	1.0	2.6	3.0	1.6	1.1	0.2	0.0	1.2	1.7
61	5.7	5.4	3.1	1.1	2.3	3.2	1.1	1.2	0.9	0.0	1.5	3.6
62	3.8	3.5	2.5	1.1	1.8	1.7	0.5	1.3	0.0	0.2	1.1	4.1
63	5.8	4.2	3.8	1.2	2.9	1.6	3.5	0.0	0.5	0.1	1.4	2.8
64	3.0	3.8	3.1	0.7	3.3	2.7	4.0	2.4	0.4	0.0	1.2	1.0
1965	4.2	4.5	3.6	1.1	3.2	4.1	2.5	4.0	1.6	0.2	1.7	3.6
66	1.7	4.6	2.9	1.1	2.6	3.9	1.1	3.0	0.9	0.0	1.1	0.4
67	0.2	3.2	2.5	0.9	3.3	4.6	1.2	0.7	0.0	0.1	1.7	4.3
68	4.3	3.6	3.6	1.2	2.6	3.0	1.6	1.1	0.2	0.0	1.2	1.1
69	3.4	3.2	3.8	1.2	3.2	3.0	1.2	2.2	0.0	0.2	1.4	1.5
1970	2.3	1.5	2.7	1.0	3.3	4.6	0.0	0.0	0.3	0.0	0.9	2.4
71	2.0	3.5	1.7	0.9	1.5	3.1	0.3	3.2	1.3	0.0	1.5	0.4
72	5.5	3.3	1.7	1.1	2.9	2.2	0.2	0.0	0.2	0.1	1.2	2.9
73	5.4	4.9	3.5	1.2	3.3	4.6	2.6	1.5	0.0	0.0	0.9	0.4
74	4.6	2.4	3.4	1.1	3.0	0.5	0.0	3.4	2.1	0.0	1.1	1.3
1975	2.5	4.0	2.2	0.5	3.4	2.1	1.5	0.5	0.0	0.0	0.7	4.0
76	2.4	1.3	2.6	1.0	1.7	0.7	5.5	0.0	0.1	0.1	0.8	0.4
77	3.5	2.3	3.2	1.1	2.6	5.8	0.0	1.5	0.0	0.2	1.2	4.4
78	5.6	5.2	2.6	0.8	2.6	2.5	2.2	0.8	0.7	0.0	1.8	2.6
79	5.6	5.2	3.8	0.4	3.1	2.7	1.7	2.8	0.0	0.2	1.3	3.2
Average	3.7	3.6	2.8	1.0	2.8	3.1	1.6	1.4	0.4	0.1	1.2	2.3

Note: Net irrigation area = 4,350 ha

TABLE-VII.34 IRRIGATION DIVERSION REQUIREMENT AT QUINALI HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	0.8	0.5	0.4	0.2	0.4	0.8	0.2	0.4	0.1	0.0	0.2	0.1
57	0.5	0.8	0.5	0.1	0.6	0.6	0.5	0.2	0.2	0.0	0.2	0.7
58	0.7	0.7	0.5	0.2	0.5	0.7	0.5	0.4	0.1	0.0	0.2	0.7
59	0.8	0.7	0.4	0.2	0.4	0.8	0.4	0.4	0.2	0.0	0.2	0.2
1960	0.7	0.7	0.6	0.2	0.4	0.6	0.4	0.4	0.1	0.0	0.2	0.4
61	1.0	1.0	0.6	0.2	0.4	0.6	0.4	0.4	0.2	0.0	0.2	0.7
62	0.8	0.7	0.5	0.2	0.3	0.4	0.3	0.4	0.1	0.0	0.2	0.7
63	1.0	0.8	0.7	0.2	0.5	0.4	0.7	0.0	0.2	0.0	0.2	0.5
64	0.6	0.7	0.6	0.1	0.5	0.6	0.8	0.5	0.2	0.0	0.2	0.3
1965	0.8	0.8	0.7	0.2	0.5	0.8	0.6	0.8	0.3	0.0	0.3	0.7
66	0.5	0.9	0.6	0.2	0.4	0.7	0.4	0.6	0.2	0.0	0.2	0.2
67	0.3	0.7	0.5	0.2	0.5	0.8	0.4	0.3	0.0	0.0	0.3	0.7
68	0.8	0.7	0.6	0.2	0.4	0.6	0.4	0.4	0.1	0.0	0.2	0.3
69	0.7	0.7	0.7	0.2	0.5	0.6	0.4	0.5	0.1	0.0	0.2	0.4
1970	0.5	0.4	0.5	0.2	0.5	0.8	0.2	0.2	0.2	0.0	0.2	0.5
71	0.5	0.7	0.4	0.2	0.3	0.6	0.3	0.7	0.3	0.0	0.3	0.2
72	1.0	0.7	0.4	0.2	0.5	0.5	0.3	0.1	0.1	0.0	0.2	0.6
73	1.0	0.9	0.6	0.2	0.5	0.8	0.6	0.4	0.1	0.0	0.2	0.2
74	0.9	0.6	0.6	0.2	0.5	0.3	0.2	0.7	0.4	0.0	0.2	0.3
1975	0.6	0.8	0.5	0.1	0.5	0.5	0.4	0.3	0.1	0.0	0.1	0.7
76	0.6	0.4	0.5	0.2	0.3	0.3	1.0	0.2	0.1	0.0	0.2	0.2
77	0.7	0.6	0.6	0.2	0.4	1.0	0.2	0.4	0.1	0.0	0.2	0.8
78	1.0	0.9	0.5	0.1	0.4	0.5	0.5	0.3	0.2	0.0	0.3	0.5
79	1.0	1.0	0.7	0.1	0.5	0.6	0.5	0.6	0.0	0.0	0.2	0.6
Average	0.7	0.7	0.5	0.2	0.5	0.6	0.4	0.4	0.2	0.0	0.2	0.5

Note: Net irrigation area = 600 ha

TABLE-VII.35 IRRIGATION DIVERSION REQUIREMENT AT BANTAYAN HEADWORKS

(Unit: m^3/sec)

	JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
1956	0.0	0.0	0.0	0.0	0.9	2.6	1.4	0.4	0.0	0.0	0.6	0.1
57	0.0	1.2	0.5	0.2	1.5	2.1	1.6	0.5	0.2	0.0	0.6	0.7
58	0.0	0.0	0.0	0.4	1.2	2.2	1.3	0.0	0.4	0.0	0.5	0.9
59	0.1	0.0	0.0	0.6	1.2	2.1	1.1	1.5	0.6	0.0	0.6	0.1
1960	1.4	0.6	1.4	0.1	1.1	2.0	2.5	0.9	0.0	0.0	0.5	0.5
61	1.4	2.0	0.9	0.1	1.5	1.9	2.5	0.5	0.5	0.0	0.6	0.6
62	0.2	0.1	0.9	0.4	0.9	3.1	1.1	0.4	0.0	0.1	0.6	0.9
63	0.7	0.0	1.6	0.5	1.4	1.2	1.4	0.0	0.5	0.0	0.6	0.5
64	0.0	0.0	1.3	0.0	1.4	2.1	2.2	1.1	0.0	0.0	0.6	0.1
1965	0.0	0.0	0.1	0.4	1.2	2.0	0.1	0.1	0.4	0.0	0.6!	0.2
66	0.0	0.8	0.6	0.4	1.4	3.2	0.1	1.9	0.7	0.0	0.6	0.1
67	0.0	0.0	0.0	0.2	1.9	2.7	2.0	0.5	0.6	0.0	0.5	0.6
68	0.0	0.7	0.9	0.5	2.1	3.3	1.1	0.7	0.0	0.1	0.6	1.4
69	2.6	2.4	1.4	0.2	1.8	2.7	1.4	1.2	0.1	0.1	0.6	0.1
1970	0.2	0.0	0.0	0.1	1.8	1.8	1.3	0.9	0.1	0.0	0.5	0.4
71	0.0	0.0	0.0	0.2	0.9	1.5	0.0	1.6	0.7	0.0	0.6	0.1
72	0.0	0.8	0.0	0.5	1.8	1.2	1.4	0.0	0.6	0.0	0.6	0.5
73	0.4	0.7	1.5	0.4	1.5	1.5	0.0	0.0	0.0	0.0	0.5	0.1
74	0.4	0.0	1.1	0.5	1.5	0.8	0.8	1.6	0.2	0.0	0.6	0.2
1975	0.0	0.0	1.9	0.0	1.6	1.4	0.5	0.6	0.0	0.0	0.7	0.1
76	1.8	0.0	0.0	0.1	0.9	1.1	0.9	0.2	0.5	0.0	0.6	0.1
77	0.4	0.0	0.8	0.2	1.1	2.1	0.2	0.6	0.0	0.0	0.5	1.1
78	1.8	0.4	0.4	0.2	1.2	0.8	0.8	0.0	0.0	0.0	0.6	0.4
79	1.2	0.9	2.1	0.1	1.4	1.2	1.1	1.5	0.0	0.0	0.6	0.6
Average	0.5	0.4	0.7	0.3	1.4	1.9	1.1	0.6	0.3	0.01	0.6	0.4

Note: Net Irrigation Area = 2,400 ha

TABLE-VII.36 MAXIMUM IRRIGABLE AREA

Name of Scheme	Irrigable Area (ha)	
	Gross	Net
Quinali (A) River basin		
i) Cabilogan Scheme	1,600	1,400
ii) Agos Sta. Cruz - South Quinali Scheme	4,850	4,350
iii) Quinali Scheme	700	600
Quinali (B) River basin		
iv) Bantayan Scheme	2,700	2,400

TABLE-VII.37 IRRIGATION WATER SHORTAGE

Scheme	Irrigation Water Shortage 1/					
	Annual Max.		2-year Max.		23 years Total	
	10^6 m^3	(%)	10^6 m^3	(%)	10^6 m^3	(%)
i) Cabilogan 2/	2.3	(18.2)	2.3	(5.2)	2.3	(0.1)
ii) Agos Sta. Cruz - South Quinali 3/	20.0	(27.6)	24.7	(15.7)	98.3	(6.8)
iii) Quinali 4/	1.7	(13.7)	1.7	(6.9)	4.0	(0.1)
iv) Bantayan 5/	3.9	(18.8)	6.9	(18.2)	12.0	(2.6)

Note: 1/: Shortage in volume (10^6 m^3) or percentage to the irrigation diversion requirements,

2/: Table-VII.22 minus Table-VII.31,

3/: Table-VII.28 minus Table-VII.32,

4/: Table-VII.29 minus Table-VII.33, and

5/: Table-VII.30 minus Table-VII.34.

TABLE-VIII.1 INUNDATED BARANGAYS DUE TO FLOOD BY TYPHOON "PEPANG" IN 1979

River Basin	Municipality	Name of Barangay
Quinali (A) River Basin	Polangui	Centro Occidential, Basud, Obaliw, Alomon, Balangibang, Kinali
	Libon	Zone 2, Zone 3, Zone 4, Zone 5, Bacolod, Buga, Bulusan, Carisac-East, Carisac-West, Marayag, San-Agustin, San Isidro, Sta Cruz
	Oas	Centro Poblacion, Bagumbayan, Bongoran, Busac, Ilaor-Sur, Iraya-Sur, Mayao, Obaliw-Rinas, Rizal, San Agustin, Talongog
	Ligao	Bagumbayan, Binatagon, Calzada, Dunao, Guilid, Bobonsuran, Tinago, Bonga, Busay, Cavasi, Pandan, Tagpo
	Guinobatan	Ilawod, Iraya
	Camalig	Ilawod, Ligban, Tagaytay
Yawa River Basin	Daraga	Kilicao, Banag
	Legazpi	San Roque, Houses along Yawa River
Quinali (B) River Basin	Malinao	Balading, Bagumbayan, Balza, Malolos, Libod, Matalipni

Remarls: Above inundated barangays is re-assessed by the inundation area due to typhoon "Daling" in 1981. The inundation area due to typhoon "Daling" is assumed to be almost the same as the area of typhoon "Pepang".

TABLE-VIII.2 NUMBER OF HOUSES INUNDATED DUE TO FLOOD

(A) 2-YEAR PROBABLE FLOOD

(Based on typhoon "Pepang")

Houses	Inundation Depth(m) Below Floor Level	Above Floor Level 0 - 0.5	0.5 - 1.0	1.0 - 2.0	2.0 - 3.0
Quinali (A) River Basin					
Type A	203	430	369	85	0
Type B	670	1,378	1,096	257	0
Type C	1,171	2,420	2,169	548	0
Yawa River Basin					
Type A	0	61	62	0	0
Type B	0	154	155	0	0
Type C	0	92	93	0	0
Quinali (B) River Basin					
Type A	54	54	0	0	0
Type B	163	163	0	0	0
Type C	326	327	0	0	0

(B) 10-YEAR PROBABLE FLOOD

Houses	Inundation Depth(m) Below Floor Level	Above Floor Level 0 - 0.5	0.5 - 1.0	1.0 - 2.0	2.0 - 3.0
Quinali (A) River Basin					
Type A	118	265	562	473	0
Type B	388	874	1,792	1,418	0
Type C	679	1,528	3,267	2,838	0
Yawa River Basin					
Type A	198	123	174	62	0
Type B	296	307	436	146	0
Type C	494	184	262	101	0
Quinali (B) River Basin					
Type A	72	60	54	0	0
Type B	215	179	163	0	0
Type C	429	356	327	0	0

(C) 20-YEAR PROBABLE FLOOD

Houses	Inundation Depth(m) Below Floor Level	Above Floor Level 0 - 0.5	0.5 - 1.0	1.0 - 2.0	2.0 - 3.0
Quinali (A) River Basin					
Type A	241	124	462	799	0
Type B	601	427	1,491	2,274	0
Type C	1,579	680	2,661	4,914	0
Yawa River Basin					
Type A	465	75	155	250	10
Type B	863	112	356	630	15
Type C	1,055	186	265	401	25
Quinali (B) River Basin					
Type A	33	38	114	0	0
Type B	100	115	342	0	0
Type C	199	231	683	0	0

(D) 50-YEAR PROBABLE FLOOD

Houses	Inundation Depth(m) Below Floor Level	Above Floor Level 0 - 0.5	0.5 - 1.0	1.0 - 2.0	2.0 - 3.0
Quinali (A) River Basin					
Type A	161	241	242	1,072	72
Type B	358	601	826	3,366	177
Type C	1,089	1,579	1,354	6,270	455
Yawa River Basin					
Type A	339	525	107	307	82
Type B	678	988	160	768	184
Type C	680	1,175	267	461	142
Quinali (B) River Basin					
Type A	32	66	76	109	0
Type B	97	198	229	326	0
Type C	193	396	458	652	0

(E) 100-YEAR PROBABLE FLOOD

Houses	Inundation Depth (m) Below Floor Level	Above Floor Level 0 - 0.5	0.5 - 1.0	1.0 - 2.0	2.0 - 3.0
Quinali (A) River Basin					
Type A	0	268	173	880	466
Type B	0	615	491	2,829	1,393
Type C	0	1,785	1,065	5,096	2,800
Yawa River Basin					
Type A	0	581	316	321	143
Type B	0	1,140	575	726	339
Type C	0	1,213	720	554	235
Quinali (B) River Basin					
Type A	0	32	104	147	0
Type B	0	97	312	441	0
Type C	0	193	624	882	0

TABLE-VIII.3 ESTIMATED FLOOD DAMAGE TO HOUSES

(Unit: 1,000 Pesos)

Description	Return Period of Flood				
	2-Year	10-Year	20-Year	50-Year	100-Year
Quinali (A) River Basin					
Houses	14,343	24,383	29,261	35,907	42,638
Establishments (10%)	1,434	2,438	2,926	3,591	4,264
Sub-Total	15,777	26,821	32,187	39,498	46,902
Yawa River Basin					
Houses	1,647	5,899	10,691	16,722	20,038
Establishments(10%)	165	590	1,069	1,672	2,004
Sub-Total	1,812	6,489	11,760	18,394	22,042
Quinali (B) River Basin					
Houses	986	2,024	2,463	4,785	5,514
Establishments(10%)	99	202	246	479	551
Sub-Total	1,085	2,226	2,709	5,264	6,065
Total	18,674	35,536	46,656	63,156	75,009

Remarks: Amount is estimated at 1982 price level.

TABLE-VIII.4 ESTIMATED DAMAGE TO HOUSES

(2-Year Probable Flood)

Name of River Basin	Depth Above Floor Level (m)	Type of Dwelling Unit	No. of Dwelling Unit	Damage Rate	House Value (pesos)	Estimated Damage Cost (pesos)
Quinali(A) River Basin	Below Floor	Type A	203	0.03	115,000	700,400
		Type B	670	0.03	29,000	582,900
		Type C	1,171	0.03	2,900	101,900
	0 - 0.5	Type A	430	0.053	115,000	2,620,900
		Type B	1,378	0.053	29,000	2,118,000
		Type C	2,420	0.053	2,900	372,000
	0.5 - 1.0	Type A	369	0.072	115,000	2,055,300
		Type B	1,096	0.072	29,000	2,288,400
		Type C	2,169	0.072	2,900	452,900
	1.0 - 2.0	Type A	85	0.109	115,000	1,065,500
		Type B	257	0.109	29,000	812,400
		Type C	548	0.109	2,900	173,200
						14,343,800
Yawa River Basin	0 - 0.5	Type A	61	0.053	115,000	371,800
		Type B	154	0.053	29,000	236,700
		Type C	92	0.053	2,900	14,100
	0.5 - 1.0	Type A	62	0.072	115,000	513,400
		Type B	155	0.072	29,000	323,600
		Type C	93	0.072	2,900	19,400
	Washed out	Type C	58	1.000	2,900	168,200
						1,647,200
Quinali(B) River Basin	Below Floor	Type A	54	0.03	115,000	186,300
		Type B	163	0.03	29,000	141,800
		Type C	326	0.03	2,900	28,400
	0 - 0.5	Type A	54	0.053	115,000	329,100
		Type B	163	0.053	29,000	250,500
		Type C	327	0.053	2,900	50,300
						986,400

Remarks: Amount is estimated at 1982 price level.

TABLE-VIII.5 ESTIMATED DAMAGE TO HOUSES
(10-year Probable Flood)

Name of River Basin	Depth Above Floor Level (m)	Type of Dwelling Unit	No. of Dwelling Unit	Damage Rate	House Value (pesos)	Estimated Damage Cost (pesos)
Quinali(A) River Basin	Below Floor	Type A	118	0.03	115,000	407,100
		Type B	388	0.03	29,000	337,600
		Type C	679	0.03	2,900	59,100
	0 - 0.5	Type A	265	0.053	115,000	1,615,200
		Type B	874	0.053	29,000	1,343,200
		Type C	1,528	0.053	2,900	234,900
	0.5 - 1.0	Type A	562	0.072	115,000	4,653,400
		Type B	1,792	0.072	29,000	3,741,700
		Type C	3,267	0.072	2,900	682,100
	1.0 - 2.0	Type A	473	0.109	115,000	5,929,100
		Type B	1,418	0.109	29,000	4,482,300
		Type C	2,838	0.109	2,900	887,100
						24,382,800
Yawa River Basin	Below Floor	Type A	198	0.03	115,000	683,100
		Type B	296	0.03	29,000	257,500
		Type C	494	0.03	2,900	43,000
	0 - 0.5	Type A	123	0.053	115,000	749,700
		Type B	307	0.053	29,000	471,900
		Type C	184	0.053	2,900	28,300
	0.5 - 1.0	Type A	174	0.072	115,000	1,440,700
		Type B	431	0.072	115,000	899,900
		Type C	262	0.072	2,900	54,700
	1.0 - 2.0	Type A	62	0.109	115,000	777,200
		Type B	146	0.109	29,000	461,500
		Type C	101	0.109	2,900	31,900
						5,899,400
Quinali(B) River Basin	Below Floor	Type A	72	0.03	115,000	248,400
		Type B	215	0.03	29,000	187,100
		Type C	429	0.03	2,900	37,300
	0 - 0.5	Type A	60	0.053	115,000	365,700
		Type B	179	0.053	29,000	275,100
		Type C	356	0.053	2,900	54,700
	0.5 - 1.0	Type A	54	0.072	115,000	447,100
		Type B	163	0.072	29,000	340,300
		Type C	327	0.072	2,900	68,300
						2,024,000

Remarks: Amount is estimated at 1982 price level.

TABLE-VIII.6 ESTIMATED DAMAGE TO HOUSES

(20-Year Probable Flood)

Name of River Basin	Depth Above Floor Level (m)	Type of Dwelling Unit	No. of Dwelling Unit	Damage Rate	House Value (pesos)	Estimated Damage Cost (pesos)
Quinali(A) River Basin	Below Floor	Type A	241	0.03	115,000	831,500
		Type B	601	0.03	29,000	522,900
		Type C	1,597	0.03	2,900	138,900
	0 - 0.5	Type A	124	0.053	115,000	755,800
		Type B	427	0.053	29,000	656,300
		Type C	680	0.053	2,900	104,500
	0.5 - 1.0	Type A	462	0.072	115,000	3,825,400
		Type B	1,491	0.072	29,000	3,113,200
		Type C	2,661	0.072	2,900	555,600
	1.0 - 2.0	Type A	799	0.109	115,000	10,015,500
		Type B	2,274	0.109	29,000	7,188,100
		Type C	4,914	0.109	2,900	1,553,300
						29,261,000
Yawa River Basin	Below Floor	Type A	465	0.03	115,000	1,604,300
		Type B	863	0.03	29,000	750,800
		Type C	1,055	0.03	2,900	91,800
	0 - 0.5	Type A	75	0.053	115,000	457,100
		Type B	112	0.053	29,000	172,100
		Type C	186	0.053	2,900	28,600
	0.5 - 1.0	Type A	155	0.072	115,000	1,283,400
		Type B	356	0.072	29,000	743,300
		Type C	265	0.072	2,900	55,300
	1.0 - 2.0	Type A	250	0.109	115,000	3,133,800
		Type B	630	0.109	29,000	1,991,400
		Type C	401	0.109	2,900	126,800
	2.0 - 3.0	Type A	10	0.152	115,000	174,800
		Type B	15	0.152	29,000	66,100
		Type C	25	0.152	2,900	11,000
						10,690,600
Quinali(B) River Basin	Below Floor	Type A	33	0.03	115,000	113,900
		Type B	100	0.03	29,000	87,000
		Type C	199	0.03	2,900	17,300
	0 - 0.5	Type A	38	0.053	115,000	231,600
		Type B	115	0.053	29,000	176,800
		Type C	231	0.053	2,900	35,500
	0.5 - 1.0	Type A	114	0.072	115,000	943,900
		Type B	342	0.072	29,000	714,100
		Type C	683	0.072	2,900	142,600
						2,462,700

Remarks: Amount is estimated at 1982 price level.

TABLE-VIII.7 ESTIMATED DAMAGE TO HOUSES

(50-Year Probable Flood)

Name of River Basin	Depth Above Floor Level (m)	Type of Dwelling Unit	No. of Dwelling Unit	Damage Rate	House Value (pesos)	Estimated Damage Cost (pesos)
Quinali(A) River Basin	Below Floor	Type A	161	0.03	115,000	555,500
		Type B	358	0.03	29,000	311,500
		Type C	1,089	0.03	2,900	94,700
	0 - 0.5	Type A	241	0.053	115,000	1,468,900
		Type B	601	0.053	29,000	923,700
		Type C	1,579	0.053	2,900	242,700
	0.5 - 1.0	Type A	242	0.072	115,000	2,003,800
		Type B	826	0.072	29,000	1,724,700
		Type C	1,354	0.072	2,900	282,700
	1.0 - 2.0	Type A	1,072	0.109	115,000	13,437,500
		Type B	3,366	0.109	29,000	10,639,800
		Type C	6,270	0.109	2,900	1,981,900
	2.0 - 3.0	Type A	72	0.152	115,000	1,258,600
		Type B	177	0.152	29,000	780,200
		Type C	455	0.152	2,900	200,600
						35,906,900
Yawa River Basin	Below Floor	Type A	339	0.03	115,000	1,169,600
		Type B	678	0.03	29,000	589,900
		Type C	680	0.03	2,900	59,200
	0 - 0.5	Type A	525	0.053	115,000	3,199,900
		Type B	988	0.053	29,000	1,518,600
		Type C	1,175	0.053	2,900	180,600
	0.5 - 1.0	Type A	107	0.072	115,000	886,000
		Type B	160	0.072	29,000	334,100
		Type C	267	0.072	2,900	55,700
	1.0 - 2.0	Type A	307	0.109	115,000	3,848,200
		Type B	768	0.109	29,000	2,427,600
		Type C	461	0.109	2,900	145,700
	2.0 - 3.0	Type A	82	0.152	115,000	1,433,400
		Type B	184	0.152	29,000	811,100
		Type C	142	0.152	2,900	62,600
						16,722,200
Quinali(B) River Basin	Below Floor	Type A	32	0.03	115,000	110,400
		Type B	97	0.03	29,000	84,400
		Type C	193	0.03	2,900	16,800
	0 - 0.5	Type A	66	0.053	115,000	402,300
		Type B	198	0.053	29,000	304,300
		Type C	396	0.053	2,900	60,900
	0.5 - 1.0	Type A	76	0.072	115,000	629,300
		Type B	229	0.072	29,000	478,200
		Type C	458	0.072	2,900	95,600
	1.0 - 2.0	Type A	109	0.109	115,000	1,366,300
		Type B	326	0.109	29,000	1,030,500
		Type C	652	0.109	2,900	206,100
						4,785,100

Remarks: Amount is estimated at 1982 price level.

TABLE-VIII.8 ESTIMATED DAMAGE TO HOUSES

(100-Year Probable Flood)

Name of River Basin	Depth Above Floor Level (m)	Type of Dwelling Unit	No. of Dwelling Unit	Damage Rate	House Value (pesos)	Estimated Damage Cost (pesos)
Quinali(A) River Basin	0 - 0.5	Type A	268	0.053	115,000	1,633,500
		Type B	615	0.053	29,000	945,300
		Type C	1,785	0.053	2,900	274,400
	0.5 - 1.0	Type A	173	0.072	115,000	1,432,400
		Type B	491	0.072	29,000	1,025,200
		Type C	1,065	0.072	2,900	222,400
	1.0 - 2.0	Type A	880	0.109	115,000	11,030,800
		Type B	2,829	0.109	29,000	8,942,500
		Type C	5,096	0.109	2,900	1,610,800
	2.0 - 3.0	Type A	466	0.152	115,000	8,145,700
		Type B	1,393	0.152	29,000	6,140,300
		Type C	2,800	0.152	2,900	1,234,200
						42,637,500
Yawa River Basin	0 - 0.5	Type A	581	0.053	115,000	3,541,200
		Type B	1,140	0.053	29,000	1,752,200
		Type C	1,213	0.053	2,900	186,400
	0.5 - 1.0	Type A	316	0.072	115,000	2,616,500
		Type B	575	0.072	29,000	1,200,600
		Type C	720	0.072	2,900	150,300
	1.0 - 2.0	Type A	321	0.109	115,000	4,023,700
		Type B	726	0.109	29,000	2,294,900
		Type C	554	0.109	2,900	175,100
	2.0 - 3.0	Type A	143	0.152	115,000	2,499,600
		Type B	339	0.152	29,000	1,494,300
		Type C	235	0.152	2,900	103,600
						20,038,400
Quinali(B) River Basin	0 - 0.5	Type A	32	0.053	115,000	195,000
		Type B	97	0.053	29,000	149,100
		Type C	193	0.053	2,900	29,700
	0.5 - 1.0	Type A	104	0.072	115,000	861,100
		Type B	312	0.072	29,000	651,500
		Type C	624	0.072	2,900	130,300
	1.0 - 2.0	Type A	147	0.109	115,000	1,824,600
		Type B	441	0.109	29,000	1,394,000
		Type C	882	0.109	2,900	278,800
						5,514,100

Remarks: Amount is estimated at 1982 price level.

TABLE-VIII.9 ESTIMATED DAMAGE COST ON THE NATIONAL ROAD

(Unit: Pesos)

Date and Typhoon	Quinali (A) River Basin	Yawa River Basin	East North-East Area	Quinali (B) River Basin	Total Damage Cost
Typoon 'Yeneng & Andeng' Nov. 1981	730,000	-	-	50,000	780,000
Typhoon 'Daling' Jun. 1981	1,993,000	-	-	230,000	2,223,000
Typhoon 'Pepang' Sep. 1979	722,500	30,000 500	46,000	47,000	816,000
Typhoon 'Kading' Oct. 1978	351,000	-	-	45,000	396,000
Typhoon 'Weling' Sep. 1978	350,000	96,000	-	45,000	395,000
Typhoon 'Yaning' Oct. 1978		96,000			
Typhoon 'Unding' Nov. 1977	1,500,000	-	-	204,000	1,704,000
Typhoon 'Goring' July 1977		27,000			
Typhoon 'Didang' May 1976	Not available	-	-	-	Not available
Typhoon 'Sisang' Dec. 1975	800,000	-	150,000	51,000	1,001,000
Heavy Rainfall Dec. 1975	365,000	-	60,000	-	425,000

Remarks : Data Source - Ministry of Public Works and Highways and City Engineering Office (Legazpi City, marked in under line).

Damage costs are based on the price level in each year.

TABLE-VIII.10 ESTIMATED DAMAGE COST ON THE PROVINCIAL ROAD

(Unit: Pesos)

Date and Typhoon	Quinali (A) River Basin	Yawa River Basin	East North-East Area	Quinali (B) River Basin	Total Damage Cost
Typhoon 'Yaneng & Anding' Nov. 1981	514,500	70,000	69,400	5,000	658,900
Typhoon 'Daling' June 1981	800,000	20,000	-	120,000	940,000
Typhoon 'Pepang' Sep. 1979	103,900	45,000	26,000	121,500	296,400
Typhoon 'Sisang' Dec. 1975	368,800	30,000	150,000	45,000	593,800

Remarks : Data Source - Provincial Engineering Office.

Damage costs are based on the price level in each year.

TABLE-VIII.11 ESTIMATED DAMAGE COST ON THE MUNICIPAL AND CITY ROAD

(Unit: Pesos)

Date and Typhhon	Quinali (A) River Basin	Yawa River Basin	East North-East Area	Quinali (B) River Basin	Total Damage Cost
Typhoon 'Daling' June 1981		20,000			20,000
Typhoon 'Pepang' Sep. 1979		40,000			40,000
Typhoon 'Kading' Oct. 1978		35,000			35,000
Typhoon 'Yaning' Oct. 1978		40,000			40,000
Typhoon 'Weling' Sep. 1978		30,000			30,000
Typhoon 'Heling' Aug. 1978		20,000			20,000
Typhoon 'Unding' Nov. 1977	302,200	27,000 35,000	220,700	43,700	629,100
Typhoon 'Tasing' Nov. 1977		10,000			10,000
Typhoon 'Luming & Miling' Sep. 1977	52,600	4,500 10,000	39,800	7,000	113,900
Typhoon 'Goring' July 1977		15,000			15,000
Typhoon 'Elang' July 1977	52,500	4,500	39,800	5,100	101,900
Typhoon 'Aring' Dec. 1976		18,000			18,000
Typhoon 'Pidang' May 1976	52,500	4,500 10,000	39,700	5,100	111,800
Typhoon 'Sisang' Dec. 1975		170,000			170,000
Typhoon 'Mameng & Neneng' Oct. 1975		70,000			70,000
Typhoon 'Diding' Aug. 1975		40,000			40,000

Remarks : Data Source - 13 - Municipalities and City Engineering Office (Legazpi City, marked in under line).

Damage costs are based on the price level in each year.

TABLE-VIII.12 ESTIMATED DAMAGE COST ON THE BARANGAY ROAD

(Unit: Pesos)

Date and Typhoon	Quinali (A) River Basin	Yawa River Basin	East North-East Area	Quinali (B) River Basin	Total Damage Cost
Typhoon 'Daling' June 1981	-	235,000	-	-	235,000
Typhoon 'Pepgang' Sep. 1979		210,000			
Typhoon 'Bebing' Apr. 1979	7,500	67,500	330,000	300,000	705,000
Typhoon 'Kading' Oct. 1978		100,000			
Typhoon 'Yaning' Oct. 1978	187,500	27,500	178,000	155,000	548,000
Typhoon 'Weling' Sep. 1978	311,500	109,500	142,000	76,000	639,000
Typhoon 'Heling' Aug. 1978	328,500	33,500	133,000	85,000	580,000
Typhoon 'Luming & Miling' Sep. 1977	76,500	8,500	209,000	69,000	363,000
Typhoon 'Unding' Nov. 1977	323,500	75,000 33,500	135,000	90,000	657,000
Typhoon 'Tasing' Nov. 1977		40,000			
Typhoon 'Goring' July 1977	119,500	50,000 8,500	228,000	71,000	477,000
Typhoon 'Luming & Miling' Sep. 1977		65,000			
Typhoon 'Elang' July 1977	102,500	8,500	158,000	53,000	322,000
Typhoon 'Aring' Dec. 1976	168,500	55,000 12,500	296,000	81,000	613,000
Typhoon 'Didang' May 1976	170,000	70,000 10,000	137,000	20,000	407,000
Typhoon 'Huaning' June 1976	160,000	10,000	127,000	30,000	327,000
Typhoon 'Sisang' Dec. 1975	100,000	10,000	95,000	30,000	235,000

Remarks : Data source - The Ministry of Public Works and Highways and City Engineering Office (Legazpi City, marked in under line).

Damage Costs are based on the price level in each year.

TABLE-VIII.13 ESTIMATED DAMAGE COST TO RAILWAY TRACKS AND BRIDGES

(Unit: Pesos)

Date & Typhoon	T.P.No. & Station	Damage Cost	Remarks
Jan.24-31, 1981 Heavy Rains	6554-55, RIO-LPV	35,000	Sinking track, 15 m. x 25 m.
	6919-20, LPV-COT		Sinking track, 1 m. x 40 m.
	7356-57, LIB-PAM		Overflooded; 8" high
	8671-82, LIG-CMG		Overflooded; 4" high
	8694-95, LIG-CMG		Overflooded; 3" high
	6522-24, HO-LPV		Overflooded; 2" high
	6765-66, BPV-COT		Sinking track; 50 m. x 50 m.
	8960-61, GB-LIG		Eroded embankment; 2 m. x 4 m.
	7434-35, PAM-NG		Eroded embankment; 2 m. x 4 m.
June 30, 1981- Aug. 5, 1981 Typhoon "Daling & Elang"	5124-25, ALS-NT	1,500,000	Washout; 3 m. long
	5179-81, ALS-NT		Landslide, 30 m. long
	5945-47, SKP-GRS		Washout; 5 m. long
	5978-79, GRS-RGY		Sinking track
	5992-93, GRS-RGY		Sinking track
	8686-87, BTO-PLG		Washout north approch temp. bridge 25 m. long
	8690-94, BTO-PLG		Eroded embankment, 150 m. long
	8719-20, BTO-PLG		Wahsout; 8 m. long
	8750-53, BTO-PLG		Tracks covered w/debris
	8777-99, PLG-LIG		- do -
	8808-15, PLG-LIG		- do -
	8831-32, PLG-LIG		Washout; 30 m. long
	8851-54, PLG-LIG		Covered w/debris & minor washout
	8883-84, PLG-LIG		Washout; 90 m. long
	8850-51, PLG-LIG		Washout; 50 m. long
	8885-86, PLG-LIG		Washout; 11 m. long
	8887-88, PLG-LIG		Eroded embankment, 11 m. long
	9020-21, LIG-CMG		Eroded embankment, 4 m. long
	9040-41, LIG-CMG		Washout, north approach perm. br.
	9104-05, GB-CMG		Tracks covered w/debris
	9108-09, GB-CMG		Washout, 2 span temp. br.
	9116-17, GB-CMG		Eroded embankment, 20 m. long

- continued -

Date & Typhoon	T.P.No. & Station	Damage Cost	Remarks
June 30, 1981- Aug. 5, 1981 Typhoon "Daling & Elang"	9127-28, GB-CMG		Washout north approach perm. br.
	9139-40, GB-CMG		Eroded embankment, 30 m. long
	9142-46, GB-CMG		Eroded Embankment, 4 m. long
	9162-63, GB-CMG		Washout north approach temp. br.
	9165-66, GB-CMG		- do -
	9168-69, GB-CMG		Washout temp. br. 3rd & 4th bent
	9192-93, GB-CMG		Washout, north & south approach of temp. bridge
	9205-07, GB-CMG		Track covered w/mud flow
	9197-98, GB-CMG		Washout, north & south approach of temp. bridge
Aug.13-17, 1981 Heavy Rains	8671-72, BTO-PLG	10,000	Overflooded eroded embankment
	8697-98, BTO-PLG		Washout
	9105-07, GB-CMG		Track covered with mud
	9139-40, GB-CMG		Eroded embankment, 30 m. long
	9205-07, GB-CMG		Track covered with mud
Sep.19-20, 1981 Typhoon "Rubing"	Camalig yard	5,000	Track covered with debris & mud
Sep.25-26, 1981 Typhoon "Saling"	8671-72, BTO-PLG	20,000	Overflooded
	8694-95, BTO-PLG		Eroded embankment
	8697-98, BTO-PLG		- do -
	8823-24, BTO-PLG		- do -
	8850-51, PLG-LIG		Washout north approach
	9089-90, BB-CMG		Overflooded
	Camalig yard		Track covered with debris and mud
Nov.5 & 7, 1981 Heavy Rains	6766-66, RPV-CCT	2,000	Sinking tracks 5" deep x 10 m. long
	6820-21, COT-LIB		Sinking tracks 20" deep x 10 m. long

- continued -

Date & Typhoon	T.P.No. & Station	Damage Cost	Remarks
Jul.27-30, 1980 Typhoon "Ising"	7519-20	15,000	North approach of culverts scoured due to high flood
	8696-98		Embankment right side eroded
	8671-72		Over flooded
	8694-95		- do -
	8696-98		- do -
Oct.28-31, 1980 Typhoon "Yoning"	7775-82	200,000	Overflooded 2" above rails
	8671-72		Eroded embankment 1.00 m x 2.00 m
	8626-27		Eroded embankment 1.00 m x 3.00 m
	8694-95		Overflooded 1" above rails
	8696-98		Eroded embankment 1.00 m x 2.00 m
	8719-20		Eroded embankment 1.00 m x 50 m
	9135-36		Eroded embankment 1.00 m x 3.00 m
	8881-82		9-span temp. br. washed away
	9197-98		Eroded embankment 1.00 m x 3.00 m
	9205-10 & CMG Yard		Submerged in mud, flood water 35 m x 1.00 m

Data Source: Philippine National Railways (PNR).

TABLE-VIII.14 ESTIMATED DAMAGE COST TO RAILWAY TRACKS AND BRIDGES

(Unit: Pesos)

Location		Description of Damages	Cost of Repair		Remarks
T.P. NO.	Bet. Station		Temporary	Permanent	
8735 - 36	Apad - Polangui	One span permanent bridge damaged	30,000	60,000	Damaged(1975), Estimated(1976)
8770 - 90	Polangui - Ligao	Track washed out	NA	3,000	Damaged(1975), Estimated(1976)
8776 - 77	Polangui - Oas	South approach of 4 spans temp. bridge eroded	10,000	190,000	Damaged(1975), Estimated(1976) Permanent repair not undertaken
8783 - 84	Polangui - Oas	Track eroded	15,000	100,000	- do -
8823 - 24	Oas - Ligao	North approach of 6 spans temp. bridge washed out	30,000	260,000	- do -
8831 - 32	Oas - Ligao	Track eroded	NA	3,000	- do -
8881 - 82	Oas - Ligao	North approach of Temp. bridge eroded	7,000	(4,210,000)	Damaged(1975), Cost for temp. estimate(1976), cost for permanent estimated(1980). Construction of permanent bridge, protection works, estimates and pertinent papers forwarded to the MPW for founding.
8881 - 82	Oas - Ligao	9 spans temp. bridge washed out	320,000	320,000	Damaged(1979), Estimated(1979)
9090 - 91	Guinobatan -Camalig	Both cap of the 3rd bent from South collapsed	NA	5,000	Damaged(1975), Estimated(1976)
9197 - 78	Guinobatan -Camalig	South approach of bridge washed out 2m x $\frac{1}{2}$ m deep. Left side of North approach eroded	NA	5,000	- do -

- continued -

Location		Description of Damages	Cost of Repair		Remarks
T.P. No.	Bet. Station		Temporary	Permanent	
9205 - 07	Guinobatan -Camalig	80m length of track was covered with sand about 1 foot deep	NA	1,000	- do -
9352 - 53	Camalig - Daraga	1 span perm. bridge DPG 49'-0" long fell	70,000	150,000	Damaged(1975), Estimated(1976) With the construction of the Camalig - Daraga line in full blast, permanent repair in this section is no longer considered.
9364 - 65	Camalig - Daraga	1 span perm. bridge TL100'-9" long fell	175,000	800,000	- do -
9407 - 08	Camalig - Daraga	1 span perm. bridge DPG49'-0" long, heavily damaged	70,000	150,000	- do -
9276 - 9368	Camalig - Legazpi	12 temp. bridges in various locations totalling 104 spans washed out	NA	2,600,000	- do -

Data Source: Philippine National Railways (PNR).

Remarks: Temporary means only possible transportation except the reconstruction of minor damages.
Permanent means the estimated damage costs to reconstruct completely.
Above data was collected in 1980.

TABLE-VIII.15 RIVER FACILITIES DAMAGE DUE TO TYPHOON 'DINANG'

(December 25, 1981)

Name of River Control Project	Amount (Pesos)	Remarks
Bacolod R.C. (Libon)	247,000	500 L.M. Extent of damage
San Agustin R.C. (Libon)	97,000	90 L.M. - do -
Carisac R.C. (Libon)	77,000	40 L.M. - do -
Busac-Alomon R.C. (Oas)	147,000	100 L.M. - do -
Talongong R.C. (Oas)	147,000	50 L.M. - do -
Cabilogan R.C. (Oas)	177,000	70 L.M. - do -
Binatagan-Gamut R.C. (Ligao)	247,000	250 L.M. - do -
Bubunsuran Break (Ligao)	247,000	60 L.M. - do -
Tagpo-Bona R.C. (Ligao)	297,000	400 L.M. - do -
Matanglad R.C. (Ligao)	77,000	80 L.M. - do -
Guinobatan R.C. (Guinobatan)	397,000	650 L.M. - do -
Quirangay-Centro R.C. (Camalig)	197,000	150 L.M. - do -
Ilawod R.C. (Camalig)	147,000	80 L.M. - do -
Cabontoran Spillway (Malilipot)	67,000	40 L.M. - do -
Nabonton R.C. (Libon)	147,000	90 L.M. - do -
Gamut R.C. (Ligao)	147,000	127 L.M. - do -
Cavasi R.C. (Ligao)	697,000	700 L.M. - do -
	3,559,000	

Data Source: Ministry of Public Works and Highways.

TABLE-VIII.16 RIVER FACILITIES DAMAGE DUE TO TYPHOON 'ANDING'

(November 23, 1981)

Name of River Control Project	Cost of Damages (Pesos)
Bacolod R.C. (Libon)	250,000
San Agustin R.C. (Libon)	100,000
Carisac R.C. (Libon)	80,000
Busac-Alomon R.C. (Oas)	150,000
Talongog R.C. (Oas)	100,000
Cabilogan R.C. (Oas)	180,000
Binatagan-Gamut R.C. (Ligao)	250,000
Bobongsoran Break (Ligao)	180,000
Tagpo-Bonga R.C. (Ligao)	300,000
Matanglad R.C. (Ligao)	80,000
Gbtan. Travasia-San Francisco R.C. (Gbtn)	300,000
Quirangay-Centro R.C. (Camalig)	200,000
Ilawod R.C. (Camalig)	150,000
Cabontoran Spillway (Malilipot)	70,000
Nabonton R.C. (Ligao)	150,000
Cavasi R.C. (Ligao)	700,000
Gamut R.C. (Ligao)	150,000
Total	3,540,000

Data Source: Ministry of Public Works and Highways.

TABLE-VIII.17 RIVER FACILITIES DAMAGE DUE TO TYPHOON'DALING'

(June 30 & July 1, 1981)

Name of River Control Project	Amount (Pesos)	Remarks
Guinobatan R.C. (Guinobatan)	250,000	460 L.M. Revetment and dike
Gamut R.C. (Ligao)	400,000	758 L.M. Repair
Tagpo R.C. (Ligao)	2,600,000	2,000 L.M. Dredging and repair of dike
Cabasi R.C. (Ligao)	2,500,000	350 L.M. Repair
Bongoran R.C. (Oas)	150,600	300 L.M. Repair
San Agustin R.C. (Libon)	401,760	930 L.M. Repair
Carisac R.C. (Libon)	180,480	390 L.M. Repair
Sta. Cruz R.C. (Libon)	150,600	300 L.M. Repair
Bacolod R.C. (Libon)	129,600	300 L.M. Repair
Busac R.C. (Oas)	260,000	200 L.M. Repair of dike and bank revetment
Camalig R.C. (Camalig)	415,540	450 L.M. - do -
Tagas R.C. (Tabaco)	350,000	265 L.M. - do -
Jonop R.C. (Malinao)	150,000	300 L.M. Revetment
Total	7,938,580	

Data Source: Ministry of Public Works and Highways.

TABLE-VIII.18 RIVER FACILITIES DAMAGE DUE TO TYPHOON 'ARING'

(November 4, 1980)

Name of River Control Project	Cost of Damages (Pesos)
Tagpo R.C. (Ligao)	260,000
Bongoran Spillway (Oas)	176,000
Busac R.C. (Oas)	125,000
San Agustin-Sta. Cruz R.C. (Libon)	25,000
Cavasi R.C. (Ligao)	1,200,000
Bacolod R.C. (Libon)	830,000
Carisac R.C. (Libon)	15,000
Gamut R.C. (Ligao)	180,000
Tagas R.C. (Tabaco)	27,000
Camalig R.C. (Camalig)	50,000
Jonop R.C. (Malinao)	90,000
	2,978,000

Data Source: Ministry of Public Works and Highways.

TABLE-VIII.19 RIVER FACILITIES DAMAGE DUE TO TYPHOON 'PEPANG'

(September 18, 1979)

Name of River Control Project	Amount (Pesos)	Remarks
Tagpo R.C. (Tuburan-Bonga)		
a) Sta. 0.240 - 0.984	120,000	Portion of existing earthdike washed out, 309 L.M.
b) Sta. 0.540 - 0.586	7,000	Scouring of earthdike on river side, 50 L.M.
c) Sta. 0.315 - 0.904	8,400	Portion of rio-rao destroyed, 18 L.M.
Albay R.C. (Busac-Aloman)		
a) Sta. 2.520 - 2.540	2,800	Scouring of portions of earthdike on riversides, 201 L.M.
b) Sta. 12.340 - 13.670	88,000	Portion of existing earthdike washed out, 125 L.M.
c) Sta. 11.340 - 12.365	9,400	Scouring of earthdike on river side, 251 L.M.
Albay R.C. (Mayao-Busac)		
a) Sta. 16.160 - 16.180	6,790	Portion of existing earthdike washed out, 20 L.M.
Albay R.C. (San Agustin-Sta. Cruz)		
a) Sta. 0.118 - 0.400	34,700	Portion of northdike washed out, 40 L.M.
b) Sta. 0.430 - 0.595	16,500	Portion of earthdike scoured, 80 L.M.
Albay R.C. (Bongoran-San Juan)		
a) Sta. 16.980 - 18.620	60,000	Portion of earthdike washed out, 160 L.M.
Gamut R.C. (Binatagan)		
a) Sta. 0.820 - 1.075	45,000	Portion of earthdike washed out, 85 L.M.
Albay R.C. (Calisac)		
a) Sta. 0.840 - 6.880	42,000	Portion of earthdike washed out, 80 L.M.
Albay R.C. (Quinale)		
a) Sta. 12.760 - 12.790	16,000	Portion of earthdike washed out, 30 L.M.
Albay R.C. (Maninila)		
a) Sta. 1.110 - 1.700	70,000	Portion of earthdike washed out, 540 L.M.
Albay R.C. (Bacolod)	275,000	Earthdike destroyed, 1,000 L.M.
Total	801,590	

Data Source: Ministry of Public Works and Highways.

TABLE-VIII.20 RIVER FACILITIES DAMAGE DUE TO TYPHOON'KADING'

(October 26, 1978)

Name of River Control Project	Amount (Pesos)	Remarks
Tagpo R.C. (Bonga) Sta. 0.000 - 0.060	67,000	Portion of riprap, 60 L.M. and side slopes of earthdike dislodged, 80 L.M.
Albay R.C. (Busac-Alomon) Sta. 11.640 - 11.690 Sta. 12.170 - 12.320	80,000	Portion of earthdike at left sect. washed out, 50 L.M. side slopes of earthdike scoured, 50 L.M.
Albay R.C. (Calisac) Sta. 6.150 - 6.180	40,000	Portion of existing earthdike washed out, 30 L.M.
Albay R.C. (Busao-Talongog) Sta. 0.150 - 0.175	46,500	Portion of riprap washed out, 25 L.M.
San Vicente R.C. Sta. 0.000	93,500	Boulder dike washed out, 100 L.M.
Tanawan-Nagas R.C.	133,000	Boulder and earthdike washed out
Total	460,000	

Data Source: Ministry of Public Works and Highways.

TABLE-VIII.21 RIVER FACILITIES DAMAGE DUE TO TYPHOON'ELANG'

(July 16-17, 1977)

Name of River Control Project	Amount (Pesos)	Remarks
Quirangay R.C.	50,000	Mud flows from Mt. Mayon which silted the Quirangay River
Tagpo R.C. (Bonga) Sta. 0.869 - 0.870 Sta. 0.000 - 0.980	20,000	Portion of riprap scoured, 10 L.M., side slopes of earthdike dislodged, 980 L.M.
Oas R.C. Sta. 12.800 - 12.860	30,000	Foundation of riprap dislodged 60 L.M., portion of earthdike destroyed
Ligao-Gamut-Nasisi R.C.	15,000	Foundation of boulder dike, 40 L.M. at PNR dike crossing scoured and portion of road dike overtopped
Total	115,000	

Data Source: Ministry of Public Works and Highways.

TABLE-VIII.22 RIVER FACILITIES DAMAGE DUE TO TYPHOON 'SISANG'

(December 26-27, 1975)

Name of River Control Project	Amount (Pesos)	Remarks
Malinao R.C.	15,000	Existing earthdike scoured including riprap, 20 L.M.
Tagas R.C.	30,000	Existing grouted bank revetments destroyed and foundation scoured
Ligao-Gamut R.C.	60,000	Water course diverted to a new direction thus affects the adjoining ricefield
Tuburan R.C.	50,000	Bank of adjoining private properties along the river is heavily damaged due to overflooding
Guinobatan R.C.	50,000	Foundation of existing grouted bank revetment scoured, 160 L.M.
Bobongsoran R.C.	10,000	The river changed its course and existing brush dike washed out, 40 L.M.
Busac R.C.	10,000	Earthdike and revetments scoured, 30 L.M.
Libon R.C. (Carisac)	15,000	Existing earthdike totally damaged, 60 L.M.
Libon R.C. (Paclas)	250,000	The river change its course thus causing damaged to ricefield and other agricultural land
Sun Agustin R.C.	10,000	Existing earthdike totally damaged, 40 L.M.
Total	500,000	

Data Source: Ministry of Public Works and Highways.

TABLE-VIII.23 RIVER FACILITIES DAMAGE DUE TO TYPHOON

(LEGAZPI CITY)

Name of River Control Project	Amount (Pesos)	Remarks
Typhoon 'Pepang' Sep.18,1979		
a) Pawa-Burabod-Bonga	40,000	A portion of the dike was destroyed
b) Pawa-Burabod-Bonga	130,000	A portion of the dike, foundation, grouted riprap and concrete pavement of top bank was destroyed
Typhoon 'Kading' Oct.26,1978		
a) Yawa-San Roque (Sta. 0.120 - 0.170)	70,000	Portion of foundations were scoured, partially damaged side slope, portions of retaining walls cracked
b) Yawa-San Roque (Sta. 0.040 - 0.070)	30,000	Scoured foundations, partially damaged grouted riprap
Typhoon 'Weling' Sep.26,1978		
a) Pawa-Burabod-Bonga (Sta. 0.520 - 0.560) (Sta. 0.180 - 0.250)	100,000	Foundations were scoured, partially washed out, riprap partially washed out
Typhoon 'Aring' Dec.5,1976		
a) Pawa-Burabod-Bonga (Sta. 0.100 - 0.200)	50,000	Destroyed grouted riprap, collapsed side slopes, washed out foundation
Typhoon 'Sisang' Dec.26-27,1975		
a) Pawa-Burabod-Bonga	60,000	24 M. grouted riprap collapsed and washed out, 50 M. foundation washed out, 100 M. earth-dike destroyed and washed out, construction materials washed out

Data Source: City Engineering Office.

TABLE-VIII.24 ESTIMATED DAMAGE COST TO TELECOMMUNICATION FACILITIES (TELEGRAPH LINES)

(Unit: Pesos)

Date and Typhoon	Damaged Cost	Remarks
Dec. 25, 1981	30,774	St. Domingo to Bacacay
Typhoon "Dinang"	31,175	Bacacay to Tabaco
Total	61,949	
Nov. 23, 1981	25,671	Camalig to Libon
Typhoon "Anding"	37,607	Legazpi to Tiwi
Total	63,278	

Data Source: Bureau of Telecommunication.

TABLE-VIII.25 ESTIMATED DAMAGE COST TO ELECTRICAL FACILITIES

Date and Typhoon	Damage and Repair Cost	Remarks
Dec. 25, 1981 Typhoon "Dinang"	45,261	Malinao 4,309, Camalig 4,153, Guinobatan 2,747, Ligao 5,748, Oas 2,154, Polangui 3,280, Libon 6,024 Daraga 4,350, Old Albay 5,900 Legazpi 6,596 (pesos)
Nov. 23, 1981 Typhoon "Anding"	99,484	Malinao 21,920, Tabaco 18,875, Malilipot 4,662, Bacacay 3,227, Sto. Domingo 3,203, Others 9,747, Camalig 2,724, Guinobatan 6,223, Ligao 1,465, Oas 3,983, Polangui 2,866, Libon 8,563, Legazpi 12,026 (pesos)
July, 1981 Typhoon "Elang"	36,344	Damage 5,465, Repair 13,474, Revenue lost 17,405 (pesos)
Nov. 4, 1980 Typhoon "Aring"	250,854	Damage 59,603, Repair 23,318, Revenue Lost 167,933 (pesos)

Data Source: Albay Electric Cooperative, INC.

TABLE-VIII.26 ESTIMATED DAMAGE COST TO WATERWORKS

Date and Typhoon	Damaged Cost	Remarks
Dec. 25, 1981 Typhoon "Dinang"		
Ligao Waterworks	97,000	90 L.M. washed out
Malinao Waterworks	147,000	80 L.M. - do -
Nov. 23, 1981 Typhoon "Anding"		
Ligao Waterworks	100,000	
Malinao Waterworks	150,000	
June 30, 1981 Typhoon "Daling"		
Malinao Waterworks	200,000	MPW-Albay, 150 L.M.
Ligao Waterworks	150,000	Water District, 40 L.M.
Ligao WW Barayong	70,000	MPW-Albay, 70 L.M.
Ligao WW Paulba	80,000	- do - , 80 L.M.
Guinobatan Waterworks	120,000	- do - , 150 L.M.
Daraga Waterworks	350,000	Provincial WW, 500 L.M.

Data source: Ministry of Public Works and Highways.

TABLE-VIII.27 ESTIMATED DAMAGE COST ON THE IRRIGATION FACILITIES

(Unit: Pesos)

Typhoon	Quinali (A) River Basin	Quinali (B) River Basin	Yawa River Basin	East and North-East Area	Total Damage Cost
Typhoon 'Anding' Nov. 1981	349,800	36,800	36,800	105,800	529,200
Typhoon 'Aring' Nov. 1980	325,400	108,000	-	25,000	458,400
Typhoon 'Pepang' Sep. 1979	622,300	26,400	-	61,400	710,000
Typhoon 'Weling' Sep. 1978	414,200	43,400	-	150,500	608,100
Typhoon 'Kading' Oct. 1978	339,200	31,900	-	116,400	487,500
Typhoon 'Unding' Nov. 1977	195,000	-	-	54,200	249,200
Typhoon 'Didang' May, 1976	71,800	19,200	-	60,300	151,300
Typhoon 'Sisang' Dec. 1975	228,300	5,200	-	-	233,500

Remarks: Data Source - National Irrigation Administration, Region V.
Damage cost is estimated at 1982 price level.

TABLE-VIII.28 IRRIGATION FACILITIES DAMAGE DUE TO TYPHOON "ANDING"

(November, 1981)

(Unit: Pesos)

River Basin and Existing System	Measured Damage Cost	Present Worth at 1982	Estimated Damage Cost
Quinali (A) River Basin			
Apud	15,000	17,000	
Libod-Bariw	5,000	5,700	
South Quinali	85,000	96,100	
Quinali (Left)	35,000	39,600	
San Agustin	48,000	54,200	
San Isidro	50,000	56,500	
Sub total	238,000	269,100	349,800
Quinali (B) River Basin			
Tanawan	10,000	11,300	
Tuliw-Pawa	15,000	17,000	
Sub total	25,000	28,300	36,800
Yawa River Basin			
Cullat	25,000	28,300	36,800
East and North-East Area			
Cogon	10,000	11,300	
Sta. Teresa	10,000	11,300	
Mariroc	30,000	33,900	
Fidel-Sultida	10,000	11,300	
Lidong	12,000	13,600	
Sub total	72,000	81,400	105,800
Total	360,000	407,100	529,200

Data Source: National Irrigation Administration, Region V.

TABLE-VIII.29 IRRIGATION FACILITIES DAMAGE DUE TO TYPHOON "ARING"

(November, 1980)

(Unit: Pesos)

River Basin and Existing System	Measured Damage Cost	Present Worth at 1982	Estimated Damage Cost
Quinali (A) River Basin			
Apud	8,000	10,200	
South Quinali	85,000	108,500	
Left Quinali	28,000	35,800	
San Agustin	40,000	51,100	
Agos Sta. Cruz	15,000	19,200	
San Isidro	12,000	15,300	
Libod-Bariw	8,000	10,200	
Sub total	196,000	250,300	325,400
Quinali (B) River Basin			
Tanawan	10,000	12,800	
Sta. Teresa	10,000	12,800	
Turiw-Pawa	45,000	57,500	
Sub total	65,000	83,100	108,000
Yawa River Basin	Nil	Nil	Nil
East and North-East Area			
Fidel-Surtida	15,000	19,200	25,000
Total	276,000	352,600	458,400

Data Source: National Irrigation Administration, Region V.

TABLE-VIII.30 IRRIGATION FACILITIES DAMAGE DUE TO TYPHOON "PEPANG"

(September, 1979)

(Unit: Pesos)

River Basin and Existing System	Measured Damage Cost	Present Worth at 1982	Estimated Damage Cost
Quinali (A) River Basin			
Nasisi-Mahaba	103,000	148,600	
South Quinali	105,900	152,800	
Quinali (Left & Right)	53,000	76,400	
San Isidro	27,500	39,700	
Agos Sta. Cruz	10,600	15,300	
San Agustin	31,800	45,900	
Sub total	331,800	478,700	622,300
Quinali (B) River Basin			
Tuliw-Pawa	14,100	20,300	26,400
Yawa River Basin	Nil	Nil	Nil
East and North-East Area			
Sta. Teresa	32,700	47,200	61,400
Total	378,600	546,200	710,100

Data Source: National Irrigation Administration, Region V.

TABLE-VIII.31 IRRIGATION DAMAGE DATA DUE TO TYPHOON "WELING"

(September, 1978)

(Unit: Pesos)

River Basin and Existing System	Measured Damage Cost	Present Worth at 1982	Estimated Damage Cost
Quinali (A) River Basin			
South Quinali	65,000	106,000	
Quinali (Left & Right)	59,500	97,000	
San Agustin	37,000	60,300	
San Isidro	33,900	55,300	
Sub total	195,400	318,600	414,200
Quinali (B) River Basin			
Tuliw-Pawa	20,500	33,400	43,400
Yawa River Basin	Nil	Nil	Nil
East and North-East Area			
San Antonio	55,000	89,700	
Sta. Teresa	16,000	26,100	
Sub total	71,000	115,800	150,500
Total	286,900	467,800	608,100

Data Source: National Irrigation Administration, Region V.

TABLE-VIII.32 IRRIGATION DAMAGE COST DUE TO TYPHOON "KADING"

(October, 1978)

(Unit: Pesos)

River Basin and Existing System	Measured Damage Cost	Present Worth at 1982	Estimated Damage Cost
Quinali (A) River Basin			
Nasisi-Mahaba	10,000	16,300	
South Quinali	50,000	81,500	
San Isidro	20,000	32,600	
Quinali (Left & Right)	59,600	97,100	
San Agustin	20,500	33,400	
Sub total	160,100	260,900	339,200
Quinali (B) River Basin			
Tuliw-Pawa	15,000	24,500	31,900
Yawa River Basin	Nil	Nil	Nil
East and North-East Area			
Sta. Teresa	12,000	19,600	
San Antonio	30,000	48,900	
Sub total	42,000	68,500	89,100
U.S.A.I.D. Fund	12,900	21,000	27,300
Total	230,000	374,900	487,500

Data Source: National Irrigation Administration, Region V.

TABLE-VIII.33 IRRIGATION FACILITIES DAMAGE DUE TO TYPHOON "UNDING"

(November, 1977)

(Unit: Pesos)

River Basin and Existing System	Measured Damage Cost	Present Worth at 1982	Estimated Damage Cost
Quinali (A) River Basin			
Nasisi-Mahaba	10,000	18,400	
San Agustin	19,400	35,700	
San Isidro	7,300	13,400	
Quinali (Left & Right)	29,800	54,900	
South Quinali	10,500	19,300	
Agos Sta. Cruz	4,500	8,300	
Sub total	81,500	150,000	195,000
Quinali (B) River Basin	Nil	Nil	Nil
Yawa River Basin	Nil	Nil	Nil
East and North-East Area			
Sta. Teresa	3,900	7,200	
San Antonio	4,600	8,500	
Sub total	8,500	15,700	20,400
U.S.A.I.D. Fund	14,100	26,000	33,800
Total	104,100	191,700	249,200

Data Source: National Irrigation Administration, Region V.

TABLE-VIII.34 IRRIGATION FACILITIES DAMAGE DUE TO TYPHOON "DIDANG"

(May, 1976)

(Unit: Pesos)

River Basin and Existing System	Measured Damage Cost	Present Worth at 1982	Estimated Damage Cost
Quinali (A) River Basin			
Nasisi-Mahaba	12,200	25,400	
South Quinali	11,750	24,500	
Quinali (Lest & Right)	2,550	5,300	
Sub total	26,500	55,200	71,800
Quinali (B) River Basin			
Tuliw-Pawa	3,550	7,400	
Tanawan	3,550	7,400	
Sub total	6,900	14,800	19,200
Yawa River Basin	Nil	Nil	Nil
East and North-East Area			
San Antonio	2,600	5,400	7,000
U.S.A.I.D Fund	19,700	41,000	53,300
Total	55,700	116,400	151,300

Data Source: National Irrigation Administration, Region V.

TABLE-VIII.35 IRRIGATION FACILITIES DAMAGE DUE TO TYPHOON "SISANG"

(December, 1975)

(Unit: Pesos)

River Basin and Existing System	Measured Damage Cost	Present Worth at 1982	Estimated Damage Cost
Quinali (A) River Basin			
Agos sta. Cruz	17,600	41,400	
Quinali (Left & Right)	7,800	18,400	
South Quinali	49,200	115,800	
Sub total	74,600	175,600	228,300
Quinali (B) River Basin	1,700	4,000	5,200
Yawa River Basin	Nil	Nil	Nil
East and North East Area	Nil	Nil	Nil
Total	76,300	179,600	233,500

Data Source: National Irrigation Administration, Region V.

TABLE-IX.1 FINANCIAL CONSTRUCTION COST FOR QUINALI(A) RIVER BASIN

(Unit: 1,000 Pesos)

Description	Sabo Works		River Improvement Works		Irrigation Works		Total		Grand Total
	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion	Local Currency Portion	
1. Contract Cost									
(1) Direct Cost	19,776	35,806	211,573	202,265	25,022	28,119	256,371	266,190	522,561
(2) General	1,978	3,581	21,157	20,227	2,502	2,812	25,637	26,620	52,257
(3) Supervision & Miscellaneous	1,305	2,363	13,964	13,349	1,651	1,856	16,920	17,568	34,488
(4) Profit	2,306	4,175	24,669	23,584	2,918	3,278	29,893	31,037	60,930
(5) Contractor's Tax	761	1,378	8,141	7,783	963	1,082	9,865	10,243	20,108
Sub Total	26,126	47,303	279,504	267,208	33,056	37,147	338,686	351,658	690,344
2. Right of Way/Site Acquisition	-	20	-	17,668	-	-	-	17,688	17,688
3. Resettlement	-	-	-	24,293	-	-	-	24,293	24,293
4. Engineering Cost	-	7,343	27,950	26,721	-	7,020	27,950	41,084	69,034
5. Project Management Cost	-	3,671	-	27,335	-	3,510	-	34,516	34,516
6. Contingency									
(1) Physical Contingency	3,919	7,095	55,901	53,442	6,611	7,429	66,431	67,966	134,397
(2) Price Escalation	12,264	59,761	142,553	388,766	6,764	19,292	161,581	467,819	629,400
Total	42,309	125,193	505,908	805,433	46,431	74,398	594,648	1,005,024	1,599,672

TABLE-IX.2 FINANCIAL CONSTRUCTION COST FOR YAWA RIVER BASIN

(Unit: 1,000 Pesos)

Description	Sabo Works		River Improvement Works		Irrigation Works		Total		Grand Total
	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion	Local Currency Portion	
1. Contract Cost									
(1) Direct Cost	19,053	35,958	9,266	13,346	-	-	28,319	49,304	77,623
(2) General	1,905	3,596	927	1,335	-	-	2,832	4,931	7,763
(3) Supervision & Miscellaneous	1,257	2,373	611	881	-	-	1,868	3,254	5,122
(4) Profit	2,221	4,193	1,080	1,556	-	-	3,301	5,749	9,050
(5) Contractor's Tax	733	1,384	357	514	-	-	1,090	1,898	2,988
Sub Total	25,169	47,504	12,241	17,632	-	-	37,410	65,136	102,546
2. Right of Way/Site Acquisition	-	20	-	390	-	-	-	410	410
3. Resettlement	-	-	-	1,134	-	-	-	1,134	1,134
4. Engineering Cost	-	7,267	1,224	1,763	-	-	1,224	9,030	10,254
5. Project Management Cost	-	3,634	-	1,494	-	-	-	5,128	5,128
6. Contingency									
(1) Physical Contingency	3,775	7,126	2,448	3,526	-	-	6,223	10,652	16,875
(2) Price Escalation	7,518	36,339	3,646	12,286	-	-	11,164	48,625	59,789
Total	36,462	101,890	19,559	38,225	-	-	56,021	140,115	196,136

TABLE-IX.3 FINANCIAL CONSTRUCTION COST FOR QUINALI(B) RIVER BASIN

(Unit: 1,000 Pesos)

Description	Sabo Works		River Improvement Works		Irrigation Works		Total		Grand Total
	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion	Local Currency Portion	
1. Contract Cost									
(1) Direct Cost	1,138	1,922	80,275	72,176	10,289	11,735	91,702	85,833	177,535
(2) General	114	192	8,028	7,218	1,029	1,174	9,171	8,584	17,755
(3) Supervision & Miscellaneous	75	127	5,298	4,763	679	774	6,052	5,664	11,716
(4) Profit	133	224	9,360	8,416	1,200	1,368	10,693	10,008	20,701
(5) Contractor's Tax	44	74	3,089	2,777	396	452	3,529	3,303	6,832
Sub Total	1,504	2,539	106,050	95,350	13,593	15,503	121,147	113,392	234,539
2. Right of Way/Site Acquisition	-	1	-	3,605	-	-	-	3,606	3,606
3. Resettlement	-	-	-	878	-	-	-	878	878
4. Engineering Cost	-	404	10,605	9,535	-	2,910	10,605	12,849	23,454
5. Project Management Cost	-	202	-	10,070	-	1,455	-	11,727	11,727
6. Contingency									
(1) Physical Contingency	226	381	21,210	19,070	2,719	3,101	24,155	22,552	46,707
(2) Price Escalation	1,080	5,217	43,133	94,525	3,083	8,943	47,296	108,685	155,981
Total	2,810	8,744	180,998	233,033	19,395	31,912	203,203	273,689	476,892

TABLE-IX.4
FINANCIAL CONSTRUCTION COST
SABO PROJECT

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost			
(a) Quirangay River	4,054	8,165	12,219
(b) Tumpa River	49	49	98
(c) Maninila River	403	776	1,179
(d) Masarawag River	3,928	6,954	10,882
(e) Ogsong River	3,205	6,720	9,925
(f) Nasisi River	8,137	13,142	21,279
(g) Anuling River	7,616	14,391	22,007
(h) Budiao River	4,402	8,359	12,761
(i) Pawa-Burabod River	7,035	13,208	20,243
Sub total (1)	38,829	71,764	110,593
(2) General	3,883	7,176	11,059
(3) Supervision & Miscellaneous	2,563	4,736	7,299
(4) Profit	4,528	8,368	12,896
(5) Contractor's Tax	1,494	2,761	4,255
Sub total	51,297	94,805	146,102
2. Right of Way/Site Acquisition	-	40	40
3. Engineering Cost	-	14,610	14,610
4. Project Management Cost	-	7,305	7,305
5. Contingency			
(1) Physical Contingency	7,694	14,221	21,915
(2) Price Escalation	19,782	96,100	115,882
Total	78,771	227,083	305,854

TABLE-IX.5
FINANCIAL CONSTRUCTION COST
SABO WORKS, QUINALI(A) RIVER BASIN

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost			
(a) Quirangay River	4,054	8,165	12,219
(b) Tumpa River	49	49	98
(c) Maninila River	403	776	1,179
(d) Masarawag River	3,928	6,954	10,882
(e) Ogsong River	3,205	6,720	9,925
(f) Nasisi River	8,137	13,142	21,279
Sub total (1)	19,776	35,806	55,582
(2) General	1,978	3,581	5,559
(3) Supervision & Miscellaneous	1,305	2,363	3,668
(4) Profit	2,306	4,175	6,481
(5) Contractor's Tax	761	1,378	2,139
Sub total	26,126	47,303	73,429
2. Right of Way/Site Acquisition	-	20	20
3. Engineering Cost	-	7,343	7,343
4. Project Management Cost	-	3,671	3,671
5. Contingency			
(1) Physical Contingency	3,919	7,095	11,014
(2) Price Escalation	12,264	59,761	72,025
Total	42,309	125,193	167,502

TABLE-IX.6
FINANCIAL CONSTRUCTION COST
SABO WORKS, YAWA RIVER BASIN

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost			
(a) Anuling River	7,616	14,391	22,007
(b) Budiao River	4,402	8,359	12,761
(c) Pawa-Burabod River	7,035	13,208	20,243
Sub total (1)	19,053	35,958	55,011
(2) General	1,905	3,596	5,501
(3) Supervision & Miscellaneous	1,257	2,373	3,630
(4) Profit	2,221	4,193	6,414
(5) Contractor's Tax	733	1,384	2,117
Sub total	25,169	47,504	72,673
2. Right of Way/Site Acquisition	-	20	20
3. Engineering Cost	-	7,267	7,267
4. Project Management Cost	-	3,634	3,634
5. Contingency			
(1) Physical Contingency	3,775	7,126	10,901
(2) Price Escalation	7,518	36,339	43,857
Total	36,462	101,890	138,352

TABLE- IX.7
FINANCIAL CONSTRUCTION COST
SABO WORKS, QUINALI(B) RIVER BASIN

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost (Buang River)	1,138	1,922	3,060
(2) General	114	192	306
(3) Supervision & Miscellaneous	75	127	202
(4) Profit	133	224	357
(5) Contractor's Tax	44	74	118
Sub total	1,504	2,539	4,043
2. Right of Way/Site Acquisition	-	1	1
3. Engineering Cost	-	404	404
4. Project Management Cost	-	202	202
5. Contingency			
(1) Physical Contingency	226	381	607
(2) Price Escalation	1,080	5,217	6,297
Total	2,810	8,744	11,554

TABLE-IX.8
FINANCIAL CONSTRUCTION COST
SABO WORKS, QUIRANGAY RIVER

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost	4,054	8,165	12,219
(2) General	405	817	1,222
(3) Supervision & Miscellaneous	268	539	807
(4) Profit	473	952	1,425
(5) Contractor's Tax	156	314	470
Sub total	5,356	10,787	16,143
2. Right of Way/Site Acquisition	-	4	4
3. Engineering Cost	-	1,614	1,614
4. Project Management Cost	-	807	807
5. Contingency			
(1) Physical Contingency	803	1,618	2,421
(2) Price Escalation	-	-	-
Total	6,159	14,830	20,989

Remarks: Above amount excludes price escalation.

TABLE-IX.9
FINANCIAL CONSTRUCTION COST
SABO WORKS, TUMPA RIVER

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost	49	49	98
(2) General	5	5	10
(3) Supervision & Miscellaneous	3	3	6
(4) Profit	6	6	12
(5) Contractor's Tax	2	2	4
Sub total	65	65	130
2. Right of Way/Site Acquisition	-	-	-
3. Engineering Cost	-	13	13
4. Project Management Cost	-	6	6
5. Contingency			
(1) Physical Contingency	10	10	20
(2) Price Escalation	-	-	-
Total	75	94	169

Remarks: Above amount excludes price escalation.

TABLE-IX.10
FINANCIAL CONSTRUCTION COST
SABO WORKS, MANINILA RIVER

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost	403	776	1,179
(2) General	40	78	118
(3) Supervision & Miscellaneous	27	51	78
(4) Profit	47	91	138
(5) Contractor's Tax	16	30	46
Sub total	533	1,026	1,559
2. Right of Way/Site Acquisition	-	1	1
3. Engineering Cost	-	156	156
4. Project Management Cost	-	78	78
5. Contingency			
(1) Physical Contingency	80	154	234
(2) Price Escalation	-	-	-
Total	613	1,415	2,028

Remarks: Above amount excludes price escalation.

TABLE- IX.11
FINANCIAL CONSTRUCTION COST
SABO WORKS, MASARAWAG RIVER

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost	3,928	6,954	10,882
(2) General	393	695	1,088
(3) Supervision & Miscellaneous	259	459	718
(4) Profit	458	811	1,269
(5) Contractor's Tax	151	268	419
Sub total	5,189	9,187	14,376
2. Right of Way/Site Acquisition	-	3	3
3. Engineering Cost	-	1,438	1,438
4. Project Management Cost	-	719	719
5. Contingency			
(1) Physical Contingency	778	1,378	2,156
(2) Price Escalation	-	-	-
Total	5,967	12,725	18,692

Remarks: Above amount excludes price escalation.

TABLE- IX.12
FINANCIAL CONSTRUCTION COST
SABO WORKS, OGSONG RIVER
(NABONTON CREEK)

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost	3,205	6,720	9,925
(2) General	321	672	993
(3) Supervision & Miscellaneous	212	443	655
(4) Profit	374	784	1,158
(5) Contractor's Tax	123	258	381
Sub total	4,235	8,877	13,112
2. Right of Way/Site Acquisition	-	5	5
3. Engineering Cost	-	1,311	1,311
4. Project Management Cost	-	656	656
5. Contingency			
(1) Physical Contingency	635	1,331	1,966
(2) Price Escalation	-	-	-
Total	4,870	12,180	17,050

Remarks: Above amount excludes price escalation.

TABLE- IX.13
FINANCIAL CONSTRUCTION COST
SABO WORKS, NASISI RIVER

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost	8,137	13,142	21,279
(2) General	814	1,314	2,128
(3) Supervision & Miscellaneous	537	867	1,404
(4) Profit	949	1,532	2,481
(5) Contractor's Tax	313	506	819
Sub total	10,750	17,361	28,111
2. Right of Way/Site Acquisition	-	7	7
3. Engineering Cost	-	2,811	2,811
4. Project Management Cost	-	1,406	1,406
5. Contingency			
(1) Physical Contingency	1,612	2,604	4,216
(2) Price Escalation	-	-	-
Total	12,362	24,189	36,551

Remarks: Above amount excludes price escalation.

TABLE-IX.14
FINANCIAL CONSTRUCTION COST
SABO WORKS, ANULING RIVER

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost	7,616	14,391	22,007
(2) General	762	1,439	2,201
(3) Supervision & Miscellaneous	503	950	3,654
(4) Profit	888	1,678	2,566
(5) Contractor's Tax	293	554	847
Sub total	10,062	19,012	29,074
2. Right of Way/Site Acquisition	-	8	8
3. Engineering Cost	-	2,907	2,907
4. Project Management Cost	-	1,454	1,454
5. Contingency			
(1) Physical Contingency	1,509	2,852	4,361
(2) Price Escalation	-	-	-
Total	11,571	26,233	37,804

Remarks: Above amount excludes price escalation.

TABLE-IX.15
FINANCIAL CONSTRUCTION COST
SABO WORKS, BUDIAO RIVER

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost	4,402	8,359	12,761
(2) General	440	836	1,276
(3) Supervision & Miscellaneous	291	552	843
(4) Profit	513	975	1,488
(5) Contractor's Tax	169	322	491
Sub total	5,815	11,044	16,859
2. Right of Way/Site Acquisition	-	5	5
3. Engineering Cost	-	1,686	1,686
4. Project Management Cost	-	843	843
5. Contingency			
(1) Physical Contingency	872	1,656	2,528
(2) Price Escalation	-	-	-
Total	6,687	15,234	21,921

Remarks: Above amount excludes price escalation.

TABLE-IX.16
FINANCIAL CONSTRUCTION COST
SABO WORKS, PAWA-BURABOD RIVER

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost	7,035	13,208	20,243
(2) General	704	1,321	2,025
(3) Supervision & Miscellaneous	464	872	1,336
(4) Profit	820	1,540	2,360
(5) Contractor's Tax	271	508	779
Sub total	9,294	17,449	26,743
2. Right of Way/Site Acquisition	-	7	7
3. Engineering Cost	-	2,674	2,674
4. Project Management Cost	-	1,337	1,337
5. Contingency			
(1) Physical Contingency	1,394	2,617	4,011
(2) Price Escalation	-	-	-
Total	10,688	24,084	34,772

Remarks: Above amount excludes price escalation.

TABLE-IX.17

FINANCIAL CONSTRUCTION COST

RIVER IMPROVEMENT WORKS, QUINALI (A) RIVER

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost	211,573	202,265	413,838
(2) General	21,157	20,227	41,384
(3) Supervision & Miscellaneous	13,964	13,349	27,313
(4) Profit	24,669	23,584	48,253
(5) Contractor's Tax	8,141	7,783	15,924
Sub total	279,504	267,208	546,712
2. Right of Way/Site Acquisition	-	17,668	17,668
3. Resettlement	-	24,293	24,293
4. Engineering Cost	27,950	26,721	54,671
5. Project Management Cost	-	27,335	27,335
6. Contingency			
(1) Physical Contingency	55,901	53,442	109,343
(2) Price Escalation	-	-	-
Total	363,355	416,667	780,022

Remarks: Above amount excludes price escalation.

TABLE-IX.18

FINANCIAL CONSTRUCTION COST

RIVER IMPROVEMENT WORKS, QUINALI (A) RIVER

DIVERSION TO TALISAY RIVER

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost	314,588	236,544	551,132
(2) General	31,459	23,654	55,113
(3) Supervision & Miscellaneous	20,763	15,612	36,375
(4) Profit	36,681	27,581	64,262
(5) Contractor's Tax	12,105	9,102	21,207
Sub total	415,596	312,493	728,089
2. Right of Way/Site Acquisition	-	16,482	16,482
3. Resettlement	-	13,604	13,604
4. Engineering Cost	41,559	31,249	72,808
5. Project Management Cost	-	36,404	36,404
6. Contingency			
(1) Physical Contingency	83,119	62,498	145,617
(2) Price Escalation	-	-	-
Total	540,274	472,730	1,013,004

Remarks: Above amount excludes price escalation.

TABLE- IX.19

FINANCIAL CONSTRUCTION COST

RIVER IMPROVEMENT WORKS, YAWA RIVER

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost	9,266	13,346	22,612
(2) General	927	1,335	2,262
(3) Supervision & Miscellaneous	611	881	1,492
(4) Profit	1,080	1,556	2,636
(5) Contractor's Tax	357	514	871
Sub total	12,241	17,632	29,873
2. Right of Way/Site Acquisition	-	390	390
3. Resettlement	-	1,134	1,134
4. Engineering Cost	1,224	1,763	2,987
5. Project Management Cost	-	1,494	1,494
6. Contingency			
(1) Physical Contingency	2,448	3,526	5,974
(2) Price Escalation	-	-	-
Total	15,913	25,939	41,852

Remarks: Above amount excludes price escalation.

TABLE-IX.20

FINANCIAL CONSTRUCTION COST

RIVER IMPROVEMENT WORKS, QUINALI (B) RIVER

(Unit: 1,000 Pesos)

Description	Foreign Currency Portion	Local Currency Portion	Total
1. Contract Cost			
(1) Direct Cost	80,275	72,176	152,451
(2) General	8,028	7,218	15,246
(3) Supervision & Miscellaneous	5,298	4,763	10,061
(4) Profit	9,360	8,416	17,776
(5) Contractor's Tax	3,089	2,777	5,866
Sub total	106,050	95,350	201,400
2. Right of Way/Site Acquisition	-	3,605	3,605
3. Resettlement	-	878	878
4. Engineering Cost	10,605	9,535	20,140
5. Project Management Cost	-	10,070	10,070
6. Contingency			
(1) Physical Contingency	21,210	19,070	40,280
(2) Price Escalation	-	-	-
Total	137,865	138,508	276,373

Remarks: Above amount excludes price escalation.