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Annex 01. Output of STATA analysis

➤ The output of 'STATA' for Ratnapura region

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. import excel "C:\Users\UDITHA\Desktop\RATNAPURA.xlsx", sheet("Sheet1") firstrow

. frontier YCWP X1DC X2NDC X3DCONS X4NDCONS X5QOW X6OM X8RM X9CCR

Iteration 0: log likelihood = 86.925723 (not concave)
Iteration 1: log likelihood = 98.020479 (not concave)
Iteration 2: log likelihood = 99.759975 (not concave)
Iteration 3: log likelihood = 100.0437 (not concave)
Iteration 4: log likelihood = 100.1389 (not concave)
Iteration 5: log likelihood = 100.39367 (not concave)
Iteration 6: log likelihood = 100.9253
Iteration 7: log likelihood = 102.04505
Iteration 8: log likelihood = 102.64175
Iteration 9: log likelihood = 102.94513
Iteration 10: log likelihood = 103.1941
Iteration 11: log likelihood = 103.30967
Iteration 12: log likelihood = 103.37618
Iteration 13: log likelihood = 103.41012
Iteration 14: log likelihood = 103.43421
Iteration 15: log likelihood = 103.44297
Iteration 16: log likelihood = 103.45406
Iteration 17: log likelihood = 103.45545
Iteration 18: log likelihood = 103.45839
Iteration 19: log likelihood = 103.45926
Iteration 20: log likelihood = 103.45979
Iteration 21: log likelihood = 103.46021
Iteration 22: log likelihood = 103.46047
Iteration 23: log likelihood = 103.46061
Iteration 24: log likelihood = 103.46075
Iteration 25: log likelihood = 103.46078
Iteration 26: log likelihood = 103.46085
Iteration 27: log likelihood = 103.46086
Iteration 28: log likelihood = 103.46087
Iteration 29: log likelihood = 103.46088

Stoc. frontier normal/half-normal model    Number of obs = 60
Wald chi2(8) = 4.44e+10
Log likelihood = 103.46088    Prob > chi2 = 0.0000

```

YCWP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
X1DC	.286203	.0000167	1.7e+04	0.000	.2861703 .2862358
X2NDC	.1459129	.0000122	1.2e+04	0.000	.145889 .1459367
X3DCONS	.0637203	8.27e-07	7.7e+04	0.000	.0637187 .0637219
X4NDCONS	.1854007	2.52e-06	7.4e+04	0.000	.1853957 .1854056
X5QOW	.0605708	4.93e-06	1.2e+04	0.000	.0605612 .0605805
X6OM	-.0131893	6.78e-07	-1.9e+04	0.000	-.0131906 -.013188
X8RM	-.0353976	2.51e-06	-1.4e+04	0.000	-.0354025 -.0353927
X9CCR	.0182004	2.26e-06	8064.77	0.000	.018196 .0182048
_cons	6.256544	.0001072	5.8e+04	0.000	6.256334 6.256754
/lnsig2v	-38.64462	197.0124	-0.20	0.844	-424.7818 347.4926
/lnsig2u	-4.900279	.1825742	-26.84	0.000	-5.258118 -4.54244
sigma_v	4.06e-09	4.00e-07			5.75e-93 2.86e+75
sigma_u	.0862816	.0078764			.0721463 .1031862
sigma2	.0074445	.0013592			.0047806 .0101084
lambda	2.13e+07	.0078764			2.13e+07 2.13e+07

```

Likelihood-ratio test of sigma_u=0: chibar2(01) = 0.00    Prob>=chibar2 = 1.000

```

➤ The output of 'STATA' for NWSDB in 2010

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. frontier YCWP X1DC X2NDC X3DCONS X4NDCONS X5QOW X6OM X8RM X9CCR

Iteration 0: log likelihood = 246.79801

Iteration 1: log likelihood = 247.29881

Iteration 2: log likelihood = 247.30142

Iteration 3: log likelihood = 247.30143

Stoc. frontier (normal/half-normal model) Number of obs = 252
 Wald chi2(8) = 18680.82
 Log likelihood = -247.30143 Prob > chi2 = 0.0000

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
YCWP						
X1DC	.3189712	.0631695	5.05	0.000	.1951614	.4427811
X2NDC	.0044421	.0173927	0.26	0.798	-.029647	.0385312
X3DCONS	.4613655	.0598505	7.71	0.000	.3440607	.5786704
X4NDCONS	.2278166	.0151773	15.01	0.000	.1980696	.2575635
X5QOW	-.056031	.0185013	-3.03	0.002	-.0922928	-.0197692
X6OM	-.0329433	.0318146	-1.04	0.300	-.0952987	.0294122
X8RM	.0107514	.0072695	1.48	0.139	-.0034966	.0249994
X9CCR	.0202306	.0067053	3.02	0.003	.0070883	.0333728
_cons	1.838885	.1623141	11.33	0.000	1.520755	2.157015
/lnsig2v	-5.311783	.2769033	-19.18	0.000	-5.854504	-4.769063
/lnsig2u	-4.674515	.4331625	-10.79	0.000	-5.523498	-3.825532
sigma_v	.0702362	.0097243			.053544	.0921321
sigma_u	.0965922	.0209201			.0631812	.1476714
sigma2	.0142632	.0029579			.0084659	.0200605
lambda	1.375248	.0296724			1.317092	1.433405

Likelihood-ratio test of sigma_u=0: chibar2(01) = 3.40 Prob>=chibar2 = 0.033

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. frontier YCWP X1DC X2NDC X3DCONS X4NDCONS X5QOW X6OM X8RM X9CCR

Iteration 0: log likelihood = 254.91413 (not concave)

Iteration 1: log likelihood = 255.01762

Iteration 2: log likelihood = 255.15128

Iteration 3: log likelihood = 255.45354

Iteration 4: log likelihood = 255.6907

Iteration 5: log likelihood = 255.6944

Iteration 6: log likelihood = 255.69443

Iteration 7: log likelihood = 255.69443

Stoc. frontier normal/half-normal model Number of obs = 252

Wald chi2(8) = 19197.43

Log likelihood = 255.69443

Prob > chi2 = 0.0000

YCWP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
X1DC	.212842	.050897	4.18	0.000	.1130857	.3125984
X2NDC	-.0438802	.0214891	-2.04	0.041	-.0859981	-.0017623
X3DCONS	.5661307	.0494509	11.45	0.000	.4692088	.6630526
X4NDCONS	.2582448	.0138268	18.68	0.000	.2311447	.2853448
X5QOW	.0061152	.0184711	0.33	0.741	-.0300875	.0423178
X6OM	-.0746355	.0274071	-2.72	0.006	-.1283525	-.0209185
X8RM	.014432	.0077565	1.86	0.063	-.0007705	.0296345
X9CCR	.0171433	.0063282	2.71	0.007	.0047402	.0295463
_cons	1.559731	.1659081	9.40	0.000	1.234557	1.884905
/lnsig2v	-5.563559	.3327566	-16.72	0.000	-6.21575	-4.911368
/lnsig2u	-4.505037	.3705893	-12.16	0.000	-5.231378	-3.778695
sigma_v	.0619282	.0103035			.0446958	.0858045
sigma_u	.1051341	.0194808			.0731174	.1511704
sigma2	.0148883	.0030595			.0088917	.0208849
lambda	1.697678	.0288623			1.641109	1.754247

Likelihood-ratio test of sigma_u=0: chibar2(01) = 1.72 Prob>=chibar2 = 0.095

➤ The output of 'STATA' for NWSDB in 2012

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```

```
. frontier YCWP X1DC X2NDC X3DCONS X4NDCONS X5QOW X6OM X8RM X9CCR
```

```
Iteration 0: log likelihood = 190.69522
```

```
Iteration 1: log likelihood = 191.02023
```

```
Iteration 2: log likelihood = 191.24639
```

```
Iteration 3: log likelihood = 191.24928
```

```
Iteration 4: log likelihood = 191.24932
```

```
Iteration 5: log likelihood = 191.24932
```

```
Stoc. frontier normal/half-normal model      Number of obs   =      252
                                              Wald chi2(8)    =  13616.80
Log likelihood = 191.24932                    Prob > chi2     =   0.0000
```

YCWP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
X1DC	.6744879	.0323543	20.85	0.000	.6110746	.7379012
X2NDC	.1925132	.0354762	5.43	0.000	.1229812	.2620453
X3DCONS	.1233047	.0192335	6.41	0.000	.0856076	.1610017
X4NDCONS	.1831015	.017689	10.35	0.000	.1484318	.2177712
X5QOW	-.1163029	.0293764	-3.96	0.000	-.1738796	-.0587263
X6OM	-.1487253	.0343703	-4.33	0.000	-.2160898	-.0813607
X8RM	-.0027344	.0061591	-0.44	0.657	-.0148061	.0093373
X9CCR	.0050181	.0074056	0.68	0.498	-.0094966	.0195329
_cons	2.679551	.1502215	17.84	0.000	2.385122	2.97398
/lnsig2v	-4.998607	.3937099	-12.70	0.000	-5.770264	-4.22695
/lnsig2u	-4.052895	.4718176	-8.59	0.000	-4.977641	-3.12815
sigma_v	.0821422	.0161701			.0558474	.1208174
sigma_u	.1318029	.0310935			.0830078	.2092815
sigma2	.0241193	.0058833			.0125882	.0356505
lambda	1.60457	.0462954			1.513833	1.695307

Likelihood-ratio test of sigma_u=0: chibar2(01) = 2.21 Prob>=chibar2 = 0.069

➤ The output of 'STATA' for NWSDB in 2013

```

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Notes:

1. (/v# option or -set maxvar-) 5000 maximum variables

```
. import excel "C:\Users\UDITHA\Desktop\2013-STATA for NWSDB.xlsx", sheet("Sheet1") firstrow
```

```
. frontier YCWP X1DC X2NDC X3DCONS X4NDCONS X5QOW X6OM X8RM X9CCR
```

```

Iteration 0: log likelihood = 276.48413
Iteration 1: log likelihood = 277.37047
Iteration 2: log likelihood = 277.73322
Iteration 3: log likelihood = 277.73512
Iteration 4: log likelihood = 277.73512

```

```

Stoc. frontier normal/half-normal model Number of obs = 252
Wald chi2(8) = 24083.98
Log likelihood = 277.73512 Prob > chi2 = 0.0000

```

YCWP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
X1DC	-.0161162	.0277922	-0.58	0.562	-.0705879	.0383555
X2NDC	.0446158	.023951	1.86	0.062	-.0023273	.091559
X3DCONS	.8205583	.0274934	29.85	0.000	.7666721	.8744444
X4NDCONS	.1616731	.0102819	15.72	0.000	.1415208	.1818253
X5QOW	-.0669573	.0170134	-3.94	0.000	-.1003029	-.0336118
X6OM	.0548884	.0245605	2.23	0.025	.0067507	.1030262
X8RM	-.0145806	.0036086	-4.04	0.000	-.0216533	-.0075079
X9CCR	.0106471	.0045884	2.32	0.020	.001654	.0196401
_cons	.9142577	.1360938	6.72	0.000	.6475187	1.180997
/lnsig2v	-5.990218	.3248857	-18.44	0.000	-6.626982	-5.353454
/lnsig2u	-4.459726	.251707	-17.72	0.000	-4.953063	-3.96639
sigma_v	.0500312	.0081272			.0363889	.0687879
sigma_u	.1075431	.0135347			.0840342	.1376288
sigma2	.0140686	.0023219			.0095179	.0186194
lambda	2.149523	.0205728			2.109201	2.189845

Likelihood-ratio test of sigma_u=0: chibar2(01) = 6.94 Prob>=chibar2 = 0.004

➤ The output of 'STATA' for NWSDB in 2014

```

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Notes:

1. (/v# option or -set maxvar-) 5000 maximum variables

```
. import excel "C:\Users\UDITHA\Desktop\2014-STATA for NWSDB.xlsx", sheet("LN data 2014") firstrow
```

```
. frontier YCWP X1DC X2NDC X3DCONS X4NDCONS X5QOW X6OM X8RM X9CCR
```

```

Iteration 0: log likelihood = 292.02321 (not concave)
Iteration 1: log likelihood = 292.68268
Iteration 2: log likelihood = 293.5541
Iteration 3: log likelihood = 293.63042
Iteration 4: log likelihood = 293.63055
Iteration 5: log likelihood = 293.63055

```

```

Stoc. frontier normal/half-normal model      Number of obs   =      252
                                                Wald chi2(8)    = 25621.03
Log likelihood = 293.63055                    Prob > chi2     = 0.0000

```

	YCWP	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
	X1DC	.0105879	.0462749	0.23	0.819	-.0801093	.1012851
	X2NDC	.017056	.0184002	0.93	0.354	-.0190077	.0531197
	X3DCONS	.7737405	.042655	18.14	0.000	.6901382	.8573427
	X4NDCONS	.2340334	.0130563	17.93	0.000	.2084436	.2596232
	X5QOW	-.0368733	.015678	-2.35	0.019	-.0676017	-.0061449
	X6OM	-.0232761	.0182174	-1.28	0.201	-.0589816	.0124294
	X8RM	-.0058525	.0030556	-1.92	0.055	-.0118414	.0001364
	X9CCR	.0053761	.0047144	1.14	0.254	-.003864	.0146163
	_cons	.8518214	.1229056	6.93	0.000	.6109309	1.092712
	/lnsig2v	-6.343524	.3799229	-16.70	0.000	-7.088159	-5.598889
	/lnsig2u	-4.445391	.2271876	-19.57	0.000	-4.890671	-4.000112
	sigma_v	.0419297	.007965			.0288952	.0608439
	sigma_u	.1083167	.0123041			.086697	.1353277
	sigma2	.0134906	.0021769			.009224	.0177572
	lambda	2.583297	.0192258			2.545615	2.620978

Likelihood-ratio test of sigma_u=0: chibar2(01) = 4.83 Prob>=chibar2 = 0.014

Annex 02. Regional Monthly Observations

Data for Regional Manager's Centre includes eleven variables. Each variable is included Sixty Monthly observations for the period from 2010 to 2014. This annexe is included monthly observations for 21 Regional Manager's Centres.



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NWSDB- TEC-North Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010 -1	3,193,240	118,089	7,115	2,114,123	494,294	77	300	584,682	1,024	960	710	1,511
2	3,178,713	118,310	7,098	2,198,956	401,628	69	298	580,115	2,245	1,928	250	1,370
3	3,171,368	118,570	7,466	2,257,679	346,071	74	298	574,969	3,016	3,138	311	1,169
4	3,187,963	118,875	7,214	2,389,377	225,123	94	298	577,021	3,550	3,980	359	1,199
5	3,201,877	119,221	7,214	2,325,332	302,169	61	353	578,579	4,282	4,733	180	1,305
6	3,200,362	119,551	7,297	2,145,732	482,935	61	299	577,025	5,742	5,953	3	1,141
7	3,184,598	119,906	7,336	2,026,027	600,890	75	299	571,954	6,413	7,177	1	950
8	3,157,023	120,276	7,688	2,189,003	450,414	79	299	560,687	7,359	8,395	2	909
9	3,151,423	120,285	7,401	2,199,863	456,970	93	297	552,760	8,179	9,427	3	830
10	3,173,076	120,705	7,452	2,187,666	475,653	49	297	551,798	9,017	10,439	1	878
11	3,213,633	121,228	7,461	2,178,694	488,625	62	297	557,565	9,816	11,513	2	930
12	3,212,950	121,448	7,506	2,054,668	604,401	73	296	557,126	10,545	12,659	2	982
2011- 1	3,228,936	121,799	7,531	2,189,167	480,069	64	296	559,575	869	1,095	2	894
2	3,215,796	122,168	7,547	2,220,397	455,422	80	296	557,297	1,326	2,014	3	784
3	3,249,403	122,390	7,573	2,228,583	446,487	74	299	574,494	2,251	3,081	2	774
4	3,219,642	122,748	7,629	2,382,381	294,772	39	299	542,510	2,835	3,930	11	748
5	3,229,233	123,145	2,907	2,351,164	330,156	29	299	548,001	3,669	4,843	59	825
6	3,297,700	128,260	7,726	2,353,904	346,749	52	302	596,884	4,338	5,877	109	841
7	3,351,192	123,860	7,744	2,354,681	379,805	55	302	616,619	4,732	6,893	98	725
8	3,459,243	124,099	7,811	2,271,018	470,968	63	302	717,101	5,750	7,861	93	863
9	3,552,745	124,686	7,966	2,275,334	470,332	75	307	807,539	6,679	8,818	136	918
10	3,620,023	125,027	7,994	2,341,797	420,370	70	307	857,945	7,576	9,694	138	870
11	3,660,266	125,497	8,043	2,339,536	438,631	56	307	882,124	8,165	10,535	148	818
12	3,719,581	125,757	8,076	2,192,668	601,081	84	305	925,804	8,910	11,428	168	847
2012 -1	3,772,109	126,095	8,098	2,335,957	472,043	70	305	781,958	968	999	338	798
2	3,790,161	126,457	8,111	2,441,927	387,740	121	305	812,990	1,764	1,782	120	808
3	3,784,649	126,792	8,205	2,404,946	456,052	83	312	832,623	2,787	2,494	159	240
4	3,794,613	127,085	8,237	2,508,580	356,918	65	312	857,962	3,725	3,173	212	407
5	3,825,995	127,553	8,257	2,620,986	260,095	78	312	888,013	4,650	4,142	245	454
6	3,789,912	128,020	8,337	2,580,515	332,232	58	319	894,040	5,815	4,907	259	419
7	3,771,938	128,324	8,435	2,546,205	387,876	80	319	899,984	6,914	5,731	136	375
8	3,740,895	128,963	8,464	2,403,233	556,681	71	319	892,293	8,394	6,590	61	345
9	3,704,698	129,545	8,460	2,202,841	769,323	66	305	874,657	9,767	7,437	97	342
10	3,698,089	129,876	8,488	2,242,841	717,157	95	305	861,655	11,096	8,291	123	313
11	3,718,257	130,250	8,543	2,289,816	663,025	83	305	851,692	10,915	9,223	217	312
12	3,739,652	130,679	8,577	2,314,562	650,185	77	308	847,405	12,870	10,023	272	424
2013 -1	3,768,498	131,020	8,622	2,323,678	637,902	90	308	840,752	1,209	782	45	450
2	3,847,405	131,358	8,666	2,347,341	618,906	78	308	850,277	2,428	1,529	51	421
3	3,895,611	131,698	8,711	2,357,876	598,791	88	311	860,151	3,601	2,260	107	562
4	4,001,267	132,030	8,755	2,373,072	586,761	98	311	889,482	4,336	2,762	172	607
5	4,037,735	132,365	8,800	2,374,478	599,355	72	311	904,049	5,040	3,547	385	542
6	4,124,097	132,680	8,844	2,407,276	566,724	78	314	941,119	6,641	4,390	362	947
7	4,174,213	133,005	8,895	2,435,198	511,232	84	314	979,270	7,843	5,179	302	295
8	4,211,491	133,404	8,911	2,411,489	504,024	95	314	1,024,235	8,792	5,950	353	452
9	4,289,877	133,726	8,996	2,491,982	424,531	68	306	1,088,342	9,744	6,759	204	467
10	4,331,691	134,077	9,036	2,431,619	514,810	77	306	1,142,700	10,845	7,537	15	455
11	4,357,018	134,354	9,070	2,479,448	484,231	84	306	1,190,773	11,741	8,190	46	444
12	4,375,153	134,713	9,128	2,384,315	599,281	69	313	1,234,668	12,754	8,908	60	444
2014 -1	4,399,831	134,882	9,194	2,636,865	354,647	97	313	1,279,471	936	659	131	529
2	4,406,400	135,285	9,266	2,630,652	386,611	85	313	1,311,345	1,932	1,347	135	605
3	4,425,544	135,627	9,335	2,551,349	483,580	88	313	1,342,267	2,962	2,241	141	635
4	4,419,012	136,012	11,237	2,672,786	374,393	72	313	1,357,962	3,856	2,941	279	611
5	4,400,535	136,380	9,459	2,612,099	441,330	77	313	1,366,806	4,912	3,907	224	665
6	4,401,980	136,903	9,462	2,524,056	537,873	79	316	1,376,059	5,814	4,783	290	542
7	4,437,207	137,387	9,465	2,549,487	540,429	82	316	1,390,177	6,930	5,736	458	422
8	4,487,094	137,765	9,527	2,714,086	411,415	88	316	1,404,012	7,627	6,612	356	411
9	4,491,629	138,223	9,579	2,716,762	442,322	78	318	1,396,447	8,627	7,516	344	476
10	4,506,509	138,827	9,657	2,600,263	581,737	68	318	1,391,610	9,645	8,367	298	436
11	4,534,035	139,018	9,711	2,403,332	795,834	77	318	1,390,135	10,647	9,228	404	369
12	4,535,073	139,340	9,804	2,315,295	878,955	95	327	1,382,290	11,759	10,089	448	358

OUTPUT

Y = CWP- Clear water Production (Volume m3/month)

INPUTS

X₁ = DC - Domestic Connections (Numbers/month), X₂ = NDC - Non Domestic Connections (Numbers/month), X₃ = DCONS- Domestic Consumption (Volume m3/month)

X₄ = NDCONS - Non Domestic Consumption (Volume m3/month), X₅ = QOW- Quality of Water (Number of sample tested/month)

X₆ = O&M - O&M Staff (Numbers/month), X₇ = NRW- Non Revenue Water volume (Volume m3/month)

X₈ = RM - Rectification of Meters (Numbers/month)

X₉ = CCR - Consumer Complaints Received (Numbers/month)

X₁₀ = CDM - Connections due to Defective Meters (Numbers/month)

X₁₁ = DCDM- Defective Connections other than Defective Meters (Numbers/month)

OUTPUT

NWSDB- AKKARAIPATTU Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010-1	425,626	31,398	1,106	359,666	111,661	120	269	65,972	68	187	102	791
2	392,367	32,052	1,109	325,757	45,665	111	269	41,669	289	260	115	900
3	458,409	32,577	1,557	355,187	44,245	131	269	52,396	277	260	103	727
4	590,372	33,012	1,132	429,137	60,527	78	269	77,988	114	210	105	807
5	600,598	33,332	1,144	372,780	86,990	80	269	94,294	256	135	138	761
6	550,575	33,847	1,180	392,331	48,259	65	291	90,735	380	140	71	710
7	608,546	34,641	1,208	414,742	48,887	141	291	107,773	250	118	55	657
8	625,076	35,222	1,235	446,572	58,948	130	291	112,014	287	165	89	601
9	591,394	35,732	1,321	426,184	48,963	126	282	107,220	298	180	71	564
10	634,044	38,455	1,327	443,921	53,693	92	282	117,425	303	207	95	512
11	600,519	38,787	1,330	419,425	43,891	101	282	113,798	225	165	118	971
12	558,703	38,805	1,336	384,076	40,091	65	281	108,277	160	130	97	1,314
2011-1	523,057	38,916	1,350	356,469	37,599	65	281	129,195	36	33	118	1,092
2	486,607	39,135	1,352	364,680	38,355	52	281	83,696	26	37	109	1,185
3	509,625	39,171	1,368	388,629	38,723	54	279	82,050	60	32	132	1,190
4	596,941	39,677	1,376	445,681	46,300	38	279	105,062	107	37	106	1,266
5	644,181	39,927	1,390	460,140	66,222	42	279	119,173	59	52	80	1,300
6	636,127	40,104	1,415	447,445	54,636	55	279	134,223	94	37	132	1,216
7	612,912	40,572	1,446	438,413	47,291	45	279	127,486	24	41	142	1,271
8	634,357	41,371	1,471	466,590	53,244	48	279	114,819	102	44	149	1,329
9	607,441	42,041	1,529	477,161	46,881	52	272	83,219	67	67	140	1,470
10	631,405	42,439	1,546	471,816	52,298	58	272	107,339	143	42	179	1,455
11	554,494	43,214	1,560	479,719	48,588	65	272	26,061	70	45	177	1,084
12	532,049	43,814	1,596	439,711	48,083	73	269	44,160	118	60	157	966
2012-1	600,044	44,056	1,629	434,110	42,052	67	269	97,867	137	64	194	850
2	550,095	44,620	1,652	442,410	44,696	80	269	87,355	312	109	132	807
3	673,244	44,887	1,668	469,915	47,951	75	267	111,287	423	148	145	830
4	688,720	45,179	1,700	519,679	55,339	65	267	113,226	469	191	187	666
5	727,314	45,791	1,726	545,747	58,724	45	267	118,698	788	230	209	585
6	713,355	46,550	1,731	566,346	63,298	56	266	110,499	962	268	241	453
7	729,190	46,917	1,757	555,196	59,043	46	266	110,035	1,063	308	39	49
8	727,902	47,177	1,819	555,516	57,147	58	266	108,603	1,224	343	37	4
9	694,642	47,782	1,867	567,793	53,647	63	266	101,557	1,390	379	22	7
10	714,757	47,980	1,882	522,690	82,140	46	265	108,640	1,505	423	18	7
11	657,691	48,892	1,896	504,342	40,105	46	266	101,281	1,688	464	12	4
12	635,271	49,074	1,909	464,053	52,498	65	265	102,587	1,709	503	7	2
2013-1	662,499	49,302	1,923	481,067	18,396	73	267	95,544	184	40	7	6
2	49,529	49,529	1,957	496,663	14,768	55	267	91,528	365	77	10	5
3	653,992	49,757	1,950	510,391	11,709	58	265	102,088	434	114	7	7
4	690,241	49,984	1,964	520,750	44,705	58	265	108,644	525	145	7	2
5	717,998	50,212	1,978	523,919	51,213	92	265	114,951	828	174	12	2
6	709,758	50,439	1,991	523,221	79,850	78	269	115,691	1,167	242	7	2
7	792,599	50,667	2,021	522,290	116,694	57	269	131,968	1,411	252	9	2
8	782,627	50,894	2,073	607,167	71,271	61	269	128,351	1,629	277	10	3
9	805,572	52,089	2,127	605,836	74,852	67	271	135,336	1,939	299	7	2
10	771,826	52,946	2,141	606,481	73,439	72	271	127,120	2,099	311	7	2
11	769,391	53,336	2,158	593,267	62,141	80	271	125,180	2,350	330	12	2
12	699,805	53,701	2,159	546,105	58,096	60	271	110,989	2,540	366	7	2
2014-1	699,524	53,931	2,173	518,330	57,421	74	271	111,434	250	72	7	9
2	717,333	53,934	2,186	515,772	63,392	65	271	118,216	278	68	7	17
3	796,552	54,180	2,185	563,858	71,703	84	259	131,829	325	83	5	14
4	755,704	54,474	2,216	611,245	72,344	58	259	119,704	270	80	7	3
5	797,276	54,483	2,231	652,832	75,567	58	259	118,714	234	71	56	15
6	824,343	54,843	2,245	672,708	74,730	69	258	118,541	200	89	9	6
7	833,395	55,023	2,275	672,907	78,392	57	258	112,925	365	90	12	9
8	910,652	55,216	2,323	663,027	77,298	75	258	128,129	250	72	15	18
9	807,168	55,826	2,338	641,498	81,104	78	257	110,017	180	78	15	4
10	889,880	56,736	2,345	642,835	74,334	85	257	127,431	130	114	18	2
11	799,908	57,215	2,354	591,877	71,115	85	257	116,067	87	115	18	2
12	788,712	57,296	2,355	561,343	66,369	90	268	118,780	63	112	18	2

Y = CWP - Clear water Production (Volume m3/month)

INPUTS

X1 = DC - Domestic Connections (Numbers/month)

X2 = NDC - Non Domestic Connections (Numbers/month)

X3 = DCONS - Domestic Consumption (Volume m3/month)

X4 = NDCONS - Non Domestic Consumption (Volume m3/month)

X5 = QOW - Quality of Water (Number of sample tested/month)

X6 = O&M - O&M Staff (Numbers/month)

X7 = NRW - Non Revenue Water volume (Volume m3/month)

X8 = RM - Rectification of Meters (Numbers/month)

X9 = CCR - Consumer Complaints Received (Numbers/month)

X10 = CDM - Connections due to Defective Meters (Numbers/month)

X11 = DCDM - Defective Connections other than Defective Meters (Numbers/month)

NWSDB- AMPARA Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010 -1	550,920	22,168	1,603	288,157	91,783	111	286	171,006	101	190	601	5,927
2	503,456	22,212	1,610	280,209	86,899	111	286	146,757	194	399	760	675
3	557,771	22,287	1,727	297,734	89,972	115	236	165,156	340	726	1,021	2,264
4	572,005	22,399	1,623	359,298	92,582	66	236	156,501	444	890	1,047	721
5	574,669	22,522	1,628	327,206	93,395	66	236	156,540	985	1,180	819	618
6	591,494	22,644	1,662	335,608	96,279	53	245	160,886	1,371	1,441	762	584
7	611,622	22,865	1,670	340,778	97,602	141	245	167,401	1,627	1,661	680	541
8	620,055	23,015	1,726	349,821	101,962	142	245	169,523	1,835	1,866	649	508
9	573,104	23,030	1,704	353,196	83,590	126	254	154,394	2,017	2,077	687	434
10	571,265	23,193	1,722	328,146	95,882	80	254	153,270	2,192	2,270	690	400
11	538,074	23,472	1,734	327,788	93,446	101	254	141,998	2,385	2,534	700	387
12	505,056	23,637	1,343	304,590	91,490	38	201	131,466	2,631	2,753	651	376
2011 -1	397,713	18,295	1,346	238,686	63,175	38	201	94,338	189	28	477	776
2	412,716	18,482	1,342	239,345	62,321	47	201	102,725	344	127	427	330
3	438,505	18,544	1,350	251,581	63,260	54	207	113,485	471	266	390	373
4	485,524	18,593	1,355	294,027	70,266	42	207	123,857	576	451	380	391
5	499,594	18,639	1,357	302,449	70,440	42	207	126,897	711	663	404	406
6	515,703	18,677	1,365	324,854	79,960	45	189	126,708	845	859	369	354
7	520,236	18,790	1,372	316,040	82,767	45	189	126,573	883	1,075	459	326
8	505,990	18,995	1,387	313,131	81,246	46	189	121,185	988	1,288	530	354
9	492,634	19,162	1,413	301,295	79,634	46	191	117,050	1,082	1,501	588	332
10	498,334	19,402	1,419	307,369	76,028	46	191	117,457	1,289	1,721	608	353
11	481,372	19,633	1,443	295,569	75,088	46	191	113,122	1,479	1,920	540	322
12	474,777	19,697	1,452	274,402	75,333	46	191	112,665	1,559	2,095	510	368
2012 -1	470,324	19,934	1,459	277,797	74,562	44	191	114,195	143	255	531	337
2	468,115	19,808	1,467	285,291	74,439	44	191	112,348	428	248	470	340
3	484,518	19,875	1,473	295,565	74,451	42	193	114,637	657	390	246	309
4	517,310	19,946	1,485	321,418	77,895	42	193	121,464	778	284	238	495
5	534,767	19,989	1,490	335,838	76,995	45	193	124,387	925	306	238	308
6	571,480	20,091	1,503	360,600	96,465	45	199	132,012	1,017	319	266	293
7	571,865	20,199	1,512	348,925	92,506	46	199	131,815	1,074	312	340	330
8	556,223	20,611	1,530	363,733	86,576	46	199	125,821	1,294	368	388	338
9	544,520	21,094	1,528	354,228	88,221	46	199	122,136	1,352	357	421	587
10	546,543	21,785	1,550	355,300	82,409	46	191	121,111	1,550	346	445	390
11	508,470	21,911	1,565	335,980	83,591	46	191	115,917	1,760	204	519	308
12	489,940	22,184	1,575	357,220	77,222	44	200	105,339	1,898	321	35	142
2013 -1	477,491	22,345	1,590	338,980	10,893	44	200	101,753	244	247	467	370
2	448,332	22,540	1,598	360,390	8,097	58	200	93,791	382	429	447	355
3	527,296	22,820	1,608	361,470	22,301	58	199	111,998	478	597	442	575
4	550,902	23,067	1,615	362,549	73,076	58	199	116,185	584	787	529	351
5	582,294	23,114	1,624	365,067	74,242	84	199	123,796	856	969	497	344
6	557,597	23,320	1,632	366,090	68,439	58	201	119,549	1,008	1,210	511	328
7	582,262	23,655	1,686	367,066	75,772	58	201	125,477	1,149	1,456	562	320
8	578,734	23,858	1,653	367,875	90,773	61	201	125,527	1,376	1,678	563	365
9	560,689	24,175	1,669	372,708	91,607	57	199	120,772	1,571	1,944	545	367
10	591,552	24,395	1,673	382,973	95,379	65	199	126,947	1,770	2,189	528	344
11	534,037	24,712	1,720	350,353	92,414	60	199	113,536	1,981	2,417	426	372
12	480,023	25,026	2,776	321,434	80,641	60	199	100,181	2,220	2,589	397	368
2014 -1	501,135	25,104	1,766	313,351	91,065	62	199	103,384	649	172	321	361
2	478,846	25,257	1,792	313,404	85,461	58	199	98,307	378	65	241	369
3	570,844	27,335	1,796	342,313	89,135	84	224	116,053	308	63	370	503
4	625,286	28,145	1,843	405,117	97,617	58	224	126,433	241	69	390	547
5	645,380	28,360	1,845	432,126	88,084	58	224	127,527	510	71	276	436
6	646,101	29,015	1,871	427,132	105,734	61	224	125,085	490	70	308	539
7	642,825	29,351	1,880	429,005	100,057	57	224	120,915	414	68	282	435
8	655,957	29,770	1,885	452,715	102,426	65	224	120,237	380	72	419	433
9	632,243	29,943	1,880	432,376	102,518	60	226	114,752	280	68	306	518
10	600,271	30,121	1,885	416,920	92,714	60	226	106,908	1,614	180	321	464
11	575,381	30,282	1,888	396,170	92,453	58	226	101,497	714	140	273	535
12	563,324	30,384	1,899	360,667	85,680	62	236	101,286	758	68	228	498

OUTPUT
 Y = CWP - Clear water Production (Volume m3/month)
INPUTS
 X1 = DC - Domestic Connections (Numbers/month)
 X2 = NDC - Non Domestic Connections (Numbers/month)
 X3 = DCONS - Domestic Consumption (Volume m3/month)
 X4 = NDCONS - Non Domestic Consumption (Volume m3/month)
 X5 = QOW - Quality of Water (Number of sample tested/month)
 X6 = O&M - O&M Staff (Numbers/month)
 X7 = NRW - Non Revenue Water volume (Volume m3/month)
 X8 = RM - Rectification of Meters (Numbers/month)
 X9 = CCR - Consumer Complaints Received (Numbers/month)
 X10 = CDM - Connections due to Defective Meters (Numbers/month)
 X11 = DCDM - Defective Connections other than Defective Meters (Numbers/month)

NWSDB- ANURADAPURA Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010-1	1,243,000	50,358	5,682	605,551	371,316	55	333	266,126	123	58	128	360
2	1,263,000	50,933	5,695	650,613	362,184	56	333	260,178	246	122	171	367
3	1,649,000	51,185	5,881	750,524	382,249	65	333	409,777	548	177	244	296
4	1,281,000	51,337	5,743	856,302	388,914	60	333	251,717	745	226	281	968
5	1,446,000	51,799	5,749	768,759	356,273	63	333	291,947	973	280	356	247
6	1,405,000	52,479	5,805	840,730	396,434	105	299	264,000	1,038	339	344	248
7	1,535,000	53,711	5,862	893,278	403,097	72	299	280,598	1,206	397	403	332
8	1,489,000	53,949	5,904	844,658	407,258	98	299	267,573	1,462	445	409	1,026
9	1,424,000	54,498	5,972	861,409	408,987	105	294	244,501	1,783	486	308	485
10	1,453,000	55,597	6,008	802,396	394,025	71	294	250,207	2,090	527	205	481
11	1,342,000	56,267	6,039	806,862	383,734	91	294	224,248	2,304	577	132	487
12	1,263,000	56,540	6,088	694,177	381,823	82	294	209,153	2,539	631	258	547
2011-1	1,308,000	56,990	6,102	689,385	383,361	89	294	234,132	2,111	104	261	577
2	1,261,000	57,354	6,122	730,714	400,193	82	294	179,062	389	154	283	2,353
3	1,536,000	57,597	6,135	753,590	389,902	89	297	276,480	665	217	288	542
4	1,503,000	57,848	6,166	881,073	418,257	85	297	255,510	781	263	300	522
5	1,653,000	58,184	6,194	893,266	416,872	100	297	297,540	1,131	322	379	580
6	1,696,000	58,483	6,232	900,015	428,870	97	296	317,152	1,509	369	430	611
7	1,692,000	58,923	6,273	944,350	439,434	96	296	314,712	1,851	420	406	615
8	1,773,000	59,316	6,331	945,378	447,613	102	296	336,870	2,132	464	439	585
9	1,750,000	59,703	6,390	990,818	466,113	34	294	327,250	2,429	520	392	559
10	1,625,000	60,022	6,465	983,608	449,428	93	294	292,500	2,717	583	270	552
11	1,447,000	60,352	6,538	826,289	377,372	92	294	259,013	3,204	635	212	555
12	1,496,000	60,829	6,567	757,850	392,032	133	302	273,768	3,475	683	228	586
2012-1	1,592,000	62,008	6,604	786,677	381,972	129	302	303,117	356	54	226	608
2	1,518,000	61,651	6,661	830,903	422,709	126	302	295,706	604	114	213	617
3	1,740,000	62,022	6,736	882,521	421,870	85	302	339,300	1,011	218	183	591
4	1,661,000	62,685	6,812	976,118	419,138	73	302	326,553	1,285	277	249	570
5	1,874,000	64,375	7,007	999,284	426,440	97	302	374,238	1,581	320	300	497
6	1,846,000	66,404	7,064	1,129,237	452,052	96	302	356,463	2,050	367	341	515
7	1,959,000	68,100	7,180	1,076,137	453,093	105	302	385,139	2,527	421	35	524
8	1,948,420	68,972	7,267	1,146,254	442,704	72	302	377,799	2,859	472	439	528
9	1,894,466	69,207	7,326	1,195,601	428,754	93	336	367,589	3,351	535	581	1,760
10	1,879,341	69,987	7,355	1,018,220	481,213	92	336	319,075	3,907	584	617	1,513
11	1,859,691	71,481	7,428	899,794	427,645	133	336	371,938	4,578	638	604	1,585
12	1,717,704	72,867	7,508	870,601	397,074	129	365	346,308	4,275	692	562	1,637
2013-1	1,584,692	73,218	7,680	915,015	308,252	138	365	315,988	2,100	518	227	1,289
2	1,437,930	73,603	7,720	940,120	325,968	153	365	296,594	2,090	527	202	1,452
3	1,776,940	73,890	7,784	960,148	321,965	152	341	356,276	1,783	486	315	1,223
4	1,847,841	74,270	7,805	978,768	533,825	172	341	373,079	1,038	339	352	652
5	1,942,249	74,565	7,944	975,045	484,031	180	341	394,082	1,206	397	443	644
6	1,919,502	75,118	8,028	980,410	552,112	175	342	399,064	1,462	445	421	453
7	1,995,094	75,360	7,995	990,814	533,988	181	342	417,773	1,115	317	334	452
8	1,994,602	75,874	8,054	1,164,995	497,046	185	342	414,279	1,870	427	354	781
9	1,908,118	75,351	8,145	1,113,294	455,182	176	358	402,422	1,670	337	326	694
10	1,970,108	76,687	8,210	1,172,990	461,952	185	358	424,164	1,235	540	332	734
11	1,697,300	76,343	8,297	1,046,857	459,796	186	358	341,666	211	104	304	771
12	1,690,700	77,603	8,341	950,066	422,869	186	358	331,546	389	154	332	734
2014-1	1,680,605	76,951	8,380	944,447	445,987	181	358	322,676	665	217	227	850
2	1,634,051	78,255	8,409	996,645	442,164	153	358	308,999	781	263	202	775
3	1,966,266	77,635	8,546	1,025,606	418,744	152	364	371,034	1,131	322	147	763
4	1,902,143	78,806	8,599	1,223,030	466,871	172	364	347,712	1,509	369	147	763
5	1,957,291	78,293	8,669	1,127,288	436,142	180	364	349,572	917	214	244	773
6	2,065,746	79,606	8,717	1,242,105	470,946	175	366	363,571	615	318	215	683
7	2,160,443	80,062	8,770	1,288,368	492,241	181	366	368,788	435	219	222	689
8	2,057,861	80,504	8,859	1,295,437	493,206	185	366	344,486	318	450	230	695
9	2,035,979	81,094	8,770	1,260,487	547,275	181	359	329,014	440	468	265	696
10	1,911,690	81,896	8,859	1,167,476	479,539	186	359	303,768	390	730	104	683
11	1,723,944	82,582	8,890	1,057,580	472,682	186	359	273,762	330	750	2	614
12	1,785,297	82,977	8,923	949,136	443,333	181	370	288,325	358	906	3	625

OUTPUT
Y = CWP- Clear water Production (Volume m3/month)
INPUTS
X₁ = DC - Domestic Connections (Numbers/month)
X₂ = NDC - Non Domestic Connections (Numbers/month)
X₃ = DCONS- Domestic Consumption (Volume m3/month)
X₄ = NDCONS - Non Domestic Consumption (Volume m3/month)

X₅ = QOW- Quality of Water (Number of sample tested/month)
X₆ = O&M - O&M Staff (Numbers/month)
X₇ = NRW- Non Revenue Water volume (Volume m3/month)
X₈ = RM - Rectification of Meters (Numbers/month)
X₉ = CCR - Consumer Complaints Received (Numbers/month)
X₁₀ = CDM - Connections due to Defective Meters (Numbers/month)
X₁₁ = DCDM- Defective Connections other than Defective Meters (Numbers/month)

NWSDB- BANDARAWELLA Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010 - 1	828,719	29,645	3,260	362,698	234,829	80	254	231,213	402	196	1,017	404
2	813,033	30,910	3,262	371,625	222,711	80	254	222,771	421	185	982	1,603
3	840,777	31,033	3,325	381,438	229,192	79	254	230,289	498	174	1,201	659
4	855,679	31,090	3,276	406,025	221,470	78	254	232,830	456	198	1,390	683
5	847,155	31,207	3,278	387,006	212,626	68	256	233,899	435	206	1,238	698
6	857,948	31,403	3,286	395,995	234,426	88	256	235,335	461	209	943	737
7	891,709	31,459	3,288	402,721	237,197	84	256	245,666	487	215	618	665
8	879,080	31,508	3,335	414,554	230,601	73	256	241,132	424	221	606	660
9	874,206	31,569	3,318	429,035	241,681	68	256	235,686	463	209	459	664
10	863,411	31,770	3,321	395,808	239,746	43	253	232,258	475	211	500	331
11	845,345	31,849	3,330	391,805	237,401	62	253	226,383	458	195	471	261
12	835,074	31,887	3,324	366,077	233,134	59	253	223,633	433	192	395	209
2011 - 1	824,161	31,953	3,325	368,635	232,291	66	252	222,523	437	242	422	192
2	791,118	31,961	3,333	342,698	223,734	78	252	221,513	420	217	522	220
3	821,793	32,028	3,349	365,345	228,998	84	252	230,102	517	209	500	209
4	877,897	32,109	3,351	405,357	227,824	83	252	245,811	512	195	515	186
5	898,644	32,228	4,008	369,330	279,581	71	252	251,620	523	204	538	183
6	911,296	32,288	3,385	436,513	253,876	74	252	218,711	548	226	542	215
7	913,793	32,391	3,409	470,848	217,977	79	252	228,448	675	218	486	197
8	917,969	32,469	4,072	464,079	229,645	72	252	220,313	731	226	485	227
9	940,327	32,520	4,245	485,100	219,783	63	252	235,082	577	248	489	211
10	897,860	32,603	4,261	445,798	209,994	70	251	242,422	538	256	537	221
11	865,180	32,636	4,281	425,787	215,335	81	251	224,947	486	247	623	198
12	874,437	32,723	4,310	412,760	214,540	74	251	244,842	496	230	693	225
2012 - 1	910,950	32,795	3,468	426,348	229,627	74	254	241,857	437	193	706	221
2	897,850	32,813	3,476	429,376	231,702	77	254	237,032	530	197	648	180
3	922,790	32,873	3,484	435,683	223,255	77	255	244,447	745	199	600	183
4	890,620	32,994	3,491	459,690	211,997	78	255	233,521	429	210	565	206
5	963,610	33,062	3,523	450,667	274,330	77	255	250,250	688	222	641	228
6	924,160	33,328	3,532	459,265	239,452	77	259	240,097	803	230	546	204
7	894,480	33,371	3,540	424,335	232,018	77	259	233,817	823	254	515	169
8	918,100	33,375	4,448	451,661	233,597	77	259	240,726	1,024	214	449	145
9	905,660	33,582	3,575	436,728	223,940	78	259	239,004	781	228	493	141
10	893,850	33,748	3,574	425,719	214,070	78	256	246,960	824	214	432	130
11	829,700	33,816	3,386	397,319	221,302	78	256	234,705	766	238	348	130
12	874,222	33,801	3,598	385,716	228,514	78	256	232,543	556	242	402	153
2013 - 1	875,119	34,080	3,609	394,772	210,635	78	256	231,466	801	190	314	160
2	861,955	34,360	3,621	406,376	208,981	86	265	225,057	854	192	312	144
3	870,590	34,639	3,633	413,333	199,159	88	265	233,948	901	162	512	126
4	891,850	34,919	3,645	415,356	249,478	85	265	240,175	567	200	340	93
5	879,130	35,198	3,556	440,642	207,721	86	265	237,980	529	190	454	178
6	882,256	35,478	3,668	452,541	243,961	86	267	236,445	820	198	374	103
7	888,936	35,757	3,662	460,747	203,973	79	267	237,168	895	167	74	44
8	945,380	36,037	3,663	482,160	268,865	76	267	248,162	723	110	21	688
9	959,245	36,087	3,645	452,605	247,422	108	267	251,802	758	224	33	462
10	933,305	36,413	3,649	464,688	234,748	100	269	242,379	805	235	10	166
11	954,635	36,348	3,628	427,196	262,415	106	269	249,828	808	274	42	69
12	920,840	36,814	3,649	385,644	232,199	98	269	243,562	699	243	45	47
2014 - 1	969,330	37,012	3,643	418,833	274,768	99	269	256,097	750	198	36	21
2	979,380	33,218	3,673	460,004	266,270	99	270	257,871	633	191	42	44
3	979,440	37,341	3,692	421,984	238,163	99	270	260,237	648	222	56	42
4	983,977	37,844	3,722	477,611	268,808	99	270	260,164	542	200	58	29
5	999,339	38,020	3,697	477,138	250,200	99	270	265,125	569	151	128	35
6	998,919	38,383	3,703	466,119	255,719	99	290	270,208	711	221	219	15
7	1,043,406	38,594	3,700	511,483	234,595	99	290	285,059	728	210	130	33
8	1,039,429	38,872	3,716	509,966	282,118	99	290	286,363	601	233	71	13
9	1,027,918	38,991	3,727	489,337	288,718	99	290	280,724	656	279	67	22
10	1,006,014	39,457	3,790	465,501	269,657	98	290	276,251	684	262	50	22
11	951,990	39,837	3,856	473,589	209,556	98	290	261,797	667	353	83	36
12	900,866	39,112	3,789	488,205	158,814	98	318	244,405	605	341	83	36

OUTPUT
 Y = CWP - Clear water Production (Volume m3/month)
INPUTS
 X₁ = DC - Domestic Connections (Numbers/month)
 X₂ = NDC - Non Domestic Connections (Numbers/month)
 X₃ = DCONS - Domestic Consumption (Volume m3/month)
 X₄ = NDCONS - Non Domestic Consumption (Volume m3/month)

X₅ = QOW - Quality of Water (Number of sample tested/month)
 X₆ = O&M - O&M Staff (Numbers/month)
 X₇ = NRW - Non Revenue Water volume (Volume m3/month)
 X₈ = RM - Rectification of Meters (Numbers/month)
 X₉ = CCR - Consumer Complaints Received (Numbers/month)
 X₁₀ = CDM - Connections due to Defective Meters (Numbers/month)
 X₁₁ = DCDM - Defective Connections other than Defective Meters (Numbers/month)

NWSDB- Galle Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010-1	1,451,324	58,313	4,533	830,956	242,713	102	324	377,635	159	249	989	1,882
2	1,477,014	59,033	4,548	869,126	234,245	100	324	379,002	231	400	984	1,778
3	1,572,572	59,303	5,324	880,443	246,633	106	323	418,147	329	542	952	1,820
4	1,617,000	60,039	4,607	954,914	238,677	103	323	428,182	505	666	902	1,576
5	1,629,151	60,696	4,638	958,900	238,662	106	323	431,399	707	793	1,007	1,396
6	1,565,118	61,399	4,561	912,716	239,869	99	323	414,130	805	905	972	1,235
7	1,663,820	61,531	4,705	883,282	250,197	118	323	453,890	925	1,073	825	1,088
8	1,482,276	62,276	4,721	916,781	247,677	106	323	394,137	987	1,269	605	1,084
9	1,665,396	62,828	4,764	954,312	256,863	109	317	444,161	1,015	1,435	357	1,143
10	1,612,370	63,420	4,788	918,960	247,921	119	317	431,631	1,027	1,626	308	1,002
11	1,592,931	64,084	4,845	914,001	250,691	85	317	426,587	1,042	1,836	313	983
12	1,565,897	64,703	4,748	898,424	238,163	97	321	420,130	1,065	2,010	326	926
2011-1	1,646,324	66,114	4,883	932,489	281,560	102	321	432,325	18	219	267	844
2	1,669,137	66,168	4,893	942,517	284,018	130	321	440,485	31	384	386	841
3	1,623,660	66,233	4,908	936,388	259,734	157	312	428,159	90	638	389	869
4	1,666,566	66,801	4,941	999,280	236,206	135	312	437,307	118	767	432	910
5	1,796,496	67,811	4,967	1,078,683	275,936	149	312	465,113	140	962	478	1,762
6	1,764,114	68,298	4,998	1,037,855	250,569	153	314	460,081	166	1,126	506	1,954
7	1,795,748	68,931	5,014	1,043,601	256,684	133	314	472,282	181	1,427	582	1,024
8	1,870,299	69,315	5,061	1,067,689	264,646	174	314	498,248	241	1,806	657	1,185
9	1,885,712	70,099	5,128	1,082,707	275,268	159	312	505,371	309	1,964	709	990
10	1,909,025	70,200	5,152	1,110,981	266,779	146	312	513,719	382	2,130	815	1,097
11	1,824,788	71,217	5,198	1,037,711	278,280	178	312	492,693	462	2,334	980	1,554
12	1,814,502	71,748	5,228	1,018,185	268,325	163	306	493,182	538	2,729	2	2,416
2012-1	1,970,828	72,591	5,256	1,085,820	291,878	109	306	542,372	72	356	726	1,578
2	1,983,788	73,239	5,274	1,111,833	291,339	113	306	550,501	89	682	610	3,095
3	2,065,918	73,817	5,308	1,100,046	357,517	135	305	578,664	94	1,262	578	1,923
4	2,058,632	74,089	5,366	1,209,251	284,921	149	305	578,887	94	1,670	587	2,052
5	2,174,305	74,891	5,385	1,189,419	277,674	153	305	626,200	97	2,057	528	2,152
6	2,161,444	75,788	5,418	1,210,219	319,873	133	300	626,386	98	2,414	567	3,191
7	2,153,479	76,266	5,321	1,145,945	303,288	174	300	633,554	108	2,797	475	3,862
8	2,154,177	77,034	5,495	1,216,709	313,539	189	300	633,876	111	2,967	453	2,005
9	2,189,830	76,848	5,390	1,150,843	305,725	146	289	585,870	114	3,744	612	1,492
10	2,189,830	77,462	5,517	1,124,873	310,075	178	289	621,818	116	4,191	479	1,099
11	2,189,830	78,367	5,545	1,139,873	318,602	163	289	610,987	119	4,427	438	1,641
12	2,189,830	79,329	5,599	1,126,393	365,933	109	288	613,189	121	4,828	491	1,318
2013-1	2,124,421	79,477	6,436	1,134,457	307,230	145	288	634,352	4	292	576	1,229
2	2,083,749	79,624	6,882	1,148,158	382,692	197	288	617,415	8	637	567	1,038
3	2,121,769	79,772	7,327	1,161,742	266,649	157	292	634,621	14	879	489	1,058
4	2,218,244	79,920	7,773	1,168,454	435,587	183	292	663,477	34	1,086	431	1,001
5	2,204,122	80,067	8,218	1,171,063	431,472	124	292	649,334	37	1,267	436	798
6	2,116,834	8,025	9,082	1,184,888	316,317	131	293	623,408	45	1,492	444	634
7	2,205,571	80,362	5,754	1,198,799	279,077	161	293	650,202	49	1,764	343	615
8	2,262,267	80,510	5,794	1,190,908	301,813	151	293	677,323	49	2,031	286	615
9	2,156,509	84,360	5,861	1,244,062	329,609	152	289	645,227	51	2,268	286	615
10	2,231,526	84,832	5,859	1,256,827	333,228	171	289	660,309	53	2,583	183	605
11	2,201,132	85,197	5,872	1,215,441	352,542	186	289	651,095	59	2,871	165	594
12	2,139,744	85,236	5,950	1,189,322	317,239	160	289	636,146	62	3,159	152	596
2014-1	2,304,288	85,373	5,999	1,281,665	345,684	197	289	679,765	2	223	128	598
2	2,140,815	86,507	6,013	1,296,174	359,457	157	289	624,690	4	413	108	603
3	2,289,287	87,038	6,059	1,282,201	339,272	183	293	661,604	5	561	93	595
4	2,322,664	87,224	6,035	1,372,347	347,380	124	293	667,534	8	703	93	595
5	2,373,647	87,983	6,065	1,378,479	341,889	131	293	682,424	10	843	460	634
6	2,293,347	88,776	6,116	1,348,608	324,509	161	291	655,439	13	1,054	258	634
7	2,390,788	89,509	6,183	1,325,818	337,870	151	291	678,506	15	1,246	289	593
8	2,334,974	90,039	6,221	1,351,565	347,252	152	291	649,590	17	1,369	386	622
9	2,260,349	90,588	6,183	1,310,366	332,267	171	290	629,281	21	1,534	406	673
10	2,328,458	91,115	6,221	1,330,018	340,957	186	290	647,311	39	1,658	402	940
11	2,260,585	91,942	6,272	1,298,136	343,094	160	290	625,956	44	1,802	427	1,255
12	2,311,558	91,797	6,243	1,220,672	342,991	150	294	645,618	53	1,950	448	795

OUTPUT
Y = CWP - Clear water Production (Volume m3/month)
INPUTS
X1 = DC - Domestic Connections (Numbers/month)
X2 = NDC - Non Domestic Connections (Numbers/month)
X3 = DCONS - Domestic Consumption (Volume m3/month)

X4 = NCONS - Non Domestic Consumption (Volume m3/month)
X5 = QOW - Quality of Water (Number of sample tested/month)
X6 = O&M - O&M Staff (Numbers/month)
X7 = NRW - Non Revenue Water volume (Volume m3/month)
X8 = RM - Rectification of Meters (Numbers/month)
X9 = CCR - Consumer Complaints Received (Numbers/month)
X10 = CDM - Connections due to Defective Meters (Numbers/month)
X11 = DCDM - Defective Connections other than Defective Meters (Numbers/month)

NWSDB- GAMPHA Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010-1	1,181,000	34,745	4,703	552,615	419,027	60	305	209,391	267	492	582	983
2	1,141,000	34,846	4,716	566,145	407,185	64	305	185,298	549	1,003	618	1,061
3	1,278,000	34,957	4,962	591,172	424,892	57	306	226,845	850	1,476	676	1,232
4	1,128,000	35,178	4,761	598,621	413,081	59	306	180,142	1,109	1,947	728	682
5	1,188,156	35,376	4,782	559,015	380,150	58	306	201,630	1,465	2,415	688	983
6	1,147,844	35,658	4,805	541,766	409,279	61	301	195,133	1,854	2,972	711	537
7	1,189,000	35,891	4,822	546,166	402,164	61	301	207,718	2,233	3,616	734	465
8	1,190,000	36,109	4,868	564,585	408,040	59	301	209,083	2,780	4,291	608	409
9	1,190,000	36,291	4,907	587,929	437,541	60	310	204,085	3,195	4,912	579	384
10	1,198,000	36,556	4,958	550,192	407,715	58	310	208,931	3,590	5,522	482	375
11	1,155,000	36,786	4,995	554,425	415,793	64	310	199,931	4,079	6,086	174	359
12	1,157,000	36,990	5,034	532,539	416,725	60	312	200,971	4,431	6,606	135	322
2011-1	1,206,368	37,218	5,053	557,556	413,937	59	312	235,242	279	566	179	317
2	1,108,632	37,380	5,091	551,280	397,090	57	312	189,576	591	1,060	203	293
3	1,261,000	37,582	5,124	567,651	404,664	58	309	240,851	955	1,695	208	301
4	1,231,109	37,848	5,152	618,834	447,507	59	309	217,906	1,300	2,173	188	279
5	1,277,891	38,149	5,187	596,222	431,486	60	309	231,298	1,653	2,802	207	281
6	1,325,000	38,385	5,216	614,341	463,862	61	299	241,150	2,073	3,467	215	272
7	1,379,000	38,651	5,281	603,838	460,227	57	299	259,252	2,499	4,257	242	254
8	1,441,000	38,827	5,309	647,130	505,214	59	299	273,790	2,804	5,125	399	242
9	1,427,000	39,090	5,392	636,440	526,437	56	299	269,703	3,004	5,898	340	240
10	1,477,000	39,324	5,432	636,500	504,180	57	299	286,538	3,468	6,516	287	227
11	1,382,000	39,557	5,465	607,922	502,547	44	299	268,108	3,844	7,193	221	200
12	1,439,000	39,774	5,503	596,045	478,611	44	305	286,361	4,226	7,811	250	195
2012-1	1,476,000	40,092	5,497	658,080	520,155	51	305	295,495	373	617	227	185
2	1,462,000	40,457	5,521	672,222	492,018	55	305	298,540	776	1,101	275	144
3	1,550,000	40,877	5,568	658,395	517,343	59	320	318,990	1,145	1,803	296	153
4	1,419,000	41,177	5,611	679,380	463,383	60	320	298,132	1,426	2,350	282	141
5	1,506,000	41,516	5,647	666,148	499,547	61	320	320,025	1,895	2,993	246	129
6	1,474,000	41,832	5,652	667,690	510,030	57	330	314,699	2,226	3,603	252	126
7	1,517,000	42,125	5,774	650,006	496,459	59	330	326,155	2,642	4,319	220	138
8	1,506,000	42,403	5,786	693,766	498,269	56	330	324,844	2,966	4,822	159	122
9	1,405,000	42,936	5,860	649,889	491,622	57	336	302,667	3,301	5,390	209	123
10	1,457,000	43,115	6,788	664,470	479,403	44	336	320,382	3,578	6,023	206	149
11	1,457,000	43,821	6,721	651,121	436,731	44	336	326,337	4,080	6,610	182	133
12	1,445,000	43,154	6,634	625,678	476,264	51	349	308,219	3,950	6,705	172	142
2013-1	1,458,000	43,566	6,556	635,312	542,322	55	349	309,254	333	734	143	168
2	1,370,000	43,979	6,479	645,082	481,244	60	349	288,248	632	1,297	127	138
3	1,560,000	44,391	6,402	651,855	445,448	59	336	335,868	1,047	1,957	113	126
4	1,476,000	44,804	6,325	656,308	532,547	78	336	317,635	1,410	2,514	83	140
5	1,503,000	45,216	6,247	659,638	511,352	59	336	322,844	1,769	3,180	98	155
6	1,438,000	45,628	6,170	671,468	470,272	60	341	309,601	2,085	3,979	99	158
7	1,579,000	46,041	6,228	681,621	432,628	74	341	347,064	2,472	4,772	91	157
8	1,567,000	46,453	6,220	704,271	523,934	76	341	345,524	2,791	5,605	72	115
9	1,488,000	46,996	6,290	712,143	484,037	67	343	329,741	3,145	6,273	89	101
10	1,571,000	47,099	6,278	699,264	520,485	73	343	347,191	3,490	6,967	80	102
11	1,505,000	47,537	6,372	687,478	481,972	81	343	337,271	3,768	7,617	101	88
12	1,572,000	47,647	6,347	682,953	476,754	85	340	355,901	4,126	8,265	94	85
2014-1	1,629,000	47,989	6,407	754,272	521,260	80	340	372,064	355	733	96	80
2	1,577,000	47,987	6,405	752,693	513,148	59	340	361,922	586	1,428	108	82
3	1,732,000	48,704	6,453	757,987	508,991	78	345	394,030	913	2,044	145	79
4	1,664,000	49,277	6,492	807,882	528,638	59	345	378,227	1,231	2,531	164	76
5	1,743,000	49,943	7,274	792,258	508,737	60	345	401,413	1,642	3,016	170	91
6	1,691,000	50,733	7,307	792,779	530,089	74	339	390,621	2,122	3,665	146	79
7	1,811,000	51,661	6,619	808,251	568,069	76	339	410,554	2,499	4,356	136	70
8	1,778,000	52,166	6,766	782,267	522,393	67	339	410,896	2,765	5,010	141	68
9	1,740,000	53,434	6,585	774,851	528,261	73	340	409,596	3,147	5,681	116	65
10	1,739,000	54,709	6,573	782,548	570,440	81	340	409,013	3,466	6,213	112	66
11	1,669,000	55,120	6,821	779,888	501,638	85	340	393,550	3,704	6,712	114	72
12	1,710,000	55,423	6,853	779,095	473,752	80	350	404,244	3,962	7,310	177	92

OUTPUT

Y = CWP- Clear water Production (Volume m3/month)

INPUTS

- X₁ = DC - Domestic Connections (Numbers/month)
- X₂ = NDC - Non Domestic Connections (Numbers/month)
- X₃ = DCONS- Domestic Consumption (Volume m3/month)
- X₄ = NDCONS - Non Domestic Consumption (Volume m3/month)

X₅ = QOW- Quality of Water (Number of sample tested/month)

X₆ = O&M - O&M Staff (Numbers/month)

X₇ = NRW- Non Revenue Water volume (Volume m3/month)

X₈ = RM - Rectification of Meters (Numbers/month)

X₉ = CCR - Consumer Complaints Received (Numbers/month)

X₁₀ = CDM - Connections due to Defective Meters (Numbers/month)

X₁₁ = DCDM- Defective Connections other than Defective Meters (Numbers/month)

NWSDB- HAMBANTOTA Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010 -1	1,256,535	60,600	4,029	767,396	176,524	85	391	312,626	623	212	960	549
2	1,356,615	60,847	4,034	836,724	182,225	87	391	337,526	1,032	267	822	451
3	1,390,547	61,076	4,283	849,923	191,551	108	390	347,081	1,451	201	828	461
4	1,523,625	61,296	4,225	938,606	199,370	120	390	381,820	1,789	176	897	530
5	1,523,625	61,492	4,069	845,455	197,293	99	390	403,151	2,306	215	952	523
6	1,375,767	61,842	4,093	831,808	201,599	92	391	360,589	2,737	165	968	519
7	1,386,308	62,535	4,111	844,537	195,078	96	391	360,995	3,307	195	945	468
8	1,540,809	62,860	4,124	941,540	221,501	104	391	397,991	3,869	196	912	428
9	1,515,035	63,131	4,143	945,973	210,471	114	390	387,546	4,513	200	822	423
10	1,428,138	63,848	4,154	878,625	210,240	89	390	362,604	5,090	177	759	375
11	1,386,132	63,939	4,167	860,251	206,017	74	390	349,167	5,645	143	586	341
12	1,252,892	64,183	4,204	778,681	186,208	86	400	313,599	4,800	174	698	447
2011-1	1,306,794	65,253	4,223	798,443	205,237	89	400	300,563	206	194	938	1,507
2	1,357,376	65,445	4,248	837,580	212,887	84	400	312,196	401	171	1,128	1,557
3	1,376,392	65,757	4,270	864,680	198,337	78	412	316,570	600	135	1,374	1,576
4	1,487,647	66,159	4,282	925,333	212,923	83	412	342,159	911	162	1,597	1,746
5	1,542,563	66,823	4,299	958,346	200,266	84	412	385,641	1,473	149	1,581	819
6	1,573,588	67,517	4,317	987,705	202,046	97	416	377,661	1,855	138	1,683	801
7	1,628,192	68,135	4,343	1,015,681	218,832	99	416	390,766	2,191	283	1,848	800
8	1,585,527	68,791	4,363	994,329	218,568	89	416	380,526	2,394	200	2,028	863
9	1,623,097	69,365	4,402	1,013,705	216,645	93	426	389,543	2,480	217	1,128	1,557
10	1,693,152	69,826	4,405	1,061,885	226,137	86	426	406,356	2,581	194	2,636	834
11	1,494,085	70,315	4,426	936,468	203,890	94	426	358,580	2,710	142	2,920	931
12	1,437,671	70,482	4,441	868,196	219,001	93	429	345,041	2,836	158	3,120	1,039
2012-1	1,560,296	71,035	4,469	894,451	209,295	93	429	379,308	1,016	172	2,712	985
2	1,646,477	71,350	4,499	933,904	197,329	85	429	412,442	1,689	263	2,573	1,036
3	1,736,557	71,786	4,521	962,508	196,653	83	429	450,810	2,265	253	2,451	1,093
4	1,769,191	72,143	4,608	1,032,057	193,078	84	429	470,428	2,577	101	2,452	1,159
5	1,814,803	72,602	4,567	1,048,456	189,969	97	429	493,626	3,183	161	2,501	1,157
6	1,700,156	72,968	4,600	1,074,877	225,284	99	435	460,912	3,797	187	2,466	1,014
7	1,725,877	73,480	4,614	1,014,739	210,118	89	435	474,961	4,574	239	2,324	1,086
8	1,958,446	73,850	4,633	1,113,785	217,351	93	435	553,653	4,848	303	2,251	1,103
9	1,775,534	73,611	4,658	1,047,417	217,508	86	438	508,513	5,433	873	2,401	1,077
10	1,814,812	74,686	4,644	1,014,905	224,945	94	438	539,740	6,222	222	2,354	1,079
11	1,791,120	74,429	4,673	925,535	290,778	93	438	524,924	7,232	124	1,911	958
12	1,806,661	74,979	4,705	944,055	216,008	85	435	533,700	8,163	103	1,195	882
2013-1	1,728,058	75,756	4,732	969,963	185,588	98	463	538,277	953	1,270	458	627
2	1,659,515	76,530	4,761	993,355	187,273	101	463	510,737	1,643	1,162	511	509
3	1,884,153	77,311	4,790	1,007,345	194,399	110	464	585,218	2,356	2,472	351	513
4	1,965,527	78,088	4,820	1,011,262	347,234	112	464	610,689	2,716	3,809	348	577
5	1,887,884	78,865	4,849	1,009,221	477,250	83	464	569,197	3,236	5,147	451	577
6	1,780,156	79,643	4,878	1,016,084	256,262	102	458	543,660	2,770	6,594	389	172
7	1,958,444	80,420	4,919	1,028,018	288,274	104	458	604,376	3,801	8,038	267	132
8	2,156,000	81,197	4,938	1,157,550	287,327	108	458	667,498	4,439	9,412	185	545
9	1,993,490	81,809	4,955	1,157,098	290,176	89	475	614,394	5,389	10,631	85	508
10	2,019,719	82,093	4,993	1,105,272	273,524	95	475	622,679	5,995	11,956	71	480
11	1,909,751	82,288	5,008	1,038,685	277,237	115	475	589,158	6,645	13,155	80	473
12	1,815,386	82,800	5,005	994,931	250,214	104	476	555,327	7,225	11,914	79	473
2014-1	1,979,466	83,061	5,021	1,064,130	290,976	77	476	602,747	649	1,214	55	451
2	1,974,536	83,274	5,036	1,111,551	304,850	110	476	599,864	1,240	2,383	68	439
3	2,063,571	83,586	5,052	1,153,049	399,775	112	486	607,103	1,863	3,621	76	436
4	2,062,345	84,111	5,058	1,230,129	311,220	83	486	596,636	2,458	4,811	85	440
5	2,121,479	84,646	5,052	1,208,957	297,461	102	486	626,685	2,999	6,202	117	463
6	2,101,124	84,895	5,058	1,233,926	302,641	104	482	617,520	3,599	7,459	143	444
7	2,176,890	85,251	4,712	1,214,937	335,865	108	482	632,604	4,342	8,716	505	1,376
8	2,391,269	85,627	4,591	1,282,534	327,413	89	482	694,903	5,012	10,210	853	1,806
9	2,103,676	86,046	4,606	1,259,442	314,164	84	480	607,331	5,766	11,649	772	832
10	2,093,841	86,420	4,639	1,206,146	296,327	115	480	598,420	6,437	13,233	775	830
11	1,882,361	86,814	4,663	1,086,779	284,863	104	480	532,332	7,054	14,523	726	786
12	1,885,460	87,109	4,681	1,051,020	289,712	77	504	529,814	7,593	15,867	776	838

OUTPUT
Y = CWP - Clear water Production (Volume m3/month)
INPUTS
X₁ = DC - Domestic Connections (Numbers/month)
X₂ = NDC - Non Domestic Connections (Numbers/month)
X₃ = DCONS - Domestic Consumption (Volume m3/month)
X₄ = NCONS - Non Domestic Consumption (Volume m3/month)

X₅ = QOW - Quality of Water (Number of sample tested/month)
X₆ = O&M - O&M Staff (Numbers/month)
X₇ = NRW - Non Revenue Water volume (Volume m3/month)
X₈ = RM - Rectification of Meters (Numbers/month)
X₉ = CCR - Consumer Complaints Received (Numbers/month)
X₁₀ = CDM - Connections due to Defective Meters (Numbers/month)
X₁₁ = DCDM - Defective Connections other than Defective Meters (Numbers/month)

NWSDB- JAFNA Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010 -1	145,520	4,771	1,023	77,056	42,400	24	104	26,063	68	187	115	876
2	136,758	4,952	1,024	87,341	29,212	22	104	22,415	289	260	152	712
3	141,535	4,950	298	74,558	39,092	21	104	24,769	277	260	234	297
4	165,015	4,640	608	70,598	28,332	22	107	39,307	114	210	209	299
5	165,637	4,954	1,023	83,450	38,849	22	107	40,299	256	135	218	310
6	171,867	4,969	1,008	80,436	36,091	21	107	44,324	380	140	190	640
7	170,207	8,717	1,033	135,491	-19,218	22	107	45,462	250	118	196	572
8	150,733	5,154	1,038	87,881	36,432	22	111	38,588	287	165	174	554
9	142,455	5,234	969	83,359	35,933	22	111	35,101	298	180	174	564
10	159,135	5,380	969	85,467	31,587	24	111	39,513	303	207	157	533
11	153,934	5,415	949	82,265	31,618	22	111	38,376	225	165	110	948
12	164,103	5,507	958	78,495	31,699	24	126	42,060	160	130	133	891
2011-1	143,598	5,576	960	78,106	30,707	23	126	34,751	126	89	128	594
2	149,846	5,593	963	78,210	31,456	23	126	40,159	91	86	162	624
3	147,850	5,639	963	81,805	28,139	24	126	37,850	176	71	181	549
4	178,187	5,647	971	84,767	37,251	24	126	56,129	266	65	190	579
5	170,865	5,680	1,360	89,998	35,118	26	126	45,792	272	63	184	551
6	170,535	5,749	1,009	94,235	37,172	27	137	39,052	238	58	186	535
7	180,059	5,783	1,033	96,737	34,082	27	137	49,156	202	65	214	539
8	179,437	5,799	1,033	94,057	34,230	23	137	51,140	214	62	256	591
9	178,874	5,909	1,037	104,789	35,422	27	137	38,637	331	54	202	572
10	176,979	5,988	1,041	96,976	33,978	27	137	46,015	295	64	178	621
11	174,268	6,009	1,050	89,464	32,993	27	137	51,758	140	70	152	679
12	176,829	6,046	1,053	86,484	34,080	25	153	56,232	186	74	158	751
2012 -1	176,117	6,141	1,077	89,441	30,113	43	153	48,643	80	67	140	669
2	159,011	6,202	1,085	93,741	26,815	44	153	43,585	171	43	146	592
3	174,970	6,239	1,084	91,277	28,849	34	153	48,747	254	20	211	543
4	188,460	6,339	1,095	99,875	29,907	43	153	52,486	135	9	184	554
5	188,957	6,355	1,095	98,901	28,301	66	153	53,588	98	9	160	563
6	174,459	6,451	1,099	105,823	34,504	48	153	48,988	65	12	90	377
7	171,764	6,477	1,100	97,783	32,511	47	153	47,785	43	6	189	499
8	167,617	6,513	1,102	96,198	33,505	47	153	45,843	12	12	202	489
9	175,642	6,544	1,112	99,957	32,586	46	153	48,477	26	18	221	465
10	159,420	6,623	1,114	93,814	29,211	46	153	43,535	14	6	199	502
11	173,065	6,722	1,116	91,613	32,537	39	155	47,448	23	21	213	447
12	178,660	6,810	1,117	87,596	30,966	27	153	48,960	12	14	203	498
2013 -1	180,821	6,867	1,119	106,824	33,980	32	153	49,454	12	19	217	456
2	179,924	6,925	1,120	94,496	25,515	40	153	46,143	8	8	183	435
3	180,443	6,982	1,122	96,547	29,636	38	153	50,496	8	10	139	240
4	171,366	7,040	1,123	98,244	32,442	42	153	46,903	8	5	165	405
5	170,375	7,079	1,125	98,832	28,111	38	153	45,541	22	29	175	351
6	211,005	7,154	1,126	99,455	37,403	42	204	59,419	20	15	170	320
7	222,432	7,212	1,145	101,225	37,349	41	204	65,551	14	10	168	286
8	230,700	7,269	1,164	111,019	32,288	32	204	71,194	4	7	117	287
9	214,016	7,524	1,177	122,300	40,578	37	196	65,681	17	13	121	227
10	221,779	7,591	1,183	110,905	34,700	38	196	70,060	19	8	115	213
11	205,768	7,791	1,190	110,119	36,613	39	196	64,981	10		74	174
12	209,095	7,905	1,196	102,948	32,840	33	204	66,346	6	20	80	170
2014 -1	184,152	8,307	1,265	103,819	30,451	49	204	57,842	6	72	85	178
2	204,316	8,378	1,270	113,612	34,407	42	204	63,992		65	154	183
3	208,829	8,689	1,271	121,853	35,527	46	218	63,547	10	63	94	164
4	197,813	8,785	1,288	125,321	50,912	43	218	58,038	10	69	118	102
5	198,341	8,876	1,315	123,957	37,083	37	218	57,063	39	71	111	146
6	250,161	9,218	1,330	145,305	44,823	38	222	69,470		70	158	157
7	263,101	9,716	1,336	146,238	48,886	37	222	70,301	27	68	165	151
8	261,109	9,945	1,347	141,175	38,268	46	222	68,384	311	72	121	129
9	248,679	10,109	1,336	148,762	42,608	43	222	64,855	303	68	105	110
10	213,961	10,328	1,347	135,325	40,369	48	222	52,913	358	150	68	153
11	198,492	10,573	1,362	129,597	41,971	48	222	46,804	349	150	78	593
12	223,245	10,826	1,363	119,196	41,373	48	230	51,458	278	150	112	178

OUTPUT

Y = CWP- Clear water Production (Volume m3/month)

INPUTS

- X₁ = DC - Domestic Connections (Numbers/month)
- X₂ = NDC - Non Domestic Connections (Numbers/month)
- X₃ = DCONS- Domestic Consumption (Volume m3/month)
- X₄ = NCONS - Non Domestic Consumption (Volume m3/month)
- X₅ = QOW- Quality of Water (Number of sample tested/month)
- X₆ = O&M - O&M Staff (Numbers/month)

- X₇ = NRW- Non Revenue Water volume (Volume m3/month)
- X₈ = RM - Rectification of Meters (Numbers/month)
- X₉ = CCR - Consumer Complaints Received (Numbers/month)
- X₁₀ = CDM - Connections due to Defective Meters (Numbers/month)
- X₁₁ = DCDM- Defective Connections other than Defective Meters (Numbers/month)

NWSDB- KALUTARA Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010-1	1,043,000	39,991	2,334	549,973	113,774	44	208	379,235	290	602	1,385	1,415
2	944,000	40,099	2,341	552,032	109,274	41	208	314,446	645	1,291	1,453	1,834
3	1,047,000	40,182	2,433	549,405	118,466	38	207	359,226	828	1,838	1,405	2,308
4	984,000	40,267	2,357	595,107	110,836	48	207	323,047	974	2,242	1,555	1,989
5	1,015,000	40,465	2,368	568,583	115,130	44	207	332,819	1,532	2,731	1,394	2,471
6	997,000	40,642	2,374	545,151	107,045	52	203	329,907	1,729	3,373	1,402	2,344
7	1,038,000	40,799	2,373	525,998	108,651	54	203	352,297	2,176	1,074	1,280	1,871
8	1,070,000	40,892	2,388	569,069	112,371	57	203	366,475	2,746	4,730	1,087	1,415
9	993,000	40,971	2,395	580,984	111,999	39	202	335,733	3,345	5,285	923	1,408
10	1,019,000	41,111	2,438	560,376	130,514	36	202	342,894	3,547	5,890	904	1,328
11	959,000	41,185	2,470	558,703	104,416	43	202	320,402	3,682	6,552	1,068	1,394
12	1,006,000	41,308	2,490	547,810	115,626	46	197	336,608	3,855	7,173	1,139	2,020
2011-1	1,018,000	41,493	2,505	558,118	122,904	46	197	336,856	387	989	1,056	1,672
2	916,000	41,598	2,517	560,981	125,768	46	197	229,641	630	1,703	1,122	1,772
3	1,004,900	41,645	2,524	563,731	114,155	42	184	326,994	783	2,636	1,244	1,323
4	996,080	41,771	2,531	613,236	129,843	56	184	253,004	898	3,179	1,376	1,416
5	1,041,131	41,870	2,552	592,011	124,704	64	184	324,312	1,265	3,529	1,281	1,370
6	997,280	41,942	2,577	583,892	119,621	59	185	293,699	1,527	4,218	1,188	508
7	1,020,050	42,108	2,598	609,469	125,462	53	185	285,104	1,830	4,830	1,437	1,024
8	1,067,300	42,194	2,603	603,474	117,479	55	185	346,339	2,119	5,538	1,387	1,307
9	974,290	42,254	2,632	610,595	121,027	39	186	242,696	2,449	6,187	1,091	1,728
10	1,050,790	42,524	2,651	610,060	120,251	63	186	320,491	2,630	6,755	1,202	1,470
11	991,820	42,603	2,666	591,365	119,219	65	186	281,280	2,788	7,394	1,364	1,441
12	998,510	42,873	2,669	572,541	114,632	60	183	311,335	3,182	8,024	1,385	1,309
2012-1	967,190	43,085	2,699	577,879	116,660	64	183	280,485	317	603	1,274	1,318
2	908,810	43,209	2,713	581,753	109,466	69	183	262,828	497	1,201	1,405	1,281
3	1,036,460	43,386	2,730	608,376	114,530	56	194	297,775	905	1,743	1,382	1,276
4	1,083,500	43,450	2,749	678,757	124,234	64	194	311,506	1,175	2,308	1,324	2,333
5	1,142,860	43,686	2,764	661,503	114,435	59	194	329,829	1,637	3,116	1,354	1,248
6	1,078,190	43,857	2,780	653,887	122,136	51	203	309,872	2,082	3,821	1,134	1,233
7	1,138,460	44,042	2,808	664,375	126,860	53	203	329,698	3,085	4,517	752	1,120
8	1,143,360	44,185	2,845	705,438	130,654	39	203	315,614	3,545	5,077	641	1,088
9	1,089,380	44,505	2,875	663,222	128,595	62	202	310,364	4,161	5,724	453	1,110
10	1,116,140	44,800	2,898	669,025	120,635	65	202	317,319	4,664	6,368	403	1,081
11	1,125,500	44,739	2,925	644,866	130,566	60	202	311,335	5,044	7,042	496	1,014
12	1,125,790	45,468	2,946	648,450	130,240	64	203	321,560	5,110	7,658	621	988
2013-1	1,144,448	45,758	2,970	654,532	127,487	58	203	329,072	412	439	523	972
2	1,010,357	46,048	2,995	659,367	153,565	71	203	287,042	822	613	515	970
3	1,218,562	46,337	3,019	663,818	112,928	20	199	355,203	1,274	979	54	950
4	1,125,296	46,627	3,043	666,319	173,470	31	199	325,548	1,691	1,241	523	948
5	1,139,677	46,917	3,067	669,700	191,211	62	199	322,301	2,043	1,607	545	985
6	1,038,294	47,207	3,091	678,340	150,490	44	201	287,296	2,572	1,945	437	840
7	1,085,693	47,496	3,100	687,730	103,919	52	201	297,263	3,098	2,326	332	912
8	1,122,559	47,786	3,137	695,504	145,731	56	201	307,469	3,533	2,745	244	1,037
9	1,122,664	47,944	3,157	694,614	151,633	34	201	304,916	3,934	3,147	225	937
10	1,107,705	48,363	3,190	694,971	150,613	58	201	295,314	4,387	3,516	227	944
11	1,077,299	48,033	3,199	683,830	153,987	89	201	281,175	4,782	3,765	270	912
12	1,083,195	48,837	3,248	693,363	150,022	69	202	274,807	5,074	4,037	280	900
2014-1	1,120,197	48,508	3,273	738,825	166,215	71	202	272,320	291	401	351	903
2	1,117,131	49,470	3,294	753,458	166,268	20	202	269,340	669	695	371	1,021
3	1,097,372	49,206	3,320	727,087	162,253	59	205	247,677	1,092	1,164	429	1,007
4	1,165,225	50,124	3,346	788,716	184,207	62	205	254,019	1,489	1,534	384	1,116
5	1,141,555	50,621	3,355	768,667	161,792	44	205	243,037	2,003	1,943	356	1,103
6	1,137,308	50,901	3,378	757,734	173,266	52	201	240,086	2,393	2,306	240	1,131
7	1,140,964	51,172	3,394	764,824	164,866	56	201	232,757	3,017	2,717	99	1,155
8	1,142,813	51,495	3,398	759,001	176,735	34	201	226,506	3,482	3,117	84	1,151
9	1,109,605	51,753	3,607	746,557	164,951	58	229	213,710	3,967	3,659	88	1,205
10	1,168,148	51,962	3,937	746,557	175,543	89	229	222,532	4,413	4,223	95	1,129
11	1,122,856	52,479	3,937	734,047	170,019	69	229	211,434	4,752	4,703	62	1,174
12	1,147,923	52,702	3,432	716,265	165,657	67	230	217,417	5,245	5,181	83	1,191

OUTPUT
Y = CWP - Clear water Production (Volume m3/month)
INPUTS
X1 = DC - Domestic Connections (Numbers/month)
X2 = NDC - Non Domestic Connections (Numbers/month)
X3 = DCONS - Domestic Consumption (Volume m3/month)
X4 = NCONS - Non Domestic Consumption (Volume m3/month)

X5 = QOW - Quality of Water (Number of sample tested/month)
X6 = O&M - O&M Staff (Numbers/month)
X7 = NRW - Non Revenue Water volume (Volume m3/month)
X8 = RM - Rectification of Meters (Numbers/month)
X9 = CCR - Consumer Complaints Received (Numbers/month)
X10 = CDM - Connections due to Defective Meters (Numbers/month)
X11 = DCDM - Defective Connections other than Defective Meters (Numbers/month)

NWSDB- KANDY Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010 -1	3,854,404	146,912	9,843	1,905,256	757,680	163	703	1,191,396	991	1,619	2,802	2,413
2	3,674,881	140,444	9,886	1,969,623	733,350	118	703	1,055,793	795	1,621	2,531	1,980
3	4,493,855	141,405	11,359	2,024,524	821,842	143	718	1,424,552	1,011	2,007	2,923	2,023
4	4,417,753	142,816	9,948	2,233,657	820,825	135	718	1,390,267	1,200	2,335	3,037	3,341
5	4,535,748	144,275	10,021	2,004,568	794,725	124	718	1,494,075	1,215	2,335	3,051	1,725
6	4,332,892	145,602	10,114	1,961,690	794,051	118	722	1,453,252	1,365	2,426	2,953	2,007
7	4,529,474	146,912	10,329	1,926,664	822,537	124	722	1,558,592	1,377	2,545	2,877	2,395
8	4,264,251	148,386	10,773	2,042,526	840,687	114	722	1,456,668	1,530	2,626	2,437	1,516
9	4,271,888	149,344	10,493	2,082,180	793,878	146	732	1,450,306	1,594	2,553	2,178	1,264
10	4,288,472	150,968	10,590	1,993,264	812,150	85	732	1,456,794	2,974	2,560	922	754
11	4,198,225	152,361	10,692	2,072,052	828,241	145	732	1,417,741	1,158	2,280	775	758
12	4,176,626	153,568	8,361	1,921,762	837,666	144	714	1,410,864	1,109	3,359	763	819
2011 -1	4,242,513	155,111	10,827	1,959,928	854,702	197	714	1,569,730	1,042	3,551	648	2,036
2	4,030,036	156,074	10,874	1,943,156	793,926	143	714	1,209,011	987	3,359	662	1,466
3	4,381,584	156,860	10,911	2,070,906	832,695	134	721	1,643,094	1,146	3,612	769	1,107
4	4,399,787	157,882	10,991	2,290,943	847,910	105	721	1,495,928	926	2,291	716	1,287
5	4,414,938	159,240	11,107	2,327,280	836,757	191	721	1,289,162	1,313	2,414	1,255	1,583
6	4,387,278	160,426	11,164	2,250,779	873,725	225	729	1,263,536	1,193	2,225	1,522	914
7	4,455,167	161,359	11,278	2,217,174	899,400	130	729	1,523,667	1,564	3,502	1,874	975
8	4,708,762	162,578	11,393	2,231,753	888,477	183	729	1,586,853	972	2,683	2,250	824
9	4,581,965	163,667	11,738	2,376,340	891,743	177	729	1,544,122	972	2,683	2,551	704
10	4,753,652	165,110	11,726	2,429,691	946,707	138	729	1,473,632	1,080	2,805	2,840	683
11	4,383,429	170,326	11,824	2,361,158	802,189	129	729	1,271,194	1,341	2,310	3,124	660
12	4,367,165	167,962	11,933	2,211,694	873,938	161	731	1,288,314	989	2,425	3,393	1,167
2012 -1	4,499,177	169,119	12,017	2,424,573	896,297	167	731	1,335,806	1,020	2,498	3,180	2,976
2	4,238,971	170,490	12,079	2,346,737	838,834	217	731	1,234,812	189	2,496	3,237	712
3	4,614,659	171,529	12,135	2,546,931	924,593	135	820	1,309,640	1,598	2,482	2,830	937
4	4,483,056	172,595	12,220	2,553,308	897,955	124	820	1,251,221	1,876	2,569	3,305	878
5	4,759,433	173,529	12,216	2,524,870	886,194	118	820	1,328,358	1,956	2,530	3,723	726
6	4,602,835	174,916	12,425	2,593,982	873,798	124	826	1,269,002	2,068	2,689	4,471	830
7	4,796,907	176,485	12,548	2,632,599	837,975	114	826	1,312,913	2,189	2,571	4,583	1,032
8	4,594,842	178,419	12,668	2,541,727	686,458	177	826	1,241,526	2,354	2,687	4,579	1,151
9	4,465,214	180,058	12,748	2,590,313	761,121	138	841	1,193,105	2,358	2,796	4,553	1,533
10	4,885,617	175,568	13,829	2,532,345	871,721	129	841	1,310,763	2,652	2,763	4,519	2,415
11	4,721,599	184,128	12,983	2,459,836	862,188	161	841	1,274,751	2,448	2,798	4,302	1,632
12	4,231,121	185,673	13,126	2,349,482	806,669	167	845	1,102,032	2,491	2,863	4,095	1,526
2013 -1	4,165,409	186,591	13,270	2,371,648	792,154	217	845	1,109,721	2,544	2,846	3,425	1,696
2	4,365,308	187,520	13,413	2,406,756	749,374	310	845	1,188,322	1,951	2,879	3,036	1,518
3	4,520,632	188,438	13,557	2,485,590	807,956	336	872	1,246,843	2,046	2,819	2,510	1,511
4	4,701,488	189,544	13,700	2,448,145	1,144,203	379	872	1,295,730	1,647	2,930	2,935	1,515
5	4,382,414	190,362	13,844	2,445,475	1,006,169	332	872	1,182,814	2,037	2,912	2,343	1,248
6	4,502,236	191,214	13,987	2,456,047	793,728	392	844	1,226,859	2,287	2,957	2,356	1,000
7	4,193,201	192,197	13,628	2,483,698	625,733	390	844	1,136,777	2,752	2,936	2,156	880
8	4,699,393	193,015	13,756	2,526,808	859,389	364	844	1,266,956	1,878	2,820	1,441	940
9	4,526,939	193,700	13,874	2,652,514	856,348	300	883	1,210,956	2,069	2,986	1,179	915
10	4,795,072	195,035	13,974	2,637,427	864,214	310	883	1,268,297	2,230	2,986	628	969
11	4,627,563	196,299	14,114	2,536,029	857,022	313	883	1,211,959	2,250	2,941	69	1,306
12	4,693,176	197,471	14,175	2,426,785	835,307	318	859	1,237,121	2,056	3,043	80	786
2014 -1	4,660,856	198,357	14,285	2,530,056	842,802	263	859	1,243,050	2,055	2,970	1	666
2	4,598,435	199,263	14,377	2,677,255	874,690	379	859	1,205,710	2,188	3,266	3	642
3	4,822,917	200,153	14,444	2,714,421	853,943	332	871	1,245,277	2,449	3,892	2	570
4	4,850,775	201,074	14,496	2,995,061	933,826	334	871	1,233,067	2,124	3,853	15	898
5	4,945,915	202,367	14,580	2,876,485	866,474	392	871	1,268,627	2,558	3,110	29	691
6	4,771,857	203,384	14,680	2,715,008	935,032	390	864	1,206,803	2,621	2,783	132	766
7	4,793,088	204,507	14,780	2,637,676	851,827	364	864	1,217,924	2,402	2,805	59	756
8	4,878,989	205,532	14,902	2,779,582	897,672	300	864	1,226,090	2,163	2,730	3	822
9	4,811,813	206,516	14,780	2,829,045	905,175	310	857	1,208,246	2,188	2,967	2	1,244
10	4,859,084	207,528	14,902	2,799,681	888,073	313	857	1,208,454	2,242	4,680	2	935
11	4,358,908	208,313	14,000	2,671,542	896,270	318	857	1,055,292	1,948	4,532	4	625
60	4,392,971	209,157	15,060	2,519,672	858,444	263	886	1,037,180	1,994	2,735	1	634

OUTPUT

Y = CWP - Clear water Production (Volume m3/month)

INPUTS

X1 = DC - Domestic Connections (Numbers/month)
 X2 = NDC - Non Domestic Connections (Numbers/month)
 X3 = DCONS - Domestic Consumption (Volume m3/month)

X4 = NCONS - Non Domestic Consumption (Volume m3/month)

X5 = QOW - Quality of Water (Number of sample tested/month)

X6 = O&M - O&M Staff (Numbers/month)

X7 = NRW - Non Revenue Water volume (Volume m3/month)

X8 = RM - Rectification of Meters (Numbers/month)

X9 = CCR - Consumer Complaints Received (Numbers/month)

X10 = CDM - Connections due to Defective Meters (Numbers/month)

X11 = DCDM - Defective Connections other than Defective Meters (Numbers/month)

NWSDB- KEGALLE Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010-1	780,903	33,842	3,038	453,459	99,824	40	216	227,633	415	366	888	410
2	741,357	33,910	3,035	441,789	97,279	38	216	209,359	690	513	804	426
3	748,816	34,023	3,249	433,101	97,386	54	217	213,712	829	591	857	369
4	828,982	34,233	3,049	512,968	113,537	54	217	227,473	884	611	829	499
5	791,675	34,369	3,058	457,157	104,127	54	217	219,927	937	669	830	484
6	787,739	34,507	3,073	434,776	101,153	70	217	224,348	1,178	849	889	559
7	727,302	34,605	3,077	413,308	97,467	92	217	208,445	1,444	993	841	391
8	781,117	34,662	3,233	445,294	114,630	86	217	223,478	1,742	1,141	384	240
9	793,485	34,663	3,101	445,294	123,981	59	217	226,699	2,040	1,300	498	262
10	801,717	34,872	3,103	437,016	104,497	56	217	232,257	2,130	1,444	571	261
11	801,050	34,965	3,125	433,947	104,459	55	217	234,948	2,255	1,583	692	298
12	766,221	35,184	3,146	423,651	100,161	55	220	226,188	2,309	1,680	658	261
2011-1	834,873	35,288	3,158	466,577	134,448	54	220	252,800	415	366	607	300
2	736,027	35,363	3,167	458,057	97,238	48	220	219,336	690	513	662	362
3	814,989	35,438	3,171	449,769	106,764	55	220	238,384	829	591	591	373
4	789,122	35,445	3,197	448,013	102,435	55	220	235,947	884	707	609	735
5	734,895	35,693	1,596	269,332	274,384	54	220	221,203	937	826	561	739
6	830,209	35,968	3,236	501,231	115,493	55	212	255,704	1,178	1,067	716	864
7	826,648	36,130	3,287	470,060	105,430	57	212	249,482	1,444	1,250	966	836
8	839,064	36,645	1,640	468,315	99,253	56	212	253,397	1,742	1,390	1,223	980
9	827,755	36,478	1,662	476,155	114,558	56	212	250,313	2,040	1,527	1,238	886
10	904,559	36,559	1,676	485,612	117,732	63	212	277,247	2,130	1,644	439	250
11	855,002	36,659	1,701	453,901	103,597	64	212	263,341	2,255	1,780	1,536	1,139
12	889,603	36,651	1,714	488,872	114,145	64	207	275,777	2,309	1,872	1,869	575
2012-1	937,316	36,721	3,409	488,019	115,500	64	207	287,381	140	97	2,093	489
2	946,512	37,127	3,415	504,067	111,888	68	207	298,151	324	152	2,176	638
3	921,965	37,444	3,462	488,923	109,463	55	211	293,185	597	193	2,331	604
4	1,042,506	37,508	3,488	526,438	114,097	54	211	339,648	784	245	2,432	675
5	1,069,897	37,941	3,580	530,640	113,790	55	211	360,876	1,131	311	2,460	687
6	1,073,416	38,342	3,598	572,297	128,935	57	213	369,470	1,313	379	2,515	990
7	1,009,340	39,600	3,607	522,646	119,852	56	213	352,159	1,754	440	2,697	718
8	1,060,330	39,906	1,808	585,013	118,000	56	213	370,691	2,044	523	2,360	801
9	1,029,781	40,181	3,669	576,473	122,356	63	221	362,071	2,423	620	2,209	760
10	1,028,352	40,185	3,691	570,348	125,531	66	221	360,540	3,244	710	1,627	734
11	913,706	41,123	3,710	507,133	106,804	64	221	318,883	3,786	886	1,576	794
12	993,049	41,440	3,728	487,334	110,799	64	221	312,210	3,667	959	1,169	715
2013-1	995,995	41,638	3,747	498,382	117,248	68	222	348,747	402	130	1,012	860
2	970,049	41,836	3,766	503,770	145,436	51	232	339,614	691	292	1,109	1,103
3	985,408	42,034	3,784	507,033	148,926	38	231	343,710	960	486	1,192	923
4	1,075,744	42,232	3,804	507,713	188,048	42	231	372,207	1,306	636	1,046	1,026
5	1,027,646	42,430	3,823	504,853	200,535	54	231	348,064	1,947	839	970	1,019
6	935,368	42,628	3,840	512,151	108,497	72	231	315,967	2,296	1,049	869	500
7	890,685	42,826	3,854	525,615	94,068	71	231	296,598	2,743	1,295	956	436
8	998,228	43,025	3,909	575,721	128,557	85	231	328,816	3,109	1,473	830	974
9	956,551	43,057	3,914	541,482	120,193	100	234	314,131	3,448	1,694	804	790
10	998,615	43,346	3,953	529,872	118,009	96	234	330,342	3,702	1,890	755	863
11	974,390	43,518	3,966	512,477	125,718	95	234	323,692	4,081	2,159	755	863
12	908,890	43,802	4,015	484,828	112,161	95	236	302,842	4,521	3,544	834	800
2014-1	1,008,351	43,910	4,020	563,238	125,351	51	236	330,638	980	384	881	765
2	966,956	27,230	4,043	611,866	134,824	38	236	308,846	1,318	366	1,123	746
3	1,082,966	44,332	4,058	582,453	123,712	42	240	347,307	1,846	348	1,042	764
4	998,095	44,583	4,086	630,116	127,738	54	240	310,408	2,184	316	1,022	861
5	1,044,816	44,711	4,105	623,502	132,501	72	240	321,490	2,743	352	1,010	845
6	1,019,271	44,854	4,125	568,144	126,768	71	237	312,203	3,067	327	1,151	775
7	973,160	44,982	4,134	550,223	129,079	85	237	297,884	3,218	305	1,184	697
8	1,029,872	45,143	4,161	575,730	110,280	100	237	318,745	1,217	372	601	639
9	1,007,148	45,307	4,173	579,653	123,865	96	234	311,108	1,868	398	371	605
10	968,683	45,515	4,186	562,079	128,665	95	234	294,092	2,400	388	278	557
11	1,002,940	45,587	4,179	562,346	129,143	95	234	301,684	2,823	354	351	590
12	976,283	45,657	4,188	522,572	122,020	95	241	293,666	1,800	342	402	668

OUTPUT

Y = CWP - Clear water Production (Volume m3/month)

INPUTS

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 X3 = DCONS - Domestic Consumption (Volume m3/month)

X4 = NCONS - Non Domestic Consumption (Volume m3/month)
 X5 = QOW - Quality of Water (Number of sample tested/month)
 X6 = O&M - O&M Staff (Numbers/month)
 X7 = NRW - Non Revenue Water volume (Volume m3/month)
 X8 = RM - Rectification of Meters (Numbers/month)
 X9 = CCR - Consumer Complaints Received (Numbers/month)
 X10 = CDM - Connections due to Defective Meters (Numbers/month)
 X11 = DCDM - Defective Connections other than Defective Meters (Numbers/month)

NWSDB- KURUNEGALA Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010 -1	924,000	32,637	3,932	419,152	305,825	51	338	199,030	79	480	441	441
2	931,000	32,816	3,956	440,741	301,674	51	338	194,579	261	1,009	493	493
3	946,000	33,200	4,354	484,835	316,958	51	338	179,645	422	1,531	491	491
4	953,000	33,578	3,998	506,039	321,423	49	338	166,870	624	2,131	572	572
5	953,461	33,991	4,023	459,141	305,301	51	338	171,432	808	2,715	570	570
6	949,539	34,233	4,043	471,785	295,718	55	338	172,626	921	3,290	555	555
7	953,000	34,715	4,073	472,240	307,613	51	330	173,255	1,324	3,898	581	581
8	955,000	35,017	3,690	492,975	309,859	58	330	173,619	1,735	4,421	490	490
9	957,000	35,652	4,113	506,190	308,547	54	330	167,954	2,234	4,550	117	117
10	959,000	35,586	4,128	465,842	331,897	40	329	167,633	2,429	4,744	181	181
11	959,000	35,941	4,262	462,116	307,908	40	329	169,551	2,685	5,068	317	317
12	951,000	36,685	4,296	417,712	302,722	42	329	173,367	2,874	5,404	325	325
2011 -1	890,000	36,938	4,326	417,148	308,530	36	329	159,577	375	370	364	364
2	847,000	37,172	4,342	433,855	292,671	38	329	146,192	770	580	385	385
3	1,003,000	37,498	4,359	460,150	344,186	40	330	169,708	1,167	720	381	381
4	976,000	37,931	4,378	524,081	321,047	42	330	162,504	1,566	960	384	384
5	1,004,520	38,191	4,409	494,934	325,198	46	330	166,951	2,058	1,450	481	481
6	1,009,480	38,675	4,443	529,184	344,342	49	328	163,536	2,588	1,670	502	502
7	1,066,000	39,258	4,477	544,039	348,912	43	328	172,692	3,184	1,800	575	575
8	1,074,000	39,831	4,536	569,084	340,884	33	328	169,799	3,829	1,780	616	616
9	1,051,000	40,432	4,615	580,192	339,066	39	323	164,482	4,598	1,729	736	736
10	1,079,000	41,104	4,648	587,131	343,363	41	323	167,137	5,392	1,743	752	752
11	1,015,000	41,530	4,687	548,951	328,494	46	323	157,224	6,242	1,700	799	799
12	1,052,000	42,038	4,708	529,522	338,988	48	323	163,270	7,239	1,880	946	946
2012 -1	1,034,000	42,554	4,806	545,477	319,010	73	323	159,029	1,185	1,500	1,127	1,127
2	984,000	42,575	4,810	562,438	276,331	56	323	151,634	2,547	300	1,313	1,313
3	1,072,000	43,592	4,873	580,632	290,604	85	323	164,445	3,989	450	1,387	1,387
4	1,050,000	43,902	5,342	602,713	310,143	100	323	160,650	5,365	600	1,314	1,314
5	1,069,000	44,890	5,523	601,364	311,458	97	323	160,350	6,437	750	1,026	1,026
6	1,053,000	44,991	5,002	629,446	302,497	96	323	156,160	6,939	900	466	466
7	1,052,000	45,458	5,017	600,006	293,271	105	323	154,960	7,442	1,050	477	477
8	1,068,000	46,038	5,075	648,255	291,505	72	323	154,366	8,972	1,200	503	503
9	1,050,000	46,281	5,108	648,984	275,708	95	328	151,515	8,713	1,350	707	707
10	1,028,000	46,909	5,138	652,815	274,908	92	328	147,415	8,755	1,500	823	823
11	1,024,000	47,682	5,230	653,196	213,467	133	328	148,378	10,681	1,650	1,046	1,046
12	1,029,000	48,305	5,328	653,890	250,299	129	337	148,512	11,822	1,800	1,086	1,086
2013 -1	1,044,000	48,650	5,400	654,645	235,962	126	337	147,622	1,152	26	1,109	1,109
2	1,022,000	48,962	5,560	655,775	227,643	115	337	143,591	2,063	99	868	868
3	1,083,232	49,218	5,700	657,080	246,853	126	344	150,136	2,994	141	901	901
4	1,097,046	49,540	5,825	658,235	310,164	129	344	150,844	3,728	195	710	710
5	1,111,722	49,925	5,870	659,035	306,824	130	344	151,417	4,729	314	956	956
6	1,086,000	50,282	5,910	659,235	295,961	128	347	148,348	5,751	384	995	995
7	1,119,845	50,581	5,445	659,819	287,401	131	347	153,419	6,692	459	916	916
8	1,165,341	50,941	5,486	660,506	355,431	147	347	160,001	7,603	556	873	873
9	1,142,897	51,208	5,527	663,671	359,281	152	345	155,320	7,462	641	839	839
10	1,143,953	51,817	5,557	646,225	365,088	153	345	154,319	9,462	718	959	959
11	1,135,121	52,246	5,591	634,042	359,415	160	345	150,517	10,506	817	1,010	1,010
12	1,149,460	52,726	5,632	598,567	366,789	154	342	153,568	11,515	898	1,010	1,010
2014 -1	1,213,570	53,010	5,667	655,397	388,390	153	342	161,526	1,029	150	1,002	1,002
2	1,208,514	53,438	5,704	689,788	385,056	152	342	158,315	2,051	300	1,010	1,010
3	1,261,691	53,742	5,740	691,285	395,204	172	342	162,758	3,117	450	1,012	1,012
4	1,281,460	54,328	5,783	749,115	388,251	180	342	164,539	4,196	600	1,063	1,063
5	1,229,755	55,452	5,813	718,385	394,773	175	341	153,965	5,371	750	1,160	1,160
6	1,091,084	55,881	5,841	709,727	388,675	181	341	125,911	6,485	900	1,115	1,115
7	1,258,632	56,242	5,886	701,917	402,423	185	341	142,225	7,997	1,050	1,512	1,512
8	1,217,953	56,657	5,928	719,631	385,495	176	341	134,097	9,450	1,200	1,395	1,395
9	1,204,976	57,167	5,958	696,276	387,576	185	344	132,186	11,048	1,350	1,538	1,538
10	1,218,432	57,619	5,918	697,027	391,029	186	344	132,687	12,799	1,500	1,680	1,680
11	1,190,255	57,781	5,936	650,520	395,092	186	344	129,381	14,303	1,650	1,473	1,473
12	1,172,260	58,075	5,95	600,573	400,658	110	346	126,252	16,221	1,800	1,362	1,362

OUTPUT
Y = CWP- Clear water Production (Volume m3/month)
INPUTS
X₁ = DC - Domestic Connections (Numbers/month)
X₂ = NDC - Non Domestic Connections (Numbers/month)
X₃ = DCONS- Domestic Consumption (Volume m3/month)
X₄ = NCONS - Non Domestic Consumption (Volume m3/month)

X₅ = QOW- Quality of Water (Number of sample tested/month)
X₆ = O&M - O&M Staff (Numbers/month)
X₇ = NRW- Non Revenue Water volume (Volume m3/month)
X₈ = RM - Rectification of Meters (Numbers/month)
X₉ = CCR - Consumer Complaints Received (Numbers/month)
X₁₀ = CDM - Connections due to Defective Meters (Numbers/month)
X₁₁ = DCDM- Defective Connections other than Defective Meters (Numbers/month)

NWSDB-MATARA - Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010-1	1,301,169	58,438	3,415	830,873	470,296	163	365	271,034	19	50	693	1,013
2	1,277,471	58,819	3,414	831,361	446,110	164	365	256,261	27	34	614	902
3	1,295,013	59,065	3,657	844,463	450,550	166	360	259,909	33	47	627	902
4	1,365,067	59,305	3,431	915,710	449,357	167	360	267,963	13	33	828	899
5	1,366,370	59,738	3,451	902,399	463,971	175	360	268,082	6	21	393	847
6	1,301,568	60,207	3,471	857,986	443,582	169	357	253,806	32	18	214	810
7	1,304,754	60,620	3,481	852,172	452,582	167	357	255,862	6	50	103	757
8	1,351,407	61,038	15,807	876,007	475,400	172	357	265,687	29	97	100	659
9	1,371,757	49,136	3,518	686,519	685,238	179	354	269,962	25	59	40	617
10	1,340,189	61,785	3,527	866,801	473,388	130	354	267,904	3	30	20	586
11	1,297,637	62,109	3,536	871,029	426,608	107	354	252,520	28	10	2	579
12	1,282,069	62,386	3,549	835,843	446,226	132	358	249,875	26	27	8	564
2011-1	1,315,554	62,684	3,561	862,665	452,889	123	358	241,404	30	308	10	566
2	1,298,178	62,933	3,709	862,876	435,302	125	358	235,100	18	203	11	571
3	1,352,198	63,273	3,773	876,070	476,128	124	358	254,754	70	295	264	93
4	1,480,099	64,017	3,809	968,227	511,872	108	358	284,179	6	231	138	332
5	1,491,094	64,510	3,804	998,113	492,981	101	358	283,606	22	306	30	580
6	1,481,604	64,732	3,848	978,287	503,317	117	359	281,060	18	224	9	590
7	1,466,549	65,241	3,853	951,401	515,148	126	359	278,644	3	362	4	593
8	1,472,832	65,468	3,899	956,296	516,536	124	359	280,869	14	413	291	618
9	1,505,181	65,875	3,940	973,763	531,418	122	359	287,640	21	429	290	584
10	1,503,038	66,150	3,945	976,699	526,339	123	359	287,381	24	368	320	617
11	1,368,637	66,458	3,973	935,339	433,298	123	359	256,209	23	356	466	601
12	1,376,065	66,744	4,001	894,640	481,425	163	357	257,599	28	330	9	588
2012-1	1,470,183	67,084	4,030	962,288	507,895	137	357	274,189	15	394	192	592
2	1,579,340	67,461	4,045	965,772	613,568	151	357	301,812	18	291	72	562
3	1,741,673	67,721	4,060	954,943	786,730	108	355	353,211	18	326	79	600
4	1,716,990	67,922	4,080	1,023,010	693,980	101	355	357,992	19	229	49	570
5	1,737,151	68,280	4,100	1,045,756	691,395	117	355	374,877	21	281	31	562
6	1,723,326	68,607	4,126	1,037,074	686,252	126	355	383,612	0	545	8	548
7	1,728,291	68,976	3,766	969,525	758,766	124	355	402,000	0	283	4	569
8	1,642,257	69,452	4,195	1,066,823	575,434	122	355	383,139	18	242	11	529
9	1,653,578	69,732	4,200	1,000,225	633,453	123	354	388,465	16	232	3	517
10	1,687,196	70,346	4,246	967,987	719,059	123	354	415,688	0	286	30	538
11	1,609,424	70,130	4,290	981,610	617,381	108	354	347,243	8	276	5	524
12	1,708,658	70,995	4,333	984,019	724,069	137	353	445,469	19	315	13	523
2013-1	1,728,155	71,633	4,357	996,440	718,620	151	353	465,055	0	268	51	528
2	1,649,231	72,310	4,421	1,006,440	230,129	200	353	447,436	21	270	111	542
3	1,813,534	72,967	4,464	1,011,263	203,217	156	366	494,007	16	358	91	581
4	1,807,940	73,624	4,508	1,017,404	315,762	210	366	492,302	0	362	63	612
5	1,800,454	74,281	4,551	1,018,367	293,575	190	366	491,344	0	427	22	600
6	1,719,150	74,939	4,595	1,026,550	206,157	194	362	471,563	14	334	19	16
7	1,758,867	75,596	4,573	1,033,724	169,139	198	362	484,040	0	392	13	22
8	1,827,093	76,253	4,640	1,083,704	202,071	128	362	516,154	0	370	17	625
9	1,741,751	76,501	3,782	1,076,159	201,772	168	357	494,135	0	434	13	653
10	1,786,097	76,923	4,392	1,045,029	200,205	209	357	507,966	0	300	18	635
11	1,748,550	78,155	4,737	1,060,387	193,729	171	357	502,708	0	350	7	633
12	1,835,069	77,773	4,791	1,025,111	206,644	214	356	533,822	0	362	13	641
2014-1	1,843,925	77,491	4,586	1,083,831	206,950	110	356	537,135	0	209	33	671
2	1,666,634	77,665	4,851	1,083,941	216,824	156	356	481,491	0	199	21	638
3	1,838,474	78,038	4,891	1,089,707	201,741	210	361	525,987	0	305	17	645
4	1,820,257	78,204	4,924	1,179,481	208,862	190	361	516,953	0	215	47	658
5	1,856,877	78,742	4,925	1,189,733	210,422	194	361	523,082	0	194	25	670
6	1,789,952	79,272	4,946	1,125,303	207,422	198	368	500,113	0	269	26	822
7	1,852,694	79,624	4,987	1,101,993	210,074	128	368	514,123	0	321	18	753
8	1,832,015	80,065	5,034	1,150,935	211,038	168	368	502,155	0	295	41	868
9	1,755,738	80,292	5,063	1,094,484	206,751	209	370	506,882	0	316	61	860
10	1,876,524	80,725	5,088	1,101,291	214,050	171	370	536,311	0	327	55	1,100
11	1,745,163	70,130	4,200	1,091,802	212,286	214	370	493,532	0	333	40	847
12	1,812,993	70,995	4,246	1,068,083	214,518	110	391	509,451	0	332	57	890

OUTPUT

Y = CWP- Clear water Production (Volume m3/month)

INPUTs

- X₁ = DC - Domestic Connections (Numbers/month)
- X₂ = NDC - Non Domestic Connections (Numbers/month)
- X₃ = DCONS- Domestic Consumption (Volume m3/month)
- X₄ = NCONS - Non Domestic Consumption (Volume m3/month)

X₅ = QOW- Quality of Water (Number of sample tested/month)

- X₆ = O&M - O&M Staff (Numbers/month)
- X₇ = NRW- Non Revenue Water volume (Volume m3/month)
- X₈ = RM - Rectification of Meters (Numbers/month)
- X₉ = CCR - Consumer Complaints Received (Numbers/month)
- X₁₀ = CDM - Connections due to Defective Meters (Numbers/month)
- X₁₁ = DCDM- Defective Connections other than Defective Meters (Numbers/month)

NWSDB- MONARAGALA Monthly Input & Output Data												
Months	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
2010 -1	373,865	18,512	1,452	219,559	45,707	46	124	108,608	150	127	428	196
2	373,647	18,620	1,469	227,466	42,292	47	124	106,228	149	187	306	402
3	412,670	18,737	1,509	246,039	45,195	47	124	118,766	140	253	282	122
4	437,289	18,782	1,476	270,422	46,544	46	124	124,365	143	225	263	116
5	388,037	18,911	1,498	230,354	44,405	47	124	110,901	179	232	179	223
6	438,534	19,125	1,505	267,524	52,859	47	125	124,061	127	263	137	137
7	407,751	19,281	1,509	256,370	47,119	48	125	113,763	100	285	156	176
8	426,120	19,393	1,957	268,473	48,650	47	125	117,567	107	314	151	127
9	410,800	9,133	1,515	126,317	191,416	46	126	111,080	148	288	174	148
10	400,525	19,794	1,529	252,309	54,456	34	126	106,860	118	295	186	160
11	391,234	19,890	1,533	246,816	51,806	34	126	103,364	135	336	191	157
12	372,750	20,021	1,538	223,577	47,630	34	132	98,704	116	164	146	157
2011 -1	384,297	20,099	1,540	228,795	54,157	34	132	99,917	150	127	183	171
2	369,048	20,212	1,545	224,323	50,074	34	132	95,952	204	349	292	221
3	358,669	20,322	1,557	221,249	42,337	33	133	96,841	185	338	264	145
4	433,486	20,460	1,571	273,433	48,955	35	133	112,706	195	280	223	83
5	428,115	20,541	3,223	436,580	48,960	34	133	107,029	220	314	214	139
6	454,301	20,669	1,599	292,296	58,223	34	128	104,489	84	37	267	122
7	484,599	20,724	1,619	313,008	61,697	33	128	111,458	181	343	344	80
8	481,107	20,929	3,299	310,581	56,820	34	128	115,466	235	313	344	78
9	467,111	20,951	3,311	306,410	55,129	39	128	107,436	217	312	300	119
10	457,927	21,068	3,320	293,390	60,981	32	128	105,323	52	323	378	69
11	428,154	21,069	3,326	270,768	56,081	25	128	102,757	94	260	448	68
12	415,620	21,354	3,360	259,806	52,443	26	128	103,905	100	308	440	58
2012 -1	444,810	21,782	1,725	268,666	63,423	27	128	107,555	100	350	547	133
2	450,545	21,857	1,733	268,759	66,874	27	128	108,987	357	749	472	134
3	437,041	21,946	1,752	271,644	62,296	33	131	104,802	454	1,133	419	100
4	474,155	22,105	1,750	300,789	66,350	32	131	112,517	497	1,441	463	125
5	510,650	22,618	1,762	331,145	63,895	34	131	120,054	773	1,835	501	96
6	546,220	22,903	1,773	345,012	74,642	39	132	128,526	899	2,260	450	137
7	525,070	23,070	1,781	328,364	74,136	38	132	123,864	1,018	2,685	575	140
8	525,070	23,337	3,639	326,690	65,260	36	132	124,704	1,240	3,145	549	94
9	557,480	23,503	1,822	335,131	70,472	34	131	124,511	1,351	3,544	491	79
10	543,410	24,002	1,823	335,140	70,772	37	131	125,471	5,069	3,859	496	131
11	523,156	24,006	1,837	331,057	66,335	37	131	125,471	1,178	3,900	417	144
12	543,156	24,050	1,852	273,325	62,323	37	142	106,136	5,555	4,132	296	70
2013 -1	512,579	24,276	1,857	283,577	62,400	38	142	106,237	4,380	3,300	334	184
2	463,813	24,502	1,882	292,057	72,293	38	142	108,393	4,220	3,540	355	150
3	489,782	24,728	1,910	292,712	44,552	39	143	115,882	2,510	3,620	368	161
4	489,543	24,954	1,924	297,865	96,680	38	143	114,553	2,560	3,401	316	77
5	488,229	25,180	1,938	298,262	90,208	39	143	113,464	1,900	3,850	16	86
6	517,409	25,406	1,933	300,234	86,970	37	143	119,004	1,890	3,621	0	15
7	529,765	25,632	1,950	304,198	104,345	33	143	120,945	980	2,884	1	12
8	516,905	25,859	1,958	355,502	80,827	34	143	114,443	952	2,885	3	6
9	520,460	26,067	1,962	351,278	70,426	33	142	112,367	647	2,645	5	7
10	510,826	26,191	1,975	351,127	75,461	34	142	107,835	456	2,561	0	2
11	453,072	26,330	1,979	333,939	78,579	34	142	93,877	524	1,852	0	3
12	484,528	26,517	1,990	301,041	64,362	34	142	98,601	762	1,643	1	2
2014 -1	500,235	26,809	2,007	314,041	78,064	37	142	99,297	798	1,964	1	4
2	508,241	44,234	2,027	331,942	77,816	39	142	100,886	782	1,864	1	5
3	573,075	27,420	2,040	333,305	82,107	39	144	109,687	432	1,745	2	6
4	534,405	27,613	2,058	377,466	92,694	39	144	101,590	412	1,732	19	10
5	573,610	27,816	2,059	352,953	83,998	37	144	107,896	462	1,234	128	20
6	595,313	28,079	2,078	380,100	88,475	33	146	110,847	473	1,300	1	12
7	565,790	28,186	2,082	406,172	78,402	34	146	104,219	335	1,475	3	17
8	576,815	28,308	2,096	384,176	78,990	33	146	106,480	385	1,100	15	39
9	570,592	28,468	2,102	386,120	84,688	34	154	105,274	321	1,025	2	25
10	549,679	29,131	2,108	376,007	75,308	33	154	102,790	324	1,036	2	24
11	529,043	29,747	2,168	386,258	46,739	33	154	99,883	354	1,005	5	17
12	543,985	30,150	2,107	378,164	36,284	34	163	103,738	356	1,007	1	11

OUTPUT

Y = CWP- Clear water Production (Volume m3/month)

INPUTS

X₁ = DC - Domestic Connections (Numbers/month)

X₂ = NDC - Non Domestic Connections (Numbers/month)

X₃ = DCONS- Domestic Consumption (Volume m3/month)

X₄ = NCONS - Non Domestic Consumption (Volume m3/month)

X₅ = QOW- Quality of Water (Number of sample tested/month)

X₆ = O&M - O&M Staff (Numbers/month)

X₇ = NRW- Non Revenue Water volume (Volume m3/month)

X₈ = RM - Rectification of Meters (Numbers/month)

X₉ = CCR - Consumer Complaints Received (Numbers/month)

X₁₀ = CDM - Connections due to Defective Meters (Numbers/month)

X₁₁ = DCDM- Defective Connections other than Defective Meters (Numbers/month)

Annex 03 - Approvals for data collection from NWSDB.

Data collection technique: The approval from relevant department to collect data from NWSDB is attached here.

Project Director (GRWSP) through,
Deputy General Manager (Corporate Planning Division),
National Water Supply & Drainage Board,
Ratmalana.
31.03.2015

① Ms Prohanka -
NWSDB
provide data
col
12/10-2014

Dear Sir,

Request to collect the details related to National Water Supply & Drainage Board performance data.

I am currently reading my final year studies of MSc in Project Management at University of Moratuwa, Sri Lanka. In fulfillment of MSc, I need to produce a Dissertation. To complete Dissertation, data collection is very important chapter before the analysis. To achieve this, quarterly observations (performances data for Q1, Q2, Q3 and Q4) have to be collected for each year for all districts covering 11 Regional Support Centers for the period from January 2007 to December 2013. The data sheets are attached here.

The topic of the research:

Stochastic Production Frontier Analysis of Water Supply Utility in Sri Lanka.

I would be most grateful if you could assist in my research by completing the attached data sheet during your valuable time. Also, I assure herewith the information provided for you will remain confidential and will be used for academic purposes only.

Thanks & Regards,

Uditha Saman Vithana,

Mobile No: 077-5102014, 077-4440692

Email : usam_vithana@yahoo.com

University of Moratuwa, Sri Lanka
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www.lib.mrt.ac.lk

③ DGM(CP)
Agreed. Please
assist. Usp 2015/02

② Adm M/P/D
DGM(CP)
col
24/03/15
DGM(CP)

① Mr Sunaraweera (DGM - Corporate Planning Division)

Mr Vithana is working as a Civil Engineer in this Greater Rathnapura Project Office & He is following MSc in Project Management at University of Moratuwa. He needs some performance data of the NWSDB. So please make arrangements to provide requested data for his MSc thesis.

Eng. G.G.N. Gunawardhana
Project Director
Greater Rathnapura Water Supply Project
National Water Supply & Drainage Board
No: 72 C, Sri Pada Mawatha,
Ratmalana

Project Director (GRWSP) through,
A.G.M (Billing) (Commercial Div.),
National Water Supply & Drainage Board,
Ratmalana.
08.05.2015

Mr Prasad
As per our discussion,
He assist him
05/01

Dear Sir,

Request to collect the details related to National Water Supply & Drainage Board performance data.

I am currently reading my final year studies of MSc in Project Management at University of Moratuwa, Sri Lanka. In fulfillment of MSc, I need to produce a Dissertation. To complete Dissertation, data collection is very important chapter before the analysis. To achieve this, quarterly observations have to be collected for all districts covering 11 Regional Support Centers for the period from January 2010 to December 2014. The data sheets are attached here.

The topic of the research:

Stochastic Production Frontier Analysis of Water Supply Utility in Sri Lanka.

I would be most grateful if you could assist in my research by completing the attached data sheets during your available time. My assistance in the information provided for this study will remain confidential and will be used for academic purposes only.

Thanks & Regards,


Uditha Saman Vithana,

Mobile No: 077-5102014, 077-4440692

Email : usam_vithana@yahoo.com



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