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REGIONAL WATER SUPPLY AND SANITATION PROJECT BENI SUEF GOVERNORATE

Water consumption study, parts I and II

Summary by:
T. Hassinen-Ali-Azzani
08.07.1997

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REGIONAL WATER SUPPLY AND SANITATION PROJECT
BENI SUEF GOVERNORATE
Water consumption study, part I

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REGIONAL WATER SUPPLY AND SANITATION PROJECT
BENI SUEF GOVERNORATE

Water consumption study, part I
Summary of the study: T. Hassinen-Ali-Azzani

1 INTRODUCTION

This report presents first part of the results of water consumption study implemented by the Regional Supply and Sanitation Project, Beni Suef, in June 1997. The study relates to Subcomponent B2, Output B2.1, Activity 211: Carrying out a field survey of quantity (per capita consumption) for determining of service level targets. (Revised Work Plan 1997, page B2)

2 IMPLEMENTATION OF THE STUDY

2.1 Preparation of the study

The study plan was introduced to Local Women Supervisors (LWS) in the monthly meeting held in the project office on 26.05.1997. In the same meeting LWS were given a short training in water meter reading by the engineers of the project.

According to the instructions given by Sector Plan Expert and Community Relations Advisor, Local Women Supervisors selected different service level houses (1 tap, 2-3 taps, 4 taps) in their respective areas. The original plan was to select 4 different rural and urban houses in each three districts (24 houses). The final sample became bigger as some of the LWS selected more than four houses. The cooperation with the Health Department staff, Beba, made also possible to obtain water meter readings in five houses in Beni Kasim village.

For the purpose of the study, ten new water meters (French model) were installed in the houses. The installation was done by the respective Local Units.

2.2 Data collection

Data collection for the study was done by Local Women Supervisors (6) who recorded daily readings of the flow meters in selected houses. During the first week of implementation (1.6-6.6.1997), some mistakes and errors were observed in the readings. In order to increase reliability of the study, it was decided to continue the meter readings for another week (7.6.-15.6) and exclude the readings of the first week from the actual study. During the second week of the study, the project staff visited the field almost daily, checked the readings and provided LWS necessary guidance. The meter readings recorded by the Health department employee in Beni Kasim village were also checked daily.

2.3 Sample size

The final sample for meter reading comprise 34 urban and rural houses in three target districts. In five houses water meter reading was done from both old and new meters. Thus, meter readings were recorded from 39 water meters in 34 houses. The sample size is presented in table 1.

Table 1. No of houses and water meters in the study

Location	No of houses	No of meters
Beba district		
Beba city	6	6
Seds	5	5
Beni Kasim	5	5
El Fashn district		
El Fashn city	4	6
Talt	5	5
Sumusta district		
Sumusta city	5	8
El Shantoor	4	4
Total	34	39

2.3.1 Water meters

The following table 2 presents the type of water meters in the sample houses.

Table 2. Type of meter

Location	Type of meter	
	Old	New
Beba district		
Beba city	4	2
Seds	2	3
Beni Kasim	5	-
El Fashn district		
El Fashn city	4	2
Talt	5	-
Sumusta district		
Sumusta city	5	3
El Shantoor	4	-
Total	29	10

2.3.2 Number of taps in the sample houses

In one third (32%) of the houses the number of taps were 4-5. The number of taps is presented in table 3.

Table 3. Number of taps per house in the sample

Taps in the house	n	%
1	6	18
2-3	10	29
4-5	11	32
6-8	7	21
Total	34	100

3. RESULTS OF THE STUDY

The summary of the flow meter readings in the whole sample is presented in Annex 1. In two cases the meter reading period was six days. This has been taken into account in calculations of the results.

Comparison of the readings of new and old meters reveal some difference. In El Fashn, in case No 1, (Annex 1) the reading of new meter is remarkably higher than reading of old meter. In per capita water consumption this makes 49 litres of difference. In

case No 3, the difference in per capita water consumption between the two readings is about 7 litres. In this case the reading of new meter is less than the reading of old meter. The calculation of results of El Fashn has been done from the readings of new meters. In Sumusta the installation of new water meters was not done correctly. The meters were installed on two parallel levels. This has been taken into account in calculating the results. In these three cases of Sumusta sample, the calculation of water consumption is the sum of two meters.

3.1 Water consumption per capita in the sample

In two third of the houses (71%) water consumption per capita/day was less than 100 litres. One exceptional case of high water consumption (279 l) was observed where water was used for the gardening purpose. This case was excluded in calculating the results. Another case of high per capita water consumption (197 l) was also found. In this case the house owner is a butcher. However, this case was included in calculating the results. Table 4 presents per capita water consumption in the sample.

Table 4. Distribution of per capita water consumption in the sample houses

Litres/ per capita	n	%
0 - 9	-	-
10 - 19	2	6
20 - 29	2	6
30 - 39	2	6
40 - 49	7	20
50 - 59	4	12
60 - 69	3	9
70 - 79	3	9
80 - 89	1	3
90 - 99	-	-
100 - 109	1	3
110 - 119	3	9
120 - 129	1	3
130 - 139	-	-
140 - 149	2	6
150 - 159	1	3
.....		
190 - 199	1 *	3
270 - 279	1 **	3
Total	34	100

* Butcher's house ** Water used for gardening

3.2 Distribution of per capita water consumption in target dist ricts

Table 5 shows that in Beba district in most of the houses (87%) water consumption per capita/day was less than 90 litres. In El Fashn and Sumusta districts the respective figures are 66 and 55.

Table 5. Water consumption per capita in the target districts

Litres/per capita	Beba		El Fashn		Sumusta	
	n	%	n	%	n	%
0 - 9						
10 - 19	1	6	1	11	1	11
20 - 29	1	6	1	11	-	-
30 - 39	-		2	22	1	11
40 - 49	4	25	1	11	2	22
50 - 59	3	19	1	11	-	-
60 - 69	3	19	-	-	-	-
70 - 79	1	6	-	-	1	11
80 - 89	1	6	-	-	-	-
90 - 99	-		-	-	-	-
100 - 109	1	6	-	-	-	-
110 - 119	-	-	1	11	1	11
120 - 129	-	-	-	-	1	11
130 - 139	-	-	-	-	-	-
140 - 149	-	-	2	22	1	11
190 - 197	1	6	-	-	-	-
.....						
290 - 297	-	-	-	-	1	11
Total	16	100	9	100	9	100

3.4 Average water consumption per capita in the target districts

The average water consumption per capita in three districts is presented in table 6.

Table 6. Average per capita water consumption in target dist-ricts

District	Beba	El Fashn	Sumusta
Average l/per capita	65	85	73 *

* Excluding the exceptional case (279 l)

3.5 Average per capita water consumption in sample areas

The average per capita water consumption in all sample areas is presented in table 7. This table reveals that average per capita water consumption in urban areas is higher than in rural areas.

Table 7. Average water consumption per capita in sample areas

Location	Litres/per capita/day
Beba district	
Beba city	79
Seds	39
Beni Kasim	74
El Fashn district	
El Fashn city	117
Talt	59
Sumusta district	
Sumusta city	84
El Shantoor	55

3.6 Average per capita water consumption in urban/rural houses

In order to calculate the average per capita water consumption in urban and rural houses, table 8 presents per capita water consumption separately in urban and rural houses in the sample.

Table 8. Per capita water consumption in urban/rural houses.

No of cases	Per capita /l in urban houses	Per capita/l in rural houses
1.	149.68	107.78
2.	118.23	83.94
3.	59.23	62.00
4.	142.53	57.42
5.	37.14	58.85
6.	120.21	39.62
7.	141.52	48.08
8.	110.14	18.22
9.	10.74	26.76
10.	41.34	64.11
11.	197.71	40.38
12.	60.81	77.63
13.	71.63	46.18
14.	46.53	49.47
15.	55.93	32.14
16.	—	74.59
17.	—	22.82
18.	—	114.68
Total	1.363.37	1.024.67
Average:	90.9	56.9

3.7 Average water consumption in different service level houses

The findings of the study reveals that the average per capita water consumption increases in different service level houses according to the number of water taps. This is presented in table 9.

Table 9. Average water consumption in different service level houses

No of taps	L /per capita
1	55.7
2-3	60.2
4-5	76.4
6-8	98.0

4. CONCLUSION

In this study in two third of the houses (71%) per capita water consumption/day was less than 100 litres. The average per capita water consumption in Beba district was 65 litres, El Fashn 85 litres and Sumusta 73 litres.

The average per capita water consumption in rural houses was 56.9 litres and urban houses 90.9 litres. Thus, the average per capita water consumption in urban houses in the target area is 23 litres higher than in rural houses. The study also revealed that the average per capita water consumption increases in different service level houses according to the number of water taps.

The comparison between the readings of new and old meters revealed some difference. These differences are probably due to the technical reasons. In Sumusta the installation of the new meters was not done correctly. In El Fashn houses the distance between the two meters was short (10-15 cm).

Regional Water Supply and Sanitation Project in Beni Suef,
Water consumption study
Summary of the flow meter readings 07.06. - 15.06.1997

No	Local Unit/ Village	No of taps	No of family members	Reading at the start	Reading at the end	Weekly consumption	Daily consumption	Per capita consumption l/day
1 (NM)	El Fashn	8	9	7.376	16.806	9.430	1.347	149.682
(OM)	El Fashn	8	9	1653.648	1659.967	6.319	902.714	100.301
2	El Fashn	5	5	309.015	312.562	3.547**	591.166	118.233
3 (NM)	El Fashn	8	12	5.381	10.357	4.976	710.857	59.238
(OM)	El Fashn	8	12	1793.488	1799.120	5.632	804.571	67.047
4	El Fashn	7	9	4007.173	4007.870	7.697	1282.833	142.537
5	Talt	3	6	213.995	216.073	2.078	296.857	49.476
6	Talt	3	6	845.73	847.08	1.35	192.857	32.142
7	Talt	4	17	1940.287	1949.164	8.877	1268.142	74.596
8	Talt	1	4	758.219	758.858	0.639	91.285	22.821
9	Talt	4	5	887.534	891.548	4.014	573.428	114.685
10 (NM)	Sumusta	6	7	2.068	2.958	0.890	127.142	18.163
(OM)	Sumusta	6	7	541.375	542.314	0.939	134.142	19.163
11 (NM)	Sumusta	4	4	2.418	3.862	1.444	206.285	51.571
(OM)	Sumusta	4	4	1403,820	1405.742	1.922	274.571	68.642
12 (NM)	Sumusta	3	3	1.632	3.337	1.705	243.571	81.190
(OM)	Sumusta	3	3	97.82	99.087	1.267	181.00	60.333
13	Sumusta	1	1	38.909	39.680	0.771	110.142	110.142
14	Sumusta	3	9	484.003	484.680	0.677	96.714	10.746
15 x)	El-Shan-toor	5	6	504.499	516.257	11.758	1.679	279.9
16	El Shan-toor	1	7	164.363	166.342	1.979	282.714	40.387
17	El Shan-toor	2	7	1519.399	1523.203	3.804	543.428	77.632
18	El Shan-toor	4	7	191.494	193.757	2.263	323.285	46.183
19 (NM)	Beba city	7	10	1.788	4.682	2.894	413.428	41.342
20 (NM) x)	Beba city	7	7	4.064	13.752	9.688	1.384	197.714
21	Beba city	3	7	755.610	758.590	2.980	425.714	60.813
22	Beba city	4	7	345.680	349.190	3.510	501.428	71.632

23	Beba city	5	7	348.957	351.237	2.280	325.714	46.530
24	Beba city	1	7	97.544	100.285	2.741	391.571	55.938
25 (NM)	Seds	3	5	2.13	3.517	1.387	198.142	39.628
26	Seds	1	7	162.172	164.528	2.356	336.571	48.081
27	Seds	3	9	118.876	120.024	1.148	164.000	18.222
28 (NM)	Seds	5	6	1.921	3.045	1.124	160.571	26.761
29 (NM)	Seds	3	5	3.381	5.625	2.244	320.571	64.114
30	Beni Kasim	2	2	301.833	303.342	1.509	215.571	107.785
31	Beni Kasim	4	5	909.340	912.278	2.938	419.714	83.942
32	Beni Kasim	4	5	1002.840	1005.010	2.170	310.000	62.00
33	Beni Kasim	1	4	130.375	131.983	1.608	229.714	57.428
34	Beni Kasim	7	7	1294.103	1296.575	2.472 **⁄	412.000	58.857

NM= New meter (10)
OM= Old meter
⁄** Reading period six days

REGIONAL WATER SUPPLY AND SANITATION PROJECT
BENI SUEF GOVERNORATE
Water consumption study, part II

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REGIONAL WATER SUPPLY AND SANITATION PROJECT
BENI SUEF GOVERNORATE

Water consumption study, part II
Summary of the study: T.Hassinen-Ali-Azzani

1. INTRODUCTION

This report presents the results of water consumption study implemented by Regional Water Supply and Sanitation Project, Beni Suef in June 1997. This part of the report is the summary of the data collected from the records of Local Units in the sample areas.

2. STUDY MATERIAL

2.1 Annual water consumption and water charges

The study material for this report comprise monthly readings of flow meters and water charges of 28 (11 urban and 17 rural) households in Beba, El Fashn and Sumusta districts. Seven out of 28 households are the same where the flow meter reading was also recorded by the project during 07.06-15.06.1997. Data from the Local Units was collected by Local Women Supervisors. The sample size is presented in table 1.

Table 1. No of households in the sample

Location	No of houses
Beba district	
Beba city	3
Seds	5
El Fashn district	
El Fashn city	4
Talt	4
Sumusta	
Sumusta city	4
El Shantoor	8
Total	28

3. RESULTS OF THE STUDY

Household information including annual water consumption and water charges paid by the households is summarised in Annex 1.

3.1 Per capita water consumption

Per capita water consumption calculated from the annual consumption shows that in most of the houses (96%) per capita water consumption was less than 100 litres. The distribution of per capita water consumption in the sample is presented in table 2.

Table 2. Per capita water consumption in the sample

Litres/per capita/d	N	%
0 - 10	-	-
10 - 19	2	7
20 - 29	4	14
30 - 39	6	21
40 - 49	4	14
50 - 59	2	7
60 - 69	2	7
70 - 79	5	18
80 - 89	1	4
90 - 99	1	4
.....		
160 - 169	1	4
Total	28	100

3.2 Distribution of per capita water consumption in target districts

Distribution of per capita water consumption in target districts is shown in table 3.

Table 3. Per capita water consumption in target districts

Litres/per capita	Beba		El Fashn		Sumusta	
	n	%	n	%	n	%
0 - 19	-	-	1	12.5	1	8
20 - 29	2	25	1	12.5	1	8
30 - 39	3	38	1	12.5	2	17
40 - 49	1	13	2	25	1	8
50 - 59	-		1	12.5	1	8.5
60 - 69	1	13	-	-	1	8.5
70 - 79	1	13	1	12.5	3	25
80 - 89	-	-	-	-	1	8.5
90 - 99	-	-	-	-	1	8.5
.....						
160 - 169	-	-	1	12.5	-	-
Total	8	100	8	100.0	12	100.0

3.3 Per capita water consumption in urban and rural houses

In this sample per capita water consumption in urban houses was 67 litres and in rural houses 40.2 litres. This is shown in table 4.

Table 4. Per capita water consumption in urban and rural houses

No of cases	Per capita/l Urban houses	Per capita /l Rural houses
1.	41	38
2.	79	32
3.	69	25
4.	166	33
5.	40	22
6.	72	57
7.	37	45
8.	12	20
9.	64	16
10.	77	77
11.	80	30
12.	-	93
14.	-	75
15.	-	25
16.	-	41
17.	-	39
18.	-	57
Total:	737	725
Average:	67.0	40.2

3.4 Comparison of per capita water consumption calculated from flow meter readings of one week period and from annual consumption data

The following table 5 presents the comparison of per capita water consumption of 8 households which were in both sample (Part 1: one week flow meter reading and Part 2: collection of annual water consumption data from the records of Local Units).

Table 5. Comparison of per capita water consumption of 8 house holds

Location	Per capita cons. (Flow meter reading) l/day	Per capita cons. (Calculated from annual cons. l/day
Seds	48	38
Seds	18	25
Beba city	60.8	41
Beba city	71.6	79
Beba city	46.5	69
Sumusta city	10.7	12
Sumusta city	68.6	80
El Shantoor	40.3	25
El Shantoor	46.1	39
El Shantoor	77.6	57

3.5 Annual water charges paid by the sample households

Annual water charges paid by the sample households is presented in the following table 6. Annual water consumption is categorized and also presented in detailed figure.

Table 6. Annual water charges paid by the sample households

Annual water consumption m3 (Category)	(Detailed)	Annual water charges paid/LE
0....29		
30 -39	(39)	12.88
40 - 49	(48)	11.96
50 - 59	(50,58)	14.50 - 26.54
60 - 69	(65,68)	21.50 - 47.26
70 - 79	(72,73)	18.86 - 28.81
80 - 89	(83)	20.24
90 - 99	(90,94,96)	24.38 - 27.70
100 - 109	(100,105)	21.85 - 37.03
110 - 119	(115,116)	28.15 - 41.13
120 - 129	(125)	43.82
130 - 139	(131)	44.27
140 - 149	(140, 145)	34.50 - 42.00
170 - 179	(176)	40.48
.....		
200 - 209	(200)	45.94
.....		
230 - 239	(235)	40.00
250 - 259	(250)	140.30
.....		
290 - 299	(299)	78.88

4. CONCLUSION

In this sample, in 96 % of the houses per capita water consumption per day was less than 100 litres. Per capita water consumption in urban houses was 67 litres and in rural houses 40.2 litres.

It is to be noted that the results of this study are based on the data obtained from the records of Local Units. The readings of monthly flow meters in the records were not so accurate as the readings of one week followed by the project for this study purpose.

Regional Water Supply and Sanitation Project, Beni Suef
Water Consumption study, part II
Summary of Annual (1996) water consumption and water charges of 28 households. Data obtained from Local Units.

No	Local Unit/ Village	No of taps	No of family members	Reading January 1996 m3	Reading December 1997 m3	Annual consumption m3	Aver. monthly consumpt	Per capita consumption l/d	Annual payment LE
1 *	Seds	3	7	9	105	96	8	38	24.38
2	Seds	4	8	6	100	94	7.8	32	25.3
3	Seds	3	9	5	88	83	6.9	25	20.24
4	Seds	1	4	4	52	48	4	33	11.96
5	Seds	4	9	5	77	72	6	22	18.86
6 *	Beba c.	3	7	-	-	105	8.75	41	21.85
7 *	Beba c.	4	7	-	-	200	16.6	79	45.94
8 *	Beba c.	5	7	-	-	176	14.6	69	40.48
9	El Fashn	3	5	4300	4599	299	24.9	166	78.88
10	El Fashn	1	5	865	938	73	6.08	40	28.81
11	El Fashn	3	5	424	555	131	10.9	72	44.27
12	El Fashn	3	5	446	514	68	5.6	37	47.26
13	Talt	1	6	-	-	125	10.4	57	43.82
14	Talt	Missing	7	-	-	115	9.5	45	41.13
15	Talt	1	8	-	-	58	4.8	20	26.54
16	Talt	1	18	-	-	105	8.7	16	37.03
17 *	Sumusta	3	9	392	431	39	3.25	12	12.88
18	Sumusta	3	6	950	1090	140	11.6	64	34.50
19	Sumusta	6	5	840	980	140	11.6	77	34.52
20 *	Sumusta	4	4	1237	1353	116	9.66	80	28.15
21	ElShant.	4	9	1650	1900	250	20.8	77	140.30
22	ElShant.	4	5	178	233	55	4.58	30	Missing
23	ElShant.	6	7	40	275	235	19.58	93	40.00
24	ElShant.	1	2	5 ¤	55	50	4.16	69	14.5
25 *	ElShant.	1	7	15	80	65	5.41	25	21.5
26	ElShant.	5	6	1470	1560	90	7.50	41	27.70
27	ElShant.	4	7	55	155	100	8.33	39	29.00
28	ElShant.	missing	7	1320	1465	145	12.08	57	42.00

* Sample house of flow meter reading 07.06.-15.06.1997
¤ Reading starts from February 1996

REGIONAL WATER SUPPLY AND SANITATION PROJECT
BENI SUEF GOVERNORATE
Water Consumption Study, Part III

Summary of the study:
T. Hassinen-Ali-Azzani
14.07.1997

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REGIONAL WATER SUPPLY AND SANITATION PROJECT
BENI SUEF GOVERNORATE
Water consumption study, part III
Summary of the study: T. Hassinen-Ali-Azzani

1 INTRODUCTION

This report is part III of the water consumption study carried out by the Regional Water Supply and Sanitation Project, Beni Suef, in June 1997. This part presents results on water collection by the women from public taps.

2 STUDY MATERIAL

2.1 Water collection from public taps

The study material comprise data on water collection from two public taps in Beba district. The taps are located in Koum El Saida and Ghayada El Sharqiya villages. Data was collected by Local Women Coordinators. In Koum El Saida data was collected from 80 women who came to fetch the water from the tap on 28.05.1997. In Ghayada El Sharqiya data was collected from 42 women who carried the water from the public tap on 23.06.1997. The time period (hours) women visited the taps is missing.

3 RESULTS OF THE STUDY

A summary of data on water collection from two public taps is shown in Annexes I and II.

3.1 Container used in fetching the water

Most of the women used similar containers in fetching the water from the tap. Two third (73%) of the women in Ghayada El Sharqiya and more than half (53%) in Koum El Saida used the containers of 20 litres of capacity. Capacity of containers used in fetching the water is shown in table 4.

Table 1. Capacity of containers used in fetching the water

Capacity of container/ litres	Koum El Saida n	%	Ghayada El S n	%
10	12	15	11	27
15	20	25	-	-
18	1	1	-	-
20¨	45	56	30	73
25	2	3	-	-
Total	80	100	41*	100

* 1 missing

3.2 How many times women visit the tap

Eighty one percent (81%) of the women in Koum El Saida and 71% in Ghayada El Sharqiya make 3-5 visits to the tap a day. In Ghayda El Sharqiya one women visits the tap 8 times a day. In Koum El Saida the highest number of visits per day was 7.

Table 2. How many times women visit the tap/day

Times/day	Koum El Saida n	%	Ghayada El S n	%
2	-		3	7
3	16	20	11	26
4	21	26	11	26
5	28	35	8	19.5
6	6	8	8	19.5
7	9	11	-	-
8	-	-	1	2
Total	80	100	42	100

3.3. Amount of water collected from the public taps

Total amount of water collected per day from the tap in Koum El Saida was 6.565 litres and in Ghayada El Sharkiya 2.950 litres. Total amount of water collected from the public taps is shown in table 3. The average amount per household as well as per capita is also shown in table 3.

Table 3 Amount of water collected from the public taps				
	Koum El Saida		Ghayada El Sharqiya	
Volume collected /day/ litres	N	Total litres	N	Total litres
20	-	-	1	20
30	5	150	3	90
40	2	80	3	120
45	4	180	-	-
50	3	150	2	100
60	11	660	11	660
70	-	-	-	-
75	8	600	-	-
80	16	1280	11	880
90	1	90	-	-
100	15	1500	6	600
105	4	420	-	-
110	1	110	-	-
120	3	360	4	480
125	2	250	-	-
140	4	560	-	-
175	1	175	-	-
Total	80	6 565	41 *	2 950

* 1 missing

Average amount per household

Koum El Saida
Average = 6 565 · 80 = 82 litres/household

Ghayada El Sharqiya.
Average = 2.950 41 = 72 litres /household

Average amount per capita

Koum El Saida
6 565 500 (family members) = 13 1 litres/per capita Average family size in Koum El Saida sample 6 2

Ghayada El Sharqiya
2 950 201 (family members) = 14 6 litres/ per capita Average family size in Ghayada El Sharqiya sample 4 7

3.4 What purpose the water is used

According to the notes, the water fetched from the two taps is used for drinking and cooking purposes The average amount of 13 - 14 litres / per capita used for drinking and cooking purposes seems to be reasonable taking into consideration the environmental and hygienic conditions which requires high amount of water consumption for food preparation and cleaning kitchen utensils. More detailed interviews with women combined with observation data would provide more reliable information on the water use for various household purposes

3.5 Distance to public taps

Distance to the tap was estimated by women themselves. According to the data in Koum El Saida all the women (100%) came from the distance less than 100 metres. In Ghayada El Sharqiya only 28 % of the women came from the distance less than 100 metres. The distance to the public tap is shown in table 4.

Table 4 Distance to public tap

Meters	Koum El Saida n	%	Ghayada El S n	%
< 50	23	29	3	7
50 - 100	57	71	9	21
150 - 200	-		4	10
350 - 400	-		11	26
450 - 500	-		7	17
> 500	-		8	19
Total	80	100	42	100

3.6 Waiting period

In Koum El Saida most of the women (73%) spent 5-10 minutes at the tap. Eleven percent (11%) of the women spent at the tap 30 minutes. Peak times remains unclear as the time is not recorded in the notes. Waiting period was not recorded in Ghayada El Sharqiya. Waiting period at the tap is presented in table 5.

Table 5. Waiting period at the tap

Waiting period/ minutes	Koum El Saida n	%	Ghayada El S (No data)
5 - 10	58	73	
15- 20	13	16	
30 >	9	11	
Total	80	100	

4. RELIABILITY OF DATA

Data collection at the two taps is probably done within few hours in one day. This should be repeated several days in order to

provide more reliable data on water consumption, frequency of water collection, peak time etc.

5. CONCLUSION

In this sample the average per capita water consumption between the families in two villages (13.1 litres/ 14.6 litres) have no remarkable difference. However, the women using the public tap in Koum El Saida were within confine of 100 metres in contrast with Ghayda El Sharqiya where 72 % of the women were outside the confine of 100 metres. The common container used by the women for fetching the water was 20 litres of capacity. The purpose of water use needs more data collection. The amount of water used per capita does not justify that it is used only drinking and cooking purposes. The waiting period at the tap in Koum El Saida was within a range of 5 - 30 minutes.

ANNEX 1

Regional Water Supply and Sanitation Project
Beni Suef Governorate
Water consumption study, part III
Water collection from Public tap, Ghayada El Sharqiya
Date: 23.06.1997 Time: Missing

No	Volume of cont. litres	How many times/day	Total/ litres/ day	No of family members	Litres per capita	Water used	Distance to tap	Waiting period
1	-	6	-	5		Drinking	400	
2	20	3	60	2	30	"	400	
3	10	5	50	4	12.5	"	400	
4	20	5	100	7	14.3	"	10	
5	20	6	120	6	20.0	"	30	
6	20	4	80	5	16.0	"	500	
7	20	4	80	6	13.3	"	400	
8	10	6	60	7	8.5	"	450	
9	20	4	80	3	26.6	"	400	
10	20	3	60	8	7.5	"	150	
11	10	3	30	2	15	"	150	
12	20	3	60	2	30	"	160	
13	10	6	60	4	15	"	400	
14	10	5	50	6	8.3	"	200	
15	20	3	60	3	20	"	60	
16	10	4	40	3	13.3	"	50	
17	10	2	20	1	20	"	70	
18	20	2	40	3	13.3	"	80	
19	20	5	100	7	14.2	"	60	
20	20	6	120	7	17.1	"	20	
21	20	5	100	6	16.6	"	600	
22	20	2	40	2	20	"	90	
23	20	5	100	6	16.6	"	80	
24	20	4	80	6	13.3	"	400	
25	20	6	120	8	15	"	400	
26	20	4	80	6	13.3	"	400	
27	10	6	60	4	15	"	500	
28	10	8	80	6	13.3	"	600	
29	20	3	60	4	15	"	400	
30	20	3	60	2	30	"	400	
31	10	3	30	1	30	"	450	

No	Volume of cont. litres	How many times/day	Total/ litres/ day	No of family members	Litres per capi-ta	Water used	Distance to tap	Waiting period
32	10	3	30	1	30	"	450	
33	20	5	100	6	16.6	"	50	
34	20	3	60	4	15	"	100	
35	20	3	60	5	12	"	600	
36	20	4	80	5	16	"	600	
37	20	4	80	4	20	"	600	
38	20	5	100	7	14.2	"	500	
39	20	4	80	6	13.3	"	500	
40	20	4	80	6	13.3	"	600	
41	20	4	80	6	13.3	"	600	
42	20	6	120	9	13.3	"	600	

Total nro of family members: 201
Average family size: 4.7

ANNEX II

Regional Water Supply and Sanitation Project
Beni Suef Governorate
Water consumption study, part III
Water collection from public tap, Koum El Saida
Date: 28.05.1997 Time: Missing

No	Volume of container/ litres	How many times/day	Total/ litres/ day	No of family members	Litres per capita	Water used	Distance to tap	Waiting period
1	15	5	75	4	18.7	Drinking Cooking	50	10
2	10	6	60	3	20	"	50	5
3	10	3	30	7	4.2	"	20	5
4	20	4	80	10	8	"	50	10
5	20	6	120	8	15	"	50	30
6	20	7	140	7	20	"	15	10
7	15	7	105	8	13.1	"	10	5
8	10	4	40	5	8	"	50	5
9	25	7	175	6	29.1	"	40	15
10	20	5	100	7	14.2	"	50	5
11	20	4	80	3	26.6	"	50	10
12	20	5	100	7	14.2	"	50?	5
13	20	4	80	4	20	"	50	10
14	20	7	140	4	35	"	50	30
15	10	4	40	5	8	"	50	30
16	20	4	80	5	16	"	20	30
17	20	7	140	5	28	"	20	10
18	15	7	105	10	10.5	"	30	15
19	20	7	140	7	20	"	50	10
20	25	5	125	9	13.8	"	50	30
21	20	5	100	7	14.2	"	50	10
22	20	5	100	7	14.2	"	30	10
23	20	5	100	7	14.2	"	50	5
24	15	7	105	10	10.5	"	30	10
25	20	3	60	10	6	"	30	30
26	20	5	100	5	20	"	30	10
27	20	3	60	6	10	"	20	10
28	10	3	30	6	5	"	50	30
29	15	5	75	4	18.7	"	30	10
30	10	5	50	4	12.5	"	50	10

31	15	5	75	6	12.5	"	50	15
32	15	5	75	7	10.7	"	50	10
33	10	5	50	9	5.5	"	50	10
34	10	3	30	9	3.3	"	50	10
35	20	3	60	4	15	"	50	30
36	20	3	60	6	10	"	50	10
37	20	6	120	8	15	"	30	5
38	15	3	45	8	5.6	"	30	10
39	15	5	75	6	12.5	"	50	10
40	15	3	45	5	9	"	30	15
41	15	3	45	8	5.6	"	30	10
42	15	5	75	6	12.5	"	50	5
43	10	3	30	5	6	"	50	10
44	10	3	30	6	5	"	50	10
45	15	7	105	9	11.6	"	50	10
46	20	5	100	9	11.1	"	50	5
47	25	5	125	7	17.8	"	50	10
48	20	5	100	5	20.0	"	50	15
49	15	4	60	7	8.5	"	50	10
50	15	4	60	10	6.0	"	50	10
51	20	4	80	5	16.0	"	20	5
52	20	4	80	6	13.3	"	50	10
53	20	3	60	8	7.5	"	50	10
54	15	5	75	8	9.3	"	50	15
55	10	5	50	7	7.1	"	50	10
56	18	6	108	6	18.0	"	50	5
57	20	5	100	5	20.0	"	50	10
58	20	4	80	7	11.4	"	50	15
59	20	4	80	5	16.0	"	50	10
60	20	6	120	7	17.1	"	50	10
61	15	6	90	5	18.0	"	50	5
62	15	3	45	3	15	"	50	10
63	20	5	100	7	14.2	"	50	15
64	20	5	100	9	11.1	"	50	10
65	20	4	80	5	16	"	50	15
66	20	4	80	6	13.3	"	50	10

67	15	5	75	6	12.5	"	50	15
68	20	3	60	4	15	"	50	10
69	15	4	60	4	15	"	50	15
70	20	4	80	3	26.6	"	30	10
71	20	4	80	3	26.6	"	30	5
72	20	5	100	6	16.6	"	10	10
73	20	5	100	9	11.1	"	10	10
74	20	4	80	9	8.8	"	50	15
75	20	3	60	5	12	"	10	10
76	20	4	80	4	20	"	50	15
77	20	4	80	2	40	"	50	10
78	20	5	100	6	16.6	"	50	5
79	20	4	80	3	26.6	"	50	30 ?
80	20	5	100	7	14.2	"	50	10

Total nro of family members: 500
Average family size: 6.2 members