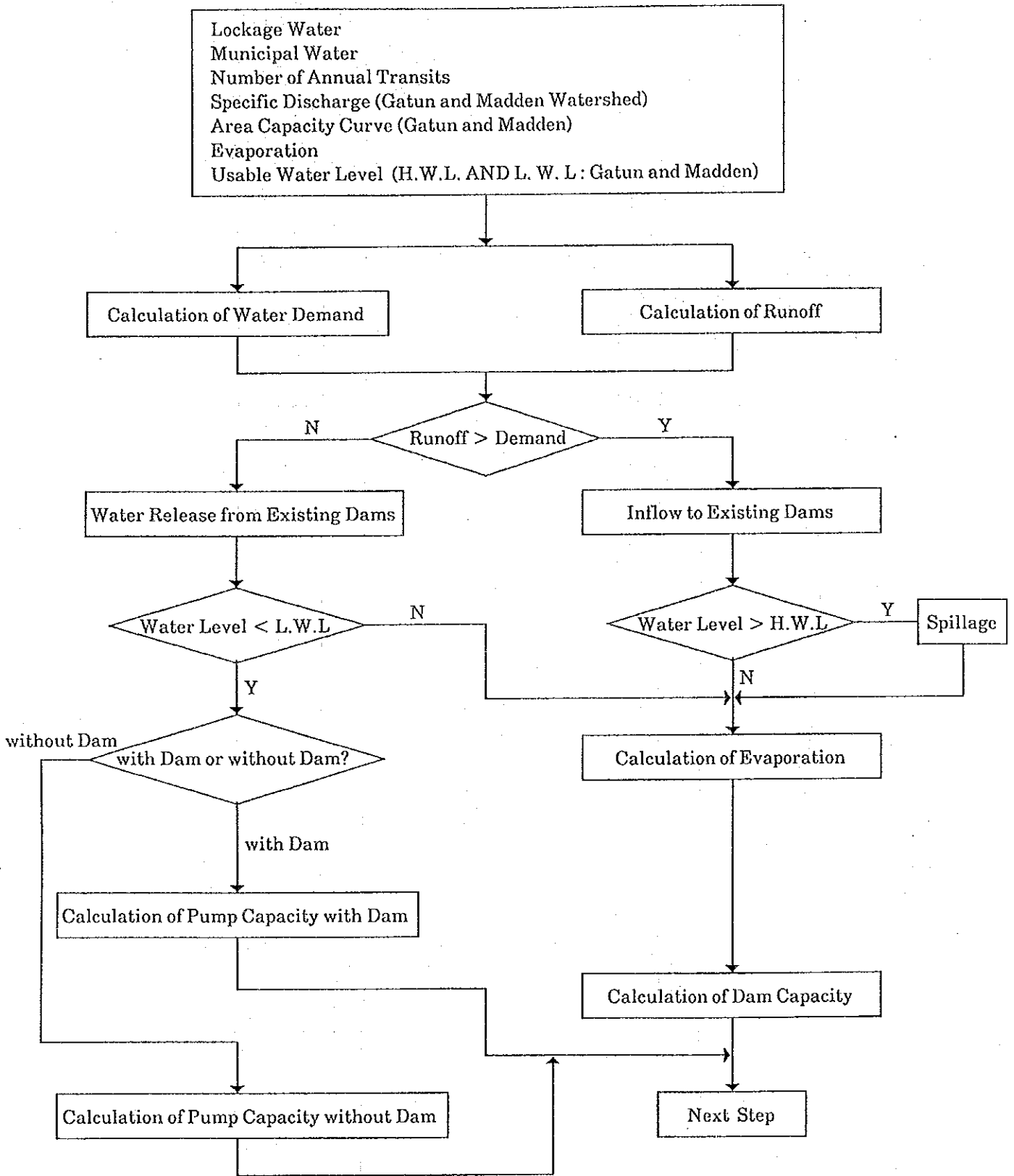
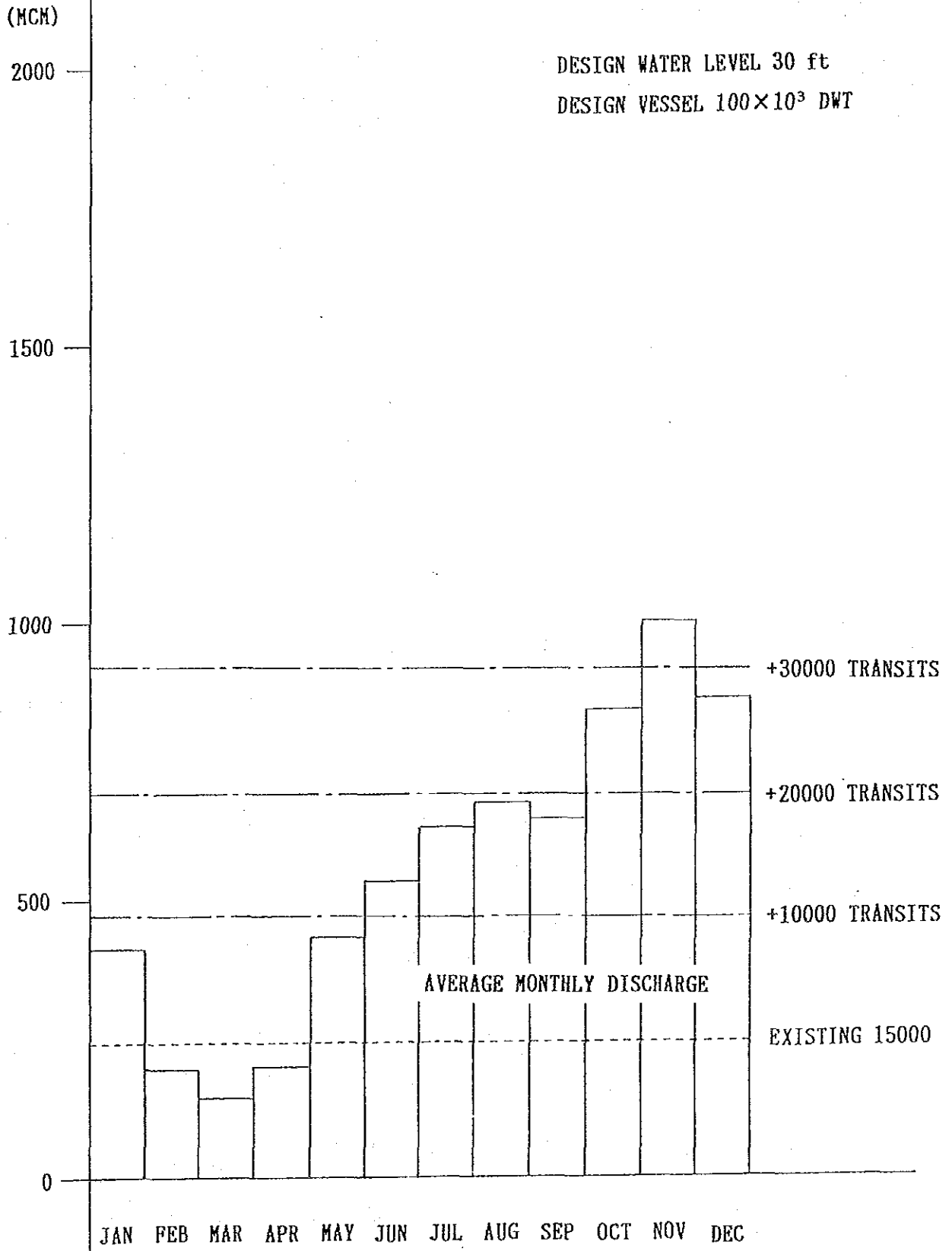


AP 1-7 FLOWCHART FOR WATER BALANCE SIMULATION

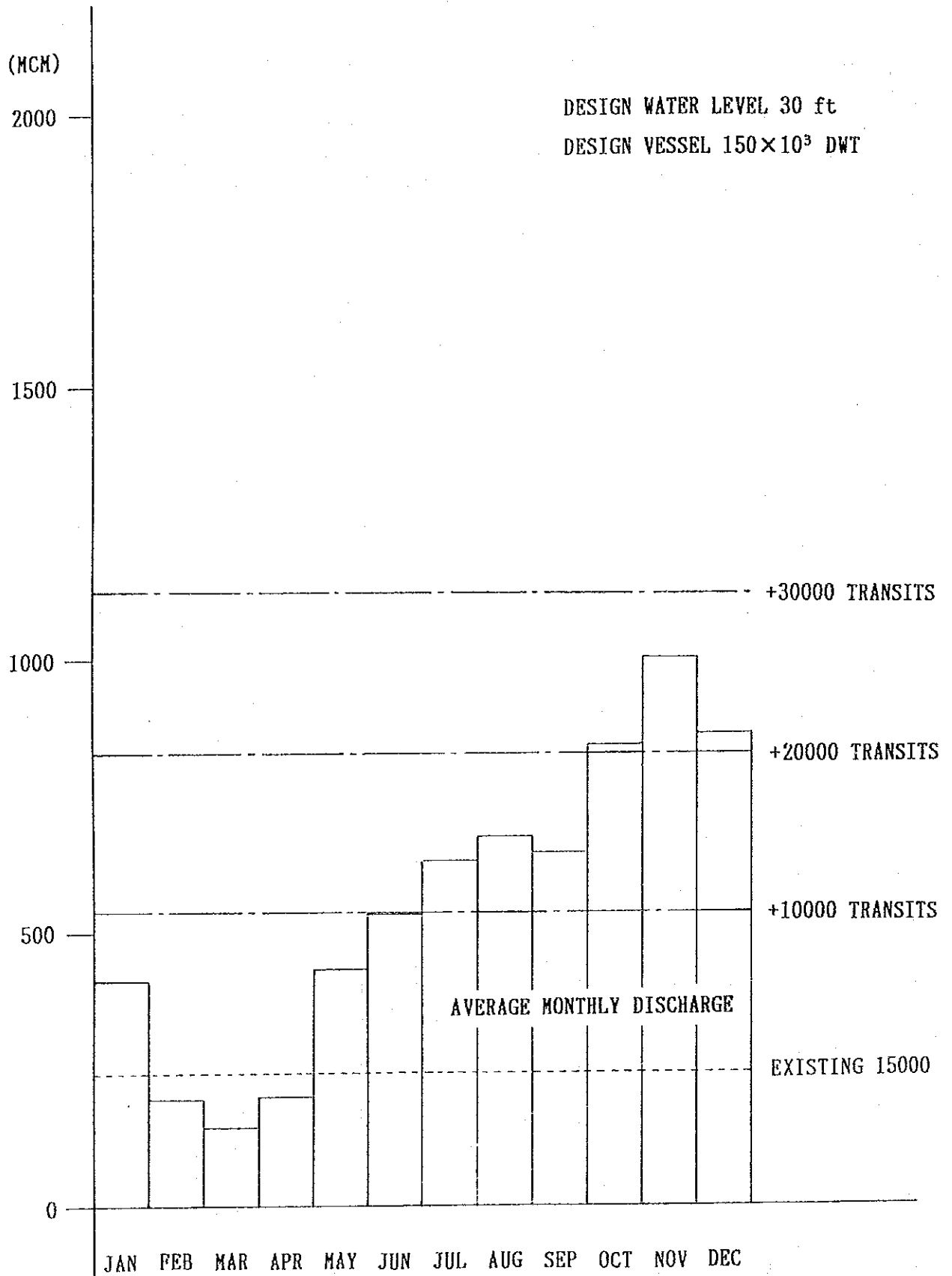


FLOWCHART FOR WATER BALANCE SIMULATION

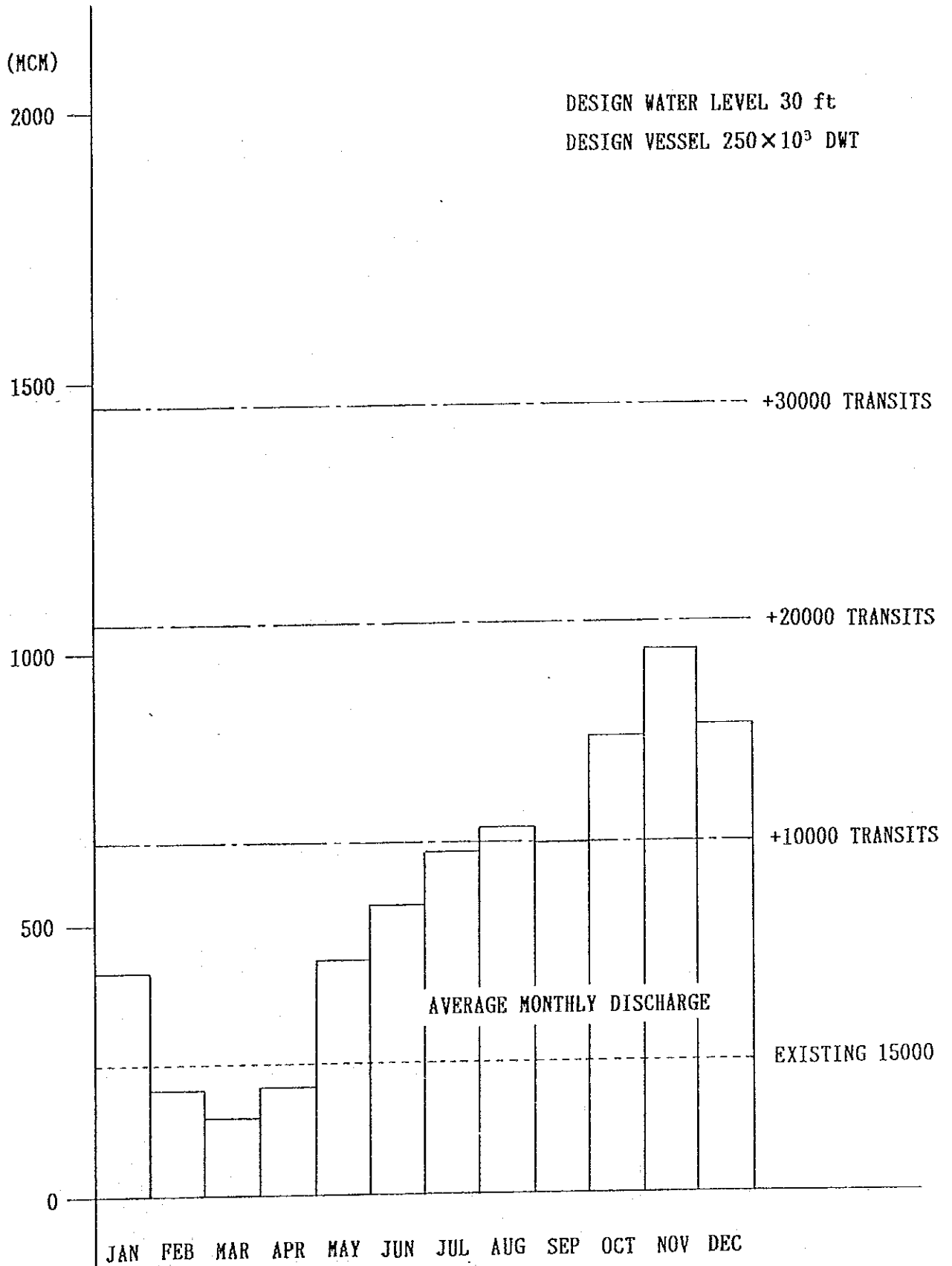
AP 1-8 RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT



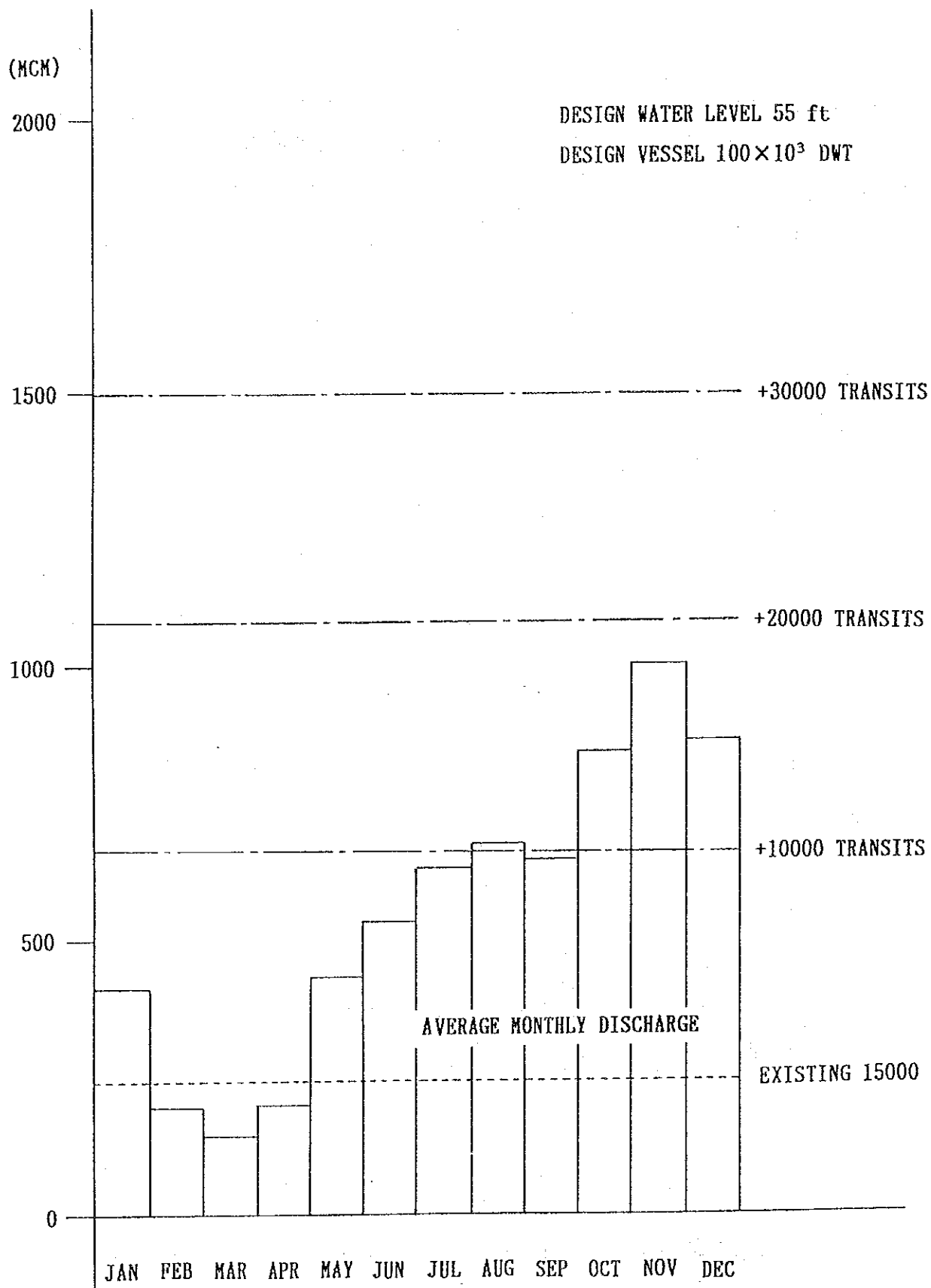
RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT



RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT

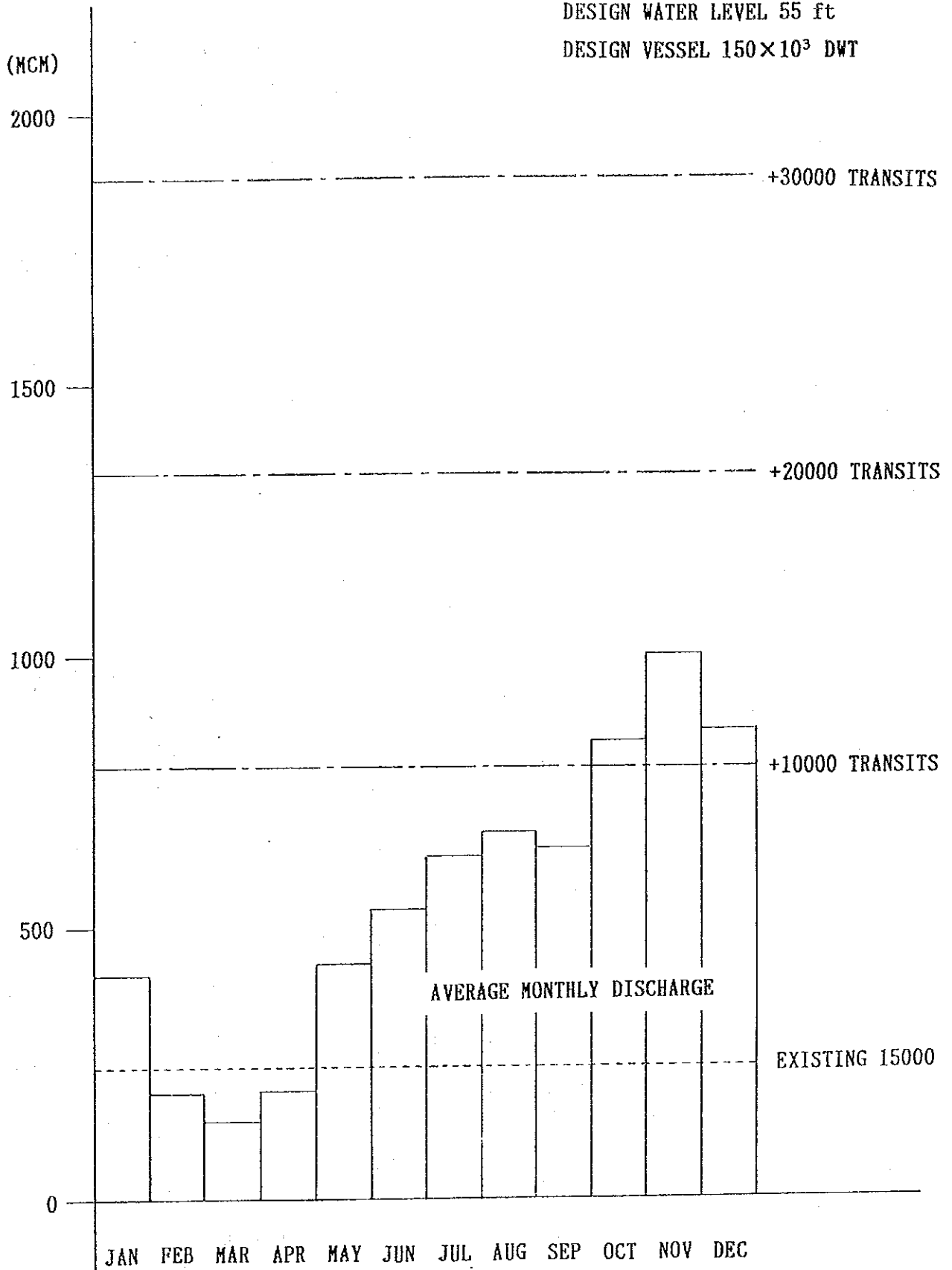


RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT

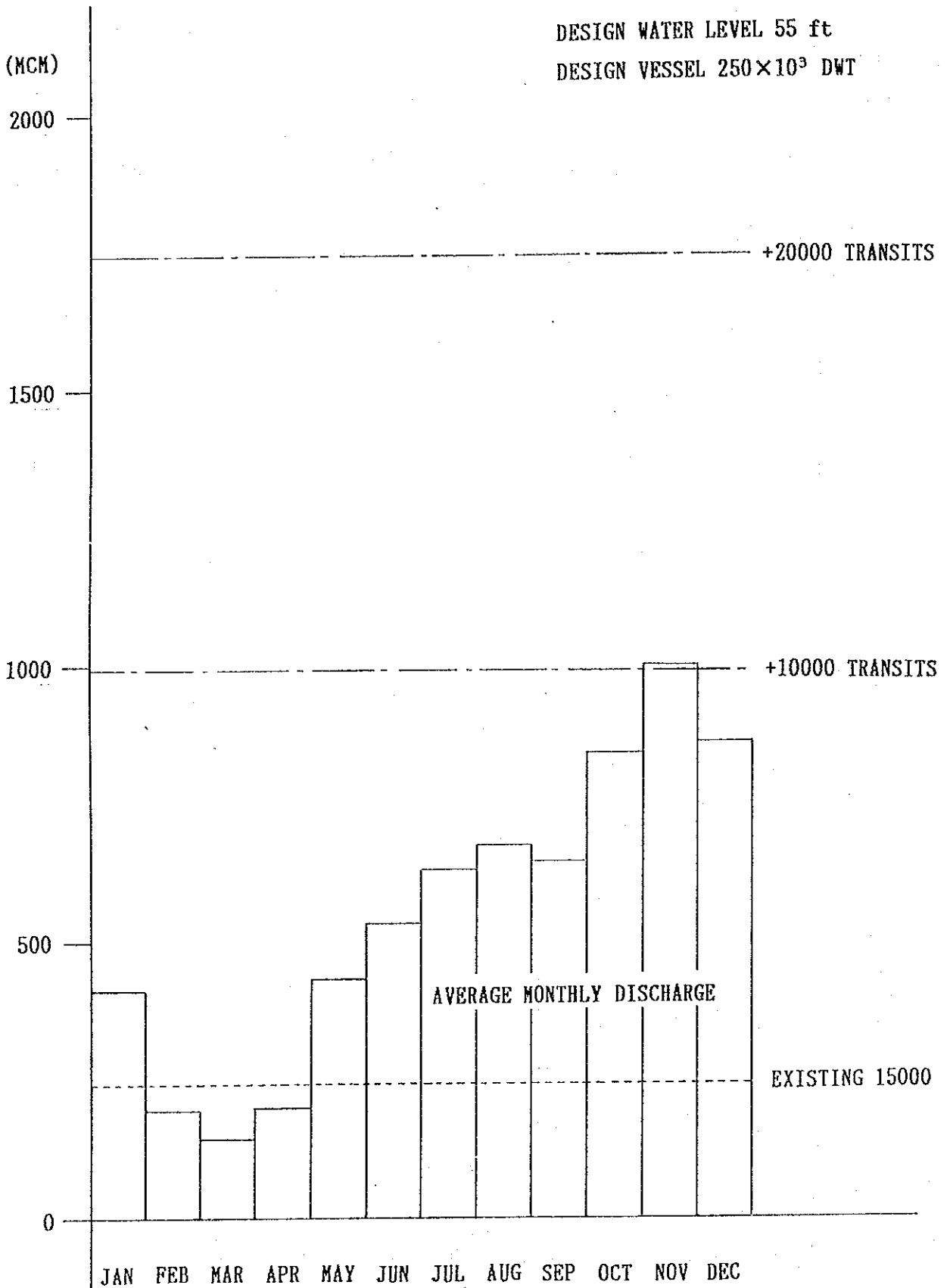


RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT

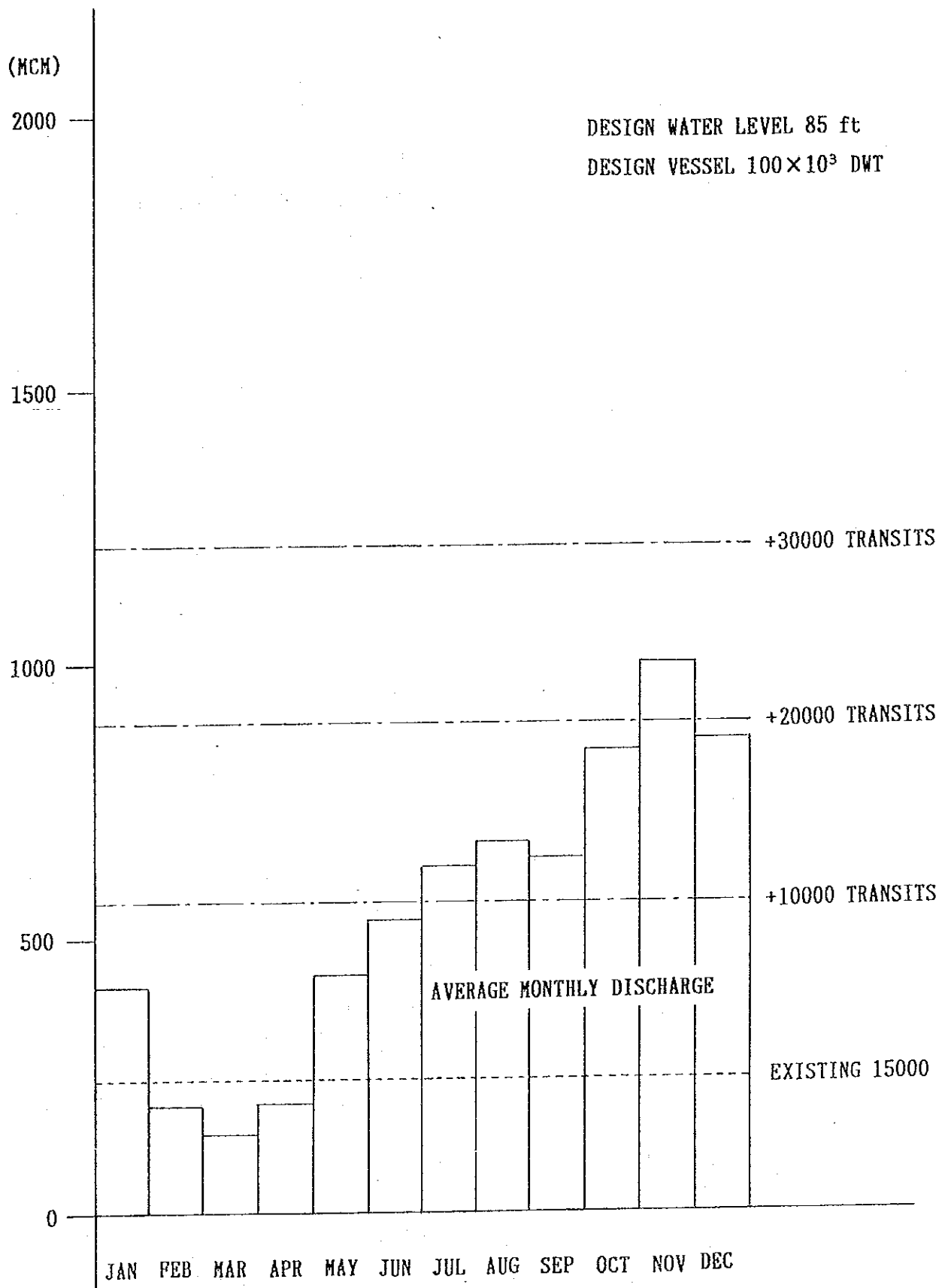
DESIGN WATER LEVEL 55 ft
DESIGN VESSEL 150×10^3 DWT



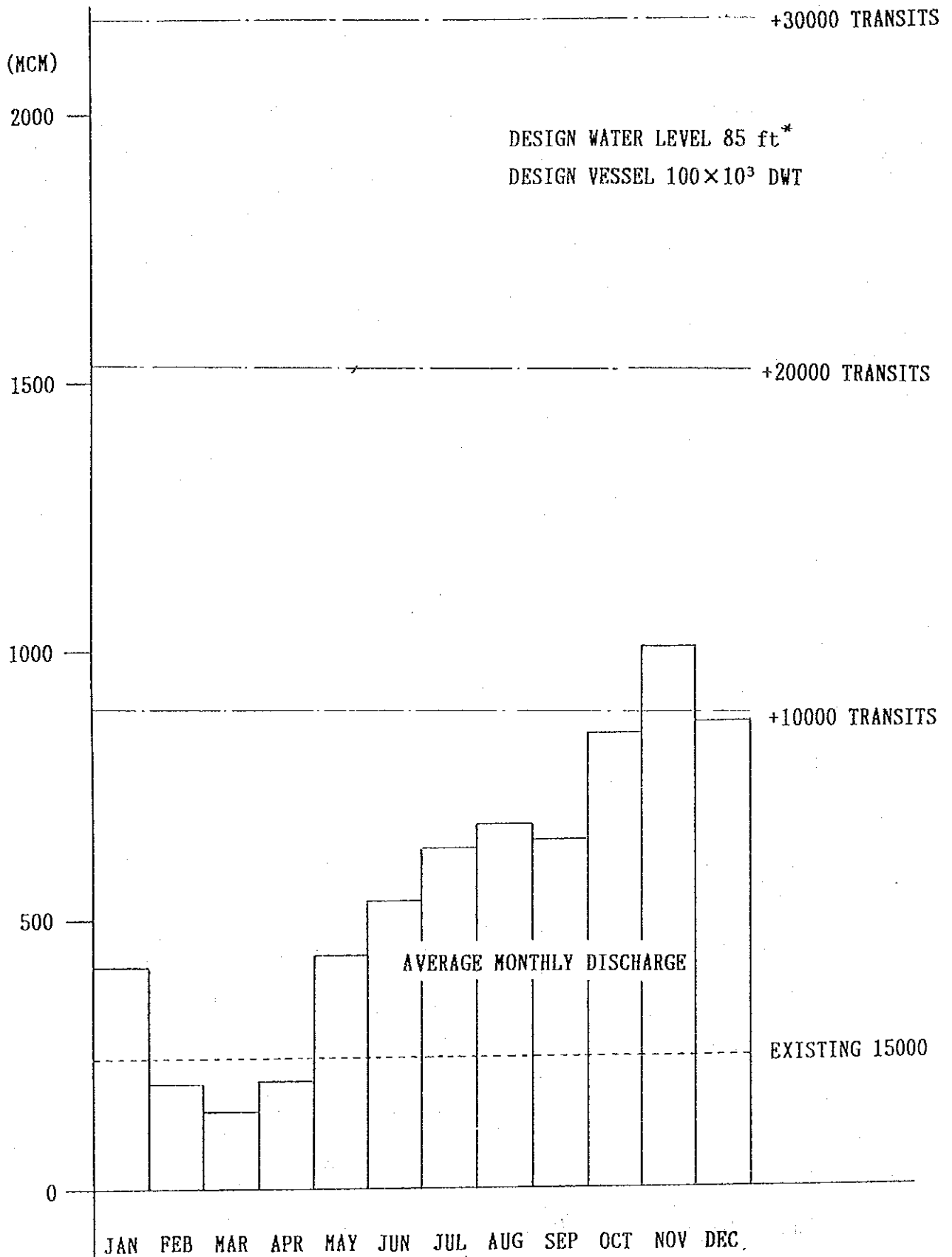
RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT



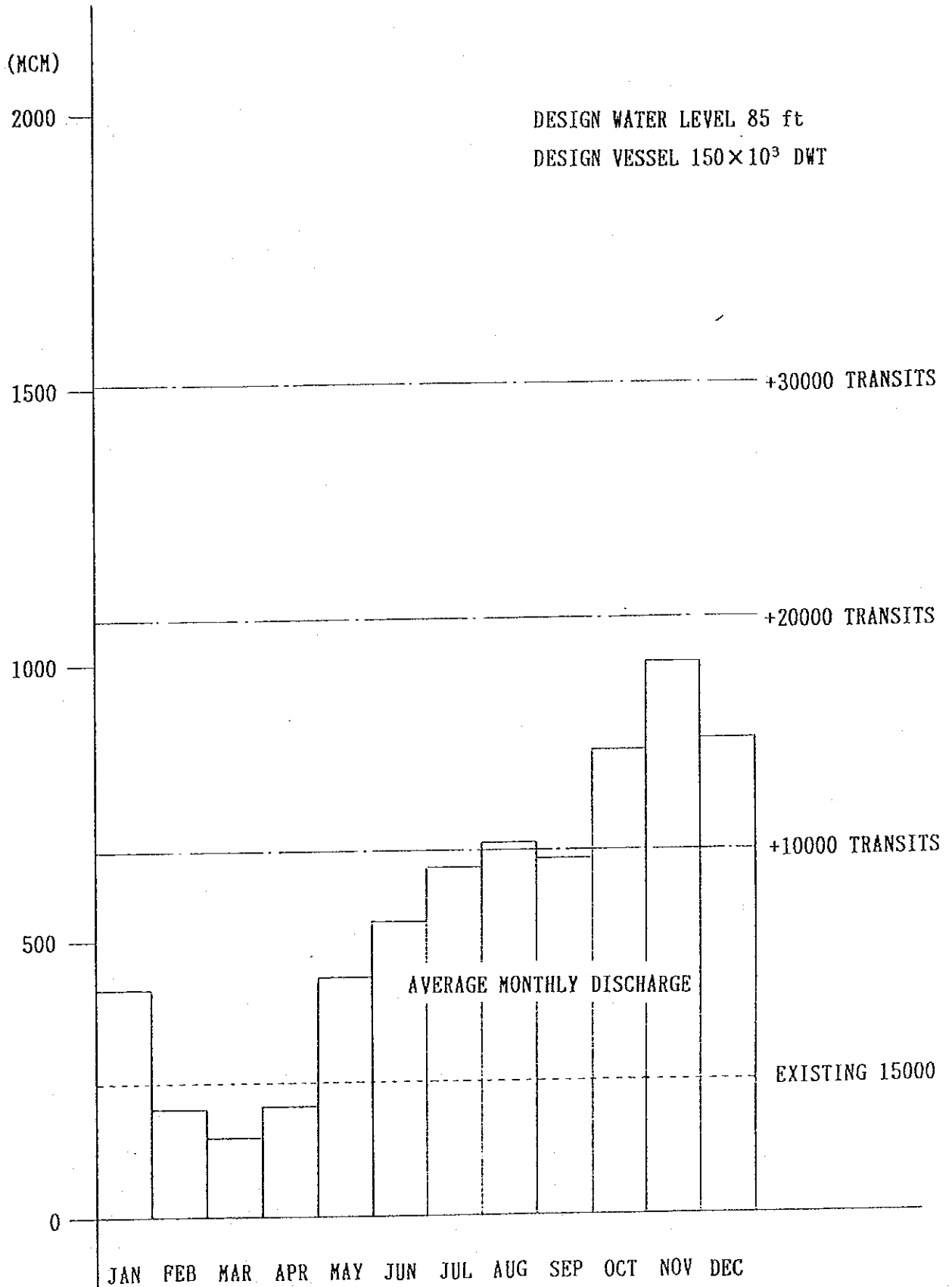
RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT



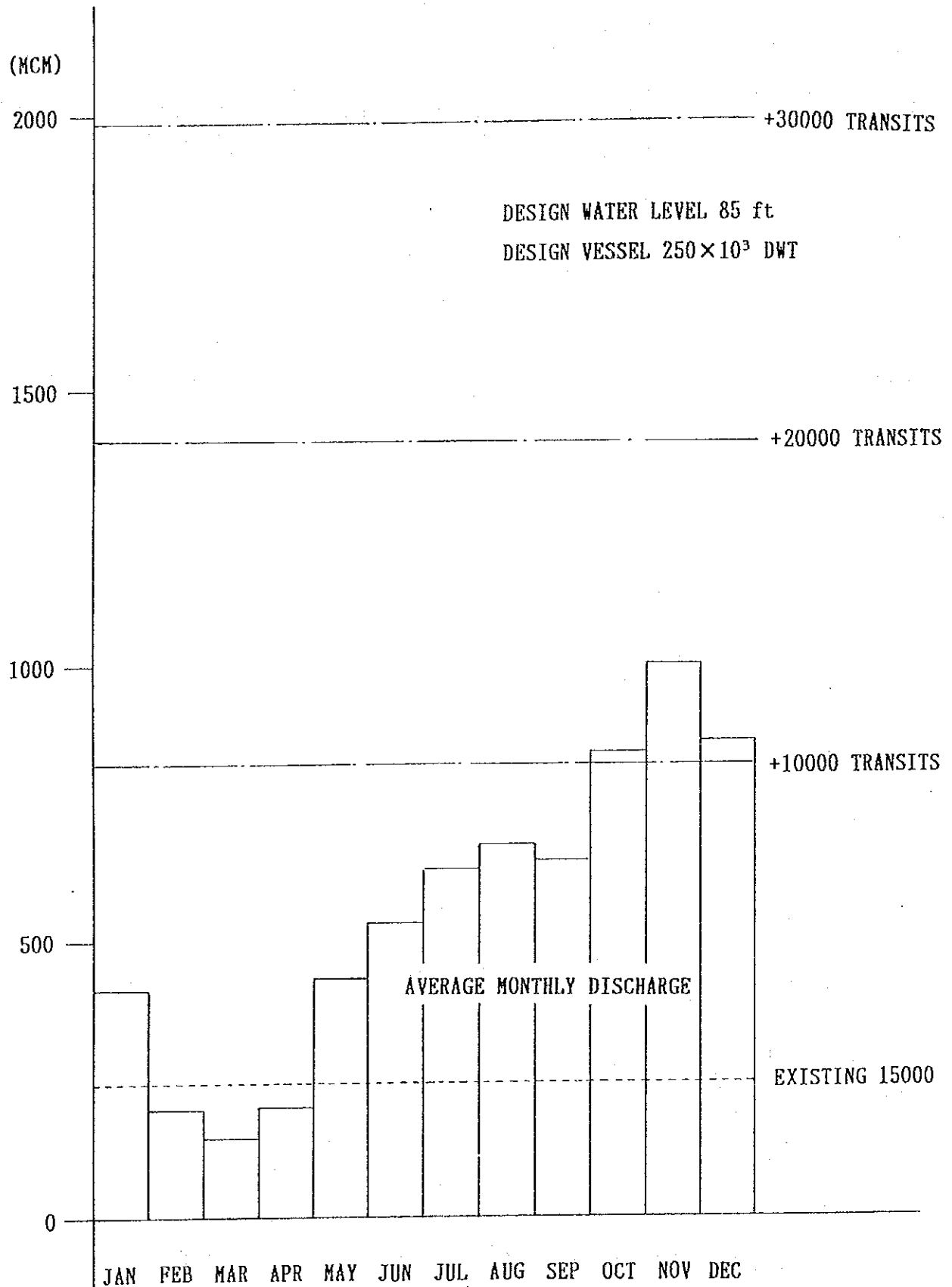
RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT



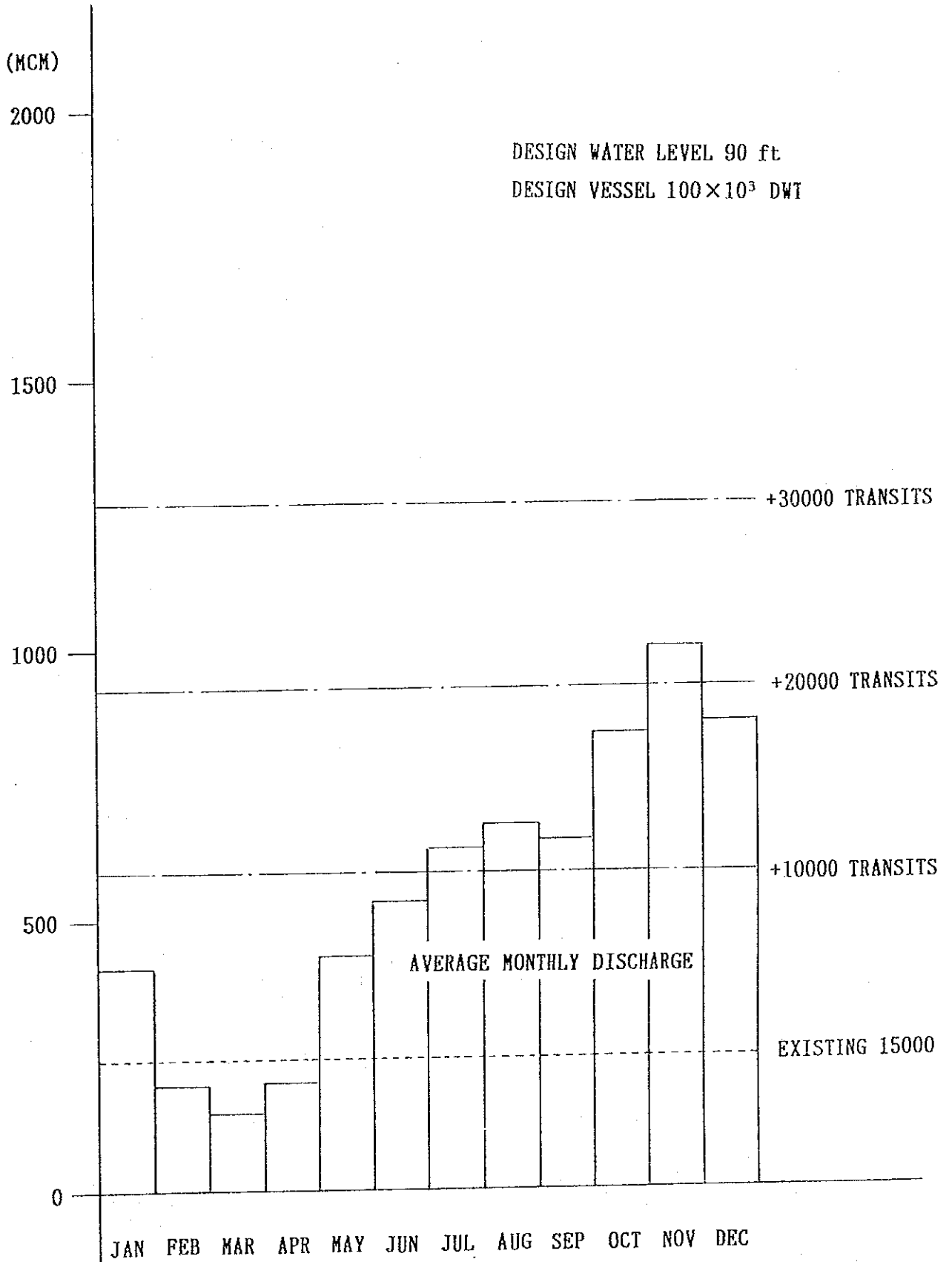
RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT



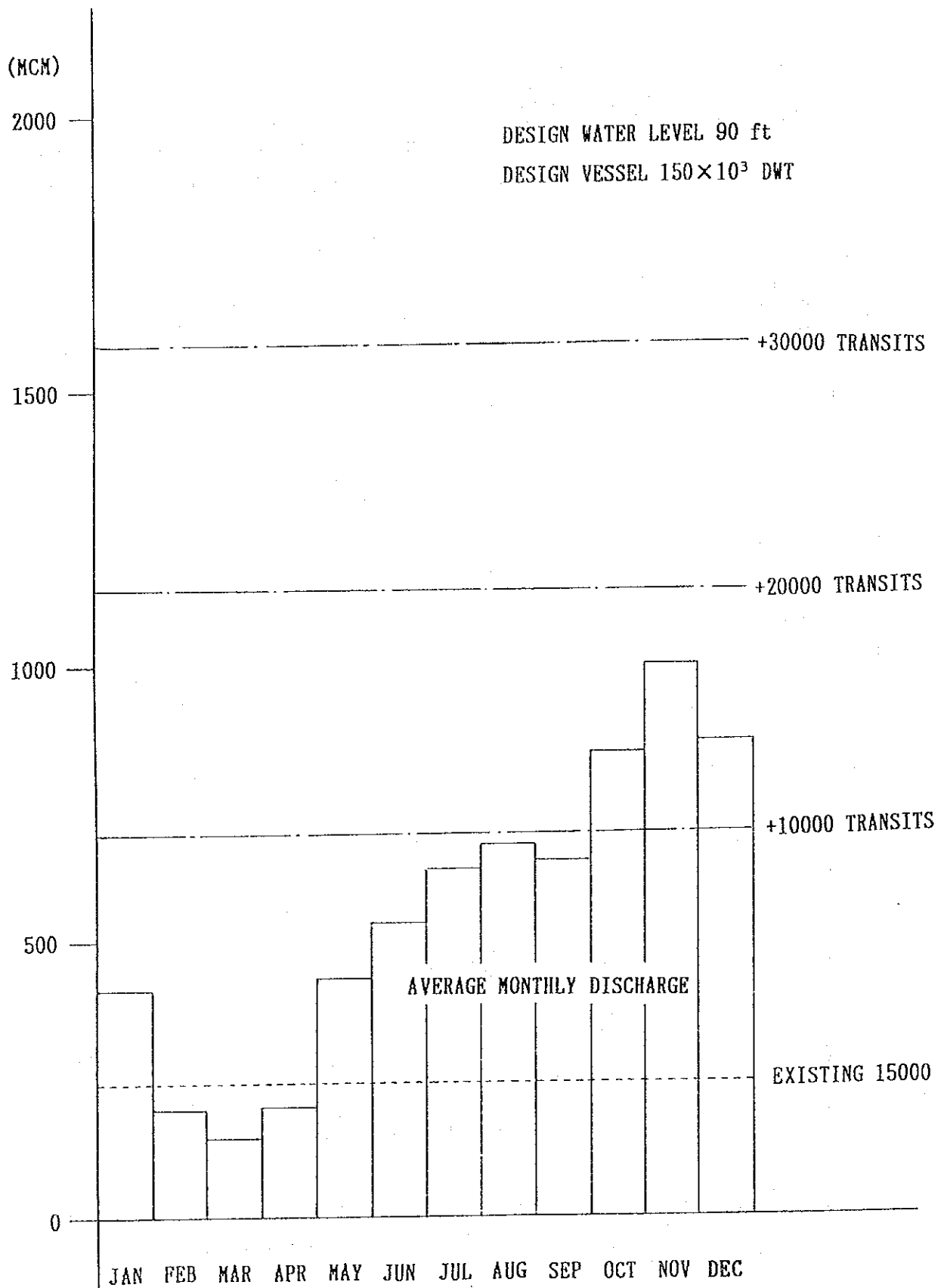
RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT



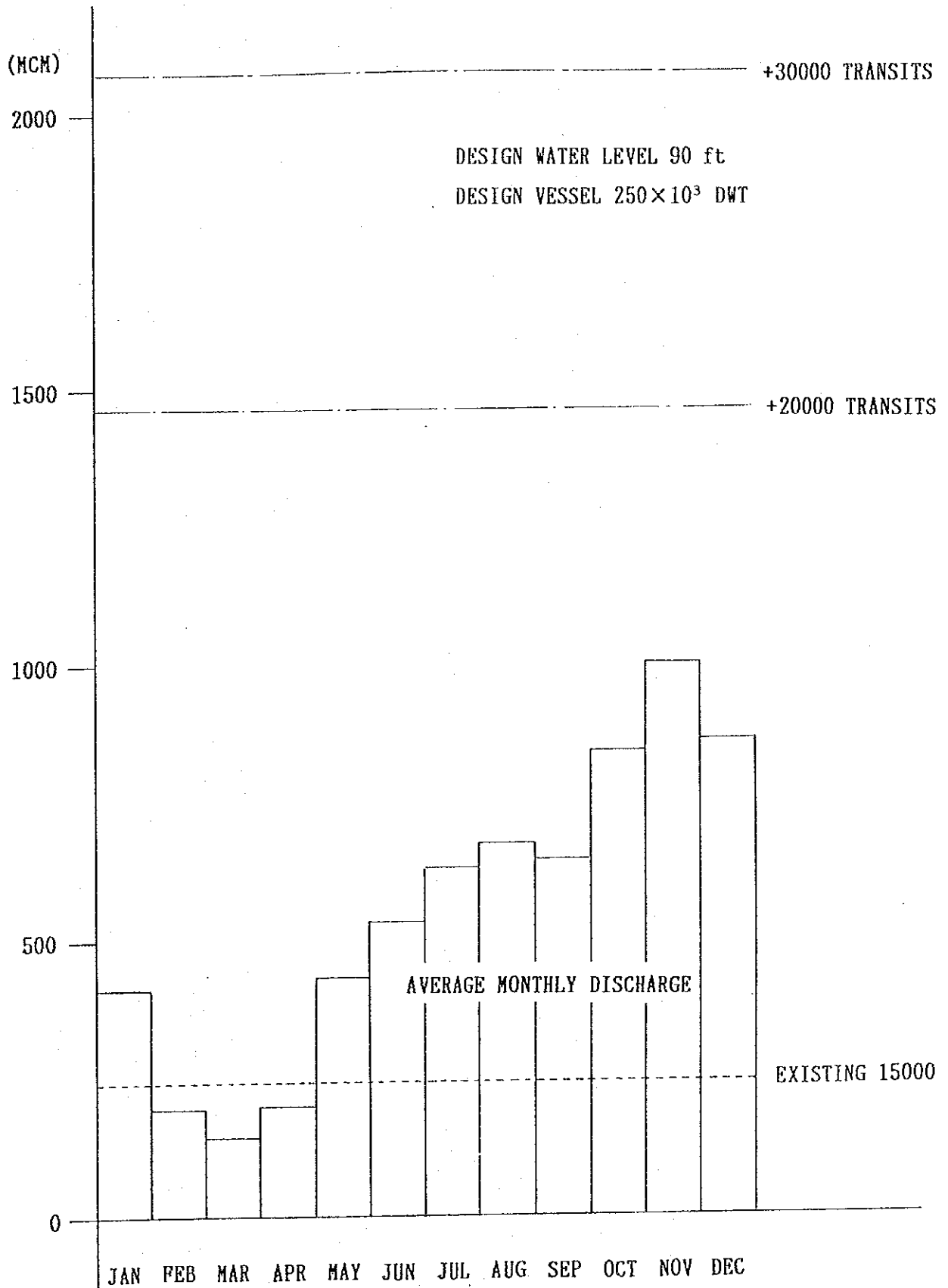
RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT



RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT



RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT



RELATIONSHIP BETWEEN DISCHARGE AND LOCKAGE WATER REQUIREMENT

DESIGN WATER LEVEL 85ft
 DESIGN VESSEL 65x10³ DWT
 EXISTING 15000 TRANSITS/ANNUAL

WATER BALANCE SIMULATION ON EXISTING CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM** *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPII 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPII 14	15	16
JAN	5282.4	26.10	218.2	147.1	11.6	59.4	.1	753.1	76.20	197.7	103.3	11.6	7.2	75.6	0.	0.
FEB	5194.2	25.90	101.1	116.0	10.5	62.9	.0	721.2	75.56	96.0	110.2	10.5	7.2	.0	0.	0.
MAR	5060.5	25.60	70.9	122.3	11.6	70.6	.0	647.7	74.08	74.2	128.0	11.6	8.1	.0	0.	0.
APR	4966.4	25.38	81.2	97.8	11.3	66.3	.0	604.3	73.21	120.1	144.5	11.3	7.6	.0	0.	0.
MAY	4991.7	25.44	194.6	111.4	11.6	46.2	.0	691.1	74.95	242.7	139.0	11.6	5.3	.0	0.	0.
JUN	5098.8	25.68	288.2	130.5	11.3	39.4	.0	753.1	76.20	247.0	111.8	11.3	4.7	57.2	0.	0.
JUL	5250.9	26.03	333.8	132.4	11.6	37.7	.0	753.1	76.20	297.5	118.0	11.6	4.8	163.1	0.	0.
AUG	5282.4	26.10	379.8	250.4	11.6	40.6	45.8	753.1	76.20	297.2	.0	11.6	5.4	280.2	0.	0.
SEP	5282.4	26.10	397.7	242.3	11.3	38.6	105.5	753.1	76.20	250.9	.0	11.3	5.0	234.7	0.	0.
OCT	5282.4	26.10	559.5	250.4	11.6	41.0	256.5	753.1	76.20	281.7	.0	11.6	5.3	264.7	0.	0.
NOV	5282.4	26.10	627.5	242.3	11.3	39.0	334.9	753.1	76.20	373.1	.0	11.3	5.2	356.6	0.	0.
DEC	5282.4	26.10	453.8	250.4	11.6	49.3	142.5	753.1	76.20	409.5	.0	11.6	6.8	391.1	0.	0.
			308.8	174.4	11.4	49.2	73.8			240.6	71.2	11.4	6.0	151.9		

AP 1-9 WATER BALANCE SIMULATION

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 30ft
DESIGN VESSEL 100 X 10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** *NEW DAM* *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	2314.2	25.65	218.2	263.6	11.6	59.0	.0	719.7	75.53	197.7	212.7	11.6	6.8	.0	0.	27.
FEB	2122.5	24.70	101.1	243.5	10.5	62.9	.0	611.3	73.35	96.0	186.7	10.5	7.2	.0	0.	24.
MAR	1867.2	23.24	70.9	270.8	11.6	70.6	.0	460.1	69.23	74.2	205.6	11.6	8.1	.0	0.	27.
APR	1679.4	22.13	81.2	217.4	11.3	66.3	.0	317.7	64.74	120.1	243.6	11.3	7.6	.0	0.	26.
MAY	1615.7	21.75	194.6	227.3	11.6	46.2	.0	294.3	63.90	242.7	249.1	11.6	5.3	.0	0.	27.
JUN	1621.1	21.78	288.2	258.1	11.3	39.4	.0	322.6	64.92	247.0	202.9	11.3	4.5	.0	0.	26.
JUL	1671.4	22.08	333.8	261.0	11.6	37.6	.0	388.8	67.26	297.5	215.3	11.6	4.3	.0	0.	27.
AUG	1751.0	22.55	379.8	275.2	11.6	40.2	.0	468.6	69.47	297.2	201.2	11.6	4.6	.0	0.	27.
SEP	1835.8	23.05	397.7	289.5	11.3	38.1	.0	532.4	71.23	250.9	171.5	11.3	4.4	.0	0.	26.
OCT	2048.9	24.31	559.5	321.8	11.6	39.8	.0	643.3	73.99	281.7	154.6	11.6	4.6	.0	0.	27.
NOV	2359.9	25.88	627.5	293.4	11.3	37.6	.0	753.1	76.20	373.1	167.6	11.3	4.6	80.0	0.	26.
DEC	2403.5	26.10	453.8	375.3	11.6	48.9	1.2	753.1	76.20	408.5	101.1	11.6	6.5	290.3	0.	27.
			308.8	274.7	11.4	48.9	.1			240.6	192.7	11.4	5.7	30.9		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 30ft

DESIGN VESSEL 100X10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****						***** MADDEN DAM *****						*****			*****		
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16	*NEW DAM* *PUMP*	
JAN	2295.2	25.56	218.2	496.9	11.6	59.0	.0	718.5	75.51	197.7	213.9	11.6	6.8	.0	0.	0.	241.	
FEB	2047.3	24.30	101.1	493.3	10.5	62.9	.0	648.2	74.09	96.0	148.6	10.5	7.2	.0	0.	0.	218.	
MAR	1702.9	22.27	70.9	574.2	11.6	70.6	.0	566.2	72.16	74.2	136.5	11.6	8.1	.0	0.	0.	241.	
APR	1442.0	20.64	81.2	497.8	11.3	66.3	.0	477.4	69.71	120.1	190.0	11.3	7.6	.0	0.	0.	233.	
MAY	1363.4	20.10	194.6	456.5	11.6	46.2	.0	448.8	68.92	242.7	254.3	11.6	5.3	.0	0.	0.	241.	
JUN	1367.5	20.13	288.2	466.7	11.3	39.4	.0	459.0	69.20	247.0	221.1	11.3	4.5	.0	0.	0.	233.	
JUL	1424.7	20.52	333.8	468.4	11.6	37.6	.0	498.2	70.28	297.5	242.4	11.6	4.3	.0	0.	0.	241.	
AUG	1513.1	21.12	379.8	480.7	11.6	40.2	.0	549.1	71.69	297.2	230.1	11.6	4.6	.0	0.	0.	241.	
SEP	1602.6	21.67	397.7	492.1	11.3	38.1	.0	588.7	72.78	250.9	195.7	11.3	4.4	.0	0.	0.	233.	
OCT	1826.0	23.00	559.5	525.8	11.6	39.8	.0	669.2	74.61	281.7	185.0	11.6	4.6	.0	0.	0.	241.	
NOV	2158.1	24.87	627.5	479.8	11.3	37.6	.0	753.1	76.20	373.1	208.0	11.3	4.5	65.4	0.	0.	233.	
DEC	2345.8	25.81	453.8	447.2	11.6	48.3	.0	753.1	76.20	409.5	263.6	11.6	6.1	128.3	0.	0.	241.	
			308.8	489.9	11.4	48.8	.0			240.6	207.4	11.4	5.7	16.1				

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 30ft

DESIGN VESSEL 100 X 10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****					***** MADDEN DAM *****					*****			*NEW DAM* *PUMP*		
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIIL 14	15	16
JAN	2302.6	25.60	218.2	730.5	11.6	59.0	.0	726.2	75.66	197.7	206.2	11.5	6.8	.0	0.	482.
FEB	2048.2	24.31	101.1	717.6	10.3	62.9	.0	676.1	74.65	96.0	128.5	10.5	7.2	.0	0.	435.
MAR	1693.0	22.21	70.9	826.0	11.6	70.6	.0	619.8	73.52	74.2	110.8	11.5	8.1	.0	0.	482.
APR	1419.7	20.49	81.2	743.5	11.3	66.3	.0	558.0	71.93	120.1	163.0	11.3	7.6	.0	0.	467.
MAY	1349.1	20.01	194.6	689.5	11.6	46.2	.0	536.5	71.34	242.7	247.3	11.6	5.3	.0	0.	482.
JUN	1370.2	20.15	288.2	683.0	11.3	39.4	.0	544.2	71.55	247.0	223.5	11.3	4.5	.0	0.	467.
JUL	1450.4	20.70	333.8	686.5	11.6	37.6	.0	575.5	72.42	297.5	250.3	11.6	4.3	.0	0.	482.
AUG	1564.0	21.45	379.8	696.6	11.6	40.2	.0	616.3	73.45	297.2	240.2	11.6	4.6	.0	0.	482.
SEP	1676.4	22.11	397.7	702.5	11.3	38.1	.0	647.6	74.08	250.9	204.0	11.3	4.4	.0	0.	467.
OCT	1929.2	23.61	559.5	737.3	11.6	39.8	.0	713.7	75.41	281.7	199.4	11.6	4.6	.0	0.	482.
NOV	2298.4	25.57	627.5	676.0	11.3	37.6	.0	753.1	76.20	373.1	230.5	11.3	4.6	87.4	0.	467.
DEC	2403.5	26.10	453.8	769.1	11.6	48.9	1.2	753.1	76.20	409.5	167.7	11.6	6.3	223.9	0.	482.
			308.8	721.5	11.4	48.9	.1		240.6	197.6	11.4		5.7	25.9		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 30ft
 DESIGN VESSEL 150x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM** *PUMP*														
	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SFIL	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SFIL	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SFIL		
JAN	2303.0	25.60	218.2	328.4	11.6	59.0	.0	714.9	75.43	197.7	217.4	11.6	6.8	.0	14	15	16	80.					
FEB	2085.8	24.51	101.1	317.4	10.5	62.9	.0	617.7	73.48	96.0	175.6	10.5	7.2	.0									
MAR	1788.6	22.77	70.9	366.2	11.6	70.6	.0	492.6	70.13	74.2	179.6	11.6	8.1	.0									
APR	1569.1	21.48	81.2	301.0	11.3	66.3	.0	366.5	66.50	120.1	227.3	11.3	7.6	.0									
MAY	1496.3	21.01	194.6	289.9	11.6	46.2	.0	336.3	65.41	242.7	255.9	11.6	5.3	.0									
JUN	1496.2	21.01	288.2	315.4	11.3	39.4	.0	354.7	66.08	247.0	212.9	11.3	4.5	.0									
JUL	1543.4	21.32	333.8	317.7	11.6	37.6	.0	408.1	67.79	297.5	228.2	11.6	4.3	.0									
AUG	1620.1	21.78	379.8	331.7	11.6	40.2	.0	474.8	69.64	297.2	214.2	11.6	4.6	.0									
SEP	1700.5	22.25	397.7	345.7	11.3	38.1	.0	527.7	71.10	250.9	182.5	11.3	4.4	.0									
OCT	1909.9	23.49	559.5	379.0	11.6	39.8	.0	626.3	73.65	281.7	166.8	11.6	4.6	.0									
NOV	2220.8	25.19	627.5	345.5	11.3	37.6	.0	753.1	76.20	373.1	182.8	11.3	4.5	47.8									
DEC	2385.7	26.01	453.8	309.0	11.6	48.7	.0	753.1	76.20	409.5	236.9	11.6	6.1	154.9									
			308.8	328.9	11.4	48.9	.0			240.6	206.7	11.4	5.7	16.9									

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 30ft
DESIGN VESSEL 150x10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****						***** MADDEN DAM *****						*NEW DAM*			
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPILL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPILL 14	15	16
JAN	2286.8	25.52	218.2	639.2	11.6	59.0	.0	719.4	75.52	197.7	213.0	11.6	6.8	.0	0.	375.
FEB	2021.4	24.15	101.1	631.8	10.5	62.9	.0	659.7	74.32	96.0	138.0	10.5	7.2	.0	0.	339.
MAR	1654.3	21.98	70.9	730.7	11.6	70.6	.0	592.6	72.89	74.2	121.5	11.6	8.1	.0	0.	375.
APR	1371.6	20.16	81.2	649.2	11.3	66.3	.0	518.3	70.84	120.1	175.5	11.3	7.6	.0	0.	363.
MAY	1285.8	19.58	194.6	597.6	11.6	46.2	.0	489.5	70.04	242.7	254.6	11.6	5.3	.0	0.	375.
JUN	1288.3	19.59	288.2	597.9	11.3	39.4	.0	493.8	70.16	247.0	226.8	11.3	4.5	.0	0.	363.
JUL	1347.5	20.00	333.8	600.3	11.6	37.6	.0	523.4	70.98	297.5	251.9	11.6	4.3	.0	0.	375.
AUG	1439.0	20.62	379.8	611.5	11.6	40.2	.0	563.6	72.09	297.2	240.8	11.6	4.6	.0	0.	375.
SEP	1530.1	21.24	397.7	620.1	11.3	38.1	.0	594.4	72.94	250.9	204.6	11.3	4.4	.0	0.	363.
OCT	1758.3	22.60	559.5	654.9	11.6	39.8	.0	662.5	74.38	281.7	197.4	11.6	4.6	.0	0.	375.
NOV	2100.7	24.59	627.5	599.1	11.3	37.6	.0	753.1	76.20	373.1	225.7	11.3	4.4	41.1	0.	363.
DEC	2299.1	25.58	453.8	570.4	11.6	48.3	.0	753.1	76.20	409.5	281.9	11.6	6.0	110.1	0.	375.
			308.8	625.2	11.4	48.8	.0			240.6	211.0	11.4	5.6	12.6		

- ① GATUN DAM CAPACITY(MCH)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④ LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥ EVAPORATION FROM GATUN DAM(MCH)
- ⑦ SPILLAGE FROM GATUN DAM(MCH)
- ⑧ MADDEN DAM CAPACITY(MCH)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCH)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCH)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCH)
- ⑬ EVAPORATION FROM MADDEN DAM(MCH)
- ⑭ SPILLAGE FROM MADDEN DAM(MCH)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCH)

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 30ft

DESIGN VESSEL 150x10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPIL	*NEW DAM*	*PUMP*
	1	2	3	4	5	6	7	8									
JAN	2282.0	25.49	218.2	938.7	11.6	59.0	.0	723.4	75.60	197.7	209.0	11.6	11.6	6.8	.0	0.	670.
FEB	2002.0	24.04	101.1	912.5	10.5	62.9	.0	677.6	74.68	96.0	124.2	10.5	10.5	7.2	.0	0.	605.
MAR	1617.0	21.76	70.9	1043.2	11.6	70.6	.0	627.5	73.68	74.2	104.5	11.6	11.6	8.1	.0	0.	670.
APR	1315.0	19.78	81.2	953.7	11.3	66.3	.0	571.7	72.31	120.1	157.0	11.3	11.3	7.6	.0	0.	648.
MAY	1225.3	19.17	194.6	896.1	11.6	46.2	.0	545.9	71.60	242.7	251.6	11.6	11.6	5.3	.0	0.	670.
JUN	1232.0	19.21	288.2	878.8	11.3	39.4	.0	545.2	71.58	247.0	231.9	11.3	11.3	4.5	.0	0.	648.
JUL	1300.9	19.68	333.8	885.3	11.6	37.6	.0	564.3	72.11	297.5	262.4	11.6	11.6	4.3	.0	0.	670.
AUG	1404.1	20.38	379.8	894.4	11.6	40.2	.0	592.0	72.87	297.2	253.3	11.6	11.6	4.6	.0	0.	670.
SEP	1504.7	21.07	397.7	895.7	11.3	38.1	.0	612.4	73.37	250.9	215.0	11.3	11.3	4.4	.0	0.	648.
OCT	1748.6	22.54	559.5	933.7	11.6	39.8	.0	663.9	74.41	281.7	214.0	11.6	11.6	4.6	.0	0.	670.
NOV	2115.9	24.66	627.5	859.3	11.3	37.6	.0	753.1	76.20	373.1	251.4	11.3	11.3	4.4	16.9	0.	648.
DEC	2338.3	25.77	453.8	841.1	11.6	48.3	.0	753.1	76.20	409.5	306.6	11.6	11.6	5.9	85.4	0.	670.
			308.8	911.0	11.4	48.8	.0			240.6	215.1	11.4	11.4	5.6	8.5		

① GATUN DAM CAPACITY(MCH)

② GATUN DAM WATER LEVEL(EL.m)

③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)

④ LOCKAGE WATER FROM GATUN DAM(MCH)

⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)

⑥ EVAPORATION FROM GATUN DAM(MCH)

⑦ SPILLAGE FROM GATUN DAM(MCH)

⑧ MADDEN DAM CAPACITY(MCH)

⑨ MADDEN DAM WATER LEVEL(EL.m)

⑩ RUNOFF FROM MADDEN DAM(MCH)

⑪ LOCKAGE WATER FROM MADDEN DAM(MCH)

⑫ MUNICIPAL WATER FROM MADDEN DAM(MCH)

⑬ EVAPORATION FROM MADDEN DAM(MCH)

⑭ SPILLAGE FROM MADDEN DAM(MCH)

⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)

⑯ PUMP CAPACITY TO BE PLANNED(MCH)

DESIGN WATER LEVEL 30ft
DESIGN VESSEL 250X10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				*****				*****			
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPI.L 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPI.L 14	NEW DAM* 15	*PUMP* 16
JAN	2297.2	25.57	218.2	441.3	11.6	59.0	.0	717.4	75.48	197.7	215.0	11.6	6.8	.0	0.	187.
FEB	2056.8	24.36	101.1	437.4	10.5	62.9	.0	640.3	73.93	96.0	155.4	10.5	7.2	.0	0.	169.
MAR	1723.0	22.39	70.9	509.9	11.6	70.6	.0	548.4	71.67	74.2	146.4	11.6	8.1	.0	0.	187.
APR	1472.2	20.84	81.2	435.9	11.3	66.3	.0	450.4	68.96	120.1	199.3	11.3	7.6	.0	0.	181.
MAY	1395.1	20.32	194.6	401.4	11.6	46.2	.0	421.2	68.15	242.7	254.9	11.6	5.3	.0	0.	187.
JUN	1397.9	20.34	288.2	416.2	11.3	39.4	.0	433.5	68.49	247.0	218.9	11.3	4.5	.0	0.	181.
JUL	1452.0	20.71	333.8	417.9	11.6	37.6	.0	476.6	69.69	297.5	238.6	11.6	4.3	.0	0.	187.
AUG	1536.8	21.28	379.8	430.7	11.6	40.2	.0	531.9	71.21	297.2	225.6	11.6	4.6	.0	0.	187.
SEP	1623.5	21.80	397.7	443.1	11.3	38.1	.0	575.2	72.41	250.9	192.0	11.3	4.4	.0	0.	181.
OCT	1842.4	23.09	559.5	476.6	11.6	39.8	.0	661.0	74.35	281.7	179.7	11.6	4.6	.0	0.	187.
NOV	2167.8	24.92	627.5	434.7	11.3	37.6	.0	753.1	76.20	373.1	200.5	11.3	4.5	64.7	0.	181.
DEC	2348.6	25.83	453.8	400.5	11.6	48.3	.0	753.1	76.20	409.5	255.8	11.6	6.1	136.0	0.	187.
			308.8	437.1	11.4	48.8	.0			240.6	206.8	11.4	5.7	16.7		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 30ft
DESIGN VESSEL 250x10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPIL	DEM.L	DEM.E	EVP.	SPIL	*NEW DAM*	*PUMP*
	1	2	3	4	5	6	7	8													
JAN	2296.2	25.56	218.2	870.9	11.6	59.0	.0	726.0	75.66	197.7	206.4	11.6	11.6	6.8	.0	0.	0.	6.8	.0	0.	616.
FEB	2031.2	24.21	101.1	849.0	10.5	62.9	.0	680.3	74.74	96.0	124.0	10.5	10.5	7.2	.0	0.	0.	7.2	.0	0.	556.
MAR	1663.6	22.04	70.9	972.3	11.6	70.6	.0	629.8	73.72	74.2	105.0	11.6	11.6	8.1	.0	0.	0.	8.1	.0	0.	616.
APR	1377.8	20.20	81.2	885.6	11.3	66.3	.0	574.1	72.38	120.1	157.0	11.3	11.3	7.6	.0	0.	0.	7.6	.0	0.	596.
MAY	1301.5	19.68	194.6	829.1	11.6	46.2	.0	551.6	71.76	242.7	248.2	11.6	11.6	5.3	.0	0.	0.	5.3	.0	0.	616.
JUN	1320.3	19.81	288.2	815.0	11.3	39.4	.0	555.2	71.86	247.0	227.6	11.3	11.3	4.5	.0	0.	0.	4.5	.0	0.	596.
JUL	1400.5	20.36	333.8	820.4	11.6	37.6	.0	579.8	72.54	297.5	256.9	11.6	11.6	4.3	.0	0.	0.	4.3	.0	0.	616.
AUG	1514.8	21.13	379.8	829.7	11.6	40.2	.0	613.2	73.39	297.2	247.6	11.6	11.6	4.6	.0	0.	0.	4.6	.0	0.	596.
SEP	1626.9	21.82	397.7	832.4	11.3	38.1	.0	638.3	73.89	250.9	210.2	11.3	11.3	4.4	.0	0.	0.	4.4	.0	0.	596.
OCT	1882.0	23.33	569.5	869.1	11.6	39.8	.0	695.6	75.04	281.7	208.2	11.6	11.6	4.6	.0	0.	0.	4.6	.0	0.	616.
NOV	2257.8	25.37	627.5	798.9	11.3	37.6	.0	753.1	76.20	373.1	243.6	11.3	11.3	4.5	56.2	0.	0.	4.5	56.2	0.	596.
DEC	2403.5	26.10	453.8	862.7	11.6	48.9	.9	753.1	76.20	409.5	244.6	11.6	11.6	6.2	177.1	0.	0.	6.2	177.1	0.	616.
			308.8	852.9	11.4	48.9	.1			240.6	204.1	11.4	11.4	5.7	19.4			5.7	19.4		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 30ft
DESIGN VESSEL 250 X 10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				VOL. 8	WL.	ROFF	DEM.L	DEM.E	EVP.	SPIL	*NEW DAM*	*PUMP*	
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.L 5	DEM.E 6	EVP. 7	SPIL 8										
JAN	2290.1	25.53	218.2	1278.7	11.6	59.0	.0	727.9	75.69	197.7	204.5	11.6	12	13	14	15	16	
FEB	2012.6	24.10	101.1	1224.5	10.5	62.9	.0	691.0	74.95	96.0	115.3	10.5	10.5	7.2	.0	0.	0.	1018.
MAR	1630.4	21.84	70.9	1388.7	11.6	70.6	.0	650.8	74.14	74.2	94.6	11.6	11.6	8.1	.0	0.	0.	1018.
APR	1328.9	19.87	81.2	1290.1	11.3	66.3	.0	606.8	73.26	120.1	145.3	11.3	11.3	7.6	.0	0.	0.	985.
MAY	1247.6	19.32	194.6	1235.9	11.6	46.2	.0	585.1	72.68	242.7	247.4	11.6	11.6	5.3	.0	0.	0.	1018.
JUN	1267.9	19.46	288.2	1202.2	11.3	39.4	.0	583.1	72.63	247.0	233.2	11.3	11.3	4.5	.0	0.	0.	985.
JUL	1354.6	20.04	333.8	1215.7	11.6	37.6	.0	597.1	73.02	297.5	267.6	11.6	11.6	4.3	.0	0.	0.	1018.
AUG	1477.2	20.88	379.8	1223.2	11.6	40.2	.0	618.0	73.49	297.2	260.1	11.6	11.6	4.6	.0	0.	0.	1018.
SEP	1595.6	21.63	397.7	1214.9	11.3	38.1	.0	632.8	73.78	250.9	220.5	11.3	11.3	4.4	.0	0.	0.	985.
OCT	1863.0	23.21	559.5	1258.5	11.6	39.8	.0	673.6	74.60	281.7	224.7	11.6	11.6	4.6	.0	0.	0.	1018.
NOV	2260.8	25.39	627.5	1165.7	11.3	37.6	.0	753.1	76.20	373.1	269.7	11.3	11.3	4.3	8.2	0.	0.	985.
DEC	2403.5	26.10	453.8	1267.3	11.6	48.9	1.1	753.1	76.20	409.5	215.9	11.6	11.6	6.2	175.8	0.	0.	1018.
			308.8	1247.1	11.4	48.9	.1			240.6	208.2	11.4	11.4	5.7	15.3			

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 55ft
DESIGN VESSEL 100X10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** *NEW DAM* *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIIL 14	15	16
JAN	2663.3	25.60	218.2	450.3	11.6	59.0	.0	713.0	75.39	197.7	219.4	11.6	6.8	.0	0.	187.
FEB	2414.0	24.52	101.1	446.4	10.5	62.9	.0	632.8	73.78	96.0	158.5	10.5	7.2	.0	0.	169.
MAR	2069.8	22.79	70.9	520.4	11.6	70.6	.0	537.9	71.38	74.2	149.4	11.6	8.1	.0	0.	187.
APR	1810.1	21.46	81.2	444.8	11.3	66.3	.0	435.8	68.56	120.1	203.3	11.3	7.6	.0	0.	181.
MAY	1724.7	20.98	194.6	409.6	11.6	46.2	.0	401.4	67.61	242.7	260.1	11.6	5.3	.0	0.	187.
JUN	1719.0	20.94	288.2	424.7	11.3	39.4	.0	409.2	67.82	247.0	223.4	11.3	4.5	.0	0.	181.
JUL	1764.6	21.21	333.8	426.4	11.6	37.6	.0	447.4	68.88	297.5	243.3	11.6	4.3	.0	0.	187.
AUG	1840.6	21.61	379.8	439.5	11.6	40.2	.0	498.2	70.28	297.2	230.2	11.6	4.6	.0	0.	187.
SEP	1918.2	22.01	397.7	452.2	11.3	38.1	.0	537.6	71.37	250.9	195.9	11.3	4.4	.0	0.	181.
OCT	2127.5	23.08	559.5	486.3	11.6	39.8	.0	619.6	73.52	281.7	183.4	11.6	4.6	.0	0.	187.
NOV	2444.0	24.65	627.5	443.5	11.3	37.6	.0	753.1	76.20	373.1	204.6	11.3	4.4	19.4	0.	181.
DEC	2616.6	25.40	453.8	408.7	11.6	48.3	.0	753.1	76.20	409.5	261.0	11.6	6.1	130.8	0.	187.
			308.8	446.1	11.4	48.8	.0			240.6	211.1	11.4	5.6	12.5		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 55ft
DESIGN VESSEL 100x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM** *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	2670.6	25.63	218.2	898.3	11.6	59.0	.0	726.1	75.66	197.7	206.2	11.6	6.8	.0	0.	643.
FEB	2404.4	24.48	101.1	874.5	10.5	62.9	.0	681.3	74.76	96.0	123.2	10.5	7.2	.0	0.	581.
MAR	2035.3	22.61	70.9	1000.6	11.6	70.6	.0	631.8	73.76	74.2	104.0	11.6	8.1	.0	0.	643.
APR	1747.9	21.11	81.2	913.1	11.3	66.3	.0	577.1	72.46	120.1	155.9	11.3	7.6	.0	0.	622.
MAY	1671.1	20.66	194.6	856.4	11.6	46.2	.0	554.7	71.84	242.7	248.2	11.6	5.3	.0	0.	643.
JUN	1689.9	20.77	288.2	840.8	11.3	39.4	.0	557.8	71.93	247.0	228.1	11.3	4.5	.0	0.	622.
JUL	1770.6	21.25	333.8	846.7	11.6	37.6	.0	581.4	72.58	297.5	257.9	11.6	4.3	.0	0.	643.
AUG	1885.6	21.84	379.8	855.9	11.6	40.2	.0	613.6	73.40	297.2	248.7	11.6	4.6	.0	0.	643.
SEP	1998.1	22.42	397.7	857.9	11.3	38.1	.0	637.9	73.88	250.9	211.1	11.3	4.4	.0	0.	622.
OCT	2254.1	23.73	559.5	894.9	11.6	39.8	.0	693.7	75.01	281.7	209.7	11.6	4.6	.0	0.	643.
NOV	2631.6	25.46	627.5	823.2	11.3	37.6	.0	753.1	76.20	373.1	245.8	11.3	4.5	52.2	0.	622.
DEC	2778.6	26.10	453.8	888.5	11.6	48.8	.8	753.1	76.20	409.5	216.1	11.6	6.2	175.6	0.	643.
			308.8	879.2	11.4	48.9	.1			240.6	204.6	11.4	5.7	19.0		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 55ft
 DESIGN VESSEL 100X10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** *NEW DAM* *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL. 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL. 14	15	16
JAN	2653.0	25.56	218.2	1317.7	11.6	59.0	.0	726.1	75.66	197.7	206.3	11.6	6.8	.0	0.	1045.
FEB	2363.7	24.29	101.1	1260.5	10.5	62.9	.0	688.6	74.90	96.0	115.9	10.5	7.2	.0	0.	943.
MAR	1968.0	22.26	70.9	1428.9	11.6	70.6	.0	648.0	74.09	74.2	95.0	11.6	8.1	.0	0.	1045.
APR	1653.8	20.56	81.2	1328.7	11.3	66.3	.0	603.2	73.18	120.1	146.1	11.3	7.6	.0	0.	1011.
MAY	1560.8	20.01	194.6	1274.4	11.6	46.2	.0	579.3	72.52	242.7	249.6	11.6	5.3	.0	0.	1045.
JUN	1570.1	20.07	288.2	1239.2	11.3	39.4	.0	575.0	72.40	247.0	235.6	11.3	4.5	.0	0.	1011.
JUL	1645.8	20.51	333.8	1253.4	11.6	37.6	.0	586.0	72.71	297.5	270.5	11.6	4.3	.0	0.	1045.
AUG	1757.5	21.17	379.8	1260.9	11.6	40.2	.0	603.9	73.20	297.2	263.1	11.6	4.6	.0	0.	1045.
SEP	1865.0	21.74	397.7	1251.8	11.3	38.1	.0	616.2	73.45	250.9	223.0	11.3	4.4	.0	0.	1011.
OCT	2121.3	23.05	559.5	1296.3	11.6	39.8	.0	654.1	74.21	281.7	227.6	11.6	4.6	.0	0.	1045.
NOV	2509.6	24.94	627.5	1201.2	11.3	37.6	.0	738.1	75.90	373.1	273.6	11.3	4.3	.0	0.	1011.
DEC	2751.0	25.98	453.8	1196.8	11.6	48.5	.0	753.1	76.20	409.5	327.1	11.6	5.8	50.0	0.	1045.
			308.8	1275.8	11.4	48.8	.0			240.6	219.4	11.4	5.6	4.2		

- ① GATUN DAM CAPACITY(MCH)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④ LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥ EVAPORATION FROM GATUN DAM(MCH)
- ⑦ SPILLAGE FROM GATUN DAM(MCH)
- ⑧ MADDEN DAM CAPACITY(MCH)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCH)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCH)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCH)
- ⑬ EVAPORATION FROM MADDEN DAM(MCH)
- ⑭ SPILLAGE FROM MADDEN DAM(MCH)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCH)

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 55ft
DESIGN VESSEL 150 X 10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****						***** MADDEN DAM *****						*NEW DAM* #PUMP*			
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIIL 14	15	16
JAN	2663.0	25.60	218.2	584.5	11.6	59.0	.0	718.3	75.50	197.7	214.1	11.6	6.8	.0	0.	321.
FEB	2401.8	24.47	101.1	579.2	10.5	62.9	.0	654.5	74.22	96.0	142.1	10.5	7.2	.0	0.	290.
MAR	2040.3	22.63	70.9	671.6	11.6	70.6	.0	582.0	72.60	74.2	127.0	11.6	8.1	.0	0.	321.
APR	1763.2	21.20	81.2	591.7	11.3	66.3	.0	502.1	70.39	120.1	181.1	11.3	7.6	.0	0.	311.
MAY	1678.2	20.70	194.6	543.2	11.6	46.2	.0	472.4	69.57	242.7	255.5	11.6	5.3	.0	0.	321.
JUN	1679.5	20.71	288.2	547.3	11.3	39.4	.0	478.0	69.72	247.0	225.6	11.3	4.5	.0	0.	311.
JUL	1736.2	21.05	333.8	549.3	11.6	37.6	.0	510.2	70.61	297.5	249.4	11.6	4.3	.0	0.	321.
AUG	1824.8	21.53	379.8	560.9	11.6	40.2	.0	553.4	71.81	297.2	237.7	11.6	4.6	.0	0.	321.
SEP	1913.4	21.99	397.7	570.8	11.3	38.1	.0	586.7	72.73	250.9	202.1	11.3	4.4	.0	0.	311.
OCT	2137.7	23.13	559.5	605.1	11.6	39.8	.0	658.6	74.30	281.7	193.5	11.6	4.6	.0	0.	321.
NOV	2474.3	24.78	627.5	553.0	11.3	37.6	.0	753.1	76.20	373.1	219.8	11.3	4.5	43.1	0.	311.
DEC	2667.0	25.62	453.8	522.6	11.6	48.3	.0	753.1	76.20	409.6	276.1	11.6	6.0	115.8	0.	321.
			308.8	573.3	11.4	48.8	.0			240.6	210.3	11.4	5.6	13.2		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
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- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 55ft
DESIGN VESSEL 150x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** *NEW DAM* *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIIL 14	15	16
JAN	2673.3	25.65	218.2	1163.4	11.6	59.0	.0	728.7	75.71	197.7	203.7	11.6	6.8	.0	0.	911.
FEB	2405.0	24.48	101.1	1118.5	10.5	62.9	.0	690.7	74.95	96.0	116.3	10.5	7.2	.0	0.	823.
MAR	2033.2	22.60	70.9	1271.1	11.6	70.6	.0	649.1	74.11	74.2	96.0	11.6	8.1	.0	0.	911.
APR	1741.8	21.08	81.2	1176.3	11.3	66.3	.0	603.6	73.19	120.1	146.7	11.3	7.6	.0	0.	881.
MAY	1668.2	20.65	194.6	1121.0	11.6	46.2	.0	583.2	72.63	242.7	246.1	11.6	5.3	.0	0.	911.
JUN	1694.7	20.80	288.2	1092.4	11.3	39.4	.0	583.7	72.65	247.0	230.7	11.3	4.5	.0	0.	881.
JUL	1786.5	21.34	333.8	1103.4	11.6	37.6	.0	601.5	73.14	297.5	263.8	11.6	4.3	.0	0.	911.
AUG	1913.9	21.99	379.8	1111.2	11.6	40.2	.0	626.6	73.66	297.2	255.9	11.6	4.6	.0	0.	911.
SEP	2037.5	22.62	397.7	1106.0	11.3	38.1	.0	644.9	74.03	250.9	217.0	11.3	4.4	.0	0.	881.
OCT	2308.9	24.01	559.5	1147.3	11.6	39.8	.0	690.5	74.94	281.7	219.8	11.6	4.6	.0	0.	911.
NOV	2708.0	25.80	627.5	1060.7	11.3	37.6	.0	753.1	76.20	373.1	262.3	11.3	4.4	32.6	0.	881.
DEC	2778.6	26.10	453.8	1231.9	11.6	48.8	1.6	753.1	76.20	409.5	135.3	11.6	6.4	256.2	0.	911.
			308.8	1142.0	11.4	48.9	.1			240.6	199.5	11.4	5.7	24.1		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
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- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
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WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 55ft

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

DESIGN VESSEL 150 X 10³ DWT

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				VOL. 8	W.L. 9	ROFF 10	DEM.L 11	DEN.E 12	EVP. 13	SPILL 14	*NEW DAM* 15	*PUMP* 16
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	VOL. 5	WL. 6	ROFF 7	DEM.L 8									
JAN	2660.4	25.59	218.2	1712.1	11.6	59.0	.0	729.1	75.72	197.7	203.3	11.6	6.8	.0	0.	1446.	
FEB	2374.9	24.35	101.1	1619.5	10.5	62.9	.0	696.9	75.07	96.0	110.5	10.5	7.2	.0	0.	1306.	
MAR	1983.8	22.35	70.9	1826.1	11.6	70.6	.0	662.1	74.37	74.2	89.3	11.6	8.1	.0	0.	1446.	
APR	1672.5	20.67	81.2	1714.6	11.3	66.3	.0	624.3	73.61	120.1	139.0	11.3	7.6	.0	0.	1400.	
MAY	1587.0	20.17	194.6	1668.6	11.6	46.2	.0	603.3	73.19	242.7	246.8	11.6	5.3	.0	0.	1446.	
JUN	1607.2	20.29	288.2	1617.0	11.3	39.4	.0	597.9	73.04	247.0	236.6	11.3	4.5	.0	0.	1400.	
JUL	1697.0	20.82	333.8	1641.2	11.6	37.6	.0	605.2	73.23	297.5	274.2	11.6	4.3	.0	0.	1446.	
AUG	1824.0	21.53	379.8	1647.3	11.6	40.2	.0	618.1	73.49	297.2	268.1	11.6	4.6	.0	0.	1446.	
SEP	1945.5	22.15	397.7	1626.5	11.3	38.1	.0	626.3	73.65	250.9	227.1	11.3	4.4	.0	0.	1400.	
OCT	2220.4	23.56	569.5	1679.6	11.6	39.8	.0	655.9	74.25	281.7	235.8	11.6	4.6	.0	0.	1446.	
NOV	2633.2	25.47	627.5	1565.5	11.3	37.6	.0	725.4	75.64	373.1	288.1	11.3	4.3	.0	0.	1400.	
DEC	2778.6	26.10	453.8	1693.3	11.6	48.8	1.1	753.1	76.20	409.5	222.1	11.6	6.1	141.9	0.	1446.	
			308.8	1667.6	11.4	48.9	1.1		240.6	211.8		11.4	5.6	11.8			

① GATUN DAM CAPACITY(MCM)

② GATUN DAM WATER LEVEL(EL.m)

③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)

④ LOCKAGE WATER FROM GATUN DAM(MCM)

⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)

⑥ EVAPORATION FROM GATUN DAM(MCM)

⑦ SPILLAGE FROM GATUN DAM(MCM)

⑧ MADDEN DAM CAPACITY(MCM)

⑨ MADDEN DAM WATER LEVEL(EL.m)

⑩ RUNOFF FROM MADDEN DAM(MCM)

⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)

⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)

⑬ EVAPORATION FROM MADDEN DAM(MCM)

⑭ SPILLAGE FROM MADDEN DAM(MCM)

⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)

⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 55ft
DESIGN VESSEL 250x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****					***** MADDEN DAM *****					*****			*****			
	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPII.	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPII.	SPII.	*NEW DAM*	*PUMP*
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
JAN	2665.9	25.61	218.2	795.8	11.6	59.0	.0	723.7	75.61	197.7	208.7	11.6	6.8	.0	0.	536.	
FEB	2398.1	24.46	101.1	779.3	10.5	62.9	.0	674.1	74.61	96.0	128.0	10.5	7.2	.0	0.	484.	
MAR	2027.4	22.57	70.9	895.1	11.6	70.6	.0	619.1	73.51	74.2	109.4	11.6	8.1	.0	0.	536.	
APR	1739.5	21.07	81.2	809.9	11.3	66.3	.0	558.1	71.94	120.1	162.2	11.3	7.6	.0	0.	518.	
MAY	1658.0	20.59	194.6	754.0	11.6	46.2	.0	533.3	71.25	242.7	250.5	11.6	5.3	.0	0.	536.	
JUN	1669.7	20.65	288.2	744.2	11.3	39.4	.0	536.7	71.35	247.0	227.9	11.3	4.5	.0	0.	518.	
JUL	1741.5	21.08	333.8	748.5	11.6	37.6	.0	562.2	72.05	297.5	256.1	11.6	4.3	.0	0.	536.	
AUG	1846.8	21.64	379.8	758.3	11.6	40.2	.0	596.9	73.01	297.2	246.2	11.6	4.6	.0	0.	536.	
SEP	1950.5	22.18	397.7	763.1	11.3	38.1	.0	623.2	73.59	250.9	209.0	11.3	4.4	.0	0.	518.	
OCT	2195.2	23.43	559.5	799.0	11.6	39.8	.0	683.2	74.80	281.7	205.5	11.6	4.6	.0	0.	536.	
NOV	2558.9	25.15	627.5	733.3	11.3	37.6	.0	753.1	76.20	373.1	238.8	11.3	4.5	48.7	0.	518.	
DEC	2777.5	26.10	453.8	710.5	11.6	48.8	.0	753.1	76.20	409.5	294.1	11.6	5.9	97.9	0.	536.	
			308.8	774.3	11.4	48.9	.0			240.6	211.4	11.4	5.6	12.2			

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
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- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 55ft
DESIGN VESSEL 250x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****					***** MADDEN DAM *****					***** *PUMP*					
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	NEW DAM# 15	*PUMP* 16
JAN	2656.3	25.57	218.2	1582.2	11.6	59.0	.0	728.0	75.70	197.7	204.3	11.6	6.8	.0	0.	1312.
FEB	2367.8	24.31	101.1	1501.6	10.5	62.9	.0	694.3	75.02	96.0	112.1	10.5	7.2	.0	0.	1185.
MAR	1973.2	22.29	70.9	1695.7	11.6	70.6	.0	657.8	74.29	74.2	90.9	11.6	8.1	.0	0.	1312.
APR	1659.1	20.59	81.2	1587.9	11.3	66.3	.0	618.0	73.48	120.1	141.1	11.3	7.6	.0	0.	1270.
MAY	1569.4	20.07	194.6	1538.8	11.6	46.2	.0	595.9	72.98	242.7	247.8	11.6	5.3	.0	0.	1312.
JUN	1584.7	20.15	288.2	1492.4	11.3	39.4	.0	590.6	72.84	247.0	236.5	11.3	4.5	.0	0.	1270.
JUL	1668.5	20.65	333.8	1513.2	11.6	37.6	.0	598.7	73.06	297.5	273.4	11.6	4.3	.0	0.	1312.
AUG	1789.2	21.35	379.8	1519.7	11.6	40.2	.0	612.8	73.38	297.2	266.9	11.6	4.6	.0	0.	1312.
SEP	1904.8	21.94	397.7	1502.8	11.3	38.1	.0	622.0	73.57	250.9	226.1	11.3	4.4	.0	0.	1270.
OCT	2172.4	23.31	559.5	1552.9	11.6	39.8	.0	653.8	74.20	281.7	233.7	11.6	4.6	.0	0.	1312.
NOV	2576.2	25.22	627.5	1444.9	11.3	37.6	.0	727.3	75.68	373.1	284.1	11.3	4.3	.0	0.	1270.
DEC	2778.6	26.10	453.8	1502.9	11.6	48.8	.5	753.1	76.20	409.5	283.7	11.6	5.9	82.5	0.	1312.
			308.8	1536.3	11.4	48.9	.0		240.6	216.7	216.7	11.4	5.6	6.9	0.	

- ① GATUN DAM CAPACITY(MCH)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④ LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥ EVAPORATION FROM GATUN DAM(MCH)
- ⑦ SPILLAGE FROM GATUN DAM(MCH)
- ⑧ MADDEN DAM CAPACITY(MCH)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCH)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCH)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCH)
- ⑬ EVAPORATION FROM MADDEN DAM(MCH)
- ⑭ SPILLAGE FROM MADDEN DAM(MCH)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCH)

DESIGN WATER LEVEL 55ft
DESIGN VESSEL 250x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				*****		*****		*****		*****	
	VOL. 1	WL. 2	ROFF 3	DEM.L. 4	DEM.F. 5	EVP. 6	SPTL. 7	VOL. 8	WL. 9	ROFF 10	DEM.L. 11	DEM.F. 12	EVP. 13	SPTL. 14	15	16
JAN	2650.4	25.55	218.2	2338.1	11.6	59.0	.0	729.7	75.73	197.7	202.7	11.6	6.8	.0	0.	2062.
FEB	2353.0	24.23	101.1	2187.8	10.5	62.9	.0	701.1	75.15	96.0	107.0	10.5	7.2	.0	0.	1863.
MAR	1948.7	22.17	70.9	2455.4	11.6	70.6	.0	670.2	74.53	74.2	85.4	11.6	8.1	.0	0.	2062.
APR	1623.8	20.38	81.2	2324.4	11.3	66.3	.0	637.0	73.87	120.1	134.4	11.3	7.6	.0	0.	1996.
MAY	1528.9	19.83	194.6	2294.1	11.6	46.2	.0	616.1	73.45	242.7	246.7	11.6	5.3	.0	0.	2062.
JUN	1543.4	19.91	288.2	2218.8	11.3	39.4	.0	607.4	73.27	247.0	239.9	11.3	4.5	.0	0.	1996.
JUL	1630.2	20.42	333.8	2260.1	11.6	37.6	.0	608.4	73.29	297.5	280.6	11.6	4.3	.0	0.	2062.
AUG	1755.5	21.16	379.8	2265.1	11.6	40.2	.0	613.7	73.40	297.2	275.6	11.6	4.6	.0	0.	2062.
SEP	1874.2	21.78	397.7	2225.5	11.3	38.1	.0	615.7	73.44	250.9	233.3	11.3	4.4	.0	0.	1996.
OCT	2150.4	23.20	559.5	2294.3	11.6	39.8	.0	634.7	73.82	281.7	246.5	11.6	4.6	.0	0.	2062.
NOV	2572.2	25.21	627.5	2152.6	11.3	37.6	.0	686.1	74.85	373.1	306.2	11.3	4.3	.0	0.	1996.
DEC	2778.6	26.10	453.8	2248.9	11.6	48.8	.6	753.1	76.20	409.5	291.9	11.6	5.7	33.3	0.	2062.
			308.8	2272.1	11.4	48.9	.0			240.6	220.8	11.4	5.6	2.8		

- ① GATUN DAM CAPACITY(MCH)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④ LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥ EVAPORATION FROM GATUN DAM(MCH)
- ⑦ SPILLAGE FROM GATUN DAM(MCH)
- ⑧ MADDEN DAM CAPACITY(MCH)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCH)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCH)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCH)
- ⑬ EVAPORATION FROM MADDEN DAM(MCH)
- ⑭ SPILLAGE FROM MADDEN DAM(MCH)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCH)

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 100 X 10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM* *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	5213.3	25.94	218.2	377.4	11.6	59.0	.0	735.5	75.85	197.7	196.9	11.6	6.8	.0	0.	161.
FEB	5013.0	25.49	101.1	373.2	10.5	62.9	.0	668.3	74.50	96.0	145.6	10.5	7.2	.0	0.	145.
MAR	4727.3	24.84	70.9	435.0	11.6	70.6	.0	583.4	72.64	74.2	139.3	11.6	8.1	.0	0.	161.
APR	4622.9	24.60	81.2	368.8	11.3	66.3	.0	392.4	70.27	120.1	187.0	11.3	7.6	.0	0.	156.
MAY	4622.9	24.60	194.6	341.2	11.6	46.2	.0	341.4	67.16	242.7	233.1	11.6	5.3	.0	0.	161.
JUN	4659.0	24.68	288.2	357.0	11.3	39.4	.0	373.8	66.77	247.0	198.7	11.3	4.5	.0	0.	156.
JUL	4745.7	24.88	333.8	358.6	11.6	37.6	.0	439.7	68.67	297.5	215.7	11.6	4.3	.0	0.	161.
AUG	4863.8	25.15	379.8	370.6	11.6	40.2	.0	516.9	70.80	297.2	203.7	11.6	4.6	.0	0.	161.
SEP	4985.3	25.42	397.7	382.3	11.3	38.1	.0	578.8	72.51	250.9	173.4	11.3	4.4	.0	0.	156.
OCT	5241.3	26.01	559.5	412.8	11.6	39.8	.0	682.8	74.79	281.7	161.5	11.6	4.6	.0	0.	161.
NOV	5282.4	26.10	627.5	555.8	11.3	38.3	136.5	753.1	76.20	373.1	.0	11.3	5.1	286.5	0.	156.
DEC	5282.4	26.10	453.8	553.3	11.6	48.6	1.0	753.1	76.20	409.5	21.0	11.6	6.7	370.2	0.	161.
			308.8	407.2	11.4	48.9	11.5			240.6	156.3	11.4	5.8	54.7		

- ① GATUN DAM CAPACITY (MCM)
- ② GATUN DAM WATER LEVEL (EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA (MCM)
- ④ LOCKAGE WATER FROM GATUN DAM (MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM (MCM)
- ⑥ EVAPORATION FROM GATUN DAM (MCM)
- ⑦ SPILLAGE FROM GATUN DAM (MCM)
- ⑧ MADDEN DAM CAPACITY (MCM)
- ⑨ MADDEN DAM WATER LEVEL (EL.M)
- ⑩ RUNOFF FROM MADDEN DAM (MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM (MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM (MCM)
- ⑬ EVAPORATION FROM MADDEN DAM (MCM)
- ⑭ SPILLAGE FROM MADDEN DAM (MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED (MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED (MCM)

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 100×10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****					***** MADDEN DAM *****					*NEW DAM* *PUMP*						
	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPIL	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPIL	14	15	16
JAN	5202.2	25.92	218.2	709.9	11.6	59.0	.0	732.0	75.78	197.7	200.4	11.6	6.8	.0	0.	0.	482.
FEB	4968.1	25.39	101.1	697.3	10.5	62.9	.0	685.5	74.84	96.0	124.8	10.5	7.2	.0	0.	0.	435.
MAR	4636.3	24.63	70.9	802.6	11.6	70.6	.0	632.4	73.77	74.2	107.6	11.6	8.1	.0	0.	0.	482.
APR	4622.9	24.60	81.2	722.5	11.3	66.3	.0	336.3	72.41	120.1	158.4	11.3	7.6	.0	0.	0.	467.
MAY	4622.9	24.60	194.6	670.0	11.6	46.2	.0	270.7	64.89	242.7	240.3	11.6	5.3	.0	0.	0.	482.
JUN	4663.4	24.69	288.2	663.7	11.3	39.4	.0	284.7	63.55	247.0	217.2	11.3	4.5	.0	0.	0.	467.
JUL	4763.0	24.92	333.8	667.0	11.6	37.6	.0	323.1	64.93	297.5	243.2	11.6	4.3	.0	0.	0.	482.
AUG	4896.3	25.22	379.8	676.8	11.6	40.2	.0	370.7	66.65	297.2	233.4	11.6	4.6	.0	0.	0.	482.
SEP	5028.5	25.52	397.7	682.6	11.3	38.1	.0	407.8	67.78	250.9	198.2	11.3	4.4	.0	0.	0.	467.
OCT	5282.4	26.10	559.5	736.1	11.6	39.9	.1	499.1	70.31	281.7	174.1	11.6	4.6	.0	0.	0.	482.
NOV	5282.4	26.10	627.5	880.9	11.3	38.4	163.5	753.1	76.20	373.1	.0	11.3	4.6	103.2	0.	0.	467.
DEC	5282.4	26.10	453.8	874.6	11.6	48.6	1.2	753.1	76.20	409.5	35.7	11.6	6.7	355.6	0.	0.	482.
			308.8	732.0	11.4	48.9	13.7			240.6	161.1	11.4	5.7				

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 100X10³ DWI

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****					***** MADDEN DAM *****					*NEW DAM* *PUMP*					
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	5199.4	25.91	218.2	1034.1	11.6	59.0	.0	732.3	75.78	197.7	200.1	11.6	6.8	.0	0.	804.
FEB	4954.2	25.35	101.1	998.7	10.5	62.9	.0	694.7	75.03	96.0	116.0	10.5	7.2	.0	0.	726.
MAR	4622.9	24.60	70.9	1137.6	11.6	70.6	.0	638.4	74.18	74.2	96.5	11.6	8.1	.0	0.	804.
APR	4622.9	24.60	81.2	1047.8	11.3	66.3	.0	326.6	72.91	120.1	146.5	11.3	7.6	.0	0.	778.
MAY	4622.9	24.60	194.6	892.8	11.6	46.2	.0	258.5	64.50	242.7	241.4	11.6	5.3	.0	0.	804.
JUN	4668.5	24.70	288.2	969.6	11.3	39.4	.0	265.0	62.84	247.0	224.7	11.3	4.5	.0	0.	778.
JUL	4778.3	24.95	333.8	978.3	11.6	37.6	.0	290.6	63.76	297.5	255.9	11.6	4.3	.0	0.	804.
AUG	4923.4	25.28	379.8	986.4	11.6	40.2	.0	323.9	64.96	297.2	247.7	11.6	4.6	.0	0.	804.
SEP	5065.1	25.61	397.7	984.2	11.3	38.1	.0	349.1	65.87	250.9	210.1	11.3	4.4	.0	0.	778.
OCT	5282.4	26.10	559.5	1093.9	11.6	39.9	.3	474.3	69.62	281.7	140.3	11.6	4.6	.0	0.	804.
NOV	5282.4	26.10	627.5	1194.3	11.3	38.4	161.1	753.1	76.20	373.1	.0	11.3	4.6	78.5	0.	778.
DEC	5282.4	26.10	453.8	1195.9	11.6	48.6	1.3	753.1	76.20	409.5	38.3	11.6	6.7	353.0	0.	804.
			308.8	1051.1	11.4	48.9	13.6		240.6	240.6	159.8	11.4	5.7	36.0		

- ① GATUN DAM CAPACITY(MCH)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④ LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥ EVAPORATION FROM GATUN DAM(MCH)
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- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCH)
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- ⑭ SPILLAGE FROM MADDEN DAM(MCH)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCH)

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 100X10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****						***** MADDEN DAM *****						*NEW DAM* *PUMP*			
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPII. 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPII. 14	15	16
JAN	5386.4	26.34	218.2	700.5	11.6	60.1	.0	734.7	75.83	197.7	197.7	11.6	6.8	.0	0.	482.
FEB	5160.4	25.82	101.1	688.1	10.5	64.0	.0	689.8	74.93	96.0	123.2	10.5	7.2	.0	0.	435.
MAR	4837.9	25.09	70.9	792.0	11.6	71.8	.0	638.1	73.89	74.2	106.2	11.6	8.1	.0	0.	482.
APR	4798.8	25.00	81.2	713.0	11.3	67.5	.0	378.2	72.63	120.1	156.3	11.3	7.6	.0	0.	467.
MAY	4798.8	25.00	194.6	661.1	11.6	47.0	.0	323.8	66.52	242.7	237.1	11.6	5.3	.0	0.	482.
JUN	4847.3	25.11	288.2	654.9	11.3	40.0	.0	340.7	65.57	247.0	214.3	11.3	4.5	.0	0.	467.
JUL	4955.1	25.36	333.8	658.2	11.6	38.3	.0	382.3	67.07	297.5	240.0	11.6	4.3	.0	0.	482.
AUG	5096.6	25.68	379.8	667.9	11.6	40.9	.0	432.9	68.48	297.2	230.3	11.6	4.6	.0	0.	482.
SEP	5237.2	26.00	397.7	673.6	11.3	38.7	.0	472.7	69.58	250.9	195.6	11.3	4.4	.0	0.	467.
OCT	5458.3	26.50	559.5	768.0	11.6	40.6	.2	607.9	73.28	281.7	130.3	11.6	4.6	.0	0.	482.
NOV	5458.3	26.50	627.5	869.3	11.3	39.1	174.4	753.1	76.20	373.1	.0	11.3	4.9	211.7	0.	467.
DEC	5458.3	26.50	453.8	873.7	11.6	49.4	1.2	753.1	76.20	409.5	24.5	11.6	6.7	366.7	0.	482.
			308.8	726.7	11.4	49.8	14.7		240.6	154.6	11.4		5.7	48.2		

- ① GATUN DAM CAPACITY (MCM)
- ② GATUN DAM WATER LEVEL (EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA (MCM)
- ④ LOCKAGE WATER FROM GATUN DAM (MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM (MCM)
- ⑥ EVAPORATION FROM GATUN DAM (MCM)
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- ⑨ MADDEN DAM WATER LEVEL (EL.m)
- ⑩ RUNOFF FROM MADDEN DAM (MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM (MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM (MCM)
- ⑬ EVAPORATION FROM MADDEN DAM (MCM)
- ⑭ SPILLAGE FROM MADDEN DAM (MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED (MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED (MCM)

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 100×10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				VOL. 8	VOL. 9	VOL. 10	DEM.L 11	DEM.E 12	EVP. 13	SPILL 14	*NEW DAM* 15	*PUMP* 16
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPILL 7	VOL. 8									
JAN	5384.5	26.33	218.2	1372.1	11.6	60.1	.0	734.4	75.82	197.7	198.0	11.6	11.6	6.8	.0	0.	1152.
FEB	5143.3	25.78	101.1	1308.0	10.5	64.0	.0	702.7	75.19	96.0	110.1	10.5	10.5	7.2	.0	0.	1040.
MAR	4802.2	25.01	70.9	1480.3	11.6	71.8	.0	667.3	74.48	74.2	89.8	11.6	11.6	8.1	.0	0.	1152.
APR	4798.8	25.00	81.2	1380.8	11.3	67.5	.0	369.6	73.72	120.1	138.6	11.3	11.3	7.6	.0	0.	1115.
MAY	4798.8	25.00	194.6	1330.3	11.6	47.0	.0	312.9	66.11	242.7	239.8	11.6	11.6	5.3	.0	0.	1152.
JUN	4858.3	25.14	288.2	1291.9	11.3	40.0	.0	316.7	64.70	247.0	227.5	11.3	11.3	4.5	.0	0.	1115.
JUL	4985.8	25.43	333.8	1308.1	11.6	38.3	.0	336.3	65.41	297.5	261.9	11.6	11.6	4.3	.0	0.	1152.
AUG	5149.9	25.80	379.8	1314.9	11.6	40.9	.0	362.1	66.34	297.2	255.2	11.6	11.6	4.6	.0	0.	1152.
SEP	5309.0	26.16	397.7	1303.2	11.3	38.7	.0	381.2	67.03	250.9	216.2	11.3	11.3	4.4	.0	0.	1115.
OCT	5458.3	26.50	559.5	1509.0	11.6	40.6	.6	585.6	72.70	281.7	61.1	11.6	11.6	4.6	.0	0.	1152.
NOV	5458.3	26.50	627.5	1519.4	11.3	39.1	172.3	753.1	76.20	373.1	.0	11.3	11.3	4.9	189.5	0.	1115.
DEC	5458.3	26.50	453.8	1543.1	11.6	49.4	1.4	753.1	76.20	409.5	27.0	11.6	11.6	6.7	364.2	0.	1152.
			308.8	1388.4	11.4	49.8	14.5			240.6	152.1	11.4	11.4	5.7	46.1		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 100X10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM* *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPI.L 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPI.L 14	15	16
JAN	5379.8	26.32	218.2	2019.5	11.6	60.1	.0	734.0	75.82	197.7	198.3	11.6	6.8	.0	0.	1795.
FEB	5129.8	25.75	101.1	1897.4	10.5	64.0	.0	706.6	75.26	96.0	105.8	10.5	7.2	.0	0.	1621.
MAR	4798.8	25.00	70.9	2133.1	11.6	71.8	.0	656.1	74.65	74.2	84.8	11.6	8.1	.0	0.	1795.
APR	4798.8	25.00	81.2	2013.4	11.3	67.5	.0	350.1	73.61	120.1	133.0	11.3	7.6	.0	0.	1737.
MAY	4798.8	25.00	194.6	1976.7	11.6	47.0	.0	288.5	65.36	242.7	241.2	11.6	5.3	.0	0.	1795.
JUN	4859.3	25.14	288.2	1913.0	11.3	40.0	.0	286.3	63.61	247.0	233.3	11.3	4.5	.0	0.	1737.
JUL	4991.8	25.44	333.8	1945.9	11.6	38.3	.0	295.9	63.95	297.5	272.0	11.6	4.3	.0	0.	1795.
AUG	5162.5	25.83	379.8	1951.2	11.6	40.9	.0	310.2	64.47	297.2	266.7	11.6	4.6	.0	0.	1737.
SEP	5326.2	26.20	397.7	1920.5	11.3	38.7	.0	319.7	64.81	250.9	225.8	11.3	4.4	.0	0.	1795.
OCT	5458.3	26.50	559.5	2168.9	11.6	40.6	.7	536.2	71.33	281.7	49.0	11.6	4.6	.0	0.	1737.
NOV	5458.3	26.50	627.5	2146.4	11.3	39.1	167.4	753.1	76.20	373.1	.0	11.3	4.7	140.2	0.	1737.
DEC	5458.3	26.50	453.8	2185.8	11.6	49.4	1.5	753.1	76.20	409.5	32.1	11.6	6.7	359.1	0.	1795.
			308.8	2022.7	11.4	49.8	14.1			240.6	153.5	11.4	5.7	41.6		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
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- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 85ft
 DESIGN VESSEL 150x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****						***** MADDEN DAM *****						*NEW DAM* #PUMP*			
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	5199.9	25.91	218.2	471.1	11.6	59.0	.0	729.6	75.73	197.7	202.8	11.6	6.8	.0	0.	241.
FEB	4977.6	25.41	101.1	467.8	10.5	62.9	.0	667.0	74.47	96.0	140.9	10.5	7.2	.0	0.	218.
MAR	4662.8	24.69	70.9	544.5	11.6	70.6	.0	592.0	72.87	74.2	129.5	11.6	8.1	.0	0.	241.
APR	4622.9	24.60	81.2	472.0	11.3	66.3	.0	317.9	70.69	120.1	180.2	11.3	7.6	.0	0.	233.
MAY	4622.9	24.60	194.6	432.8	11.6	46.2	.0	247.6	64.19	242.7	241.1	11.6	5.3	.0	0.	241.
JUN	4651.2	24.66	288.2	442.6	11.3	39.4	.0	269.2	62.99	247.0	209.6	11.3	4.5	.0	0.	233.
JUL	4732.7	24.85	333.8	444.1	11.6	37.6	.0	320.9	64.86	297.5	229.8	11.6	4.3	.0	0.	241.
AUG	4846.0	25.11	379.8	456.8	11.6	40.2	.0	383.7	67.12	297.2	218.2	11.6	4.6	.0	0.	241.
SEP	4961.1	25.37	397.7	466.6	11.3	38.1	.0	433.5	68.50	250.9	185.6	11.3	4.4	.0	0.	233.
OCT	5211.7	25.94	559.5	498.5	11.6	39.8	.0	523.6	70.98	281.7	175.4	11.6	4.6	.0	0.	241.
NOV	5282.4	26.10	627.5	652.2	11.3	38.1	88.5	753.1	76.20	373.1	.0	11.3	4.7	127.6	0.	233.
DEC	5282.4	26.10	453.8	633.7	11.6	48.6	1.0	753.1	76.20	409.5	40.2	11.6	6.7	351.0	0.	241.
			308.8	498.5	11.4	48.9	7.5		240.6	162.8	11.4		5.7	39.9		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 85ft

DESIGN VESSEL 150x10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** *NEW DAM* *PUMP*														
	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPI	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPI	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPI		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
JAN	5211.1	25.94	218.2	915.3	11.6	59.0	.0	734.6	75.83	197.7	197.8	11.6	6.8	.0	0.	696.							
FEB	4979.3	25.41	101.1	888.5	10.5	62.9	.0	696.0	75.05	96.0	116.9	10.5	7.2	.0	0.	629.							
MAR	4649.3	24.66	70.9	1015.0	11.6	70.6	.0	652.4	74.18	74.2	98.1	11.6	8.1	.0	0.	696.							
APR	4622.9	24.60	81.2	929.4	11.3	66.3	.0	380.3	73.24	120.1	147.8	11.3	7.6	.0	0.	674.							
MAY	4622.9	24.60	194.6	874.8	11.6	46.2	.0	326.1	66.55	242.7	238.3	11.6	5.3	.0	0.	696.							
JUN	4677.3	24.72	288.2	857.2	11.3	39.4	.0	337.3	65.45	247.0	220.0	11.3	4.5	.0	0.	674.							
JUL	4794.5	24.99	333.8	863.7	11.6	37.6	.0	369.4	66.61	297.5	249.4	11.6	4.3	.0	0.	696.							
AUG	4946.6	25.34	379.8	872.2	11.6	40.2	.0	409.5	67.83	297.2	240.9	11.6	4.6	.0	0.	696.							
SEP	5096.1	25.68	397.7	872.8	11.3	38.1	.0	440.5	68.69	250.9	204.4	11.3	4.4	.0	0.	674.							
OCT	5282.4	26.10	559.5	1017.5	11.6	39.9	.4	610.3	73.33	281.7	95.6	11.6	4.6	.0	0.	696.							
NOV	5282.4	26.10	627.5	1077.2	11.3	38.4	174.5	753.1	76.20	373.1	.0	11.3	4.9	214.2	0.	674.							
DEC	5282.4	26.10	453.8	1088.7	11.6	48.6	1.3	753.1	76.20	409.5	24.4	11.6	5.7	366.8	0.	696.							
			308.8	939.4	11.4	48.9	14.7			240.6	152.8	11.4	5.7	48.4									

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 150x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****					***** MADDEN DAM *****					***** *NEW DAM* *PUMP*					
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	5192.1	25.89	218.2	1336.0	11.6	59.0	.0	731.8	75.77	197.7	200.6	11.6	6.8	.0	0.	1098.
FEB	4935.9	25.31	101.1	1275.8	10.5	62.9	.0	698.0	75.09	96.0	112.1	10.5	7.2	.0	0.	992.
MAR	4622.9	24.60	70.9	1445.0	11.6	70.6	.0	615.6	74.34	74.2	91.7	11.6	8.1	.0	0.	1098.
APR	4622.9	24.60	81.2	1345.8	11.3	66.3	.0	296.1	72.42	120.1	141.2	11.3	7.6	.0	0.	1063.
MAY	4622.9	24.60	194.6	1293.8	11.6	46.2	.0	220.1	63.34	242.7	242.9	11.6	5.3	.0	0.	1098.
JUN	4666.0	24.70	288.2	1257.2	11.3	39.4	.0	221.5	61.26	247.0	229.9	11.3	4.5	.0	0.	1063.
JUL	4776.4	24.95	333.8	1272.3	11.6	37.6	.0	238.7	61.89	297.5	264.3	11.6	4.3	.0	0.	1098.
AUG	4923.2	25.28	379.8	1279.4	11.6	40.2	.0	262.4	62.74	297.2	257.3	11.6	4.6	.0	0.	1098.
SEP	5065.2	25.61	397.7	1269.0	11.3	38.1	.0	279.7	63.37	250.9	218.1	11.3	4.4	.0	0.	1063.
OCT	5282.4	26.10	559.5	1388.5	11.6	39.9	.3	397.1	67.49	281.7	148.1	11.6	4.5	.0	0.	1098.
NOV	5282.4	26.10	627.5	1487.1	11.3	38.4	153.5	753.1	76.20	373.1	.0	11.3	4.3	1.5	0.	1063.
DEC	5282.4	26.10	453.8	1490.4	11.6	48.6	1.3	753.1	76.20	409.6	46.2	11.6	6.7	345.1	0.	1098.
			308.8	1345.0	11.4	48.9	12.9			240.6	162.7	11.4	5.7	28.9		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
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- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
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- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
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WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM
DESIGN WATER LEVEL 85ft
DESIGN VESSEL 250 X 10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				*****				*NEW DAM*	*PUMP*			
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPI.L 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12			EVP. 13	SPI.L 14	
JAN	5200.2	25.91	218.2	631.6	11.6	59.0	.0	731.0	75.76	197.7	201.4	11.6	6.8	.0	15	16	402.
FEB	4967.5	25.38	101.1	623.3	10.5	62.9	.0	680.3	74.74	96.0	129.0	10.5	7.2	.0	0.	0.	363.
MAR	4637.9	24.63	70.9	720.0	11.6	70.6	.0	621.8	73.56	74.2	113.0	11.6	8.1	.0	0.	0.	402.
APR	4622.9	24.60	81.2	642.1	11.3	66.3	.0	324.4	71.96	120.1	164.0	11.3	7.6	.0	0.	0.	389.
MAY	4622.9	24.60	194.6	592.0	11.6	46.2	.0	255.7	64.43	242.7	240.9	11.6	5.3	.0	0.	0.	402.
JUN	4658.7	24.68	288.2	590.6	11.3	39.4	.0	271.5	63.07	247.0	215.5	11.3	4.5	.0	0.	0.	389.
JUL	4751.9	24.89	333.8	593.1	11.6	37.6	.0	313.2	64.58	297.5	239.8	11.6	4.3	.0	0.	0.	402.
AUG	4878.2	25.18	379.8	603.5	11.6	40.2	.0	364.7	66.44	297.2	229.5	11.6	4.6	.0	0.	0.	402.
SEP	5004.3	25.47	397.7	611.1	11.3	38.1	.0	405.0	67.71	250.9	195.0	11.3	4.4	.0	0.	0.	389.
OCT	5269.8	26.07	559.5	644.2	11.6	39.9	.0	481.8	69.83	281.7	188.8	11.6	4.6	.0	0.	0.	402.
NOV	5282.4	26.10	627.5	806.1	11.3	38.3	148.0	753.1	76.20	373.1	.0	11.3	4.6	85.9	0.	0.	389.
DEC	5282.4	26.10	453.8	794.3	11.6	48.6	1.1	753.1	76.20	409.5	38.7	11.6	6.7	352.6	0.	0.	402.
			308.8	654.3	11.4	48.9	12.4			240.6	163.0	11.4	5.7				

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
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WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 250 X 10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** *NEW DAM* *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPII. 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPII. 14	15	16
JAN	5208.9	25.93	218.2	1238.9	11.6	59.0	.0	734.2	75.82	197.7	198.1	11.6	6.8	.0	0.	1018.
FEB	4969.5	25.39	101.1	1186.3	10.5	62.9	.0	700.9	75.15	96.0	111.7	10.5	7.2	.0	0.	919.
MAR	4630.6	24.62	70.9	1345.4	11.6	70.6	.0	663.7	74.40	74.2	91.7	11.6	8.1	.0	0.	1018.
APR	4622.9	24.60	81.2	1250.0	11.3	66.3	.0	370.5	73.61	120.1	140.8	11.3	7.6	.0	0.	985.
MAY	4622.9	24.60	194.6	1197.4	11.6	46.2	.0	313.7	66.14	242.7	239.7	11.6	5.3	.0	0.	1018.
JUN	4680.7	24.73	288.2	1164.8	11.3	39.4	.0	319.0	64.79	247.0	226.0	11.3	4.5	.0	0.	985.
JUL	4805.2	25.01	333.8	1177.8	11.6	37.6	.0	341.3	65.59	297.5	259.2	11.6	4.3	.0	0.	1018.
AUG	4965.9	25.38	379.8	1185.1	11.6	40.2	.0	370.3	66.64	297.2	252.0	11.6	4.6	.0	0.	1018.
SEP	5122.2	25.74	397.7	1177.1	11.3	38.1	.0	392.0	67.35	250.9	213.6	11.3	4.4	.0	0.	985.
OCT	5282.4	26.10	559.5	1364.9	11.6	39.9	.6	585.3	72.69	281.7	72.2	11.6	4.6	.0	0.	1018.
NOV	5282.4	26.10	627.5	1390.7	11.3	38.4	172.0	753.1	76.20	373.1	.0	11.3	4.9	189.2	0.	985.
DEC	5282.4	26.10	453.8	1410.0	11.6	48.6	1.4	753.1	76.20	409.5	27.0	11.6	6.7	364.2	0.	1018.
			308.8	1267.4	11.4	48.9	14.5			240.6	152.7	11.4	5.7	46.1		

- ① GATUN DAM CAPACITY(MCH)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④ LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥ EVAPORATION FROM GATUN DAM(MCH)
- ⑦ SPILLAGE FROM GATUN DAM(MCH)
- ⑧ MADDEN DAM CAPACITY(MCH)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCH)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCH)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCH)
- ⑬ EVAPORATION FROM MADDEN DAM(MCH)
- ⑭ SPILLAGE FROM MADDEN DAM(MCH)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCH)

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 85ft

DESIGN VESSEL 250x10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****							***** MADDEN DAM *****							*NEW DAM* *PUMP*	
	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPII.	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPII.	15	16
JAN	5214.8	25.95	218.2	1822.3	11.6	59.0	7	735.0	75.84	197.7	197.4	11.6	6.8	13	0.	1607.
FEB	4976.1	25.40	101.1	1717.9	10.5	62.9	0	707.1	75.28	96.0	106.3	10.5	7.2	0	0.	1452.
MAR	4637.7	24.63	70.9	1934.1	11.6	70.6	0	676.1	74.65	74.2	85.5	11.6	8.1	0	0.	1607.
APR	4622.9	24.60	81.2	1820.9	11.3	66.3	0	396.4	74.00	120.1	133.6	11.3	7.6	0	0.	1555.
MAY	4622.9	24.60	194.6	1779.9	11.6	46.2	0	346.3	67.08	242.7	239.7	11.6	5.3	0	0.	1607.
JUN	4692.2	24.76	288.2	1723.5	11.3	39.4	0	346.6	65.79	247.0	230.9	11.3	4.5	0	0.	1555.
JUL	4832.5	25.08	333.8	1751.2	11.6	37.6	0	359.8	66.26	297.5	268.4	11.6	4.3	0	0.	1607.
AUG	5010.8	25.48	379.8	1756.8	11.6	40.2	0	377.9	66.92	297.2	262.8	11.6	4.6	0	0.	1607.
SEP	5182.4	25.87	397.7	1731.9	11.3	38.1	0	390.7	67.31	260.9	222.5	11.3	4.4	0	0.	1555.
OCT	5282.4	26.10	559.5	2014.0	11.6	39.9	9	650.6	74.14	281.7	5.6	11.6	4.6	0	0.	1607.
NOV	5282.4	26.10	627.5	1954.5	11.3	38.5	178.5	753.1	76.20	373.1	0	11.3	5.0	254.4	0.	1555.
DEC	5282.4	26.10	453.8	1999.1	11.6	48.6	1.5	753.1	76.20	409.5	20.5	11.6	6.7	370.7	0.	1607.
			308.8	1833.8	11.4	48.9	15.1	240.6	147.8	11.4	11.4	11.4	5.7	52.1		

- ①GATUN DAM CAPACITY(MCH)
- ②GATUN DAM WATER LEVEL(EL.m)
- ③RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥EVAPORATION FROM GATUN DAM(MCH)
- ⑦SPILLAGE FROM GATUN DAM(MCH)
- ⑧MADDEN DAM CAPACITY(MCH)
- ⑨MADDEN DAM WATER LEVEL(EL.m)
- ⑩RUNOFF FROM MADDEN DAM(MCH)
- ⑪LOCKAGE WATER FROM MADDEN DAM(MCH)
- ⑫MUNICIPAL WATER FROM MADDEN DAM(MCH)
- ⑬EVAPORATION FROM MADDEN DAM(MCH)
- ⑭SPILLAGE FROM MADDEN DAM(MCH)
- ⑮NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯PUMP CAPACITY TO BE PLANNED(MCH)

DESIGN WATER LEVEL 90ft
DESIGN VESSEL 100×10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****			***** MADDEN DAM *****			*****			*****						
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPI.L 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPI.L 14	*NEW DAM* 15	*PUMP* 16
JAN	5858.4	27.41	218.2	389.5	11.6	62.8	.0	729.2	75.72	197.7	203.2	11.6	6.8	.0	0.	161.
FEB	5642.0	26.92	101.1	385.1	10.5	66.9	.0	657.3	74.27	96.0	150.2	10.5	7.2	.0	0.	145.
MAR	5337.9	26.23	70.9	448.9	11.6	75.1	.0	568.0	72.21	74.2	143.8	11.6	8.1	.0	0.	161.
APR	5282.4	26.10	81.2	380.6	11.3	70.6	.0	306.0	69.67	120.1	193.0	11.3	7.6	.0	0.	156.
MAY	5282.4	26.10	194.6	352.2	11.6	49.2	.0	233.5	53.78	242.7	240.5	11.6	5.3	.0	0.	161.
JUN	5304.5	26.15	288.2	368.5	11.3	41.9	.0	259.7	62.64	247.0	205.1	11.3	4.5	.0	0.	156.
JUL	5377.3	26.32	333.8	370.1	11.6	40.1	.0	318.6	64.77	297.5	222.6	11.6	4.3	.0	0.	161.
AUG	5480.9	26.55	379.8	382.4	11.6	42.8	.0	389.3	67.27	297.2	210.3	11.6	4.6	.0	0.	161.
SEP	5587.8	26.79	397.7	394.6	11.3	40.5	.0	445.6	68.83	250.9	179.0	11.3	4.4	.0	0.	156.
OCT	5827.9	27.34	559.5	426.1	11.6	42.3	.0	544.4	71.56	281.7	166.6	11.6	4.6	.0	0.	161.
NOV	5943.4	27.60	627.5	573.6	11.3	40.3	42.3	753.1	76.20	373.1	.0	11.3	4.8	148.4	0.	156.
DEC	5943.4	27.60	453.8	550.4	11.6	51.7	.8	753.1	76.20	409.5	42.3	11.6	6.7	349.0	0.	161.
			308.8	418.5	11.4	52.0	3.6	240.6			163.1	11.4	5.7	41.4		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 90ft
DESIGN VESSEL 100x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM* *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	NEW DAM* 15	*PUMP* 16
JAN	5872.0	27.44	218.2	750.8	11.6	62.8	.0	735.5	75.85	197.7	196.9	11.6	6.8	.0	0.	536.
FEB	5644.2	26.92	101.1	735.3	10.5	66.9	.0	693.1	74.99	96.0	120.7	10.5	7.2	.0	0.	484.
MAR	5319.6	26.18	70.9	844.5	11.6	75.1	.0	644.3	74.01	74.2	103.3	11.6	8.1	.0	0.	536.
APR	5282.4	26.10	81.2	764.2	11.3	70.6	.0	383.3	72.89	120.1	153.0	11.3	7.6	.0	0.	518.
MAY	5282.4	26.10	194.6	711.3	11.6	49.2	.0	330.8	65.73	242.7	236.4	11.6	5.3	.0	0.	536.
JUN	5333.7	26.22	288.2	702.2	11.3	41.9	.0	347.0	65.80	247.0	215.0	11.3	4.5	.0	0.	518.
JUL	5445.4	26.47	333.8	706.1	11.6	40.1	.0	387.0	67.21	297.5	241.5	11.6	4.3	.0	0.	536.
AUG	5591.0	26.80	379.8	715.5	11.6	42.8	.0	435.7	68.56	297.2	232.3	11.6	4.6	.0	0.	536.
SEP	5735.4	27.13	397.7	719.9	11.3	40.5	.0	473.8	69.61	250.9	197.2	11.3	4.4	.0	0.	518.
OCT	5943.4	27.60	559.5	832.8	11.6	42.5	.3	624.3	73.61	281.7	115.0	11.6	4.6	.0	0.	536.
NOV	5943.4	27.60	627.5	917.2	11.3	40.8	176.7	753.1	76.20	373.1	.0	11.3	4.9	228.1	0.	518.
DEC	5943.4	27.60	453.8	925.2	11.6	51.7	1.0	753.1	75.20	409.5	22.6	11.6	6.7	368.6	0.	536.
			308.8	777.1	11.4	52.1	14.8		240.6	152.8	11.4		5.7	49.7		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 90ft
DESIGN VESSEL 100X10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM *****							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPIL.	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPIL.	NEW DAM	*PUMP*
JAN	5854.5	27.40	218.2	1089.7	11.6	62.8	.0	732.1	75.78	197.7	200.3	11.6	6.8	.0	0.	857.
FEB	5602.3	26.83	101.1	1050.0	10.5	66.9	.0	695.2	75.04	96.0	115.2	10.5	7.2	.0	0.	774.
MAR	5282.4	26.10	70.9	1194.6	11.6	75.1	.0	620.7	74.21	74.2	95.5	11.6	8.1	.0	0.	857.
APR	5282.4	26.10	81.2	1103.0	11.3	70.6	.0	302.3	72.45	120.1	145.4	11.3	7.6	.0	0.	829.
MAY	5282.4	26.10	194.6	1048.2	11.6	49.2	.0	228.9	63.60	242.7	241.9	11.6	5.3	.0	0.	857.
JUN	5324.4	26.20	288.2	1022.5	11.3	41.9	.0	234.1	61.72	247.0	226.0	11.3	4.5	.0	0.	829.
JUL	5431.4	26.44	333.8	1032.2	11.6	40.1	.0	257.8	62.58	297.5	257.8	11.6	4.3	.0	0.	857.
AUG	5573.8	26.76	379.8	1040.1	11.6	42.8	.0	288.9	63.70	297.2	249.9	11.6	4.6	.0	0.	857.
SEP	5712.6	27.08	397.7	1036.5	11.3	40.5	.0	312.3	64.54	250.9	212.0	11.3	4.4	.0	0.	829.
OCT	5943.4	27.60	559.5	1131.5	11.6	42.5	.2	419.2	68.10	281.7	158.6	11.6	4.6	.0	0.	857.
NOV	5943.4	27.60	627.5	1248.4	11.3	40.7	156.5	753.1	76.20	373.1	.0	11.3	4.4	23.5	0.	829.
DEC	5943.4	27.60	453.8	1246.5	11.6	51.7	1.1	753.1	76.20	409.5	43.5	11.6	6.7	347.7	0.	857.
			308.8	1103.6	11.4	52.1	13.1			240.6	162.2	11.4	5.7	30.9		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 90ft
 DESIGN VESSEL 150x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****										***** MADDEN DAM *****										*NEW DAM*	
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16						
JAN	5858.7	27.41	218.2	496.3	11.6	62.8	.0	730.5	75.75	197.7	201.9	11.6	6.8	.0	0.	268.						
FEB	5631.6	26.89	101.1	492.7	10.5	66.9	.0	670.9	74.55	96.0	138.0	10.5	7.2	.0	0.	242.						
MAR	5310.8	26.16	70.9	572.8	11.6	75.1	.0	600.0	73.09	74.2	125.4	11.6	8.1	.0	0.	258.						
APR	5282.4	26.10	81.2	499.5	11.3	70.6	.0	312.5	71.02	120.1	176.2	11.3	7.6	.0	0.	259.						
MAY	5282.4	26.10	194.6	457.9	11.6	49.2	.0	241.7	64.03	242.7	240.3	11.6	5.3	.0	0.	268.						
JUN	5311.1	26.17	288.2	465.6	11.3	41.9	.0	262.8	62.76	247.0	210.1	11.3	4.5	.0	0.	259.						
JUL	5393.9	26.35	333.8	467.2	11.6	40.1	.0	313.4	64.58	297.5	231.0	11.6	4.3	.0	0.	268.						
AUG	5508.6	26.61	379.8	478.6	11.6	42.8	.0	374.8	66.80	297.2	219.6	11.6	4.6	.0	0.	268.						
SEP	5624.8	26.88	397.7	488.9	11.3	40.5	.0	423.3	68.21	250.9	186.8	11.3	4.4	.0	0.	259.						
OCT	5877.3	27.45	559.5	520.9	11.6	42.3	.0	511.5	70.65	281.7	177.3	11.6	4.6	.0	0.	268.						
NOV	5943.4	27.60	627.5	675.7	11.3	40.5	93.1	753.1	76.20	373.1	.0	11.3	4.7	115.6	0.	259.						
DEC	5943.4	27.60	453.8	657.5	11.6	51.7	.9	753.1	76.20	409.5	40.7	11.6	6.7	350.6	0.	268.						
			308.8	522.8	11.4	52.0	7.8			240.6	162.3	11.4	5.7	38.8								

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

DESIGN WATER LEVEL 90ft

DESIGN VESSEL 150×10^3 DWT

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****					***** MADDEN DAM *****					*NEW DAM* *PUMP*			
	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPI.L	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPI.L
JAN	5871.7	27.44	218.2	965.4	11.6	62.8	.0	735.3	75.84	197.7	197.1	11.6	6.8	14
FEB	5638.0	26.91	101.1	934.7	10.5	66.9	.0	698.3	75.10	96.0	115.3	10.5	7.2	15
MAR	5305.8	26.15	70.9	1066.2	11.6	75.1	.0	656.4	74.26	74.2	96.3	11.6	8.1	16
APR	5282.4	26.10	81.2	979.4	11.3	70.6	.0	381.1	73.36	120.1	145.7	11.3	7.6	0.
MAY	5282.4	26.10	194.6	924.9	11.6	49.2	.0	328.1	66.60	242.7	237.6	11.6	5.3	0.
JUN	5338.5	26.23	288.2	904.7	11.3	41.9	.0	338.9	65.51	247.0	220.4	11.3	4.5	0.
JUL	5458.4	26.50	333.8	912.2	11.6	40.1	.0	370.1	66.63	297.5	250.4	11.6	4.3	0.
AUG	5613.4	26.85	379.8	920.4	11.6	42.8	.0	408.9	67.82	297.2	242.1	11.6	4.6	0.
SEP	5765.4	27.20	397.7	919.6	11.3	40.5	.0	438.8	68.64	250.9	205.4	11.3	4.4	0.
OCT	5943.4	27.60	559.5	1076.9	11.6	42.5	.4	618.7	73.50	281.7	85.6	11.6	4.6	0.
NOV	5943.4	27.60	627.5	1125.1	11.3	40.7	176.2	753.1	76.20	373.1	.0	11.3	4.9	222.5
DEC	5943.4	27.60	453.8	1139.4	11.6	51.7	1.1	753.1	76.20	409.5	23.2	11.6	6.7	368.0
			308.8	989.1	11.4	52.1	14.8			240.6	151.6	11.4	5.7	49.2

- ① GATUN DAM CAPACITY(MCH)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④ LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥ EVAPORATION FROM GATUN DAM(MCH)
- ⑦ SPILLAGE FROM GATUN DAM(MCH)
- ⑧ MADDEN DAM CAPACITY(MCH)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCH)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCH)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCH)
- ⑬ EVAPORATION FROM MADDEN DAM(MCH)
- ⑭ SPILLAGE FROM MADDEN DAM(MCH)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCH)

DESIGN WATER LEVEL 90ft
DESIGN VESSEL 250X10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM** *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	5872.7	27.44	218.2	669.8	11.6	62.8	.0	735.8	75.85	197.7	196.6	11.6	6.8	.0	0.	455.
FEB	5648.6	26.93	101.1	659.0	10.5	66.9	.0	690.6	74.94	96.0	123.5	10.5	7.2	.0	0.	411.
MAR	5328.6	26.21	70.9	759.4	11.6	75.1	.0	638.0	73.89	74.2	107.0	11.6	8.1	.0	0.	455.
APR	5282.4	26.10	81.2	681.6	11.3	70.6	.0	387.0	72.61	120.1	156.8	11.3	7.6	.0	0.	441.
MAY	5282.4	26.10	194.6	630.9	11.6	49.2	.0	335.5	66.89	242.7	235.6	11.6	5.3	.0	0.	455.
JUN	5331.9	26.21	288.2	626.2	11.3	41.9	.0	354.5	66.07	247.0	212.2	11.3	4.5	.0	0.	441.
JUL	5440.1	26.46	333.8	629.2	11.6	40.1	.0	398.8	67.54	297.5	237.2	11.6	4.3	.0	0.	455.
AUG	5581.8	26.78	379.8	639.0	11.6	42.8	.0	452.4	69.02	297.2	227.4	11.6	4.6	.0	0.	455.
SEP	5723.1	27.10	397.7	645.3	11.3	40.5	.0	494.6	70.18	250.9	193.2	11.3	4.4	.0	0.	441.
OCT	5943.4	27.60	569.5	740.1	11.6	42.5	.2	633.8	73.80	281.7	126.3	11.6	4.6	.0	0.	455.
NOV	5943.4	27.60	627.5	838.5	11.3	40.8	177.6	753.1	76.20	373.1	.0	11.3	5.0	237.6	0.	441.
DEC	5943.4	27.60	453.8	844.8	11.6	51.7	1.0	753.1	76.20	409.5	21.6	11.6	6.7	369.6	0.	455.
			308.8	697.0	11.4	52.1	14.9			240.6	153.1	11.4	5.7	50.6		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 90ft
DESIGN VESSEL 250x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITHOUT DAM

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM** *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	5852.6	27.40	218.2	1921.9	11.6	62.8	.0	733.0	75.80	197.7	199.4	11.6	6.8	.0	.0	1687.
FEB	5591.3	26.80	101.1	1809.1	10.5	66.9	.0	704.4	75.22	96.0	106.9	10.5	7.2	.0	.0	1524.
MAR	5282.4	26.10	70.9	2035.4	11.6	75.1	.0	618.0	74.59	74.2	85.9	11.6	8.1	.0	.0	1687.
APR	5282.4	26.10	81.2	1918.5	11.3	70.6	.0	298.7	72.68	120.1	134.4	11.3	7.6	.0	.0	1633.
MAY	5282.4	26.10	194.6	1879.0	11.6	49.2	.0	224.3	63.46	242.7	242.3	11.6	5.3	.0	.0	1687.
JUN	5331.4	26.21	288.2	1819.0	11.3	41.9	.0	221.7	61.27	247.0	233.9	11.3	4.5	.0	.0	1633.
JUL	5451.8	26.49	333.8	1849.2	11.6	40.1	.0	231.1	61.61	297.5	272.1	11.6	4.3	.0	.0	1687.
AUG	5609.9	26.84	379.8	1854.7	11.6	42.8	.0	245.4	62.13	297.2	266.6	11.6	4.6	.0	.0	1687.
SEP	5761.7	27.19	397.7	1827.1	11.3	40.5	.0	255.0	62.47	250.9	225.8	11.3	4.4	.0	.0	1633.
OCT	5943.4	27.60	559.5	2010.7	11.6	42.5	.4	409.8	67.84	281.7	110.6	11.6	4.6	.0	.0	1687.
NOV	5943.4	27.60	627.5	2052.9	11.3	40.7	155.6	753.1	76.20	373.1	.0	11.3	4.4	14.2	.0	1633.
DEC	5943.4	27.60	453.8	2076.7	11.6	51.7	1.2	753.1	76.20	409.5	44.6	11.6	6.7	346.7	.0	1687.
			308.8	1921.2	11.4	52.1	13.1			240.6	160.2	11.4	5.7	30.1		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 100X10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				*****				*NEW DAM* *PUMP*	
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12		EVP. 13
JAN	5164.8	25.83	218.2	345.5	11.6	59.0	.0	703.6	75.21	197.7	228.8	11.6	6.8	.0
FEB	4931.1	25.30	101.1	334.0	10.5	62.9	.0	597.2	73.02	96.0	184.7	10.5	7.2	.0
MAR	4622.9	24.60	70.9	385.3	11.6	70.6	.0	454.5	69.30	74.2	189.0	11.6	8.1	.0
APR	4622.9	24.60	81.2	316.6	11.3	66.3	.0	214.2	61.00	120.1	239.1	11.3	7.6	.0
MAY	4622.9	24.60	194.6	305.1	11.6	46.2	.0	214.2	61.00	242.7	269.3	11.6	5.3	.0
JUN	4622.9	24.60	288.2	331.8	11.3	39.4	.0	214.2	61.00	247.0	224.0	11.3	4.5	.0
JUL	4653.6	24.67	333.8	334.2	11.6	37.6	.0	255.7	62.50	297.5	240.1	11.6	4.3	.0
AUG	4713.0	24.80	379.8	348.9	11.6	40.2	.0	311.3	64.51	297.2	225.4	11.6	4.6	.0
SEP	4775.3	24.95	397.7	363.8	11.3	38.1	.0	354.6	66.07	250.9	192.0	11.3	4.4	.0
OCT	4965.0	25.38	559.5	398.8	11.6	39.8	.0	444.5	68.80	281.7	175.5	11.6	4.6	.0
NOV	5257.8	26.04	627.5	363.5	11.3	37.7	.0	609.8	73.32	373.1	192.3	11.3	4.3	.0
DEC	5282.4	26.10	453.8	448.8	11.6	48.6	.6	753.1	76.20	409.5	125.5	11.6	6.0	123.0
			308.8	356.4	11.4	48.9	.0		240.6	207.1	11.4	5.6	10.3	

- ①GATUN DAM CAPACITY(MCH)
- ②GATUN DAM WATER LEVEL(EL.m)
- ③RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥EVAPORATION FROM GATUN DAM(MCH)
- ⑦SPILLAGE FROM GATUN DAM(MCH)
- ⑧MADDEN DAM CAPACITY(MCH)
- ⑨MADDEN DAM WATER LEVEL(EL.m)
- ⑩RUNOFF FROM MADDEN DAM(MCH)
- ⑪LOCKAGE WATER FROM MADDEN DAM(MCH)
- ⑫MUNICIPAL WATER FROM MADDEN DAM(MCH)
- ⑬EVAPORATION FROM MADDEN DAM(MCH)
- ⑭SPILLAGE FROM MADDEN DAM(MCH)
- ⑮NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯PUMP CAPACITY TO BE PLANNED(MCH)

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 100x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****					***** MADDEN DAM *****					***** NEW DAM* *PUMP*					
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPII 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPII 14	15	16
JAN	5141.6	25.78	218.2	690.2	11.6	59.0	.0	712.3	75.38	197.7	220.1	11.6	6.8	.0	0.	402.
FEB	4851.0	25.12	101.1	581.1	10.5	52.9	.0	649.7	74.12	96.0	141.0	10.5	7.2	.0	0.	363.
MAR	4622.9	24.60	70.9	786.8	11.6	70.6	.0	412.4	72.56	74.2	123.5	11.6	8.1	.0	0.	402.
APR	4622.9	24.60	81.2	701.6	11.3	66.3	.0	214.2	61.00	120.1	179.2	11.3	7.6	.0	189.	389.
MAY	4622.9	24.60	194.6	647.0	11.6	46.2	.0	214.2	61.00	242.7	263.3	11.6	5.3	.0	335.	402.
JUN	4661.1	24.69	333.8	648.1	11.3	39.4	.0	233.6	61.70	297.5	235.5	11.3	4.5	.0	358.	389.
JUL	4731.4	24.85	379.8	659.5	11.6	40.2	.0	263.8	62.79	297.2	250.8	11.6	4.3	.0	358.	402.
AUG	4800.8	25.00	397.7	667.8	11.3	38.1	.0	286.1	63.60	250.9	213.1	11.3	4.4	.0	358.	389.
SEP	5006.7	25.47	559.5	704.0	11.6	39.8	.0	345.3	65.74	281.7	206.3	11.6	4.6	.0	358.	402.
OCT	5282.4	26.10	627.5	691.3	11.3	37.8	.2	513.3	70.70	373.1	189.5	11.3	4.3	.0	358.	389.
NOV	5282.4	26.10	453.8	794.5	11.6	48.6	.9	753.1	76.20	409.5	115.7	11.6	5.7	36.7	358.	402.
DEC	5282.4	26.10	308.8	693.1	11.4	48.9	.1			240.6	200.0	11.4	5.6	3.1		

- ① GATUN DAM CAPACITY(MCH)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④ LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥ EVAPORATION FROM GATUN DAM(MCH)
- ⑦ SPILLAGE FROM GATUN DAM(MCH)
- ⑧ MADDEN DAM CAPACITY(MCH)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCH)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCH)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCH)
- ⑬ EVAPORATION FROM MADDEN DAM(MCH)
- ⑭ SPILLAGE FROM MADDEN DAM(MCH)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCH)

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

DESIGN WATER LEVEL 85ft

DESIGN VESSEL 100X10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPILL 14	*NEW DAM* *PUMP*
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPILL 7	VOL. 8								
JAN	5133.2	25.76	218.2	1020.0	11.6	59.0	.0	718.2	75.50	197.7	214.2	11.6	6.8	.0	15	16
FEB	4825.3	25.06	101.1	988.8	10.5	62.9	.0	670.6	74.54	96.0	125.9	10.5	7.2	.0	0.	723.
MAR	4622.9	24.60	70.9	1128.7	11.6	70.6	.0	405.1	73.52	74.2	105.4	11.6	8.1	.0	0.	723.
APR	4622.9	24.60	81.2	1035.2	11.3	66.3	.0	214.2	61.00	120.1	159.1	11.3	7.6	.0	199.	700.
MAY	4622.9	24.60	194.6	976.1	11.6	46.2	.0	214.2	61.00	242.7	258.1	11.6	5.3	.0	347.	723.
JUN	4667.6	24.70	288.2	955.5	11.3	39.4	.0	214.2	61.00	247.0	238.8	11.3	4.5	.0	373.	700.
JUL	4746.6	24.88	379.8	972.2	11.6	40.2	.0	224.7	61.38	297.5	271.0	11.6	4.3	.0	373.	723.
AUG	4822.7	25.05	397.7	972.1	11.3	38.1	.0	243.7	62.07	297.2	262.0	11.6	4.6	.0	373.	723.
SEP	5042.0	25.55	559.5	1011.9	11.6	39.8	.0	256.8	62.54	250.9	222.3	11.6	4.4	.0	373.	700.
OCT	5282.4	26.10	627.5	1037.4	11.3	37.8	.4	300.0	64.10	281.7	222.2	11.6	4.6	.0	373.	723.
NOV	5282.4	26.10	453.8	1115.8	11.6	48.6	1.0	500.7	70.35	373.1	156.9	11.3	4.3	.0	373.	700.
DEC	5282.4	26.10	308.8	1014.7	11.4	48.9	.1	753.1	76.20	409.5	118.3	11.6	5.6	21.5	373.	723.

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
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- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 100X10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM* *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	5325.5	26.20	218.2	681.1	11.6	60.1	.0	715.2	75.44	197.7	217.2	11.6	6.8	.0	0.	402.
FEB	5042.8	25.56	101.1	672.2	10.5	64.0	.0	654.4	74.22	96.0	139.1	10.5	7.2	.0	0.	363.
MAR	4798.8	25.00	70.9	776.4	11.6	71.8	.0	443.9	72.74	74.2	121.8	11.6	8.1	.0	0.	402.
APR	4798.8	25.00	81.2	692.4	11.3	67.5	.0	217.0	61.10	120.1	176.9	11.3	7.6	.0	150.	389.
MAY	4798.8	25.00	194.6	638.4	11.6	47.0	.0	217.0	61.10	242.7	259.8	11.6	5.3	.0	285.	402.
JUN	4798.8	25.00	288.2	636.9	11.3	40.0	.0	217.0	61.10	247.0	232.4	11.3	4.5	.0	297.	389.
JUL	4844.9	25.10	333.8	639.6	11.6	38.3	.0	239.9	61.93	297.5	258.6	11.6	4.3	.0	297.	402.
AUG	4923.2	25.28	379.8	650.8	11.6	40.9	.0	273.4	63.14	297.2	247.5	11.6	4.6	.0	297.	402.
SEP	5000.7	25.46	397.7	659.0	11.3	38.7	.0	298.4	64.04	250.9	210.3	11.3	4.4	.0	297.	389.
OCT	5215.1	25.95	559.5	694.7	11.6	40.5	.0	360.4	66.28	281.7	203.5	11.6	4.6	.0	297.	402.
NOV	5458.3	26.50	627.5	723.1	11.3	38.4	.3	571.8	72.31	373.1	146.2	11.3	4.3	.0	297.	389.
DEC	5458.3	26.50	453.8	793.6	11.6	49.4	.9	753.1	76.20	409.5	104.6	11.6	6.0	106.0	297.	402.
			308.8	688.2	11.4	49.7	.1			240.6	193.2	11.4	5.6	8.8		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

DESIGN WATER LEVEL 85ft

DESIGN VESSEL 100x10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPIL	*NEW DAM*	*PUMP*
	1	2	3	4	5	6	7	8									
JAN	5314.8	26.17	218.2	1361.4	11.6	60.1	.0	723.7	75.61	197.7	208.7	11.6	11.6	6.8	.0	0.	1071.
FEB	5007.9	25.48	101.1	1201.2	10.5	64.0	.0	685.1	74.83	96.0	116.9	10.5	10.5	7.2	.0	0.	968.
MAR	4798.8	25.00	70.9	1474.3	11.6	71.8	.0	437.4	74.00	74.2	95.7	11.6	11.6	8.1	.0	0.	1071.
APR	4798.8	25.00	81.2	1372.1	11.3	67.5	.0	217.0	61.10	120.1	147.3	11.3	11.3	7.6	.0	158.	1037.
MAY	4798.8	25.00	194.6	1317.5	11.6	47.0	.0	217.0	61.10	242.7	252.6	11.6	11.6	5.3	.0	295.	1071.
JUN	4798.8	25.00	288.2	1280.7	11.3	40.0	.0	217.0	61.10	247.0	238.7	11.3	11.3	4.5	.0	310.	1037.
JUL	4858.3	25.14	333.8	1295.8	11.6	38.3	.0	224.2	61.36	297.5	274.3	11.6	11.6	4.3	.0	310.	1071.
AUG	4953.8	25.35	379.8	1303.2	11.6	40.9	.0	238.3	61.87	297.2	266.9	11.6	11.6	4.6	.0	310.	1071.
SEP	5045.1	25.56	397.7	1293.2	11.3	38.7	.0	247.4	62.20	250.9	226.2	11.3	11.3	4.4	.0	310.	1037.
OCT	5285.0	26.11	559.5	1338.8	11.6	40.5	.0	281.6	63.44	281.7	231.2	11.6	11.6	4.6	.0	310.	1071.
NOV	5458.3	26.50	627.5	1440.5	11.3	38.4	.7	560.3	72.00	373.1	78.9	11.3	11.3	4.3	.0	310.	1037.
DEC	5458.3	26.50	453.8	1463.0	11.6	49.4	1.1	753.1	76.20	409.5	107.0	11.6	11.6	5.9	92.2	310.	1071.
			308.8	1353.5	11.4	49.7	.2			240.6	187.0	11.4	11.4	5.6	7.7		

① GATUN DAM CAPACITY (MCM)

② GATUN DAM WATER LEVEL (EL.m)

③ RUNOFF FROM GATUN DRAINAGE AREA (MCM)

④ LOCKAGE WATER FROM GATUN DAM (MCM)

⑤ MUNICIPAL WATER FROM GATUN DAM (MCM)

⑥ EVAPORATION FROM GATUN DAM (MCM)

⑦ SPILLAGE FROM GATUN DAM (MCM)

⑧ MADDEN DAM CAPACITY (MCM)

⑨ MADDEN DAM WATER LEVEL (EL.m)

⑩ RUNOFF FROM MADDEN DAM (MCM)

⑪ LOCKAGE WATER FROM MADDEN DAM (MCM)

⑫ MUNICIPAL WATER FROM MADDEN DAM (MCM)

⑬ EVAPORATION FROM MADDEN DAM (MCM)

⑭ SPILLAGE FROM MADDEN DAM (MCM)

⑮ NEW DAM CAPACITY TO BE PLANNED (MCM)

⑯ PUMP CAPACITY TO BE PLANNED (MCM)

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 100 X 10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****						***** MADDEN DAM *****						*NEW DAM* *PUMP*		
	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPI.L	VOL.	WL.	ROFF	DEM.L	DEM.E	EVP.	SPI.L	
JAN	5306.9	26.16	218.2	2012.1	11.6	60.1	.0	726.6	75.67	197.7	205.8	11.6	6.8	.0	15
FEB	4988.8	25.43	101.1	1893.0	10.5	64.0	.0	594.7	75.03	96.0	110.2	10.5	7.2	.0	16
MAR	4798.8	25.00	70.9	2129.4	11.6	71.8	.0	422.8	74.34	74.2	88.5	11.6	8.1	.0	0.
APR	4798.8	25.00	81.2	2007.8	11.3	67.5	.0	217.0	61.10	120.1	138.5	11.3	7.6	.0	0.
MAY	4798.8	25.00	194.6	1967.7	11.6	47.0	.0	217.0	61.10	242.7	250.2	11.6	5.3	.0	178.
JUN	4798.8	25.00	288.2	1904.7	11.3	40.0	.0	217.0	61.10	247.0	241.6	11.3	4.5	.0	320.
JUL	4860.3	25.14	333.8	1936.6	11.6	38.3	.0	217.2	61.11	297.5	281.3	11.6	4.3	.0	339.
AUG	4959.5	25.37	379.8	1942.2	11.5	40.9	.0	222.5	61.30	297.2	275.7	11.6	4.6	.0	339.
SEP	5053.1	25.58	397.7	1912.9	11.3	38.7	.0	224.4	61.37	250.9	233.4	11.3	4.4	.0	339.
OCT	5301.3	26.14	559.5	1973.4	11.6	40.5	.0	245.4	62.13	281.7	244.5	11.6	4.6	.0	339.
NOV	5458.3	26.50	627.5	2078.8	11.3	38.4	.9	535.4	71.31	373.1	67.6	11.3	4.3	.0	339.
DEC	5458.3	26.50	453.8	2105.8	11.6	49.4	1.2	753.1	76.20	409.5	112.1	11.6	5.8	62.3	339.
			308.8	1988.7	11.4	49.7	.2			240.6	187.4	11.4	5.6	5.2	

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 85ft
 DESIGN VESSEL 150x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				*****				*****			
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIIL 14	15	16
JAN	5164.4	25.83	218.2	453.1	11.6	59.0	.0	711.6	75.37	197.7	220.8	11.6	6.8	.0	0.	187.
FEB	4912.2	25.26	101.1	449.2	10.5	62.9	.0	630.4	73.73	96.0	159.5	10.5	7.2	.0	0.	169.
MAR	4622.9	24.60	70.9	523.6	11.6	70.6	.0	476.4	71.29	74.2	150.3	11.6	8.1	.0	0.	187.
APR	4622.9	24.60	81.2	447.6	11.3	66.3	.0	214.2	61.00	120.1	204.6	11.3	7.6	.0	104.	181.
MAY	4622.9	24.60	194.6	412.1	11.6	46.2	.0	214.2	61.00	242.7	261.8	11.6	5.3	.0	228.	187.
JUN	4665.9	24.70	333.8	429.1	11.6	37.6	.0	250.9	62.33	297.5	244.8	11.6	4.5	.0	229.	181.
JUL	4739.2	24.86	379.8	442.2	11.6	40.2	.0	300.2	64.11	297.2	231.7	11.6	4.3	.0	229.	187.
AUG	4813.9	25.03	397.7	455.0	11.3	38.1	.0	338.4	65.49	250.9	197.2	11.3	4.4	.0	229.	181.
SEP	5020.1	25.50	559.5	489.4	11.6	39.8	.0	419.3	68.10	281.7	184.5	11.6	4.5	.0	229.	187.
OCT	5282.4	26.10	627.5	497.4	11.3	37.8	.2	622.1	73.57	373.1	154.8	11.3	4.3	.0	229.	181.
NOV	5282.4	26.10	453.8	580.3	11.6	48.6	.8	753.1	76.20	409.5	93.6	11.6	6.2	167.1	229.	187.
DEC	5282.4	26.10	308.8	467.2	11.4	48.9	.1			240.6	194.0	11.4	5.6	13.9		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
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DESIGN WATER LEVEL 85ft
 DESIGN VESSEL 150X10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** *NEW DAM* *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIIL 14	15	16
JAN	5145.9	25.79	218.2	1328.6	11.6	59.0	.0	724.4	75.62	197.7	208.0	11.6	6.8	.0	0.	1045.
FEB	4846.0	25.11	101.1	1271.1	10.5	62.9	.0	685.9	74.85	96.0	116.9	10.5	7.2	.0	0.	943.
MAR	4622.9	24.60	70.9	1440.8	11.6	70.6	.0	460.0	74.02	74.2	95.8	11.6	8.1	.0	0.	1045.
APR	4622.9	24.60	81.2	1339.8	11.3	66.3	.0	214.2	61.00	120.1	147.3	11.3	7.6	.0	125.	1011.
MAY	4622.9	24.60	194.6	1285.0	11.6	46.2	.0	214.2	61.00	242.7	251.6	11.6	5.3	.0	255.	1045.
JUN	4622.9	24.60	288.2	1249.5	11.3	39.4	.0	214.2	61.00	247.0	237.6	11.3	4.5	.0	262.	1011.
JUL	4688.2	24.75	333.8	1263.9	11.6	37.6	.0	223.0	61.32	297.5	272.8	11.6	4.3	.0	262.	1045.
AUG	4789.4	24.98	379.8	1271.4	11.6	40.2	.0	238.7	61.88	297.2	265.3	11.6	4.6	.0	262.	1045.
SEP	4886.4	25.20	397.7	1262.2	11.3	38.1	.0	249.1	62.26	250.9	224.9	11.3	4.4	.0	262.	1011.
OCT	5132.0	25.76	559.5	1307.1	11.6	39.8	.0	285.1	63.56	281.7	229.5	11.6	4.6	.0	262.	1045.
NOV	5282.4	26.10	627.5	1438.0	11.3	37.8	.8	593.6	72.92	373.1	49.1	11.3	4.3	.0	262.	1011.
DEC	5282.4	26.10	453.8	1437.1	11.6	48.6	1.1	753.1	76.20	409.5	99.6	11.6	6.1	132.8	262.	1045.
			308.8	1324.5	11.4	48.9	.2			240.6	183.2	11.4	5.6	11.1		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④ LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)
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- ⑨ MADDEN DAM WATER LEVEL(EL.M)
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WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 250x10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****					***** MADDEN DAM *****					EVP.	DEM.E	DEM.L	DEM.L	SPIL	EVP.	DEM.E	DEM.L	SPIL	*NEW DAM*	#PUMP*	
	VOL.	WL.	ROFF	DEM.L	DEM.E	VOL.	WL.	ROFF	DEM.L	DEM.E												VOL.
JAN	5141.8	25.78	218.2	609.6	11.6	709.1	75.32	197.7	223.3	11.6	709.1	75.32	197.7	223.3	11.6	14	6.8	12	11	15	16	321.
FEB	4855.7	25.13	101.1	604.1	10.5	639.2	73.91	96.0	148.2	10.5	639.2	73.91	96.0	148.2	10.5	0	7.2	10.5	10.5	0	0	290.
MAR	4622.9	24.60	70.9	700.5	11.6	403.5	72.02	74.2	132.4	11.6	403.5	72.02	74.2	132.4	11.6	0	8.1	11.6	11.6	0	0	321.
APR	4622.9	24.60	81.2	617.2	11.3	214.2	61.00	120.1	188.9	11.3	214.2	61.00	120.1	188.9	11.3	0	7.6	11.3	11.3	0	201.	311.
MAY	4622.9	24.60	194.6	566.6	11.6	214.2	61.00	247.0	235.3	11.6	214.2	61.00	247.0	235.3	11.6	0	5.3	11.6	11.6	0	350.	321.
JUN	4656.0	24.68	333.8	572.9	11.6	235.7	61.78	297.5	260.1	11.6	235.7	61.78	297.5	260.1	11.6	0	4.5	11.6	11.6	0	376.	311.
JUL	4720.4	24.82	379.8	585.0	11.6	268.7	62.97	297.2	247.9	11.6	268.7	62.97	297.2	247.9	11.6	0	4.6	11.6	11.6	0	376.	321.
AUG	4784.5	24.97	397.7	595.3	11.3	293.2	63.86	250.9	210.8	11.3	293.2	63.86	250.9	210.8	11.3	0	4.4	11.3	11.3	0	376.	311.
SEP	4982.9	25.42	559.5	631.1	11.6	356.9	66.16	281.7	201.8	11.6	356.9	66.16	281.7	201.8	11.6	0	4.6	11.6	11.6	0	376.	321.
OCT	5282.4	26.10	627.5	589.9	11.3	498.3	70.29	373.1	216.2	11.3	498.3	70.29	373.1	216.2	11.3	0	4.3	11.3	11.3	0	376.	311.
NOV	5282.4	26.10	453.8	714.2	11.6	753.1	76.20	409.5	118.7	11.6	753.1	76.20	409.5	118.7	11.6	0	5.6	11.6	11.6	18.7	376.	321.
DEC	5282.4	26.10	308.8	613.1	11.4	48.9	48.9	240.6	204.2	11.4	48.9	48.9	240.6	204.2	11.4	1	5.6	11.4	11.4	1.6	376.	321.

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
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- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
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DESIGN WATER LEVEL 85ft
DESIGN VESSEL 250x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****					***** MADDEN DAM *****					*****			*NEW DAN* *PUMP*		
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	5140.3	25.78	218.2	1227.2	11.6	59.0	.0	722.5	75.58	197.7	209.9	11.6	6.8	.0	0.	937.
FEB	4836.1	25.08	101.1	1178.6	10.5	62.9	.0	681.4	74.76	96.0	119.4	10.5	7.2	.0	0.	847.
MAR	4622.9	24.60	70.9	1338.6	11.6	70.6	.0	438.1	73.87	74.2	98.5	11.6	8.1	.0	0.	937.
APR	4622.9	24.60	81.2	1240.1	11.3	66.3	.0	214.2	61.00	120.1	150.6	11.3	7.6	.0	155.	907.
MAY	4622.9	24.60	194.6	1183.4	11.6	46.2	.0	214.2	61.00	242.7	253.7	11.6	5.3	.0	292.	937.
JUN	4622.9	24.60	288.2	1152.6	11.3	39.4	.0	214.2	61.00	247.0	238.1	11.3	4.5	.0	307.	937.
JUL	4680.4	24.73	333.8	1164.6	11.6	37.6	.0	223.2	61.33	297.5	272.5	11.6	4.3	.0	307.	937.
AUG	4773.3	24.94	379.8	1172.5	11.6	40.2	.0	239.7	61.92	297.2	264.5	11.6	4.6	.0	307.	937.
SEP	4862.4	25.14	397.7	1166.4	11.3	38.1	.0	250.7	62.32	250.9	224.3	11.3	4.4	.0	307.	907.
OCT	5098.5	25.68	559.5	1209.5	11.6	39.8	.0	288.6	63.69	281.7	227.6	11.6	4.6	.0	307.	937.
NOV	5282.4	26.10	627.5	1301.0	11.3	37.8	.7	556.4	71.89	373.1	89.7	11.3	4.3	.0	307.	907.
DEC	5282.4	26.10	453.8	1330.0	11.6	48.6	1.1	753.1	75.20	409.5	107.1	11.6	5.9	88.2	307.	937.
			308.8	1222.0	11.4	48.9	.1		240.6	188.0	11.4	11.4	5.6	7.4		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 85ft
DESIGN VESSEL 250 X 10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM** *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	5142.6	25.78	218.2	1814.1	11.6	59.0	.0	726.9	75.67	197.7	205.5	11.6	6.8	.0	0.	1527.
FEB	4836.2	25.09	101.1	1713.0	10.5	62.9	.0	694.1	75.01	96.0	111.2	10.5	7.2	.0	0.	1379.
MAR	4622.9	24.60	70.9	1930.0	11.6	70.6	.0	457.5	74.31	74.2	89.6	11.6	8.1	.0	0.	1527.
APR	4622.9	24.60	81.2	1814.7	11.3	66.3	.0	214.2	61.00	120.1	139.8	11.3	7.6	.0	129.	1477.
MAY	4622.9	24.60	194.6	1770.1	11.6	46.2	.0	214.2	61.00	242.7	249.5	11.6	5.3	.0	259.	1527.
JUN	4623.3	24.60	288.2	1714.6	11.3	39.4	.0	214.2	61.00	247.0	239.8	11.3	4.5	.0	268.	1477.
JUL	4693.3	24.76	333.8	1741.2	11.6	37.6	.0	217.3	61.11	297.5	278.4	11.6	4.3	.0	268.	1527.
AUG	4800.8	25.00	379.8	1747.2	11.6	40.2	.0	225.9	61.42	297.2	272.4	11.6	4.6	.0	268.	1527.
SEP	4902.8	25.24	397.7	1723.8	11.3	38.1	.0	230.6	61.59	250.9	230.7	11.3	4.4	.0	268.	1477.
OCT	5158.2	25.82	559.5	1779.4	11.6	39.8	.0	255.8	62.50	281.7	240.2	11.6	4.6	.0	268.	1527.
NOV	5282.4	26.10	627.5	1930.6	11.3	37.8	1.0	589.5	72.81	373.1	23.9	11.3	4.3	.0	268.	1477.
DEC	5282.4	26.10	453.8	1919.1	11.6	48.6	1.2	753.1	76.20	409.5	100.5	11.6	6.1	127.8	268.	1527.
			308.8	1799.8	11.4	48.9	.2		240.6		181.8	11.4	5.6	10.6		

- ① GATUN DAM CAPACITY(MCH)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④ LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥ EVAPORATION FROM GATUN DAM(MCH)
- ⑦ SPILLAGE FROM GATUN DAM(MCH)
- ⑧ MADDEN DAM CAPACITY(MCH)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCH)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCH)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCH)
- ⑬ EVAPORATION FROM MADDEN DAM(MCH)
- ⑭ SPILLAGE FROM MADDEN DAM(MCH)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCH)

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

DESIGN WATER LEVEL 90ft

DESIGN VESSEL 100X10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM** *PUMP**							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	5825.6	27.34	218.2	368.7	11.6	62.8	.0	708.4	75.30	197.7	224.0	11.6	6.8	.0	0.	107.
FEB	5585.6	26.79	101.1	360.4	10.5	66.9	.0	611.7	73.36	96.0	175.0	10.5	7.2	.0	0.	97.
MAR	5282.4	26.10	70.9	418.4	11.6	75.1	.0	468.0	70.11	74.2	174.3	11.6	8.1	.0	0.	107.
APR	5282.4	26.10	81.2	347.8	11.3	70.6	.0	214.2	61.00	120.1	225.8	11.3	7.6	.0	116.	104.
MAY	5282.4	26.10	194.6	328.5	11.6	49.2	.0	214.2	61.00	242.7	264.2	11.6	5.3	.0	242.	107.
JUN	5282.4	26.10	288.2	351.8	11.3	41.9	.0	214.2	61.00	247.0	221.8	11.3	4.5	.0	245.	104.
JUL	5317.8	26.18	333.8	353.9	11.6	40.1	.0	257.0	62.55	297.5	238.8	11.6	4.3	.0	245.	107.
AUG	5382.2	26.33	379.8	368.1	11.6	42.8	.0	313.3	64.58	297.2	224.6	11.6	4.6	.0	245.	107.
SEP	5449.5	26.48	397.7	382.3	11.3	40.5	.0	357.3	66.17	250.9	191.3	11.3	4.4	.0	245.	104.
OCT	5645.5	26.93	559.5	416.7	11.6	42.3	.0	446.7	68.86	281.7	176.0	11.6	4.6	.0	245.	107.
NOV	5943.4	27.60	627.5	381.8	11.3	40.2	.0	612.5	73.37	373.1	191.8	11.3	4.3	.0	245.	104.
DEC	5943.4	27.60	453.8	497.0	11.6	51.7	.6	753.1	75.20	409.5	95.7	11.6	6.1	155.5	245.	107.
			308.8	381.3	11.4	52.0	.1			240.6	200.3	11.4	5.6	13.0		

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL SOFT
DESIGN VESSEL 100X10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM* *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	5809.8	27.30	218.2	732.7	11.6	62.8	.0	717.4	75.48	197.7	215.0	11.6	6.8	.0	0.	455.
FEB	5523.9	26.65	101.1	720.9	10.5	66.9	.0	660.6	74.34	96.0	135.1	10.5	7.2	.0	0.	411.
MAR	5282.4	26.10	70.9	830.7	11.6	75.1	.0	448.2	73.04	74.2	117.1	11.6	8.1	.0	0.	455.
APR	5282.4	26.10	81.2	745.6	11.3	70.6	.0	214.2	61.00	120.1	171.5	11.3	7.6	.0	142.	441.
MAY	5282.4	26.10	194.6	690.1	11.6	49.2	.0	214.2	61.00	242.7	257.7	11.6	5.3	.0	275.	455.
JUN	5282.4	26.10	288.2	685.0	11.3	41.9	.0	214.2	61.00	247.0	232.1	11.3	4.5	.0	285.	441.
JUL	5331.6	26.21	333.8	688.3	11.6	40.1	.0	236.3	61.80	297.5	259.4	11.6	4.3	.0	285.	455.
AUG	5413.4	26.40	379.8	699.0	11.6	42.8	.0	268.5	62.96	297.2	248.7	11.6	4.6	.0	285.	455.
SEP	5494.0	26.58	397.7	705.9	11.3	40.5	.0	292.5	63.83	250.9	211.3	11.3	4.4	.0	285.	441.
OCT	5713.1	27.08	559.5	741.8	11.6	42.3	.0	352.1	65.98	281.7	205.9	11.6	4.6	.0	285.	455.
NOV	5943.4	27.60	627.5	786.0	11.3	40.2	.8	578.5	72.50	373.1	131.2	11.3	4.3	.0	285.	441.
DEC	5943.4	27.60	453.8	845.1	11.6	51.7	.8	753.1	76.20	409.5	102.7	11.6	6.0	114.7	285.	455.
			308.8	739.2	11.4	52.0	.1			240.6	190.7	11.4	5.6	9.6		

- ① GATUN DAM CAPACITY(MCH)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④ LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥ EVAPORATION FROM GATUN DAM(MCH)
- ⑦ SPILLAGE FROM GATUN DAM(MCH)
- ⑧ MADDEN DAM CAPACITY(MCH)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCH)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCH)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCH)
- ⑬ EVAPORATION FROM MADDEN DAM(MCH)
- ⑭ SPILLAGE FROM MADDEN DAM(MCH)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCH)

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

DESIGN WATER LEVEL 90ft

DESIGN VESSEL 100×10^3 DWT

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****							***** MADDEN DAM *****							SPLL	*NEW DAM* *PUMP*
	1	2	3	4	5	6	7	8	9	10	11	12	13	14		
JAN	5809.8	27.30	218.2	1080.9	11.6	62.8	0.0	723.3	75.60	197.7	209.1	11.6	6.8	0.0	0.0	804.
FEB	5515.2	26.63	101.1	1044.0	10.5	66.9	0.0	680.3	74.74	96.0	121.3	10.5	7.2	0.0	0.0	726.
MAR	5282.4	26.10	70.9	1189.2	11.6	75.1	0.0	465.2	73.81	74.2	100.9	11.6	8.1	0.0	0.0	804.
APR	5282.4	26.10	81.2	1095.3	11.3	70.6	0.0	214.2	61.00	120.1	153.1	11.3	7.6	0.0	119.	778.
MAY	5282.4	26.10	194.6	1037.8	11.6	49.2	0.0	214.2	61.00	242.7	252.3	11.6	5.3	0.0	246.	804.
JUN	5282.4	26.10	288.2	1013.6	11.3	41.9	0.0	214.2	61.00	247.0	234.9	11.3	4.5	0.0	251.	778.
JUL	5345.5	26.24	333.8	1022.6	11.6	40.1	0.0	228.3	61.51	297.5	267.5	11.6	4.3	0.0	251.	804.
AUG	5443.3	26.47	379.8	1031.1	11.6	42.8	0.0	250.3	62.30	297.2	259.0	11.6	4.6	0.0	251.	804.
SEP	5538.0	26.68	397.7	1028.8	11.3	40.5	0.0	265.9	62.87	250.9	219.7	11.3	4.4	0.0	251.	778.
OCT	5778.0	27.23	559.5	1069.1	11.6	42.3	0.0	310.5	64.48	281.7	220.9	11.6	4.6	0.0	251.	804.
NOV	5943.4	27.60	627.5	1187.5	11.3	40.2	0.0	607.1	73.27	373.1	60.9	11.3	4.3	0.0	251.	778.
DEC	5943.4	27.60	453.8	1193.2	11.6	51.7	0.0	753.1	76.20	409.5	96.9	11.6	6.1	148.9	251.	804.
			308.8	1082.8	11.4	52.0	0.0			240.6	183.0	11.4	5.6	12.4		

① GATUN DAM CAPACITY(MCH)

② GATUN DAM WATER LEVEL(EL.m)

③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)

④ LOCKAGE WATER FROM GATUN DAM(MCH)

⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)

⑥ EVAPORATION FROM GATUN DAM(MCH)

⑦ SPILLAGE FROM GATUN DAM(MCH)

⑧ MADDEN DAM CAPACITY(MCH)

⑨ MADDEN DAM WATER LEVEL(EL.m)

⑩ RUNOFF FROM MADDEN DAM(MCH)

⑪ LOCKAGE WATER FROM MADDEN DAM(MCH)

⑫ MUNICIPAL WATER FROM MADDEN DAM(MCH)

⑬ EVAPORATION FROM MADDEN DAM(MCH)

⑭ SPILLAGE FROM MADDEN DAM(MCH)

⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)

⑯ PUMP CAPACITY TO BE PLANNED(MCH)

DESIGN WATER LEVEL 90FT
DESIGN VESSEL 150×10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

EXISTING 15000 TRANSITS/ANNUAL + 10000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****						***** MADDEN DAM *****						*****			*****		
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	NEW DAN* 15	*PUMP* 16		
JAN	5822.3	27.33	218.2	479.2	11.6	62.8	.0	713.4	75.40	197.7	219.0	11.6	6.8	.0	0.	214.		
FEB	5563.9	26.74	101.1	475.6	10.5	66.9	.0	636.7	73.86	96.0	155.0	10.5	7.2	.0	0.	194.		
MAR	5282.4	26.10	70.9	554.1	11.6	75.1	.0	472.8	71.63	74.2	144.1	11.6	8.1	.0	0.	214.		
APR	5282.4	26.10	81.2	477.1	11.3	70.6	.0	214.2	61.00	120.1	198.5	11.3	7.6	.0	109.	207.		
MAY	5282.4	26.10	194.6	438.1	11.6	49.2	.0	214.2	61.00	242.7	260.0	11.6	5.3	.0	233.	214.		
JUN	5282.4	26.10	288.2	450.9	11.3	41.9	.0	214.2	61.00	247.0	224.7	11.3	4.5	.0	235.	207.		
JUL	5326.3	26.20	333.8	452.6	11.6	40.1	.0	250.1	62.30	297.5	245.6	11.6	4.3	.0	235.	214.		
AUG	5400.6	26.37	379.8	465.4	11.6	42.8	.0	298.3	64.04	297.2	232.8	11.6	4.6	.0	235.	214.		
SEP	5476.3	26.54	397.7	477.6	11.3	40.5	.0	335.5	65.38	250.9	198.1	11.3	4.4	.0	235.	207.		
OCT	5684.2	27.01	539.5	511.9	11.6	42.3	.0	414.7	67.98	281.7	186.3	11.6	4.6	.0	235.	214.		
NOV	5943.4	27.60	627.5	524.0	11.3	40.2	.2	620.6	73.54	373.1	151.6	11.3	4.3	.0	235.	207.		
DEC	5943.4	27.60	453.8	604.1	11.6	51.7	.7	753.1	76.20	409.5	94.1	11.6	6.2	165.1	235.	214.		
			308.8	492.5	11.4	52.0	.1			240.6	192.5	11.4	5.6	13.8				

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
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- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 90ft
DESIGN VESSEL 150x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	*NEW DAM* 15	*PUMP* 16
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8									
JAN	5805.9	27.29	218.2	950.8	11.6	62.8	.0	720.7	75.55	197.7	211.7	11.6	11.6	6.8	0.	0.	670.
FEB	5510.1	26.62	101.1	924.3	10.5	66.9	.0	673.3	74.60	96.0	125.8	10.5	10.5	7.2	0.	0.	605.
MAR	5282.4	26.10	70.9	1056.7	11.6	75.1	.0	446.5	73.56	74.2	105.8	11.6	11.6	8.1	0.	0.	670.
APR	5282.4	26.10	81.2	966.0	11.3	70.6	.0	214.2	61.00	120.1	159.0	11.3	11.3	7.6	0.	144.	648.
MAY	5282.4	26.10	194.6	907.7	11.6	49.2	.0	214.2	61.00	242.7	254.9	11.6	11.6	5.3	0.	278.	670.
JUN	5282.4	26.10	288.2	890.2	11.3	41.9	.0	214.2	61.00	247.0	234.9	11.3	11.3	4.5	0.	288.	648.
JUL	5337.5	26.23	333.8	896.7	11.6	40.1	.0	229.9	61.57	297.5	265.8	11.6	11.6	4.3	0.	288.	670.
AUG	5426.5	26.43	379.8	906.0	11.6	42.8	.0	254.3	62.45	297.2	256.6	11.6	11.6	4.6	0.	288.	670.
SEP	5513.1	26.62	397.7	907.3	11.3	40.5	.0	271.9	63.08	250.9	217.7	11.3	11.3	4.4	0.	288.	648.
OCT	5742.4	27.15	559.5	945.8	11.6	42.3	.0	320.6	64.85	281.7	216.7	11.6	11.6	4.6	0.	288.	670.
NOV	5943.4	27.60	627.5	1022.5	11.3	40.2	.5	575.6	72.42	373.1	102.6	11.3	11.3	4.3	0.	288.	648.
DEC	5943.4	27.60	453.8	1059.3	11.6	51.7	.8	753.1	76.20	409.5	103.3	11.6	11.6	6.0	111.1	288.	670.
			308.8	952.8	11.4	52.0	.1			240.6	187.9	11.4	11.4	5.6	9.3		

- ① GATUN DAM CAPACITY(MCH)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④ LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥ EVAPORATION FROM GATUN DAM(MCH)
- ⑦ SPILLAGE FROM GATUN DAM(MCH)
- ⑧ MADDEN DAM CAPACITY(MCH)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCH)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCH)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCH)
- ⑬ EVAPORATION FROM MADDEN DAM(MCH)
- ⑭ SPILLAGE FROM MADDEN DAM(MCH)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCH)

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

DESIGN WATER LEVEL 90ft
DESIGN VESSEL 150 X 10³ DWT

EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				EVP.	DEM.E	SPIL	VOL.	***** MADDEN DAM *****				EVP.	DEM.E	SPIL	*NEW DAM* *PUMP*
	1	2	3	4	5	6	7	8					9	10	11	12				
JAN	5808.3	27.30	218.2	1403.8	11.6	62.8	.0	725.8	75.65	197.7	206.6	11.6	6.8	.0	0.	1125.				
FEB	5508.7	26.61	101.1	1339.4	10.5	68.9	.0	689.0	74.91	96.0	115.2	10.5	7.2	.0	0.	1016.				
MAR	5282.4	26.10	70.9	1516.3	11.6	75.1	.0	468.4	74.12	74.2	94.0	11.6	8.1	.0	0.	1125.				
APR	5282.4	26.10	81.2	1413.4	11.3	70.6	.0	214.2	61.00	120.1	145.0	11.3	7.6	.0	115.	1089.				
MAY	5282.4	26.10	194.6	1360.2	11.6	49.2	.0	214.2	61.00	242.7	250.2	11.6	5.3	.0	241.	1125.				
JUN	5284.7	26.11	288.2	1321.4	11.3	41.9	.0	214.2	61.00	247.0	237.0	11.3	4.5	.0	247.	1089.				
JUL	5354.2	26.26	333.8	1337.6	11.6	40.1	.0	223.0	61.32	297.5	272.8	11.6	4.3	.0	247.	1125.				
AUG	5459.8	26.50	379.8	1344.8	11.6	42.8	.0	238.3	61.87	297.2	265.6	11.6	4.6	.0	247.	1125.				
SEP	5561.0	26.73	397.7	1333.3	11.3	40.5	.0	248.6	62.24	250.9	225.1	11.3	4.4	.0	247.	1089.				
OCT	5811.8	27.30	559.5	1379.7	11.6	42.3	.0	283.3	63.50	281.7	230.7	11.6	4.6	.0	247.	1125.				
NOV	5943.4	27.60	627.5	1532.3	11.3	40.2	.8	614.8	73.42	373.1	26.1	11.3	4.3	.0	247.	1089.				
DEC	5943.4	27.60	453.8	1514.5	11.6	51.7	1.0	753.1	76.20	409.5	95.9	11.6	6.2	157.6	247.	1125.				
			308.8	1399.7	11.4	52.0	1.1			240.6	180.3	11.4	5.6	13.1						

- ① GATUN DAM CAPACITY(MCM)
- ② GATUN DAM WATER LEVEL(EL.M)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④ LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥ EVAPORATION FROM GATUN DAM(MCM)
- ⑦ SPILLAGE FROM GATUN DAM(MCM)
- ⑧ MADDEN DAM CAPACITY(MCM)
- ⑨ MADDEN DAM WATER LEVEL(EL.M)
- ⑩ RUNOFF FROM MADDEN DAM(MCM)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬ EVAPORATION FROM MADDEN DAM(MCM)
- ⑭ SPILLAGE FROM MADDEN DAM(MCM)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCM)

DESIGN WATER LEVEL 90ft
 DESIGN VESSEL 250x10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

EXISTING 15000 TRANSITS/ANNUAL + 20000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM* *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPTL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPTL 14	NEW DAM* 15	*PUMP* 16
JAN	5807.3	27.29	218.2	1297.7	11.6	62.8	.0	724.8	75.63	197.7	207.6	11.6	6.8	.0	0.	1018.
FEB	5507.6	26.61	101.1	1242.6	10.5	66.9	.0	686.2	74.86	96.0	117.0	10.5	7.2	.0	0.	919.
MAR	5282.4	26.10	70.9	1409.3	11.6	75.1	.0	462.5	74.02	74.2	96.0	11.6	8.1	.0	0.	1018.
APR	5282.4	26.10	81.2	1309.3	11.3	70.6	.0	214.2	61.00	120.1	147.4	11.3	7.6	.0	123.	985.
MAY	5282.4	26.10	194.6	1254.2	11.6	49.2	.0	214.2	61.00	242.7	251.0	11.6	5.3	.0	251.	1018.
JUN	5348.6	26.25	333.8	1233.7	11.6	40.1	.0	224.2	61.36	297.5	271.5	11.6	4.3	.0	256.	985.
JUL	5450.5	26.48	379.8	1241.3	11.6	42.8	.0	241.2	61.98	297.2	264.0	11.6	4.6	.0	256.	1018.
AUG	5548.4	26.71	397.7	1232.9	11.3	40.5	.0	252.8	62.39	250.9	223.8	11.3	4.4	.0	256.	985.
SEP	5794.6	27.26	559.5	1277.2	11.6	42.3	.0	290.2	63.75	281.7	228.1	11.6	4.6	.0	256.	1018.
OCT	5943.4	27.60	627.5	1411.4	11.3	40.2	.7	602.4	73.16	373.1	45.3	11.3	4.3	.0	256.	985.
NOV	5943.4	27.60	453.8	1407.4	11.6	51.7	.9	753.1	76.20	409.5	97.9	11.6	6.1	143.3	256.	1018.
DEC	5943.4	27.60	308.8	1294.8	11.4	52.0	.1			240.6	182.2	11.4	5.6	11.9		

- ① GATUN DAM CAPACITY(MCH)
- ② GATUN DAM WATER LEVEL(EL.m)
- ③ RUNOFF FROM GATUN DRAINAGE AREA(MCH)
- ④ LOCKAGE WATER FROM GATUN DAM(MCH)
- ⑤ MUNICIPAL WATER FROM GATUN DAM(MCH)
- ⑥ EVAPORATION FROM GATUN DAM(MCH)
- ⑦ SPILLAGE FROM GATUN DAM(MCH)
- ⑧ MADDEN DAM CAPACITY(MCH)
- ⑨ MADDEN DAM WATER LEVEL(EL.m)
- ⑩ RUNOFF FROM MADDEN DAM(MCH)
- ⑪ LOCKAGE WATER FROM MADDEN DAM(MCH)
- ⑫ MUNICIPAL WATER FROM MADDEN DAM(MCH)
- ⑬ EVAPORATION FROM MADDEN DAM(MCH)
- ⑭ SPILLAGE FROM MADDEN DAM(MCH)
- ⑮ NEW DAM CAPACITY TO BE PLANNED(MCH)
- ⑯ PUMP CAPACITY TO BE PLANNED(MCH)

DESIGN WATER LEVEL 90ft
 DESIGN VESSEL 250X10³ DWT

WATER BALANCE SIMULATION ON STUDY CASE WITH DAM

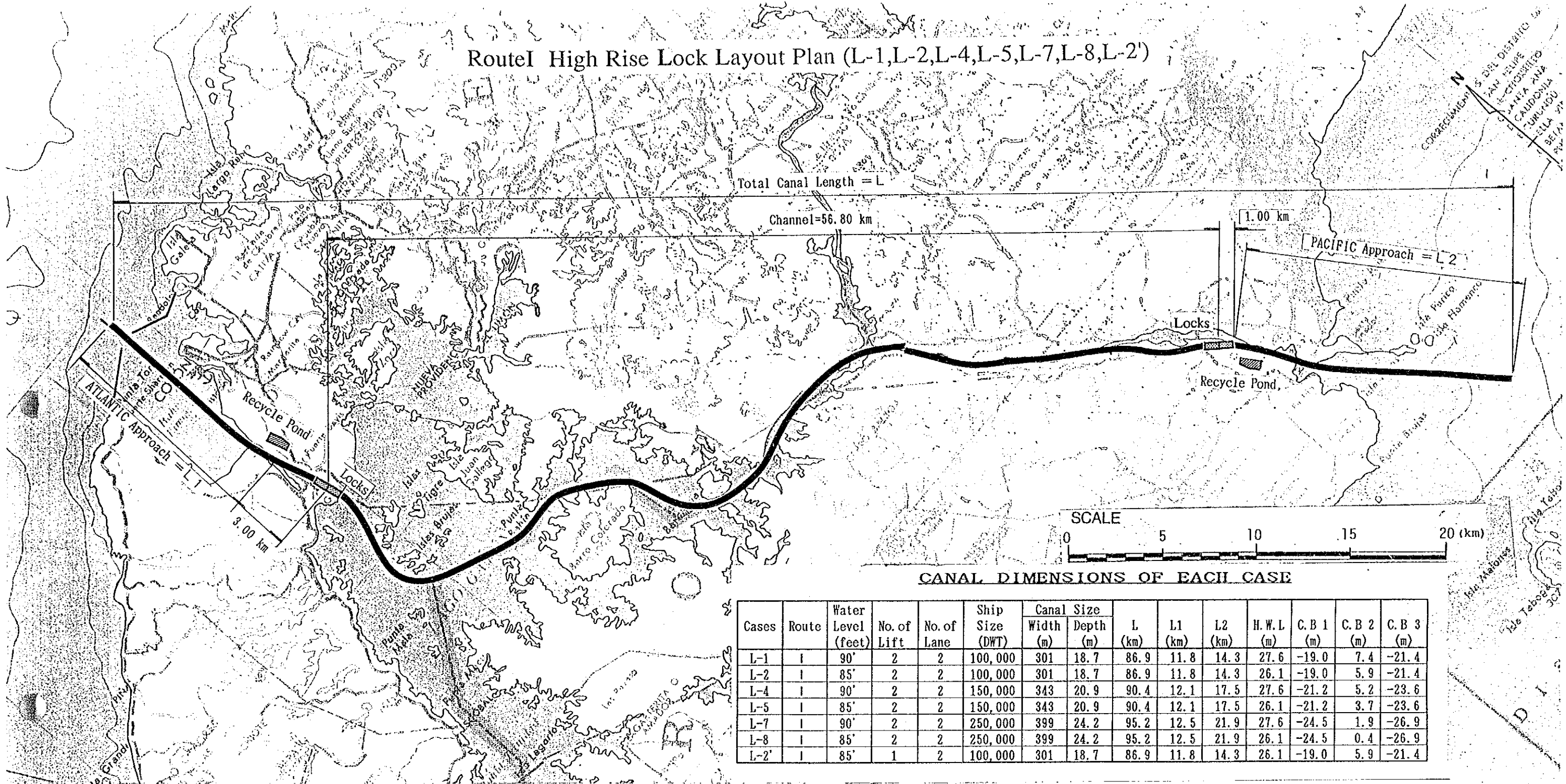
EXISTING 15000 TRANSITS/ANNUAL + 30000 TRANSITS/ANNUAL IN NEW CANAL

MONTH	***** GATUN DAM *****				***** MADDEN DAM *****				***** NEW DAM** *PUMP*							
	VOL. 1	WL. 2	ROFF 3	DEM.L 4	DEM.E 5	EVP. 6	SPIL 7	VOL. 8	WL. 9	ROFF 10	DEM.L 11	DEM.E 12	EVP. 13	SPIL 14	15	16
JAN	5804.3	27.29	218.2	1916.7	11.6	62.8	.0	727.8	75.69	197.7	204.6	11.6	6.8	.0	0.	1634.
FEB	5497.6	26.59	101.1	1806.0	10.5	66.9	.0	696.1	75.06	96.0	110.0	10.5	7.2	.0	0.	1476.
MAR	5282.4	26.10	70.9	2032.9	11.6	75.1	.0	462.5	74.37	74.2	88.4	11.6	8.1	.0	0.	1634.
APR	5282.4	26.10	81.2	1914.6	11.3	70.6	.0	214.2	61.00	120.1	138.3	11.3	7.6	.0	123.	1581.
MAY	5282.4	26.10	194.6	1872.7	11.6	49.2	.0	214.2	61.00	242.7	248.6	11.6	5.3	.0	251.	1634.
JUN	5285.3	26.11	288.2	1813.3	11.3	41.9	.0	214.2	61.00	247.0	239.6	11.3	4.5	.0	259.	1581.
JUL	5358.6	26.27	333.8	1842.7	11.6	40.1	.0	217.2	61.11	297.5	278.6	11.6	4.3	.0	259.	1634.
AUG	5469.3	26.53	379.8	1848.5	11.6	42.8	.0	225.3	61.40	297.2	272.8	11.6	4.6	.0	259.	1634.
SEP	5574.5	26.76	397.7	1821.8	11.3	40.5	.0	229.6	61.56	250.9	231.0	11.3	4.4	.0	259.	1581.
OCT	5834.0	27.35	559.5	1879.9	11.6	42.3	.0	253.7	62.43	281.7	241.4	11.6	4.6	.0	259.	1634.
NOV	5943.4	27.60	627.5	2046.8	11.3	40.2	.9	605.1	73.23	373.1	6.1	11.3	4.3	.0	259.	1581.
DEC	5943.4	27.60	453.8	2023.3	11.6	51.7	1.0	753.1	76.20	409.5	98.0	11.6	6.1	145.8	259.	1634.
			308.8	1901.6	11.4	52.0	.2			240.6	179.8	11.4	5.6	12.2		

- ①GATUN DAM CAPACITY(MCM)
- ②GATUN DAM WATER LEVEL(EL.m)
- ③RUNOFF FROM GATUN DRAINAGE AREA(MCM)
- ④LOCKAGE WATER FROM GATUN DAM(MCM)
- ⑤MUNICIPAL WATER FROM GATUN DAM(MCM)
- ⑥EVAPORATION FROM GATUN DAM(MCM)
- ⑦SPILLAGE FROM GATUN DAM(MCM)
- ⑧MADDEN DAM CAPACITY(MCM)
- ⑨MADDEN DAM WATER LEVEL(EL.m)
- ⑩RUNOFF FROM MADDEN DAM(MCM)
- ⑪LOCKAGE WATER FROM MADDEN DAM(MCM)
- ⑫MUNICIPAL WATER FROM MADDEN DAM(MCM)
- ⑬EVAPORATION FROM MADDEN DAM(MCM)
- ⑭SPILLAGE FROM MADDEN DAM(MCM)
- ⑮NEW DAM CAPACITY TO BE PLANNED(MCM)
- ⑯PUMP CAPACITY TO BE PLANNED(MCM)

APPENDIX 2 : LAYOUT PLANS AND PROFILES

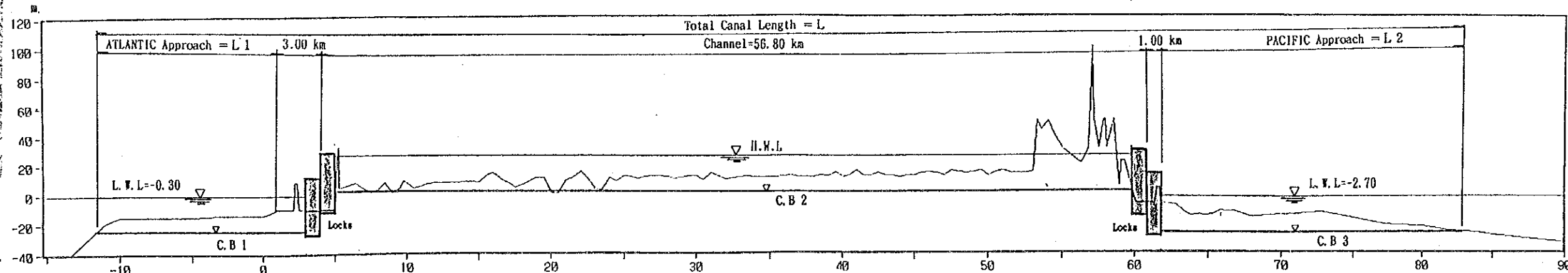
Route I High Rise Lock Layout Plan (L-1, L-2, L-4, L-5, L-7, L-8, L-2')



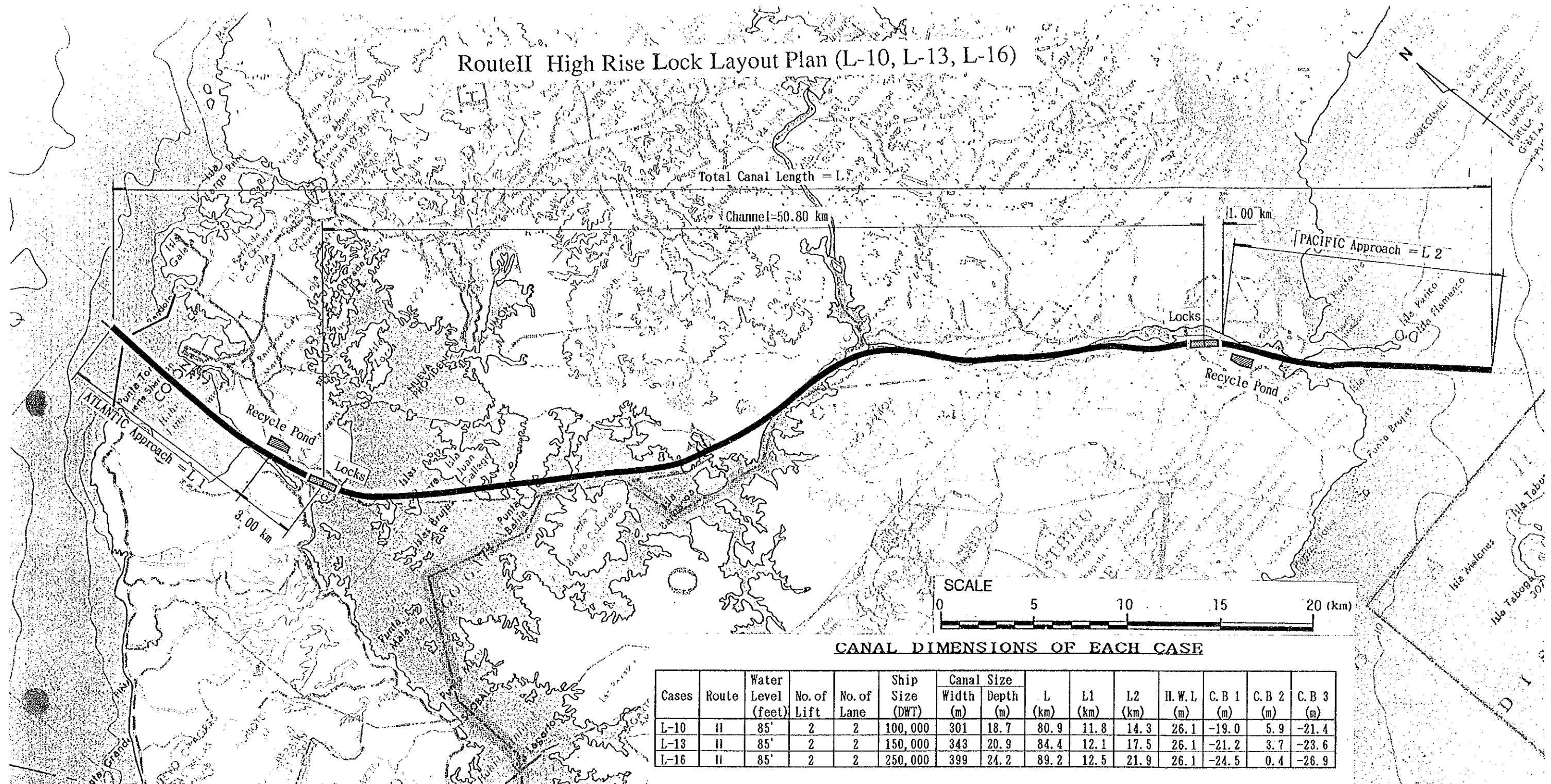
CANAL DIMENSIONS OF EACH CASE

Cases	Route	Water Level (feet)	No. of Lift	No. of Lane	Ship Size (DWT)	Canal Size		L (km)	L1 (km)	L2 (km)	H.W.L (m)	C.B 1 (m)	C.B 2 (m)	C.B 3 (m)
						Width (m)	Depth (m)							
L-1	I	90'	2	2	100,000	301	18.7	86.9	11.8	14.3	27.6	-19.0	7.4	-21.4
L-2	I	85'	2	2	100,000	301	18.7	86.9	11.8	14.3	26.1	-19.0	5.9	-21.4
L-4	I	90'	2	2	150,000	343	20.9	90.4	12.1	17.5	27.6	-21.2	5.2	-23.6
L-5	I	85'	2	2	150,000	343	20.9	90.4	12.1	17.5	26.1	-21.2	3.7	-23.6
L-7	I	90'	2	2	250,000	399	24.2	95.2	12.5	21.9	27.6	-24.5	1.9	-26.9
L-8	I	85'	2	2	250,000	399	24.2	95.2	12.5	21.9	26.1	-24.5	0.4	-26.9
L-2'	I	85'	1	2	100,000	301	18.7	86.9	11.8	14.3	26.1	-19.0	5.9	-21.4

Profile



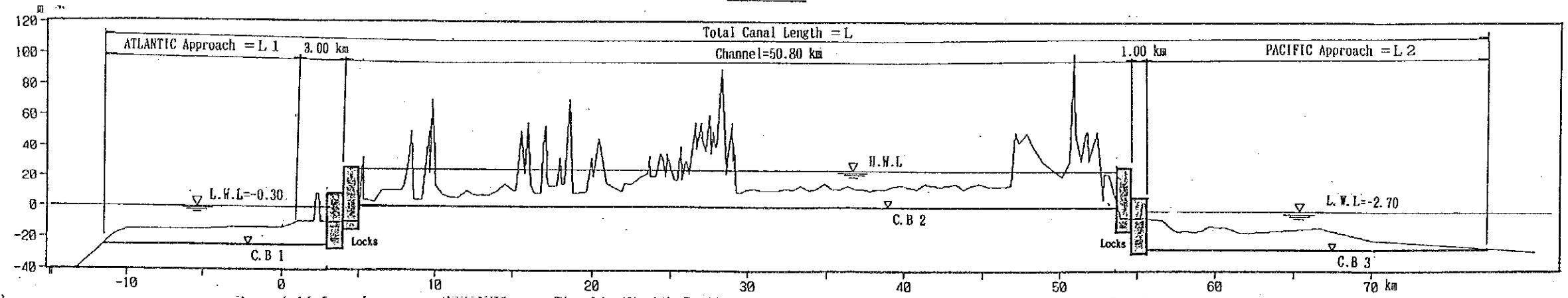
Route II High Rise Lock Layout Plan (L-10, L-13, L-16)



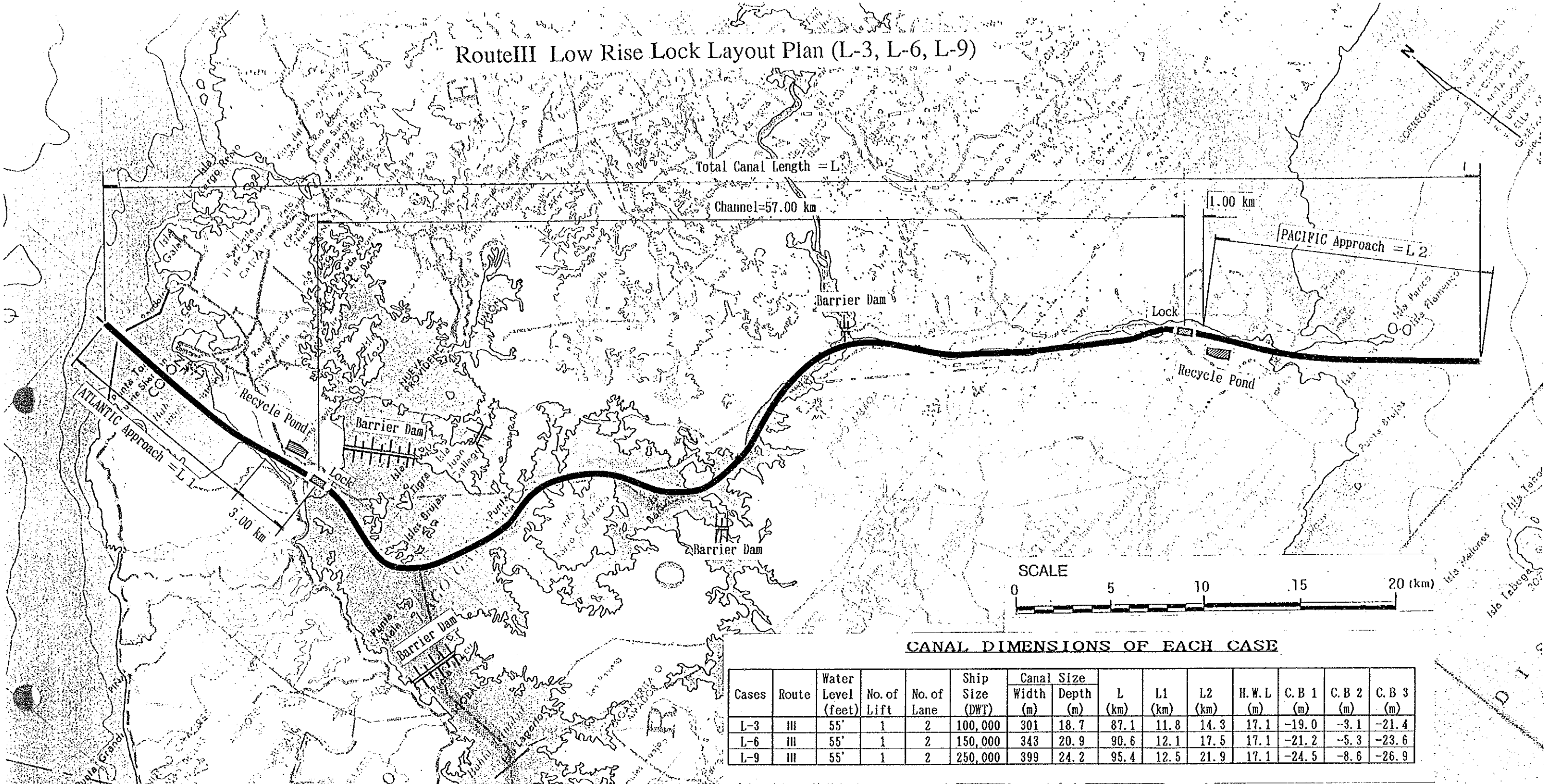
CANAL DIMENSIONS OF EACH CASE

Cases	Route	Water Level (feet)	No. of Lift	No. of Lane	Ship Size (DWT)	Canal Size		L (km)	L1 (km)	L2 (km)	H.W.L (m)	C.B 1 (m)	C.B 2 (m)	C.B 3 (m)
						Width (m)	Depth (m)							
L-10	II	85'	2	2	100,000	301	18.7	80.9	11.8	14.3	26.1	-19.0	5.9	-21.4
L-13	II	85'	2	2	150,000	343	20.9	84.4	12.1	17.5	26.1	-21.2	3.7	-23.6
L-16	II	85'	2	2	250,000	399	24.2	89.2	12.5	21.9	26.1	-24.5	0.4	-26.9

Profile



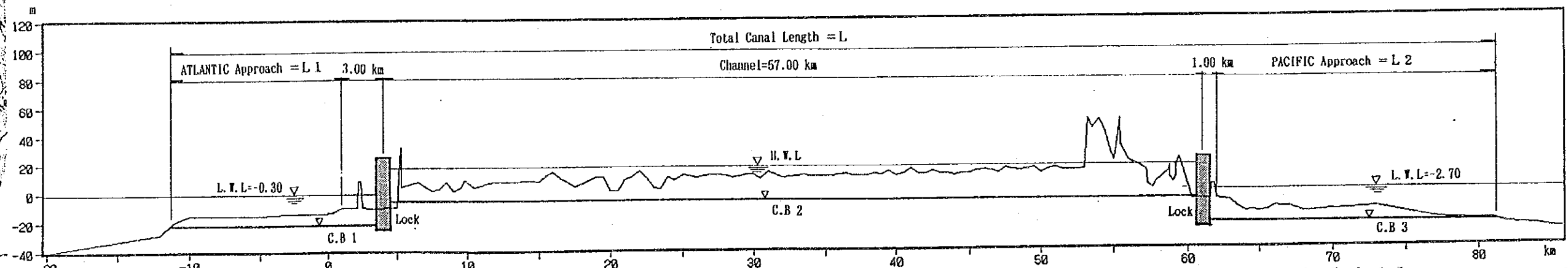
Route III Low Rise Lock Layout Plan (L-3, L-6, L-9)



CANAL DIMENSIONS OF EACH CASE

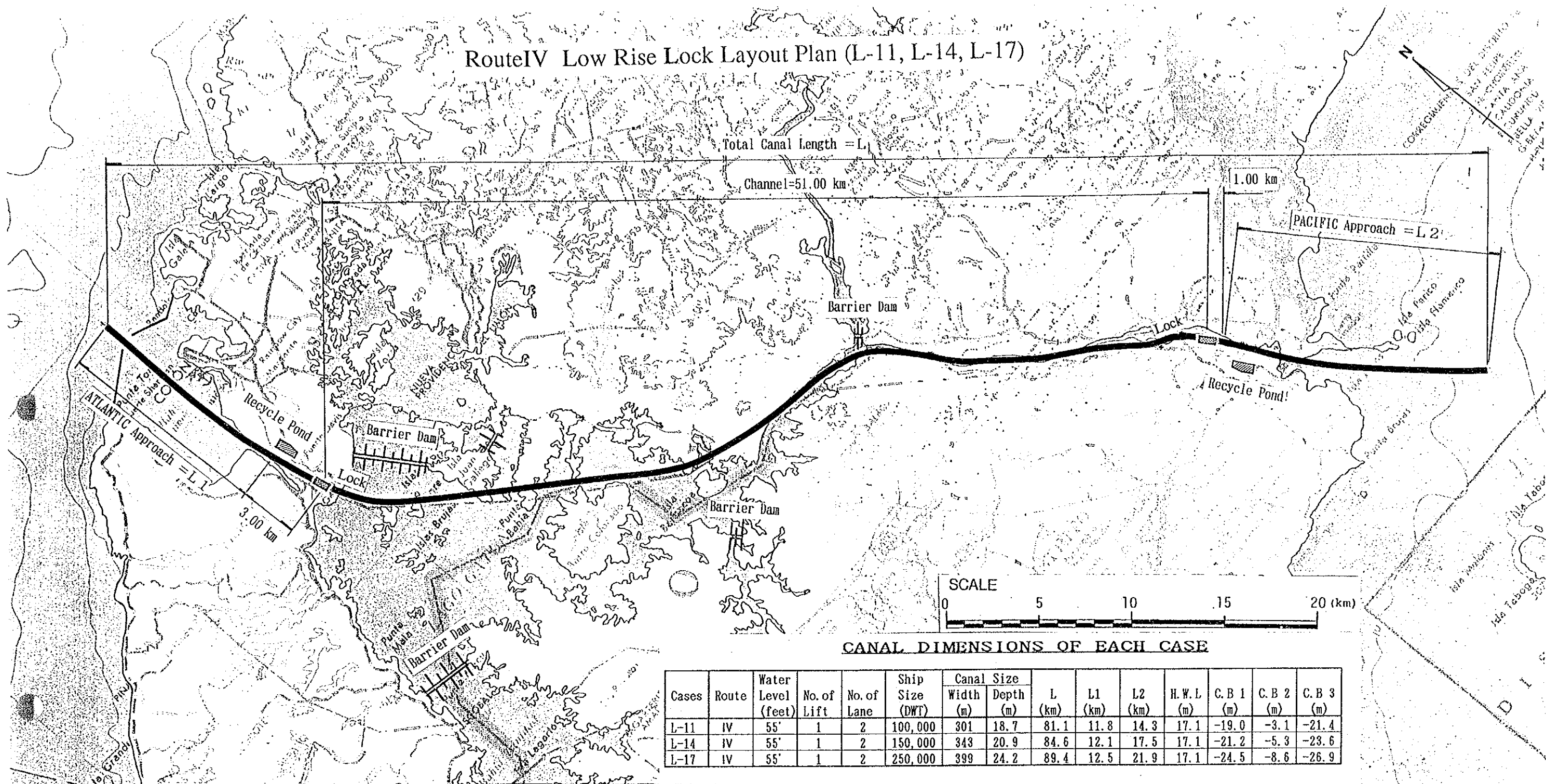
Cases	Route	Water Level (feet)	No. of Lift	No. of Lane	Ship Size (DWT)	Canal Size		L (km)	L1 (km)	L2 (km)	H.W.L (m)	C.B 1 (m)	C.B 2 (m)	C.B 3 (m)
						Width (m)	Depth (m)							
L-3	III	55'	1	2	100,000	301	18.7	87.1	11.8	14.3	17.1	-19.0	-3.1	-21.4
L-6	III	55'	1	2	150,000	343	20.9	90.6	12.1	17.5	17.1	-21.2	-5.3	-23.6
L-9	III	55'	1	2	250,000	399	24.2	95.4	12.5	21.9	17.1	-24.5	-8.6	-26.9

Profile



A.2-3

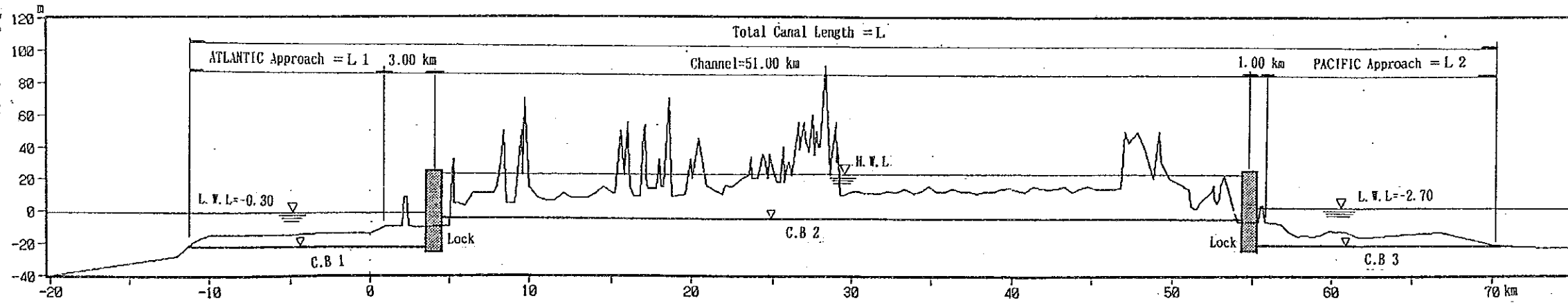
Route IV Low Rise Lock Layout Plan (L-11, L-14, L-17)



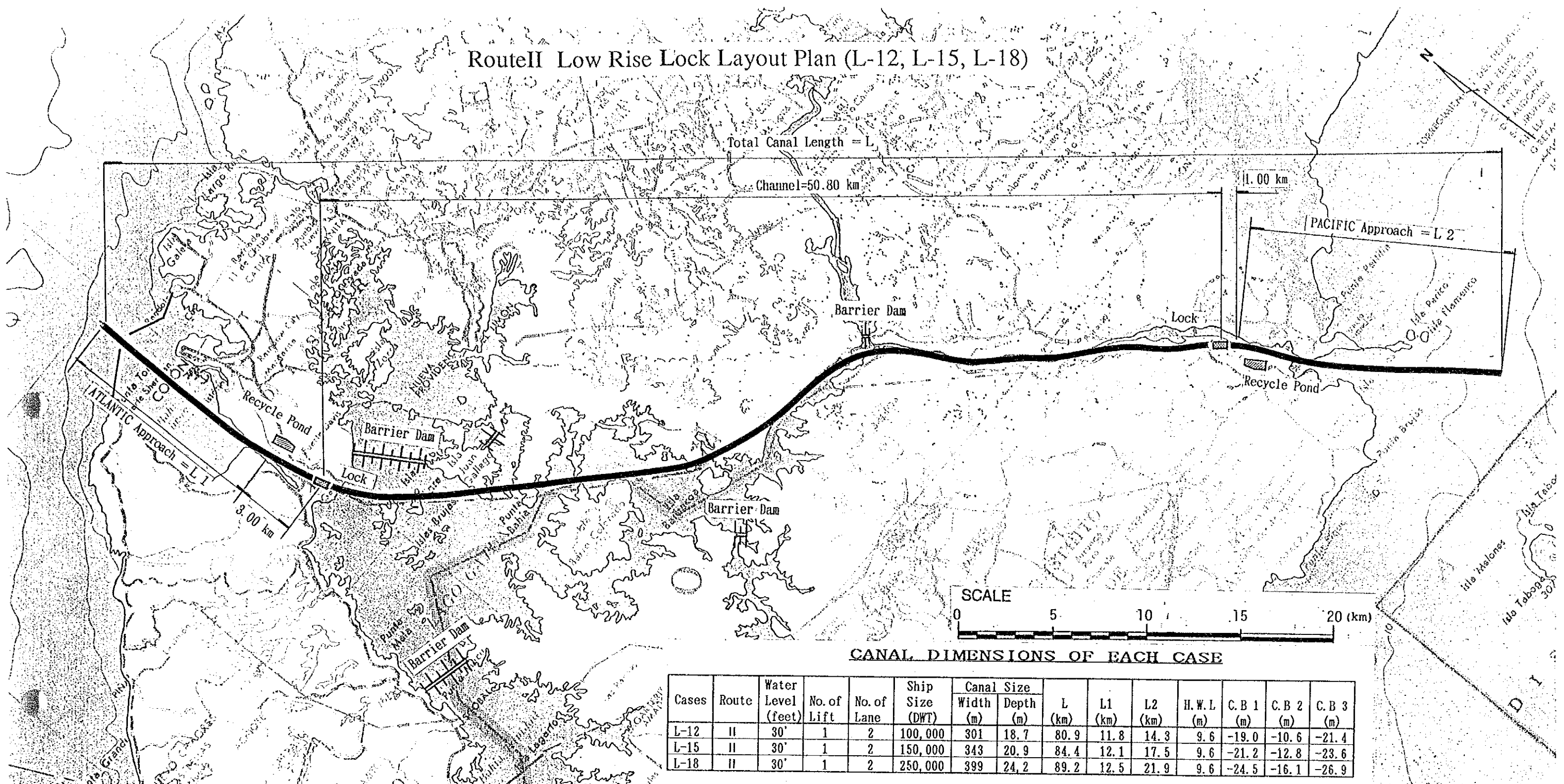
CANAL DIMENSIONS OF EACH CASE

Cases	Route	Water Level (feet)	No. of Lift	No. of Lane	Ship Size (DWT)	Canal Size			H.W.L (m)	C.B 1 (m)	C.B 2 (m)	C.B 3 (m)		
						Width (m)	Depth (m)	L (km)						
L-11	IV	55'	1	2	100,000	301	18.7	81.1	11.8	14.3	17.1	-19.0	-3.1	-21.4
L-14	IV	55'	1	2	150,000	343	20.9	84.6	12.1	17.5	17.1	-21.2	-5.3	-23.6
L-17	IV	55'	1	2	250,000	399	24.2	89.4	12.5	21.9	17.1	-24.5	-8.6	-26.9

Profile



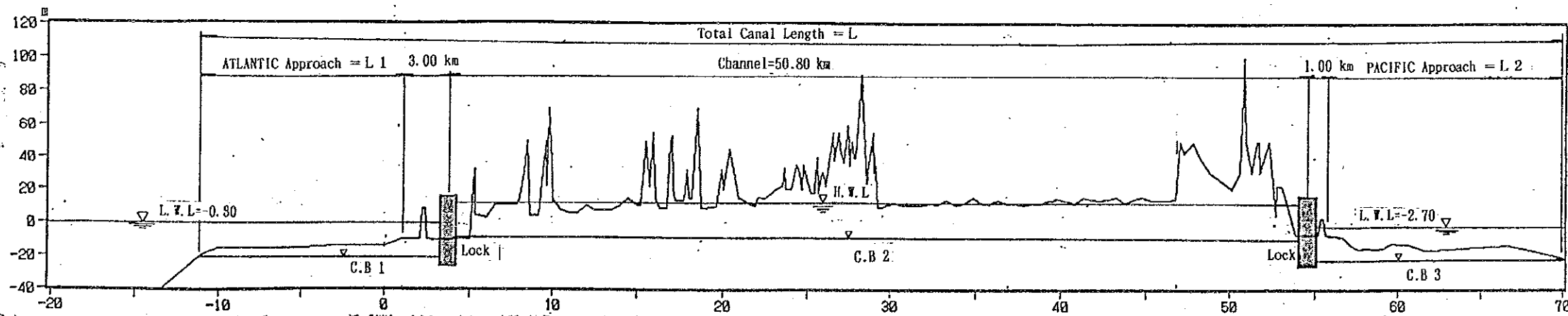
Route II Low Rise Lock Layout Plan (L-12, L-15, L-18)



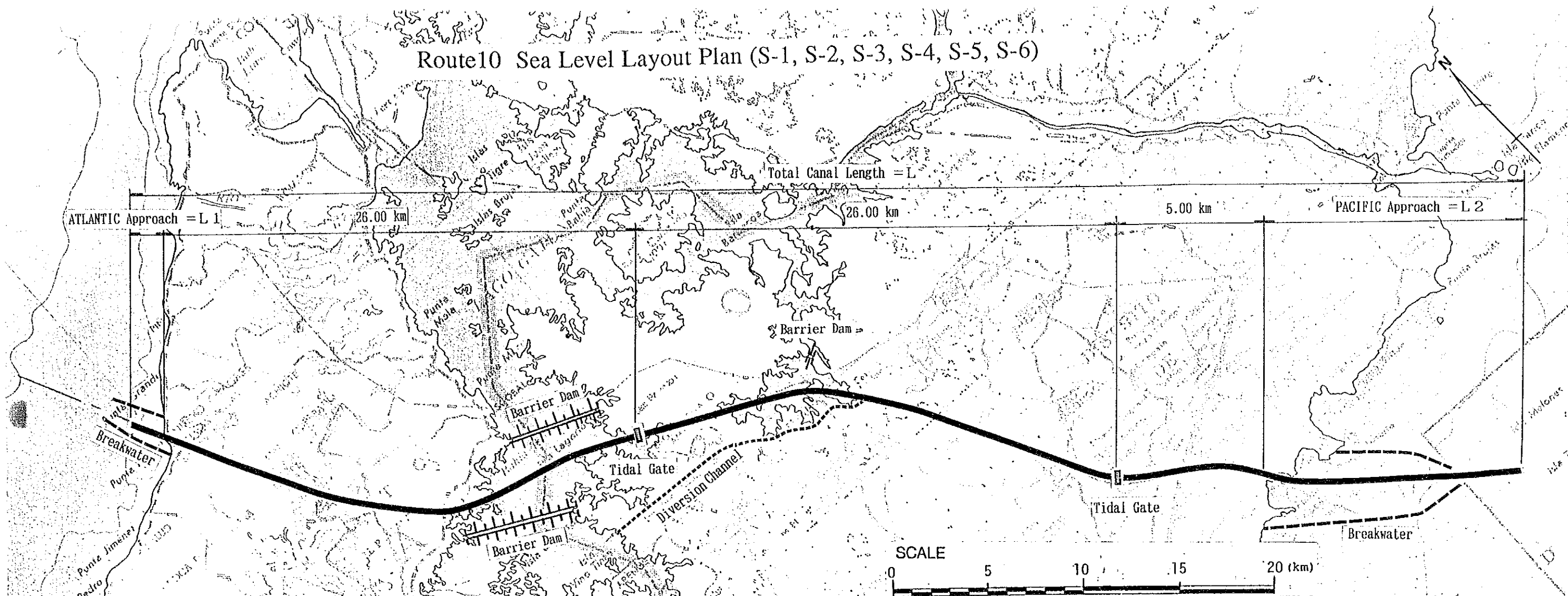
CANAL DIMENSIONS OF EACH CASE

Cases	Route	Water Level (feet)	No. of Lift	No. of Lane	Ship Size (DWT)	Canal Size		L (km)	L1 (km)	L2 (km)	H.W.L (m)	C.B 1 (m)	C.B 2 (m)	C.B 3 (m)
						Width (m)	Depth (m)							
L-12	II	30'	1	2	100,000	301	18.7	80.9	11.8	14.3	9.6	-19.0	-10.6	-21.4
L-15	II	30'	1	2	150,000	343	20.9	84.4	12.1	17.5	9.6	-21.2	-12.8	-23.6
L-18	II	30'	1	2	250,000	399	24.2	89.2	12.5	21.9	9.6	-24.5	-16.1	-26.9

Profile



Route 10 Sea Level Layout Plan (S-1, S-2, S-3, S-4, S-5, S-6)



CANAL DIMENSIONS OF EACH CASE

Cases	Route	Water Level (feet)	No. of Lift	No. of Lane	Ship Size (DWT)	Canal Size		L (km)	L1 (km)	L2 (km)	H.W.L (m)	C.B 1 (m)	C.B 2 (m)	C.B 3 (m)
						Width (m)	Depth (km)							
S-1	10	0	0	1	150,000	147	20.9	86.2	3.5	25.7	3.3	-21.2	-23.3	-23.6
S-2	10	0	0	2	150,000	343	20.9	86.2	3.5	25.7	3.3	-21.2	-23.3	-23.6
S-3	10	0	0	1	250,000	171	24.2	88.55	3.85	27.7	3.3	-24.5	-26.6	-26.9
S-4	10	0	0	2	250,000	399	24.2	88.55	3.85	27.7	3.3	-24.5	-26.6	-26.9
S-5	10	0	0	1	300,000	183	25.3	89.6	3.9	28.7	3.3	-25.6	-27.7	-28.0
S-6	10	0	0	2	300,000	424	25.3	89.6	3.9	28.7	3.3	-25.6	-27.7	-28.0

Profile

