

PN-ACE-761

101062

Water Awareness Study

Water Quality Improvement and Conservation Project



*Water Awareness Study
Final Report - Phase I
Appendix II*

*Funded by
United States Agency
for
International Development*

*Conducted by
Engineering Consortium
July 31, 1996*

APPENDIX II 1

AMENDED SCOPE OF WORK
BEHAVIORAL STUDY OF WATER USERS

Following is an amended scope of work which was followed in the behavioral study. The changes to the original scope of work are underlined.

SCOPE OF WORK

- 1 - In the pre-campaign study the sub-contractor must produce the following -
 - a- Beginning outline and report within two weeks of the award of the contract which consists of the following -
 - Description which outlines the pre-campaign, post-campaign studies and focus group interviews which will collect data on the water conservation knowledge, attitudes and practices to develop behavioral profile of persons
 - Description of how the stratified random sample will be drawn
 - Complete time table for development of questionnaire, pre-testing, implementation of study, focus groups interviews and preparation of reports
 - b- Develop a questionnaire and submit the instrument to the WQIC Project for review and approval before beginning a pre-test
 - c- Develop procedures to measure actual amounts of water being used in the household and submit procedure to the WQIC Project for review and approval
 - d- Pre-test the questionnaire. A pre-test of the questionnaire will be conducted and results will be discussed and reviewed with the Contractor and representatives from the MWI and JES before the larger study is conducted

- e- Conduct the pre-campaign questionnaires, focus group interviews and direct the collection of household measurements taken in the households
 - f- Tabulate and analyze the results of the questionnaire, focus group interviews, and household measurements
 - g- Develop recommendations in the pre-campaign study of which types of communications and methods might be most effective in presenting information and developing campaign to influence attitudes and behavioral changes in regards to water use conservation
 - h- Submit five copies of a complete draft pre-campaign report which describes the questionnaire, method of survey, findings of the questionnaire, findings of the small group interviews and recommendations of type of communications which are considered to be most effective in developing public awareness. Submit draft to the WQIC Project for comments. After receipt of comments the final report will be submitted
- 2 - In the post-campaign study the sub-contractor must produce the following -
- a- Review of the water conservation activities which have been conducted in the target area
 - b- Results of the post-campaign questionnaire and focus group interviews, a comprehensive draft report which incorporates and summarizes the findings of both studies and provides information on the results of the water-use campaigns. Submit five copies to WQIC Project for comments. After receipt of comments, the final report will be submitted
- 3 - Conduct four workshops as follows -
- a- Train MWI and JES staff on methods of conducting focus group interviews in January 1994
 - b- Train volunteers on how to take measurements in the households
 - c- Present a seminar on the findings of the pre-campaign study
 - d- Present the findings and recommendations after the post-campaign study in a seminar

Attachment (1) to Appendix (A) shows the work plan for the main activities of the study

Appendix (A)/ Attachement (2)
Water Awareness Study
Actual Implementation Time Table

Activity / Pre-Campaing	Start Date	Finish Date
1 - Preparation of beginning outline and report	March 9, 1995 (date of signing Contract)	March 13, 95
2 - Workshop no (1) plan	March 9, 1995 (date of signing Contract)	March 13, 95
3 - Workshop no (1) implementation	April 8, 1995	April 13, 95
4 - Workshop no (2) (water measurement)	June 13, 1995	June 14, 95
5 - Organization of focus groups interviews	June 15, 1995	June 30, 95
6 - Submission of draft questionnaire to DAI specialist and pre-testing for approval	June 14, 1995	June 19, 95
7 - Questionnaire Approval by DAI	June 27, 1995	
8 - Questionnaire conduction and focus groups interviews	July 10, 1995	August 1, 95
9 - Tabulation and analysis of results	August 2, 1995	August 20, 95
10- Submission of draft final report of pre-campaign phase	October 10, 95	
11- Workshop (seminar) no (3)	To be determined	

7

Appendix (A)/ Attachement (3)
Study Team

E C Members

1 - Mr Rafiq Kanan	Project Manager
2 - Mr Husam Assaf	Project Coordinator
3 - Mr Abdus-Salam Kamal	Assistant Project Coordinator
4 - Miss Ala' Al-Naif	Water Management Specialist

Consultants

1 - Dr Najı Muala	Marketing and Promotion Specialist/ University of Jordan
2 - Dr Abdul Qader Ramzi	Senior Sociologist/University of Applied Sciences
3 - Dr Mohammad Abu-Hantash	Senior Sociologist/University of Applied Sciences
4 - Dr Josı Salem-Pickarts	Senior Social Scientist (for reporting on chapters 3-7)
5 - Dr Mahmoud Sirhan	Assistant Social Scientist/ Ministry of Youth
6 - Mr Walıd Al-Azharı	Computer Analyst

Assistants

The recorders for focus groups interviews were -

A Amman

1 - Najaat Baker	4 - Hamzeh Ibrahim
2 - Zaid Momany	5 - Samar Halaseh
3 - Rash Sa'adi	6 - Sabrı Khatıb

B Irbid

1 - Jihan Al-Jamal	4 - Mohammad Al-Attar
2 - Muna Farhoud	5 - Mohammad Al-Tamıma
3 - Rania Masa'adeh	

C Aqaba

1 - Raed Al-Sheikh	3 - Hussein Diyyat
2 - Mohammad Al-Hjouj	4 - Ahmad Hamdan

D Mafrag

1 - Yasmin Basbous
2 - Samar Al-Hamed
3 - Kholoud Amoush

4 - Samia Khaza'aleh
5 - Omar Husban
6 - Dina Khamis

E Dier Alla

1 - Mohammad Husni
2 - Adel Shoubaky

3 - Said Zureiky
4 - Ali Hamarneh

F Al-Safawi

1 - Raed Jazi
2 - Sa'ad Al-Aliash
3 - Salem Al-Awn

4 - Awad Al-Laimoun
5 - Arshraf Nawar
6 - Aref Al-Asmar

APPENDIX II 2

WORKSHOP# 1

Conduction and Methodology

This 6-day workshop # 1 (April 8-13, 1995) was held to train staff members of the MWI, JES and other government and non-government institues on methods of conducting focus groups interviews and preparation of water awareness questionnaire. This workshop was held in the lectures' hall of the JES building and the total number of participants was 22 people as shown in Attachment (1) of this Appendix. Attachment 2 of this Appendix shows the program of workshop # 1.

The participants were exposed to intensive theoretical knowledge in the form of lectures on the water crisis in Jordan. The topics of these lectures were The human behavior and its determinants, persuasive communication and its techniques, field data collection techniques, development of water awareness questionnaire (herein after referred to as the questionnaire), methods of conducting interviews in general and focus groups interviews in particular, management and follow up of feedback data and information, discussions with focus groups, focus group in behavioral studies (concept, organization, and actuation), and the concept and dynamics of team work, including general evaluation of the workshop.

APPENDIX II 21/ ATTACHMENT (1)

PARTICIPANTS / WORKSHOP NO (1)
APRIL 8-13, 1995

Name	Agency / Department
1 - Engineer Mohammad Awamleh	Ministry of Water and Irrigation
2 - Engineer Sami Abbasi	Ministry of Water and Irrigation
3 - Engineer Jamal Al-Khatib	Ministry of Water and Irrigation
4 - Adnan Al-Zu'abi	Ministry of Water and Irrigation
5 - Manal Farah	Ministry of Water and Irrigation
6 - Ha'ala Abu-Nuwar	Ministry of Water and Irrigation
7 - Aida Jbour	Ministry of Water and Irrigation
8 - Dr Faisal Ghazou	Water Authority of Jordan
9 - Engineer Ahmad Haraahsheh	Water Authority of Jordan
10- Engineer Ahmad Al-Nsour	Water Authority of Jordan
11- Engineer Munir Adgham	Jordan Environmental Society
12- Engineer Mohammad Ayesh	Jordan Environmental Society
13- Maha Al-Shaer	Jordan Environmental Society
14- Engineer Ahmad Al-Kofahi	Jordan Environmental Society
15- Laila Hamarneh	Jordan Environmental Society
16- Engineer Raed Aubaidi	Jordan Environmental Society
17- Hind Al-Faraj	Jordan Environmental Society
18- Mohammad Jarrar	Ministry of Communications and post
19- Ribhi Abu Laban	Ministry of Awqaf and Islamic Affairs

Name

Agency / Department

20- Mowaffaq Abu Ghazleh

Ministry of Education

21- Samia B'saiso

Royal Society for
Preservation of Nature

22- Fatmah Al-Mughrabi

Royal Society for
Preservation of Nature

23- Eiman Al-Nimri

Royal Society for
Preservation of Nature

24- Engineer Husam Assaf

Engineering Consortium/
Moderator / Coordinator

25- Engineer Abdus-Salam Kamal

Engineering Consortium/
Moderator / Coordinator

ملحق رقم (1) للـ
(Appendix II 21)
المشاركين / الورشة الاولى
٨-١٣/٤/١٩٩٥م

- | | |
|---|---|
| ١٥- لطفى حماربسة /
جمعية البيئة الاردنية | ١ - المهندس محمد عوامله /
وزارة المياه والري |
| ١٦- المهندس رائد عبيدي /
جمعية البيئة الاردنية | ٢ - المهندس سامي عباس /
وزارة المياه والري |
| ١٧- هيد المسراحي /
جمعية البيئة الاردنية | ٣ - جمال الخطيب /
وزارة المياه والري |
| ١٨- محمد حمرار /
مؤسسة المواصلات والبريد | ٤ - عدنان الرعيني /
وزارة المياه والري |
| ١٩- ربحي ابو لسان /
وزارة الاوقاف | ٥ - مبال فـرح /
وزارة المياه والري |
| ٢٠- موفى ابو عرلينة /
وزارة التربة والتعليم | ٦ - هاله ابو سوار /
وزارة المياه والري |
| ٢١- سامية بسسسو / | ٧ - عابده حـسور /
وزارة المياه والري |
| ٢٢- فاطمه المعريسي / | ٨ - الدكتور فضل عـرو /
سلطه المياه |
| ٢٣- ايمان المـري / | ٩ - المهندس احمد جراحسه /
سلطه المياه |
| ٢٤- حسام عـسـسـسـسـس /
التجمع الهندسي | ١٠- احمد السـسـسـسـسور /
سلطه المياه |
| ٢٥- عبد السلام كـمـسـسـسـس /
التجمع الهندسي | ١١- المهندس مسر ادعم /
جمعية البيئة الاردنية |
| ٢٦- الدكتور باحي معـسـسـسـس /
مستشار | ١٢- المهندس محمد عـسـسـسـس /
جمعية البيئة الاردنية |
| ٢٧- د عبد القادر رـمـري /
مستشار | ١٣- مها الشـعـسـسـسـس /
جمعية البيئة الاردنية |
| ٢٨- د محمد ابو هـسـسـسـس /
مستشار | ١٤- محمد الكـوـفـسـسـسـس /
جمعية البيئة الاردنية |

شركة التجمع الهندسي/مهندسون مستشارون ومعماريون

برنامج ورشة العمل رقم (1)

(WORKSHOP NO 1 PROGRAM)

الوعي المائي / دراسة سلوكية مستخدمي المياه

(WATER AWARENESS/BEHAVIORAL STUDY OF WATER USERS)

المكان قاعة جمعية البيئة الاردنية
(LOCATION JORDAN ENVIRONMENT SOCIETY)

الست ٨/٤/١٩٩٥

(SATURDAY, APRIL 8, 1995)

- تسجيل المشاركين (REGISTRATION)

- ٨٣٠ - ٩٠ (8 30 - 9 00)

- حفل افتتاح الورشة (OPENING SESSION)

- ٩٠ - ٩١٠ (9 00 - 9 10)

كلمة ترحيبية من ممثل شركة التجمع الهندسي / المهندس حسام
عساف

WELCOMING REMARKS BY ENGINEERING CONSORTIUM /)
(ENGINEER HUSAM ASSAF

- ٩١٠ - ٩٢٠ (9 10 - 9 20)

كلمة عطوفة السيد محمد مصالحة / نائبرئيس "جمعية البيئة
الاردنية".

ADDRESS BY H E THE VISE PRESIDENT OF "JORDAN)
(ENVIRONMENT SOCIETY"
(MR MOHAMMAD MASAALHA)

- ٩٢٠ - ٩٣٠ (9 20 - 9.30)

كلمة افتتاح الورشة لعطوفة امين عام وزارة المياه والري
بالوكالة السيد المهندس احمد الحديدي .

ADDRESS BY H E THE ACTING SECRETARY GENERAL OF THE)
(MINISTRY OF WATER AND IRRIGATION
(MR AHMAD AL-HADEEDI)

- استراحة ٩٢٠ - ٩٥٠ (9.30 - 9 50 BREAK)

اللقاء الاول (SESSION 1)

- الساعة ٩ ص (9 50 O'CLOCK)

المشكلة المائية في الاردن ، ما هيتهها وانعادهها
(WATER PROBLEM IN JORDAN, NATURE AND DIMENSIONS)

- المتحدث الرئيسي الدكتور محمد ابو هنتاش
(MAIN SPEAKER, DR MOHAMMAD ABU HANTASH)

- موجه نقاش الدكتور عبد القادر رمري
(STIMULATOR, DR ABDUL QADIR RAMSI)

- المحاضرة مع نقاش (LECTURE AND DISCUSSION)

- استراحة ١١ - ١١:٢٠ (11 00 - 11 20 BREAK)

اللقاء الثاني (SESSION 2)

- الساعة ١١:٢٠ (11 20 O'CLOCK)

السلوك الانساني / مقدمة عامة
(THE HUMAN BEHAVIOR / AN INTRODUCTION)

- المتحدث الرئيسي الدكتور محمد ابو هنتاش
(MAIN SPEAKER, DR MOHAMMAD ABU HANTASH)

- متحدث مساعد الدكتور عبد القادر رمري
(SUPPORTING SPEAKER, DR ABDUL QADIR RAMSI)

- المحاضرة مع نقاش (LECTURE AND DISCUSSION)

- الساعة ١٢:٣٠ تقريبا / نهاية اللقاء الثاني
(12 30 O'CLOCK END OF SESSION 2)

الاحد ١٩٩٥/٤/٩
(SUNDAY, APRIL 9, 1995)

(SESSION 1) اللقاء الاول

- الساعة ٩:٣٠ (9 30 O'CLOCK)

السلوك الانساني / المحددات الرئيسيه
(HUMAN BEHAVIOR AND ITS DETERMINENTS)

- المتحدث الرئيسي الدكتور ناجي معلا
(MAIN SPEAKER, DR NAJI MUALLA)

- موجه نقاش الدكتور محمد ابو هنتاش
(STIMULATOR, DR MOHAMMAD ABU HANTASH)

- موجه نقاش الدكتور عبد القادر رمري
(STIMULATOR, DR ABDUL QADIR RAMSI)

- المحاضرة مع نقاش (LECTURE AND DISCUSSION)

- استراحة ١٠:١٥ (10 15 O'CLOCK BREAK)

(SESSION 2) اللقاء الثاني

- الساعة ١٠:٤٠ (10 40 O'CLOCK)

الاتصال الاقناعي واساليه
(PERSUASIVE COMMUNICATION AND ITS TECHNIQUES)

- المتحدث الرئيسي الدكتور ناجي معلا
(MAIN SPEAKER, DR NAJI MUALLA)

- موجه نقاش الدكتور عبد القادر رمري
(STIMULATOR, DR ABDUL QADIR RAMSI)

- موجه نقاش الدكتور محمد ابو هنتاش
(STIMULATOR, DR MOHAMMAD ABU HANTASH)

(LECTURE AND DISCUSSION مع نقاش)

- الساعة ١٢:٠٠ تقريبا نهاية اللقاء الثاني
(12 00 O'CLOCK END OF SESSION 2)

الاثنين ١٩٩٥/٤/١
(MONDAY, APRIL 10, 1995)

اللقاء الاول (SESSION 1)

- الساعة ٩.٠٠ (9 00 O'CLOCK)

اساليب جمع البيانات الميدانية
(FIELD DATA COLLECTION TECHNIQUES)

- المرحلة الاولى (STAGE 1)

- اساليب جمع البيانات الميدانية / الاستبيان
(TECHNIQUES OF DATA COLLECTION, "THE QUESTIONNAIRE")

- المتحدث الرئيسي الدكتور عبد القادر رمري
(MAIN SPEAKER, DR ABDUL QADIR RAMSI)

- موجه نقاش الدكتور محمد ابو هبطش
(STIMULATOR, DR MOHAMMAD ABU HANTASH)

- المحاضرة مع نقاش (LECTURE AND DISCUSSION)

- استراحة ١٠.٣٠ (10 30 O'CLOCK BREAK)

اللقاء الثاني (SESSION 2)

- الساعة ١١.٠٠ (11 00 O'CLOCK)

- المرحلة الثانية (STAGE 2)

- المقاملات وطرق ادارتها
(INTERVIEWS METHODS OF CONDUCTING)

- المتحدث الرئيسي الدكتور ناجي معلا
(MAIN SPEAKER, DR NAJI MUALLA)

- موجه نقاش الدكتور عبد القادر رمري
(STIMULATOR, DR ABDUL QADIR RAMSI)

- موجه نقاش الدكتور محمد ابو هبطش
(STIMULATOR, DR MOHAMMAD ABU HANTASH)

- المحاضرة مع نقاش (LECTURE AND DISCUSSION)

- الساعة ١٢.٠٠ نهاية اللقاء الثاني
(12 00 O'CLOCK END OF SESSION 2)

الثلاثاء ١١/٤/١٩٩٥
(TUESDAY, APRIL 11, 1995)

اللقاء الاول (SESSION 1)

- الساعة ٩:٣٠ (9 30 O'CLOCK)

جماعات التركيز
(FOCUS GROUPS / DISCUSSIONS)

- المتحدث الرئيسي الدكتور ناجي معلا
(MAIN SPEAKER, DR. NAJI MUALLA)

- موجه نقاش الدكتور عبد القادر رمري
(STIMULATOR, DR ABDUL QADIR RAMSI)

- موجه نقاش الدكتور محمد ابو هبطش
(STIMULATOR, DR MOHAMMAD ABU HANTASH)

- المحاضرة مع نقاش (LECTURE AND DISCUSSION)

- استراحة ٣٠ دقيقة (10 30 O'CLOCK BREAK)

اللقاء الثاني (SESSION 2)

- الساعة ١٠:٤٥ (10 45 O'CLOCK)

جماعات التركيز في الدراسات الميدانية السلوكية ، مفهومها ،
اختيارها ، تنظيمها وتفعيلها
FOCUS GROUP IN BEHAVIORAL STUDIES . CONCEPT,)
(ORGANIZATION AND ACTUATION

- المتحدث الرئيسي الدكتور عبد القادر رمري
(MAIN SPEAKER, DR. ABDUL QADIR RAMSI)

- موجه نقاش الدكتور ناجي معلا
(STIMULATOR, DR NAJI MUALLA)

- موجه نقاش الدكتور محمد ابو هبطش
(STIMULATOR, DR MOHAMMAD ABU HANTASH)

- المحاضرة مع نقاش (LECTURE AND DISCUSSION)

- الساعة ١١:٤٥ (11 45 O'CLOCK) العمل كمرس

المفهوم والديناميكيات
(TEAM WORK CONCEPT AND DYNAMICS)

- المتحدث الرئيسي الدكتور عبد القادر رمري
(MAIN SPEAKER, DR ABDUL QADIR RAMSI)

- موجه نقاش الدكتور محمد ابو هنتاش
(STIMULATOR, DR MOHAMMAD ABU HANTASH)

- الساعة ١٢:٠٠ تقريباً نهاية اللقاء الثاني
(1 00 O'CLOCK END OF SESSION 2)

الاربعاء ١٢/٤/١٩٩٥
(WEDNESDAY, APRIL 12, 1995)

اللقاء الاول (SESSION 1)

- الساعة ٩.٣٠ (9 30 O'CLOCK)

- المرحلة الاولى (STAGE 1)

ادارة ومتابعة عملية إلتعدية الراحعة
(FEED BACK MANAGEMENT AND FOLLOW UP)

- المتحدث الرئيسي الدكتور محمد ابو هبطش
(MAIN SPEAKER, DR MOHAMMAD ABU HANTASH)

- موحه نقاش الدكتور عبد القادر رمري
(STIMULATOR, DR ABDUL QADIR RAMSI)

- المحاضرة مع نقاش (LECTURE AND DISCUSSION)

- استراحة ١٠.٣٠ (10 30 O'CLOCK BEAK)

اللقاء الثاني (SESSION 2)

- الساعة ١١ (11 00 O'CLOCK)

- المرحلة الثانية (STAGE 2)

تقييم عام (GENERAL EVALUATION)

- المتحدث الرئيسي الدكتور ناجي معلا
(MAIN SPEAKER, DR NAJI MUALLA)

- موحه نقاش الدكتور عبد القادر رمري
(STIMULATOR, DR ABDUL QADIR RAMSI)

- موحه نقاش الدكتور محمد ابو هبطش
(STIMULATOR, DR MOHAMMAD ABU HANTASH)

- المحاضرة مع نقاش (LECTURE AND DISCUSSION)

- الساعة ١٢.٣٠ تقريبا نهاية اللقاء الثاني / ونهاية الورشة
(12.30 O'CLOCK END OF SESSION 2)

الخميس ١٣/٤/١٩٩٥
(THURSDAY, APRIL 13, 1995)

- الساعة ٩:٣٠ (9 30 O'CLOCK)
- مناقشة عامة (GENERAL DISCUSSION)
- الساعة ١١:٠٠ (11 00 O'CLOCK)
- انتهاء اعمال الورشة رقم (١) (1) (END OF WORKSHOP (1))

APPENDIX II 2 2

PRETESTING AND CONDUCTION OF
THE WATER AWARENESS QUESTIONNAIRE
- METHODOLOGY -

1 - Pretesting

The water awareness behavioral questionnaire was developed by (EC) study team and approved by DAI Public Awareness Specialist. The questionnaire was developed and conducted with the stratified random samples (as detailed herebelow) to collect information which will provide (within specified sampling errors) the water conservation knowledge, attitudes, and practices which constitute a behavioral profile of persons in urban, suburban, and rural areas. Approval of the final form of the questionnaire after incorporating the amendments collected during the questionnaire pre-testing was confirmed by a letter received from DAI Chief of Party dated June 27, 1995. A report outlining the pre-testing of the questionnaire is herewith attached (Attachment (1)).

2 - Conduction

a- The study called for preparation of a public awareness questionnaire through which the related field data should be collected from the selected sample that represents the target groups in the 6 localities (including the focus groups). The awareness level (knowledge, attitudes, and practices) of the respondents of this sample represents the standard awareness of water users in the six localities in particular and in Jordan in general.

The study called for applying the questionnaire to selected target groups from the public in selected localities on the basis that every individual of these target groups represents a family or a household that consumes water and is affected by the water problem, and at the same time does affect this problem through his awareness, attitude and behavioral practices. Thus, the study target groups were selected from the following categories -

- School teachers - Elementary, and Secondary
- University Students
- Housewives
- Business people who are engaged in working in hotels, hospitals, factories etc which use large amounts of water
- Government Sector
- Agricultural Sector (where applicable)

b- The sample selection As the household is the most common sampling unit in public awareness studies, 8 to 12 citizens were selected (with some minor exceptions imposed by the 'social strata of the locality) from each category Thus, 40-65 citizens were randomly selected in each locality in Amman, Irbid, Al-Mafraq, Safawi, Deir Alla and Aqaba So, 36 groups were organized in the above localities with a total number of about 336 citizens, who were assigned the role of focus groups and represented the target groups

In the focus groups interviews that took place afterwards in the localities, each member of these groups filled-in a questionnaire and was given four copies of the questionnaires to hand them to 4 citizens of his choice and to have them filled in by them after which these 4 copies were collected by the focus group member and delivered to an agreed upon focal point for collecting all the filled in questionnaires Later on, these questionnaires were collected from all the focal points by the EC coordinator The total number of questionnaires distributed for filling-in (including the focus group members) was $336 \times 5 = 1680$ The actual total number received back was 1368

c- The discussions held in the focus groups interviews were registered by a recorder and the information gained through them were summarized Also, the information gained by the questionnaire, were analyzed as explained in section III 3 2 of this report

d- The questionnaire comprised 4 parts namely -

- The First Part General information about the household and the head of the family

- The Second Part Questions concerning the knowledge of the respondents about the water crisis
- The Third Part Questions related to the attitudes of the respondents on the water problem
- The Forth Part Questions related to practices of the respondents, in dealing with water

After filling in the copies of the questionnaire by members of the focus groups, they were requested to apply the questionnaire to other citizens and to have them filled in and returned

- e- The data collected through the questionnaire was analyzed as shown in chapter 3 of this report

APPENDIX II 22/ ATTACHMENT (1)

REPORT ON QUESTIONNAIRE PRETEST
WATER AWARENESS BEHAVIORAL STUDY

1 - General

a- Pretest Sample -

The pretest was conducted on 30 subjects distributed on the three preagreed areas as follows -

- North (Irbid)	10
- Amman	10
- South (Aqaba)	10
	--
Total	30 subjects

b- Pretest Period -

The pretest lasted three days, one day for each area as follows -

- Amman, June 14, 1995
- Aqaba, June 18, 1995
- Irbid, June 19, 1995

c- Time -

The average time needed to fill the questionnaire by the individuals who were subjected to the pretest was 25 minutes

The time range was 11 5 - 45 minutes Majority were around the average time mentioned

Although the "average time" mentioned looks a little higher than required, it was noticed that the participants, in general, did not complain about this They filled-in the questionnaire with clear eagerness

2 - Remarks / Observations

The following remarks have been reported by the subjects of the sample -

a- The questionnaire was comprehensive and integrated
In general, the questions included were clear and understandable

b- Some suggestions have been reported by the subjects regarding the wording/content of some questions
These can be summarized as follows -

1- Part One/ General Information -

- Question (12) -

Change choice "b" to become "1000-2000 JD " in lieu of "1001-2000 JD "

2- Part Two/ Knowledge -

- Question (1) -

Add "Weatherwise" after "Jordan"

- Question (10) -

Change choices to become

- a- 5 years
- b- 10 years
- c- 15 years
- d- 20 years
- e- More than 20 years

- Question (11) -

Change choice "d" to become "Collected in dams"
Choice "e" becomes "I don't know"

- Question (14) -

Choice "g" becomes. "Others (specify and define source of information)"

- Question (16) -

Change to become as follows

"Put () or () in front of each of the following statements -

a- Fixing a smaller "shower head" (in case you have a shower) reduces the water quantity needed for bathing

b- Irrigation of plants on intervals gives the same results, as if the plants were irrigated continually to give it all the quantity of water needed

Note For choices C, D, no change is suggested

3- Part Three/ Attitudes -

- Question (6) -

Change choice "c" to become "Security (in all aspects)"

4- Part Four/ Behavior -

- Question (2) -

Change the question to become -

"What is the amount you paid for water to the Water Authority for the last quarterly (three months) payment "

- Question (4) -

Boxes shown for choices to be considered "in summer" Add another "box" beside each previous "box" to be used "for winter"

- Question (5) -

Same change as for "question 4" above

- Question (10) -

Add choice "f" as follows -

"F For the single air-conditioning units type that needs water"

- Question (15) -

"F From irrigation "Channels" assigned for agriculture"

3 - Recommendations

- a- Time Due to the well integrated and comprehensive nature of the questions, we don't think reduction of number of questions is needed Please notice that there was no complaint about "time" by the "subjects"
- b- Remarks of subjects/ observations We agree to the suggested amendments Will be incorporated in the form prior to use in the focus groups interviews

APPENDIX II 2 3

FOCUS GROUPS INTERVIEWS

Focus Groups Definition

A focus group is usually a panel of 8 to 12 respondents led by a trained moderator. The moderator uses principles of group dynamics to focus or guide the group in an exchange of ideas, feelings, and experiences on a clearly understood topic such as water awareness. The topical objective is often a new concept or product concept. The output of the session is a list of ideas and behavioral observations with recommendations of the moderator. These are later used for quantitative testing. As a group interview tool, focus groups have applied research potential for other functional areas of business or studies, particularly where the generation and evaluation of ideas or assessment of needs is indispensable. In exploratory research, the qualitative data that focus groups produce may be used for enriching all levels of research questions and hypotheses and comparing the effectiveness of design options.

1 - Conduction and Methodology

Focus groups interviews were conducted according to the time table shown in Attachment (1) of this Appendix (herein attached)

The procedure followed in conducting focus groups meetings was as follows -

Session (1)

1- General -

- a- Water problem and its dimensions
- b- Need for awareness.
- c- National loyalty and its role in the solutions

2- General idea about "Water Quality Improvement and Conservation Project" / Water Awareness Study

- 3- The role of the Research Team and the role of the Focus Groups
- 4- Questionnaire distribution, clarification and discussions
- 5- Instructions for filling in the questionnaire
- 6- Forming the "Small Focus Groups"
The time allocated for session (1) was about 100-110 minutes

Session (2)

- 7- Conduction of small focus groups interviews

The time allocated for session (2) was about 54 - 60 minutes

The issues raised for discussion during the focus groups interviews are shown here below -

2 - Interviews and Discussions

Discussions in the focus groups were conducted as follows -

- 1- Each interview was conducted in two sessions -

- a- The first session was assigned to introduce and explain the whole study and the role of the focus group members, as well as to explain the questionnaire. Also, the members filled in the questionnaire copies and received 4 copies more to introduce them to and have them filled in by 4 citizens of their choice from their localities

In this session each group was divided into 6 smaller groups to take part in the discussions, of the second session

A moderator and a recorder were assigned to each small focus group

- b- In the second session the smaller focus groups discussed water awareness and the water problem,

as well as their knowledge, attitudes, and practices through the discussion of 15 issues/topics as follows -

- 1 - Previous knowledge of the water problem in Jordan
- 2 - Symptoms of the water problem
- 3 - Effects of the water problem on the life of citizens in Jordan
- 4 - Contention of the Jordanian citizen in water rationing
- 5 - Initiatives of the focus groups members to convey/transmit information on the water problem to others
- 6 - Views of the focus groups members on best media for informing people on the water problem
- 7 - Exchange of information on the water problem between focus groups members and the general public
- 8 - Influence of the misguided water related behavior of the general public on the focus groups members
- 9 - Suggestions of the focus groups members on how to influence the behavior of others in their localities towards rationing water use and conservation
- 10- Expected obstacles that might confront the focus groups member in coordinating water conservation activities with the general public
- 11- Suggestions of focus groups members on rationing water consumption in households
- 12- Suggestions of focus groups members on means by which communication with the public concerning the water problem can be made more fruitful and encouraging.
- 13- Views of the focus groups members on problems related to water use in agriculture
- 14- Contention of the focus groups members on their role in water awareness studies.
- 15- Contention of the focus groups members on their participation in meetings discussing water related issues.

Members of the focus group in each of the selected areas, namely Amman, Irbid, Aqaba, Magraq, Dier Alla, and Safawi met together to discuss the questionnaire and methods of distribution of the questionnaire. The participants of each group were

broken into smaller groups with no less than 6 and no more than 15 participants in each small group. The moderators and recorders of each small group were selected by (EC). The participants of these focus groups classified into 6 categories are listed in table (2) as shown herein after. The focus group in Aqaba did not include university students and agricultural sectors' members because of the nature of the community in this locality. Deir Alla's focus group included one university student only due to the same reason.

Table (2)
Focus Groups Members and Classification

Target groups Number	Teachers	University Students	Housewives	Business People	Government Sector	Agricultural Sector	Total	Male / Female Ratio
Area	No	No	No	No	No			
1 - Amman	15	9	7	17	16	2	66	32/34
2 - Irbid	11	13	8	9	14	4	59	42/17
3 - Aqaba	7	-	7	10	16	-	40	29/11
4 - Mafrq	12	8	7	8	16	7	58	32/26
5 - Deir Alla	9	1	10	8	14	15	57	40/17
6 - Safawi	9	10	7	14	11	5	56	46/10
TOTAL	63	41	46	66	87	33	336	221/115

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ATTACHMENT (1)/ APPENDIX II 2 3

TIME TABLE/ FOCUS GROUPS INTERVIEWS

Area	Amman	Irbid	Aqaba	Mafrag	Deir Alla	Safawi (Badia)
Item						
Interview date	Monday, July 10 1995	Sunday, July 16 1995	Wed , July 19 1995	Monday, July 24 1995	Sat , July 29 1995	Tuesday, Aug 1, 1995
Questionnaire Collection date (s)	July 11 + 12	July 17 + 18	July 20 + 21	July 25 + 26	July 30 + 31	Aug 2 + 3
Coordinator Name	A S Kamal + R A	A S Kamal + R A	A S Kamal + R A	A S Kamal + R A	A S Kamal + R A	A S Kamal + R A
Name of S S S / M S Senior Social Scientist or Marketing Specialist	Dr Ramzi Dr Mohammad	Dr Mohammad Dr Ramzi	Dr Ramzi Dr Mohammad	Dr Mohammad Dr Ramzi	Dr Mualla Dr Mohammad	Dr Mualla Dr Ramzi
Name of J S S Junior Social Scientist	Sirhan, M	Sirhan, M	Sirhan, M	Sirhan, M	Sirhan, M	Sirhan, M
Engineering Consortium	H Assaf +A Naif	A Naif	A Naif	H Assaf and/or A Naif	A Naif	A Naif
Place	Water Auth- ority Aud- tort- um	Public School	Hotel	Public School	Public School	H Council For Sc & Tech
Time	10 00	10 00	10 00	10 00	10 00	10 00

APPENDIX II 3A

Workshop # 2 / Water Measurement

This 2- day workshop # 2 (June 13-14, 1995) was held by (EC) Water Management Specialist (WMS) and (EC) coordinator to train volunteers selected by DAI on how to take water consumption measurements in the various utilities in the households. The workshop was held at Amra Hotel and the number of volunteers attended the workshop was 30 people as shown in Attachment (1) to this Appendix. Attachment (2) to this Appendix shows the program of workshop # 2. The volunteers represented North, Middle, and South Areas of Jordan as pre-agreed upon with DAI.

1 - Conduction And Methodology

The Water Management Specialist (WMS) delivered a lecture highlighting the importance of water availability, factors affecting water consumption, importance of the workshop, work plan, instructing the volunteers on how to take water consumption measurements in the households, tools for taking these measurements and calibration of these tools and facilities, clarified the questionnaire, and pointed out instructions on methods of filling it by them and by others. The lecture in Arabic and English is shown in Appendix (E2).

Instructions' form Appendix () was designed and prepared by the (WMS) to explain how to take water consumption measurements in the households (bathroom, toilet, kitchen, washing machine, laundry, etc). Also, a questionnaire for collecting water consumption measurements in the households and other relevant information was prepared by the (WMS) and approved by DAI's Specialist Appendix (E3).

2 - Questionnaire for Measurements of Water Consumption in Households

100 copies of this questionnaire were distributed to others by the volunteers. Only 75 filled-in questionnaires were received despite continuous reminders from (EC) to the volunteers. The results are tabulated and analyzed in Appendix (E4).

Attachment (1)/ Appendix II 3A
Workshop II/ Water Measurement / Participants
(June 13-14, 1995)

<u>Name</u>	<u>Area/Community</u>	<u>Vocation</u>
1 - Muna Toukan	Aqaba	Chief Accountant/ Ministry of Supply
2 - Bilal Al-Lataifeh	Aqaba	Lab Technician/ Phosphate Mining Co
3 - Hind Al-Faraj	Amman	School Headmaster/ Retired
4 - Raed Al-Oubaidi	Amman	Engineer/ Private Sector (Company)
5 - Mohammad Samaarah	Amman	Student
6 - Tareq Abu Mahfouz	Amman	Engineer
7 - Nawal Abu Rmeileh	Amman	Employee/ Company
8 - Lameece Maraqah	Amman	Architect/ Student
9 - Suheil Abu Alsameed	Amman	Student/ Architect- ure
10- Abdul Rahim Fataier	Amman	Bichemist
11- Hiba Bani-Hani	Amman	Pharmacist
12- Jamal Al-Khatib	Amman	Engineer / Govern- ment Employee
13- Sami Abbasi	Amman	Engineer / MWI
14- Mohammad Awamleh	Amman	Engineer / Govern- ment Employee
15- Ahmad Abu Althahab	Amman	Student
16- Yahia Abu Laban	Amman	Government Employee

<u>Name</u>	<u>Area/Community</u>	<u>Vocation</u>
17- Mohammad Al Damanhourı	Amman	Teacher
18- Muwaffaq Abu Ghazleh	Amman	Government Employee
19- Dr Rawhı Al Sharıf	Amman	University Teacher
20- Nazmı Mahaaftha	Deir Alla	Agriculture Specialist/ Government Employee
21- Fayyad H'waraat	Deir Alla	Agriculture/ Government Employee
22- Dr Ata Ayyoub	Deir Alla	Veterian / Government Employee
23- Kamal Rahahleh	Deir Alla	Agricultural Engineer
24- Baker Abdul Nabı	North Shouneh	Agricultural / Government Employee
25- Wafa'a Smeiraat	Fuheis	Teacher
26- Fadia Farah	Fuheis	Educational Consultant
27- Yanaal Moumany	Ajloun	Company Employee
28- Maha Juneıdı	Salt	J E S
29- Mohammad Ashour	Salt	J E S
30- Mai Marjı	Zarqa	Engineer
31- Suheir Noufal	Zarqa	Architect / Government Employee

(Appendix II 3A) / Attachment (1))

ورشة قياسات المياه
(١٣-١٤ حزيران ١٩٩٥)

الرقم	الاسم	الوظيفة	المطعمه / البلده	العنوان والهاتف
١ -	مى طوقان	رئيس قسم المحاسبه / التمويين	العقبه	٢١٥٥٦٢ / ٢١٥١٧٦
٢ -	هدد الفرخ	مديرية مدرسه متقاعد	عمان	ص ب (١٣٦٥) ٦٦٢ ٥٨
٣ -	رائد العيدي	مهندس / شركة العباسه بالسنة	عمان	ص ب (٩٢٦٨٧١) ٦٦١٨٢٦
٤ -	محمد سماره	طالب	عمان	٧٧٩٤٣٨
٥ -	طارق ابو محفوظ	مهندس مدني	عمان	ص ب (٢٦٦٥٧) ٦١ ٤٥
٦ -	د. روجي الشريف	استاد جامعة	عمان	٨١١ ٤
٧ -	نوال ابو رمله	الشركة العربية للبيئية والتممية	عمان	٨٣٢٤٧٧
٨ -	نلال اللطافه	مبي محترس / الفوسفات	العقبه	٣١٧ ٣٦
٩ -	لميس مرقه	مهندسة معماريه	عمان	٦٦٨٩٤٦
١٠ -	سهيل ابو السميد	طالب	عمان	٨١٥٨٥١
١١ -	عبدالرحيم فطائر	كيميائي حيوي	عمان	كلية تدريب عمان ٧٩١١٦١
١٢ -	شه نسي هاني	صيدلانية	عمان	٦٧٧٥٧٥

الرقم	الاسم	الوطنية	المطقة / البلده	العنوان والهاتف
١٣-	جمال الحطب	عمان	سلطة وادي الاردن	
١٤-	محمد العوامله	عمان	سلطة المياه	
١٥-	نظمي محافظه	الزراعة	دير علا	دير علا / الزراعة
١٦-	فصاح حوارات	الزراعة	دير علا	دير علا / الزراعة
١٧-	بكر عبد النبي	الزراعة	الشوية الشماله	الشوية الشماله
١٨-	وفاء سميرات	مدرسة روصه	الفحص	٧٢٩٢١٥
١٩-	فاديا فرح	مرشده قروية	الفحص	٧٢٩ ٧٨
٢٠-	نيال المومني	موظف شركة	عجلون	٤٤١٠٢٩
٢١-	احمد ابو الذهب	طالب	عمان	٨٢١٦٤
٢٢-	بهي ابو لس	رئيس قسم الدعوه	عمان	وزارة الاوقاف ٦٦٦١٤١
٢٣-	د عطا ابوب	طبيب بيطري	دير علا	دير علا / الزراعة ٥٧٢٠٠٣
٢٤-	كمال رحاحله	مهندس زراعي	دير علا	دير علا / الزراعة ٥٧٢٠٠٣
٢٥-	محمد الدمهوري	مدرس في معهد بائع	عمان	٧٩١١٦١
٢٦-	موفق ابو عزاله	وزارة التربيه والتعليم	عمان	٢١٤/٦٠٧١٨١
٢٧-	مها حيدى	جمعية البيئه	السلط	٠٥/٥٥٤٥٥٦
٢٨-	محمد عاشور	جمعية البيئه	السلط	٠٥/٥٥٤٥٥٦
٢٩-	مي مرعي	مهندسة مدني	الزرقاء	٩٨٥٥٨٥
٣٠-	سهير نوفل	مهندسة معماري	الزرقاء	٢/٢/ ٩٨٢١٢١

APPENDIX II 3A / ATTACHMENT (2)

شركة الجمع الهندسي / مهندسون مسشارون ومعمارون

برنامج ورشه العمل رقم (٢)
(WORKSHOP NO (2) PROGRAM)

قياس كميات المياه المستهلكة في الاسخدامات المنزلية
(WATER MEASUREMENTS/DIFFERENT HOUSEHOLD ACTIVITIES)

المكان فندق عمره (AMRA HOTEL)

الثلاثاء ١٣ حزيران ١٩٩٥
(TUESDAY JUNE 13, 1005)

الافتتاح

١ - ٢ (10 00 - 10 30)

- كلمة ترحيبه من قبل ممثل شركة الجمع الهندسي / المهندس
حسام عساف
WELCOMING REMARKS BY ENGINEERING CONSORTIUM/ENGINEER)
(HUSAM ASSAF

- كلمة ترحيبه من قبل ممثل جمعية البيئة الاردنيه / الدكتور
روحي الشريف
- كلمة الافتتاح لعطوفة الدكتور محمد نبي هاني / امين عام وزارة
المياه والري

اعمال الورشه / الجلسة الاولى

المتحدث الرئيسي / المهندس الاء النائف
MAIN SPEAKER ENGINEER/ ALA' AL-NAIF

١٠٣٠ - ١٢٠ (10 30 - 1 30)

- مقدمه (INTRODUCTION)

- الهدف من الورشه (AIMS OF THE WORKSHOP)

- خطة العمل / شرح مفصل (WORKPLAN, DETAILED EXPLANATION)
(يتخللها استراحة نصف ساعة) (INCLUDES A HALF HOUR BREAK)

تطبيق عملي / الجلسة الثانية

٢٣٠ - ٤ (2 30 - 4 00 AFTERNOON)

الاربعاء ١٤ حزيران ١٩٩٥
(WEDNESDAY JUNE 14, 1995)

الجلسه الثالثه

المتحدث الرئيسي / المهندس الاء النايف
MAIN SPEAKER ENGINEER/ ALA' AL-NAIF

- (8 30 - 11 00) ١١ ر٠ - ٨٢٠ -
- DETAILED EXPLANATION OF THE شرح مفصل للاستبيان (QUESTIONNAIRE)
- (11 00 - 11 30 BREAK) ١١ ر٠ - ١١٢٠ -
- (11 30 - 1 00) ١١ ر٠ - ١١٢٠ -
- GENERAL DISCUSSION FOR THE مناقشة عامة للاستبيان وحداول الاحصاء (STATISTICAL TABLES)
- (1 00 - 1 30) ١ ر٠ - ١ ر٠ -
- (1 00 - 1 300 AFTERNOON, RESERVE TIME)

END OF WORKSHOP

WATER MEASUREMENT WORKSHOP

"AND WE MADE EVERYTHING ALIVE FROM WATER"
THE HOLY QURAN

INTRODUCTION

Where ever water is found, life is found for human beings, animals, and plants. There is a binding relationship between food security and water security, as no food can be produced without water. In the past, water was one of the reasons for starting wars in many places in the world, and a lot of decision makers also think that this is likely in the future.

At the same time that we ask God to provide our dear country with enough water and help us to produce more quantities, we have to understand the water problem which is worrying the decision makers. Therefore, we have to find all possible methods to save water and not waste it and underestimate its value. We all know the harm of waste (God does not like wasting people).

There must be a water policy which is balanced and fixed in order to supply people of this country with their needs. To reach this aim, we have to know the average quantities that are actually spent in households for the different activities like cleaning, cooking, bathing, and also to maintain the gardens.

We think that this household water measurement study is very important to calculate the actual quantities of water consumed and demanded for households without waste for any of the non-necessary activities. We hope to calculate and measure the amount of water which is consumed daily and the times that the water consumption is at its peak.

Planners, in water areas, need site information which represents the actual water consumed, the demand for water, and future expectations. Some of the information needed is the daily consumption per capita in different areas. This information is useful to help develop

- Water policy on the country level carried out by the efforts of the Main Authority or by co-operation on a regional basis
- Future planning for National Development Projects which concern water and need to look for new sources for water
- Design of the water structures, major and minor water networks, dams, and reservoirs

It is easy to assume that the yearly per capita consumption of water should be calculated only according to the quantity of water which is

consumed or pumped from the station providing water for cities or villages. But, these statistics may lead to wrong findings, because of concentrated consumption in some places and not in others, difference in the living and social standards of the people living in that city or village, and the difference in the type of residences or businesses. Other consumption also depends on water produced from private wells.

Some assume that the quarterly house water bill can be taken as a basis for calculating the water consumption per capita. This does not give the real consumption for these reasons:

- The possibility of water leakage in the internal network of the house which increases the number of cubic meters read in the house water meter
- Possibility of illegal house connections before the house water meter
- Possibility of wrong water meter readings caused by damaged water meters
- Water harvesting or collection of rain water in special tanks

Therefore, taking into consideration the water consumption through the bill is also not dependable for exact quantities.

FACTORS WHICH AFFECT THE AMOUNT OF WATER REQUIRED

- Size of town, village or place
- Nature and type of residents, as water consumption per capita per day differs according to their standards of living
- The existence of industrial and trade centers in the region
- The climate of the region. It is well known the residents of the hot climate areas need more water than those living in the colder areas for drinking and bathing whenever enough quantities of water exist
- The existence of the water meter. Studies prove that the existence of the water meter reduces the general consumption of water
- The change in consumption during the different times. The maximum consumption during the day is the first hours of the morning and the first hours of the evening. Also the maximum consumption during the week is on Friday. During the year, the maximum consumption is usually in the summer months
- Value of consumed water. The higher the price of water, the lower the consumption would be. The system of the increasing rates in accordance with the increase in consumption also reduces the

amount of water consumed in households (This may not apply to the areas of high income people)

- Quality of water The better the quality of water and the assurance of its cleanness the more the consumption is
- Pressure in the networks The high pressure in the networks will lead to increase in the consumption
- Water management The control of the water works, reduction of the wasted water through leakage control, repair of the damaged parts of the network and control of the lines that are illegally connected
- Degree of water reduction by using water savings devices provides less consumption Also control of pressure and the amount of water supplied within the unit of time by using pressure reduction valves and devices used in flushes and taps

AIM OF THE WORKSHOP

The aim of this workshop is to train the volunteers by showing them how to measure water consumed in different households and how to complete the questionnaire

The group of volunteers because they are interested in water conservation and they are aware of water consumed in a household They showed a great deal of assurance and reliability in their work They have to measure the exact quantities of water following standard methods which were provided in the workshop

The method of completing the questionnaire and the help they give in measuring the water consumed is an indirect way developing public awareness Training the volunteers in one workshop, use of measurements with the same kind of tools will lead to a higher degree of accuracy in the measurements The final target of this study is to obtain a reasonable, actual average daily consumption per capita and use these averages for the yearly consumption at a similar period of the year

PLAN OF WORK

Methods of water measurements in different household activities

- Preparation Of Volunteers

The volunteers are prepared by explaining the method of measuring water consumed in different household work and show them how to

fill the questionnaire and collect the daily information to fill the statistical data tables special for bathrooms, kitchens and washrooms. Each volunteer is given a set of tools required to carry on measurements in his own house in a standard method after calibrating the tools (this will be explained later). He or she has to teach all members of the family especially their children how to fill information in the statistical tables by themselves on time.

The volunteer should also distribute another four copies of questionnaire to four different houses in his region, town or governorate and explain to the family, in particular the housewife -as she is the first person in the house that deals with water and household work- the importance of the above measurements and get them the nearest to the actual.

- Tools Used In The Measurements

- *Standard bucket* A plastic bucket of 10 liter volume
- *1 liter measure* A cup of 1 L volume divided into parts of liter divisions
- *Stop watch*
- *Wooden sticks* used in measuring the height of water accumulated in the bathroom wash basin, tub, and kitchen sink
- *Flow master pen*, water proof

- Calibrating The Tools

The Bucket for calibrating the standard bucket, it has to be filled with water liter by liter using the 1 liter cup, and after every liter added a mark has to be put on the bucket wall outside and inside by the flow master pen, until it measures 10 liters.

The Wooden Stick to measure the volume of water used in one of the facilities in the household, then to use it time after time for the same facility. A number of sticks are calibrated once, then used each in a different facility.

To calibrate a wooden stick to measure the amount of water accumulated under the shower at any time. Plug the stopper of the tub under the shower. Fill one standard bucket of 10 liters with water and pour in the tub. At a central indicated point put the stick and measure the height of water on it and mark (10 L), then add 5L by 5 L, and after each time mark the stick showing the volume of water represented by the height - It is suggested that 80L is enough to mark a maximum height on the stick.

With the same method calibrate other sticks for the bathroom basin and kitchen sink, and others if any by adding 1L for smaller basins.

- Rubber Hose

Calibrate the rubber hose used for watering the garden and washing cars by measuring the volume of water flow through the hose during a certain time. Choose the tap in the garden that is usually used, connect it to the hose, put the other end of the hose on the standard bucket that was calibrated earlier, start the stop watch at the same minute turning on the tap, when the bucket is full -10L - stop the watch and read the time consumed to fill 10L.

Methods of Calculating the Exact Amount of Water Used

Each volunteer must measure the exact amount of water used in the household in different facilities

- Bathroom

To measure the exact amount of water used for taking a shower, each member of the family should carry out the following procedure once. Plug the stopper of the shower basin before starting the water, take a normal shower, just after turning off the shower, taking the same point that the stick was calibrated for, put the stick and measure the nearest volume mark on the stick.

Other measurements should be carried out for the tub bath, face and hand washing by using the special calibrated sticks.

- Kitchen

In a very similar way, plug the stopper of the kitchen sink, start doing the normal washing up, then with the special calibrated stick measure how many liters of water you need for that lot of washing up, register also the total number of pieces that were done.

Completing the Questionnaire

To count the number of times each facility of the house is used such as bathroom, kitchen and washroom. Statistical tables were prepared to be hung in bathroom, kitchen and washroom in an accessible place, such as the back of the door with a pen always attached to it so as to make it easy for everybody even children whom have to be taught how to use them properly in times. The whole family should be taught and informed of those tables importance to get the best results to help the study to be successful and useful.

Filling in the Forms

- Bathroom (No 1)

Form used to calculate the number of times water is being used in flushing the toilet, showering, bathing, and washing hands and face. The procedure is as simple as putting a mark counting one time with writing the date and time of use during the day.

- Kitchen (No 2)

Form used to calculate the amount of water used to wash after every meal and time spent for that particular washing up.

- Washroom (No 3)

Number of washings using the automatic or non automatic machine and writing down the capacity of the washing machine, date of washing and time.

In case of hand washing, the volume of water being used in washing and rinsing can be measured by the standard bucket.

Form No (1)

For Use in The Toilet And Bathroom

Note This form is to be used by the volunteer

Date	No. of times toilet flush	No. of times using the shower	Quant-consum (Liters)	No. of times using the tub	Quant-consum (Liters)	No. of times hand wash	Quant- (Liters)	No. of times hand wash	Quant- (Liters)

Form No (2)
For Use In The Kitchen

Note This form is to be used by the volunteer

Date	Type of Meal	No. of pieces that are washed up at one time	Time consumed to wash up that lot	Water consumed (Liters)

Form No (3)
For Use In The Washroom

Note This form is to be used by the volunteer

Date	Type of the Wash, Electrical or Manual Wash	Capacity of the Washing Machine	No. of Washings Per Week	Quantity of Water Consumed per Washing (Liters)

Form No.(1)
For Use In The Bathroom and Toilet

Date	Time	No. of times Flush the Toilet	No. of times having a shower	No. of times bathing by the tub	No. of times hand washes	No. of times face washes

Form No (2)
For Use In The Kitchen

Date	Time	Type of Meal	No. of pieces that are washed up	Time consumed for washing up that lot

Form No (3)
For Use In The Washroom

Date	Time	Type of washing machine	Capacity of the washing machine	No. of washings

"THE QUESTIONNAIRE"/ URBAN ZONE

Note Please put mark (X) or a number in the proper box.

- 1 Date
- 2 Governorate / Place
- 3 Area category High , Middle , Low
- 4 Type of house Villa , Flat , Separate house
- 5 No of rooms in the house rooms (including kitchen and sitting room)
- 6 Size of the family. over 25 yrs, 10-25 yrs, 1 mth -10 yrs
- 7 No of males , No of females
- 8 No of people leave in the morning persons
- 9 No of meals per day
- 10 No of dishes Breakfast plates, cup, cutlery, pans
Lunch, plates, cup, cutlery, pans
Dinner, plates, cup, cutlery, pans
- 11 Do you have automatic dish washer? Yes , No (if yes, answer 12)
- 12 How many times you use it / week? times
- 13 Do you have washing machine? Yes , No (if yes, answer 14,15,16)
- 14 Automatic , Non automatic
- 15 Capacity kg. of clothes, top opening , side opening
- 16 How many times you use it / week? times
- 17 How many times you do hand washing / week? times
- 18 How much water you need for each hand washing? liter (done with volunteer help)

- 19 How many times members of family have a bath/week? times
- 20 No of them use the shower, takes minutes under the shower
- 21 No of them use the tub, using liters of water
- 22 No of them use the bucket, liters of water
- 23 How many times you flush the toilets in all bathrooms/week? times,
(this is to be done after filling statistical tables)
- 24 How many No of rooms not covered with carpet? rooms
- 25 How many times you clean them/week? times
- 26 How do you clean them? washing , cleaning
- 27 How many buckets you need for cleaning them? buckets of 10L
- 28 How many bathrooms in the house? bathroom
- 29 How many times you clean the / week? times
- 30 How many buckets you need to clean them? buckets of 10L
- 31 Do you have a garden? Yes , No (if yes answer 32,33,34)
- 32 Area of the garden. m²
- 33 What do you plant? m² fruits, m² vegetables, m² grass, flowers
- 34 How much time you need watering the garden? minutes
- 35 Do you raise cattle? Yes , No (if yes answer 36)
- 36 No cows, sheep, chicken, dogs, others
- 37 Do you have a swimming pool? Yes , No (if yes answer 38,39)
- 38 Capacity of pool m³
- 39 How many times you change its water/year? times
- 40 Do you have outside areas ? Yes No (if yes answer 41,42,43)
- 41 Areas m²

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- 42 How do clean them? washing , cleaning
- 43 How many times you clean them? times
- 44 Do have under ground storage tank? Yes , No (if yes answer 45)
- 45 Capacity of tank , m³
- 46 Do you have rain water collecting tank? Yes , No (if yes answer 47)
- 47 Capacity of the tank m³ ,
- 48 Is your house connected to the waste water system? Yes , No
- 49 Do you use bottled drinking water? Yes , No (if yes answer 50)
- 50 How many bottles you need / week? 1 5L, or 20L
- 51 How many cars you have if any? car
- 52 How do you clean them? buckets of 10L or minutes using the rubber hose
- 53 Do you have servants? servant, driver, gardener, guard, others
- 54 Do you have prayers ? Yes , No (if yes answer 55)
- 55 How many prayers in the family? persons
- 56 Do you have leakage in pipes or taps of the house? Yes , No
- 57 Do you suspect leakages in the above? Yes , No
- 58 What was the average amount of your quarterly water bill for the last cycle during last year? JD

THE QUESTIONNAIRE / RURAL AREAS

note Put mark (X) or number in the proper box.

- 1 Date
- 2 Governorate / Place
- 3 Type of residence building, others
- 4 No of members of family or families living in the residence person.
- 5 Males , females
- 6 No of people leaving the house in the morning to study or work persons
- 7 No of meals / day ? meals
- 8 No of dishes Breakfast plates, cup, cutlery, pans
Lunch, plates, cup, cutlery, pans
Dinner plates, cup, cutlery, pans
- 9 Do you raise cattle ? Yes , No (if yes answer 10)
- 10 No cows, sheep, chicken, dogs, others
- 11 How many times members of family have a bath/week? times
- 12 No of them use bucket of 10L , and No of them use the shower for minutes
- 13 Do you have washing machine? Yes , No (if yes, answer 14,15,16)
- 14 Automatic , Non automatic
- 15 Capacity kg. of clothes, top opening , side opening
- 16 How many times you use it / week? times
- 17 How many times you do hand washing / week? times

- 18 How much water you need for each hand washing? liter (done with volunteer help)
- 19 Do you have Toilet flush? Yes , No (if yes answer 20)
- 20 How many times you flush you toilet / week? times
- 21 How many rooms in the house with cleanable floors? rooms
- 22 How do you clean them? washing with water , clean with damp cloth
- 23 How much water you need to clean each bucket of 10L
- 24 How many times you clean them / week? times
- 25 How many times you clean the bathroom or the toilet /week? times
- 26 Do you have a garden or a farm? Yes ,No (if Yes answer 27,28)
- 27 Area of the garden m²
- 28 Do you use the Water Authority's water to water the garden or the farm? Yes ,No
(if Yes answer 29)
- 29 What do you plant? m² wheat or barley, fruits , vegetables
- 30 Do you have undergroud storage tank ?Yes , No (if Yes answer 31)
- 31 Capacity of the tank , m³
- 32 Do you have rain water collection tank? Yes , No (if Yes answer 33)
- 33 Capacity of the tank , m³
- 34 If you use Water Authority water, what was your average amount of the quarterly bill for one cycle during last year ? J Ds

Form No.(1)
For Use In The Bathroom and Toilet

Date	Time	No. of times Flush the Toilet	No. of times having a shower	No. of times bathing by the tub	No. of times hand washes	No. of times face washes

Form No (2)
For Use In The Kitchen

Date	Time	Type of Meal	No. of pieces that are washed up	Time consumed for washing up that lot

APPENDIX II 4

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