JAPAN INTERNATIONAL COOPERATION AGENCY
MINISTRY OF HOUSING AND URBAN DEVELOPMENT
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

THE STUDY ON GREATER KANDY AND NUWARA ELIYA WATER SUPPLY AND ENVIRONMENTAL IMPROVEMENT PLAN IN THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

VOLUME III

GREATER KANDY (SUPPORTING REPORT AND DATA)

FEBRUARY 1999

NIPPON JOGESUIDO SEKKEI CO., LTD.

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Chapter 4

Appendix 4.1 **Greater Kandy Water Supply Service Population**

Appendix 4.2 **Greater Kandy Projected Water Demand**

Appendix 4.1 Greater Kandy Water Service Population

AREA	Reservoir Location	1997	2000	2005	2010	2015
KANDY MUNICIPAL COUNCIL						
Bahirawakanda/Anniwatta	Bahirawakanda	17,808	17,931	17,913	20,138	22,217
Primrose	Primrose	5,237	5,274	5,269	5,923	6,534
Dangolla	Dangolla	3,928	3,956	3,951	4,441	4,901
Heeressagala (lower)	Heeressagala	1,049	1,055	1,053	1,184	1,308
R2 Reservoir Present Distribution Zone	Wakarawatta	36,665	36,912	36,879	41,460	45,743
R3 Reservoir Present Distribution Zone	Wakarawatta	11,696	11,774	11,761	13,222	14,593
Uplands, Aruppola, Mawilmada, Watapuuwa, Lady McCullums Drive	Uplands	58,617	67,099	76,174	75,632	75,704
Subtotal		135,000	144,000	153,000	162,000	171,000
KANDY FOUR GRAVETS						
Ampitiya, ketawala	Ampitiya	7,687	8,196	9,057	9,535	10,032
meekanuwa	Meekkanuwa	2,276	2,427	2,682	2,824	2,971
Tennekumbura	Talwatta	2,848	3,037	3,459	3,528	3,717
Gurudeniya	Ilukmodara	2,848	3,037	3,459	3,528	3,717
Mahakanda	Sarasavigama	2,989	3,187	3,392	3,639	3,901
Hindagala	Hindagala	2,562	2,732	2,906	3,118	3,344
Hantana Sump	Hantana Place	2,848	3,037	3,354	3,528	3,717
Hantana Housing scheme	Hantana(upper)	2,848	3,037	3,354	3,528	3,717
Hantana Housing	Hantana(lower)	1,708	1,821	1,958	2,119	2,229
Settlements near Call Link Tower/Hantana Housing Scheme	Hantana(Call Link)	2,704	2,883	3,097	3,355	3,527
Heeressagala Sump/ meda Bowala (Lower)	H'gala(lower)	1,140	1,215	1,344	1,414	1,488
Heeressagala (middle)	H'gala(middle)	2,848	3,037	3,354	3,528	3,717
Heeressagala (Upper)	H'gala(upper)	2,848	3,037	3,354	3,528	3,717
Uda Peradeniya (Lower)	Prospect Hill	2,848	3,037	3,354	3,528	3,717
Uda Peradeniya (Upper)/ Bowalawatta	Bowalawatta	2,848	3,037	3,354	3,528	3,717
Augastawatta	Augastawatta	2,848	3,037	3,354	3,528	3,717
Mount Pleasant Housing Schemes	Spring Hill	2,848	3,037	3,354	3,528	3,717
Lewla	Ampitya	4,853	5,171	3,813	5,714	6,335
Subtotal		54,400	58,000	62,000	67,000	71,000
HARISPATTUWA, AKURANA & PUJAPITIYA						
Bokkawela - Present WSS and Suburbs	Bokkawela(Ex)	11,369	12,050	13,202	13,765	15,107

Appendix 4.1 Greater Kandy Water Service Population

AREA	Reservoir Location	1997	2000	2005	2010	2015
Hedeniya (part)-Present WSS and Suburbs-Pujapitiya	Pujapitiya	3,838	4,068	4,618	5,135	5,100
Hedeniya (part)-Present WSS and Suburbs-Madadeniya	Madadeniya(Ex)	5,658	5,996	6,748	7,565	7,518
Hedeniya (part)-Present WSS and Suburbs	Nugawela	6,038	6,400	7,264	8,074	8,023
Kulugammana-Present WSS and Suburbs	Nugawela	9,810	10,397	11,806	13,119	13,035
Kulugammana-Present WSS and Suburbs	Kulugammana	5,658	5,996	6,795	7,050	7,518
Rajapihilla (part) Present WSS and Suburbs	Rajapihilla	3,772	3,998	4,366	4,698	5,012
Rajapihilla (part) Present WSS and Suburbs	Uduwawala	7,167	7,596	8,303	8,929	9,523
Kondadeniya-Present WSS and Suburbs	Kondadeniya	9,434	9,998	11,002	11,287	12,535
Akurana (part)-Present WSS and Suburbs	Kahawatta	16,179	17,147	16,700	18,553	21,498
Akurana (part)-Present WSS and Suburbs	Akurana	6,530	6,921	7,563	8,133	8,677
Akurana (part)-Present WSS and Suburbs	Kurugoda	1,419	1,503	1,672	1,766	1,885
Alawathugoda- Present WSS and Suburbs	Kurugoda	5,960	6,316	6,748	7,427	7,919
Thelambugahawatta	Thelambug ahawatta	1,704	1,806	2,048	2,274	2,264
Alawathugoda-Present WSS and Suburbs	Heepitiya	11,923	12,637	14,347	15,944	15,843
Gohagoda-Present WSS and Suburbs	Gohagoda	14,901	15,793	17,932	18,727	19,800
Bogahakanda	Bogahakanda	567	601	657	706	753
Yatihalagala-Present WSS and Suburbs	Yatihalagala	8,273	8,776	8,230	7,848	10,991
Subtotal		130,200	138,000	150,000	161,000	173,000
KUNDASALE						
Gam Udawa	Opposite Army Camp	4,559	4,748	4,624	5,220	5,777
KR1	KR1	1,709	1,780	1,734	1,958	2,166
KR2	KR2	3,991	4,156	4,049	4,568	5,057
Kundasale	Kundasale	12,655	13,180	12,831	14,489	16,036
Menikhinna	Menikhinna	14,249	14,841	14,791	16,980	18,056
Sirimalwatta	Sirimalwatta	9,973	10,387	10,354	11,884	12,637
Dambarawa	Dambarawa	2,850	2,968	2,959	3,396	3,611
IDB Zone	IDB Zone	21,296	22,176	29,282	26,304	26,769
Ahaspokuna	Ahaspokuna	1,709	1,780	1,917	2,036	2,166
Rajawella	Rajawella Town	1,709	1,780	1,917	2,036	2,166
Vijaya Srigama	Vijaya Srigama	5,131	5,344	5,199	5,873	6,502
Kolongahawatte	Kolongahawatte	3,989	4,159	4,145	4,756	5,057
Subtotal		83,820	87,300	93,800	99,500	106,000

Appendix 4.1 Greater Kandy Water Service Population

AREA	Reservoir Location	1997	2000	2005	2010	2015
PATHA DUMBARA						
Jambugahapitiya	Jambugahapitiya	2,798	2,894	3,024	3,299	3,482
Uda Thalawinna	Jambugahapitiya Sump Booster	2,798	2,894	3,024	3,299	3,482
Kahalla	Kahalla	5,389	5,576	6,176	6,163	6,707
Balanagala	Balanagala	6,222	6,437	6,720	7,159	7,743
Madawala Area	Bangalawatta	4,973	5,146	5,739	5,603	6,190
Wattegama	Wal Arambe	7,049	7,293	7,392	8,404	8,773
Pitiyagedara	Pitiyagedara	6,011	6,219	6,935	7,215	7,481
Napana	Napana	2,076	2,147	2,395	2,338	2,583
Pihilladeniya	Pihilladeniya	4,145	4,293	4,596	4,918	5,160
Subtotal		41,460	42,900	46,000	48,400	51,600
PATHA HEWAHETA						
Talatuoya	Talatuoya	2,926	3,009	3,290	3,710	4,200
Haragama	Haragama	2,926	3,009	3,290	3,710	4,200
Marassana	Marassana	2,508	2,581	2,820	3,180	3,599
Subtotal		8,360	8,600	9,400	10,600	12,000
UDUNUWARA, YATINUWARA AND UDA PALATHA (PART)						
Daulagala present WSS and Suburbs	Daulagala	27,956	29,311	34,371	36,458	37,765
Kalugamuwa	Kalugamuwa	36,144	37,790	36,086	41,156	44,790
Eriyagama	Eriyagama	13,572	14,241	15,171	16,754	18,334
Suriyagoda, Waturakumbura, Giragama, Danture, Urapola	Suriyagoda	481	504	571	594	649
Murutalawa, Pelawa, Yahalatenna	Murutalawa	3,230	3,387	3,837	3,969	4,364
Kadugannawa Present WSS and Suburbs	Kagudannawa (Ex)	4,848	5,083	5,782	5,985	6,549
Gannoruwa Institutions	Gannoruwa	4,849	5,084	5,782	5,984	6,549
Subtotal		91,080	95,400	101,600	110,900	119,000
TOTAL		544,320	574,200	615,800	659,400	703,600

Appendix 4.2 Greater Kandy Projected Water Demand

Demand (m3/d)

AREA	Reservoir Location	1997	2000	2005	2010	2015
KANDY MUNICIPAL COUNCIL						
Bahirawakanda/Anniwatta	Bahirawakanda	4,737	4,913	4,729	5,256	5,621
Primrose	Primrose	1,393	1,445	1,391	1,546	1,653
Dangolla	Dangolla	1,045	1,084	1,043	1,159	1,240
Heeressagala (lower)	Heeressagala	279	289	278	309	331
R2 Reservoir Present Distribution Zone	Wakarawatta	9,753	10,114	9,736	10,821	11,573
R3 Reservoir Present Distribution Zone	Wakarawatta	3,111	3,226	3,105	3,451	3,692
Uplands, Aruppola, mawilmada, Watapuuwa, Lady mcCullums Drive	Uplands	15,592	18,385	20,110	19,740	19,153
Subtotal		35,910	39,456	40,392	42,282	43,263
KANDY FOUR GRAVETS						
Ampitiya, ketawala	Ampitiya	1,669	1,819	1,950	2,127	2,232
meekanuwa	Meekkanuwa	494	539	578	630	661
Tennekumbura	Talwatta	619	674	745	787	827
Gurudeniya	Ilukmodara	619	674	745	787	827
Mahakanda	Sarasavigama	649	707	730	812	868
Hindagala	Hindagala	556	606	626	696	744
Hantana Sump	Hantana Place	619	674	722	787	827
Hantana Housing scheme	Hantana(upper)	619	674	722	787	827
Hantana Housing	Hantana(lower)	371	404	422	473	496
Settlements near Call Link Tower/Hantana Housing Scheme	Hantana(Call Link)	587	640	667	748	785
Heeressagala Sump/ meda Bowala (Lower)	H'gala(lower)	248	270	289	315	331
Heeressagala (middle)	H'gala(middle)	619	674	722	787	827
Heeressagala (Upper)	H'gala(upper)	619	674	722	787	827
Uda Peradeniya (Lower)	Prospect Hill	619	674	722	787	827
Uda Peradeniya (Upper)/ Bowalawatta	Bowalawatta	619	674	722	787	827
Augastawatta	Augastawatta	619	674	722	787	827
Mount Pleasant Housing Schemes	Spring Hill	619	674	722	787	827
Lewla	Ampitya	1,054	1,148	821	1,275	1,409
Subtotal		11,814	12,874	13,351	14,947	15,796
HARISPATTUWA, AKURANA & PUJAPITIYA						

Appendix 4.2 Greater Kandy Projected Water Demand

Demand (m3/d)

AREA	Reservoir Location	1997	2000	2005	2010	2015
Bokkawela - Present WSS and Suburbs	Bokkawela(Ex)	2,229	2,369	2,308	2,363	2,749
Hedeniya (part)-Present WSS and Suburbs-Pujapitiya	Pujapitiya	752	800	807	882	928
Hedeniya (part)-Present WSS and Suburbs-Madadeniya	Madadeniya(Ex)	1,109	1,179	1,180	1,299	1,368
Hedeniya (part)-Present WSS and Suburbs	Nugawela	1,184	1,258	1,270	1,386	1,460
Kulugammana-Present WSS and Suburbs	Nugawela	1,923	2,044	2,064	2,252	2,372
Kulugammana-Present WSS and Suburbs	Kulugammana	1,109	1,179	1,188	1,210	1,368
Rajapihilla (part) Present WSS and Suburbs	Rajapihilla	739	786	763	807	912
Rajapihilla (part) Present WSS and Suburbs	Uduwawala	1,405	1,493	1,452	1,533	1,733
Kondadeniya-Present WSS and Suburbs	Kondadeniya	1,849	1,966	1,924	1,938	2,281
Akurana (part)-Present WSS and Suburbs	Kahawatta	3,171	3,371	2,920	3,185	3,912
Akurana (part)-Present WSS and Suburbs	Akurana	1,280	1,361	1,322	1,396	1,579
Akurana (part)-Present WSS and Suburbs	Kurugoda	278	296	292	303	343
Alawathugoda- Present WSS and Suburbs	Kurugoda	1,168	1,242	1,180	1,275	1,441
Thelambugahawatta	Thelambug ahawatta	334	355	358	390	412
Alawathugoda-Present WSS and Suburbs	Heepitiya	2,337	2,484	2,508	2,737	2,883
Gohagoda-Present WSS and Suburbs	Gohagoda	2,921	3,105	3,135	3,215	3,603
Bogahakanda	Bogahakanda	111	118	115	121	137
Yatihalagala-Present WSS and Suburbs	Yatihalagala	1,622	1,725	1,439	1,347	2,000
Subtotal		25,522	27,129	26,227	27,643	31,481
KUNDASALE						
Gam Udawa	Opposite Army Camp	806	886	990	1,167	1,307
KR1	KR1	302	332	371	438	490
KR2	KR2	706	775	867	1,021	1,144
Kundasale	Kundasale	2,237	2,458	2,747	3,240	3,628
Menikhinna	Menikhinna	2,519	2,768	3,167	3,797	4,085
Sirimalwatta	Sirimalwatta	1,763	1,937	2,217	2,657	2,859
Dambarawa	Dambarawa	504	554	634	759	817
IDB Zone	IDB Zone	3,765	4,136	6,270	5,882	6,056
Ahaspokuna	Ahaspokuna	302	332	410	455	490
Rajawella	Rajawella Town	302	332	410	455	490

Appendix 4.2 Greater Kandy Projected Water Demand

Demand (m3/d)

AREA	Reservoir Location	1997	2000	2005	2010	2015
Vijaya Srigama	Vijaya Srigama	907	997	1,113	1,313	1,471
Kolongahawatte	Kolongahawatte	706	775	887	1,064	1,144
Subtotal		14,819	16,282	20,085	22,249	23,981
PATHA DUMBARA						
Jambugahapitiya	Jambugahapitiya	458	493	462	545	558
Uda Thalawinna	Jambugahapitiya Sump Booster	458	493	462	545	558
Kahalla	Kahalla	882	949	943	1,017	1,075
Balanagala	Balanagala	1,018	1,096	1,026	1,182	1,241
Madawala Area	Bangalawatta	814	876	876	925	992
Wattegama	Wal Arambe	1,154	1,242	1,129	1,387	1,406
Pitiyagedara	Pitiyagedara	984	1,059	1,059	1,191	1,199
Napana	Napana	340	366	366	386	414
Pihilladeniya	Pihilladeniya	679	730	702	812	827
Subtotal		6,787	7,303	7,023	7,989	8,270
PATHA HEWAHETA						
Talatuoya	Talatuoya	506	538	607	752	825
Haragama	Haragama	506	538	607	752	825
Marassana	Marassana	434	461	520	644	707
Subtotal		1,447	1,538	1,734	2,148	2,357
UDUNUWARA, YATINUWARA AND UDA PALATHA (PART)						
Daulagala present WSS and Suburbs	Daulagala	4,218	4,576	4,751	5,295	5,236
Kalugamuwa	Kalugamuwa	5,453	5,899	4,988	5,977	6,210
Eriyagama	Eriyagama	2,048	2,223	2,097	2,433	2,542
Suriyagoda, Waturakumbura, Giragama, Danture, Urapola	Suriyagoda	72	79	79	86	90
Murutalawa, Pelawa, Yahalatenna	Murutalawa	487	529	530	576	605
Kadugannawa Present WSS and Suburbs	Kagudannawa(Ex)	731	793	799	869	908
Gannoruwa Institutions	Gannoruwa	731	793	799	869	908
Subtotal		13,741	14,892	14,044	16,107	16,499
TOTAL		110,041	119,473	122,856	133,365	141,647

Chapter 5

Appendix 5.1	**Details of Production Boreholes in Greater Kandy Area**
Appendix 5.2	**Water Quality of Existing Wells**
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Appendix 5.14	**Capacity Calculation for Distribution Service Reservoir**

Appendix 5.1 Details of Production Bore Holes in Greater Kandy Area

No	NWSDB ID No	Intake	Aquifer Recommended Capacity (m^3/day)	BH No Existing/New	Present Pump Inst. Depth (m)	Maximium production m3/d capacity of the scheme	Present dynamic water level from ground	Remarks
1	6056	Akurana	Old	789 Pump no 1	18		18	Both boreholes and pumps are in order. Electrical panel too is in good condition.
				Pump no 2	48.6			Pump and borehole are in order. Electrical panel is in good condition.
				789 Pump no 3				Efficiency of the pump is less. Borehole draw down is also high
			650	8020	45		45	Water yield is too low. Pump is throttled. Pump and electrical panel are in order.
				Pump no 4	36			Pump is under repair. Electrical panel is good. Dunamic water level of the borehole has to be checked.
8		Alawatugoda						
8	6074	Owissa		1134	37.6	400	37	There are two pumps installed and designeda to operate one at a time. Although the design capacity is 32 m3/hr, the present pumping rate is 20 m3/hr. In continuous pumping this drops down further to 18 m3/hr. At
				1135	37.6		37	this stage pump draws lesser ampearage than usual and as it gets cut off from the present circuit breakers. Somehow continuous pumping is done by throttling the valve. Water level indicator is not in working order. As the production capacity has dropped down to 26 m3/d from 64 m3/d, water is distributed by zoning.
8	6074	Vilana		1076	61		61	Designed to pump 36 m3/h with two pumps running simultaneously but
				1077	61	240	61	has reduced to 7 m3/h. This may be due to lowering of water table or
			400	1120	59		59	drop in the pump performance. One pump is out of order and column pipes and water seal are required to repair same.
9	6065	Rajapihilla	old	804	48.6		48.6	2 boreholes with vertical turbine pumps. As the wells are in a single aquifer
			770	811	46.8		46.8	both pumps cannot be operated at the same time and pumping is always done with one from the old well and the new well field borehole. With this combination about 34 m^3/hr is drawn. Boreholes were flushed and serviced to increase the production. But there was no visible improvement.
				810				
			new-1	8013-HAS	54		38	2 boreholes with one submersible pump. The other well is used as a observation well. It is proposed to install a standby pump to the observation well to supply water continuously even on a breakdown.
			650	8014-HAS				
								The present required capacity is 950 m^3/d.

No	NWSDB ID No	Intake	Aquifer Recommended Capacity (m^3/day)	BH No Existing/New	Present Pump Inst. Depth (m)	Maximium production m3/d capacity of the scheme	Present dynamic water level from ground	Remarks
10	6066	Gohagoda	old	794+	37.6	216	37.6	Dynamic water level of the borehole is very low. Pump is not operating
			750	1095+			37.6	to its full strength and the efficiency is low. The electrical panels is in
			new	8015				order.
			700	8016				
11	6067	Kondadeniya	old	750+	dry			Out of the 4 tube wells, two wells have dried up. The individual
				795+				production of the remaining two wells are 700 m3/d and 1000 m3/d
			old	1139+				respectively, making the total production 1700 m3/d.. Pumps are not
								installed in the additional two boreholes constructed close to the
			new	1226-HAS				present boreholes. Water level indicators are not in working order.
			2350	1227-HAS	54		48	
				2215-HAS				
				2216-HAS	54		46	
12	6069	Gannoruwa	1920	pump 01	18		6	The total production of the 3 tube wells is 200 m3/d. Production capacity
				pump 02	18	1850	6	is sufficient to cater the demand. New service connections are being
				pump 03	9		5	given. Water level indicators are in working order.
13	6076	Hedeniya		1087+	28.8		23	Dynamic water levels of boreholes are very low. Pumps are not operating
				1088+	28.8		23	to the full strength. Efficiency of the pump is low. Electrical penel is in
			1120	1089+		840		order
				1090+	39.6		23	
14	6077	Kulugammana	old	1097+				3 tube wells. Two are installed with submersible pumps and the other with
			350	1098+				a vertical turbine pump. The present production capacity is 800 m3/d avg.
				1099+	59.4		59.4	and the required capacity is 1500 m3/d. Required balance quantity is
			new	2211-HAS	39.4	740	39.4	compensated from Kondadeniya WSS. The yield gets very low in two
			900	2212-GAS	39.4		39.4	tube wells out of the three situated close to Pinga Oya.
				2219-HAS				Water level indicators need to be repaired.
15	6068	Bokkawela	old	1140+	37.8		37.8	When compared with the pump curve the efficiency of the pums are low
			450	1141+	37.8		37.8	It is advisable to check them after servicing. Both electrical panels are
						950		in good condition. Frequent power failures disturb the smooth operation
			new	8011-HAS	54		48	of the system
			550	8012-HAS			48	

No	NWSDB ID No	Intake	Aquifer Recommended Capacity (m^3/day)	BH No Existing/New	Present Pump Inst. Depth (m)	Maximium production m3/d capacity of the scheme	Present dynamic water level from ground	Remarks
15	6075	Ankumbura		905+	27	240	23	There are 2 boreholes. Pump installation depth is 30m. The
			400	1009+	27		24	static water level has gone down to 12 m which was 1.92 m at the time of
								commissioning the scheme. Present production is 300 m^3/d. The water
								depth gauge is in working order and readings are recorded daily.
								Both pumps are very low in efficiency. It is advisable to do a yield test
								to determine the efficiency of the borehole.
	6079	Galhinna		864+	45	240	42	Draw down of the borehole is very high. Pump is not operating to its
				1026+	45		42	full strength. Borehole yield is very low. Pump and electrical panels are
								in order.
	6093	Menikhinna	800	Pump 01 (581)	42	300	42	Although the yield of the borehole is very low the pump has a very high
				13/316				capacity. Therefore pumping is limited to a few hours. The pump and the
								electrical panel are in working order.
	6092	Kundasale	1500	Pump 01 (13/374)	48	576	44	The water level of the borehole depends ont he Victoria reservoir. Both
				Pump 02 (2007)	48		44	pump and electrical panels are in order. It is unable to operate pumps
				(13/315				throughout day (24 hrs) during dry season as the water level goes down.
	6082	Nikulatenna	800	Pump 01 (16/390)	42	480	38	Pump capacity at the time of commissioning the scheme was 27 m^3/hr.
								Present capacity is 18 m^3/hr. This is mainly due to low yield of water
	6082	Karandagolla	1200	Pump 01 (13/368)	42	720	36	Pump 01works 8 hrs per day while pump no 02 works 20 hrs per day. This
				Pump 02 (16/274)				is mainly due to the low yield of water in the boreholes. It is proposed to
				Pump 03 (kv/2028)	42		41	deepen the boreholes and increase the installation depth. Need to
								replace 90% of the valves as no maintenance was done for the last 12 yrs.
								Sump 225 m3; overhead tank 90 m3. Floater switches are out of order and
								the above two tanks need replacement.
	6025	Polgolla						Direct intake in Mahaweli River. 2 nos submersible pumps (63 m^3/hr and 2
								centrifugal pumps (25 m^3/hr) are installed. Small particles and grit enter
								into the intake well and choke in the submiersible pumps. No operational
								problems in the pumping main

No	NWSDB ID No	Intake	Aquifer Recommended Capacity (m^3/day)	BH No Existing/New	Present Pump Inst. Depth (m)	Maximium production m3/d capacity of the scheme	Present dynamic water level from ground	Remarks
15	6071	Balanagala	no records	Pump 01	26	1440	15	No electrical or mechanical problems in the pumps. A reduction in
				Pump 02	26		19	pumping rate has been identified in pumps 1 and 2.
				Pump 03			25	
				Pump 04	33		23	
	6022	Udu/Yatinuwara						Performance of the infiltration gallery is satisfactory. It has been
								suggested to increase the size of perforations in the filtered drain water
								system to increase the capacity. No problem with the intake well. Level
								indicators are in good working order.
	6021	University						The water level of the river goes down below the intake wter inlet level
								during worst drought periods. Temporary cofferdams were built in these
								situations. It is proposed to have a permanent cofferdam across the river
								to prevent this situation.
	6021	Upper Hantana						The quantity of water reduces up to less than 1/3 during the drought. No
								means of measuring the quantity of water. During the wet season, a large
								quantity of water go waste. Production cost of this WSS could be
								brought down by using this water during the wet season. There are leaks
								in the intake dam.
		Nilambe						It has been proposed to build a weir in down stream of the intake inlet
								point to stop lowering of water level during the drought.
		Ampitiya	1500			900		Hardness of water is very high compared with other schemes but within
								the 3LS limit. Due to the inadequate supply of water no new connections
								are being given. No maintenance problems other than inadequate supply.
								Distribution system maintained by the Ampitiya PS.

Appendix 5.2 Water Quality of Existing Wells

Parameters	SLS 614:1983 Part 1 & 2	Maximum Desirable Level	Maximum Permissible Level	2.Ampitiya B/H	2.Ampitiya B/H	2.Ampitiya B/H	17.Menikhinna Wawinna Tube Well	17.Menikhinna Dewata Tube Well	23.Balanagala Reservoir	20.Pallekelle	18.Kundasale Intake	18.Kundasale Tube Well	13.Kulugammana B/H 1099	13.Kulugammana B/H 1097	12.Hedeniya B/H 1088	12.Hedeniya B/H 1087	12.Hedeniya B/H 1090
Appearance																	
Odour																	
Colour	PtCo			23	Nil	6				9	28	18	56	64	123	107	93
Turbidity	FTU			3	Nil	1				1	5	4	10	11	23	18	16
pH		6,5	9.0	6,6	6,5	6,7	7,2	6		6,55	6,9	6,6	6,6	6,4	6,3	6,4	6,4
Conductivity at 25°C	uS/cm	750	3500	575	550	555				750	500	340	400	375	383	346	373
Alkalinity, total	mg/l $CaCO_3$	200	400							260	198	154			164	156	156
Hardness, total	mg/l $CaCO_3$	250	600	288	316	278				348	164	128	188	188	172	160	192
Ammonium	mg/l NH_4		0.20														
Nitrite	mg/l NO_2		3														
Nitrate	mg/l NO_3		50	3,96	3,5	4,84				4,4	4,8	2,6	1,3	0,4	0,44	0,88	0,88
Chloride	mg/ lCl	200	1200														
Sulphide, Hydrogen	mg/l H_2S																
Sulphate	mg/l SO_4	200	400														
Phosphate	mg/l PO_4		2.0														
Fluoride	mg/l F	0,5	1,5														
Iron, total	mg/l Fe	0,3	1.0	0,44	0,04	0.10				0,05	0,56	0,93	0,98	0,65	0,92	1,08	1,36
Manganese	mg/l Mn	0,03	0,5														
Calcium	mg/l $CaCO_3$	100	240	180	204	164											
Zinc	mg/l Zn	5.00	15														
Oxygen, dissolved	mg/l O_2																
Residual Chloride	mg/l Cl_2	0,2	1.0						0,4								
Total Coliforms at 35°C/100 ml		00	10	Nil			Nil	Nil	Nil		30	Nil			Nil	Nil	Nil
Escherichia Coil at 44°C/100 ml		00	00	Nil			Nil	Nil	Nil		Nil	Nil			Nil	Nil	Nil
Fecal Streptococci at 37°C/100 ml																	
Date/s				04.05.92 05.11.92 16.02.93			06.05.92		28.12.94	10.12.92	10.12.92 12.08.93		28.09.93		11.02.95		

Appendix 5.3 Daily Flow Rate Data of Mahaweli River

THE REPUBLIC OF SRI LANKA— DEPARTMENT OF IRRIGATION

HYDROLOGY BRANCH

Average daily discharges in Cumecs of Mahaweli Ganga at Peradeniya for the year ending 30th September 19.97...

File No.

Used Rating Table dated..... 1996 Oct.

Catchment Area ...1168.0..... Square Kilometres

Gauging Commenced on .....

Data from previous records January, 19.....to December, 19.....

Max Flood Peak..... Cumecs on ..... A.M./P.M.

Max. Flood Volume ..... M.C.M. from ..... to .....

Max. Flood Rainfall ..... %

Min. Annual Flow: ..... M.C.M. in 19..../.....

Max. Value of Annual Flow ..... Annual Rainfall ..... % in 19..../.....

Min. Value of Annual Flow ..... Annual Rainfall ..... % in 19..../.....

Mean flow: ..... Cumecs.

Median flow: ..... Cumecs.

Modal flow: ..... Cumecs.

AIF stations

1. Peradeniya
2. watawala
3. New forest
4. Halwood
5. Laba kelle
6. Ramboda

Date	October	November	December	January	February	March	April	May	June	July	August	September	Date
1	74·69	38·27	34·21	23·54	17·67	7·44	2·37	24·01	15·91	22·62	21·34	15·91	1
2	63·16	38·27	29·26	24·48	17·90	7·81	7·81	29·26	16·34	24·01	13·36	16·77	2
3	58·66	38·27	32·21	24·01	16·15	7·81	11·31	27·81	9·72	22·87	15·48	16·77	3
4	54·23	39·81	35·21	22·62	13·78	6·70	11·31	24·71	16·77	18·53	14·62	22·15	4
5	54·23	41·89	33·70	23·08	13·78	10·91	12·12	43·44	20·47	14·62	16·77	13·36	5
6	46·64	41·37	32·21	21·70	13·78	5·63	16·34	25·42	28·85	17·21	13·78	13·78	6
7	55·88	34·71	30·73	19·03	13·36	12·53	15·05	52·58	21·24	16·77	9·33	16·34	7
8	52·58	33·70	34·21	18·14	13·36	12·12	16·77	44·52	9·72	15·91	29·26	14·60	8
9	56·44	32·21	35·72	17·26	13·78	17·21	11·72	40·85	9·33	17·21	25·90	19·03	9
10	77·63	26·85	34·21	15·19	16·39	12·12	11·72	31·71	9·33	10·91	14·62	25·42	10
11	93·88	25·42	36·22	17·21	17·45	5·63	12·53	28·29	10·12	30·73	15·05	24·95	11
12	80·59	29·26	41·89	14·62	20·48	5·63	9·72	22·15	9·72	26·37	14·62	26·37	12
13	68·30	30·29	37·24	15·05	20·10	7·44	16·62	31·22	10·12	22·15	21·52	36·73	13
14	95·72	30·24	65·44	14·62	18·98	7·44	10·12	30·24	15·48	13·36	18·68	45·05	14
15	110·70	29·75	89·81	18·33	18·98	7·44	11·72	26·85	17·21	25·90	15·05	50·41	15
16	70·03	29·26	38·27	23·78	19·88	6·70	11·72	24·01	17·21	17·21	16·77	62·59	16
17	115·79	26·27	28·78	17·49	19·68	7·44	10·51	23·54	16·77	9·33	16·77	48·79	17
18	243·93	38·27	28·29	18·64	19·43	6·70	16·77	23·08	13·78	16·77	11·31	40·33	18
19	171·99	39·71	29·33	21·92	19·68	7·44	14·62	22·15	15·05	46·69	10·12	53·13	19
20	108·18	31·22	34·95	22·38	20·78	7·44	17·21	22·15	11·31	28·29	17·90	52·58	20
21	90·21	33·70	24·48	19·43	16·77	7·44	15·91	21·24	9·72	46·11	16·77	77·63	21
22	82·38	33·21	24·95	16·62	17·21	8·56	15·05	20·78	16·34	55·33	17·95	76·45	22
23	69·45	35·21	24·95	21·70	10·12	8·19	38·78	21·70	16·77	49·33	16·60	86·58	23
24	67·73	35·21	24·95	14·62	12·53	8·19	28·78	18·11	9·33	59·78	15·14	72·35	24
25	61·47	30·73	22·62	13·78	7·07	7·81	24·85	16·34	17·21	77·63	16·77	69·45	25
26	55·33	30·24	30·73	21·70	7·44	7·44	34·71	22·62	9·33	43·46	19·71	34·21	26
27	50·41	33·70	28·78	21·24	7·07	6·70	28·78	16·34	16·77	31·71	17·90	25·90	27
28	48·25	45·58	28·29	13·78	6·70	7·81	28·29	15·91	24·95	33·20	16·77	27·81	28
29	42·94	105·66	24·48	23·08	.....	7·81	30·24	21·24	20·78	29·26	94·21	28·29	29
30	41·89	25·72	24·48	13·78		2·67	31·71	24·01	31·22	25·42	22·62	28·78	30
31	39·29		24·01	20·78		2·37		23·08		24·48	17·87		31

Max. Annual Flood Peak..... 187.35 Cumecs at ..... 1.00 A.M./P.M. on ..... 18th Oct. 96.

Max. Flood Volume ..... M.C.M. from ..... to .....

Max. Flood Rainfall ..... %

REMARKS: ..... I.E., Hydrology

Worked by: ..... Checked by: .....

10 years AVERAGES													
21882·49	TOTAL (Cumecs-Days)	2402·62	1085·95	982·61	593·60	430·70	244·57	525·16	836·55	464·87	899·12	547·06	1142·58	10149·32
59·95	MEAN (Cumecs)	77·50	36·20	31·70	19·15	15·38	7·89	17·50	26·98	15·49	28·81	17·65	38·08	27·81
0·05	CUMECS PER Sq. Km.	0·066	0·031	0·027	0·01	0·01	0·066	0·015	0·02	0·01	0·02	0·015	0·03	0·02
1890·65	RUN-OFF IN M.C.M	207·58	92·82	84·90	51·29	37·21	21·13	45·37	72·28	40·16	77·16	47·26	98·71	876·90
161·87	RUN-OFF in m.m.	177·72	80·23	72·68	43·91	31·86	18·09	38·85	61·88	34·39	66·06	40·46	84·51	750·77
3029·29	Rainfall in mm.	246·25	188·03	101·17	5·41	17·94	53·67	463·17	316·21	257·45	474·53	247·70	448·97	2480·50
410·59	Maximum (Cumecs)	243·93	105·66	65·44	23·78	20·78	12·53	38·78	52·58	26·85	59·78 77·63	34·21	86·68	243·93
0·0	Minimum (Cumecs)	39·29	25·42	22·62	13·78	6·70	2·37	7·81	16·34	9·33	10·91	11·31	13·36	2·37

A-5.3.1

THE REPUBLIC OF SRI LANKA— DEPARTMENT OF IRRIGATION

HYDROLOGY BRANCH
File No.

Average daily discharges in Cumecs of Mahaweli ganga at Peradeniya for the year ending 30th September 1996 ....

Used Rating Table dated.....

Catchment Area ..1158..... Square Kilometres

Gauging Commenced on .....

Data from previous records January, 10.....to December, 19.....

Max Flood Peak 5097.71 Cumecs on 15.08.47 ..... 2.49 ..... A.M.P.M.

Max. Flood Volume ..... M.C.M. from ..... to .....

Max. Flood Volume — Rainfall ..... % ..... M.C.M. in 19..../..../....

Max. Annual Flow: ..... M.C.M. in 19..../..../....

Min. Annual Flow: ..... M.C.M. in 19..../..../....

Max. Value of — Annual Flow ..... % in 19..../..../....
Annual Rainfall

Min. Value of — Annual Flow ..... % in 19..../..../....
Annual Rainfall

Mean flow: ..... Cumecs.

Median flow: ..... Cumecs.

Modal flow: ..... Cumecs.

R/F sections
1. Peradeniya
2. New Forest
3. Nedamala
4. ~~Allied water~~
5. Helm wood
6. Labookelle

Date	October	November	December	January	February	March	April	May	June	July	August	September
1	46·11	64·87	46·11	34·21	20·23	12·12	9·33	15·48	9·33	20·33	33·70	35·72
2	48·79	60·34	42·41	25·90	20·05	12·53	16·34	18·52	15·05	24·98	35·21	35·21
3	51·49	53·68	38·27	32·71	22·13	10·12	15·91	18·81	16·34	20·33	30·24	28·78
4	66·01	56·44	43·99	46·64	22·99	11·31	15·48	15·97	10·12	21·24	24·48	37·24
5	81·78	83·57	43·46	36·22	21·45	12·95	14·62	14·63	10·77	18·84	26·37	39·81
6	108·81	300·96	57·49	27·81	47·12	12·12	10·91	~~2·35~~ 36·35	15·91	20·10	29·75	31·75
7	208·75	193·17	45·05	24·98	24·03	12·12	21·70	~~2·35~~ 26·35	17·21	23·54	28·29	35·72
8	389·04	180·60	39·29	27·33	20·45	5·98	15·48	~~2·35~~ 17·83	15·05	20·56	22·62	29·75
9	294·88	100·67	42·41	25·90	24·96	12·95	20·78	~~2·35~~ 23·13	14·20	~~20·43~~ 90·43	24·48	31·22
10	164·75	81·78	42·41	24·01	25·91	5·98	23·08	9·72	14·20	~~91·44~~ 91·44	24·95	39·29
11	109·44	98·19	42·41	24·01	26·39	5·98	13·78	9·33	13·36	52·04	35·90	42·94
12	90·21	66·58	42·41	26·85	20·55	5·98	13·36	10·12	~~27·82~~ 27·82	33·20	31·22	42·94
13	80·90	101·29	38·78	22·62	22·93	6·70	20·35	10·51	37·24	18·09	28·29	53·68
14	72·35	111·34	39·81	21·24	18·17	6·34	20·34	10·91	27·81	26·37	31·71	66·01
15	61·47	81·19	40·33	21·24	17·10	7·07	20·55	11·72	28·29	27·81	38·27	54·23
16	63·73	65·44	38·78	21·24	20·85	16·77	23·08	11·72	26·85	27·81	57·55	50·41
17	70·61	57·55	37·75	22·62	22·37	11·72	13·78	11·31	26·37	30·24	56·44	52·04
18	67·45	63·13	36·73	21·24	28·07	9·72	23·08	15·91	24·01	25·90	~~46·83~~ 46·83	52·58
19	69·45	67·15	36·73	21·24	9·33	10·51	24·01	10·51	20·15	27·81	~~36·73~~ 36·73	52·58
20	54·78	57·78	32·71	21·24	9·33	5·63	30·13	11·31	18·09	28·78	35·20	53·68
21	53·13	61·47	29·75	21·70	19·93	12·12	30·73	11·72	18·66	37·24	32·21	56·44
22	45·87	60·90	26·42	21·24	15·48	9·35	24·95	9·72	13·78	34·21	39·81	92·65
23	72·35	52·58	23·54	20·15	15·48	16·77	25·90	12·12	21·70	34·71	39·81	170·76
24	56·99	54·78	22·62	21·70	21·45	10·51	26·37	9·33	23·08	43·46	45·05	108·18
25	49·87	53·13	23·54	21·70	17·14	10·12	24·01	12·53	20·78	41·37	39·81	76·45
26	55·98	47·18	22·15	23·08	20·12	9·72	25·42	12·12	21·24	41·37	51·49	71·77
27	50·95	54·78	25·42	29·26	9·72	10·12	22·15	10·12	21·70	42·94	63·16	80·59
28	56·99	46·64	23·54	29·75	10·12	11·31	21·24	9·33	22·62	33·20	55·68	72·94
29	80·00	45·58	26·85	30·13	9·72	9·72	24·48	15·91	22·65	32·21	48·25	171·99
30	80·00	42·94	34·21	26·85		9·72	22·62	9·72	23·08	27·33	44·52	81·78
31	70·61		36·22	23·54		17·21		11·91		81·22	37·24	

Max. Annual Flood Peak ..5621·82.. Cumecs at ..10·00.. AM/PM on ..6th.. Oct ..95..

Max. Flood Volume ..... M.C.M. from ..... to .....

Max. Flood Volume — Rainfall ..... %

REMARKS: ..... I.E. Hydrology

Worked by: ..... Checked by: .....

Data for Current year 19...../.....

AVERAGES	22051·68	TOTAL (Cumecs-Days)	2892·49	2466·30	1114·79	800·92	580·47	321·25	614·54	378·34	603·45	976·60	1150·96	1855·13	12761·29
	60·41	MEAN (Cumecs)	93·31	82·27	35·96	25·83	20·01	10·36	20·48	12·14	20·11	31·50	37·32	61·84	37·70
	0·05	CUMECS PER Sq. Km.	0·08	0·07	0·03	0·02	0·02	0·008	0·017	0·01	0·017	0·02	0·03	0·05	0·03
	1905·33	RUN-OFF IN M.C.M	249·91	213·26	96·32	69·20	50·15	27·75	53·09	32·51	52·14	84·38	99·96	160·28	1188·95
	1631·28	RUN-OFF in m.m.	213·97	182·58	82·46	59·24	42·93	23·76	45·46	27·84	44·64	72·24	85·58	137·23	1017·94
	3029·48	Rainfall in mm.	547·40	362·80	99·88	114·22	95·38	90·94	311·88	69·18	238·48	348·2	315·64	436·16	3020·14
	410·59	Maximum (Cumecs)	383·04	300·96	57·49	46·64	47·12	17·21	50·73	18·81	37·24	91·44	63·16	171·99	383·04
	0·0	Minimum (Cumecs)	46·11	42·94	22·15	21·24	9·33	5·63	9·35	9·33	9·33	10·84	22·62	28·78	5·63

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A-5.3.2