Table F.1-35 Irrigation Requirement for Tobacco in Sector II

(Unit: MCM)

Month	10 days	ETcrop (mm/day)	ETcrop (mm/10day)	Pe (mm/10day)	Net ETcrop (mm/10day)	Irrigation Area (ha)	Water Requirement
	1			26.7			
May	2			26.7			
	3			26.7			
	4			31.7			
Jun	5			31.7			
	6			31.7			
	7			23.3			
July	8			23.3			
	9			23.3			
	10			26.7			
Aug	11			26.7			
	12			26.7			
	13	2.09	20.9	25.0		6	
Sept	14	2.18	21.8	25.0		19	
	15	2.36	23.6	25.0		31	
	16	2.73	27.3	20.0	7.3	44	0.007
Oct	17	3.04	30.4	20.0	10.4	50	0.011
	18	3.33	33.3	20.0	13.3	50	0.014
	19	2.40	24.0	5.0	19.0	50	0.020
Nov	20	3.64	36.4	5.0	31.4	50	0.034
	21	3.74	37.4	5.0	32.4	50	0.035
	22	3.63	36.3		36.3	50	0.039
Dec	23	3.52	35.2		35.2	50	0.038
	24	3.74	37.4		37.4	50	0.040
	25	3.64	36.4		36.4	50	0.039
Jan	26	3.67	36.7		36.7	50	0.039
	27	4.10	41.0		41.0	44	0.038
	28	3.98	39.8	1.7	38.1	31	0.026
Feb	29	3.69	36.9	1.7	35.2	19	0.014
	30	3.74	37.4	1.7	35.7	6	0.005
	31						
Mar	32						
	33						
	34			6.7			
Apr	35			6.7			
	36			6.7			

Table F.1-36 Irrigation Requirement for Soy Beans in Sector II

(Unit: MCM)

Month	10 days	ETcrop (mm/day)	ETcrop (mm/10day)	Pe (mm/10day)	Net ETcrop (mm/10day)	Irrigation Area (ha)	Water Requirement
	1			26.7			
May	2	2.50	25.0	26.7		12	
	3	2.20	22.0	26.7		35	
	4	2.49	24.9	31.7		59	
Jun	5	2.37	23.7	31.7		82	
	6	3.23	32.3	31.7	0.6	106	0.001
	7	3.48	34.8	23.3	11.4	129	0.032
July	8	3.60	36.0	23.3	12.7	153	0.041
	9	3.47	34.7	23.3	11.3	176	0.043
	10	3.47	34.7	26.7	8.0	176	0.030
Aug	11	3.56	35.6	26.7	9.0	153	0.029
	12	3.78	37.8	26.7	11.2	129	0.031
	13	3.65	36.5	25.0	11.5	106	0.026
Sept	14	3.35	33.5	25.0	8.5	82	0.015
	15	3.08	30.8	25.0	5.8	59	0.007
	16	2.81	28.1	20.0	8.1	35	0.006
Oct	17	2.26	22.6	20.0	2.6	12	0.001
	18			20.0			
	19			5.0			
Nov	20			5.0			
	21			5.0			
	22						
Dec	23						
	24						
	25						
Jan	26						
	27						
	28			1.7			
Feb	29			1.7			
	30			1.7			
	31						
Mar	32						
	33						
	34			6.7			
Apr	35			6.7			
	36			6.7			

C:

Table F.1-37 Irrigation Requirement for Vegetable (A)-1 in Sector II

(Unit: MCM)

Month	10 days	ETcrop (mm/day)	ETcrop (mm/10day)	Pe (mm/10day)	Net ETcrop (mm/10day)	Irrigation Area (ha)	Water Requirement
	1			26.7			
May	2			26.7			
	3			26.7			
	4			31.7			
Jun	5			31.7			
	6			31.7			
	7			23.3			
July	8			23.3			
	9			23.3			
	10			26.7			
Aug	11			26.7			
	12			26.7			
	13			25.0			
Sept	14			25.0			
	15			25.0			
	16			20.0			
Oct	17	2.03	20.3	20.0	0.3	11	0.000
	18	2.22	22.2	20.0	2.2	34	0.002
	19	1.73	17.3	5.0	12.3	57	0.015
Nov	20	2.65	26.5	5.0	21.5	80	0.037
	21	2.82	28.2	5.0	23.2	102	0.051
	22	2.77	27.7		27.7	125	0.074
Dec	23	2.62	26.2		26.2	148	0.083
	24	2.79	27.9		27.9	170	0.102
	25	2.92	29.2		29.2	170	0.107
Jan	26	3.31	33.1		33.1	148	0.105
	27	3.89	38.9		38.9	125	0.104
	28	3.81	38.1	1.7	36.5	102	0.080
Feb	29	3.61	36.1	1.7	34.4	80	0.059
	30	3.52	35.2	1.7	33.5	57	0.041
	31	2.94	29.4		29.4	34	0.021
Mar	32					11	
	33						
	34			6.7			
Apr	35			6.7			
	36			6.7			
						Maize (III)	

Table F.1-38 Irrigation Requirement for Vegetable (A)-2 in Sector II

(Unit: MCM)

Month	10 days	ETcrop (mm/day)	ETcrop (mm/10day)	Pe (mm/10day)	Net ETcrop (mm/10day)	Irrigation Area (ha)	Water Requirement
	1			26.7			
May	2			26.7			
	3			26.7			
	4			31.7			
Jun	5			31.7			
	6			31.7			
	7			23.3			
July	8			23.3			
	9			23.3			
	10			26.7			
Aug	11			26.7			
	12			26.7			
	13	2.09	20.9	25.0		12	
Sept	14	1.99	19.9	25.0		35	
	15	2.24	22.4	25.0		59	
	16	2.73	27.3	20.0	7.3	82	0.013
Oct	17	3.00	30.0	20.0	10.0	106	0.023
	18	3.03	30.3	20.0	10.3	129	0.029
	19	1.99	19.9	5.0	14.9	153	0.049
Nov	20	2.75	27.5	5.0	22.5	176	0.085
	21	2.75	27.5	5.0	22.5	176	0.085
	22	2.84	28.4		28.4	153	0.093
Dec	23	2.94	29.4		29.4	129	0.081
	24	3.23	32.3		32.3	106	0.073
	25	3.16	31.6		31.6	82	0.056
Jan	26	3.17	31.7		31.7	59	0.040
	27	3.28	32.8		32.8	35	0.025
	28	2.87	28.7	1.7	27.0	12	0.007
Feb	29			1.7			
	30			1.7			
	31						
Mar	32						
	33						
	34			6.7			
Apr	35			6.7			
	36			6.7			

Table F.1-39 Irrigation Requirement for Vegetable (A)-3 in Sector II

(Unit: MCM)

Month	10 days	ETcrop (mm/day)	ETcrop (mm/10day)	Pe (mm/10day)	Net ETcrop (mm/10day)	Irrigation Area (ha)	Water Requirement
	1			26.7			
May	2	2.30	23.0	26.7		12	
	3	2.02	20.2	26.7		35	
	4	2.37	23.7	31.7		59	
Jun	5	2.92	29.2	31.7		82	
	6	3.23	32.3	31.7	0.6	106	0.001
	7	3.52	35.2	23.3	11.9	129	0.033
July	8	3.65	36.5	23.3	13.1	153	0.043
	9	3.60	36.0	23.3	12.7	176	0.048
	10	3.60	36.0	26.7	9.3	176	0.035
Aug	11	3.74	37.4	26.7	10.7	153	0.035
	12	4.00	40.0	26.7	13.4	129	0.037
	13	3.89	38.9	25.0	13.9	106	0.032
Sept	14	3.63	36.3	25.0	11.3	82	0.020
	15	3.34	33.4	25.0	8.4	59	0.011
	16	3.12	31.2	20.0	11.2	35	0.008
Oct	17	2.73	27.3	20.0	7.3	12	0.002
	18			20.0			
	19			5.0			
Nov	20			5.0			
	21			5.0			
	22						
Dec	23						
	24						
	25						
Jan	26						
	27						
	28			1.7			
Feb	29			1.7			
	30			1.7			
	31						
Mar	32						
	33						
	34			6.7			
Apr	35			6.7			
	36			6.7			

Table F.1-40 Irrigation Requirement for Vegetable (A)-4 in Sector II

(Unit: MCM)

Month	10 days	ETcrop (mm/day)	ETcrop (mm/10day)	Pe (mm/10day)	Net ETcrop (mm/10day)	Irrigation Area (ha)	Water Requirement
	1	4.69	46.9	26.7	20.3	129	0.056
May	2	4.75	47.5	26.7	20.8	106	0.047
	3	4.05	40.5	26.7	13.8	82	0.024
	4	3.78	37.8	31.7	6.2	59	0.008
Jun	5	3.44	34.4	31.7	2.7	35	0.002
	6	3.01	30.1	31.7		12	
	7			23.3			
July	8			23.3			
	9			23.3			
	10			26.7			
Aug	11			26.7			
	12			26.7			
	13			25.0			
Sept	14			25.0			
	15			25.0			
	16			20.0			
Oct	17			20.0			
	18			20.0			
	19			5.0			
Nov	20			5.0			
	21			5.0			
	22						
Dec	23						
	24						
	25						
Jan	26						
	27	2.13	21.3		21.3	12	0.005
	28	2.13	21.3	1.7	19.7	35	0.015
Feb	29	2.46	24.6	1.7	22.9	59	0.029
	30	3.12	31.2	1.7	29.6	82	0.052
	31	3.28	32.8		32.8	106	0.074
Mar	32	4.18	41.8		41.8	129	0.116
	33	4.48	44.8		44.8	153	0.147
	34	4.35	43.5	6.7	36.8	176	0.139
Apr	35	4.26	42.6	6.7	36.0	176	0.136
	36	4.47	44.7	6.7	38.1	153	0.124

D:

Table F.1-41 Irrigation Requirement for Vegetable (B)-1 in Sector II

(Unit: MCM)

Month	10 days	ETcrop (mm/day)	ETcrop (mm/10day)	Pe (mm/10day)	Net ETcrop (mm/10day)	Irrigation Area (ha)	Water Requirement
	1			26.7			
May	2			26.7			
	3			26.7			
	4			31.7			
Jun	5			31.7			
	6			31.7			
	7			23.3			
July	8			23.3			
	9			23.3			
	10			26.7			
Aug	11			26.7			
	12			26.7			
	13	2.09	20.9	25.0		11	
Sept	14	1.99	19.9	25.0		34	
	15	2.05	20.5	25.0		57	
	16	2.38	23.8	20.0	3.8	80	0.006
Oct	17	2.65	26.5	20.0	6.5	102	0.014
	18	2.70	27.0	20.0	7.0	125	0.019
	19	1.82	18.2	5.0	13.2	148	0.042
Nov	20	2.65	26.5	5.0	21.5	170	0.078
	21	2.69	26.9	5.0	21.9	182	0.085
	22	2.71	27.1		27.1	182	0.105
Dec	23	2.75	27.5		27.5	170	0.100
	24	3.03	30.3		30.3	148	0.096
	25	3.06	30.6		30.6	125	0.082
Jan	26	3.20	32.0		32.0	102	0.070
	27	3.61	36.1		36.1	80	0.061
	28	3.48	34.8	1.7	33.2	57	0.040
Feb	29	3.32	33.2	1.7	31.5	34	0.023
	30	3.21	32.1	1.7	30.5	11	0.007
	31						
Mar	32						
	33						
	34			6.7			
Apr	35			6.7			
	36			6.7			

Rice (1)

Table F.1-42 Irrigation Requirement for Vegetable (B)-2 in Sector II

(Unit: MCM)

Month	10 days	ETcrop (mm/day)	ETcrop (mm/10day)	Pe (mm/10day)	Net ETcrop (mm/10day)	Irrigation Area (ha)	Water Requirement
	1	4.54	45.4	26.7	18.7	129	0.052
May	2	4.40	44.0	26.7	17.3	106	0.039
	3	3.83	38.3	26.7	11.6	82	0.020
	4	3.61	36.1	31.7	4.5	59	0.006
Jun	5	3.40	34.0	31.7	2.3	35	0.002
	6	3.10	31.0	31.7		12	
	7			23.3			
July	8			23.3			
	9			23.3			
	10			26.7			
Aug	11			26.7			
	12			26.7			
	13			25.0			
Sept	14			25.0			
	15			25.0			
	16			20.0			
Oct	17			20.0			
	18			20.0			
	19			5.0			
Nov	20			5.0			
	21			5.0			
	22						
Dec	23						
	24						
	25	1.84	18.4		18.4	12	0.005
Jan	26	1.94	19.4		19.4	35	0.015
	27	2.34	23.4		23.4	59	0.029
	28	2.62	26.2	1.7	24.6	82	0.043
Feb	29	2.87	28.7	1.7	27.0	106	0.061
	30	3.26	32.6	1.7	30.9	129	0.085
	31	3.23	32.3		32.3	153	0.106
Mar	32	4.03	40.3		40.3	176	0.152
	33	4.32	43.2		43.2	188	0.174
	34	4.35	43.5	6.7	36.8	188	0.148
Apr	35	4.47	44.7	6.7	38.1	176	0.143
	36	4.63	46.3	6.7	39.6	153	0.130

Table F.1-43 Irrigation Requirement for Vegetable (B)-3 in Sector II

(Unit: MCM)

Month	10 days	ETcrop (mm/day)	ETcrop (mm/10day)	Pe (mm/10day)	Net ETcrop (mm/10day)	Irrigation Area (ha)	Water Requirement
	1			26.7			
May	2			26.7			
	3			26.7			
	4			31.7			
Jun	5			31.7			
	6			31.7			
	7			23.3			
July	8			23.3			
	9			23.3			
	10			26.7			
Aug	11			26.7			
	12			26.7			
	13			25.0			
Sept	14	2.03	20.3	25.0		12	
	15	1.98	19.8	25.0		35	
	16	2.18	21.8	20.0	1.8	59	0.002
Oct	17	2.46	24.6	20.0	4.6	82	0.008
	18	2.55	25.5	20.0	5.5	106	0.013
	19	1.78	17.8	5.0	12.8	129	0.035
Nov	20	2.62	26.2	5.0	21.2	153	0.069
	21	2.69	26.9	5.0	21.9	176	0.082
	22	2.64	26.4		26.4	188	0.106
Dec	23	2.62	26.2		26.2	188	0.106
	24	2.92	29.2		29.2	176	0.110
	25	3.03	30.3		30.3	153	0.099
Jan	26	3.24	32.4		32.4	129	0.089
	27	3.65	36.5		36.5	106	0.083
	28	3.61	36.1	1.7	34.4	82	0.060
Feb	29	3.48	34.8	1.7	33.2	59	0.042
	30	3.52	35.2	1.7	33.5	35	0.025
	31	3.07	30.7		30.7	12	0.008
Mar	32						
	33						
	34			6.7			
Apr	35			6.7			
	36			6.7			

Table F.1-44 Irrigation Requirement for Fruits in Sector II

(Unit: MCM)

Month	10 days	ETcrop (mm/day)	ETcrop (mm/10day)	Pe (mm/10day)	Net ETcrop (mm/10day)	Irrigation Area (ha)	Water Requirement
	1	4.34	43.4	26.7	16.7	56	0.020
May	2	4.25	42.5	26.7	15.8	56	0.019
	3	3.74	37.4	26.7	10.7	56	0.013
	4	3.66	36.6	31.7	4.9	56	0.006
Jun	5	3.66	36.6	31.7	4.9	56	0.006
	6	3.66	36.6	31.7	4.9	56	0.006
	7	3.74	37.4	23.3	14.1	56	0.017
July	8	3.82	38.3	23.3	14.9	56	0.018
	9	3.82	38.3	23.3	14.9	56	0.018
	10	3.82	38.3	26.7	11.6	56	0.014
Aug	11	3.74	37.4	26.7	10.7	56	0.013
	12	3.74	37.4	26.7	10.7	56	0.013
	13	3.48	34.8	25.0	9.8	56	0.012
Sept	14	3.32	33.2	25.0	8.1	56	0.010
	15	3.23	32.3	25.0	7.3	56	0.009
	16	3.32	33.2	20.0	13.1	56	0.016
Oct	17	3.32	33.2	20.0	13.1	56	0.016
	18	3.15	31.5	20.0	11.5	56	0.014
	19	2.04	20.4	5.0	15.4	56	0.019
Nov	20	2.89	28.9	5.0	23.9	56	0.029
	21	2.89	28.9	5.0	23.9	56	0.029
	22	2.80	28.0		28.0	56	0.034
Dec	23	2.72	27.2		27.2	56	0.033
	24	2.89	28.9		28.9	56	0.035
	25	2.89	28.9		28.9	56	0.035
Jan	26	3.06	30.6		30.6	56	0.037
	27	3.48	34.8		34.8	56	0.042
	28	3.48	34.8	1.7	33.2	56	0.040
Feb	29	3.48	34.8	1.7	33.2	56	0.040
	30	3.74	37.4	1.7	35.7	56	0.043
	31	3.57	35.7		35.7	56	0.043
Mar	32	4.34	43.4		43.4	56	0.052
	33	4.59	45.9		45.9	56	0.055
	34	4.51	45.1	6.7	38.4	56	0.046
Apr	35	4.42	44.2	6.7	37.5	56	0.045
	36	4.42	44.2	6.7	37.5	56	0.045

E:

Table F.1-45 Irrigation Requirement for Coffee in Sector II

(Unit: MCM)

Month	10 days	ETcrop (mm/day)	ETcrop (mm/10day)	Pe (mm/10day)	Net ETcrop (mm/10day)	Irrigation Area (ha)	Water Requirement
	1	5.35	53.6	26.7	26.9	31	0.018
May	2	5.25	52.5	26.7	25.8	31	0.017
	3	4.62	46.2	26.7	19.5	31	0.013
	4	4.52	45.2	31.7	13.5	31	0.009
Jun	5	4.52	45.2	31.7	13.5	31	0.009
	6	4.52	45.2	31.7	13.5	31	0.009
	7	4.62	46.2	23.3	22.9	31	0.015
July	8	4.73	47.3	23.3	23.9	31	0.016
	9	4.73	47.3	23.3	23.9	31	0.016
	10	4.73	47.3	26.7	20.6	31	0.014
Aug	11	4.62	46.2	26.7	19.5	31	0.013
	12	4.62	46.2	26.7	19.5	31	0.013
	13	4.31	43.1	25.0	18.0	31	0.012
Sept	14	4.10	40.9	25.0	15.9	31	0.011
	15	3.99	39.9	25.0	14.9	31	0.010
	16	4.10	40.9	20.0	20.9	31	0.014
Oct	17	4.10	40.9	20.0	20.9	31	0.014
	18	3.89	38.9	20.0	18.9	31	0.013
	19	2.52	25.2	5.0	20.2	31	0.014
Nov	20	3.57	35.7	5.0	30.7	31	0.021
	21	3.57	35.7	5.0	30.7	31	0.021
	22	3.47	34.7		34.7	31	0.023
Dec	23	3.36	33.6		33.6	31	0.023
	24	3.57	35.7		35.7	31	0.024
	25	3.57	35.7		35.7	31	0.024
Jan	26	3.78	37.8		37.8	31	0.025
	27	4.31	43.1		43.1	31	0.029
	28	4.31	43.1	1.7	41.4	31	0.028
Feb	29	4.31	43.1	1.7	41.4	31	0.028
	30	4.62	46.2	1.7	44.5	31	0.030
	31	4.41	44.1		44.1	31	0.030
Mar	32	5.35	53.6		53.6	31	0.036
	33	5.67	56.7		56.7	31	0.038
	34	5.57	55.7	6.7	49.0	31	0.033
Apr	35	5.46	54.6	6.7	47.9	31	0.032
	36	5.46	54.6	6.7	47.9	31	0.032

Rice (II)

Table F.1-46 Irrigation Requirement for Pasture in Sector II

(Unit: MCM)

Month	10 days	ETcrop (mm/day)	ETcrop (mm/10day)	Pe (mm/10day)	Net ETcrop (mm/10day)	Irrigation Area (ha)	Water Requirement
	1	2.81	28.1	26.7	1.4	56	0.002
May	2	2.75	27.5	26.7	0.8	56	0.001
	3	2.42	24.2	26.7		56	
	4	2.37	23.7	31.7		56	
Jun	5	2.37	23.7	31.7		56	
	6	2.37	23.7	31.7		56	
	7	2.42	24.2	23.3	0.9	56	0.001
July	8	2.48	24.8	23.3	1.4	56	0.002
	9	2.48	24.8	23.3	1.4	56	0.002
	10	2.48	24.8	26.7		56	
Aug	11	2.42	24.2	26.7		56	
	12	2.42	24.2	26.7		56	
	13	2.26	22.6	25.0		56	
Sept	14	2.15	21.5	25.0		56	
	15	2.09	20.9	25.0		56	
	16	2.15	21.5	20.0	1.4	56	0.002
Oct	17	2.15	21.5	20.0	1.4	56	0.002
	18	2.04	20.4	20.0	0.4	56	0.000
	19	1.20	12.0	5.0	7.0	56	0.008
Nov	20	1.70	17.0	5.0	12.0	56	0.014
	21	1.70	17.0	5.0	12.0	56	0.014
	22	1.65	16.5		16.5	56	0.020
Dec	23	1.60	16.0		16.0	56	0.019
	24	1.70	17.0		17.0	56	0.021
	25	1.70	17.0		17.0	56	0.021
Jan	26	1.80	18.0		18.0	56	0.022
	27	2.05	20.5		20.5	56	0.025
	28	2.05	20.5	1.7	18.8	56	0.023
Feb	29	2.05	20.5	1.7	18.8	56	0.023
	30	2.20	22.0	1.7	20.3	56	0.025
	31	2.10	21.0		21.0	56	0.025
Mar	32	2.55	25.5		25.5	56	0.031
	33	2.70	27.0		27.0	56	0.033
	34	2.65	26.5	6.7	19.8	56	0.024
Apr	35	2.60	26.0	6.7	19.3	56	0.023
	36	2.60	26.0	6.7	19.3	56	0.023

(2) Water Distribution Plan

1) Main Canal

The maximum discharge of canals will occur in the last 10 days on January by the calculation of 10 days' water requirement and the discharge of Sector I and II are 1.103 and 1.847 m^3/sec, respectively.

2) Lateral Canal

Required water diverted to each lateral canal is calculated irrigation area governed by each lateral canal and unit water requirement at the time of maximum intake. Unit water requirement at the time of maximum intake is 1.378 ℓ/sec/ha.

F.2 Diversion Work and Canal System

(1) Diversion work

1) Study on design Flood

According to the flood records of Coyolar dam through spillway to the San Jose River, the maximum discharge of 173 m^3 /sec has been recorded since the completion of dam in 1965 and flood analysis is made about 520 m^3/sec in the river basin with 240 km^2 (192 km^2 in Coyolar dam and 48 km^2 in Diversion dam) as provable return period for fifty (50) years. Unit discharge of 2.2 m^3 /sec/km^2 is calculated on the basis of 520 m^3 /sec in the 240 km^2. On the other hand, provable flood discharge of 190 m^3/sec is estimated on the basis of the water level mark in the bank made in the past, as well as calculated 106 m^3/sec : 2.2 m^3/sec/km^2 x 48 km^2.

From these estimated discharges, the 190 m^3/sec is taken for applying to plan of diversion work. The hydraulic calculation is made as below:

$Q = A \times V$

where :

Q : Discharge (190 m^3/sec)

A : Section area (90 m^2)

V : Mean velocity (2.1 m/sec)

: $1/n\ R^{2/3} I^{1/2}$

where :

n : Roughness coefficient (0.05)

R : Hydraulic radius (1.6 m)

I : Hydraulic gradient (1 : 170)

As a result of calculation, $Q = A \times V$ = 190 m^3/sec is more than above discharge of 173 m^3/sec from the Coyolar dam's max. discharge. On the other hand, water depth on the top of fixed weir is only 1.7m for the 190 m^3/sec. Accordingly no river protection is conducted for the San Jose River bank.

2) Fixed weir and River bed protection

- Length of apron

$L_1 = 0.6\ C\ D_1$

where :

L_1 : Apron length of fixed weir (11.0m)

C : Bligh's coefficient (9)

D_1 : Height from top of dam crest to end of apron (4 m)

L_2 : Length of river protection (about 20 m)

3) Water intake mouth and Hydraulic dimensions

- Irrigation water requirement

q_1 : 1.103 m^3/sec in sector I area (800 ha)

q_2 : 1.847 m^3/sec in sector II area (1340 ha)

Qi : $q_1 + q_2$ = 2.947 x m^3/sec (2140 ha)

- Domestic water requirement

Qd : 0.5 m^3/sec

- Total water intake

Qt : Qi + Qd = 2.947 + 0.5 = 3.5 m^3/sec

- Hydraulic dimensions

· Dam up elevation : 667.80 m
· Water surface elevation at intake mouth : 667.75m
· Intake mouth :

$A = Q/V = 3.5\ m^3/sec / 0.6 = 5.8\ m^2$

where :
A : Water area (5.8 m^2)
V : Design velocity (0.6 m/sec)

· Dimensions
Depth : 1.5m, Width : 1.3m (three spans)
(1.5m x 1.3m) x 3 = 5.9 m^2
· Bottom elevation : 667.75m - 1.5m = 666.25m
· River bed elevation : 665.40m

4) Settling Basin

$B = Q / h\ u$

Where :
B : Width of basin (10m)
Q : Normal water (3.5 m^3/sec)
h : Water depth at the depositted sand in basin (1.8m)
u : Critical velocity for suspended solid (0.2 m/sec)

Length of Basin

$L = 20x\ Q^{1/2}$

Where :
L : Length of basin (40 m)
Q : Normal water (3.5 m^3/sec)

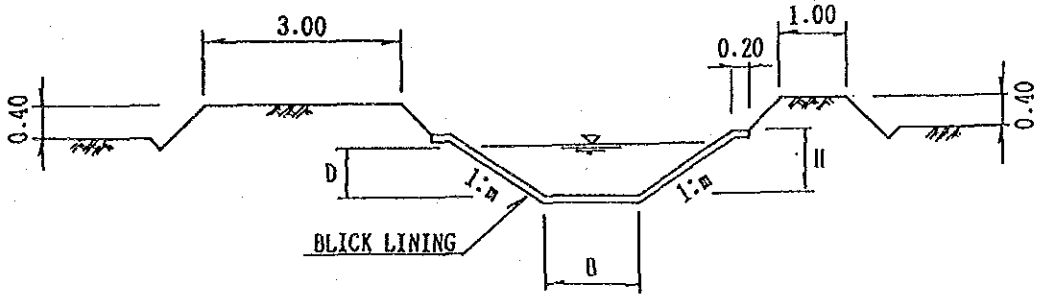
(2) Canal System

1) Hydraulic dimensions

Hydraulic dimensions in the existing open canals are arranged in order to improve the hydraulic well condition by brick linning and maintenance roads to be provided of 3.0 m width with gravel paving. The canal element and typical figure are shown in Table F.2-1.

Table F.2- 1 Canal Profile

NAME OF CANAL	TYPE	DISCHARGE Q (CU.M/S)	BOTTOM B (M)	HIGHT H (M)	SLOP m	LONGITUDE I	DEPTH D (M)	VELOCITY V (M/S)
MAIN CANAL								
SECTOR I								
STA.0+000 - STA.3+800	MB	1.103	2.00	1.00	1.5	1/1600	0.65	0.58
STA.3+800 - STA.4+200	MB	1.086	2.00	1.00	1.5	1/1350	0.61	0.61
STA.4+200 - STA.4+400	MC	0.609	1.20	0.90	1.5	1/1350	0.56	0.55
STA.4+400 - STA.5+900	MC	0.534	1.20	0.90	1.5	1/1600	0.54	0.49
STA.5+900 - STA.6+110	MC	0.318	1.20	0.90	1.5	1/1600	0.42	0.43
SECTOR II								
STA.0+000 - STA.1+880	MA	1.846	2.00	1.20	1.5	1/1600	0.85	0.67
STA.1+880 - STA.2+720	MA	1.608	2.00	1.20	1.5	1/1600	0.79	0.65
STA.2+720 - STA.3+920	MA	1.550	2.00	1.20	1.5	1/1600	0.78	0.64
STA.3+920 - STA.4+420	MB	1.507	2.00	1.00	1.5	1/1100	0.69	0.73
STA.4+420 - STA.5+850	MB	1.012	2.00	1.00	1.5	1/1100	0.56	0.65
STA.5+850 - STA.6+330	MB	0.832	2.00	1.00	1.5	1/1100	0.50	0.61
LATERAL CANAL								
SECTOR I								
CL-1	LE	0.017	0.50	0.60	1.0	--	--	--
CL-2	LD	0.467	0.80	0.80	1.0	1/400	0.45	0.84
CL-3	LE	0.025	0.50	0.60	1.0	1/400	0.12	0.40
CL-4	LE	0.178	0.50	0.60	1.0	1/250	0.29	0.79
CL-5	LD	0.230	0.80	0.80	1.0	1/300	0.28	0.76
SECTOR II								
CL-1	LD	0.215	0.80	0.80	1.0	1/550	0.32	0.60
CL-2	LE	0.026	0.50	0.60	1.0	1/900	0.15	0.30
CL-3	LE	0.036	0.50	0.60	1.0	1/550	0.15	0.38
CL-4	LD	0.492	0.80	0.80	1.0	1/550	0.51	0.76
CL-4A	LD	0.336	0.80	0.80	1.0	--	--	--
CL-5	LE	0.127	0.50	0.60	1.0	1/700	0.32	0.49
CL-6	LC	0.718	1.00	0.90	1.0	--	--	--
CL-6A	LD	0.262	0.80	0.80	1.0	--	--	--



F.3 Study of Possible Irrigation Area

For the determination of the optimum scale of the irrigation area and water balance, the dam operation study for each height of reservoir water level; namely El.797, El.807, and 812, are carried out.

For calculation of the water balance, data of water inflow to the Dam (Q_{in1}), inflow at the upstream diversion weir (Q_{in2}), water demand for irrigation (Q_{out1}), and water supply for domestic use (Q_{out2}), , and looses (evaporation and leakage) (Q_{loss}), have been taken into account and calculated as follow.
Data for the period 1964-1988 (25 years) has been used.

Irrigable area for each Case is the area (ha) of maximum acreage which has shortage of water not more than 5 years during 25 years simulation.

$$R^{n}_{vol} = R^{n-1}_{vol} + Q^{n}_{in1} + Q^{n}_{in2} - (Q^{n}_{out1} + Q^{n}_{out2} + Q^{n}_{loss})$$

where

R^{n}_{vol} : Reservoir volume at the certain time of n

R^{n-1}_{vol} : Reservoir volume of 10 days before from the certain time of n

Water Balance Calculation Result are shown in Table F.3-1 to 3, and Table F.3-4 to 28 show the water balance calculation sheet in case of the full water level of the reservoir is set at the level of El.807.0 m.

Table F.3-1 Water Balance Culclation Result

(F.W.L = 797.0 m Irr. Area 1150 ha)

Month	10 days	Storage (Million m3)																								
		1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
	1	0.000	0.920	0.662	2.815	6.220	1.206	1.248	3.328	1.654	0.000	1.549	0.000	0.000	1.391	1.211	2.231	6.220	0.418	3.152	2.120	2.266	1.131	0.000	0.000	0.757
May	2	2.079	3.429	6.072	3.387	6.220	5.077	1.850	5.988	2.610	3.318	6.220	1.885	1.679	5.671	3.763	3.527	6.220	1.715	6.220	2.466	2.585	3.244	2.138	2.342	2.668
	3	4.212	5.991	6.220	4.013	6.220	6.220	2.506	6.220	3.619	6.220	6.220	3.824	3.411	6.220	6.220	4.876	6.220	3.066	6.220	2.866	4.958	5.410	4.330	4.738	4.633
	4	6.220	6.220	6.220	6.220	6.220	6.220	5.336	6.220	6.220	6.220	6.220	5.955	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
Jun	5	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
	6	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
	7	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
Jul	8	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
	9	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
	10	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
Aug	11	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
	12	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
	13	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
Sept	14	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
	15	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
	16	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
Oct	17	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
	18	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
	19	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
Nov	20	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
	21	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220	6.220
	22	6.220	6.220	6.171	6.025	6.220	5.913	6.208	6.136	5.943	6.021	6.004	5.957	6.053	6.142	6.220	6.148	6.220	6.220	5.998	6.140	5.939	6.002	5.924	6.054	6.009
Dec	23	6.220	6.220	6.116	5.824	6.220	5.601	6.190	6.047	5.661	5.817	5.782	5.689	5.880	6.058	6.220	6.071	6.220	6.220	5.770	6.054	5.654	5.778	5.623	5.884	5.794
	24	6.220	6.220	6.017	5.579	6.181	5.244	6.128	5.913	5.334	5.568	5.516	5.376	5.663	5.930	6.220	5.949	6.220	6.220	5.498	5.924	5.323	5.510	5.277	5.668	5.533
	25	5.533	5.553	5.389	4.970	5.494	4.759	5.475	5.226	4.657	4.881	4.860	4.917	5.006	5.243	5.650	5.264	6.685	5.343	4.975	5.298	4.763	4.831	4.792	4.981	4.858
Jan	26	4.851	4.890	4.765	4.366	4.812	4.279	4.826	4.544	3.984	4.199	4.209	4.462	4.353	4.561	5.084	4.584	5.154	4.870	4.456	4.676	4.207	4.156	4.312	4.239	4.187
	27	4.140	4.199	4.112	3.733	4.100	3.770	4.149	3.833	3.283	3.488	3.529	3.978	3.671	3.850	4.490	3.875	4.594	4.169	3.908	4.025	3.623	3.453	3.803	3.588	3.488
	28	3.500	3.739	3.969	3.289	3.519	3.273	3.498	3.571	2.656	2.835	2.945	3.333	3.036	3.225	3.878	3.300	3.963	4.386	3.454	3.586	3.099	2.799	3.176	2.934	2.867
Feb	29	2.939	3.359	3.906	2.925	3.016	2.856	2.926	3.389	2.109	2.262	2.440	2.768	2.481	2.679	3.346	2.805	3.412	4.682	3.079	3.227	2.655	2.224	2.628	2.359	2.325
	30	2.433	3.033	3.897	2.616	2.568	2.493	2.409	3.261	1.616	1.744	1.990	2.257	1.981	2.188	2.869	2.365	2.915	5.033	2.759	2.922	2.265	1.704	2.135	1.839	1.838
	31	2.171	2.480	4.084	2.598	2.075	2.153	1.855	2.744	1.074	1.190	1.543	1.703	1.427	1.634	2.662	2.247	2.371	4.985	2.285	2.388	1.799	1.236	1.585	1.316	1.463
Mar	32	1.889	1.906	4.251	2.560	1.562	1.793	1.282	2.207	0.512	0.617	1.077	1.130	0.854	1.061	2.434	2.109	1.807	4.917	1.791	1.834	1.313	0.748	1.015	0.774	1.068
	33	1.567	1.292	4.378	2.482	1.008	1.393	0.668	1.630	0.000	0.003	0.570	0.516	0.240	0.447	2.166	1.930	1.202	4.808	1.257	1.240	0.786	0.220	0.485	0.191	0.533
	34	1.396	1.126	3.901	4.453	1.118	1.389	1.599	1.682	0.000	0.563	0.074	0.018	0.668	0.746	2.232	3.690	0.985	4.300	1.589	1.626	0.945	0.018	0.000	0.424	1.092
Apr	35	1.179	0.916	3.380	6.220	1.183	1.340	2.485	1.690	0.000	1.077	0.000	0.000	1.051	1.000	2.253	5.405	0.723	3.748	1.876	1.968	1.060	0.000	0.000	0.612	1.505
	36	0.920	0.662	2.815	6.220	1.206	1.248	3.328	1.654	0.000	1.549	0.000	0.000	1.391	1.211	2.231	6.220	0.418	3.152	2.120	2.266	1.131	0.000	0.000	0.757	1.876

Table F.3-2 Water Balance Culclation Result

(F.W.L = 807.0 m Irr. Area 2140 ha)

Storage (Million m3)

Month	10 days	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
May	1	0.000	0.705	0.996	2.231	7.678	0.638	0.664	2.744	1.070	0.000	0.965	0.000	0.000	0.807	0.627	2.523	6.493	0.057	3.019	1.536	1.682	0.547	0.000	0.000	0.173
	2	1.826	2.961	6.406	2.551	10.457	4.409	1.013	5.151	1.773	3.093	5.981	1.633	1.426	5.079	2.927	3.566	8.269	1.101	6.280	1.630	2.749	2.407	1.885	2.089	1.831
	3	3.753	5.316	11.815	2.970	12.600	8.279	1.463	7.658	2.576	6.286	10.996	3.365	2.952	9.359	5.326	4.708	10.144	2.246	9.641	1.823	3.915	4.367	3.871	4.279	3.590
Jun	4	8.853	8.079	12.600	6.037	12.600	12.600	4.167	9.051	5.237	9.327	12.600	5.341	11.869	12.332	8.002	8.411	12.600	8.065	12.600	6.738	7.482	7.212	6.293	8.041	8.343
	5	12.600	10.831	12.600	9.092	12.600	12.600	6.860	10.434	7.888	12.356	12.600	7.305	12.600	12.600	10.666	12.114	12.600	12.600	12.600	11.653	11.048	10.047	8.704	11.803	12.600
	6	12.600	12.600	12.600	12.110	12.600	12.600	9.517	11.779	10.501	12.600	12.600	9.232	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	11.079	12.600	12.600	
Jul	7	12.600	12.600	12.600	12.493	12.600	12.600	12.600	12.349	10.791	12.600	12.600	10.473	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	11.394	12.600	12.600	
	8	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	10.986	12.600	12.600	11.618	12.600	12.576	12.600	12.600	12.600	12.600	12.600	12.600	12.600	11.614	12.600	12.600	
	9	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	11.155	12.600	12.600	12.600	12.600	12.526	12.600	12.600	12.600	12.600	12.600	12.600	12.600	11.808	12.600	12.600	
Aug	10	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	11.760	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.530	12.600	12.600	
	11	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.455	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	
	12	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600
Sept	13	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	
	14	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	
	15	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	
Oct	15	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	
	17	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	
	18	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	
Nov	19	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	
	20	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	
	21	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	12.600	
Dec	22	12.200	12.383	12.009	11.863	12.069	11.752	12.046	11.975	11.782	11.860	11.842	11.796	11.891	11.980	12.369	11.987	12.151	12.227	11.836	11.978	11.778	11.840	11.763	11.893	11.848
	23	11.791	12.157	11.410	11.118	11.530	10.894	11.484	11.340	10.954	11.110	11.076	10.982	11.174	11.352	12.129	11.364	11.694	11.846	11.064	11.348	10.947	11.072	10.916	11.177	11.087
	24	11.298	11.847	10.726	10.288	10.906	9.953	10.837	10.622	10.043	10.277	10.225	10.085	10.372	10.639	11.805	10.658	11.152	11.380	10.207	10.633	10.032	10.219	9.986	10.377	10.242
Jan	25	10.043	10.612	9.530	9.111	9.651	8.900	9.616	9.367	8.798	9.022	9.001	9.058	9.147	9.384	10.667	9.405	10.049	10.135	9.116	9.439	8.904	8.972	8.933	9.122	8.999
	26	8.797	9.385	8.341	7.943	8.405	7.856	8.403	8.121	7.561	7.776	7.786	8.038	7.929	8.138	9.537	8.161	8.953	8.898	8.032	8.252	7.784	7.733	7.889	7.876	7.764
	27	7.496	8.104	7.099	6.720	7.104	6.757	7.136	6.820	6.270	6.475	6.516	6.963	6.658	6.837	8.353	6.862	7.804	7.607	6.895	7.012	6.610	6.440	6.790	6.575	6.475
Feb	28	6.354	7.143	6.455	5.775	6.021	5.759	5.983	6.057	5.142	5.321	5.430	5.819	5.522	5.710	7.240	5.786	6.672	7.322	5.939	6.072	5.585	5.284	5.661	5.419	5.352
	29	5.361	6.329	5.958	4.978	5.085	4.908	4.979	5.441	4.161	4.315	4.493	4.820	4.534	4.732	6.275	4.858	5.687	7.186	5.132	5.279	4.707	4.277	4.681	4.412	4.378
	30	4.468	5.617	5.563	4.282	4.251	4.159	4.075	4.927	3.282	3.410	3.656	3.923	3.547	3.854	5.411	4.031	4.804	7.150	4.425	4.588	3.931	3.370	3.801	3.505	3.504
Mar	31	3.881	4.739	5.425	3.939	3.433	3.494	3.197	4.085	2.415	2.532	2.885	3.045	2.769	2.976	4.879	3.588	3.935	6.777	3.626	3.729	3.140	2.577	2.926	2.658	2.804
	32	3.257	3.822	5.250	3.559	2.576	2.792	2.280	3.206	1.510	1.615	2.075	2.128	1.852	2.059	4.308	3.107	3.028	6.366	2.790	2.833	2.311	1.747	2.014	1.772	2.067
	33	2.557	2.831	4.999	3.103	1.645	2.014	1.289	2.251	0.530	0.624	1.191	1.137	0.861	1.068	3.663	2.551	2.046	5.880	1.878	1.861	1.407	0.841	1.026	0.812	1.254
Apr	34	2.022	2.302	4.159	4.710	1.392	1.646	1.856	1.940	0.000	0.820	0.331	0.275	0.925	1.003	3.365	3.947	1.465	5.009	1.845	1.884	1.203	0.275	0.069	0.681	1.349
	35	1.403	1.688	3.234	6.234	1.054	1.195	2.340	1.544	0.000	0.932	0.000	0.000	0.906	0.855	2.984	5.260	0.801	4.053	1.731	1.822	0.914	0.000	0.000	0.467	1.360
	36	0.705	0.996	2.231	7.678	0.638	0.664	2.744	1.070	0.000	0.965	0.000	0.000	0.807	0.627	2.523	6.493	0.057	3.019	1.536	1.682	0.547	0.000	0.000	0.173	1.292

Table F.3-3 Water Balance Culclation Result

(F.W.L = 812.0 m Irr. Area 2700 ha)

Month	10 days	Storage (Million m3) 1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
	1	0.000	0.936	1.227	2.462	7.909	0.869	0.895	2.975	1.301	0.000	1.196	0.000	0.000	1.038	0.858	2.754	6.724	0.288	3.181	1.767	1.913	0.608	0.000	0.000	0.404
May	2	1.683	3.048	6.636	2.638	10.545	4.496	1.101	5.239	1.861	2.950	6.211	1.490	1.283	5.166	3.014	3.653	8.356	1.189	6.299	1.717	2.836	2.325	1.742	1.946	1.919
	3	3.493	5.287	12.046	2.941	13.307	8.250	1.434	7.629	2.547	6.026	11.227	3.106	2.692	9.421	5.297	4.679	10.115	2.217	9.544	1.784	3.886	4.169	3.611	4.019	3.561
	4	8.594	7.962	15.482	5.920	16.770	16.770	4.050	8.934	5.120	8.979	14.116	4.993	11.609	12.307	7.885	8.365	14.947	8.036	12.820	6.709	7.405	6.926	5.945	7.777	8.314
Jun	5	13.694	10.623	16.770	8.884	16.770	16.770	6.652	10.225	7.679	11.917	16.770	6.866	16.770	15.178	10.458	12.037	16.770	13.855	16.082	11.624	10.909	9.669	8.265	11.521	13.067
	6	16.770	13.237	16.770	11.801	16.770	16.770	9.208	11.470	10.192	14.809	16.770	8.693	16.770	16.770	12.984	15.662	16.770	16.770	16.770	16.538	14.367	12.366	10.539	15.219	16.770
	7	16.770	13.328	16.770	11.971	16.770	16.770	12.282	11.827	10.269	15.581	16.770	9.720	16.770	16.627	13.881	16.770	16.770	16.770	16.770	16.770	16.770	13.703	10.641	16.770	16.770
Jul	8	16.770	13.298	16.770	12.020	16.770	16.770	15.235	12.063	10.225	16.233	16.770	10.626	16.770	16.365	14.657	16.770	16.770	16.770	16.770	16.770	16.770	14.921	10.622	16.770	16.770
	9	16.770	13.236	16.770	12.036	16.770	16.770	16.770	12.267	10.149	16.770	16.770	11.501	16.770	16.070	15.400	16.770	16.770	16.770	16.770	16.770	16.770	16.107	10.571	16.770	16.770
	10	16.770	13.603	16.770	12.175	16.770	16.770	16.770	16.548	10.546	16.770	16.770	11.802	16.770	16.692	15.994	16.770	16.770	16.770	16.770	16.770	16.770	16.770	11.086	16.770	16.770
Aug	11	16.770	14.081	16.770	12.426	16.770	16.770	16.770	16.770	11.056	16.770	16.770	12.216	16.770	16.770	16.760	16.770	16.770	16.770	16.770	16.770	16.770	16.770	11.713	16.770	16.770
	12	16.770	14.664	16.770	12.782	16.770	16.770	16.770	16.770	11.670	16.770	16.770	12.734	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	12.444	16.770	16.770
	13	16.770	15.770	16.770	15.182	16.770	16.770	16.770	16.770	13.120	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	15.296	16.770	16.770
Sept	14	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	14.776	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770
	15	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.575	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770
	16	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770
Oct	17	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770
	18	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770
	19	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770
Nov	20	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.748	16.770	16.770	16.770	16.770
	21	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.671	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.770	16.702	16.770	16.770	16.601	16.770	16.770	16.770	16.770
	22	16.064	16.247	15.873	15.727	15.933	15.615	15.910	15.838	15.546	15.723	15.706	15.659	15.755	15.844	15.233	15.850	16.015	16.023	15.700	15.842	15.472	15.704	15.626	15.757	15.712
Dec	23	15.346	15.712	14.965	14.673	15.085	14.450	15.039	14.896	14.410	14.666	14.631	14.538	14.729	14.907	15.584	14.920	15.249	15.333	14.619	14.903	14.333	14.627	14.472	14.732	14.642
	24	14.523	15.072	13.951	13.513	14.131	13.178	14.062	13.847	13.168	13.502	13.450	13.310	13.597	13.864	15.030	13.883	14.377	14.536	13.432	13.858	13.087	13.444	13.211	13.602	13.467
	25	12.947	13.515	12.433	12.015	12.555	11.804	12.519	12.271	11.602	11.926	11.905	11.961	12.050	12.288	13.570	12.309	12.952	12.970	12.019	12.342	11.638	11.875	11.837	12.026	11.902
Jan	26	11.381	11.969	10.926	10.527	10.989	10.440	10.987	10.705	10.046	10.360	10.370	10.623	10.514	10.722	12.121	10.745	11.538	11.414	10.617	10.837	10.199	10.317	10.473	10.460	10.348
	27	9.747	10.355	9.350	8.971	9.355	9.008	9.387	9.071	8.421	8.726	8.767	9.216	8.909	9.088	10.604	9.113	10.055	9.789	9.146	9.263	8.691	8.691	9.041	8.826	8.726
	28	8.321	9.110	8.422	7.742	7.988	7.726	7.950	8.024	7.009	7.288	7.397	7.786	7.489	7.677	9.207	7.753	8.639	9.221	7.906	8.039	7.382	7.251	7.628	7.386	7.319
Feb	29	7.083	8.052	7.661	6.700	6.808	6.631	6.701	7.164	5.784	6.037	6.215	6.543	6.256	6.454	7.997	6.580	7.410	8.839	6.854	7.002	6.260	5.999	6.403	6.134	6.100
	30	5.972	7.121	7.067	5.786	5.755	5.663	5.579	6.431	4.686	4.914	5.160	5.427	5.151	5.358	6.915	5.535	6.308	8.585	5.929	6.092	5.265	4.874	5.305	5.009	5.008
	31	5.201	6.058	6.745	5.259	4.752	4.814	4.516	5.405	3.635	3.851	4.204	4.364	4.088	4.295	6.198	4.908	5.255	8.028	4.946	5.049	4.290	3.897	4.246	3.977	4.124
Mar	32	4.383	4.948	6.376	4.685	3.702	3.918	3.406	4.332	2.536	2.741	3.201	3.254	2.978	3.185	5.434	4.233	4.154	7.423	3.916	3.959	3.267	2.873	3.140	2.898	3.193
	33	3.469	3.743	5.911	4.015	2.557	2.926	2.201	3.163	1.343	1.536	2.103	2.049	1.773	1.980	4.575	3.463	2.958	6.724	2.790	2.773	2.150	1.753	1.938	1.724	2.166
	34	2.729	3.008	4.865	5.417	2.098	2.353	2.563	2.646	0.490	1.527	1.038	0.982	1.632	1.710	4.072	4.654	2.172	5.647	2.553	2.590	1.740	0.982	0.776	1.388	2.056
Apr	35	1.882	2.167	3.713	6.713	1.533	1.674	2.819	2.023	0.000	1.411	0.000	0.000	1.385	1.334	3.463	5.739	1.280	4.464	2.210	2.301	1.224	0.105	0.000	0.946	1.839
	36	0.936	1.227	2.462	7.909	0.869	0.895	2.975	1.301	0.000	1.196	0.000	0.000	1.038	0.858	2.754	6.724	0.288	3.181	1.767	1.913	0.608	0.000	0.000	0.404	1.523

Table F.3-4 Water Balance Sheet in 1964

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Demand: Sideflow Supply	Demand: Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	2.314	0.193	0.232	0.432	0.521	0.336	1.977	0.000	0.030	0.000	0.000	0.000
May	2	2.314	0.204	0.342	0.432	0.521	0.457	1.856	0.000	0.030	1.826	0.000	0.000
	3	2.314	0.167	0.279	0.432	0.521	0.357	1.956	0.000	0.030	3.753	0.000	0.000
	4	5.131	0.126	0.211	0.432	1.154	0.000	5.131	0.000	0.030	8.853	0.000	0.000
Jun	5	5.131	0.130	0.218	0.432	1.154	0.000	5.131	0.000	0.030	12.600	1.354	0.000
	6	5.131	0.144	0.241	0.432	1.154	0.000	5.131	0.000	0.030	12.600	5.101	0.000
	7	2.995	0.305	0.511	0.432	0.674	0.574	2.421	0.000	0.030	12.600	2.391	0.000
Jul	8	2.995	0.341	0.570	0.432	0.674	0.669	2.326	0.000	0.030	12.600	2.296	0.000
	9	2.995	0.350	0.587	0.432	0.674	0.695	2.300	0.000	0.030	12.600	2.270	0.000
	10	2.401	0.297	0.498	0.432	0.540	0.687	1.714	0.000	0.030	12.600	1.684	0.000
Aug	11	2.401	0.264	0.442	0.432	0.540	0.598	1.803	0.000	0.030	12.600	1.773	0.000
	12	2.401	0.233	0.390	0.432	0.540	0.515	1.886	0.000	0.030	12.600	1.856	0.000
	13	6.057	0.182	0.304	0.432	1.363	0.000	6.057	0.000	0.030	12.600	6.027	0.000
Sept	14	6.057	0.120	0.202	0.432	1.363	0.000	6.057	0.000	0.030	12.600	6.027	0.000
	15	6.057	0.078	0.131	0.432	1.363	0.000	6.057	0.000	0.030	12.600	6.027	0.000
	16	2.284	0.104	0.174	0.432	0.514	0.196	2.088	0.000	0.030	12.600	2.058	0.000
Oct	17	2.284	0.101	0.169	0.432	0.514	0.188	2.096	0.000	0.030	12.600	2.066	0.000
	18	2.284	0.096	0.162	0.432	0.514	0.176	2.108	0.000	0.030	12.600	2.078	0.000
	19	1.646	0.169	0.284	0.432	0.370	0.515	1.132	0.000	0.030	12.600	1.102	0.000
Nov	20	1.646	0.310	0.519	0.432	0.370	0.891	0.756	0.000	0.030	12.600	0.726	0.000
	21	1.646	0.347	0.582	0.432	0.370	0.991	0.656	0.000	0.030	12.600	0.626	0.000
	22	1.006	0.437	0.733	0.432	0.226	1.376	0.000	0.370	0.030	12.200	0.000	0.000
Dec	23	1.006	0.441	0.738	0.432	0.226	1.385	0.000	0.379	0.030	11.791	0.000	0.000
	24	1.006	0.472	0.791	0.432	0.226	1.469	0.000	0.463	0.030	11.298	0.000	0.000
	25	0.355	0.459	0.769	0.432	0.080	1.580	0.000	1.225	0.030	10.043	0.000	0.000
Jan	26	0.355	0.456	0.764	0.432	0.080	1.572	0.000	1.217	0.030	8.797	0.000	0.000
	27	0.355	0.476	0.798	0.432	0.080	1.626	0.000	1.271	0.030	7.496	0.000	0.000
	28	0.330	0.405	0.679	0.432	0.074	1.442	0.000	1.112	0.030	6.354	0.000	0.000
Feb	29	0.330	0.350	0.586	0.432	0.074	1.294	0.000	0.964	0.030	5.361	0.000	0.000
	30	0.330	0.312	0.523	0.432	0.074	1.193	0.000	0.863	0.030	4.468	0.000	0.000
	31	0.472	0.263	0.440	0.432	0.106	1.029	0.000	0.557	0.030	3.881	0.000	0.000
Mar	32	0.472	0.277	0.464	0.432	0.106	1.067	0.000	0.595	0.030	3.257	0.000	0.000
	33	0.472	0.305	0.511	0.432	0.106	1.142	0.000	0.670	0.030	2.557	0.000	0.000
	34	0.582	0.294	0.492	0.432	0.131	1.087	0.000	0.505	0.030	2.022	0.000	0.000
Apr	35	0.582	0.325	0.545	0.432	0.131	1.171	0.000	0.589	0.030	1.403	0.000	0.000
	36	0.582	0.355	0.594	0.432	0.131	1.250	0.000	0.668	0.030	0.705	0.000	0.000
		76.717				17.263							

Table F.3-5 Water Balance Sheet in 1965

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	2.664	0.193	0.232	0.432	0.599	0.258	2.407	0.000	0.030	0.705	0.000	0.000
May	2	2.664	0.204	0.342	0.432	0.599	0.379	2.286	0.000	0.030	2.961	0.000	0.000
	3	2.664	0.167	0.279	0.432	0.599	0.279	2.386	0.000	0.030	5.316	0.000	0.000
	4	2.908	0.126	0.211	0.432	0.654	0.115	2.793	0.000	0.030	8.079	0.000	0.000
Jun	5	2.908	0.130	0.218	0.432	0.654	0.126	2.782	0.000	0.030	10.831	0.000	0.000
	6	2.908	0.144	0.241	0.432	0.654	0.163	2.745	0.000	0.030	12.600	0.946	0.000
	7	1.291	0.305	0.511	0.432	0.291	0.957	0.334	0.000	0.030	12.600	0.304	0.000
Jul	8	1.291	0.341	0.570	0.432	0.291	1.052	0.239	0.000	0.030	12.600	0.209	0.000
	9	1.291	0.350	0.587	0.432	0.291	1.078	0.213	0.000	0.030	12.600	0.183	0.000
	10	1.495	0.297	0.498	0.432	0.336	0.891	0.604	0.000	0.030	12.600	0.574	0.000
Aug	11	1.495	0.264	0.442	0.432	0.336	0.802	0.693	0.000	0.030	12.600	0.663	0.000
	12	1.495	0.233	0.390	0.432	0.336	0.719	0.776	0.000	0.030	12.600	0.746	0.000
	13	6.041	0.182	0.304	0.432	1.359	0.000	6.041	0.000	0.030	12.600	6.011	0.000
Sept	14	6.041	0.120	0.202	0.432	1.359	0.000	6.041	0.000	0.030	12.600	6.011	0.000
	15	6.041	0.078	0.131	0.432	1.359	0.000	6.041	0.000	0.030	12.600	6.011	0.000
	16	4.903	0.104	0.174	0.432	1.103	0.000	4.903	0.000	0.030	12.600	4.873	0.000
Oct	17	4.903	0.101	0.169	0.432	1.103	0.000	4.903	0.000	0.030	12.600	4.873	0.000
	18	4.903	0.096	0.162	0.432	1.103	0.000	4.903	0.000	0.030	12.600	4.873	0.000
	19	1.575	0.169	0.284	0.432	0.354	0.531	1.044	0.000	0.030	12.600	1.014	0.000
Nov	20	1.575	0.310	0.519	0.432	0.354	0.907	0.668	0.000	0.030	12.600	0.638	0.000
	21	1.575	0.347	0.582	0.432	0.354	1.007	0.568	0.000	0.030	12.600	0.538	0.000
	22	1.155	0.437	0.733	0.432	0.260	1.342	0.000	0.187	0.030	12.383	0.000	0.000
Dec	23	1.155	0.441	0.738	0.432	0.260	1.351	0.000	0.196	0.030	12.157	0.000	0.000
	24	1.155	0.472	0.791	0.432	0.260	1.435	0.000	0.280	0.030	11.847	0.000	0.000
	25	0.371	0.459	0.769	0.432	0.084	1.576	0.000	1.205	0.030	10.612	0.000	0.000
Jan	26	0.371	0.456	0.764	0.432	0.084	1.568	0.000	1.197	0.030	9.385	0.000	0.000
	27	0.371	0.476	0.798	0.432	0.084	1.622	0.000	1.251	0.030	8.104	0.000	0.000
	28	0.477	0.405	0.679	0.432	0.107	1.409	0.000	0.931	0.030	7.143	0.000	0.000
Feb	29	0.477	0.350	0.586	0.432	0.107	1.261	0.000	0.783	0.030	6.329	0.000	0.000
	30	0.477	0.312	0.523	0.432	0.107	1.160	0.000	0.682	0.030	5.617	0.000	0.000
	31	0.234	0.263	0.440	0.432	0.053	1.082	0.000	0.848	0.030	4.739	0.000	0.000
Mar	32	0.234	0.277	0.464	0.432	0.053	1.120	0.000	0.886	0.030	3.822	0.000	0.000
	33	0.234	0.305	0.511	0.432	0.053	1.195	0.000	0.961	0.030	2.831	0.000	0.000
	34	0.587	0.294	0.492	0.432	0.132	1.086	0.000	0.499	0.030	2.302	0.000	0.000
Apr	35	0.587	0.325	0.545	0.432	0.132	1.170	0.000	0.583	0.030	1.688	0.000	0.000
	36	0.587	0.355	0.594	0.432	0.132	1.249	0.000	0.662	0.030	0.996	0.000	0.000
		71.103				15.998							

Table F.3-6 Water Balance Sheet in 1966

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	5.440	0.193	0.232	0.432	1.224	0.000	5.440	0.000	0.030	0.996	0.000	0.000
May	2	5.440	0.204	0.342	0.432	1.224	0.000	5.440	0.000	0.030	6.406	0.000	0.000
	3	5.440	0.167	0.279	0.432	1.224	0.000	5.440	0.000	0.030	11.815	0.000	0.000
	4	3.529	0.126	0.211	0.432	0.794	0.000	3.529	0.000	0.030	12.600	2.715	0.000
Jun	5	3.529	0.130	0.218	0.432	0.794	0.000	3.529	0.000	0.030	12.600	3.499	0.000
	6	3.529	0.144	0.241	0.432	0.794	0.023	3.506	0.000	0.030	12.600	3.476	0.000
	7	2.976	0.305	0.511	0.432	0.670	0.578	2.398	0.000	0.030	12.600	2.368	0.000
Jul	8	2.976	0.341	0.570	0.432	0.670	0.673	2.303	0.000	0.030	12.600	2.273	0.000
	9	2.976	0.350	0.587	0.432	0.670	0.699	2.277	0.000	0.030	12.600	2.247	0.000
	10	1.605	0.297	0.498	0.432	0.361	0.866	0.739	0.000	0.030	12.600	0.709	0.000
Aug	11	1.605	0.264	0.442	0.432	0.361	0.777	0.828	0.000	0.030	12.600	0.798	0.000
	12	1.605	0.233	0.390	0.432	0.361	0.694	0.911	0.000	0.030	12.600	0.881	0.000
	13	3.916	0.182	0.304	0.432	0.881	0.037	3.879	0.000	0.030	12.600	3.849	0.000
Sept	14	3.916	0.120	0.202	0.432	0.881	0.000	3.916	0.000	0.030	12.600	3.886	0.000
	15	3.916	0.078	0.131	0.432	0.881	0.000	3.916	0.000	0.030	12.600	3.886	0.000
	16	3.024	0.104	0.174	0.432	0.680	0.030	2.994	0.000	0.030	12.600	2.964	0.000
Oct	17	3.024	0.101	0.169	0.432	0.680	0.022	3.002	0.000	0.030	12.600	2.972	0.000
	18	3.024	0.096	0.162	0.432	0.680	0.010	3.014	0.000	0.030	12.600	2.984	0.000
	19	1.373	0.169	0.284	0.432	0.309	0.576	0.797	0.000	0.030	12.600	0.767	0.000
Nov	20	1.373	0.310	0.519	0.432	0.309	0.952	0.421	0.000	0.030	12.600	0.391	0.000
	21	1.373	0.347	0.582	0.432	0.309	1.052	0.321	0.000	0.030	12.600	0.291	0.000
	22	0.850	0.437	0.733	0.432	0.191	1.411	0.000	0.561	0.030	12.009	0.000	0.000
Dec	23	0.850	0.441	0.738	0.432	0.191	1.420	0.000	0.570	0.030	11.410	0.000	0.000
	24	0.850	0.472	0.791	0.432	0.191	1.504	0.000	0.654	0.030	10.726	0.000	0.000
	25	0.403	0.459	0.769	0.432	0.091	1.569	0.000	1.166	0.030	9.530	0.000	0.000
Jan	26	0.403	0.456	0.764	0.432	0.091	1.561	0.000	1.158	0.030	8.341	0.000	0.000
	27	0.403	0.476	0.798	0.432	0.091	1.615	0.000	1.212	0.030	7.099	0.000	0.000
	28	0.736	0.405	0.679	0.432	0.166	1.350	0.000	0.614	0.030	6.455	0.000	0.000
Feb	29	0.736	0.350	0.586	0.432	0.166	1.202	0.000	0.466	0.030	5.958	0.000	0.000
	30	0.736	0.312	0.523	0.432	0.166	1.101	0.000	0.365	0.030	5.563	0.000	0.000
	31	0.839	0.263	0.440	0.432	0.189	0.946	0.000	0.108	0.030	5.425	0.000	0.000
Mar	32	0.839	0.277	0.464	0.432	0.189	0.984	0.000	0.146	0.030	5.250	0.000	0.000
	33	0.839	0.305	0.511	0.432	0.189	1.059	0.000	0.221	0.030	4.999	0.000	0.000
	34	0.333	0.294	0.492	0.432	0.075	1.143	0.000	0.810	0.030	4.159	0.000	0.000
Apr	35	0.333	0.325	0.545	0.432	0.075	1.227	0.000	0.894	0.030	3.234	0.000	0.000
	36	0.333	0.355	0.594	0.432	0.075	1.306	0.000	0.973	0.030	2.231	0.000	0.000
		75.072				16.891							

Table F.3-7 Water Balance Sheet in 1967

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	1.084	0.193	0.232	0.432	0.244	0.613	0.471	0.000	0.030	2.231	0.000	0.000
May	2	1.084	0.204	0.342	0.432	0.244	0.734	0.350	0.000	0.030	2.551	0.000	0.000
	3	1.084	0.167	0.279	0.432	0.244	0.634	0.450	0.000	0.030	2.970	0.000	0.000
	4	3.155	0.126	0.211	0.432	0.710	0.059	3.096	0.000	0.030	6.037	0.000	0.000
Jun	5	3.155	0.130	0.218	0.432	0.710	0.070	3.085	0.000	0.030	9.092	0.000	0.000
	6	3.155	0.144	0.241	0.432	0.710	0.107	3.048	0.000	0.030	12.110	0.000	0.000
	7	1.356	0.305	0.511	0.432	0.305	0.943	0.413	0.000	0.030	12.493	0.000	0.000
Jul	8	1.356	0.341	0.570	0.432	0.305	1.038	0.318	0.000	0.030	12.600	0.181	0.000
	9	1.356	0.350	0.587	0.432	0.305	1.064	0.292	0.000	0.030	12.600	0.262	0.000
	10	1.309	0.297	0.498	0.432	0.295	0.932	0.377	0.000	0.030	12.600	0.347	0.000
Aug	11	1.309	0.264	0.442	0.432	0.295	0.843	0.466	0.000	0.030	12.600	0.436	0.000
	12	1.309	0.233	0.390	0.432	0.295	0.760	0.549	0.000	0.030	12.600	0.519	0.000
	13	2.836	0.182	0.304	0.432	0.638	0.280	2.557	0.000	0.030	12.600	2.527	0.000
Sept	14	2.836	0.120	0.202	0.432	0.638	0.116	2.721	0.000	0.030	12.600	2.691	0.000
	15	2.836	0.078	0.131	0.432	0.638	0.003	2.834	0.000	0.030	12.600	2.804	0.000
	16	3.350	0.104	0.174	0.432	0.754	0.000	3.350	0.000	0.030	12.600	3.320	0.000
Oct	17	3.350	0.101	0.169	0.432	0.754	0.000	3.350	0.000	0.030	12.600	3.320	0.000
	18	3.350	0.096	0.162	0.432	0.754	0.000	3.350	0.000	0.030	12.600	3.320	0.000
	19	1.857	0.169	0.284	0.432	0.418	0.467	1.390	0.000	0.030	12.600	1.360	0.000
Nov	20	1.857	0.310	0.519	0.432	0.418	0.843	1.014	0.000	0.030	12.600	0.984	0.000
	21	1.857	0.347	0.582	0.432	0.418	0.943	0.914	0.000	0.030	12.600	0.884	0.000
	22	0.731	0.437	0.733	0.432	0.164	1.438	0.000	0.707	0.030	11.863	0.000	0.000
Dec	23	0.731	0.441	0.738	0.432	0.164	1.447	0.000	0.716	0.030	11.118	0.000	0.000
	24	0.731	0.472	0.791	0.432	0.164	1.531	0.000	0.800	0.030	10.288	0.000	0.000
	25	0.419	0.459	0.769	0.432	0.094	1.566	0.000	1.147	0.030	9.111	0.000	0.000
Jan	26	0.419	0.456	0.764	0.432	0.094	1.558	0.000	1.139	0.030	7.943	0.000	0.000
	27	0.419	0.476	0.798	0.432	0.094	1.612	0.000	1.193	0.030	6.720	0.000	0.000
	28	0.491	0.405	0.679	0.432	0.110	1.406	0.000	0.915	0.030	5.775	0.000	0.000
Feb	29	0.491	0.350	0.586	0.432	0.110	1.258	0.000	0.767	0.030	4.978	0.000	0.000
	30	0.491	0.312	0.523	0.432	0.110	1.157	0.000	0.666	0.030	4.282	0.000	0.000
	31	0.671	0.263	0.440	0.432	0.151	0.984	0.000	0.313	0.030	3.939	0.000	0.000
Mar	32	0.671	0.277	0.464	0.432	0.151	1.022	0.000	0.351	0.030	3.559	0.000	0.000
	33	0.671	0.305	0.511	0.432	0.151	1.097	0.000	0.426	0.030	3.103	0.000	0.000
	34	2.331	0.294	0.492	0.432	0.524	0.694	1.637	0.000	0.030	4.710	0.000	0.000
Apr	35	2.331	0.325	0.545	0.432	0.524	0.778	1.553	0.000	0.030	6.234	0.000	0.000
	36	2.331	0.355	0.594	0.432	0.524	0.857	1.474	0.000	0.030	7.678	0.000	0.000
		58.772				13.223							

Table F.3-8 Water Balance Sheet in 1968

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	3.091	0.193	0.232	0.432	0.696	0.161	2.930	0.000	0.030	7.678	0.000	0.000
May	2	3.091	0.204	0.342	0.432	0.696	0.282	2.809	0.000	0.030	10.457	0.000	0.000
	3	3.091	0.167	0.279	0.432	0.696	0.182	2.909	0.000	0.030	12.600	0.736	0.000
	4	5.113	0.126	0.211	0.432	1.150	0.000	5.113	0.000	0.030	12.600	5.083	0.000
Jun	5	5.113	0.130	0.218	0.432	1.150	0.000	5.113	0.000	0.030	12.600	5.083	0.000
	6	5.113	0.144	0.241	0.432	1.150	0.000	5.113	0.000	0.030	12.600	5.083	0.000
	7	1.430	0.305	0.511	0.432	0.322	0.926	0.504	0.000	0.030	12.600	0.474	0.000
Jul	8	1.430	0.341	0.570	0.432	0.322	1.021	0.409	0.000	0.030	12.600	0.379	0.000
	9	1.430	0.350	0.587	0.432	0.322	1.047	0.383	0.000	0.030	12.600	0.353	0.000
	10	2.451	0.297	0.498	0.432	0.551	0.676	1.775	0.000	0.030	12.600	1.745	0.000
Aug	11	2.451	0.264	0.442	0.432	0.551	0.587	1.864	0.000	0.030	12.600	1.834	0.000
	12	2.451	0.233	0.390	0.432	0.551	0.504	1.947	0.000	0.030	12.600	1.917	0.000
	13	3.479	0.182	0.304	0.432	0.783	0.135	3.344	0.000	0.030	12.600	3.314	0.000
Sept	14	3.479	0.120	0.202	0.432	0.783	0.000	3.479	0.000	0.030	12.600	3.449	0.000
	15	3.479	0.078	0.131	0.432	0.783	0.000	3.479	0.000	0.030	12.600	3.449	0.000
	16	4.336	0.104	0.174	0.432	0.976	0.000	4.336	0.000	0.030	12.600	4.306	0.000
Oct	17	4.336	0.101	0.169	0.432	0.976	0.000	4.336	0.000	0.030	12.600	4.306	0.000
	18	4.336	0.096	0.162	0.432	0.976	0.000	4.336	0.000	0.030	12.600	4.306	0.000
	19	1.973	0.169	0.284	0.432	0.444	0.441	1.532	0.000	0.030	12.600	1.502	0.000
Nov	20	1.973	0.310	0.519	0.432	0.444	0.817	1.156	0.000	0.030	12.600	1.126	0.000
	21	1.973	0.347	0.582	0.432	0.444	0.917	1.056	0.000	0.030	12.600	1.026	0.000
	22	0.899	0.437	0.733	0.432	0.202	1.400	0.000	0.501	0.030	12.069	0.000	0.000
Dec	23	0.899	0.441	0.738	0.432	0.202	1.409	0.000	0.510	0.030	11.530	0.000	0.000
	24	0.899	0.472	0.791	0.432	0.202	1.493	0.000	0.594	0.030	10.906	0.000	0.000
	25	0.355	0.459	0.769	0.432	0.080	1.580	0.000	1.225	0.030	9.651	0.000	0.000
Jan	26	0.355	0.456	0.764	0.432	0.080	1.572	0.000	1.217	0.030	8.405	0.000	0.000
	27	0.355	0.476	0.798	0.432	0.080	1.626	0.000	1.271	0.030	7.104	0.000	0.000
	28	0.378	0.405	0.679	0.432	0.085	1.431	0.000	1.053	0.030	6.021	0.000	0.000
Feb	29	0.378	0.350	0.586	0.432	0.085	1.283	0.000	0.905	0.030	5.085	0.000	0.000
	30	0.378	0.312	0.523	0.432	0.085	1.182	0.000	0.804	0.030	4.251	0.000	0.000
	31	0.283	0.263	0.440	0.432	0.064	1.071	0.000	0.788	0.030	3.433	0.000	0.000
Mar	32	0.283	0.277	0.464	0.432	0.064	1.109	0.000	0.826	0.030	2.576	0.000	0.000
	33	0.283	0.305	0.511	0.432	0.064	1.184	0.000	0.901	0.030	1.645	0.000	0.000
	34	0.812	0.294	0.492	0.432	0.183	1.035	0.000	0.223	0.030	1.392	0.000	0.000
Apr	35	0.812	0.325	0.545	0.432	0.183	1.119	0.000	0.307	0.030	1.054	0.000	0.000
	36	0.812	0.355	0.594	0.432	0.183	1.198	0.000	0.386	0.030	0.638	0.000	0.000
		73.801				16.607							

Table F.3-9 Water Balance Sheet in 1969

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	3.901	0.193	0.232	0.432	0.878	0.000	3.901	0.000	0.030	0.638	0.000	0.000
May	2	3.901	0.204	0.342	0.432	0.878	0.100	3.801	0.000	0.030	4.409	0.000	0.000
	3	3.901	0.167	0.279	0.432	0.878	0.000	3.901	0.000	0.030	8.279	0.000	0.000
	4	9.984	0.126	0.211	0.432	1.571	0.000	9.984	0.000	0.030	12.600	5.633	0.000
Jun	5	9.984	0.130	0.218	0.432	1.571	0.000	9.984	0.000	0.030	12.600	9.954	0.000
	6	9.984	0.144	0.241	0.432	1.571	0.000	9.984	0.000	0.030	12.600	9.954	0.000
	7	2.301	0.305	0.511	0.432	0.518	0.730	1.571	0.000	0.030	12.600	1.541	0.000
Jul	8	2.301	0.341	0.570	0.432	0.518	0.825	1.476	0.000	0.030	12.600	1.446	0.000
	9	2.301	0.350	0.587	0.432	0.518	0.851	1.450	0.000	0.030	12.600	1.420	0.000
	10	5.567	0.297	0.498	0.432	1.252	0.000	5.567	0.000	0.030	12.600	5.537	0.000
Aug	11	5.567	0.264	0.442	0.432	1.252	0.000	5.567	0.000	0.030	12.600	5.537	0.000
	12	5.567	0.233	0.390	0.432	1.252	0.000	5.567	0.000	0.030	12.600	5.537	0.000
	13	5.660	0.182	0.304	0.432	1.273	0.000	5.660	0.000	0.030	12.600	5.630	0.000
Sept	14	5.660	0.120	0.202	0.432	1.273	0.000	5.660	0.000	0.030	12.600	5.630	0.000
	15	5.660	0.078	0.131	0.432	1.273	0.000	5.660	0.000	0.030	12.600	5.630	0.000
	16	3.345	0.104	0.174	0.432	0.753	0.000	3.345	0.000	0.030	12.600	3.315	0.000
Oct	17	3.345	0.101	0.169	0.432	0.753	0.000	3.345	0.000	0.030	12.600	3.315	0.000
	18	3.345	0.096	0.162	0.432	0.753	0.000	3.345	0.000	0.030	12.600	3.315	0.000
	19	1.624	0.169	0.284	0.432	0.365	0.520	1.104	0.000	0.030	12.600	1.074	0.000
Nov	20	1.624	0.310	0.519	0.432	0.365	0.896	0.728	0.000	0.030	12.600	0.698	0.000
	21	1.624	0.347	0.582	0.432	0.365	0.996	0.628	0.000	0.030	12.600	0.598	0.000
	22	0.640	0.437	0.733	0.432	0.144	1.458	0.000	0.818	0.030	11.752	0.000	0.000
Dec	23	0.640	0.441	0.738	0.432	0.144	1.467	0.000	0.827	0.030	10.894	0.000	0.000
	24	0.640	0.472	0.791	0.432	0.144	1.551	0.000	0.911	0.030	9.953	0.000	0.000
	25	0.520	0.459	0.769	0.432	0.117	1.543	0.000	1.023	0.030	8.900	0.000	0.000
Jan	26	0.520	0.456	0.764	0.432	0.117	1.535	0.000	1.015	0.030	7.856	0.000	0.000
	27	0.520	0.476	0.798	0.432	0.117	1.589	0.000	1.069	0.030	6.757	0.000	0.000
	28	0.447	0.405	0.679	0.432	0.101	1.415	0.000	0.968	0.030	5.759	0.000	0.000
Feb	29	0.447	0.350	0.586	0.432	0.101	1.267	0.000	0.820	0.030	4.908	0.000	0.000
	30	0.447	0.312	0.523	0.432	0.101	1.166	0.000	0.719	0.030	4.159	0.000	0.000
	31	0.408	0.263	0.440	0.432	0.092	1.043	0.000	0.635	0.030	3.494	0.000	0.000
Mar	32	0.408	0.277	0.464	0.432	0.092	1.081	0.000	0.673	0.030	2.792	0.000	0.000
	33	0.408	0.305	0.511	0.432	0.092	1.156	0.000	0.748	0.030	2.014	0.000	0.000
	34	0.719	0.294	0.492	0.432	0.162	1.056	0.000	0.338	0.030	1.646	0.000	0.000
Apr	35	0.719	0.325	0.545	0.432	0.162	1.140	0.000	0.422	0.030	1.195	0.000	0.000
	36	0.719	0.355	0.594	0.432	0.162	1.219	0.000	0.501	0.030	0.664	0.000	0.000
		105.345				21.677							

Table F.3-10 Water Balance Sheet in 1970

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Demand: Sideflow Supply	Demand: Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	1.108	0.193	0.232	0.432	0.249	0.608	0.500	0.000	0.030	0.664	0.000	0.000
May	2	1.108	0.204	0.342	0.432	0.249	0.729	0.379	0.000	0.030	1.013	0.000	0.000
	3	1.108	0.167	0.279	0.432	0.249	0.629	0.479	0.000	0.030	1.463	0.000	0.000
	4	2.860	0.126	0.211	0.432	0.643	0.126	2.734	0.000	0.030	4.167	0.000	0.000
Jun	5	2.860	0.130	0.218	0.432	0.643	0.137	2.723	0.000	0.030	6.860	0.000	0.000
	6	2.860	0.144	0.241	0.432	0.643	0.174	2.686	0.000	0.030	9.517	0.000	0.000
	7	3.727	0.305	0.511	0.432	0.839	0.409	3.317	0.000	0.030	12.600	0.204	0.000
Jul	8	3.727	0.341	0.570	0.432	0.839	0.504	3.222	0.000	0.030	12.600	3.192	0.000
	9	3.727	0.350	0.587	0.432	0.839	0.530	3.196	0.000	0.030	12.600	3.166	0.000
	10	3.764	0.297	0.498	0.432	0.847	0.380	3.384	0.000	0.030	12.600	3.354	0.000
Aug	11	3.764	0.264	0.442	0.432	0.847	0.291	3.473	0.000	0.030	12.600	3.443	0.000
	12	3.764	0.233	0.390	0.432	0.847	0.208	3.556	0.000	0.030	12.600	3.526	0.000
	13	4.821	0.182	0.304	0.432	1.085	0.000	4.821	0.000	0.030	12.600	4.791	0.000
Sept	14	4.821	0.120	0.202	0.432	1.085	0.000	4.821	0.000	0.030	12.600	4.791	0.000
	15	4.821	0.078	0.131	0.432	1.085	0.000	4.821	0.000	0.030	12.600	4.791	0.000
	16	4.464	0.104	0.174	0.432	1.004	0.000	4.464	0.000	0.030	12.600	4.434	0.000
Oct	17	4.464	0.101	0.169	0.432	1.004	0.000	4.464	0.000	0.030	12.600	4.434	0.000
	18	4.464	0.096	0.162	0.432	1.004	0.000	4.464	0.000	0.030	12.600	4.434	0.000
	19	1.401	0.169	0.284	0.432	0.315	0.570	0.831	0.000	0.030	12.600	0.801	0.000
Nov	20	1.401	0.310	0.519	0.432	0.315	0.946	0.455	0.000	0.030	12.600	0.425	0.000
	21	1.401	0.347	0.582	0.432	0.315	1.046	0.355	0.000	0.030	12.600	0.325	0.000
	22	0.880	0.437	0.733	0.432	0.198	1.404	0.000	0.524	0.030	12.046	0.000	0.000
Dec	23	0.880	0.441	0.738	0.432	0.198	1.413	0.000	0.533	0.030	11.484	0.000	0.000
	24	0.880	0.472	0.791	0.432	0.198	1.497	0.000	0.617	0.030	10.837	0.000	0.000
	25	0.383	0.459	0.769	0.432	0.086	1.574	0.000	1.191	0.030	9.616	0.000	0.000
Jan	26	0.383	0.456	0.764	0.432	0.086	1.566	0.000	1.183	0.030	8.403	0.000	0.000
	27	0.383	0.476	0.798	0.432	0.086	1.620	0.000	1.237	0.030	7.136	0.000	0.000
	28	0.321	0.405	0.679	0.432	0.072	1.444	0.000	1.123	0.030	5.983	0.000	0.000
Feb	29	0.321	0.350	0.586	0.432	0.072	1.296	0.000	0.975	0.030	4.979	0.000	0.000
	30	0.321	0.312	0.523	0.432	0.072	1.195	0.000	0.874	0.030	4.075	0.000	0.000
	31	0.234	0.263	0.440	0.432	0.053	1.082	0.000	0.848	0.030	3.197	0.000	0.000
Mar	32	0.234	0.277	0.464	0.432	0.053	1.120	0.000	0.886	0.030	2.280	0.000	0.000
	33	0.234	0.305	0.511	0.432	0.053	1.195	0.000	0.961	0.030	1.289	0.000	0.000
	34	1.482	0.294	0.492	0.432	0.333	0.885	0.597	0.000	0.030	1.856	0.000	0.000
Apr	35	1.482	0.325	0.545	0.432	0.333	0.969	0.513	0.000	0.030	2.340	0.000	0.000
	36	1.482	0.355	0.594	0.432	0.333	1.048	0.434	0.000	0.030	2.744	0.000	0.000
		76.335				17.175							

Table F.3-11 Water Balance Sheet in 1971

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Demand: Sideflow Supply	Demand: Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	2.788	0.193	0.232	0.432	0.627	0.230	2.558	0.000	0.030	2.744	0.000	0.000
May	2	2.788	0.204	0.342	0.432	0.627	0.351	2.437	0.000	0.030	5.151	0.000	0.000
	3	2.788	0.167	0.279	0.432	0.627	0.251	2.537	0.000	0.030	7.658	0.000	0.000
	4	1.790	0.126	0.211	0.432	0.403	0.366	1.423	0.000	0.030	9.051	0.000	0.000
Jun	5	1.790	0.130	0.218	0.432	0.403	0.377	1.412	0.000	0.030	10.434	0.000	0.000
	6	1.790	0.144	0.241	0.432	0.403	0.414	1.375	0.000	0.030	11.779	0.000	0.000
	7	1.509	0.305	0.511	0.432	0.339	0.909	0.600	0.000	0.030	12.349	0.000	0.000
Jul	8	1.509	0.341	0.570	0.432	0.339	1.004	0.505	0.000	0.030	12.600	0.224	0.000
	9	1.509	0.350	0.587	0.432	0.339	1.030	0.479	0.000	0.030	12.500	0.449	0.000
	10	4.691	0.297	0.498	0.432	1.055	0.172	4.519	0.000	0.030	12.600	4.489	0.000
Aug	11	4.691	0.264	0.442	0.432	1.055	0.083	4.608	0.000	0.030	12.600	4.578	0.000
	12	4.691	0.233	0.390	0.432	1.055	0.000	4.691	0.000	0.030	12.600	4.661	0.000
	13	2.972	0.182	0.304	0.432	0.669	0.249	2.723	0.000	0.030	12.600	2.693	0.000
Sept	14	2.972	0.120	0.202	0.432	0.669	0.085	2.887	0.000	0.030	12.600	2.857	0.000
	15	2.972	0.078	0.131	0.432	0.669	0.000	2.972	0.000	0.030	12.600	2.942	0.000
	16	4.160	0.104	0.174	0.432	0.936	0.000	4.160	0.000	0.030	12.600	4.130	0.000
Oct	17	4.160	0.101	0.169	0.432	0.936	0.000	4.160	0.000	0.030	12.600	4.130	0.000
	18	4.160	0.096	0.162	0.432	0.936	0.000	4.160	0.000	0.030	12.600	4.130	0.000
	19	2.892	0.169	0.284	0.432	0.651	0.234	2.658	0.000	0.030	12.600	2.628	0.000
Nov	20	2.892	0.310	0.519	0.432	0.651	0.610	2.282	0.000	0.030	12.600	2.252	0.000
	21	2.892	0.347	0.582	0.432	0.651	0.710	2.182	0.000	0.030	12.600	2.152	0.000
	22	0.822	0.437	0.733	0.432	0.185	1.417	0.000	0.595	0.030	11.975	0.000	0.000
Dec	23	0.822	0.441	0.738	0.432	0.185	1.426	0.000	0.604	0.030	11.340	0.000	0.000
	24	0.822	0.472	0.791	0.432	0.185	1.510	0.000	0.688	0.030	10.622	0.000	0.000
	25	0.355	0.459	0.769	0.432	0.080	1.580	0.000	1.225	0.030	9.367	0.000	0.000
Jan	26	0.355	0.456	0.764	0.432	0.080	1.572	0.000	1.217	0.030	8.121	0.000	0.000
	27	0.355	0.476	0.798	0.432	0.080	1.626	0.000	1.271	0.030	6.820	0.000	0.000
	28	0.639	0.405	0.679	0.432	0.144	1.372	0.000	0.733	0.030	6.057	0.000	0.000
Feb	29	0.639	0.350	0.586	0.432	0.144	1.224	0.000	0.585	0.030	5.441	0.000	0.000
	30	0.639	0.312	0.523	0.432	0.144	1.123	0.000	0.484	0.030	4.927	0.000	0.000
	31	0.264	0.263	0.440	0.432	0.059	1.076	0.000	0.812	0.030	4.085	0.000	0.000
Mar	32	0.264	0.277	0.464	0.432	0.059	1.114	0.000	0.850	0.030	3.206	0.000	0.000
	33	0.264	0.305	0.511	0.432	0.059	1.189	0.000	0.925	0.030	2.251	0.000	0.000
	34	0.765	0.294	0.492	0.432	0.172	1.046	0.000	0.281	0.030	1.940	0.000	0.000
Apr	35	0.765	0.325	0.545	0.432	0.172	1.130	0.000	0.365	0.030	1.544	0.000	0.000
	36	0.765	0.355	0.594	0.432	0.172	1.209	0.000	0.444	0.030	1.070	0.000	0.000
		70.940				15.960							

Table F.3-12 Water Balance Sheet in 1972

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	1.397	0.193	0.232	0.432	0.314	0.543	0.854	0.000	0.030	1.070	0.000	0.000
May	2	1.397	0.204	0.342	0.432	0.314	0.664	0.733	0.000	0.030	1.773	0.000	0.000
	3	1.397	0.167	0.279	0.432	0.314	0.564	0.833	0.000	0.030	2.576	0.000	0.000
	4	2.825	0.126	0.211	0.432	0.636	0.133	2.691	0.000	0.030	5.237	0.000	0.000
Jun	5	2.825	0.130	0.218	0.432	0.636	0.144	2.680	0.000	0.030	7.888	0.000	0.000
	6	2.825	0.144	0.241	0.432	0.636	0.181	2.643	0.000	0.030	10.501	0.000	0.000
	7	1.280	0.305	0.511	0.432	0.288	0.960	0.320	0.000	0.030	10.791	0.000	0.000
Jul	8	1.280	0.341	0.570	0.432	0.288	1.055	0.225	0.000	0.030	10.986	0.000	0.000
	9	1.280	0.350	0.587	0.432	0.288	1.081	0.199	0.000	0.030	11.155	0.000	0.000
	10	1.520	0.297	0.498	0.432	0.342	0.885	0.635	0.000	0.030	11.760	0.000	0.000
Aug	11	1.520	0.264	0.442	0.432	0.342	0.796	0.724	0.000	0.030	12.455	0.000	0.000
	12	1.520	0.233	0.390	0.432	0.342	0.713	0.807	0.000	0.030	12.600	0.632	0.000
	13	2.061	0.182	0.304	0.432	0.464	0.454	1.607	0.000	0.030	12.600	1.577	0.000
Sept	14	2.061	0.120	0.202	0.432	0.464	0.290	1.771	0.000	0.030	12.600	1.741	0.000
	15	2.061	0.078	0.131	0.432	0.464	0.177	1.884	0.000	0.030	12.600	1.854	0.000
	16	2.942	0.104	0.174	0.432	0.662	0.048	2.894	0.000	0.030	12.600	2.864	0.000
Oct	17	2.942	0.101	0.169	0.432	0.662	0.040	2.902	0.000	0.030	12.600	2.872	0.000
	18	2.942	0.096	0.162	0.432	0.662	0.028	2.914	0.000	0.030	12.600	2.884	0.000
	19	1.253	0.169	0.284	0.432	0.282	0.603	0.650	0.000	0.030	12.600	0.620	0.000
Nov	20	1.253	0.310	0.519	0.432	0.282	0.979	0.274	0.000	0.030	12.600	0.244	0.000
	21	1.253	0.347	0.582	0.432	0.282	1.079	0.174	0.000	0.030	12.600	0.144	0.000
	22	0.664	0.437	0.733	0.432	0.149	1.453	0.000	0.788	0.030	11.782	0.000	0.000
Dec	23	0.664	0.441	0.738	0.432	0.149	1.462	0.000	0.797	0.030	10.954	0.000	0.000
	24	0.664	0.472	0.791	0.432	0.149	1.546	0.000	0.881	0.030	10.043	0.000	0.000
	25	0.363	0.459	0.769	0.432	0.082	1.578	0.000	1.215	0.030	8.798	0.000	0.000
Jan	26	0.363	0.456	0.764	0.432	0.082	1.570	0.000	1.207	0.030	7.561	0.000	0.000
	27	0.363	0.476	0.798	0.432	0.082	1.624	0.000	1.261	0.030	6.270	0.000	0.000
	28	0.341	0.405	0.679	0.432	0.077	1.439	0.000	1.098	0.030	5.142	0.000	0.000
Feb	29	0.341	0.350	0.586	0.432	0.077	1.291	0.000	0.950	0.030	4.161	0.000	0.000
	30	0.341	0.312	0.523	0.432	0.077	1.190	0.000	0.849	0.030	3.282	0.000	0.000
	31	0.243	0.263	0.440	0.432	0.055	1.080	0.000	0.837	0.030	2.415	0.000	0.000
Mar	32	0.243	0.277	0.464	0.432	0.055	1.118	0.000	0.875	0.030	1.510	0.000	0.000
	33	0.243	0.305	0.511	0.432	0.055	1.193	0.000	0.950	0.030	0.530	0.000	0.000
	34	0.490	0.294	0.492	0.432	0.110	1.108	0.000	0.618	0.030	0.000	0.000	0.118
Apr	35	0.490	0.325	0.545	0.432	0.110	1.192	0.000	0.702	0.030	0.000	0.000	0.732
	36	0.490	0.355	0.594	0.432	0.110	1.271	0.000	0.781	0.030	0.000	0.000	0.811
		46.137				10.381							

Table F.3-13 Water Balance Sheet in 1973

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	3.348	0.193	0.232	0.432	0.753	0.104	3.244	0.000	0.030	0.000	0.000	0.000
May	2	3.348	0.204	0.342	0.432	0.753	0.225	3.123	0.000	0.030	3.093	0.000	0.000
	3	3.348	0.167	0.279	0.432	0.753	0.125	3.223	0.000	0.030	6.286	0.000	0.000
	4	3.134	0.126	0.211	0.432	0.705	0.064	3.071	0.000	0.030	9.327	0.000	0.000
Jun	5	3.134	0.130	0.218	0.432	0.705	0.075	3.060	0.000	0.030	12.356	0.000	0.000
	6	3.134	0.144	0.241	0.432	0.705	0.112	3.023	0.000	0.030	12.600	2.749	0.000
	7	1.848	0.305	0.511	0.432	0.416	0.832	1.015	0.000	0.030	12.600	0.985	0.000
Jul	8	1.848	0.341	0.570	0.432	0.416	0.927	0.920	0.000	0.030	12.600	0.890	0.000
	9	1.848	0.350	0.587	0.432	0.416	0.953	0.894	0.000	0.030	12.600	0.864	0.000
	10	2.773	0.297	0.498	0.432	0.624	0.603	2.170	0.000	0.030	12.600	2.140	0.000
Aug	11	2.773	0.264	0.442	0.432	0.624	0.514	2.259	0.000	0.030	12.600	2.229	0.000
	12	2.773	0.233	0.390	0.432	0.624	0.431	2.342	0.000	0.030	12.600	2.312	0.000
	13	3.025	0.182	0.304	0.432	0.681	0.237	2.788	0.000	0.030	12.600	2.758	0.000
Sept	14	3.025	0.120	0.202	0.432	0.681	0.073	2.952	0.000	0.030	12.600	2.922	0.000
	15	3.025	0.078	0.131	0.432	0.681	0.000	3.025	0.000	0.030	12.600	2.995	0.000
	16	4.430	0.104	0.174	0.432	0.997	0.000	4.430	0.000	0.030	12.600	4.400	0.000
Oct	17	4.430	0.101	0.169	0.432	0.997	0.000	4.430	0.000	0.030	12.600	4.400	0.000
	18	4.430	0.096	0.162	0.432	0.997	0.000	4.430	0.000	0.030	12.600	4.400	0.000
	19	1.532	0.169	0.284	0.432	0.345	0.540	0.992	0.000	0.030	12.600	0.962	0.000
Nov	20	1.532	0.310	0.519	0.432	0.345	0.916	0.616	0.000	0.030	12.600	0.586	0.000
	21	1.532	0.347	0.582	0.432	0.345	1.016	0.516	0.000	0.030	12.600	0.486	0.000
	22	0.728	0.437	0.733	0.432	0.164	1.438	0.000	0.710	0.030	11.860	0.000	0.000
Dec	23	0.728	0.441	0.738	0.432	0.164	1.447	0.000	0.719	0.030	11.110	0.000	0.000
	24	0.728	0.472	0.791	0.432	0.164	1.531	0.000	0.803	0.030	10.277	0.000	0.000
	25	0.355	0.459	0.769	0.432	0.080	1.580	0.000	1.225	0.030	9.022	0.000	0.000
Jan	26	0.355	0.456	0.764	0.432	0.080	1.572	0.000	1.217	0.030	7.776	0.000	0.000
	27	0.355	0.476	0.798	0.432	0.080	1.626	0.000	1.271	0.030	6.475	0.000	0.000
	28	0.320	0.405	0.679	0.432	0.072	1.444	0.000	1.124	0.030	5.321	0.000	0.000
Feb	29	0.320	0.350	0.586	0.432	0.072	1.296	0.000	0.976	0.030	4.315	0.000	0.000
	30	0.320	0.312	0.523	0.432	0.072	1.195	0.000	0.875	0.030	3.410	0.000	0.000
	31	0.234	0.263	0.440	0.432	0.053	1.082	0.000	0.848	0.030	2.532	0.000	0.000
Mar	32	0.234	0.277	0.464	0.432	0.053	1.120	0.000	0.886	0.030	1.615	0.000	0.000
	33	0.234	0.305	0.511	0.432	0.053	1.195	0.000	0.961	0.030	0.624	0.000	0.000
	34	1.179	0.294	0.492	0.432	0.265	0.953	0.226	0.000	0.030	0.820	0.000	0.000
Apr	35	1.179	0.325	0.545	0.432	0.265	1.037	0.142	0.000	0.030	0.932	0.000	0.000
	36	1.179	0.355	0.594	0.432	0.265	1.116	0.063	0.000	0.030	0.965	0.000	0.000
		68.715				15.462							

Table F.3-14 Water Balance Sheet in 1974

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	5.046	0.193	0.232	0.432	1.135	0.000	5.046	0.000	0.030	0.965	0.000	0.000
May	2	5.046	0.204	0.342	0.432	1.135	0.000	5.046	0.000	0.030	5.981	0.000	0.000
	3	5.046	0.167	0.279	0.432	1.135	0.000	5.046	0.000	0.030	10.996	0.000	0.000
	4	3.083	0.126	0.211	0.432	0.694	0.075	3.007	0.000	0.030	12.600	1.374	0.000
Jun	5	3.083	0.130	0.218	0.432	0.694	0.086	2.996	0.000	0.030	12.600	2.966	0.000
	6	3.083	0.144	0.241	0.432	0.694	0.123	2.959	0.000	0.030	12.600	2.929	0.000
	7	1.400	0.305	0.511	0.432	0.315	0.933	0.467	0.000	0.030	12.600	0.437	0.000
Jul	8	1.400	0.341	0.570	0.432	0.315	1.028	0.372	0.000	0.030	12.600	0.342	0.000
	9	1.400	0.350	0.587	0.432	0.315	1.054	0.346	0.000	0.030	12.600	0.316	0.000
	10	2.122	0.297	0.498	0.432	0.477	0.750	1.372	0.000	0.030	12.600	1.342	0.000
Aug	11	2.122	0.264	0.442	0.432	0.477	0.661	1.461	0.000	0.030	12.600	1.431	0.000
	12	2.122	0.233	0.390	0.432	0.477	0.578	1.544	0.000	0.030	12.600	1.514	0.000
	13	5.599	0.182	0.304	0.432	1.260	0.000	5.599	0.000	0.030	12.600	5.569	0.000
Sept	14	5.599	0.120	0.202	0.432	1.260	0.000	5.599	0.000	0.030	12.600	5.569	0.000
	15	5.599	0.078	0.131	0.432	1.260	0.000	5.599	0.000	0.030	12.600	5.569	0.000
	16	3.245	0.104	0.174	0.432	0.730	0.000	3.245	0.000	0.030	12.600	3.215	0.000
Oct	17	3.245	0.101	0.169	0.432	0.730	0.000	3.245	0.000	0.030	12.600	3.215	0.000
	18	3.245	0.096	0.162	0.432	0.730	0.000	3.245	0.000	0.030	12.600	3.215	0.000
	19	1.463	0.169	0.284	0.432	0.329	0.556	0.907	0.000	0.030	12.600	0.877	0.000
Nov	20	1.463	0.310	0.519	0.432	0.329	0.932	0.531	0.000	0.030	12.600	0.501	0.000
	21	1.463	0.347	0.582	0.432	0.329	1.032	0.431	0.000	0.030	12.600	0.401	0.000
	22	0.714	0.437	0.733	0.432	0.161	1.441	0.000	0.728	0.030	11.842	0.000	0.000
Dec	23	0.714	0.441	0.738	0.432	0.161	1.450	0.000	0.737	0.030	11.076	0.000	0.000
	24	0.714	0.472	0.791	0.432	0.161	1.534	0.000	0.821	0.030	10.225	0.000	0.000
	25	0.381	0.459	0.769	0.432	0.086	1.574	0.000	1.194	0.030	9.001	0.000	0.000
Jan	26	0.381	0.456	0.764	0.432	0.086	1.566	0.000	1.186	0.030	7.786	0.000	0.000
	27	0.381	0.476	0.798	0.432	0.086	1.620	0.000	1.240	0.030	6.516	0.000	0.000
	28	0.376	0.405	0.679	0.432	0.085	1.431	0.000	1.056	0.030	5.430	0.000	0.000
Feb	29	0.376	0.350	0.586	0.432	0.085	1.283	0.000	0.908	0.030	4.493	0.000	0.000
	30	0.376	0.312	0.523	0.432	0.085	1.182	0.000	0.807	0.030	3.656	0.000	0.000
	31	0.321	0.263	0.440	0.432	0.072	1.063	0.000	0.741	0.030	2.885	0.000	0.000
Mar	32	0.321	0.277	0.464	0.432	0.072	1.101	0.000	0.779	0.030	2.075	0.000	0.000
	33	0.321	0.305	0.511	0.432	0.072	1.176	0.000	0.854	0.030	1.191	0.000	0.000
	34	0.317	0.294	0.492	0.432	0.071	1.147	0.000	0.830	0.030	0.331	0.000	0.000
Apr	35	0.317	0.325	0.545	0.432	0.071	1.231	0.000	0.914	0.030	0.000	0.000	0.612
	36	0.317	0.355	0.594	0.432	0.071	1.310	0.000	0.993	0.030	0.000	0.000	1.023
		72.192				16.244							

Table F.3-15 Water Balance Sheet in 1975

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	2.156	0.193	0.232	0.432	0.485	0.372	1.784	0.000	0.030	0.000	0.000	0.000
May	2	2.156	0.204	0.342	0.432	0.485	0.493	1.663	0.000	0.030	1.633	0.000	0.000
	3	2.156	0.167	0.279	0.432	0.485	0.393	1.763	0.000	0.030	3.365	0.000	0.000
	4	2.265	0.126	0.211	0.432	0.510	0.259	2.005	0.000	0.030	5.341	0.000	0.000
Jun	5	2.265	0.130	0.218	0.432	0.510	0.270	1.994	0.000	0.030	7.305	0.000	0.000
	6	2.265	0.144	0.241	0.432	0.510	0.307	1.957	0.000	0.030	9.232	0.000	0.000
	7	2.056	0.305	0.511	0.432	0.463	0.785	1.270	0.000	0.030	10.473	0.000	0.000
Jul	8	2.056	0.341	0.570	0.432	0.463	0.880	1.175	0.000	0.030	11.618	0.000	0.000
	9	2.056	0.350	0.587	0.432	0.463	0.906	1.149	0.000	0.030	12.600	0.137	0.000
	10	1.442	0.297	0.498	0.432	0.324	0.903	0.539	0.000	0.030	12.600	0.509	0.000
Aug	11	1.442	0.264	0.442	0.432	0.324	0.814	0.628	0.000	0.030	12.600	0.598	0.000
	12	1.442	0.233	0.390	0.432	0.324	0.731	0.711	0.000	0.030	12.600	0.681	0.000
	13	6.772	0.182	0.304	0.432	1.524	0.000	6.772	0.000	0.030	12.600	6.742	0.000
Sept	14	6.772	0.120	0.202	0.432	1.524	0.000	6.772	0.000	0.030	12.600	6.742	0.000
	15	6.772	0.078	0.131	0.432	1.524	0.000	6.772	0.000	0.030	12.600	6.742	0.000
	16	5.630	0.104	0.174	0.432	1.267	0.000	5.630	0.000	0.030	12.600	5.600	0.000
Oct	17	5.630	0.101	0.169	0.432	1.267	0.000	5.630	0.000	0.030	12.600	5.600	0.000
	18	5.630	0.096	0.162	0.432	1.267	0.000	5.630	0.000	0.030	12.600	5.600	0.000
	19	3.281	0.169	0.284	0.432	0.738	0.147	3.134	0.000	0.030	12.600	3.104	0.000
Nov	20	3.281	0.310	0.519	0.432	0.738	0.523	2.758	0.000	0.030	12.600	2.728	0.000
	21	3.281	0.347	0.582	0.432	0.738	0.623	2.658	0.000	0.030	12.600	2.628	0.000
	22	0.676	0.437	0.733	0.432	0.152	1.450	0.000	0.774	0.030	11.796	0.000	0.000
Dec	23	0.676	0.441	0.738	0.432	0.152	1.459	0.000	0.783	0.030	10.982	0.000	0.000
	24	0.676	0.472	0.791	0.432	0.152	1.543	0.000	0.867	0.030	10.085	0.000	0.000
	25	0.541	0.459	0.769	0.432	0.122	1.538	0.000	0.997	0.030	9.058	0.000	0.000
Jan	26	0.541	0.456	0.764	0.432	0.122	1.530	0.000	0.989	0.030	8.038	0.000	0.000
	27	0.541	0.476	0.798	0.432	0.122	1.584	0.000	1.043	0.030	6.965	0.000	0.000
	28	0.326	0.405	0.679	0.432	0.073	1.443	0.000	1.116	0.030	5.819	0.000	0.000
Feb	29	0.326	0.350	0.586	0.432	0.073	1.295	0.000	0.968	0.030	4.820	0.000	0.000
	30	0.326	0.312	0.523	0.432	0.073	1.194	0.000	0.867	0.030	3.923	0.000	0.000
	31	0.234	0.263	0.440	0.432	0.053	1.082	0.000	0.848	0.030	3.045	0.000	0.000
Mar	32	0.234	0.277	0.464	0.432	0.053	1.120	0.000	0.886	0.030	2.128	0.000	0.000
	33	0.234	0.305	0.511	0.432	0.053	1.195	0.000	0.961	0.030	1.137	0.000	0.000
	34	0.315	0.294	0.492	0.432	0.071	1.147	0.000	0.832	0.030	0.275	0.000	0.000
Apr	35	0.315	0.325	0.545	0.432	0.071	1.231	0.000	0.916	0.030	0.000	0.000	0.670
	36	0.315	0.355	0.594	0.432	0.071	1.310	0.000	0.995	0.030	0.000	0.000	1.025
		77.078				17.343							

Table F.3-16 Water Balance Sheet in 1976

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	1.987	0.193	0.232	0.432	0.447	0.410	1.577	0.000	0.030	0.000	0.000	0.000
May	2	1.987	0.204	0.342	0.432	0.447	0.531	1.456	0.000	0.030	1.426	0.000	0.000
	3	1.987	0.167	0.279	0.432	0.447	0.431	1.556	0.000	0.030	2.952	0.000	0.000
	4	8.947	0.126	0.211	0.432	2.013	0.000	8.947	0.000	0.030	11.869	0.000	0.000
Jun	5	8.947	0.130	0.218	0.432	2.013	0.000	8.947	0.000	0.030	12.600	8.186	0.000
	6	8.947	0.144	0.241	0.432	2.013	0.000	8.947	0.000	0.030	12.600	8.917	0.000
	7	1.390	0.305	0.511	0.432	0.313	0.935	0.455	0.000	0.030	12.600	0.425	0.000
Jul	8	1.390	0.341	0.570	0.432	0.313	1.030	0.360	0.000	0.030	12.600	0.330	0.000
	9	1.390	0.350	0.587	0.432	0.313	1.056	0.334	0.000	0.030	12.600	0.304	0.000
	10	1.679	0.297	0.498	0.432	0.378	0.849	0.830	0.000	0.030	12.600	0.800	0.000
Aug	11	1.679	0.264	0.442	0.432	0.378	0.760	0.919	0.000	0.030	12.600	0.889	0.000
	12	1.679	0.233	0.390	0.432	0.378	0.677	1.002	0.000	0.030	12.600	0.972	0.000
	13	2.230	0.182	0.304	0.432	0.502	0.416	1.814	0.000	0.030	12.600	1.784	0.000
Sept	14	2.230	0.120	0.202	0.432	0.502	0.252	1.978	0.000	0.030	12.600	1.948	0.000
	15	2.230	0.078	0.131	0.432	0.502	0.139	2.091	0.000	0.030	12.600	2.061	0.000
	16	4.988	0.104	0.174	0.432	1.123	0.000	4.988	0.000	0.030	12.600	4.958	0.000
Oct	17	4.988	0.101	0.169	0.432	1.123	0.000	4.988	0.000	0.030	12.600	4.958	0.000
	18	4.988	0.096	0.162	0.432	1.123	0.000	4.988	0.000	0.030	12.600	4.958	0.000
	19	1.354	0.169	0.284	0.432	0.305	0.580	0.774	0.000	0.030	12.600	0.744	0.000
Nov	20	1.354	0.310	0.519	0.432	0.305	0.956	0.398	0.000	0.030	12.600	0.368	0.000
	21	1.354	0.347	0.582	0.432	0.305	1.056	0.298	0.000	0.030	12.600	0.268	0.000
	22	0.754	0.437	0.733	0.432	0.170	1.432	0.000	0.679	0.030	11.891	0.000	0.000
Dec	23	0.754	0.441	0.738	0.432	0.170	1.441	0.000	0.688	0.030	11.174	0.000	0.000
	24	0.754	0.472	0.791	0.432	0.170	1.525	0.000	0.772	0.030	10.372	0.000	0.000
	25	0.379	0.459	0.769	0.432	0.085	1.575	0.000	1.195	0.030	9.147	0.000	0.000
Jan	26	0.379	0.456	0.764	0.432	0.085	1.567	0.000	1.187	0.030	7.929	0.000	0.000
	27	0.379	0.476	0.798	0.432	0.085	1.621	0.000	1.241	0.030	6.658	0.000	0.000
	28	0.335	0.405	0.679	0.432	0.075	1.441	0.000	1.106	0.030	5.522	0.000	0.000
Feb	29	0.335	0.350	0.586	0.432	0.075	1.293	0.000	0.958	0.030	4.534	0.000	0.000
	30	0.335	0.312	0.523	0.432	0.075	1.192	0.000	0.857	0.030	3.647	0.000	0.000
	31	0.234	0.263	0.440	0.432	0.053	1.082	0.000	0.848	0.030	2.769	0.000	0.000
Mar	32	0.234	0.277	0.464	0.432	0.053	1.120	0.000	0.886	0.030	1.852	0.000	0.000
	33	0.234	0.305	0.511	0.432	0.053	1.195	0.000	0.961	0.030	0.861	0.000	0.000
	34	1.071	0.294	0.492	0.432	0.241	0.977	0.094	0.000	0.030	0.925	0.000	0.000
Apr	35	1.071	0.325	0.545	0.432	0.241	1.061	0.010	0.000	0.030	0.906	0.000	0.000
	36	1.071	0.355	0.594	0.432	0.241	1.140	0.000	0.069	0.030	0.807	0.000	0.000
		76.045				17.111							

Table F.3-17 Water Balance Sheet in 1977

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	4.310	0.193	0.232	0.432	0.970	0.000	4.310	0.000	0.030	0.807	0.000	0.000
May	2	4.310	0.204	0.342	0.432	0.970	0.008	4.302	0.000	0.030	5.079	0.000	0.000
	3	4.310	0.167	0.279	0.432	0.970	0.000	4.310	0.000	0.030	9.359	0.000	0.000
	4	3.080	0.126	0.211	0.432	0.693	0.076	3.004	0.000	0.030	12.332	0.000	0.000
Jun	5	3.080	0.130	0.218	0.432	0.693	0.087	2.993	0.000	0.030	12.600	2.695	0.000
	6	3.080	0.144	0.241	0.432	0.693	0.124	2.956	0.000	0.030	12.600	2.926	0.000
	7	1.101	0.305	0.511	0.432	0.248	1.000	0.101	0.000	0.030	12.600	0.071	0.000
Jul	8	1.101	0.341	0.570	0.432	0.248	1.095	0.006	0.000	0.030	12.576	0.000	0.000
	9	1.101	0.350	0.587	0.432	0.248	1.121	0.000	0.020	0.030	12.526	0.000	0.000
	10	1.703	0.297	0.498	0.432	0.383	0.844	0.860	0.000	0.030	12.600	0.756	0.000
Aug	11	1.703	0.264	0.442	0.432	0.383	0.755	0.949	0.000	0.030	12.600	0.919	0.000
	12	1.703	0.233	0.390	0.432	0.383	0.672	1.032	0.000	0.030	12.600	1.002	0.000
	13	3.571	0.182	0.304	0.432	0.803	0.115	3.456	0.000	0.030	12.600	3.426	0.000
Sept	14	3.571	0.120	0.202	0.432	0.803	0.000	3.571	0.000	0.030	12.600	3.541	0.000
	15	3.571	0.078	0.131	0.432	0.803	0.000	3.571	0.000	0.030	12.600	3.541	0.000
	16	2.062	0.104	0.174	0.432	0.464	0.246	1.816	0.000	0.030	12.600	1.786	0.000
Oct	17	2.062	0.101	0.169	0.432	0.464	0.238	1.824	0.000	0.030	12.600	1.794	0.000
	18	2.062	0.096	0.162	0.432	0.464	0.226	1.836	0.000	0.030	12.600	1.806	0.000
	19	1.908	0.169	0.284	0.432	0.429	0.456	1.452	0.000	0.030	12.600	1.422	0.000
Nov	20	1.908	0.310	0.519	0.432	0.429	0.832	1.076	0.000	0.030	12.600	1.046	0.000
	21	1.908	0.347	0.582	0.432	0.429	0.932	0.976	0.000	0.030	12.600	0.946	0.000
	22	0.826	0.437	0.733	0.432	0.186	1.416	0.000	0.590	0.030	11.980	0.000	0.000
Dec	23	0.826	0.441	0.738	0.432	0.186	1.425	0.000	0.599	0.030	11.352	0.000	0.000
	24	0.826	0.472	0.791	0.432	0.186	1.509	0.000	0.683	0.030	10.639	0.000	0.000
	25	0.355	0.459	0.769	0.432	0.080	1.580	0.000	1.225	0.030	9.384	0.000	0.000
Jan	26	0.355	0.456	0.764	0.432	0.080	1.572	0.000	1.217	0.030	8.138	0.000	0.000
	27	0.355	0.476	0.798	0.432	0.080	1.626	0.000	1.271	0.030	6.837	0.000	0.000
	28	0.342	0.405	0.679	0.432	0.077	1.439	0.000	1.097	0.030	5.710	0.000	0.000
Feb	29	0.342	0.350	0.586	0.432	0.077	1.291	0.000	0.949	0.030	4.732	0.000	0.000
	30	0.342	0.312	0.523	0.432	0.077	1.190	0.000	0.848	0.030	3.854	0.000	0.000
	31	0.234	0.263	0.440	0.432	0.053	1.082	0.000	0.848	0.030	2.976	0.000	0.000
Mar	32	0.234	0.277	0.464	0.432	0.053	1.120	0.000	0.886	0.030	2.059	0.000	0.000
	33	0.234	0.305	0.511	0.432	0.053	1.195	0.000	0.961	0.030	1.068	0.000	0.000
	34	0.966	0.294	0.492	0.432	0.217	1.001	0.000	0.035	0.030	1.003	0.000	0.000
Apr	35	0.966	0.325	0.545	0.432	0.217	1.085	0.000	0.119	0.030	0.855	0.000	0.000
	36	0.966	0.355	0.594	0.432	0.217	1.164	0.000	0.198	0.030	0.627	0.000	0.000
		61.377				13.810							

Table F.3-18 Water Balance Sheet in 1978

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	2.700	0.193	0.232	0.432	0.608	0.249	2.451	0.000	0.030	0.627	0.000	0.000
May	2	2.700	0.204	0.342	0.432	0.608	0.370	2.330	0.000	0.030	2.927	0.000	0.000
	3	2.700	0.167	0.279	0.432	0.608	0.270	2.430	0.000	0.030	5.326	0.000	0.000
	4	2.836	0.126	0.211	0.432	0.638	0.131	2.705	0.000	0.030	8.002	0.000	0.000
Jun	5	2.836	0.130	0.218	0.432	0.638	0.142	2.694	0.000	0.030	10.666	0.000	0.000
	6	2.836	0.144	0.241	0.432	0.638	0.179	2.657	0.000	0.030	12.600	0.693	0.000
	7	1.949	0.305	0.511	0.432	0.439	0.809	1.140	0.000	0.030	12.600	1.110	0.000
Jul	8	1.949	0.341	0.570	0.432	0.439	0.904	1.045	0.000	0.030	12.600	1.015	0.000
	9	1.949	0.350	0.587	0.432	0.439	0.930	1.019	0.000	0.030	12.600	0.989	0.000
	10	1.681	0.297	0.498	0.432	0.378	0.849	0.832	0.000	0.030	12.600	0.802	0.000
Aug	11	1.681	0.264	0.442	0.432	0.378	0.760	0.921	0.000	0.030	12.600	0.891	0.000
	12	1.681	0.233	0.390	0.432	0.378	0.677	1.004	0.000	0.030	12.600	0.974	0.000
	13	3.601	0.182	0.304	0.432	0.810	0.108	3.494	0.000	0.030	12.600	3.464	0.000
Sept	14	3.601	0.120	0.202	0.432	0.810	0.000	3.601	0.000	0.030	12.600	3.571	0.000
	15	3.601	0.078	0.131	0.432	0.810	0.000	3.601	0.000	0.030	12.600	3.571	0.000
	16	3.508	0.104	0.174	0.432	0.789	0.000	3.508	0.000	0.030	12.600	3.478	0.000
Oct	17	3.508	0.101	0.169	0.432	0.789	0.000	3.508	0.000	0.030	12.600	3.478	0.000
	18	3.508	0.096	0.162	0.432	0.789	0.000	3.508	0.000	0.030	12.600	3.478	0.000
	19	1.760	0.169	0.284	0.432	0.396	0.489	1.271	0.000	0.030	12.600	1.241	0.000
Nov	20	1.760	0.310	0.519	0.432	0.396	0.865	0.895	0.000	0.030	12.600	0.865	0.000
	21	1.760	0.347	0.582	0.432	0.396	0.965	0.795	0.000	0.030	12.600	0.765	0.000
	22	1.144	0.437	0.733	0.432	0.257	1.345	0.000	0.201	0.030	12.369	0.000	0.000
Dec	23	1.144	0.441	0.738	0.432	0.257	1.354	0.000	0.210	0.030	12.129	0.000	0.000
	24	1.144	0.472	0.791	0.432	0.257	1.438	0.000	0.294	0.030	11.805	0.000	0.000
	25	0.451	0.459	0.769	0.432	0.101	1.559	0.000	1.108	0.030	10.667	0.000	0.000
Jan	26	0.451	0.456	0.764	0.432	0.101	1.551	0.000	1.100	0.030	9.537	0.000	0.000
	27	0.451	0.476	0.798	0.432	0.101	1.605	0.000	1.154	0.030	8.353	0.000	0.000
	28	0.353	0.405	0.679	0.432	0.080	1.436	0.000	1.083	0.030	7.240	0.000	0.000
Feb	29	0.353	0.350	0.586	0.432	0.080	1.288	0.000	0.935	0.030	6.275	0.000	0.000
	30	0.353	0.312	0.523	0.432	0.080	1.187	0.000	0.834	0.030	5.411	0.000	0.000
	31	0.516	0.263	0.440	0.432	0.116	1.019	0.000	0.502	0.030	4.879	0.000	0.000
Mar	32	0.516	0.277	0.464	0.432	0.116	1.057	0.000	0.540	0.030	4.308	0.000	0.000
	33	0.516	0.305	0.511	0.432	0.116	1.132	0.000	0.615	0.030	3.663	0.000	0.000
	34	0.776	0.294	0.492	0.432	0.175	1.043	0.000	0.268	0.030	3.365	0.000	0.000
Apr	35	0.776	0.325	0.545	0.432	0.175	1.127	0.000	0.352	0.030	2.984	0.000	0.000
	36	0.776	0.355	0.594	0.432	0.175	1.206	0.000	0.431	0.030	2.523	0.000	0.000
		63.825				14.362							

Table F.3-19 Water Balance Sheet in 1979

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Demand: Sideflow Supply	Demand: Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	1.674	0.193	0.232	0.432	0.377	0.480	1.194	0.000	0.030	2.523	0.000	0.000
May	2	1.674	0.204	0.342	0.432	0.377	0.601	1.073	0.000	0.030	3.566	0.000	0.000
	3	1.674	0.167	0.279	0.432	0.377	0.501	1.173	0.000	0.030	4.708	0.000	0.000
	4	3.733	0.126	0.211	0.432	0.840	0.000	3.733	0.000	0.030	8.411	0.000	0.000
Jun	5	3.733	0.130	0.218	0.432	0.840	0.000	3.733	0.000	0.030	12.114	0.000	0.000
	6	3.733	0.144	0.241	0.432	0.840	0.000	3.733	0.000	0.030	12.600	3.217	0.000
	7	2.944	0.305	0.511	0.432	0.662	0.586	2.359	0.000	0.030	12.600	2.329	0.000
Jul	8	2.944	0.341	0.570	0.432	0.662	0.681	2.264	0.000	0.030	12.600	2.234	0.000
	9	2.944	0.350	0.587	0.432	0.662	0.707	2.238	0.000	0.030	12.600	2.208	0.000
	10	2.147	0.297	0.498	0.432	0.483	0.744	1.403	0.000	0.030	12.600	1.373	0.000
Aug	11	2.147	0.264	0.442	0.432	0.483	0.655	1.492	0.000	0.030	12.600	1.462	0.000
	12	2.147	0.233	0.390	0.432	0.483	0.572	1.575	0.000	0.030	12.600	1.545	0.000
	13	3.339	0.182	0.304	0.432	0.751	0.167	3.173	0.000	0.030	12.600	3.143	0.000
Sept	14	3.339	0.120	0.202	0.432	0.751	0.003	3.337	0.000	0.030	12.600	3.307	0.000
	15	3.339	0.078	0.131	0.432	0.751	0.000	3.339	0.000	0.030	12.600	3.309	0.000
	16	4.527	0.104	0.174	0.432	1.019	0.000	4.527	0.000	0.030	12.600	4.497	0.000
Oct	17	4.527	0.101	0.169	0.432	1.019	0.000	4.527	0.000	0.030	12.600	4.497	0.000
	18	4.527	0.096	0.162	0.432	1.019	0.000	4.527	0.000	0.030	12.600	4.497	0.000
	19	1.373	0.169	0.284	0.432	0.309	0.576	0.797	0.000	0.030	12.600	0.767	0.000
Nov	20	1.373	0.310	0.519	0.432	0.309	0.952	0.421	0.000	0.030	12.600	0.391	0.000
	21	1.373	0.347	0.582	0.432	0.309	1.052	0.321	0.000	0.030	12.600	0.291	0.000
	22	0.832	0.437	0.733	0.432	0.187	1.415	0.000	0.583	0.030	11.987	0.000	0.000
Dec	23	0.832	0.441	0.738	0.432	0.187	1.424	0.000	0.592	0.030	11.364	0.000	0.000
	24	0.832	0.472	0.791	0.432	0.187	1.508	0.000	0.676	0.030	10.658	0.000	0.000
	25	0.357	0.459	0.769	0.432	0.080	1.580	0.000	1.223	0.030	9.405	0.000	0.000
Jan	26	0.357	0.456	0.764	0.432	0.080	1.572	0.000	1.215	0.030	8.161	0.000	0.000
	27	0.357	0.476	0.798	0.432	0.080	1.626	0.000	1.269	0.030	6.862	0.000	0.000
	28	0.384	0.405	0.679	0.432	0.086	1.430	0.000	1.046	0.030	5.786	0.000	0.000
Feb	29	0.384	0.350	0.586	0.432	0.086	1.282	0.000	0.898	0.030	4.858	0.000	0.000
	30	0.384	0.312	0.523	0.432	0.086	1.181	0.000	0.797	0.030	4.031	0.000	0.000
	31	0.589	0.263	0.440	0.432	0.133	1.002	0.000	0.413	0.030	3.588	0.000	0.000
Mar	32	0.589	0.277	0.464	0.432	0.133	1.040	0.000	0.451	0.030	3.107	0.000	0.000
	33	0.589	0.305	0.511	0.432	0.133	1.115	0.000	0.526	0.030	2.551	0.000	0.000
	34	2.159	0.294	0.492	0.432	0.486	0.732	1.426	0.000	0.030	3.947	0.000	0.000
Apr	35	2.159	0.325	0.545	0.432	0.486	0.816	1.342	0.000	0.030	5.260	0.000	0.000
	36	2.159	0.355	0.594	0.432	0.486	0.895	1.263	0.000	0.030	6.493	0.000	0.000
		72.173				16.239							

Table F.3-20 Water Balance Sheet in 1980

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Demand: Sideflow Supply	Demand: Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	2.272	0.193	0.232	0.432	0.511	0.346	1.927	0.000	0.030	6.493	0.000	0.000
May	2	2.272	0.204	0.342	0.432	0.511	0.467	1.806	0.000	0.030	8.269	0.000	0.000
	3	2.272	0.167	0.279	0.432	0.511	0.367	1.906	0.000	0.030	10.144	0.000	0.000
	4	4.862	0.126	0.211	0.432	1.094	0.000	4.862	0.000	0.030	12.600	2.376	0.000
Jun	5	4.862	0.130	0.218	0.432	1.094	0.000	4.862	0.000	0.030	12.600	4.832	0.000
	6	4.862	0.144	0.241	0.432	1.094	0.000	4.862	0.000	0.030	12.600	4.832	0.000
	7	2.956	0.305	0.511	0.432	0.665	0.583	2.373	0.000	0.030	12.600	2.343	0.000
Jul	8	2.956	0.341	0.570	0.432	0.665	0.678	2.278	0.000	0.030	12.600	2.248	0.000
	9	2.956	0.350	0.587	0.432	0.665	0.704	2.252	0.000	0.030	12.600	2.222	0.000
	10	2.582	0.297	0.498	0.432	0.581	0.646	1.936	0.000	0.030	12.600	1.906	0.000
Aug	11	2.582	0.264	0.442	0.432	0.581	0.557	2.025	0.000	0.030	12.600	1.995	0.000
	12	2.582	0.233	0.390	0.432	0.581	0.474	2.108	0.000	0.030	12.600	2.078	0.000
	13	4.068	0.182	0.304	0.432	0.915	0.003	4.066	0.000	0.030	12.600	4.036	0.000
Sept	14	4.068	0.120	0.202	0.432	0.915	0.000	4.068	0.000	0.030	12.600	4.038	0.000
	15	4.068	0.078	0.131	0.432	0.915	0.000	4.068	0.000	0.030	12.600	4.038	0.000
	16	2.746	0.104	0.174	0.432	0.618	0.092	2.654	0.000	0.030	12.600	2.624	0.000
Oct	17	2.746	0.101	0.169	0.432	0.618	0.084	2.662	0.000	0.030	12.600	2.632	0.000
	18	2.746	0.096	0.162	0.432	0.618	0.072	2.674	0.000	0.030	12.600	2.644	0.000
	19	1.499	0.169	0.284	0.432	0.337	0.548	0.952	0.000	0.030	12.600	0.922	0.000
Nov	20	1.499	0.310	0.519	0.432	0.337	0.924	0.576	0.000	0.030	12.600	0.546	0.000
	21	1.499	0.347	0.582	0.432	0.337	1.024	0.476	0.000	0.030	12.600	0.446	0.000
	22	0.966	0.437	0.733	0.432	0.217	1.385	0.000	0.419	0.030	12.151	0.000	0.000
Dec	23	0.966	0.441	0.738	0.432	0.217	1.394	0.000	0.428	0.030	11.694	0.000	0.000
	24	0.966	0.472	0.791	0.432	0.217	1.478	0.000	0.512	0.030	11.152	0.000	0.000
	25	0.479	0.459	0.769	0.432	0.108	1.552	0.000	1.073	0.030	10.049	0.000	0.000
Jan	26	0.479	0.456	0.764	0.432	0.108	1.544	0.000	1.065	0.030	8.953	0.000	0.000
	27	0.479	0.476	0.798	0.432	0.108	1.598	0.000	1.119	0.030	7.804	0.000	0.000
	28	0.338	0.405	0.679	0.432	0.076	1.440	0.000	1.102	0.030	6.672	0.000	0.000
Feb	29	0.338	0.350	0.586	0.432	0.076	1.292	0.000	0.954	0.030	5.687	0.000	0.000
	30	0.338	0.312	0.523	0.432	0.076	1.191	0.000	0.853	0.030	4.804	0.000	0.000
	31	0.242	0.263	0.440	0.432	0.054	1.081	0.000	0.839	0.030	3.935	0.000	0.000
Mar	32	0.242	0.277	0.464	0.432	0.054	1.119	0.000	0.877	0.030	3.028	0.000	0.000
	33	0.242	0.305	0.511	0.432	0.054	1.194	0.000	0.952	0.030	2.046	0.000	0.000
	34	0.545	0.294	0.492	0.432	0.123	1.095	0.000	0.551	0.030	1.465	0.000	0.000
Apr	35	0.545	0.325	0.545	0.432	0.123	1.179	0.000	0.635	0.030	0.801	0.000	0.000
	36	0.545	0.355	0.594	0.432	0.123	1.258	0.000	0.714	0.030	0.057	0.000	0.000
		70.664				15.900							

Table F.3-21 Water Balance Sheet in 1981

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	1.675	0.193	0.232	0.432	0.377	0.480	1.195	0.000	0.030	0.057	0.000	0.000
May	2	1.675	0.204	0.342	0.432	0.377	0.601	1.074	0.000	0.030	1.101	0.000	0.000
	3	1.675	0.167	0.279	0.432	0.377	0.501	1.174	0.000	0.030	2.246	0.000	0.000
	4	5.849	0.126	0.211	0.432	1.316	0.000	5.849	0.000	0.030	8.065	0.000	0.000
Jun	5	5.849	0.130	0.218	0.432	1.316	0.000	5.849	0.000	0.030	12.600	1.284	0.000
	6	5.849	0.144	0.241	0.432	1.316	0.000	5.849	0.000	0.030	12.600	5.819	0.000
	7	1.826	0.305	0.511	0.432	0.411	0.837	0.988	0.000	0.030	12.600	0.958	0.000
Jul	8	1.826	0.341	0.570	0.432	0.411	0.932	0.893	0.000	0.030	12.600	0.863	0.000
	9	1.826	0.350	0.587	0.432	0.411	0.958	0.867	0.000	0.030	12.600	0.837	0.000
	10	4.654	0.297	0.498	0.432	1.047	0.180	4.474	0.000	0.030	12.600	4.444	0.000
Aug	11	4.654	0.264	0.442	0.432	1.047	0.091	4.563	0.000	0.030	12.600	4.533	0.000
	12	4.654	0.233	0.390	0.432	1.047	0.008	4.646	0.000	0.030	12.600	4.616	0.000
	13	3.212	0.182	0.304	0.432	0.723	0.195	3.016	0.000	0.030	12.600	2.986	0.000
Sept	14	3.212	0.120	0.202	0.432	0.723	0.031	3.180	0.000	0.030	12.600	3.150	0.000
	15	3.212	0.078	0.131	0.432	0.723	0.000	3.212	0.000	0.030	12.600	3.182	0.000
	16	3.490	0.104	0.174	0.432	0.785	0.000	3.490	0.000	0.030	12.600	3.460	0.000
Oct	17	3.490	0.101	0.169	0.432	0.785	0.000	3.490	0.000	0.030	12.600	3.460	0.000
	18	3.490	0.096	0.162	0.432	0.785	0.000	3.490	0.000	0.030	12.600	3.460	0.000
	19	1.278	0.169	0.284	0.432	0.288	0.597	0.681	0.000	0.030	12.600	0.651	0.000
Nov	20	1.278	0.310	0.519	0.432	0.288	0.973	0.305	0.000	0.030	12.600	0.275	0.000
	21	1.278	0.347	0.582	0.432	0.288	1.073	0.205	0.000	0.030	12.600	0.175	0.000
	22	1.028	0.437	0.733	0.432	0.231	1.371	0.000	0.343	0.030	12.227	0.000	0.000
Dec	23	1.028	0.441	0.738	0.432	0.231	1.380	0.000	0.352	0.030	11.846	0.000	0.000
	24	1.028	0.472	0.791	0.432	0.231	1.464	0.000	0.436	0.030	11.380	0.000	0.000
	25	0.363	0.459	0.769	0.432	0.082	1.578	0.000	1.215	0.030	10.135	0.000	0.000
Jan	26	0.363	0.456	0.764	0.432	0.082	1.570	0.000	1.207	0.030	8.898	0.000	0.000
	27	0.363	0.476	0.798	0.432	0.082	1.624	0.000	1.261	0.030	7.607	0.000	0.000
	28	1.030	0.405	0.679	0.432	0.232	1.284	0.000	0.255	0.030	7.322	0.000	0.000
Feb	29	1.030	0.350	0.586	0.432	0.232	1.136	0.000	0.107	0.030	7.186	0.000	0.000
	30	1.030	0.312	0.523	0.432	0.232	1.035	0.000	0.006	0.030	7.150	0.000	0.000
	31	0.647	0.263	0.440	0.432	0.145	0.990	0.000	0.343	0.030	6.777	0.000	0.000
Mar	32	0.647	0.277	0.464	0.432	0.145	1.028	0.000	0.381	0.030	6.366	0.000	0.000
	33	0.647	0.305	0.511	0.432	0.145	1.103	0.000	0.456	0.030	5.880	0.000	0.000
	34	0.307	0.294	0.492	0.432	0.069	1.149	0.000	0.841	0.030	5.009	0.000	0.000
Apr	35	0.307	0.325	0.545	0.432	0.069	1.233	0.000	0.925	0.030	4.053	0.000	0.000
	36	0.307	0.355	0.594	0.432	0.069	1.312	0.000	1.004	0.030	3.019	0.000	0.000
		76.077				17.118							

Table F.3-22 Water Balance Sheet in 1982

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Demand: Sideflow Supply	Demand: Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	3.485	0.193	0.232	0.432	0.784	0.073	3.412	0.000	0.030	3.019	0.000	0.000
May	2	3.485	0.204	0.342	0.432	0.784	0.194	3.291	0.000	0.030	6.280	0.000	0.000
	3	3.485	0.167	0.279	0.432	0.784	0.094	3.391	0.000	0.030	9.641	0.000	0.000
	4	3.399	0.126	0.211	0.432	0.765	0.004	3.394	0.000	0.030	12.600	0.405	0.000
Jun	5	3.399	0.130	0.218	0.432	0.765	0.015	3.383	0.000	0.030	12.600	3.353	0.000
	6	3.399	0.144	0.241	0.432	0.765	0.052	3.346	0.000	0.030	12.600	3.316	0.000
	7	1.352	0.305	0.511	0.432	0.304	0.944	0.408	0.000	0.030	12.600	0.378	0.000
Jul	8	1.352	0.341	0.570	0.432	0.304	1.039	0.313	0.000	0.030	12.600	0.283	0.000
	9	1.352	0.350	0.587	0.432	0.304	1.065	0.287	0.000	0.030	12.600	0.257	0.000
	10	1.269	0.297	0.498	0.432	0.286	0.941	0.328	0.000	0.030	12.600	0.298	0.000
Aug	11	1.269	0.264	0.442	0.432	0.286	0.852	0.417	0.000	0.030	12.600	0.387	0.000
	12	1.269	0.233	0.390	0.432	0.286	0.769	0.500	0.000	0.030	12.600	0.470	0.000
	13	2.638	0.182	0.304	0.432	0.594	0.324	2.314	0.000	0.030	12.600	2.284	0.000
Sept	14	2.638	0.120	0.202	0.432	0.594	0.160	2.478	0.000	0.030	12.600	2.448	0.000
	15	2.638	0.078	0.131	0.432	0.594	0.047	2.591	0.000	0.030	12.600	2.561	0.000
	16	2.329	0.104	0.174	0.432	0.524	0.186	2.143	0.000	0.030	12.600	2.113	0.000
Oct	17	2.329	0.101	0.169	0.432	0.524	0.178	2.151	0.000	0.030	12.600	2.121	0.000
	18	2.329	0.096	0.162	0.432	0.524	0.166	2.163	0.000	0.030	12.600	2.133	0.000
	19	1.669	0.169	0.284	0.432	0.375	0.510	1.159	0.000	0.030	12.600	1.129	0.000
Nov	20	1.669	0.310	0.519	0.432	0.375	0.886	0.783	0.000	0.030	12.600	0.753	0.000
	21	1.669	0.347	0.582	0.432	0.375	0.986	0.683	0.000	0.030	12.600	0.653	0.000
	22	0.709	0.437	0.733	0.432	0.159	1.443	0.000	0.734	0.030	11.836	0.000	0.000
Dec	23	0.709	0.441	0.738	0.432	0.159	1.452	0.000	0.743	0.030	11.064	0.000	0.000
	24	0.709	0.472	0.791	0.432	0.159	1.536	0.000	0.827	0.030	10.207	0.000	0.000
	25	0.489	0.459	0.769	0.432	0.110	1.550	0.000	1.061	0.030	9.116	0.000	0.000
Jan	26	0.489	0.456	0.764	0.432	0.110	1.542	0.000	1.053	0.030	8.032	0.000	0.000
	27	0.489	0.476	0.798	0.432	0.110	1.596	0.000	1.107	0.030	6.895	0.000	0.000
	28	0.482	0.405	0.679	0.432	0.108	1.408	0.000	0.926	0.030	5.939	0.000	0.000
Feb	29	0.482	0.350	0.586	0.432	0.108	1.260	0.000	0.778	0.030	5.132	0.000	0.000
	30	0.482	0.312	0.523	0.432	0.108	1.159	0.000	0.677	0.030	4.425	0.000	0.000
	31	0.299	0.263	0.440	0.432	0.067	1.068	0.000	0.769	0.030	3.626	0.000	0.000
Mar	32	0.299	0.277	0.464	0.432	0.067	1.106	0.000	0.807	0.030	2.790	0.000	0.000
	33	0.299	0.305	0.511	0.432	0.067	1.181	0.000	0.882	0.030	1.878	0.000	0.000
	34	0.993	0.294	0.492	0.432	0.223	0.995	0.000	0.002	0.030	1.846	0.000	0.000
Apr	35	0.993	0.325	0.545	0.432	0.223	1.079	0.000	0.086	0.030	1.731	0.000	0.000
	36	0.993	0.355	0.594	0.432	0.223	1.158	0.000	0.165	0.030	1.536	0.000	0.000
		57.337				12.899							

Table F.3-23 Water Balance Sheet in 1983

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	0.899	0.193	0.232	0.432	0.202	0.655	0.245	0.000	0.030	1.536	0.000	0.000
May	2	0.899	0.204	0.342	0.432	0.202	0.776	0.124	0.000	0.030	1.630	0.000	0.000
	3	0.899	0.167	0.279	0.432	0.202	0.676	0.224	0.000	0.030	1.823	0.000	0.000
	4	4.945	0.126	0.211	0.432	1.113	0.000	4.945	0.000	0.030	6.738	0.000	0.000
Jun	5	4.945	0.130	0.218	0.432	1.113	0.000	4.945	0.000	0.030	11.653	0.000	0.000
	6	4.945	0.144	0.241	0.432	1.113	0.000	4.945	0.000	0.030	12.600	3.967	0.000
	7	1.716	0.305	0.511	0.432	0.386	0.862	0.854	0.000	0.030	12.600	0.824	0.000
Jul	8	1.716	0.341	0.570	0.432	0.386	0.957	0.759	0.000	0.030	12.600	0.729	0.000
	9	1.716	0.350	0.587	0.432	0.386	0.983	0.733	0.000	0.030	12.600	0.703	0.000
	10	2.183	0.297	0.498	0.432	0.491	0.736	1.448	0.000	0.030	12.600	1.418	0.000
Aug	11	2.183	0.264	0.442	0.432	0.491	0.647	1.537	0.000	0.030	12.600	1.507	0.000
	12	2.183	0.233	0.390	0.432	0.491	0.564	1.620	0.000	0.030	12.600	1.590	0.000
	13	3.909	0.182	0.304	0.432	0.880	0.038	3.871	0.000	0.030	12.600	3.841	0.000
Sept	14	3.909	0.120	0.202	0.432	0.880	0.000	3.909	0.000	0.030	12.600	3.879	0.000
	15	3.909	0.078	0.131	0.432	0.880	0.000	3.909	0.000	0.030	12.600	3.879	0.000
	16	3.167	0.104	0.174	0.432	0.713	0.000	3.167	0.000	0.030	12.600	3.137	0.000
Oct	17	3.167	0.101	0.169	0.432	0.713	0.000	3.167	0.000	0.030	12.600	3.137	0.000
	18	3.167	0.096	0.162	0.432	0.713	0.000	3.167	0.000	0.030	12.600	3.137	0.000
	19	2.419	0.169	0.284	0.432	0.544	0.341	2.078	0.000	0.030	12.600	2.048	0.000
Nov	20	2.419	0.310	0.519	0.432	0.544	0.717	1.702	0.000	0.030	12.600	1.672	0.000
	21	2.419	0.347	0.582	0.432	0.544	0.817	1.602	0.000	0.030	12.600	1.572	0.000
	22	0.825	0.437	0.733	0.432	0.186	1.416	0.000	0.592	0.030	11.978	0.000	0.000
Dec	23	0.825	0.441	0.738	0.432	0.186	1.425	0.000	0.601	0.030	11.348	0.000	0.000
	24	0.825	0.472	0.791	0.432	0.186	1.509	0.000	0.685	0.030	10.633	0.000	0.000
	25	0.405	0.459	0.769	0.432	0.091	1.569	0.000	1.164	0.030	9.439	0.000	0.000
Jan	26	0.405	0.456	0.764	0.432	0.091	1.561	0.000	1.156	0.030	8.252	0.000	0.000
	27	0.405	0.476	0.798	0.432	0.091	1.615	0.000	1.210	0.030	7.012	0.000	0.000
	28	0.494	0.405	0.679	0.432	0.111	1.405	0.000	0.910	0.030	6.072	0.000	0.000
Feb	29	0.494	0.350	0.586	0.432	0.111	1.257	0.000	0.762	0.030	5.279	0.000	0.000
	30	0.494	0.312	0.523	0.432	0.111	1.156	0.000	0.661	0.030	4.588	0.000	0.000
	31	0.250	0.263	0.440	0.432	0.056	1.079	0.000	0.829	0.030	3.729	0.000	0.000
Mar	32	0.250	0.277	0.464	0.432	0.056	1.117	0.000	0.867	0.030	2.833	0.000	0.000
	33	0.250	0.305	0.511	0.432	0.056	1.192	0.000	0.942	0.030	1.861	0.000	0.000
	34	1.037	0.294	0.492	0.432	0.233	0.985	0.053	0.000	0.030	1.884	0.000	0.000
Apr	35	1.037	0.325	0.545	0.432	0.233	1.069	0.000	0.031	0.030	1.822	0.000	0.000
	36	1.037	0.355	0.594	0.432	0.233	1.148	0.000	0.110	0.030	1.682	0.000	0.000
		66.748				15.020							

Table F.3-24 Water Balance Sheet in 1984

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	1.694	0.193	0.232	0.432	0.381	0.476	1.218	0.000	0.030	1.682	0.000	0.000
May	2	1.694	0.204	0.342	0.432	0.381	0.597	1.097	0.000	0.030	2.749	0.000	0.000
	3	1.694	0.167	0.279	0.432	0.381	0.497	1.197	0.000	0.030	3.915	0.000	0.000
	4	3.596	0.126	0.211	0.432	0.809	0.000	3.596	0.000	0.030	7.482	0.000	0.000
Jun	5	3.596	0.130	0.218	0.432	0.809	0.000	3.596	0.000	0.030	11.048	0.000	0.000
	6	3.596	0.144	0.241	0.432	0.809	0.008	3.589	0.000	0.030	12.600	2.007	0.000
	7	4.403	0.305	0.511	0.432	0.991	0.257	4.146	0.000	0.030	12.600	4.116	0.000
Jul	8	4.403	0.341	0.570	0.432	0.991	0.352	4.051	0.000	0.030	12.600	4.021	0.000
	9	4.403	0.350	0.587	0.432	0.991	0.378	4.025	0.000	0.030	12.600	3.995	0.000
	10	2.303	0.297	0.498	0.432	0.518	0.709	1.595	0.000	0.030	12.600	1.565	0.000
Aug	11	2.303	0.264	0.442	0.432	0.518	0.620	1.684	0.000	0.030	12.600	1.654	0.000
	12	2.303	0.233	0.390	0.432	0.518	0.537	1.767	0.000	0.030	12.600	1.737	0.000
	13	4.982	0.182	0.304	0.432	1.121	0.000	4.982	0.000	0.030	12.600	4.952	0.000
Sept	14	4.982	0.120	0.202	0.432	1.121	0.000	4.982	0.000	0.030	12.600	4.952	0.000
	15	4.982	0.078	0.131	0.432	1.121	0.000	4.982	0.000	0.030	12.600	4.952	0.000
	16	3.299	0.104	0.174	0.432	0.742	0.000	3.299	0.000	0.030	12.600	3.269	0.000
Oct	17	3.299	0.101	0.169	0.432	0.742	0.000	3.299	0.000	0.030	12.600	3.269	0.000
	18	3.299	0.096	0.162	0.432	0.742	0.000	3.299	0.000	0.030	12.600	3.269	0.000
	19	1.213	0.169	0.284	0.432	0.273	0.612	0.601	0.000	0.030	12.600	0.571	0.000
Nov	20	1.213	0.310	0.519	0.432	0.273	0.988	0.225	0.000	0.030	12.600	0.195	0.000
	21	1.213	0.347	0.582	0.432	0.273	1.088	0.125	0.000	0.030	12.600	0.095	0.000
	22	0.661	0.437	0.733	0.432	0.149	1.453	0.000	0.792	0.030	11.778	0.000	0.000
Dec	23	0.661	0.441	0.738	0.432	0.149	1.462	0.000	0.801	0.030	10.947	0.000	0.000
	24	0.661	0.472	0.791	0.432	0.149	1.546	0.000	0.885	0.030	10.032	0.000	0.000
	25	0.459	0.459	0.769	0.432	0.103	1.557	0.000	1.098	0.030	8.904	0.000	0.000
Jan	26	0.459	0.456	0.764	0.432	0.103	1.549	0.000	1.090	0.030	7.784	0.000	0.000
	27	0.459	0.476	0.798	0.432	0.103	1.603	0.000	1.144	0.030	6.610	0.000	0.000
	28	0.425	0.405	0.679	0.432	0.096	1.420	0.000	0.995	0.030	5.585	0.000	0.000
Feb	29	0.425	0.350	0.586	0.432	0.096	1.272	0.000	0.847	0.030	4.707	0.000	0.000
	30	0.425	0.312	0.523	0.432	0.096	1.171	0.000	0.746	0.030	3.931	0.000	0.000
	31	0.305	0.263	0.440	0.432	0.069	1.066	0.000	0.761	0.030	3.140	0.000	0.000
Mar	32	0.305	0.277	0.464	0.432	0.069	1.104	0.000	0.799	0.030	2.311	0.000	0.000
	33	0.305	0.305	0.511	0.432	0.069	1.179	0.000	0.874	0.030	1.407	0.000	0.000
	34	0.852	0.294	0.492	0.432	0.192	1.026	0.000	0.174	0.030	1.203	0.000	0.000
Apr	35	0.852	0.325	0.545	0.432	0.192	1.110	0.000	0.258	0.030	0.914	0.000	0.000
	36	0.852	0.355	0.594	0.432	0.192	1.189	0.000	0.337	0.030	0.547	0.000	0.000
		72.579				16.331							

Table F.3-25 Water Balance Sheet in 1985

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	2.341	0.193	0.232	0.432	0.527	0.330	2.011	0.000	0.030	0.547	0.000	0.000
May	2	2.341	0.204	0.342	0.432	0.527	0.451	1.890	0.000	0.030	2.407	0.000	0.000
	3	2.341	0.167	0.279	0.432	0.527	0.351	1.990	0.000	0.030	4.367	0.000	0.000
	4	2.975	0.126	0.211	0.432	0.669	0.100	2.875	0.000	0.030	7.212	0.000	0.000
Jun	5	2.975	0.130	0.218	0.432	0.669	0.111	2.864	0.000	0.030	10.047	0.000	0.000
	6	2.975	0.144	0.241	0.432	0.669	0.148	2.827	0.000	0.030	12.600	0.244	0.000
	7	2.310	0.305	0.511	0.432	0.520	0.728	1.581	0.000	0.030	12.600	1.551	0.000
Jul	8	2.310	0.341	0.570	0.432	0.520	0.823	1.486	0.000	0.030	12.600	1.456	0.000
	9	2.310	0.350	0.587	0.432	0.520	0.849	1.460	0.000	0.030	12.600	1.430	0.000
	10	2.187	0.297	0.498	0.432	0.492	0.735	1.452	0.000	0.030	12.600	1.422	0.000
Aug	11	2.187	0.264	0.442	0.432	0.492	0.646	1.541	0.000	0.030	12.600	1.511	0.000
	12	2.187	0.233	0.390	0.432	0.492	0.563	1.624	0.000	0.030	12.600	1.594	0.000
	13	2.384	0.182	0.304	0.432	0.536	0.382	2.002	0.000	0.030	12.600	1.972	0.000
Sept	14	2.384	0.120	0.202	0.432	0.536	0.218	2.166	0.000	0.030	12.600	2.136	0.000
	15	2.384	0.078	0.131	0.432	0.536	0.105	2.279	0.000	0.030	12.600	2.249	0.000
	16	2.870	0.104	0.174	0.432	0.646	0.064	2.805	0.000	0.030	12.600	2.775	0.000
Oct	17	2.870	0.101	0.169	0.432	0.646	0.056	2.813	0.000	0.030	12.600	2.783	0.000
	18	2.870	0.096	0.162	0.432	0.646	0.044	2.825	0.000	0.030	12.600	2.795	0.000
	19	1.789	0.169	0.284	0.432	0.403	0.482	1.307	0.000	0.030	12.600	1.277	0.000
Nov	20	1.789	0.310	0.519	0.432	0.403	0.858	0.931	0.000	0.030	12.600	0.901	0.000
	21	1.789	0.347	0.582	0.432	0.403	0.958	0.831	0.000	0.030	12.600	0.801	0.000
	22	0.712	0.437	0.733	0.432	0.160	1.442	0.000	0.730	0.030	11.840	0.000	0.000
Dec	23	0.712	0.441	0.738	0.432	0.160	1.451	0.000	0.739	0.030	11.072	0.000	0.000
	24	0.712	0.472	0.791	0.432	0.160	1.535	0.000	0.823	0.030	10.219	0.000	0.000
	25	0.362	0.459	0.769	0.432	0.081	1.579	0.000	1.217	0.030	8.972	0.000	0.000
Jan	26	0.362	0.456	0.764	0.432	0.081	1.571	0.000	1.209	0.030	7.733	0.000	0.000
	27	0.362	0.476	0.798	0.432	0.081	1.625	0.000	1.263	0.030	6.440	0.000	0.000
	28	0.319	0.405	0.679	0.432	0.072	1.444	0.000	1.126	0.030	5.284	0.000	0.000
Feb	29	0.319	0.350	0.586	0.432	0.072	1.296	0.000	0.978	0.030	4.277	0.000	0.000
	30	0.319	0.312	0.523	0.432	0.072	1.195	0.000	0.877	0.030	3.370	0.000	0.000
	31	0.304	0.263	0.440	0.432	0.068	1.067	0.000	0.763	0.030	2.577	0.000	0.000
Mar	32	0.304	0.277	0.464	0.432	0.068	1.105	0.000	0.801	0.030	1.747	0.000	0.000
	33	0.304	0.305	0.511	0.432	0.068	1.180	0.000	0.876	0.030	0.841	0.000	0.000
	34	0.557	0.294	0.492	0.432	0.125	1.093	0.000	0.536	0.030	0.275	0.000	0.000
Apr	35	0.557	0.325	0.545	0.432	0.125	1.177	0.000	0.620	0.030	0.000	0.000	0.374
	36	0.557	0.355	0.594	0.432	0.125	1.256	0.000	0.699	0.030	0.000	0.000	0.729
		57.327				12.898							

Table F.3-26 Water Balance Sheet in 1986

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	2.362	0.193	0.232	0.432	0.531	0.326	2.036	0.000	0.030	0.000	0.000	0.000
May	2	2.362	0.204	0.342	0.432	0.531	0.447	1.915	0.000	0.030	1.885	0.000	0.000
	3	2.362	0.167	0.279	0.432	0.531	0.347	2.015	0.000	0.030	3.871	0.000	0.000
	4	2.630	0.126	0.211	0.432	0.592	0.177	2.452	0.000	0.030	6.293	0.000	0.000
Jun	5	2.630	0.130	0.218	0.432	0.592	0.188	2.441	0.000	0.030	8.704	0.000	0.000
	6	2.630	0.144	0.241	0.432	0.592	0.225	2.404	0.000	0.030	11.079	0.000	0.000
	7	1.300	0.305	0.511	0.432	0.293	0.955	0.345	0.000	0.030	11.394	0.000	0.000
Jul	8	1.300	0.341	0.570	0.432	0.293	1.050	0.250	0.000	0.030	11.614	0.000	0.000
	9	1.300	0.350	0.587	0.432	0.293	1.076	0.224	0.000	0.030	11.808	0.000	0.000
	10	1.616	0.297	0.498	0.432	0.364	0.863	0.753	0.000	0.030	12.530	0.000	0.000
Aug	11	1.616	0.264	0.442	0.432	0.364	0.774	0.842	0.000	0.030	12.600	0.742	0.000
	12	1.616	0.233	0.390	0.432	0.364	0.691	0.925	0.000	0.030	12.600	0.895	0.000
	13	3.205	0.182	0.304	0.432	0.721	0.197	3.009	0.000	0.030	12.600	2.979	0.000
Sept	14	3.205	0.120	0.202	0.432	0.721	0.033	3.173	0.000	0.030	12.600	3.143	0.000
	15	3.205	0.078	0.131	0.432	0.721	0.000	3.205	0.000	0.030	12.600	3.175	0.000
	16	3.357	0.104	0.174	0.432	0.755	0.000	3.357	0.000	0.030	12.600	3.327	0.000
Oct	17	3.357	0.101	0.169	0.432	0.755	0.000	3.357	0.000	0.030	12.600	3.327	0.000
	18	3.357	0.096	0.162	0.432	0.755	0.000	3.357	0.000	0.030	12.600	3.327	0.000
	19	1.905	0.169	0.284	0.432	0.429	0.456	1.449	0.000	0.030	12.600	1.419	0.000
Nov	20	1.905	0.310	0.519	0.432	0.429	0.832	1.073	0.000	0.030	12.600	1.043	0.000
	21	1.905	0.347	0.582	0.432	0.429	0.932	0.973	0.000	0.030	12.600	0.943	0.000
	22	0.649	0.437	0.733	0.432	0.146	1.456	0.000	0.807	0.030	11.763	0.000	0.000
Dec	23	0.649	0.441	0.738	0.432	0.146	1.465	0.000	0.816	0.030	10.916	0.000	0.000
	24	0.649	0.472	0.791	0.432	0.146	1.549	0.000	0.900	0.030	9.986	0.000	0.000
	25	0.520	0.459	0.769	0.432	0.117	1.543	0.000	1.023	0.030	8.933	0.000	0.000
Jan	26	0.520	0.456	0.764	0.432	0.117	1.535	0.000	1.015	0.030	7.889	0.000	0.000
	27	0.520	0.476	0.798	0.432	0.117	1.589	0.000	1.069	0.030	6.790	0.000	0.000
	28	0.341	0.405	0.679	0.432	0.077	1.439	0.000	1.099	0.030	5.661	0.000	0.000
Feb	29	0.341	0.350	0.586	0.432	0.077	1.291	0.000	0.951	0.030	4.681	0.000	0.000
	30	0.341	0.312	0.523	0.432	0.077	1.190	0.000	0.850	0.030	3.801	0.000	0.000
	31	0.237	0.263	0.440	0.432	0.053	1.082	0.000	0.845	0.030	2.926	0.000	0.000
Mar	32	0.237	0.277	0.464	0.432	0.053	1.120	0.000	0.883	0.030	2.014	0.000	0.000
	33	0.237	0.305	0.511	0.432	0.053	1.195	0.000	0.958	0.030	1.026	0.000	0.000
	34	0.238	0.294	0.492	0.432	0.053	1.165	0.000	0.927	0.030	0.069	0.000	0.000
Apr	35	0.238	0.325	0.545	0.432	0.053	1.249	0.000	1.011	0.030	0.000	0.000	0.972
	36	0.238	0.355	0.594	0.432	0.053	1.328	0.000	1.090	0.030	0.000	0.000	1.120
		55.078				12.393							

Table F.3-27 Water Balance Sheet in 1987

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Demand: Sideflow Supply	Demand: Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	2.528	0.193	0.232	0.432	0.569	0.288	2.240	0.000	0.030	0.000	0.000	0.000
May	2	2.528	0.204	0.342	0.432	0.569	0.409	2.119	0.000	0.030	2.089	0.000	0.000
	3	2.528	0.167	0.279	0.432	0.569	0.309	2.219	0.000	0.030	4.279	0.000	0.000
	4	3.792	0.126	0.211	0.432	0.853	0.000	3.792	0.000	0.030	8.041	0.000	0.000
Jun	5	3.792	0.130	0.218	0.432	0.853	0.000	3.792	0.000	0.030	11.803	0.000	0.000
	6	3.792	0.144	0.241	0.432	0.853	0.000	3.792	0.000	0.030	12.600	2.965	0.000
	7	6.019	0.305	0.511	0.432	0.451	0.797	5.222	0.000	0.030	12.600	5.192	0.000
Jul	8	6.019	0.341	0.570	0.432	0.451	0.892	5.127	0.000	0.030	12.600	5.097	0.000
	9	6.019	0.350	0.587	0.432	0.451	0.918	5.101	0.000	0.030	12.600	5.071	0.000
	10	1.918	0.297	0.498	0.432	0.432	0.795	1.123	0.000	0.030	12.600	1.093	0.000
Aug	11	1.918	0.264	0.442	0.432	0.432	0.706	1.212	0.000	0.030	12.600	1.182	0.000
	12	1.918	0.233	0.390	0.432	0.432	0.623	1.295	0.000	0.030	12.600	1.265	0.000
	13	4.629	0.182	0.304	0.432	1.041	0.000	4.629	0.000	0.030	12.600	4.599	0.000
Sept	14	4.629	0.120	0.202	0.432	1.041	0.000	4.629	0.000	0.030	12.600	4.599	0.000
	15	4.629	0.078	0.131	0.432	1.041	0.000	4.629	0.000	0.030	12.600	4.599	0.000
	16	1.773	0.104	0.174	0.432	0.399	0.311	1.462	0.000	0.030	12.600	1.432	0.000
Oct	17	1.773	0.101	0.169	0.432	0.399	0.303	1.470	0.000	0.030	12.600	1.440	0.000
	18	1.773	0.096	0.162	0.432	0.399	0.291	1.482	0.000	0.030	12.600	1.452	0.000
	19	1.511	0.169	0.284	0.432	0.340	0.545	0.966	0.000	0.030	12.600	0.936	0.000
Nov	20	1.511	0.310	0.519	0.432	0.340	0.921	0.590	0.000	0.030	12.600	0.560	0.000
	21	1.511	0.347	0.582	0.432	0.340	1.021	0.490	0.000	0.030	12.600	0.460	0.000
	22	0.755	0.437	0.733	0.432	0.170	1.432	0.000	0.677	0.030	11.893	0.000	0.000
Dec	23	0.755	0.441	0.738	0.432	0.170	1.441	0.000	0.686	0.030	11.177	0.000	0.000
	24	0.755	0.472	0.791	0.432	0.170	1.525	0.000	0.770	0.030	10.377	0.000	0.000
	25	0.355	0.459	0.769	0.432	0.080	1.580	0.000	1.225	0.030	9.122	0.000	0.000
Jan	26	0.355	0.456	0.764	0.432	0.080	1.572	0.000	1.217	0.030	7.876	0.000	0.000
	27	0.355	0.476	0.798	0.432	0.080	1.626	0.000	1.271	0.030	6.575	0.000	0.000
	28	0.319	0.405	0.679	0.432	0.072	1.444	0.000	1.126	0.030	5.419	0.000	0.000
Feb	29	0.319	0.350	0.586	0.432	0.072	1.296	0.000	0.978	0.030	4.412	0.000	0.000
	30	0.319	0.312	0.523	0.432	0.072	1.195	0.000	0.877	0.030	3.505	0.000	0.000
	31	0.259	0.263	0.440	0.432	0.058	1.077	0.000	0.817	0.030	2.658	0.000	0.000
Mar	32	0.259	0.277	0.464	0.432	0.058	1.115	0.000	0.855	0.030	1.772	0.000	0.000
	33	0.259	0.305	0.511	0.432	0.058	1.190	0.000	0.930	0.030	0.812	0.000	0.000
	34	0.912	0.294	0.492	0.432	0.205	1.013	0.000	0.101	0.030	0.681	0.000	0.000
Apr	35	0.912	0.325	0.545	0.432	0.205	1.097	0.000	0.185	0.030	0.467	0.000	0.000
	36	0.912	0.355	0.594	0.432	0.205	1.176	0.000	0.264	0.030	0.173	0.000	0.000
		74.312				14.013							

Table F.3-28 Water Balance Sheet in 1988

(Unit:Million m3)

Month	10 days	Inflow (Qin)	Demand: Irrigation Demand Sector I	Demand: Irrigation Demand Sector II	Demand: Domestic Use	Sideflow Supply	Total (Qout)	Balance (+)	Balance (-)	Loss	Storage (V)	Spill (Q)	Shortage (V)
	1	2.177	0.193	0.232	0.432	0.490	0.367	1.809	0.000	0.030	0.173	0.000	0.000
May	2	2.177	0.204	0.342	0.432	0.490	0.488	1.688	0.000	0.030	1.831	0.000	0.000
	3	2.177	0.167	0.279	0.432	0.490	0.388	1.788	0.000	0.030	3.590	0.000	0.000
	4	4.783	0.126	0.211	0.432	1.076	0.000	4.783	0.000	0.030	8.343	0.000	0.000
Jun	5	4.783	0.130	0.218	0.432	1.076	0.000	4.783	0.000	0.030	12.600	0.496	0.000
	6	4.783	0.144	0.241	0.432	1.076	0.000	4.783	0.000	0.030	12.600	4.753	0.000
	7	3.412	0.305	0.511	0.432	0.768	0.480	2.931	0.000	0.030	12.600	2.901	0.000
Jul	8	3.412	0.341	0.570	0.432	0.768	0.575	2.836	0.000	0.030	12.600	2.806	0.000
	9	3.412	0.350	0.587	0.432	0.768	0.601	2.810	0.000	0.030	12.600	2.780	0.000
	10	4.724	0.297	0.498	0.432	1.063	0.164	4.560	0.000	0.030	12.600	4.530	0.000
Aug	11	4.724	0.264	0.442	0.432	1.063	0.075	4.649	0.000	0.030	12.600	4.619	0.000
	12	4.724	0.233	0.390	0.432	1.063	0.000	4.724	0.000	0.030	12.600	4.694	0.000
	13	3.476	0.182	0.304	0.432	0.782	0.136	3.340	0.000	0.030	12.600	3.310	0.000
Sept	14	3.476	0.120	0.202	0.432	0.782	0.000	3.476	0.000	0.030	12.600	3.446	0.000
	15	3.476	0.078	0.131	0.432	0.782	0.000	3.476	0.000	0.030	12.600	3.446	0.000
	16	2.892	0.104	0.174	0.432	0.651	0.059	2.832	0.000	0.030	12.600	2.802	0.000
Oct	17	2.892	0.101	0.169	0.432	0.651	0.051	2.840	0.000	0.030	12.600	2.810	0.000
	18	2.892	0.096	0.162	0.432	0.651	0.039	2.852	0.000	0.030	12.600	2.822	0.000
	19	1.370	0.169	0.284	0.432	0.308	0.577	0.794	0.000	0.030	12.600	0.764	0.000
Nov	20	1.370	0.310	0.519	0.432	0.308	0.953	0.418	0.000	0.030	12.600	0.388	0.000
	21	1.370	0.347	0.582	0.432	0.308	1.053	0.318	0.000	0.030	12.600	0.288	0.000
	22	0.718	0.437	0.733	0.432	0.162	1.440	0.000	0.722	0.030	11.848	0.000	0.000
Dec	23	0.718	0.441	0.738	0.432	0.162	1.449	0.000	0.731	0.030	11.087	0.000	0.000
	24	0.718	0.472	0.791	0.432	0.162	1.533	0.000	0.815	0.030	10.242	0.000	0.000
	25	0.365	0.459	0.769	0.432	0.082	1.578	0.000	1.213	0.030	8.999	0.000	0.000
Jan	26	0.365	0.456	0.764	0.432	0.082	1.570	0.000	1.205	0.030	7.764	0.000	0.000
	27	0.365	0.476	0.798	0.432	0.082	1.624	0.000	1.259	0.030	6.475	0.000	0.000
	28	0.346	0.405	0.679	0.432	0.078	1.438	0.000	1.093	0.030	5.352	0.000	0.000
Feb	29	0.346	0.350	0.586	0.432	0.078	1.290	0.000	0.945	0.030	4.378	0.000	0.000
	30	0.346	0.312	0.523	0.432	0.078	1.189	0.000	0.844	0.030	3.504	0.000	0.000
	31	0.380	0.263	0.440	0.432	0.085	1.050	0.000	0.670	0.030	2.804	0.000	0.000
Mar	32	0.380	0.277	0.464	0.432	0.085	1.088	0.000	0.708	0.030	2.067	0.000	0.000
	33	0.380	0.305	0.511	0.432	0.085	1.163	0.000	0.783	0.030	1.254	0.000	0.000
	34	1.096	0.294	0.492	0.432	0.247	0.971	0.125	0.000	0.030	1.349	0.000	0.000
Apr	35	1.096	0.325	0.545	0.432	0.247	1.055	0.041	0.000	0.030	1.360	0.000	0.000
	36	1.096	0.355	0.594	0.432	0.247	1.134	0.000	0.038	0.030	1.292	0.000	0.000
		77.216				17.372							

ANNEX G : PROJECT COST ESTIMATION

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G.1 Unit Cost

The unit cost of construction works is estimated on the basis of the prevailing unit prices of labor and materials in Honduras. The unit prices used for estimation of the Project cost are shown in the Tables G.1-1 and G.1-2.

Table G.1-1 Labor Unit Prices

DESCRIPTION	UNIT	LEMPIRA	UNIT	LEMPIRA
Chief engineer	Month	3500	Day	167
Engineer	Month	3000	Day	143
Clerk	Month	700	Day	33
Typist	Month	700	Day	33
Nurse	Month		Day	0
Office worker	Month	500	Day	24
Guard man	Month	400	Day	19
Foreman	Month	500	Day	24
Plant operator	Month	500	Day	24
Driver	Month	450	Day	21
Steel worker	Month	400	Day	19
Carpenter	Month	400	Day	19
Mechanics	Month	500	Day	24
Electrician	Month	500	Day	24
Masonly	Month	450	Day	21
Scattolding man	Month		Day	0
Plaster	Month	400	Day	19
Plumber	Month	500	Day	24
Driller	Month	450	Day	21
Common labor	Month	420	Day	20

Table G.1-2 Unit Prices of Materials

MATERIALS	DESCRIPTION	UNIT	PRICE (Lempira)	PRICE (Dollar)
Steel bar	9mm	ton	1860.00	930.0
Steel bar	13mm	ton	1860.00	930.0
Steel bar	16mm	ton	1880.00	940.0
Steel bar	19mm	ton	1790.00	895.0
Steel bar	22mm	ton	1750.00	875.0
Steel bar	25mm	ton	1790.00	895.0
Steel plate	4x8x1/32"	pcs	78.38	39.2
Steel angle	6x50x50	ton	3263.70	1631.9
Steel angle	7x100x100	ton	4050.00	2025.0
Steel wire	#12/8	kg	44.60	22.3
Steel pipe	50mm, l=12'	No	150.00	75.0
Steel pipe	75mm, l=12'	No	280.00	140.0
Nails	#8/12	kg	350.00	175.0
Boltnuts	13mm	pcs	0.75	0.4
Plywood	910x1820x12	sheet	33.00	16.5
Slate(asbestos)		pcs	56.26	28.1
Portland cement		bag	7.89	
Asphalt		gallon	10.00	5.0
Aggregate	13/25mm	m3	25.00	
Fine sand	5mm<	m3	12.60	
Brick	10"x5"x2"	1000 Pcs	150.00	
Plain concrete		m3	219.00	109.5
Reinforced concrete		m3	500.00	250.0
Asphalt concrete		m3	700.00	350.0
Wooden timber		m3	20.00	
Wooden bood		m3	424.00	
Water stop	5mm	m	2.50	
Dynamite		kg	5.52	2.8
Percussion cap		pcs	0.54	0.3
Fuse		m	1.04	0.5
Gasoline		lit	1.09	0.5
Diesel oil		lit	0.64	0.3
Engine oil		lit	4.76	2.4

G.2 Cost Estimation of Civil Works

Table G.2-1 Cost Estimation of Civil Works for The Coyolar Dam Rehabilitation

1. EXCAVATION(1) SOIL per 10 m3

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Driller		person	0.30	44.00		13.20	0.00	
Foreman		person	0.20	64.00		12.80	0.00	
Common labor		person	0.10	42.00		4.20	0.00	
Operator		person	0.20	50.00		10.00	0.00	
Sub-total						40.20	0.00	
Material cost								
Dynamite	Kiri No.3	kg	0.18		10.00	0.00	1.80	
Detonator	Immidiate No.6	ea	0.76		2.50	0.00	1.90	
Sub-total						0.00	3.70	
Machinery cost								
Air leg hammer	30kg	day	0.11		30.00	0.00	3.30	
Air compressor	5.0 m3/min	day	0.05		200.00	0.00	10.00	
Diesel oil		lit	1.60		0.32	0.00	0.51	
Lubricant	20 % of diesel		0.20		0.51	0.00	0.10	
Back hoe	0.6 m3	hour	1.06		67.50	0.00	71.55	
Diesel oil		lit	13.78		0.32	0.00	4.41	
Lubricant	20 % of diesel		0.20		4.41	0.00	0.88	
Sub-total						0.00	90.76	
Dump truck						33.60	124.25	No.2
SUB-TOTAL						73.80	218.71	
INDIRECT COST						22.26	65.97	
Total						96.06	284.68	
per m3	L.C(Lp)	98.15/10						
	F.C($)	290.88/10				9.61	28.47	

2. TRANSPORTATION per 10 m3

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Foreman		person	0.10	64.00		6.40	0.00	
Common labor		person	0.20	42.00		8.40	0.00	
Driver		person	0.20	44.00		8.80	0.00	
Operator		person	0.20	50.00		10.00	0.00	
Sub-total						33.60	0.00	
Machinery cost								
Back hoe	0.6 m3	hour	1.00		67.50	0.00	67.50	
Diesel oil		lit	13.09		0.32	0.00	4.19	
Lubricant	20 % of diesel		0.20		4.19	0.00	0.84	
Dump truck	11 ton	hour	1.00		47.50	0.00	47.50	
Diesel oil		lit	11.00		0.32	0.00	3.52	
Lubricant	20 % of diesel		0.20		3.52	0.00	0.70	
Sub-total						0.00	124.25	
Total						33.60	124.25	
per m3	L.C(Lp)	33.60/10						
	F.C($)	124.25/10				3.36	12.43	

3. EXCAVATION(2) ROCK per 10 m3

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Driller		person	1.20	44.00		52.80	0.00	
Foreman		person	0.30	64.00		19.20	0.00	
Common labor		person	0.20	42.00		8.40	0.00	
Sub-total						80.40	0.00	
Material cost								
Dynamite	Kiri No.3	kg	0.78		10.00	0.00	7.80	
Detonator	Immidiate No.6	ea	3.32		2.50	0.00	8.30	
Sub-total						0.00	16.10	
Machinery cost								
Air leg hammer	30kg	day	0.44		30.00	0.00	13.20	
Air compressor	5.0 m3/min	day	0.22		200.00	0.00	44.00	
Diesel oil		lit	7.04		0.32	0.00	2.25	
Lubricant	20 % of diesel		0.20		2.25	0.00	0.45	
Sub-total						0.00	59.90	
Dump truck						33.60	124.25	No.2
SUB-TOTAL						114.00	200.25	
INDIRECT COST						34.39	60.41	
Total						148.39	260.66	
per m3	L.C(Lp)	151.62/10						
	F.C($)	266.34/10				14.84	26.07	

4. EXCAVATION(3) HARD ROCK per 10 m3

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Driller		Person	2.40	44.00		105.60	0.00	
Foreman		Person	0.60	64.00		38.40	0.00	
Common labor		Person	0.20	42.00		8.40	0.00	
Sub-total						152.40	0.00	
Material cost								
Dynamite	Arbanite	kg	0.78		40.00	0.00	31.20	
Detonator	MSD	ea	3.32		2.70	0.00	8.96	
Sub-total						0.00	40.16	
Machinery cost								
Air leg hammer	30kg	day	0.88		30.00	0.00	26.40	
Air compressor	5.0 m3/min	day	0.44		200.00	0.00	88.00	
Diesel oil		lit	14.08		0.32	0.00	4.51	
Lubricant	20 % of diesel		0.20		4.51	0.00	0.90	
Sub-total						0.00	119.81	
Dump truck						33.60	124.25	No.2
SUB-TOTAL						186.00	284.22	
INDIRECT COST						56.11	85.74	
Total						242.11	369.96	
per m3	L.C(Lp)	247.38/10						
	F.C($)	378.01/10				24.21	37.00	

5. DEMOLITION OF CONCRETE per 10 m3

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Driller		Person	2.40	44.00		105.60	0.00	
Foreman		Person	0.60	64.00		38.40	0.00	
Common labor		Person	0.20	42.00		8.40	0.00	
Sub-total						152.40	0.00	
Material cost								
Dynamite	Arbanite	kg	0.78		40.00	0.00	31.20	
Detonator	MSD	ea	3.32		2.70	0.00	8.96	
Sub-total						0.00	40.16	
Machinery cost								
Air leg hammer	30kg	day	0.88		30.00	0.00	26.40	
Air compressor	5.0 m3/min	day	0.44		200.00	0.00	88.00	
Diesel oil		lit	14.08		0.32	0.00	4.51	
Lubricant	20 % of diesel		0.20		4.51	0.00	0.90	
Sub-total						0.00	119.81	
Dump truck						33.60	124.25	No. 2
SUB-TOTAL						186.00	284.22	
INDIRECT COST						56.11	85.74	
Total						242.11	369.96	
per m3	L.C(Lp)	247.38/10						
	F.C($)	378.01/10				24.21	37.00	

6. CHIPPING OF CONCRETE Per 40 m2 t=5cm

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Foreman		Person	1.00	64.00		64.00	0.00	
Masonry		Person	6.00	44.00		264.00	0.00	
Common labor		Person	2.00	42.00		84.00	0.00	
Sub-total						412.00	0.00	
					(per m2	10.30	0.00	
Material cost								
Hire of scaffolding		m2	40.00		1.42	0.00	56.80	
Miscellaneous		l.s.	1.00			0.00	5.00	
Sub-total						0.00	61.80	
					(per m2	0.00	1.55	
Machinery cost								
Breaker		ea	3.00		150.00	0.00	450.00	
Air compressor	10.5 m3/min	day	1.00		450.00	0.00	450.00	
Diesel oil		lit	32.00		0.32	0.00	10.24	
Lubricant	20 % of diesel		0.20		10.24	0.00	2.05	
Hire of winch		day	1.00		32.50	0.00	32.50	
Diesel oil		lit	8.25		0.32	0.00	2.64	
Lubricant	20 % of diesel		0.20		2.64	0.00	0.53	
Sub-total						0.00	947.96	
					(per m2	0.00	23.70	
Transportation of chip								
Labor cost		m3	2.00	2.92		5.84	0.00	
					(per m2	0.15	0.00	
Machinery cost		m3	2.00		11.50	0.00	23.00	
					(per m2	0.00	0.58	
Gondora		l.s.	1.00			305.40	1699.33	
					(per m2	0.23	1.31	
SUB-TOTAL						10.68	27.13	
INDIRECT COST						3.22	8.18	
Total								
per m2	L.C(Lp)							
	F.C($)					13.90	35.31	

7. GONDORA FOR CHIPPING

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Steel worker		Person	3.00	40.00		120.00	0.00	
Common labor		Person	3.00	42.00		126.00	0.00	
Sub-total						246.00	0.00	
Material cost								
Angle		kg	700.00	0.07	1.63	46.20	1141.00	
Wire rope		m	200.00	0.07	2.67	13.20	533.33	
Miscellaneous		l.s.	1.00			0.00	25.00	
Sub-total						59.40	1699.33	
Total						305.40	1699.33	
per m2 (total 1300 m2)	L.C(Lp)	305.40/1300						
	F.C($)	1699.33/1300				0.23	1.31	

8-1. PLAIN CONCRETE per 1m3

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Concrete mixing	210 kg/cm2					158.32	11.28	
Concrete pouring						17.00	3.61	
Removal of laitance						2.11	0.51	
Installation of form						4.72	1.71	
Fabrication of form						10.45	8.26	
Total						192.61	25.37	

8-2. REINFORCED CONCRETE per 1m3

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Concrete mixing	240 kg/cm2					170.27	11.43	
Concrete pouring						13.06	2.78	
Removal of laitance						1.62	0.39	
Installation of form						3.63	1.31	
Fabrication of form						10.45	8.26	
Fabrication of steel bar						28.13	73.58	
Total						227.16	97.75	

9-1. CONCRETE MIXING 210 kg/cm3

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost (per 100m3)								
Foreman		person	1.00	64.00		64.00	0.00	
Operator		person	3.00	50.00		150.00	0.00	
Common labor		person	6.00	42.00		252.00	0.00	
Sub-total						466.00	0.00	
Hire of machinery	per 100m3	l.s.	1.00			0.00	11.65	
Material cost (per 1m3)								
Cement		kg	214.20	0.30		64.26	0.00	
Admixture		kg	0.43	0.05	2.00	0.02	0.86	
Aggregate		ton	0.52	22.80	5.60	11.74	2.88	
Aggregate		ton	0.43	22.80	5.60	9.79	2.40	
Aggregate		ton	0.43	22.80	5.60	9.79	2.40	
Fine sand		ton	0.59	36.11		21.36	0.00	
Sub-total						116.97	8.55	
SUB-TOTAL						121.63	8.67	
INDIRECT COST						36.69	2.61	
Total						158.32	11.28	
per m3	L.C(Lp)							
	F.C($)					158.32	11.28	

9-2. CONCRETE MIXING 240 kg/cm3

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost (per 100m3)								
Foreman		person	1.00	64.00		64.00	0.00	
Operator		person	3.00	50.00		150.00	0.00	
Common labor		person	6.00	42.00		252.00	0.00	
Sub-total						466.00	0.00	
Hire of machinery	per 100m3	l.s.	1.00			0.00	23.30	
Material cost (per 1m3)								
Cement		kg	244.80	0.30		73.44	0.00	
Admixture		kg	0.43	0.05	2.00	0.02	0.86	
Aggregate		ton	0.52	22.80	5.60	11.74	2.88	
Aggregate		ton	0.43	22.80	5.60	9.79	2.40	
Aggregate		ton	0.43	22.80	5.60	9.79	2.40	
Fine sand		ton	0.59	36.11		21.36	0.00	
Sub-total						126.15	8.55	
SUB-TOTAL						130.81	8.78	
INDIRECT COST						39.46	2.65	
Total						170.27	11.43	
per m3	L.C(Lp)							
	F.C($)					170.27	11.43	

10. CONCRETE POURING

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost (per 100m3)								
Concrete pouring								
Foreman		person	1.00	64.00		64.00	0.00	
Common labor		person	15.00	42.00		630.00	0.00	
Carpenter		person	1.00	40.00		40.00	0.00	
Banker machine								
Common labor		person	4.00	42.00		168.00	0.00	
Cable crane								
Foreman		person	1.00	64.00		64.00	0.00	
Operator		person	3.00	50.00		150.00	0.00	
Test room								
Foreman		person	1.00	64.00		64.00	0.00	
Common labor		person	3.00	42.00		126.00	0.00	
Sub-total						1306.00	0.00	
Material cost								
Vibrator		ea	3.00		32.50	0.00	97.50	
Electrical parts		l.s.	1.00			0.00	80.00	
Equipements		l.s.	1.00			0.00	100.00	
Sub-total						0.00	277.50	
SUB-TOTAL						1306.00	277.50	
INDIRECT COST						393.95	83.71	
Total						1699.95	361.21	
per m3	L.C(Lp)	1736.98/100						
	F.C($)	369.08/100				17.00	3.61	

11. REMOVAL OF LAITANCE

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost (per 100m2)								
Foreman		person	1.00	64.00		64.00	0.00	
Common labor		person	4.00	42.00		168.00	0.00	
Sub-total						232.00	0.00	
Material cost								
Washer		l.s.				0.00	53.33	
Consumer		l.s.				0.00	2.67	
Sub-total						0.00	56.00	
SUB-TOTAL						232.00	56.00	
INDIRECT COST						69.98	16.89	
Total						301.98	72.89	
per m3	L.C(Lp)	308.56/100*0.7						
(0.7m2 per 1m3)	F.C($)	74.48/100*0.7				2.11	0.51	

12. INSTALLATION OF FORM

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost (per 10m2)								
Carpenter		person	2.29	40.00		91.60	0.00	
Common labor		person	1.36	42.00		57.12	0.00	
Welder		person	0.31	64.00		19.84	0.00	
Sub-total						168.56	0.00	
Material cost								
Nail		kg	3.00	1.60	3.20	4.80	9.60	
Wire		kg	5.00	1.60	3.20	8.00	16.00	
Oil		lit	1.00		2.00	0.00	2.00	
Duewel bar		kg	30.00		0.93	0.00	27.90	
Welding bar		kg	1.00		5.00	0.00	5.00	
Miscellaneous		l.s.	1.00			0.00	1.00	
Diverted materials		l.s.	1.00			0.00	3.00	
Equipments		l.s.	1.00			0.00	1.00	
Sub-total						12.80	65.50	
SUB-TOTAL						181.36	65.50	
INDIRECT COST						54.71	19.76	
Total						236.07	85.26	
per m3	L.C(Lp)	241.21/10*0.2						
(0.2m2 per 1m3)	F.C($)	87.12/10*0.2				4.72	1.71	

13. FABRICATION OF FORM

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost (per 10m2)								
Carpenter		person	0.90	40.00		36.00	0.00	
					(per 1m3	0.72	0.00	
Material cost (per 10m2)	3 times recycle							
Plywood	0.9*1.8	ea	6.50	33.00		214.50	0.00	
Wooden timber		m3	0.12	20.00		2.40	0.00	
Nail		kg	0.75		4.00	0.00	3.00	
Form tie		l.s.	1.00			0.00	10.00	
Washer		l.s.	1.00			0.00	10.00	
Wooden con'c		l.s.	1.00			0.00	10.00	
Sub-total						216.90	33.00	
					(per 1m3	7.23	1.10	
Material cost (per 15100m3)								
Steel support		ea	391.00	2.10	140.00	821.10	54740.00	
Pipe support	Small	ea	73.60	1.00	75.00	73.60	5520.00	
Pipe support	Large	ea	135.70	2.10	140.00	284.97	18998.00	
						1179.67	79258.00	
					(per 1m3	0.08	5.25	
SUB-TOTAL						8.03	6.35	
INDIRECT COST						2.42	1.92	
Total						10.45	8.26	
per m3	L.C(Lp)							
(0.2m2 per 1m3)	F.C($)					10.45	8.26	

14. FABRICATION OF RE-BAR

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost (per 1 ton)								
Steel worker		Person	3.30	42.00		138.60	0.00	
Common labor		Person	3.00	42.00		126.00	0.00	
Foreman		Person	1.00	64.00		64.00	0.00	
Sub-total						328.60	0.00	
Material cost								
Steel bar		ton	1.03	66.00	940.00	67.98	968.20	
Connecting wire		kg	4.00	8.92	17.84	35.68	71.36	
Miscellaneous		l.s.	1.00			0.00	1.00	
Sub-total						103.66	1040.56	
Machinery cost								
Crane		hour	2.00		45.00	0.00	90.00	
SUB-TOTAL						432.26	1130.56	
INDIRECT COST						130.39	341.03	
Total						562.65	1471.59	
per m3 (50kg per 1m3)	L.C(Lp)	574.91*0.05						
	F.C($)	1503.64*0.05				28.13	73.58	

15. CURTAIN GROUTING (Vertical) per 1m

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Boring (7.2 m/ea/day)								
Labor cost								
Operator		person	2.20	50.00		110.00	0.00	
Common labor		person	3.60	42.00		151.20	0.00	
Mechanic		person	0.20	50.00		10.00	0.00	
Electrician		person	0.20	50.00		10.00	0.00	
Sub-total						281.20	0.00	
Material cost								
Diamond bit	Dia.46mm	ea	0.40		500.00	0.00	200.00	
Boring rod	Dia.40.5, l=3.0m	ea	0.20		140.00	0.00	28.00	
Core liftering		ea	1.30		50.00	0.00	65.00	
Sub-total						0.00	293.00	
Machinery cost								
Boring machine	Small dia. 5.5kw	day	1.00		50.00	0.00	50.00	
Boring pump	Submergible pump	day	1.00		8.00	0.00	8.00	
Sub-total						0.00	58.00	
Sub-total						281.20	351.00	
					(per 1m	39.06	48.75	
Grouting(1 step, 5m/day)								
Labor cost								
Operator		person	1.70	50.00		85.00	0.00	
Common labor		person	4.30	42.00		180.60	0.00	
Mechanic		person	0.20	50.00		10.00	0.00	
Electrician		person	0.20	50.00		10.00	0.00	
Sub-total						285.60	0.00	
Material cost								
Packer		l.s.	1.00		60.00	0.00	60.00	
Cement	Portland	kg	500.00	0.20		100.00	0.00	
Sub-total						100.00	60.00	
Machinery cost								
Grouting pump	7.5kw	day	1.00		40.00	0.00	40.00	
Grouting mixer	2.2kw	day	1.00		20.00	0.00	20.00	
Flow meter		day	1.00		80.00	0.00	80.00	
Sub-total						0.00	140.00	
Sub-total						385.60	200.00	
					(per 1m	77.12	40.00	
SUB-TOTAL						116.18	88.75	
INDIRECT COST						35.04	26.77	
Total						151.22	115.52	
per m	L.C(Lp)							
	F.C($)					151.22	115.52	

16. CURTAIN GROUTING (Slanted) per 1m

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Boring (6.3 m/ea/day)								
Labor cost								
Operator		person	2.20	50.00		110.00	0.00	
Common labor		person	3.60	42.00		151.20	0.00	
Mechanic		person	0.20	50.00		10.00	0.00	
Electrician		person	0.20	50.00		10.00	0.00	
Sub-total						281.20	0.00	
Material cost								
Diamond bit	Dia. 46mm	ea	0.40		500.00	0.00	200.00	
Boring rod	Dia. 40.5, l=3.0m	ea	0.20		140.00	0.00	28.00	
Core liftering		ea	1.30		50.00	0.00	65.00	
Sub-total						0.00	293.00	
Machinery cost								
Boring machine	Small dia. 5.5kw	day	1.00		50.00	0.00	50.00	
Boring pump	Submergible pump	day	1.00		8.00	0.00	8.00	
Sub-total						0.00	58.00	
Sub-total						281.20	351.00	
					(per 1m	44.63	55.71	
Grouting(1 step, 5m/day)								
Labor cost								
Operator		person	1.70	50.00		85.00	0.00	
Common labor		person	4.30	42.00		180.60	0.00	
Mechanic		person	0.20	50.00		10.00	0.00	
Electrician		person	0.20	50.00		10.00	0.00	
Sub-total						285.60	0.00	
Material cost								
Packer		l.s.	1.00		60.00	0.00	60.00	
Cement	Portland	kg	500.00	0.20		100.00	0.00	
Sub-total						100.00	60.00	
Machinery cost								
Grouting pump	7.5kw	day	1.00		40.00	0.00	40.00	
Grouting mixer	2.2kw	day	1.00		20.00	0.00	20.00	
Flow meter		day	1.00		80.00	0.00	80.00	
Sub-total						0.00	140.00	
Sub-total						385.60	200.00	
					(per 1m	77.12	40.00	
SUB-TOTAL						121.75	95.71	
INDIRECT COST						36.73	28.87	
Total						158.48	124.59	
per m	L.C(Lp)					158.48	124.59	
	F.C($)							

17. CONSOLIDATION GROUTING per 1m

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Boring (8.3 m/ea/day)								
Labor cost								
Operator		person	2.20	50.00		110.00	0.00	
Common labor		person	3.60	42.00		151.20	0.00	
Mechanic		person	0.20	50.00		10.00	0.00	
Electrician		person	0.20	50.00		10.00	0.00	
Sub-total						281.20	0.00	
Material cost								
Diamond bit	Dia.46mm	ea	0.40		500.00	0.00	200.00	
Boring rod	Dia.40.5, l=3.0m	ea	0.20		140.00	0.00	28.00	
Core liftering		ea	1.30		50.00	0.00	65.00	
Sub-total						0.00	293.00	
Machinery cost								
Boring machine	Small dia, 5.5kw	day	1.00		50.00	0.00	50.00	
Boring pump	Submergible pump	day	1.00		8.00	0.00	8.00	
Sub-total						0.00	58.00	
Sub-total						281.20	351.00	
					(per 1m	33.88	42.29	
Grouting(1.3st, 6.5m/day)								
Labor cost								
Operator		person	1.70	50.00		85.00	0.00	
Common labor		person	4.30	42.00		180.60	0.00	
Mechanic		person	0.20	50.00		10.00	0.00	
Electrician		person	0.20	50.00		10.00	0.00	
Sub-total						285.60	0.00	
Material cost								
Packer		l.s.	1.00		60.00	0.00	60.00	
Cement	Portland	kg	500.00	0.20		100.00	0.00	
Sub-total						100.00	60.00	
Machinery cost								
Grouting pump	7.5kw	day	1.00		40.00	0.00	40.00	
Grouting mixer	2.2kw	day	1.00		20.00	0.00	20.00	
Flow meter		day	1.00		80.00	0.00	80.00	
Sub-total						0.00	140.00	
Sub-total						385.60	200.00	
					(per 1m	59.32	30.77	
SUB-TOTAL						93.20	73.06	
INDIRECT COST						28.11	22.04	
Total						121.32	95.10	
per m	L.C(Lp)							
	F.C($)					121.32	95.10	

18. CHEMICAL GROUTING per 1m

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Boring (8.3 m/ea/day)								
Labor cost								
Operator		person	2.20	50.00		110.00	0.00	
Common labor		person	3.60	42.00		151.20	0.00	
Mechanic		person	0.20	50.00		10.00	0.00	
Electrician		person	0.20	50.00		10.00	0.00	
Sub-total						281.20	0.00	
Material cost								
Diamond bit	Dia.46mm	ea	0.40		500.00	0.00	200.00	
Boring rod	Dia.40.5, l=3.0m	ea	0.20		140.00	0.00	28.00	
Core liftering		ea	1.30		50.00	0.00	65.00	
Sub-total						0.00	293.00	
Machinery cost								
Boring machine	Small dia, 5.5kw	day	1.00		50.00	0.00	50.00	
Boring pump	Submergible pump	day	1.00		8.00	0.00	8.00	
Sub-total						0.00	58.00	
Sub-total						281.20	351.00	
					(per 1m	33.88	42.29	
Grouting(1 st, 3.0m/day)								
Labor cost								
Foreman		person	1.00	64.00		64.00	0.00	
Operator		person	1.70	50.00		85.00	0.00	
Common labor		person	4.30	42.00		180.60	0.00	
Mechanic		person	0.20	50.00		10.00	0.00	
Electrician		person	0.20	50.00		10.00	0.00	
Sub-total						349.60	0.00	
Material cost								
Packer		l.s.	1.00		60.00	0.00	60.00	
Water glass		lit	18.00	0.07	1.12	1.19	20.21	
Cement	Portland	kg	30.00	0.20		6.00	0.00	
Sub-total						7.19	80.21	
Machinery cost								
Grouting pump	7.5kw	day	2.00		40.00	0.00	80.00	
Grouting mixer	2.2kw	day	2.00		20.00	0.00	40.00	
Flow meter		day	1.00		80.00	0.00	80.00	
Sub-total						0.00	200.00	
Sub-total						356.79	280.21	
					(per 1m	118.93	93.40	
SUB-TOTAL						152.81	135.69	
INDIRECT COST						46.09	40.93	
Total						198.90	176.62	
per m	L.C(Lp)							
	F.C($)					198.90	176.62	

Table G.2-2 Cost Estimation of Civil Works for the Improvement of Flores Irrigation System

1. MANPOWER EXCAVATION per 10 m3 SOIL WITH GRAVEL

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Common labor		person	5.00	42.00		210.00	0.00	
SUB-TOTAL						210.00	0.00	
INDIRECT COST						63.35	0.00	
Total						273.35	0.00	
per m3	L.C(Lp)	273.35/10						
	F.C($)					27.33	0.00	

2. MANPOWER BACKFILL per 10 m3 SOIL WITH GRAVEL

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Common labor		person	2.14	42.00		90.00	0.00	
Skilled labor		person	0.80	50.00		40.00	0.00	
Sub-total						130.00	0.00	
Machinery cost								
Miscellaneous			0.07	40.00		2.80	0.00	
SUB-TOTAL						132.80	0.00	
INDIRECT COST						40.06	0.00	
Total						172.86	0.00	
per m3	L.C(Lp)	172.86/10						
	F.C($)					17.29	0.00	

3. MORTAR MIXING per 1.0 m3

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Common labor		person	1.43	42.00		60.00	0.00	
Material cost								
Cement		kg	720.00	0.30		216.00	0.00	
Fine sand		ton	0.53	36.11		19.06	0.00	
Sub-total						235.06	0.00	
SUB-TOTAL						295.06	0.00	
INDIRECT COST						89.00	0.00	
Total						384.06	0.00	
per m3	L.C(Lp)							
	F.C($)					384.06	0.00	

4. FORM WORK per 100 m2

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Carpenter		person	8.86	40.00		354.29	0.00	
Common labor		person	3.71	42.00		156.00	0.00	
Plywood		m3	2.20	20.00		44.00	0.00	
Wooden timber		m3	0.80	20.00		16.00	0.00	
Nail		kg	9.20		4.00	0.00	36.80	
Foreman		person	4.29	64.00		274.29	0.00	
Carpenter		person	21.43	40.00		857.14	0.00	
Common labor		person	31.43	42.00		1320.00	0.00	
Support		m3	1.30	20.00		26.00	0.00	
SUB-TOTAL						3047.71	36.80	
INDIRECT COST						919.34	11.10	
Total						3967.06	47.90	
per m2	L.C(Lp)	3967.06/100						
	F.C($)	47.90/100				39.67	0.48	

5. RIPRAP per 10 m2 t=0.4 m

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Masonry		person	0.86	44.00		37.84	0.00	
Common labor		person	2.51	42.00		105.42	0.00	
Sub-total						143.26	0.00	
Material cost								
Stone		m3	4.00	22.80	5.60	91.20	22.40	
Mortar		m3	0.61	384.06		234.28	0.00	
Sub-total						325.48	22.40	
SUB-TOTAL						468.74	22.40	
INDIRECT COST						141.39	6.76	
Total						610.13	29.16	
per m3	L.C(Lp)	610.13/10/.4						
	F.C($)	7.29/10/.4				152.53	7.29	

6. STONE MASONRY per 10 m2 t=0.4 m

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Masonry		person	0.86	44.00		37.84	0.00	
Common labor		person	9.60	42.00		403.20	0.00	
Sub-total						441.04	0.00	
Material cost								
Stone		m3	4.00	22.80	5.60	91.20	22.40	
Mortar		m3	0.61	384.06		234.28	0.00	
Sub-total						325.48	22.40	
SUB-TOTAL						766.52	22.40	
INDIRECT COST						231.22	6.76	
Total						997.74	29.16	
per m2	L.C(Lp)	997.74/10						
	F.C($)	29.16/10				99.77	2.92	

7. BLICK LINING per m2 Main Canal

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Masonry		person	0.14	44.00		6.16	0.00	
Common labor		person	0.44	42.00		18.48	0.00	
Sub-total						24.64	0.00	
Material cost								
Brick		ea	80.00	0.15		12.00	0.00	
Mortar		m3	0.07	384.06		25.73	0.00	
Sub-total						37.73	0.00	
SUB-TOTAL						62.37	0.00	
INDIRECT COST						18.81	0.00	
Total						81.19	0.00	
per m2	L.C(Lp)							
	F.C($)					81.19	0.00	

8. BLICK LINING per m2 Lateral Canal

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Labor cost								
Masonry		person	0.14	44.00		6.16	0.00	
Common labor		person	0.44	42.00		18.48	0.00	
Sub-total						24.64	0.00	
Material cost								
Brick		ea	31.00	0.15		4.65	0.00	
Mortar		m3	0.01	384.06		4.65	0.00	
Sub-total						9.30	0.00	
SUB-TOTAL						33.94	0.00	
INDIRECT COST						10.24	0.00	
Total						44.17	0.00	
per m2	L.C(Lp)							
	F.C($)					44.17	0.00	

9-1. STEEL GATE

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Steel gate	B2.8*H2.0*0.07	ton	3.10	66.00	1500.00	204.60	4650.00	
Installation cost			0.05			139.50	162.75	
SUB-TOTAL						139.50	4812.75	
INDIRECT COST						42.08	1451.77	
Total						181.58	6264.52	
per ea	L.C(Lp)							
	F.C($)					181.58	6264.52	

9-2. STEEL GATE

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Steel gate	B1.5*H1.5*0.07	ton	1.30	66.00	1500.00	85.80	1950.00	
Installation cost			0.10			117.00	136.50	
SUB-TOTAL						117.00	2086.50	
INDIRECT COST						35.29	629.39	
Total						152.29	2715.89	
per ea	L.C(Lp)							
	F.C($)					152.29	2715.89	

9-3. STEEL GATE

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Steel gate	B1.0*H1.0*0.05	ton	0.40	66.00	1500.00	26.40	600.00	
Installation cost			0.10			36.00	42.00	
SUB-TOTAL						36.00	642.00	
INDIRECT COST						10.86	193.66	
Total						46.86	835.66	
per ea	L.C(Lp)							
	F.C($)					46.86	835.66	

9-4. STEEL GATE

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Steel gate	B2.0*H1.0*0.07	ton	1.10	66.00	1500.00	72.60	1650.00	
Installation cost			0.10			99.00	115.50	
SUB-TOTAL						99.00	1765.50	
INDIRECT COST						29.86	532.56	
Total						128.86	2298.06	
per ea	L.C(Lp)							
	F.C($)					128.86	2298.06	

10. GRAVEL PAVEMENT per 100 m2

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Gravel stone		m3	5.25	22.80	5.60	119.70	29.40	
Motor grador		hour	0.27		72.50	0.00	19.58	
Operator		person	0.39	50.00		19.50	0.00	
Common labor		person	0.22	42.00		9.24	0.00	
Road rollewr		hour	0.20		30.00	0.00	6.00	
Operator		person	0.29	50.00		14.29	0.00	
Common labor		person	0.22	42.00		9.24	0.00	
Tire roller		hour	0.10		35.00	0.00	3.50	
Operator		person	0.14	50.00		7.14	0.00	
Common labor		person	0.22	42.00		9.24	0.00	
Diesel oil		lit.	0.32		0.32	0.00	0.10	
Lubricant			0.20			0.00	0.02	
Sub-total						188.35	58.60	
Gravel stone		m3	15.75	22.80	5.60	359.10	88.20	
Motor grador		hour	0.27		72.50	0.00	19.58	
Operator		person	0.39	50.00		19.50	0.00	
Common labor		person	0.22	42.00		9.24	0.00	
Road rollewr		hour	0.20		30.00	0.00	6.00	
Operator		person	0.29	50.00		14.29	0.00	
Common labor		person	0.22	42.00		9.24	0.00	
Tire roller		hour	0.10		35.00	0.00	3.50	
Operator		person	0.14	50.00		7.14	0.00	
Common labor		person	0.22	42.00		9.24	0.00	
Diesel oil		lit.	0.32		0.32	0.00	0.10	
Lubricant			0.20			0.00	0.02	
Sub-total						427.75	117.40	
SUB-TOTAL						616.10	176.00	
INDIRECT COST						185.85	53.09	
Total						801.94	229.08	
per m2	L.C(Lp)	178.71/100						
	F.C($)	732.04/100				8.02	2.29	

11. EXCAVATION & PUSHING BY 15 TON BULLDOZER per hour L=20 m

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Bulldozer		hour	1.00		60.00	0.00	60.00	
Operator		person	0.23	50.00		11.71	0.00	
Common labor		person	0.08	42.00		3.22	0.00	
Diesel oil		lit.	16.00		0.32	0.00	5.12	
Lubricant			0.20			0.00	1.02	
SUB-TOTAL						14.93	66.14	
INDIRECT COST						4.50	19.95	
Total						19.43	86.10	
per m3	L.C(Lp)	19.43/60.2						
Q=60.2 m3/hr	F.C($)	164.20/60.2				0.32	1.43	

12. LAYING OF GRAVEL BY 15 TON BULLDOZER per hour d=30 cm N=4

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Bulldozer		hour	1.00		60.00	0.00	60.00	
Operator		person	0.23	50.00		11.71	0.00	
Common labor		person	0.08	42.00		3.22	0.00	
Diesel oil		lit.	16.00		0.32	0.00	5.12	
Lubricant			0.20			0.00	1.02	
SUB-TOTAL						14.93	66.14	
INDIRECT COST						4.50	19.95	
Total						19.43	86.10	
per m3	L.C(Lp)	19.43/48.6						
Q=48.6 m3/hr	F.C($)	86.10/48.6				0.40	1.77	

13. EXCAVATION BY BACKHOE, SOIL W/GRAVEL per hour

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Backhoe	0.7 m3	hour	1.00		67.50	0.00	67.50	
Operator		person	0.23	50.00		11.71	0.00	
Common labor		person	0.08	42.00		3.22	0.00	
Diesel oil		lit.	15.00		0.32	0.00	4.80	
Lubricant			0.20			0.00	0.96	
SUB-TOTAL						14.93	73.26	
INDIRECT COST						4.50	22.10	
Total						19.43	95.36	
per m3	L.C(Lp)	19.43/43.9						
Q=43.9 m3/hr	F.C($)	183.22/43.9				0.44	2.17	

14. EXCAVATION BY BACKHOE, ROCK per hour

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Backhoe	0.7 m3	hour	1.00		67.50	0.00	67.50	
Operator		person	0.23	50.00		11.71	0.00	
Common labor		person	0.08	42.00		3.22	0.00	
Diesel oil		lit.	15.00		0.32	0.00	4.80	
Lubricant			0.20			0.00	0.96	
SUB-TOTAL						14.93	73.26	
INDIRECT COST						4.50	22.10	
Total						19.43	95.36	
per m3	L.C(Lp)	19.43/32.9						
Q=32.9 m3/hr	F.C($)	183.22/32.9				0.59	2.90	

15. TRANSPORTATION BY 6 TON DUMP TRUCK

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Dump truck	6 ton	hour	1.00		22.50	0.00	22.50	
Driver		person	0.20	44.00		8.80	0.00	
Common laber		person	0.06	42.00		2.52	0.00	
Diesel oil		lit.	6.60		0.32	0.00	2.11	
Lubricant			0.20			0.00	0.42	
SUB-TOTAL						11.32	25.03	
INDIRECT COST						3.41	7.55	
Total						14.73	32.59	
per m3	L.C(Lp)							
Q=16.5 m3	F.C($)					0.89	1.97	

16. TRANSPORTATION BY 11 TON DUMP TRUCK

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Dump truck	11 ton	hour	1.00		47.50	0.00	47.50	
Driver		person	0.20	44.00		8.80	0.00	
Common laber		person	0.06	42.00		2.52	0.00	
Diesel oil		lit.	12.00		0.32	0.00	3.84	
Lubricant			0.20			0.00	0.77	
SUB-TOTAL						11.32	52.11	
INDIRECT COST						3.41	15.72	
Total						14.73	67.83	
per m3	L.C(Lp)							
Q=22.4 m3	F.C($)					0.66	3.03	

17. COMPACTION BY TIRE ROLLER

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Tire roller	11 ton	hour	1.00		35.00	0.00	35.00	
Operator		person	0.18	44.00		7.92	0.00	
Common laber		person	0.06	42.00		2.52	0.00	
Diesel oil		lit.	5.00		0.32	0.00	1.60	
Lubricant			0.20			0.00	0.32	
SUB-TOTAL						10.44	36.92	
INDIRECT COST						3.15	11.14	
Total						13.59	48.06	
per m2	L.C(Lp)							
Q=479 m2	F.C($)					0.03	0.10	

18. GRADING

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Motor grador		hour	1.00		72.50	0.00	72.50	
Operator		person	0.18	50.00		9.00	0.00	
Common labor		person	0.06	42.00		2.52	0.00	
Diesel oil		lit.	10.00		0.32	0.00	3.20	
Lubricant			0.20			0.00	0.64	
SUB-TOTAL						11.52	76.34	
INDIRECT COST						3.48	23.03	
Total						15.00	99.37	
per m2	L.C(Lp)							
Q= 962 m3	F.C($)					0.02	0.10	

19. LAND RECLAMATION per ha 10000 m2 * 0.3 m = 3000 m3

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Bulldozer		m3	3000.00	0.32	1.43	960.00	4290.00	
Common labor		person	100.00	42.00		4200.00	0.00	
SUB-TOTAL						5160.00	4290.00	
INDIRECT COST						1556.51	1294.08	
Total						6716.51	5584.08	
per ha	L.C(Lp)							
	F.C($)					6716.51	5584.08	

20. CHECK GATE PIT

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Concrete		m3	3.00	183.33	14.21	549.99	42.63	
Re-bar		ton	0.30	66.00	940.00	19.80	282.00	
Form work		m2	12.00	39.67	0.48	476.04	5.76	
Stop log		m3	0.17		10.00	0.00	1.70	
Miscellaneous			0.10			104.58	33.21	
SUB-TOTAL						1150.41	365.30	
INDIRECT COST						347.02	110.19	
Total						1497.44	475.49	
per ea	L.C(Lp)							
	F.C($)					1497.44	475.49	

21. DROP GROOVE per ea

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Wooden timber	1.0m*1.0m*0.07m	m3	0.10	20.00		2.00	0.00	
Attachment		kg	10.00		3.00	0.00	30.00	
Common labor		person	2.00	42.00		84.00	0.00	
Miscellaneous			0.10			8.60	3.00	
SUB-TOTAL						94.60	33.00	
INDIRECT COST						28.54	9.95	
Total						123.14	42.95	
per ea	L.C(Lp)							
	F.C($)					123.14	42.95	

22. STRIPPING Per hour

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE		PRICE		REMARKS
				L.C(Lp)	F.C($)	L.C(Lp)	F.C($)	
Bulldozer	15 ton	hour	1.00		60.00	0.00	60.00	
Operator		person	0.23	50.00		11.71	0.00	
Common labor		person	0.08	42.00		3.22	0.00	
Diesel oil		lit.	16.00		0.32	0.00	5.12	
Lubricant			0.20			0.00	1.02	
SUB-TOTAL						14.93	66.14	
INDIRECT COST						4.50	19.95	
Total						19.43	86.10	
per m2	L.C(Lp)	19.43/280						
Q=280 m3/hr	F.C($)	164.20/280				0.07	0.31	

ANNEX H : PROJECT EVALUATION

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H.1 Economic and Financial Evaluation

Table H.1-1 Results of Economic and Financial Evaluation

Descriptions	F.I.R.R (%)	E.I.R.R (%)	B/C	N.P.F.V (Lps)	N.P.E.V (Lps)	Cost/ha (Lps)	N.P.F.V/ha (Lps)	N.P.E.V/ha (Lps)
On Financial Price Basis								
	15.00		1.00	0		48.2		
BASE CASE	12.00		1.30	21,422			10.0	
	0.00		6.80	787,204			367.9	
Sensitivity Analysis								
	9.80		1.00	0				
5 Years Delay in Benefit Accrual	12.00		0.73	-19,542			-9.1	
	0.00		6.02	680,889			318.2	
	12.27		1.00	0				
2 Years Delay in Benefit Accrual	12.00		1.03	2,216			1.0	
	0.00		6.49	744,678			348.0	
	12.38		1.00	0				
20% Decrease in Benefit	12.00		1.04	2,617			1.2	
	0.00		5.44	602,619			281.6	
	11.96		1.00	0		62.7	0.0	
30% Increase in Cost	12.00		1.00	-355			-0.2	
	0.00		5.23	746,513			348.8	
	14.99		1.00	0			0.0	
2 Years Delay in Construction	12.00		1.29	16,943			7.9	
	0.00		6.56	746,118			348.7	
	14.97		1.00	0			0.0	
5 Years Delay in Construction	12.00		1.29	11,868			5.5	
	0.00		6.18	684,489			319.9	
	9.73		1.00	0			0.0	
20% Decrease in Benefit	12.00		0.80	-19,160			-9.0	
30% Increase in Cost	0.00		4.19	561,928			262.6	
On Economic Price Basis								
		15.71	1.00		0	29.4		
BASE CASE		12.00	1.37		16,359			7.6
		0.00	7.25		509,414			238.0
Sensitivity Analysis								
		10.17	1.00		0			
5 Years Delay in Benefit Accrual		12.00	0.77		-10,106			-4.7
		0.00	6.42		441,494			206.3
		12.79	1.00		0			
2 Years Delay in Benefit Accrual		12.00	1.09		3,951			1.8
		0.00	6.92		482,246			225.3
		13.00	1.00		0			
20% Decrease in Benefit		12.00	1.09		4,211			2.0
		0.00	5.80		391,233			182.8
		12.56	1.00		0	38.2		
30% Increase in Cost		12.00	1.05		3,044			1.4
		0.00	5.58		484,967			226.6
		15.70	1.00		0			
2 Years Delay in Construction		12.00	1.37		12,955			6.1
		0.00	6.99		483,070			225.7
		15.69	1.00		0			
5 Years Delay in Construction		12.00	1.36		9,098			4.3
		0.00	6.58		443,554			207.3
		10.25	1.00		0			0.0
20% Decrease in Benefit		12.00	0.84		-9,104			-4.3
30% Increase in Cost		0.00	4.46		366,786			171.4

Presumption : F.I.R.R is calculated from the price-escalated costs which include contingencies(20% of the civil works of Dam Rehabilitation and 10% of the civil works of Flores Irrigation Improvement) and from the benefits with price escalation by domestic wholesale price trends for agricultural products and World Bank's G-5 index. E.I.R.R is calculated on non-escalated cost/benefit basis but with 20%/10% contingencies.
Exchange Rate is as folow:
1 US$ = 2.0 Lps

Table II.1-2 FIRR Cash Flow of Cost and Benefit (Base Case)

(Unit: 1000Lps)

No.	Year	Cost			Benefit	Discount Rate	Present Value	
		Const. Cost	O & M Cost	Total			Cost	Benefit
1	1993	1,459	0	1,459	0	1.0000	1,459	0
2	1994	1,575	0	1,575	0	0.8696	1,370	0
3	1995	7,129	0	7,129	0	0.7562	5,391	0
4	1996	36,931	0	36,931	0	0.6575	24,283	0
5	1997	31,010	0	31,010	0	0.5718	17,731	0
6	1998	25,130	720	25,850	4,698	0.4972	12,853	2,336
7	1999	0	720	720	9,791	0.4323	311	4,233
8	2000	0	720	720	15,303	0.3760	271	5,753
9	2001	0	720	720	21,263	0.3269	235	6,951
10	2002	0	720	720	21,263	0.2843	205	6,045
11	2003	0	720	720	21,263	0.2472	178	5,256
12	2004	0	720	720	21,263	0.2150	155	4,571
13	2005	0	720	720	21,263	0.1869	135	3,975
14	2006	0	720	720	21,263	0.1625	117	3,456
15	2007	0	720	720	21,263	0.1413	102	3,005
16	2008	0	720	720	21,263	0.1229	88	2,613
17	2009	0	720	720	21,263	0.1069	77	2,273
18	2010	0	720	720	21,263	0.0929	67	1,976
19	2011	0	720	720	21,263	0.0808	58	1,718
20	2012	0	720	720	21,263	0.0703	51	1,494
21	2013	0	720	720	21,263	0.0611	44	1,299
22	2014	0	720	720	21,263	0.0531	38	1,130
23	2015	0	720	720	21,263	0.0462	33	983
24	2016	0	720	720	21,263	0.0402	29	854
25	2017	0	720	720	21,263	0.0349	25	743
26	2018	0	720	720	21,263	0.0304	22	646
27	2019	0	720	720	21,263	0.0264	19	562
28	2020	0	720	720	21,263	0.0230	17	489
29	2021	0	720	720	21,263	0.0200	14	425
30	2022	0	720	720	21,263	0.0174	13	369
31	2023	0	720	720	21,263	0.0151	11	321
32	2024	0	720	720	21,263	0.0131	9	279
33	2025	0	720	720	21,263	0.0114	8	243
34	2026	0	720	720	21,263	0.0099	7	211
35	2027	0	720	720	21,263	0.0086	6	184
36	2028	0	720	720	21,263	0.0075	5	160
37	2029	0	720	720	21,263	0.0065	5	139
38	2030	0	720	720	21,263	0.0057	4	121
39	2031	0	720	720	21,263	0.0049	4	105
40	2032	0	720	720	21,263	0.0043	3	91
41	2033	0	720	720	21,263	0.0037	3	79
42	2034	0	720	720	21,263	0.0032	2	69
43	2035	0	720	720	21,263	0.0028	2	60
44	2036	0	720	720	21,263	0.0025	2	52
45	2037	0	720	720	21,263	0.0021	2	45
46	2038	0	720	720	21,263	0.0019	1	39
47	2039	0	720	720	21,263	0.0016	1	34
48	2040	0	720	720	21,263	0.0014	1	30
49	2041	0	720	720	21,263	0.0012	1	26
50	2042	0	720	720	21,263	0.0011	1	23
Total(Lp)		103,234	32,400	135,634	922,838		65,467	65,468
(US $)		51,617	16,200	67,817	461,419		32,734	32,734

B/C = 1.00
B-C = 0
FIRR = 15.00 %

Table H.1-3 FIRR Cash Flow of Cost and Benefit (Base Case)

(Unit: 1000Lps)

No.	Year	Cost			Benefit	Discount Rate	Present Value	
		Const. Cost	O & M Cost	Total			Cost	Benefit
1	1993	1,459	0	1,459	0	1.0000	1,459	0
2	1994	1,575	0	1,575	0	0.8929	1,406	0
3	1995	7,129	0	7,129	0	0.7972	5,683	0
4	1996	36,931	0	36,931	0	0.7118	26,287	0
5	1997	31,010	0	31,010	0	0.6355	19,707	0
6	1998	25,130	720	25,850	4,698	0.5674	14,668	2,666
7	1999	0	720	720	9,791	0.5066	365	4,960
8	2000	0	720	720	15,303	0.4523	326	6,922
9	2001	0	720	720	21,263	0.4039	291	8,588
10	2002	0	720	720	21,263	0.3606	260	7,668
11	2003	0	720	720	21,263	0.3220	232	6,846
12	2004	0	720	720	21,263	0.2875	207	6,113
13	2005	0	720	720	21,263	0.2567	185	5,458
14	2006	0	720	720	21,263	0.2292	165	4,873
15	2007	0	720	720	21,263	0.2046	147	4,351
16	2008	0	720	720	21,263	0.1827	132	3,885
17	2009	0	720	720	21,263	0.1631	117	3,468
18	2010	0	720	720	21,263	0.1456	105	3,097
19	2011	0	720	720	21,263	0.1300	94	2,765
20	2012	0	720	720	21,263	0.1161	84	2,469
21	2013	0	720	720	21,263	0.1037	75	2,204
22	2014	0	720	720	21,263	0.0926	67	1,968
23	2015	0	720	720	21,263	0.0826	60	1,757
24	2016	0	720	720	21,263	0.0738	53	1,569
25	2017	0	720	720	21,263	0.0659	47	1,401
26	2018	0	720	720	21,263	0.0588	42	1,251
27	2019	0	720	720	21,263	0.0525	38	1,117
28	2020	0	720	720	21,263	0.0469	34	997
29	2021	0	720	720	21,263	0.0419	30	890
30	2022	0	720	720	21,263	0.0374	27	795
31	2023	0	720	720	21,263	0.0334	24	710
32	2024	0	720	720	21,263	0.0298	21	634
33	2025	0	720	720	21,263	0.0266	19	566
34	2026	0	720	720	21,263	0.0238	17	505
35	2027	0	720	720	21,263	0.0212	15	451
36	2028	0	720	720	21,263	0.0189	14	403
37	2029	0	720	720	21,263	0.0169	12	360
38	2030	0	720	720	21,263	0.0151	11	321
39	2031	0	720	720	21,263	0.0135	10	287
40	2032	0	720	720	21,263	0.0120	9	256
41	2033	0	720	720	21,263	0.0107	8	229
42	2034	0	720	720	21,263	0.0096	7	204
43	2035	0	720	720	21,263	0.0086	6	182
44	2036	0	720	720	21,263	0.0076	6	163
45	2037	0	720	720	21,263	0.0068	5	145
46	2038	0	720	720	21,263	0.0061	4	130
47	2039	0	720	720	21,263	0.0054	4	116
48	2040	0	720	720	21,263	0.0049	4	103
49	2041	0	720	720	21,263	0.0043	3	92
50	2042	0	720	720	21,263	0.0039	3	82
Total(Lp)		103,234	32,400	135,634	922,838		72,592	94,014
(US $)		51,617	16,200	67,817	461,419		36,296	47,007

B/C = 1.30
B-C = 21,422
FIRR = 12.00 %

Table H.1-4 FIRR Cash Flow of Cost and Benefit (Base Case)

(Unit: 1000Lps)

No.	Year	Cost			Benefit	Discount Rate	Present Value	
		Const Cost	O & M Cost	Total			Cost	Benefit
1	1993	1,459	0	1,459	0	1.0000	1,459	0
2	1994	1,575	0	1,575	0	1.0000	1,575	0
3	1995	7,129	0	7,129	0	1.0000	7,129	0
4	1996	36,931	0	36,931	0	1.0000	36,931	0
5	1997	31,010	0	31,010	0	1.0000	31,010	0
6	1998	25,130	720	25,850	4,698	1.0000	25,850	4,698
7	1999	0	720	720	9,791	1.0000	720	9,791
8	2000	0	720	720	15,303	1.0000	720	15,303
9	2001	0	720	720	21,263	1.0000	720	21,263
10	2002	0	720	720	21,263	1.0000	720	21,263
11	2003	0	720	720	21,263	1.0000	720	21,263
12	2004	0	720	720	21,263	1.0000	720	21,263
13	2005	0	720	720	21,263	1.0000	720	21,263
14	2006	0	720	720	21,263	1.0000	720	21,263
15	2007	0	720	720	21,263	1.0000	720	21,263
16	2008	0	720	720	21,263	1.0000	720	21,263
17	2009	0	720	720	21,263	1.0000	720	21,263
18	2010	0	720	720	21,263	1.0000	720	21,263
19	2011	0	720	720	21,263	1.0000	720	21,263
20	2012	0	720	720	21,263	1.0000	720	21,263
21	2013	0	720	720	21,263	1.0000	720	21,263
22	2014	0	720	720	21,263	1.0000	720	21,263
23	2015	0	720	720	21,263	1.0000	720	21,263
24	2016	0	720	720	21,263	1.0000	720	21,263
25	2017	0	720	720	21,263	1.0000	720	21,263
26	2018	0	720	720	21,263	1.0000	720	21,263
27	2019	0	720	720	21,263	1.0000	720	21,263
28	2020	0	720	720	21,263	1.0000	720	21,263
29	2021	0	720	720	21,263	1.0000	720	21,263
30	2022	0	720	720	21,263	1.0000	720	21,263
31	2023	0	720	720	21,263	1.0000	720	21,263
32	2024	0	720	720	21,263	1.0000	720	21,263
33	2025	0	720	720	21,263	1.0000	720	21,263
34	2026	0	720	720	21,263	1.0000	720	21,263
35	2027	0	720	720	21,263	1.0000	720	21,263
36	2028	0	720	720	21,263	1.0000	720	21,263
37	2029	0	720	720	21,263	1.0000	720	21,263
38	2030	0	720	720	21,263	1.0000	720	21,263
39	2031	0	720	720	21,263	1.0000	720	21,263
40	2032	0	720	720	21,263	1.0000	720	21,263
41	2033	0	720	720	21,263	1.0000	720	21,263
42	2034	0	720	720	21,263	1.0000	720	21,263
43	2035	0	720	720	21,263	1.0000	720	21,263
44	2036	0	720	720	21,263	1.0000	720	21,263
45	2037	0	720	720	21,263	1.0000	720	21,263
46	2038	0	720	720	21,263	1.0000	720	21,263
47	2039	0	720	720	21,263	1.0000	720	21,263
48	2040	0	720	720	21,263	1.0000	720	21,263
49	2041	0	720	720	21,263	1.0000	720	21,263
50	2042	0	720	720	21,263	1.0000	720	21,263
Total(Lp)		103,234	32,400	135,634	922,838		135,634	922,838
(US $)		51,617	16,200	67,817	461,419		67,817	461,419

B/C = 6.80
B-C = 787,204
FIRR = 0.00 %

Table H.1-5 FIRR Cash Flow of Cost and Benefit
(5 years Delay in Benefit Accrual)

(Unit: 1000Lps)

No.	Year	Cost			Benefit	Discount Rate	Present Value	
		Const. Cost	O & M Cost	Total			Cost	Benefit
1	1993	1,459	0	1,459	0	1.0000	1,459	0
2	1994	1,575	0	1,575	0	0.9107	1,434	0
3	1995	7,129	0	7,129	0	0.8295	5,913	0
4	1996	36,931	0	36,931	0	0.7554	27,899	0
5	1997	31,010	0	31,010	0	0.6880	21,335	0
6	1998	25,130	720	25,850	0	0.6266	16,198	0
7	1999	0	720	720	0	0.5707	411	0
8	2000	0	720	720	0	0.5197	374	0
9	2001	0	720	720	0	0.4733	341	0
10	2002	0	720	720	0	0.4311	310	0
11	2003	0	720	720	4,698	0.3926	283	1,845
12	2004	0	720	720	9,791	0.3576	257	3,501
13	2005	0	720	720	15,303	0.3257	234	4,984
14	2006	0	720	720	21,263	0.2966	214	6,307
15	2007	0	720	720	21,263	0.2701	194	5,744
16	2008	0	720	720	21,263	0.2460	177	5,231
17	2009	0	720	720	21,263	0.2241	161	4,764
18	2010	0	720	720	21,263	0.2041	147	4,339
19	2011	0	720	720	21,263	0.1858	134	3,952
20	2012	0	720	720	21,263	0.1693	122	3,599
21	2013	0	720	720	21,263	0.1542	111	3,278
22	2014	0	720	720	21,263	0.1404	101	2,985
23	2015	0	720	720	21,263	0.1279	92	2,719
24	2016	0	720	720	21,263	0.1165	84	2,476
25	2017	0	720	720	21,263	0.1061	76	2,255
26	2018	0	720	720	21,263	0.0966	70	2,054
27	2019	0	720	720	21,263	0.0880	63	1,871
28	2020	0	720	720	21,263	0.0801	58	1,704
29	2021	0	720	720	21,263	0.0730	53	1,552
30	2022	0	720	720	21,263	0.0665	48	1,413
31	2023	0	720	720	21,263	0.0605	44	1,287
32	2024	0	720	720	21,263	0.0551	40	1,172
33	2025	0	720	720	21,263	0.0502	36	1,067
34	2026	0	720	720	21,263	0.0457	33	972
35	2027	0	720	720	21,263	0.0416	30	885
36	2028	0	720	720	21,263	0.0379	27	806
37	2029	0	720	720	21,263	0.0345	25	734
38	2030	0	720	720	21,263	0.0315	23	669
39	2031	0	720	720	21,263	0.0286	21	609
40	2032	0	720	720	21,263	0.0261	19	555
41	2033	0	720	720	21,263	0.0238	17	505
42	2034	0	720	720	21,263	0.0216	16	460
43	2035	0	720	720	21,263	0.0197	14	419
44	2036	0	720	720	21,263	0.0180	13	382
45	2037	0	720	720	21,263	0.0163	12	348
46	2038	0	720	720	21,263	0.0149	11	317
47	2039	0	720	720	21,263	0.0136	10	288
48	2040	0	720	720	21,263	0.0124	9	263
49	2041	0	720	720	21,263	0.0112	8	239
50	2042	0	720	720	21,263	0.0102	7	218
Total(Lp)		103,234	32,400	135,634	816,523		78,766	78,766
(US $)		51,617	16,200	67,817	408,262		39,383	39,383

B/C = 1.00
B-C = 0
FIRR = 9.80 %

Table H.1-6 FIRR Cash Flow of Cost and Benefit
(5 years Delay in Benefit Accrual)

(Unit: 1000Lps)

No.	Year	Cost			Benefit	Discount Rate	Present Value	
		Const. Cost	O & M Cost	Total			Cost	Benefit
1	1993	1,459	0	1,459	0	1.0000	1,459	0
2	1994	1,575	0	1,575	0	0.8929	1,406	0
3	1995	7,129	0	7,129	0	0.7972	5,683	0
4	1996	36,931	0	36,931	0	0.7118	26,287	0
5	1997	31,010	0	31,010	0	0.6355	19,707	0
6	1998	25,130	720	25,850	0	0.5674	14,668	0
7	1999	0	720	720	0	0.5066	365	0
8	2000	0	720	720	0	0.4523	326	0
9	2001	0	720	720	0	0.4039	291	0
10	2002	0	720	720	0	0.3606	260	0
11	2003	0	720	720	4,698	0.3220	232	1,513
12	2004	0	720	720	9,791	0.2875	207	2,815
13	2005	0	720	720	15,303	0.2567	185	3,928
14	2006	0	720	720	21,263	0.2292	165	4,873
15	2007	0	720	720	21,263	0.2046	147	4,351
16	2008	0	720	720	21,263	0.1827	132	3,885
17	2009	0	720	720	21,263	0.1631	117	3,468
18	2010	0	720	720	21,263	0.1456	105	3,097
19	2011	0	720	720	21,263	0.1300	94	2,765
20	2012	0	720	720	21,263	0.1161	84	2,469
21	2013	0	720	720	21,263	0.1037	75	2,204
22	2014	0	720	720	21,263	0.0926	67	1,968
23	2015	0	720	720	21,263	0.0826	60	1,757
24	2016	0	720	720	21,263	0.0738	53	1,569
25	2017	0	720	720	21,263	0.0659	47	1,401
26	2018	0	720	720	21,263	0.0588	42	1,251
27	2019	0	720	720	21,263	0.0525	38	1,117
28	2020	0	720	720	21,263	0.0469	34	997
29	2021	0	720	720	21,263	0.0419	30	890
30	2022	0	720	720	21,263	0.0374	27	795
31	2023	0	720	720	21,263	0.0334	24	710
32	2024	0	720	720	21,263	0.0298	21	634
33	2025	0	720	720	21,263	0.0266	19	566
34	2026	0	720	720	21,263	0.0238	17	505
35	2027	0	720	720	21,263	0.0212	15	451
36	2028	0	720	720	21,263	0.0189	14	403
37	2029	0	720	720	21,263	0.0169	12	360
38	2030	0	720	720	21,263	0.0151	11	321
39	2031	0	720	720	21,263	0.0135	10	287
40	2032	0	720	720	21,263	0.0120	9	256
41	2033	0	720	720	21,263	0.0107	8	229
42	2034	0	720	720	21,263	0.0096	7	204
43	2035	0	720	720	21,263	0.0086	6	182
44	2036	0	720	720	21,263	0.0076	6	163
45	2037	0	720	720	21,263	0.0068	5	145
46	2038	0	720	720	21,263	0.0061	4	130
47	2039	0	720	720	21,263	0.0054	4	116
48	2040	0	720	720	21,263	0.0049	4	103
49	2041	0	720	720	21,263	0.0043	3	92
50	2042	0	720	720	21,263	0.0039	3	82
Total(Lp)		103,234	32,400	135,634	816,523		72,592	53,049
(US $)		51,617	16,200	67,817	408,262		36,296	26,525

B/C = 0.73
B-C = -19,542
FIRR = 12.00 %