Ministry of Water Resources and Irrigation
US Agency for International Development
Agricultural Policy Reform Program
Environmental Policy and Institutional Strengthening Indefinite Quantity Contract

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Task Order 807

MATCHING IRRIGATION SUPPLIES AND DEMANDS PILOT DISTRICT DATA REPORT

Report No. 45d
East Isna District

February 2002

Water Policy Program
International Resources Group **Winrock International** **Nile Consultants**

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MATCHING IRRIGATION SUPPLIES AND DEMANDS PILOT DISTRICT DATA REPORT – EAST ISNA

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Environmental Policy and Institutional Strengthening Indefinite Quantity Contract (EPIQ)
Partners: International Resources Group, Winrock International,
and Harvard Institute for International Development
Subcontractors: PADCO; Management Systems International; and Development Alternatives, Inc.
Collaborating Institutions: Center for Naval Analysis Corporation; Conservation International; KNB Engineering and Applied Sciences, Inc.; Keller-Bliesner Engineering; Resource Management International, Inc.;
Tellus Institute; Urban Institute; and World Resources Institute

1 Introduction

1.1 Overview

The Agricultural Policy Reform Program (APRP) is a United States Agency for International Development (USAID) grant program involving several ministries. The Ministry of Agriculture and Land Reclamation (MALR) is the primary Egyptian governmental agency charged with support of agricultural production. The Ministry of Water Resources and Irrigation (MWRI) has the prime management responsibility for Egypt's water resources. The MALR, MWRI and USAID, under the umbrella of the APRP, jointly designed an agricultural and water policy package, which consists of integrated policy and institutional reforms. USAID supports the ministries' efforts through annual cash transfers based on performance in achieving identified and agreed-upon policy reform benchmarks and technical assistance.

Technical assistance for the water policy analysis activity is provided through a task order (Contract PCE-I-00-96-00002-00, Task Order 807) under the umbrella of the Environmental Policy and Institutional Strengthening Indefinite Quantity Contract (EPIQ) between USAID and a consortium headed by the International Resources Group (IRG) and Winrock International. Local technical assistance and administrative support is provided through a subcontract with Nile Consultants.

1.2 Purpose of the Report

This report presents data collected as part of the activities of MWRI and MALR under the Tranche IV, C.1 Benchmark, which states:

> ***The GOE (MWRI and MALR jointly) will establish a system that improves the flow of real-time information between the Ministries with respect to irrigation demands and supplies.***

Satisfactory achievement of the BM required the accomplishment of two verification indicators:

1. A pilot program will be initiated by the MWRI and MALR in one irrigation district in each of two governorates for mutual information transfer for cropping patterns and calendars and water supplies by December 31, 2000.
2. A joint MALR/MWRI national policy for the application of the pilot program will be approved by the two Ministers by December 31, 2001.

The overall timeline for work on this BM is July 31, 1999 – December 31, 2001, which is divided into two phases:

- Phase I: July 31, 1999 – December 31, 2000
- Phase II: January 1, 2001 – December 31, 2001.

During Phase I, the two ministries successfully established a pilot program in five irrigation districts, in five different governorates involving four separate irrigation directorates covering Lower, Middle, and Upper Egypt. The APRP Water Policy Program Report No. 33 (December 2000) documented details of this pilot program. Further documentation of the

benchmark activities and results are given in APRP Water Policy Program Report No. 45 (December 2001).

This is a data report for the East Isna pilot district covering the period from March 1, 2000, through September 30, 2001. It is one of five separate data reports – one report for each pilot irrigation district. The other four data reports (numbered 45a, 45b, 45c, and 45e) are for the other pilot districts: Abou Hummus, Abou Kebir, Beba, and Luxor, respectively.

1.3 Organization of the Report

This report consists of this brief introduction, information about the district, information about the different data collected, calibration relationships, and data presented both as tables and graphs in the following chapters:

Chapter 2	Information about East Isna Irrigation District
Chapter 3	Cropping pattern information
Chapter 4	Crop water needs Microsoft Excel district-level user's manual
Chapter 5	Crop water needs Microsoft Excel model administrator user's manual
Chapter 6	Crop water needs Microsoft Excel district calculation results
Chapter 7	Crop water needs Microsoft Access user's manual
Chapter 8	Crop water needs Microsoft Access district analysis
Chapter 9	Water-monitoring program

Included with this report are two IBM-compatible 3.5" floppy disks that contain the computer programs and data files used in this report. The computer programs are intended for use by district engineers involved in implementing the MISD policy and discharging their responsibilities related to improving water delivery to more closely match crop water demands. This report can be used as a handbook for districts new to the MISD concepts and processes. Disk 1 contains the Microsoft Excel-based versions of software. The specific contents of Disk 1 are:

1. A folder named "Egy" that has the FAO CLIMWAT weather records from 28 sites in Egypt listed in Table A-1 of Chapter 5.
2. The workbook named "Canal Demand" and its three associated cropping history files: "current", "expected", and "planting". Canal Demand uses the MALR cropping pattern information to calculate crop water needs for each half-month period.
3. The following data files:
    a. "Crop Pattern – EI" that contains the cropping pattern information for the East Isna district obtained from MALR and used as input to Canal Demand.
    b. "Crops & Needs – EI" that contains results of calculations of crop water needs output from Canal Demand for the East Isna district.
    c. "DEMO – EI" that is an Excel Workbook used for organizing and displaying the results of Canal Demand and comparing the crop water needs with water delivered to the East Isna district.

Disk 2 contains the Microsoft Access-based versions of the software. The specific contents of Disk 2 are:

1. A compressed version of the Access tool in a file named "MISD_Tool.zip".

2. A file named “WinZip32.exe”. This is the program to be used to decompress the “.zip” file.

Note: When the “.zip” file is decompressed, it will extract the Microsoft Access tool software named “MISD_Tool.MDB”.

2 Information About East Isna Irrigation District

2.1 Command Area and Overlap with MALR Districts

The East Isna Irrigation District is one of the four irrigation districts that constitute the Isna Inspectorate, one of the three inspectorates in the Qena Irrigation Directorate within the Qena Governorate. The total command area of the East Isna Irrigation District is about 32,000 feddans. The irrigation district lies totally within the Isna Agricultural Administration, *i.e.,* no other district level agricultural administrations overlap the irrigation district.

2.2 Canal System

Two main canals feed the East Isna Irrigation District. The first is the Elramady Canal that takes water from the Nile River through the Namasa pump station at km 151.0 on the west bank. The second canal is the "Old" Kallabia Canal that takes water from the Nile River at km 158.0 on the east bank through a pump station at the canal head. The total command area of the Elramady Canal is about 44,000 feddans, of which only 25,000 feddans belong to the East Isna Irrigation District – the rest of area constitutes the command area of the West Isna Irrigation District. Most of cultivated area is irrigated from the canal branches while a small area is irrigated from the main canals (or canal with order 1). The two main canals then branch to smaller canals with different order until they supply water to the mesqas. There are 25 second order branch canals serving about 74% of the total district area. Eleven third order branch canals irrigate about 15% of the total district area. One fourth order canal irrigates 600 feddans and one fifth order canal irrigates 200 feddans. About 10% of the district command area is irrigated directly from the two main canals.

The area served by each branch canal differs from one canal to another even for the same branching order. Second order branch canal command area ranges from 260 feddans to 6926 feddans with an average of 1487 feddans. Sixty percent of the second order canals have an area less than 1000 feddans, 16% have an area of 2000 – 4000 feddans, and the rest of these canals (24%) have area greater than 4000 feddans. The average area for third order canals is about 670 feddans, with about 83% of these canals having an area less than 1000 feddans and 17% with area ranging from 1000 to 3000 feddans.

The total length of first order canals within the district is about 38 km, of second order 137 km, of third order 39 km, of fourth order 3.4 km, and of fifth order 1.2 km. Fifty-two percent of the second order canals have length less than 5 km, 32% have length ranging from 5 to 10 km, and 16% have length ranging from 10 to 20 km. For third order, the length is less than 5 km for about 67% of the canals, and 5 to 10 km for 33% of the canals.

2.3 Water Distribution System in the District

Water is pumped from the Nile River into the two main canals in East Isna district on a continuous basis with different daily rates based on the variation of climatic conditions and water demands. Then, the water is rotated between two groups of canals, where each group has water for one week "on-period". This system of water distribution is known in Egypt as a two-turn rotation system.

Records are kept of water levels in key locations mainly at canal head and canal tail using marble gauges. These gauges are read three times a day, 6:00 am, 2:00 pm and 6:00 pm. However, the 6:00 am reading is the main one that is registered in the district files and used to reallocate water among the branch canals. In some locations, the telemetry system is used to report water data on a one-hour basis using the VDS system. These locations are mainly on canals at district entrance and exit. Telemetry data are available now only at the directorate headquarters office at the governorate level.

Maintaining water levels on each branch canal to achieve the targeted levels is the main process of water management within the district. Water volumes were not considered before implementation of this benchmark. However, water levels on canals may not cope with the real need of water due to different canal conditions and then, the only solution is to operate the canal on a volumetric or flow rate basis.

Figure 2-1. Location of the East Isna Irrigation District in the Qena Governorate.

3 Cropping Pattern Information

Table 3-1. Raw data on cropping pattern for East Isna Irrigation District collected from April 1, 2000 through September 30, 2001, from file "Crop Pattern – EI" on disk.

No	Canal	Area	Existing, 1 Apr 2000				Expected, 16 Apr 2000			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	740	7	531	545	840	7	546	430
2	Sahel Komer	561	230	22	86	223	260	22	46	233
3	Hager Komer	1527	533	1	275	718	600	1	150	776
4	Hager Komer Bransh	406	246	1	159	0	325	1	80	0
5	Mansour Bransh	603	300	0	233	70	340	0	150	113
6	Ganabit Eltama	246	110	1	50	85	125	1	33	87
7	Ganabit Elteraa	778	515	1	191	71	585	1	100	92
8	Elrekia Canal	348	95	102	96	55	110	102	84	52
9	Elnamsa	1622	832	2	399	389	950	2	200	470
10	Elakhmas	602	210	1	108	283	235	1	58	308
11	Elsereeb	88	15	0	65	8	17	0	35	36
12	Eladima	785	451	15	147	172	510	15	75	185
13	Elghaba	109	80	0	14	15	90	0	8	11
14	Esna west	1705	653	15	622	415	740	15	350	600
15	Elkaram	1674	680	6	774	214	770	6	400	498
16	Elshekh Fadl west	880	374	21	379	106	425	21	200	234
17	Esna North	1353	466	0	655	232	530	0	350	473
18	Sahel Esna	626	35	2	99	490	40	2	55	529
19	Elshekh Fadl East	160	100	30	30	0	60	30	70	0
20	Elnegoo	127	45	16	66	0	50	16	61	0
21	Elkorom	240	55	8	172	5	60	8	90	82
22	Ganabit Asfon	4297	930	5	2926	436	1060	5	1600	1632
23	Alkeman	526	85	2	439	0	95	2	85	344
24	Elmatana	3124	1000	176	1256	692	1130	176	250	1568
25	Sahel Elmatana	984	240	322	422	0	270	322	250	142
26	Gezert elkeman	506	0	408	98	0	1	460	45	0
27	Old Klabia	1435	16	289	722	408	18	289	705	423
28	Elsahel 1	304	45	117	142	0	52	134	118	0
29	Elsahel 2	502	0	443	59	0	0	414	88	0
30	Elhala New	492	0	442	50	0	0	459	30	3
31	Elsahel 3	270	0	105	98	67	0	105	144	21
32	Elgabal	482	13	13	310	146	15	13	160	294
33	Elzorkany	650	47	24	549	30	52	24	250	324
34	Elder	782	25	281	476	0	28	281	300	173
35	Sahel Elder	791	0	507	227	57	0	507	125	159
36	Sayalt Zarneekh	708	0	315	393	0	0	315	200	193

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Apr 2000				Expected, 1 May 2000			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	842	7	546	428	951	7	535	330
2	Sahel Komer	561	262	22	46	231	295	22	70	174
3	Hager Komer	1527	602	1	150	774	685	1	60	781
4	Hager Komer Bransh	406	320	1	85	0	330	1	75	0
5	Mansour Bransh	603	340	0	150	113	380	0	95	128
6	Ganabit Eltama	246	127	1	33	85	135	1	75	35
7	Ganabit Elteraa	778	585	1	100	92	662	1	45	70
8	Elrekia Canal	348	111	102	84	51	122	102	62	62
9	Elnamsa	1622	963	2	203	454	1070	2	405	145
10	Elakhmas	602	255	1	58	288	270	1	110	221
11	Elsereeb	88	23	0	35	30	20	0	60	8
12	Eladima	785	519	15	75	176	580	15	140	50
13	Elghaba	109	102	0	7	0	74	0	35	0
14	Esna west	1705	740	15	353	597	840	15	450	400
15	Elkaram	1674	776	6	403	489	855	6	498	315
16	Elshekh Fadl west	880	426	21	200	233	480	21	205	174
17	Esna North	1353	530	0	350	473	600	0	120	633
18	Sahel Esna	626	40	2	55	529	42	2	60	522
19	Elshekh Fadl East	160	70	30	60	0	70	30	60	0
20	Elnegoo	127	50	16	61	0	41	16	70	0
21	Elkorom	240	60	8	90	82	69	8	50	113
22	Ganabit Asfon	4297	1060	5	1600	1632	1170	5	200	2922
23	Alkeman	526	95	2	85	344	98	2	115	311
24	Elmatana	3124	1130	176	250	1568	1275	176	125	1548
25	Sahel Elmatana	984	270	322	250	142	300	322	95	267
26	Gezert elkeman	506	1	460	45	0	1	424	80	1
27	Old Klabia	1435	18	289	705	423	18	289	340	788
28	Elsahel 1	304	52	134	118	0	55	119	130	0
29	Elsahel 2	502	0	414	88	0	0	397	105	0
30	Elhala New	492	0	459	30	3	0	372	120	0
31	Elsahel 3	270	0	105	144	21	0	105	95	70
32	Elgabal	482	15	13	160	294	15	13	95	359
33	Elzorkany	650	52	24	250	324	56	24	125	445
34	Elder	782	28	281	300	173	30	281	145	326
35	Sahel Elder	791	0	507	125	159	0	507	120	164
36	Sayalt Zarneekh	708	0	315	200	193	0	315	115	278

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 May 2000				Expected, 16 May 2000			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	951	7	535	330	995	7	535	286
2	Sahel Komer	561	295	22	70	174	305	22	70	164
3	Hager Komer	1527	685	1	60	781	725	1	60	741
4	Hager Komer Bransh	406	330	1	75	0	330	1	75	0
5	Mansour Bransh	603	380	0	85	138	390	0	85	128
6	Ganabit Eltama	246	135	1	75	35	145	1	75	25
7	Ganabit Elteraa	778	662	1	45	70	685	1	45	47
8	Elrekia Canal	348	122	102	62	62	130	102	62	54
9	Elnamsa	1622	1070	2	405	145	1100	2	405	115
10	Elakhmas	602	270	1	110	221	278	1	110	213
11	Elsereeb	88	20	0	60	8	21	0	60	7
12	Eladima	785	580	15	140	50	614	15	140	16
13	Elghaba	109	74	0	35	0	74	0	35	0
14	Esna west	1705	840	15	450	400	875	15	450	365
15	Elkaram	1674	855	6	498	315	900	6	498	270
16	Elshekh Fadl west	880	480	21	205	174	500	21	205	154
17	Esna North	1353	600	0	120	633	630	0	120	603
18	Sahel Esna	626	42	2	60	522	45	2	60	519
19	Elshekh Fadl East	160	70	30	60	0	77	30	53	0
20	Elnegoo	127	56	16	55	0	61	16	50	0
21	Elkorom	240	69	8	50	113	72	8	50	110
22	Ganabit Asfon	4297	1170	5	200	2922	1265	5	200	2827
23	Alkeman	526	98	2	115	311	110	2	115	299
24	Elmatana	3124	1275	176	125	1548	1344	176	125	1479
25	Sahel Elmatana	984	300	322	95	267	318	322	95	249
26	Gezert elkeman	506	1	425	80	0	1	425	80	0
27	Old Klabia	1435	18	289	340	788	20	289	340	786
28	Elsahel 1	304	55	119	130	0	57	117	130	0
29	Elsahel 2	502	0	397	105	0	0	397	105	0
30	Elhala New	492	0	372	120	0	0	372	120	0
31	Elsahel 3	270	0	105	95	70	0	105	95	70
32	Elgabal	482	15	13	95	359	17	13	95	357
33	Elzorkany	650	56	24	125	445	62	24	125	439
34	Elder	782	30	281	145	326	32	281	145	324
35	Sahel Elder	791	0	507	120	164	0	507	120	164
36	Sayalt Zarneekh	708	0	315	115	278	0	315	65	328

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 May 2000				Expected, 1 May 2000			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	995	7	535	286	1025	7	535	256
2	Sahel Komer	561	305	22	70	164	315	22	70	154
3	Hager Komer	1527	725	1	60	741	738	1	60	728
4	Hager Komer Bransh	406	330	1	75	0	330	1	75	0
5	Mansour Bransh	603	390	0	85	128	405	0	85	113
6	Ganabit Eltama	246	145	1	75	25	150	1	75	20
7	Ganabit Elteraa	778	685	1	45	47	710	1	45	22
8	Elrekia Canal	348	130	102	62	54	132	102	62	52
9	Elnamsa	1622	1100	2	405	115	1135	2	405	80
10	Elakhmas	602	278	1	110	213	280	1	110	211
11	Elsereeb	88	21	0	60	7	22	0	60	6
12	Eladima	785	614	15	140	16	625	15	140	5
13	Elghaba	109	74	0	35	0	74	0	35	0
14	Esna west	1705	875	15	450	365	915	15	450	325
15	Elkaram	1674	900	6	498	270	925	6	498	245
16	Elshekh Fadl west	880	500	21	205	154	517	21	205	137
17	Esna North	1353	630	0	120	603	635	0	120	598
18	Sahel Esna	626	45	2	60	519	45	2	60	519
19	Elshekh Fadl East	160	77	30	53	0	80	30	50	0
20	Elnegoo	127	61	16	50	0	62	16	49	0
21	Elkorom	240	75	8	50	107	72	8	50	110
22	Ganabit Asfon	4297	1265	5	200	2827	1275	5	200	2817
23	Alkeman	526	110	2	115	299	113	2	115	296
24	Elmatana	3124	1344	176	125	1479	1390	176	125	1433
25	Sahel Elmatana	984	318	322	95	249	325	322	95	242
26	Gezert elkeman	506	1	425	80	0	1	425	80	0
27	Old Klabia	1435	20	289	340	786	20	289	340	786
28	Elsahel 1	304	57	117	130	0	57	117	130	0
29	Elsahel 2	502	0	397	105	0	0	397	105	0
30	Elhala New	492	0	372	120	0	0	372	120	0
31	Elsahel 3	270	0	105	95	70	0	105	95	70
32	Elgabal	482	17	13	95	357	17	13	95	357
33	Elzorkany	650	62	24	125	439	62	24	125	439
34	Elder	782	32	281	145	324	32	281	145	324
35	Sahel Elder	791	0	507	120	164	0	507	120	164
36	Sayalt Zarneekh	708	0	315	115	278	0	315	65	328

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Jun 2000				Expected, 16 Jun 2000			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	1025	7	535	256	1057	7	535	224
2	Sahel Komer	561	315	22	70	154	327	22	70	142
3	Hager Komer	1527	738	1	60	728	762	1	60	704
4	Hager Komer Bransh	406	330	1	75	0	330	1	75	0
5	Mansour Bransh	603	405	0	85	113	422	0	85	96
6	Ganabit Eltama	246	150	1	75	20	156	1	75	14
7	Ganabit Elteraa	778	710	1	45	22	732	1	45	0
8	Elrekia Canal	348	132	102	62	52	136	102	62	48
9	Elnamsa	1622	1135	2	405	80	1189	2	405	26
10	Elakhmas	602	280	1	110	211	249	1	110	242
11	Elsereeb	88	22	0	60	6	23	0	60	5
12	Eladima	785	625	15	140	5	630	15	140	0
13	Elghaba	109	74	0	35	0	74	0	35	0
14	Esna west	1705	915	15	450	325	933	15	450	307
15	Elkaram	1674	925	6	498	245	970	6	498	200
16	Elshekh Fadl west	880	517	21	205	137	534	21	205	120
17	Esna North	1353	635	0	120	598	665	0	120	568
18	Sahel Esna	626	280	2	60	284	287	2	60	277
19	Elshekh Fadl East	160	45	55	60	0	49	51	60	0
20	Elnegoo	127	62	16	49	0	61	16	50	0
21	Elkorom	240	72	8	50	110	77	8	50	105
22	Ganabit Asfon	4297	1275	5	200	2817	1323	5	200	2769
23	Alkeman	526	113	2	115	296	119	2	115	290
24	Elmatana	3124	1390	176	125	1433	1415	176	125	1408
25	Sahel Elmatana	984	325	322	95	242	335	322	95	232
26	Gezert elkeman	506	1	425	80	0	1	425	80	0
27	Old Klabia	1435	20	289	340	786	21	289	340	785
28	Elsahel 1	304	57	117	130	0	60	114	130	0
29	Elsahel 2	502	0	397	105	0	0	397	105	0
30	Elhala New	492	0	372	120	0	0	372	120	0
31	Elsahel 3	270	0	105	95	70	0	105	95	70
32	Elgabal	482	17	13	95	357	18	13	95	356
33	Elzorkany	650	62	24	125	439	67	24	125	434
34	Elder	782	32	281	145	324	34	281	145	322
35	Sahel Elder	791	0	507	120	164	0	507	120	164
36	Sayalt Zarneekh	708	0	315	115	278	0	315	65	328

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Jun 2000				Expected, 1 Jul 2000			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	1025	7	535	256	1057	7	535	224
2	Sahel Komer	561	315	22	70	154	327	22	70	142
3	Hager Komer	1527	738	1	60	728	762	1	60	704
4	Hager Komer Bransh	406	330	1	75	0	330	1	75	0
5	Mansour Bransh	603	405	0	85	113	422	0	85	96
6	Ganabit Eltama	246	150	1	75	20	156	1	75	14
7	Ganabit Elteraa	778	710	1	45	22	732	1	45	0
8	Elrekia Canal	348	132	102	62	52	136	102	62	48
9	Elnamsa	1622	1135	2	405	80	1189	2	405	26
10	Elakhmas	602	280	1	110	211	249	1	110	242
11	Elsereeb	88	22	0	60	6	23	0	60	5
12	Eladima	785	625	15	140	5	630	15	140	0
13	Elghaba	109	74	0	35	0	74	0	35	0
14	Esna west	1705	915	15	450	325	933	15	450	307
15	Elkaram	1674	925	6	498	245	970	6	498	200
16	Elshekh Fadl west	880	517	21	205	137	534	21	205	120
17	Esna North	1353	635	0	120	598	665	0	120	568
18	Sahel Esna	626	280	2	60	284	287	2	60	277
19	Elshekh Fadl East	160	45	55	60	0	49	51	60	0
20	Elnegoo	127	62	16	49	0	61	16	50	0
21	Elkorom	240	72	8	50	110	77	8	50	105
22	Ganabit Asfon	4297	1275	5	200	2817	1323	5	200	2769
23	Alkeman	526	113	2	115	296	119	2	115	290
24	Elmatana	3124	1390	176	125	1433	1415	176	125	1408
25	Sahel Elmatana	984	325	322	95	242	335	322	95	232
26	Gezert elkeman	506	1	425	80	0	1	425	80	0
27	Old Klabia	1435	20	289	340	786	21	289	340	785
28	Elsahel 1	304	57	117	130	0	60	114	130	0
29	Elsahel 2	502	0	397	105	0	0	397	105	0
30	Elhala New	492	0	372	120	0	0	372	120	0
31	Elsahel 3	270	0	105	95	70	0	105	95	70
32	Elgabal	482	17	13	95	357	18	13	95	356
33	Elzorkany	650	62	24	125	439	67	24	125	434
34	Elder	782	32	281	145	324	34	281	145	322
35	Sahel Elder	791	0	507	120	164	0	507	120	164
36	Sayalt Zarneekh	708	0	315	115	278	0	315	65	328

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Jul 2000				Expected, 16 Jul 2000			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	1057	7	535	224	834	7	286	696
2	Sahel Komer	561	327	22	70	142	402	22	110	27
3	Hager Komer	1527	762	1	60	704	813	1	276	437
4	Hager Komer Bransh	406	330	1	75	0	358	1	47	0
5	Mansour Bransh	603	422	0	85	96	409	0	194	0
6	Ganabit Eltama	246	156	1	75	14	60	1	58	127
7	Ganabit Elteraa	778	732	1	45	0	638	1	139	0
8	Elrekia Canal	348	136	102	62	48	132	102	60	54
9	Elnamsa	1622	1189	2	405	26	1045	2	384	191
10	Elakhmas	602	249	1	110	242	406	1	87	108
11	Elsereeb	88	23	0	60	5	32	0	56	0
12	Eladima	785	630	15	140	0	595	15	164	11
13	Elghaba	109	74	0	35	0	91	0	15	3
14	Esna west	1705	933	15	450	307	1137	15	387	166
15	Elkaram	1674	970	6	498	200	931	6	454	283
16	Elshekh Fadl west	880	534	21	205	120	404	21	342	113
17	Esna North	1353	665	0	120	568	804	0	378	171
18	Sahel Esna	626	287	2	60	277	216	2	87	321
19	Elshekh Fadl East	160	49	0	111	0	59	60	41	0
20	Elnegoo	127	66	16	45	0	48	16	63	0
21	Elkorom	240	77	8	50	105	72	8	160	0
22	Ganabit Asfon	4297	1323	5	200	2769	1601	5	2691	0
23	Alkeman	526	119	2	115	290	107	2	375	42
24	Elmatana	3124	1415	176	125	1408	880	176	1658	410
25	Sahel Elmatana	984	335	322	95	232	410	322	236	16
26	Gezert elkeman	506	1	425	80	0	1	458	47	0
27	Old Klabia	1435	21	289	340	785	20	289	361	765
28	Elsahel 1	304	60	114	130	0	50	197	57	0
29	Elsahel 2	502	0	397	105	0	0	338	164	0
30	Elhala New	492	0	372	120	0	0	360	132	0
31	Elsahel 3	270	0	105	95	70	0	105	70	95
32	Elgabal	482	18	13	95	356	23	13	107	339
33	Elzorkany	650	67	24	125	434	83	24	82	461
34	Elder	782	34	281	145	322	34	281	117	350
35	Sahel Elder	791	0	507	120	164	0	507	11	273
36	Sayalt Zarneekh	708	0	315	115	278	0	315	140	253

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Jul 2000					Expected, 1 Aug 2000				
		(feddan	suger	garden	summe	Others	Fallow	suger	garder	summ	Others	Fallow
1	Elramady	1823	834	16	96	281	596	834	16	80	281	612
2	Sahel Komer	561	359	48	44	110	0	373	48	30	110	0
3	Hager Komer	1527	813	0	31	276	407	813	0	20	276	418
4	Hager Komer Bransh	406	348	2	9	47	0	352	2	5	47	0
5	Mansour Bransh	603	388	0	21	194	0	398	0	11	194	0
6	Ganabit Eltama	246	60	0	0	58	128	60	0	0	58	128
7	Ganabit Elteraa	778	615	0	24	139	0	624	0	15	139	0
8	Elrekia Canal	348	96	110	82	60	0	108	110	70	60	0
9	Elnamsa	1622	1045	3	66	384	124	1045	3	50	384	140
10	Elakhmas	602	406	8	9	87	92	406	8	50	87	51
11	Elsereeb	88	32	0	0	56	0	32	0	10	46	0
12	Eladima	785	537	43	41	164	0	548	43	30	164	0
13	Elghaba	109	91	0	3	15	0	91	0	0	15	3
14	Esna west	1705	1137	5	166	382	15	1137	5	150	382	31
15	Elkaram	1674	931	3	27	454	259	931	3	17	454	269
16	Elshekh Fadl west	880	404	12	49	342	73	404	12	30	342	92
17	Esna North	1353	804	2	135	378	34	804	2	100	378	69
18	Sahel Esna	626	216	6	175	87	142	216	6	125	87	192
19	Elshekh Fadl East	160	89	0	15	41	15	89	0	10	41	20
20	Elnegoo	127	60	21	12	34	0	36	21	7	63	0
21	Elkorom	240	61	15	4	160	0	63	15	2	160	0
22	Ganabit Asfon	4297	1601	15	130	2551	0	1601	15	80	2601	0
23	Alkeman	526	107	2	0	375	42	107	2	0	375	42
24	Elmatana	3124	880	176	224	1658	186	880	176	150	1658	260
25	Sahel Elmatana	984	386	325	37	236	0	403	325	20	236	0
26	Gezert elkeman	506	1	458	0	47	0	1	458	0	47	0
27	Old Klabia	1435	20	259	719	361	76	20	259	700	361	95
28	Elsahel 1	304	50	113	84	57	0	50	113	84	57	0
29	Elsahel 2	502	0	167	141	194	0	0	178	130	194	0
30	Elhala New	492	0	342	18	132	0	0	350	10	132	0
31	Elsahel 3	270	0	105	95	70	0	0	105	50	70	45
32	Elgabal	482	23	3	205	107	144	23	3	70	107	279
33	Elzorkany	650	83	28	274	82	183	83	28	150	82	307
34	Elder	782	34	214	198	117	219	34	214	100	117	317
35	Sahel Elder	791	0	575	185	11	20	0	575	190	11	15
36	Sayalt Zarneekh	708	0	294	274	140	0	0	300	150	140	118

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Aug 2000					Expected, 16 Aug 2000				
		(feddan	suger	garden	summe	Others	Fallow	suger	garden	summe	Others	Fallow
1	Elramady	1823	834	16	96	281	596	834	16	50	362	561
2	Sahel Komer	561	359	48	44	110	0	402	48	30	80	1
3	Hager Komer	1527	813	0	31	276	407	813	0	20	271	423
4	Hager Komer Bransh	406	348	2	9	47	0	352	2	5	47	0
5	Mansour Bransh	603	388	0	21	194	0	398	0	11	194	0
6	Ganabit Eltama	246	60	0	0	58	128	60	0	0	45	141
7	Ganabit Elteraa	778	615	0	24	139	0	598	0	15	165	0
8	Elrekia Canal	348	96	110	82	60	0	132	110	70	36	0
9	Elnamsa	1622	1045	3	66	384	124	1045	3	50	384	140
10	Elakhmas	602	406	8	9	87	92	406	8	50	87	51
11	Elsereeb	88	32	0	19	37	0	32	0	10	46	0
12	Eladima	785	537	43	41	164	0	552	43	30	160	0
13	Elghaba	109	91	0	3	15	0	91	0	0	15	3
14	Esna west	1705	1137	5	166	382	15	1137	5	150	382	31
15	Elkaram	1674	931	3	27	454	259	931	3	17	454	269
16	Elshekh Fadl west	880	404	12	49	342	73	404	12	30	342	92
17	Esna North	1353	804	2	135	378	34	804	2	100	312	135
18	Sahel Esna	626	216	6	175	87	142	216	6	125	87	192
19	Elshekh Fadl East	160	89	0	15	41	15	89	0	10	41	20
20	Elnegoo	127	31	21	12	63	0	36	21	7	63	0
21	Elkorom	240	61	15	4	160	0	85	15	2	135	3
22	Ganabit Asfon	4297	1601	15	130	2551	0	1601	15	80	2601	0
23	Alkeman	526	107	2	0	375	42	107	2	0	375	42
24	Elmatana	3124	880	176	224	1658	186	880	176	150	1667	251
25	Sahel Elmatana	984	386	325	37	236	0	403	325	20	236	0
26	Gezert elkeman	506	1	458	0	47	0	1	458	0	47	0
27	Old Klabia	1435	20	259	719	361	76	20	259	150	690	316
28	Elsahel 1	304	50	113	84	57	0	50	124	35	95	0
29	Elsahel 2	502	0	167	141	194	0	0	267	25	106	104
30	Elhala New	492	0	342	18	132	0	0	358	0	132	2
31	Elsahel 3	270	0	104	96	70	0	0	105	5	70	90
32	Elgabal	482	23	3	205	107	144	23	3	15	30	411
33	Elzorkany	650	83	28	274	82	183	83	28	25	82	432
34	Elder	782	34	214	198	117	219	34	214	30	117	387
35	Sahel Elder	791	0	575	185	11	20	0	575	15	11	190
36	Sayalt Zarneekh	708	0	294	274	140	0	0	300	35	140	233

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Aug 2000					Expected, 1 Sep 2000				
		(feddan	suger	garden	summe	Others	Fallow	suger	garder	summ	Others	Fallow
1	Elramady	1823	834	16	50	362	561	834	16	10	362	601
2	Sahel Komer	561	402	48	30	80	1	402	48	0	80	31
3	Hager Komer	1527	813	0	20	271	423	813	0	0	271	443
4	Hager Komer Bransh	406	352	2	5	47	0	357	2	0	47	0
5	Mansour Bransh	603	398	0	11	194	0	409	0	0	194	0
6	Ganabit Eltama	246	60	0	0	45	141	60	0	0	45	141
7	Ganabit Elteraa	778	598	0	15	165	0	613	0	0	165	0
8	Elrekia Canal	348	132	110	70	36	0	132	110	20	36	50
9	Elnamsa	1622	1045	3	50	384	140	1045	3	15	384	175
10	Elakhmas	602	406	8	50	87	51	406	8	0	87	101
11	Elsereeb	88	32	0	10	46	0	32	0	0	46	10
12	Eladima	785	552	43	30	160	0	577	43	5	160	0
13	Elghaba	109	91	0	0	15	3	91	0	0	15	3
14	Esna west	1705	1137	5	150	382	31	1137	5	35	382	146
15	Elkaram	1674	931	3	17	454	269	931	3	0	454	286
16	Elshekh Fadl west	880	404	12	30	342	92	404	12	5	342	117
17	Esna North	1353	804	2	100	312	135	804	2	25	312	210
18	Sahel Esna	626	216	6	125	87	192	216	6	35	87	282
19	Elshekh Fadl East	160	89	0	10	41	20	89	0	0	41	30
20	Elnegoo	127	36	21	7	63	0	43	21	0	63	0
21	Elkorom	240	85	15	2	135	3	85	15	0	135	5
22	Ganabit Asfon	4297	1601	15	80	2601	0	1601	15	25	2656	0
23	Alkeman	526	107	2	0	375	42	107	2	0	375	42
24	Elmatana	3124	880	176	150	1667	251	880	176	45	1667	356
25	Sahel Elmatana	984	410	325	20	229	0	410	325	5	236	8
26	Gezert elkeman	506	1	458	0	47	0	1	458	0	47	0
27	Old Klabia	1435	20	259	150	690	316	20	259	150	690	316
28	Elsahel 1	304	50	124	35	95	0	50	124	35	95	0
29	Elsahel 2	502	0	267	25	106	104	0	267	25	106	104
30	Elhala New	492	0	358	0	132	2	0	358	0	132	2
31	Elsahel 3	270	0	105	5	70	90	0	105	5	70	90
32	Elgabal	482	23	3	15	30	411	23	3	15	30	411
33	Elzorkany	650	83	28	25	82	432	83	28	25	82	432
34	Elder	782	34	214	30	117	387	34	214	30	117	387
35	Sahel Elder	791	0	575	15	11	190	0	575	15	11	190
36	Sayalt Zarneekh	708	0	300	25	140	243	0	300	25	140	243

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Sep 2000				Expected, 16 Sep 2000			
		(feddan	suger	garden	Others	fallow	suger	garder	Others	fallow
1	Elramady	1823	834	16	362	611	834	16	362	611
2	Sahel Komer	561	402	48	80	31	402	48	85	26
3	Hager Komer	1527	813	2	271	441	813	2	280	432
4	Hager Komer Bransh	406	359	0	47	0	359	0	47	0
5	Mansour Bransh	603	409	0	194	0	403	0	200	0
6	Ganabit Eltama	246	60	0	45	141	60	0	60	126
7	Ganabit Elteraa	778	713	0	65	0	713	0	65	0
8	Elrekia Canal	348	132	110	36	70	132	110	50	56
9	Elnamsa	1622	1054	7	384	177	1054	7	390	171
10	Elakhmas	602	406	8	87	101	406	8	100	88
11	Elsereeb	88	32	0	46	10	32	0	46	10
12	Eladima	785	582	43	160	0	567	43	175	0
13	Elghaba	109	91	0	15	3	91	0	15	3
14	Esna west	1705	1137	5	382	181	1137	5	405	158
15	Elkaram	1674	931	3	454	286	931	3	454	286
16	Elshekh Fadl west	880	404	12	342	122	404	12	350	114
17	Esna North	1353	804	2	312	235	804	2	320	227
18	Sahel Esna	626	216	6	87	317	216	6	100	304
19	Elshekh Fadl East	160	89	0	41	30	66	0	94	0
20	Elnegoo	127	43	21	63	0	43	21	63	0
21	Elkorom	240	85	15	135	5	85	15	135	5
22	Ganabit Asfon	4297	1601	15	2681	0	1601	15	2681	0
23	Alkeman	526	107	2	375	42	107	2	380	37
24	Elmatana	3124	880	176	1667	401	880	176	1700	368
25	Sahel Elmatana	984	410	325	236	13	410	325	249	0
26	Gezert elkeman	506	1	458	47	0	1	455	50	0
27	Old Klabia	1435	20	259	390	766	20	259	450	706
28	Elsahel 1	304	50	159	95	0	50	139	115	0
29	Elsahel 2	502	0	267	106	129	0	267	120	115
30	Elhala New	492	0	358	132	2	0	347	145	0
31	Elsahel 3	270	0	105	70	95	0	105	90	75
32	Elgabal	482	23	3	30	426	23	3	45	411
33	Elzorkany	650	83	28	82	457	83	28	115	424
34	Elder	782	34	214	117	417	34	214	167	367
35	Sahel Elder	791	0	575	11	205	0	575	61	155
36	Sayalt Zarneekh	708	0	300	140	268	0	300	185	223

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Sep 2000				Expected, 1 Oct 2000			
		(feddan	suger	garden	Others	fallow	suger	garder	Others	Fallow
1	Elramady	1823	834	16	362	611	834	16	362	611
2	Sahel Komer	561	402	48	80	31	402	48	85	26
3	Hager Komer	1527	813	2	271	441	813	2	280	432
4	Hager Komer Bransh	406	359	0	47	0	359	0	47	0
5	Mansour Bransh	603	409	0	194	0	403	0	200	0
6	Ganabit Eltama	246	60	0	45	141	60	0	60	126
7	Ganabit Elteraa	778	713	0	65	0	713	0	65	0
8	Elrekia Canal	348	132	110	36	70	132	110	50	56
9	Elnamsa	1622	1054	7	384	177	1054	7	390	171
10	Elakhmas	602	406	8	87	101	406	8	100	88
11	Elsereeb	88	32	0	46	10	32	0	46	10
12	Eladima	785	582	43	160	0	567	43	175	0
13	Elghaba	109	91	0	15	3	91	0	15	3
14	Esna west	1705	1137	5	382	181	1137	5	405	158
15	Elkaram	1674	931	3	454	286	931	3	454	286
16	Elshekh Fadl west	880	404	12	342	122	404	12	350	114
17	Esna North	1353	804	2	312	235	804	2	320	227
18	Sahel Esna	626	216	6	87	317	216	6	100	304
19	Elshekh Fadl East	160	89	0	41	30	66	0	94	0
20	Elnegoo	127	43	21	63	0	43	21	63	0
21	Elkorom	240	85	15	135	5	85	15	135	5
22	Ganabit Asfon	4297	1601	15	2681	0	1601	15	2681	0
23	Alkeman	526	107	2	375	42	107	2	380	37
24	Elmatana	3124	880	176	1667	401	880	176	1700	368
25	Sahel Elmatana	984	410	325	236	13	410	324	250	0
26	Gezert elkeman	506	1	458	47	0	1	455	50	0
27	Old Klabia	1435	20	259	390	766	20	259	450	706
28	Elsahel 1	304	50	159	95	0	50	139	115	0
29	Elsahel 2	502	0	267	106	129	0	267	120	115
30	Elhala New	492	0	358	132	2	0	347	145	0
31	Elsahel 3	270	0	105	70	95	0	105	90	75
32	Elgabal	482	23	3	30	426	23	3	45	411
33	Elzorkany	650	83	28	82	457	83	28	115	424
34	Elder	782	34	214	117	417	34	214	167	367
35	Sahel Elder	791	0	575	11	205	0	575	61	155
36	Sayalt Zarneekh	708	0	300	140	268	0	300	185	223

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Oct 2000				Expected, 16 Oct 2000			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	1104	16	512	191	1104	20	512	187
2	Sahel Komer	561	401	48	80	32	401	49	111	0
3	Hager Komer	1527	622	1	148	756	622	1	150	754
4	Hager Komer Bransh	406	353	0	53	0	353	0	53	0
5	Mansour Bransh	603	351	0	252	0	351	0	252	0
6	Ganabit Eltama	246	169	0	54	23	169	0	54	23
7	Ganabit Elteraa	778	639	0	139	0	639	0	139	0
8	Elrekya	348	135	101	110	2	135	101	110	2
9	Elnamsa	1622	1229	5	290	98	1229	5	300	88
10	Elakhmas	602	409	1	192	0	409	1	192	0
11	Elsereeb	88	60	0	10	18	60	0	10	18
12	Eladima	785	599	43	106	37	599	43	106	37
13	Elghaba	109	92	0	14	3	92	0	14	3
14	Esna west	1705	1172	6	297	230	1172	6	297	230
15	Elkaram	1674	995	14	305	360	995	14	305	360
16	Elshekh Fadl west	880	594	4	202	80	594	4	202	80
17	Esna North	1353	819	0	361	173	819	0	361	173
18	Elshekh Fdeal East	160	52	15	72	21	52	15	72	21
19	sahel Esna	626	215	6	250	155	215	6	250	155
20	Elnegoo	127	67	8	52	0	67	8	52	0
21	Elkorom	240	71	14	88	67	71	14	88	67
22	Ganabit Asfon	4297	1220	10	3067	0	1220	10	3067	0
23	Alkeman	526	110	2	414	0	110	2	414	0
24	Elmatana	3124	1072	139	1508	405	1072	139	1508	405
25	Sahel Elmatana	984	217	261	398	108	217	261	398	108
26	Gezert elkeman	506	2	432	72	0	2	432	72	0
27	Old Klabia	1435	20	169	1095	151	20	169	1095	151
28	Elsahel 1	304	49	194	61	0	49	194	61	0
29	Elsahel 2	502	0	268	218	16	0	268	218	16
30	Elhala New	492	0	0	225	267	0	0	225	267
31	Elsahel 3	270	0	107	151	12	0	107	151	12
32	Elgabal	482	24	17	297	144	24	17	297	144
33	Elzorkany	650	90	29	417	114	90	29	417	114
34	Elder	782	33	210	205	334	33	210	205	334
35	Sahel Elder	791	0	566	225	0	0	566	225	0
36	Sayalt Zarneekh	708	0	301	236	171	0	301	236	171

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Oct 2000				Expected, 1 Nov 2000			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	1104	20	512	187	1104	20	512	187
2	Sahel Komer	561	401	49	111	0	401	49	111	0
3	Hager Komer	1527	1163	1	148	215	622	1	148	756
4	Hager Komer Bransh	406	353	0	53	0	353	0	53	0
5	Mansour Bransh	603	351	0	252	0	351	0	252	0
6	Ganabit Eltama	246	169	0	54	23	169	0	54	23
7	Ganabit Elteraa	778	614	0	139	25	639	0	139	0
8	Elrekya	348	135	101	110	2	135	101	110	2
9	Elnamsa	1622	1229	5	290	98	1229	5	300	88
10	Elakhmas	602	409	1	192	0	409	1	192	0
11	Elsereeb	88	60	0	10	18	60	0	10	18
12	Eladima	785	599	43	106	37	599	43	106	37
13	Elghaba	109	92	0	14	3	92	0	14	3
14	Esna west	1705	1172	6	297	230	1172	6	297	230
15	Elkaram	1674	995	14	305	360	995	14	305	360
16	Elshekh Fadl west	880	594	4	202	80	594	4	202	80
17	Esna North	1353	819	0	361	173	819	0	361	173
18	Elshekh Fdeal East	160	52	15	72	21	52	15	72	21
19	sahel Esna	626	215	6	250	155	215	6	250	155
20	Elnegoo	127	44	8	75	0	67	8	52	0
21	Elkorom	240	71	14	88	67	71	14	88	67
22	Ganabit Asfon	4297	1220	10	3067	0	1220	10	3067	0
23	Alkeman	526	110	2	414	0	110	2	414	0
24	Elmatana	3124	1072	139	1508	405	1072	139	1508	405
25	Sahel Elmatana	984	217	261	398	108	217	261	398	108
26	Gezert elkeman	506	2	432	72	0	2	432	72	0
27	Old Klabia	1435	20	169	1095	151	20	169	1095	151
28	Elsahel 1	304	49	78	168	9	49	78	168	9
29	Elsahel 2	502	0	268	218	16	0	268	218	16
30	Elhala New	492	0	0	225	267	0	0	225	267
31	Elsahel 3	270	0	107	151	12	0	107	151	12
32	Elgabal	482	24	17	297	144	24	17	297	144
33	Elzorkany	650	90	29	417	114	90	29	417	114
34	Elder	782	33	210	205	334	33	210	205	334
35	Sahel Elder	791	0	566	225	0	0	585	206	0
36	Sayalt Zarneekh	708	0	301	236	171	0	301	236	171

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Nov 2000				Expected, 16 Nov 2000			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	1104	9	512	198	1104	9	512	198
2	Sahel Komer	561	401	49	110	1	401	49	110	1
3	Hager Komer	1527	1179	1	301	46	1179	1	301	46
4	Hager Komer Bransh	406	331	0	56	19	331	0	56	19
5	Mansour Bransh	603	446	0	117	40	446	0	117	40
6	Ganabit Eltama	246	198	0	43	5	198	0	43	5
7	Ganabit Elteraa	778	614	0	103	61	614	0	103	61
8	Elrekya	348	135	101	96	16	135	101	96	16
9	Elnamsa	1622	1229	5	282	106	1229	5	282	106
10	Elakhmas	602	389	1	201	11	389	1	201	11
11	Elsereeb	88	60	0	10	18	60	0	10	18
12	Eladima	785	599	43	104	39	599	43	104	39
13	Elghaba	109	92	0	14	3	92	0	14	3
14	Esna west	1705	1057	6	405	237	1057	6	405	237
15	Elkaram	1674	1098	14	455	107	1098	14	455	107
16	Elshekh Fadl west	880	638	3	222	17	638	3	222	17
17	Esna North	1353	890	0	420	43	890	0	420	43
18	Elshekh Fdeal East	160	72	14	54	20	72	14	54	20
19	sahel Esna	626	243	17	287	79	243	17	287	79
20	Elnegoo	127	43	8	72	4	43	8	72	4
21	Elkorom	240	71	14	118	37	71	14	118	37
22	Ganabit Asfon	4297	1220	10	3067	0	1220	10	3067	0
23	Alkeman	526	149	2	269	106	149	2	269	106
24	Elmatana	3124	1088	139	1315	582	1088	139	1315	582
25	Sahel Elmatana	984	263	327	394	0	263	327	394	0
26	Gezert elkeman	506	2	436	68	0	2	436	68	0
27	Old Klabia	1435	30	172	1089	144	30	172	1089	144
28	Elsahel 1	304	49	87	137	31	49	87	137	31
29	Elsahel 2	502	0	266	217	19	0	266	217	19
30	Elhala New	492	0	407	66	19	0	407	66	19
31	Elsahel 3	270	0	107	151	12	0	107	151	12
32	Elgabal	482	24	14	415	29	24	14	415	29
33	Elzorkany	650	90	29	426	105	90	29	426	105
34	Elder	782	33	176	283	290	33	176	283	290
35	Sahel Elder	791	0	564	199	28	0	564	199	28
36	Sayalt Zarneekh	708	0	301	265	142	0	301	265	142

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Nov 2000				Expected, 1 Dec 2000			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	1104	9	512	198	1104	9	512	198
2	Sahel Komer	561	401	49	110	1	401	49	110	1
3	Hager Komer	1527	1179	1	301	46	1179	1	301	46
4	Hager Komer Bransh	406	331	0	56	19	331	0	56	19
5	Mansour Bransh	603	446	0	117	40	446	0	117	40
6	Ganabit Eltama	246	198	0	43	5	198	0	43	5
7	Ganabit Elteraa	778	614	0	103	61	614	0	103	61
8	Elrekya	348	135	101	96	16	135	101	96	16
9	Elnamsa	1622	1229	5	282	106	1229	5	282	106
10	Elakhmas	602	389	1	201	11	389	1	201	11
11	Elsereeb	88	60	0	10	18	60	0	10	18
12	Eladima	785	599	43	104	39	599	43	104	39
13	Elghaba	109	92	0	14	3	92	0	14	3
14	Esna west	1705	1057	6	405	237	1057	6	405	237
15	Elkaram	1674	1098	14	455	107	1098	14	455	107
16	Elshekh Fadl west	880	638	3	222	17	638	3	222	17
17	Esna North	1353	890	0	420	43	890	0	420	43
18	Elshekh Fdeal East	160	72	14	54	20	72	14	54	20
19	sahel Esna	626	243	17	287	79	243	17	287	79
20	Elnegoo	127	43	8	72	4	43	8	72	4
21	Elkorom	240	71	14	118	37	71	14	118	37
22	Ganabit Asfon	4297	1220	10	3067	0	1220	10	3067	0
23	Alkeman	526	149	2	269	106	149	2	269	106
24	Elmatana	3124	1088	139	1315	582	1088	139	1315	582
25	Sahel Elmatana	984	263	327	394	0	263	327	394	0
26	Gezert elkeman	506	2	436	68	0	2	436	68	0
27	Old Klabia	1435	30	172	1089	144	30	172	1089	144
28	Elsahel 1	304	49	87	137	31	49	87	137	31
29	Elsahel 2	502	0	266	217	19	0	266	217	19
30	Elhala New	492	0	407	66	19	0	407	66	19
31	Elsahel 3	270	0	107	151	12	0	107	151	12
32	Elgabal	482	24	14	415	29	24	14	415	29
33	Elzorkany	650	90	29	426	105	90	29	426	105
34	Elder	782	33	176	283	290	33	176	283	290
35	Sahel Elder	791	0	564	199	28	0	564	199	28
36	Sayalt Zarneekh	708	0	301	265	142	0	301	265	142

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Dec 2000				Expected, 16 Dec 2000			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	1104	9	710	0	1104	9	710	0
2	Sahel Komer	561	401	49	111	0	401	49	111	0
3	Hager Komer	1527	1179	1	347	0	1179	1	347	0
4	Hager Komer Bransh	406	331	0	75	0	331	0	75	0
5	Mansour Bransh	603	446	0	157	0	446	0	157	0
6	Ganabit Eltama	246	198	0	48	0	198	0	48	0
7	Ganabit Elteraa	778	614	0	164	0	614	0	164	0
8	Elrekya	348	135	101	112	0	135	101	112	0
9	Elnamsa	1622	1229	5	388	0	1229	5	388	0
10	Elakhmas	602	389	1	212	0	389	1	212	0
11	Elsereeb	88	60	0	28	0	60	0	28	0
12	Eladima	785	599	43	143	0	599	43	143	0
13	Elghaba	109	92	0	17	0	92	0	17	0
14	Esna west	1705	1057	6	642	0	1057	6	642	0
15	Elkaram	1674	1098	14	562	0	1098	14	562	0
16	Elshekh Fadl west	880	638	3	239	0	638	3	239	0
17	Esna North	1353	890	0	463	0	890	0	463	0
18	Elshekh Fdeal East	160	72	14	74	0	72	14	74	0
19	sahel Esna	626	243	17	366	0	243	17	366	0
20	Elnegoo	127	43	8	76	0	43	8	76	0
21	Elkorom	240	71	14	155	0	71	14	155	0
22	Ganabit Asfon	4297	1220	10	3067	0	1220	10	3067	0
23	Alkeman	526	149	2	375	0	149	2	375	0
24	Elmatana	3124	1088	139	1897	0	1088	139	1897	0
25	Sahel Elmatana	984	263	327	394	0	263	327	394	0
26	Gezert elkeman	506	2	436	68	0	2	436	68	0
27	Old Klabia	1435	30	172	1233	0	30	172	1233	0
28	Elsahel 1	304	49	87	168	0	49	87	168	0
29	Elsahel 2	502	0	266	236	0	0	266	236	0
30	Elhala New	492	0	407	85	0	0	407	85	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	24	14	444	0	24	14	444	0
33	Elzorkany	650	90	29	531	0	90	29	531	0
34	Elder	782	33	176	573	0	33	176	573	0
35	Sahel Elder	791	0	564	227	0	0	564	227	0
36	Sayalt Zarneekh	708	0	301	407	0	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Dec 2000				Expected, 1 Jan 2001			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	1054	9	710	50	1000	9	710	104
2	Sahel Komer	561	376	49	111	25	350	49	111	51
3	Hager Komer	1527	1100	1	347	79	1000	1	347	179
4	Hager Komer Bransh	406	300	0	75	31	280	0	75	51
5	Mansour Bransh	603	401	0	157	45	380	0	157	66
6	Ganabit Eltama	246	178	0	48	20	150	0	48	48
7	Ganabit Elteraa	778	550	0	164	64	500	0	164	114
8	Elrekya	348	110	101	112	25	100	101	112	35
9	Elnamsa	1622	1150	5	388	79	1100	5	388	129
10	Elakhmas	602	350	1	212	39	325	1	212	64
11	Elsereeb	88	50	0	28	10	45	0	28	15
12	Eladima	785	550	43	143	49	500	43	143	99
13	Elghaba	109	82	0	17	10	72	0	17	20
14	Esna west	1705	1000	6	642	57	957	6	642	100
15	Elkaram	1674	1000	14	562	98	950	14	562	148
16	Elshekh Fadl west	880	580	3	239	58	550	3	239	88
17	Esna North	1353	850	0	463	40	800	0	463	90
18	Elshekh Fdeal East	160	62	14	74	10	52	14	74	20
19	sahel Esna	626	223	17	366	20	200	17	366	43
20	Elnegoo	127	38	8	76	5	33	8	76	10
21	Elkorom	240	65	14	155	6	60	14	155	11
22	Ganabit Asfon	4297	1100	10	3067	120	1000	10	3067	220
23	Alkeman	526	120	2	375	29	110	2	375	39
24	Elmatana	3124	1000	139	1897	88	950	139	1897	138
25	Sahel Elmatana	984	240	327	394	23	200	327	394	63
26	Gezert elkeman	506	2	436	68	0	0	436	68	2
27	Old Klabia	1435	25	172	1233	5	25	172	1233	5
28	Elsahel 1	304	45	87	168	4	40	87	168	9
29	Elsahel 2	502	0	266	236	0	0	266	236	0
30	Elhala New	492	0	407	85	0	0	407	85	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	23	14	444	1	20	14	444	4
33	Elzorkany	650	80	29	531	10	70	29	531	20
34	Elder	782	30	176	573	3	25	176	573	8
35	Sahel Elder	791	0	564	227	0	0	564	227	0
36	Sayalt Zarneekh	708	0	301	407	0	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Jan 2000				Expected, 16 Jan 2000			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	1000	9	710	104	950	9	710	154
2	Sahel Komer	561	350	49	111	51	325	49	111	76
3	Hager Komer	1527	1000	1	347	179	920	1	347	259
4	Hager Komer Bransh	406	280	0	75	51	250	0	75	81
5	Mansour Bransh	603	380	0	157	66	345	0	157	101
6	Ganabit Eltama	246	150	0	48	48	135	0	48	63
7	Ganabit Elteraa	778	500	0	164	114	470	0	164	144
8	Elrekya	348	100	101	112	35	90	101	112	45
9	Elnamsa	1622	1100	5	388	129	1050	5	388	179
10	Elakhmas	602	325	1	212	64	320	1	212	69
11	Elsereeb	88	45	0	28	15	40	0	28	20
12	Eladima	785	500	43	143	99	450	43	143	149
13	Elghaba	109	72	0	17	20	68	0	17	24
14	Esna west	1705	957	6	642	100	927	6	642	130
15	Elkaram	1674	950	14	562	148	900	14	562	198
16	Elshekh Fadl west	880	550	3	239	88	530	3	239	108
17	Esna North	1353	800	0	463	90	750	0	463	140
18	Elshekh Fdeal East	160	52	14	74	20	48	14	74	24
19	sahel Esna	626	200	17	366	43	175	17	366	68
20	Elnegoo	127	33	8	76	10	28	8	76	15
21	Elkorom	240	60	14	155	11	55	14	155	16
22	Ganabit Asfon	4297	1000	10	3067	220	920	10	3067	300
23	Alkeman	526	110	2	375	39	100	2	375	49
24	Elmatana	3124	950	139	1897	138	910	139	1897	178
25	Sahel Elmatana	984	200	327	394	63	185	327	394	78
26	Gezert elkeman	506	0	436	68	2	0	436	68	2
27	Old Klabia	1435	25	172	1233	5	20	172	1233	10
28	Elsahel 1	304	40	87	168	9	35	87	168	14
29	Elsahel 2	502	0	266	236	0	0	266	236	0
30	Elhala New	492	0	407	85	0	0	407	85	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	20	14	444	4	18	14	444	6
33	Elzorkany	650	70	29	531	20	65	29	531	25
34	Elder	782	25	176	573	8	20	176	573	13
35	Sahel Elder	791	0	564	227	0	0	564	227	0
36	Sayalt Zarneekh	708	0	301	407	0	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Jan 2001				Expected, 1 Feb 2001			
		(feddan	suger	garden	Others	Fallow	suger	garder	Others	Fallow
1	Elramady	1823	950	9	710	154	850	9	710	254
2	Sahel Komer	561	325	49	111	76	300	49	111	101
3	Hager Komer	1527	920	1	347	259	870	1	347	309
4	Hager Komer Bransh	406	250	0	75	81	240	0	75	91
5	Mansour Bransh	603	345	0	157	101	320	0	157	126
6	Ganabit Eltama	246	135	0	48	63	130	0	48	68
7	Ganabit Elteraa	778	470	0	164	144	450	0	164	164
8	Elrekya	348	90	101	112	45	40	101	112	95
9	Elnamsa	1622	1050	5	388	179	980	5	388	249
10	Elakhmas	602	320	1	212	69	300	1	212	89
11	Elsereeb	88	40	0	28	20	38	0	28	22
12	Eladima	785	450	43	143	149	440	43	143	159
13	Elghaba	109	68	0	17	24	55	0	17	37
14	Esna west	1705	927	6	642	130	850	6	642	207
15	Elkaram	1674	900	14	562	198	850	14	562	248
16	Elshekh Fadl west	880	530	3	239	108	500	3	239	138
17	Esna North	1353	750	0	463	140	680	0	463	210
18	Elshekh Fdeal East	160	48	14	74	24	45	14	74	27
19	sahel Esna	626	175	17	366	68	220	17	366	23
20	Elnegoo	127	28	8	76	15	25	8	76	18
21	Elkorom	240	55	14	155	16	50	14	155	21
22	Ganabit Asfon	4297	920	10	3067	300	900	10	3067	320
23	Alkeman	526	100	2	375	49	95	2	375	54
24	Elmatana	3124	910	139	1897	178	850	139	1897	238
25	Sahel Elmatana	984	185	327	394	78	170	327	394	93
26	Gezert elkeman	506	2	436	68	0	2	436	68	0
27	Old Klabia	1435	20	172	1233	10	18	172	1233	12
28	Elsahel 1	304	35	87	168	14	32	87	168	17
29	Elsahel 2	502	0	266	236	0	0	266	236	0
30	Elhala New	492	0	407	85	0	0	407	85	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	18	14	444	6	16	14	444	8
33	Elzorkany	650	65	29	531	25	62	29	531	28
34	Elder	782	20	176	573	13	20	176	573	13
35	Sahel Elder	791	0	564	227	0	0	564	227	0
36	Sayalt Zarneekh	708	0	301	407	0	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Feb 2001				Expected, 16 Feb 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	850	9	710	254	800	9	710	304
2	Sahel Komer	561	300	49	111	101	250	49	111	151
3	Hager Komer	1527	870	1	347	309	800	1	347	379
4	Hager Komer Bransh	406	240	0	75	91	210	0	75	121
5	Mansour Bransh	603	320	0	157	126	300	0	157	146
6	Ganabit Eltama	246	130	0	48	68	125	0	48	73
7	Ganabit Elteraa	778	450	0	164	164	400	0	164	214
8	Elrekya	348	40	101	112	95	40	101	112	95
9	Elnamsa	1622	980	5	388	249	900	5	388	329
10	Elakhmas	602	300	1	212	89	250	1	212	139
11	Elsereeb	88	38	0	28	22	35	0	28	25
12	Eladima	785	440	43	143	159	400	43	143	199
13	Elghaba	109	55	0	17	37	54	0	17	38
14	Esna west	1705	850	6	642	207	750	6	642	307
15	Elkaram	1674	850	14	562	248	750	14	562	348
16	Elshekh Fadl west	880	500	3	239	138	450	3	239	188
17	Esna North	1353	680	0	463	210	600	0	463	290
18	Elshekh Fdeal East	160	45	14	74	27	43	14	74	29
19	sahel Esna	626	220	17	366	23	150	17	366	93
20	Elnegoo	127	25	8	76	18	25	8	76	18
21	Elkorom	240	50	14	155	21	48	14	155	23
22	Ganabit Asfon	4297	900	10	3067	320	800	10	3067	420
23	Alkeman	526	95	2	375	54	95	2	375	54
24	Elmatana	3124	850	139	1897	238	750	139	1897	338
25	Sahel Elmatana	984	170	327	394	93	170	327	394	93
26	Gezert elkeman	506	2	436	68	0	1	436	68	1
27	Old Klabia	1435	18	172	1233	12	17	172	1233	13
28	Elsahel 1	304	32	87	168	17	30	87	168	19
29	Elsahel 2	502	0	266	236	0	0	266	236	0
30	Elhala New	492	0	407	85	0	0	407	85	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	16	14	444	8	15	14	444	9
33	Elzorkany	650	62	29	531	28	60	29	531	30
34	Elder	782	20	176	573	13	19	176	573	14
35	Sahel Elder	791	0	564	227	0	0	564	227	0
36	Sayalt Zarneekh	708	0	301	407	0	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Feb 2001				Expected, 1 Mar 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	800	9	710	304	700	9	710	404
2	Sahel Komer	561	250	49	111	151	240	49	111	161
3	Hager Komer	1527	800	1	347	379	700	1	347	479
4	Hager Komer Bransh	406	210	0	75	121	180	0	75	151
5	Mansour Bransh	603	300	0	157	146	240	0	157	206
6	Ganabit Eltama	246	125	0	48	73	100	0	48	98
7	Ganabit Elteraa	778	400	0	164	214	300	0	164	314
8	Elrekya	348	40	101	112	95	40	101	112	95
9	Elnamsa	1622	900	5	388	329	700	5	388	529
10	Elakhmas	602	250	1	212	139	200	1	212	189
11	Elsereeb	88	35	0	28	25	30	0	28	30
12	Eladima	785	400	43	143	199	300	43	143	299
13	Elghaba	109	54	0	17	38	47	0	17	45
14	Esna west	1705	750	6	642	307	600	6	642	457
15	Elkaram	1674	750	14	562	348	500	14	562	598
16	Elshekh Fadl west	880	450	3	239	188	300	3	239	338
17	Esna North	1353	600	0	463	290	400	0	463	490
18	Elshekh Fdeal East	160	43	14	74	29	20	14	74	52
19	sahel Esna	626	150	17	366	93	100	17	366	143
20	Elnegoo	127	25	8	76	18	20	8	76	23
21	Elkorom	240	48	14	155	23	31	14	155	40
22	Ganabit Asfon	4297	800	10	3067	420	500	10	3067	720
23	Alkeman	526	95	2	375	54	49	2	375	100
24	Elmatana	3124	750	139	1897	338	588	139	1897	500
25	Sahel Elmatana	984	170	327	394	93	100	327	394	163
26	Gezert elkeman	506	1	436	68	1	0	436	68	2
27	Old Klabia	1435	17	172	1233	13	12	172	1233	18
28	Elsahel 1	304	30	87	168	19	20	87	168	29
29	Elsahel 2	502	0	266	236	0	0	266	236	0
30	Elhala New	492	0	407	85	0	0	407	85	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	15	14	444	9	10	14	444	14
33	Elzorkany	650	60	29	531	30	40	29	531	50
34	Elder	782	19	176	573	14	13	176	573	20
35	Sahel Elder	791	0	564	227	0	0	564	227	0
36	Sayalt Zarneekh	708	0	301	407	0	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Mar 2001				Expected, 16 Mar 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	700	9	710	404	400	9	710	704
2	Sahel Komer	561	240	49	111	161	131	49	111	270
3	Hager Komer	1527	700	1	347	479	400	1	347	779
4	Hager Komer Bransh	406	180	0	75	151	131	0	75	200
5	Mansour Bransh	603	240	0	157	206	146	0	157	300
6	Ganabit Eltama	246	100	0	48	98	68	0	48	130
7	Ganabit Elteraa	778	300	0	164	314	214	0	164	400
8	Elrekya	348	40	101	112	95	35	101	112	100
9	Elnamsa	1622	700	5	388	529	429	5	388	800
10	Elakhmas	602	200	1	212	189	89	1	212	300
11	Elsereeb	88	30	0	28	30	20	0	28	40
12	Eladima	785	300	43	143	299	199	43	143	400
13	Elghaba	109	47	0	17	45	32	0	17	60
14	Esna west	1705	600	6	642	457	357	6	642	700
15	Elkaram	1674	500	14	562	598	398	14	562	700
16	Elshekh Fadl west	880	300	3	239	338	238	3	239	400
17	Esna North	1353	400	0	463	490	290	0	463	600
18	Elshekh Fdeal East	160	20	14	74	52	20	14	74	52
19	sahel Esna	626	100	17	366	143	80	17	366	163
20	Elnegoo	127	20	8	76	23	13	8	76	30
21	Elkorom	240	31	14	155	40	21	14	155	50
22	Ganabit Asfon	4297	500	10	3067	720	420	10	3067	800
23	Alkeman	526	49	2	375	100	39	2	375	110
24	Elmatana	3124	588	139	1897	500	388	139	1897	700
25	Sahel Elmatana	984	100	327	394	163	63	327	394	200
26	Gezert elkeman	506	0	436	68	2	0	436	68	2
27	Old Klabia	1435	12	172	1233	18	10	172	1233	20
28	Elsahel 1	304	20	87	168	29	15	87	168	34
29	Elsahel 2	502	0	266	236	0	0	266	236	0
30	Elhala New	492	0	407	85	0	0	407	85	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	10	14	444	14	8	14	444	16
33	Elzorkany	650	40	29	531	50	30	29	531	60
34	Elder	782	13	176	573	20	10	176	573	23
35	Sahel Elder	791	0	564	227	0	0	564	227	0
36	Sayalt Zarneekh	708	0	301	407	0	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Mar 2001				Expected, 1 Apr 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	400	9	710	704	300	9	710	804
2	Sahel Komer	561	131	49	111	270	101	49	111	300
3	Hager Komer	1527	400	1	347	779	300	1	347	879
4	Hager Komer Bransh	406	131	0	75	200	100	0	75	231
5	Mansour Bransh	603	146	0	157	300	100	0	157	346
6	Ganabit Eltama	246	68	0	48	130	50	0	48	148
7	Ganabit Elteraa	778	214	0	164	400	164	0	164	450
8	Elrekya	348	35	101	112	100	25	101	112	110
9	Elnamsa	1622	429	5	388	800	329	5	388	900
10	Elakhmas	602	89	1	212	300	69	1	212	320
11	Elsereeb	88	20	0	28	40	15	0	28	45
12	Eladima	785	199	43	143	400	250	43	143	349
13	Elghaba	109	32	0	17	60	25	0	17	67
14	Esna west	1705	357	6	642	700	307	6	642	750
15	Elkaram	1674	398	14	562	700	300	14	562	798
16	Elshekh Fadl west	880	238	3	239	400	200	3	239	438
17	Esna North	1353	290	0	463	600	200	0	463	690
18	Elshekh Fdeal East	160	20	14	74	52	15	14	74	57
19	sahel Esna	626	80	17	366	163	43	17	366	200
20	Elnegoo	127	13	8	76	30	10	8	76	33
21	Elkorom	240	21	14	155	50	16	14	155	55
22	Ganabit Asfon	4297	420	10	3067	800	350	10	3067	870
23	Alkeman	526	39	2	375	110	30	2	375	119
24	Elmatana	3124	388	139	1897	700	300	139	1897	788
25	Sahel Elmatana	984	63	327	394	200	50	327	394	213
26	Gezert elkeman	506	0	436	68	2	0	436	68	2
27	Old Klabia	1435	10	172	1233	20	6	172	1233	24
28	Elsahel 1	304	15	87	168	34	10	87	168	39
29	Elsahel 2	502	0	266	236	0	0	266	236	0
30	Elhala New	492	0	407	85	0	0	407	85	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	10	14	444	14	6	14	444	18
33	Elzorkany	650	40	29	531	50	30	29	531	60
34	Elder	782	13	176	573	20	8	176	573	25
35	Sahel Elder	791	0	564	227	0	0	564	227	0
36	Sayalt Zarneekh	708	0	301	407	0	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Apr 2001				Expected, 16 Apr 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	300	9	710	804	300	9	710	804
2	Sahel Komer	561	101	49	111	300	101	49	111	300
3	Hager Komer	1527	300	1	347	879	300	1	347	879
4	Hager Komer Bransh	406	131	0	75	200	131	0	75	200
5	Mansour Bransh	603	146	0	157	300	146	0	157	300
6	Ganabit Eltama	246	50	0	48	148	50	0	48	148
7	Ganabit Elteraa	778	164	0	164	450	164	0	164	450
8	Elrekya	348	25	101	112	110	25	101	112	110
9	Elnamsa	1622	329	5	388	900	329	5	388	900
10	Elakhmas	602	69	1	212	320	69	1	212	320
11	Elsereeb	88	15	0	28	45	15	0	28	45
12	Eladima	785	150	43	143	449	150	43	143	449
13	Elghaba	109	25	0	17	67	25	0	17	67
14	Esna west	1705	307	6	642	750	307	6	642	750
15	Elkaram	1674	300	14	562	798	300	14	562	798
16	Elshekh Fadl west	880	200	3	239	438	200	3	239	438
17	Esna North	1353	200	0	463	690	200	0	463	690
18	Elshekh Fdeal East	160	43	14	74	29	43	14	74	29
19	sahel Esna	626	15	17	366	228	15	17	366	228
20	Elnegoo	127	10	8	76	33	10	8	76	33
21	Elkorom	240	16	14	155	55	16	14	155	55
22	Ganabit Asfon	4297	350	10	3067	870	350	10	3067	870
23	Alkeman	526	30	2	375	119	30	2	375	119
24	Elmatana	3124	300	139	1897	788	300	139	1897	788
25	Sahel Elmatana	984	50	327	394	213	50	327	394	213
26	Gezert elkeman	506	0	436	68	2	0	436	68	2
27	Old Klabia	1435	6	172	1233	24	6	172	1233	24
28	Elsahel 1	304	10	87	168	39	10	87	168	39
29	Elsahel 2	502	0	266	236	0	0	266	236	0
30	Elhala New	492	0	407	85	0	0	407	85	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	6	14	444	18	6	14	444	18
33	Elzorkany	650	30	29	531	60	30	29	531	60
34	Elder	782	8	176	573	25	8	176	573	25
35	Sahel Elder	791	0	564	227	0	0	564	227	0
36	Sayalt Zarneekh	708	0	301	407	0	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Apr 2001				Expected, 1 May 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	300	9	710	804	300	9	500	1014
2	Sahel Komer	561	101	49	111	300	101	49	81	330
3	Hager Komer	1527	300	1	347	879	300	1	200	1026
4	Hager Komer Bransh	406	131	0	75	200	131	0	50	225
5	Mansour Bransh	603	146	0	157	300	146	0	107	350
6	Ganabit Eltama	246	50	0	48	148	50	0	30	166
7	Ganabit Elteraa	778	164	0	164	450	164	0	120	494
8	Elrekya	348	25	101	112	110	25	101	80	142
9	Elnamsa	1622	329	5	388	900	329	5	300	988
10	Elakhmas	602	69	1	212	320	69	1	112	420
11	Elsereeb	88	15	0	28	45	15	0	20	53
12	Eladima	785	150	43	143	449	150	43	100	492
13	Elghaba	109	25	0	17	67	25	0	10	74
14	Esna west	1705	307	6	642	750	307	6	342	1050
15	Elkaram	1674	300	14	562	798	300	14	300	1060
16	Elshekh Fadl west	880	200	3	239	438	200	3	139	538
17	Esna North	1353	200	0	463	690	200	0	263	890
18	Elshekh Fdeal East	160	43	14	74	29	43	14	200	-97
19	sahel Esna	626	15	17	366	228	15	17	50	544
20	Elnegoo	127	10	8	76	33	10	8	26	83
21	Elkorom	240	16	14	155	55	16	14	75	135
22	Ganabit Asfon	4297	350	10	3067	870	350	10	1067	2870
23	Alkeman	526	30	2	375	119	30	2	175	319
24	Elmatana	3124	300	139	1897	788	300	139	597	2088
25	Sahel Elmatana	984	50	327	394	213	50	327	194	413
26	Gezert elkeman	506	0	436	68	2	0	436	68	2
27	Old Klabia	1435	6	172	1233	24	6	172	800	457
28	Elsahel 1	304	10	87	168	39	10	87	100	107
29	Elsahel 2	502	0	266	236	0	0	266	136	100
30	Elhala New	492	0	407	85	0	0	407	50	35
31	Elsahel 3	270	0	107	163	0	0	107	100	63
32	Elgabal	482	6	14	444	18	6	14	300	162
33	Elzorkany	650	30	29	531	60	30	29	400	191
34	Elder	782	8	176	573	25	8	176	373	225
35	Sahel Elder	791	0	564	227	0	0	564	127	100
36	Sayalt Zarneekh	708	0	301	407	0	0	301	250	157

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 May 2001				Expected, 16 May 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	1104	9	500	210	1104	9	350	360
2	Sahel Komer	561	401	49	81	30	401	49	51	60
3	Hager Komer	1527	1179	1	200	147	1179	1	100	247
4	Hager Komer Bransh	406	331	0	50	25	331	0	25	50
5	Mansour Bransh	603	446	0	103	54	446	0	100	57
6	Ganabit Eltama	246	198	0	30	18	198	0	25	23
7	Ganabit Elteraa	778	614	0	120	44	614	0	120	44
8	Elrekya	348	135	101	80	32	135	101	60	52
9	Elnamsa	1622	1229	5	300	88	1229	5	300	88
10	Elakhmas	602	380	1	112	109	389	1	92	120
11	Elsereeb	88	60	0	20	8	60	0	15	13
12	Eladima	785	599	43	100	43	599	43	80	63
13	Elghaba	109	92	0	10	7	92	0	5	12
14	Esna west	1705	1057	6	342	300	1057	6	200	442
15	Elkaram	1674	1098	14	300	262	1098	14	250	312
16	Elshekh Fadl west	880	638	3	139	100	638	3	89	150
17	Esna North	1353	890	0	263	200	890	0	223	240
18	Elshekh Fdeal East	160	72	14	50	24	72	14	30	44
19	sahel Esna	626	243	17	200	166	243	17	100	266
20	Elnegoo	127	43	8	26	50	43	8	20	56
21	Elkorom	240	71	14	75	80	71	14	55	100
22	Ganabit Asfon	4297	1220	10	1067	2000	1220	10	887	2180
23	Alkeman	526	149	2	175	200	149	2	150	225
24	Elmatana	3124	1088	139	592	1305	1088	139	585	1312
25	Sahel Elmatana	984	236	117	394	237	236	117	394	237
26	Gezert elkeman	506	2	436	68	0	2	436	68	0
27	Old Klabia	1435	30	172	800	433	30	172	600	633
28	Elsahel 1	304	49	87	100	68	49	87	50	118
29	Elsahel 2	502	0	266	136	100	0	266	100	136
30	Elhala New	492	0	407	50	35	0	407	45	40
31	Elsahel 3	270	0	107	100	63	0	107	80	83
32	Elgabal	482	24	14	300	144	24	14	200	244
33	Elzorkany	650	90	29	400	131	90	29	300	231
34	Elder	782	33	176	373	200	33	176	340	233
35	Sahel Elder	791	0	564	127	100	0	564	107	120
36	Sayalt Zarneekh	708	0	301	250	157	0	301	220	187

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 May 2001				Expected, 1 Jun 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	1104	9	350	360	1104	9	600	110
2	Sahel Komer	561	401	49	51	60	401	49	100	11
3	Hager Komer	1527	1179	1	100	247	1179	1	300	47
4	Hager Komer Bransh	406	331	0	25	50	331	0	60	15
5	Mansour Bransh	603	446	0	100	57	446	0	137	20
6	Ganabit Eltama	246	198	0	25	23	198	0	38	10
7	Ganabit Elteraa	778	614	0	70	94	614	0	144	20
8	Elrekya	348	135	101	60	52	135	101	100	12
9	Elnamsa	1622	1229	5	200	188	1229	5	350	38
10	Elakhmas	602	389	1	92	120	389	1	192	20
11	Elsereeb	88	60	0	15	13	60	0	20	8
12	Eladima	785	599	43	80	63	599	43	123	20
13	Elghaba	109	92	0	5	12	92	0	15	2
14	Esna west	1705	1057	6	200	442	1057	6	542	100
15	Elkaram	1674	1098	14	250	312	1098	14	450	112
16	Elshekh Fadl west	880	638	3	89	150	638	3	189	50
17	Esna North	1353	890	0	223	240	890	0	423	40
18	Elshekh Fdeal East	160	72	14	30	44	72	14	54	20
19	sahel Esna	626	243	17	200	166	243	17	300	66
20	Elnegoo	127	43	8	20	56	43	8	66	10
21	Elkorom	240	71	14	55	100	71	14	135	20
22	Ganabit Asfon	4297	1220	10	867	2200	1220	10	2567	500
23	Alkeman	526	149	2	150	225	149	2	325	50
24	Elmatana	3124	1088	139	595	1302	1088	139	1595	302
25	Sahel Elmatana	984	263	327	174	220	263	327	374	20
26	Gezert elkeman	506	2	436	68	0	2	436	68	0
27	Old Klabia	1435	30	172	800	433	30	172	600	633
28	Elsahel 1	304	49	87	100	68	49	87	50	118
29	Elsahel 2	502	0	266	136	100	0	266	100	136
30	Elhala New	492	0	407	50	35	0	407	45	40
31	Elsahel 3	270	0	107	100	63	0	107	80	83
32	Elgabal	482	24	14	300	144	24	14	200	244
33	Elzorkany	650	90	29	400	131	90	29	300	231
34	Elder	782	33	176	373	200	33	176	340	233
35	Sahel Elder	791	0	564	127	100	0	564	107	120
36	Sayalt Zarneekh	708	0	301	250	157	0	301	220	187

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Jun 2001				Expected, 16 Jun 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	1104	9	600	110	1104	9	710	0
2	Sahel Komer	561	401	49	100	11	401	49	111	0
3	Hager Komer	1527	1179	1	300	47	1179	1	347	0
4	Hager Komer Bransh	406	331	0	60	15	331	0	75	0
5	Mansour Bransh	603	446	0	137	20	446	0	157	0
6	Ganabit Eltama	246	198	0	38	10	198	0	48	0
7	Ganabit Elteraa	778	614	0	144	20	614	0	164	0
8	Elrekya	348	135	101	100	12	135	101	112	0
9	Elnamsa	1622	1229	5	350	38	1229	5	388	0
10	Elakhmas	602	389	1	192	20	389	1	212	0
11	Elsereeb	88	60	0	20	8	60	0	28	0
12	Eladima	785	599	43	123	20	599	43	143	0
13	Elghaba	109	92	0	15	2	92	0	17	0
14	Esna west	1705	1057	6	542	100	1057	6	642	0
15	Elkaram	1674	1098	14	450	112	1098	14	562	0
16	Elshekh Fadl west	880	638	3	189	50	638	3	239	0
17	Esna North	1353	890	0	423	40	890	0	463	0
18	Elshekh Fdeal East	160	72	14	54	20	72	14	74	0
19	sahel Esna	626	243	17	300	66	243	17	366	0
20	Elnegoo	127	43	8	66	10	43	8	76	0
21	Elkorom	240	71	14	135	20	71	14	155	0
22	Ganabit Asfon	4297	1220	10	2567	500	1220	10	3067	0
23	Alkeman	526	149	2	325	50	149	2	375	0
24	Elmatana	3124	1088	139	1595	302	1088	139	1897	0
25	Sahel Elmatana	984	263	327	374	20	263	327	394	0
26	Gezert elkeman	506	2	436	68	0	2	436	68	0
27	Old Klabia	1435	30	172	600	633	30	172	1233	0
28	Elsahel 1	304	49	87	50	118	49	87	168	0
29	Elsahel 2	502	0	266	100	136	0	266	236	0
30	Elhala New	492	0	407	45	40	0	407	85	0
31	Elsahel 3	270	0	107	80	83	0	107	163	0
32	Elgabal	482	24	14	200	244	24	14	444	0
33	Elzorkany	650	90	29	300	231	90	29	531	0
34	Elder	782	33	176	340	233	33	176	573	0
35	Sahel Elder	791	0	564	107	120	0	564	227	0
36	Sayalt Zarneekh	708	0	301	220	187	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Jun 2001				Expected, 1 Jul 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	1104	9	710	0	1104	9	710	0
2	Sahel Komer	561	401	49	111	0	401	49	111	0
3	Hager Komer	1527	1179	1	347	0	1179	1	347	0
4	Hager Komer Bransh	406	331	0	75	0	331	0	75	0
5	Mansour Bransh	603	446	0	157	0	446	0	157	0
6	Ganabit Eltama	246	198	0	48	0	198	0	48	0
7	Ganabit Elteraa	778	614	0	164	0	614	0	164	0
8	Elrekya	348	135	101	112	0	135	101	112	0
9	Elnamsa	1622	1229	5	388	0	1229	5	388	0
10	Elakhmas	602	389	1	212	0	389	1	212	0
11	Elsereeb	88	60	0	28	0	60	0	28	0
12	Eladima	785	599	43	143	0	599	43	143	0
13	Elghaba	109	92	0	17	0	92	0	17	0
14	Esna west	1705	1057	6	642	0	1057	6	642	0
15	Elkaram	1674	1098	14	562	0	1098	14	562	0
16	Elshekh Fadl west	880	638	3	239	0	638	3	239	0
17	Esna North	1353	890	0	463	0	890	0	463	0
18	Elshekh Fdeal East	160	72	14	74	0	72	14	74	0
19	sahel Esna	626	243	17	366	0	243	17	366	0
20	Elnegoo	127	43	8	76	0	43	8	76	0
21	Elkorom	240	71	14	155	0	71	14	155	0
22	Ganabit Asfon	4297	1220	10	3067	0	1220	10	3067	0
23	Alkeman	526	149	2	375	0	149	2	375	0
24	Elmatana	3124	1088	139	1897	0	1088	139	1897	0
25	Sahel Elmatana	984	263	327	394	0	263	327	394	0
26	Gezert elkeman	506	2	436	68	0	2	436	68	0
27	Old Klabia	1435	30	172	1233	0	30	172	1233	0
28	Elsahel 1	304	49	87	168	0	49	87	168	0
29	Elsahel 2	502	0	266	236	0	0	266	236	0
30	Elhala New	492	0	407	85	0	0	407	85	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	24	14	444	0	24	14	444	0
33	Elzorkany	650	90	29	531	0	90	29	531	0
34	Elder	782	33	176	573	0	33	176	573	0
35	Sahel Elder	791	0	564	227	0	0	564	227	0
36	Sayalt Zarneekh	708	0	301	407	0	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Jul 2001				Expected, 16 Jul 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	1104	9	710	0	1104	9	710	0
2	Sahel Komer	561	401	49	111	0	401	49	111	0
3	Hager Komer	1527	1179	1	347	0	1179	1	347	0
4	Hager Komer Bransh	406	331	0	75	0	331	0	75	0
5	Mansour Bransh	603	446	0	157	0	446	0	157	0
6	Ganabit Eltama	246	198	0	48	0	198	0	48	0
7	Ganabit Elteraa	778	614	0	164	0	614	0	164	0
8	Elrekya	348	135	101	112	0	135	101	112	0
9	Elnamsa	1622	1229	5	388	0	1229	5	388	0
10	Elakhmas	602	389	1	212	0	389	1	212	0
11	Elsereeb	88	60	0	28	0	60	0	28	0
12	Eladima	785	599	43	143	0	599	43	143	0
13	Elghaba	109	92	0	17	0	92	0	17	0
14	Esna west	1705	1057	6	642	0	1057	6	642	0
15	Elkaram	1674	1098	14	562	0	1098	14	562	0
16	Elshekh Fadl west	880	638	3	239	0	638	3	239	0
17	Esna North	1353	890	0	463	0	890	0	463	0
18	Elshekh Fdeal East	160	72	14	74	0	72	14	74	0
19	sahel Esna	626	243	17	366	0	243	17	366	0
20	Elnegoo	127	43	8	76	0	43	8	76	0
21	Elkorom	240	71	14	155	0	71	14	155	0
22	Ganabit Asfon	4297	1220	10	3067	0	1220	10	3067	0
23	Alkeman	526	149	2	375	0	149	2	375	0
24	Elmatana	3124	1088	139	1897	0	1088	139	1897	0
25	Sahel Elmatana	984	263	327	394	0	263	327	394	0
26	Gezert elkeman	506	2	436	68	0	2	436	68	0
27	Old Klabia	1435	30	172	1233	0	30	172	1233	0
28	Elsahel 1	304	49	87	168	0	49	87	168	0
29	Elsahel 2	502	0	266	236	0	0	266	236	0
30	Elhala New	492	0	407	85	0	0	407	85	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	24	14	444	0	24	14	444	0
33	Elzorkany	650	90	29	531	0	90	29	531	0
34	Elder	782	33	176	573	0	33	176	573	0
35	Sahel Elder	791	0	564	227	0	0	564	227	0
36	Sayalt Zarneekh	708	0	301	407	0	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Jul 2001				Expected, 1 Aug 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	1104	9	710	0	1104	9	710	0
2	Sahel Komer	561	401	49	111	0	401	49	111	0
3	Hager Komer	1527	1179	1	347	0	1179	1	347	0
4	Hager Komer Bransh	406	331	0	75	0	331	0	75	0
5	Mansour Bransh	603	446	0	157	0	446	0	157	0
6	Ganabit Eltama	246	198	0	48	0	198	0	48	0
7	Ganabit Elteraa	778	614	0	164	0	614	0	164	0
8	Elrekya	348	135	101	112	0	135	101	112	0
9	Elnamsa	1622	1229	5	388	0	1229	5	388	0
10	Elakhmas	602	389	1	212	0	389	1	212	0
11	Elsereeb	88	60	0	28	0	60	0	28	0
12	Eladima	785	599	43	143	0	599	43	143	0
13	Elghaba	109	92	0	17	0	92	0	17	0
14	Esna west	1705	1057	6	642	0	1057	6	642	0
15	Elkaram	1674	1098	14	562	0	1098	14	562	0
16	Elshekh Fadl west	880	638	3	239	0	638	3	239	0
17	Esna North	1353	890	0	463	0	890	0	463	0
18	Elshekh Fdeal East	160	72	14	74	0	72	14	74	0
19	sahel Esna	626	243	17	366	0	243	17	366	0
20	Elnegoo	127	43	8	76	0	43	8	76	0
21	Elkorom	240	71	14	155	0	71	14	155	0
22	Ganabit Asfon	4297	1220	10	3067	0	1220	10	3067	0
23	Alkeman	526	149	2	375	0	149	2	375	0
24	Elmatana	3124	1088	139	1897	0	1088	139	1897	0
25	Sahel Elmatana	984	263	327	394	0	263	327	394	0
26	Gezert elkeman	506	2	436	68	0	2	436	68	0
27	Old Klabia	1435	30	172	1233	0	30	172	1233	0
28	Elsahel 1	304	49	87	168	0	49	87	168	0
29	Elsahel 2	502	0	266	236	0	0	266	236	0
30	Elhala New	492	0	407	85	0	0	407	85	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	24	14	444	0	24	14	444	0
33	Elzorkany	650	90	29	531	0	90	29	531	0
34	Elder	782	33	176	573	0	33	176	573	0
35	Sahel Elder	791	0	564	227	0	0	564	227	0
36	Sayalt Zarneekh	708	0	301	407	0	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Aug 2001				Expected, 16 Aug 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	1104	9	710	0	1104	9	710	0
2	Sahel Komer	561	401	49	111	0	401	49	111	0
3	Hager Komer	1527	1179	1	347	0	1179	1	347	0
4	Hager Komer Bransh	406	331	0	75	0	331	0	75	0
5	Mansour Bransh	603	446	0	157	0	446	0	157	0
6	Ganabit Eltama	246	198	0	48	0	198	0	48	0
7	Ganabit Elteraa	778	614	0	164	0	614	0	164	0
8	Elrekya	348	135	101	112	0	135	101	112	0
9	Elnamsa	1622	1229	5	388	0	1229	5	388	0
10	Elakhmas	602	389	1	212	0	389	1	212	0
11	Elsereeb	88	60	0	28	0	60	0	28	0
12	Eladima	785	599	43	143	0	599	43	143	0
13	Elghaba	109	92	0	17	0	92	0	17	0
14	Esna west	1705	1057	6	642	0	1057	6	642	0
15	Elkaram	1674	1098	14	562	0	1098	14	562	0
16	Elshekh Fadl west	880	638	3	239	0	638	3	239	0
17	Esna North	1353	890	0	463	0	890	0	463	0
18	Elshekh Fdeal East	160	72	14	74	0	72	14	74	0
19	sahel Esna	626	243	17	366	0	243	17	366	0
20	Elnegoo	127	43	8	76	0	43	8	76	0
21	Elkorom	240	71	14	155	0	71	14	155	0
22	Ganabit Asfon	4297	1220	10	3067	0	1220	10	3067	0
23	Alkeman	526	149	2	375	0	149	2	375	0
24	Elmatana	3124	1088	139	1897	0	1088	139	1897	0
25	Sahel Elmatana	984	263	327	394	0	263	327	394	0
26	Gezert elkeman	506	2	436	68	0	2	436	68	0
27	Old Klabia	1435	30	172	1233	0	30	172	1233	0
28	Elsahel 1	304	49	87	168	0	49	87	168	0
29	Elsahel 2	502	0	266	236	0	0	266	236	0
30	Elhala New	492	0	407	85	0	0	407	85	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	24	14	444	0	24	14	444	0
33	Elzorkany	650	90	29	531	0	90	29	531	0
34	Elder	782	33	176	573	0	33	176	573	0
35	Sahel Elder	791	0	564	227	0	0	564	227	0
36	Sayalt Zarneekh	708	0	301	407	0	0	301	407	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Aug 2001				Expected, 1 Sep 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	1184	7	632	0	1184	7	632	0
2	Sahel Komer	561	407	51	103	0	407	51	103	0
3	Hager Komer	1527	1116	1	410	0	1116	1	410	0
4	Hager Komer Bransh	406	340	0	66	0	340	0	66	0
5	Mansour Bransh	603	425	0	178	0	425	0	178	0
6	Ganabit Eltama	246	193	0	53	0	193	0	53	0
7	Ganabit Elteraa	778	597	0	181	0	597	0	181	0
8	Elrekya	348	117	102	129	0	117	102	129	0
9	Elnamsa	1622	1048	1	573	0	1048	1	573	0
10	Elakhmas	602	408	1	193	0	408	1	193	0
11	Elsereeb	88	60	0	28	0	60	0	28	0
12	Eladima	785	513	39	233	0	513	39	233	0
13	Elghaba	109	62	0	47	0	62	0	47	0
14	Esna west	1705	936	7	762	0	936	7	762	0
15	Elkaram	1674	1272	5	397	0	1272	5	397	0
16	Elshekh Fadl west	880	485	11	384	0	485	11	384	0
17	Esna North	1353	988	0	365	0	988	0	365	0
18	Elshekh Fdeal East	160	20	4	136	0	20	4	136	0
19	sahel Esna	626	219	4	403	0	219	4	403	0
20	Elnegoo	127	33	44	50	0	33	44	50	0
21	Elkorom	240	77	11	152	0	77	11	152	0
22	Ganabit Asfon	4297	1412	6	2879	0	1412	6	2879	0
23	Alkeman	526	164	0	362	0	164	0	362	0
24	Elmatana	3124	1587	236	1301	0	1587	236	1301	0
25	Sahel Elmatana	984	303	338	343	0	303	338	343	0
26	Gezert elkeman	506	1	437	68	0	1	437	68	0
27	Old Klabia	1435	15	95	1325	0	15	95	1325	0
28	Elsahel 1	304	44	60	200	0	44	60	200	0
29	Elsahel 2	502	0	262	240	0	0	262	240	0
30	Elhala New	492	0	411	81	0	0	411	81	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	33	16	433	0	33	16	433	0
33	Elzorkany	650	96	32	522	0	96	32	522	0
34	Elder	782	33	275	474	0	33	275	474	0
35	Sahel Elder	791	0	566	225	0	0	566	225	0
36	Sayalt Zarneekh	708	0	302	406	0	0	302	406	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 1 Sep 2001				Expected, 16 Sep 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	1184	7	632	0	1184	7	632	0
2	Sahel Komer	561	407	51	103	0	407	51	103	0
3	Hager Komer	1527	1116	1	410	0	1116	1	410	0
4	Hager Komer Bransh	406	340	0	66	0	340	0	66	0
5	Mansour Bransh	603	425	0	178	0	425	0	178	0
6	Ganabit Eltama	246	193	0	53	0	193	0	53	0
7	Ganabit Elteraa	778	597	0	181	0	597	0	181	0
8	Elrekya	348	117	102	129	0	117	102	129	0
9	Elnamsa	1622	1048	1	573	0	1048	1	573	0
10	Elakhmas	602	408	1	193	0	408	1	193	0
11	Elsereeb	88	60	0	28	0	60	0	28	0
12	Eladima	785	513	39	233	0	513	39	233	0
13	Elghaba	109	62	0	47	0	62	0	47	0
14	Esna west	1705	936	7	762	0	936	7	762	0
15	Elkaram	1674	1272	5	397	0	1272	5	397	0
16	Elshekh Fadl west	880	485	11	384	0	485	11	384	0
17	Esna North	1353	988	0	365	0	988	0	365	0
18	Elshekh Fdeal East	160	20	4	136	0	20	4	136	0
19	sahel Esna	626	219	4	403	0	219	4	403	0
20	Elnegoo	127	33	44	50	0	33	44	50	0
21	Elkorom	240	77	11	152	0	77	11	152	0
22	Ganabit Asfon	4297	1412	6	2879	0	1412	6	2879	0
23	Alkeman	526	164	0	362	0	164	0	362	0
24	Elmatana	3124	1587	236	1301	0	1587	236	1301	0
25	Sahel Elmatana	984	303	338	343	0	303	338	343	0
26	Gezert elkeman	506	1	437	68	0	1	437	68	0
27	Old Klabia	1435	15	95	1325	0	15	95	1325	0
28	Elsahel 1	304	44	60	200	0	44	60	200	0
29	Elsahel 2	502	0	262	240	0	0	262	240	0
30	Elhala New	492	0	411	81	0	0	411	81	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	33	16	433	0	33	16	433	0
33	Elzorkany	650	96	32	522	0	96	32	522	0
34	Elder	782	33	275	474	0	33	275	474	0
35	Sahel Elder	791	0	566	225	0	0	566	225	0
36	Sayalt Zarneekh	708	0	302	406	0	0	302	406	0

Table 3-1. (Continued).

No	Canal	Area	Existing, 16 Sep 2001				Expected, 1 Oct 2001			
		(feddan	sugerc	garden	Others	Fallow	sugerc	garder	Others	Fallow
1	Elramady	1823	1184	7	632	0	1184	7	632	0
2	Sahel Komer	561	407	51	103	0	407	51	103	0
3	Hager Komer	1527	1116	1	410	0	1116	1	410	0
4	Hager Komer Bransh	406	340	0	66	0	340	0	66	0
5	Mansour Bransh	603	425	0	178	0	425	0	178	0
6	Ganabit Eltama	246	193	0	53	0	193	0	53	0
7	Ganabit Elteraa	778	597	0	181	0	597	0	181	0
8	Elrekya	348	117	102	129	0	117	102	129	0
9	Elnamsa	1622	1048	1	573	0	1048	1	573	0
10	Elakhmas	602	408	1	193	0	408	1	193	0
11	Elsereeb	88	60	0	28	0	60	0	28	0
12	Eladima	785	513	39	233	0	513	39	233	0
13	Elghaba	109	62	0	47	0	62	0	47	0
14	Esna west	1705	936	7	762	0	936	7	762	0
15	Elkaram	1674	1272	5	397	0	1272	5	397	0
16	Elshekh Fadl west	880	485	11	384	0	485	11	384	0
17	Esna North	1353	988	0	365	0	988	0	365	0
18	Elshekh Fdeal East	160	20	4	136	0	20	4	136	0
19	sahel Esna	626	219	4	403	0	219	4	403	0
20	Elnegoo	127	33	44	50	0	33	44	50	0
21	Elkorom	240	77	11	152	0	77	11	152	0
22	Ganabit Asfon	4297	1412	6	2879	0	1412	6	2879	0
23	Alkeman	526	164	0	362	0	164	0	362	0
24	Elmatana	3124	1587	236	1301	0	1587	236	1301	0
25	Sahel Elmatana	984	303	338	343	0	303	338	343	0
26	Gezert elkeman	506	1	437	68	0	1	437	68	0
27	Old Klabia	1435	15	95	1325	0	15	95	1325	0
28	Elsahel 1	304	44	60	200	0	44	60	200	0
29	Elsahel 2	502	0	262	240	0	0	262	240	0
30	Elhala New	492	0	411	81	0	0	411	81	0
31	Elsahel 3	270	0	107	163	0	0	107	163	0
32	Elgabal	482	33	16	433	0	33	16	433	0
33	Elzorkany	650	96	32	522	0	96	32	522	0
34	Elder	782	33	275	474	0	33	275	474	0
35	Sahel Elder	791	0	566	225	0	0	566	225	0
36	Sayalt Zarneekh	708	0	302	406	0	0	302	406	0

4 Crop Water Needs Microsoft Excel District-Level User's Manual

4.1 Introduction

A simple model has been developed for estimating daily average irrigation water requirements and canal discharge requirements in all branch canals within an irrigation district. Model outputs will serve three purposes. First, they will be used in forecasting regional and national irrigation water requirements. Second, they will provide detailed information to district and directorate personnel responsible for managing and monitoring branch canal releases. Third, the model will provide a mechanism for developing long-term records of cropping patterns, cropping calendars and canal water requirements.

The model will utilize MALR cropping pattern and calendar data. It is anticipated that these MALR data will be compiled semi-monthly and will have been recorded in a spreadsheet format (Excel). The model is designed to import these spreadsheets directly. Users of the model at the district level are not required to provide any inputs other than the MALR data. Additional data are needed at the time the model is installed and initialized in a particular district by a supervising engineer, but these additional inputs will not be required again in the course of normal model operations.

Computation of water requirements and canal discharge requirements for all branch canals within a district is virtually instantaneous. The resulting estimates of average daily water requirements for all branch canals can be transferred immediately to the Directorate level to be used in estimating regional irrigation water requirements. The estimates of canal discharge requirements can be used within the district to assist the District Engineer and others in management of canal operations.

4.2 Background on the Model

4.2.1 Time Intervals

The intervals of time used in the analyses are half-month periods. The length of each period will be 15 or 16 days, except for the last half of February, which will be 13 days. Periods are numbered from 1 to 24, beginning with the first half of January (Period 1) and ending with the last half of December (Period 24). The 'current' and 'expected' periods are defined with reference to the half-month interval during which the cropping survey is prepared:

- *Current* period: the half-month during which the cropping survey is compiled.
- *Expected* period: the next half month following the current period.

4.2.2 Initializing the Program

The program will be installed and periodically monitored by a Ministry level professional responsible for overseeing the use of the model. The model supervisor will need assistance from the District Engineer to develop five sets of inputs for model setup and initialization: (i) a list of the crops that dominate total rates of water use in the district (generally those that cover the largest irrigated areas); (ii) a list of all canals that need to be included in the analysis; (iii) a mapping of the linkages of these canals that indicates all connections between primary, secondary and tertiary canals; (iv) a preliminary matrix of canal rotations that

indicates which canals receive water in each rotation; and (v) the duration of each rotation and intervals between rotations.

4.3 Loading the Program

The program will have been installed as an Excel Workbook entitled Canal Demand. The following procedure initiates operation:

a) load Excel
b) go to the Directory entitled *Canal* and open the workbook titled *Canal Demand*
c) you will be asked if you want to *Disable Macros* or *Enable Macros*. Select *Enable Macros*

Sheet 1 of the workbook should be displayed. If another sheet is displayed, select the *Sheet 1* tab on the bottom of the screen.

The Sheet 1 worksheet is used to enter the MALR input data used by the model. For routine model operation the user need only enter the areas planted in individual crops for each canal and the number of the current period. The model is then executed in two stages, using CTRL keystrokes to activate Visual Basic macros. The macros are computer programs that run in the background. The first macro uses the data in Sheet 1 to compute daily average crop water requirements associated with each canal in the district. The second macro then computes the canal discharges required to meet those crop water requirements.

The user should understand the distinction between daily average crop water requirements and canal discharge requirements. Crop water requirements associated with a given canal are the daily *average* water requirements for all irrigated areas served directly by that canal. Canal discharge requirements refer to the rates of discharge in the canal required to deliver the necessary water during the interval of time the canal is actually operated in a rotation. Canal discharge requirements will generally be greater than daily average water requirements because:

(i) Canals operating in rotation are only carrying water for a fraction of the total rotation cycle time, so the instantaneous delivery rate during operation will necessarily be greater than average rate.
(ii) The required discharge to some canals will include water conveyed by that canal to another canal, unrelated to the irrigated areas served directly by the primary canal.

4.4 Entering Data and Running the Program

4.4.1 Preparing the input file

The period number is entered in cell C2 of Sheet 1. The MALR crop survey data are either typed directly into the spreadsheet or copied from another spreadsheet into the Sheet 1 template. Figure 4-1 shows a template of Sheet 1 before any data entry. Figure 4-2 shows the same Sheet 1 with data entry complete.

If a file is to be copied into Sheet 1 rather than typed in directly, it must be set up with the exact data positioning shown in Figure 4-2. The data can then be loaded into Sheet 1 using the C*ut* and *Paste* keys in Excel. It should be re-emphasized that if a file is to be cut and pasted into Sheet 1, the row and column positioning of the data must coincide exactly with the format shown. The Excel workbook version of the model also requires that zeros be represented literally, *i.e.*, as the number zero, rather than as a blank.

Figure 4-1. Sheet 1

Input Spreadsheet

							Current and Expected Cropping Pattern in Abou Houmos District																Water	
	Period										Area (Feddan)												Requirements	
Canal		Total				Current pattern										Expected pattern							(m^3/dy)	
No.	Name	area	Barsee	Beans	Wheat	Vegeta	Garde	Cotton	Prep	Rice	Maize	Fallow	Barsee	Beans	Wheat	Vegeta	Garde	Cotton	Prep	Rice	Maize	Fallow	0 - 2 wks	2 - 4 wks
1	Elkamaheen	4861																						
2	Elzarka	3584																						
3	Elherfa	7959																						
4	Besntway	3295																						
5	Seaf Aldeen	515																						
6	Elahkar	420																						
7	G. Kabeel	380																						
8	Kafla	3709																						
9	Elkarawy	1811																						
10	Elgaradat	1307																						
11	Elnakhla	1191																						
12	Sahaly	1602																						
13	G.sahaly	1102																						
14	Khadra	240																						
15	Hamdy	305																						
16	Zawet Naem	1775																						
17	Berket Attas	2476																						
18	Gnady Kafrazzazy	1566																						
19	Elhamamy	3811																						
20	Elsharkawa	1845																						
21	Eldekhla	4235																						
22	Elwzara	2140																						
23	Elkenawia	8606																						
24	Abou tahon	3105																						
25	Elzeny	4189																						
26	Elkasida	490																						
27	Mahlt Keel	4159																						
28	Koom Elbous	2350																						
29	Sidi Azab	1690																						

Figure 4-2. Sheet 1

Import MALR spreadsheet

							Current and Expected Cropping Pattern in Abou Houmos District																Water	
	Period	12									Area (Feddan)												Requirements	
Canal		Total				Current pattern										Expected pattern							(m^3/dy)	
No.	Name	area	Barsee	Beans	Wheat	Vegeta	Garde	Cotton	Prep	Rice	Maize	Fallow	Barsee	Beans	Wheat	Vegeta	Garde	Cotton	Prep	Rice	Maize	Fallow	0 - 2 wks	2 - 4 wks
1	Elkamaheen	4861	0	0	0	505	0	1836	0	1546	554	420	0	0	0	525	0	1836	0	1846	654	0		
2	Elzarka	3584	0	0	0	360	55	1333	0	1040	375	421	0	0	0	381	55	1333	0	1340	475	0		
3	Elherfa	7959	0	0	0	753	0	3006	0	2522	672	1006	0	0	0	859	0	3006	0	3022	1072	0		
4	Besntway	3295	0	0	0	240	100	1207	0	1013	330	405	0	0	0	345	100	1207	0	1213	430	0		
5	Seaf Aldeen	515	0	0	0	55	0	195	0	166	52	47	0	0	0	55	0	195	0	196	69	0		
6	Elahkar	420	0	0	0	32	0	159	0	145	42	42	0	0	0	44	0	159	0	160	57	0		
7	G. Kabeel	380	0	0	0	21	0	144	0	112	41	62	0	0	0	41	0	144	0	144	51	0		
8	Kafla	3709	0	0	0	295	23	1392	0	1199	396	404	0	0	0	399	23	1392	0	1399	496	0		
9	Elkarawy	1811	0	0	0	162	18	677	0	581	206	167	0	0	0	194	18	677	0	681	241	0		
10	Elgaradat	1307	0	0	0	108	28	483	0	382	152	154	0	0	0	138	28	483	0	486	172	0		
11	Elnakhla	1191	0	0	0	82	273	347	0	270	94	125	0	0	0	98	273	347	0	349	124	0		
12	Sahaly	1602	0	0	0	132	0	605	0	408	156	301	0	0	0	173	0	605	0	608	216	0		
13	G.sahaly	1102	0	0	0	96	0	416	0	318	68	204	0	0	0	120	0	416	0	418	148	0		
14	Khadra	240	0	0	0	21	0	91	0	61	32	35	0	0	0	26	0	91	0	91	32	0		
15	Hamdy	305	0	0	0	21	0	115	0	82	21	66	0	0	0	33	0	115	0	116	41	0		
16	Zawet Naem	1775	0	0	0	151	0	670	0	474	169	311	0	0	0	192	0	670	0	674	239	0		
17	Berket Attas	2476	0	0	0	213	8	932	0	637	232	454	0	0	0	267	8	932	0	937	332	0		
18	Gnady Kafrazzazy	1566	0	0	0	120	183	522	0	425	152	164	0	0	0	150	183	522	0	525	186	0		
19	Elhamamy	3811	0	0	0	151	1476	882	0	687	264	351	0	0	0	252	1476	882	0	887	314	0		
20	Elsharkawa	1845	0	0	0	82	715	427	0	329	111	181	0	0	0	122	715	427	0	429	152	0		
21	Eldekhla	4235	0	0	0	146	1640	980	0	685	249	535	0	0	0	281	1640	980	0	985	349	0		
22	Elwzara	2140	0	0	0	98	829	495	0	408	97	213	0	0	0	141	829	495	0	498	177	0		
23	Elkenawia	8606	0	0	0	622	42	3235	0	2781	855	1071	0	0	0	922	42	3235	0	3252	1155	0		
24	Abou tahon	3105	0	0	0	272	0	1173	0	879	268	513	0	0	0	335	0	1173	0	1179	418	0		
25	Elzeny	4189	0	0	0	352	0	1582	0	1291	332	632	0	0	0	452	0	1582	0	1591	564	0		
26	Elkasida	490	0	0	0	31	0	185	0	152	44	78	0	0	0	53	0	185	0	186	66	0		
27	Mahlt Keel	4159	0	0	0	249	0	1572	0	1178	465	695	0	0	0	449	0	1572	0	1578	560	0		
28	Koom Elbous	2350	0	0	0	154	0	888	0	692	262	354	0	0	0	254	0	888	0	892	316	0		
29	Sidi Azab	1690	0	0	0	151	0	638	0	582	138	181	0	0	0	182	0	638	0	642	228	0		

4.4.2 Calculation of Crop Water Requirements

When the input data have been entered and verified in Sheet 1, pressing **CTRL-h** (simultaneous keystrokes) will execute a macro that calculates daily average canal water requirements (m^3/day). The results will appear in the two right hand columns of Sheet 1, as illustrated in Figure 4-3. The first of these two columns (labeled *0-2 wks*) shows average crop water requirements for the current time period, the period during which the crop survey was conducted. The second column (labeled *2-4 wks*) presents forecast crop water requirements for the coming half-month period. These figures represent the daily average water requirement for those crops associated with each of the indicated canals over the half-month period.

Figure 4-3. Sheet 1

Keystroke (Ctrl-h)

							Current and Expected Cropping Pattern in Abou Houmos District														Water	
Period		12									Area (Feddan)										Requirements	
Canal		Total				Current pattern										Expected pattern					(m^3/dy)	
No.	Name	area	Barsee	Beans	Wheat	Vegeta	Garde	Cotton	Prep	Rice	Maize	Fallow	Barsee	Beans	Wheat	Vegeta	Garde	Cotton	Prep	Rice	Maize	Fallow	0 - 2 wks	2 - 4 wks
1	Elkamaheen	4861	0	0	0	505	0	1836	0	1546	554	420	0	0	0	525	0	1836	0	1846	654	0	141999	158794
2	Elzarka	3584	0	0	0	360	55	1333	0	1040	375	421	0	0	0	381	55	1333	0	1340	475	0	100474	116965
3	Elherfa	7959	0	0	0	753	0	3006	0	2522	672	1006	0	0	0	859	0	3006	0	3022	1072	0	226131	257772
4	Besntway	3295	0	0	0	240	100	1207	0	1013	330	405	0	0	0	345	100	1207	0	1213	430	0	91978	106120
5	Seaf Aldeen	515	0	0	0	55	0	195	0	166	52	47	0	0	0	55	0	195	0	196	69	0	15179	16751
6	Elahkar	420	0	0	0	32	0	159	0	145	42	42	0	0	0	44	0	159	0	160	57	0	12410	13611
7	G. Kabeel	380	0	0	0	21	0	144	0	112	41	62	0	0	0	41	0	144	0	144	51	0	10026	12521
8	Kafla	3709	0	0	0	295	23	1392	0	1199	396	404	0	0	0	399	23	1392	0	1399	496	0	107330	121289
9	Elkarawy	1811	0	0	0	162	18	677	0	581	206	167	0	0	0	194	18	677	0	681	241	0	52788	59011
10	Elgaradat	1307	0	0	0	108	28	483	0	382	152	154	0	0	0	138	28	483	0	486	172	0	36629	42749
11	Elnakhla	1191	0	0	0	82	273	347	0	270	94	125	0	0	0	98	273	347	0	349	124	0	32670	37065
12	Sahaly	1602	0	0	0	132	0	605	0	408	156	301	0	0	0	173	0	605	0	608	216	0	41185	52650
13	G.sahaly	1102	0	0	0	96	0	416	0	318	68	204	0	0	0	120	0	416	0	418	148	0	29359	35599
14	Khadra	240	0	0	0	21	0	91	0	61	32	35	0	0	0	26	0	91	0	91	32	0	6353	7982
15	Hamdy	305	0	0	0	21	0	115	0	82	21	66	0	0	0	33	0	115	0	116	41	0	7776	9940
16	Zawet Naem	1775	0	0	0	151	0	670	0	474	169	311	0	0	0	192	0	670	0	674	239	0	46515	58172
17	Berket Attas	2476	0	0	0	213	8	932	0	637	232	454	0	0	0	267	8	932	0	937	332	0	64068	81190
18	Gnady Kafrazzazy	1566	0	0	0	120	183	522	0	425	152	164	0	0	0	150	183	522	0	525	186	0	44295	50070
19	Elhamamy	3811	0	0	0	151	1476	882	0	687	264	351	0	0	0	252	1476	882	0	887	314	0	101312	113833
20	Elsharkawa	1845	0	0	0	82	715	427	0	329	111	181	0	0	0	122	715	427	0	429	152	0	48841	54949
21	Eldekhla	4235	0	0	0	146	1640	980	0	685	249	535	0	0	0	281	1640	980	0	985	349	0	107898	126493
22	Elwzara	2140	0	0	0	98	829	495	0	408	97	213	0	0	0	141	829	495	0	498	177	0	57281	63296
23	Elkenawia	8606	0	0	0	622	42	3235	0	2781	855	1071	0	0	0	922	42	3235	0	3252	1155	0	244819	279348
24	Abou tahon	3105	0	0	0	272	0	1173	0	879	268	513	0	0	0	335	0	1173	0	1179	418	0	83341	101223
25	Elzeny	4189	0	0	0	352	0	1582	0	1291	332	632	0	0	0	452	0	1582	0	1591	564	0	115913	135656
26	Elkasida	490	0	0	0	31	0	185	0	152	44	78	0	0	0	53	0	185	0	186	66	0	13513	15935
27	Mahlt Keel	4159	0	0	0	249	0	1572	0	1178	465	695	0	0	0	449	0	1572	0	1578	560	0	110570	136550
28	Koom Elbous	2350	0	0	0	154	0	888	0	692	262	354	0	0	0	254	0	888	0	892	316	0	63959	77019
29	Sidi Azab	1690	0	0	0	151	0	638	0	582	138	181	0	0	0	182	0	638	0	642	228	0	49728	54435

4.4.3 Calculation of Canal Releases

Pressing **CTRL-c** will execute a second macro that computes the canal discharge rates needed to meet the calculated crop water requirements. The outputs of this calculation are presented in Sheet 4, as illustrated in Figure 4-4. These outputs include the following:

a) Average crop water requirements (Column O): These outputs, which duplicate the last column of Sheet 1, are repeated in Sheet 4 for convenient viewing. They represent estimated average daily crop water requirements for the next time period following the current period. The calculated crop water requirements are for those irrigated areas directly served by each individual canal. They do not include water conveyed through to other canals.

b) Combined flows in rotation (Columns Q – S): These are the actual canal discharge rates (m^3/dy) that will be required during each of the rotation intervals of the next half-month period. They include water to be delivered to irrigated areas on the given canal, as well as any additional water that will be conveyed through to other canals.

c) District totals (Last row of the spread sheet following the list of all canals): Column O in this row shows the total of daily average crop water requirements for all irrigated areas served by the entire list of canals. Columns Q – S show total delivery rates required from the primary source for the entire district during each of the rotation intervals. (Note that the outputs in Columns Q through S are *not* simply the sums of the canal deliveries shown in the preceding rows since some of the preceding canal deliveries are duplicated when water is passed through one canal to another.)

Figure 4-4. Sheet 4

Analysis of operational releases (CTRL-C)
(in rotations)

Number of rotations		3			Analysis of total canal flows in rotation: 2 week projection											
Number of days per rotation		5										Individual		Combined Flows (m^3/dy)		
Canal			Linkages					Rotation				flows			(in rotation)	
No	Name	1	2	3	4	5		1	2	3		(m^3/dy)		1	2	3
1	Elkamaheen	1	0	0	0	0		1	0	0		158794		476382	0	0
2	Elzarka	2	0	0	0	0		0	0	1		116965		87816	0	669256
3	Elherfa	3	0	0	0	0		1	0	0		257772		773316	0	0
4	Besntway	2	4	0	0	0		0	0	1		106120		37564	0	318361
5	Seaf Aldeen	2	5	0	0	0		1	0	0		16751		50252	0	0
6	Elahkar	6	0	0	0	0		1	0	0		13611		40832	0	0
7	G. Kabeel	2	4	7	0	0		1	0	0		12521		37564	0	0
8	Kafla	8	0	0	0	0		0	1	0		121289		0	363866	0
9	Elkarawy	9	0	0	0	0		0	0	1		59011		0	0	177034
10	Elgaradat	10	0	0	0	0		0	0	1		42749		0	0	128248
11	Elnakhla	11	0	0	0	0		0	1	0		37065		0	111196	0
12	Sahaly	12	0	0	0	0		0	1	0		52650		0	157949	0
13	G.sahaly	13	0	0	0	0		1	0	0		35599		106797	0	0
14	Khadra	14	0	0	0	0		1	0	0		7982		23946	0	0
15	Hamdy	15	0	0	0	0		1	0	0		9940		29821	0	0
16	Zawet Naem	16	0	0	0	0		1	0	0		58172		174516	0	0
17	Berket Attas	17	0	0	0	0		0	1	0		81190		0	243569	0
18	Gnady Kafrazzazy	18	0	0	0	0		0	1	0		50070		0	150211	0
19	Elhamamy	19	0	0	0	0		0	1	0		113833		0	341499	0
20	Elsharkawa	20	0	0	0	0		0	1	0		54949		0	164848	0
21	Eldekhla	21	0	0	0	0		0	1	0		126493		0	379479	0
22	Elwzara	22	0	0	0	0		0	0	1		63296		0	0	189887
23	Elkenawia	23	0	0	0	0		0	0	1				0	0	838044
24	Abou tahon	24	0	0	0	0		0	0	1		101223		0	0	303668
25	Elzeny	25	0	0	0	0		1	0	0		135656		406969	0	0
26	Elkasida	26	0	0	0	0		0	1	0		15935		0	47806	0
27	Mahlt Keel	27	0	0	0	0		0	0	1		136550		0	0	409649
28	Koom Elbous	28	0	0	0	0		0	1	0		77019		0	231058	0
29	Sidi Azab	29	0	0	0	0		0	0	1		54435		0	0	163304

4.4.4 Other Outputs

The user can view a one-year history of cropping and planting data for any single canal in Sheet 2. Type the canal number in cell B5 of Sheet 2 and execute the **CTRL-h** macro command[1]. Sheet 2 displays a history of *Current* and *Expected* crop areas and the calculated

[1] If several canals are to be viewed the canal number can be changed and CTRL-h execution repeated as many times as desired. Repeating the program execution does not have any adverse effects on the analysis.

area planted in each time period for the most recent 24 time periods. The time period associated with each line of data is indicated in Column 2. The oldest data appear as the first row, and more recent data in succeeding rows. The most recent data appear in the last row of the sheet.

Figure 4-5 illustrates a one-year history display for canal 1. The most recent period of data is Period 6. Note that the first eighteen lines of data, which represent Periods 7 through 24, are from the preceding calendar year. The next 6 lines of data show periods 1 through 6 of the current year.

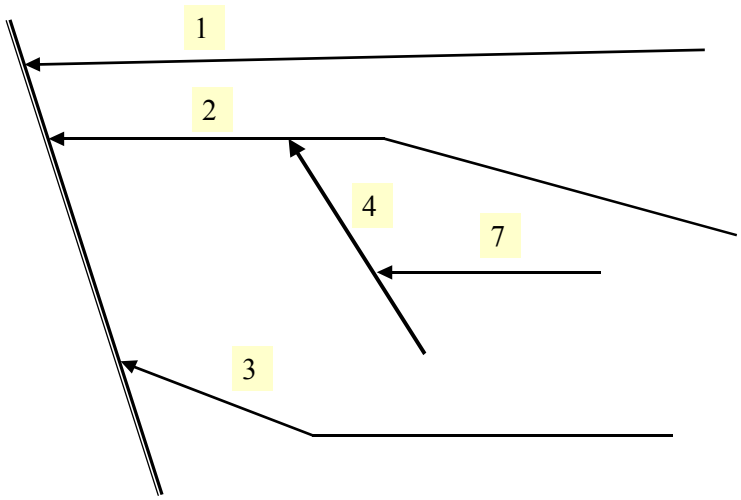
The user also has the option of viewing a one-year history of estimated daily average water requirements on Sheet 9 (illustrated in Figure 4-6). Sheet 9 presents a 24 period calendar-year history, with the most recent data appearing in the column corresponding to the most recent data period. Columns to the right of the current period number then represent data from the previous calendar year while columns to the left present current year data.

4.4.5 Setting up Canal Linkages and Rotation Information

The canal linkage information required by the model includes a numerical 'virtual-map' of the canal pathway by which water is delivered from the primary source to individual canals. All canals need to be assigned an identifying number during model setup. The numerical pathway indicates the sequence of canal numbers through which water will be delivered to a given canal. Such a map is indicated in Figure 4-7. In this example, the pathway to canal 1 is simply the number '1'. Likewise the pathway to canal 2 is just '2'. However canal 4 receives water through canal 2, so its pathway would be '2,4'. Similarly the pathway to canal 7 would be '2,4,7'.

Figure 4-7

Mapping of canals: an example



Note: Arrows are directed opposite to water flow while pathway numbers are sequenced in the direction of water flow.

Figure 4-5: Sample history spreadsheet (Sheet 2) for Canal 1

Figure 4-6: Summary of calculated crop water requirements (Sheet 9)

5 Crop Water Needs Microsoft Excel Model Administrator User's Manual

5.1 Introduction

The Model Administrator is assumed to be a person at the Ministry level with responsibility for insuring the integrity and correct use of the model. This implies responsibility for installing the model and configuring it for use in each district. The process of configuring the model will involve installing the Excel workbook on the District computer, assisting the District Engineer with setting up spreadsheet templates with the district name and appropriate crop and canal names in the several worksheets of the model, and determining the fixed input data to be loaded into Sheets 3 and 4. The entire Chapter 4 should be included together with this Chapter 5 to make a complete Model Administrator User's Manual.

5.2 Installing the Program

An original copy of the program is provided in the Excel file entitled *Canal Demand* on the floppy disks that accompany this report. The model is configured to operate from a directory on the C drive labeled *Canal.* Installing the program involves creating a directory with that name (*Canal*) on the district computer, then loading the program file (*Canal Demand*) into that directory.

The master copy of the program is comprised of spreadsheets built for the Abou Hummus District, along with three macros that run in the background of the spreadsheets. Canal names and crop names shown on all worksheets are for the Abou Hummus district. The fixed input data on Sheet 3 are also specifically for that district. Installing the model for another district therefore involves editing these spreadsheets to supply new crop and canal names and the additional fixed data for the new district. The various spreadsheets are protected and cannot be edited until the spreadsheet protection has been disabled.

Installing the program for another (different than Abou Hummus) district will therefore involve the following steps:

1. <u>Create a program directory</u> – Create a new directory entitled *Canal* on the C drive.
2. <u>Import the program workbook</u> – Copy the entire floppy disk (entitled *Canal Demand*) into the new directory. Files on this disk include the program itself and a set of files for the sample application of the model in the Abou Hummus district. The Abou Hummus sample files include a set of input data for 24 time periods and three history files.
3. <u>Activate Excel and open the file entitled *Canal Demand*</u> – After opening the workbook verify that Sheet 1 is displayed. If not, select the Sheet 1 tab at the bottom of the current spreadsheet.
4. <u>Disable spreadsheet protection for Sheet 1</u> – To do this, select the tabs for *Tools, Protection* and *Unprotect Worksheet*. It is then possible to fill in the column and row headers (crop and canal names and canal numbers).
5. <u>Establish a crop list</u> – Select a list of up to nine primary crops for the district and enter the names of those crops as column headings. A tenth column is to be identified as *Fallow*. The list of crops should include those that cover the largest areas of land and therefore consume the greatest volume of water. Miscellaneous other crops that cover only small areas of land may be lumped together under the

generic heading of *Other*. The input spreadsheet (Sheet 1) should be set up from the outset to include all principal crops, not only those grown at the time the program is set up but also any others likely to be grown at any time during the entire year.

6. Replace the district name – The district name appearing at the top of Sheet 1 can be over-written.
7. Determine the number of canals – The various canals need to be arranged in the desired order, numbered accordingly and entered into the spreadsheet.
8. Set up fixed input data – The crop, weather and canal configuration data specific to the irrigation district and the list of crops, according to the positions shown in Figures 4-4 and 5-1. Details for determining these inputs are discussed further in sections 5.4 and 5.7.
9. Enter the canal linkage and rotation information – The logic of pathways was described earlier in Chapter 4. A more detailed discussion is presented in section 5.4.
10. Re-enable worksheet protection – Select tabs: *Tools, Protection,* and *Protect Worksheet*. Note that those cells that will be changed in the course of routine data entry and computation are not protected even when the rest of the worksheet is protected[2].
11. Copy the worksheet headings from Sheet 1 to other Sheets – Sheets 2, 4, 5, and 9 will need to be set up with the same canal names and crop headings. To do this, disable protection for each of those sheets, then copy and paste the column and row headings as appropriate. Then re-enable spreadsheet protection for each.

5.3 Initializing the History Files

In addition to the spreadsheets in the program workbook, the model also generates and continuously updates a set of exportable history files that can be imported to an Excel spreadsheet. These files are the *Current*, *Expected,* and *Planting* history files. They need to be created prior to the first running of the model, *i.e.,* when the CanalDemand workbook is opened for the first time for a new district. The initialization procedure is detailed in item 1 below. However the user should be warned that this procedure will setup entirely blank files by writing a zero in every data location. Since that will erase any pre-existing history data, two safeguards are included to prevent the inadvertent destruction of these files:

1. Initiation of the procedure cannot be done by keystroke. It requires the following sequence of steps:
    a. With the workbook open, select *Tools*.
    b. Select *Macro*.
    c. Select *Macros* again.
    d. Pick the macro name *InitializeHistoryFiles*.
    e. Select *Run*.
2. Upon completion of a model run with new data, the history files will have been updated. It is recommended that they then be backed up by copying them to a separate directory.

[2] Enabling or disabling protection for individual cells within a worksheet is controlled by the cell format. Select the *Format, Cells,* and P*rotection* tabs. Under the *Protection* tab is a check box entitled *Locked*. When that box is checked the individual cell will be protected whenever the sheet is protected. If the *Locked* check is removed the cell will not be protected even when the worksheet is.

Once the blank history files have been created it may be wise to begin the process of back-filling the history files with synthetic cropping pattern data for earlier periods. The synthetic data would serve to establish estimated planting dates for crops that were planted before the MALR cropping surveys were initiated. The reason would be to minimize errors in estimates of crop water requirements for the first few months after initiation of the model. Model estimates of crop water use depend upon the stage of growth of the various crops. Stage of growth in turn depends upon the dates when the crops were planted. When initializing a history file, all crop area data prior to the first data entry will be zero. The program will interpret the transition from zero feddan to non-zero crop areas (the first data entries) as the planting dates for all currently active crops. Consequently, initial estimates of crop water use for all currently irrigated crops would be low, reflecting the low rate of water use expected in the early stages of crop development. These initial estimates will be low even if the crops have actually reached full development. By estimating the planting dates for all active crops, then backfilling the history files to those dates using synthetic data the model will use the estimated planting dates as the start of the season. The synthetic data might simply be the first actual data set, but repeated for all periods back to the estimated time of planting.

5.4 Setting up the Fixed Input Data

Fixed input data are those that will be specific to the irrigation district, the region or the crop varieties, and will not change from one time period to another in the course of normal model operations. In general, they should only change when new circumstances arise, such as the introduction of a new dominant crop, or when improved data are available, such as new estimates of reference ET, better rainfall data, or better estimates of application or canal efficiencies. The fixed data include:

- Crop coefficients
- A table of 'other water requirements'
- Historical ET_0, the reference evapotranspiration
- Historical rainfall
- The length of time (number of days) in each time period
- Estimated application and canal efficiencies
- Canal linkages and rotations

Procedures for determining fixed input data are presented in section 5.7, *Estimating Fixed Input Data*.

The rules for establishing the pseudo map of canal linkages are explained with reference to Figure 4-7, which shows canals 1, 2 and 3 branching from a main canal, and canals 4 and 7 as tributary to canal 2. With regard to linkages between canals, this report uses the word 'rank' to describe where a canal fits in the hierarchy of canal linkages. It is assumed that there is a single primary source of water for the district. Generally this will be a single main canal. A Rank 1 canal receives water directly from that primary source. A Rank 2 canal is one that receives water from a Rank 1 canal, and does not connect directly to the primary source. A Rank 3 canal receives water from a Rank 2 canal, and so on. Some districts receive water from 2 or more main canals. In that case the model logic requires that those main canals be included in the analysis as Rank 1 canals, and all canals connecting directly to them are then Rank 2 canals. As presently configured, the model allows up to five ranks.

Fixed input data are stored in Sheets 3 and 4 (see Figures 5-1 and 4-4). The exact positioning of each of the data in these worksheets is critical, since the macros that depend on the data use row and column numbers to locate them. If the data are entered in a wrong location

model estimates will be incorrect, though such errors may not be apparent to the user. If for any reason the data need to be relocated in the worksheets the Visual Basic macros will need to be edited accordingly.

Because of the importance of preserving the integrity of these particular data, Sheet 3 is password protected. At the time of this program the password has been set as EPIQ. Sheet 4 is protected without a password because the district level user may need to consider changes in the schedule of rotations.

Additionally, it is recommended that a set of test data be set up for each location that can be run periodically to verify correct model operation. The correct values of model outputs can be verified once by hand for these test data, then the results can be used indefinitely to verify model performance.

5.5 Viewing the History Files

As noted earlier, the model provides for display of the three parameter histories for each canal designated by the user. The complete, off-line history files store these data for all canals on a continuing basis. They are Excel compatible, and can be viewed using the following procedure:

1. Open a new Excel worksheet in a new workbook.
2. Pick *File.*
3. Pick *Open.*
4. Go to the *C* drive, the *Canal* directory.
5. Under *Files of Type:* pick *All Files.*
6. Select the file of interest (*Current, Expected, or Planting*).
7. The *Text Import Wizard* will appear.
8. Pick *Delimited* data and go to *Next.*
9. Select the *Commas* delimiter type and go to *Next.*
10. Go to *Finish.*

The spreadsheet will then display the file. Note however, that these data are unlabeled. Data sets for the individual canals are separated by a line indicating the next canal number, but no crop headers, numbers of the time periods or canal names or numbers are shown. The user may choose to edit the newly created Excel files to add these labels.

5.6 Archiving the History Files

The history files record the data for one year, at the end of which time they begin to write over previous data. It is therefore suggested that the backup files be tagged and stored each year and new backup files created. The logical time to archive the history files will be at the end of the calendar year, that is, after data have been entered for period 24. At that point all data will be historical data for the current year. The *Expected* cropping pattern represents a forecast for the first period of the coming year, but it is only a forecast, and not historical in the same sense as the observed cropping areas represented by the *Current* and *Planting* data files.

Figure 5-1: Spreadsheet for fixed inputs (Sheet 3)

5.7 Estimating Fixed Input Data

Table A-1. FAO CLIMWAT weather data sites.

Country: EGYPT Country Code: EGY

No.	Station Name	Altitude	Latitude	Longitude
1	Alexandria	32 m	31.22 N.L.	29.57 E.L.
2	Aswan	200 m	24.02 N.L.	32.53 E.L.
3	Asyut	70 m	27.03 N.L.	31.01 E.L.
4	Bahariya	20 m	28.20 N.L.	28.54 E.L.
5	Baitim	2 m	31.33 N.L.	31.06 E.L.
6	Beni Suef	28 m	29.04 N.L.	31.06 E.L.
7	Bilbeis	20 m	30.24 N.L.	31.35 E.L.
8	Borg El Arab	20 m	30.54 N.L.	29.33 E.L.
9	Dabaa	18 m	30.56 N.L.	28.28 E.L.
10	Dakhla	111 m	25.29 N.L.	29.00 E.L.
11	Gemmeiza	20 m	30.43 N.L.	31.07 E.L.
12	Giza	19 m	30.03 N.L.	31.13 E.L.
13	Helwan	141 m	29.52 N.L.	31.20 E.L.
14	Ismailia	20 m	30.35 N.L.	31.26 E.L.
15	Kharga	73 m	25.27 N.L.	30.32 E.L.
16	Kom Ombo	102 m	24.29 N.L.	32.56 E.L.
17	Mallawi	20 m	27.42 N.L.	30.45 E.L.
18	Mansoura	30 m	31.03 N.L.	31.23 E.L.
19	Mersa Matruh	30 m	31.20 N.L.	27.13 E.L.
20	Minya	40 m	28.05 N.L.	30.44 E.L.
21	Port Said	6 m	31.17 N.L.	32.18 E.L.
22	Sakha	20 m	31.07 N.L.	30.57 E.L.
23	Salloum	6 m	31.32 N.L.	25.11 E.L.
24	Shandaweel	60 m	26.26 N.L.	31.38 E.L.
25	Sidi Barrani	23 m	31.38 N.L.	25.58 E.L.
26	Siwa	-13 m	29.12 N.L.	25.29 E.L.
27	Sohag	61 m	26.34 N.L.	31.42 E.L.
28	Tahrir	20 m	30.39 N.L.	30.42 E.L.

6 Crop Water Needs Microsoft Excel District Calculation Results

6.1 Introduction

During the period June – August 2001, Dr. Marshall English, an expatriate irrigation-scheduling specialist on TDY assignment with EPIQ, developed a Microsoft Excel spreadsheet (also called an operational tool herein) for use in the irrigation district office. This spreadsheet uses the cropping pattern information transferred from MALR to calculate the real-time crop water needs for both the "current" and "expected" half-month time periods. Details of the spreadsheet development are given in APRP Water Policy Program Report No. 45, (December 2001), Appendix C, which is the TDY report of Dr. English.

Another spreadsheet and associated suite of graphs was developed for analyzing results of the operational tool that calculates water needs. See section 6.4 for detailed description, explanation, and presentation of results of this spreadsheet. This chapter gives results of use of these tools in the East Isna Irrigation District. It incorporates a comparison of crop water needs and water delivered on a district-wide basis. The water delivered to the district was obtained from the water-monitoring program conducted in the East Isna Irrigation District.

For the East Isna Irrigation District as one of the five pilot districts of the MISD benchmark, calculations were made for the whole period of cropping pattern and water delivery information collected during the benchmark activities, from March 1, 2000 through September 30, 2001 (Cropping pattern information collection began April 1, 2000.).

6.2 Crop K_c Values

Use of the operational tool for an irrigation district in Egypt requires setup procedures including determination of proper crop coefficients (K_c values) for the crops grown in the district. Table 6-1 gives crop coefficients developed for the major crops grown in Egypt consistent with the MISD cropping pattern information collection program. The FAO parameters ($K_{c\text{-}ini}$, $K_{c\text{-}mid}$, $K_{c\text{-}end}$, L_{ini}, L_{dev}, L_{mid}, and L_{late}) taken from FAO 56 were used in a Microsoft Excel spreadsheet to calculate the crop coefficients. As new districts are added to the program, these coefficients should be carefully reviewed to ensure that the values are appropriate especially for the mix of crops reported in the *Other* category, *i.e.*, other than major crops and for any crops added as major crops that are not listed in Table 6-1.

6.3 Minimum Irrigation Depth

Depending primarily on the method of irrigation used for the land within the district and possibly the crop, there is a certain minimum depth of water that can be applied during an irrigation. For instance, a farmer must have enough water to spread over the whole basin for the level-basin application method of irrigation. The calculation scheme of the operational tool developed by Dr. Marshall English and detailed in Appendix C (Report 45) was modified to allow incorporation of this concept of minimum irrigation depth. Table 6-2 shows the modified macro statement used for the results of this report. Values of minimum irrigation depth are input into the operational tool on Sheet 3, Cells A32 through I32, for each crop.

Table 6-1. Crop coefficients (K_c values) for use in Egypt in the crop water needs calculation spreadsheet (operational tool) using the MISD cropping pattern information.

Period	Maize	Berseem (long)	Berseem (short)	Beans	Wheat	[1]Vegetables	[2]Garden	Cotton	Rice	Rice Short Dur	Sugar Cane	Sesame	Sunflower	[3]Other
1	0.29	0.21	0.21	0.27	0.37	0.82	0.90	0.27	0.56	0.56	0.60	0.21	0.21	0.79
2	0.56	0.45	0.45	0.50	0.70	0.82	0.90	0.50	1.05	1.05	0.60	0.41	0.41	0.79
3	0.79	0.72	0.72	0.50	0.79	0.82	0.90	0.53	1.06	1.09	0.64	0.66	0.73	0.79
4	1.10	0.90	0.90	0.50	0.91	0.82	0.90	0.72	1.13	1.17	0.75	1.00	1.11	0.79
5	1.20	0.90	0.90	0.51	1.04	0.82	0.90	0.93	1.19	1.20	0.86	1.10	1.15	0.79
6	1.20	0.90	0.72	0.70	1.14	0.82	0.90	1.14	1.20	1.20	0.99	1.10	1.05	0.79
7	1.13	0.90		0.98	1.15	0.82	0.90	1.20	1.20	1.20	1.11	1.00	0.46	0.79
8	0.75	0.90		1.15	1.15	0.82	0.90	1.20	1.20	1.11	1.23	0.39		0.79
9	0.07	0.90		1.15	1.15	0.82	0.90	1.20	1.18	0.44	1.25			0.79
10		0.90		0.89	1.14	0.82	0.90	1.18	1.04		1.25			0.79
11		0.90		0.20	0.88	0.82	0.90	1.05	0.43		1.25			0.79
12		0.90			0.43	0.82	0.90	0.92			1.25			0.79
13		0.90				0.82	0.90	0.54			1.25			0.79
14		0.12				0.82	0.90				1.25			0.79
15						0.82	0.90				1.25			0.79
16						0.82	0.90				1.25			0.79
17						0.82	0.90				1.25			0.79
18						0.82	0.90				1.25			0.79
19						0.82	0.90				1.25			0.79
20						0.82	0.90				1.25			0.79
21						0.82	0.90				1.17			0.79
22						0.82	0.90				1.01			0.79
23						0.82	0.90				0.85			0.79
24						0.82	0.90				0.68			0.79

[1]Because some districts report vegetables all year, this column uses the seasonal average of 26 vegetable crops of FAO 56

[2]As used by Marshall English

[3]Estimated (to cover all 24 periods) as approximate average of crops in this table other than sugar cane, rice, and vegetables

Table 6-2. The modified macro statement used for the results of this chapter.

```
Sub RecordHist()
'
' RecordHist Macro
'
' Macro recorded 7/13/2001 by Marshall English and modified by Larry King 10/8/2001
'
' Keyboard Shortcut: Ctrl+h
'
'This routine inputs a cropping pattern worksheet (sheet 1)and uses it for the following:
'   (a) updates the history files for current (weeks 0-2) and forecast (weeks 2-4) cropping patterns, planting
'       history for the current period (assumed to be planted during weeks 0 - 2)
'   (b) calculates weighted averages of crop coefficients for each crop on each canal, for the current (weeks 0-2)
'       and forecast (weeks 2-4) periods
'   (c) calculates weighted average water duty, by canal, for each crop
'   (d) calculates total water delivery required for each canal for the near-term (weeks 0-2) and longer term
'       (weeks 2-4)
'   (e) displays current and expected cropping patterns and current planting schedule for all crops for any chosen
'       canal for the current period (period for which computation is in progress (sheet 2)
'   (f) displays wheighted average crop coefficients and water duties for all crops on all canals for the current and
'       expected cropping patterns (sheet 5)
'
' ##########################################################################################
' #####     Update external files of current and expected crop areas and current and expected planting     ######
'
Dim current(24, 13, 60), expected(24, 13, 60), planting(24, 13, 60), Kc(0 To 23, 9), KcAvg(60, 9), ExpPlant(24,
13, 60), Flag(9), OCwr(0 To 23, 9), SumOCwr(60, 9)
NCanals = Worksheets("Sheet3").Cells(33, 12)
Open "c:\canal\current" For Input As #1
Open "c:\canal\expected" For Input As #2
For cl = 1 To NCanals
   Line Input #1, canal
For p = 1 To 24
   Input #1, current(p, 4, cl), current(p, 5, cl), current(p, 6, cl), current(p, 7, cl), current(p, 8, cl), current(p, 9, cl),
current(p, 10, cl), current(p, 11, cl), current(p, 12, cl), current(p, 13, cl)
Next p
Next cl
For cl = 1 To NCanals
   Line Input #2, canal
For p = 1 To 24

   Input #2, expected(p, 4, cl), expected(p, 5, cl), expected(p, 6, cl), expected(p, 7, cl), expected(p, 8, cl),
expected(p, 9, cl), expected(p, 10, cl), expected(p, 11, cl), expected(p, 12, cl), expected(p, 13, cl)

Next p
Next cl
Close #1
Close #2
'
' load new data and store in current and expected history arrays
'
Set Period = Worksheets("sheet1").Cells(2, 3)
   For Ncan = 1 To NCanals
   For Ncrop = 4 To 13
      Set current(Period, Ncrop, Ncan) = Worksheets("sheet1").Cells(Ncan + 4, Ncrop)
      Set expected(Period, Ncrop, Ncan) = Worksheets("sheet1").Cells(Ncan + 4, Ncrop + 10)
   Next Ncrop
   Next Ncan
'
```

Table 6-2. (Continued)

```
' compute areas planted in this interval or expected planting for next, and store in planting history files
'
   Open "c:\canal\planting" For Output As #3
   For cl = 1 To NCanals
   For cr = 1 To 13
   For p = 1 To 24
      If p = 1 Then
         planting(1, cr, cl) = current(p, cr, cl) - current(24, cr, cl)
      Else
         planting(p, cr, cl) = current(p, cr, cl) - current(p - 1, cr, cl)
      End If
         If planting(p, cr, cl) < 0 Then planting(p, cr, cl) = 0

         ExpPlant(p, cr, cl) = expected(p, cr, cl) - current(p, cr, cl)
         If ExpPlant(p, cr, cl) < 0 Then ExpPlant(p, cr, cl) = 0
   Next p
   Next cr
   Next cl
   For cl = 1 To NCanals
      Write #3, "Canal Number", cl
   For p = 1 To 24
    Write #3, planting(p, 4, cl), planting(p, 5, cl), planting(p, 6, cl), planting(p, 7, cl), planting(p, 8, cl),
planting(p, 9, cl), planting(p, 10, cl), planting(p, 11, cl), planting(p, 12, cl), planting(p, 13, cl)
   Next p
   Next cl
   Close #3
'
'  Re-write current and expected history files
'
Open "c:\canal\current" For Output As #1
For cl = 1 To NCanals
   Write #1, "Canal Number", cl
For p = 1 To 24
   Write #1, current(p, 4, cl), current(p, 5, cl), current(p, 6, cl), current(p, 7, cl), current(p, 8, cl), current(p, 9, cl),
current(p, 10, cl), current(p, 11, cl), current(p, 12, cl), current(p, 13, cl)
Next p
Next cl
Open "c:\canal\expected" For Output As #2
For cl = 1 To NCanals
   Write #2, "Canal Number", cl
For p = 1 To 24
   Write #2, expected(p, 4, cl), expected(p, 5, cl), expected(p, 6, cl), expected(p, 7, cl), expected(p, 8, cl),
expected(p, 9, cl), expected(p, 10, cl), expected(p, 11, cl), expected(p, 12, cl), expected(p, 13, cl)
Next p
Next cl

Close #1
Close #2
'
' ##########################################################################################
' #############              Display history files for designated canal              ########################
'
Set canal = Worksheets("sheet2").Cells(5, 2)
Worksheets("sheet2").Cells(5, 2).Value = canal
Worksheets("sheet2").Cells(2, 15).Value = Period
For p = 1 To 24
      DataRow = Period - p + 1
   If Period - p < 0 Then
```

Table 6-2. (Continued)

```
      DataRow = Period + 24 - p + 1
   End If
For K = 3 To 12
   Worksheets("sheet2").Cells(25 - p + 7, 2).Value = DataRow
   Worksheets("sheet2").Cells(25 - p + 7, K).Value = current(DataRow, K + 1, canal)
   Worksheets("sheet2").Cells(25 - p + 7, K + 12).Value = planting(DataRow, K + 1, canal)
   Worksheets("sheet2").Cells(25 - p + 7, K + 23).Value = expected(DataRow, K + 1, canal)
 Next K
 Next p
'
' ##########################################################################################
' ########        Calculate weighted averages of Kc, and volumes of other crop water needs        ###########
' ########                          for each crop in each canal                          #####################
'
' Notes:
'      If Forecast = 0 the forecast is for the next 15 days
'      If Forecast = 1 the forecast is for the period 15 to 30 days in the future
'      If Flag = 99 then the crop is a perennial, and KcAvg will be set to Kc(period), i.e.
'               the crop coefficient will be independent of planting date, and will only
'               depend on time of year
'
For Forecast = 0 To 1
   Set Period = Worksheets("sheet1").Cells(2, 3)
   T = Period
'
'      Read in values of Kc, Flag and OCwr from W/S #3 for all crops over all tau  #######
'
   For tau = 0 To 23
   For cr = 1 To 9
      Set Flag(cr) = Worksheets("sheet3").Cells(6, cr)
      Set Kc(tau, cr) = Worksheets("sheet3").Cells(8 + tau, cr)
      Set OCwr(tau, cr) = Worksheets("sheet3").Cells(8 + tau, cr + 14)
   Next cr
   Next tau
 '
 '
   For cl = 1 To NCanals
   For cr = 1 To 9
      SumA = 0
      SumAK = 0
      SumOCwr(cl, cr) = 0

      If Forecast = 1 Then
         SumA = ExpPlant(Period, cr + 3, cl)
         SumAK = ExpPlant(Period, cr + 3, cl) * Kc(0, cr)
         SumOCwr(cl, cr) = OCwr(0, cr) * ExpPlant(Period, cr + 3, cl)
      End If
      '
      '  Aggregate areas planted, Kc times area, and OCwr over all intervals where planting occurred
      '
      For tau = 0 To 12 - Forecast
         If T - tau < 1 Then
            Offset = 24
         Else
            Offset = 0
         End If

         SumA = SumA + planting(T - tau + Offset, cr + 3, cl)
```

Table 6-2. (Continued)

```
        SumAK = SumAK + planting(T - tau + Offset, cr + 3, cl) * Kc(tau + Forecast, cr)
        SumOCwr(cl, cr) = SumOCwr(cl, cr) + OCwr(tau + Forecast, cr) * planting(T - tau + Offset, cr + 3, cl)

      Next tau

      '
      ' for perennial crops set KcAvg to constant value
      '
      If Flag(cr) = 99 Then
        KcAvg(cl, cr) = Kc(Period - 1, cr)
      Else
      '
      '
       If SumA <= 0 Then
        KcAvg(cl, cr) = 0
       Else
        KcAvg(cl, cr) = SumAK / SumA
       End If
      End If
      If Forecast = 0 Then
        Worksheets("sheet5").Cells(cl + 5, cr + 3).Value = KcAvg(cl, cr)
      Else
        Worksheets("sheet5").Cells(cl + NCanals + 8, cr + 3).Value = KcAvg(cl, cr)
      End If
  Next cr
  Next cl
'
'##########################################################################################
'######                Compute water duties by canal and crop for given period          ##################
'
 If Period = 24 Then
  If Forecast = 1 Then
      Set ET0 = Worksheets("sheet3").Cells(8, 11)
      Set Rain = Worksheets("sheet3").Cells(8, 12)
      Set Plength = Worksheets("sheet3").Cells(8, 26)
      Set Eff = Worksheets("sheet3").Cells(35, 5)
  Else
      Set ET0 = Worksheets("sheet3").Cells(Period + 7 + Forecast, 11)
      Set Rain = Worksheets("sheet3").Cells(Period + 7 + Forecast, 12)
      Set Plength = Worksheets("sheet3").Cells(Period + 7, 26)
      Set Eff = Worksheets("sheet3").Cells(35, 5)
  End If
 Else
  Set ET0 = Worksheets("sheet3").Cells(Period + 7 + Forecast, 11)
  Set Rain = Worksheets("sheet3").Cells(Period + 7 + Forecast, 12)
  Set Plength = Worksheets("sheet3").Cells(Period + 7, 26)
  Set Eff = Worksheets("sheet3").Cells(35, 5)
 End If
 For cl = 1 To NCanals
  SumW = 0
 For cr = 1 To 9
  If Forecast = 0 Then
      AreaF = current(Period, cr + 3, cl)
  Else
      AreaF = expected(Period, cr + 3, cl)
  End If

  If KcAvg(cl, cr) <= 0 Then
```

Table 6-2. (Continued)

```
        If AreaF = 0 Then
            duty = 0
        Else
            duty = 0 + SumOCwr(cl, cr) / (Plength * AreaF)
            MinID = Worksheets("sheet3").Cells(32, cr)
            ThDuty = MinID / Plength
            If duty < ThDuty Then
                duty = ThDuty
            End If
        End If
    Else
        If AreaF = 0 Then
            duty = 0
        Else
            duty = (KcAvg(cl, cr) * ET0 - (Rain / Plength)) / Eff + SumOCwr(cl, cr) / (Plength * AreaF)
            MinID = Worksheets("sheet3").Cells(32, cr)
            ThDuty = MinID / Plength
            If duty < ThDuty Then
                duty = ThDuty
            End If
        End If

    End If
    If duty < 0 Then
        duty = 0
    End If
        If Forecast = 0 Then
        Worksheets("sheet5").Cells(cl + 5, cr + 12).Value = duty
    Else
        Worksheets("sheet5").Cells(cl + NCanals + 8, cr + 12).Value = duty
    End If
'
' ##########################################################################################
' ########      Compute total daily required water volumes, by canal    ########################
'
    If Forecast = 0 Then
        AreaF = current(Period, cr + 3, cl)
        SumW = SumW + duty * AreaF
    Else
        AreaF = expected(Period, cr + 3, cl)
        SumW = SumW + duty * AreaF
    End If
  Next cr
    TotW = SumW * 4.2
    Worksheets("sheet1").Cells(4 + cl, 24 + Forecast).Value = TotW
    If Period + 2 + Forecast <= 24 Then
        Worksheets("sheet9").Cells(4 + cl, Period + 2 + Forecast).Value = TotW
    Else
        Worksheets("sheet9").Cells(4 + cl, 3).Value = TotW
    End If
   Next cl
Next Forecast
    Worksheets("sheet5").Cells(2, 3).Value = Period
'
End Sub
```

6.4 Pilot District Results

This section presents the results of calculations without detailed discussion or interpretation (see Report 45 for discussion and interpretation of these results). The focus of this chapter is on how to use the tools to perform the calculations and prepare the graphs. Note that for the East Isna district, Table 3-1 shows 36 canals to which the MALR cropping pattern information is associated. MISD data collection and processing began on April 1, 2000, using these 36 canals covering the total command area for the district. Table 6-3 shows the input data of Sheet 3 of the operational tool for the East Isna district.

Table 6-4 shows calculations of Sheet 1 copied from Canal Demand, the crop water needs calculation spreadsheet, for the East Isna Irrigation District for each half-month period from April 1, 2000 through September 30, 2001. The cropping pattern data of Chapter 3 were used as input to Canal Demand for these calculations. A problem with the cropping pattern data was observed. Some of these calculations used raw cropping pattern data that had not been processed by the MALR Microsoft Access database. These raw data sometimes had errors indicated by reported crop areas not summing to total areas for the particular branch canal. This data problem was handled by adding check sums to Sheet 1 to help find and correct these data errors. The last two columns of Table 6-4 are check sums for each canal for the existing and expected cropping patterns, respectively. Each check sum value in these last two columns should equal the command area of the canal. If not, the data error must be found in the row and corrected. The first row of check sums below the last canal total the values in the respective columns. The two check sums in the bottom row sum over all crops of the existing and expected crop patterns, respectively, and of course, must equal the total district command area. These check sums have proven to be a valuable aid to ensuring correct data entry to the Canal Demand spreadsheet, but will be unnecessary when all cropping pattern data are processed by the MALR Access database.

Table 6-5 (Sheet 1 of East Isna DEMO) shows a comparison of calculated crop water needs and water delivered to the East Isna pilot district expressed as daily average over each half-month period from April 2000 through September 2001. Note that for any particular half month, the existing area of crop may differ from the expected area. Thus, two values of water delivered per feddan of cropped area are calculated. For each half-month period, four pieces of data available from results of Canal Demand must be entered into East Isna DEMO Sheet 1, shown here as Table 6-5. These four district-wide data values are: (1) crop water needs (million m^3/day) for existing crops, (2) crop water needs (million m^3/day) for expected crops, (3) existing area (feddans) of fallow, and (4) expected area (feddans) of fallow. In transposing these four data values from results of Canal Demand calculations (Table 6-4) to East Isna DEMO (Table 6-5) one must be very careful to enter the data into the correct cell of the spreadsheet. Note that for each period, the district-wide existing crop water requirement (m^3/day) is given as the sum of the column labeled "0 – 2 wks" in Table 6-4. This value (850502 m^3/day, for period 7, 2000, in Table 6-4) is entered into Table 6-5 as the water required for existing crops for the same time period (period 7, 1 Apr – 15 Apr, 2000, as 0.8585 million m^3/day). In contrast, the district-wide expected crop water requirement (sum of column labeled "2 – 4 wks" in Table 6-4) must be entered into Table 6-5 for the next period. For example, the "2 – 4 wks" water requirement in Table 6-4, period 7 (787159 m^3/day), is entered into Table 6-5 as 0.7872 million m^3/day for 16 Apr – 30 Apr. In other words, the governing time in Table 6-5 is listed in the columns labeled "Dates (To, From), Yr".

Table 6-3. Sheet 3 copied from Canal Demand, the crop water needs calculation spreadsheet, showing input data for the East Isna District.

Crop Coefficients

Wheat	Maize	Sesam	Cotton	Rice	Vegs	Sugar	Garde	Others
						Peren. 99	*Peren.* 99	*Peren.* 99
0.37	0.29	0.21	0.27	0.56	0.82	0.60	0.90	0.79
0.70	0.56	0.41	0.50	1.05	0.82	0.60	0.90	0.79
0.79	0.79	0.66	0.53	1.09	0.82	0.64	0.90	0.79
0.91	1.10	1.00	0.72	1.17	0.82	0.75	0.90	0.79
1.04	1.20	1.10	0.93	1.20	0.82	0.86	0.90	0.79
1.14	1.20	1.10	1.14	1.20	0.82	0.99	0.90	0.79
1.15	1.13	1.00	1.20	1.20	0.82	1.11	0.90	0.79
1.15	0.75	0.39	1.20	1.11	0.82	1.23	0.90	0.79
1.15	0.07	0.00	1.20	0.44	0.82	1.25	0.90	0.79
1.14	0.00	0.00	1.18	0.00	0.82	1.25	0.90	0.79
0.88	0.00	0.00	1.05	0.00	0.82	1.25	0.90	0.79
0.43	0.00	0.00	0.92	0.00	0.82	1.25	0.90	0.79
0.00	0.00	0.00	0.54	0.00	0.82	1.25	0.90	0.79
0.00	0.00	0.00	0.00	0.00	0.82	1.25	0.90	0.79
0.00	0.80	0.00	0.00	0.00	0.82	1.25	0.90	0.79
0.00	0.00	0.00	0.00	0.00	0.82	1.25	0.90	0.79
0.00	0.00	0.00	0.00	0.00	0.82	1.25	0.90	0.79
0.00	0.00	0.00	0.00	0.00	0.82	1.25	0.90	0.79
0.00	0.00	0.00	0.00	0.00	0.82	1.25	0.90	0.79
0.00	0.00	0.00	0.00	0.00	0.82	1.25	0.90	0.79
0.00	0.00	0.00	0.00	0.00	0.82	1.17	0.90	0.79
0.00	0.00	0.00	0.00	0.00	0.82	1.01	0.90	0.79
0.00	0.00	0.00	0.00	0.00	0.82	0.85	0.90	0.79
0.00	0.00	0.00	0.00	0.00	0.82	0.68	0.90	0.79
50	50	50	50	50	50	50	50	50

: Minimum Irrigation Depth (mm)

Weather (mm/mo)

Ref ET	Eff Rain	Time (T)	Lag time (tau)
2.80	0.00	1	0
3.20	0.00	2	1
3.60	0.00	3	2
4.00	0.00	4	3
4.80	0.00	5	4
5.60	0.00	6	5
5.90	0.00	7	6
6.30	0.00	8	7
6.50	0.00	9	8
6.70	0.00	10	9
7.50	0.00	11	10
7.30	0.00	12	11
7.00	0.00	13	12
7.00	0.00	14	13
7.00	0.00	15	14
7.00	0.00	16	15
6.60	0.00	17	16
6.00	0.00	18	17
5.40	0.00	19	18
4.80	0.00	20	19
4.20	0.00	21	20
3.80	0.00	22	21
3.20	0.00	23	22
2.80	0.00	24	23

Other crop water requirements (mm per period)

Wheat	Maize	Sesame	Cotton	Rice	Vegs	Sugar C	Garden	Others
0	75	0	50	100	0	0	0	0
0	0	0	0	100	0	0	0	0
0	0	0	0	100	0	0	0	0
0	0	0	0	100	0	0	0	0
0	0	0	0	100	0	0	0	0
0	0	0	0	100	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

Period Lengths

Period no.	length
1	15
2	16
3	15
4	13
5	15
6	16
7	15
8	15
9	15
10	16
11	15
12	15
13	15
14	16
15	15
16	16
17	15
18	15
19	15
20	16
21	15
22	15
23	15
24	16

Efficiency

Appl.	Canal	Total
0.75	0.933	0.70

Number of canals	36.00

Table 6-4. Sheet 1 copied from Canal Demand, the crop water needs calculation spreadsheet, for East Isna Irrigation District for half-month time periods, April 1 – 15 through September 15 – 30, 2001 (See file "Crops & Needs – EI" on disk).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 7

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	740	7	531	545	0	0	0	0	0	0	840	7	546	430	44151	51788	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	230	22	86	223	0	0	0	0	0	0	260	22	46	233	12144	13031	561	561
3	Hager Komer	1527	0	0	0	0	0	0	533	1	275	718	0	0	0	0	0	0	600	1	150	776	28666	29688	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	246	1	159	0	0	0	0	0	0	0	325	1	80	0	14145	16059	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	300	0	233	70	0	0	0	0	0	0	340	0	150	113	18304	18745	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	110	1	50	85	0	0	0	0	0	0	125	1	33	87	5753	6264	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	515	1	191	71	0	0	0	0	0	0	585	1	100	92	25610	27566	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	95	102	96	55	0	0	0	0	0	0	110	102	84	52	9667	10594	348	348
9	Elnamsa	1622	0	0	0	0	0	0	832	2	399	389	0	0	0	0	0	0	950	2	200	470	43915	45901	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	210	1	108	283	0	0	0	0	0	0	235	1	58	308	11304	11626	602	602
11	Elsereeb	88	0	0	0	0	0	0	15	0	65	8	0	0	0	0	0	0	17	0	35	36	2407	1758	88	88
12	Eladima	785	0	0	0	0	0	0	451	15	147	172	0	0	0	0	0	0	510	15	75	185	22310	24149	785	785
13	Elghaba	109	0	0	0	0	0	0	80	0	14	15	0	0	0	0	0	0	90	0	8	11	3535	4015	109	109
14	Esna west	1705	0	0	0	0	0	0	653	15	622	415	0	0	0	0	0	0	740	15	350	600	43532	42011	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	680	6	774	214	0	0	0	0	0	0	770	6	400	498	48557	44457	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	374	21	379	106	0	0	0	0	0	0	425	21	200	234	25964	24519	880	880
17	Esna North	1353	0	0	0	0	0	0	466	0	655	232	0	0	0	0	0	0	530	0	350	473	36629	32689	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	35	2	99	490	0	0	0	0	0	0	40	2	55	529	4208	3389	626	626
19	Elshekh Fadl East	160	0	0	0	0	0	0	100	30	30	0	0	0	0	0	0	0	60	30	70	0	5724	5628	160	160
20	Elnegoo	127	0	0	0	0	0	0	45	16	66	0	0	0	0	0	0	0	50	16	61	0	4124	4464	127	127
21	Elkorom	240	0	0	0	0	0	0	55	8	172	5	0	0	0	0	0	0	60	8	90	82	7226	5477	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	930	5	2926	436	0	0	0	0	0	0	1060	5	1600	1632	118531	92425	4297	4297
23	Alkeman	526	0	0	0	0	0	0	85	2	439	0	0	0	0	0	0	0	95	2	85	344	15681	6592	526	526
24	Elmatana	3124	0	0	0	0	0	0	1000	176	1256	692	0	0	0	0	0	0	1130	176	250	1568	80027	60866	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	240	322	422	0	0	0	0	0	0	0	270	322	250	142	31491	29749	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	0	408	98	0	0	0	0	0	0	0	1	460	45	0	15740	17035	506	506
27	Old Klabia	1435	0	0	0	0	0	0	16	289	722	408	0	0	0	0	0	0	18	289	705	423	30028	31640	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	45	117	142	0	0	0	0	0	0	0	52	134	118	0	9467	10264	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	443	59	0	0	0	0	0	0	0	0	414	88	0	15764	16712	502	502
30	Elhala New	492	0	0	0	0	0	0	0	442	50	0	0	0	0	0	0	0	0	459	30	3	15480	16511	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	105	98	67	0	0	0	0	0	0	0	105	144	21	6086	7872	270	270
32	Elgabal	482	0	0	0	0	0	0	13	13	310	146	0	0	0	0	0	0	15	13	160	294	9594	5850	482	482
33	Elzorkany	650	0	0	0	0	0	0	47	24	549	30	0	0	0	0	0	0	52	24	250	324	17965	10464	650	650
34	Elder	782	0	0	0	0	0	0	25	281	476	0	0	0	0	0	0	0	28	281	300	173	23247	19693	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	507	227	57	0	0	0	0	0	0	0	507	125	159	22501	20981	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	315	393	0	0	0	0	0	0	0	0	315	200	193	21027	16689	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**9166**	**3700**	**13318**	**5932**	**0**	**0**	**0**	**0**	**0**	**0**	**10383**	**3757**	**7491**	**10485**	**850502**	**787159**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 8

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	842	7	546	428	0	0	0	0	0	0	951	7	535	330	55691	62349	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	262	22	46	231	0	0	0	0	0	0	295	22	70	174	14304	17080	561	561
3	Hager Komer	1527	0	0	0	0	0	0	602	1	150	774	0	0	0	0	0	0	685	1	60	781	32503	34743	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	320	1	85	0	0	0	0	0	0	0	330	1	75	0	17450	18176	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	340	0	150	113	0	0	0	0	0	0	380	0	95	128	20287	21156	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	127	1	33	85	0	0	0	0	0	0	135	1	75	35	6924	8822	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	585	1	100	92	0	0	0	0	0	0	662	1	45	70	30219	33178	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	111	102	84	51	0	0	0	0	0	0	122	102	62	62	11139	11343	348	348
9	Elnamsa	1622	0	0	0	0	0	0	963	2	203	454	0	0	0	0	0	0	1070	2	405	145	50904	63876	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	255	1	58	288	0	0	0	0	0	0	270	1	110	221	13622	16376	602	602
11	Elsereeb	88	0	0	0	0	0	0	23	0	35	30	0	0	0	0	0	0	20	0	60	8	2115	2808	88	88
12	Eladima	785	0	0	0	0	0	0	519	15	75	176	0	0	0	0	0	0	580	15	140	50	26880	32663	785	785
13	Elghaba	109	0	0	0	0	0	0	102	0	7	0	0	0	0	0	0	0	74	0	35	0	4951	4628	109	109
14	Esna west	1705	0	0	0	0	0	0	740	15	353	597	0	0	0	0	0	0	840	15	450	400	45457	54686	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	776	6	403	489	0	0	0	0	0	0	855	6	498	315	48318	56568	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	426	21	200	233	0	0	0	0	0	0	480	21	205	174	26493	30079	880	880
17	Esna North	1353	0	0	0	0	0	0	530	0	350	473	0	0	0	0	0	0	600	0	120	633	35094	32479	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	40	2	55	529	0	0	0	0	0	0	42	2	60	522	3570	3934	626	626
19	Elshekh Fadl East	160	0	0	0	0	0	0	70	30	60	0	0	0	0	0	0	0	70	30	60	0	6067	6260	160	160
20	Elnegoo	127	0	0	0	0	0	0	50	16	61	0	0	0	0	0	0	0	41	16	70	0	4691	4685	127	127
21	Elkorom	240	0	0	0	0	0	0	60	8	90	82	0	0	0	0	0	0	69	8	50	113	5749	5131	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1060	5	1600	1632	0	0	0	0	0	0	1170	5	200	2922	97233	62462	4297	4297
23	Alkeman	526	0	0	0	0	0	0	95	2	85	344	0	0	0	0	0	0	98	2	115	311	7023	8314	526	526
24	Elmatana	3124	0	0	0	0	0	0	1130	176	250	1568	0	0	0	0	0	0	1275	176	125	1548	65991	71191	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	270	322	250	142	0	0	0	0	0	0	300	322	95	267	30973	28620	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	460	45	0	0	0	0	0	0	0	1	424	80	1	17039	17395	506	506
27	Old Klabia	1435	0	0	0	0	0	0	18	289	705	423	0	0	0	0	0	0	18	289	340	788	31721	21483	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	52	134	118	0	0	0	0	0	0	0	55	119	130	0	10500	10821	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	414	88	0	0	0	0	0	0	0	0	397	105	0	16712	17170	502	502
30	Elhala New	492	0	0	0	0	0	0	0	459	30	3	0	0	0	0	0	0	0	372	120	0	16511	16754	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	105	144	21	0	0	0	0	0	0	0	105	95	70	7872	6612	270	270
32	Elgabal	482	0	0	0	0	0	0	15	13	160	294	0	0	0	0	0	0	15	13	95	359	5918	4103	482	482
33	Elzorkany	650	0	0	0	0	0	0	52	24	250	324	0	0	0	0	0	0	56	24	125	445	10700	7380	650	650
34	Elder	782	0	0	0	0	0	0	28	281	300	173	0	0	0	0	0	0	30	281	145	326	19820	15770	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	507	125	159	0	0	0	0	0	0	0	507	120	164	20981	21493	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	315	200	193	0	0	0	0	0	0	0	315	115	278	16689	14600	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**10464**	**3757**	**7494**	**10401**	**0**	**0**	**0**	**0**	**0**	**0**	**11589**	**3602**	**5285**	**11640**	**838112**	**845185**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 9

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	**Water Requirements (m^3/dy)** 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	951	7	535	330	0	0	0	0	0	0	995	7	535	286	63090	67243	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	295	22	70	174	0	0	0	0	0	0	305	22	70	164	17310	18345	561	561
3	Hager Komer	1527	0	0	0	0	0	0	685	1	60	781	0	0	0	0	0	0	725	1	60	741	35277	38373	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	330	1	75	0	0	0	0	0	0	0	330	1	75	0	18433	19001	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	380	0	85	138	0	0	0	0	0	0	390	0	85	128	21144	22297	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	135	1	75	35	0	0	0	0	0	0	145	1	75	25	8927	9704	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	662	1	45	70	0	0	0	0	0	0	685	1	45	47	33694	35887	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	122	102	62	62	0	0	0	0	0	0	130	102	62	54	11438	12192	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1070	2	405	145	0	0	0	0	0	0	1100	2	405	115	64711	68209	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	270	1	110	221	0	0	0	0	0	0	278	1	110	213	16587	17499	602	602
11	Elsereeb	88	0	0	0	0	0	0	20	0	60	8	0	0	0	0	0	0	21	0	60	7	2824	2961	88	88
12	Eladima	785	0	0	0	0	0	0	580	15	140	50	0	0	0	0	0	0	614	15	140	16	33115	35842	785	785
13	Elghaba	109	0	0	0	0	0	0	74	0	35	0	0	0	0	0	0	0	74	0	35	0	4686	4830	109	109
14	Esna west	1705	0	0	0	0	0	0	840	15	450	400	0	0	0	0	0	0	875	15	450	365	55341	58803	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	855	6	498	315	0	0	0	0	0	0	900	6	498	270	57235	61258	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	480	21	205	174	0	0	0	0	0	0	500	21	205	154	30453	32395	880	880
17	Esna North	1353	0	0	0	0	0	0	600	0	120	633	0	0	0	0	0	0	630	0	120	603	32947	35468	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	42	2	60	522	0	0	0	0	0	0	45	2	60	519	3966	4239	626	626
19	Elshekh Fadl East	160	0	0	0	0	0	0	70	30	60	0	0	0	0	0	0	0	77	30	53	0	6314	6638	160	160
20	Elnegoo	127	0	0	0	0	0	0	56	16	55	0	0	0	0	0	0	0	61	16	50	0	4986	5232	127	127
21	Elkorom	240	0	0	0	0	0	0	69	8	50	113	0	0	0	0	0	0	72	8	50	110	5185	5495	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1170	5	200	2922	0	0	0	0	0	0	1265	5	200	2827	63375	70099	4297	4297
23	Alkeman	526	0	0	0	0	0	0	98	2	115	311	0	0	0	0	0	0	110	2	115	299	8391	9252	526	526
24	Elmatana	3124	0	0	0	0	0	0	1275	176	125	1548	0	0	0	0	0	0	1344	176	125	1479	72185	77873	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	300	322	95	267	0	0	0	0	0	0	318	322	95	249	28854	30646	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	425	80	0	0	0	0	0	0	0	1	425	80	0	17431	17967	506	506
27	Old Klabia	1435	0	0	0	0	0	0	18	289	340	788	0	0	0	0	0	0	20	289	340	786	21497	22259	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	55	119	130	0	0	0	0	0	0	0	57	117	130	0	10863	11226	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	397	105	0	0	0	0	0	0	0	0	397	105	0	17170	17698	502	502
30	Elhala New	492	0	0	0	0	0	0	0	372	120	0	0	0	0	0	0	0	0	372	120	0	16754	17270	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	105	95	70	0	0	0	0	0	0	0	105	95	70	6612	6816	270	270
32	Elgabal	482	0	0	0	0	0	0	15	13	95	359	0	0	0	0	0	0	17	13	95	357	4115	4342	482	482
33	Elzorkany	650	0	0	0	0	0	0	56	24	125	445	0	0	0	0	0	0	62	24	125	439	7424	7954	650	650
34	Elder	782	0	0	0	0	0	0	30	281	145	326	0	0	0	0	0	0	32	281	145	324	15793	16379	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	507	120	164	0	0	0	0	0	0	0	507	120	164	21493	22154	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	315	115	278	0	0	0	0	0	0	0	315	65	328	14600	13461	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**11604**	**3603**	**5260**	**11649**	**0**	**0**	**0**	**0**	**0**	**0**	**12178**	**3601**	**5198**	**11139**	**854221**	**907307**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 10

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	995	7	535	286	0	0	0	0	0	0	1025	7	535	256	67243	76959	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	305	22	70	164	0	0	0	0	0	0	315	22	70	154	18345	21098	561	561
3	Hager Komer	1527	0	0	0	0	0	0	725	1	60	741	0	0	0	0	0	0	738	1	60	728	38373	43686	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	330	1	75	0	0	0	0	0	0	0	330	1	75	0	19001	21269	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	390	0	85	128	0	0	0	0	0	0	405	0	85	113	22297	25803	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	145	1	75	25	0	0	0	0	0	0	150	1	75	20	9704	11144	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	685	1	45	47	0	0	0	0	0	0	710	1	45	22	35887	41578	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	130	102	62	54	0	0	0	0	0	0	132	102	62	52	12192	13760	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1100	2	405	115	0	0	0	0	0	0	1135	2	405	80	68209	78323	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	278	1	110	213	0	0	0	0	0	0	280	1	110	211	17499	19701	602	602
11	Elsereeb	88	0	0	0	0	0	0	21	0	60	7	0	0	0	0	0	0	22	0	60	6	2961	3371	88	88
12	Eladima	785	0	0	0	0	0	0	614	15	140	16	0	0	0	0	0	0	625	15	140	5	35842	40741	785	785
13	Elghaba	109	0	0	0	0	0	0	74	0	35	0	0	0	0	0	0	0	74	0	35	0	4830	5407	109	109
14	Esna west	1705	0	0	0	0	0	0	875	15	450	365	0	0	0	0	0	0	915	15	450	325	58803	68074	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	900	6	498	270	0	0	0	0	0	0	925	6	498	245	61258	69978	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	500	21	205	154	0	0	0	0	0	0	517	21	205	137	32395	37220	880	880
17	Esna North	1353	0	0	0	0	0	0	630	0	120	603	0	0	0	0	0	0	635	0	120	598	35468	39985	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	45	2	60	519	0	0	0	0	0	0	45	2	60	519	4239	4745	626	626
19	Elshekh Fadl East	160	0	0	0	0	0	0	77	30	53	0	0	0	0	0	0	0	80	30	50	0	6638	7493	160	160
20	Elnegoo	127	0	0	0	0	0	0	61	16	50	0	0	0	0	0	0	0	62	16	49	0	5232	5877	127	127
21	Elkorom	240	0	0	0	0	0	0	75	8	50	107	0	0	0	0	0	0	72	8	50	110	5646	6152	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1265	5	200	2827	0	0	0	0	0	0	1275	5	200	2817	70099	79031	4297	4297
23	Alkeman	526	0	0	0	0	0	0	110	2	115	299	0	0	0	0	0	0	113	2	115	296	9252	10526	526	526
24	Elmatana	3124	0	0	0	0	0	0	1344	176	125	1479	0	0	0	0	0	0	1390	176	125	1433	77873	89759	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	318	322	95	249	0	0	0	0	0	0	325	322	95	242	30646	34700	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	425	80	0	0	0	0	0	0	0	1	425	80	0	17967	20113	506	506
27	Old Klabia	1435	0	0	0	0	0	0	20	289	340	786	0	0	0	0	0	0	20	289	340	786	22259	24917	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	57	117	130	0	0	0	0	0	0	0	57	117	130	0	11226	12566	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	397	105	0	0	0	0	0	0	0	0	397	105	0	17698	19811	502	502
30	Elhala New	492	0	0	0	0	0	0	0	372	120	0	0	0	0	0	0	0	0	372	120	0	17270	19332	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	105	95	70	0	0	0	0	0	0	0	105	95	70	6816	7630	270	270
32	Elgabal	482	0	0	0	0	0	0	17	13	95	357	0	0	0	0	0	0	17	13	95	357	4342	4860	482	482
33	Elzorkany	650	0	0	0	0	0	0	62	24	125	439	0	0	0	0	0	0	62	24	125	439	7954	8903	650	650
34	Elder	782	0	0	0	0	0	0	32	281	145	324	0	0	0	0	0	0	32	281	145	324	16379	18335	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	507	120	164	0	0	0	0	0	0	0	507	120	164	22154	24800	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	315	115	278	0	0	0	0	0	0	0	315	65	328	15049	15068	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**12181**	**3601**	**5248**	**11086**	**0**	**0**	**0**	**0**	**0**	**0**	**12484**	**3601**	**5194**	**10837**	**909045**	**1032712**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 11

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1025	7	535	256	0	0	0	0	0	0	1057	7	535	224	76959	76659	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	315	22	70	154	0	0	0	0	0	0	327	22	70	142	21098	21193	561	561
3	Hager Komer	1527	0	0	0	0	0	0	738	1	60	728	0	0	0	0	0	0	762	1	60	704	43686	43835	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	330	1	75	0	0	0	0	0	0	0	330	1	75	0	21269	20702	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	405	0	85	113	0	0	0	0	0	0	422	0	85	96	25803	26046	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	150	1	75	20	0	0	0	0	0	0	156	1	75	14	11144	11176	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	710	1	45	22	0	0	0	0	0	0	732	1	45	0	41578	41674	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	132	102	62	52	0	0	0	0	0	0	136	102	62	48	13760	13612	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1135	2	405	80	0	0	0	0	0	0	1189	2	405	26	78323	79190	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	280	1	110	211	0	0	0	0	0	0	249	1	110	242	19701	17478	602	602
11	Elsereeb	88	0	0	0	0	0	0	22	0	60	6	0	0	0	0	0	0	23	0	60	5	3371	3335	88	88
12	Eladima	785	0	0	0	0	0	0	625	15	140	5	0	0	0	0	0	0	630	15	140	0	40741	39928	785	785
13	Elghaba	109	0	0	0	0	0	0	74	0	35	0	0	0	0	0	0	0	74	0	35	0	5407	5263	109	109
14	Esna west	1705	0	0	0	0	0	0	915	15	450	325	0	0	0	0	0	0	933	15	450	307	68074	67244	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	925	6	498	245	0	0	0	0	0	0	970	6	498	200	69978	70576	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	517	21	205	137	0	0	0	0	0	0	534	21	205	120	37220	37158	880	880
17	Esna North	1353	0	0	0	0	0	0	635	0	120	598	0	0	0	0	0	0	665	0	120	568	39985	40561	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	280	2	60	284	0	0	0	0	0	0	287	2	60	277	17964	17868	626	626
19	Elshekh Fadl East	160	0	0	0	0	0	0	45	55	60	0	0	0	0	0	0	0	49	51	60	0	6892	6769	160	160
20	Elnegoo	127	0	0	0	0	0	0	62	16	49	0	0	0	0	0	0	0	61	16	50	0	5877	5701	127	127
21	Elkorom	240	0	0	0	0	0	0	72	8	50	110	0	0	0	0	0	0	77	8	50	105	6152	6261	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1275	5	200	2817	0	0	0	0	0	0	1323	5	200	2769	79031	79552	4297	4297
23	Alkeman	526	0	0	0	0	0	0	113	2	115	296	0	0	0	0	0	0	119	2	115	290	10526	10573	526	526
24	Elmatana	3124	0	0	0	0	0	0	1390	176	125	1433	0	0	0	0	0	0	1415	176	125	1408	89759	88734	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	325	322	95	242	0	0	0	0	0	0	335	322	95	232	34700	34322	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	425	80	0	0	0	0	0	0	0	1	425	80	0	20113	19576	506	506
27	Old Klabia	1435	0	0	0	0	0	0	20	289	340	786	0	0	0	0	0	0	21	289	340	785	24917	24307	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	57	117	130	0	0	0	0	0	0	0	60	114	130	0	12566	12277	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	397	105	0	0	0	0	0	0	0	0	397	105	0	19811	19283	502	502
30	Elhala New	492	0	0	0	0	0	0	0	372	120	0	0	0	0	0	0	0	0	372	120	0	19332	18816	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	105	95	70	0	0	0	0	0	0	0	105	95	70	7630	7426	270	270
32	Elgabal	482	0	0	0	0	0	0	17	13	95	357	0	0	0	0	0	0	18	13	95	356	4860	4785	482	482
33	Elzorkany	650	0	0	0	0	0	0	62	24	125	439	0	0	0	0	0	0	67	24	125	434	8903	8940	650	650
34	Elder	782	0	0	0	0	0	0	32	281	145	324	0	0	0	0	0	0	34	281	145	322	18335	17956	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	507	120	164	0	0	0	0	0	0	0	507	120	164	24800	24138	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	315	115	278	0	0	0	0	0	0	0	315	65	328	16846	14666	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**12684**	**3626**	**5254**	**10552**	**0**	**0**	**0**	**0**	**0**	**0**	**13056**	**3619**	**5205**	**10236**	**1047108**	**1037580**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 12

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1025	7	535	256	0	0	0	0	0	0	1057	7	535	224	74907	73508	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	315	22	70	154	0	0	0	0	0	0	327	22	70	142	20536	20322	561	561
3	Hager Komer	1527	0	0	0	0	0	0	738	1	60	728	0	0	0	0	0	0	762	1	60	704	42521	42034	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	330	1	75	0	0	0	0	0	0	0	330	1	75	0	20702	19851	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	405	0	85	113	0	0	0	0	0	0	422	0	85	96	25115	24975	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	150	1	75	20	0	0	0	0	0	0	156	1	75	14	10847	10716	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	710	1	45	22	0	0	0	0	0	0	732	1	45	0	40469	39961	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	132	102	62	52	0	0	0	0	0	0	136	102	62	48	13393	13053	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1135	2	405	80	0	0	0	0	0	0	1189	2	405	26	76234	75936	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	280	1	110	211	0	0	0	0	0	0	249	1	110	242	19176	16760	602	602
11	Elsereeb	88	0	0	0	0	0	0	22	0	60	6	0	0	0	0	0	0	23	0	60	5	3281	3198	88	88
12	Eladima	785	0	0	0	0	0	0	625	15	140	5	0	0	0	0	0	0	630	15	140	0	39654	38287	785	785
13	Elghaba	109	0	0	0	0	0	0	74	0	35	0	0	0	0	0	0	0	74	0	35	0	5263	5046	109	109
14	Esna west	1705	0	0	0	0	0	0	915	15	450	325	0	0	0	0	0	0	933	15	450	307	66258	64481	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	925	6	498	245	0	0	0	0	0	0	970	6	498	200	68112	67675	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	517	21	205	137	0	0	0	0	0	0	534	21	205	120	36227	35631	880	880
17	Esna North	1353	0	0	0	0	0	0	635	0	120	598	0	0	0	0	0	0	665	0	120	568	38918	38894	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	280	2	60	284	0	0	0	0	0	0	287	2	60	277	17485	17134	626	626
19	Elshekh Fadl East	160	0	0	0	0	0	0	45	55	60	0	0	0	0	0	0	0	49	51	60	0	6708	6491	160	160
20	Elnegoo	127	0	0	0	0	0	0	62	16	49	0	0	0	0	0	0	0	61	16	50	0	5721	5466	127	127
21	Elkorom	240	0	0	0	0	0	0	72	8	50	110	0	0	0	0	0	0	77	8	50	105	5987	6004	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1275	5	200	2817	0	0	0	0	0	0	1323	5	200	2769	76924	76283	4297	4297
23	Alkeman	526	0	0	0	0	0	0	113	2	115	296	0	0	0	0	0	0	119	2	115	290	10245	10139	526	526
24	Elmatana	3124	0	0	0	0	0	0	1390	176	125	1433	0	0	0	0	0	0	1415	176	125	1408	87366	85088	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	325	322	95	242	0	0	0	0	0	0	335	322	95	232	33774	32911	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	425	80	0	0	0	0	0	0	0	1	425	80	0	19576	18772	506	506
27	Old Klabia	1435	0	0	0	0	0	0	20	289	340	786	0	0	0	0	0	0	21	289	340	785	24252	23308	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	57	117	130	0	0	0	0	0	0	0	60	114	130	0	12231	11773	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	397	105	0	0	0	0	0	0	0	0	397	105	0	19283	18491	502	502
30	Elhala New	492	0	0	0	0	0	0	0	372	120	0	0	0	0	0	0	0	0	372	120	0	18816	18043	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	105	95	70	0	0	0	0	0	0	0	105	95	70	7426	7121	270	270
32	Elgabal	482	0	0	0	0	0	0	17	13	95	357	0	0	0	0	0	0	18	13	95	356	4730	4589	482	482
33	Elzorkany	650	0	0	0	0	0	0	62	24	125	439	0	0	0	0	0	0	67	24	125	434	8666	8572	650	650
34	Elder	782	0	0	0	0	0	0	32	281	145	324	0	0	0	0	0	0	34	281	145	322	17846	17218	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	507	120	164	0	0	0	0	0	0	0	507	120	164	24138	23146	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	315	115	278	0	0	0	0	0	0	0	315	65	328	16397	14064	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**12684**	**3626**	**5254**	**10552**	**0**	**0**	**0**	**0**	**0**	**0**	**13056**	**3619**	**5205**	**10236**	**1019185**	**994940**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 13

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1057	7	535	224	0	0	0	0	0	0	834	7	286	696	73508	53539	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	327	22	70	142	0	0	0	0	0	0	402	22	110	27	20322	25586	561	561
3	Hager Komer	1527	0	0	0	0	0	0	762	1	60	704	0	0	0	0	0	0	813	1	276	437	42034	51878	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	330	1	75	0	0	0	0	0	0	0	358	1	47	0	19851	20392	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	422	0	85	96	0	0	0	0	0	0	409	0	194	0	24975	27909	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	156	1	75	14	0	0	0	0	0	0	60	1	58	127	10716	5112	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	732	1	45	0	0	0	0	0	0	0	638	1	139	0	39961	38145	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	136	102	62	48	0	0	0	0	0	0	132	102	60	54	13053	12776	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1189	2	405	26	0	0	0	0	0	0	1045	2	384	191	75936	67679	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	249	1	110	242	0	0	0	0	0	0	406	1	87	108	16760	24239	602	602
11	Elsereeb	88	0	0	0	0	0	0	23	0	60	5	0	0	0	0	0	0	32	0	56	0	3198	3538	88	88
12	Eladima	785	0	0	0	0	0	0	630	15	140	0	0	0	0	0	0	0	595	15	164	11	38287	37246	785	785
13	Elghaba	109	0	0	0	0	0	0	74	0	35	0	0	0	0	0	0	0	91	0	15	3	5046	5275	109	109
14	Esna west	1705	0	0	0	0	0	0	933	15	450	307	0	0	0	0	0	0	1137	15	387	166	64481	73100	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	970	6	498	200	0	0	0	0	0	0	931	6	454	283	67675	64168	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	534	21	205	120	0	0	0	0	0	0	404	21	342	113	35631	33351	880	880
17	Esna North	1353	0	0	0	0	0	0	665	0	120	568	0	0	0	0	0	0	804	0	378	171	38894	54752	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	287	2	60	277	0	0	0	0	0	0	216	2	87	321	17134	14302	626	626
19	Elshekh Fadl East	160	0	0	0	0	0	0	49	0	111	0	0	0	0	0	0	0	59	60	41	0	6255	6726	160	160
20	Elnegoo	127	0	0	0	0	0	0	66	16	45	0	0	0	0	0	0	0	48	16	63	0	5563	5215	127	127
21	Elkorom	240	0	0	0	0	0	0	77	8	50	105	0	0	0	0	0	0	72	8	160	0	6004	9391	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1323	5	200	2769	0	0	0	0	0	0	1601	5	2691	0	76283	173529	4297	4297
23	Alkeman	526	0	0	0	0	0	0	119	2	115	290	0	0	0	0	0	0	107	2	375	42	10139	18136	526	526
24	Elmatana	3124	0	0	0	0	0	0	1415	176	125	1408	0	0	0	0	0	0	880	176	1658	410	85088	107865	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	335	322	95	232	0	0	0	0	0	0	410	322	236	16	32911	41527	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	425	80	0	0	0	0	0	0	0	1	458	47	0	18772	18924	506	506
27	Old Klabia	1435	0	0	0	0	0	0	21	289	340	785	0	0	0	0	0	0	20	289	361	765	23308	23952	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	60	114	130	0	0	0	0	0	0	0	50	197	57	0	11773	11963	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	397	105	0	0	0	0	0	0	0	0	338	164	0	18491	18218	502	502
30	Elhala New	492	0	0	0	0	0	0	0	372	120	0	0	0	0	0	0	0	0	360	132	0	18043	17988	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	105	95	70	0	0	0	0	0	0	0	105	70	95	7121	6292	270	270
32	Elgabal	482	0	0	0	0	0	0	18	13	95	356	0	0	0	0	0	0	23	13	107	339	4589	5249	482	482
33	Elzorkany	650	0	0	0	0	0	0	67	24	125	434	0	0	0	0	0	0	83	24	82	461	8572	7985	650	650
34	Elder	782	0	0	0	0	0	0	34	281	145	322	0	0	0	0	0	0	34	281	117	350	17218	16289	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	507	120	164	0	0	0	0	0	0	0	507	11	273	23146	19530	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	315	115	278	0	0	0	0	0	0	0	315	140	253	15723	16552	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**13061**	**3568**	**5301**	**10186**	**0**	**0**	**0**	**0**	**0**	**0**	**12695**	**3673**	**10036**	**5712**	**996460**	**1138321**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 14

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	**Water Requirements** (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	96	834	16	281	596	0	0	0	0	0	80	834	16	281	612	57020	56469	1823	1823
2	Sahel Komer	561	0	0	0	0	0	44	359	48	110	0	0	0	0	0	0	30	373	48	110	0	25827	26080	561	561
3	Hager Komer	1527	0	0	0	0	0	31	813	0	276	407	0	0	0	0	0	20	813	0	276	418	52908	52529	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	9	348	2	47	0	0	0	0	0	0	5	352	2	47	0	20215	20287	406	406
5	Mansour Bransh	603	0	0	0	0	0	21	388	0	194	0	0	0	0	0	0	11	398	0	194	0	27530	27711	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	60	0	58	128	0	0	0	0	0	0	60	0	58	128	5074	5074	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	24	615	0	139	0	0	0	0	0	0	15	624	0	139	0	37726	37889	778	778
8	Elrekia Canal	348	0	0	0	0	0	82	96	110	60	0	0	0	0	0	0	70	108	110	60	0	14013	14230	348	348
9	Elnamsa	1622	0	0	0	0	0	66	1045	3	384	124	0	0	0	0	0	50	1045	3	384	140	69990	69439	1622	1622
10	Elakhmas	602	0	0	0	0	0	9	406	8	87	92	0	0	0	0	0	50	406	8	87	51	24814	26226	602	602
11	Elsereeb	88	0	0	0	0	0	0	32	0	56	0	0	0	0	0	0	10	32	0	46	0	3538	3551	88	88
12	Eladima	785	0	0	0	0	0	41	537	43	164	0	0	0	0	0	0	30	548	43	164	0	36671	36870	785	785
13	Elghaba	109	0	0	0	0	0	3	91	0	15	0	0	0	0	0	0	0	91	0	15	3	5379	5275	109	109
14	Esna west	1705	0	0	0	0	0	166	1137	5	382	15	0	0	0	0	0	150	1137	5	382	31	78273	77722	1705	1705
15	Elkaram	1674	0	0	0	0	0	27	931	3	454	259	0	0	0	0	0	17	931	3	454	269	64985	64640	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	49	404	12	342	73	0	0	0	0	0	30	404	12	342	92	34699	34044	880	880
17	Esna North	1353	0	0	0	0	0	135	804	2	378	34	0	0	0	0	0	100	804	2	378	69	59477	58272	1353	1353
18	Sahel Esna	626	0	0	0	0	0	175	216	6	87	142	0	0	0	0	0	125	216	6	87	192	20480	18758	626	626
19	Elshekh Fadl East	160	0	0	0	0	0	15	89	0	41	15	0	0	0	0	0	10	89	0	41	20	6549	6377	160	160
20	Elnegoo	127	0	0	0	0	0	12	60	21	34	0	0	0	0	0	0	7	36	21	63	0	5485	5015	127	127
21	Elkorom	240	0	0	0	0	0	4	61	15	160	0	0	0	0	0	0	2	63	15	160	0	9216	9252	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	130	1601	15	2551	0	0	0	0	0	0	80	1601	15	2601	0	173739	173676	4297	4297
23	Alkeman	526	0	0	0	0	0	0	107	2	375	42	0	0	0	0	0	0	107	2	375	42	18136	18136	526	526
24	Elmatana	3124	0	0	0	0	0	224	880	176	1658	186	0	0	0	0	0	150	880	176	1658	260	115580	113031	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	37	386	325	236	0	0	0	0	0	0	20	403	325	236	0	41655	41962	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	458	47	0	0	0	0	0	0	0	1	458	47	0	18924	18924	506	506
27	Old Klabia	1435	0	0	0	0	0	719	20	259	361	76	0	0	0	0	0	700	20	259	361	95	47581	46926	1435	1435
28	Elsahel 1	304	0	0	0	0	0	84	50	113	57	0	0	0	0	0	0	84	50	113	57	0	11681	11681	304	304
29	Elsahel 2	502	0	0	0	0	0	141	0	167	194	0	0	0	0	0	0	130	0	178	194	0	17606	17643	502	502
30	Elhala New	492	0	0	0	0	0	18	0	342	132	0	0	0	0	0	0	10	0	350	132	0	17927	17954	492	492
31	Elsahel 3	270	0	0	0	0	0	95	0	105	70	0	0	0	0	0	0	50	0	105	70	45	9563	8014	270	270
32	Elgabal	482	0	0	0	0	0	205	23	3	107	144	0	0	0	0	0	70	23	3	107	279	11931	7282	482	482
33	Elzorkany	650	0	0	0	0	0	274	83	28	82	183	0	0	0	0	0	150	83	28	82	307	17573	13303	650	650
34	Elder	782	0	0	0	0	0	198	34	214	117	219	0	0	0	0	0	100	34	214	117	317	20575	17200	782	782
35	Sahel Elder	791	0	0	0	0	0	185	0	575	11	20	0	0	0	0	0	190	0	575	11	15	28471	28644	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	274	0	294	140	0	0	0	0	0	0	150	0	300	140	118	25195	21151	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**3593**	**12511**	**3370**	**9887**	**2755**	**0**	**0**	**0**	**0**	**0**	**2696**	**12566**	**3395**	**9956**	**3503**	**1236007**	**1211236**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 15

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	96	834	16	281	596	0	0	0	0	0	50	834	16	362	561	57020	58123	1823	1823
2	Sahel Komer	561	0	0	0	0	0	44	359	48	110	0	0	0	0	0	0	30	402	48	80	1	25827	26607	561	561
3	Hager Komer	1527	0	0	0	0	0	31	813	0	276	407	0	0	0	0	0	20	813	0	271	423	52908	52363	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	9	348	2	47	0	0	0	0	0	0	5	352	2	47	0	20215	20287	406	406
5	Mansour Bransh	603	0	0	0	0	0	21	388	0	194	0	0	0	0	0	0	11	398	0	194	0	27530	27711	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	60	0	58	128	0	0	0	0	0	0	60	0	45	141	5074	4643	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	24	615	0	139	0	0	0	0	0	0	15	598	0	165	0	37726	37386	778	778
8	Elrekia Canal	348	0	0	0	0	0	82	96	110	60	0	0	0	0	0	0	70	132	110	36	0	14013	14693	348	348
9	Elnamsa	1622	0	0	0	0	0	66	1045	3	384	124	0	0	0	0	0	50	1045	3	384	140	69990	69439	1622	1622
10	Elakhmas	602	0	0	0	0	0	9	406	8	87	92	0	0	0	0	0	50	406	8	87	51	24814	26226	602	602
11	Elsereeb	88	0	0	0	0	0	19	32	0	37	0	0	0	0	0	0	10	32	0	46	0	3562	3551	88	88
12	Eladima	785	0	0	0	0	0	41	537	43	164	0	0	0	0	0	0	30	552	43	160	0	36671	36947	785	785
13	Elghaba	109	0	0	0	0	0	3	91	0	15	0	0	0	0	0	0	0	91	0	15	3	5379	5275	109	109
14	Esna west	1705	0	0	0	0	0	166	1137	5	382	15	0	0	0	0	0	150	1137	5	382	31	78273	77722	1705	1705
15	Elkaram	1674	0	0	0	0	0	27	931	3	454	259	0	0	0	0	0	17	931	3	454	269	64985	64640	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	49	404	12	342	73	0	0	0	0	0	30	404	12	342	92	34699	34044	880	880
17	Esna North	1353	0	0	0	0	0	135	804	2	378	34	0	0	0	0	0	100	804	2	312	135	59477	56082	1353	1353
18	Sahel Esna	626	0	0	0	0	0	175	216	6	87	142	0	0	0	0	0	125	216	6	87	192	20480	18758	626	626
19	Elshekh Fadl East	160	0	0	0	0	0	15	89	0	41	15	0	0	0	0	0	10	89	0	41	20	6549	6377	160	160
20	Elnegoo	127	0	0	0	0	0	12	31	21	63	0	0	0	0	0	0	7	36	21	63	0	4925	5015	127	127
21	Elkorom	240	0	0	0	0	0	4	61	15	160	0	0	0	0	0	0	2	85	15	135	3	9216	9578	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	130	1601	15	2551	0	0	0	0	0	0	80	1601	15	2601	0	173739	173676	4297	4297
23	Alkeman	526	0	0	0	0	0	0	107	2	375	42	0	0	0	0	0	0	107	2	375	42	18136	18136	526	526
24	Elmatana	3124	0	0	0	0	0	224	880	176	1658	186	0	0	0	0	0	150	880	176	1667	251	115580	113330	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	37	386	325	236	0	0	0	0	0	0	20	403	325	236	0	41655	41962	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	458	47	0	0	0	0	0	0	0	1	458	47	0	18924	18924	506	506
27	Old Klabia	1435	0	0	0	0	0	719	20	259	361	76	0	0	0	0	0	150	20	259	690	316	47581	38900	1435	1435
28	Elsahel 1	304	0	0	0	0	0	84	50	113	57	0	0	0	0	0	0	35	50	124	95	0	11681	11670	304	304
29	Elsahel 2	502	0	0	0	0	0	141	0	167	194	0	0	0	0	0	0	25	0	267	106	104	17606	14471	502	502
30	Elhala New	492	0	0	0	0	0	18	0	342	132	0	0	0	0	0	0	0	0	358	132	2	17927	17912	492	492
31	Elsahel 3	270	0	0	0	0	0	96	0	104	70	0	0	0	0	0	0	5	0	105	70	90	9560	6464	270	270
32	Elgabal	482	0	0	0	0	0	205	23	3	107	144	0	0	0	0	0	15	23	3	30	411	11931	2833	482	482
33	Elzorkany	650	0	0	0	0	0	274	83	28	82	183	0	0	0	0	0	25	83	28	82	432	17573	8998	650	650
34	Elder	782	0	0	0	0	0	198	34	214	117	219	0	0	0	0	0	30	34	214	117	387	20575	14789	782	782
35	Sahel Elder	791	0	0	0	0	0	185	0	575	11	20	0	0	0	0	0	15	0	575	11	190	28471	22617	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	274	0	294	140	0	0	0	0	0	0	35	0	300	140	233	25195	17191	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**3613**	**12482**	**3369**	**9897**	**2755**	**0**	**0**	**0**	**0**	**0**	**1367**	**12619**	**3503**	**10107**	**4520**	**1235467**	**1177341**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 16

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	**Water Requirements** (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	50	834	16	362	561	0	0	0	0	0	10	834	16	362	601	58123	53503	1823	1823
2	Sahel Komer	561	0	0	0	0	0	30	402	48	80	1	0	0	0	0	0	0	402	48	80	31	26607	24112	561	561
3	Hager Komer	1527	0	0	0	0	0	20	813	0	271	423	0	0	0	0	0	0	813	0	271	443	52363	48721	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	5	352	2	47	0	0	0	0	0	0	0	357	2	47	0	20287	19213	406	406
5	Mansour Bransh	603	0	0	0	0	0	11	398	0	194	0	0	0	0	0	0	0	409	0	194	0	27711	26315	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	60	0	45	141	0	0	0	0	0	0	60	0	45	141	4643	4378	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	15	598	0	165	0	0	0	0	0	0	0	613	0	165	0	37386	35505	778	778
8	Elrekia Canal	348	0	0	0	0	0	70	132	110	36	0	0	0	0	0	0	20	132	110	36	50	14693	12230	348	348
9	Elnamsa	1622	0	0	0	0	0	50	1045	3	384	140	0	0	0	0	0	15	1045	3	384	175	69439	64335	1622	1622
10	Elakhmas	602	0	0	0	0	0	50	406	8	87	51	0	0	0	0	0	0	406	8	87	101	26226	23104	602	602
11	Elsereeb	88	0	0	0	0	0	10	32	0	46	0	0	0	0	0	0	0	32	0	46	10	3551	3023	88	88
12	Eladima	785	0	0	0	0	0	30	552	43	160	0	0	0	0	0	0	5	577	43	160	0	36947	35262	785	785
13	Elghaba	109	0	0	0	0	0	0	91	0	15	3	0	0	0	0	0	0	91	0	15	3	5275	4974	109	109
14	Esna west	1705	0	0	0	0	0	150	1137	5	382	31	0	0	0	0	0	35	1137	5	382	146	77722	69547	1705	1705
15	Elkaram	1674	0	0	0	0	0	17	931	3	454	269	0	0	0	0	0	0	931	3	454	286	64640	60394	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	30	404	12	342	92	0	0	0	0	0	5	404	12	342	117	34044	31287	880	880
17	Esna North	1353	0	0	0	0	0	100	804	2	312	135	0	0	0	0	0	25	804	2	312	210	56082	50442	1353	1353
18	Sahel Esna	626	0	0	0	0	0	125	216	6	87	192	0	0	0	0	0	35	216	6	87	282	18758	14764	626	626
19	Elshekh Fadl East	160	0	0	0	0	0	10	89	0	41	20	0	0	0	0	0	0	89	0	41	30	6377	5688	160	160
20	Elnegoo	127	0	0	0	0	0	7	36	21	63	0	0	0	0	0	0	0	43	21	63	0	5015	4848	127	127
21	Elkorom	240	0	0	0	0	0	2	85	15	135	3	0	0	0	0	0	0	85	15	135	5	9578	8965	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	80	1601	15	2601	0	0	0	0	0	0	25	1601	15	2656	0	173676	163686	4297	4297
23	Alkeman	526	0	0	0	0	0	0	107	2	375	42	0	0	0	0	0	0	107	2	375	42	18136	17099	526	526
24	Elmatana	3124	0	0	0	0	0	150	880	176	1667	251	0	0	0	0	0	45	880	176	1667	356	113330	103444	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	20	410	325	229	0	0	0	0	0	0	5	410	325	236	8	42097	39423	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	458	47	0	0	0	0	0	0	0	1	458	47	0	18924	17843	506	506
27	Old Klabia	1435	0	0	0	0	0	150	20	259	690	316	0	0	0	0	0	150	20	259	690	316	38900	36678	1435	1435
28	Elsahel 1	304	0	0	0	0	0	35	50	124	95	0	0	0	0	0	0	35	50	124	95	0	11670	11003	304	304
29	Elsahel 2	502	0	0	0	0	0	25	0	267	106	104	0	0	0	0	0	25	0	267	106	104	14471	13644	502	502
30	Elhala New	492	0	0	0	0	0	0	0	358	132	2	0	0	0	0	0	0	0	358	132	2	17912	16889	492	492
31	Elsahel 3	270	0	0	0	0	0	5	0	105	70	90	0	0	0	0	0	5	0	105	70	90	6464	6094	270	270
32	Elgabal	482	0	0	0	0	0	15	23	3	30	411	0	0	0	0	0	15	23	3	30	411	2833	2671	482	482
33	Elzorkany	650	0	0	0	0	0	25	83	28	82	432	0	0	0	0	0	25	83	28	82	432	8998	8484	650	650
34	Elder	782	0	0	0	0	0	30	34	214	117	387	0	0	0	0	0	30	34	214	117	387	14789	13944	782	782
35	Sahel Elder	791	0	0	0	0	0	15	0	575	11	190	0	0	0	0	0	15	0	575	11	190	22617	21324	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	25	0	300	140	243	0	0	0	0	0	25	0	300	140	243	16846	15884	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**1357**	**12626**	**3503**	**10100**	**4530**	**0**	**0**	**0**	**0**	**0**	**550**	**12689**	**3503**	**10162**	**5212**	**1177131**	**1088720**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 17

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	**Water Requirements (m^3/dy)** 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	834	16	362	611	0	0	0	0	0	0	834	16	362	611	53178	48344	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	402	48	80	31	0	0	0	0	0	0	402	48	85	26	24112	22063	561	561
3	Hager Komer	1527	0	0	0	0	0	0	813	2	271	441	0	0	0	0	0	0	813	2	280	432	48793	44613	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	359	0	47	0	0	0	0	0	0	0	359	0	47	0	19241	17492	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	409	0	194	0	0	0	0	0	0	0	403	0	200	0	26315	23823	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	60	0	45	141	0	0	0	0	0	0	60	0	60	126	4378	4406	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	713	0	65	0	0	0	0	0	0	0	713	0	65	0	37327	33934	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	132	110	36	70	0	0	0	0	0	0	132	110	50	56	11581	10926	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1054	7	384	177	0	0	0	0	0	0	1054	7	390	171	64436	58748	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	406	8	87	101	0	0	0	0	0	0	406	8	100	88	23104	21373	602	602
11	Elsereeb	88	0	0	0	0	0	0	32	0	46	10	0	0	0	0	0	0	32	0	46	10	3023	2748	88	88
12	Eladima	785	0	0	0	0	0	0	582	43	160	0	0	0	0	0	0	0	567	43	175	0	35347	31885	785	785
13	Elghaba	109	0	0	0	0	0	0	91	0	15	3	0	0	0	0	0	0	91	0	15	3	4974	4522	109	109
14	Esna west	1705	0	0	0	0	0	0	1137	5	382	181	0	0	0	0	0	0	1137	5	405	158	68410	62845	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	931	3	454	286	0	0	0	0	0	0	931	3	454	286	60394	54904	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	404	12	342	122	0	0	0	0	0	0	404	12	350	114	31125	28523	880	880
17	Esna North	1353	0	0	0	0	0	0	804	2	312	235	0	0	0	0	0	0	804	2	320	227	49630	45346	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	216	6	87	317	0	0	0	0	0	0	216	6	100	304	13628	12758	626	626
19	Elshekh Fadl East	160	0	0	0	0	0	0	89	0	41	30	0	0	0	0	0	0	66	0	94	0	5688	5643	160	160
20	Elnegoo	127	0	0	0	0	0	0	43	21	63	0	0	0	0	0	0	0	43	21	63	0	4848	4407	127	127
21	Elkorom	240	0	0	0	0	0	0	85	15	135	5	0	0	0	0	0	0	85	15	135	5	8965	8150	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1601	15	2681	0	0	0	0	0	0	0	1601	15	2681	0	163657	148779	4297	4297
23	Alkeman	526	0	0	0	0	0	0	107	2	375	42	0	0	0	0	0	0	107	2	380	37	17099	15687	526	526
24	Elmatana	3124	0	0	0	0	0	0	880	176	1667	401	0	0	0	0	0	0	880	176	1700	368	101983	93650	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	410	325	236	13	0	0	0	0	0	0	410	325	249	0	39261	36062	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	458	47	0	0	0	0	0	0	0	1	455	50	0	17843	16209	506	506
27	Old Klabia	1435	0	0	0	0	0	0	20	259	390	766	0	0	0	0	0	0	20	259	450	706	22422	22090	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	50	159	95	0	0	0	0	0	0	0	50	139	115	0	11114	10024	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	267	106	129	0	0	0	0	0	0	0	267	120	115	12832	12064	502	502
30	Elhala New	492	0	0	0	0	0	0	0	358	132	2	0	0	0	0	0	0	0	347	145	0	16889	15367	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	105	70	95	0	0	0	0	0	0	0	105	90	75	5932	5962	270	270
32	Elgabal	482	0	0	0	0	0	0	23	3	30	426	0	0	0	0	0	0	23	3	45	411	2184	2412	482	482
33	Elzorkany	650	0	0	0	0	0	0	83	28	82	457	0	0	0	0	0	0	83	28	115	424	7672	7913	650	650
34	Elder	782	0	0	0	0	0	0	34	214	117	417	0	0	0	0	0	0	34	214	167	367	12970	13213	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	575	11	205	0	0	0	0	0	0	0	575	61	155	20837	20365	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	300	140	268	0	0	0	0	0	0	0	300	185	223	15072	14981	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**12805**	**3542**	**9787**	**5982**	**0**	**0**	**0**	**0**	**0**	**0**	**12761**	**3508**	**10349**	**5498**	**1066261**	**982230**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 18

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	834	16	362	611	0	0	0	0	0	0	834	16	362	611	48344	43509	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	402	48	80	31	0	0	0	0	0	0	402	48	85	26	21920	19856	561	561
3	Hager Komer	1527	0	0	0	0	0	0	813	2	271	441	0	0	0	0	0	0	813	2	280	432	44357	40152	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	359	0	47	0	0	0	0	0	0	0	359	0	47	0	17492	15743	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	409	0	194	0	0	0	0	0	0	0	403	0	200	0	23922	21441	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	60	0	45	141	0	0	0	0	0	0	60	0	60	126	3980	3966	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	713	0	65	0	0	0	0	0	0	0	713	0	65	0	33934	30540	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	132	110	36	70	0	0	0	0	0	0	132	110	50	56	10528	9833	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1054	7	384	177	0	0	0	0	0	0	1054	7	390	171	58578	52874	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	406	8	87	101	0	0	0	0	0	0	406	8	100	88	21003	19236	602	602
11	Elsereeb	88	0	0	0	0	0	0	32	0	46	10	0	0	0	0	0	0	32	0	46	10	2748	2473	88	88
12	Eladima	785	0	0	0	0	0	0	582	43	160	0	0	0	0	0	0	0	567	43	175	0	32134	28697	785	785
13	Elghaba	109	0	0	0	0	0	0	91	0	15	3	0	0	0	0	0	0	91	0	15	3	4522	4069	109	109
14	Esna west	1705	0	0	0	0	0	0	1137	5	382	181	0	0	0	0	0	0	1137	5	405	158	62191	56561	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	931	3	454	286	0	0	0	0	0	0	931	3	454	286	54904	49414	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	404	12	342	122	0	0	0	0	0	0	404	12	350	114	28295	25671	880	880
17	Esna North	1353	0	0	0	0	0	0	804	2	312	235	0	0	0	0	0	0	804	2	320	227	45118	40811	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	216	6	87	317	0	0	0	0	0	0	216	6	100	304	12389	11483	626	626
19	Elshekh Fadl East	160	0	0	0	0	0	0	89	0	41	30	0	0	0	0	0	0	66	0	94	0	5171	5079	160	160
20	Elnegoo	127	0	0	0	0	0	0	43	21	63	0	0	0	0	0	0	0	43	21	63	0	4407	3966	127	127
21	Elkorom	240	0	0	0	0	0	0	85	15	135	5	0	0	0	0	0	0	85	15	135	5	8150	7335	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1601	15	2681	0	0	0	0	0	0	0	1601	15	2681	0	148779	133901	4297	4297
23	Alkeman	526	0	0	0	0	0	0	107	2	375	42	0	0	0	0	0	0	107	2	380	37	15545	14118	526	526
24	Elmatana	3124	0	0	0	0	0	0	880	176	1667	401	0	0	0	0	0	0	880	176	1700	368	92712	84285	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	410	325	236	13	0	0	0	0	0	0	410	324	250	0	35692	32452	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	458	47	0	0	0	0	0	0	0	1	455	50	0	16221	14588	506	506
27	Old Klabia	1435	0	0	0	0	0	0	20	259	390	766	0	0	0	0	0	0	20	259	450	706	20383	19881	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	50	159	95	0	0	0	0	0	0	0	50	139	115	0	10103	9022	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	267	106	129	0	0	0	0	0	0	0	267	120	115	11665	10857	502	502
30	Elhala New	492	0	0	0	0	0	0	0	358	132	2	0	0	0	0	0	0	0	347	145	0	15353	13830	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	105	70	95	0	0	0	0	0	0	0	105	90	75	5393	5365	270	270
32	Elgabal	482	0	0	0	0	0	0	23	3	30	426	0	0	0	0	0	0	23	3	45	411	1985	2171	482	482
33	Elzorkany	650	0	0	0	0	0	0	83	28	82	457	0	0	0	0	0	0	83	28	115	424	6974	7122	650	650
34	Elder	782	0	0	0	0	0	0	34	214	117	417	0	0	0	0	0	0	34	214	167	367	11791	11892	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	575	11	205	0	0	0	0	0	0	0	575	61	155	18943	18328	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	300	140	268	0	0	0	0	0	0	0	300	185	223	13702	13483	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**12805**	**3542**	**9787**	**5982**	**0**	**0**	**0**	**0**	**0**	**0**	**12761**	**3507**	**10350**	**5498**	**969328**	**884003**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 19

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	**Water Requirements (m^3/dy)** 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1104	16	512	191	0	0	0	0	0	0	1104	20	512	187	58284	51911	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	401	48	80	32	0	0	0	0	0	0	401	49	111	0	19688	18232	561	561
3	Hager Komer	1527	0	0	0	0	0	0	622	1	148	756	0	0	0	0	0	0	622	1	150	754	29008	25831	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	353	0	53	0	0	0	0	0	0	0	353	0	53	0	15653	13914	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	351	0	252	0	0	0	0	0	0	0	351	0	252	0	20666	18370	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	169	0	54	23	0	0	0	0	0	0	169	0	54	23	8227	7313	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	639	0	139	0	0	0	0	0	0	0	639	0	139	0	29437	26167	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	135	101	110	2	0	0	0	0	0	0	135	101	110	2	11228	9981	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1229	5	290	98	0	0	0	0	0	0	1229	5	300	88	57343	51199	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	409	1	192	0	0	0	0	0	0	0	409	1	192	0	21508	19118	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	10	18	0	0	0	0	0	0	60	0	10	18	2686	2388	88	88
12	Eladima	785	0	0	0	0	0	0	599	43	106	37	0	0	0	0	0	0	599	43	106	37	28227	25090	785	785
13	Elghaba	109	0	0	0	0	0	0	92	0	14	3	0	0	0	0	0	0	92	0	14	3	4084	3631	109	109
14	Esna west	1705	0	0	0	0	0	0	1172	6	297	230	0	0	0	0	0	0	1172	6	297	230	55243	49105	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	995	14	305	360	0	0	0	0	0	0	995	14	305	360	48513	43122	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	594	4	202	80	0	0	0	0	0	0	594	4	202	80	29344	26084	880	880
17	Esna North	1353	0	0	0	0	0	0	819	0	361	173	0	0	0	0	0	0	819	0	361	173	42410	37697	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	52	15	72	21	0	0	0	0	0	0	52	15	72	21	4386	3899	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	215	6	250	155	0	0	0	0	0	0	215	6	250	155	15281	13584	626	626
20	Elnegoo	127	0	0	0	0	0	0	67	8	52	0	0	0	0	0	0	0	67	8	52	0	4278	3802	127	127
21	Elkorom	240	0	0	0	0	0	0	71	14	88	67	0	0	0	0	0	0	71	14	88	67	5536	4921	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1220	10	3067	0	0	0	0	0	0	0	1220	10	3067	0	128205	113960	4297	4297
23	Alkeman	526	0	0	0	0	0	0	110	2	414	0	0	0	0	0	0	0	110	2	414	0	15110	13431	526	526
24	Elmatana	3124	0	0	0	0	0	0	1072	139	1508	405	0	0	0	0	0	0	1072	139	1508	405	86068	76505	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	217	261	398	108	0	0	0	0	0	0	217	261	398	108	26586	23632	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	432	72	0	0	0	0	0	0	0	2	432	72	0	14521	12908	506	506
27	Old Klabia	1435	0	0	0	0	0	0	20	169	1095	151	0	0	0	0	0	0	20	169	1095	151	33766	30014	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	49	194	61	0	0	0	0	0	0	0	49	194	61	0	9203	8180	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	268	218	16	0	0	0	0	0	0	0	268	218	16	13395	11906	502	502
30	Elhala New	492	0	0	0	0	0	0	0	0	225	267	0	0	0	0	0	0	0	0	225	267	5759	5119	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	151	12	0	0	0	0	0	0	0	107	151	12	6985	6209	270	270
32	Elgabal	482	0	0	0	0	0	0	24	17	297	144	0	0	0	0	0	0	24	17	297	144	9070	8062	482	482
33	Elzorkany	650	0	0	0	0	0	0	90	29	417	114	0	0	0	0	0	0	90	29	417	114	15164	13479	650	650
34	Elder	782	0	0	0	0	0	0	33	210	205	334	0	0	0	0	0	0	33	210	205	334	12707	11295	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	566	225	0	0	0	0	0	0	0	0	566	225	0	22264	19790	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	236	171	0	0	0	0	0	0	0	301	236	171	14818	13171	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**12985**	**2987**	**12176**	**3968**	**0**	**0**	**0**	**0**	**0**	**0**	**12985**	**2992**	**12219**	**3920**	**924650**	**823019**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 20

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1104	20	512	187	0	0	0	0	0	0	1104	20	512	187	51911	45422	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	401	49	111	0	0	0	0	0	0	0	401	49	111	0	18232	15953	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1163	1	148	215	0	0	0	0	0	0	622	1	148	756	45261	22562	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	353	0	53	0	0	0	0	0	0	0	353	0	53	0	13914	12175	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	351	0	252	0	0	0	0	0	0	0	351	0	252	0	18370	16073	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	169	0	54	23	0	0	0	0	0	0	169	0	54	23	7313	6399	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	614	0	139	25	0	0	0	0	0	0	639	0	139	0	25267	22896	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	135	101	110	2	0	0	0	0	0	0	135	101	110	2	9981	8733	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1229	5	290	98	0	0	0	0	0	0	1229	5	300	88	50972	44799	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	409	1	192	0	0	0	0	0	0	0	409	1	192	0	19118	16729	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	10	18	0	0	0	0	0	0	60	0	10	18	2388	2089	88	88
12	Eladima	785	0	0	0	0	0	0	599	43	106	37	0	0	0	0	0	0	599	43	106	37	25090	21954	785	785
13	Elghaba	109	0	0	0	0	0	0	92	0	14	3	0	0	0	0	0	0	92	0	14	3	3631	3177	109	109
14	Esna west	1705	0	0	0	0	0	0	1172	6	297	230	0	0	0	0	0	0	1172	6	297	230	49105	42967	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	995	14	305	360	0	0	0	0	0	0	995	14	305	360	43122	37732	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	594	4	202	80	0	0	0	0	0	0	594	4	202	80	26084	22823	880	880
17	Esna North	1353	0	0	0	0	0	0	819	0	361	173	0	0	0	0	0	0	819	0	361	173	37697	32985	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	52	15	72	21	0	0	0	0	0	0	52	15	72	21	3899	3412	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	215	6	250	155	0	0	0	0	0	0	215	6	250	155	13584	11886	626	626
20	Elnegoo	127	0	0	0	0	0	0	44	8	75	0	0	0	0	0	0	0	67	8	52	0	3498	3327	127	127
21	Elkorom	240	0	0	0	0	0	0	71	14	88	67	0	0	0	0	0	0	71	14	88	67	4921	4306	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1220	10	3067	0	0	0	0	0	0	0	1220	10	3067	0	113960	99715	4297	4297
23	Alkeman	526	0	0	0	0	0	0	110	2	414	0	0	0	0	0	0	0	110	2	414	0	13431	11752	526	526
24	Elmatana	3124	0	0	0	0	0	0	1072	139	1508	405	0	0	0	0	0	0	1072	139	1508	405	76505	66942	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	217	261	398	108	0	0	0	0	0	0	217	261	398	108	23632	20678	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	432	72	0	0	0	0	0	0	0	2	432	72	0	12908	11294	506	506
27	Old Klabia	1435	0	0	0	0	0	0	20	169	1095	151	0	0	0	0	0	0	20	169	1095	151	30014	26262	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	49	78	168	9	0	0	0	0	0	0	49	78	168	9	7608	6657	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	268	218	16	0	0	0	0	0	0	0	268	218	16	11906	10418	502	502
30	Elhala New	492	0	0	0	0	0	0	0	0	225	267	0	0	0	0	0	0	0	0	225	267	5119	4479	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	151	12	0	0	0	0	0	0	0	107	151	12	6209	5433	270	270
32	Elgabal	482	0	0	0	0	0	0	24	17	297	144	0	0	0	0	0	0	24	17	297	144	8062	7054	482	482
33	Elzorkany	650	0	0	0	0	0	0	90	29	417	114	0	0	0	0	0	0	90	29	417	114	13479	11794	650	650
34	Elder	782	0	0	0	0	0	0	33	210	205	334	0	0	0	0	0	0	33	210	205	334	11295	9883	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	566	225	0	0	0	0	0	0	0	0	585	206	0	19790	17369	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	236	171	0	0	0	0	0	0	0	301	236	171	13171	11525	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**13478**	**2876**	**12337**	**3425**	**0**	**0**	**0**	**0**	**0**	**0**	**12985**	**2895**	**12305**	**3931**	**840445**	**719654**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 21

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1104	9	512	198	0	0	0	0	0	0	1104	9	512	198	42947	38857	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	401	49	110	1	0	0	0	0	0	0	401	49	110	1	15124	13684	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1179	1	301	46	0	0	0	0	0	0	1179	1	301	46	40777	36893	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	331	0	56	19	0	0	0	0	0	0	331	0	56	19	10874	9838	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	446	0	117	40	0	0	0	0	0	0	446	0	117	40	15479	14005	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	198	0	43	5	0	0	0	0	0	0	198	0	43	5	6694	6056	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	614	0	103	61	0	0	0	0	0	0	614	0	103	61	20154	18234	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	135	101	96	16	0	0	0	0	0	0	135	101	96	16	8182	7403	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1229	5	282	106	0	0	0	0	0	0	1229	5	282	106	41963	37967	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	389	1	201	11	0	0	0	0	0	0	389	1	201	11	15493	14018	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	10	18	0	0	0	0	0	0	60	0	10	18	1968	1781	88	88
12	Eladima	785	0	0	0	0	0	0	599	43	104	39	0	0	0	0	0	0	599	43	104	39	20707	18735	785	785
13	Elghaba	109	0	0	0	0	0	0	92	0	14	3	0	0	0	0	0	0	92	0	14	3	2991	2706	109	109
14	Esna west	1705	0	0	0	0	0	0	1057	6	405	237	0	0	0	0	0	0	1057	6	405	237	39363	35615	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1098	14	455	107	0	0	0	0	0	0	1098	14	455	107	41749	37773	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	638	3	222	17	0	0	0	0	0	0	638	3	222	17	23298	21080	880	880
17	Esna North	1353	0	0	0	0	0	0	890	0	420	43	0	0	0	0	0	0	890	0	420	43	34602	31307	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	72	14	54	20	0	0	0	0	0	0	72	14	54	20	3515	3181	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	243	17	287	79	0	0	0	0	0	0	243	17	287	79	13264	12001	626	626
20	Elnegoo	127	0	0	0	0	0	0	43	8	72	4	0	0	0	0	0	0	43	8	72	4	2883	2608	127	127
21	Elkorom	240	0	0	0	0	0	0	71	14	118	37	0	0	0	0	0	0	71	14	118	37	4760	4307	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1220	10	3067	0	0	0	0	0	0	0	1220	10	3067	0	97255	87993	4297	4297
23	Alkeman	526	0	0	0	0	0	0	149	2	269	106	0	0	0	0	0	0	149	2	269	106	9794	8861	526	526
24	Elmatana	3124	0	0	0	0	0	0	1088	139	1315	582	0	0	0	0	0	0	1088	139	1315	582	61410	55562	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	263	327	394	0	0	0	0	0	0	0	263	327	394	0	23014	20823	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	436	68	0	0	0	0	0	0	0	2	436	68	0	11301	10225	506	506
27	Old Klabia	1435	0	0	0	0	0	0	30	172	1089	144	0	0	0	0	0	0	30	172	1089	144	26465	23945	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	49	87	137	31	0	0	0	0	0	0	49	87	137	31	6145	5560	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	217	19	0	0	0	0	0	0	0	266	217	19	10353	9367	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	66	19	0	0	0	0	0	0	0	407	66	19	10545	9540	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	151	12	0	0	0	0	0	0	0	107	151	12	5433	4915	270	270
32	Elgabal	482	0	0	0	0	0	0	24	14	415	29	0	0	0	0	0	0	24	14	415	29	9287	8402	482	482
33	Elzorkany	650	0	0	0	0	0	0	90	29	426	105	0	0	0	0	0	0	90	29	426	105	11792	10669	650	650
34	Elder	782	0	0	0	0	0	0	33	176	283	290	0	0	0	0	0	0	33	176	283	290	10599	9589	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	199	28	0	0	0	0	0	0	0	564	199	28	16753	15158	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	265	142	0	0	0	0	0	0	0	301	265	142	12102	10950	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**12343**	**2614**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**12343**	**2614**	**729038**	**659605**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 22

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	**Water Requirements** (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1104	9	512	198	0	0	0	0	0	0	1104	9	512	198	34830	29330	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	401	49	110	1	0	0	0	0	0	0	401	49	110	1	12221	10291	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1179	1	301	46	0	0	0	0	0	0	1179	1	301	46	32592	27446	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	331	0	56	19	0	0	0	0	0	0	331	0	56	19	8631	7268	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	446	0	117	40	0	0	0	0	0	0	446	0	117	40	12378	10423	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	198	0	43	5	0	0	0	0	0	0	198	0	43	5	5334	4492	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	614	0	103	61	0	0	0	0	0	0	614	0	103	61	15994	13469	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	135	101	96	16	0	0	0	0	0	0	135	101	96	16	6910	5819	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1229	5	282	106	0	0	0	0	0	0	1229	5	282	106	33483	28197	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	389	1	201	11	0	0	0	0	0	0	389	1	201	11	12599	10610	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	10	18	0	0	0	0	0	0	60	0	10	18	1562	1315	88	88
12	Eladima	785	0	0	0	0	0	0	599	43	104	39	0	0	0	0	0	0	599	43	104	39	16549	13936	785	785
13	Elghaba	109	0	0	0	0	0	0	92	0	14	3	0	0	0	0	0	0	92	0	14	3	2371	1996	109	109
14	Esna west	1705	0	0	0	0	0	0	1057	6	405	237	0	0	0	0	0	0	1057	6	405	237	31759	26744	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1098	14	455	107	0	0	0	0	0	0	1098	14	455	107	33767	28436	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	638	3	222	17	0	0	0	0	0	0	638	3	222	17	18752	15791	880	880
17	Esna North	1353	0	0	0	0	0	0	890	0	420	43	0	0	0	0	0	0	890	0	420	43	28060	23629	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	72	14	54	20	0	0	0	0	0	0	72	14	54	20	2918	2457	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	243	17	287	79	0	0	0	0	0	0	243	17	287	79	11114	9359	626	626
20	Elnegoo	127	0	0	0	0	0	0	43	8	72	4	0	0	0	0	0	0	43	8	72	4	2451	2064	127	127
21	Elkorom	240	0	0	0	0	0	0	71	14	118	37	0	0	0	0	0	0	71	14	118	37	4048	3409	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1220	10	3067	0	0	0	0	0	0	0	1220	10	3067	0	83542	70351	4297	4297
23	Alkeman	526	0	0	0	0	0	0	149	2	269	106	0	0	0	0	0	0	149	2	269	106	8317	7004	526	526
24	Elmatana	3124	0	0	0	0	0	0	1088	139	1315	582	0	0	0	0	0	0	1088	139	1315	582	51593	43446	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	263	327	394	0	0	0	0	0	0	0	263	327	394	0	19863	16727	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	436	68	0	0	0	0	0	0	0	2	436	68	0	10218	8604	506	506
27	Old Klabia	1435	0	0	0	0	0	0	30	172	1089	144	0	0	0	0	0	0	30	172	1089	144	23835	20072	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	49	87	137	31	0	0	0	0	0	0	49	87	137	31	5381	4532	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	217	19	0	0	0	0	0	0	0	266	217	19	9367	7888	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	66	19	0	0	0	0	0	0	0	407	66	19	9540	8034	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	151	12	0	0	0	0	0	0	0	107	151	12	4915	4139	270	270
32	Elgabal	482	0	0	0	0	0	0	24	14	415	29	0	0	0	0	0	0	24	14	415	29	8315	7002	482	482
33	Elzorkany	650	0	0	0	0	0	0	90	29	426	105	0	0	0	0	0	0	90	29	426	105	10341	8708	650	650
34	Elder	782	0	0	0	0	0	0	33	176	283	290	0	0	0	0	0	0	33	176	283	290	9469	7974	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	199	28	0	0	0	0	0	0	0	564	199	28	15158	12764	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	265	142	0	0	0	0	0	0	0	301	265	142	10950	9221	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**12343**	**2614**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**12343**	**2614**	**609128**	**512950**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 23

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	**Water Requirements (m^3/dy)** 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1104	9	710	0	0	0	0	0	0	0	1104	9	710	0	28942	25841	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	401	49	111	0	0	0	0	0	0	0	401	49	111	0	9075	8021	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1179	1	347	0	0	0	0	0	0	0	1179	1	347	0	24522	21709	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	331	0	75	0	0	0	0	0	0	0	331	0	75	0	6540	5777	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	446	0	157	0	0	0	0	0	0	0	446	0	157	0	9660	8567	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	198	0	48	0	0	0	0	0	0	0	198	0	48	0	3959	3499	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	614	0	164	0	0	0	0	0	0	0	614	0	164	0	12508	11064	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	135	101	112	0	0	0	0	0	0	0	135	101	112	0	5647	5023	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1229	5	388	0	0	0	0	0	0	0	1229	5	388	0	26029	23058	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	389	1	212	0	0	0	0	0	0	0	389	1	212	0	9581	8538	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	28	0	0	0	0	0	0	0	60	0	28	0	1404	1249	88	88
12	Eladima	785	0	0	0	0	0	0	599	43	143	0	0	0	0	0	0	0	599	43	143	0	12688	11206	785	785
13	Elghaba	109	0	0	0	0	0	0	92	0	17	0	0	0	0	0	0	0	92	0	17	0	1759	1552	109	109
14	Esna west	1705	0	0	0	0	0	0	1057	6	642	0	0	0	0	0	0	0	1057	6	642	0	27092	24173	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1098	14	562	0	0	0	0	0	0	0	1098	14	562	0	26686	23759	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	638	3	239	0	0	0	0	0	0	0	638	3	239	0	14089	12502	880	880
17	Esna North	1353	0	0	0	0	0	0	890	0	463	0	0	0	0	0	0	0	890	0	463	0	21548	19191	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	72	14	74	0	0	0	0	0	0	0	72	14	74	0	2539	2276	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	243	17	366	0	0	0	0	0	0	0	243	17	366	0	9811	8851	626	626
20	Elnegoo	127	0	0	0	0	0	0	43	8	76	0	0	0	0	0	0	0	43	8	76	0	1993	1799	127	127
21	Elkorom	240	0	0	0	0	0	0	71	14	155	0	0	0	0	0	0	0	71	14	155	0	3752	3396	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1220	10	3067	0	0	0	0	0	0	0	1220	10	3067	0	66603	60511	4297	4297
23	Alkeman	526	0	0	0	0	0	0	149	2	375	0	0	0	0	0	0	0	149	2	375	0	8154	7408	526	526
24	Elmatana	3124	0	0	0	0	0	0	1088	139	1897	0	0	0	0	0	0	0	1088	139	1897	0	48932	44196	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	263	327	394	0	0	0	0	0	0	0	263	327	394	0	15919	14216	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	436	68	0	0	0	0	0	0	0	2	436	68	0	8598	7573	506	506
27	Old Klabia	1435	0	0	0	0	0	0	30	172	1233	0	0	0	0	0	0	0	30	172	1233	0	22164	20291	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	49	87	168	0	0	0	0	0	0	0	49	87	168	0	4851	4367	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	236	0	8176	7326	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	85	0	8322	7344	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	4321	3900	270	270
32	Elgabal	482	0	0	0	0	0	0	24	14	444	0	0	0	0	0	0	0	24	14	444	0	7368	6770	482	482
33	Elzorkany	650	0	0	0	0	0	0	90	29	531	0	0	0	0	0	0	0	90	29	531	0	10024	9158	650	650
34	Elder	782	0	0	0	0	0	0	33	176	573	0	0	0	0	0	0	0	33	176	573	0	12271	11154	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	227	0	13189	11706	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	407	0	11375	10249	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**14957**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**14957**	**0**	**510092**	**457219**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2000)

Period 24

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1054	9	710	50	0	0	0	0	0	0	1000	9	710	104	23393	24076	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	376	49	111	25	0	0	0	0	0	0	350	49	111	51	7149	7195	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1100	1	347	79	0	0	0	0	0	0	1000	1	347	179	19058	18873	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	300	0	75	31	0	0	0	0	0	0	280	0	75	51	4933	4970	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	401	0	157	45	0	0	0	0	0	0	380	0	157	66	7347	7518	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	178	0	48	20	0	0	0	0	0	0	150	0	48	48	2973	2772	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	550	0	164	64	0	0	0	0	0	0	500	0	164	114	9395	9296	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	110	101	112	25	0	0	0	0	0	0	100	101	112	35	4457	4495	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1150	5	388	79	0	0	0	0	0	0	1100	5	388	129	20319	20908	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	350	1	212	39	0	0	0	0	0	0	325	1	212	64	7423	7533	602	602
11	Elsereeb	88	0	0	0	0	0	0	50	0	28	10	0	0	0	0	0	0	45	0	28	15	1028	1022	88	88
12	Eladima	785	0	0	0	0	0	0	550	43	143	49	0	0	0	0	0	0	500	43	143	99	9767	9652	785	785
13	Elghaba	109	0	0	0	0	0	0	82	0	17	10	0	0	0	0	0	0	72	0	17	20	1302	1246	109	109
14	Esna west	1705	0	0	0	0	0	0	1000	6	642	57	0	0	0	0	0	0	957	6	642	100	21736	22477	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1000	14	562	98	0	0	0	0	0	0	950	14	562	148	20796	21380	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	580	3	239	58	0	0	0	0	0	0	550	3	239	88	10830	11091	880	880
17	Esna North	1353	0	0	0	0	0	0	850	0	463	40	0	0	0	0	0	0	800	0	463	90	17301	17682	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	62	14	74	10	0	0	0	0	0	0	52	14	74	20	2008	1976	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	223	17	366	20	0	0	0	0	0	0	200	17	366	43	8041	8181	626	626
20	Elnegoo	127	0	0	0	0	0	0	38	8	76	5	0	0	0	0	0	0	33	8	76	10	1628	1647	127	127
21	Elkorom	240	0	0	0	0	0	0	65	14	155	6	0	0	0	0	0	0	60	14	155	11	3122	3222	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1100	10	3067	120	0	0	0	0	0	0	1000	10	3067	220	55294	57089	4297	4297
23	Alkeman	526	0	0	0	0	0	0	120	2	375	29	0	0	0	0	0	0	110	2	375	39	6582	6820	526	526
24	Elmatana	3124	0	0	0	0	0	0	1000	139	1897	88	0	0	0	0	0	0	950	139	1897	138	40404	41960	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	240	327	394	23	0	0	0	0	0	0	200	327	394	63	13323	13260	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	436	68	0	0	0	0	0	0	0	0	436	68	2	7521	7544	506	506
27	Old Klabia	1435	0	0	0	0	0	0	25	172	1233	5	0	0	0	0	0	0	25	172	1233	5	19293	20213	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	45	87	168	4	0	0	0	0	0	0	40	87	168	9	4136	4227	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	236	0	7154	7326	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	85	0	7282	7344	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	3781	3900	270	270
32	Elgabal	482	0	0	0	0	0	0	23	14	444	1	0	0	0	0	0	0	20	14	444	4	6406	6708	482	482
33	Elzorkany	650	0	0	0	0	0	0	80	29	531	10	0	0	0	0	0	0	70	29	531	20	8536	8852	650	650
34	Elder	782	0	0	0	0	0	0	30	176	573	3	0	0	0	0	0	0	25	176	573	8	10660	11033	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	227	0	11540	11706	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	407	0	9953	10249	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**12734**	**3322**	**14957**	**1103**	**0**	**0**	**0**	**0**	**0**	**0**	**11844**	**3322**	**14957**	**1993**	**415872**	**425443**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 1 — Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1000	9	710	104	0	0	0	0	0	0	950	9	710	154	24076	24225	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	350	49	111	51	0	0	0	0	0	0	325	49	111	76	7195	7080	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1000	1	347	179	0	0	0	0	0	0	920	1	347	259	18873	18161	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	280	0	75	51	0	0	0	0	0	0	250	0	75	81	4970	4638	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	380	0	157	66	0	0	0	0	0	0	345	0	157	101	7518	7211	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	150	0	48	48	0	0	0	0	0	0	135	0	48	63	2772	2618	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	500	0	164	114	0	0	0	0	0	0	470	0	164	144	9296	9068	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	100	101	112	35	0	0	0	0	0	0	90	101	112	45	4495	4704	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1100	5	388	129	0	0	0	0	0	0	1050	5	388	179	20908	20672	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	325	1	212	64	0	0	0	0	0	0	320	1	212	69	7533	7713	602	602
11	Elsereeb	88	0	0	0	0	0	0	45	0	28	15	0	0	0	0	0	0	40	0	28	20	1022	985	88	88
12	Eladima	785	0	0	0	0	0	0	500	43	143	99	0	0	0	0	0	0	450	43	143	149	9652	9212	785	785
13	Elghaba	109	0	0	0	0	0	0	72	0	17	20	0	0	0	0	0	0	68	0	17	24	1246	1210	109	109
14	Esna west	1705	0	0	0	0	0	0	957	6	642	100	0	0	0	0	0	0	927	6	642	130	22477	22820	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	950	14	562	148	0	0	0	0	0	0	900	14	562	198	21380	21366	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	550	3	239	88	0	0	0	0	0	0	530	3	239	108	11091	11097	880	880
17	Esna North	1353	0	0	0	0	0	0	800	0	463	90	0	0	0	0	0	0	750	0	463	140	17682	17523	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	52	14	74	20	0	0	0	0	0	0	48	14	74	24	1976	2036	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	200	17	366	43	0	0	0	0	0	0	175	17	366	68	8181	8295	626	626
20	Elnegoo	127	0	0	0	0	0	0	33	8	76	10	0	0	0	0	0	0	28	8	76	15	1647	1683	127	127
21	Elkorom	240	0	0	0	0	0	0	60	14	155	11	0	0	0	0	0	0	55	14	155	16	3222	3363	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1000	10	3067	220	0	0	0	0	0	0	920	10	3067	300	57089	59573	4297	4297
23	Alkeman	526	0	0	0	0	0	0	110	2	375	39	0	0	0	0	0	0	100	2	375	49	6820	7123	526	526
24	Elmatana	3124	0	0	0	0	0	0	950	139	1897	138	0	0	0	0	0	0	910	139	1897	178	41960	43916	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	200	327	394	63	0	0	0	0	0	0	185	327	394	78	13260	14217	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	0	436	68	2	0	0	0	0	0	0	0	436	68	2	7544	8566	506	506
27	Old Klabia	1435	0	0	0	0	0	0	25	172	1233	5	0	0	0	0	0	0	20	172	1233	10	20213	21954	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	40	87	168	9	0	0	0	0	0	0	35	87	168	14	4227	4542	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	236	0	7326	8176	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	85	0	7344	8322	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	3900	4321	270	270
32	Elgabal	482	0	0	0	0	0	0	20	14	444	4	0	0	0	0	0	0	18	14	444	6	6708	7229	482	482
33	Elzorkany	650	0	0	0	0	0	0	70	29	531	20	0	0	0	0	0	0	65	29	531	25	8852	9465	650	650
34	Elder	782	0	0	0	0	0	0	25	176	573	8	0	0	0	0	0	0	20	176	573	13	11033	12013	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	227	0	11706	13189	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	407	0	10249	11375	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**11844**	**3322**	**14957**	**1993**	**0**	**0**	**0**	**0**	**0**	**0**	**11099**	**3322**	**14957**	**2738**	**425443**	**439658**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 2

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	950	9	710	154	0	0	0	0	0	0	850	9	710	254	23394	23447	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	325	49	111	76	0	0	0	0	0	0	300	49	111	101	6796	6784	561	561
3	Hager Komer	1527	0	0	0	0	0	0	920	1	347	259	0	0	0	0	0	0	870	1	347	309	17356	17359	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	250	0	75	81	0	0	0	0	0	0	240	0	75	91	4419	4430	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	345	0	157	101	0	0	0	0	0	0	320	0	157	126	6910	6879	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	135	0	48	63	0	0	0	0	0	0	130	0	48	68	2500	2525	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	470	0	164	144	0	0	0	0	0	0	450	0	164	164	8656	8705	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	90	101	112	45	0	0	0	0	0	0	40	101	112	95	4625	4400	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1050	5	388	179	0	0	0	0	0	0	980	5	388	249	19753	19581	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	320	1	212	69	0	0	0	0	0	0	300	1	212	89	7433	7575	602	602
11	Elsereeb	88	0	0	0	0	0	0	40	0	28	20	0	0	0	0	0	0	38	0	28	22	950	977	88	88
12	Eladima	785	0	0	0	0	0	0	450	43	143	149	0	0	0	0	0	0	440	43	143	159	8818	9051	785	785
13	Elghaba	109	0	0	0	0	0	0	68	0	17	24	0	0	0	0	0	0	55	0	17	37	1150	1012	109	109
14	Esna west	1705	0	0	0	0	0	0	927	6	642	130	0	0	0	0	0	0	850	6	642	207	22008	22228	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	900	14	562	198	0	0	0	0	0	0	850	14	562	248	20579	21018	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	530	3	239	108	0	0	0	0	0	0	500	3	239	138	10633	10699	880	880
17	Esna North	1353	0	0	0	0	0	0	750	0	463	140	0	0	0	0	0	0	680	0	463	210	16867	16826	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	48	14	74	24	0	0	0	0	0	0	45	14	74	27	1994	2126	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	175	17	366	68	0	0	0	0	0	0	220	17	366	23	8142	9463	626	626
20	Elnegoo	127	0	0	0	0	0	0	28	8	76	15	0	0	0	0	0	0	25	8	76	18	1659	1781	127	127
21	Elkorom	240	0	0	0	0	0	0	55	14	155	16	0	0	0	0	0	0	50	14	155	21	3315	3573	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	920	10	3067	300	0	0	0	0	0	0	900	10	3067	320	58768	64342	4297	4297
23	Alkeman	526	0	0	0	0	0	0	100	2	375	49	0	0	0	0	0	0	95	2	375	54	7035	7685	526	526
24	Elmatana	3124	0	0	0	0	0	0	910	139	1897	178	0	0	0	0	0	0	850	139	1897	238	43119	46229	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	185	327	394	78	0	0	0	0	0	0	170	327	394	93	14055	15311	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	436	68	0	0	0	0	0	0	0	2	436	68	0	8592	9662	506	506
27	Old Klabia	1435	0	0	0	0	0	0	20	172	1233	10	0	0	0	0	0	0	18	172	1233	12	21937	24620	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	35	87	168	14	0	0	0	0	0	0	32	87	168	17	4511	4978	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	236	0	8176	9198	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	85	0	8322	9363	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	4321	4862	270	270
32	Elgabal	482	0	0	0	0	0	0	18	14	444	6	0	0	0	0	0	0	16	14	444	8	7213	8059	482	482
33	Elzorkany	650	0	0	0	0	0	0	65	29	531	25	0	0	0	0	0	0	62	29	531	28	9408	10438	650	650
34	Elder	782	0	0	0	0	0	0	20	176	573	13	0	0	0	0	0	0	20	176	573	13	11995	13462	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	227	0	13189	14838	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	407	0	11375	12796	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**11101**	**3322**	**14957**	**2736**	**0**	**0**	**0**	**0**	**0**	**0**	**10398**	**3322**	**14957**	**3439**	**429973**	**456280**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 3

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	850	9	710	254	0	0	0	0	0	0	800	9	710	304	24190	25944	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	300	49	111	101	0	0	0	0	0	0	250	49	111	151	7047	7003	561	561
3	Hager Komer	1527	0	0	0	0	0	0	870	1	347	309	0	0	0	0	0	0	800	1	347	379	18121	18889	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	240	0	75	91	0	0	0	0	0	0	210	0	75	121	4640	4648	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	320	0	157	126	0	0	0	0	0	0	300	0	157	146	7159	7585	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	130	0	48	68	0	0	0	0	0	0	125	0	48	73	2639	2830	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	450	0	164	164	0	0	0	0	0	0	400	0	164	214	9098	9253	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	40	101	112	95	0	0	0	0	0	0	40	101	112	95	4435	4920	348	348
9	Elnamsa	1622	0	0	0	0	0	0	980	5	388	249	0	0	0	0	0	0	900	5	388	329	20438	21288	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	300	1	212	89	0	0	0	0	0	0	250	1	212	139	7837	7881	602	602
11	Elsereeb	88	0	0	0	0	0	0	38	0	28	22	0	0	0	0	0	0	35	0	28	25	1010	1068	88	88
12	Eladima	785	0	0	0	0	0	0	440	43	143	159	0	0	0	0	0	0	400	43	143	199	9436	9784	785	785
13	Elghaba	109	0	0	0	0	0	0	55	0	17	37	0	0	0	0	0	0	54	0	17	38	1060	1152	109	109
14	Esna west	1705	0	0	0	0	0	0	850	6	642	207	0	0	0	0	0	0	750	6	642	307	22972	23822	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	850	14	562	248	0	0	0	0	0	0	750	14	562	348	21762	22478	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	500	3	239	138	0	0	0	0	0	0	450	3	239	188	11137	11508	880	880
17	Esna North	1353	0	0	0	0	0	0	680	0	463	210	0	0	0	0	0	0	600	0	463	290	17421	17994	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	45	14	74	27	0	0	0	0	0	0	43	14	74	29	2165	2366	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	220	17	366	23	0	0	0	0	0	0	150	17	366	93	9656	9611	626	626
20	Elnegoo	127	0	0	0	0	0	0	25	8	76	18	0	0	0	0	0	0	25	8	76	18	1802	1998	127	127
21	Elkorom	240	0	0	0	0	0	0	50	14	155	21	0	0	0	0	0	0	48	14	155	23	3617	3978	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	900	10	3067	320	0	0	0	0	0	0	800	10	3067	420	65130	70654	4297	4297
23	Alkeman	526	0	0	0	0	0	0	95	2	375	54	0	0	0	0	0	0	95	2	375	54	7768	8612	526	526
24	Elmatana	3124	0	0	0	0	0	0	850	139	1897	238	0	0	0	0	0	0	750	139	1897	338	46973	50490	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	170	327	394	93	0	0	0	0	0	0	170	327	394	93	15460	17145	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	436	68	0	0	0	0	0	0	0	1	436	68	1	9664	10722	506	506
27	Old Klabia	1435	0	0	0	0	0	0	18	172	1233	12	0	0	0	0	0	0	17	172	1233	13	24636	27354	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	32	87	168	17	0	0	0	0	0	0	30	87	168	19	5006	5525	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	236	0	9198	10220	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	85	0	9363	10403	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	4862	5402	270	270
32	Elgabal	482	0	0	0	0	0	0	16	14	444	8	0	0	0	0	0	0	15	14	444	9	8073	8951	482	482
33	Elzorkany	650	0	0	0	0	0	0	62	29	531	28	0	0	0	0	0	0	60	29	531	30	10493	11616	650	650
34	Elder	782	0	0	0	0	0	0	20	176	573	13	0	0	0	0	0	0	19	176	573	14	13479	14958	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	227	0	14838	16486	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	407	0	12796	14218	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**10398**	**3322**	**14957**	**3439**	**0**	**0**	**0**	**0**	**0**	**0**	**9337**	**3322**	**14957**	**4500**	**465378**	**498756**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 4

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	800	9	710	304	0	0	0	0	0	0	700	9	710	404	28056	31507	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	250	49	111	151	0	0	0	0	0	0	240	49	111	161	7663	8980	561	561
3	Hager Komer	1527	0	0	0	0	0	0	800	1	347	379	0	0	0	0	0	0	700	1	347	479	21001	23041	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	210	0	75	121	0	0	0	0	0	0	180	0	75	151	5202	5594	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	300	0	157	146	0	0	0	0	0	0	240	0	157	206	8377	8756	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	125	0	48	73	0	0	0	0	0	0	100	0	48	98	3160	3252	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	400	0	164	214	0	0	0	0	0	0	300	0	164	314	10309	10211	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	40	101	112	95	0	0	0	0	0	0	40	101	112	95	5025	6030	348	348
9	Elnamsa	1622	0	0	0	0	0	0	900	5	388	329	0	0	0	0	0	0	700	5	388	529	23664	24077	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	250	1	212	139	0	0	0	0	0	0	200	1	212	189	8541	9169	602	602
11	Elsereeb	88	0	0	0	0	0	0	35	0	28	25	0	0	0	0	0	0	30	0	28	30	1161	1285	88	88
12	Eladima	785	0	0	0	0	0	0	400	43	143	199	0	0	0	0	0	0	300	43	143	299	10840	10848	785	785
13	Elghaba	109	0	0	0	0	0	0	54	0	17	38	0	0	0	0	0	0	47	0	17	45	1294	1402	109	109
14	Esna west	1705	0	0	0	0	0	0	750	6	642	307	0	0	0	0	0	0	600	6	642	457	25802	27722	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	750	14	562	348	0	0	0	0	0	0	500	14	562	598	24458	23950	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	450	3	239	188	0	0	0	0	0	0	300	3	239	338	12696	11995	880	880
17	Esna North	1353	0	0	0	0	0	0	600	0	463	290	0	0	0	0	0	0	400	0	463	490	19578	19174	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	43	14	74	29	0	0	0	0	0	0	20	14	74	52	2479	2479	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	150	17	366	93	0	0	0	0	0	0	100	17	366	143	10007	10928	626	626
20	Elnegoo	127	0	0	0	0	0	0	25	8	76	18	0	0	0	0	0	0	20	8	76	23	2064	2369	127	127
21	Elkorom	240	0	0	0	0	0	0	48	14	155	23	0	0	0	0	0	0	31	14	155	40	4105	4559	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	800	10	3067	420	0	0	0	0	0	0	500	10	3067	720	72766	80840	4297	4297
23	Alkeman	526	0	0	0	0	0	0	95	2	375	54	0	0	0	0	0	0	49	2	375	100	8863	9642	526	526
24	Elmatana	3124	0	0	0	0	0	0	750	139	1897	338	0	0	0	0	0	0	588	139	1897	500	52470	59464	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	170	327	394	93	0	0	0	0	0	0	100	327	394	163	17593	19600	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	436	68	1	0	0	0	0	0	0	0	436	68	2	10725	12848	506	506
27	Old Klabia	1435	0	0	0	0	0	0	17	172	1233	13	0	0	0	0	0	0	12	172	1233	18	27399	32771	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	30	87	168	19	0	0	0	0	0	0	20	87	168	29	5604	6509	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	236	0	10220	12264	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	85	0	10403	12483	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	5402	6482	270	270
32	Elgabal	482	0	0	0	0	0	0	15	14	444	9	0	0	0	0	0	0	10	14	444	14	8991	10681	482	482
33	Elzorkany	650	0	0	0	0	0	0	60	29	531	30	0	0	0	0	0	0	40	29	531	50	11774	13697	650	650
34	Elder	782	0	0	0	0	0	0	19	176	573	14	0	0	0	0	0	0	13	176	573	20	15008	17880	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	227	0	16486	19784	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	407	0	14218	17062	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**9337**	**3322**	**14957**	**4500**	**0**	**0**	**0**	**0**	**0**	**0**	**7080**	**3322**	**14957**	**6757**	**523406**	**579336**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 5

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	700	9	710	404	0	0	0	0	0	0	400	9	710	704	33725	30677	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	240	49	111	161	0	0	0	0	0	0	131	49	111	270	9740	8214	561	561
3	Hager Komer	1527	0	0	0	0	0	0	700	1	347	479	0	0	0	0	0	0	400	1	347	779	25258	20799	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	180	0	75	151	0	0	0	0	0	0	131	0	75	200	6165	5776	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	240	0	157	206	0	0	0	0	0	0	146	0	157	300	9516	8386	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	100	0	48	98	0	0	0	0	0	0	68	0	48	130	3569	3239	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	300	0	164	314	0	0	0	0	0	0	214	0	164	400	11162	10537	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	40	101	112	95	0	0	0	0	0	0	35	101	112	100	6157	7039	348	348
9	Elnamsa	1622	0	0	0	0	0	0	700	5	388	529	0	0	0	0	0	0	429	5	388	800	26295	22847	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	200	1	212	189	0	0	0	0	0	0	89	1	212	300	9803	8229	602	602
11	Elsereeb	88	0	0	0	0	0	0	30	0	28	30	0	0	0	0	0	0	20	0	28	40	1380	1321	88	88
12	Eladima	785	0	0	0	0	0	0	300	43	143	299	0	0	0	0	0	0	199	43	143	400	11798	10846	785	785
13	Elghaba	109	0	0	0	0	0	0	47	0	17	45	0	0	0	0	0	0	32	0	17	60	1551	1376	109	109
14	Esna west	1705	0	0	0	0	0	0	600	6	642	457	0	0	0	0	0	0	357	6	642	700	29623	27539	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	500	14	562	598	0	0	0	0	0	0	398	14	562	700	25534	26842	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	300	3	239	338	0	0	0	0	0	0	238	3	239	400	12946	13312	880	880
17	Esna North	1353	0	0	0	0	0	0	400	0	463	490	0	0	0	0	0	0	290	0	463	600	20441	20670	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	20	14	74	52	0	0	0	0	0	0	20	14	74	52	2542	2966	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	100	17	366	143	0	0	0	0	0	0	80	17	366	163	11245	12541	626	626
20	Elnegoo	127	0	0	0	0	0	0	20	8	76	23	0	0	0	0	0	0	13	8	76	30	2432	2635	127	127
21	Elkorom	240	0	0	0	0	0	0	31	14	155	40	0	0	0	0	0	0	21	14	155	50	4657	5144	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	500	10	3067	720	0	0	0	0	0	0	420	10	3067	800	82424	93849	4297	4297
23	Alkeman	526	0	0	0	0	0	0	49	2	375	100	0	0	0	0	0	0	39	2	375	110	9797	11141	526	526
24	Elmatana	3124	0	0	0	0	0	0	588	139	1897	500	0	0	0	0	0	0	388	139	1897	700	61327	65769	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	100	327	394	163	0	0	0	0	0	0	63	327	394	200	19917	22167	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	0	436	68	2	0	0	0	0	0	0	0	436	68	2	12848	14990	506	506
27	Old Klabia	1435	0	0	0	0	0	0	12	172	1233	18	0	0	0	0	0	0	10	172	1233	20	32809	38219	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	20	87	168	29	0	0	0	0	0	0	15	87	168	34	6573	7524	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	236	0	12264	14308	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	85	0	12483	14564	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	6482	7562	270	270
32	Elgabal	482	0	0	0	0	0	0	10	14	444	14	0	0	0	0	0	0	8	14	444	16	10712	12440	482	482
33	Elzorkany	650	0	0	0	0	0	0	40	29	531	50	0	0	0	0	0	0	30	29	531	60	13824	15839	650	650
34	Elder	782	0	0	0	0	0	0	13	176	573	20	0	0	0	0	0	0	10	176	573	23	17921	20821	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	227	0	19784	23081	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	407	0	17062	19906	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**7080**	**3322**	**14957**	**6757**	**0**	**0**	**0**	**0**	**0**	**0**	**4694**	**3322**	**14957**	**9143**	**601765**	**633114**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 6

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	400	9	710	704	0	0	0	0	0	0	300	9	710	804	32424	30656	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	131	49	111	270	0	0	0	0	0	0	101	49	111	300	8786	8205	561	561
3	Hager Komer	1527	0	0	0	0	0	0	400	1	347	779	0	0	0	0	0	0	300	1	347	879	22547	20250	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	131	0	75	200	0	0	0	0	0	0	100	0	75	231	6348	5602	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	146	0	157	300	0	0	0	0	0	0	100	0	157	346	9024	7895	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	68	0	48	130	0	0	0	0	0	0	50	0	48	148	3536	3095	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	214	0	164	400	0	0	0	0	0	0	164	0	164	450	11472	10334	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	35	101	112	100	0	0	0	0	0	0	25	101	112	110	7191	7226	348	348
9	Elnamsa	1622	0	0	0	0	0	0	429	5	388	800	0	0	0	0	0	0	329	5	388	900	24721	22540	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	89	1	212	300	0	0	0	0	0	0	69	1	212	320	8618	8379	602	602
11	Elsereeb	88	0	0	0	0	0	0	20	0	28	40	0	0	0	0	0	0	15	0	28	45	1409	1309	88	88
12	Eladima	785	0	0	0	0	0	0	199	43	143	400	0	0	0	0	0	0	250	43	143	349	11716	14131	785	785
13	Elghaba	109	0	0	0	0	0	0	32	0	17	60	0	0	0	0	0	0	25	0	17	67	1516	1352	109	109
14	Esna west	1705	0	0	0	0	0	0	357	6	642	700	0	0	0	0	0	0	307	6	642	750	29098	28904	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	398	14	562	700	0	0	0	0	0	0	300	14	562	798	28580	26677	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	238	3	239	400	0	0	0	0	0	0	200	3	239	438	14352	13789	880	880
17	Esna North	1353	0	0	0	0	0	0	290	0	463	600	0	0	0	0	0	0	200	0	463	690	21936	19957	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	20	14	74	52	0	0	0	0	0	0	15	14	74	57	3053	3041	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	80	17	366	163	0	0	0	0	0	0	43	17	366	200	12890	12284	626	626
20	Elnegoo	127	0	0	0	0	0	0	13	8	76	30	0	0	0	0	0	0	10	8	76	33	2692	2731	127	127
21	Elkorom	240	0	0	0	0	0	0	21	14	155	50	0	0	0	0	0	0	16	14	155	55	5236	5342	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	420	10	3067	800	0	0	0	0	0	0	350	10	3067	870	95684	98356	4297	4297
23	Alkeman	526	0	0	0	0	0	0	39	2	375	110	0	0	0	0	0	0	30	2	375	119	11312	11602	526	526
24	Elmatana	3124	0	0	0	0	0	0	388	139	1897	700	0	0	0	0	0	0	300	139	1897	788	67464	67994	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	63	327	394	200	0	0	0	0	0	0	50	327	394	213	22442	23189	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	0	436	68	2	0	0	0	0	0	0	0	436	68	2	14990	15793	506	506
27	Old Klabia	1435	0	0	0	0	0	0	10	172	1233	20	0	0	0	0	0	0	6	172	1233	24	38263	40172	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	15	87	168	34	0	0	0	0	0	0	10	87	168	39	7589	7821	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	236	0	14308	15075	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	85	0	14564	15344	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	7562	7967	270	270
32	Elgabal	482	0	0	0	0	0	0	10	14	444	14	0	0	0	0	0	0	6	14	444	18	12542	13073	482	482
33	Elzorkany	650	0	0	0	0	0	0	40	29	531	50	0	0	0	0	0	0	30	29	531	60	16302	16825	650	650
34	Elder	782	0	0	0	0	0	0	13	176	573	20	0	0	0	0	0	0	8	176	573	25	20964	21912	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	227	0	23081	24317	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	407	0	19906	20972	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**4709**	**3322**	**14957**	**9128**	**0**	**0**	**0**	**0**	**0**	**0**	**3709**	**3322**	**14957**	**10128**	**654116**	**654112**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 7

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	300	9	710	804	0	0	0	0	0	0	300	9	710	804	31931	34096	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	101	49	111	300	0	0	0	0	0	0	101	49	111	300	8634	9219	561	561
3	Hager Komer	1527	0	0	0	0	0	0	300	1	347	879	0	0	0	0	0	0	300	1	347	879	21524	22984	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	131	0	75	200	0	0	0	0	0	0	131	0	75	200	7245	7736	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	146	0	157	300	0	0	0	0	0	0	146	0	157	300	10128	10814	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	50	0	48	148	0	0	0	0	0	0	50	0	48	148	3307	3531	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	164	0	164	450	0	0	0	0	0	0	164	0	164	450	11031	11778	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	25	101	112	110	0	0	0	0	0	0	25	101	112	110	7332	7830	348	348
9	Elnamsa	1622	0	0	0	0	0	0	329	5	388	900	0	0	0	0	0	0	329	5	388	900	23938	25561	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	69	1	212	320	0	0	0	0	0	0	69	1	212	320	8672	9260	602	602
11	Elsereeb	88	0	0	0	0	0	0	15	0	28	45	0	0	0	0	0	0	15	0	28	45	1372	1466	88	88
12	Eladima	785	0	0	0	0	0	0	150	43	143	449	0	0	0	0	0	0	150	43	143	449	11263	12027	785	785
13	Elghaba	109	0	0	0	0	0	0	25	0	17	67	0	0	0	0	0	0	25	0	17	67	1458	1557	109	109
14	Esna west	1705	0	0	0	0	0	0	307	6	642	750	0	0	0	0	0	0	307	6	642	750	30209	32257	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	300	14	562	798	0	0	0	0	0	0	300	14	562	798	27951	29846	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	200	3	239	438	0	0	0	0	0	0	200	3	239	438	14638	15631	880	880
17	Esna North	1353	0	0	0	0	0	0	200	0	463	690	0	0	0	0	0	0	200	0	463	690	20807	22218	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	43	14	74	29	0	0	0	0	0	0	43	14	74	29	4205	4490	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	15	17	366	228	0	0	0	0	0	0	15	17	366	228	11367	12137	626	626
20	Elnegoo	127	0	0	0	0	0	0	10	8	76	33	0	0	0	0	0	0	10	8	76	33	2773	2961	127	127
21	Elkorom	240	0	0	0	0	0	0	16	14	155	55	0	0	0	0	0	0	16	14	155	55	5409	5776	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	350	10	3067	870	0	0	0	0	0	0	350	10	3067	870	99843	106612	4297	4297
23	Alkeman	526	0	0	0	0	0	0	30	2	375	119	0	0	0	0	0	0	30	2	375	119	11730	12525	526	526
24	Elmatana	3124	0	0	0	0	0	0	300	139	1897	788	0	0	0	0	0	0	300	139	1897	788	69268	73964	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	50	327	394	213	0	0	0	0	0	0	50	327	394	213	23402	24988	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	0	436	68	2	0	0	0	0	0	0	0	436	68	2	15793	16863	506	506
27	Old Klabia	1435	0	0	0	0	0	0	6	172	1233	24	0	0	0	0	0	0	6	172	1233	24	40198	42923	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	10	87	168	39	0	0	0	0	0	0	10	87	168	39	7863	8396	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	236	0	15075	16097	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	85	0	15344	16384	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	7967	8508	270	270
32	Elgabal	482	0	0	0	0	0	0	6	14	444	18	0	0	0	0	0	0	6	14	444	18	13099	13987	482	482
33	Elzorkany	650	0	0	0	0	0	0	30	29	531	60	0	0	0	0	0	0	30	29	531	60	16953	18102	650	650
34	Elder	782	0	0	0	0	0	0	8	176	573	25	0	0	0	0	0	0	8	176	573	25	21946	23434	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	227	0	24317	25966	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	407	0	20972	22394	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**3686**	**3322**	**14957**	**10151**	**0**	**0**	**0**	**0**	**0**	**0**	**3686**	**3322**	**14957**	**10151**	**668964**	**714318**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 8

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	300	9	710	804	0	0	0	0	0	0	300	9	500	1014	35456	30112	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	101	49	111	300	0	0	0	0	0	0	101	49	81	330	9678	9060	561	561
3	Hager Komer	1527	0	0	0	0	0	0	300	1	347	879	0	0	0	0	0	0	300	1	200	1026	24344	20588	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	131	0	75	200	0	0	0	0	0	0	131	0	50	225	8330	7825	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	146	0	157	300	0	0	0	0	0	0	146	0	107	350	11476	10300	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	50	0	48	148	0	0	0	0	0	0	50	0	30	166	3758	3323	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	164	0	164	450	0	0	0	0	0	0	164	0	120	494	12522	11564	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	25	101	112	110	0	0	0	0	0	0	25	101	80	142	7943	7209	348	348
9	Elnamsa	1622	0	0	0	0	0	0	329	5	388	900	0	0	0	0	0	0	329	5	300	988	27053	25201	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	69	1	212	320	0	0	0	0	0	0	69	1	112	420	9573	6796	602	602
11	Elsereeb	88	0	0	0	0	0	0	15	0	28	45	0	0	0	0	0	0	15	0	20	53	1534	1336	88	88
12	Eladima	785	0	0	0	0	0	0	150	43	143	449	0	0	0	0	0	0	150	43	100	492	12707	11786	785	785
13	Elghaba	109	0	0	0	0	0	0	25	0	17	67	0	0	0	0	0	0	25	0	10	74	1670	1507	109	109
14	Esna west	1705	0	0	0	0	0	0	307	6	642	750	0	0	0	0	0	0	307	6	342	1050	33649	25474	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	300	14	562	798	0	0	0	0	0	0	300	14	300	1060	31207	24125	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	200	3	239	438	0	0	0	0	0	0	200	3	139	538	16538	13982	880	880
17	Esna North	1353	0	0	0	0	0	0	200	0	463	690	0	0	0	0	0	0	200	0	263	890	23125	17697	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	43	14	74	29	0	0	0	0	0	0	43	14	200	-97	4685	8716	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	15	17	366	228	0	0	0	0	0	0	15	17	50	544	12205	2857	626	626
20	Elnegoo	127	0	0	0	0	0	0	10	8	76	33	0	0	0	0	0	0	10	8	26	83	3007	1562	127	127
21	Elkorom	240	0	0	0	0	0	0	16	14	155	55	0	0	0	0	0	0	16	14	75	135	5849	3570	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	350	10	3067	870	0	0	0	0	0	0	350	10	1067	2870	108200	50015	4297	4297
23	Alkeman	526	0	0	0	0	0	0	30	2	375	119	0	0	0	0	0	0	30	2	175	319	12661	6901	526	526
24	Elmatana	3124	0	0	0	0	0	0	300	139	1897	788	0	0	0	0	0	0	300	139	597	2088	75325	37663	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	50	327	394	213	0	0	0	0	0	0	50	327	194	413	25215	19853	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	0	436	68	2	0	0	0	0	0	0	0	436	68	2	16863	17399	506	506
27	Old Klabia	1435	0	0	0	0	0	0	6	172	1233	24	0	0	0	0	0	0	6	172	800	457	42950	30973	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	10	87	168	39	0	0	0	0	0	0	10	87	100	107	8441	6614	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	136	100	16097	13527	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	50	35	16384	15826	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	100	63	8508	6837	270	270
32	Elgabal	482	0	0	0	0	0	0	6	14	444	18	0	0	0	0	0	0	6	14	300	162	14014	10022	482	482
33	Elzorkany	650	0	0	0	0	0	0	30	29	531	60	0	0	0	0	0	0	30	29	400	191	18238	14781	650	650
34	Elder	782	0	0	0	0	0	0	8	176	573	25	0	0	0	0	0	0	8	176	373	225	23470	18053	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	127	100	25966	23709	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	250	157	22394	18268	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**3686**	**3322**	**14957**	**10151**	**0**	**0**	**0**	**0**	**0**	**0**	**3686**	**3322**	**7842**	**17266**	**731037**	**535032**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 9 — Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1104	9	500	210	0	0	0	0	0	0	1104	9	350	360	69541	66917	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	401	49	81	30	0	0	0	0	0	0	401	49	51	60	23764	23543	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1179	1	200	147	0	0	0	0	0	0	1179	1	100	247	63673	62457	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	331	0	50	25	0	0	0	0	0	0	331	0	25	50	17677	17427	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	446	0	103	54	0	0	0	0	0	0	446	0	100	57	24916	25587	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	198	0	30	18	0	0	0	0	0	0	198	0	25	23	10577	10743	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	614	0	120	44	0	0	0	0	0	0	614	0	120	44	33630	34664	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	135	101	80	32	0	0	0	0	0	0	135	101	60	52	12591	12343	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1229	5	300	88	0	0	0	0	0	0	1229	5	300	88	69332	71466	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	380	1	112	109	0	0	0	0	0	0	389	1	92	120	22011	22505	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	20	8	0	0	0	0	0	0	60	0	15	13	3541	3491	88	88
12	Eladima	785	0	0	0	0	0	0	599	43	100	43	0	0	0	0	0	0	599	43	80	63	33792	34196	785	785
13	Elghaba	109	0	0	0	0	0	0	92	0	10	7	0	0	0	0	0	0	92	0	5	12	4793	4782	109	109
14	Esna west	1705	0	0	0	0	0	0	1057	6	342	300	0	0	0	0	0	0	1057	6	200	442	62276	59683	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1098	14	300	262	0	0	0	0	0	0	1098	14	250	312	63262	63621	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	638	3	139	100	0	0	0	0	0	0	638	3	89	150	35490	34995	880	880
17	Esna North	1353	0	0	0	0	0	0	890	0	263	200	0	0	0	0	0	0	890	0	223	240	51491	51805	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	72	14	50	24	0	0	0	0	0	0	72	14	30	44	5542	5077	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	243	17	200	166	0	0	0	0	0	0	243	17	100	266	18605	16002	626	626
20	Elnegoo	127	0	0	0	0	0	0	43	8	26	50	0	0	0	0	0	0	43	8	20	56	3178	3085	127	127
21	Elkorom	240	0	0	0	0	0	0	71	14	75	80	0	0	0	0	0	0	71	14	55	100	6263	5821	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1220	10	1067	2000	0	0	0	0	0	0	1220	10	887	2180	92700	89836	4297	4297
23	Alkeman	526	0	0	0	0	0	0	149	2	175	200	0	0	0	0	0	0	149	2	150	225	12726	12323	526	526
24	Elmatana	3124	0	0	0	0	0	0	1088	139	592	1305	0	0	0	0	0	0	1088	139	585	1312	76158	78279	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	236	117	394	237	0	0	0	0	0	0	236	117	394	237	27751	28605	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	436	68	0	0	0	0	0	0	0	2	436	68	0	17496	18035	506	506
27	Old Klabia	1435	0	0	0	0	0	0	30	172	800	433	0	0	0	0	0	0	30	172	600	633	32148	26785	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	49	87	100	68	0	0	0	0	0	0	49	87	50	118	8523	7198	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	136	100	0	0	0	0	0	0	0	266	100	136	13527	12800	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	50	35	0	0	0	0	0	0	0	407	45	40	15826	16154	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	100	63	0	0	0	0	0	0	0	107	80	83	6837	6412	270	270
32	Elgabal	482	0	0	0	0	0	0	24	14	300	144	0	0	0	0	0	0	24	14	200	244	10904	8064	482	482
33	Elzorkany	650	0	0	0	0	0	0	90	29	400	131	0	0	0	0	0	0	90	29	300	231	17729	15099	650	650
34	Elder	782	0	0	0	0	0	0	33	176	373	200	0	0	0	0	0	0	33	176	340	233	19278	18824	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	127	100	0	0	0	0	0	0	0	564	107	120	23709	23804	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	250	157	0	0	0	0	0	0	0	301	220	187	18268	17877	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**13801**	**3112**	**8033**	**7170**	**0**	**0**	**0**	**0**	**0**	**0**	**13810**	**3112**	**6416**	**8778**	**1029527**	**1010304**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 10

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1104	9	350	360	0	0	0	0	0	0	1104	9	600	110	66917	83795	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	401	49	51	60	0	0	0	0	0	0	401	49	100	11	23543	28096	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1179	1	100	247	0	0	0	0	0	0	1179	1	300	47	62457	77024	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	331	0	25	50	0	0	0	0	0	0	331	0	60	15	17427	20752	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	446	0	100	57	0	0	0	0	0	0	446	0	137	20	25587	29958	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	198	0	25	23	0	0	0	0	0	0	198	0	38	10	10743	12488	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	614	0	70	94	0	0	0	0	0	0	614	0	144	20	33077	39657	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	135	101	60	52	0	0	0	0	0	0	135	101	100	12	12343	15239	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1229	5	200	188	0	0	0	0	0	0	1229	5	350	38	68290	81776	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	389	1	92	120	0	0	0	0	0	0	389	1	192	20	22505	28747	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	15	13	0	0	0	0	0	0	60	0	20	8	3491	4086	88	88
12	Eladima	785	0	0	0	0	0	0	599	43	80	63	0	0	0	0	0	0	599	43	123	20	34196	39808	785	785
13	Elghaba	109	0	0	0	0	0	0	92	0	5	12	0	0	0	0	0	0	92	0	15	2	4782	5708	109	109
14	Esna west	1705	0	0	0	0	0	0	1057	6	200	442	0	0	0	0	0	0	1057	6	542	100	59683	78967	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1098	14	250	312	0	0	0	0	0	0	1098	14	450	112	63621	78327	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	638	3	89	150	0	0	0	0	0	0	638	3	189	50	34995	42728	880	880
17	Esna North	1353	0	0	0	0	0	0	890	0	223	240	0	0	0	0	0	0	890	0	423	40	51805	65100	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	72	14	30	44	0	0	0	0	0	0	72	14	54	20	5077	6537	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	243	17	200	166	0	0	0	0	0	0	243	17	300	66	19177	25022	626	626
20	Elnegoo	127	0	0	0	0	0	0	43	8	20	56	0	0	0	0	0	0	43	8	66	10	3085	5089	127	127
21	Elkorom	240	0	0	0	0	0	0	71	14	55	100	0	0	0	0	0	0	71	14	135	20	5821	9360	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1220	10	867	2200	0	0	0	0	0	0	1220	10	2567	500	89201	160287	4297	4297
23	Alkeman	526	0	0	0	0	0	0	149	2	150	225	0	0	0	0	0	0	149	2	325	50	12323	20016	526	526
24	Elmatana	3124	0	0	0	0	0	0	1088	139	595	1302	0	0	0	0	0	0	1088	139	1595	302	78597	123532	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	263	327	174	220	0	0	0	0	0	0	263	327	374	20	30573	41333	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	436	68	0	0	0	0	0	0	0	2	436	68	0	18035	20188	506	506
27	Old Klabia	1435	0	0	0	0	0	0	30	172	800	433	0	0	0	0	0	0	30	172	600	633	33137	29984	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	49	87	100	68	0	0	0	0	0	0	49	87	50	118	8786	8057	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	136	100	0	0	0	0	0	0	0	266	100	136	13943	14328	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	50	35	0	0	0	0	0	0	0	407	45	40	16313	18083	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	100	63	0	0	0	0	0	0	0	107	80	83	7047	7178	270	270
32	Elgabal	482	0	0	0	0	0	0	24	14	300	144	0	0	0	0	0	0	24	14	200	244	11240	9027	482	482
33	Elzorkany	650	0	0	0	0	0	0	90	29	400	131	0	0	0	0	0	0	90	29	300	231	18275	16902	650	650
34	Elder	782	0	0	0	0	0	0	33	176	373	200	0	0	0	0	0	0	33	176	340	233	19872	21071	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	127	100	0	0	0	0	0	0	0	564	107	120	24439	26646	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	250	157	0	0	0	0	0	0	0	301	220	187	18830	20012	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**6730**	**8227**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**11309**	**3648**	**1029231**	**1314907**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 11

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1104	9	600	110	0	0	0	0	0	0	1104	9	710	0	83795	85366	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	401	49	100	11	0	0	0	0	0	0	401	49	111	0	28096	27727	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1179	1	300	47	0	0	0	0	0	0	1179	1	347	0	77024	76597	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	331	0	60	15	0	0	0	0	0	0	331	0	75	0	20752	20717	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	446	0	137	20	0	0	0	0	0	0	446	0	157	0	29958	29851	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	198	0	38	10	0	0	0	0	0	0	198	0	48	0	12488	12501	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	614	0	144	20	0	0	0	0	0	0	614	0	164	0	39657	39291	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	135	101	100	12	0	0	0	0	0	0	135	101	112	0	15239	15248	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1229	5	350	38	0	0	0	0	0	0	1229	5	388	0	81776	80910	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	389	1	192	20	0	0	0	0	0	0	389	1	212	0	28747	28673	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	20	8	0	0	0	0	0	0	60	0	28	0	4086	4254	88	88
12	Eladima	785	0	0	0	0	0	0	599	43	123	20	0	0	0	0	0	0	599	43	143	0	39808	39438	785	785
13	Elghaba	109	0	0	0	0	0	0	92	0	15	2	0	0	0	0	0	0	92	0	17	0	5708	5625	109	109
14	Esna west	1705	0	0	0	0	0	0	1057	6	542	100	0	0	0	0	0	0	1057	6	642	0	78967	80322	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1098	14	450	112	0	0	0	0	0	0	1098	14	562	0	78327	80114	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	638	3	189	50	0	0	0	0	0	0	638	3	239	0	42728	43319	880	880
17	Esna North	1353	0	0	0	0	0	0	890	0	423	40	0	0	0	0	0	0	890	0	463	0	65100	64748	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	72	14	54	20	0	0	0	0	0	0	72	14	74	0	6537	7054	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	243	17	300	66	0	0	0	0	0	0	243	17	366	0	25022	26639	626	626
20	Elnegoo	127	0	0	0	0	0	0	43	8	66	10	0	0	0	0	0	0	43	8	76	0	5089	5299	127	127
21	Elkorom	240	0	0	0	0	0	0	71	14	135	20	0	0	0	0	0	0	71	14	155	0	9360	9802	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1220	10	2567	500	0	0	0	0	0	0	1220	10	3067	0	160287	173314	4297	4297
23	Alkeman	526	0	0	0	0	0	0	149	2	325	50	0	0	0	0	0	0	149	2	375	0	20016	21212	526	526
24	Elmatana	3124	0	0	0	0	0	0	1088	139	1595	302	0	0	0	0	0	0	1088	139	1897	0	123532	130687	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	263	327	374	20	0	0	0	0	0	0	263	327	394	0	41333	40923	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	436	68	0	0	0	0	0	0	0	2	436	68	0	20188	19650	506	506
27	Old Klabia	1435	0	0	0	0	0	0	30	172	600	633	0	0	0	0	0	0	30	172	1233	0	29984	51087	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	49	87	50	118	0	0	0	0	0	0	49	87	168	0	8057	11925	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	100	136	0	0	0	0	0	0	0	266	236	0	14328	18652	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	45	40	0	0	0	0	0	0	0	407	85	0	18083	18985	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	80	83	0	0	0	0	0	0	0	107	163	0	7178	9858	270	270
32	Elgabal	482	0	0	0	0	0	0	24	14	200	244	0	0	0	0	0	0	24	14	444	0	9027	17229	482	482
33	Elzorkany	650	0	0	0	0	0	0	90	29	300	231	0	0	0	0	0	0	90	29	531	0	16902	24444	650	650
34	Elder	782	0	0	0	0	0	0	33	176	340	233	0	0	0	0	0	0	33	176	573	0	21071	28572	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	107	120	0	0	0	0	0	0	0	564	227	0	26646	30088	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	220	187	0	0	0	0	0	0	0	301	407	0	20012	25948	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**11309**	**3648**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**14957**	**0**	**1314907**	**1406071**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 12

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1104	9	710	0	0	0	0	0	0	0	1104	9	710	0	85366	81858	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	401	49	111	0	0	0	0	0	0	0	401	49	111	0	27727	26588	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1179	1	347	0	0	0	0	0	0	0	1179	1	347	0	76597	73449	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	331	0	75	0	0	0	0	0	0	0	331	0	75	0	20717	19866	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	446	0	157	0	0	0	0	0	0	0	446	0	157	0	29851	28624	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	198	0	48	0	0	0	0	0	0	0	198	0	48	0	12501	11988	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	614	0	164	0	0	0	0	0	0	0	614	0	164	0	39291	37677	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	135	101	112	0	0	0	0	0	0	0	135	101	112	0	15248	14621	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1229	5	388	0	0	0	0	0	0	0	1229	5	388	0	80910	77585	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	389	1	212	0	0	0	0	0	0	0	389	1	212	0	28673	27494	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	28	0	0	0	0	0	0	0	60	0	28	0	4254	4079	88	88
12	Eladima	785	0	0	0	0	0	0	599	43	143	0	0	0	0	0	0	0	599	43	143	0	39438	37818	785	785
13	Elghaba	109	0	0	0	0	0	0	92	0	17	0	0	0	0	0	0	0	92	0	17	0	5625	5394	109	109
14	Esna west	1705	0	0	0	0	0	0	1057	6	642	0	0	0	0	0	0	0	1057	6	642	0	80322	77021	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1098	14	562	0	0	0	0	0	0	0	1098	14	562	0	80114	76821	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	638	3	239	0	0	0	0	0	0	0	638	3	239	0	43319	41538	880	880
17	Esna North	1353	0	0	0	0	0	0	890	0	463	0	0	0	0	0	0	0	890	0	463	0	64748	62087	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	72	14	74	0	0	0	0	0	0	0	72	14	74	0	7054	6765	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	243	17	366	0	0	0	0	0	0	0	243	17	366	0	26639	25544	626	626
20	Elnegoo	127	0	0	0	0	0	0	43	8	76	0	0	0	0	0	0	0	43	8	76	0	5299	5082	127	127
21	Elkorom	240	0	0	0	0	0	0	71	14	155	0	0	0	0	0	0	0	71	14	155	0	9802	9400	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1220	10	3067	0	0	0	0	0	0	0	1220	10	3067	0	173314	166191	4297	4297
23	Alkeman	526	0	0	0	0	0	0	149	2	375	0	0	0	0	0	0	0	149	2	375	0	21212	20341	526	526
24	Elmatana	3124	0	0	0	0	0	0	1088	139	1897	0	0	0	0	0	0	0	1088	139	1897	0	130687	125317	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	263	327	394	0	0	0	0	0	0	0	263	327	394	0	40923	39241	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	436	68	0	0	0	0	0	0	0	2	436	68	0	19650	18842	506	506
27	Old Klabia	1435	0	0	0	0	0	0	30	172	1233	0	0	0	0	0	0	0	30	172	1233	0	51087	48988	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	49	87	168	0	0	0	0	0	0	0	49	87	168	0	11925	11435	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	236	0	18652	17885	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	85	0	18985	18205	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	9858	9453	270	270
32	Elgabal	482	0	0	0	0	0	0	24	14	444	0	0	0	0	0	0	0	24	14	444	0	17229	16521	482	482
33	Elzorkany	650	0	0	0	0	0	0	90	29	531	0	0	0	0	0	0	0	90	29	531	0	24444	23440	650	650
34	Elder	782	0	0	0	0	0	0	33	176	573	0	0	0	0	0	0	0	33	176	573	0	28572	27397	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	227	0	30088	28851	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	407	0	25948	24882	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**14957**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**14957**	**0**	**1406071**	**1348287**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 13

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	**Water Requirements (m^3/dy)** 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1104	9	710	0	0	0	0	0	0	0	1104	9	710	0	81858	81858	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	401	49	111	0	0	0	0	0	0	0	401	49	111	0	26588	26588	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1179	1	347	0	0	0	0	0	0	0	1179	1	347	0	73449	73449	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	331	0	75	0	0	0	0	0	0	0	331	0	75	0	19866	19866	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	446	0	157	0	0	0	0	0	0	0	446	0	157	0	28624	28624	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	198	0	48	0	0	0	0	0	0	0	198	0	48	0	11988	11988	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	614	0	164	0	0	0	0	0	0	0	614	0	164	0	37677	37677	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	135	101	112	0	0	0	0	0	0	0	135	101	112	0	14621	14621	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1229	5	388	0	0	0	0	0	0	0	1229	5	388	0	77585	77585	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	389	1	212	0	0	0	0	0	0	0	389	1	212	0	27494	27494	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	28	0	0	0	0	0	0	0	60	0	28	0	4079	4079	88	88
12	Eladima	785	0	0	0	0	0	0	599	43	143	0	0	0	0	0	0	0	599	43	143	0	37818	37818	785	785
13	Elghaba	109	0	0	0	0	0	0	92	0	17	0	0	0	0	0	0	0	92	0	17	0	5394	5394	109	109
14	Esna west	1705	0	0	0	0	0	0	1057	6	642	0	0	0	0	0	0	0	1057	6	642	0	77021	77021	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1098	14	562	0	0	0	0	0	0	0	1098	14	562	0	76821	76821	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	638	3	239	0	0	0	0	0	0	0	638	3	239	0	41538	41538	880	880
17	Esna North	1353	0	0	0	0	0	0	890	0	463	0	0	0	0	0	0	0	890	0	463	0	62087	62087	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	72	14	74	0	0	0	0	0	0	0	72	14	74	0	6765	6765	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	243	17	366	0	0	0	0	0	0	0	243	17	366	0	25544	25544	626	626
20	Elnegoo	127	0	0	0	0	0	0	43	8	76	0	0	0	0	0	0	0	43	8	76	0	5082	5082	127	127
21	Elkorom	240	0	0	0	0	0	0	71	14	155	0	0	0	0	0	0	0	71	14	155	0	9400	9400	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1220	10	3067	0	0	0	0	0	0	0	1220	10	3067	0	166191	166191	4297	4297
23	Alkeman	526	0	0	0	0	0	0	149	2	375	0	0	0	0	0	0	0	149	2	375	0	20341	20341	526	526
24	Elmatana	3124	0	0	0	0	0	0	1088	139	1897	0	0	0	0	0	0	0	1088	139	1897	0	125317	125317	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	263	327	394	0	0	0	0	0	0	0	263	327	394	0	39241	39241	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	436	68	0	0	0	0	0	0	0	2	436	68	0	18842	18842	506	506
27	Old Klabia	1435	0	0	0	0	0	0	30	172	1233	0	0	0	0	0	0	0	30	172	1233	0	48988	48988	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	49	87	168	0	0	0	0	0	0	0	49	87	168	0	11435	11435	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	236	0	17885	17885	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	85	0	18205	18205	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	9453	9453	270	270
32	Elgabal	482	0	0	0	0	0	0	24	14	444	0	0	0	0	0	0	0	24	14	444	0	16521	16521	482	482
33	Elzorkany	650	0	0	0	0	0	0	90	29	531	0	0	0	0	0	0	0	90	29	531	0	23440	23440	650	650
34	Elder	782	0	0	0	0	0	0	33	176	573	0	0	0	0	0	0	0	33	176	573	0	27397	27397	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	227	0	28851	28851	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	407	0	24882	24882	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**14957**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**14957**	**0**	**1348287**	**1348287**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 14

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1104	9	710	0	0	0	0	0	0	0	1104	9	710	0	81858	81858	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	401	49	111	0	0	0	0	0	0	0	401	49	111	0	26588	26588	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1179	1	347	0	0	0	0	0	0	0	1179	1	347	0	73449	73449	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	331	0	75	0	0	0	0	0	0	0	331	0	75	0	19866	19866	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	446	0	157	0	0	0	0	0	0	0	446	0	157	0	28624	28624	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	198	0	48	0	0	0	0	0	0	0	198	0	48	0	11988	11988	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	614	0	164	0	0	0	0	0	0	0	614	0	164	0	37677	37677	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	135	101	112	0	0	0	0	0	0	0	135	101	112	0	14621	14621	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1229	5	388	0	0	0	0	0	0	0	1229	5	388	0	77585	77585	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	389	1	212	0	0	0	0	0	0	0	389	1	212	0	27494	27494	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	28	0	0	0	0	0	0	0	60	0	28	0	4079	4079	88	88
12	Eladima	785	0	0	0	0	0	0	599	43	143	0	0	0	0	0	0	0	599	43	143	0	37818	37818	785	785
13	Elghaba	109	0	0	0	0	0	0	92	0	17	0	0	0	0	0	0	0	92	0	17	0	5394	5394	109	109
14	Esna west	1705	0	0	0	0	0	0	1057	6	642	0	0	0	0	0	0	0	1057	6	642	0	77021	77021	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1098	14	562	0	0	0	0	0	0	0	1098	14	562	0	76821	76821	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	638	3	239	0	0	0	0	0	0	0	638	3	239	0	41538	41538	880	880
17	Esna North	1353	0	0	0	0	0	0	890	0	463	0	0	0	0	0	0	0	890	0	463	0	62087	62087	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	72	14	74	0	0	0	0	0	0	0	72	14	74	0	6765	6765	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	243	17	366	0	0	0	0	0	0	0	243	17	366	0	25544	25544	626	626
20	Elnegoo	127	0	0	0	0	0	0	43	8	76	0	0	0	0	0	0	0	43	8	76	0	5082	5082	127	127
21	Elkorom	240	0	0	0	0	0	0	71	14	155	0	0	0	0	0	0	0	71	14	155	0	9400	9400	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1220	10	3067	0	0	0	0	0	0	0	1220	10	3067	0	166191	166191	4297	4297
23	Alkeman	526	0	0	0	0	0	0	149	2	375	0	0	0	0	0	0	0	149	2	375	0	20341	20341	526	526
24	Elmatana	3124	0	0	0	0	0	0	1088	139	1897	0	0	0	0	0	0	0	1088	139	1897	0	125317	125317	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	263	327	394	0	0	0	0	0	0	0	263	327	394	0	39241	39241	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	436	68	0	0	0	0	0	0	0	2	436	68	0	18842	18842	506	506
27	Old Klabia	1435	0	0	0	0	0	0	30	172	1233	0	0	0	0	0	0	0	30	172	1233	0	48988	48988	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	49	87	168	0	0	0	0	0	0	0	49	87	168	0	11435	11435	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	236	0	17885	17885	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	85	0	18205	18205	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	9453	9453	270	270
32	Elgabal	482	0	0	0	0	0	0	24	14	444	0	0	0	0	0	0	0	24	14	444	0	16521	16521	482	482
33	Elzorkany	650	0	0	0	0	0	0	90	29	531	0	0	0	0	0	0	0	90	29	531	0	23440	23440	650	650
34	Elder	782	0	0	0	0	0	0	33	176	573	0	0	0	0	0	0	0	33	176	573	0	27397	27397	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	227	0	28851	28851	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	407	0	24882	24882	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**14957**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**14957**	**0**	**1348287**	**1348287**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 15

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1104	9	710	0	0	0	0	0	0	0	1104	9	710	0	81858	81858	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	401	49	111	0	0	0	0	0	0	0	401	49	111	0	26588	26588	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1179	1	347	0	0	0	0	0	0	0	1179	1	347	0	73449	73449	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	331	0	75	0	0	0	0	0	0	0	331	0	75	0	19866	19866	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	446	0	157	0	0	0	0	0	0	0	446	0	157	0	28624	28624	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	198	0	48	0	0	0	0	0	0	0	198	0	48	0	11988	11988	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	614	0	164	0	0	0	0	0	0	0	614	0	164	0	37677	37677	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	135	101	112	0	0	0	0	0	0	0	135	101	112	0	14621	14621	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1229	5	388	0	0	0	0	0	0	0	1229	5	388	0	77585	77585	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	389	1	212	0	0	0	0	0	0	0	389	1	212	0	27494	27494	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	28	0	0	0	0	0	0	0	60	0	28	0	4079	4079	88	88
12	Eladima	785	0	0	0	0	0	0	599	43	143	0	0	0	0	0	0	0	599	43	143	0	37818	37818	785	785
13	Elghaba	109	0	0	0	0	0	0	92	0	17	0	0	0	0	0	0	0	92	0	17	0	5394	5394	109	109
14	Esna west	1705	0	0	0	0	0	0	1057	6	642	0	0	0	0	0	0	0	1057	6	642	0	77021	77021	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1098	14	562	0	0	0	0	0	0	0	1098	14	562	0	76821	76821	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	638	3	239	0	0	0	0	0	0	0	638	3	239	0	41538	41538	880	880
17	Esna North	1353	0	0	0	0	0	0	890	0	463	0	0	0	0	0	0	0	890	0	463	0	62087	62087	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	72	14	74	0	0	0	0	0	0	0	72	14	74	0	6765	6765	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	243	17	366	0	0	0	0	0	0	0	243	17	366	0	25544	25544	626	626
20	Elnegoo	127	0	0	0	0	0	0	43	8	76	0	0	0	0	0	0	0	43	8	76	0	5082	5082	127	127
21	Elkorom	240	0	0	0	0	0	0	71	14	155	0	0	0	0	0	0	0	71	14	155	0	9400	9400	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1220	10	3067	0	0	0	0	0	0	0	1220	10	3067	0	166191	166191	4297	4297
23	Alkeman	526	0	0	0	0	0	0	149	2	375	0	0	0	0	0	0	0	149	2	375	0	20341	20341	526	526
24	Elmatana	3124	0	0	0	0	0	0	1088	139	1897	0	0	0	0	0	0	0	1088	139	1897	0	125317	125317	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	263	327	394	0	0	0	0	0	0	0	263	327	394	0	39241	39241	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	2	436	68	0	0	0	0	0	0	0	2	436	68	0	18842	18842	506	506
27	Old Klabia	1435	0	0	0	0	0	0	30	172	1233	0	0	0	0	0	0	0	30	172	1233	0	48988	48988	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	49	87	168	0	0	0	0	0	0	0	49	87	168	0	11435	11435	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	266	236	0	0	0	0	0	0	0	0	266	236	0	17885	17885	502	502
30	Elhala New	492	0	0	0	0	0	0	0	407	85	0	0	0	0	0	0	0	0	407	85	0	18205	18205	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	9453	9453	270	270
32	Elgabal	482	0	0	0	0	0	0	24	14	444	0	0	0	0	0	0	0	24	14	444	0	16521	16521	482	482
33	Elzorkany	650	0	0	0	0	0	0	90	29	531	0	0	0	0	0	0	0	90	29	531	0	23440	23440	650	650
34	Elder	782	0	0	0	0	0	0	33	176	573	0	0	0	0	0	0	0	33	176	573	0	27397	27397	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	564	227	0	0	0	0	0	0	0	0	564	227	0	28851	28851	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	301	407	0	0	0	0	0	0	0	0	301	407	0	24882	24882	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**14957**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**13837**	**3322**	**14957**	**0**	**1348287**	**1348287**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 16

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1184	7	632	0	0	0	0	0	0	0	1184	7	632	0	83394	78629	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	407	51	103	0	0	0	0	0	0	0	407	51	103	0	26713	25186	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1116	1	410	0	0	0	0	0	0	0	1116	1	410	0	72232	68104	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	340	0	66	0	0	0	0	0	0	0	340	0	66	0	20040	18895	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	425	0	178	0	0	0	0	0	0	0	425	0	178	0	28219	26606	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	193	0	53	0	0	0	0	0	0	0	193	0	53	0	11891	11212	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	597	0	181	0	0	0	0	0	0	0	597	0	181	0	37348	35214	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	117	102	129	0	0	0	0	0	0	0	117	102	129	0	14278	13462	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1048	1	573	0	0	0	0	0	0	0	1048	1	573	0	74070	69837	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	408	1	193	0	0	0	0	0	0	0	408	1	193	0	27862	26269	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	28	0	0	0	0	0	0	0	60	0	28	0	4079	3846	88	88
12	Eladima	785	0	0	0	0	0	0	513	39	233	0	0	0	0	0	0	0	513	39	233	0	36138	34073	785	785
13	Elghaba	109	0	0	0	0	0	0	62	0	47	0	0	0	0	0	0	0	62	0	47	0	4814	4539	109	109
14	Esna west	1705	0	0	0	0	0	0	936	7	762	0	0	0	0	0	0	0	936	7	762	0	74688	70420	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1272	5	397	0	0	0	0	0	0	0	1272	5	397	0	80141	75562	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	485	11	384	0	0	0	0	0	0	0	485	11	384	0	38619	36413	880	880
17	Esna North	1353	0	0	0	0	0	0	988	0	365	0	0	0	0	0	0	0	988	0	365	0	63981	60325	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	20	4	136	0	0	0	0	0	0	0	20	4	136	0	5714	5387	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	219	4	403	0	0	0	0	0	0	0	219	4	403	0	25020	23591	626	626
20	Elnegoo	127	0	0	0	0	0	0	33	44	50	0	0	0	0	0	0	0	33	44	50	0	5055	4766	127	127
21	Elkorom	240	0	0	0	0	0	0	77	11	152	0	0	0	0	0	0	0	77	11	152	0	9502	8959	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1412	6	2879	0	0	0	0	0	0	0	1412	6	2879	0	169882	160174	4297	4297
23	Alkeman	526	0	0	0	0	0	0	164	0	362	0	0	0	0	0	0	0	164	0	362	0	20621	19443	526	526
24	Elmatana	3124	0	0	0	0	0	0	1587	236	1301	0	0	0	0	0	0	0	1587	236	1301	0	135405	127668	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	303	338	343	0	0	0	0	0	0	0	303	338	343	0	40065	37775	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	437	68	0	0	0	0	0	0	0	1	437	68	0	18827	17751	506	506
27	Old Klabia	1435	0	0	0	0	0	0	15	95	1325	0	0	0	0	0	0	0	15	95	1325	0	48342	45580	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	44	60	200	0	0	0	0	0	0	0	44	60	200	0	11214	10573	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	262	240	0	0	0	0	0	0	0	0	262	240	0	17867	16846	502	502
30	Elhala New	492	0	0	0	0	0	0	0	411	81	0	0	0	0	0	0	0	0	411	81	0	18223	17182	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	9453	8913	270	270
32	Elgabal	482	0	0	0	0	0	0	33	16	433	0	0	0	0	0	0	0	33	16	433	0	16704	15750	482	482
33	Elzorkany	650	0	0	0	0	0	0	96	32	522	0	0	0	0	0	0	0	96	32	522	0	23570	22223	650	650
34	Elder	782	0	0	0	0	0	0	33	275	474	0	0	0	0	0	0	0	33	275	474	0	27855	26263	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	566	225	0	0	0	0	0	0	0	0	566	225	0	28860	27211	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	302	406	0	0	0	0	0	0	0	0	302	406	0	24887	23465	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**14188**	**3431**	**14497**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14188**	**3431**	**14497**	**0**	**1355572**	**1278111**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 17

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	**Water Requirements (m^3/dy)** 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1184	7	632	0	0	0	0	0	0	0	1184	7	632	0	78629	71481	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	407	51	103	0	0	0	0	0	0	0	407	51	103	0	25186	22897	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1116	1	410	0	0	0	0	0	0	0	1116	1	410	0	68104	61913	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	340	0	66	0	0	0	0	0	0	0	340	0	66	0	18895	17177	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	425	0	178	0	0	0	0	0	0	0	425	0	178	0	26606	24187	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	193	0	53	0	0	0	0	0	0	0	193	0	53	0	11212	10192	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	597	0	181	0	0	0	0	0	0	0	597	0	181	0	35214	32013	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	117	102	129	0	0	0	0	0	0	0	117	102	129	0	13462	12239	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1048	1	573	0	0	0	0	0	0	0	1048	1	573	0	69837	63489	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	408	1	193	0	0	0	0	0	0	0	408	1	193	0	26269	23881	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	28	0	0	0	0	0	0	0	60	0	28	0	3846	3496	88	88
12	Eladima	785	0	0	0	0	0	0	513	39	233	0	0	0	0	0	0	0	513	39	233	0	34073	30975	785	785
13	Elghaba	109	0	0	0	0	0	0	62	0	47	0	0	0	0	0	0	0	62	0	47	0	4539	4127	109	109
14	Esna west	1705	0	0	0	0	0	0	936	7	762	0	0	0	0	0	0	0	936	7	762	0	70420	64018	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1272	5	397	0	0	0	0	0	0	0	1272	5	397	0	75562	68693	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	485	11	384	0	0	0	0	0	0	0	485	11	384	0	36413	33102	880	880
17	Esna North	1353	0	0	0	0	0	0	988	0	365	0	0	0	0	0	0	0	988	0	365	0	60325	54841	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	20	4	136	0	0	0	0	0	0	0	20	4	136	0	5387	4897	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	219	4	403	0	0	0	0	0	0	0	219	4	403	0	23591	21446	626	626
20	Elnegoo	127	0	0	0	0	0	0	33	44	50	0	0	0	0	0	0	0	33	44	50	0	4766	4333	127	127
21	Elkorom	240	0	0	0	0	0	0	77	11	152	0	0	0	0	0	0	0	77	11	152	0	8959	8144	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1412	6	2879	0	0	0	0	0	0	0	1412	6	2879	0	160174	145613	4297	4297
23	Alkeman	526	0	0	0	0	0	0	164	0	362	0	0	0	0	0	0	0	164	0	362	0	19443	17675	526	526
24	Elmatana	3124	0	0	0	0	0	0	1587	236	1301	0	0	0	0	0	0	0	1587	236	1301	0	127668	116062	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	303	338	343	0	0	0	0	0	0	0	303	338	343	0	37775	34341	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	437	68	0	0	0	0	0	0	0	1	437	68	0	17751	16138	506	506
27	Old Klabia	1435	0	0	0	0	0	0	15	95	1325	0	0	0	0	0	0	0	15	95	1325	0	45580	41436	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	44	60	200	0	0	0	0	0	0	0	44	60	200	0	10573	9612	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	262	240	0	0	0	0	0	0	0	0	262	240	0	16846	15314	502	502
30	Elhala New	492	0	0	0	0	0	0	0	411	81	0	0	0	0	0	0	0	0	411	81	0	17182	15620	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	8913	8103	270	270
32	Elgabal	482	0	0	0	0	0	0	33	16	433	0	0	0	0	0	0	0	33	16	433	0	15750	14318	482	482
33	Elzorkany	650	0	0	0	0	0	0	96	32	522	0	0	0	0	0	0	0	96	32	522	0	22223	20202	650	650
34	Elder	782	0	0	0	0	0	0	33	275	474	0	0	0	0	0	0	0	33	275	474	0	26263	23876	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	566	225	0	0	0	0	0	0	0	0	566	225	0	27211	24737	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	302	406	0	0	0	0	0	0	0	0	302	406	0	23465	21331	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**14188**	**3431**	**14497**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14188**	**3431**	**14497**	**0**	**1278111**	**1161919**	32116	32116
	Check Sums:											32116										32116				

Table 6-4. (Continued).

Current and Expected Cropping Pattern in East Isna Irrigation District (2001)

Period 18

Area (Fed.)

Canal No	Name	Total	Existing pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Expected pattern W	Ma	Se	Co	Ri	Vegs	Sugar	Garden	Others	Fallow	Water Requirements (m^3/dy) 0 - 2 wks	2 - 4 wks	Check Sums Existing	Expected
1	Elramady	1823	0	0	0	0	0	0	1184	7	632	0	0	0	0	0	0	0	1184	7	632	0	71481	64333	1823	1823
2	Sahel Komer	561	0	0	0	0	0	0	407	51	103	0	0	0	0	0	0	0	407	51	103	0	22897	20607	561	561
3	Hager Komer	1527	0	0	0	0	0	0	1116	1	410	0	0	0	0	0	0	0	1116	1	410	0	61913	55722	1527	1527
4	Hager Komer Brans	406	0	0	0	0	0	0	340	0	66	0	0	0	0	0	0	0	340	0	66	0	17177	15459	406	406
5	Mansour Bransh	603	0	0	0	0	0	0	425	0	178	0	0	0	0	0	0	0	425	0	178	0	24187	21769	603	603
6	Ganabit Eltama	246	0	0	0	0	0	0	193	0	53	0	0	0	0	0	0	0	193	0	53	0	10192	9173	246	246
7	Ganabit Elteraa	778	0	0	0	0	0	0	597	0	181	0	0	0	0	0	0	0	597	0	181	0	32013	28811	778	778
8	Elrekia Canal	348	0	0	0	0	0	0	117	102	129	0	0	0	0	0	0	0	117	102	129	0	12239	11015	348	348
9	Elnamsa	1622	0	0	0	0	0	0	1048	1	573	0	0	0	0	0	0	0	1048	1	573	0	63489	57140	1622	1622
10	Elakhmas	602	0	0	0	0	0	0	408	1	193	0	0	0	0	0	0	0	408	1	193	0	23881	21493	602	602
11	Elsereeb	88	0	0	0	0	0	0	60	0	28	0	0	0	0	0	0	0	60	0	28	0	3496	3147	88	88
12	Eladima	785	0	0	0	0	0	0	513	39	233	0	0	0	0	0	0	0	513	39	233	0	30975	27878	785	785
13	Elghaba	109	0	0	0	0	0	0	62	0	47	0	0	0	0	0	0	0	62	0	47	0	4127	3714	109	109
14	Esna west	1705	0	0	0	0	0	0	936	7	762	0	0	0	0	0	0	0	936	7	762	0	64018	57616	1705	1705
15	Elkaram	1674	0	0	0	0	0	0	1272	5	397	0	0	0	0	0	0	0	1272	5	397	0	68693	61823	1674	1674
16	Elshekh Fadl west	880	0	0	0	0	0	0	485	11	384	0	0	0	0	0	0	0	485	11	384	0	33102	29792	880	880
17	Esna North	1353	0	0	0	0	0	0	988	0	365	0	0	0	0	0	0	0	988	0	365	0	54841	49357	1353	1353
18	Sahel Esna	626	0	0	0	0	0	0	20	4	136	0	0	0	0	0	0	0	20	4	136	0	4897	4408	160	160
19	Elshekh Fadl East	160	0	0	0	0	0	0	219	4	403	0	0	0	0	0	0	0	219	4	403	0	21446	19301	626	626
20	Elnegoo	127	0	0	0	0	0	0	33	44	50	0	0	0	0	0	0	0	33	44	50	0	4333	3899	127	127
21	Elkorom	240	0	0	0	0	0	0	77	11	152	0	0	0	0	0	0	0	77	11	152	0	8144	7330	240	240
22	Ganabit Asfon	4297	0	0	0	0	0	0	1412	6	2879	0	0	0	0	0	0	0	1412	6	2879	0	145613	131052	4297	4297
23	Alkeman	526	0	0	0	0	0	0	164	0	362	0	0	0	0	0	0	0	164	0	362	0	17675	15908	526	526
24	Elmatana	3124	0	0	0	0	0	0	1587	236	1301	0	0	0	0	0	0	0	1587	236	1301	0	116062	104456	3124	3124
25	Sahel Elmatana	984	0	0	0	0	0	0	303	338	343	0	0	0	0	0	0	0	303	338	343	0	34341	30907	984	984
26	Gezert elkeman	506	0	0	0	0	0	0	1	437	68	0	0	0	0	0	0	0	1	437	68	0	16138	14524	506	506
27	Old Klabia	1435	0	0	0	0	0	0	15	95	1325	0	0	0	0	0	0	0	15	95	1325	0	41436	37292	1435	1435
28	Elsahel 1	304	0	0	0	0	0	0	44	60	200	0	0	0	0	0	0	0	44	60	200	0	9612	8651	304	304
29	Elsahel 2	502	0	0	0	0	0	0	0	262	240	0	0	0	0	0	0	0	0	262	240	0	15314	13783	502	502
30	Elhala New	492	0	0	0	0	0	0	0	411	81	0	0	0	0	0	0	0	0	411	81	0	15620	14058	492	492
31	Elsahel 3	270	0	0	0	0	0	0	0	107	163	0	0	0	0	0	0	0	0	107	163	0	8103	7292	270	270
32	Elgabal	482	0	0	0	0	0	0	33	16	433	0	0	0	0	0	0	0	33	16	433	0	14318	12886	482	482
33	Elzorkany	650	0	0	0	0	0	0	96	32	522	0	0	0	0	0	0	0	96	32	522	0	20202	18182	650	650
34	Elder	782	0	0	0	0	0	0	33	275	474	0	0	0	0	0	0	0	33	275	474	0	23876	21488	782	782
35	Sahel Elder	791	0	0	0	0	0	0	0	566	225	0	0	0	0	0	0	0	0	566	225	0	24737	22264	791	791
36	Sayalt Zarneekh	708	0	0	0	0	0	0	0	302	406	0	0	0	0	0	0	0	0	302	406	0	21331	19198	708	708
	Check Sums:	**32116**	**0**	**0**	**0**	**0**	**0**	**0**	**14188**	**3431**	**14497**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**14188**	**3431**	**14497**	**0**	**1161919**	**1045727**	32116	32116
	Check Sums:											32116										32116				

Table 6-5. Crop water needs compared with water delivered to the East Isna District expressed as daily average over each half-month period from March 2000 through September 2001 (See Sheet 1 of file "DEMO – EI" on disk).

	Dates				Water: Required		Delivered	Water Delivered			Existing		Expected			Dates			Water Required		Water Delivered to Area	
					(million cubic meters)/day			% Diff. From	% Diff. From	Area	Fallow	Cropped	Fallow	Cropped					m^3/(day feddan)			
Per	From	To	Yr	Mo	Existing	Expected		Existing Need	Expected Need	fed	feddans	feddans	feddans	feddans	Per	From	To	Yr	Existing	Expected	Existing	Expected
5	1 Mar	15 Mar	2000	M			1.0726			32116					5	1 Mar	15 Mar	2000				
6	16 Mar	31 Mar					0.9921								6	16 Mar	31 Mar					
7	1 Apr	15 Apr		A	0.8505		1.1374	33.74			5932	26184			7	1 Apr	15 Apr		32.48		43.44	
8	16 Apr	30 Apr			0.8381	0.7872	1.0934	30.46	38.90		10401	21715	10485	21631	8	16 Apr	30 Apr		38.60	36.39	50.35	50.55
9	1 May	15 May		M	0.8542	0.8452	1.1025	29.06	30.44		11649	20467	11640	20476	9	1 May	15 May		41.74	41.28	53.87	53.84
10	16 May	31 May			0.9090	0.9073	1.2797	40.78	41.05		11086	21030	11139	20977	10	16 May	31 May		43.23	43.25	60.85	61.01
11	1 Jun	15 Jun		J	1.0471	1.0327	1.2543	19.78	21.45		10552	21564	10837	21279	11	1 Jun	15 Jun		48.56	48.53	58.16	58.94
12	16 Jun	30 Jun			1.0192	1.0376	1.4622	43.47	40.93		10552	21564	10236	21880	12	16 Jun	30 Jun		47.26	47.42	67.81	66.83
13	1 Jul	15 Jul		J	0.9965	0.9949	1.4525	45.77	45.99		10186	21930	10236	21880	13	1 Jul	15 Jul		45.44	45.47	66.23	66.39
14	16 Jul	31 Jul			1.2360	1.1383	1.5976	29.25	40.35		2755	29361	5712	26404	14	16 Jul	31 Jul		42.10	43.11	54.41	60.51
15	1 Aug	15 Aug		A	1.2355	1.2112	1.7250	39.62	42.41		2755	29361	3503	28613	15	1 Aug	15 Aug		42.08	42.33	58.75	60.29
16	16 Aug	31 Aug			1.1771	1.1773	1.6484	40.04	40.01		4530	27586	4520	27596	16	16 Aug	31 Aug		42.67	42.66	59.76	59.73
17	1 Sep	15 Sep		S	1.0663	1.0887	1.5241	42.94	39.99		5982	26134	5212	26904	17	1 Sep	15 Sep		40.80	40.47	58.32	56.65
18	16 Sep	30 Sep			0.9693	0.9822	1.4864	53.34	51.33		5982	26134	5498	26618	18	16 Sep	30 Sep		37.09	36.90	56.88	55.84
19	1 Oct	15 Oct		O	0.9247	0.8840	1.4969	61.89	69.33		3968	28148	5498	26618	19	1 Oct	15 Oct		32.85	33.21	53.18	56.24
20	16 Oct	31 Oct			0.8404	0.8230	1.5212	81.00	84.83		3425	28691	3920	28196	20	16 Oct	31 Oct		29.29	29.19	53.02	53.95
21	1 Nov	15 Nov		N	0.7290	0.7197	1.5605	114.05	116.84		2614	29502	3931	28185	21	1 Nov	15 Nov		24.71	25.53	52.89	55.37
22	16 Nov	30 Nov			0.6091	0.6596	1.3242	117.39	100.76		2614	29502	2614	29502	22	16 Nov	30 Nov		20.65	22.36	44.88	44.88
23	1 Dec	15 Dec		D	0.5101	0.5130	1.3526	165.17	163.69		0	32116	2614	29502	23	1 Dec	15 Dec		15.88	17.39	42.12	45.85
24	16 Dec	31 Dec			0.4159	0.4572	0.2788	-32.97	-39.03		1103	31013	0	32116	24	16 Dec	31 Dec		13.41	14.24	8.99	8.68
1	1 Jan	15 Jan	2001	J	0.4254	0.4254	0.7025	65.12	65.12		1993	30123	1993	30123	1	1 Jan	15 Jan	2001	14.12	14.12	23.32	23.32
2	16 Jan	31 Jan			0.4300	0.4397	1.2738	196.26	189.74		2736	29380	2738	29378	2	16 Jan	31 Jan		14.63	14.97	43.36	43.36
3	1 Feb	15 Feb		F	0.4654	0.4563	1.0402	123.51	127.97		3439	28677	3439	28677	3	1 Feb	15 Feb		16.23	15.91	36.27	36.27
4	16 Feb	28 Feb			0.5234	0.4988	0.8887	69.79	78.18		4500	27616	4500	27616	4	16 Feb	28 Feb		18.95	18.06	32.18	32.18
5	1 Mar	15 Mar		M	0.6018	0.5793	0.8635	43.50	49.06		6757	25359	6757	25359	5	1 Mar	15 Mar		23.73	22.85	34.05	34.05
6	16 Mar	31 Mar			0.6541	0.6331	1.2109	85.12	91.26		9128	22988	9143	22973	6	16 Mar	31 Mar		28.45	27.56	52.68	52.71
7	1 Apr	15 Apr		A	0.6690	0.6541	1.0425	55.84	59.38		10151	21965	10128	21988	7	1 Apr	15 Apr		30.46	29.75	47.46	47.41
8	16 Apr	30 Apr			0.7310	0.7143	1.0924	49.43	52.93		10151	21965	10151	21965	8	16 Apr	30 Apr		33.28	32.52	49.73	49.73
9	1 May	15 May		M	1.0295	0.5350	1.0564	2.61	97.45		7170	24946	17266	14850	9	1 May	15 May		41.27	36.03	42.35	71.14
10	16 May	31 May			1.0292	1.0103	1.2241	18.93	21.16		8227	23889	8778	23338	10	16 May	31 May		43.08	43.29	51.24	52.45
11	1 Jun	15 Jun		J	1.3149	1.3149	1.3337	1.43	1.43		3648	28468	3648	28468	11	1 Jun	15 Jun		46.19	46.19	46.85	46.85
12	16 Jun	30 Jun			1.4061	1.4061	1.3632	-3.05	-3.05		0	32116	0	32116	12	16 Jun	30 Jun		43.78	43.78	42.45	42.45
13	1 Jul	15 Jul		J	1.3483	1.3483	1.3468	-0.11	-0.11		0	32116	0	32116	13	1 Jul	15 Jul		41.98	41.98	41.94	41.94
14	16 Jul	31 Jul			1.3483	1.3483	1.6225	20.34	20.34		0	32116	0	32116	14	16 Jul	31 Jul		41.98	41.98	50.52	50.52
15	1 Aug	15 Aug		A	1.3483	1.3483	1.5998	18.66	18.66		0	32116	0	32116	15	1 Aug	15 Aug		41.98	41.98	49.81	49.81
16	16 Aug	31 Aug			1.3556	1.3483	1.6764	23.66	24.33		0	32116	0	32116	16	16 Aug	31 Aug		42.21	41.98	52.20	52.20
17	1 Sep	15 Sep		S	1.2781	1.2781	1.6860	31.92	31.92		0	32116	0	32116	17	1 Sep	15 Sep		39.80	39.80	52.50	52.50
18	16 Sep	30 Sep			1.1619	1.1619	1.6711	43.82	43.82		0	32116	0	32116	18	16 Sep	30 Sep		36.18	36.18	52.03	52.03
19	1 Oct	15 Oct		O		1.0457						32116	0	32116	19	1 Oct	15 Oct			32.56		

The data values for area in fallow for the existing and expected time periods follow in a similar fashion. For example, for period 7, 2000, Table 6-4, the existing area of fallow totals 5932 feddans for the district. This value is entered into Table 6-5 for the time period, 1 Apr – 15 Apr. The expected area of fallow (period 7, 2000, Table 6-4) is 10485 feddans. This is the area expected to be in fallow during the next half-month time period, and thus the value 10485 feddans is entered into Table 6-5 as expected fallow for 16 Apr – 30 Apr, 2000.

Table 6-6 shows daily water delivered to the pilot district and daily average over each half-month period expressed as million m^3. This table is summarized from results of the water-monitoring program presented in Chapter 9. This table (Table 6-6) forms the far right part of Sheet 1 of East Isna DEMO spreadsheet. Proper daily values from the results of the water-monitoring program (Chapter 9) must be entered into this area of East Isna DEMO.

In summary, East Isna DEMO requires five types of data to be entered for each half-month: (1) crop water needs (million m^3/day) for existing crops, (2) crop water needs (million m^3/day) for expected crops, (3) existing area (feddans) of fallow, (4) expected area (feddans) of fallow, and daily values of water delivered (million m^3) to the district.

Figures 6-1 and 6-2 show the water delivered to the district compared to the calculated water needs – average daily values for the half-month time period expressed in million m^3/day. The curve labeled "existing" need shows the water needed by the existing or current crops for the particular half month. The "expected" need for the particular half month is the water needed by the crops calculated from cropping patterns that were forecast from the previous half-month.

Figures 6-3 and 6-4 give the same information expressed on a per feddan (of cropped area) basis. Since the existing and expected areas of crops do not agree exactly, two curves of water delivery are calculated. The first labeled "Delivered/(Existing Area)" is the water delivered in m^3/day per feddan of existing crops. The second labeled "Delivered/(Expected Area)" is the water delivered in m^3/day per feddan of crops forecast during the previous half-month as expected for the given half-month.

Another pair of figures (Figures 6-5 and 6-6) plot the percent difference of water delivered from existing need and from expected need (See Report 45, section 3.5.2 for equations). Positive values of percent difference mean over-delivery and negative values designate under-delivery.

Figure 6-7 combines the information of Figures 6-1 and 6-2 for the entire time data was collected, *i.e.*, from March 2000 through September 2001. Likewise, Figures 6-8 and 6-9 combine Figures 6-3 and 6-4, and 6-5 and 6-6, respectively.

Table 6-6. Daily water delivered to the East Isna District and daily average over each half-month period from March 2000 through September 2001 expressed as million m^3 (See Sheet 1 of file "DEMO – EI" on disk).

	(million cubic meters)				2000						2001								
Day	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept
1	0.760	0.760	1.073	0.707	1.467	1.362	1.140	1.505	1.727	1.402	0.000	1.228	1.346	1.267	1.057	1.426	1.366	1.6474	1.6315
2	0.760	0.978	1.194	0.677	1.556	1.426	1.505	1.742	1.727	1.342	0.000	1.109	1.346	1.267	1.097	1.327	1.366	1.6672	1.6315
3	0.760	1.236	1.109	1.418	1.507	1.426	1.742	1.742	1.568	1.283	0.000	1.109	1.346	1.267	0.978	1.327	1.477	1.6672	1.7424
4	0.760	1.346	1.291	1.418	1.263	1.521	1.742	1.723	1.568	1.117	0.277	1.239	0.931	0.978	0.760	1.327	1.477	1.6672	1.5919
5	0.760	1.346	1.291	1.447	0.903	1.521	1.742	1.624	1.806	1.402	0.475	1.196	0.000	0.760	0.760	1.327	1.477	1.6672	1.1722
6	0.760	1.346	1.251	1.140	1.188	1.521	1.742	1.624	1.501	1.447	0.356	1.117	0.000	0.760	0.760	1.327	1.477	1.6672	1.2989
7	1.236	1.346	1.093	1.140	1.140	1.976	1.544	1.624	1.331	1.378	0.356	0.978	0.000	0.760	0.919	1.327	1.477	1.6592	1.4256
8	1.426	1.346	1.156	1.140	1.140	1.976	1.544	1.624	1.331	1.378	0.356	0.760	0.871	0.879	1.166	1.366	1.477	1.4256	1.4256
9	1.307	1.238	1.251	1.140	1.616	1.996	1.624	1.426	1.331	1.259	0.356	0.760	0.871	0.998	1.196	1.327	1.457	1.4256	1.7107
10	1.307	1.228	0.687	1.093	1.685	1.616	1.624	1.267	1.331	1.259	0.642	0.760	0.871	0.998	1.277	1.327	1.447	1.4256	1.8394
11	1.307	1.184	1.026	1.469	1.756	1.552	1.624	1.267	1.331	1.034	1.497	0.760	0.871	0.998	1.277	1.327	1.140	1.4256	1.9958
12	1.307	0.887	0.950	1.501	1.746	1.996	1.485	1.267	1.647	1.517	1.497	0.998	1.125	0.998	1.277	1.426	1.140	1.4256	1.9958
13	1.402	0.919	0.950	1.511	1.647	1.996	1.267	1.267	1.806	1.517	1.497	1.236	1.125	1.236	1.166	1.283	1.140	1.6236	1.9562
14	1.382	0.950	0.950	1.521	1.612	1.996	1.267	1.267	1.711	1.497	1.584	1.236	1.125	1.236	1.107	1.283	1.140	1.7622	1.9166
15	0.855	0.950	1.263	1.491	1.560	1.996	1.267	1.485	1.695	1.457	1.643	1.117	1.125	1.236	1.047	1.283	1.140	1.8414	1.9562
Average	1.0726	1.1374	1.1025	1.2543	1.4525	1.7250	1.5241	1.4969	1.5605	1.3526	0.7025	1.0402	0.8635	1.0425	1.0564	1.3337	1.3468	1.5998	1.6860
16	0.000	1.168	1.481	1.491	1.535	1.877	1.267	1.535	1.687	1.378	1.634	1.196	1.362	0.978	1.069	1.283	1.527	1.9008	1.9364
17	0.000	1.366	1.342	1.491	1.455	1.738	1.505	1.564	1.497	1.546	1.568	0.737	1.362	0.871	1.119	1.283	1.622	1.9008	1.9364
18	0.760	1.337	1.477	1.477	1.544	1.837	1.742	1.643	1.497	0.978	1.568	0.598	1.362	0.871	1.089	1.378	1.622	1.9008	1.8117
19	0.978	1.366	1.477	1.140	1.554	1.667	1.742	1.693	1.358	0.000	1.568	0.598	1.323	0.871	0.871	1.378	1.622	1.7424	1.8315
20	1.426	1.366	1.402	1.457	1.614	1.604	1.742	1.703	1.140	0.000	1.568	0.598	1.168	0.871	0.871	1.378	1.622	1.7424	1.6474
21	1.119	1.317	1.497	1.596	1.584	1.671	1.742	1.742	1.140	0.000	1.449	0.978	1.109	0.871	1.109	1.382	1.622	1.9008	1.6573
22	1.402	1.327	1.507	1.507	1.584	1.719	1.742	1.742	0.998	0.000	1.093	0.760	0.950	0.871	1.346	1.432	1.622	1.7424	1.6573
23	1.402	1.327	1.497	1.507	1.584	1.758	1.742	1.663	1.140	0.000	1.236	0.871	1.030	1.089	1.297	1.283	1.622	1.8058	1.6474
24	1.402	0.840	1.536	1.507	1.584	1.768	1.485	1.485	1.140	0.000	0.982	0.871	1.030	1.346	1.297	1.283	1.622	1.786	1.5345
25	1.402	0.935	1.067	1.412	1.584	1.748	1.267	1.267	1.140	0.000	1.140	1.109	1.030	1.346	1.376	1.432	1.622	0.9286	1.5444
26	1.263	0.855	1.119	1.412	1.639	1.663	1.267	1.331	1.140	0.000	0.982	1.109	1.267	1.236	1.376	1.471	1.622	1.4731	1.5345
27	1.045	0.855	1.109	1.402	1.639	1.663	1.267	1.204	1.140	0.000	0.950	1.109	1.267	1.236	1.366	1.396	1.622	1.6414	1.5345
28	1.045	0.855	1.188	1.497	1.639	1.663	1.267	1.331	1.467	0.000	0.950	1.109	1.267	1.236	1.366	1.346	1.657	1.6414	1.5444
29	1.045	0.855	1.188	1.586	1.659	1.485	1.267	1.370	1.616	0.000	1.168		1.267	1.236	1.366	1.376	1.657	1.6315	1.6177
30	0.903	0.855	1.188	1.586	1.659	1.267	1.505	1.766	1.576	0.000	1.426		1.267	1.236	1.327	1.366	1.657	1.6315	1.6177
31	0.808		0.618		1.689	1.267		1.727		0.000	1.245		1.267		1.327		1.647	1.632	
Average	1.0000	1.1083	1.2933	1.4711	1.5967	1.6498	1.5035	1.5479	1.3119	0.2439	1.2830	0.8956	1.2080	1.0776	1.2233	1.3645	1.6240	1.6876	1.6702

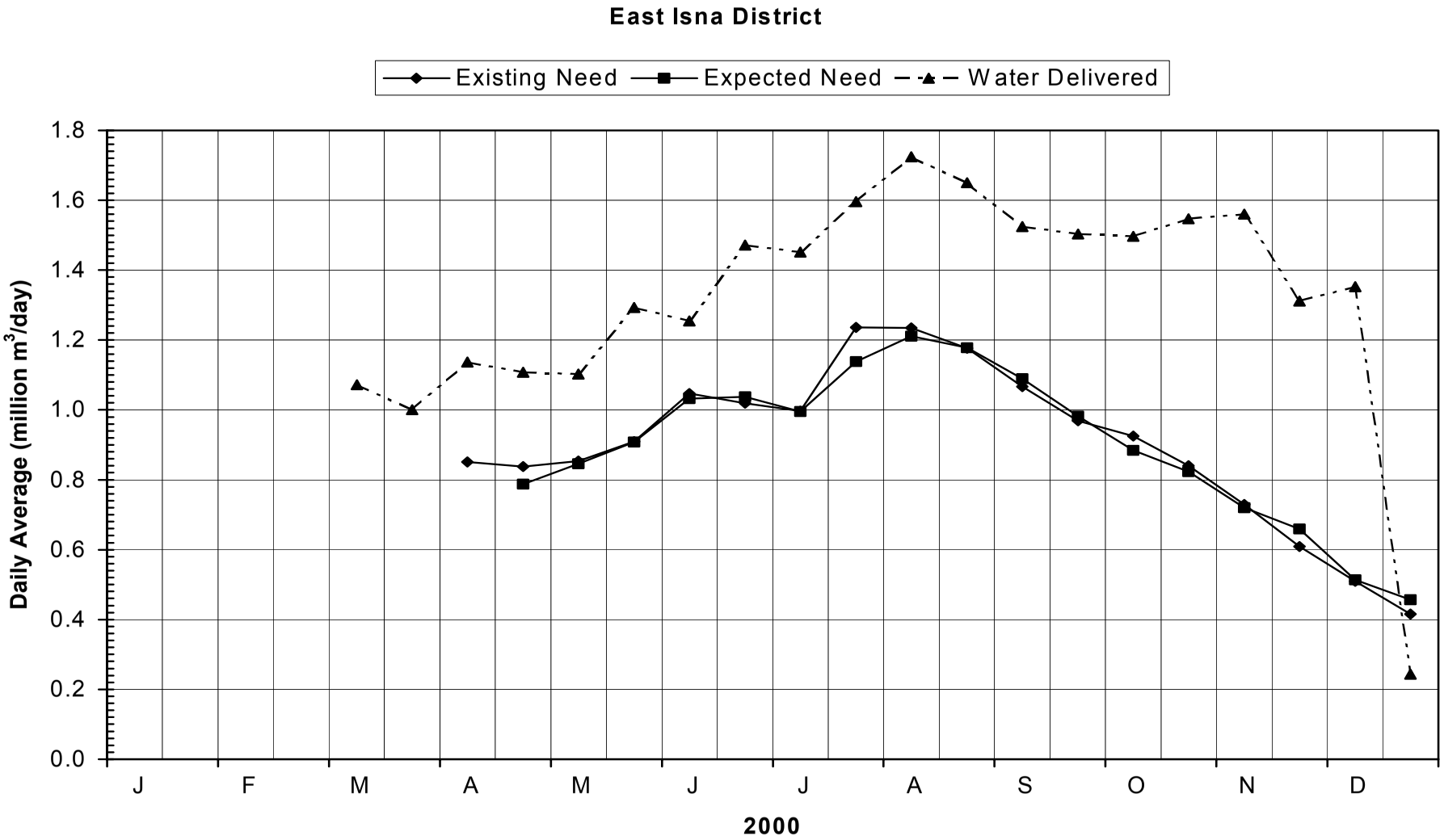


Figure 6-1. Daily crop water needs and water delivered to the East Isna District averaged over each half-month period and expressed as million m^3/day in 2000 (See Chart 1 of file "DEMO – EI" on disk).

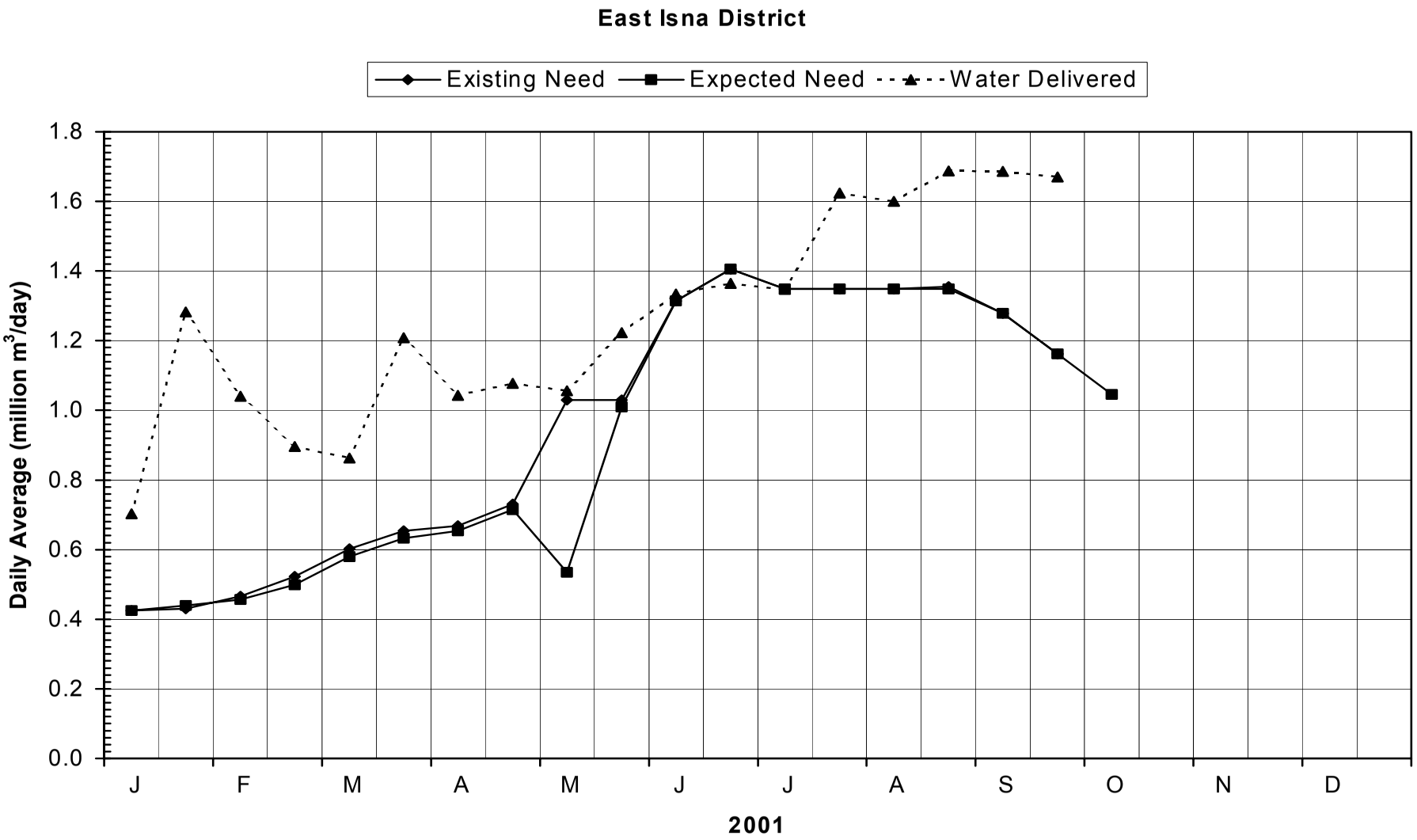


Figure 6-2. Daily crop water needs and water delivered to the East Isna District averaged over each half-month period and expressed as million m^3/day in 2001 (See Chart 2 of file "DEMO – EI" on disk).

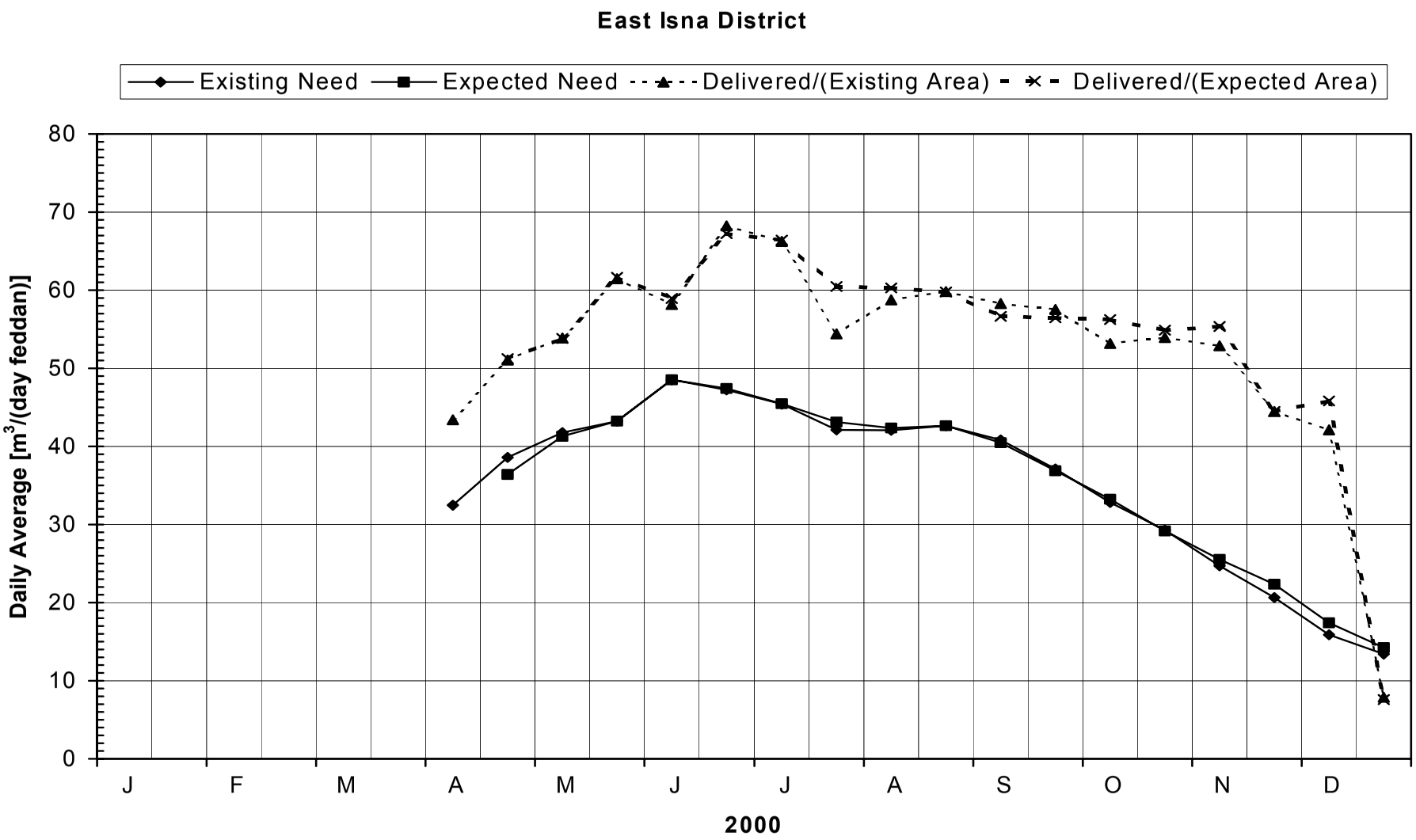


Figure 6-3. Daily crop water needs and water delivered to the East Isna District averaged over each half-month period and expressed as m^3/day per feddan of crop area in 2000 (See Chart 11 of file "DEMO – EI" on disk).

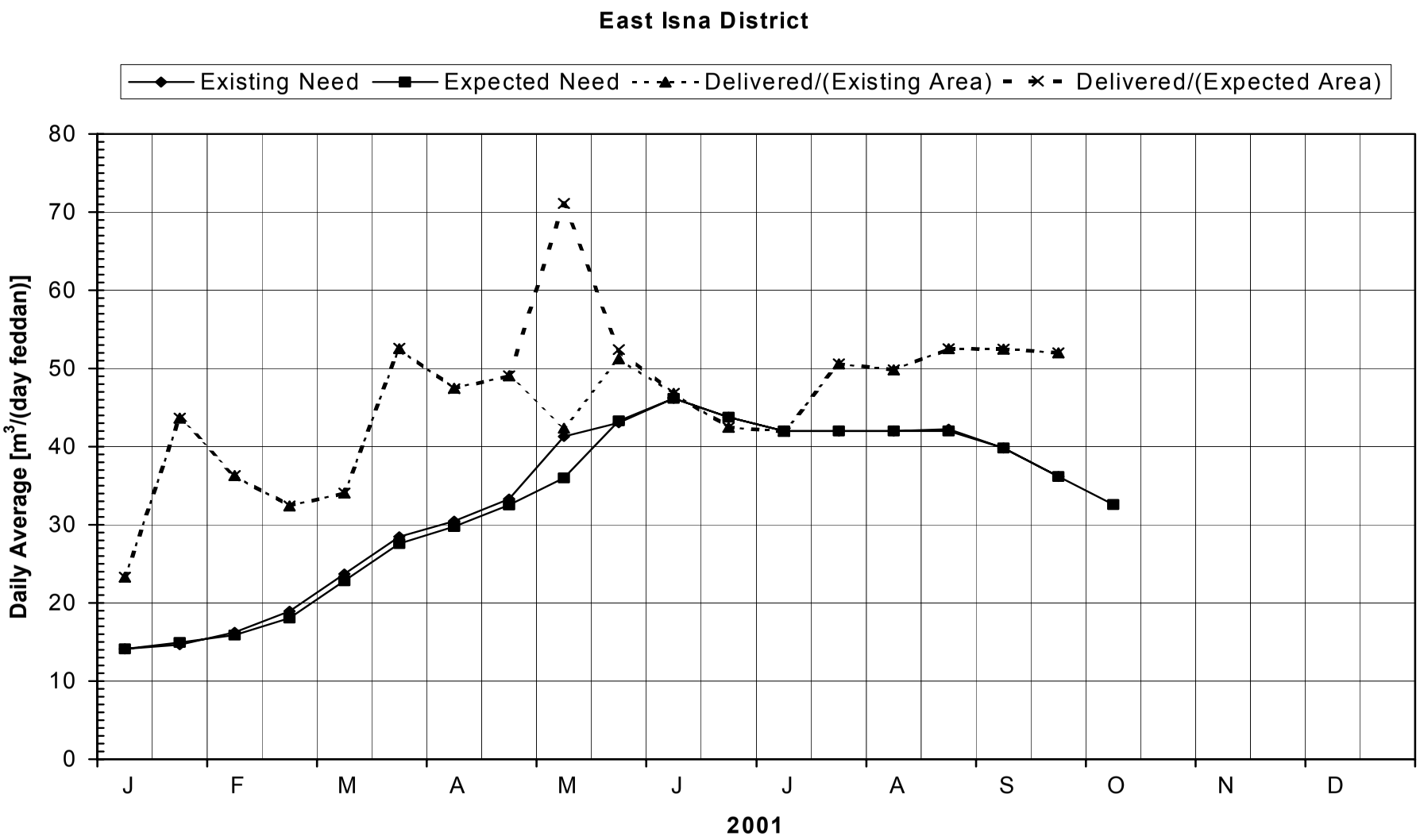


Figure 6-4. Daily crop water needs and water delivered to the East Isna District averaged over each half-month period and expressed as m^3/day per feddan of crop area in 2001 (See Chart 12 of file "DEMO – EI" on disk).

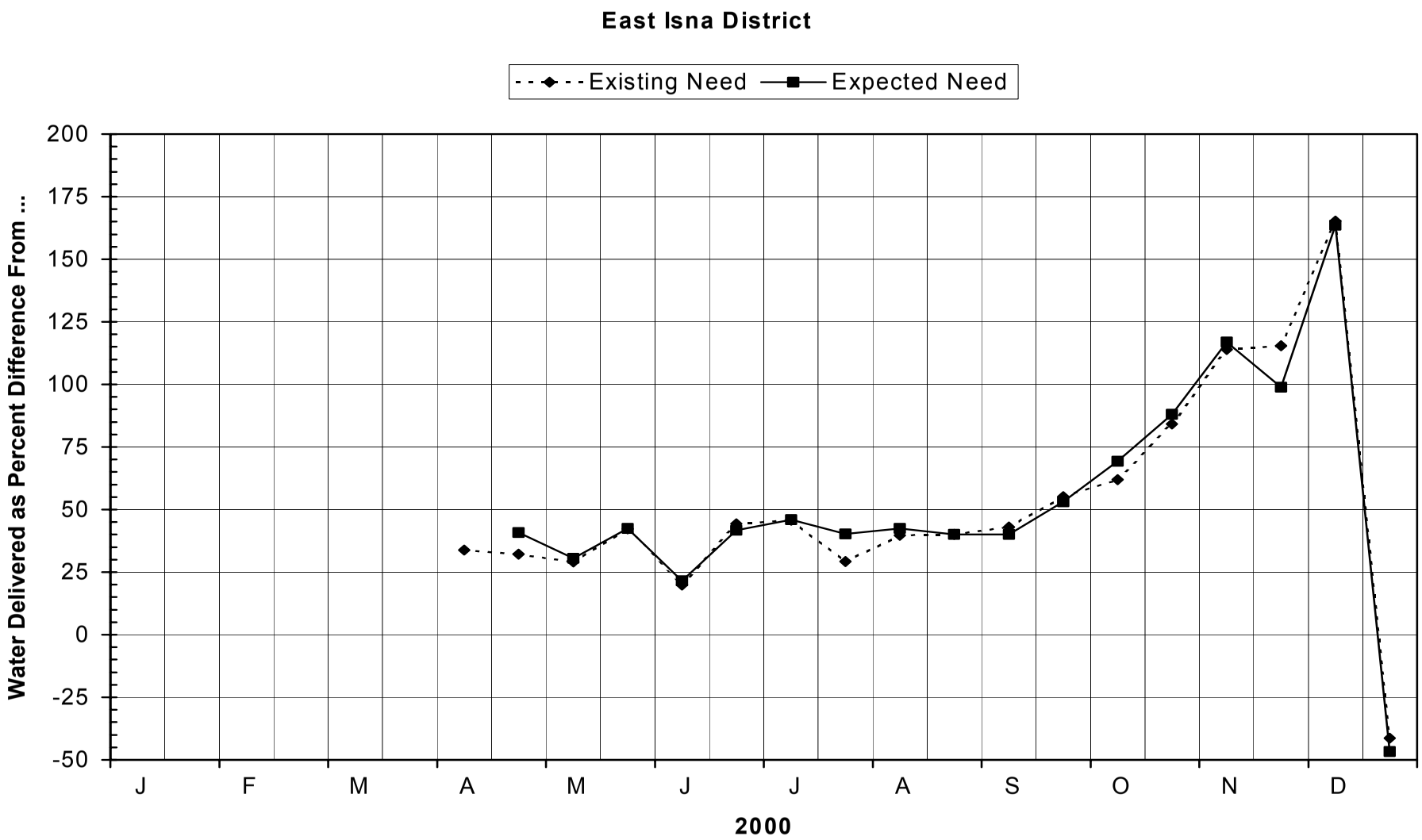


Figure 6-5. Percent difference of daily water delivered from crop water needs of existing crops and expected crops in the East Isna District averaged over each half-month period in 2000 (See Chart 21 of file "DEMO – EI" on disk).

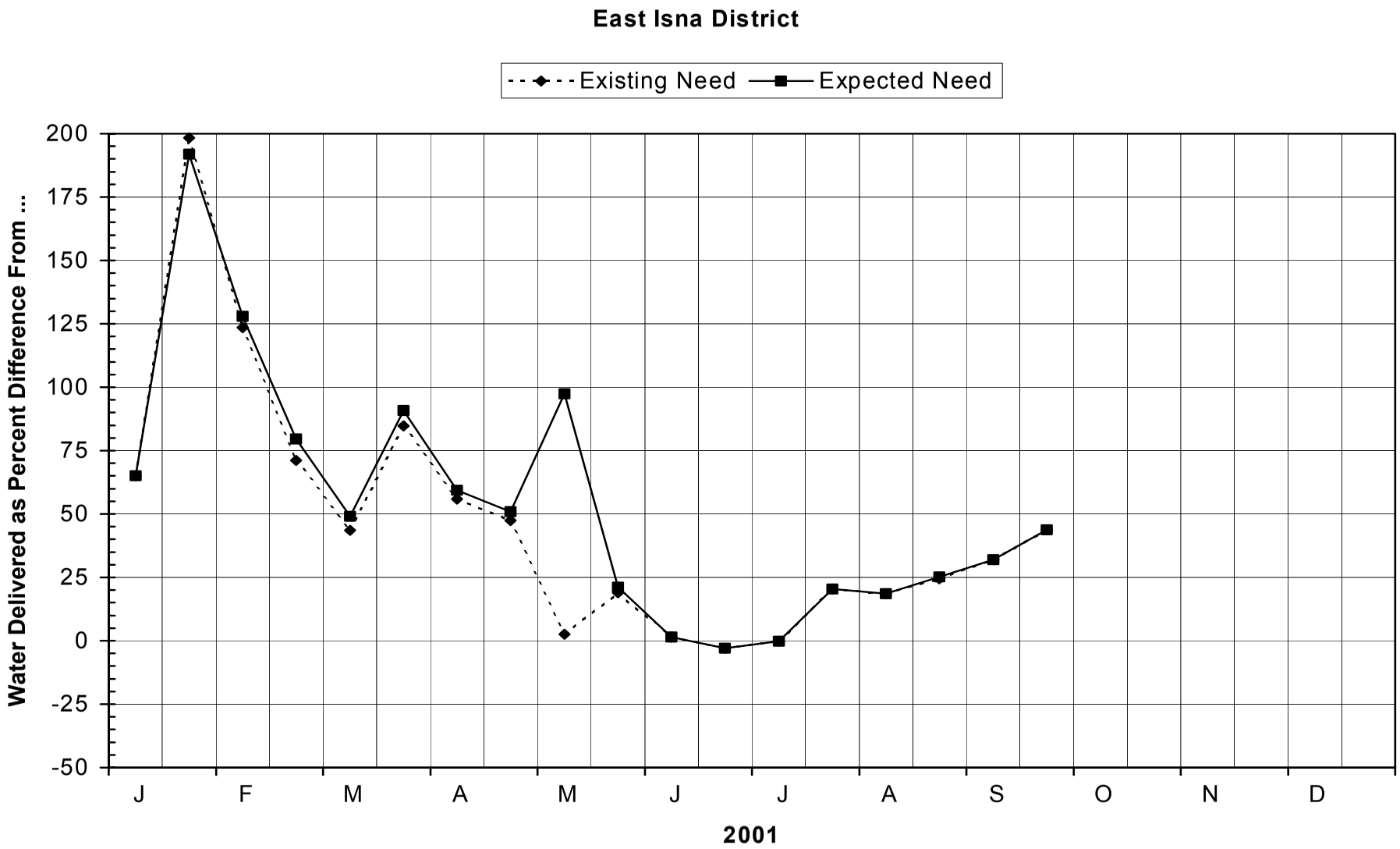


Figure 6-6. Percent difference of daily water delivered from crop water needs of existing crops and expected crops in the East Isna District averaged over each half-month period in 2001 (See Chart 22 of file "DEMO – EI" on disk).

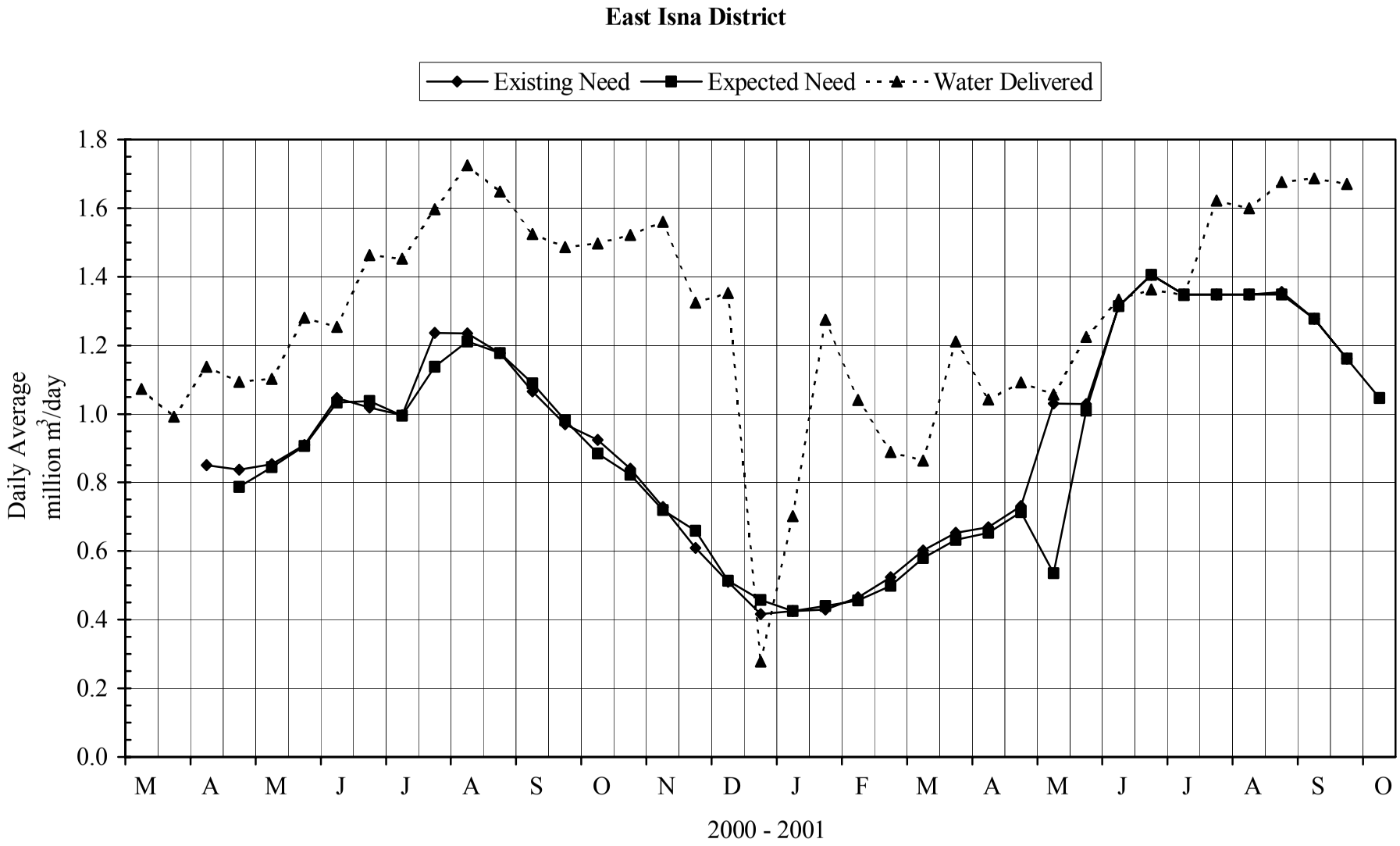


Figure 6-7. Daily crop water needs and water delivered to the East Isna District averaged over each half-month period and expressed as million m^3/day from March 1, 2000 through October 15, 2001.

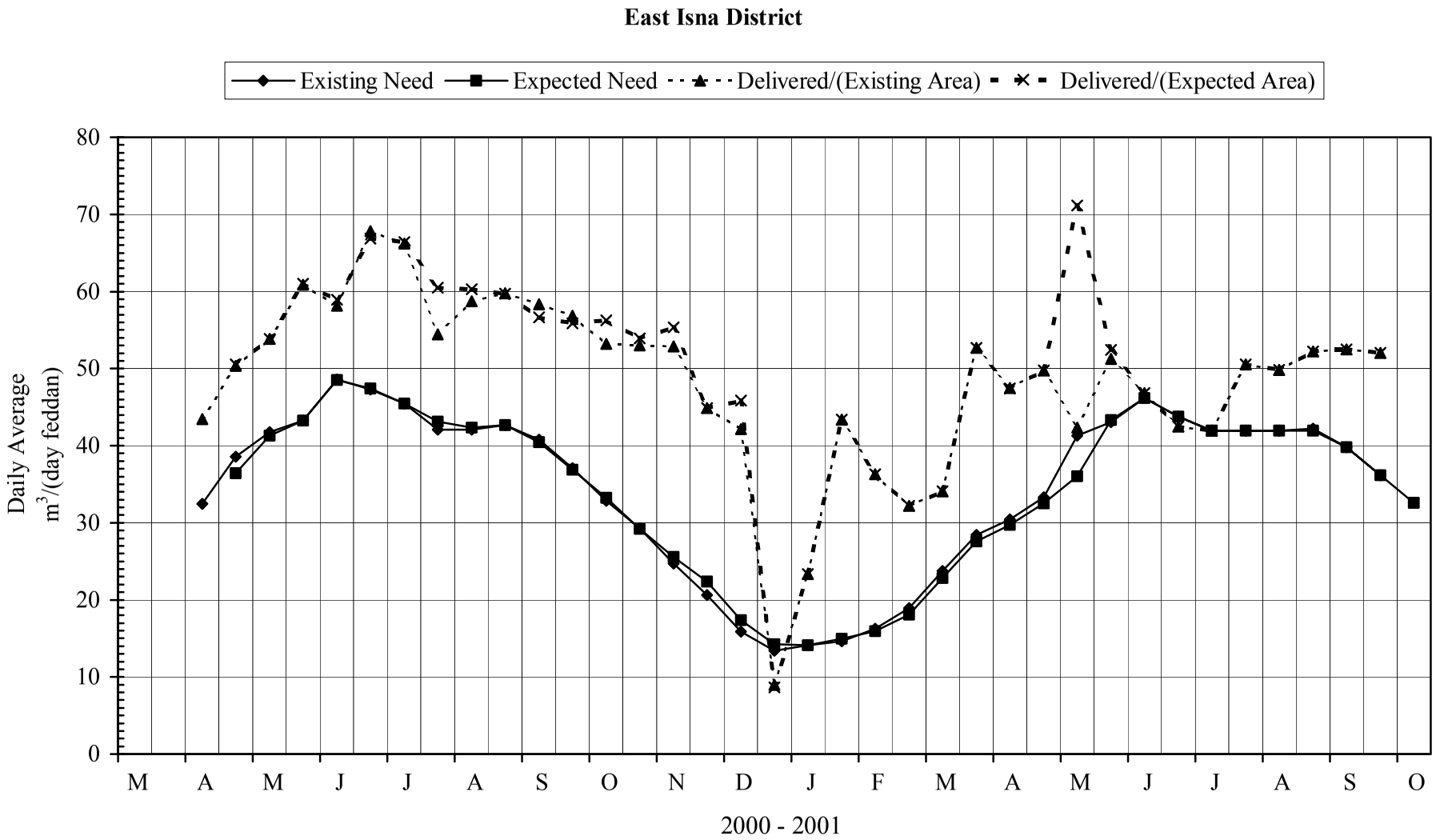


Figure 6-8. Daily crop water needs and water delivered to the East Isna District averaged over each half-month period and expressed as m^3/day per feddan of crop area from March 1, 2000 through October 15, 2001.

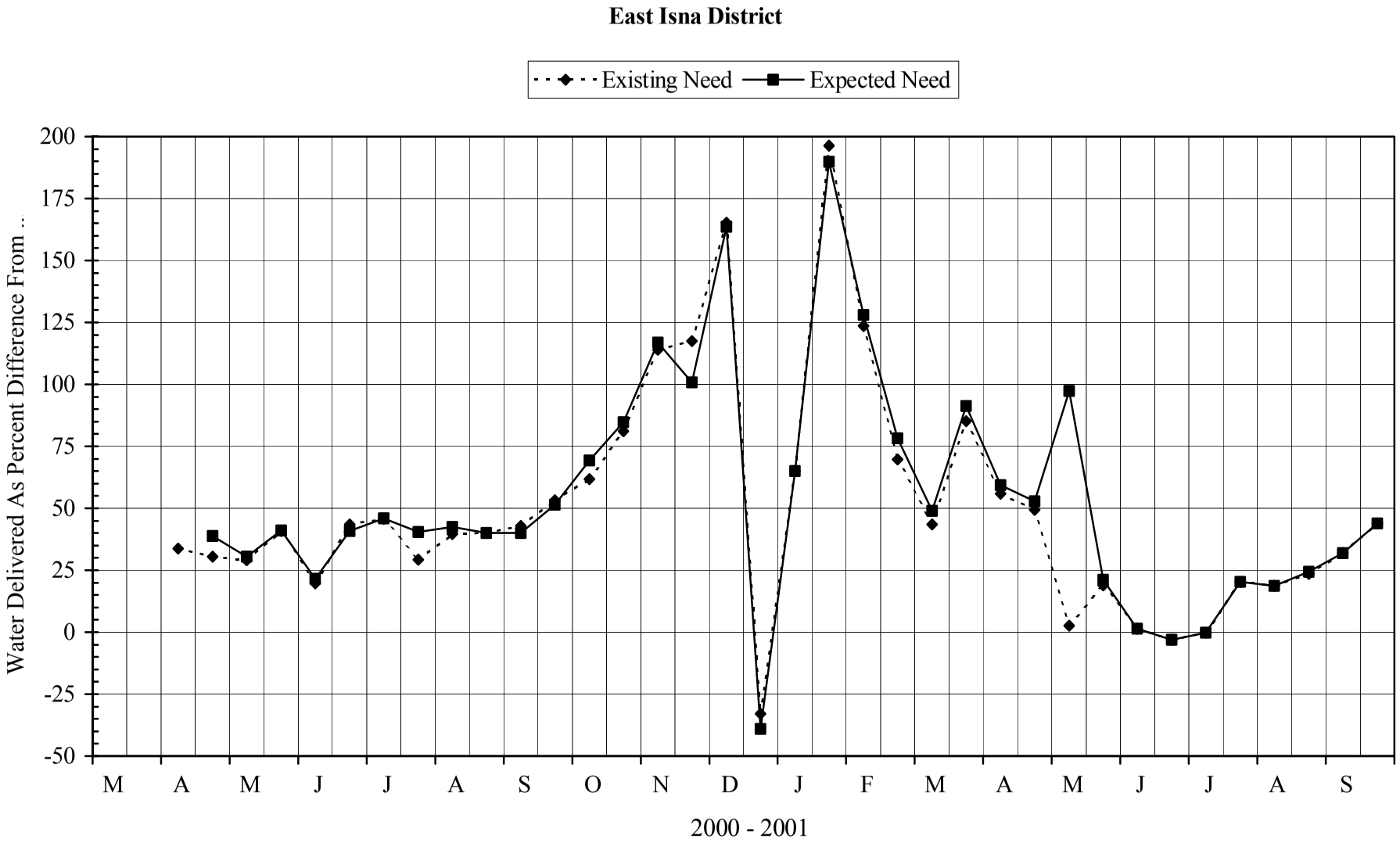


Figure 6-9. Percent difference of daily water delivered from crop water needs of existing crops and expected crops in the East Isna District averaged over each half-month period from March 2000 through September 2001.

7 Crop Water Needs Microsoft Access User's Manual

7.1 Introduction

This chapter presents a user's manual for the Microsoft Access tool for estimating actual (current or existing) and expected crop water needs at the district level. This is Version II of the Microsoft Excel tool described in Chapters 4, 5, and 6, and uses the same fundamental equations and approach to calculation of crop water needs. On a semi-monthly basis, the Ministry of Agriculture and Land Reclamation (**MALR**) has developed an Access tool for aggregating crop areas from the hood up to the canal level within the agricultural administrative unit or units within the irrigation district. The output of this tool is communicated to the irrigation district of the Ministry of Water Resources and Irrigation (**MWRI**). The district then calculates the canal water needs based on the submitted cropping pattern and, in turn, submits these needs to the general irrigation directorate, which again communicates water needs reports to upper levels of water distribution of **MWRI**. Activities required by **MWRI** includes entering semi-monthly cropping pattern data, calculating water needs for canals serving the districts, generating reports/graphical data presentations, and finally sending these reports to the general directorates via e-mail.

The objective of developing the Access tool is to provide **MWRI** district engineers with an automated, user friendly, and practical tool for implementing the national MISD policy in their districts.

Chapters 4, 5, and 6 of this report present the Crop Water Needs model and user's manual for the Excel version. In this chapter, the user's manual for the Access version is presented. Chapter 8 is devoted to presentation of examples of results and calculations from the Access version. It is not intended in these two chapters to present the technical model for calculating water needs, however, the user is advised to refer to the Excel version guide whenever it is required to understand the model's specific theory and relevant equations (See also APRP Water Policy Program Report 45, December 2001).

7.2 Background

The water needs tool is developed using the Microsoft Access database programming language. This is one of the Microsoft Office programs used in developing integrated, relational databases. The Access tool is developed under Arabic Windows 2000 and utilizing Microsoft Office 2000. The Access development tool uses Visual Basic coding language and SQL database query language. The main feature of Access is that it is a visual programming language, a language fully compatible with the Microsoft Windows environment. This feature provides a powerful tool for the programmer whose intention is to tailor a flexible user interface for a specific model.

All objects (main screens/forms, menus/sub-menus, text and graphical reports) developed for the water needs model are designed to display in the English language. However, in further developments of this tool, those objects can easily be translated to display in Arabic. It is to be noted that, since this version is developed under the Arabic Windows environment, there is no problem in using Arabic numerals of the operating system. In this case report headings, Access objects will still appear in English, while numbers will display and print in Arabic.

7.3 Software Requirements and Installation

7.3.1 Software Requirements

The program is developed using Microsoft Access 2000, therefore it should be installed under Arabic Windows 98/2000/NT operating system and Microsoft Office 2000. It is recommended that Microsoft Outlook be installed on the computer running this tool. The program can be installed on any PC configuration that runs both Microsoft Windows and Office 2000 without memory problems.

Applications developed with Access have the extension ".mdb" in the development phase. Until the beta version of this tool is verified, the program should be run with Microsoft Access installed on the district's computer. When this version is completely tested it can be transformed to ".mde" file where the user, or even the system manager, can not change the design of the interface and data base objects. The crop water needs tool can then be transformed to a ".exe" file which runs independent of Microsoft Access.

The program is distributed on 1 floppy disk (**Disk 2 attached to this report**) that contains the following files:

1- MISD_Tool.zip, a compressed file of the water need Access application.
2- Winzip32.exe file, this is the program that will be used to extracts the .mdb file.

7.3.2 Installation

To install the program, the user should follow the following procedure:

1. Copy all files to the application folder on the MISD computers of the irrigation districts. In order to have a standard file structure for MISD computers, it is advised that the folder should be created under a main directory named MISD and be given the name application. All files therefore, will be located in the directory named "\MISD\application".
2. Click on winzip.exe icon to run the unzip program and ask it to extract the water needs program from the MISD-Tool .zip file and put it on the folder named MISD\ application.
3. Once the MISD-Tool.zip file is decompressed an icon having the name "MISD-Tool.mdb" will display in the same folder. This is the water needs access tool which shall be used later to analyze MISD data. MISD-tool.mdb contains database tables, water requirement model and reports required to accomplish all MISD activities.
4. Install Microsoft Outlook on the computer running this tool.
5. Configure/add the district's e-mail account on Microsoft Outlook.

7.4 District Configuration

7.4.1 Data Types

There are two types of data relevant to this tool. First, "static data" describe and configure the district's specific system. Static data define the district canal system and include an exhaustive list of the crops to be cultivated in the district throughout the year together with the other crop related definitions. Weather data are also considered as static data since they

should be updated every few years whenever an update of the average monthly (or semi-monthly) rainfall in the district is available.

The second data type is the so called "dynamic data", these include historic current/expected cropping pattern data entered through the user interface to the data base, the current /expected water needs data calculated based on both current and expected historic crop pattern data, respectively. Here, the semi-monthly crop pattern data of all district canals are considered as dynamic data. These are the semi-monthly data submitted by the **MALR** administrative unit to district engineers twice each month.

7.4.2 Operation Modes

There are two modes for running this application, the first is the system manager's mode, while the second is the user's mode. Until the system is completely tested, the model will be run in the user's mode. In this mode, the user is not permitted to deal with static data. Instead, he can edit dynamic data through the Access user interface developed for this purpose. It is therefore recommended that the first installation and configuration of this tool in any given irrigation district be supervised by engineers of **MWRI** properly trained in the Access version of the crop water needs calculation tool.

7.5 User Interface

The user interface of the water needs Access tool allows the user to accomplish all MISD relevant activities in a user friendly way. Besides, it contains some quality control features that provide the user with validation checks on cropped areas for each canal in the district. In the following few paragraphs, the user is presented with the set of menus and screens developed in this tool.

7.5.1 Main Menu and Welcome Screen

Once the user clicks the icon named "MISD_tool.mdb", a welcome screen displays for a few seconds, this screen contains information about the program license, and technical support contact information. Figure 7-1 shows the welcome screen and the main menu bar of the water needs tool. The menu bar on the top of the screen, contains some built in office items, and items specific to the **MISD** tool.

The built in items are namely the File, Edit, Tools, Windows, and Help items. Those are common tools of Microsoft Office, and will be used in further development of the system. They can also be utilized by the user to issue Windows- and Office-common commands and operations. This screen displays for few seconds to be followed by another window (Access form) that shows the **MISD** procedure that should be followed in order to fully utilize this tool. Figure 7-2 is a snapshot of the procedure form. Each activity in this procedure form has a corresponding menu/pop-up menu item in the user interface of the water needs tool.

7.5.2 Data Entry, Main Menu Item

Through this menu item, the user can accomplish all required data entry operations. Once the user click on the main menu "Data Entry" item, a popup menu displays showing only one choice. That is to display data entry main form. Figure 7-3 shows the main menu bar and the popup menu of the "Data Entry" menu item. When choosing this item, an Access form is

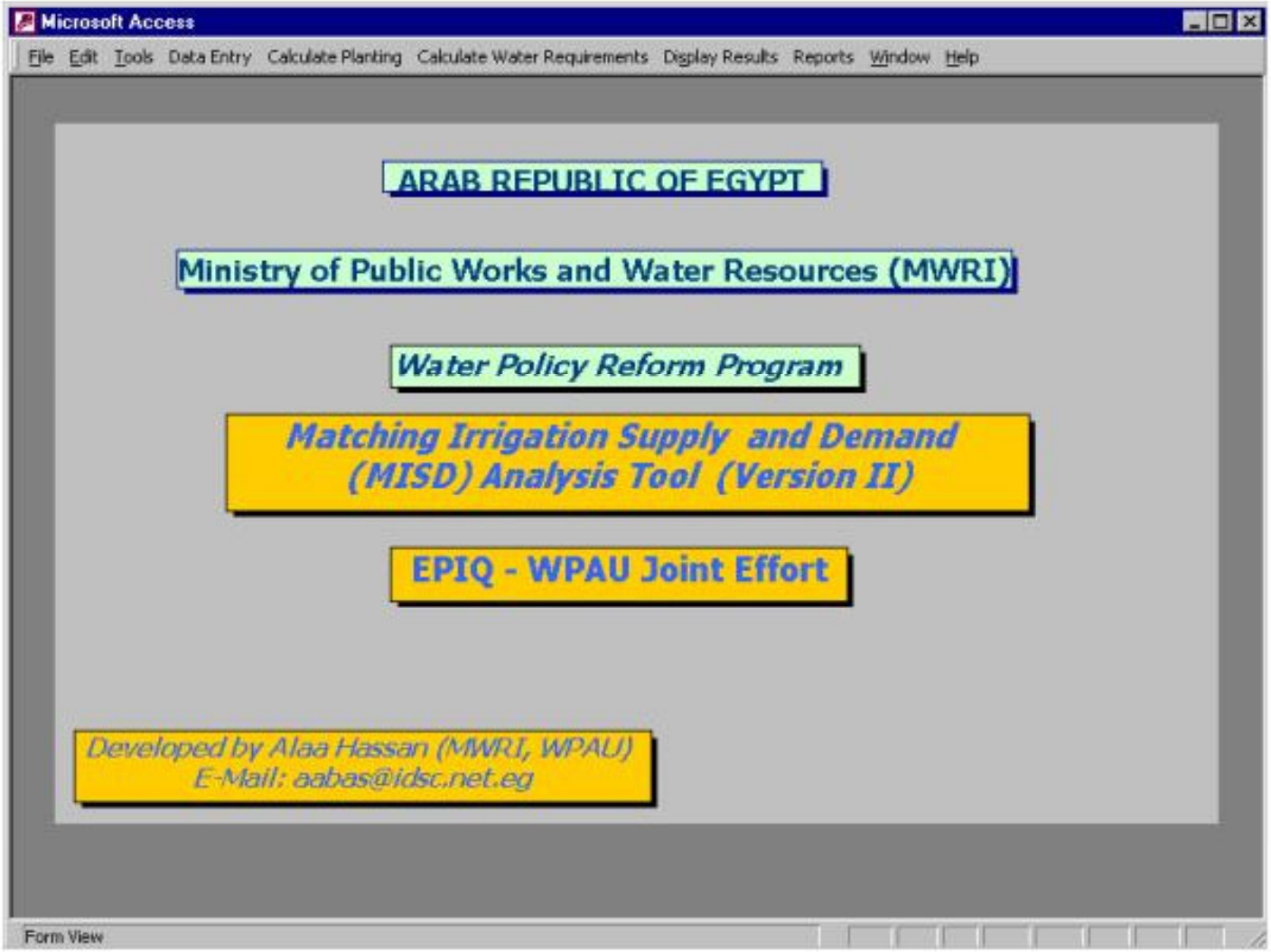


Figure 7-1. Crop water needs tool welcome screen.

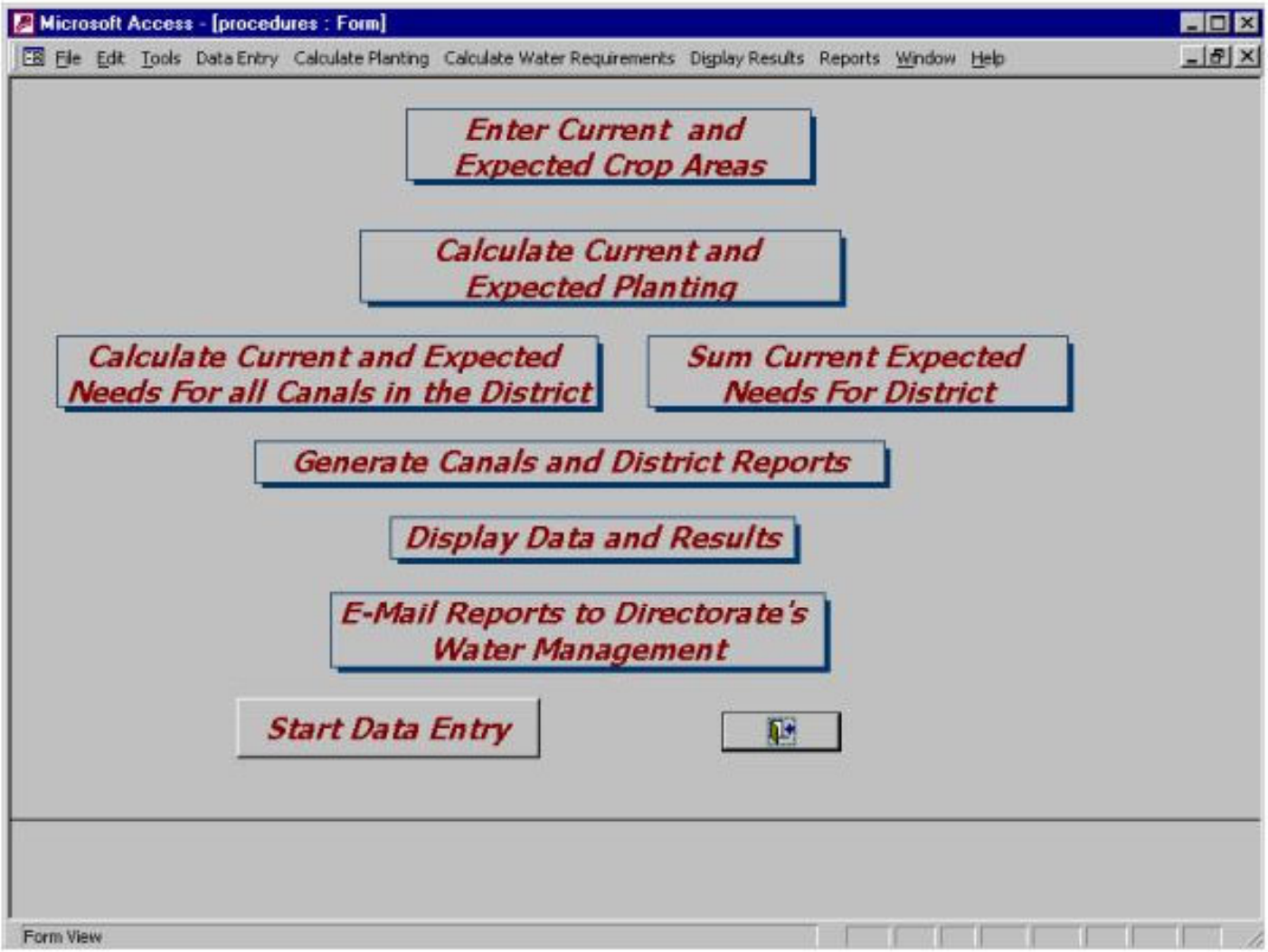


Figure 7-2. Crop water needs tool procedure.

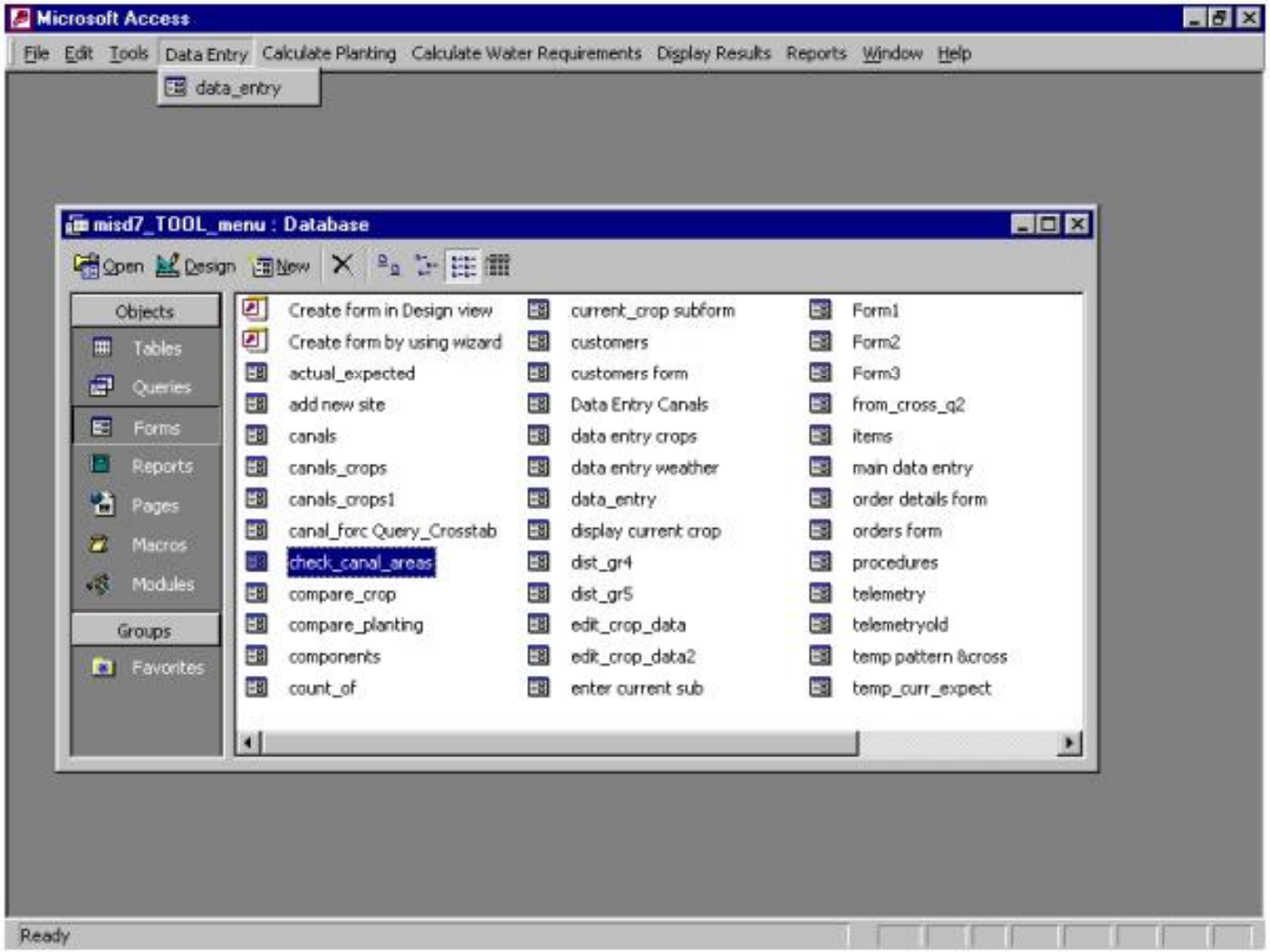


Figure 7-3. Main menu and data entry pop up menu.

displayed to the user showing all possible data entry operations. Figure 7-4 shows the "Data Entry" form with the six options for the user to choose from. The form also displays information for the last period for which crop data are available in the data base, the recommended period for data entry, and the current date and current half-month time period (1 to 24). Out of the six options displayed, four options are enabled, namely the Add New, Edit, Copy and Delete cropping pattern for a specific period of the 24 (half-month) periods of the year. Other operations are only allowed for the system manager and they deal with the editing of district configuration data. The details of each option are as follows:

1- Add New Crop: This option displays a list box having all the crops available in the database for the user to choose from. A note is put on this same form as a reminder for the user to always include Fallow as one of the chosen crops. Figure 7-5 shows the list box displaying all crops available in the current database. When the user chooses the list of crops that needs to be entered, it is automatically assumed that he is editing data for the period following the last period available in the database. Again the recommended period is displayed in the "Data entry" form below the label box titled ***"Recommended time period to add",*** on the two text boxes displaying the year and the time period.

   If the user is regularly entering data, he/she would choose this option during the current period and she/he would be entering data for actual current and next (expected) time periods. Seeing Figure 7-4, one can observe that the last available cropping pattern record in "Abo Hommos" irrigation district of "Behira" general directorate, is the record corresponding to period 13 of the year 2001. The next period to add, therefore, is the 14th period of the same year. The Access tool queries the data base and displays this for user information.

   Note:
   If the current period is the last period in this year, then the next time period will be calculated as the first period (January 1 to 15) of next year.

   Once the user chooses to continue, another form will appear allowing the user to enter cropped areas for all chosen crops and for every canal in the district. Figure 7-6 shows one such data entry form for "Abo Hommos" district and for period 14 of year 2001. The user can scroll through all canals by changing the canal navigation button at the bottom of the form and can scroll through all crops using the crop navigation button at the middle of the form. For this district, 29 canals are configured, and at this time period three crops are only included. For each canal, the user can change the crop name and enter current and expected areas for the crop he chooses.

   This form has a checksum for the canal that the user is currently editing and two text boxes. The first shows the sum of areas entered for the canal while the second shows the area left unregistered for this same canal. This is intended to be a guide for the user in order for her/him to validate that the sum of cropped areas for the current canal should exactly match its total area served. The form also has a checksum button, which displays an "OK" message whenever the canal passes the validation test. It is therefore recommended that ***after entering all data for current canal, the checksum button is pushed for further data validation***.

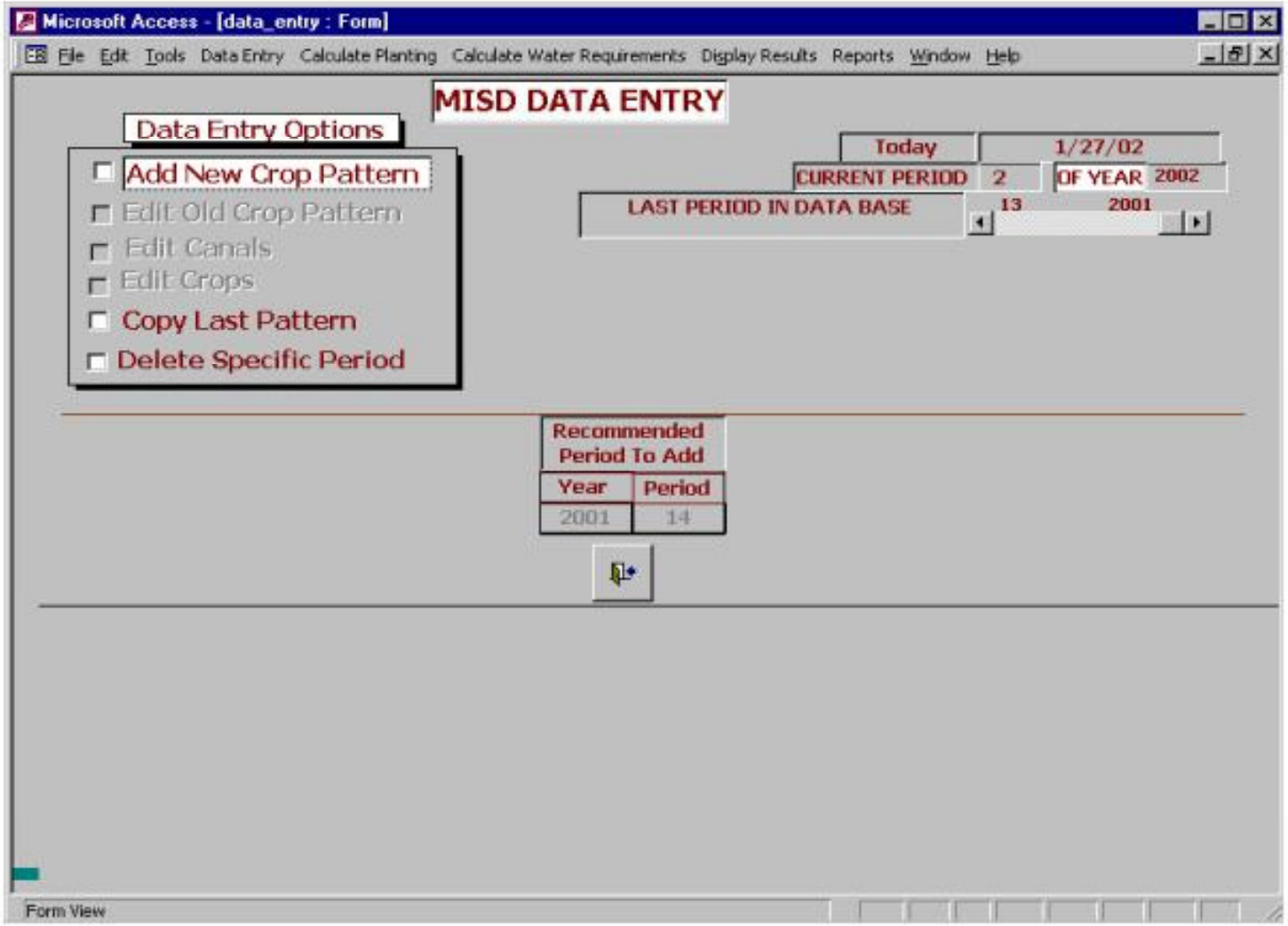


Figure 7-4. Data entry form options.

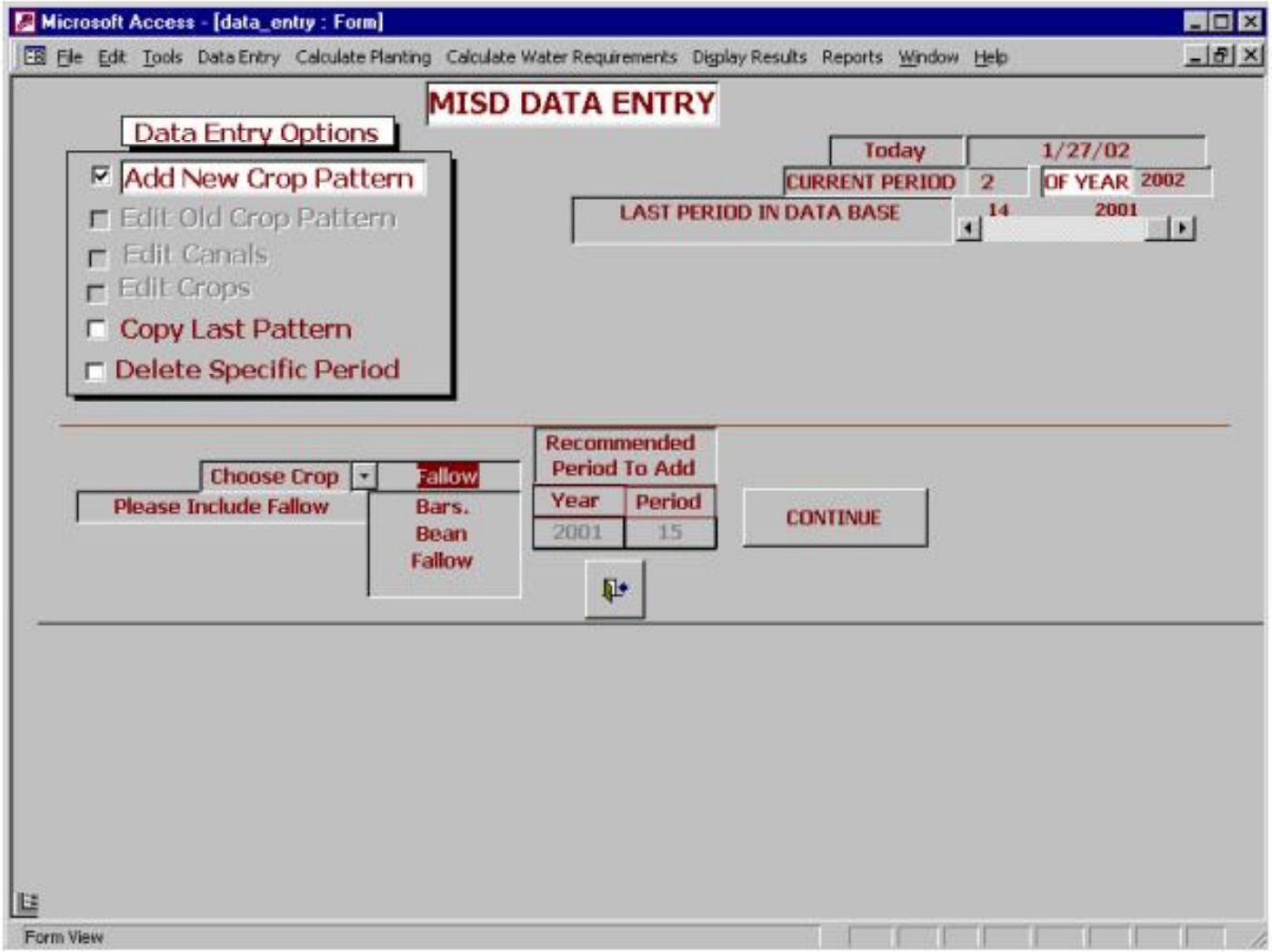


Figure 7-5. User input through the crop list box.

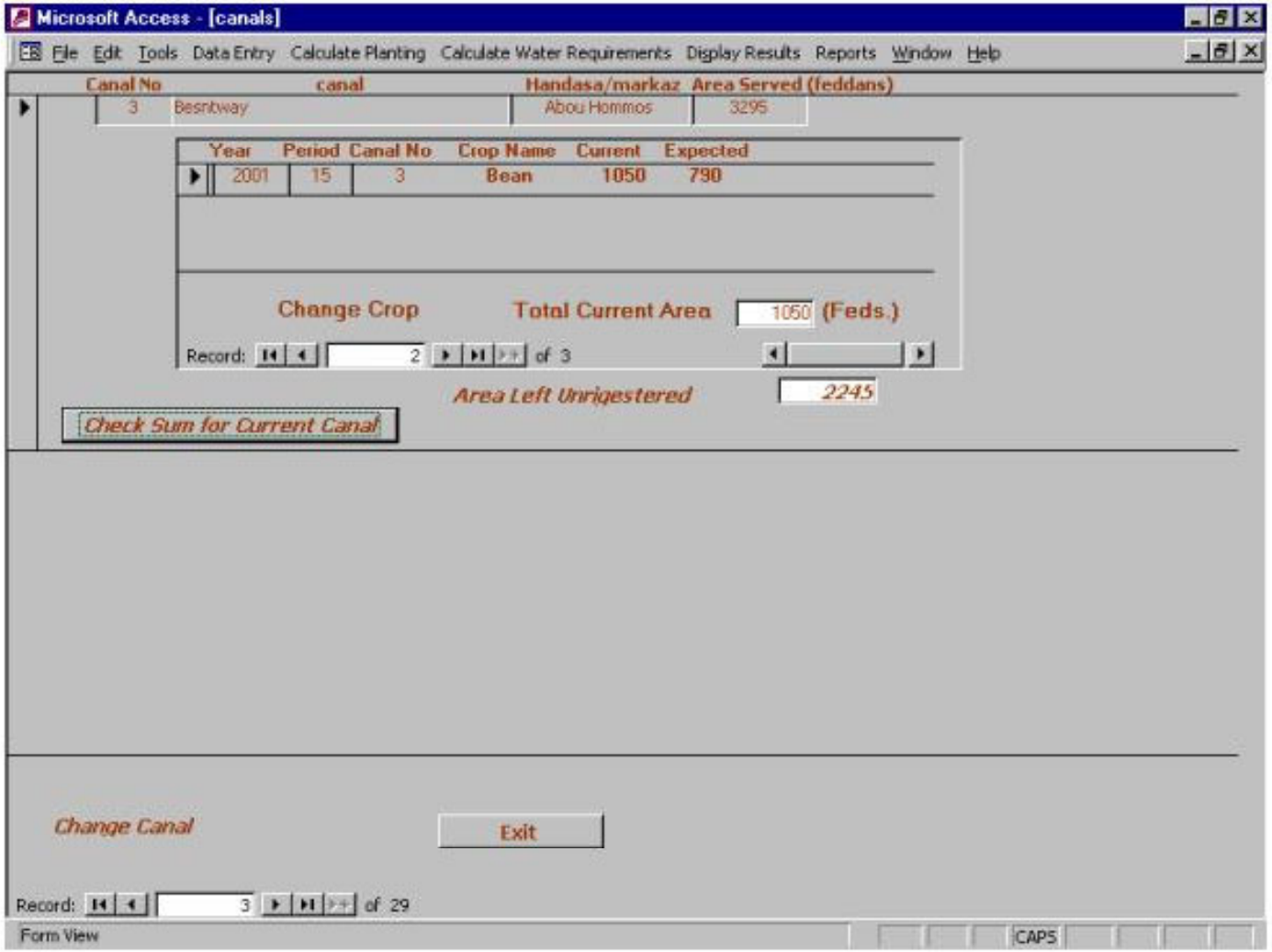


Figure 7-6. Add crop data entry screen one.

It can be seen in Figure 7-6 that the registered area is less than the canals area served, while in Figure 7-7 the match occurs, and a message is displayed saying:

"***Cropped Area Matches Area Served (OK)***"

This message is displayed when the user presses the checksum button after registering areas for all crops irrigated by this canal. If the user wants to quit this form, another similar form occurs, but this time showing the number of unmatched canals and again allowing the user to re-edit those canals. Figure 7-8 shows one such form where only one canal passed the validity check, since the number of unmatched canals is 28.

Again, if the user decides to quit the data entry screen, a form will be displayed for a last validation check. This form is shown in Figure 7-9. This form shows the number of canals failing the checksum together with a list box displaying the list of canal names. The user is then given three save options: (1) quit and delete entered data, (2) return to previous screen, and (3) save the entered data.

2- Edit Old Crop Pattern: Here the user can choose any available period in the database and start editing all canals as shown above. The only difference between this operation and the previous one is that the user here edits old (or previously entered) record (period) – while in option 1, he adds a new period to the database.

3- Edit Canals: This is a part of the district's configuration process, it is only available for the system manager and will be discussed in details in a system manager's manual that is separate from this report. Here, the system manager adds a canal record to the database, the record includes canal names, area served and the district to which the canal belongs.

4- Edit Crops: This is the same as Edit Canals except that, the crop record includes crop ID, name and whether this is a perennial or non-perennial crop.

5- Copy Last Pattern: This feature allows the user to copy the last period's crop data to the current period. It is to be noted that the copy feature does not just allow the user to copy any period to any other one. This is again to preserve continuity in data records and to prevent having gaps in the database. As will be seen in Chapter 8, continuity in the database produces accurate results. When the user chooses this option, the program will start the copy process.

6- Delete Specific Period (Crop Pattern): This option allows for the deletion of data for a certain period. If the user chooses to do so, an Access form will be displayed showing the user all the available periods. Now that period 14 has been edited, the database has records up to period 14 of year 2001, and the recommended period to add is the 15th period of year 2001 (see Figure 7-10). Figure 7-11 shows the form designed for deletion, in this form a list box showing all records available in the database is displayed. The user can choose from the list of available periods, the record for which the cropping pattern is to be deleted.

Note: Gaps in the database are not recommended, the user should always delete last period available in the database and the copy option automatically copies the last available period to a new following one.

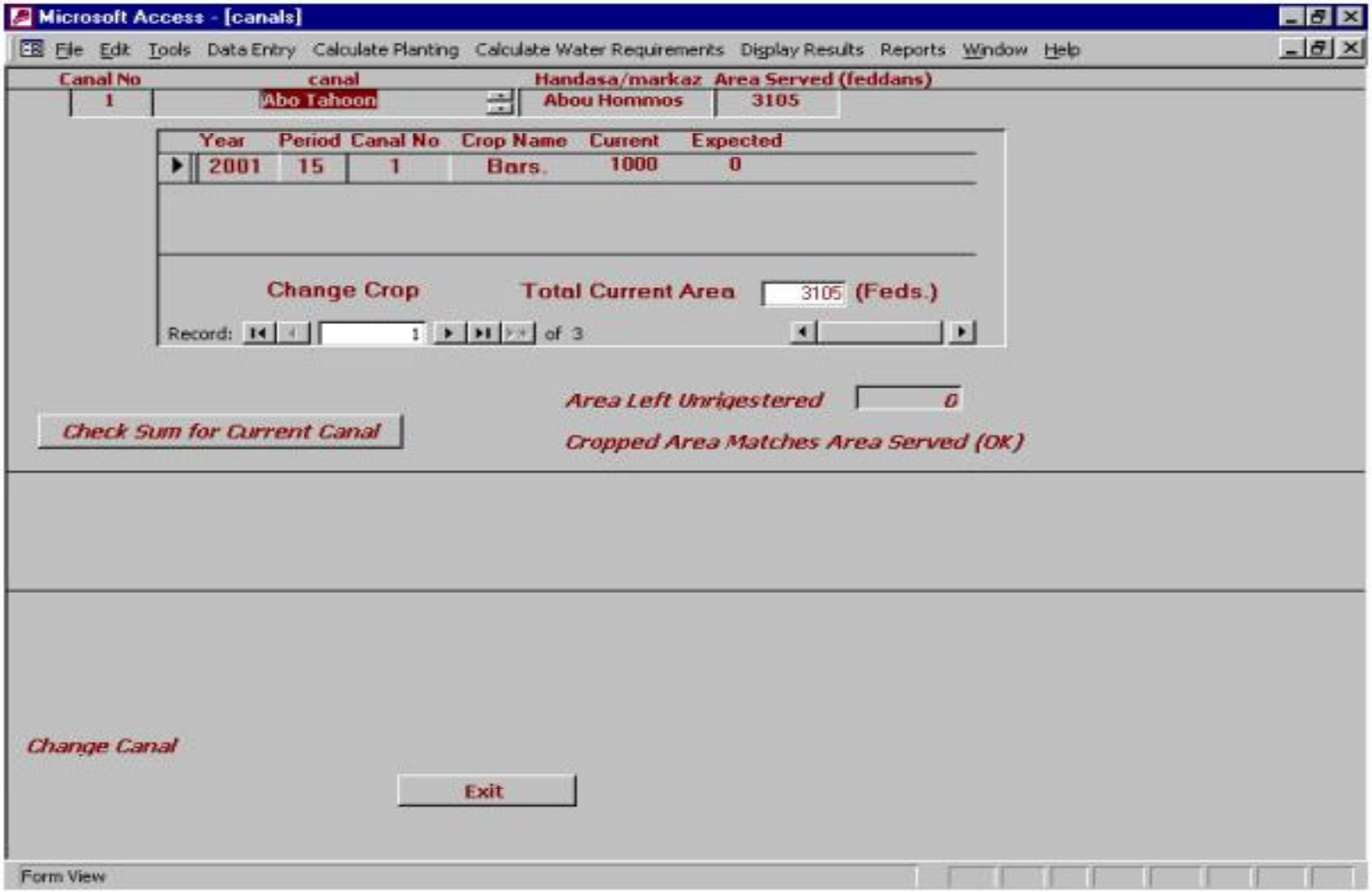


Figure 7-7. Crop entry screen one, canal checksum message.

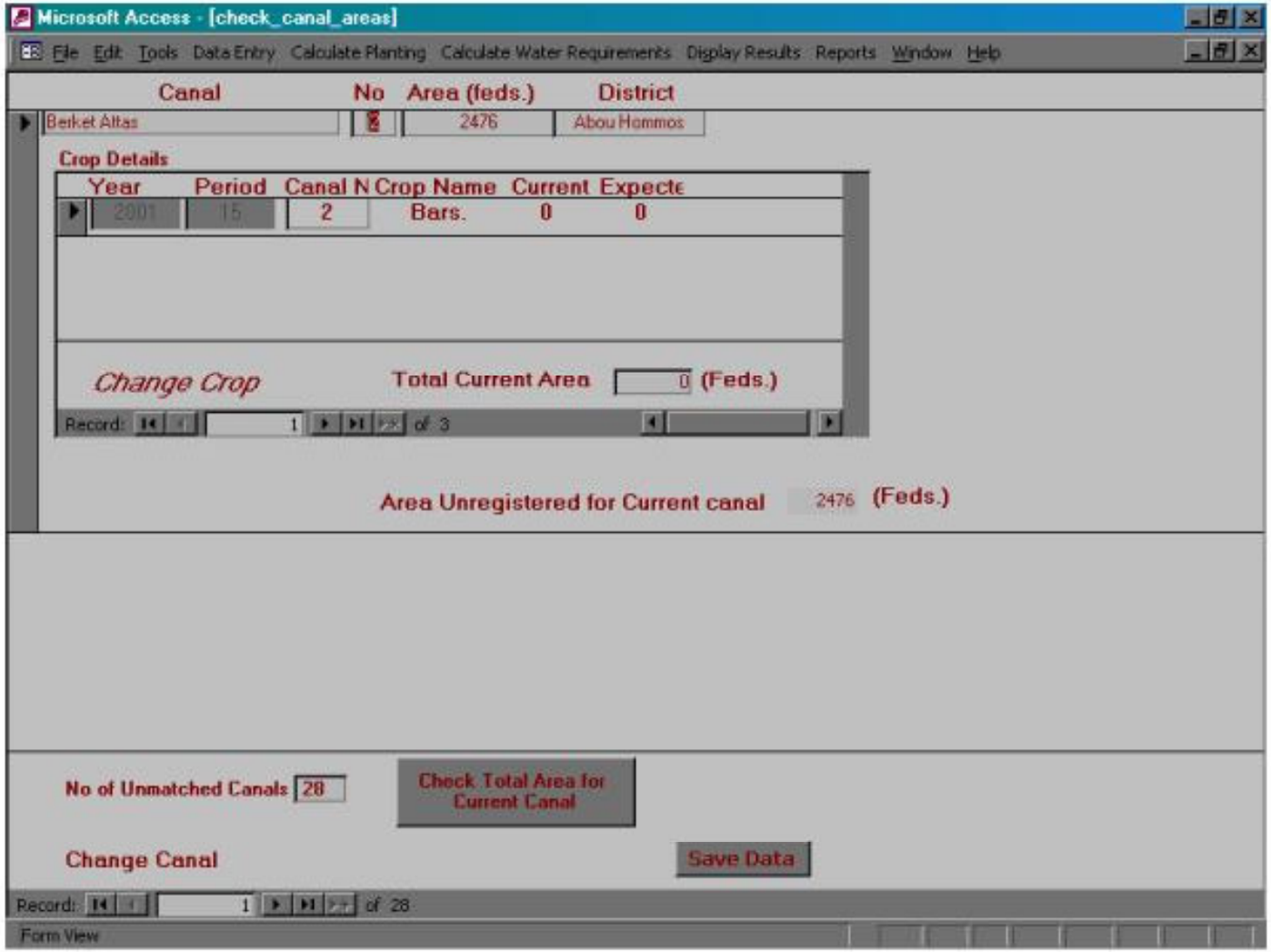


Figure 7-8. Crop entry screen two, number of canals failing validation test.

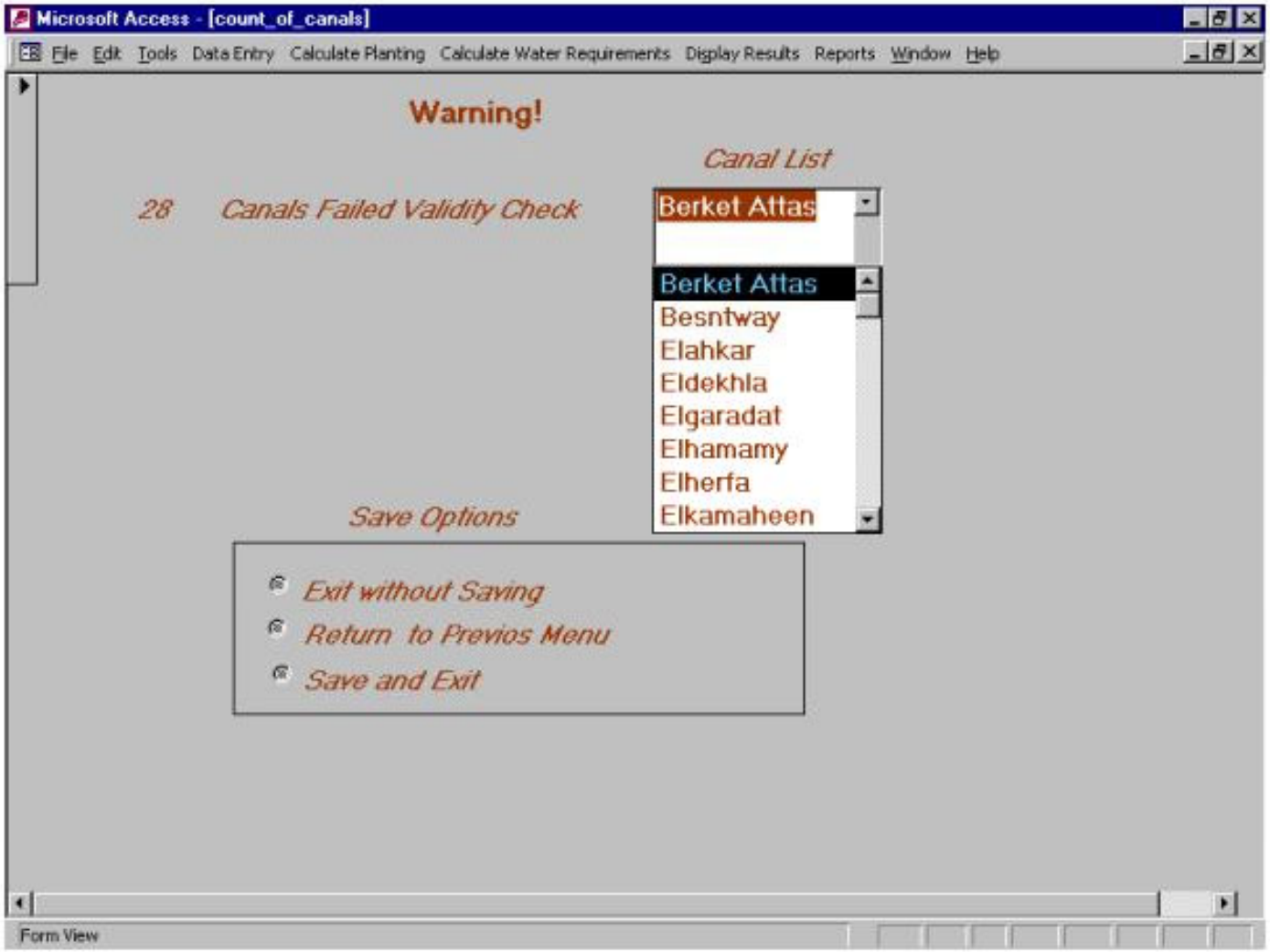


Figure 7-9. List of canals failing checksum and save options.

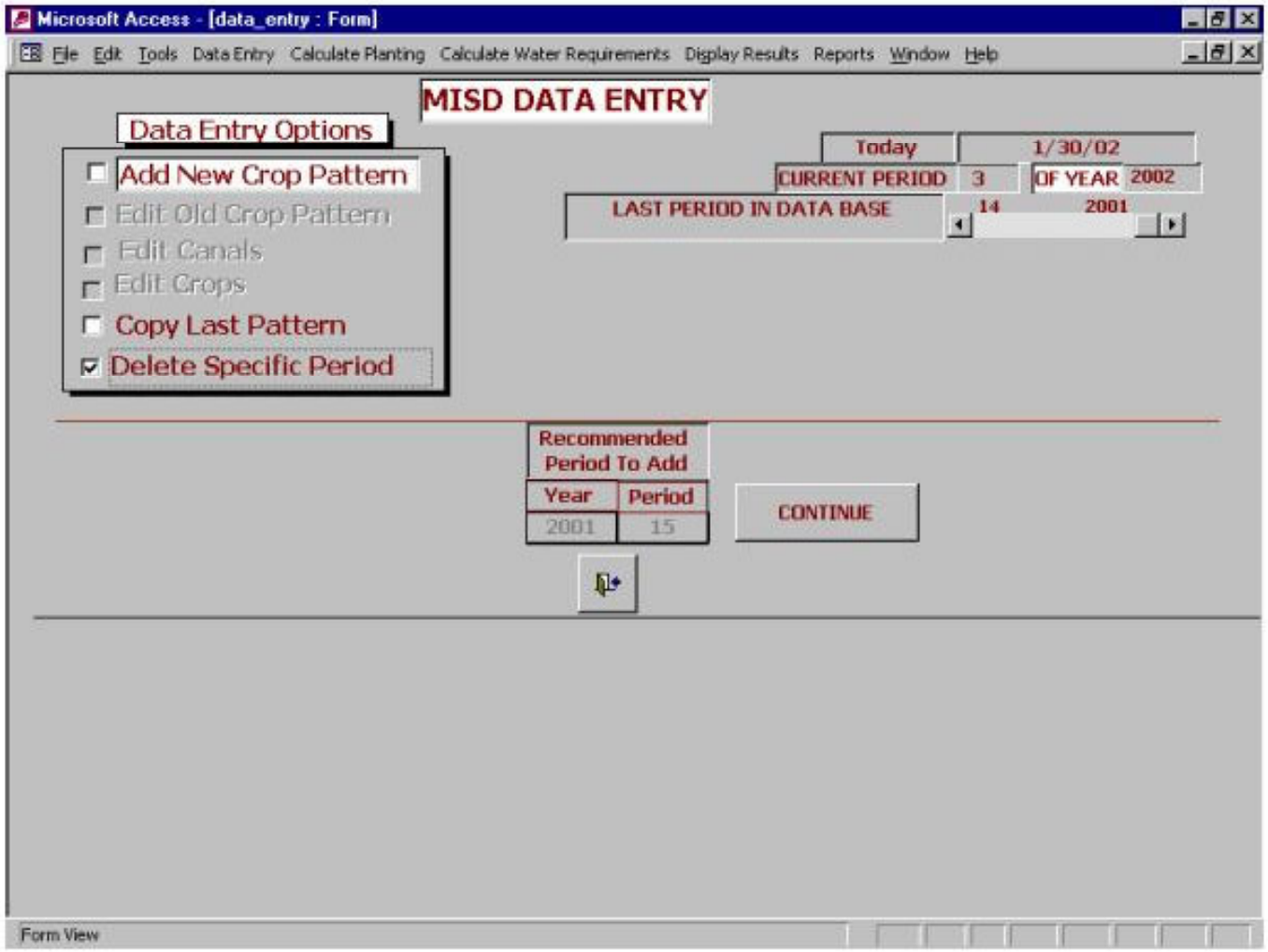


Figure 7-10. Last available data period and period recommended to add.

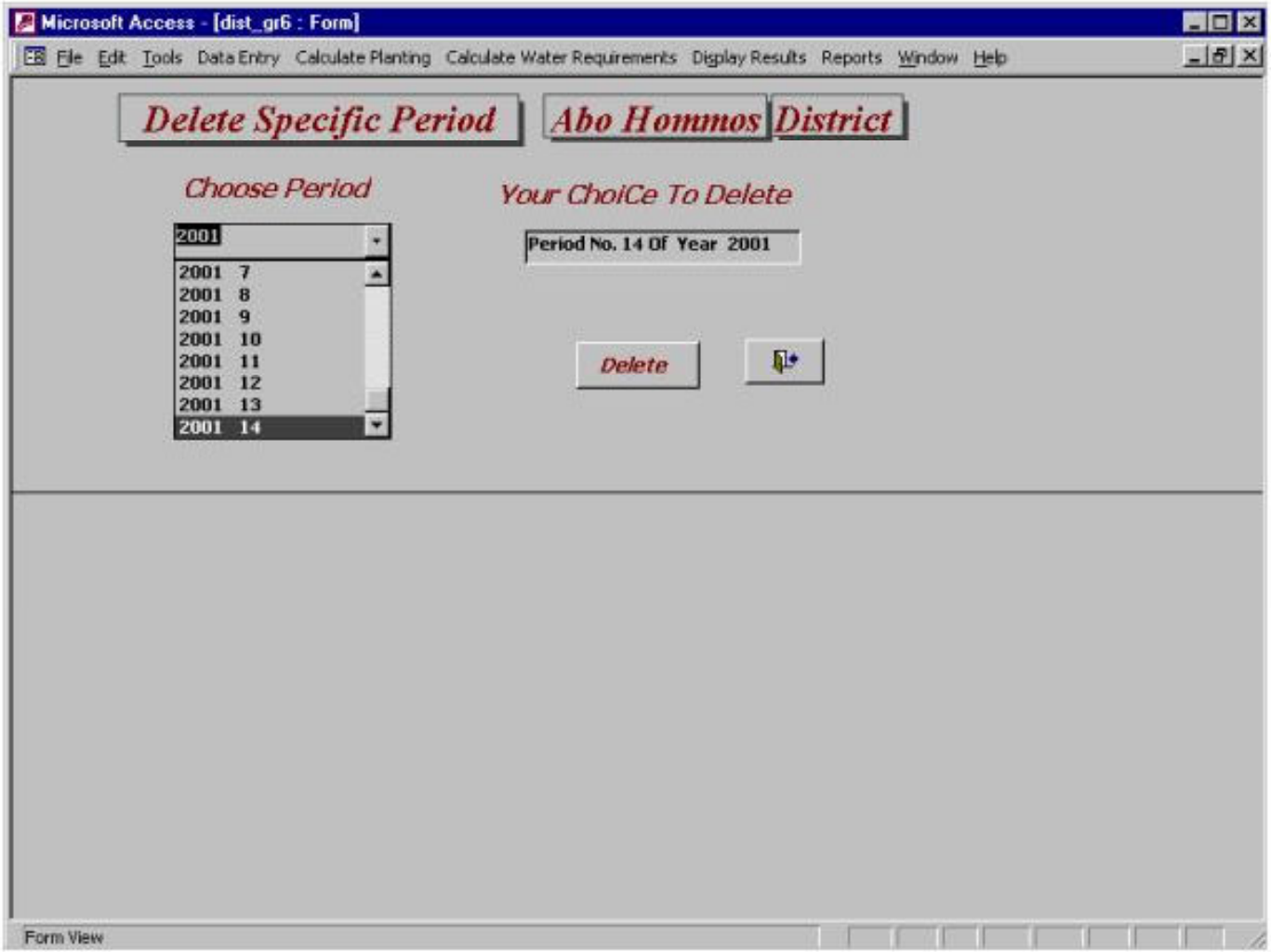


Figure 7-11. Delete option form, list of available periods.

7.5.3 Calculate Planting, Main Menu Item

This is a main menu item that displays a popup menu allowing the user to start calculating planting and expected planting for all available historic patterns. The first is calculated as the difference between current and previous area for each crop and canal. While the second is calculated as the difference between the next (expected) and the current area for each crop and canal in the district. The two items thus initiate two separate calculation procedures and simply prompt the user with a **"Calculation completed"** message after termination (see Figure 7-12).

Note:

1- ***It is recommended to do this step after data entry is accomplished and before water requirements are calculated.***

2- ***Menu items specific to this tool occur in the main menu bar in the order that should be followed for efficient and accurate utilization of this tool. Please refer to the procedures form presented above.***

7.5.4 Calculate Water Requirements, Main Menu Item

Figure 7-13 shows the "Calculate Water Requirements" menu and pop-up menu items. This is also a specific water needs tool, prepared for the user such that he can easily calculate current and expected water requirements, respectively, through first and second pop-up items. This is actually the main purpose of the crop water needs program. It is advised that this step be done after "Calculate Planting" and "Data Entry" activities have been done. The two procedures calculate water needs for all time periods, canals, and crops available in the data base. These two programs are initiated by clicking the pop-up menu items and again the programs display a successful completion message after termination.

Note:

1- ***In order to ensure data integrity, the procedures for calculating current water requirements, initiates planting calculations programs before starting its specific calculation procedure. This is done in order to avoid any discrepancies that may occur if the user forgets to run planting calculation procedures.***

2- ***For detailed information about the model, please refer to Chapters 4 to 6 of this report.***

7.5.5 Display Results, Main Menu Item

Through this item, the user is presented with a tool for observing and analyzing configuration and historic information (see Figure 7-14). There are four groups of information to be displayed through the pop-up menu of this main menu item as follows:

1. Water Requirement Historic Data: This presents a form on which the user can choose the start time (period number and year) and end time for displaying data.
2. Crop Information: This includes graphical and text display information about crop coefficients, comparison of historic crop areas for a certain year, canal, and crop in the data base; and same kind of comparison for expected crop areas.
3. Weather Information: This includes information about semi-monthly values of evapo-transpiration and rainfall depth (mm) within the district.

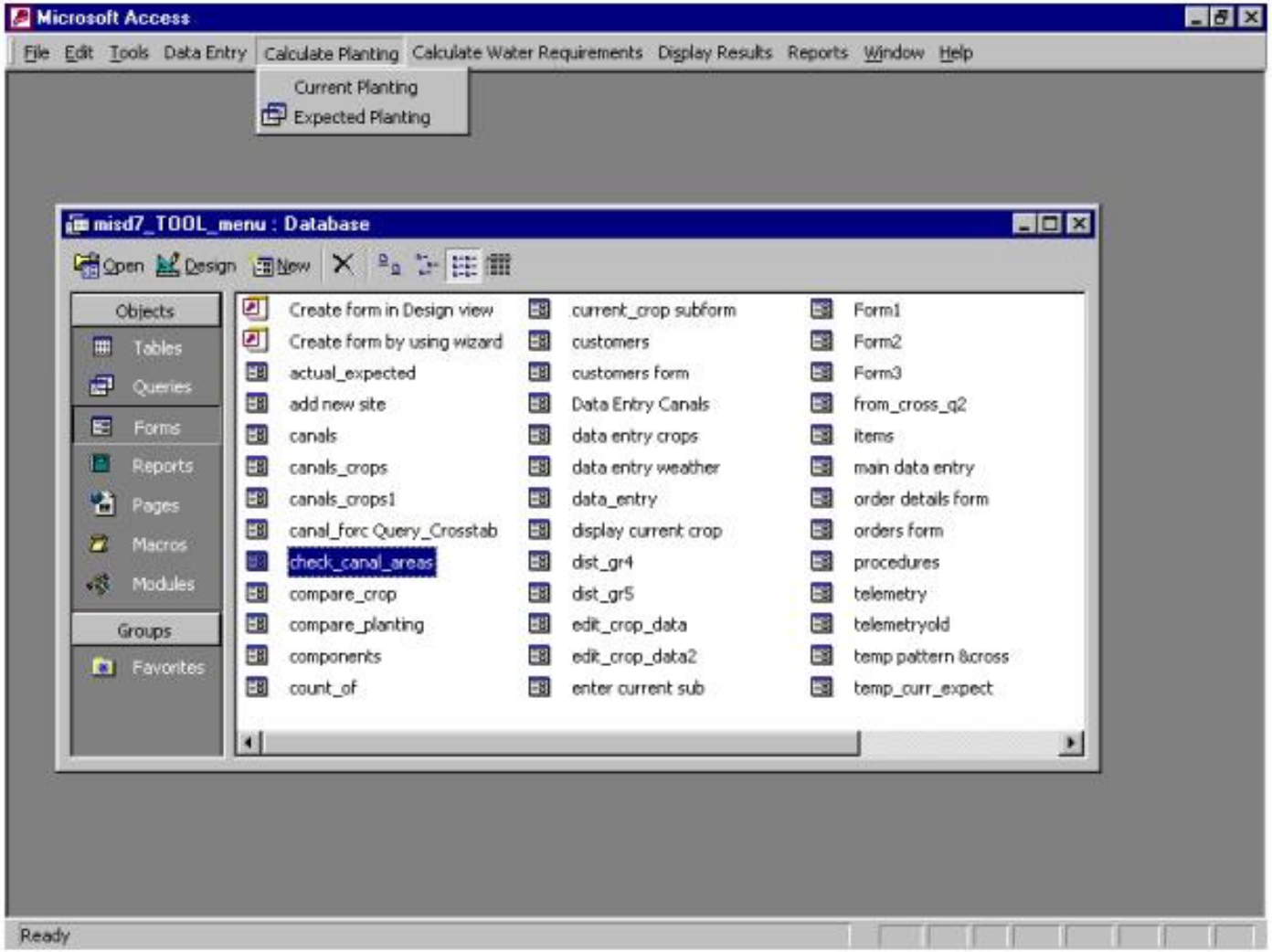


Figure 7-12. Calculate planting main and pop up menus.

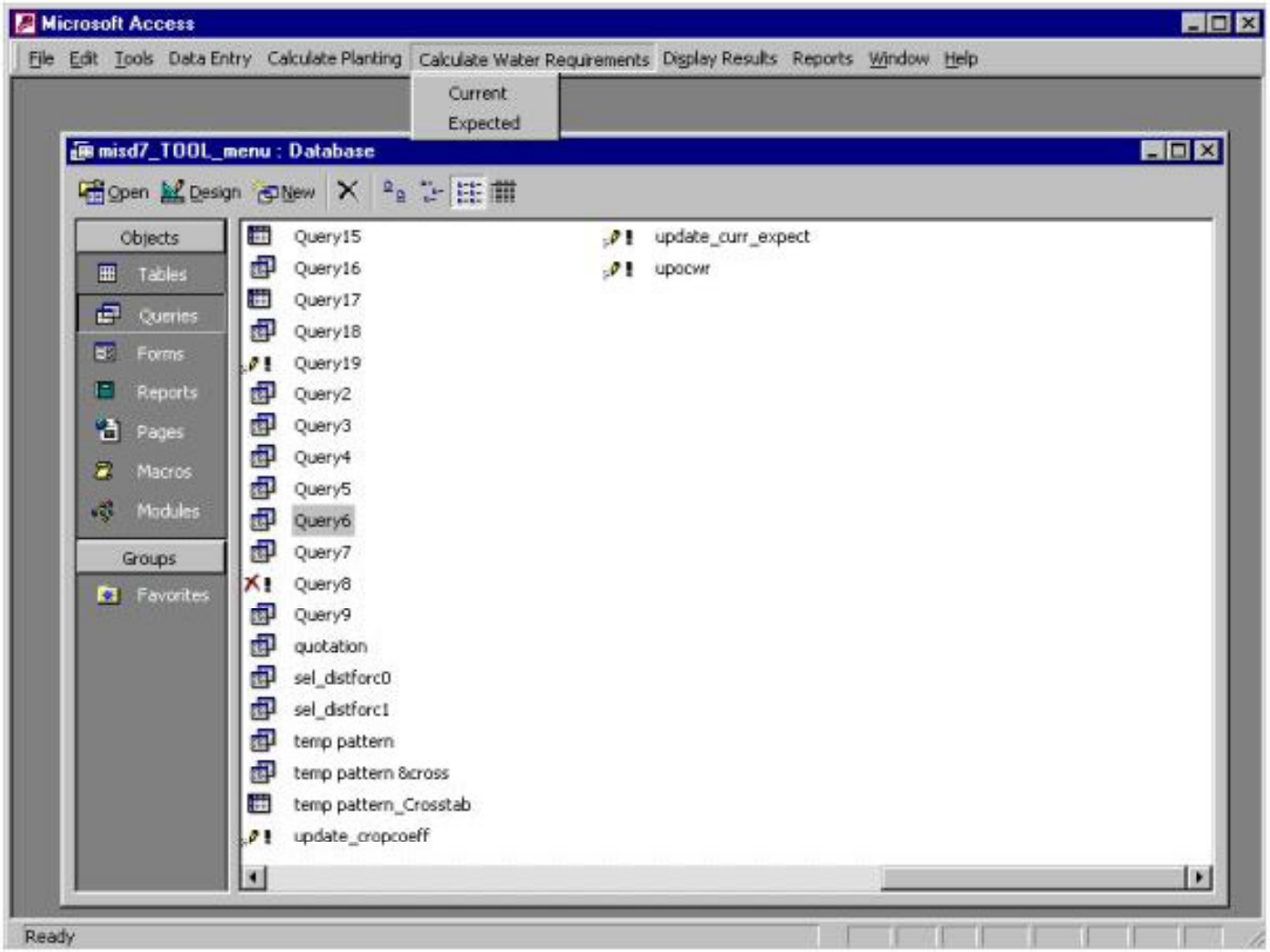


Figure 7-13. Calculate water needs main and pop up menus.

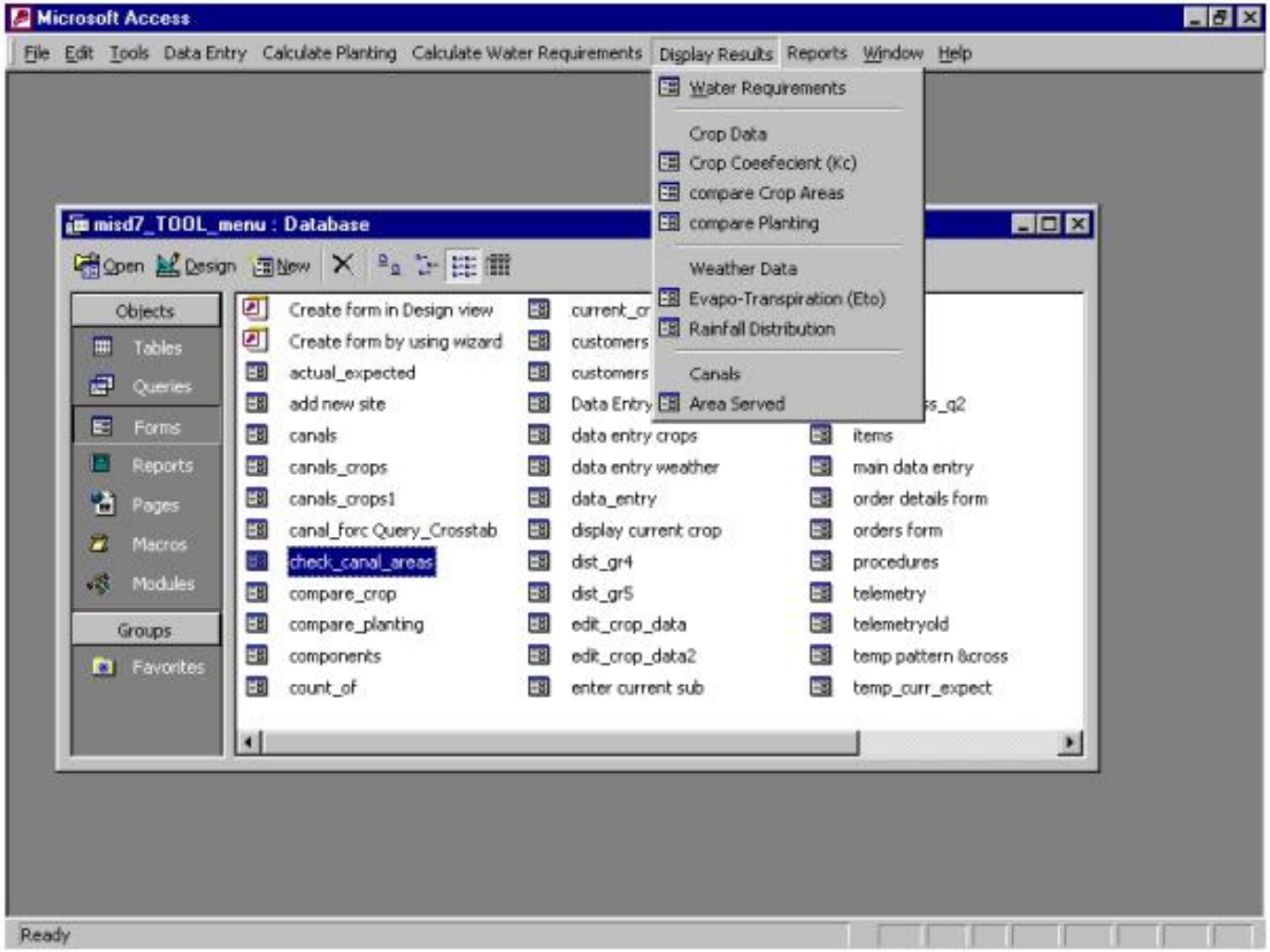


Figure 7-14. Display results main and pop up menus.

4. Canal Information: Including canal IDs, area served, and the name of the district to which the canal belongs.

7.5.6 Report Generation, Main Menu Item

This menu item helps the user generate reports on historic water needs, cropped areas, planting for individual canals and for the whole district for a defined period of time. Figure 7-15 shows the form having four types of reports for the user to generate. It can be seen that the user can preview, print, and send the report to higher administrative levels of the ministry (see Figure 7-16). The report will be sent as an e-mail attachment that will be displayed to the user to enable her/him to edit the message including changing any other pre-set attributes.

Note:

1. ***This step assumes that Microsoft Outlook is installed within the Microsoft Office software on the district's computer where this tool is to be run.***
2. ***E-mail configuration is part of the district's specific configuration.***

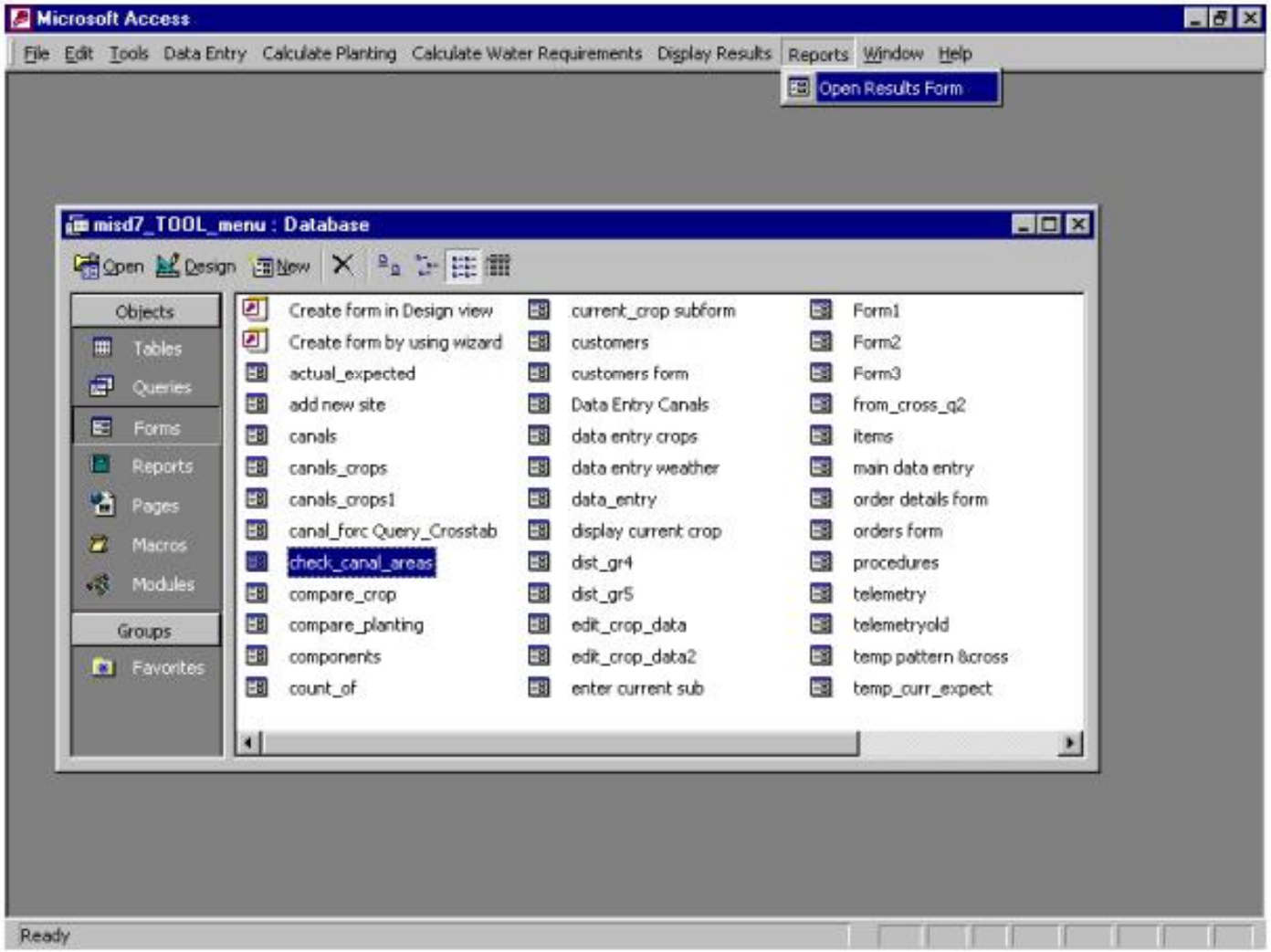


Figure 7-15. Reports main and pop up menus.

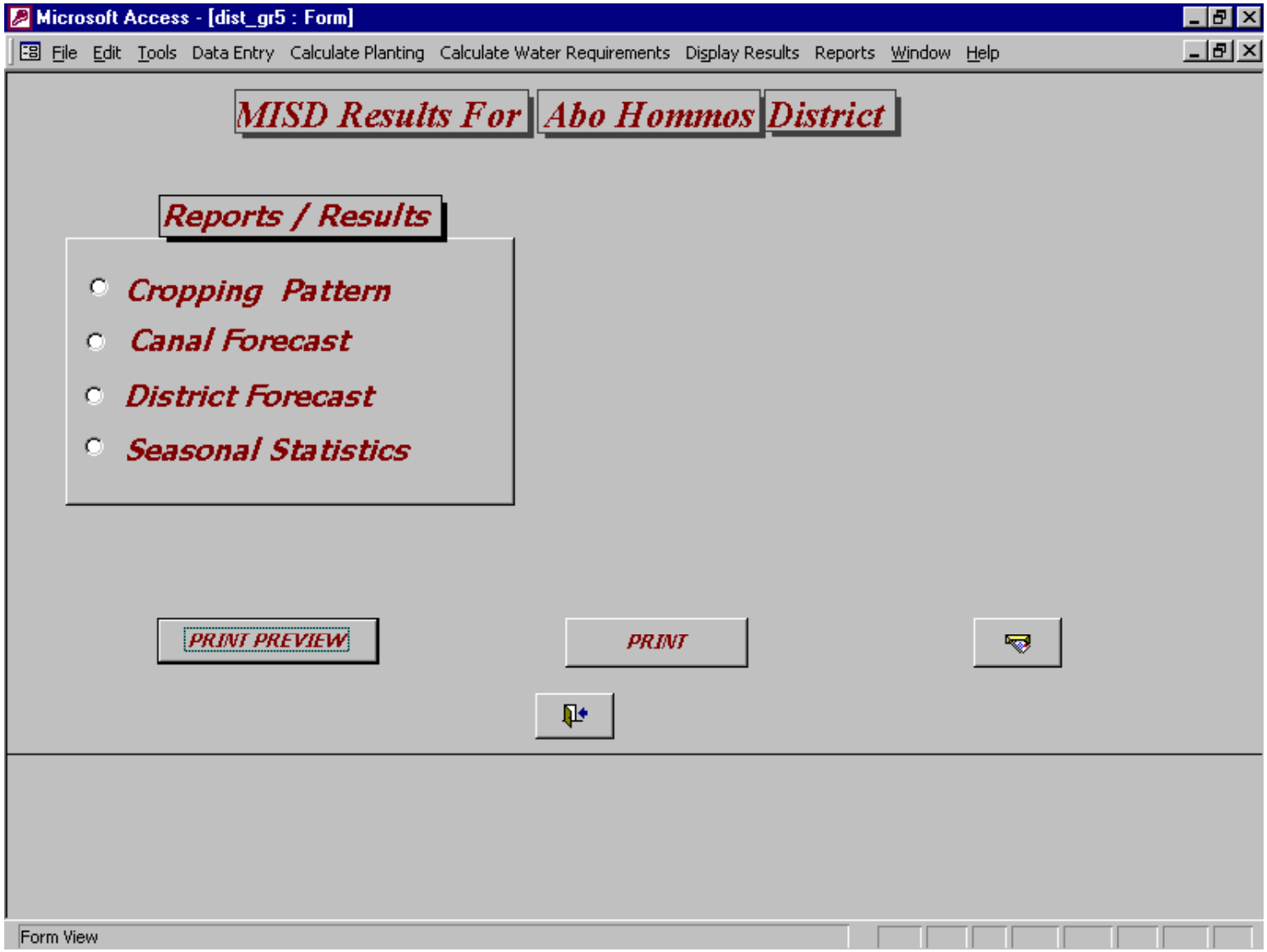


Figure 7-16. Reports generation form.

8 Crop Water Needs Microsoft Access District Analysis

8.1 Introduction

Chapter 7 describes the User Interface of the Microsoft Access version of the MISD Crop Water Needs tool. This chapter discusses results obtained from utilizing this tool in analyzing crop patterns and calculating canal water requirements at the district level. Examples are given as to how to use this tool to systematically accomplish MISD tasks. The procedure followed here is similar to that displayed in the user interface of the crop water needs tool on the procedure form of the welcome screen (see Figure 8-1). This form will remain opened as long as the program is running and the user did not intentionally close it. This is meant to be a reminder for the district engineer (or any other user) of the different MISD tasks.

Also, Chapter 7 gives an extensive description of the data entry activity. Measures to ensure data quality and integrity are embedded in the data entry screens/forms. After data entry of observed and projected cropping pattern information, the next steps are to start calculations, analyze data, generate reports, and send water needs reports to higher levels within the Ministry. The district engineer (or other user) is advised to proceed as follows:

8.2 Observe Configuration Data

Before starting any calculation, the user is advised to observe the district's configuration data. This is the static data of the system and the user is only allowed to view it. Water calculations are very sensitive to this type of data so the user must be sure of having the right description of the canal system, crop definitions and coefficients, and the weather data that are appropriate for the district. The user should select the "display results" main menu option (see Figure 8-2) to display crop, canal, and weather data from the corresponding pop-up menu item. Figures 8-3 through 8-5 show configuration data for the "Abou Hommos" district of the "Beheira" directorate. In the current step, the user should make sure that all canals are included and that they have the right area served by each canal. Also he/she should make sure that all crops for all seasons are included and that crop coefficient and other crop definitions are correct and that semi-monthly weather data are realistic.

Note:

1- ***Calculation of water requirements depends on the whether or not the crop is perennial.***
2- ***If any inconsistency arises in these data, the district engineer should contact the ministry headquarters to re-configure the district's tool.***

8.3 Check Crop Pattern

If the user is satisfied that all canals and possible crops are included in the data base, she/he should go ahead and enter data for first time period if it is the first time she/he enters data to the system. However in this chapter, it is assumed that the district engineer has enough data to analyze historical crop patterns and crop water needs. For the purpose of this discussion, it is assumed that the district engineer at "Abou Hummus" has entered data for October 16-31 (period 20), 2000 through July 1-15 (period 13), 2001. The engineer should then enter new

data and analyze crop pattern results for any canal, crop, and specific period of interest. This is shown in Figure 8-6 and can be viewed by choosing the "Compare Crop Pattern" pop-up menu item of the "Display Results" main menu. In this figure, the user has chosen a comparison between current and historical cropped areas for rice on the El-Herfa canal in 2001. Since data are not available beyond period 13, the graph displays records from period 1 to period 13 of same year (2001). The user can also make further validation by choosing to print the crop pattern report using the reports main menu item. Figure 8-7 shows the report generation form of the water needs user interface. The user selects the crop pattern report option on this form to generate a report for Herfa canal for the periods 1 through 12, 2001. Table 8-1 shows a snapshot for period 1, 2001 from the output report.

This report has an advantage in that it compares the cropped area on a certain canal for all available periods in the system's database. A check is implemented to ensure that the total cropped area (including fallow) matches the total area served. Again this is another tool for the district engineer that helps revise data and remove any inconsistency.

Note:

The last existing crops are for period 13 (July 1-15) and the next period (period 14) has projected cropping area "Expected" to exist in the next half-month (July 16-31).

8.4 Calculate Planting

Next, the user should initiate calculations for current planting and expected planting using the "Calculate Planting" main menu item as follows:

8.4.1 Current Planting

Click the pop-up menu item titled "Current" to initiate the calculation of current planting. Table 8-2 shows a text format of the Visual Basic procedure developed for that purpose.

8.4.2 Expected Planting

Click the pop-up menu item titled "Expected" to initiate the calculation of expected planting using Microsoft SQL query language. Table 8-2 shows a text format of the query designed for that purpose.

8.5 Check Planting

In order to check the output of the previous step, the district engineer can follow the same steps as in section 8.3 to display a comparison of expected and current planting for a specific year and crop on a certain canal. Figure 8-8 depicts such a comparison for year 2001 and rice on the El-Herfa canal.

8.6 Calculate Water Needs

In this step the district engineer will start running the model for calculating water needs for all canals and crops within the district. It should be noted that the engineer should not start this step before validating data as shown in the previous steps. However, the macro developed for calculating water requirement is designed to automatically initiate planting calculations before starting the water requirements calculation procedure.

In order to start the calculations, the district engineer should choose the "Calculate Water Requirements" main menu item and one of the following pop-up menu items:

8.6.1 Current Needs

Choose the "Current" menu item of the pop-up menu to run the Visual Basic procedure developed to calculate the water needs for all available time periods on all canals in the district. Water needs are calculated based on crop, weather, and canal data. The procedure sums the current water requirements for all crops on every canal in the district and generates historical data files for canals and the district's current water needs. Table 8-4 shows the Visual Basic source code for the procedure to derive current water requirements for all time periods in the database.

8.6.2 Expected Needs

Choose the "Expected" item of the pop-up menu to run the Visual Basic procedure developed to calculate the water needs for all available time periods in the water system. Water needs are calculated based on crop, weather, and canal data. The procedure sums expected water requirement for all crops and every canal in the district and generates historical data files for all canals and for the district's expected water needs. Table 8-5 shows the Visual Basic source code for the procedure to derive expected water requirements for all time periods in the database.

8.7 Analyze Water Needs

At this stage the district engineer should look at the model's output and look at the water requirements for each canal and the current and expected water needs for the district. The water needs tool generates many graphics and reports for comparing historic water needs with the most recent needs for canals and for the whole district. Figures 8-2 and 8-7 show the "Display Results" main menu item and the report generation form from the reports main menu item. These two items are considered the main means for analyzing MISD data.

8.7.1 Display Results

Figure 8-11 shows a comparison between current and expected water needs for the Abou Hommos district in million cubic meters. Through this option, the user can display water needs for any set of data available in the database of the crop water needs tool. It can be seen that the user can choose a start and an end date for the comparison. The district engineer can also print the graph displayed by clicking the "Print Graph" button on that same form.

8.7.2 Generate Reports

The report form allows the district engineer considerable flexibility for report generation. The form is designed such that the user can select a report type, enter a selection of report parameters, and preview, print, or send the report by e-mail. However, it is recommended that the user preview the report before printing or sending it via e-mail. This preview is very important since the size of the generated report varies according to the time span required by the user, especially in the case of crop pattern reports. The district engineer can generate

canal forecast reports (Table 8-6 and Figure 8-9), seasonal statistics for a specific canal (Table 8-7), and historical water needs on the district level (Table 8-8 and Figure 8-10).

8.8 Send Water Needs Report to Irrigation Directorate

The ultimate goal of this tool is to enhance data transfer procedures by utilizing state of the art technology and information systems. When the user is satisfied with the results obtained, she/he can simply select any report option and click the "send e-mail" icon (the command button to the right of the print command button). This will initialize a macro that puts an e-mail message in the outbox of Microsoft Outlook with the specified report attached in a rich text format (Microsoft Word compatible). When the user decides to send an e-mail to the directorate, the mail message will show up on a typical e-mail outlook composer window. This allows the user to edit or save the attached file, the pre-set message, or any other attribute of the e-mail composer.

Figure 8-12 shows the e-mail composer with the district forecast report attached. If the user is connected to the internet he/she can directly send the report. Otherwise, the e-mail message will remain in the outbox of Outlook Express and will automatically be sent whenever the user is online.

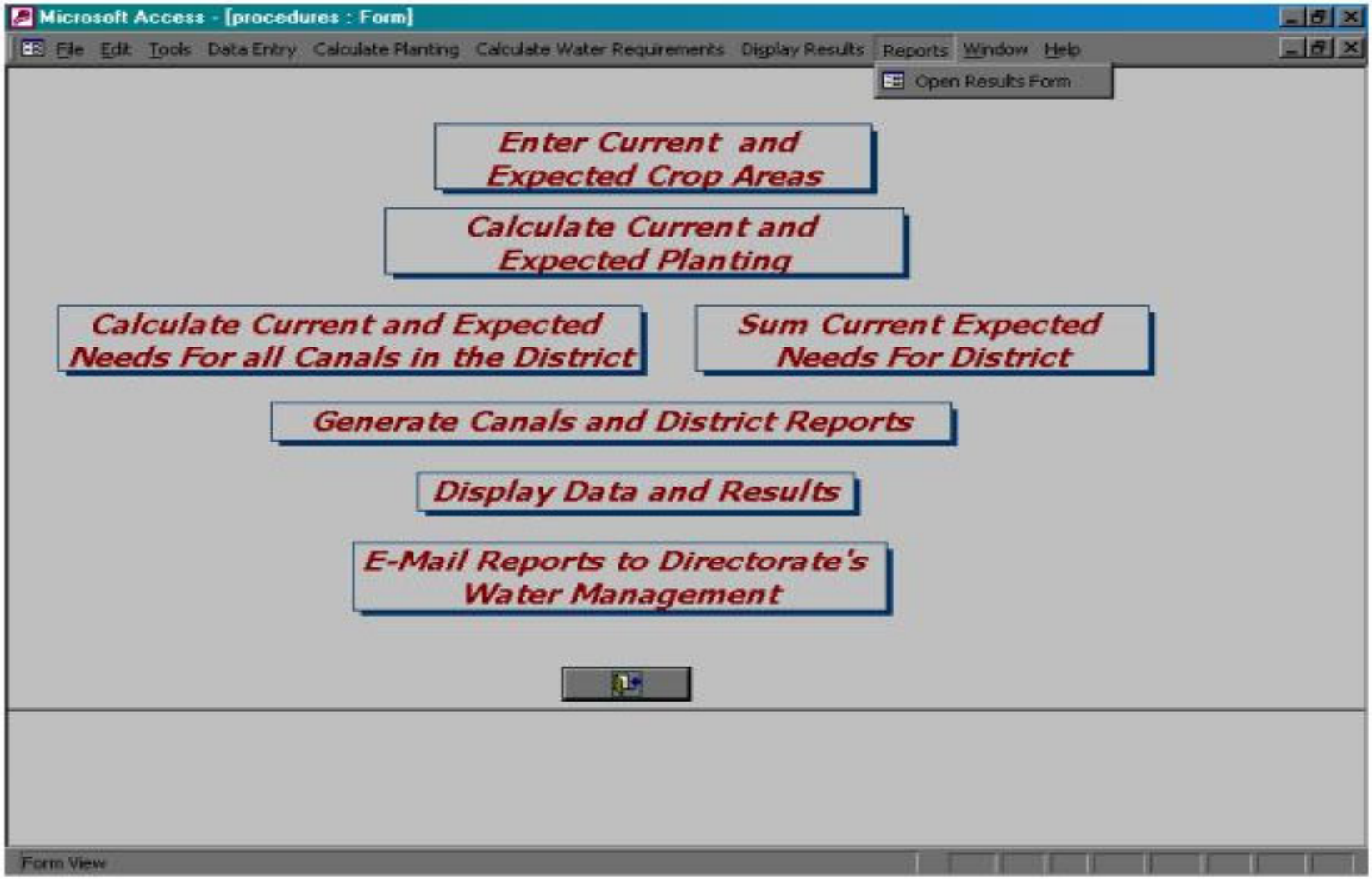


Figure 8-1. MISD procedures form.

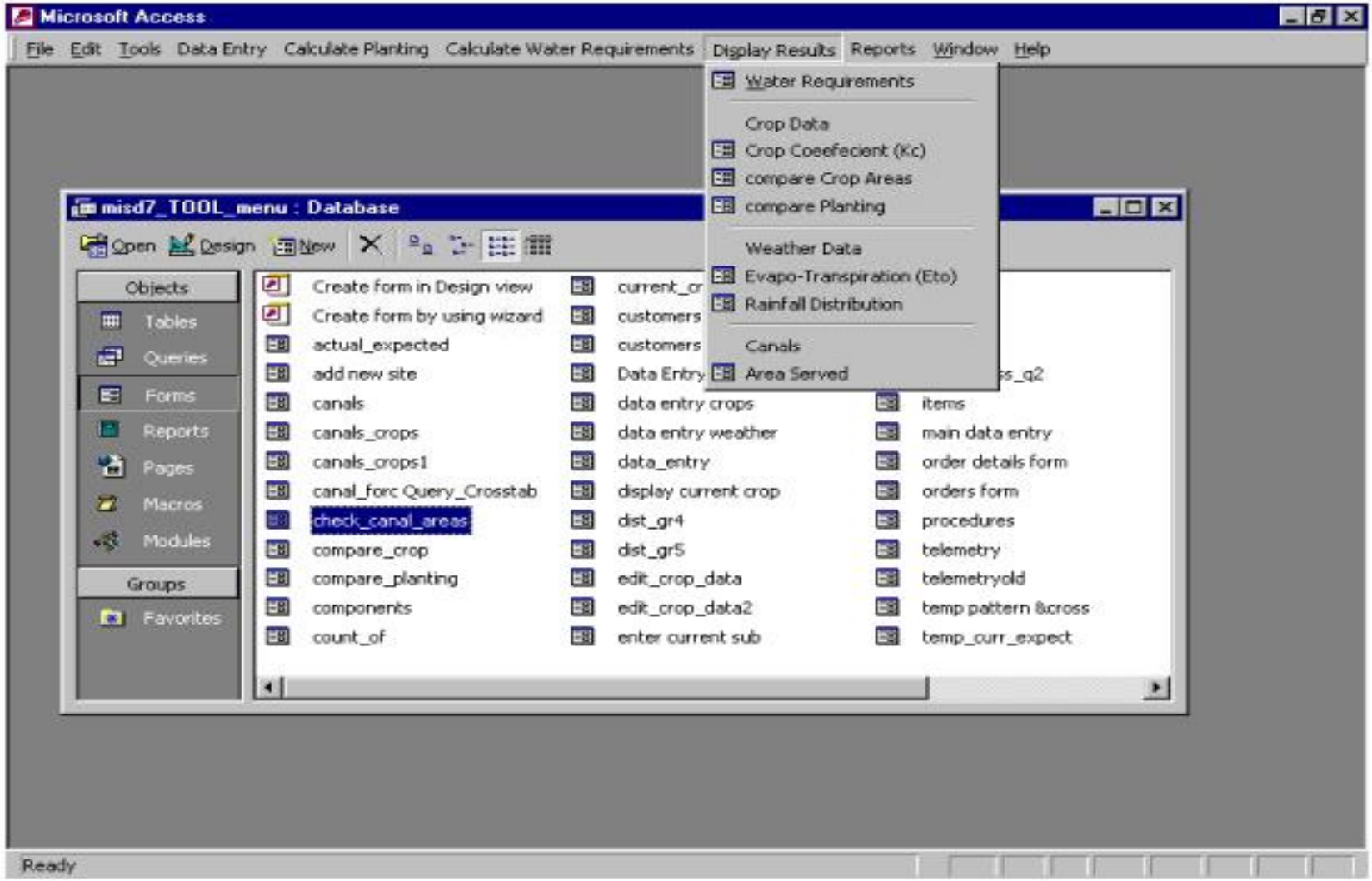


Figure 8-2. Display results pop up menu.

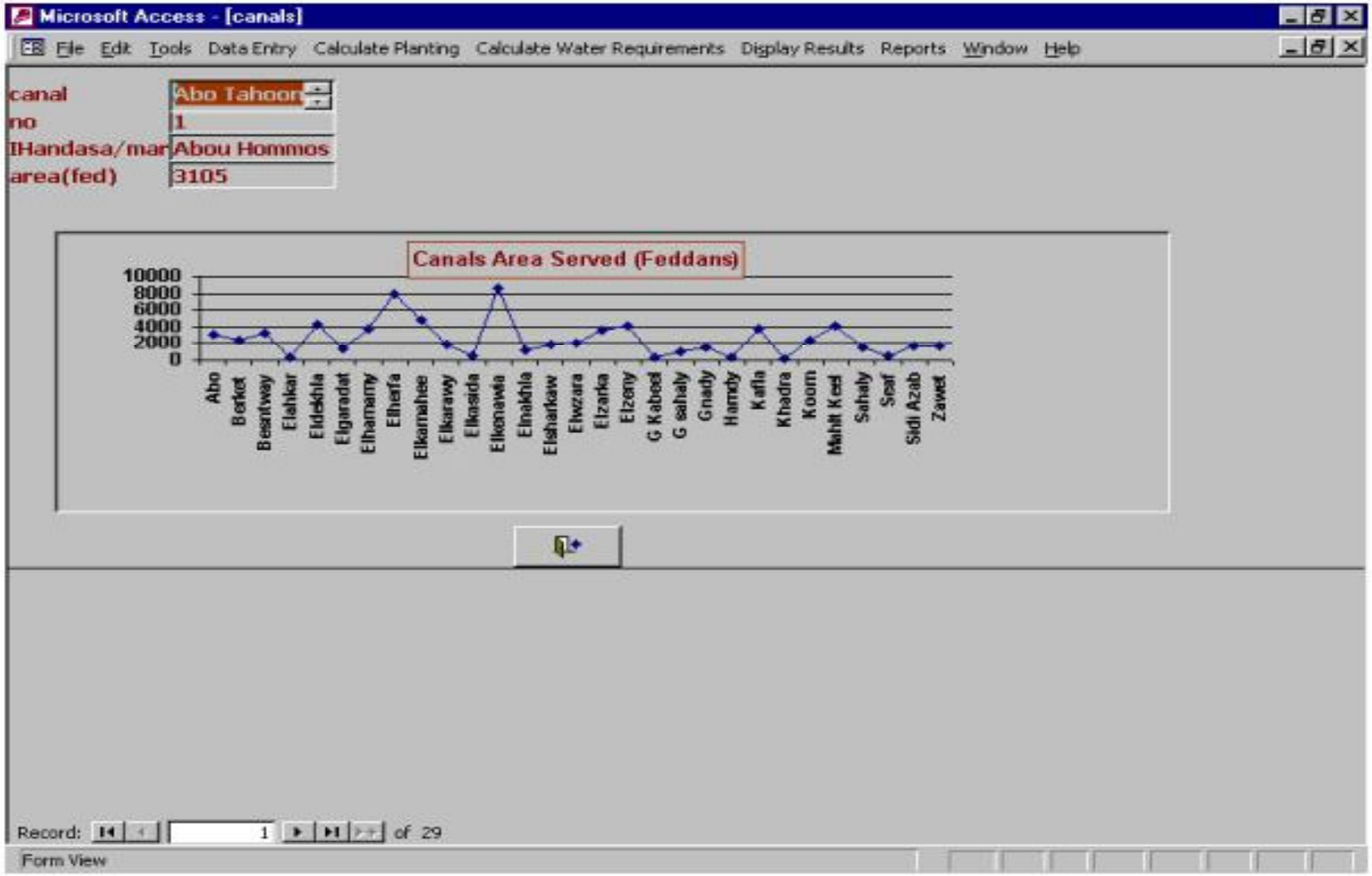


Figure 8-3. Canal configuration data for Abou Hommos Irrigation District.

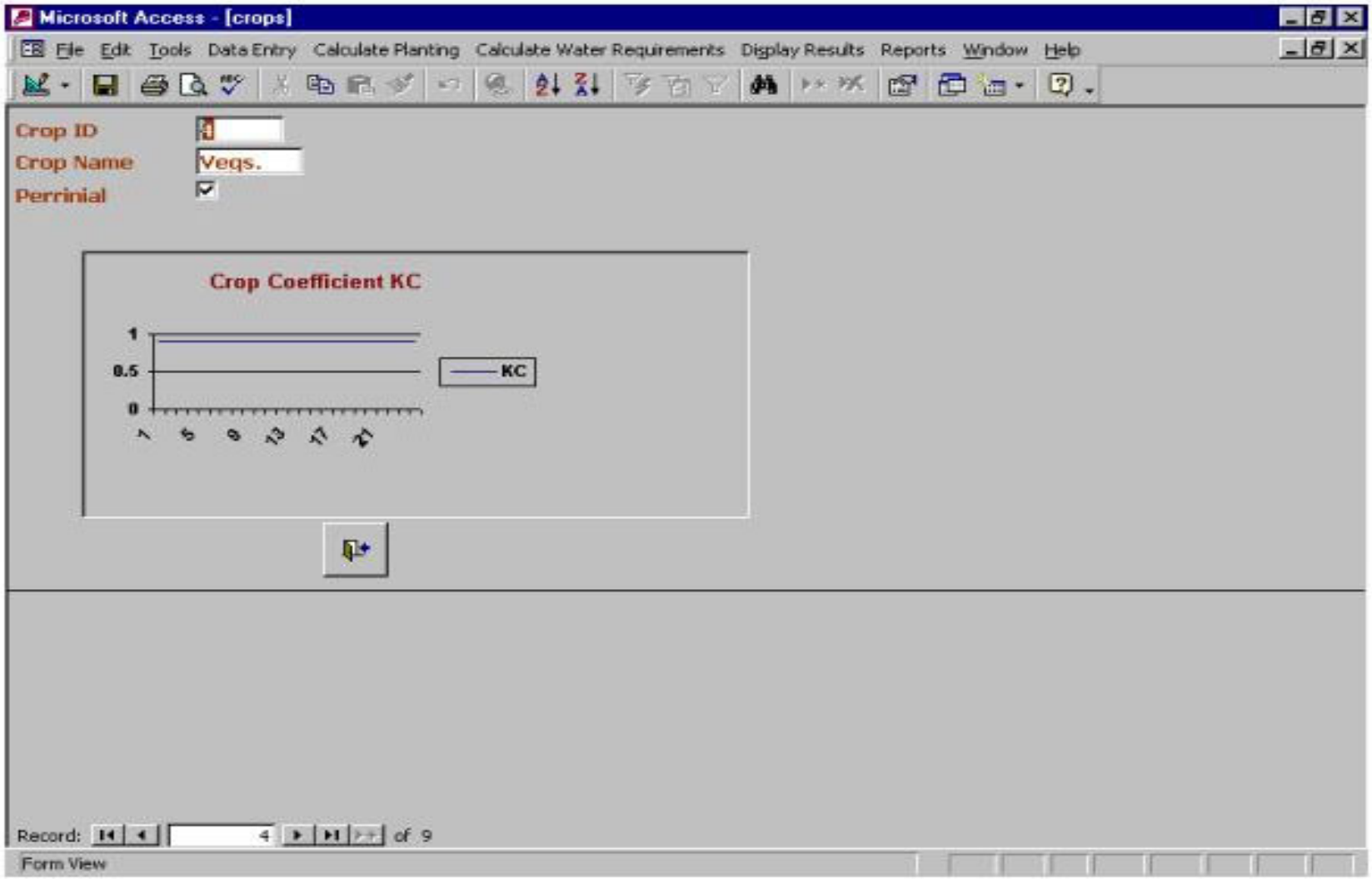


Figure 8-4. Crop data for Abou Hummus.

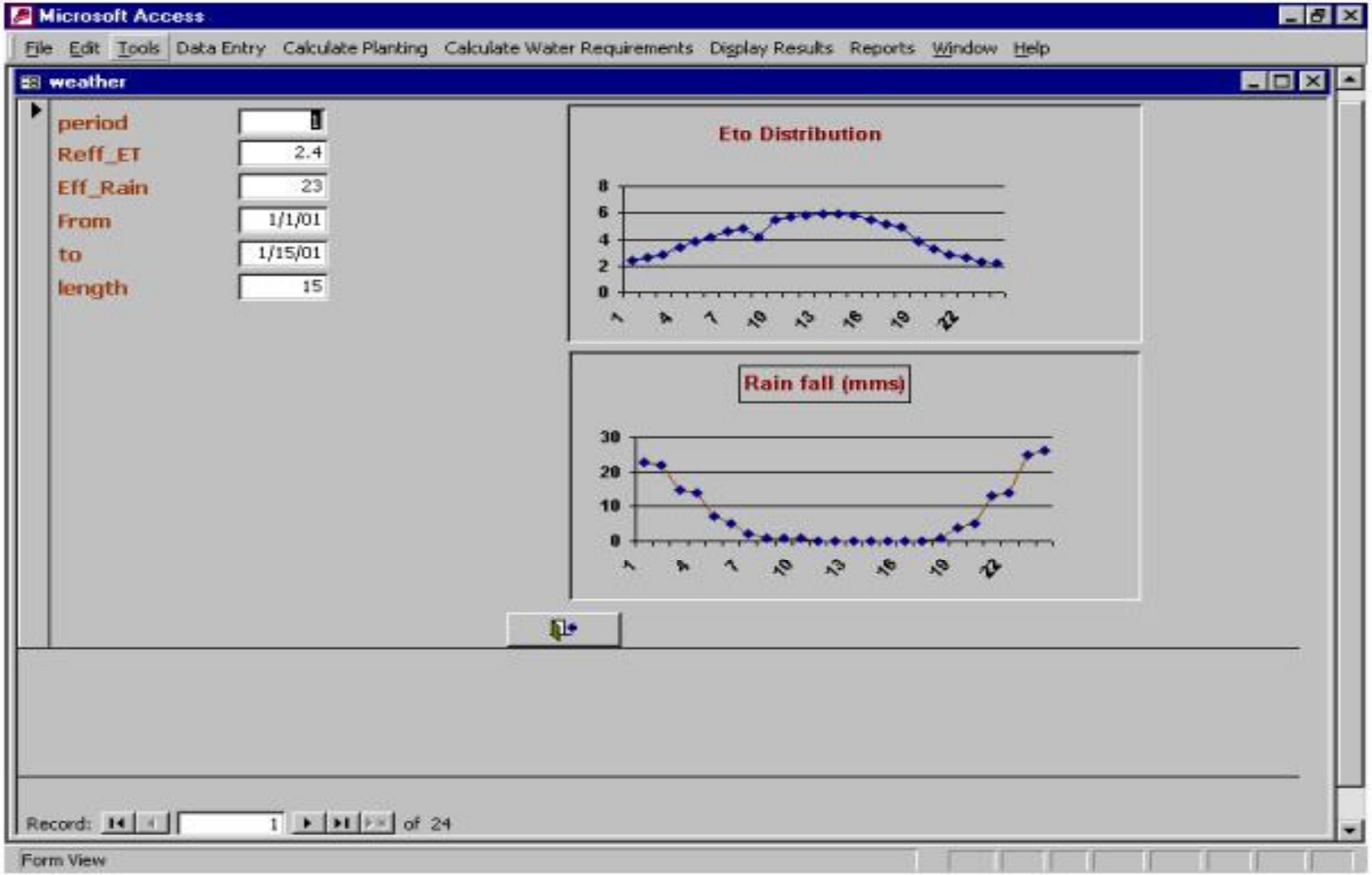


Figure 8-5. Weather data for Abou Hummus.

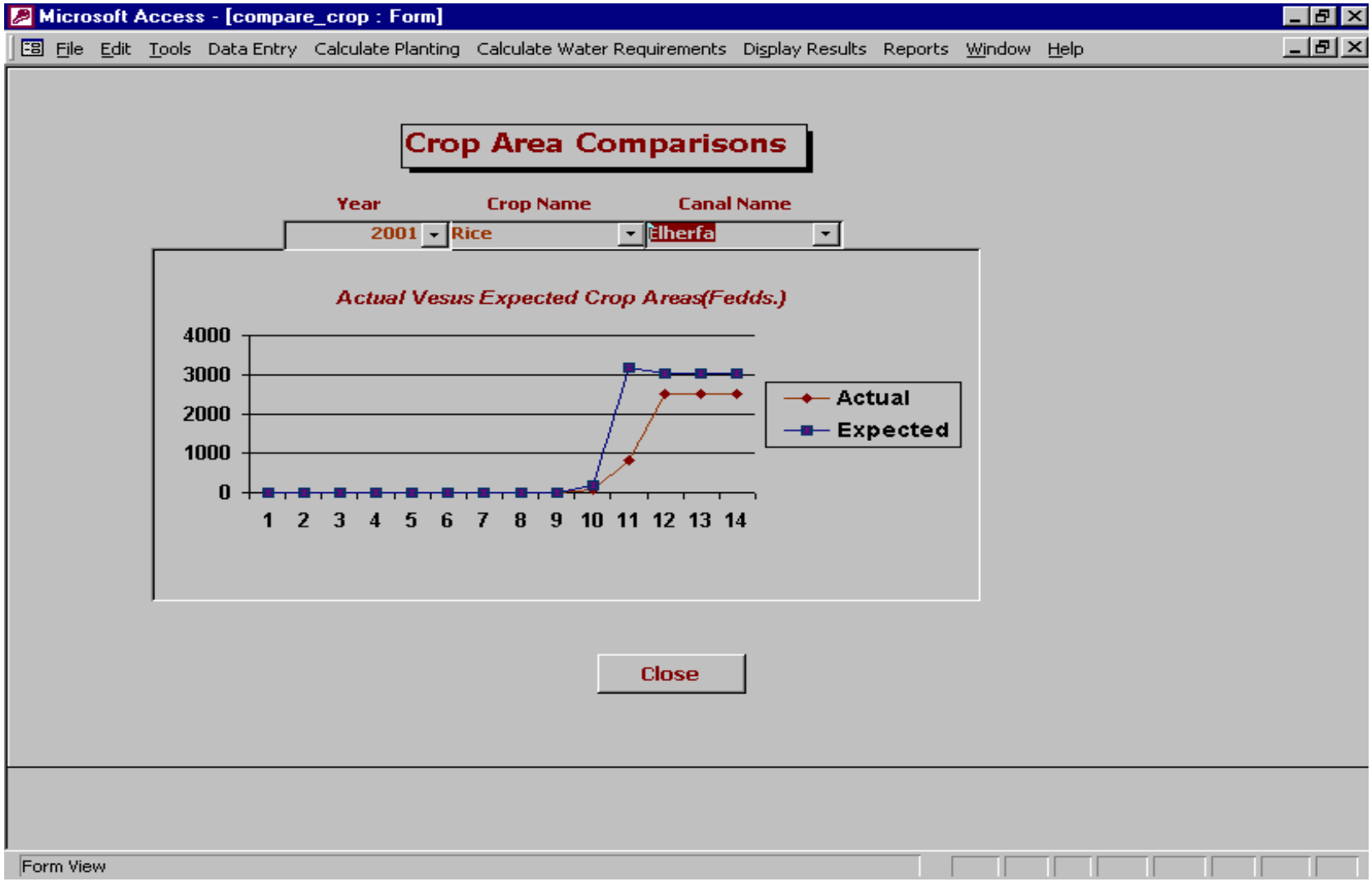


Figure 8-6. Comparison of actual and expected crop areas of rice on El Herfa Canal for 2001.

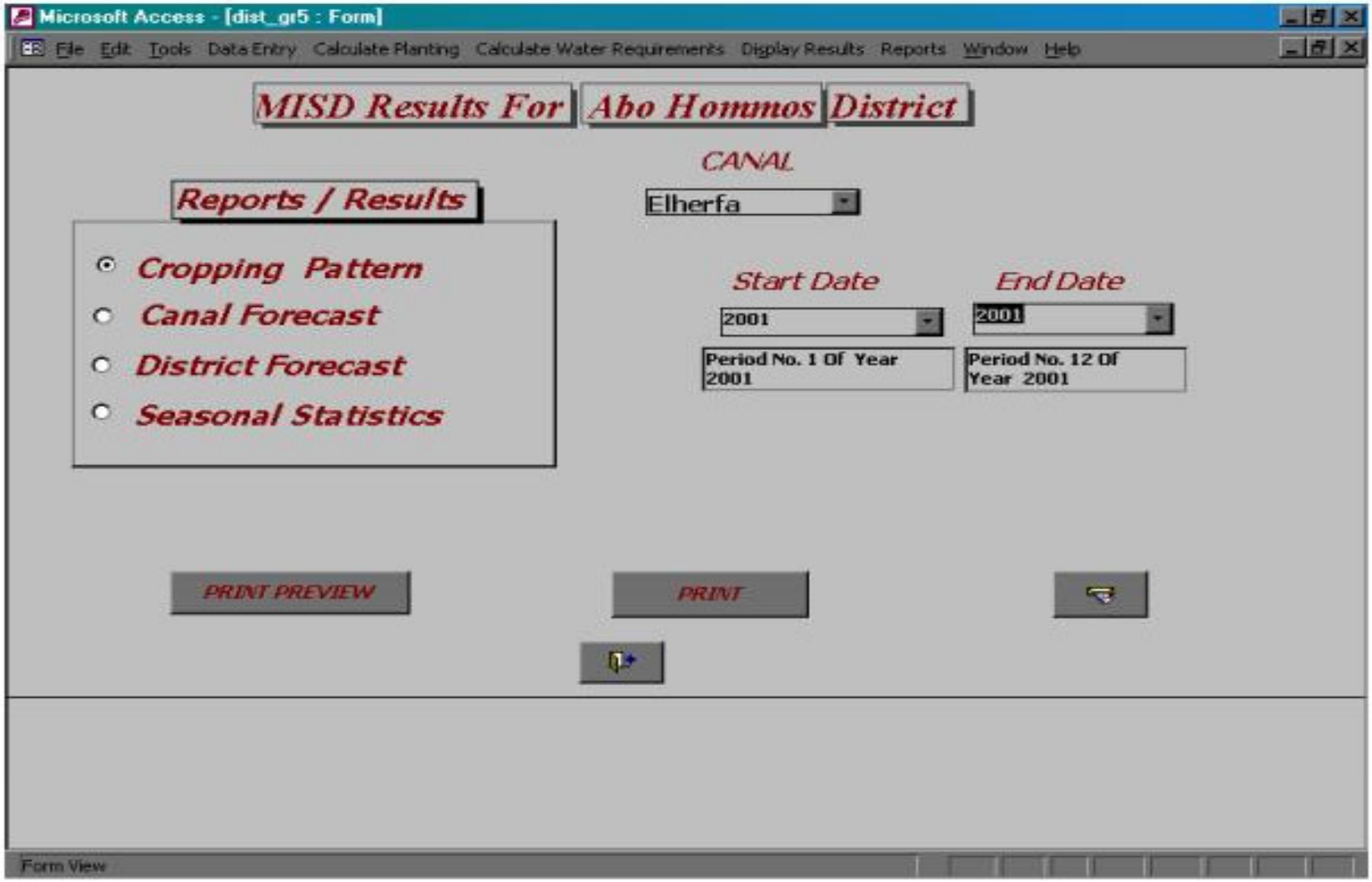


Figure 8-7. Crop pattern report parameters (canal name, start date, end date).

Table 8-1. Crop pattern report for El Herfa Canal.

Cropping Pattern For

Abou Hummus District

Year	Period	Canal	Area Served	Crop	Crop Area	% Of Canal Area
2001	1	Elherfa	7959	Bean	288	4
2001	1	Elherfa	7959	Wht.	4038	51
2001	1	Elherfa	7959	Vegs.	74	1
2001	1	Elherfa	7959	Gards.	0	0
2001	1	Elherfa	7959	Cott.	0	0
2001	1	Elherfa	7959	Rice	0	0
2001	1	Elherfa	7959	Maize	0	0
2001	1	Elherfa	7959	Fallow	0	0
2001	1	Elherfa	7959	Bars.	3559	45
				Totals	7959	100%

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Table 8-2. Current planting calculation procedure.

```
Option Compare Database
Option Explicit
Sub planting()
   DoCmd.SetWarnings False
   Dim mydb As Database
   Dim current As Recordset
   Dim expected As Recordset
   Dim crop As Recordset
   Dim canal As Recordset
   Dim period As Recordset
   Dim coeff As Recordset
   Dim dates As Date
   Dim p, pp, yy, cyy As Integer
   Dim cl As Integer
   Dim cr As Integer
   Dim i, j, k, fyear, fperiod, lyear,lperiod As integer
   Dim duty As Variant
   Dim sumw As Variant
   Dim suma As Variant
   Dim sumak As Variant
   Dim sumocwr, prevcurr, cc As Variant
   Set mydb = CurrentDb
   Set current = mydb.openrecordset("current_crop")
   Set expected = mydb.openrecordset("expected_crop")
   Set crop = mydb.openrecordset("crops")
   Set canal = mydb.openrecordset("canals")
   Set coeff = mydb.openrecordset("coeff_crop")
   Set period = mydb.openrecordset("period")
   current.Index = "PRIMARYKEY"
   expected.Index = "PRIMARYKEY"
   crop.Index = "primarykey"
   canal.Index = "PRIMARYKEY"
   coeff.Index = "primarykey"
   MsgBox "Calculating Planted areas for current period"
      cyy = year(date)
      canal.MoveFirst
      Do While Not canal.EOF
        cl = canal![no]
        crop.MoveFirst
        Do While Not crop.EOF
          k = 1
          cr = crop![Crop_ID]
          current.MoveFirst
          prevcurr = 0
          For i = 2000 To cyy
            For j = 1 To 24
             current.Seek "=", i, j, cl, cr
     If Not current.NoMatch And Not current.EOF Then
              current.Edit

      If k = 1 Then
```

Table 8-2. (Continued).

```
current![planting] = current![area]
                k = k + 1
              End If
               cc = current![area] - prevcurr
               If cc < 0 Then
                cc = 0
               End If
               current![planting] = cc
               prevcurr = current![area]
               current.Update
              End If
             Next j
               If k = 1 Then k = k + 1
              current.Seek "=", i, j, cl, cr
            Next i
             crop.MoveNext
           Loop
        canal.MoveNext
      Loop
       MsgBox "Calculations Completed"
   End Sub
```

Table 8-3. SQL statement for calculating expected planting.

```
Expected Planting SQL statement
UPDATE (crops INNER JOIN current_crop ON crops.Crop_ID =
current_crop.crop_id) INNER JOIN expected_crop ON (current_crop.period =
expected_crop.period) AND (current_crop.year = expected_crop.year) AND
(current_crop.canal_id = expected_crop.canal_id) AND (crops.Crop_ID =
expected_crop.crop_id) SET expected_crop.expplant =
IIf([expected_crop].[area]<[current_crop].[area],0,[expected_crop].[area]-[current_crop].[area]);
```

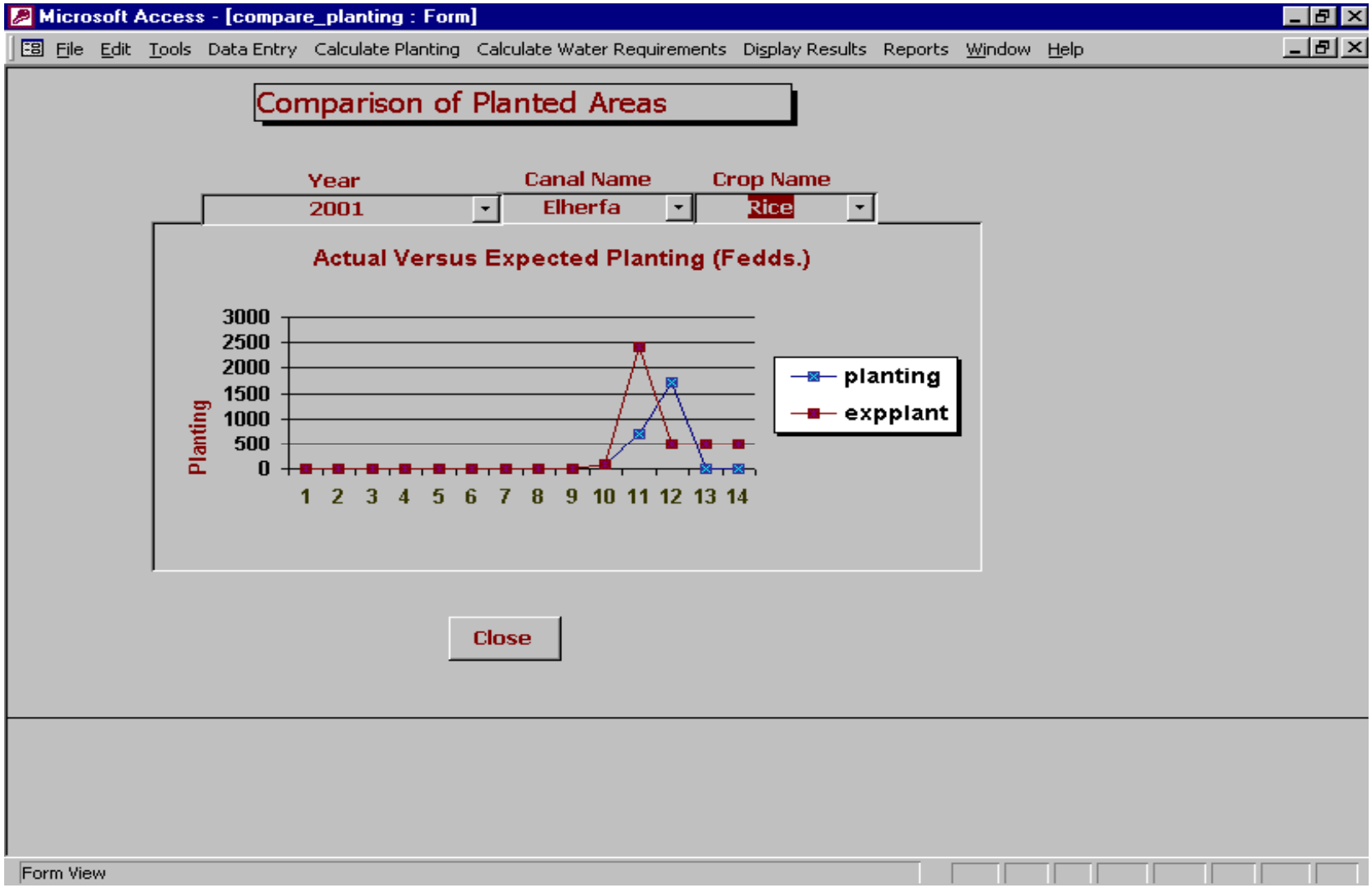

Figure 8-8. Comparison of actual planting and expected planting.

Table 8-4. Current water requirements calculation procedure.

```
Attribute VB_Name = "current"
Option Compare Database
Option Explicit
Function current_req()
   DoCmd.SetWarnings False
   Dim mydb As Database
   Dim current As Recordset
   Dim expected As Recordset
   Dim crop As Recordset
   Dim canal As Recordset
   Dim period As Recordset
   Dim coeff As Recordset
   Dim weather As Recordset
   Dim canalforc As Recordset
   Dim distforc As Recordset
   Dim logs As Recordset
   Dim dates As Date
   Dim p, pp, yy, cyy As Integer
   Dim cl, lngth As Integer
   Dim cr As Integer
   Dim i, j, k, l, fyear, fperiod, lyear, lperiod, lj, cp, ll As     Integer
   Dim kcarea, carea, et, rf, sumdist, sumclwr, clwr, mn As Double
   Dim c_coeff As Single
   Dim sumocwr, prevcurr, ocwr As Double
   Set mydb = CurrentDb
   Set current = mydb.openrecordset("current_crop")
   Set expected = mydb.openrecordset("expected_crop")
   Set crop = mydb.openrecordset("crops")
   Set canal = mydb.openrecordset("canals")
   Set coeff = mydb.openrecordset("coeff_crop")
   Set weather = mydb.openrecordset("weather")
   Set canalforc = mydb.openrecordset("canal_forecast")
   Set distforc = mydb.openrecordset("dist_forecast")
   Set logs = mydb.openrecordset("log")
   current.Index = "PRIMARYKEY"
   expected.Index = "PRIMARYKEY"
   crop.Index = "PRIMARYKEY"
   canal.Index = "PRIMARYKEY"
   coeff.Index = "PRIMARYKEY"
   weather.Index = "PRIMARYKEY"
   canalforc.Index = "PRIMARYKEY"
   distforc.Index = "primarykey"

   MsgBox "Calculating Water Requirement For Current Period"
'-----------------------------------------------------------------
'   Define first available data record for each crop/canal
'-----------------------------------------------------------------
          logs.MoveFirst
          fyear = logs![fyear]
          fperiod = logs![fperiod]
'----------------------------------------
' start from the 14th record
'----------------------------------------
         ' ffperiod = fperiod + 14
' Beyond the 24th period, step to next year
'-----------------------------------------------------------------
         ' If ffperiod > 24 Then
```

Table 8-4. (Continued).

```
          '  fperiod = fperiod + 14 - 25
          '  fyear = fyear + 1
          ' End If
'-----------------------------------------------------------------
'Define last available record for that crop/canal
'-----------------------------------------------------------------
          lyear = logs![lyear]
          lperiod = logs![lperiod]
'-------------------------------------
'for each time period in historic crop file
'-----------------------------------------------------------------
          i = fyear
      Do While i < lyear + 1
          j = 1
          lj = 24
          If i = fyear Then
            j = fperiod
          End If
          If i = lyear Then
            lj = lperiod
          End If
        Do While j < lj + 1
          sumdist = 0
          canal.MoveFirst
'-----------------------------------------------------------------
'for each canal in canal db
'-----------------------------------------------------------------
         Do While Not canal.EOF
          sumclwr = 0
          cl = canal![no]
          weather.MoveFirst
          weather.Seek "=", j
          If Not weather.NoMatch And Not weather.EOF Then
             et = weather![Reff_ET]
             rf = weather![Eff_Rain]
             lngth = weather![length]
          End If
'-----------------------------------------------------------------
' and every crop in crop db
'-----------------------------------------------------------------
          crop.MoveFirst
          Do While Not crop.EOF
             sumocwr = 0
             kcarea = 0
             carea = 0
             cr = crop![Crop_ID]
             cp = crop![onoff]
             If cr = 10 Then Exit Do
          If cp = 1 Then
             coeff.MoveFirst
             coeff.Seek "=", cr, j
            If Not coeff.NoMatch And Not coeff.EOF Then
              c_coeff = coeff![coeff]
              ocwr = coeff![ocwr]
            End If
            current.MoveFirst
            current.Seek "=", i, j, cl, cr
            If Not current.NoMatch And Not current.EOF Then current.Edit
```

Table 8-4. (Continued).

```
            clwr = (((c_coeff * et) - (rf / lngth)) / 0.7)

        If current![area] > 0 Then
              clwr = clwr + (ocwr / lngth / current![area])
              mn = 50 / lngth
              If clwr > 0 And clwr < mn Then
               clwr = mn
              End If
              If clwr <= 0 Then
               clwr = 0
              End If
            current![two_weeks] = clwr *(current![area]  * 4.2)
             Else
              current![two_weeks] = 0
              clwr = 0
             End If
            current![kc] = c_coeff
            current![kcavg] = c_coeff
            current![duty] = clwr
            clwr = current![two_weeks]
            current.Update
        End If
' non perr.
        Else
          For l = 13 To 1 Step -1
           ll = j - l + 1
           If ll < 1 Then
            ll = ll + 24
            yy = i - 1
           Else
            yy = i
           End If
' Seek for lagged kc in coeff. db
'--------------------------------
           coeff.MoveFirst
           coeff.Seek "=", cr, l
           If Not coeff.NoMatch Then
            c_coeff = coeff![coeff]
            ocwr = coeff![ocwr]
           End If
           weather.MoveFirst
           weather.Seek "=", j
           If Not weather.NoMatch Then
            et = weather![Reff_ET]
            rf = weather![Eff_Rain]
            lngth = weather![length]
           End If
'Seek planting for 0-2 weeks forecast in current crop db.
'-------------------------------------------------------
           current.MoveFirst
           current.Seek "=", yy, ll, cl, cr
           If Not current.NoMatch And Not current.EOF Then
            kcarea = kcarea + (current![planting] * c_coeff)
            sumocwr = sumocwr + (ocwr * current![planting])
            carea = carea + current![planting]
            If i = yy And j = ll Then
             current.Edit
             If current![area] = 0 Then
```

Table 8-4. (Continued).

```
            current![two_weeks] = 0
            clwr = 0
          Else
            If carea > 0 Then
        clwr = ((kcarea / carea * et) - (rf / lngth)) / 0.7
          current![kc] = kcarea / carea
          End If
            clwr = clwr + (sumocwr / lngth / current![area])
            If clwr < 0 Then
              clwr = 0
            End If
            mn = 50 / lngth
            If clwr < mn Then
               clwr = mn
            End If
        End If
          current![duty] = clwr
          current![two_weeks] = clwr * (current![area]*4.2)
          current![kcavg] = kcarea
          clwr = current![two_weeks]
          current.Update
      End If
      End If
    Next l
  End If
  sumclwr = sumclwr + clwr
  crop.MoveNext
 Loop
 canalforc.Seek "=", cl, i, j
 If Not canalforc.NoMatch And Not canalforc.EOF Then
  canalforc.Edit
  canalforc![canal_id] = cl
  canalforc![year] = i
  canalforc![period] = j
  canalforc![forecast0] = sumclwr '* lngth) / 1000000
  canalforc.Update
 Else
   canalforc.AddNew
   canalforc![canal_id] = cl
   canalforc![year] = i
   canalforc![period] = j
   canalforc![forecast0] = sumclwr '* lngth) / 1000000
   canalforc.Update
 End If
   sumdist = sumdist + sumclwr
   canal.MoveNext
Loop
distforc.Seek "=", i, j
If Not distforc.NoMatch And Not distforc.EOF Then
 distforc.Edit
 distforc![year] = i
 distforc![period] = j
 distforc![forecast0] = sumdist '  * lngth ) / 1000000
 distforc.Update
Else
 distforc.AddNew
 distforc![year] = i
 distforc![period] = j
```

Table 8-4. (Continued).

```
      distforc![forecast0] = sumdist '  * lngth ) / 1000000
      distforc.Update
     End If
     j = j + 1
    Loop
    i = i + 1
   Loop
   MsgBox "Calculations Completed"
End Function
```

Table 8-5. Expected water requirements calculation procedure.

```
    Attribute VB_Name = "expected"
 Option Compare Database
 Option Explicit
 Function expected_req()
   DoCmd.SetWarnings False
   Dim mydb As Database
   Dim current As Recordset
   Dim expected As Recordset
   Dim crop As Recordset
   Dim canal As Recordset
   Dim period As Recordset
   Dim coeff As Recordset
   Dim weather, canalforc, distforc, logs As Recordset
   Dim dates As Date
   Dim p, pp, yy, cyy As Integer
   Dim cl, lngth, cp As Integer
   Dim cr, newj, newi As Integer
   Dim i, j, k, l, lj, lyear, fyear, lperiod, fperiod, ll As Integer
   Dim kcarea, carea, et, rf, sumdist, sumclwr, clwr, mn As Double
   Dim c_coeff As Single
   Dim sumocwr, prevcurr, ocwr, expect_four As Double
   Set mydb = CurrentDb
   Set current = mydb.openrecordset("current_crop")
   Set expected = mydb.openrecordset("expected_crop")
   Set crop = mydb.openrecordset("crops")
   Set canal = mydb.openrecordset("canals")
   Set coeff = mydb.openrecordset("coeff_crop")
   Set weather = mydb.openrecordset("weather")
   Set canalforc = mydb.openrecordset("canal_forecast")
   Set distforc = mydb.openrecordset("dist_forecast")
   Set logs = mydb.openrecordset("log")
   current.Index = "PRIMARYKEY"
   expected.Index = "PRIMARYKEY"
   crop.Index = "PRIMARYKEY"
   canal.Index = "PRIMARYKEY"
   coeff.Index = "PRIMARYKEY"
   weather.Index = "PRIMARYKEY"
   canalforc.Index = "PRIMARYKEY"
   distforc.Index = "primarykey"
   MsgBox "Calculating Water Requirement For Next Period"
'-----------------------------------------------------------------
 '   Define first available data record for each crop/canal
'-----------------------------------------------------------------
            logs.MoveFirst
            fyear = logs![fyear]
            fperiod = logs![fperiod]

' Beyond the 24th period, step to next year
'-----------------------------------------------------------------
           ' ffperiod = fperiod + 12
           ' If ffperiod > 24 Then
           '  fperiod = fperiod + 12 - 25
           '  fyear = fyear + 1
           ' End If
'-----------------------------------------------------------------
 ' Define last available record for that crop/canal
             lyear = logs![lyear]
```

Table 8-5. (Continued).

```
            lperiod = logs![lperiod]
 '-----------------------------------------------------------------
  'for each time period in historic crop file
            i = fyear
       Do While i < lyear + 1
            j = 1
            lj = 24
            If i = fyear Then
              j = fperiod
            End If
            If i = lyear Then
              lj = lperiod
            End If
         Do While j < lj + 1
            weather.MoveFirst
            weather.Seek "=", j + 1
            If Not weather.NoMatch And Not weather.EOF Then
               et = weather![Reff_ET]
               rf = weather![Eff_Rain]
               lngth = weather![length]
            End If
'-----------------------------------------------------------------
'for each canal in canal db
'-----------------------------------------------------------------
            sumdist = 0
            canal.MoveFirst
          Do While Not canal.EOF
            sumclwr = 0
            cl = canal![no]

'-----------------------------------------------------------------
' and every crop in crop db
'-----------------------------------------------------------------
           crop.MoveFirst
           Do While Not crop.EOF
              sumocwr = 0
              kcarea = 0
              carea = 0
              cr = crop![Crop_ID]
              cp = crop![onoff]
              If cr = 10 Then Exit Do
'-----------------------------------------------------------------
' perrinials
'-----------------------------------------------------------------
            If cp = 1 Then
              coeff.MoveFirst
              coeff.Seek "=", cr, j
              If Not coeff.NoMatch And Not coeff.EOF Then
                c_coeff = coeff![coeff]
                ocwr = coeff![ocwr]
              End If
              expected.MoveFirst
              expected.Seek "=", i, j, cl, cr
              If Not expected.NoMatch And Not expected.EOF Then
                 expected.Edit
                 clwr = (((c_coeff * et) - (rf / lngth)) / 0.7)
                 If expected![area] > 0 Then
                   clwr = clwr + (ocwr / lngth / expected![area])
```

Table 8-5. (Continued).

```
                mn = 50 / lngth
                If clwr > 0 And clwr < mn Then
                 clwr = mn
                End If
                If clwr <= 0 Then
                 clwr = 0
                End If
                expect_four = clwr * (expected![area] * 4.2)
               Else
                expect_four = 0
                clwr = 0
               End If
              expected![four_weeks] = expect_four
              expected![kc] = c_coeff
              expected![kcavg] = c_coeff
              expected![duty] = clwr
              clwr = expected![four_weeks]
              expected.Update

             End If
'-----------------------------------------------------------------
' non perr.
'-----------------------------------------------------------------

            Else
             For l = 11 To 0 Step -1
              ll = j - 1
              If ll < 1 Then
               ll = ll + 24
               yy = i - 1
              Else
               yy = i
              End If
' Seek for lagged kc in coeff. db
'--------------------------------
              coeff.MoveFirst
              coeff.Seek "=", cr, l + 2
              If Not coeff.NoMatch Then
               c_coeff = coeff![coeff]
               ocwr = coeff![ocwr]
              End If

'Seek planting for 0-4 weeks forecast in expected crop db.
'-------------------------------------------------------
              current.MoveFirst
              current.Seek "=", yy, ll, cl, cr
              If Not current.NoMatch And Not current.EOF Then
                kcarea = kcarea + (current![planting] * c_coeff)
                sumocwr = sumocwr + (ocwr * current![planting])
                carea = carea + current![planting]
              End If
             Next l
             coeff.MoveFirst
             coeff.Seek "=", cr, 1
             If Not coeff.NoMatch Then
              c_coeff = coeff![coeff]
              ocwr = coeff![ocwr]
```

Table 8-5. (Continued).

```
            End If
             expected.MoveFirst
             expected.Seek "=", i, j, cl, cr
             If Not expected.NoMatch And Not expected.EOF Then
              expected.Edit
              kcarea = kcarea + (expected![expplant] * c_coeff)

              sumocwr = sumocwr + (ocwr * expected![expplant])
              carea = carea + expected![expplant]
                If expected![area] = 0 Then
                 expect_four = 0
                 clwr = 0
                Else
                 If carea > 0 Then
               clwr = ((kcarea / carea * et) - (rf / lngth))/ 0.7
                    expected![kc] = kcarea / carea
                 End If
                 clwr = clwr + (sumocwr / lngth /   expected![area])
                 If clwr < 0 Then
                   clwr = 0
                 End If
                 mn = 50 / lngth
                 If clwr < mn Then
                    clwr = mn
                 End If
                 expect_four = clwr * (expected![area] * 4.2)
                 expected![duty] = clwr
                 expected![four_weeks] = expect_four
                 expected![kcavg] = kcarea / carea
                 clwr = expect_four
                 expected.Update
                End If
            End If
            End If
            sumclwr = sumclwr + clwr
            crop.MoveNext
           Loop
'-----------------------------------------------------------------
'Update canal Forecast(canal_forecast table), put forecast of next period in current record
'-----------------------------------------------------------------
           canalforc.Seek "=", cl, i, j
           If Not canalforc.NoMatch And Not canalforc.EOF Then
            canalforc.Edit
            canalforc.forecast1 = sumclwr '* lngth) / 1000000
            canalforc.Update
           Else
             canalforc.AddNew
             canalforc.canal_id = cl
             canalforc.year = i
             canalforc.period = j
             canalforc.forecast1 = sumclwr '* lngth) / 1000000
             canalforc.Update
           End If
'-----------------------------------------------------------------
'Put same data in another field, such that next period's canal forecast
'is put in the next period's record
'-----------------------------------------------------------------
```

Table 8-5. (Continued).

```
            canalforc.MoveFirst
            If j = 24 Then
             canalforc.Seek "=", cl, i + 1, 1
            Else
             canalforc.Seek "=", cl, i, j + 1
            End If
            If Not canalforc.NoMatch Then
              canalforc.Edit
              canalforc.for_shift = sumclwr

           If i = lyear And j = lperiod Then
               canalforc.forecast0 = sumclwr
              End If
              canalforc.Update
             Else
              If j = 24 Then
               newj = 1
               newi = i + 1
              Else
               newi = i
               newj = j + 1
              End If
              If i = lyear And j = lperiod Then
               canalforc.AddNew
               canalforc.canal_id = cl
               canalforc.year = newi
               canalforc.period = newj
               canalforc.for_shift = sumclwr
               canalforc.forecast0 = sumclwr
               canalforc.Update
              End If
             End If
               sumdist = sumdist + sumclwr
               canal.MoveNext
            Loop
        '-----------------------------------------------------------------
'Update district Forecast(dist_forecast table), put forecast of   ' next period '  in current record
     '-----------------------------------------------------------------
            distforc.MoveFirst
            distforc.Seek "=", i, j
            If Not distforc.NoMatch And Not distforc.EOF Then
             distforc.Edit
             distforc.forecast1 = sumdist '  * lngth ) / 1000000
             distforc.Update
            Else
             distforc.AddNew
             distforc.year = i
             distforc.period = j
             distforc.forecast1 = sumdist '  * lngth ) / 1000000
             distforc.Update
            End If
'-----------------------------------------------------------------
' Put same data in another field, such that next period's district
' forecast is put in the next period's record
'-----------------------------------------------------------------
            distforc.MoveFirst
            If j = 24 Then
             distforc.Seek "=", i + 1, 1
```

Table 8-5. (Continued).

```
          Else
           distforc.Seek "=", i, j + 1
          End If
          If Not distforc.NoMatch Then
            distforc.Edit
            distforc.for_shift = sumdist
            If i = lyear And j = lperiod Then
            distforc.forecast0 = sumdist
            End If
            distforc.Update
          Else
            If j = 24 Then
              newj = 1
             newi = i + 1
            Else
             newi = i
             newj = j + 1
            End If
            If i = lyear And j = lperiod Then
             distforc.AddNew
             distforc.year = newi
             distforc.period = newj
             distforc.for_shift = sumdist
             distforc.forecast0 = sumdist
             distforc.Update
            End If
           End If
         j = j + 1
         Loop
        i = i + 1
       Loop
       MsgBox "Calculations Completed"
  End Function
```

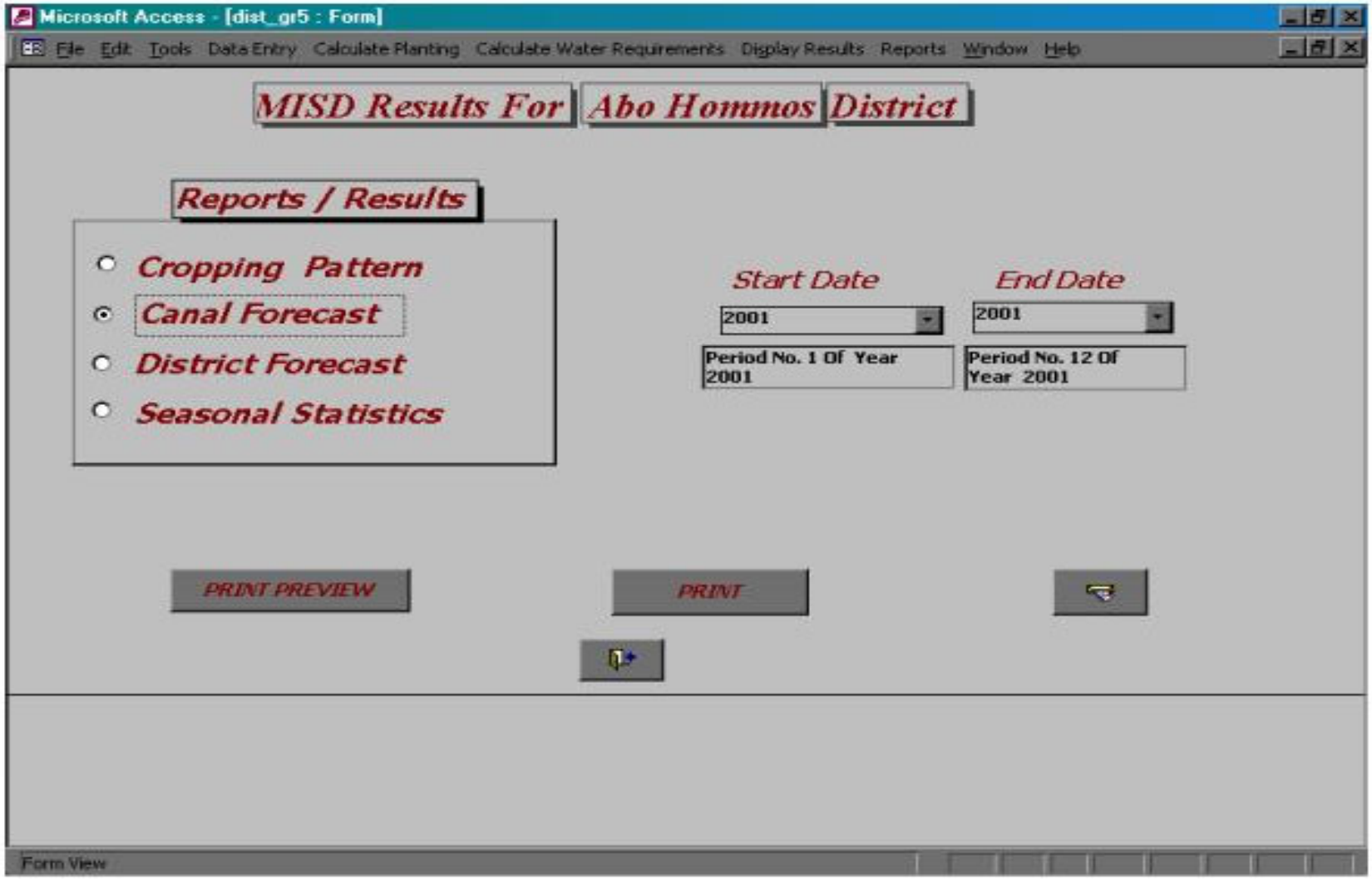

Figure 8-9. Canal forecast report parameters (start date and end date).

Table 8-6. Canal forecast report, period 1 (January 1-15), 2001.

Canal Water Needs Forecast

No.	Canal	Year	Period	Current	Expected
1	Abo Tahoon	2001	1	43470.00	40753.13
2	Berket Attas	2001	1	34664.00	32497.50
3	Besntway	2001	1	46130.00	43246.88
4	Elahkar	2001	1	5880.00	5512.50
5	Eldekhla	2001	1	59290.00	55584.38
6	Elgaradat	2001	1	18298.00	17154.38
7	Elhamamy	2001	1	53354.00	50019.38
8	Elherfa	2001	1	111426.00	104461.88
9	Elkamaheen	2001	1	68054.00	63800.63
10	Elkarawy	2001	1	25354.00	23769.38
11	Elkasida	2001	1	6860.00	6431.25
12	Elkenawia	2001	1	120484.00	112953.75
13	Elnakhla	2001	1	16674.00	15631.88
14	Elsharkawa	2001	1	25830.00	24215.63

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Table 8-6. (Continued).

Canal Water Needs Forecast (Continued)

No.	Canal	Year	Period	Current	Expected
15	Elwzara	2001	1	29960.00	28087.50
16	Elzarka	2001	1	50176.00	47040.00
17	Elzeny	2001	1	58646.00	54980.63
18	G Kabeel	2001	1	5320.00	4987.50
19	G sahaly	2001	1	15428.00	14463.75
20	Gnady	2001	1	21924.00	20553.75
21	Hamdy	2001	1	4270.00	4003.13
22	Kafla	2001	1	51926.00	48680.63
23	Khadra	2001	1	3360.00	3150.00
24	Koom Elbous	2001	1	32900.00	30843.75
25	Mahlt Keel	2001	1	58226.00	54586.88
26	Sahaly	2001	1	22428.00	21026.25
27	Seaf Aldeen	2001	1	7210.00	6759.38
28	Sidi Azab	2001	1	23660.00	22181.25
29	Zawet Naem	2001	1	24850.00	23296.88

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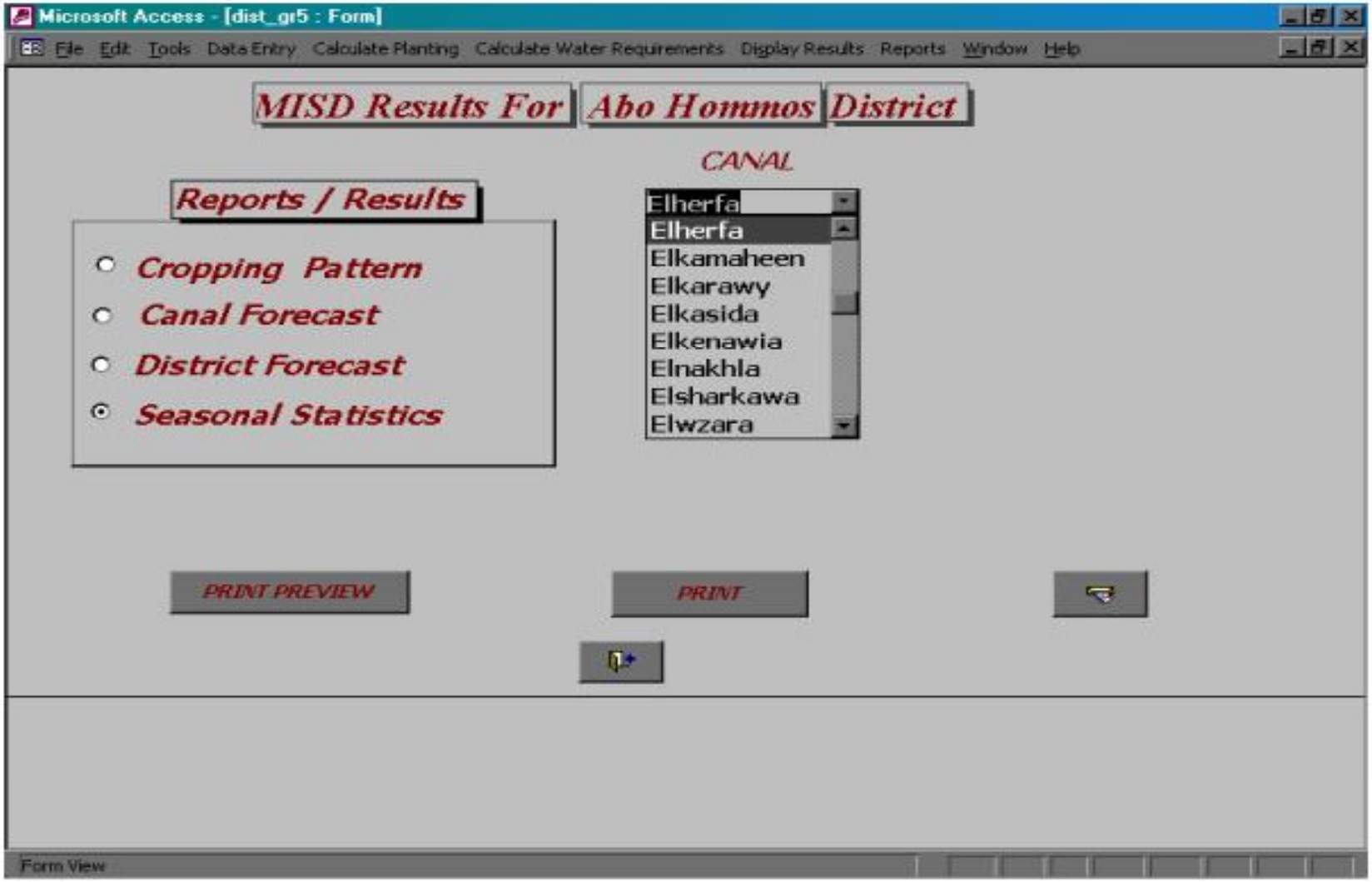

Figure 8-10. Seasonal statistics report parameters (canal name).

Table 8-7. Seasonal statistics report.

Water Requirements Statistical Report							
		Current			Expected		
Canal	Per	Average	Min	Max	Average	Min	Max
Elherfa	1	111426.00	111426.00	111426.00	104461.88	104461.88	104461.88
Elherfa	2	104461.88	104461.88	104461.88	104461.88	104461.88	104461.88
Elherfa	3	111466.38	111466.38	111466.38	111466.38	111466.38	111466.38
Elherfa	4	130585.90	130585.90	130585.90	130585.90	130585.90	130585.90
Elherfa	5	149739.24	149739.24	149739.24	149739.24	149739.24	149739.24
Elherfa	6	153340.83	153340.83	153340.83	154119.61	154119.61	154119.61
Elherfa	7	141345.21	141345.21	141345.21	145557.35	145557.35	145557.35
Elherfa	8	33827.17	33827.17	33827.17	29915.36	29915.36	29915.36
Elherfa	9	23810.72	23810.7	23810.72	45395.42	45395.42	45395.42
Elherfa	10	63160.25	63160.25	63160.25	58013.02	58013.02	58013.02
Elherfa	11	116117.09	116117.09	116117.09	78892.95	78892.95	78892.9529
Elherfa	12	261989.15	261989.15	261989.15	282525.99	282525.99	282525.99
Elherfa	13	349110.94	349110.94	349110.94	349110.94	349110.94	349110.94
Elherfa	14	481983.38	481983.38	481983.38	370153.24	370153.24	370153.24
Elherfa	15	0.00	0.00	0.00	0.00	0.00	0.00
Elherfa	20	59968.75	59968.75	59968.75	0.00	0.00	0.00
Elherfa	21	111426.00	111426.00	111426.00	55300.00	55300.00	55300.00
Elherfa	22	111426.00	111426.00	111426.00	111426.00	111426.00	111426.00
Elherfa	23	111426.00	111426.00	111426.00	111426.00	111426.00	111426.00
Elherfa	24	104461.88	104461.88	104461.88	104461.88	104461.88	104461.88

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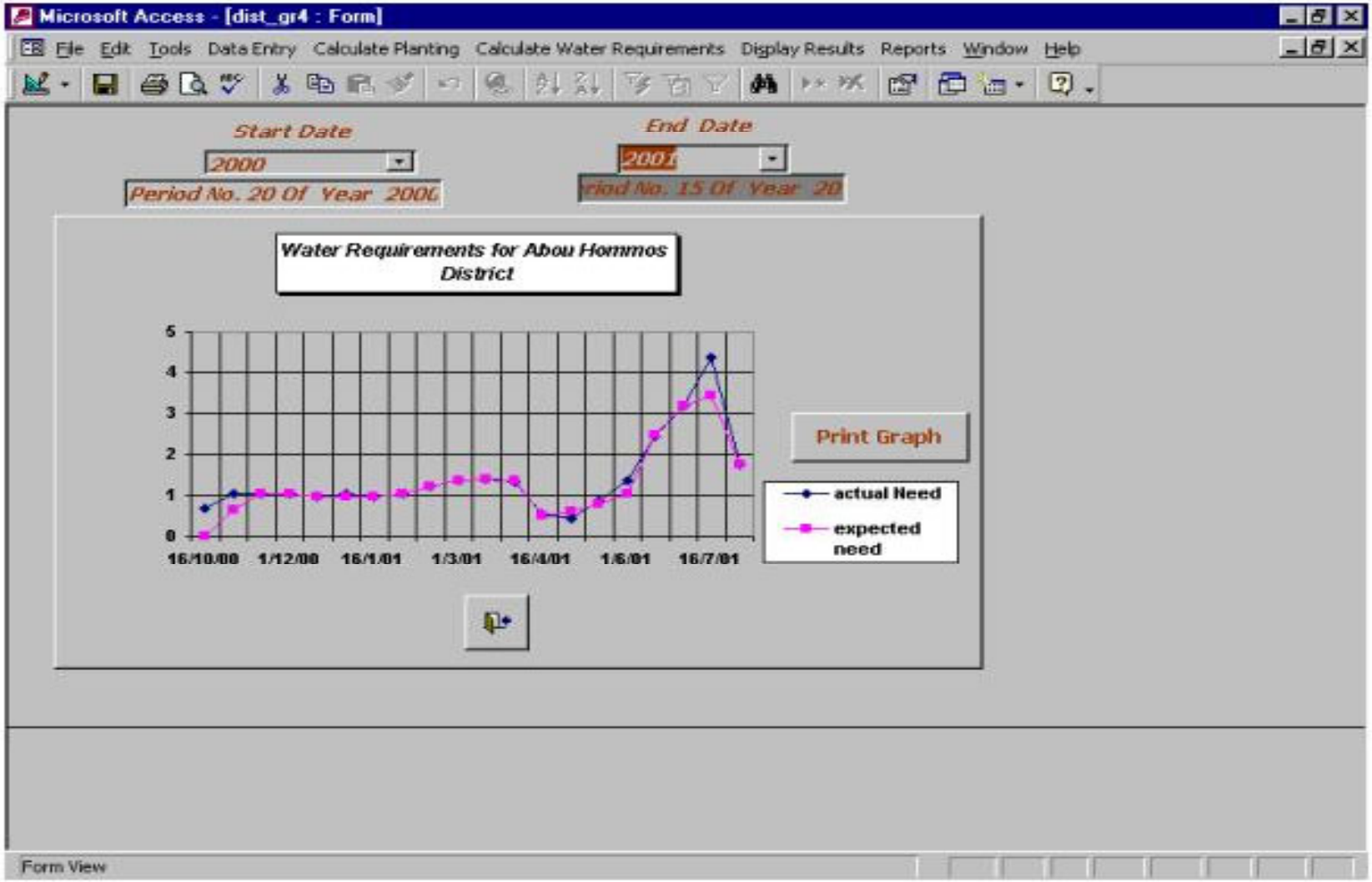

Figure 8-11. Comparison of actual and expected needs.

Table 8-8. Time series of current and expected crop water needs for the Abou Hummus Irrigation District.

Abou Hummus District Forecast

Year	Period	Current Need	Next Period Expected Need (Million m^3)	Expected Need (Million m^3)
2000	20	0.69	0.66	0.00
2000	21	1.05	1.05	0.66
2000	22	1.05	1.05	1.05
2000	23	1.05	0.98	1.05
2000	24	0.98	0.98	0.98
2001	1	1.05	0.98	0.98
2001	2	0.98	1.05	0.98
2001	3	1.05	1.22	1.05
2001	4	1.22	1.34	1.22
2001	5	1.34	1.39	1.34
2001	6	1.39	1.37	1.39
2001	7	1.31	0.52	1.37
2001	8	0.54	0.62	0.52
2001	9	0.41	0.79	0.62
2001	10	0.84	1.03	0.79
2001	11	1.36	2.45	1.03
2001	12	2.42	3.20	2.45
2001	13	3.20	3.32	3.20
2001	14	4.36	3.48	3.32
2001	15	3.48	0.00	3.48

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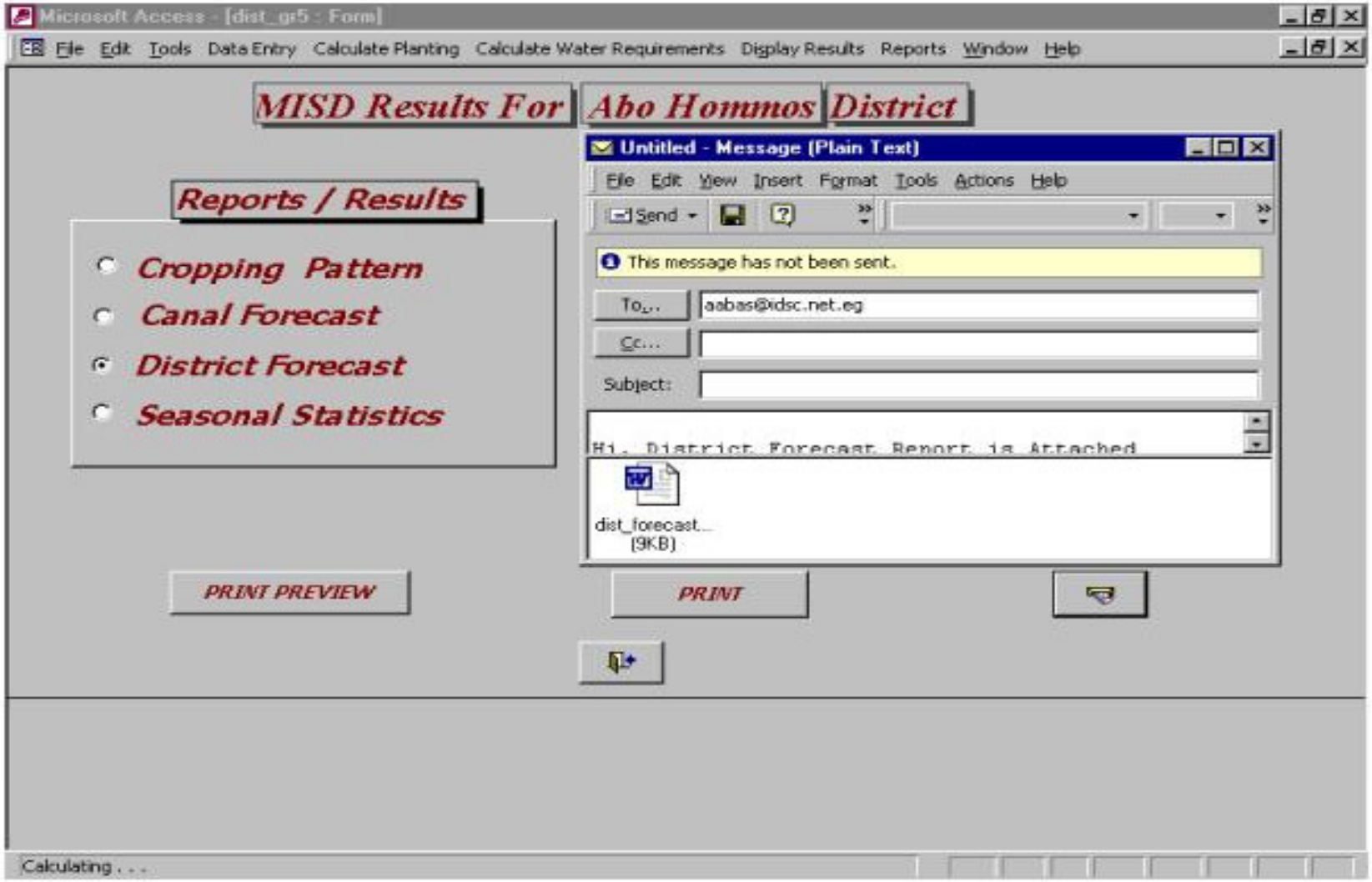

Figure 8-12. District to directorate data transfer example for sending district historic crop water needs.

9 Water-Monitoring Program

9.1 Introduction

The importance of water monitoring is to ensure that the district has the right quantity of water during a certain period. Also, it could be a helpful tool to determine the status of irrigation and hence the district engineer can make a decision of rescheduling the water distribution within the district. He can also ask his superiors to provide him with additional water in case of water shortage or reduce the incoming flow to avoid excess water problems.

9.2 Water Monitoring Program

A water-monitoring program was initiated on March 1, 2000, to estimate the water supplies to the irrigation district. This program will provide data for assessing the mismatch between irrigation demands and supplies on a district-wide basis. The main components of this program are:

9.2.1 Monitoring Locations

The first step in establishing the monitoring program was selection of key locations on the canal system to be monitored. These locations represent the sources from which the district gets its water allocation and the places where water leaves the district and is delivered to another neighboring district. Figure 9-1 shows a schematic of the canal system of the East Isna district with the monitoring locations.

9.2.2 Location of Measurements

Two pump stations on the Nile River, the Elnamasa and Old Kallabia pump stations, supply water to this district. Therefore, discharges of these pumps were monitored through recording the pump operating hours and discharges. However, because there is a canal shared by the East Isna and West Isna districts, the Om Ads Canal, the water level and discharges were monitored at this canal head.

9.2.3 Parameters

The parameters to be monitored at each location were determined to be water levels (upstream and downstream of the location), gate opening and water flows.

9.2.4 Frequency of Measurement

The schedule was established for the district to measure water levels every two hours and measure the water flow using the current meter method at least once during the “on-period” of the canal.

9.2.5 Monitoring Tools

Assessment of the tools required for implementing the monitoring program indicated that automatic water level recorders (ARs) would be used to measure water levels where telemetry stations do not exist. Wherever possible, telemetry stations were used for these

water level measurements. In addition, the gatekeepers take readings every two hours during the daytime. In minor locations, *i.e.*, small canals feeding the district, the gatekeepers were assigned to report their water levels instead of using ARs or telemetry.

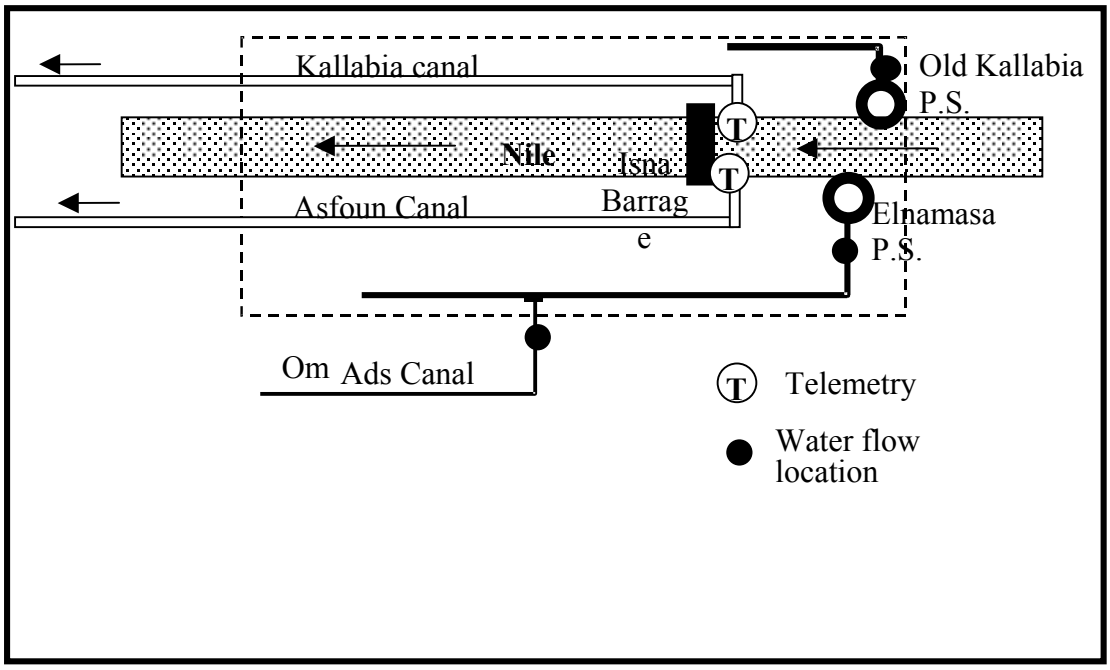

Figure 9-1. Locations of MISD water monitoring in East Isna District.

9.2.6 Calibration

Calibration work involves determination of the appropriate hydraulic equations to be used for calculating the water inflow to the district from the water level measurements. Calibration depends on the current meter flow measurements. Two hydraulic equations are recommended because they are very common in the Egyptian water management system. The first equation is stage-discharge relation and can be written as:

$$Q = a\ h^b$$

where Q is the canal discharge, h is the water level downstream the canal headgate, and a and b are calibration constants. In many cases, a linear form of the stage-discharge equation is used as follows:

$$Q = a + b\ (h)$$

The second equation is the orifice flow equation that can be written as:

$$Q = C_d A\sqrt{2gH}$$

where A is gate opening area, H is the water head difference across the gate, g is the acceleration of gravity, and C_d is the calibration coefficient. A linearized form of the orifice equation is commonly used at MWRI. This form is:

$$\frac{Q}{\sqrt{H}} = C(d_0 \pm L)$$

where d_0 is the gate opening depth and C and L are calibration constants chosen to give the highest correlation coefficient between the two variables $Q/\sqrt{H}$ and d_0.

Data of flow measurements are shown in Table 9-1. The measured data don't show a good correlation between water level and measured discharges. More measurements may be needed to develop a suitable hydraulic equation. However, the water diverted to Om Ads canal was calculated as a proportion of Elramadi canal.

9.2.7 Calculating Flow from Water Levels

Once the calibration equations are developed, they can be used to calculate water flow rate (discharge) from the water level data. Thus, the two-hour and daily water inflow and outflow were calculated in order to estimate the actual water delivered to the irrigation district. Tables 9-2 through 9-4 show water flow estimated at the previously mentioned monitoring locations.

Due to the difficulty of developing a reliable hydraulic relationship between water levels and discharges on the Om Ads canal partly because of the sensitivity of discharge to slight changes of downstream water levels, the flow in this canal was estimated as a proportion of the Elramady canal intake flow. Thus, Table 9-2 shows data only until September 2000. It is recommended additional work be done to find a reliable system for estimating the canal flow in the Om Ads Canal.

Table 9-1. Current meter flow measurements in the East Isna Irrigation District.

Om Ads Canl Intake			
Date	U.S.	D.S	Dis(m^3/sec)
03/14/00	79.70	79.40	9.338
06/28/00	79.50	79.45	11.307
07/22/00	79.35	79.25	14.800
08/24/00	79.60	79.50	9.690
09/06/00	79.42	79.38	14.738
09/20/00	79.60	79.60	9.360

Table 9-2. Two-hour water levels (m above msl) and discharges (million m^3/day) of Om Ads Canal.

Day		
03/01/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
03/02/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
03/03/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
03/04/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
03/05/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
03/06/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
03/07/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
03/08/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
03/09/00	U.S	79.7
	D.S	79.4
	Discharge	0.977
03/10/00	U.S	79.7
	D.S	79.4
	Discharge	0.977
03/11/00	U.S	79.7
	D.S	79.4
	Discharge	0.977
03/12/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
03/13/00	U.S	79.5
	Discharge	0.977
	Discharge	
03/14/00	U.S	79.7
	D.S	79.4
	Discharge	0.977
03/15/00	U.S	79.7
	D.S	79.4
	Discharge	0.977
03/16/00	U.S	79.5
	D.S	79
	Discharge	0.000

Day		
03/17/00	U.S	79.6
	D.S	79
	Discharge	0.000
03/18/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
03/19/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
03/20/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
03/21/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
03/22/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
03/23/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
03/24/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
03/25/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
03/26/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
03/27/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
03/28/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
03/29/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
03/30/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
03/31/00	U.S	79.25
	D.S	79.25
	Discharge	0.977

Table 9-2. (Continued).

Day		
04/01/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
04/02/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
04/03/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
04/04/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
04/05/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
04/06/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
04/07/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
04/08/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
04/09/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
04/10/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
04/11/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
04/12/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
04/13/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
04/14/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
04/15/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
04/16/00	U.S	79.55
	D.S	79.4
	Discharge	0.977

Day		
04/17/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
04/18/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
04/19/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
04/20/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
04/21/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
04/22/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
04/23/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
04/24/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
04/25/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
04/26/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
04/27/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
04/28/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
04/29/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
04/30/00	U.S	79.55
	D.S	79.4
	Discharge	0.977

Table 9-2. (Continued).

Day		
05/01/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
05/02/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
05/03/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
05/04/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
05/05/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
05/06/00	U.S	79.7
	D.S	79.4
	Discharge	0.977
05/07/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
05/08/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
05/09/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
05/10/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
05/11/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
05/12/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
05/13/00	U.S	79.55
	Discharge	0.977
	Discharge	
05/14/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
05/15/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
05/16/00	U.S	79.65
	D.S	79.4
	Discharge	0.977

Day		
05/17/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
05/18/00	U.S	79.95
	D.S	79.4
	Discharge	0.977
05/19/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
05/20/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
05/21/00	U.S	dry
	D.S	dry
	Discharge	0.977
05/22/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
05/23/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
05/24/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
05/25/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
05/26/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
05/27/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
05/28/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
05/29/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
05/30/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
05/31/00	U.S	79.5
	D.S	79.4
	Discharge	0.977

Table 9-2. (Continued).

Day		
06/01/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
06/02/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
06/03/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
06/04/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
06/05/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
06/06/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
06/07/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
06/08/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
06/09/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
06/10/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
06/11/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
06/12/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
06/13/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
06/14/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
06/15/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
06/16/00	U.S	79.55
	D.S	79.4
	Discharge	0.977

Day		
06/17/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
06/18/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
06/19/00	U.S	79.7
	D.S	79.4
	Discharge	0.977
06/20/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
06/21/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
06/22/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
06/23/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
06/24/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
06/25/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
06/26/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
06/27/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
06/28/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
06/29/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
06/30/00	U.S	79.55
	D.S	79.4
	Discharge	0.977

Table 9-2. (Continued).

Day		
07/01/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
07/02/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
07/03/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
07/04/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
07/05/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
07/06/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
07/07/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
07/08/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
07/09/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
07/10/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
07/11/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
07/12/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
07/13/00	U.S	79.65
	Discharge	0.977
	Discharge	
07/14/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
07/15/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
07/16/00	U.S	79.65
	D.S	79.4
	Discharge	0.977

Day		
07/17/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
07/18/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
07/19/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
07/20/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
07/21/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
07/22/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
07/23/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
07/24/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
07/25/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
07/26/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
07/27/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
07/28/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
07/29/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
07/30/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
07/31/00	U.S	79.5
	D.S	79.4
	Discharge	0.977

Table 9-2. (Continued).

Day		
08/01/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
08/02/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
08/03/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
08/04/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
08/05/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
08/06/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
08/07/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
08/08/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
08/09/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
08/10/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
08/11/00	U.S	79.2
	D.S	79.4
	Discharge	0.977
08/12/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
08/13/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
08/14/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
08/15/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
08/16/00	U.S	79.5
	D.S	79.4
	Discharge	0.977

Day		
08/17/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
08/18/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
08/19/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
08/20/00	U.S	79.45
	D.S	79.4
	Discharge	0.977
08/21/00	U.S	79.3
	D.S	79.28
	Discharge	0.977
08/22/00	U.S	79.4
	D.S	79.38
	Discharge	0.977
08/23/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
08/24/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
08/25/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
08/26/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
08/27/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
08/28/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
08/29/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
08/30/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
08/31/00	U.S	79.5
	D.S	79.4
	Discharge	0.977

Table 9-2. (Continued).

Day		
09/01/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
09/02/00	U.S	79.5
	D.S	79.3
	Discharge	0.977
09/03/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
09/04/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
09/05/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
09/06/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
09/07/00	U.S	79.55
	D.S	79.4
	Discharge	0.977
09/08/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
09/09/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
09/10/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
09/11/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
09/12/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
09/13/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
09/14/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
09/15/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
09/16/00	U.S	79.6
	D.S	79.4
	Discharge	0.977

Day		
09/17/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
09/18/00	U.S	79.5
	D.S	79.4
	Discharge	0.977
09/19/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
09/20/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
09/21/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
09/22/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
09/23/00	U.S	79.6
	D.S	79.4
	Discharge	0.977
09/24/00	U.S	79.65
	D.S	79.4
	Discharge	0.977
09/25/00	U.S	
	D.S	
	Discharge	0.977
09/26/00	U.S	
	D.S	
	Discharge	0.977
09/27/00	U.S	
	D.S	
	Discharge	0.977
09/28/00	U.S	
	D.S	
	Discharge	0.977
09/29/00	U.S	
	D.S	
	Discharge	0.977
09/30/00	U.S	
	D.S	
	Discharge	0.977

Table 9-3. Working hours and discharges for Elnamsa P.S.

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
01/03/2000	48	8	1	1.382
02/03/2000	48	8	1	1.382
03/03/2000	48	8	1	1.382
04/03/2000	48	8	1	1.382
05/03/2000	48	8	1	1.382
06/03/2000	48	8	1	1.382
07/03/2000	48	8	1	1.382
08/03/2000	60	8	1	1.728
09/03/2000	60	8	1	1.728
10/03/2000	60	8	1	1.728
11/03/2000	60	8	1	1.728
12/03/2000	60	8	1	1.728
13/03/2000	66	8	1	1.901
14/03/2000	66	8	1	1.901
15/03/2000	54	8	1	1.555
16/03/2000	0	8	1	0.000
17/03/2000	0	8	1	0.000
18/03/2000	48	8	1	1.382
19/03/2000	48	8	1	1.382
20/03/2000	60	8	1	1.728
21/03/2000	60	8	1	1.728
22/03/2000	66	8	1	1.901
23/03/2000	66	8	1	1.901
24/03/2000	66	8	1	1.901
25/03/2000	66	8	1	1.901
26/03/2000	66	8	1	1.901
27/03/2000	66	8	1	1.901
28/03/2000	66	8	1	1.901
29/03/2000	66	8	1	1.901
30/03/2000	57	8	1	1.642
31/03/2000	51	8	1	1.469
01/04/2000	48	8	1	1.382
02/04/2000	48	8	1	1.382
03/04/2000	48	8	1	1.382
04/04/2000	55	8	1	1.584
05/04/2000	55	8	1	1.584
06/04/2000	55	8	1	1.584
07/04/2000	55	8	1	1.584
08/04/2000	55	8	1	1.584
09/04/2000	55	8	1	1.584
10/04/2000	55	8	1	1.584
11/04/2000	61	8	1	1.757
12/04/2000	56	8	1	1.613
13/04/2000	58	8	1	1.670
14/04/2000	60	8	1	1.728
15/04/2000	60	8	1	1.728
16/04/2000	60	8	1	1.728
17/04/2000	60	8	1	1.728
18/04/2000	60	8	1	1.728
19/04/2000	60	8	1	1.728
20/04/2000	60	8	1	1.728
21/04/2000	60	8	1	1.728
22/04/2000	60	8	1	1.728

Table 9-3. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
23/04/2000	60	8	1	1.728
24/04/2000	48	8	1	1.382
25/04/2000	54	8	1	1.555
26/04/2000	54	8	1	1.555
27/04/2000	54	8	1	1.555
28/04/2000	54	8	1	1.555
29/04/2000	54	8	1	1.555
30/04/2000	54	8	1	1.555
01/05/2000	54	8	1	1.555
02/05/2000	46	8	1	1.325
03/05/2000	40	8	1	1.152
04/05/2000	54	8	1	1.555
05/05/2000	54	8	1	1.555
06/05/2000	54	8	1	1.555
07/05/2000	54	8	1	1.555
08/05/2000	48	8	1	1.382
09/05/2000	54	8	1	1.555
10/05/2000	24	8	1	0.691
11/05/2000	51	8	1	1.469
12/05/2000	60	8	1	1.728
13/05/2000	60	8	1	1.728
14/05/2000	60	8	1	1.728
15/05/2000	66	8	1	1.901
16/05/2000	66	8	1	1.901
17/05/2000	66	8	1	1.901
18/05/2000	72	8	1	2.074
19/05/2000	72	8	1	2.074
20/05/2000	66	8	1	1.901
21/05/2000	72	8	1	2.074
22/05/2000	72	8	1	2.074
23/05/2000	72	8	1	2.074
24/05/2000	72	8	1	2.074
25/05/2000	48	8	1	1.382
26/05/2000	55	8	1	1.584
27/05/2000	55	8	1	1.584
28/05/2000	60	8	1	1.728
29/05/2000	60	8	1	1.728
30/05/2000	60	8	1	1.728
31/05/2000	24	8	1	0.691
01/06/2000	24	8	1	0.691
02/06/2000	24	8	1	0.691
03/06/2000	72	8	1	2.074
04/06/2000	72	8	1	2.074
05/06/2000	72	8	1	2.074
06/06/2000	72	8	1	2.074
07/06/2000	72	8	1	2.074
08/06/2000	72	8	1	2.074
09/06/2000	72	8	1	2.074
10/06/2000	69	8	1	1.987
11/06/2000	69	8	1	1.987
12/06/2000	66	8	1	1.901
13/06/2000	66	8	1	1.901
14/06/2000	66	8	1	1.901

Table 9-3. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
15/06/2000	66	8	1	1.901
16/06/2000	66	8	1	1.901
17/06/2000	66	8	1	1.901
18/06/2000	72	8	1	2.074
19/06/2000	72	8	1	2.074
20/06/2000	72	8	1	2.074
21/06/2000	72	8	1	2.074
22/06/2000	72	8	1	2.074
23/06/2000	72	8	1	2.074
24/06/2000	72	8	1	2.074
25/06/2000	66	8	1	1.901
26/06/2000	66	8	1	1.901
27/06/2000	66	8	1	1.901
28/06/2000	72	8	1	2.074
29/06/2000	72	8	1	2.074
30/06/2000	72	8	1	2.074
01/07/2000	72	8	1	2.074
02/07/2000	72	8	1	2.074
03/07/2000	72	8	1	2.074
04/07/2000	66	8	1	1.901
05/07/2000	57	8	1	1.642
06/07/2000	75	8	1	2.160
07/07/2000	72	8	1	2.074
08/07/2000	72	8	1	2.074
09/07/2000	72	8	1	2.074
10/07/2000	82	8	1	2.362
11/07/2000	84	8	1	2.419
12/07/2000	84	8	1	2.419
13/07/2000	79	8	1	2.275
14/07/2000	78	8	1	2.246
15/07/2000	76	8	1	2.189
16/07/2000	75	8	1	2.160
17/07/2000	70	8	1	2.016
18/07/2000	75	8	1	2.160
19/07/2000	80	8	1	2.304
20/07/2000	80	8	1	2.304
21/07/2000	80	8	1	2.304
22/07/2000	80	8	1	2.304
23/07/2000	80	8	1	2.304
24/07/2000	80	8	1	2.304
25/07/2000	80	8	1	2.304
26/07/2000	86	8	1	2.477
27/07/2000	86	8	1	2.477
28/07/2000	86	8	1	2.477
29/07/2000	86	8	1	2.477
30/07/2000	86	8	1	2.477
31/07/2000	86	8	1	2.477
01/08/2000	86	8	1	2.477
02/08/2000	90	8	1	2.592
03/08/2000	90	8	1	2.592
04/08/2000	96	8	1	2.765
05/08/2000	96	8	1	2.765

Table 9-3. (Continued).

Date	No of Hours	Dis. (m3/sec)	Eff.	Total Discharge (M.m3/day)
06/08/2000	96	8	1	2.765
07/08/2000	96	8	1	2.765
08/08/2000	96	8	1	2.765
09/08/2000	96	8	1	2.765
10/08/2000	72	8	1	2.074
11/08/2000	68	8	1	1.958
12/08/2000	96	8	1	2.765
13/08/2000	96	8	1	2.765
14/08/2000	96	8	1	2.765
15/08/2000	96	8	1	2.765
16/08/2000	96	8	1	2.765
17/08/2000	96	8	1	2.765
18/08/2000	96	8	1	2.765
19/08/2000	79	8	1	2.275
20/08/2000	75	8	1	2.160
21/08/2000	78	8	1	2.246
22/08/2000	81	8	1	2.333
23/08/2000	86	8	1	2.477
24/08/2000	86	8	1	2.477
25/08/2000	86	8	1	2.477
26/08/2000	80	8	1	2.304
27/08/2000	80	8	1	2.304
28/08/2000	80	8	1	2.304
29/08/2000	80	8	1	2.304
30/08/2000	80	8	1	2.304
31/08/2000	80	8	1	2.304
01/09/2000	72	8	1	2.074
02/09/2000	80	8	1	2.304
03/09/2000	80	8	1	2.304
04/09/2000	80	8	1	2.304
05/09/2000	80	8	1	2.304
06/09/2000	80	8	1	2.304
07/09/2000	80	8	1	2.304
08/09/2000	80	8	1	2.304
09/09/2000	80	8	1	2.304
10/09/2000	80	8	1	2.304
11/09/2000	80	8	1	2.304
12/09/2000	80	8	1	2.304
13/09/2000	80	8	1	2.304
14/09/2000	80	8	1	2.304
15/09/2000	80	8	1	2.304
16/09/2000	80	8	1	2.304
17/09/2000	80	8	1	2.304
18/09/2000	80	8	1	2.304
19/09/2000	80	8	1	2.304
20/09/2000	80	8	1	2.304
21/09/2000	80	8	1	2.304
22/09/2000	80	8	1	2.304
23/09/2000	80	8	1	2.304
24/09/2000	80	8	1	2.304

Table 9-3. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
25/09/2000	80	8	1	2.304
26/09/2000	80	8	1	2.304
27/09/2000	80	8	1	2.304
28/09/2000	80	8	1	2.304
29/09/2000	80	8	1	2.304
30/09/2000	80	8	1	2.304
01/10/2000	80	8	1	2.304
02/10/2000	80	8	1	2.304
03/10/2000	80	8	1	2.304
04/10/2000	80	8	1	2.304
05/10/2000	80	8	1	2.304
06/10/2000	80	8	1	2.304
07/10/2000	80	8	1	2.304
08/10/2000	80	8	1	2.304
09/10/2000	80	8	1	2.304
10/10/2000	80	8	1	2.304
11/10/2000	80	8	1	2.304
12/10/2000	80	8	1	2.304
13/10/2000	80	8	1	2.304
14/10/2000	80	8	1	2.304
15/10/2000	80	8	1	2.304
16/10/2000	80	8	1	2.304
17/10/2000	80	8	1	2.304
18/10/2000	80	8	1	2.304
19/10/2000	80	8	1	2.304
20/10/2000	80	8	1	2.304
21/10/2000	80	8	1	2.304
22/10/2000	80	8	1	2.304
23/10/2000	80	8	1	2.304
24/10/2000	80	8	1	2.304
25/10/2000	80	8	1	2.304
26/10/2000	84	8	1	2.419
27/10/2000	76	8	1	2.189
28/10/2000	84	8	1	2.419
29/10/2000	84	8	1	2.419
30/10/2000	84	8	1	2.419
31/10/2000	84	8	1	2.419
01/11/2000	84	8	1	2.419
02/11/2000	84	8	1	2.419
03/11/2000	84	8	1	2.419
04/11/2000	84	8	1	2.419
05/11/2000	84	8	1	2.419
06/11/2000	81	8	1	2.333
07/11/2000	84	8	1	2.419
08/11/2000	84	8	1	2.419
09/11/2000	84	8	1	2.419
10/11/2000	84	8	1	2.419
11/11/2000	84	8	1	2.419
12/11/2000	84	8	1	2.419
13/11/2000	84	8	1	2.419
14/11/2000	78	8	1	2.246
15/11/2000	77	8	1	2.218

Table 9-3. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
16/11/2000	84	8	1	2.419
17/11/2000	72	8	1	2.074
18/11/2000	72	8	1	2.074
19/11/2000	72	8	1	2.074
20/11/2000	72	8	1	2.074
21/11/2000	72	8	1	2.074
22/11/2000	63	8	1	1.814
23/11/2000	72	8	1	2.074
24/11/2000	72	8	1	2.074
25/11/2000	72	8	1	2.074
26/11/2000	72	8	1	2.074
27/11/2000	72	8	1	2.074
28/11/2000	72	8	1	2.074
29/11/2000	72	8	1	2.074
30/11/2000	72	8	1	2.074
01/12/2000	66	8	1	1.901
02/12/2000	66	8	1	1.901
03/12/2000	66	8	1	1.901
04/12/2000	48	8	1	1.382
05/12/2000	66	8	1	1.901
06/12/2000	72	8	1	2.074
07/12/2000	72	8	1	2.074
08/12/2000	72	8	1	2.074
09/12/2000	72	8	1	2.074
10/12/2000	72	8	1	2.074
11/12/2000	54	8	1	1.555
12/12/2000	72	8	1	2.074
13/12/2000	72	8	1	2.074
14/12/2000	72	8	1	2.074
15/12/2000	72	8	1	2.074
16/12/2000	72	8	1	2.074
17/12/2000	72	8	1	2.074
18/12/2000	48	8	1	1.382
19/12/2000	0	8	1	0.000
20/12/2000	0	8	1	0.000
21/12/2000	0	8	1	0.000
22/12/2000	0	8	1	0.000
23/12/2000	0	8	1	0.000
24/12/2000	0	8	1	0.000
25/12/2000	0	8	1	0.000
26/12/2000	0	8	1	0.000
27/12/2000	0	8	1	0.000
28/12/2000	0	8	1	0.000
29/12/2000	0	8	1	0.000
30/12/2000	0	8	1	0.000
31/12/2000	0	8	1	0.000
01/01/2001	0	8	1	0.000
02/01/2001	0	8	1	0.000
03/01/2001	0	8	1	0.000
04/01/2001	0	8	1	0.000
05/01/2001	0	8	1	0.000
06/01/2001	0	8	1	0.000
07/01/2001	0	8	1	0.000
08/01/2001	0	8	1	0.000

Table 9-3. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
09/01/2001	0	8	1	0.000
10/01/2001	18	8	1	0.518
11/01/2001	72	8	1	2.074
12/01/2001	72	8	1	2.074
13/01/2001	72	8	1	2.074
14/01/2001	80	8	1	2.304
15/01/2001	90	8	1	2.592
16/01/2001	90	8	1	2.592
17/01/2001	84	8	1	2.419
18/01/2001	84	8	1	2.419
19/01/2001	84	8	1	2.419
20/01/2001	84	8	1	2.419
21/01/2001	84	8	1	2.419
22/01/2001	69	8	1	1.987
23/01/2001	78	8	1	2.246
24/01/2001	62	8	1	1.786
25/01/2001	72	8	1	2.074
26/01/2001	62	8	1	1.786
27/01/2001	60	8	1	1.728
28/01/2001	60	8	1	1.728
29/01/2001	60	8	1	1.728
30/01/2001	60	8	1	1.728
31/01/2001	58	8	1	1.670
01/02/2001	55	8	1	1.584
02/02/2001	55	8	1	1.584
03/02/2001	55	8	1	1.584
04/02/2001	52	8	1	1.498
05/02/2001	48	8	1	1.382
06/02/2001	48	8	1	1.382
07/02/2001	48	8	1	1.382
08/02/2001	48	8	1	1.382
09/02/2001	48	8	1	1.382
10/02/2001	48	8	1	1.382
11/02/2001	48	8	1	1.382
12/02/2001	48	8	1	1.382
13/02/2001	48	8	1	1.382
14/02/2001	48	8	1	1.382
15/02/2001	48	8	1	1.382
16/02/2001	53	8	1	1.526
17/02/2001	24	8	1	0.691
18/02/2001	24	8	1	0.691
19/02/2001	24	8	1	0.691
20/02/2001	24	8	1	0.691
21/02/2001	48	8	1	1.382
22/02/2001	48	8	1	1.382
23/02/2001	55	8	1	1.584
24/02/2001	55	8	1	1.584
25/02/2001	55	8	1	1.584
26/02/2001	55	8	1	1.584
27/02/2001	55	8	1	1.584
28/02/2001	55	8	1	1.584
01/03/2001	55	8	1	1.584
02/03/2001	55	8	1	1.584

Table 9-3. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
03/03/2001	55	8	1	1.584
04/03/2001	45	8	1	1.296
05/03/2001	0	8	1	0.000
06/03/2001	0	8	1	0.000
07/03/2001	0	8	1	0.000
08/03/2001	55	8	1	1.584
09/03/2001	55	8	1	1.584
10/03/2001	55	8	1	1.584
11/03/2001	55	8	1	1.584
12/03/2001	56	8	1	1.613
13/03/2001	56	8	1	1.613
14/03/2001	56	8	1	1.613
15/03/2001	56	8	1	1.613
16/03/2001	56	8	1	1.613
17/03/2001	56	8	1	1.613
18/03/2001	56	8	1	1.613
19/03/2001	56	8	1	1.613
20/03/2001	60	8	1	1.728
21/03/2001	60	8	1	1.728
22/03/2001	60	8	1	1.728
23/03/2001	65	8	1	1.872
24/03/2001	65	8	1	1.872
25/03/2001	65	8	1	1.872
26/03/2001	65	8	1	1.872
27/03/2001	65	8	1	1.872
28/03/2001	65	8	1	1.872
29/03/2001	65	8	1	1.872
30/03/2001	65	8	1	1.872
31/03/2001	65	8	1	1.872
01/04/2001	65	8	1	1.872
02/04/2001	65	8	1	1.872
03/04/2001	65	8	1	1.872
04/04/2001	48	8	1	1.382
05/04/2001	48	8	1	1.382
06/04/2001	48	8	1	1.382
07/04/2001	48	8	1	1.382
08/04/2001	48	8	1	1.382
09/04/2001	48	8	1	1.382
10/04/2001	48	8	1	1.382
11/04/2001	48	8	1	1.382
12/04/2001	48	8	1	1.382
13/04/2001	48	8	1	1.382
14/04/2001	48	8	1	1.382
15/04/2001	48	8	1	1.382
16/04/2001	48	8	1	1.382
17/04/2001	55	8	1	1.584
18/04/2001	55	8	1	1.584
19/04/2001	55	8	1	1.584
20/04/2001	55	8	1	1.584
21/04/2001	55	8	1	1.584
22/04/2001	55	8	1	1.584
23/04/2001	55	8	1	1.584
24/04/2001	55	8	1	1.584

Table 9-3. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
25/04/2001	55	8	1	1.584
26/04/2001	48	8	1	1.382
27/04/2001	48	8	1	1.382
28/04/2001	48	8	1	1.382
29/04/2001	48	8	1	1.382
30/04/2001	48	8	1	1.382
01/05/2001	48	8	1	1.382
02/05/2001	48	8	1	1.382
03/05/2001	48	8	1	1.382
04/05/2001	48	8	1	1.382
05/05/2001	48	8	1	1.382
06/05/2001	48	8	1	1.382
07/05/2001	48	8	1	1.382
08/05/2001	48	8	1	1.382
09/05/2001	48	8	1	1.382
10/05/2001	55	8	1	1.584
11/05/2001	55	8	1	1.584
12/05/2001	55	8	1	1.584
13/05/2001	48	8	1	1.382
14/05/2001	48	8	1	1.382
15/05/2001	48	8	1	1.382
16/05/2001	50	8	1	1.440
17/05/2001	45	8	1	1.296
18/05/2001	55	8	1	1.584
19/05/2001	55	8	1	1.584
20/05/2001	55	8	1	1.584
21/05/2001	55	8	1	1.584
22/05/2001	55	8	1	1.584
23/05/2001	55	8	1	1.584
24/05/2001	55	8	1	1.584
25/05/2001	60	8	1	1.728
26/05/2001	60	8	1	1.728
27/05/2001	60	8	1	1.728
28/05/2001	60	8	1	1.728
29/05/2001	60	8	1	1.728
30/05/2001	60	8	1	1.728
31/05/2001	60	8	1	1.728
01/06/2001	65	8	1	1.872
02/06/2001	65	8	1	1.872
03/06/2001	65	8	1	1.872
04/06/2001	65	8	1	1.872
05/06/2001	65	8	1	1.872
06/06/2001	65	8	1	1.872
07/06/2001	65	8	1	1.872
08/06/2001	65	8	1	1.872
09/06/2001	65	8	1	1.872
10/06/2001	65	8	1	1.872
11/06/2001	65	8	1	1.872
12/06/2001	65	8	1	1.872
13/06/2001	66	8	1	1.901
14/06/2001	66	8	1	1.901
15/06/2001	66	8	1	1.901
16/06/2001	66	8	1	1.901

Table 9-3. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
17/06/2001	66	8	1	1.901
18/06/2001	72	8	1	2.074
19/06/2001	72	8	1	2.074
20/06/2001	72	8	1	2.074
21/06/2001	66	8	1	1.901
22/06/2001	66	8	1	1.901
23/06/2001	66	8	1	1.901
24/06/2001	66	8	1	1.901
25/06/2001	66	8	1	1.901
26/06/2001	66	8	1	1.901
27/06/2001	65	8	1	1.872
28/06/2001	65	8	1	1.872
29/06/2001	65	8	1	1.872
30/06/2001	65	8	1	1.872
01/07/2001	65	8	1	1.872
02/07/2001	65	8	1	1.872
03/07/2001	72	8	1	2.074
04/07/2001	72	8	1	2.074
05/07/2001	72	8	1	2.074
06/07/2001	72	8	1	2.074
07/07/2001	72	8	1	2.074
08/07/2001	72	8	1	2.074
09/07/2001	72	8	1	2.074
10/07/2001	72	8	1	2.074
11/07/2001	72	8	1	2.074
12/07/2001	72	8	1	2.074
13/07/2001	72	8	1	2.074
14/07/2001	72	8	1	2.074
15/07/2001	72	8	1	2.074
16/07/2001	72	8	1	2.074
17/07/2001	78	8	1	2.246
18/07/2001	78	8	1	2.246
19/07/2001	78	8	1	2.246
20/07/2001	78	8	1	2.246
21/07/2001	78	8	1	2.246
22/07/2001	78	8	1	2.246
23/07/2001	78	8	1	2.246
24/07/2001	78	8	1	2.246
25/07/2001	78	8	1	2.246
26/07/2001	78	8	1	2.246
27/07/2001	78	8	1	2.246
28/07/2001	84	8	1	2.419
29/07/2001	84	8	1	2.419
30/07/2001	84	8	1	2.419
31/07/2001	84	8	1	2.419
01/08/2001	84	8	1	2.419
02/08/2001	84	8	1	2.419
03/08/2001	84	8	1	2.419
04/08/2001	84	8	1	2.419
05/08/2001	84	8	1	2.419
06/08/2001	84	8	1	2.419
07/08/2001	91	8	1	2.621
08/08/2001	90	8	1	2.592

Table 9-3. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
09/08/2001	90	8	1	2.592
10/08/2001	90	8	1	2.592
11/08/2001	90	8	1	2.592
12/08/2001	90	8	1	2.592
13/08/2001	90	8	1	2.592
14/08/2001	90	8	1	2.592
15/08/2001	90	8	1	2.592
16/08/2001	90	8	1	2.592
17/08/2001	90	8	1	2.592
18/08/2001	90	8	1	2.592
19/08/2001	80	8	1	2.304
20/08/2001	80	8	1	2.304
21/08/2001	90	8	1	2.592
22/08/2001	80	8	1	2.304
23/08/2001	84	8	1	2.419
24/08/2001	84	8	1	2.419
25/08/2001	48	8	1	1.382
26/08/2001	78	8	1	2.246
27/08/2001	78	8	1	2.246
28/08/2001	78	8	1	2.246
29/08/2001	78	8	1	2.246
30/08/2001	78	8	1	2.246
31/08/2001	78	8	1	2.246
01/09/2001	78	8	1	2.246
02/09/2001	78	8	1	2.246
03/09/2001	80	8	1	2.304
04/09/2001	78	8	1	2.246
05/09/2001	74	8	1	2.131
06/09/2001	82	8	1	2.362
07/09/2001	90	8	1	2.592
08/09/2001	90	8	1	2.592
09/09/2001	93	8	1	2.678
10/09/2001	93	8	1	2.678
11/09/2001	96	8	1	2.765
12/09/2001	96	8	1	2.765
13/09/2001	96	8	1	2.765
14/09/2001	96	8	1	2.765
15/09/2001	96	8	1	2.765
16/09/2001	96	8	1	2.765
17/09/2001	96	8	1	2.765
18/09/2001	90	8	1	2.592
19/09/2001	90	8	1	2.592
20/09/2001	84	8	1	2.419
21/09/2001	84	8	1	2.419
22/09/2001	84	8	1	2.419
23/09/2001	84	8	1	2.419
24/09/2001	80	8	1	2.304
25/09/2001	80	8	1	2.304
26/09/2001	80	8	1	2.304
27/09/2001	80	8	1	2.304
28/09/2001	80	8	1	2.304
29/09/2001	84	8	1	2.419
30/09/2001	84	8	1	2.419

Table 9-4. Working hours and discharges of Old Klabia P.S.

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
01/03/2000	0	2.75	1	0.000
02/03/2000	0	2.75	1	0.000
03/03/2000	0	2.75	1	0.000
04/03/2000	0	2.75	1	0.000
05/03/2000	0	2.75	1	0.000
06/03/2000	0	2.75	1	0.000
07/03/2000	48	2.75	1	0.475
08/03/2000	48	2.75	1	0.475
09/03/2000	36	2.75	1	0.356
10/03/2000	36	2.75	1	0.356
11/03/2000	36	2.75	1	0.356
12/03/2000	36	2.75	1	0.356
13/03/2000	36	2.75	1	0.356
14/03/2000	34	2.75	1	0.337
15/03/2000	0	2.75	1	0.000
16/03/2000	0	2.75	1	0.000
17/03/2000	0	2.75	1	0.000
18/03/2000	0	2.75	1	0.000
19/03/2000	22	2.75	1	0.218
20/03/2000	48	2.75	1	0.475
21/03/2000	17	2.75	1	0.168
22/03/2000	36	2.75	1	0.356
23/03/2000	36	2.75	1	0.356
24/03/2000	36	2.75	1	0.356
25/03/2000	36	2.75	1	0.356
26/03/2000	22	2.75	1	0.218
27/03/2000	0	2.75	1	0.000
28/03/2000	0	2.75	1	0.000
29/03/2000	0	2.75	1	0.000
30/03/2000	0	2.75	1	0.000
31/03/2000	0	2.75	1	0.000
01/04/2000	0	2.75	1	0.000
02/04/2000	22	2.75	1	0.218
03/04/2000	48	2.75	1	0.475
04/04/2000	48	2.75	1	0.475
05/04/2000	48	2.75	1	0.475
06/04/2000	48	2.75	1	0.475
07/04/2000	48	2.75	1	0.475
08/04/2000	48	2.75	1	0.475
09/04/2000	37	2.75	1	0.366
10/04/2000	36	2.75	1	0.356
11/04/2000	22	2.75	1	0.218
12/04/2000	0	2.75	1	0.000
13/04/2000	0	2.75	1	0.000
14/04/2000	0	2.75	1	0.000
15/04/2000	0	2.75	1	0.000
16/04/2000	22	2.75	1	0.218
17/04/2000	42	2.75	1	0.416
18/04/2000	39	2.75	1	0.386
19/04/2000	42	2.75	1	0.416
20/04/2000	42	2.75	1	0.416
21/04/2000	37	2.75	1	0.366

Table 9-4. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
22/04/2000	38	2.75	1	0.376
23/04/2000	38	2.75	1	0.376
24/04/2000	8	2.75	1	0.079
25/04/2000	8	2.75	1	0.079
26/04/2000	0	2.75	1	0.000
27/04/2000	0	2.75	1	0.000
28/04/2000	0	2.75	1	0.000
29/04/2000	0	2.75	1	0.000
30/04/2000	0	2.75	1	0.000
01/05/2000	22	2.75	1	0.218
02/05/2000	47	2.75	1	0.465
03/05/2000	48	2.75	1	0.475
04/05/2000	44	2.75	1	0.436
05/05/2000	44	2.75	1	0.436
06/05/2000	40	2.75	1	0.396
07/05/2000	24	2.75	1	0.238
08/05/2000	40	2.75	1	0.396
09/05/2000	40	2.75	1	0.396
10/05/2000	31	2.75	1	0.307
11/05/2000	22	2.75	1	0.218
12/05/2000	0	2.75	1	0.000
13/05/2000	0	2.75	1	0.000
14/05/2000	0	2.75	1	0.000
15/05/2000	22	2.75	1	0.218
16/05/2000	44	2.75	1	0.436
17/05/2000	30	2.75	1	0.297
18/05/2000	34	2.75	1	0.337
19/05/2000	34	2.75	1	0.337
20/05/2000	36	2.75	1	0.356
21/05/2000	36	2.75	1	0.356
22/05/2000	37	2.75	1	0.366
23/05/2000	36	2.75	1	0.356
24/05/2000	40	2.75	1	0.396
25/05/2000	31	2.75	1	0.307
26/05/2000	25	2.75	1	0.248
27/05/2000	24	2.75	1	0.238
28/05/2000	24	2.75	1	0.238
29/05/2000	24	2.75	1	0.238
30/05/2000	24	2.75	1	0.238
31/05/2000	24	2.75	1	0.238
01/06/2000	33	2.75	1	0.327
02/06/2000	30	2.75	1	0.297
03/06/2000	28	2.75	1	0.277
04/06/2000	28	2.75	1	0.277
05/06/2000	31	2.75	1	0.307
06/06/2000	0	2.75	1	0.000
07/06/2000	0	2.75	1	0.000
08/06/2000	0	2.75	1	0.000
09/06/2000	0	2.75	1	0.000
10/06/2000	0	2.75	1	0.000
11/06/2000	38	2.75	1	0.376
12/06/2000	46	2.75	1	0.455
13/06/2000	47	2.75	1	0.465

Table 9-4. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
14/06/2000	48	2.75	1	0.475
15/06/2000	45	2.75	1	0.446
16/06/2000	45	2.75	1	0.446
17/06/2000	45	2.75	1	0.446
18/06/2000	34	2.75	1	0.337
19/06/2000	0	2.75	1	0.000
20/06/2000	32	2.75	1	0.317
21/06/2000	46	2.75	1	0.455
22/06/2000	37	2.75	1	0.366
23/06/2000	37	2.75	1	0.366
24/06/2000	37	2.75	1	0.366
25/06/2000	37	2.75	1	0.366
26/06/2000	37	2.75	1	0.366
27/06/2000	36	2.75	1	0.356
28/06/2000	36	2.75	1	0.356
29/06/2000	45	2.75	1	0.446
30/06/2000	45	2.75	1	0.446
01/07/2000	33	2.75	1	0.327
02/07/2000	42	2.75	1	0.416
03/07/2000	37	2.75	1	0.366
04/07/2000	22	2.75	1	0.218
05/07/2000	0	2.75	1	0.000
06/07/2000	0	2.75	1	0.000
07/07/2000	0	2.75	1	0.000
08/07/2000	0	2.75	1	0.000
09/07/2000	48	2.75	1	0.475
10/07/2000	39	2.75	1	0.386
11/07/2000	43	2.75	1	0.426
12/07/2000	42	2.75	1	0.416
13/07/2000	40	2.75	1	0.396
14/07/2000	38	2.75	1	0.376
15/07/2000	36	2.75	1	0.356
16/07/2000	35	2.75	1	0.347
17/07/2000	35	2.75	1	0.347
18/07/2000	36	2.75	1	0.356
19/07/2000	29	2.75	1	0.287
20/07/2000	35	2.75	1	0.347
21/07/2000	32	2.75	1	0.317
22/07/2000	32	2.75	1	0.317
23/07/2000	32	2.75	1	0.317
24/07/2000	32	2.75	1	0.317
25/07/2000	32	2.75	1	0.317
26/07/2000	28	2.75	1	0.277
27/07/2000	28	2.75	1	0.277
28/07/2000	28	2.75	1	0.277
29/07/2000	30	2.75	1	0.297
30/07/2000	30	2.75	1	0.297
31/07/2000	33	2.75	1	0.327
01/08/2000	0	2.75	1	0.000
02/08/2000	0	2.75	1	0.000
03/08/2000	0	2.75	1	0.000

Table 9-4. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
04/08/2000	0	2.75	1	0.000
05/08/2000	0	2.75	1	0.000
06/08/2000	0	2.75	1	0.000
07/08/2000	46	2.75	1	0.455
08/08/2000	46	2.75	1	0.455
09/08/2000	48	2.75	1	0.475
10/08/2000	48	2.75	1	0.475
11/08/2000	48	2.75	1	0.475
12/08/2000	48	2.75	1	0.475
13/08/2000	48	2.75	1	0.475
14/08/2000	48	2.75	1	0.475
15/08/2000	48	2.75	1	0.475
16/08/2000	36	2.75	1	0.356
17/08/2000	22	2.75	1	0.218
18/08/2000	32	2.75	1	0.317
19/08/2000	42	2.75	1	0.416
20/08/2000	42	2.75	1	0.416
21/08/2000	44	2.75	1	0.436
22/08/2000	44	2.75	1	0.436
23/08/2000	40	2.75	1	0.396
24/08/2000	41	2.75	1	0.406
25/08/2000	39	2.75	1	0.386
26/08/2000	40	2.75	1	0.396
27/08/2000	40	2.75	1	0.396
28/08/2000	40	2.75	1	0.396
29/08/2000	22	2.75	1	0.218
30/08/2000	0	2.75	1	0.000
31/08/2000	0	2.75	1	0.000
01/09/2000	0	2.75	1	0.000
02/09/2000	24	2.75	1	0.238
03/09/2000	48	2.75	1	0.475
04/09/2000	48	2.75	1	0.475
05/09/2000	48	2.75	1	0.475
06/09/2000	48	2.75	1	0.475
07/09/2000	28	2.75	1	0.277
08/09/2000	28	2.75	1	0.277
09/09/2000	36	2.75	1	0.356
10/09/2000	36	2.75	1	0.356
11/09/2000	36	2.75	1	0.356
12/09/2000	22	2.75	1	0.218
13/09/2000	0	2.75	1	0.000
14/09/2000	0	2.75	1	0.000
15/09/2000	0	2.75	1	0.000
16/09/2000	0	2.75	1	0.000
17/09/2000	24	2.75	1	0.238
18/09/2000	48	2.75	1	0.475
19/09/2000	48	2.75	1	0.475
20/09/2000	48	2.75	1	0.475
21/09/2000	48	2.75	1	0.475
22/09/2000	48	2.75	1	0.475
23/09/2000	48	2.75	1	0.475
24/09/2000	40	2.75	1	0.396

Table 9-4. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
25/09/2000	22	2.75	1	0.218
26/09/2000	0	2.75	1	0.000
27/09/2000	0	2.75	1	0.000
28/09/2000	0	2.75	1	0.000
29/09/2000	0	2.75	1	0.000
30/09/2000	0	2.75	1	0.000
01/10/2000	24	2.75	1	0.238
02/10/2000	48	2.75	1	0.475
03/10/2000	48	2.75	1	0.475
04/10/2000	46	2.75	1	0.455
05/10/2000	36	2.75	1	0.356
06/10/2000	36	2.75	1	0.356
07/10/2000	36	2.75	1	0.356
08/10/2000	36	2.75	1	0.356
09/10/2000	16	2.75	1	0.158
10/10/2000	0	2.75	1	0.000
11/10/2000	0	2.75	1	0.000
12/10/2000	0	2.75	1	0.000
13/10/2000	0	2.75	1	0.000
14/10/2000	0	2.75	1	0.000
15/10/2000	22	2.75	1	0.218
16/10/2000	27	2.75	1	0.267
17/10/2000	30	2.75	1	0.297
18/10/2000	38	2.75	1	0.376
19/10/2000	43	2.75	1	0.426
20/10/2000	44	2.75	1	0.436
21/10/2000	48	2.75	1	0.475
22/10/2000	48	2.75	1	0.475
23/10/2000	40	2.75	1	0.396
24/10/2000	22	2.75	1	0.218
25/10/2000	0	2.75	1	0.000
26/10/2000	0	2.75	1	0.000
27/10/2000	0	2.75	1	0.000
28/10/2000	0	2.75	1	0.000
29/10/2000	4	2.75	1	0.040
30/10/2000	44	2.75	1	0.436
31/10/2000	40	2.75	1	0.396
01/11/2000	40	2.75	1	0.396
02/11/2000	40	2.75	1	0.396
03/11/2000	24	2.75	1	0.238
04/11/2000	24	2.75	1	0.238
05/11/2000	48	2.75	1	0.475
06/11/2000	22	2.75	1	0.218
07/11/2000	0	2.75	1	0.000
08/11/2000	0	2.75	1	0.000
09/11/2000	0	2.75	1	0.000
10/11/2000	0	2.75	1	0.000
11/11/2000	0	2.75	1	0.000
12/11/2000	32	2.75	1	0.317
13/11/2000	48	2.75	1	0.475
14/11/2000	48	2.75	1	0.475
15/11/2000	48	2.75	1	0.475
16/11/2000	36	2.75	1	0.356

Table 9-4. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
17/11/2000	36	2.75	1	0.356
18/11/2000	36	2.75	1	0.356
19/11/2000	22	2.75	1	0.218
20/11/2000	0	2.75	1	0.000
21/11/2000	0	2.75	1	0.000
22/11/2000	0	2.75	1	0.000
23/11/2000	0	2.75	1	0.000
24/11/2000	0	2.75	1	0.000
25/11/2000	0	2.75	1	0.000
26/11/2000	0	2.75	1	0.000
27/11/2000	0	2.75	1	0.000
28/11/2000	33	2.75	1	0.327
29/11/2000	48	2.75	1	0.475
30/11/2000	44	2.75	1	0.436
01/12/2000	36	2.75	1	0.356
02/12/2000	30	2.75	1	0.297
03/12/2000	24	2.75	1	0.238
04/12/2000	36	2.75	1	0.356
05/12/2000	36	2.75	1	0.356
06/12/2000	31	2.75	1	0.307
07/12/2000	24	2.75	1	0.238
08/12/2000	24	2.75	1	0.238
09/12/2000	12	2.75	1	0.119
10/12/2000	12	2.75	1	0.119
11/12/2000	18	2.75	1	0.178
12/12/2000	38	2.75	1	0.376
13/12/2000	38	2.75	1	0.376
14/12/2000	36	2.75	1	0.356
15/12/2000	32	2.75	1	0.317
16/12/2000	24	2.75	1	0.238
17/12/2000	41	2.75	1	0.406
18/12/2000	22	2.75	1	0.218
19/12/2000	0	2.75	1	0.000
20/12/2000	0	2.75	1	0.000
21/12/2000	0	2.75	1	0.000
22/12/2000	0	2.75	1	0.000
23/12/2000	0	2.75	1	0.000
24/12/2000	0	2.75	1	0.000
25/12/2000	0	2.75	1	0.000
26/12/2000	0	2.75	1	0.000
27/12/2000	0	2.75	1	0.000
28/12/2000	0	2.75	1	0.000
29/12/2000	0	2.75	1	0.000
30/12/2000	0	2.75	1	0.000
31/12/2000	0	2.75	1	0.000
01/01/2001	0	2.75	1	0.000
02/01/2001	0	2.75	1	0.000
03/01/2001	0	2.75	1	0.000
04/01/2001	28	2.75	1	0.277
05/01/2001	48	2.75	1	0.475
06/01/2001	36	2.75	1	0.356
07/01/2001	36	2.75	1	0.356

Table 9-4. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
08/01/2001	36	2.75	1	0.356
09/01/2001	36	2.75	1	0.356
10/01/2001	36	2.75	1	0.356
11/01/2001	36	2.75	1	0.356
12/01/2001	36	2.75	1	0.356
13/01/2001	36	2.75	1	0.356
14/01/2001	32	2.75	1	0.317
15/01/2001	22	2.75	1	0.218
16/01/2001	21	2.75	1	0.208
17/01/2001	24	2.75	1	0.238
18/01/2001	24	2.75	1	0.238
19/01/2001	24	2.75	1	0.238
20/01/2001	24	2.75	1	0.238
21/01/2001	12	2.75	1	0.119
22/01/2001	0	2.75	1	0.000
23/01/2001	0	2.75	1	0.000
24/01/2001	0	2.75	1	0.000
25/01/2001	0	2.75	1	0.000
26/01/2001	0	2.75	1	0.000
27/01/2001	0	2.75	1	0.000
28/01/2001	0	2.75	1	0.000
29/01/2001	22	2.75	1	0.218
30/01/2001	48	2.75	1	0.475
31/01/2001	33	2.75	1	0.327
01/02/2001	36	2.75	1	0.356
02/02/2001	24	2.75	1	0.238
03/02/2001	24	2.75	1	0.238
04/02/2001	42	2.75	1	0.416
05/02/2001	44	2.75	1	0.436
06/02/2001	36	2.75	1	0.356
07/02/2001	22	2.75	1	0.218
08/02/2001	0	2.75	1	0.000
09/02/2001	0	2.75	1	0.000
10/02/2001	0	2.75	1	0.000
11/02/2001	0	2.75	1	0.000
12/02/2001	24	2.75	1	0.238
13/02/2001	48	2.75	1	0.475
14/02/2001	48	2.75	1	0.475
15/02/2001	36	2.75	1	0.356
16/02/2001	36	2.75	1	0.356
17/02/2001	36	2.75	1	0.356
18/02/2001	22	2.75	1	0.218
19/02/2001	22	2.75	1	0.218
20/02/2001	22	2.75	1	0.218
21/02/2001	22	2.75	1	0.218
22/02/2001	0	2.75	1	0.000
23/02/2001	0	2.75	1	0.000
24/02/2001	0	2.75	1	0.000
25/02/2001	24	2.75	1	0.238
26/02/2001	24	2.75	1	0.238
27/02/2001	24	2.75	1	0.238
28/02/2001	24	2.75	1	0.238
01/03/2001	48	2.75	1	0.475
02/03/2001	48	2.75	1	0.475

Table 9-4. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
03/03/2001	48	2.75	1	0.475
04/03/2001	22	2.75	1	0.218
05/03/2001	0	2.75	1	0.000
06/03/2001	0	2.75	1	0.000
07/03/2001	0	2.75	1	0.000
08/03/2001	0	2.75	1	0.000
09/03/2001	0	2.75	1	0.000
10/03/2001	0	2.75	1	0.000
11/03/2001	0	2.75	1	0.000
12/03/2001	24	2.75	1	0.238
13/03/2001	24	2.75	1	0.238
14/03/2001	24	2.75	1	0.238
15/03/2001	24	2.75	1	0.238
16/03/2001	48	2.75	1	0.475
17/03/2001	48	2.75	1	0.475
18/03/2001	48	2.75	1	0.475
19/03/2001	44	2.75	1	0.436
20/03/2001	22	2.75	1	0.218
21/03/2001	16	2.75	1	0.158
22/03/2001	0	2.75	1	0.000
23/03/2001	0	2.75	1	0.000
24/03/2001	0	2.75	1	0.000
25/03/2001	0	2.75	1	0.000
26/03/2001	24	2.75	1	0.238
27/03/2001	24	2.75	1	0.238
28/03/2001	24	2.75	1	0.238
29/03/2001	24	2.75	1	0.238
30/03/2001	24	2.75	1	0.238
31/03/2001	24	2.75	1	0.238
01/04/2001	24	2.75	1	0.238
02/04/2001	24	2.75	1	0.238
03/04/2001	24	2.75	1	0.238
04/04/2001	22	2.75	1	0.218
05/04/2001	0	2.75	1	0.000
06/04/2001	0	2.75	1	0.000
07/04/2001	0	2.75	1	0.000
08/04/2001	12	2.75	1	0.119
09/04/2001	24	2.75	1	0.238
10/04/2001	24	2.75	1	0.238
11/04/2001	24	2.75	1	0.238
12/04/2001	24	2.75	1	0.238
13/04/2001	48	2.75	1	0.475
14/04/2001	48	2.75	1	0.475
15/04/2001	48	2.75	1	0.475
16/04/2001	22	2.75	1	0.218
17/04/2001	0	2.75	1	0.000
18/04/2001	0	2.75	1	0.000
19/04/2001	0	2.75	1	0.000
20/04/2001	0	2.75	1	0.000
21/04/2001	0	2.75	1	0.000
22/04/2001	0	2.75	1	0.000
23/04/2001	22	2.75	1	0.218
24/04/2001	48	2.75	1	0.475

Table 9-4. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
25/04/2001	48	2.75	1	0.475
26/04/2001	48	2.75	1	0.475
27/04/2001	48	2.75	1	0.475
28/04/2001	48	2.75	1	0.475
29/04/2001	48	2.75	1	0.475
30/04/2001	48	2.75	1	0.475
01/05/2001	30	2.75	1	0.297
02/05/2001	34	2.75	1	0.337
03/05/2001	22	2.75	1	0.218
04/05/2001	0	2.75	1	0.000
05/05/2001	0	2.75	1	0.000
06/05/2001	0	2.75	1	0.000
07/05/2001	16	2.75	1	0.158
08/05/2001	41	2.75	1	0.406
09/05/2001	44	2.75	1	0.436
10/05/2001	41	2.75	1	0.406
11/05/2001	41	2.75	1	0.406
12/05/2001	41	2.75	1	0.406
13/05/2001	41	2.75	1	0.406
14/05/2001	35	2.75	1	0.347
15/05/2001	29	2.75	1	0.287
16/05/2001	28	2.75	1	0.277
17/05/2001	41	2.75	1	0.406
18/05/2001	22	2.75	1	0.218
19/05/2001	0	2.75	1	0.000
20/05/2001	0	2.75	1	0.000
21/05/2001	24	2.75	1	0.238
22/05/2001	48	2.75	1	0.475
23/05/2001	43	2.75	1	0.426
24/05/2001	43	2.75	1	0.426
25/05/2001	43	2.75	1	0.426
26/05/2001	43	2.75	1	0.426
27/05/2001	42	2.75	1	0.416
28/05/2001	42	2.75	1	0.416
29/05/2001	42	2.75	1	0.416
30/05/2001	38	2.75	1	0.376
31/05/2001	38	2.75	1	0.376
01/06/2001	40	2.75	1	0.396
02/06/2001	30	2.75	1	0.297
03/06/2001	30	2.75	1	0.297
04/06/2001	30	2.75	1	0.297
05/06/2001	30	2.75	1	0.297
06/06/2001	30	2.75	1	0.297
07/06/2001	30	2.75	1	0.297
08/06/2001	34	2.75	1	0.337
09/06/2001	30	2.75	1	0.297
10/06/2001	30	2.75	1	0.297
11/06/2001	30	2.75	1	0.297
12/06/2001	40	2.75	1	0.396
13/06/2001	24	2.75	1	0.238
14/06/2001	24	2.75	1	0.238
15/06/2001	24	2.75	1	0.238
16/06/2001	24	2.75	1	0.238

Table 9-4. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
17/06/2001	24	2.75	1	0.238
18/06/2001	24	2.75	1	0.238
19/06/2001	24	2.75	1	0.238
20/06/2001	24	2.75	1	0.238
21/06/2001	34	2.75	1	0.337
22/06/2001	39	2.75	1	0.386
23/06/2001	24	2.75	1	0.238
24/06/2001	24	2.75	1	0.238
25/06/2001	39	2.75	1	0.386
26/06/2001	43	2.75	1	0.426
27/06/2001	37	2.75	1	0.366
28/06/2001	32	2.75	1	0.317
29/06/2001	35	2.75	1	0.347
30/06/2001	34	2.75	1	0.337
01/07/2001	34	2.75	1	0.337
02/07/2001	34	2.75	1	0.337
03/07/2001	34	2.75	1	0.337
04/07/2001	34	2.75	1	0.337
05/07/2001	34	2.75	1	0.337
06/07/2001	34	2.75	1	0.337
07/07/2001	34	2.75	1	0.337
08/07/2001	34	2.75	1	0.337
09/07/2001	32	2.75	1	0.317
10/07/2001	31	2.75	1	0.307
11/07/2001	0	2.75	1	0.000
12/07/2001	0	2.75	1	0.000
13/07/2001	0	2.75	1	0.000
14/07/2001	0	2.75	1	0.000
15/07/2001	0	2.75	1	0.000
16/07/2001	39	2.75	1	0.386
17/07/2001	39	2.75	1	0.386
18/07/2001	39	2.75	1	0.386
19/07/2001	39	2.75	1	0.386
20/07/2001	39	2.75	1	0.386
21/07/2001	39	2.75	1	0.386
22/07/2001	39	2.75	1	0.386
23/07/2001	39	2.75	1	0.386
24/07/2001	39	2.75	1	0.386
25/07/2001	39	2.75	1	0.386
26/07/2001	39	2.75	1	0.386
27/07/2001	39	2.75	1	0.386
28/07/2001	33	2.75	1	0.327
29/07/2001	33	2.75	1	0.327
30/07/2001	33	2.75	1	0.327
31/07/2001	32	2.75	1	0.317
01/08/2001	32	2.75	1	0.317
02/08/2001	34	2.75	1	0.337
03/08/2001	34	2.75	1	0.337
04/08/2001	34	2.75	1	0.337
05/08/2001	34	2.75	1	0.337
06/08/2001	34	2.75	1	0.337
07/08/2001	22	2.75	1	0.218
08/08/2001	0	2.75	1	0.000

Table 9-4. (Continued).

Date	Working Hours	Pump Unit Discharge (m3/s)	Eff.	Total Discharge (M.m3/day)
09/08/2001	0	2.75	1	0.000
10/08/2001	0	2.75	1	0.000
11/08/2001	0	2.75	1	0.000
12/08/2001	0	2.75	1	0.000
13/08/2001	20	2.75	1	0.198
14/08/2001	34	2.75	1	0.337
15/08/2001	42	2.75	1	0.416
16/08/2001	48	2.75	1	0.475
17/08/2001	48	2.75	1	0.475
18/08/2001	48	2.75	1	0.475
19/08/2001	48	2.75	1	0.475
20/08/2001	48	2.75	1	0.475
21/08/2001	48	2.75	1	0.475
22/08/2001	48	2.75	1	0.475
23/08/2001	48	2.75	1	0.475
24/08/2001	46	2.75	1	0.455
25/08/2001	17	2.75	1	0.168
26/08/2001	24	2.75	1	0.238
27/08/2001	41	2.75	1	0.406
28/08/2001	41	2.75	1	0.406
29/08/2001	40	2.75	1	0.396
30/08/2001	40	2.75	1	0.396
31/08/2001	40	2.75	1	0.396
01/09/2001	40	2.75	1	0.396
02/09/2001	40	2.75	1	0.396
03/09/2001	48	2.75	1	0.475
04/09/2001	36	2.75	1	0.356
05/09/2001	0	2.75	1	0.000
06/09/2001	0	2.75	1	0.000
07/09/2001	0	2.75	1	0.000
08/09/2001	0	2.75	1	0.000
09/09/2001	24	2.75	1	0.238
10/09/2001	37	2.75	1	0.366
11/09/2001	48	2.75	1	0.475
12/09/2001	48	2.75	1	0.475
13/09/2001	44	2.75	1	0.436
14/09/2001	40	2.75	1	0.396
15/09/2001	44	2.75	1	0.436
16/09/2001	42	2.75	1	0.416
17/09/2001	42	2.75	1	0.416
18/09/2001	39	2.75	1	0.386
19/09/2001	41	2.75	1	0.406
20/09/2001	32	2.75	1	0.317
21/09/2001	33	2.75	1	0.327
22/09/2001	33	2.75	1	0.327
23/09/2001	32	2.75	1	0.317
24/09/2001	27	2.75	1	0.267
25/09/2001	28	2.75	1	0.277
26/09/2001	27	2.75	1	0.267
27/09/2001	27	2.75	1	0.267
28/09/2001	28	2.75	1	0.277
29/09/2001	29	2.75	1	0.287
30/09/2001	29	2.75	1	0.287