Table 3.2 Availability of Daily Rainfall Data (39/50)

Id. No.	Station Name	Year	1982 /									
		10	11	12	1	2	3	4	5	6	7	8	9
a. East Side of Dead Sea													
1	CA 0002 Khanzira	-	0	0	0	0	0	-	-	-	-	-	-
2	CA 0005 Al Aina	x	x	x	x	x	x	x	x	x	x	x	x
3	CA 0006 Muhai	0	0	0	0	0	0	0	-	-	-	-	-
b. Wadi Mujib													
4	CD 0013 Mazar	-	0	0	0	0	0	-	-	-	-	-	-
5	CD 0033 Jabel Sakhriyat	x	x	x	x	x	x	x	x	x	x	x	x
c. Wadi Hasa													
6	CF 0003 Jurf Ed-Darawish	-	0	0	0	0	0	-	-	-	-	-	-
7	CF 0005 Hasa Police Station	x	x	x	x	x	x	x	x	x	x	x	x
8	CF 0007 Hasa Evapo. Station	-	0	0	0	0	0	-	-	-	-	-	-
9	CF 0008 Hasa Gaging Station	-	0	0	0	0	0	0	-	-	-	-	-
d. Wadi Araba													
10	DA 0001 Shaubak School	-	0	0	0	0	0	0	-	-	-	-	-
11	DA 0002 Shaubak Agr. Station	0	0	0	0	0	0	0	0	-	-	-	-
12	DA 0003 Beir Ed-Dabbaghat	-	0	0	0	0	0	-	-	-	-	-	-
13	DA 0004 Ifjeij	-	0	0	0	0	0	-	-	-	-	-	-
14	DA 0005 Uneiza Railway Station	x	x	x	x	x	x	x	x	x	x	x	x
15	DA 0006 Al Husseiniya School	x	x	x	x	x	x	x	x	x	x	x	x
e. Wadi Feifa													
16	DB 0001 Tafile	-	0	0	0	0	0	-	-	-	-	-	-
17	DB 0002 Abur (Prince Hassan Nursery)	-	0	0	0	0	0	0	-	-	-	-	-
f. Wadi Khuneizeer													
18	DC 0001 Buseira	-	0	0	0	0	0	-	-	-	-	-	-
19	DC 0002 Rashadiya Police Station	-	0	0	0	0	0	0	-	-	-	-	-
g. Wadi Feedan													
20	DE 0001 Dana	-	0	0	0	0	0	-	-	-	-	-	-
h. Wadi Mousa													
21	DG 0001 Wadi Mousa	-	0	0	0	0	0	-	-	-	-	-	-
22	DG 0002 Hay	-	0	0	0	0	0	-	-	-	-	-	-
i. Wadi Howar													
23	DH 0001 Taiyiba Janoubiya	-	0	0	0	0	0	-	-	-	-	-	-
24	DH 0002 Dilagha	-	0	0	0	0	0	-	-	-	-	-	-
j. Wadi Yutum													
25	ED 0002 Ras En-Naqb	-	0	0	0	0	0	-	-	-	-	-	-
26	ED 0003 Ram Police Post	-	0	0	0	0	0	-	-	-	-	-	-
27	ED 0004 Quweira Evap. Station	-	0	0	0	0	0	-	-	-	-	-	-
28	ED 0006 Al Khaldy	x	x	x	x	x	x	x	x	x	x	x	x
29	ED 0010 Wadi Yutum Gaging Station	x	x	x	x	x	x	x	x	x	x	x	x
30	ED 0012 Ram(Qa' Disi) Evap. Station	x	x	x	x	x	x	x	x	x	x	x	x
31	ED 0015 Fassu'a Station	x	x	x	x	x	x	x	x	x	x	x	x

Note 0 : Record available - : No rainfall x : No record E : Estimated
Tr : Less than 0.1 mm

Table 3.2 Availability of Daily Rainfall Data (40/50)

Id. No.	Station Name	Year 1982 / 1983											
		10	11	12	1	2	3	4	5	6	7	8	9
k. Jafr Basin													
32 G 0001	Udruh School	x	x	x	x	x	x	x	x	x	x	x	x
33 G 0002	Jafr Police Station	x	x	x	x	x	x	x	x	x	x	x	x
34 G 0003	Ma'an School	0	0	0	0	0	0	-	-	-	-	-	-
35 G 0004	Basta	-	0	0	0	0	0	-	-	-	-	-	-
36 G 0005	Sadaqa	-	0	0	0	0	0	-	-	-	-	-	-
37 G 0006	Qurein	x	x	x	x	x	x	x	x	x	x	x	x
38 G 0007	Ma'an Railway Station	0	0	0	0	0	0	-	-	-	-	-	-
39 G 0008	Jafr Evaporation Station	x	x	x	x	x	x	x	x	x	x	x	x
40 G 0009	Udruh Evaporation Station	-	0	0	0	0	0	-	-	-	-	-	-
41 G 0010	Jurdhan Gaging Station	x	x	x	x	x	x	x	x	x	x	x	x
42 G 0011	Jabel Quzemeh	x	x	x	x	x	x	x	x	x	x	x	x
43 G 0012	Qabr Es-Sawwa	x	x	x	x	x	x	x	x	x	x	x	x
44 G 0013	Abu Tarafa	x	x	x	x	x	x	x	x	x	x	x	x
45 G 0014	Inab	x	x	x	x	x	x	x	x	x	x	x	x
46 G 0015	Kabid	x	x	x	x	x	x	x	x	x	x	x	x
47 G 0016	Jabel Batra	x	x	x	x	x	x	x	x	x	x	x	x
l. Eastern Desert Basin													
48 J 0001	Bayir Evaporation Station	x	x	x	x	x	x	x	x	x	x	x	x
49 J 0003	Wadi Bayir	x	x	x	x	x	x	x	x	x	x	x	x
50 J 0004	Qa' Es Siq	x	x	x	x	x	x	x	x	x	x	x	x
m. Southern Desert Basin													
51 K 0001	Al Mudawwara	x	x	x	x	x	x	x	x	x	x	x	x
52 K 0003	Muheish	x	x	x	x	x	x	x	x	x	x	x	x
53 K 0004	Wadi Dureiba	x	x	x	x	x	x	x	x	x	x	x	x

Note 0 : Record available - : No rainfall x : No record E : Estimated
Tr : Less than 0.1 mm

Table 3.2 Availability of Daily Rainfall Data (41/50)

Id. No.	Station Name	Year 1983 / 1984											
		10	11	12	1	2	3	4	5	6	7	8	9
a. East Side of Dead Sea													
1	CA 0002 Khanzira	x	0	0	0	0	0	-	-	-	-	-	-
2	CA 0005 Al Aina	x	x	x	x	x	x	x	x	x	x	x	x
3	CA 0006 Muhai	-	0	-	0	0	0	-	-	-	-	-	-
b. Wadi Mujib													
4	CD 0013 Mazar	0	0	x	0	0	0	-	-	-	-	-	-
5	CD 0033 Jabel Sakhriyat	x	x	x	x	x	x	x	x	x	x	x	x
c. Wadi Hasa													
6	CF 0003 Jurf Ed-Darawish	x	x	x	x	x	x	x	x	x	x	x	x
7	CF 0005 Hasa Police Station	x	x	x	x	x	x	x	x	x	x	x	x
8	CF 0007 Hasa Evapo. Station	-	-	0	0	-	0	-	-	-	-	-	-
9	CF 0008 Hasa Gaging Station	-	0	-	0	0	0	-	-	-	-	-	-
d. Wadi Araba													
10	DA 0001 Shaubak School	x	x	x	x	x	x	x	x	x	x	x	x
11	DA 0002 Shaubak Agr. Station	-	0	0	0	0	0	-	-	-	-	-	-
12	DA 0003 Beir Ed-Dabbaghat	-	-	0	0	0	0	-	-	-	-	-	-
13	DA 0004 Ifjeij	-	0	0	0	0	0	-	-	-	-	-	-
14	DA 0005 Uneiza Railway Station	x	x	x	x	x	x	x	x	x	x	x	x
15	DA 0006 Al Husseiniya School	-	-	0	0	-	0	-	-	-	-	-	-
e. Wadi Feifa													
16	DB 0001 Tafile	-	-	0	0	0	0	-	-	-	-	-	-
17	DB 0002 Abur (Prince Hassan Nursery)	-	-	0	0	0	0	0	-	-	-	-	-
f. Wadi Khuneizeer													
18	DC 0001 Buseira	-	0	0	0	0	0	-	-	-	-	-	-
19	DC 0002 Rashadiya Police Station	-	-	0	0	0	0	-	-	-	-	-	-
g. Wadi Feedan													
20	DE 0001 Dana	-	0	0	0	0	0	-	-	-	-	-	-
h. Wadi Mousa													
21	DG 0001 Wadi Mousa	-	-	0	0	0	0	-	-	-	-	-	-
22	DG 0002 Hay	-	-	0	0	0	0	-	-	-	-	-	-
i. Wadi Howar													
23	DH 0001 Taiyiba Janoubiya	-	0	0	0	0	0	-	-	-	-	-	-
24	DH 0002 Dilagha	x	x	x	x	x	x	x	x	x	x	x	x
j. Wadi Yutum													
25	ED 0002 Ras En-Naqb	-	-	-	-	0	0	-	-	-	-	-	-
26	ED 0003 Ram Police Post	-	-	-	0	-	-	-	-	-	-	-	-
27	ED 0004 Quweira Evap. Station	0	0	0	0	0	0	-	-	-	-	-	-
28	ED 0006 Al Khaldy	x	x	x	x	x	x	x	x	x	x	x	x
29	ED 0010 Wadi Yutum Gaging Station	x	x	x	x	x	x	x	x	x	x	x	x
30	ED 0012 Ram(Qa' Disi) Evap. Station	x	x	x	x	x	x	x	x	x	x	x	x
31	ED 0015 Fassu'a Station	x	x	x	x	x	x	x	x	x	x	x	x

Note 0 : Record available - : No rainfall x : No record E : Estimated
Tr : Less than 0.1 mm

Table 3.2 Availability of Daily Rainfall Data (42/50)

Id. No.			Station Name	Year 1983 / 1984											
				10	11	12	1	2	3	4	5	6	7	8	9
k. Jafr Basin															
32	G	0001	Udruh School	x	x	x	x	x	x	x	x	x	x	x	x
33	G	0002	Jafr Police Station	x	x	x	x	x	x	x	x	x	x	x	x
34	G	0003	Ma'an School	-	-	0	0	0	0	-	-	-	-	-	-
35	G	0004	Basta	-	-	0	0	0	0	-	-	-	-	-	-
36	G	0005	Sadaqa	-	0	0	-	-	0	-	-	-	-	-	-
37	G	0006	Qurein	x	x	x	x	x	0	x	x	x	x	x	x
38	G	0007	Ma'an Railway Station	-	-	0	0	0	0	-	-	-	-	-	-
39	G	0008	Jafr Evaporation Station	x	x	x	x	x	x	x	x	x	x	x	x
40	G	0009	Udruh Evaporation Station	-	-	0	0	0	0	-	-	-	-	-	-
41	G	0010	Jurdhan Gaging Station	x	x	x	x	x	x	x	x	x	x	x	x
42	G	0011	Jabel Quzemeh	x	x	x	x	x	x	x	x	x	x	x	x
43	G	0012	Qabr Es-Sawwa	x	x	x	x	x	x	x	x	x	x	x	x
44	G	0013	Abu Tarafa	x	x	x	x	x	x	x	x	x	x	x	x
45	G	0014	Inab	x	x	x	x	x	x	x	x	x	x	x	x
46	G	0015	Kabid	x	x	x	x	x	x	x	x	x	x	x	x
47	G	0016	Jabel Batra	x	x	x	x	x	x	x	x	x	x	x	x
l. Eastern Desert Basin															
48	J	0001	Bayir Evaporation Station	x	x	x	x	x	x	x	x	x	x	x	x
49	J	0003	Wadi Bayir	x	x	x	x	x	x	x	x	x	x	x	x
50	J	0004	Qa' Es Siq	x	x	x	x	x	x	x	x	x	x	x	x
m. Southern Desert Basin															
51	K	0001	Al Mudawwara	x	x	x	x	x	x	x	x	x	x	x	x
52	K	0003	Muheish	x	x	x	x	x	x	x	x	x	x	x	x
53	K	0004	Wadi Dureiba	x	x	x	x	x	x	x	x	x	x	x	x

Note 0 : Record available - : No rainfall x : No record E : Estimated
Tr : Less than 0.1 mm

Table 3.2 Availability of Daily Rainfall Data (43/50)

Id. No.	Station Name	Year 1984 / 1985											
		10	11	12	1	2	3	4	5	6	7	8	9
a. East Side of Dead Sea													
1	CA 0002 Khanzira	0	0	0	0	0	0	0	-	-	-	-	-
2	CA 0005 Al Aina	x	x	x	x	x	x	x	x	x	x	x	x
3	CA 0006 Muhai	0	0	0	0	0	E	E0	-	-	-	-	-
b. Wadi Mujib													
4	CD 0013 Mazar	-	0	0	0	0	0	0	-	-	-	-	-
5	CD 0033 Jabel Sakhriyat	x	x	x	x	x	x	x	x	x	x	x	x
c. Wadi Hasa													
6	CF 0003 Jurf Ed-Darawish	0	0	x	x	x	0	0	x	x	x	x	x
7	CF 0005 Hasa Police Station	x	x	x	x	x	x	x	x	x	x	x	x
8	CF 0007 Hasa Evapo. Station	0	0	0	0	0	0	0	0	-	-	-	-
9	CF 0008 Hasa Gaging Station	-	-	0	-	0	0	-	-	-	-	-	-
d. Wadi Araba													
10	DA 0001 Shaubak School	x	x	x	x	x	x	x	x	x	x	x	x
11	DA 0002 Shaubak Agr. Station	0	0	0	0	0	0	0	-	-	-	-	-
12	DA 0003 Beir Ed-Dabbaghat	0	0	0	0	0	0	0	-	-	-	-	-
13	DA 0004 Ifjeij	0	-	0	0	0	x	0	-	-	-	-	-
14	DA 0005 Uneiza Railway Station	x	x	x	x	x	x	x	x	x	x	x	x
15	DA 0006 Al Husseiniya School	0	-	0	-	0	0	0	-	-	-	-	-
e. Wadi Feifa													
16	DB 0001 Tafile	0	-	0	0	0	0	0	-	-	-	-	-
17	DB 0002 Abur (Prince Hassan Nursery)	0	0	0	0	0	E	0	-	-	-	-	-
f. Wadi Khuneizeer													
18	DC 0001 Buseira	0	-	0	0	0	0	0	-	-	-	-	-
19	DC 0002 Rashadiya Police Station	0	-	0	0	0	x	0	-	-	-	-	-
g. Wadi Feedan													
20	DE 0001 Dana	0	-	0	0	0	0	-	-	-	-	-	-
h. Wadi Mousa													
21	DG 0001 Wadi Mousa	0	-	0	0	0	0	0	-	-	-	-	-
22	DG 0002 Hay	-	-	0	0	0	0	-	-	-	-	-	-
i. Wadi Howar													
23	DH 0001 Taiyiba Janoubiya	-	-	0	0	0E	0	0	-	-	-	-	-
24	DH 0002 Dilagha	-	-	0	0	0	0	0	-	-	-	-	-
j. Wadi Yutum													
25	ED 0002 Ras En-Naqb	-	-	0	0	0	0	-	-	-	-	-	-
26	ED 0003 Ram Police Post	0	0	-	-	0	-	-	-	-	-	-	-
27	ED 0004 Quweira Evap. Station	0	0	0	0	0	0	0	-	-	-	-	-
28	ED 0006 Al Khaldy	x	x	x	x	x	x	x	x	x	x	x	x
29	ED 0010 Wadi Yutum Gaging Station	x	x	x	x	x	x	x	x	x	x	x	x
30	ED 0012 Ram(Qa' Disi) Evap. Station	x	x	x	x	x	x	x	x	x	x	x	x
31	ED 0015 Fassu'a Station	x	x	x	x	x	x	x	x	x	x	x	x

Note 0 : Record available - : No rainfall x : No record E : Estimated
Tr : Less than 0.1 mm

Table 3.2 Availability of Daily Rainfall Data (44/50)

Id. No.			Station Name	Year 1984 / 1985											
				10	11	12	1	2	3	4	5	6	7	8	9
k. Jafr Basin															
32	G	0001	Udruh School	x	x	x	x	x	x	x	x	x	x	x	x
33	G	0002	Jafr Police Station	x	x	x	x	x	x	x	x	x	x	x	x
34	G	0003	Ma'an School	-	-	0	-	0	0	-	-	-	-	-	-
35	G	0004	Basta	-	0	0	0	0	0	0	-	-	-	-	-
36	G	0005	Sadaqa	0	0	0	0	0	0	0	-	-	-	-	-
37	G	0006	Qurein	0	0	0	0	0	0	0	-	-	-	-	-
38	G	0007	Ma'an Railway Station	0	0	0	0	0	0	0	-	-	-	-	-
39	G	0008	Jafr Evaporation Station	x	x	x	x	x	x	x	x	x	x	x	x
40	G	0009	Udruh Evaporation Station	0	0	0	0	0	0	0	0	-	-	-	-
41	G	0010	Jurdhan Gaging Station	x	x	x	x	x	x	x	x	x	x	x	x
42	G	0011	Jabel Quzemeh	x	x	x	x	x	x	x	x	x	x	x	x
43	G	0012	Qabr Es-Sawwa	x	x	x	x	x	x	x	x	x	x	x	x
44	G	0013	Abu Tarafa	x	x	x	x	x	x	x	x	x	x	x	x
45	G	0014	Inab	x	x	x	x	x	x	x	x	x	x	x	x
46	G	0015	Kabid	x	x	x	x	x	x	x	x	x	x	x	x
47	G	0016	Jabel Batra	x	x	x	x	x	x	x	x	x	x	x	x
l. Eastern Desert Basin															
48	J	0001	Bayir Evaporation Station	x	x	x	x	x	x	x	x	x	x	x	x
49	J	0003	Wadi Bayir	x	x	x	x	x	x	x	x	x	x	x	x
50	J	0004	Qa' Es Siq	x	x	x	x	x	x	x	x	x	x	x	x
m. Southern Desert Basin															
51	K	0001	Al Mudawwara	x	x	x	x	x	x	x	x	x	x	x	x
52	K	0003	Muheish	x	x	x	x	x	x	x	x	x	x	x	x
53	K	0004	Wadi Dureiba	x	x	x	x	x	x	x	x	x	x	x	x

Note 0 : Record available - : No rainfall x : No record E : Estimated
Tr : Less than 0.1 mm

Table 3.2 Availability of Daily Rainfall Data (45/50)

Id. No.	Station Name	Year 1985 / 1986											
		10	11	12	1	2	3	4	5	6	7	8	9
a. East Side of Dead Sea													
1	CA 0002 Khanzira	-	-	0	0	0	-	0	0	-	-	-	-
2	CA 0005 Al Aina	x	x	x	x	x	x	x	x	x	x	x	x
3	CA 0006 Muhai	0	0	0	0	0	0	0	0	-	-	-	-
b. Wadi Mujib													
4	CD 0013 Mazar	-	-	0	0	0	0	0	0	-	-	-	-
5	CD 0033 Jabel Sakhriyat	x	x	x	x	x	x	x	x	x	x	x	x
c. Wadi Hasa													
6	CF 0003 Jurf Ed-Darawish	-	0	0	0	0	-	0	-	-	-	-	-
7	CF 0005 Hasa Police Station	x	x	x	x	x	x	x	x	x	x	x	x
8	CF 0007 Hasa Evapo. Station	-	0	0	0	0	-	0	0	-	-	-	-
9	CF 0008 Hasa Gaging Station	-	0	0	0	0	x	x	x	-	-	-	-
d. Wadi Araba													
10	DA 0001 Shaubak School	x	x	x	x	x	x	x	x	x	x	x	x
11	DA 0002 Shaubak Agr. Station	0	0	0	0	0	0	0	0	-	-	-	-
12	DA 0003 Beir Ed-Dabbaghat	0	-	0	0	0	0	0	-	-	-	-	-
13	DA 0004 Ifjeij	x	x	x	x	x	x	x	x	x	x	x	x
14	DA 0005 Uneiza Railway Station	x	x	x	x	x	x	x	x	x	x	x	x
15	DA 0006 Al Husseiniya School	x	x	x	x	x	x	x	x	x	x	x	x
e. Wadi Feifa													
16	DB 0001 Tafile	-	0	0	0	0	0	0	0	-	-	-	-
17	DB 0002 Abur (Prince Hassan Nursery)	-	0	0	0	0	0	0	0	-	-	-	-
f. Wadi Khuneizeer													
18	DC 0001 Buseira	0	0	0	x	0	0	0	0	-	-	-	-
19	DC 0002 Rashadiya Police Station	-	-	0	0	0	0	0	0	-	-	-	-
g. Wadi Feedan													
20	DE 0001 Dana	-	0	0	0	0	0	0	0	-	-	-	-
h. Wadi Mousa													
21	DG 0001 Wadi Mousa	0	-	0	-	0	0	0	0	-	-	-	-
22	DG 0002 Hay	x	x	x	x	x	x	x	x	x	x	x	x
i. Wadi Howar													
23	DH 0001 Taiyiba Janoubiya	0	-	0	0	0	0	0	0	-	-	-	-
24	DH 0002 Dilagha	-	-	0	-	0	-	0	-	-	-	-	-
j. Wadi Yutum													
25	ED 0002 Ras En-Naqb	-	-	0	-	0	0	0	-	-	-	-	-
26	ED 0003 Ram Police Post	x	x	x	x	x	x	x	x	x	x	x	x
27	ED 0004 Quweira Evap. Station	x	x	x	x	x	x	x	x	x	x	x	x
28	ED 0006 Al Khaldy	x	x	x	x	x	x	x	x	x	x	x	x
29	ED 0010 Wadi Yutum Gaging Station	x	x	x	x	x	x	x	x	x	x	x	x
30	ED 0012 Ram(Qa' Disi) Evap. Station	x	x	x	x	x	x	x	x	x	x	x	x
31	ED 0015 Fassu'a Station	x	x	x	x	x	x	x	x	x	x	x	x

Note 0 : Record available - : No rainfall x : No record E : Estimated
Tr : Less than 0.1 mm

Table 3.2 Availability of Daily Rainfall Data (46/50)

Id. No.			Station Name	Year 1985 / 1986											
				10	11	12	1	2	3	4	5	6	7	8	9
k. Jafr Basin															
32	G	0001	Udruh School	x	x	x	x	x	x	x	x	x	x	x	x
33	G	0002	Jafr Police Station	x	x	x	x	x	x	x	x	x	x	x	x
34	G	0003	Ma'an School	0	-	0	-	0	0	0	-	-	-	-	-
35	G	0004	Basta	0	0	0	0	x0	-	0	0	-	-	-	-
36	G	0005	Sadaqa	-	0	0	0	0	0	0	0	-	-	-	-
37	G	0006	Qurein	0	-	0	0	0	0	0	0	-	-	-	-
38	G	0007	Ma'an Railway Station	0	Tr	0	0	0	0	0	0	-	-	-	-
39	G	0008	Jafr Evaporation Station	x	x	x	x	x	x	x	x	x	x	x	x
40	G	0009	Udruh Evaporation Station	0	0	0	0	0	0	0	0	-	-	-	-
41	G	0010	Jurdhan Gaging Station	x	x	x	x	x	x	x	x	x	x	x	x
42	G	0011	Jabel Quzemeh	x	x	x	x	x	x	x	x	x	x	x	x
43	G	0012	Qabr Es-Sawwa	x	x	x	x	x	x	x	x	x	x	x	x
44	G	0013	Abu Tarafa	x	x	x	x	x	x	x	x	x	x	x	x
45	G	0014	Inab	x	x	x	x	x	x	x	x	x	x	x	x
46	G	0015	Kabid	x	x	x	x	x	x	x	x	x	x	x	x
47	G	0016	Jabel Batra	x	x	x	x	x	x	x	x	x	x	x	x
l. Eastern Desert Basin															
48	J	0001	Bayir Evaporation Station	x	x	x	x	x	x	x	x	x	x	x	x
49	J	0003	Wadi Bayir	x	x	x	x	x	x	x	x	x	x	x	x
50	J	0004	Qa' Es Siq	x	x	x	x	x	x	x	x	x	x	x	x
m. Southern Desert Basin															
51	K	0001	Al Mudawwara	x	x	x	x	x	x	x	x	x	x	x	x
52	K	0003	Muheish	x	x	x	x	x	x	x	x	x	x	x	x
53	K	0004	Wadi Dureiba	x	x	x	x	x	x	x	x	x	x	x	x

Note 0 : Record available - : No rainfall x : No record E : Estimated
Tr : Less than 0.1 mm

Table 3.2 Availability of Daily Rainfall Data (47/50)

Id. No.	Station Name	Year 1986 / 1987											
		10	11	12	1	2	3	4	5	6	7	8	9
a. East Side of Dead Sea													
1	CA 0002 Khanzira	-	0	0	0	0	0	-	-	-	-	-	-
2	CA 0005 Al Aina	x	x	x	x	x	x	x	x	x	x	x	x
3	CA 0006 Muhai	-	0	0	0	0	0x	-	-	-	-	-	-
b. Wadi Mujib													
4	CD 0013 Mazar	-	0	0	0	0	0	-	-	-	-	-	-
5	CD 0033 Jabel Sakhriyat	x	x	x	x	x	x	x	x	x	x	x	x
c. Wadi Hasa													
6	CF 0003 Jurf Ed-Darawish	-	0	0	0	0	0	-	-	-	-	-	-
7	CF 0005 Hasa Police Station	x	x	x	x	x	x	x	x	x	x	x	x
8	CF 0007 Hasa Evapo. Station	-	0	0	0	0	0	-	-	-	-	-	-
9	CF 0008 Hasa Gaging Station	-	0	0	-	0	0	-	-	-	-	-	-
d. Wadi Araba													
10	DA 0001 Shaubak School	x	x	x	x	x	x	x	x	x	x	x	x
11	DA 0002 Shaubak Agr. Station	-	0	0	0	0	0	-	-	-	-	-	-
12	DA 0003 Beir Ed-Dabbaghat	-	0	0	0	0	0	-	-	-	-	-	-
13	DA 0004 Ifjeij	x	x	x	x	x	x	x	x	x	x	x	x
14	DA 0005 Uneiza Railway Station	x	x	x	x	x	x	x	x	x	x	x	x
15	DA 0006 Al Husseiniya School	x	x	x	x	x	x	x	x	x	x	x	x
e. Wadi Feifa													
16	DB 0001 Tafile	-	0	0	0	0	0	-	-	-	-	-	-
17	DB 0002 Abur (Prince Hassan Nursery)	-	0	0	0	0	0	-	-	-	-	-	-
f. Wadi Khuneizeer													
18	DC 0001 Buseira	-	0	0	0	0	0	-	-	-	-	-	-
19	DC 0002 Rashadiya Police Station	-	0	0	0	0	0	-	-	-	-	-	-
g. Wadi Feedan													
20	DE 0001 Dana	-	0	0	0	0	0	-	-	-	-	-	-
h. Wadi Mousa													
21	DG 0001 Wadi Mousa	-	0	0	-	0	0	-	-	-	-	-	-
22	DG 0002 Hay	x	x	x	x	x	x	x	x	x	x	x	x
i. Wadi Howar													
23	DH 0001 Taiyiba Janoubiya	-	0	0	-	0	0	-	-	-	-	-	-
24	DH 0002 Dilagha	-	0	-	-	0	0	-	-	-	-	-	-
j. Wadi Yutum													
25	ED 0002 Ras En-Naqb	-	0	0	0	0	0	-	-	-	-	-	-
26	ED 0003 Ram Police Post	x	x	x	x	x	x	x	x	x	x	x	x
27	ED 0004 Quweira Evap. Station	x	x	x	x	x	x	x	x	x	x	x	x
28	ED 0006 Al Khaldy	x	x	x	x	x	x	x	x	x	x	x	x
29	ED 0010 Wadi Yutum Gaging Station	x	x	x	x	x	x	x	x	x	x	x	x
30	ED 0012 Ram(Qa' Disi) Evap. Station	x	x	x	x	x	x	x	x	x	x	x	x
31	ED 0015 Fassu'a Station	x	x	x	x	x	x	x	x	x	x	x	x

Note 0 : Record available - : No rainfall x : No record E : Estimated
Tr : Less than 0.1 mm

Table 3.2 Availability of Daily Rainfall Data (48/50)

Id. No.			Station Name	Year 1986 / 1987											
				10	11	12	1	2	3	4	5	6	7	8	9
k. Jafr Basin															
32	G	0001	Udruh School	x	x	x	x	x	x	x	x	x	x	x	x
33	G	0002	Jafr Police Station	x	x	x	x	x	x	x	x	x	x	x	x
34	G	0003	Ma'an School	-	0	-	-	-	0	-	0	-	-	-	-
35	G	0004	Basta	-	0	0	-	0	0	-	-	-	-	-	-
36	G	0005	Sadaqa	-	0	0	-	0	0	-	-	-	-	-	-
37	G	0006	Qurein	-	0	0	-	0	0	-	-	-	-	-	-
38	G	0007	Ma'an Railway Station	-	0	0	-	0	0	-	0	-	-	-	-
39	G	0008	Jafr Evaporation Station	x	x	x	x	x	x	x	x	x	x	x	x
40	G	0009	Udruh Evaporation Station	-	0	0	0	0	0	-	-	-	-	-	-
41	G	0010	Jurdhan Gaging Station	x	x	x	x	x	x	x	x	x	x	x	x
42	G	0011	Jabel Quzemeh	x	x	x	x	x	x	x	x	x	x	x	x
43	G	0012	Qabr Es-Sawwa	x	x	x	x	x	x	x	x	x	x	x	x
44	G	0013	Abu Tarafa	x	x	x	x	x	x	x	x	x	x	x	x
45	G	0014	Inab	x	x	x	x	x	x	x	x	x	x	x	x
46	G	0015	Kabid	x	x	x	x	x	x	x	x	x	x	x	x
47	G	0016	Jabel Batra	x	x	x	x	x	x	x	x	x	x	x	x
l. Eastern Desert Basin															
48	J	0001	Bayir Evaporation Station	x	x	x	x	x	x	x	x	x	x	x	x
49	J	0003	Wadi Bayir	x	x	x	x	x	x	x	x	x	x	x	x
50	J	0004	Qa' Es Siq	x	x	x	x	x	x	x	x	x	x	x	x
m. Southern Desert Basin															
51	K	0001	Al Mudawwara	x	x	x	x	x	x	x	x	x	x	x	x
52	K	0003	Muheish	x	x	x	x	x	x	x	x	x	x	x	x
53	K	0004	Wadi Dureiba	x	x	x	x	x	x	x	x	x	x	x	x

Note 0 : Record available - : No rainfall x : No record E : Estimated
Tr : Less than 0.1 mm

Table 3.2 Availability of Daily Rainfall Data (49/50)

Id. No.	Station Name	Year 1987 / 1988											
		10	11	12	1	2	3	4	5	6	7	8	9
a. East Side of Dead Sea													
1	CA 0002 Khanzira	0	-	0	0	0	0	-	-	-	-	-	-
2	CA 0005 Al Aina	x	x	x	x	x	x	x	x	x	x	x	x
3	CA 0006 Muhai	-	-	0	0	0	0	0	-	-	-	-	-
b. Wadi Mujib													
4	CD 0013 Mazar	-	-	0	0	0	0	-	-	-	-	-	-
5	CD 0033 Jabel Sakhriyat	x	x	x	x	x	x	x	x	x	x	x	x
c. Wadi Hasa													
6	CF 0003 Jurf Ed-Darawish	0	-	-	x	-	0	0	-	-	-	-	-
7	CF 0005 Hasa Police Station	x	x	x	x	x	x	x	x	x	x	x	x
8	CF 0007 Hasa Evapo. Station	x	x	x	x	x	x	x	x	x	x	x	x
9	CF 0008 Hasa Gaging Station	-	-	0	0	0	0	-	-	-	-	-	-
d. Wadi Araba													
10	DA 0001 Shaubak School	x	x	x	x	x	x	x	x	x	x	x	x
11	DA 0002 Shaubak Agr. Station	0	-	0	0	0	0	-	-	-	-	-	-
12	DA 0003 Beir Ed-Dabbaghat	-	-	0	0	0	x0	-	-	-	-	-	-
13	DA 0004 Ifjeij	x	x	x	x	x	x	x	x	x	x	x	x
14	DA 0005 Uneiza Railway Station	x	x	x	x	x	x	x	x	x	x	x	x
15	DA 0006 Al Husseiniya School	x	x	x	x	x	x	x	x	x	x	x	x
e. Wadi Feifa													
16	DB 0001 Tafile	-	-	0	0	0	0	-	-	-	-	-	-
17	DB 0002 Abur (Prince Hassan Nursery)	-	-	0	0	0	0	0	-	-	-	-	-
f. Wadi Khuneizeer													
18	DC 0001 Buseira	0	-	0	0	0	0	0	-	-	-	-	-
19	DC 0002 Rashadiya Police Station	-	0	0	0	0	0	0	0	-	-	-	-
g. Wadi Feedan													
20	DE 0001 Dana	-	-	0	0	0	x0	-	-	-	-	-	-
h. Wadi Mousa													
21	DG 0001 Wadi Mousa	0	-	0	0	0	0	-	-	-	-	-	-
22	DG 0002 Hay	x	x	x	x	x	x	x	x	x	x	x	x
i. Wadi Howar													
23	DH 0001 Taiyiba Janoubiya	-	-	0	0	0	0	-	-	-	-	-	-
24	DH 0002 Dilagha	-	-	-	0	0	0	-	-	-	-	-	-
j. Wadi Yutum													
25	ED 0002 Ras En-Naqb	0	x	x	x	x	x	x	x	x	x	x	x
26	ED 0003 Ram Police Post	x	x	x	x	x	x	x	x	x	x	x	x
27	ED 0004 Quweira Evap. Station	x	x	x	x	x	x	x	x	x	x	x	x
28	ED 0006 Al Khaldy	x	x	x	x	x	x	x	x	x	x	x	x
29	ED 0010 Wadi Yutum Gaging Station	x	x	x	x	x	x	x	x	x	x	x	x
30	ED 0012 Ram(Qa' Disi) Evap. Station	x	x	x	x	x	x	x	x	x	x	x	x
31	ED 0015 Fassu'a Station	x	x	x	x	x	x	x	x	x	x	x	x

Note 0 : Record available - : No rainfall x : No record E : Estimated
Tr : Less than 0.1 mm

Table 3.2 Availability of Daily Rainfall Data (50/50)

Id. No.	Station Name	Year 1987 / 1988											
		10	11	12	1	2	3	4	5	6	7	8	9
k. Jafr Basin													
32 G 0001	Udruh School	x	x	x	x	x	x	x	x	x	x	x	x
33 G 0002	Jafr Police Station	x	x	x	x	x	x	x	x	x	x	x	x
34 G 0003	Ma'an School	0	x	x	x	x	x	x	x	x	x	x	x
35 G 0004	Basta	-	-	0	0	0	0	-	-	-	-	-	-
36 G 0005	Sadaqa	-	-	0	0	0	0	-	-	-	-	-	-
37 G 0006	Qurein	-	-	0	0	0	0	-	-	-	-	-	-
38 G 0007	Ma'an Railway Station	x	x	x	x	x	x	x	x	x	x	x	x
39 G 0008	Jafr Evaporation Station	x	x	x	x	x	x	x	x	x	x	x	x
40 G 0009	Udruh Evaporation Station	x	x	x	x	x	x	x	x	x	x	x	x
41 G 0010	Jurdhan Gaging Station	x	x	x	x	x	x	x	x	x	x	x	x
42 G 0011	Jabel Quzemeh	x	x	x	x	x	x	x	x	x	x	x	x
43 G 0012	Qabr Es-Sawwa	x	x	x	x	x	x	x	x	x	x	x	x
44 G 0013	Abu Tarafa	x	x	x	x	x	x	x	x	x	x	x	x
45 G 0014	Inab	x	x	x	x	x	x	x	x	x	x	x	x
46 G 0015	Kabid	x	x	x	x	x	x	x	x	x	x	x	x
47 G 0016	Jabel Batra	x	x	x	x	x	x	x	x	x	x	x	x
l. Eastern Desert Basin													
48 J 0001	Bayir Evaporation Station	x	x	x	x	x	x	x	x	x	x	x	x
49 J 0003	Wadi Bayir	x	x	x	x	x	x	x	x	x	x	x	x
50 J 0004	Qa' Es Siq	x	x	x	x	x	x	x	x	x	x	x	x
m. Southern Desert Basin													
51 K 0001	Al Mudawwara	x	x	x	x	x	x	x	x	x	x	x	x
52 K 0003	Muheish	x	x	x	x	x	x	x	x	x	x	x	x
53 K 0004	Wadi Dureiba	x	x	x	x	x	x	x	x	x	x	x	x

Note 0 : Record available - : No rainfall x : No record E : Estimated
Tr : Less than 0.1 mm

Table 3.3 Depth - Duration Relationships (1/9)

Rainfall St. No. : CF 0007
Rainfall St. Name: Hasa Evaporation Station

Elapsed Time	Date of Occurrence: Jan.10,1971			Dec.26-27,1971			Nov.24,1972			Feb.20,1975			Dec.17-18,1985			Average of Accumul. Rate of 5 Storms	Hourly Rainfall
			Accum.			Accum.			Accum.			Accum.			Accum.		
(hr)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(%)	(%)
0			0.0			0.0			0.0			0.0			0.0	0.0	
1	0.1	0.6	0.6	0.6	4.4	4.4	0.3	2.0	2.0	0.6	1.7	1.7	1.0	4.0	4.0	2.5	2.5
2	3.6	20.1	20.7		0.0	4.4	0.7	4.7	6.7	0.6	1.7	3.4	2.0	8.0	12.0	9.4	6.9
3	7.0	39.1	59.8	0.2	1.5	5.9	0.1	0.7	7.4	0.2	0.6	4.0	0.4	1.6	13.6	18.1	8.7
4	3.4	19.0	78.8	0.1	0.7	6.6	0.9	6.0	13.4	3.6	10.3	14.3	0.4	1.6	15.2	25.7	7.5
5	2.0	11.2	89.9		0.0	6.6	0.2	1.3	14.8	1.7	4.9	19.2		0.0	15.2	29.1	3.5
6	1.2	6.7	96.6	2.2	16.2	22.8	10.2	68.5	83.2	1.1	3.2	22.3	0.4	1.6	16.8	48.4	19.2
7	0.6	3.4	100.0	0.7	5.1	27.9	0.3	2.0	85.2	3.2	9.2	31.5	1.4	5.6	22.4	53.4	5.1
8		0.0	100.0	0.2	1.5	29.4		0.0	85.2	1.6	4.6	36.1	1.2	4.8	27.2	55.6	2.2
9		0.0	100.0		0.0	29.4		0.0	85.2	1.2	3.4	39.5	0.6	2.4	29.6	56.8	1.2
10		0.0	100.0	0.4	2.9	32.4		0.0	85.2	2.2	6.3	45.8	1.6	6.4	36.0	59.9	3.1
11		0.0	100.0	0.2	1.5	33.8		0.0	85.2	4.3	12.3	58.2	1.2	4.8	40.8	63.6	3.7
12		0.0	100.0	2.9	21.3	55.1		0.0	85.2	3.4	9.7	67.9	1.8	7.2	48.0	71.3	7.7
13		0.0	100.0		0.0	55.1	1.2	8.1	93.3	1.4	4.0	71.9	0.8	3.2	51.2	74.3	3.1
14		0.0	100.0	0.5	3.7	58.8	1.0	6.7	100.0	1.1	3.2	75.1	2.8	11.2	62.4	79.3	4.9
15		0.0	100.0	3.8	27.9	86.8		0.0	100.0	0.5	1.4	76.5	3.8	15.2	77.6	88.2	8.9
16		0.0	100.0	0.5	3.7	90.4		0.0	100.0	0.7	2.0	78.5	1.4	5.6	83.2	90.4	2.3
17		0.0	100.0	0.1	0.7	91.2		0.0	100.0	0.9	2.6	81.1	2.6	10.4	93.6	93.2	2.7
18		0.0	100.0	0.9	6.6	97.8		0.0	100.0	0.5	1.4	82.5	1.4	5.6	99.2	95.9	2.7
19		0.0	100.0	0.3	2.2	100.0		0.0	100.0	5.3	15.2	97.7		0.0	99.2	99.4	3.5
20		0.0	100.0		0.0	100.0		0.0	100.0	0.8	2.3	100.0	0.2	0.8	100.0	100.0	0.6
21		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
22		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
23		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
24		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
25			100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
26			100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
27			100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
28			100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
	17.9	100.0		13.6	100.0		14.9	100.0		34.9	100.0		25.0	100.0			

Table 3.3 Depth - Duration Relationships (2/9)

Rainfall St. No. : CF 0008
Rainfall St. Name: Hasa Gaging Station

Elapsed Time	Date of Occurrence: Dec.26-27,1971			Mar.07-08,1979			Dec.14-15,1979			Mar.02-03,1980			Dec.23-24,1983			Average of Accumul. Rate of 5 Storms	Hourly Rainfall
			Accum.			Accum.			Accum.			Accum.			Accum.		
(hr)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(%)	(%)
0			0.0			0.0			0.0			0.0			0.0	0.0	
1	0.3	1.1	1.1	0.2	0.8	0.8	0.6	2.6	2.6	0.4	1.1	1.1	0.4	1.0	1.0	1.3	1.3
2	2.3	8.4	9.5	0.6	2.3	3.1	1.2	5.2	7.8		0.0	1.1	0.4	1.0	2.0	4.7	3.4
3	0.5	1.8	11.4	0.4	1.5	4.6	1.8	7.8	15.5		0.0	1.1	6.2	15.5	17.5	10.0	5.3
4		0.0	11.4		0.0	4.6	1.2	5.2	20.7	0.2	0.6	1.7	5.2	13.0	30.5	13.8	3.7
5	3.6	13.2	24.5	0.8	3.1	7.6	1.2	5.2	25.9	0.2	0.6	2.2	4.8	12.0	42.5	20.5	6.8
6	0.5	1.8	26.4	1.0	3.8	11.5	1.6	6.9	32.8		0.0	2.2	3.4	8.5	51.0	24.8	4.2
7	3.9	14.3	40.7	0.6	2.3	13.7	0.2	0.9	33.6	1.6	4.4	6.6	2.6	6.5	57.5	30.4	5.7
8	3.3	12.1	52.7	0.4	1.5	15.3	3.8	16.4	50.0	0.8	2.2	8.8	1.2	3.0	60.5	37.5	7.0
9	0.2	0.7	53.5	2.2	8.4	23.7	3.0	12.9	62.9	0.8	2.2	11.0	1.4	3.5	64.0	43.0	5.6
10	0.8	2.9	56.4	2.2	8.4	32.1	3.8	16.4	79.3	3.6	9.9	21.0	1.6	4.0	68.0	51.4	8.3
11	2.4	8.8	65.2	2.4	9.2	41.2	2.0	8.6	87.9	3.0	8.3	29.3	2.8	7.0	75.0	59.7	8.4
12	1.8	6.6	71.8	1.4	5.3	46.6	0.8	3.4	91.4	2.2	6.1	35.4	4.8	12.0	87.0	66.4	6.7
13	2.1	7.7	79.5	0.4	1.5	48.1	0.4	1.7	93.1	0.4	1.1	36.5	2.6	6.5	93.5	70.1	3.7
14		0.0	79.5	1.4	5.3	53.4	0.2	0.9	94.0		0.0	36.5	0.8	2.0	95.5	71.8	1.6
15		0.0	79.5	0.2	0.8	54.2	0.4	1.7	95.7		0.0	36.5	0.2	0.5	96.0	72.4	0.6
16	0.2	0.7	80.2		0.0	54.2		0.0	95.7	1.8	5.0	41.4	0.0	0.0	96.0	73.5	1.1
17	0.4	1.5	81.7	1.6	6.1	60.3		0.0	95.7	1.4	3.9	45.3	0.2	0.5	96.5	75.9	2.4
18		0.0	81.7	1.0	3.8	64.1		0.0	95.7	5.2	14.4	59.7	0.0	0.0	96.5	79.5	3.6
19		0.0	81.7	0.8	3.1	67.2		0.0	95.7	1.0	2.8	62.4	0.2	0.5	97.0	80.8	1.3
20	0.2	0.7	82.4	4.4	16.8	84.0	0.8	3.4	99.1	0.8	2.2	64.6	0.0	0.0	97.0	85.4	4.6
21	0.3	1.1	83.5	0.4	1.5	85.5	0.2	0.9	100.0	0.2	0.6	65.2	0.2	0.5	97.5	86.3	0.9
22	0.8	2.9	86.4	1.0	3.8	89.3		0.0	100.0		0.0	65.2	1.0	2.5	100.0	88.2	1.8
23	1.0	3.7	90.1	0.2	0.8	90.1		0.0	100.0	1.6	4.4	69.6		0.0	100.0	90.0	1.8
24	0.8	2.9	93.0	2.2	8.4	98.5		0.0	100.0	3.4	9.4	79.0		0.0	100.0	94.1	4.1
25	1.0	3.7	96.7	0.4	1.5	100.0		0.0	100.0		0.0	79.0		0.0	100.0	95.1	1.0
26	0.9	3.3	100.0		0.0	100.0		0.0	100.0	2.6	7.2	86.2		0.0	100.0	97.2	2.1
27		0.0	100.0		0.0	100.0		0.0	100.0	4.8	13.3	99.4		0.0	100.0	99.9	2.7
28		0.0	100.0		0.0	100.0		0.0	100.0	0.2	0.6	100.0		0.0	100.0	100.0	0.1
	27.3	100.0		26.2	100.0		23.2	100.0		36.2	100.0		40.0	100.0			

Table 3.3 Depth - Duration Relationships (3/9)

Rainfall St. No. : DA 0005
Rainfall St. Name: Uneiza Railway Station

Elapsed Time	Date of Occurrence									Average of Accumul. Rate of 3 Storms	Hourly Rainfall
	Mar.22,1985			Dec.17-18,1985			Mar.18-19,1987				
			Accum.			Accum.			Accum.		
(hr)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(%)	(%)
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1	0.2	2.0	2.0	0.4	2.1	2.1	0.2	2.5	2.5	2.2	2.2
2	1.6	16.3	18.4	0.2	1.1	3.2	0.8	10.0	12.5	11.4	9.1
3	4.4	44.9	63.3	0.2	1.1	4.3	1.2	15.0	27.5	31.7	20.3
4	0.6	6.1	69.4		0.0	4.3	0.2	2.5	30.0	34.5	2.9
5	0.2	2.0	71.4	1.2	6.4	10.6	0.8	10.0	40.0	40.7	6.1
6	2.0	20.4	91.8	1.4	7.4	18.1	1.2	15.0	55.0	55.0	14.3
7	0.8	8.2	100.0	1.6	8.5	26.6	0.2	2.5	57.5	61.4	6.4
8		0.0	100.0	2.8	14.9	41.5	0.4	5.0	62.5	68.0	6.6
9		0.0	100.0	1.2	6.4	47.9	0.4	5.0	67.5	71.8	3.8
10		0.0	100.0	2.8	14.9	62.8	1.6	20.0	87.5	83.4	11.6
11		0.0	100.0	4.8	25.5	88.3	0.4	5.0	92.5	93.6	10.2
12		0.0	100.0	1.4	7.4	95.7	0.2	2.5	95.0	96.9	3.3
13		0.0	100.0	0.2	1.1	96.8	0.4	5.0	100.0	98.9	2.0
14		0.0	100.0	0.2	1.1	97.9		0.0	100.0	99.3	0.4
15		0.0	100.0	0.4	2.1	100.0		0.0	100.0	100.0	0.7
16		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
17		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
18		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
19		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
20		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
21		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
22		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
23		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
24		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
25		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
26		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
27		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
28		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
29		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
30		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
31		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
32		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
	9.8	100.0		18.8	100.0		8.0	100.0			

Table 3.3 Depth - Duration Relationships (4/9)

Rainfall St. No. : DB 0002
Rainfall St. Name: Abur

Elapsed Time	Date of Occurrence: Dec.14-15,1977			Dec.22-23,1977			Dec.11-12,1980			Dec.26-27,1980			Feb.01,1982			Average of Accumul. Rate of 5 Storms	Hourly Rainfall
			Accum.			Accum.			Accum.			Accum.			Accum.		
(hr)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(%)	(%)
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	
1	0.2	1.0	1.0	0.2	0.5	0.5	0.4	0.6	0.6	1.8	5.2	5.2	0.6	2.7	2.7	2.0	2.0
2	1.0	5.1	6.1		0.0	0.5	0.8	1.1	1.7	1.4	4.0	9.2	7.6	34.5	37.3	11.0	9.0
3	0.4	2.0	8.2	0.6	1.6	2.1	2.0	2.8	4.5		0.0	9.2	2.8	12.7	50.0	14.8	3.8
4	0.2	1.0	9.2	0.2	0.5	2.6	1.2	1.7	6.2	0.4	1.2	10.4	2.6	11.8	61.8	18.0	3.2
5	0.8	4.1	13.3	2.6	6.8	9.5	2.4	3.4	9.6	2.0	5.8	16.2	1.2	5.5	67.3	23.1	5.1
6	1.0	5.1	18.4	3.8	10.0	19.5	3.6	5.1	14.6	4.4	12.7	28.9	1.4	6.4	73.6	31.0	7.8
7	1.2	6.1	24.5	1.8	4.7	24.2	3.0	4.2	18.8	4.2	12.1	41.0	2.0	9.1	82.7	38.3	7.3
8	1.4	7.1	31.6	1.2	3.2	27.4	5.6	7.9	26.7	1.6	4.6	45.7	1.6	7.3	90.0	44.3	6.0
9	2.4	12.2	43.9		0.0	27.4	3.0	4.2	30.9	2.4	6.9	52.6	0.8	3.6	93.6	49.7	5.4
10	5.8	29.6	73.5	0.4	1.1	28.4	3.8	5.3	36.2	3.6	10.4	63.0	0.6	2.7	96.4	59.5	9.8
11	3.6	18.4	91.8	0.8	2.1	30.5	4.4	6.2	42.4	2.4	6.9	69.9	0.8	3.6	100.0	66.9	7.4
12	0.8	4.1	95.9	0.8	2.1	32.6	3.0	4.2	46.6	2.0	5.8	75.7		0.0	100.0	70.2	3.2
13	0.6	3.1	99.0	5.4	14.2	46.8	4.6	6.5	53.1	4.8	13.9	89.6		0.0	100.0	77.7	7.5
14	0.2	1.0	100.0		0.0	46.8	6.2	8.7	61.8	0.8	2.3	91.9		0.0	100.0	80.1	2.4
15		0.0	100.0	0.2	0.5	47.4	3.6	5.1	66.9		0.0	91.9		0.0	100.0	81.2	1.1
16		0.0	100.0	1.2	3.2	50.5	3.0	4.2	71.1	0.8	2.3	94.2		0.0	100.0	83.2	1.9
17		0.0	100.0	2.0	5.3	55.8	2.0	2.8	73.9	0.8	2.3	96.5		0.0	100.0	85.2	2.1
18		0.0	100.0	0.2	0.5	56.3	1.4	2.0	75.8		0.0	96.5		0.0	100.0	85.7	0.5
19		0.0	100.0		0.0	56.3	1.6	2.2	78.1		0.0	96.5		0.0	100.0	86.2	0.4
20		0.0	100.0	0.8	2.1	58.4	2.2	3.1	81.2		0.0	96.5		0.0	100.0	87.2	1.0
21		0.0	100.0		0.0	58.4	5.6	7.9	89.0	0.2	0.6	97.1		0.0	100.0	88.9	1.7
22		0.0	100.0	0.2	0.5	58.9	2.8	3.9	93.0	0.2	0.6	97.7		0.0	100.0	89.9	1.0
23		0.0	100.0		0.0	58.9	5.0	7.0	100.0		0.0	97.7		0.0	100.0	91.3	1.4
24		0.0	100.0	0.8	2.1	61.1		0.0	100.0	0.4	1.2	98.8		0.0	100.0	92.0	0.7
25		0.0	100.0		0.0	61.1		0.0	100.0	0.4	1.2	100.0		0.0	100.0	92.2	0.2
26		0.0	100.0	2.4	6.3	67.4		0.0	100.0		0.0	100.0		0.0	100.0	93.5	1.3
27		0.0	100.0	3.8	10.0	77.4		0.0	100.0		0.0	100.0		0.0	100.0	95.5	2.0
28		0.0	100.0	2.6	6.8	84.2		0.0	100.0		0.0	100.0		0.0	100.0	96.8	1.4
29		0.0	100.0	2.2	5.8	90.0		0.0	100.0		0.0	100.0		0.0	100.0	98.0	1.2
30		0.0	100.0	1.8	4.7	94.7		0.0	100.0		0.0	100.0		0.0	100.0	98.9	0.9
31		0.0	100.0	1.8	4.7	99.5		0.0	100.0		0.0	100.0		0.0	100.0	99.9	0.9
32		0.0	100.0	0.2	0.5	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.1
	19.6	100.0		38.0	100.0		71.2	100.0		34.6	100.0		22.0	100.0			

Table 3.3 Depth - Duration Relationships (5/9)

Rainfall St. No. : DG 0001
Rainfall St. Name: Wadi Mousa

Elapsed Time	Date of Occurrence: Dec.13,1984			Mar.17-18,1985			Mar.22,1985			Apr. 22,1985			Average of Accumul. Rate of 4 Storms	Hourly Rainfall
			Accum.			Accum.			Accum.			Accum.		
(hr)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(%)	(%)
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	
1	0.2	0.9	0.9	0.2	1.5	1.5	0.2	1.1	1.1	0.4	2.8	2.8	1.6	1.6
2	4.4	19.5	20.4	0.6	4.6	6.2	0.8	4.6	5.7	0.4	2.8	5.6	9.5	7.9
3	4.4	19.5	39.8	0.8	6.2	12.3	3.2	18.4	24.1	0.2	1.4	6.9	20.8	11.4
4	3.6	15.9	55.8	0.6	4.6	16.9	3.4	19.5	43.7	0.6	4.2	11.1	31.9	11.1
5	6.4	28.3	84.1	0.4	3.1	20.0	0.6	3.4	47.1	0.0	0.0	11.1	40.6	8.7
6	1.8	8.0	92.0	0.6	4.6	24.6	0.4	2.3	49.4	3.8	26.4	37.5	50.9	10.3
7	1.8	8.0	100.0	1.2	9.2	33.8	7.6	43.7	93.1	1.2	8.3	45.8	68.2	17.3
8		0.0	100.0	0.2	1.5	35.4	1.2	6.9	100.0	1.0	6.9	52.8	72.0	3.8
9		0.0	100.0	0.0	0.0	35.4		0.0	100.0	0.2	1.4	54.2	72.4	0.3
10		0.0	100.0	0.2	1.5	36.9		0.0	100.0	0.4	2.8	56.9	73.5	1.1
11		0.0	100.0	0.4	3.1	40.0		0.0	100.0	1.4	9.7	66.7	76.7	3.2
12		0.0	100.0	0.8	6.2	46.2		0.0	100.0	1.2	8.3	75.0	80.3	3.6
13		0.0	100.0	1.8	13.8	60.0		0.0	100.0	0.4	2.8	77.8	84.4	4.2
14		0.0	100.0	1.8	13.8	73.8		0.0	100.0	0.2	1.4	79.2	88.3	3.8
15		0.0	100.0	1.8	13.8	87.7		0.0	100.0	0.2	1.4	80.6	92.1	3.8
16		0.0	100.0	0.4	3.1	90.8		0.0	100.0	0.4	2.8	83.3	93.5	1.5
17		0.0	100.0	1.0	7.7	98.5		0.0	100.0	1.2	8.3	91.7	97.5	4.0
18		0.0	100.0	0.0	0.0	98.5		0.0	100.0	0.2	1.4	93.1	97.9	0.3
19		0.0	100.0	0.2	1.5	100.0		0.0	100.0		0.0	93.1	98.3	0.4
20		0.0	100.0		0.0	100.0		0.0	100.0		0.0	93.1	98.3	0.0
21		0.0	100.0		0.0	100.0		0.0	100.0	0.8	5.6	98.6	99.7	1.4
22		0.0	100.0		0.0	100.0		0.0	100.0	0.2	1.4	100.0	100.0	0.3
23		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
24		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
25		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
26		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
27		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
28		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
29		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
30		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
31		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
32		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
	22.6	100.0		13.0	100.0		17.4	100.0		14.4	100.0			

Table 3.3 Depth - Duration Relationships (6/9)

Rainfall St. No. : DH 0001
Rainfall St. Name: Taiyiba Janoubiya

Elapsed Time	Date of Occurrence									Average of Accumul. Rate of 3 Storms	Hourly Rainfall
	Feb.05,1985			Feb.26-27,1985			Mar.22-23,1985				
			Accum.			Accum.			Accum.		
(hr)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(%)	(%)
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1	0.4	1.1	1.1	1.8	4.7	4.7	0.8	2.4	2.4	2.8	2.8
2	15.4	43.5	44.6	2.8	7.4	12.1	1.8	5.4	7.8	21.5	18.8
3	8.2	23.2	67.8	2.6	6.8	18.9	1.8	5.4	13.3	33.3	11.8
4	5.4	15.3	83.1	2.4	6.3	25.3	7.4	22.3	35.5	48.0	14.6
5	1.6	4.5	87.6	1.6	4.2	29.5	7.2	21.7	57.2	58.1	10.1
6	0.0	0.0	87.6	1.4	3.7	33.2	4.2	12.7	69.9	63.5	5.4
7	2.8	7.9	95.5	1.4	3.7	36.8	1.2	3.6	73.5	68.6	5.1
8	0.6	1.7	97.2	1.0	2.6	39.5	0.8	2.4	75.9	70.9	2.2
9	0.4	1.1	98.3	1.0	2.6	42.1	0.4	1.2	77.1	72.5	1.7
10	0.2	0.6	98.9	1.4	3.7	45.8		0.0	77.1	73.9	1.4
11	0	0.0	98.9	2.2	5.8	51.6		0.0	77.1	75.9	1.9
12	0.4	1.1	100.0	2.8	7.4	58.9	1.8	5.4	82.5	80.5	4.6
13		0.0	100.0	1.2	3.2	62.1		0.0	82.5	81.5	1.1
14		0.0	100.0	0.6	1.6	63.7		0.0	82.5	82.1	0.5
15		0.0	100.0	0.2	0.5	64.2	0.4	1.2	83.7	82.6	0.6
16		0.0	100.0		0.0	64.2	2.6	7.8	91.6	85.3	2.6
17		0.0	100.0		0.0	64.2	0.4	1.2	92.8	85.7	0.4
18		0.0	100.0		0.0	64.2		0.0	92.8	85.7	0.0
19		0.0	100.0	0.6	1.6	65.8	1.6	4.8	97.6	87.8	2.1
20		0.0	100.0	1.4	3.7	69.5	0.8	2.4	100.0	89.8	2.0
21		0.0	100.0	5.0	13.2	82.6		0.0	100.0	94.2	4.4
22		0.0	100.0	2.4	6.3	88.9		0.0	100.0	96.3	2.1
23		0.0	100.0	3.8	10.0	98.9		0.0	100.0	99.6	3.3
24		0.0	100.0	0.4	1.1	100.0		0.0	100.0	100.0	0.4
25		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
26		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
27		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
28		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
29		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
30		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
31		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
32		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
	35.4	100.0		38.0	100.0		33.2	100.0			

Table 3.3 Depth - Duration Relationships (7/9)

Rainfall St. No. : ED 0002
Rainfall St. Name: Ras En-Naqb

Elapsed Time	Date of Occurrence: Jan.31, 1969			Apr.15-16,1969			Mar.10-11,1970			Nov.7-8,1986			Average of Accumul. Rate of 4 Storms	Hourly Rainfall
			Accum.			Accum.			Accum.			Accum.		
(hr)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(%)	(%)
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	
1	0.3	1.3	1.3	0.5	3.2	3.2	0.7	8.9	8.9	0.6	4.8	4.8	4.6	4.6
2	1.0	4.3	5.7		0.0	3.2	0.8	10.1	19.0		0.0	4.8	8.2	3.6
3	1.3	5.7	11.3		0.0	3.2	1.6	20.3	39.2		0.0	4.8	14.7	6.5
4	0.6	2.6	13.9	1.0	6.5	9.7	1.2	15.2	54.4	0.2	1.6	6.5	21.1	6.5
5	0.8	3.5	17.4	4.1	26.5	36.1	0.4	5.1	59.5	0.8	6.5	12.9	31.5	10.4
6		0.0	17.4	0.1	0.6	36.8	0.1	1.3	60.8		0.0	12.9	32.0	0.5
7	0.2	0.9	18.3	0.8	5.2	41.9	1.1	13.9	74.7	0.2	1.6	14.5	37.3	5.4
8	2.2	9.6	27.8	4.7	30.3	72.3	0.7	8.9	83.5		0.0	14.5	49.5	12.2
9	0.2	0.9	28.7	1.7	11.0	83.2	0.1	1.3	84.8	3.0	24.2	38.7	58.9	9.3
10	2.8	12.2	40.9	0.1	0.6	83.9		0.0	84.8	3.6	29.0	67.7	69.3	10.5
11	1.2	5.2	46.1	0.1	0.6	84.5		0.0	84.8	2.0	16.1	83.9	74.8	5.5
12	2.8	12.2	58.3	0.1	0.6	85.2	0.1	1.3	86.1		0.0	83.9	78.3	3.5
13	2.1	9.1	67.4	0.3	1.9	87.1	0.1	1.3	87.3	1.6	12.9	96.8	84.7	6.3
14	2.6	11.3	78.7	1.3	8.4	95.5	0.1	1.3	88.6	0.2	1.6	98.4	90.3	5.6
15	3.1	13.5	92.2	0.7	4.5	100.0	0.8	10.1	98.7		0.0	98.4	97.3	7.0
16	1.3	5.7	97.8		0.0	100.0	0.1	1.3	100.0		0.0	98.4	99.1	1.7
17	0.5	2.2	100.0		0.0	100.0		0.0	100.0	0.2	1.6	100.0	100.0	0.9
18		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
19		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
20		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
21		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
22		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
23		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
24		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
25		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
26		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
27		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
28		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
29		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
30		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
31		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
32		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
	23.0	100.0		15.5	100.0		7.9	100.0		12.4	100.0			

Table 3.3 Depth - Duration Relationships (8/9)

Rainfall St. No. : G 0003
Rainfall St. Name: Ma'an School

Elapsed Time	Date of Occurrence: Dec.22-23,1971			Dec.11,1980			Dec.26-27,1980			Nov.28,1986			Mar.18-19,1987			Average of Accumul. Rate of 5 Storms	Hourly Rainfall
			Accum.			Accum.			Accum.			Accum.			Accum.		
(hr)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(mm)	(%)	(%)	(%)	(%)
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	
1	1.0	14.3	14.3	0.2	1.9	1.9	2.8	7.6	7.6	1.0	13.2	13.2	0.2	3.8	3.8	8.2	8.2
2		0.0	14.3	0.2	1.9	3.8	0.8	2.2	9.8	0.8	10.5	23.7		0.0	3.8	11.1	2.9
3	1.0	14.3	28.6		0.0	3.8		0.0	9.8		0.0	23.7	1.4	26.9	30.8	19.3	8.2
4	2.0	28.6	57.1		0.0	3.8	0.2	0.5	10.3		0.0	23.7		0.0	30.8	25.2	5.8
5	0.5	7.1	64.3	0.2	1.9	5.8	1.2	3.3	13.6		0.0	23.7	0.4	7.7	38.5	29.2	4.0
6	1.0	14.3	78.6	0.6	5.8	11.5	2.8	7.6	21.2		0.0	23.7	0.4	7.7	46.2	36.2	7.1
7	0.5	7.1	85.7	1.0	9.6	21.2	2.6	7.1	28.3	0.2	2.6	26.3		0.0	46.2	41.5	5.3
8		0.0	85.7	0.4	3.8	25.0	4.0	10.9	39.1		0.0	26.3	0.2	3.8	50.0	45.2	3.7
9	0.5	7.1	92.9	1.6	15.4	40.4	7.4	20.1	59.2		0.0	26.3	0.6	11.5	61.5	56.1	10.8
10	0.5	7.1	100.0	1.0	9.6	50.0	4.6	12.5	71.7	0.4	5.3	31.6	0.8	15.4	76.9	66.0	10.0
11		0.0	100.0	0.6	5.8	55.8	2.2	6.0	77.7	1.6	21.1	52.6	0.4	7.7	84.6	74.1	8.1
12		0.0	100.0	1.0	9.6	65.4	2.4	6.5	84.2	1.6	21.1	73.7	0.6	11.5	96.2	83.9	9.7
13		0.0	100.0	1.6	15.4	80.8	1.4	3.8	88.0	1.4	18.4	92.1	0.2	3.8	100.0	92.2	8.3
14		0.0	100.0	0.8	7.7	88.5	3.0	8.2	96.2	0.4	5.3	97.4		0.0	100.0	96.4	4.2
15		0.0	100.0	1.2	11.5	100.0	1.4	3.8	100.0	0.2	2.6	100.0		0.0	100.0	100.0	3.6
16		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
17		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
18		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
19		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
20		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
21		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
22		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
23		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
24		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
25		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
26		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
27		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
28		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
29		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
30		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
31		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
32		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
	7.0	100.0		10.4	100.0		36.8	100.0		7.6	100.0		5.2	100.0			

Table 3.3 Depth - Duration Relationships (9/9)

Rainfall St. No.: G 0010
Rainfall St. Name: Jurdhan Gaging Station

Elapsed Time	Date of Occurrence															Average of Accumul. Rate of 5 Storms	Hourly Rainfall
	Dec.22-23,1971			Feb.06-07,1972			Mar.21,1972			Nov.24,1972			Mar.18-19,1987				
(hr)	(mm)	(%)	Accum. (%)	(mm)	(%)	Accum. (%)	(mm)	(%)	Accum. (%)	(mm)	(%)	Accum. (%)	(mm)	(%)	Accum. (%)	(%)	(%)
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	
1	0.2	2.8	2.8	0.1	0.8	0.8	0.1	1.6	1.6	0.2	2.1	2.1	0.2	3.8	3.8	2.2	2.2
2	0.8	11.3	14.1	0.2	1.6	2.4	0.5	7.8	9.4	0.5	5.3	7.4		0.0	3.8	7.4	5.2
3	1.2	16.9	31.0		0.0	2.4	0.4	6.3	15.6	1.5	15.8	23.2	1.4	26.9	30.8	20.6	13.2
4	0.1	1.4	32.4	0.7	5.6	7.9		0.0	15.6	1.4	14.7	37.9		0.0	30.8	24.9	4.3
5	1.5	21.1	53.5	0.5	4.0	11.9		0.0	15.6	1.1	11.6	49.5	0.4	7.7	38.5	33.8	8.9
6	1.7	23.9	77.5	0.5	4.0	15.9		0.0	15.6	1.7	17.9	67.4	0.4	7.7	46.2	44.5	10.7
7	0.7	9.9	87.3	0.3	2.4	18.3	0.8	12.5	28.1	2.7	28.4	95.8		0.0	46.2	55.1	10.6
8	0.6	8.5	95.8	0.6	4.8	23.0	0.8	12.5	40.6		0.0	95.8	0.2	3.8	50.0	61.0	5.9
9	0.2	2.8	98.6	1.0	7.9	31.0	2.0	31.3	71.9		0.0	95.8	0.6	11.5	61.5	71.7	10.7
10		0.0	98.6	0.2	1.6	32.5	1.1	17.2	89.1		0.0	95.8	0.8	15.4	76.9	78.6	6.8
11	0.1	1.4	100.0	2.2	17.5	50.0	0.6	9.4	98.4		0.0	95.8	0.4	7.7	84.6	85.8	7.2
12		0.0	100.0	1.9	15.1	65.1	0.1	1.6	100.0		0.0	95.8	0.6	11.5	96.2	91.4	5.6
13		0.0	100.0	1.3	10.3	75.4		0.0	100.0		0.0	95.8	0.2	3.8	100.0	94.2	2.8
14		0.0	100.0	2.0	15.9	91.3		0.0	100.0	0.4	4.2	100.0		0.0	100.0	98.3	4.0
15		0.0	100.0	0.8	6.3	97.6		0.0	100.0		0.0	100.0		0.0	100.0	99.5	1.3
16		0.0	100.0	0.3	2.4	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.5
17		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
18		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
19		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
20		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
21		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
22		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
23		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
24		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
25		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
26		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
27		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
28		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
29		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
30		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
31		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
32		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0		0.0	100.0	100.0	0.0
	7.1	100.0		12.6	100.0		6.4	100.0		9.5	100.0		5.2	100.0			

Table 3.4 Availability of Daily Discharge Data (1/5)

	Station Name	Id. No.	Year 1963/64											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	x	x	x	x	x	x	x	x	x	x	x	x
2	Wadi Jurdhan	G 0018	-	-	0	-	0	0	-	-	-	-	-	-

	Station Name	Id. No.	Year 1964/65											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	x	x	x	x	x	x	x	x	x	x	x	x
2	Wadi Jurdhan	G 0018	-	-	-	0	-	-	-	-	-	-	-	-

	Station Name	Id. No.	Year 1965/66											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	x	x	x	x	x	x	x	x	x	x	x	x
2	Wadi Jurdhan	G 0018	0	-	-	-	0	0	-	-	-	-	-	-

	Station Name	Id. No.	Year 1966/67											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	x	x	x	x	x	x	x	x	x	x	x	x
2	Wadi Jurdhan	G 0018	-	0	-	-	-	0	-	0	-	-	-	-

	Station Name	Id. No.	Year 1967/68											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	x	x	x	x	x	x	x	x	x	x	x	x
2	Wadi Jurdhan	G 0018	0	0	-	-	-	-	-	0	-	-	-	-

Note :
0 : Record available - : No streamflow x : No record

Table 3.4 Availability of Daily Discharge Data (2/5)

	Station Name	Id. No.	Year 1968/69											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	0	0	0	0	0	0	0	0	-	-	-
2	Wadi Jurdhan	G 0018	-	0	-	0	-	0	0	0	-	-	-	-

	Station Name	Id. No.	Year 1969/70											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	0	0	0	0	0	0	-	-	-	-	-	-
2	Wadi Jurdhan	G 0018	-	-	-	0	-	-	-	-	-	-	-	-

	Station Name	Id. No.	Year 1970/71											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	-	0	0	0	0	0	0	0	-	-	-
2	Wadi Jurdhan	G 0018	-	-	-	-	-	-	0	-	-	-	-	-

	Station Name	Id. No.	Year 1971/72											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	0	0	0	0	0	0	0	0	0	-	-
2	Wadi Jurdhan	G 0018	-	-	-	-	0	-	0	-	-	-	-	-

	Station Name	Id. No.	Year 1972/73											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	0	0	0	0	0	0	0	0	-	-	-
2	Wadi Jurdhan	G 0018	-	0	-	-	-	-	-	-	-	-	-	-

Note :
0 : Record available - : No streamflow x : No record

Table 3.4 Availability of Daily Discharge Data (3/5)

	Station Name	Id. No.	Year 1973/74											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	0	0	0	0	0	0	0	-	-	-	-
2	Wadi Jurdhan	G 0018	-	-	-	-	-	0	-	-	-	-	-	-

	Station Name	Id. No.	Year 1974/75											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	0	0	0	0	0	0	0	-	-	-	-
2	Wadi Jurdhan	G 0018	-	0	0	-	0	-	-	-	-	-	-	-

	Station Name	Id. No.	Year 1975/76											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	x	x	x	x	x	x	x	x	x	x	x
2	Wadi Jurdhan	G 0018	-	-	-	-	-	-	-	-	-	-	-	-

	Station Name	Id. No.	Year 1976/77											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	x	x	x	0	0	0	0	-	-	-	-	-
2	Wadi Jurdhan	G 0018	-	-	-	-	-	-	-	-	-	-	-	-

	Station Name	Id. No.	Year 1977/78											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	-	0	0	0	0	0	0	0	-	-	-
2	Wadi Jurdhan	G 0018	-	-	-	-	-	-	-	-	-	-	-	-

Note :
0 : Record available - : No streamflow x : No record

Table 3.4 Availability of Daily Discharge Data (4/5)

	Station Name	Id. No.	Year 1978/79											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	-	-	0	0	0	0	-	-	-	-	-
2	Wadi Jurdhan	G 0018	-	-	-	-	-	-	-	-	-	-	-	-

	Station Name	Id. No.	Year 1979/80											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	0	0	0	0	0	0	0	-	-	-	-
2	Wadi Jurdhan	G 0018	-	0	0	-	0	-	-	-	-	-	-	-

	Station Name	Id. No.	Year 1980/81											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	-	0	0	0	0	0	-	-	-	-	-
2	Wadi Jurdhan	G 0018	-	-	0	-	-	-	-	-	-	-	-	-

	Station Name	Id. No.	Year 1981/82											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	-	-	0	0	0	0	0	0	-	-	-
2	Wadi Jurdhan	G 0018	-	-	-	0	-	-	-	-	-	-	-	-

	Station Name	Id. No.	Year 1982/83											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	0	0	0	0	0	0	0	0	-	-	-
2	Wadi Jurdhan	G 0018	-	-	-	-	-	-	-	-	-	-	-	-

Note :
0 : Record available - : No streamflow x : No record

Table 3.4 Availability of Daily Discharge Data (5/5)

	Station Name	Id. No.	Year 1983/84											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	-	-	0	0	0	0	-	-	-	-	-
2	Wadi Jurdhan	G 0018	-	-	-	-	-	-	-	-	-	-	-	-

	Station Name	Id. No.	Year 1984/85											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	0	0	0	0	0	0	0	0	0	-	-	-
2	Wadi Jurdhan	G 0018	-	-	-	-	-	-	-	-	-	-	-	-

	Station Name	Id. No.	Year 1985/86											
			10	11	12	1	2	3	4	5	6	7	8	9
1	Hasa River	CF 0009	-	-	-	0	0	0	0	0	-	-	-	-
2	Wadi Jurdhan	G 0018	-	-	-	-	-	-	-	-	-	-	-	-

Note :
0 : Record available - : No streamflow x : No record

Table 3.5 Availability of Hourly Discharge Data of Hasa River
at Hasa Water Stage Gaging Station (1/4)

No.	Year	Period	Peak Discharge (m3/ sec)	Total Rainfall (mm)				
				CD0013	CF0003	CF0007	CF0008	DA0005	DB0002
H 1	1968	Nov.24 - Nov.28	56.0			12.1	16.1	17.6	
H 2		Dec.08 - Dec.09	5.2		18.3		4.9	3.2	
H 3		Dec.26	6.8		22.2		10.1	2.7	
H 4	1969	Mar.21 - Mar.24	53.5		92.3	7.0	28.6	9.5	
H 5	1970	Jan.27	5.5		24.9	6.2	17.7	1.6	
H 6		Mar.11 - Mar.12	7.4		26.6	3.7	12.3	3.6	
H 7		Mar.23	8.3			3.8	4.1	4.2	
H 8		Dec.01	0.4		5.7				
H 9		Dec.08	0.2		9.8				
H 10		Dec.13	1.6			3.0			
H 11	1971	Jan.11 - Jan.12	171.0		15.8	18.5	8.6		
H 12		Apr.12 - Apr.16	138.0		176.7	17.1	2.0		
H 13		Apr.24	11.6		13.2	1.4			
H 14		Nov.18	3.3		16.1		8.0		
H 15		Dec.07	78.2		92.5	3.7	7.6	1.2	
H 16		Dec.22 - Dec.23	1.7			2.8	0.7	5.1	
H 17		Dec.26 - Dec.29	71.0			23.0	60.9	9.4	
H 18	1972	Feb.06 - Feb.08	39.2		13.4	8.3	22.2	9.6	
H 19		Mar.16 - Mar.17	32.1		24.2	4.2	22.5	9.6	
H 20		Mar.21 - Mar.22	2.8		4.9	1.1	5.2	4.0	
H 21		Apr.29 - May 01	56.0		26.0	9.3	13.4	5.2	
H 22		Nov.24 - Nov.26	50.0		10.1	14.9	5.9		
H 23	1973	Nov.11 - Nov.13	16.5		12.3	4.6	6.8	1.1	
H 24		Nov.23	2.9		17.4		0.4		
H 25		Dec.17	0.7		18.4		9.4	2.0	
H 26	1974	Jan.14 - Jan.25	30.3		5.3	23.0	53.4	14.2	
H 27		Jan.31 - Feb.01	30.3			7.0		5.5	
H 28		Feb.10 - Feb.13	80.2		21.7	7.1	11.7	3.4	
H 29		Feb.25	1.4		4.5		6.9		
H 30		Mar.18 - Mar.23	22.6		1.2	12.8	2.4	3.4	
H 31		Nov.22 - Nov.23	53.6		16.6	11.3		11.4	
H 32		Dec.05 - Dec.06	1.8		41.1	2.5			
H 33		Dec.11	2.5		22.4	3.1	12.4		
H 34	1975	Feb.10 - Feb.11	2.0		10.0	5.9	12.6		
H 35		Feb.20 - Feb.22	166.0		73.8	34.9		14.3	
H 36	1977	Dec.23 - Dec.24	1.5		28.6		18.4		42.4
H 37	1978	Mar.14	2.4		8.0		10.0		17.2
H 38	1979	Nov.03	47.1		0.2				7.2
H 39		Nov.27	49.4		0.2				24.9
H 40		Dec.06 - Dec.07	420.0		58.8		19.2		
H 41		Dec.14	56.7		3.8		10.6		
H 42	1980	Feb.24 - Feb.27	150.0				38.4		
H 43		Mar.01 - Mar.04	34.3		15.6		46.4		
H 44		Dec.11 - Dec.13	40.0		86.8				84.8
H 45		Dec.27 - Dec.30	290.0		51.2	29.8			40.0
H 46	1982	Feb.04 - Feb.06	5.2		41.2	3.2	0.2		20.0
H 47		Apr.15 - Apr.17	93.0						
H 48		May 11 - May 15	63.1		17.8	13.0		6.0	6.2
H 49		Nov.07 - Nov.08	21.1			1.2			7.6
H 50		Nov.22 - Nov.26	41.1		22.4	5.0	18.2		6.4

Note : Total rainfall is calculated from hourly rainfall data.
Blank means no hourly rainfall data is available.

Table 3.5 Availability of Hourly Discharge Data of Hasa River at Hasa Water Stage Gaging Station (2/4)

No.	Year	Period	Peak Discharge (m3/ sec)	Total Rainfall (mm) DH0001	DG0001	ED0002	G0003	G0010
H 1	1968	Nov.24 - Nov.28	56.0					
H 2		Dec.08 - Dec.09	5.2					
H 3		Dec.26	6.8					
H 4	1969	Mar.21 - Mar.24	53.5					
H 5	1970	Jan.27	5.5			3.6		
H 6		Mar.11 - Mar.12	7.4			10.1		
H 7		Mar.23	8.3			2.8		
H 8		Dec.01	0.4					
H 9		Dec.08	0.2				1.0	
H 10		Dec.13	1.6				2.5	
H 11	1971	Jan.11 - Jan.12	171.0				0.5	
H 12		Apr.12 - Apr.16	138.0					
H 13		Apr.24	11.6					
H 14		Nov.18	3.3					
H 15		Dec.07	78.2				5.0	1.4
H 16		Dec.22 - Dec.23	1.7				7.0	7.1
H 17		Dec.26 - Dec.29	71.0				6.5	7.9
H 18	1972	Feb.06 - Feb.08	39.2					12.7
H 19		Mar.16 - Mar.17	32.1					3.0
H 20		Mar.21 - Mar.22	2.8					6.4
H 21		Apr.29 - May 01	56.0				2.0	11.3
H 22		Nov.24 - Nov.26	50.0					9.5
H 23	1973	Nov.11 - Nov.13	16.5					
H 24		Nov.23	2.9					
H 25		Dec.17	0.7					
H 26	1974	Jan.14 - Jan.25	30.3					
H 27		Jan.31 - Feb.01	30.3					
H 28		Feb.10 - Feb.13	80.2				2.5	
H 29		Feb.25	1.4					
H 30		Mar.18 - Mar.23	22.6				3.0	
H 31		Nov.22 - Nov.23	53.6				3.0	
H 32		Dec.05 - Dec.06	1.8					
H 33		Dec.11	2.5					
H 34	1975	Feb.10 - Feb.11	2.0					
H 35		Feb.20 - Feb.22	166.0				5.5	
H 36	1977	Dec.23 - Dec.24	1.5					
H 37	1978	Mar.14	2.4					
H 38	1979	Nov.03	47.1					
H 39		Nov.27	49.4					
H 40		Dec.06 - Dec.07	420.0					
H 41		Dec.14	56.7					
H 42	1980	Feb.24 - Feb.27	150.0					
H 43		Mar.01 - Mar.04	34.3					
H 44		Dec.11 - Dec.13	40.0				10.6	
H 45		Dec.27 - Dec.30	290.0				36.8	
H 46	1982	Feb.04 - Feb.06	5.2				0.2	
H 47		Apr.15 - Apr.17	93.0					
H 48		May 11 - May 15	63.1				0.4	
H 49		Nov.07 - Nov.08	21.1					
H 50		Nov.22 - Nov.26	41.1				0.8	

Note : Total rainfall is calculated from hourly rainfall data.
Blank means no hourly rainfall data is available.

Table 3.5 Availability of Hourly Discharge Data of Hasa River
at Hasa Water Stage Gaging Station (3/4)

No.	Year	Period	Peak Discharge (m3/ sec)	Total Rainfall (mm)					
				CD0013	CF0003	CF0007	CF0008	DA0005	DB0002
H 51	1984	Jan.28	2.1			5.4	19.0		
H 52		Mar.14 - Mar.15	3.1			3.4	29.2		
H 53		Oct.19	1.6	14.8			15.2	1.4	
H 54		Oct.31 - Nov.02	24.1		4.4	0.4	2.6	2.8	
H 55	1985	Feb.15 - Feb.16	32.4	64.0	3.8	5.6		4.2	13.8
H 56		Mar.23 - Mar.24	43.3	27.6	11.0		14.2		
H 57		Apr.22 - Apr.23	9.8	36.6	5.0		12.2	0.4	
H 58		Dec.17 - Dec.21	123.6	77.0	34.0	30.2	18.4	21.8	
H 59	1986	Jan.19	4.5	26.4	0.4	0.8			
H 60		Feb.05	5.2		6.0	1.4		6.5	
H 61		Feb.09	2.9					0.4	
H 62		Feb.13 - Feb.14	5.2	6.0	2.0	2.6	5.0	2.6	
H 63		Feb.24	4.8	4.0					
H 64		Apr.08 - Apr.11	120.0	1.2	7.8		1.0		

Note : Total rainfall is calculated from hourly rainfall data.
Blank means no hourly rainfall data is available.

Table 3.5 Availability of Hourly Discharge Data of Hasa River at Hasa Water Stage Gaging Station (4/4)

No.	Year	Period	Peak Discharge (m3/ sec)	Total Rainfall (mm) DH0001	DG0001	ED0002	G0003	G0010
H 51	1984	Jan.28	2.1				4.2	
H 52		Mar.14 - Mar.15	3.1					
H 53		Oct.19	1.6	15.2				
H 54		Oct.31 - Nov.02	24.1	0.8	3.6			
H 55	1985	Feb.15 - Feb.16	32.4	2.2				
H 56		Mar.23 - Mar.24	43.3	33.2	18.4			
H 57		Apr.22 - Apr.23	9.8	30.8	16.2			
H 58		Dec.17 - Dec.21	123.6					
H 59	1986	Jan.19	4.5					
H 60		Feb.05	5.2					
H 61		Feb.09	2.9					
H 62		Feb.13 - Feb.14	5.2					
H 63		Feb.24	4.8					
H 64		Apr.08 - Apr.11	120.0					

Note : Total rainfall is calculated from hourly rainfall data.
Blank means no hourly rainfall data is available.

Table 3.6 Availability of Hourly Discharge Data
of Wadi Jurdhan at Jurdhan Gaging Station (1/2)

No.	Year	Period	Peak Discharge (m3/ sec)	Total Rainfall (mm)				
				CD0013	CF0003	CF0007	CF0008	DA0005	DB0002
J 1	1963	Dec.03 - Dec.04	17.2					
J 2		Dec.10 - Dec.11	11.9					
J 3	1964	Feb.01	29.5					
J 4	1965	Jan.11 - Jan.12	14.4					
J 5		Jan.19 - Jan.20	26.6					
J 6		Oct.27 - Oct.28	13.3					
J 7	1966	Feb.27	0.1					
J 8		Mar.11	120.0					
J 9		Nov.10 - Nov.11	7.7					
J 10	1967	Mar.27 - Mar.28	0.2					
J 11		May 15 - May 17	15.8					
J 12		Oct.31	0.5					
J 13		Nov.02 - Nov.03	1.4					
J 14	1968	May 04 - May 05	1.2					
J 15		Nov.25 - Nov.26	37.0			12.1	16.1	17.2
J 16	1969	Jan.21 - Jan.22	18.6	16.2		1.6	5.9	1.4
J 17		Mar.21 - Mar.23	28.0	63.9		7.0	28.6	9.5
J 18		Apr.16 - Apr.17	5.8	2.0		0.3	1.3	0.6
J 19		May 23 - May 24	1.8	0.4				0.2
J 20	1970	Jan.10 - Jan.11	2.4	2.9		1.0		1.8
J 21	1971	Apr.12 - Apr.14	76.6	168.8		17.0	2.0	0.2
J 22	1972	Feb.07	0.165	13.4		7.2	5.4	2.9
J 23		Apr.21	1.84	2.6		1.7	1.6	1.6
J 24		Apr.29 - Apr.30	32.9	19.5		8.9	7.2	4.6
J 25		Nov.16 - Nov.17	26.8					
J 26		Nov.24 - Nov.25	2.6	10.1		14.9	5.9	
J 27	1974	Mar.19 - Mar.20	4.6	0.8		2.3	1.8	3.2
J 28		Nov.23	0.004	16.6		11.3		11.4
J 29		Dec.05 - Dec.07	1.5	41.3		2.5		
J 30	1975	Feb.20 - Feb.21	25.5	73.8		34.9		14.3

Note : Total rainfall is calculated from hourly rainfall data.
Blank means no hourly rainfall data is available.

Table 3.6 Availability of Hourly Discharge Data
of Wadi Jurdhan at Jurdhan Gaging Station (2/2)

No.	Year	Period	Peak Discharge (m3/ sec)	Total Rainfall (mm)				
				DH0001	DG0001	ED0002	G0003	G0010
J 1	1963	Dec.03 - Dec.04	17.2					
J 2		Dec.10 - Dec.11	11.9					
J 3	1964	Feb.01	29.5					
J 4	1965	Jan.11 - Jan.12	14.4					
J 5		Jan.19 - Jan.20	26.6					
J 6		Oct.27 - Oct.28	13.3					
J 7	1966	Feb.27	0.1					
J 8		Mar.11	120.0					
J 9		Nov.10 - Nov.11	7.7					
J 10	1967	Mar.27 - Mar.28	0.2					
J 11		May 15 - May 17	15.8					
J 12		Oct.31	0.5					
J 13		Nov.02 - Nov.03	1.4					
J 14	1968	May 04 - May 05	1.2					
J 15		Nov.25 - Nov.26	37.0					
J 16	1969	Jan.21 - Jan.22	18.6			11.57		
J 17		Mar.21 - Mar.23	28.0					
J 18		Apr.16 - Apr.17	5.8			2.0		
J 19		May 23 - May 24	1.8					
J 20	1970	Jan.10 - Jan.11	2.4			1.6		
J 21	1971	Apr.12 - Apr.14	76.6					
J 22	1972	Feb.07	0.165					12.6
J 23		Apr.21	1.84				3.5	6.1
J 24		Apr.29 - Apr.30	32.9					11.3
J 25		Nov.16 - Nov.17	26.8				0.5	8.9
J 26		Nov.24 - Nov.25	2.6					9.5
J 27	1974	Mar.19 - Mar.20	4.6				3.0	
J 28		Nov.23	0.004					
J 29		Dec.05 - Dec.07	1.5					
J 30	1975	Feb.20 - Feb.21	25.5				5.5	

Note : Total rainfall is calculated from hourly rainfall data.
Blank means no hourly rainfall data is available.

Table 3.7 Suspended Sediment Data of Hasa River at Hasa Water Stage Gaging Station

Year	Date	Discharge (m3/sec)	Sediment % of weight	Sediment (kg/sec)
-1968/69				
1968	Nov 24	4.7	4.73	231.2
		2.4	5.19	131.7
		2.4	2.99	75.9
	Nov 26	0.7	0.25	1.9
	Dec 26	1.3	1.49	19.7
		2.4	1.98	50.2
1969	Mar 19	0.3	1.00	2.8
		0.0	0.62	0.3
		4.7	2.14	104.6
	Mar 22	6.8	0.40	28.3
		5.2	0.28	15.0
	-	22.0	-	1700.0
	-	7.0	-	28.0
	-	5.2	-	14.5
	-	4.9	-	185.0
	-	4.6	-	100.0
	-	2.5	-	75.0
	-	2.5	-	135.0
	-	2.6	-	68.0
	-	2.3	-	33.0
	-	1.2	-	25.0
	-	9.8	-	72.0
	-	1.4	-	4.7
-1971/72				
1971	Nov 18	3.3	0.55	18.9
	Dec 07	59.0	1.33	816.1
		26.4	1.32	362.4
		15.3	0.79	125.7
1972	Feb 07	13.0	0.47	63.5
		3.5	0.21	7.6
	Mar 17	7.3	0.03	2.3
		6.5	0.01	0.7
		8.2	0.05	4.3
		26.4	0.14	38.4
		32.1	0.12	40.1
	Apr 29	5.3	0.30	16.5
		4.7	0.38	18.6
	Apr 30	13.0	1.40	189.3
		8.6	1.46	130.6
		8.6	1.00	89.4
		47.0	2.59	1266.0
		32.1	1.18	393.9
	May 01	13.6	0.66	93.4

Year	Date	Discharge (m3/sec)	Sediment % of weight	Sediment (kg/sec)
-1971/72				
	-	60.2	-	920.0
	-	49.0	-	1350.0
	-	34.0	-	400.0
	-	31.0	-	450.0
	-	16.5	-	17.5
	-	15.5	-	115.0
	-	13.0	-	115.0
	-	12.0	-	160.0
	-	12.0	-	250.0
	-	10.0	-	5.7
	-	8.0	-	54.0
	-	8.5	-	95.0
	-	5.5	-	4.3
	-	5.8	-	12.5
	-	3.6	-	220.0
	-	5.0	-	16.0
	-	2.2	-	850.0
	-	2.8	-	4.7
	-	1.1	-	11.0
	-	1.1	-	3.2
-1973/74				
	-	21.0	-	195.0
	-	22.0	-	340.0
	-	22.0	-	370.0
	-	10.5	-	170.0
	-	10.5	-	205.0
	-	8.5	-	375.0
	-	7.2	-	54.0
	-	6.6	-	34.0
	-	6.5	-	87.0
	-	5.2	-	33.0
	-	5.2	-	220.0
	-	3.3	-	5.5
	-	3.0	-	17.0
	-	3.4	-	35.0
	-	3.2	-	75.0
	-	2.7	-	5.5
	-	2.7	-	9.2
	-	2.7	-	12.0
	-	2.5	-	28.0
	-	2.5	-	37.5
	-	2.8	-	27.0
	-	2.7	-	48.0

Year	Date	Discharge (m3/sec)	Sediment % of weight	Sediment (kg/sec)
-1973/74				
	-	2.1	-	1.8
	-	2.2	-	7.0
	-	1.1	-	1.2
	-	1.4	-	4.2
	-	1.1	-	5.4
-1974/75				
	-	80.0	-	1090.0
	-	77.0	-	3500.0
	-	69.0	-	870.0
	-	52.0	-	1450.0
	-	32.5	-	925.0
	-	28.0	-	1300.0
	-	22.0	-	500.0
	-	10.5	-	190.0
	-	5.7	-	230.0
	-	1.4	-	1.2
-1977/78				
1977	Dec 13	1.0	0.37	3.8
		0.2	0.16	0.2
-1979/80				
1980	Feb 25	67.5	1.21	849.4
		54.0	1.19	668.3
		32.5	1.40	473.2
		23.9	1.18	293.3
	Feb 26	5.2	0.12	6.5
	Mar 02	2.1	0.12	2.6
		0.6	0.07	0.4
		7.9	0.42	34.5
	Mar 03	5.2	0.51	27.6
		34.3	1.63	581.5

Table 3.8 Suspended Sediment Data of Wadi Jurdhan at Water Stage Gaging Station

Year	Date	Discharge (m3/sec)	Sediment % of weight of Discharge	Sediment (kg/sec)
-1968/69				
1968	Nov 25	34.00	1.04	367.7
		29.00	2.98	898.8
		9.32	1.79	173.5
	Nov 26	0.03	0.32	0.1
1969	Jan 22	8.60	0.77	68.9
		5.60	0.55	32.0
		2.78	0.47	13.6
	Mar 21	6.44	1.82	121.9
		2.92	1.86	56.5
		3.62	1.90	71.5
		2.10	1.08	23.6
		1.90	1.02	20.2
	Mar 22	9.29	0.99	95.6
		11.94	2.11	262.0
		10.88	1.96	221.8
		9.29	1.82	175.8
	-	82.00	-	260.0
	-	52.00	-	1450.0
	-	16.50	-	165.0
	-	15.50	-	290.0
	-	15.50	-	310.0
	-	18.50	-	420.0
	-	18.50	-	460.0
	-	13.50	-	105.0
	-	12.00	-	210.0
	-	14.00	-	180.0
	-	8.50	-	160.0
	-	7.60	-	49.0
	-	6.60	-	36.0
	-	6.50	-	130.0
	-	3.70	-	70.0
	-	3.30	-	22.5
	-	2.90	-	13.8
	-	2.20	-	22.5
	-	1.80	-	18.5
-1969/70				
1970	Jan 11	0.73	0.53	4.0
		0.17	0.35	0.6
-1970/71				
1971	Apr 12	10.00	3.87	402.5
		3.69	1.95	74.8
		3.69	1.50	57.6
		1.40	1.28	18.6
-1970/71				
1971	Apr 12	6.57	1.86	127.1
		4.28	1.11	49.4
	-	17.50	-	800.0
	-	14.50	-	195.0
	-	10.50	-	105.0
	-	7.40	-	110.0
	-	7.80	-	88.0
	-	8.50	-	150.0
	-	9.50	-	140.0
	-	6.00	-	120.0
	-	4.60	-	68.0
	-	3.30	-	44.0
	-	1.05	-	10.5
-1971/72				
1972	Feb 07	0.07	0.07	0.1
	Apr 21	1.40	0.58	8.4
		0.36	2.27	8.5
		0.20	0.51	1.1
	-	21.50	-	1150.0
	-	24.50	-	360.0
	-	6.40	-	1.6
	-	5.50	-	44.0
	-	4.90	-	11.5
	-	3.70	-	21.5
	-	2.90	-	9.5
	-	2.05	-	12.0
	-	1.80	-	7.8
	-	1.40	-	33.0
	-	1.25	-	2.6
-1972/73				
	Nov 16	2.61	5.18	140.6
		15.40	1.44	230.6
		3.20	0.80	26.6
		1.35	0.42	5.9
		0.59	0.29	1.8
		0.30	0.24	0.7
		0.12	0.24	0.3
	Nov 24	0.88	0.53	4.9
		0.45	0.21	1.0
		0.78	0.22	1.8
		0.68	0.21	1.5
		1.66	0.33	5.7

Table 3.9 Climatological Data of Study Area (1/3)

Station Name : Hasa Evaporation Station
Agency In-Charge : WAJ Altitude (m) : 900
PG North : 30.600 PG East : 243.600
(PG; Palestine Grid)

	Max of Max Temp (C deg)	Min of Min Temp (C deg)	Average Max Temp (C deg)	Average Min Temp (C deg)	Average Relative Humidity (%)	Average Total Evap (mm)	Average Total Sunshine Hours	Average Wind Vel (km/hr)	Average Daily Evap (mm/day)
Oct	37.0	3.0	27.0	13.0	58	236		7.8	7.6
Nov	33.0	0.0	21.5	8.9	59	149		7.2	5.0
Dec	28.0	-3.0	16.4	4.9	71	103		7.9	3.3
Jan	25.0	0.0	14.8	3.9	70	103		8.5	3.3
Feb	28.0	-2.0	16.6	5.5	69	134		9.7	4.8
Mar	32.0	-1.0	19.1	7.3	60	190		10.4	6.1
Apr	36.0	2.0	25.2	9.4	48	276		10.2	9.2
May	39.0	6.0	29.5	13.7	42	377		9.7	12.2
Jun	41.0	7.0	32.1	16.2	38	455		10.7	15.2
Jul	45.0	7.0	33.3	18.5	44	488		10.4	15.7
Aug	42.0	11.0	29.9	18.4	70	451		10.2	14.5
Sep	40.0	12.0	32.1	16.7	56	346		8.9	11.5
Total						3,306			

Note :
(1) Maximum, minimum and average are derived for the period between 1977/78 and 1987/88.
(2) Blank means no data is available. (3) Evaporation is measured by a class-A pan.

Station Name : Abur
Agency In-Charge : Meteorological Dept Altitude (m) : 1,200
PG North : 23.300 PG East : 218.200
(PG; Palestine Grid)

	Max of Max Temp (C deg)	Min of Min Temp (C deg)	Average Max Temp (C deg)	Average Min Temp (C deg)	Average Relative Humidity (%)	Average Total Evap (mm)	Average Total Sunshine Hours	Average Wind Vel (km/hr)	Average Daily Evap (mm/day)
Oct	33.3	5.0	24.8	12.1	48	198	279	10.1	6.4
Nov	28.0	-3.5	17.6	7.0	57	118	236	11.2	3.9
Dec	24.6	-3.0	13.0	3.6	64	81	204	12.4	2.6
Jan	24.4	-4.0	11.6	2.5	65	91	209	13.0	2.9
Feb	25.2	-2.8	12.5	3.0	65	89	203	14.9	3.2
Mar	27.5	-3.0	15.5	4.8	58	132	250	14.7	4.3
Apr	33.0	0.0	21.0	8.3	44	193	275	13.0	6.4
May	35.8	2.8	25.6	11.8	36	261	324	10.6	8.4
Jun	36.6	6.5	28.4	14.6	37	288	365	10.6	9.6
Jul	41.0	10.3	30.0	17.0	38	329	382	11.7	10.6
Aug	38.6	11.0	30.1	16.8	40	303	363	11.0	9.8
Sep	36.4	8.4	28.9	15.2	42	255	313	8.5	8.5
Total						2,338	3,403		

Note :
(1) Maximum, minimum and average are derived for the period between 1977/78 and 1987/88.
(2) Blank means no data is available. (3) Evaporation is measured by a class-A pan.

Table 3.9 Climatological Data of Study Area (2/3)

Station Name : Shaubak
Agency In-Charge : Meteorological Dept Altitude (m) : 1,365
PG North : 991.500 PG East : 200.500
(PG; Palestine Grid)

	Max of Max Temp (C deg)	Min of Min Temp (C deg)	Average Max Temp (C deg)	Average Min Temp (C deg)	Average Relative Humidity (%)	Total Evap (mm)	Total Sunshine Hours	Wind Vel (km/hr)	Daily Evap (mm/day)
Oct	31.4	-2.0	22.7	6.7	54	144	283	5.9	4.7
Nov	26.4	-11.2	15.6	2.4	64	86	219	7.6	2.9
Dec	22.5	-10.0	11.0	-0.2	74	55	181	8.5	1.8
Jan	22.6	-9.0	9.9	-1.1	73	65	187	9.8	2.1
Feb	23.8	-9.6	10.7	-0.1	72	63	177	10.5	2.2
Mar	28.0	-11.6	13.5	0.5	65	98	231	10.9	3.2
Apr	31.0	-3.7	17.8	4.8	54	153	272	9.4	5.1
May	33.0	-3.2	23.2	7.4	46	200	314	8.1	6.5
Jun	33.6	2.0	25.8	10.8	47	227	366	7.8	7.6
Jul	38.2	4.2	27.1	13.4	46	250	379	9.3	8.1
Aug	36.8	5.2	27.4	13.4	50	227	366	7.1	7.3
Sep	34.0	2.2	26.3	10.7	52	199	317	5.3	6.6
Total						1,768	3,293		

Note :
(1) Maximum, minimum and average are derived for the period between 1977/78 and 1987/88.
(2) Blank means no data is available. (3) Evaporation is measured by a class-A pan.

Station Name : Udruh Evaporation Station
Agency In-Charge : WAJ Altitude (m) : 1,350
PG North : 973.600 PG East : 206.300
(PG; Palestine Grid)

	Max of Max Temp (C deg)	Min of Min Temp (C deg)	Average Max Temp (C deg)	Average Min Temp (C deg)	Average Relative Humidity (%)	Total Evap (mm)	Total Sunshine Hours	Wind Vel (km/hr)	Daily Evap (mm/day)
Oct	32.0	-1.0	21.9	7.3	51	287	276	12.2	9.3
Nov	25.0	-6.0	15.4	2.2	63	159	224	12.2	5.3
Dec	24.0	-9.0	10.4	-1.2	69	115	65	14.9	3.7
Jan	20.0	-10.0	9.4	-2.6	68	121	119	16.2	3.9
Feb	22.0	-9.0	9.6	-2.0	65	137	167	17.9	4.9
Mar	25.0	-8.0	12.2	0.2	60	198	179	19.0	6.4
Apr	30.0	-5.0	18.4	4.2	54	287	302	17.3	9.6
May	32.0	0.0	23.3	7.8	46	390	352	17.1	12.6
Jun	34.0	3.0	26.1	11.0	46	488	368	20.0	16.3
Jul	39.0	4.5	27.6	13.3	45	488	211	25.3	15.7
Aug	35.5	6.0	28.1	13.1	44	503	363	18.9	16.2
Sep	33.0	5.0	27.3	11.7	47	391		14.6	13.0
Total						3,564	2,624		

Note :
(1) Maximum, minimum and average are derived for the period between 1977/78 and 1987/88.
(2) Blank means no data is available. (3) Evaporation is measured by a class-A pan.

Table 3.9 Climatological Data of Study Area (3/3)

Station Name : Jafr Evaporation Station
Agency In-Charge : WAJ Altitude (m) :865
PG North : 970.000 PG East : 267.000
(PG; Palestine Grid)

	Max of Max Temp (C deg)	Min of Min Temp (C deg)	Average Max Temp (C deg)	Average Min Temp (C deg)	Average Relative Humidity (%)	Total Evap (mm)	Total Sunshine Hours	Wind Vel (km/hr)	Daily Evap (mm/day)
Oct	37.2	5.7	28.1	12.2	50	140	282	8.3	4.5
Nov	29.7	-2.6	20.4	5.9	59	120	244	7.7	4.0
Dec	24.3	-5.5	15.8	1.9	62	98	214	6.8	3.2
Jan	25.4	-6.0	15.2	1.3	62	180	224	8.2	5.8
Feb	28.2	-4.0	16.6	2.5	58	213	213	11.4	7.6
Mar	31.6	-3.5	19.9	5.4	51	285	245	12.7	9.2
Apr	36.7	2.0	24.1	8.6	46	405	273	13.2	13.5
May	39.7	7.0	29.8	13.4	40	515	298	12.7	16.6
Jun	39.0	10.0	33.3	16.3	40	612	361	16.0	20.4
Jul	41.5	11.7	35.3	17.9	41	741	375	15.3	23.9
Aug	42.0	12.6	35.5	18.2	43	632	352	12.6	20.4
Sep	39.6	11.5	33.8	16.9	37	246	264	9.7	8.2
Total						4,186	3,344		

Note :
(1) Maximum, minimum and average are derived for the period between 1980/81 and 1987/88.
(2) Blank means no data is available. (3) Evaporation is measured by a class-A pan.

Station Name : Ma'an Airport
Agency In-Charge : Meteorological Dept Altitude (m) : 1,069
PG North : 952.500 PG East : 224.000
(PG; Palestine Grid)

	Max of Max Temp (C deg)	Min of Min Temp (C deg)	Average Max Temp (C deg)	Average Min Temp (C deg)	Average Relative Humidity (%)	Total Evap (mm)	Total Sunshine Hours	Wind Vel (km/hr)	Daily Evap (mm/day)
Oct	35.8	3.9	27.2	12.0	46	275	255	7.8	8.9
Nov	29.0	-2.5	19.0	6.1	56	143	220	8.0	4.8
Dec	26.0	-8.5	14.3	2.8	64	107	191	9.2	3.5
Jan	25.2	-5.7	14.5	2.0	61	117	227	11.2	3.8
Feb	26.5	-5.0	15.4	2.7	60	138	244	13.6	4.9
Mar	31.5	-4.0	18.8	5.3	53	210	250	15.6	6.8
Apr	35.2	-1.3	24.6	9.5	43	315	269	15.4	10.5
May	37.6	0.0	26.3	12.0	35	390	301	14.1	12.6
Jun	38.5	0.0	29.4	14.1	36	370	312	13.0	12.3
Jul	40.5	9.2	33.5	17.2	40	377	358	13.1	12.2
Aug	42.0	11.4	34.4	17.4	43	425	343	12.0	13.7
Sep	38.0	9.0	32.6	15.9	39	284	253	6.5	9.5
Total						3,151	3,225		

Note :
(1) Maximum, minimum and average are derived for the period between 1977/78 and 1987/88.
(2) Blank means no data is available. (3) Evaporation is measured by a class-A pan.

Table 3.10 Annual Rainfall of Upper Hasa Basin

Thie Polygon No.	Area (km2)	Area (%)	Rainfall Station No.	Station Annual Rainfall (mm)	Annual Rainfall of Polygons (mm)
H 1	84	3.8	CF 0008	136	5.2
H 2	114	5.2	CA 0006	132	6.8
H 3	238	10.8	DB 0002	225	24.4
H 4	18	0.8	DC 0001	265	2.2
H 5	35	1.6	DE 0001	247	3.9
H 6	143	6.5	DA 0006	80	5.2
H 7	7	0.3	DA 0006	80	0.3
H 8	539	24.5	CF 0003	57	14.0
H 9	39	1.8	G 0002	30	0.5
H 10	876	39.9	CF 0007	61	24.3
H 11	105	4.8	J 0001	47	2.2
Total	2,198	100.0			89.0

Note :

(1) Annual rainfall of rainfall stations is an average between 1937/38 and 1987/88.

(2) Scale of a map used to measure the size of Thiessen polygons is 1/500,000.

Table 3.11 Annual Rainfall of Jurdhan Basin

Thiessen Polygon No.	Area (km2)	Area (%)	Rainfall Station No.	Station Annual Rainfall (mm)	Annual Rainfall of Polygons (mm)
J 7	16.4	9.0	DG 0001	180	16.2
J 9	26.2	14.3	DH 0001	179	25.7
J 8	85.0	46.5	G 0004	148	68.9
J 6	12.3	6.7	G 0009	119	8.0
J 16	42.8	23.4	G 0010	45	10.5
Total	182.7	100.0			129.2

Note :

(1) Annual rainfall of rainfall stations is an average between 1937/38 and 1987/88.

(2) Scale of a map used to measure the size of Thiessen polygons is 1/50,000.

Table 3.12 Probable Rainfall in and around Study Area (1/3)

Station No.: CD 0013

Return Period	Duration									
	Minutes						Hours			
(year)	5	10	15	20	30	60	2	3	6	24
2	45.0	26.9	20.3	17.1	14.5	10.1	7.8	6.7	5.1	2.3
5	66.1	38.8	29.5	24.7	20.4	14.3	11.1	9.8	7.5	3.0
10	80.1	46.7	35.6	29.7	24.3	17.0	13.3	11.7	9.1	4.4
25	97.7	56.6	43.3	36.1	29.1	20.5	16.1	14.2	11.1	5.4
50	110.8	64.0	49.0	40.8	32.8	23.1	18.2	16.0	12.5	6.2
100	123.8	71.3	54.7	45.5	36.4	25.3	20.3	17.8	14.0	7.0
200	136.8	78.7	60.3	50.1	39.9	28.3	22.4	19.6	15.5	7.8
500	153.9	88.3	67.8	56.3	44.7	31.6	25.1	22.0	17.4	8.8

Station No.: CF 0007

Return Period	Duration									
	Minutes						Hours			
(year)	5	10	15	20	30	60	2	3	6	24
2	21.3	16.3	13.6	12.4	9.2	5.3	3.2	2.4	1.48	0.51
5	43.0	30.5	24.5	20.7	15.7	8.8	5.2	4.0	2.5	1.0
10	57.4	39.9	31.8	26.2	20.1	11.1	6.5	5.0	3.2	1.3
25	75.5	51.8	40.9	33.1	25.6	14.1	8.2	6.3	4.0	1.7
50	85.0	60.6	47.7	38.3	29.7	16.2	9.4	7.3	4.6	2.0
100	102.4	69.3	54.4	43.4	33.7	18.4	10.6	8.2	5.2	2.3
200	115.7	78.1	61.1	48.5	37.7	20.5	11.8	9.2	5.8	2.6
500	133.2	89.6	69.9	55.2	43.1	23.3	13.4	10.5	6.7	3.0

Station No.: CF 0008

Return Period	Duration									
	Minutes						Hours			
(year)	5	10	15	20	30	60	2	3	6	24
2	32.8	20.6	15.2	12.4	9.6	6.2	4.3	3.5	2.4	1.03
5	55.8	30.8	22.7	17.9	13.3	8.7	6.2	5.2	3.7	1.9
10	71.6	37.9	27.7	21.5	15.7	10.3	7.6	6.2	4.6	2.4
25	90.3	46.9	34.0	26.1	18.7	12.3	9.1	7.6	5.7	3.1
50	104.5	53.6	38.7	29.6	21.0	13.8	10.3	8.6	6.6	3.6
100	118.7	60.2	43.3	32.9	23.3	15.3	11.5	9.6	7.4	4.1
200	132.8	66.8	47.9	36.3	25.5	16.8	12.7	10.5	8.2	4.6
500	151.5	75.5	54.0	40.8	28.4	18.8	14.2	11.8	9.3	5.3

Table 3.12 Probable Rainfall in and around Study Area (2/3)

Station No.: DB 0001

Return Period	Duration									
	Minutes						Hours			
(year)	5	10	15	20	30	60	2	3	6	24
2	46.8	28.3	21.3	17.7	13.8	9.3	6.9	6.0	4.6	2.1
5	63.0	35.5	26.2	21.4	16.7	11.4	8.8	7.9	6.3	3.2
10	73.7	40.3	29.4	23.8	18.7	12.8	10.1	9.1	7.5	3.9
25	87.3	46.3	33.5	26.9	21.2	14.5	11.6	10.7	8.9	4.8
50	97.3	50.8	36.6	29.2	23.0	15.9	12.8	11.9	10.0	5.4
100	107.3	55.2	39.6	31.5	24.8	17.1	14.0	13.0	11.1	6.1
200	117.3	59.6	42.6	33.8	26.7	18.4	15.2	14.2	12.2	6.8
500	130.4	65.4	46.6	36.8	29.1	20.1	16.7	15.7	13.6	7.7

Station No.: DC 0002

Return Period	Duration									
	Minutes						Hours			
(year)	5	10	15	20	30	60	2	3	6	24
2	37.5	23.0	17.6	14.5	11.3	7.9	5.9	5.6	3.7	1.64
5	64.0	36.3	26.9	21.8	16.6	11.1	8.1	7.1	5.5	2.54
10	81.5	45.1	33.1	26.6	20.1	13.2	9.6	8.5	6.6	3.1
25	103.7	56.2	40.8	32.7	24.5	15.9	11.5	10.2	8.0	3.9
50	120.2	64.5	46.6	37.3	27.8	17.9	12.9	11.6	9.1	4.5
100	136.5	72.7	52.3	41.8	31.1	19.9	14.3	12.8	10.2	5.0
200	152.9	80.8	58.6	46.2	34.3	21.8	15.6	14.1	11.2	5.6
500	174.2	91.6	65.6	52.2	38.6	24.4	17.4	15.8	12.6	6.3

Station No.: DG 0001

Return Period	Duration									
	Minutes						Hours			
(year)	5	10	15	20	30	60	2	3	6	24
2	33.8	21.2	16.4	13.9	11.1	7.7	5.7	4.8	3.4	1.4
5	48.0	30.2	23.1	19.7	15.6	10.7	8.0	7.0	5.1	2.1
10	57.4	36.1	27.7	23.5	18.6	12.8	9.5	8.4	6.3	2.5
25	69.3	43.6	33.3	28.4	22.3	15.3	11.4	10.2	7.7	3.1
50	78.1	49.2	37.5	32.0	25.1	17.2	12.9	11.6	8.8	3.6
100	86.8	54.7	41.7	35.6	27.9	19.1	14.3	12.9	9.9	4.0
200	95.6	60.2	45.8	39.1	30.7	21.0	15.7	14.2	10.9	4.4
500	107.1	67.4	51.3	43.8	34.3	23.5	17.6	16.0	12.3	5.0

Table 3.12 Probable Rainfall in and around Study Area (3/3)

Station No.: DH 0003

Return Period	Duration									
	Minutes						Hours			
(year)	5	10	15	20	30	60	2	3	6	24
2	27.8	20.5	16.9	14.7	11.6	7.6	5.2	4.9	3.6	1.44
5	52.2	33.5	25.9	21.7	16.9	11.3	8.4	7.3	5.5	2.4
10	68.4	42.1	31.9	26.3	20.4	13.7	10.2	8.9	6.7	3.0
25	88.8	53.0	39.4	32.2	24.7	16.8	12.4	10.9	8.2	3.8
50	103.9	61.0	45.0	36.5	28.0	19.1	14.1	12.4	9.4	4.4
100	118.9	69.1	50.5	40.8	31.2	21.3	15.7	13.9	10.5	5.0
200	133.9	77.0	56.0	45.1	34.4	23.6	17.4	15.3	11.6	5.6
500	153.7	87.6	63.3	50.8	38.7	26.6	19.5	17.3	13.1	6.4

Station No.: G 0003

Return Period	Duration									
	Minutes						Hours			
(year)	5	10	15	20	30	60	2	3	6	24
2	15.5	10.2	7.9	6.6	5.0	3.1	1.9	1.4	0.85	0.35
5	22.6	16.1	12.9	11.1	8.7	6.0	4.0	3.2	2.2	0.88
10	27.3	20.6	16.3	14.1	11.2	7.9	5.4	4.4	3.1	1.23
25	33.2	24.9	20.5	17.8	14.4	10.4	7.2	6.0	4.2	1.7
50	37.6	28.6	23.6	20.6	16.7	12.2	8.5	7.1	5.1	2.0
100	42.0	32.2	26.6	23.4	19.1	14.0	9.8	8.2	5.9	2.3
200	46.4	35.9	29.7	26.2	21.4	15.8	11.2	9.3	6.7	2.7
500	52.1	40.6	33.8	29.8	24.4	18.1	12.9	10.8	7.8	3.1

Table 3.13 Peak Discharges of Probable Floods of Hasa River

Return Period (year)	Peak Discharge (m^3/sec)	Runoff Coefficient (%)	Creager's C Value
2	36	10	0.4
5	195	27	1.9
10	314	35	3.1
25	526	44	5.2
50	690	49	6.8
100	826	53	8.2
200	1,001	56	9.9
500	1,219	60	12.0

Table 3.14 Peak Discharges of Probable Floods of Wadi Jurdhan

Return Period (year)	Peak Discharge (m^3/sec)	Runoff Coefficient (%)	Creager's C Value
2	36	18	1.2
5	90	31	3.1
10	128	37	4.4
25	190	44	6.5
50	245	49	8.5
100	291	52	10.0
200	339	55	11.7
500	411	59	14.2

Table 3.15 Location, Catchment Area and Annual Rainfall of Recharge Dams

Recharge Dam No.	Location		Drainage Area (km^2)	Annual Mean Rainfall of Drainage Area (mm)	Adjustment Factor of Probable Floods
	PG North	PG East			
A1	992.1 (N 30° 31'	204.3 E 35° 34')	24.3	307	0.65
A2	989.5 (N 30° 30'	204.8 E 35° 34')	32.2	295	0.76
A3	976.6 (N 30° 23'	205.1 E 35° 35')	31.1	272	0.68
B1	950.0 (N 30° 08'	203.2 E 35° 33')	55.7	154	0.57
B2	948.2 (N 30° 07'	204.6 E 35° 34')	135.9	140	0.91
B3	946.6 (N 30° 06'	210.4 E 35° 38')	71.7	149	0.65
C1	925.1 (N 29° 55'	226.8 E 35° 48')	89.3	113	0.57
C2	915.2 (N 29° 49'	237.7 E 35° 55')	115.3	94	0.56

Note : (1) PG denotes Palestine Grid.
(2) Figures in Parentheses are latitude and longitude, respectively.
(3) Annual mean rainfall is an average between 1937/38 and 1987/88.

Table 3.16 Peak Discharges of Probable Floods of Recharge Dams

(Unit : m^3/sec)

Probable Year	Recharge Dam No.							
	A1	A2	A3	B1	B2	B3	C1	C2
2	23	27	24	21	33	23	21	20
5	59	68	61	51	82	59	51	50
10	83	97	87	73	116	83	73	72
25	124	144	129	108	178	124	108	106
50	159	186	167	140	223	159	140	137
100	189	221	198	166	265	189	166	163
200	220	258	231	193	308	220	193	190
500	267	312	279	234	374	267	234	230

Table 3.17 Simple Correlation Factors and Linear Regression Formulas of Monthly Rainfall (1/4)

	Simple Correlation Factor	Linear Regression Coefficient		Simple Correlation Factor	Linear Regression Coefficient		Simple Correlation Factor	Linear Regression Coefficient
1 - 2	0.919	0.914	4 - 1	0.955	1.018	7 - 1	0.808	0.397
3	0.939	1.447	2	0.940	0.979	2	0.778	0.374
4	0.955	0.914	3	0.913	1.496	3	0.791	0.584
5	0.936	1.417	5	0.924	1.531	4	0.837	0.386
6	0.802	1.759	6	0.799	1.721	5	0.848	0.630
7	0.808	1.878	7	0.837	2.009	6	0.868	0.869
8	0.689	1.557	8	0.632	1.533	8	0.688	0.679
9	0.806	1.752	9	0.831	1.697	9	0.778	0.859
2 - 1	0.919	0.966	5 - 1	0.936	0.618	8 - 1	0.689	0.396
3	0.856	1.391	2	0.928	0.597	2	0.562	0.329
4	0.940	0.933	3	0.881	0.904	3	0.750	0.617
5	0.928	1.502	4	0.924	0.583	4	0.632	0.348
6	0.797	1.609	6	0.865	1.114	5	0.613	0.588
7	0.778	1.873	7	0.848	1.257	6	0.821	1.029
8	0.562	1.406	8	0.613	0.890	7	0.688	0.889
9	0.775	1.533	9	0.758	1.054	9	0.779	1.001
3 - 1	0.939	0.634	6 - 1	0.802	0.427	9 - 1	0.806	0.432
2	0.856	0.576	2	0.797	0.462	2	0.775	0.470
4	0.913	0.586	3	0.821	0.627	3	0.869	0.713
5	0.881	0.925	4	0.799	0.430	4	0.831	0.463
6	0.821	1.225	5	0.865	0.740	5	0.758	0.659
7	0.791	1.235	7	0.868	0.947	6	0.793	0.851
8	0.750	1.099	8	0.821	0.747	7	0.778	0.829
9	0.869	1.163	9	0.793	0.859	8	0.779	0.715

Station Name :

(No.)	(Id. No.)	(Station Name)
1.	DA 0002	Shaubak Agricultural Station
2	DA 0003	Beir Ed-Dabbaghat
3	DA 0004	Ifjeij
4	DE 0001	Dana
5	DG 0001	Wadi Mousa
6	DH 0002	Dilagha
7	ED 0002	Ras En-Naqb
8	G 0005	Sadaqa
9	G 0009	Udruh Evaporation Station

Note :

1. These 9 rainfall stations are located in and near the Jafr basin and long-term annual rainfall of most of them is more than 100 mm.
2. Linear regression formulas are given by $y = a\,x$, where "a" is shown on the table above ,and "y" and "x" are rainfall at two stations.

Table 3.17 Simple Correlation Factors and Linear Regression Formulas of Monthly Rainfall (2/4)

	Simple Correlation Factor	Linear Regression Coefficient		Simple Correlation Factor	Linear Regression Coefficient		Simple Correlation Factor	Linear Regression Coefficient
1 - 2	0.734	0.417	3 - 1	0.845	0.945	5 - 1	0.781	1.467
3	0.845	0.854	2	0.829	0.505	2	0.803	0.755
4	0.782	0.451	4	0.936	0.555	3	0.911	1.528
5	0.781	0.497	5	0.911	0.581	4	0.925	0.868
6	0.814	0.483	6	0.910	0.564	6	0.882	0.879
2 - 1	0.734	1.635	4 - 1	0.782	1.621	6 - 1	0.814	1.593
3	0.829	1.566	2	0.906	0.998	2	0.886	0.898
4	0.906	0.871	3	0.936	1.655	3	0.910	1.568
5	0.803	1.002	5	0.925	1.040	4	0.957	0.885
6	0.886	0.941	6	0.957	1.061	5	0.882	0.966

Station Name :

(No.)	(Id. No.)	(Station Name)
1.	CA 0006	Muhai
2	CD 0013	Mazar
3	CF 0008	Hasa Gaging Station
4	DB 0001	Tafile
5	DB 0002	Abur(Prince Hassan Nursery)
6	DC 0001	Buseira

Note :

1. These 6 rainfall stations are located in and near the Upper Hasa basin and long-term annual rainfall of most of them is more than 100 mm.
2. Linear regression formulas are given by $y = a\,x$, where "a" is shown on the table above ,and "y" and "x" are rainfall at two stations.

Table 3.17 Simple Correlation Factors and Linear Regression Formulas of Monthly Rainfall (3/4)

	Simple Correlation Factor	Linear Regression Coefficient		Simple Correlation Factor	Linear Regression Coefficient		Simple Correlation Factor	Linear Regression Coefficient
1 - 2	0.848	1.257	4 - 1	0.613	0.588	7 - 1	0.178	0.053
3	0.380	2.751	2	0.688	0.889	2	0.257	0.093
4	0.613	0.890	3	0.246	1.294	3	0.546	0.412
5	0.587	3.114	5	0.503	2.206	4	0.152	0.079
6	0.758	1.054	6	0.779	1.001	5	0.442	0.402
7	0.178	2.504	7	0.152	1.499	6	0.181	0.109
2 - 1	0.848	0.630	5 - 1	0.587	0.156			
3	0.452	2.043	2	0.658	0.237			
4	0.688	0.679	3	0.769	0.905			
5	0.658	2.373	4	0.503	0.184			
6	0.778	0.859	6	0.675	0.262			
7	0.257	1.994	7	0.442	0.822			
3 - 1	0.380	0.098	6 - 1	0.758	0.659			
2	0.452	0.162	2	0.778	0.829			
4	0.246	0.129	3	0.458	1.948			
5	0.769	0.743	4	0.779	0.715			
6	0.453	0.166	5	0.675	2.221			
7	0.546	0.976	7	0.181	1.504			

Station Name :

(No.)	(Id. No.)	(Station Name)
1.	DG 0001	Wadi Mousa
2	ED 0002	Ras En-Naqb
3	G 0002	Jafr Police Station
4	G 0005	Sadaqa
5	G 0007	Ma'an Railway Station
6	G 0009	Udruh Evaporation Station
7	K 0001	Al Mudawara

Note :

1. These 7 rainfall stations are located in the Jafr basin and long-term annual rainfall of most of them is less than 100 mm.
2. Linear regression formulas are given by $y = a\,x$, where "a" is shown on the table above ,and "y" and "x" are rainfall at two stations.

Table 3.17 Simple Correlation Factors and Linear Regression Formulas of Monthly Rainfall (4/4)

	Simple Correlation Factor	Linear Regression Coefficient		Simple Correlation Factor	Linear Regression Coefficient		Simple Correlation Factor	Linear Regression Coefficient
1 - 2	0.734	0.417	4 - 1	0.524	0.310	7 - 1	0.663	0.255
3	0.603	1.686	2	0.714	0.171	2	0.507	0.105
4	0.524	1.511	3	0.801	0.885	3	0.564	0.540
5	0.670	0.888	5	0.519	0.299	4	0.734	0.516
6	0.782	0.451	6	0.738	0.164	5	0.721	0.538
7	0.663	2.259	7	0.734	1.242	6	0.474	0.085
2 - 1	0.734	1.635	5 - 1	0.670	0.618			
3	0.737	4.065	2	0.602	0.265			
4	0.714	3.720	3	0.891	1.227			
5	0.602	1.800	4	0.519	1.314			
6	0.906	0.871	6	0.570	0.278			
7	0.507	4.102	7	0.721	1.168			
3 - 1	0.603	0.311	6 - 1	0.782	1.621			
2	0.737	0.163	2	0.906	0.998			
4	0.801	0.826	3	0.760	4.492			
5	0.891	0.686	4	0.738	4.020			
6	0.760	0.152	5	0.570	1.589			
7	0.564	0.870	7	0.474	4.459			

Station Name :

(No.)	(Id. No.)	(Station Name)
1.	CA 0006	Muhai
2	CD 0013	Mazar
3	CF 0003	Jurf Ed-Dawawish
4	CF 0007	Hasa Evaporation Station
5	DA 0006	Al Husseinya School
6	DB 0001	Tafile
7	J 0001	Bayir Evaporation Station

Note :

1. These 7 rainfall stations are located in the Upper Hasa basin and long-term annual rainfall of most of them is less than 100 mm.
2. Linear regression formulas are given by $y = a\,x$, where "a" is shown on the table above ,and "y" and "x" are rainfall at two stations.

Table 3.18 Comparison of Runoff Characteristics Based on Observed Discharge Data

Item	Upper Hasa Basin (1968/69 - 1985/86)	Jurdhan Basin (1963/64 - 1985/86)	Mujib Basin (1960/61 - 1984/85)
Catchment Area (km2)	2,198	182.7	6,600
Average Annual Rainfall (mm)	85	130	154
Average Annual Runoff (mcm)	8.0	0.37	54
Runoff Coeffcient (%)	4.3	1.6	5.3

Table 3.19 Observed Runoff Characteristics of Wadi Jurdhan

Year	Basin Rainfall (mm)	Observed Discharge (mm)	Runoff Coefficient (%)
1963 /64	246.3	6.1	2.5
1964 /65	219.1	7.6	3.5
1965 /66	96.1	0.6	0.6
1966 /67	161.4	2.1	1.3
1967 /68	114.3	0.2	0.2
1968 /69	178.2	8.3	4.7
1969 /70	67.0	0.1	0.2
1970 /71	125.6	6.3	5.0
1971 /72	198.6	1.4	0.7
1972 /73	35.6	1.0	2.7
1973 /74	214.5	0.7	0.3
1974 /75	147.4	4.0	2.7
1975 /76	72.0	0.0	0.0
1976 /77	89.8	0.0	0.0
1977 /78	98.3	0.0	0.0
1978 /79	104.8	0.0	0.0
1979 /80	173.8	5.5	3.2
1980 /81	120.8	3.0	2.5
1981 /82	103.4	0.2	0.2
1982 /83	161.3	-	-
1983 /84	39.1	-	-
1984 /85	107.4	-	-
1985 /86	116.0	-	-
Average	135.1	2.5	1.8

Table 3.20 Parameters of Tank Model for Study Area

	Top Tank	Second Tank	Third Tank		Fourth Tank
			Non-B4 Layers	B4 Layers	
a. Discharge Coefficient (1/day)					
Side Holes	0.10	0.16	0.10	0.003	0.00	0.00015
Bottom Holes		0.30	0.05	0.025	0.00	0.00
b. Height of Side Holes (mm)	8	2	2	10	0	20
c. Initial Storage of Tank (mm)		0	0	0	0	100
d. Capacity of Soil Moisture (mm)						
- Primary (PS)		17 (30)	-	-	-	-
- Seconday(SS)		66 (120)	-	-	-	-
e. Conductivity of Soil Moisture (mm/day)						
- From second tank to primary soil moisture		0.2	-	-	-	-
- From primary soil moisture to secondary soil moisture		1.0	-	-	-	-

Note : Figures in the parentheses are of the Jafr basin and the recharge dam sites.

Table 3.21 Comparison of Observed and Calculated Discharge of Hasa River

Year	Rain	Observed Discharge	Calculated Discharge	Runoff Coefficient (%)	
	(mm)	(mm)	(mm)	Observed	Calculated
1968 /69	72	1.1	1.5	1.6	2.1
1969 /70	52	2.7	0.1	5.3	0.1
1970 /71	74	6.0	2.8	8.2	3.8
1971 /72	135	4.3	8.5	3.1	6.3
1972 /73	40	1.0	0.3	2.5	0.8
1973 /74	126	3.2	13.2	2.5	10.5
1974 /75	128	4.7	13.4	3.7	10.5
1975 /76	48	-	0.1	-	0.2
1976 /77	62	0.3	0.1	0.5	0.2
1977 /78	76	0.6	0.1	0.8	0.1
1978 /79	54	0.9	0.2	1.7	0.4
1979 /80	134	17.5	2.3	13.1	1.7
1980 /81	94	6.7	6.4	7.2	6.8
1981 /82	75	3.3	0.1	4.4	0.1
1982 /83	112	2.3	0.8	2.0	0.7
1983 /84	86	0.4	10.1	0.5	11.8
1984 /85	69	2.1	0.1	3.1	0.1
1985 /86	89	5.0	5.7	5.6	6.4
Average	85	3.7	3.7	4.3	4.3

Table 3.22 Summary of Runoff Analysis for Period Between 1963/64 and 1985/86

	Upper Hasa Basin			Jafr Basin			Recharge Dam							
	Entire Basin	Subbasin 1	Subbasin 2	Entire Basin	Subbasin 1	Subbasin 2	A1	A2	A3	B1	B2	B3	C1	C2
Catchment Area (km2)	2,198	1,400	798	13,427	2,521	10,906	24.3	32.2	31.1	55.7	135.9	71.7	89.3	115.3
Length of Riverbed (km)	300	200	100	1,500	600	900	10	15	11	22	65	20	35	40
Length of Permeable Riverbed (km)														
B2/A7 Aquifers	80	80	0	290	160	130	5	8	6	9	28	11	19	8
B4 Aquifers	25	10	15	80	30	50	0	0	0	0	0	0	0	0
Area of Permeable Zones (km2)														
B2/A7 Aquifers	586	586	0	2,221	826	1,395	20.2	30.6	31.1	32.6	108.5	67.0	89.3	78.5
B4 Aquifers	273	120	153	774	212	562	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Annual Rainfall (mm)	92	115	53	51	128	33	302	291	271	146	136	134	108	91
Average Annual Runoff (mcm)	13.8	13.2	0.6	22.9	20.8	2.1	1.5	1.9	2.0	0.8	1.6	0.9	0.7	0.5
Runoff Coefficient (%)	6.8	8.2	1.5	3.3	6.5	0.6	20.1	20.8	23.3	10.3	8.7	9.1	7.6	4.7
Average Annual Sediment														
(mcm)	0.17	0.16	0.01	0.32	0.29	0.03	0.01	0.01	0.01	0.005	0.01	0.01	0.005	0.003
(% of runoff)	1.2	1.2	0.1	1.4	1.4	1.5	0.6	0.6	0.6	0.6	0.7	0.6	0.6	0.6
(m3/km2/year)	77	114	13	24	115	3	352	363	406	90	84	74	52	26
Annual Recharge Through Riverbed (mcm)														
B2/A7 Aquifers	2.4	2.4	0.0	6.7	6.0	0.7	0.5	0.8	0.5	0.4	1.3	0.5	0.7	0.3
B4 Aquifers	0.6	0.4	0.2	2.0	1.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note:
On average between 1937 and 1988, annual rainfall of Subbasin 1 is more than 50 mm and that of Subbasin 2 is less than 50 mm.

Table 3.23 Water Quality of Hasa River at Ghor Safi

Electrical Conductivity (Mmhos/cm)	Total Dissolved Solids (mg/lit)	CA++ (mg/lit)	Mg++ (mg/lit)	Na+ (mg/lit)	K+ (mg/lit)	Cl- (mg/lit)	SO4- (mg/lit)	CO3- (mg/lit)	HCO3- (mg/lit)	Na% (mg/lit)	PH	Sodium Absorption Ratio (SAR)	Total Cations (mg/lit)
0.575	368	2.4	1.6	1.7	0.1	2.23	1.2	0.0	2.33	29.31	7.4	1.2	5.8

Table 3.24 Main Features of Proposed Storage Dams

Name of wadi	Jurdhan	Abusafat	Usheishat	Matkh	Fassua	Abyad	Uqeiqa	El Jahdaniya
Catchment area (km2)	709	839	-	1,000	-	-	-	-
Dam type	Rockfill	-	-	-	-	-	-	-
Dam height (m)	18	13	12	-	15	12	17	13
Dam volume (m3)	146,000	-	-	-	-	-	-	-
Crest length (m)	-	-	2,000	800	1,200	300	300	1,000
Reservoir volume (MCM)	-	2.0	2.4	-	-	-	-	-

Table 3.25 Storage Capacity and Construction Cost of Recharge Dams

Recharge Dam	Catchment Area (km2)	Average Annual Inflow (1) (mcm)	Average Annual Evapolation (2) (mcm)	Maximum Annual Inflow (3) (mcm)	Gross Storage Capacity (4) (mcm)	Effective Storage Capacity (mcm)	Dam Height (m)	Dam Concrete Volume (m3)	Construction Cost of Concrete Dam Body (1000 US$)
A1	34.3	1.5	0.06	5.6	3.7	3.2	19	48,000	4,320
A2	32.2	1.9	0.09	9.1	6.0	5.3	18	54,000	4,860
A3	31.1	2.0	0.05	12.0	8.5	7.8	39	125,000	11,250
B1	55.7	0.8	0.03	3.6	2.4	2.1	20	25,000	2,250
B2	135.9	1.6	0.07	8.9	4.2	3.7	19	38,000	3,420
B3	71.7	0.9	0.06	4.8	2.0	1.7	10	8,000	720

Note

(1) Average of 23 years between 1963/64 and 1985/86

(2) Maximum of 23 years between 1963/64 and 1985/86

(3) Gross storage capacity is equal to effective storage capacity plus dead storage due to 50-year sedimentation.

FIGURES

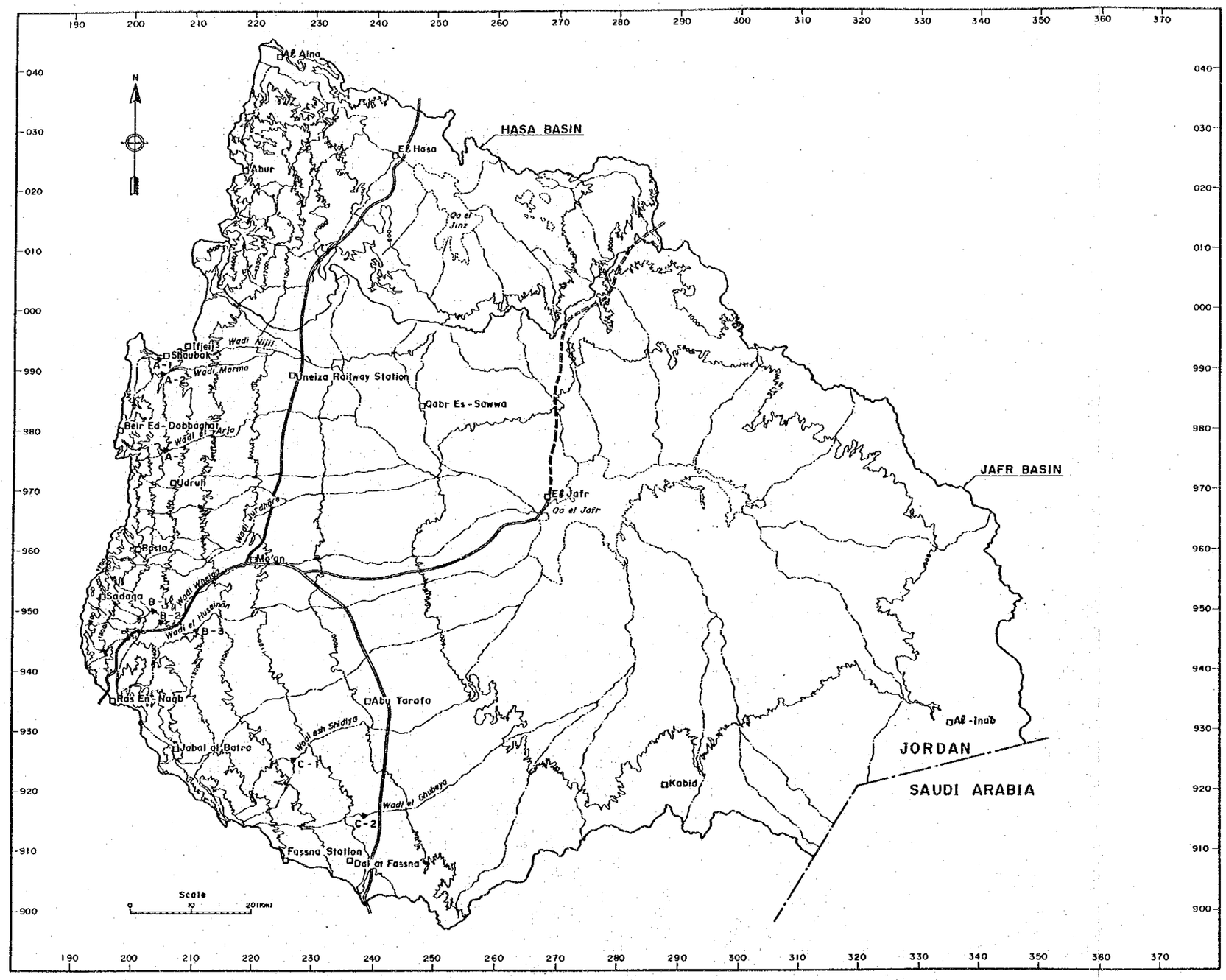


Fig.3.1
Topography of Study Area

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

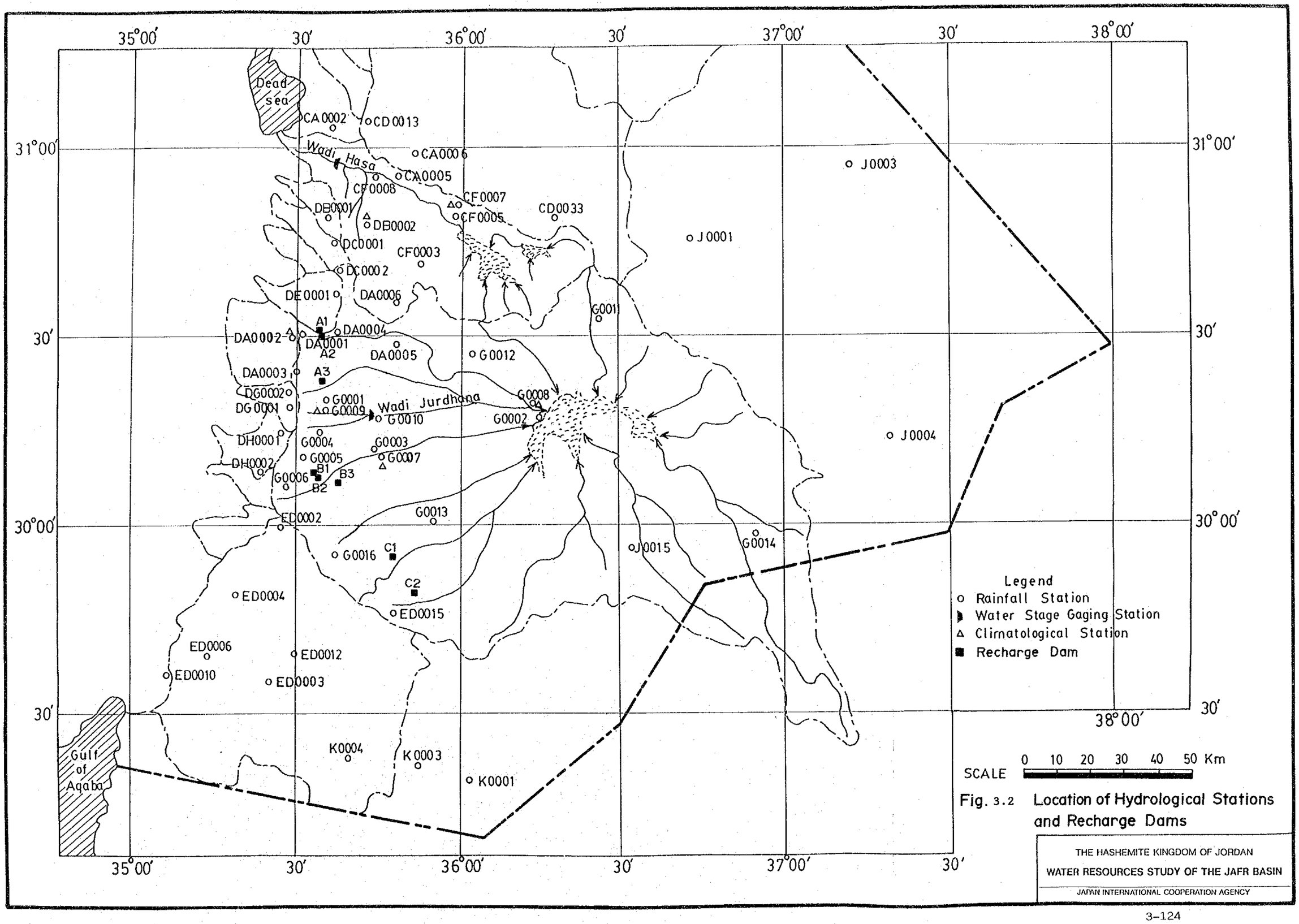


Fig. 3.2 Location of Hydrological Stations and Recharge Dams

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

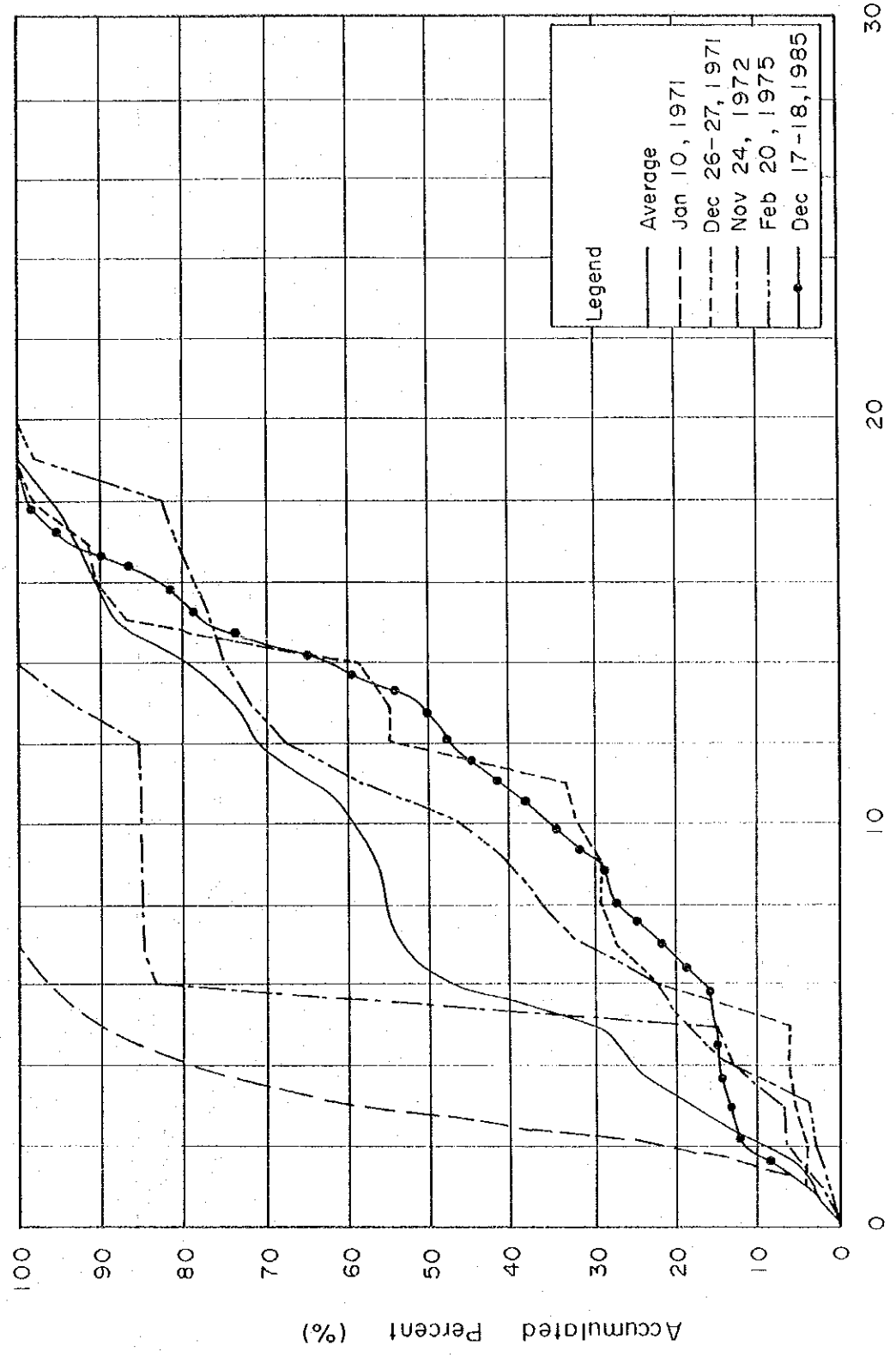


Fig.3.3 Depth-Duration Curves of Strong Rainfall (1/9)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

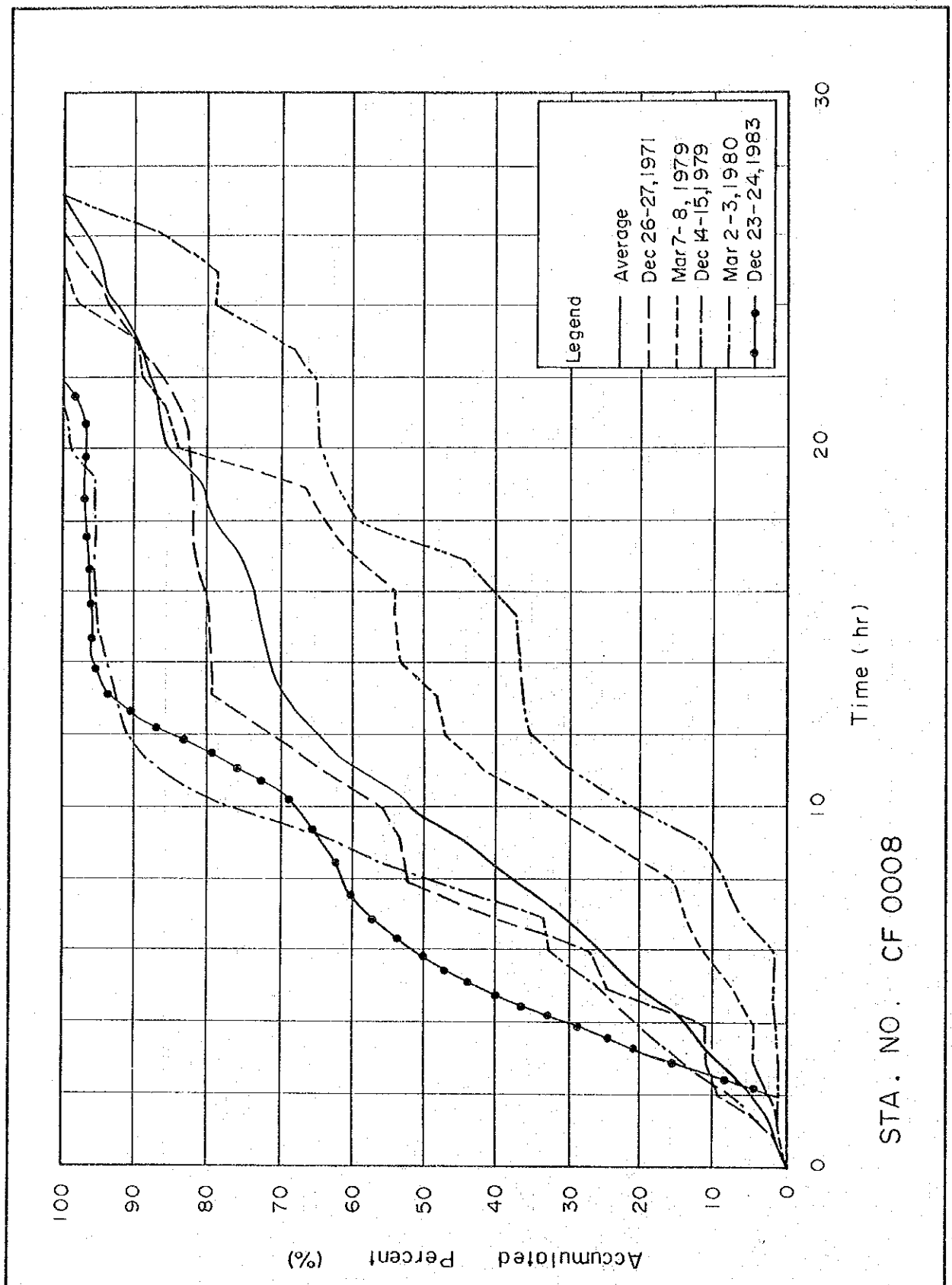


Fig.3.3 Depth-Duration Curves of Strong Rainfall (2/9)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

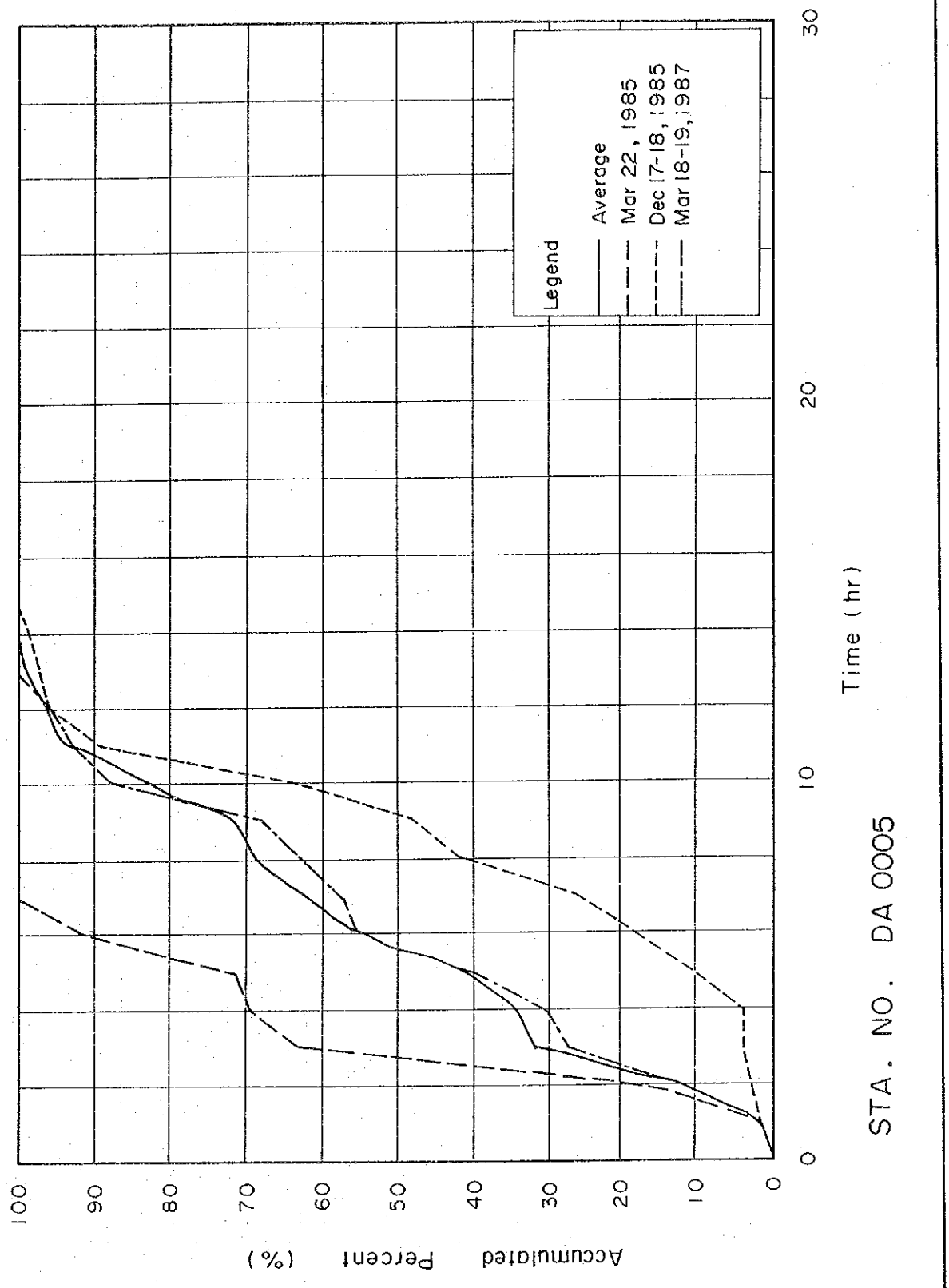


Fig.3.3
Depth-Duration Curves of Strong Rainfall (3/9)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

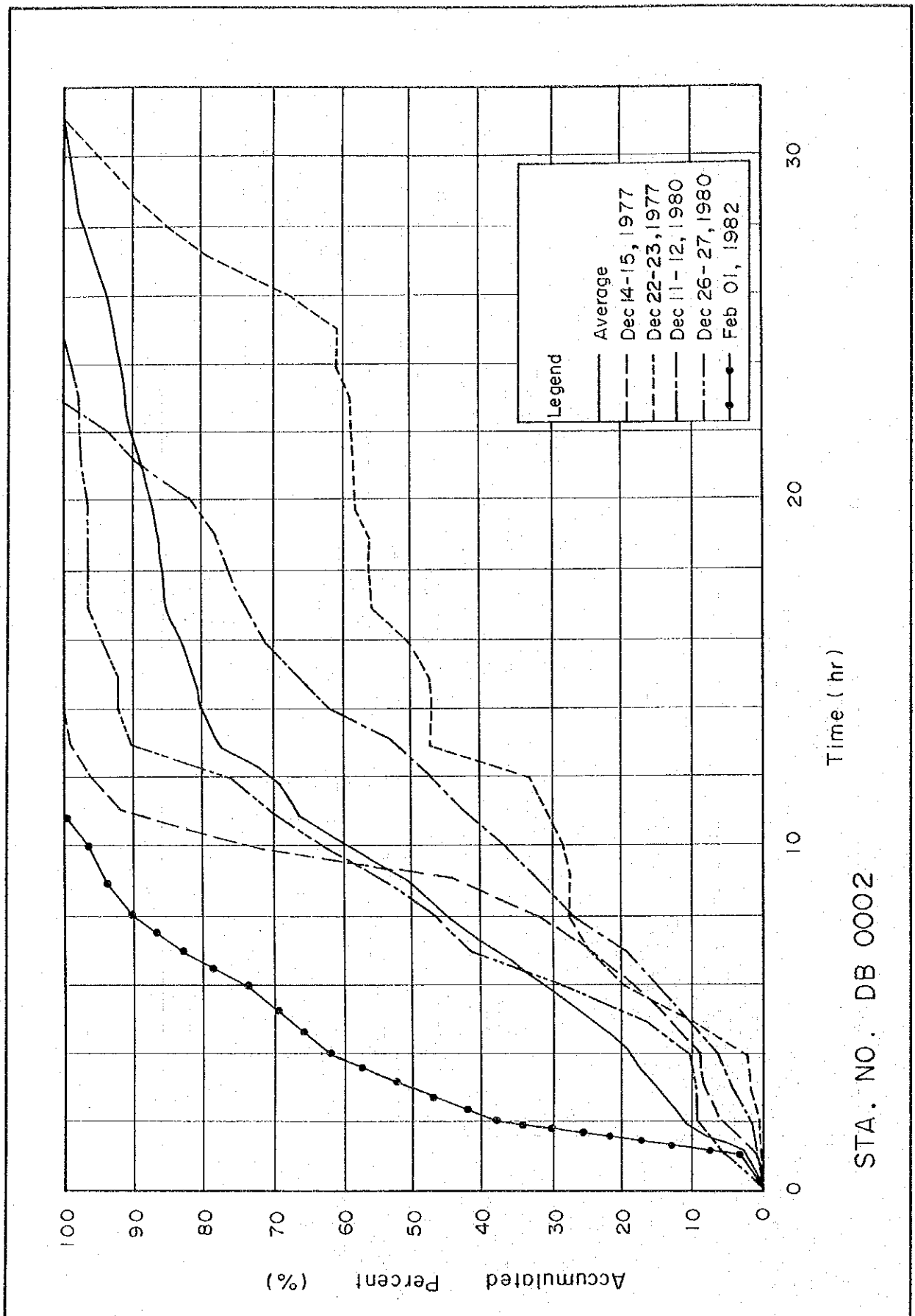


Fig.3.3
Depth-Duration Curves of Strong Rainfall (4/9)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

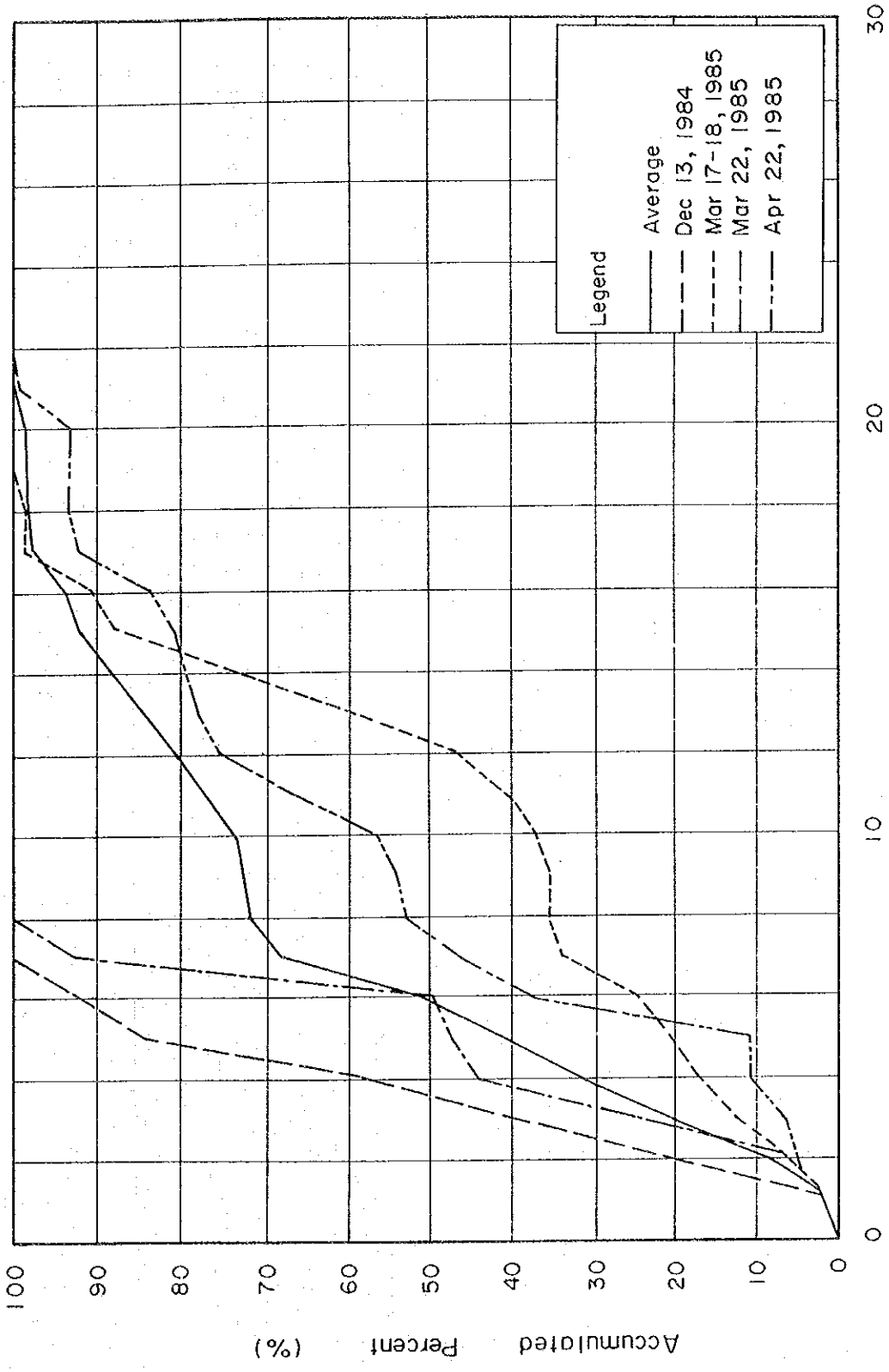


Fig.3.3
Depth-Duration Curves of Strong Rainfall (5/9)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

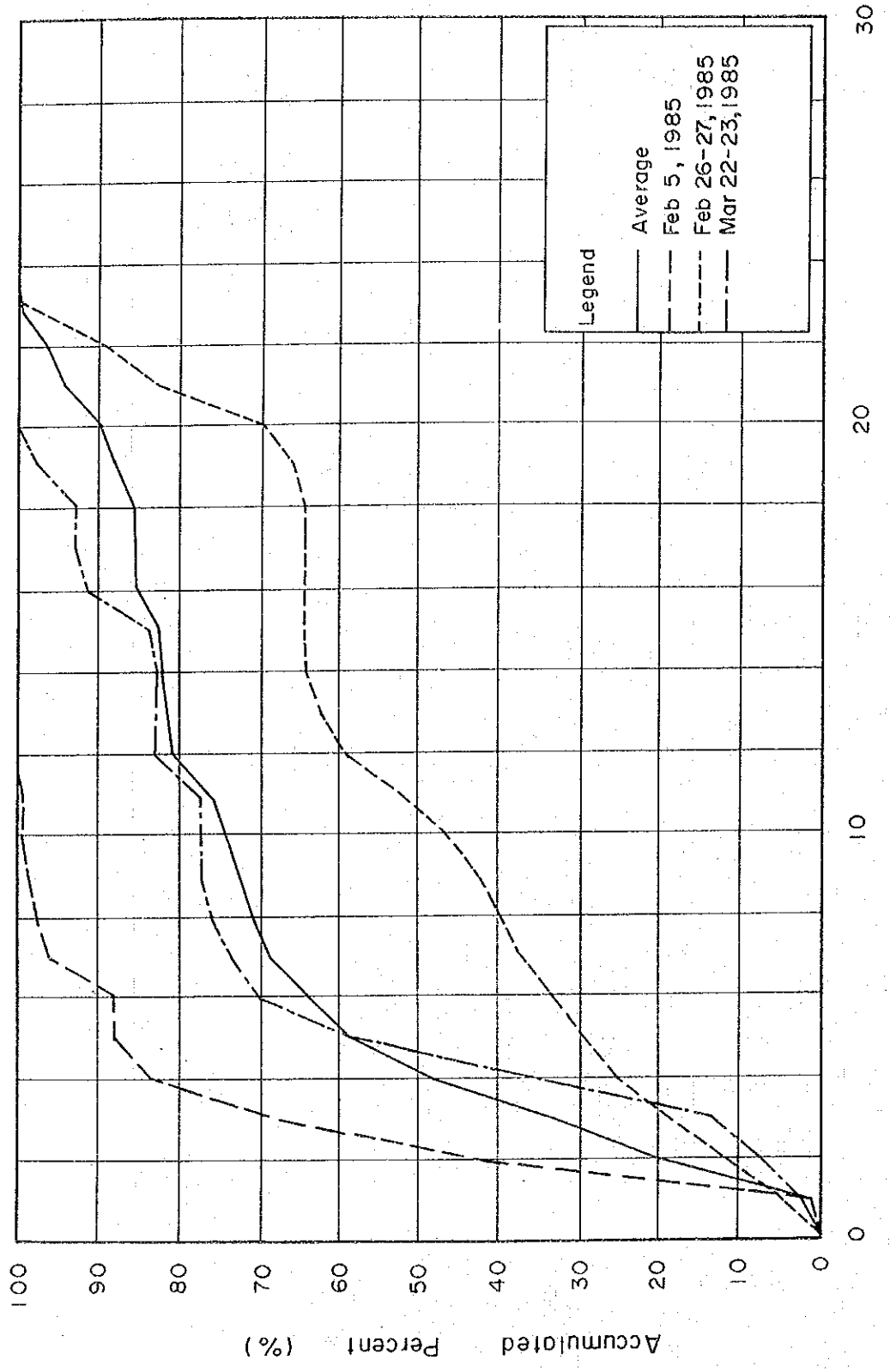


Fig.3.3
Depth-Duration Curves of Strong Rainfall (6/9)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

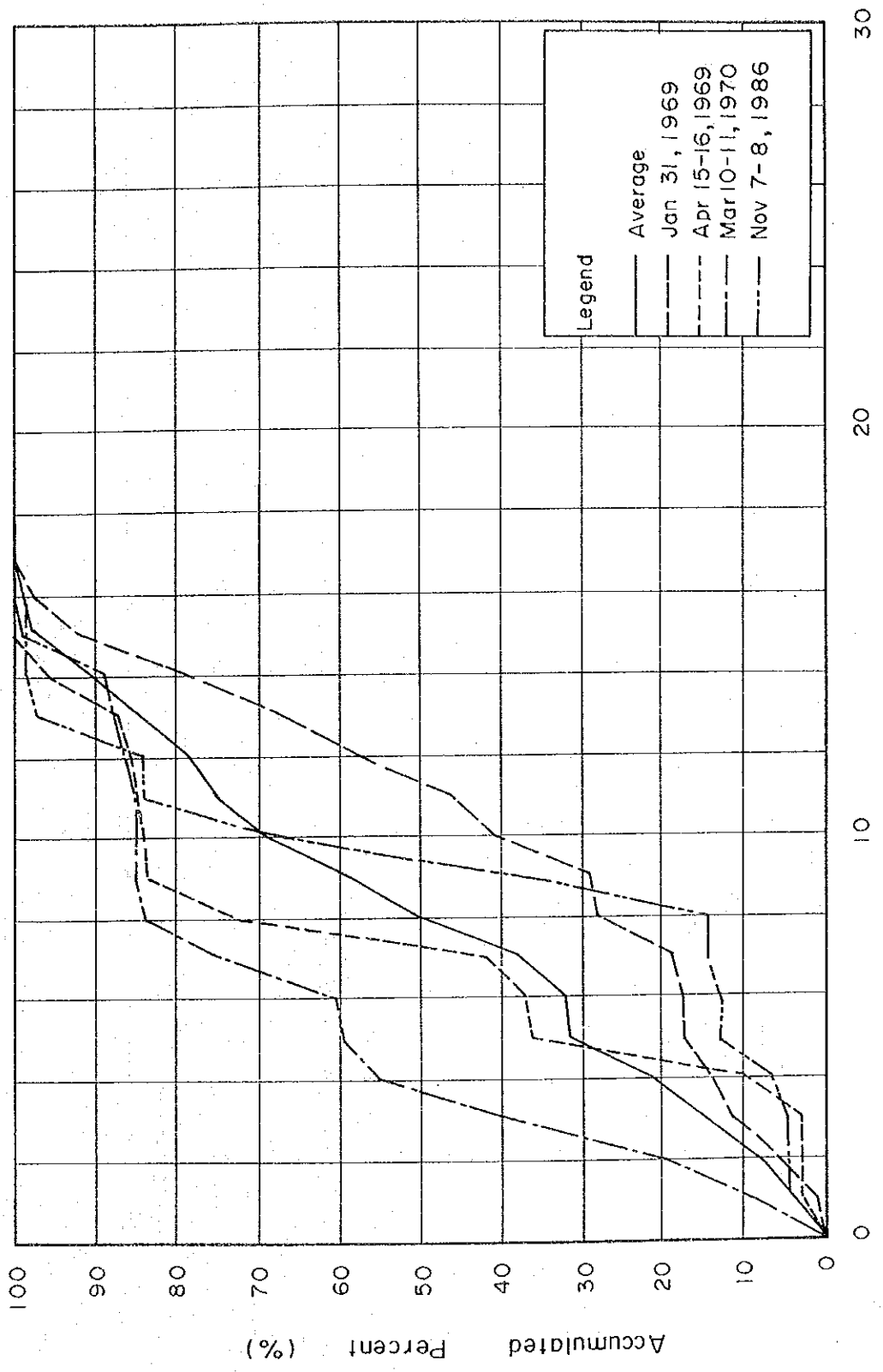


Fig.3.3
Depth-Duration Curves of Strong Rainfall (7/9)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

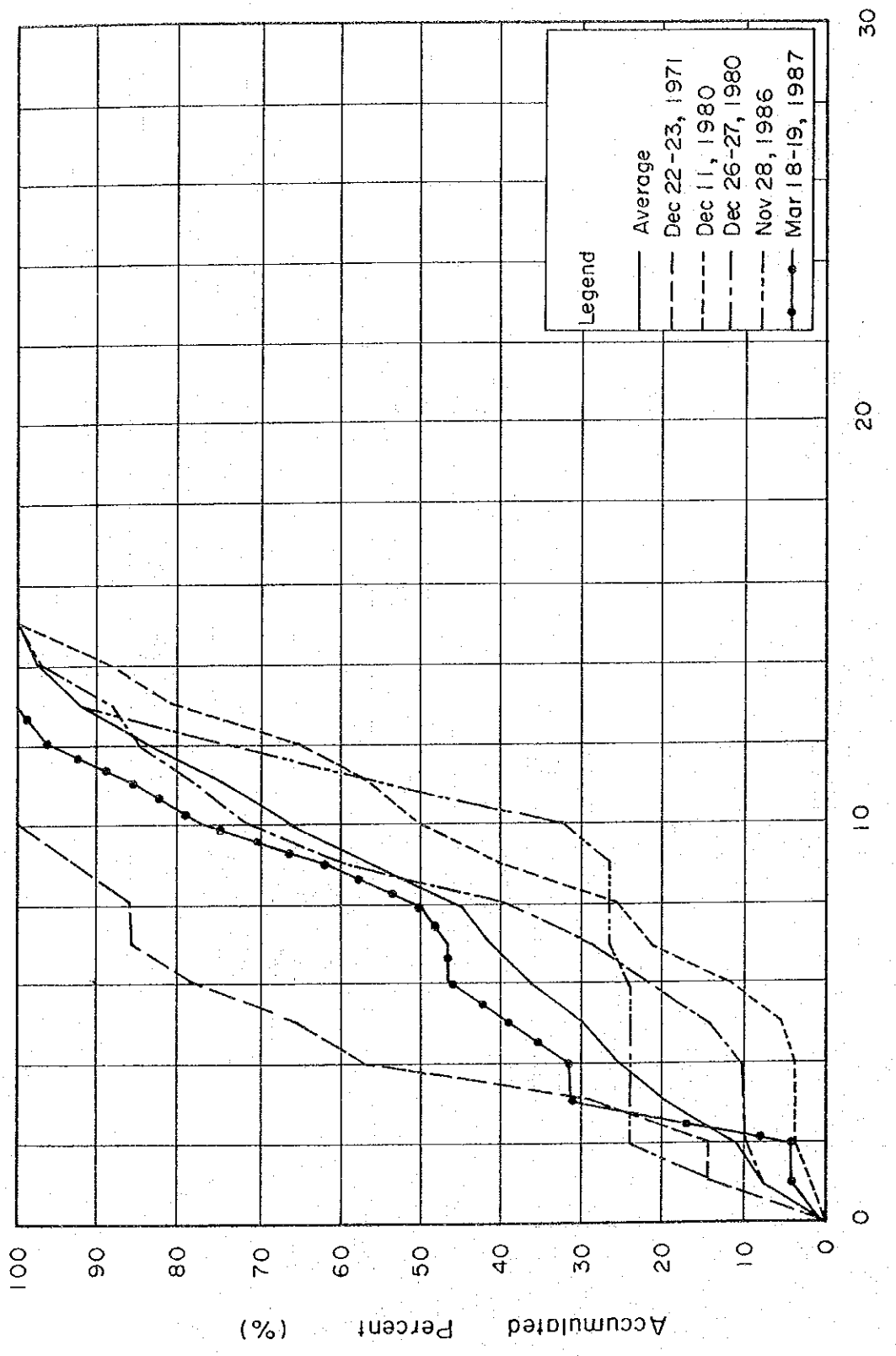


Fig.3.3
Depth-Duration Curves of Strong Rainfall (8/9)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

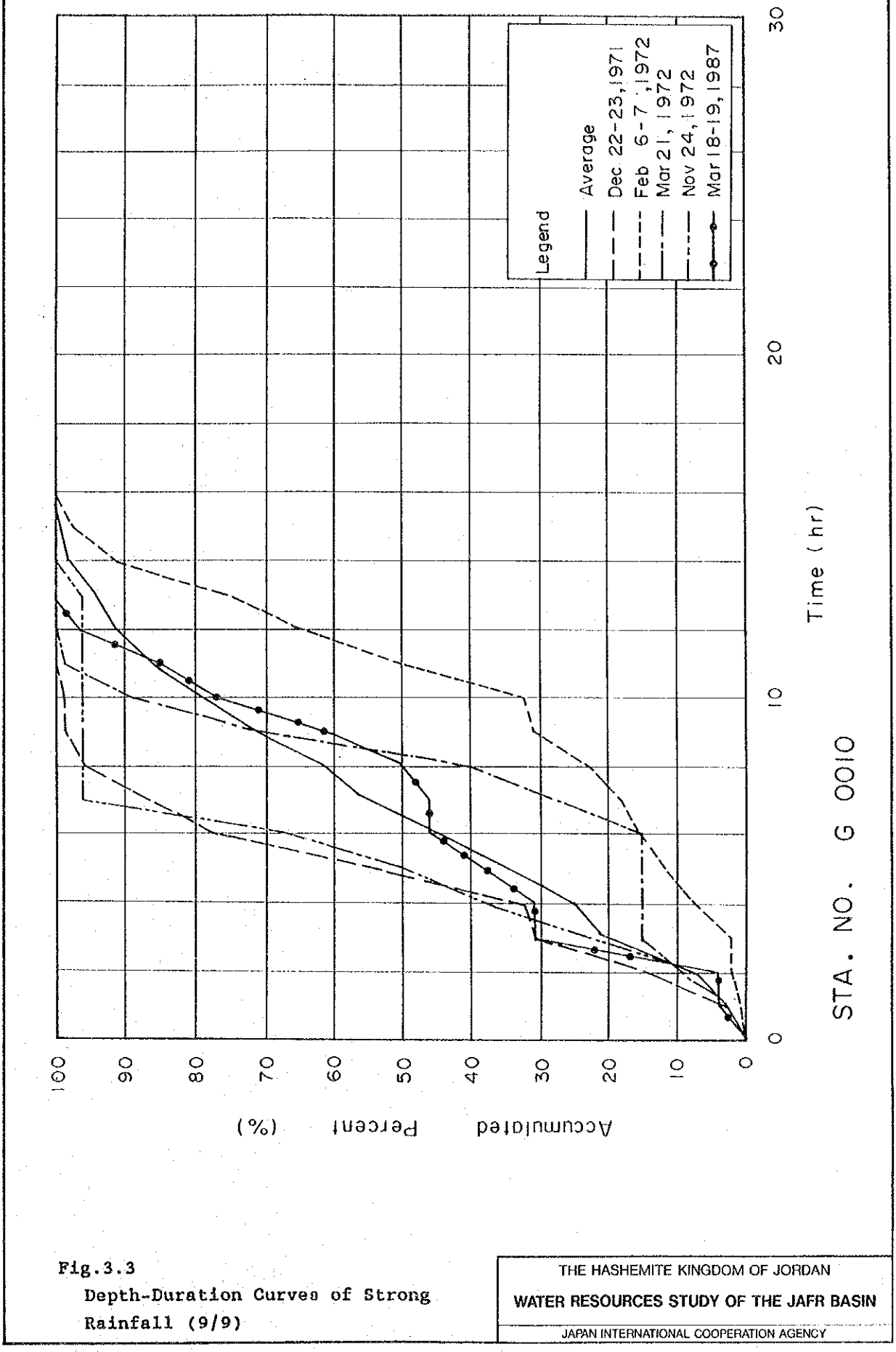
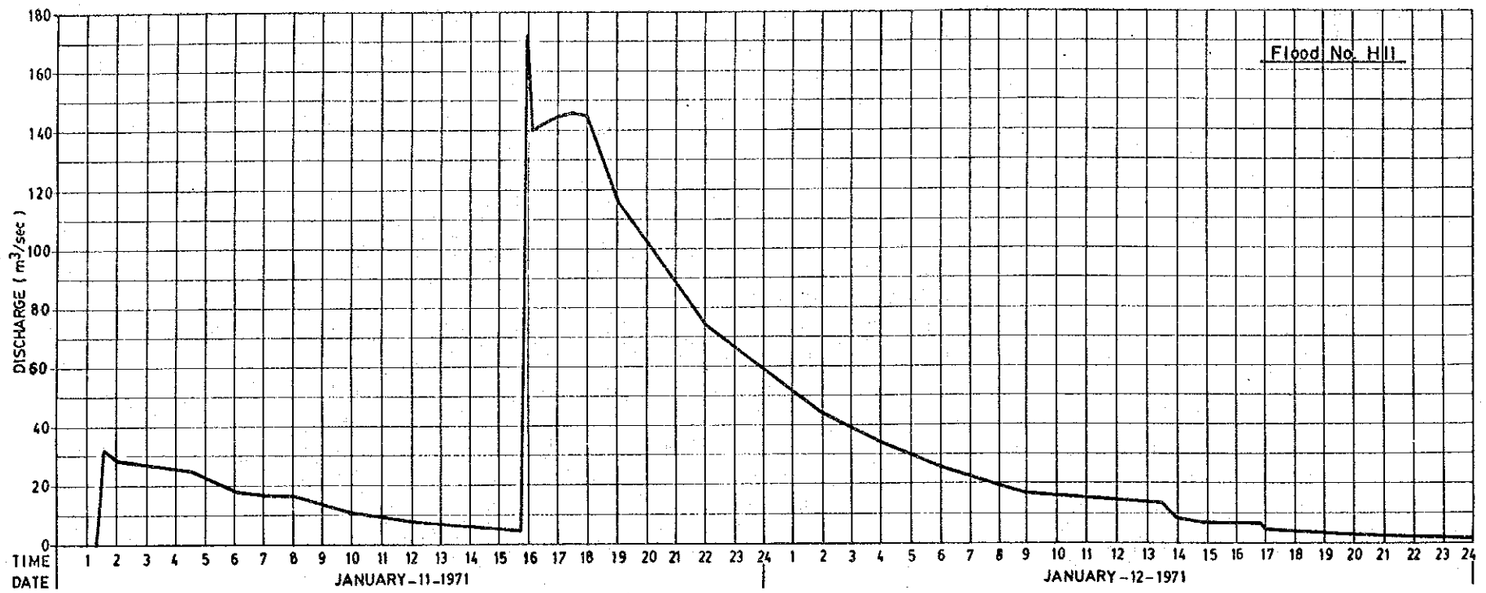
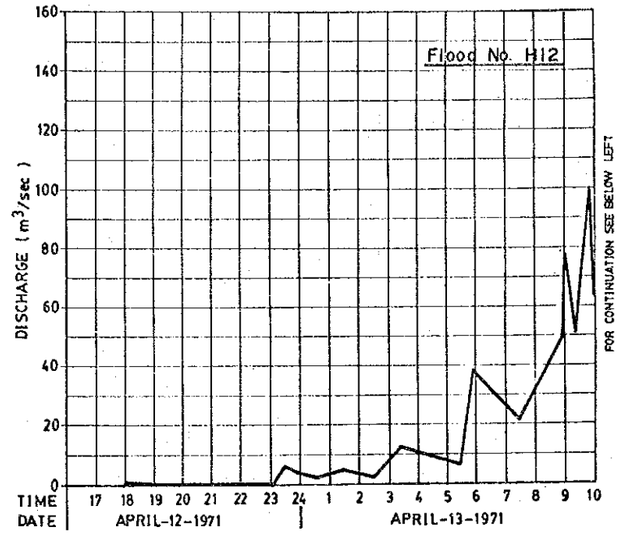


Fig.3.3
Depth-Duration Curves of Strong Rainfall (9/9)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY





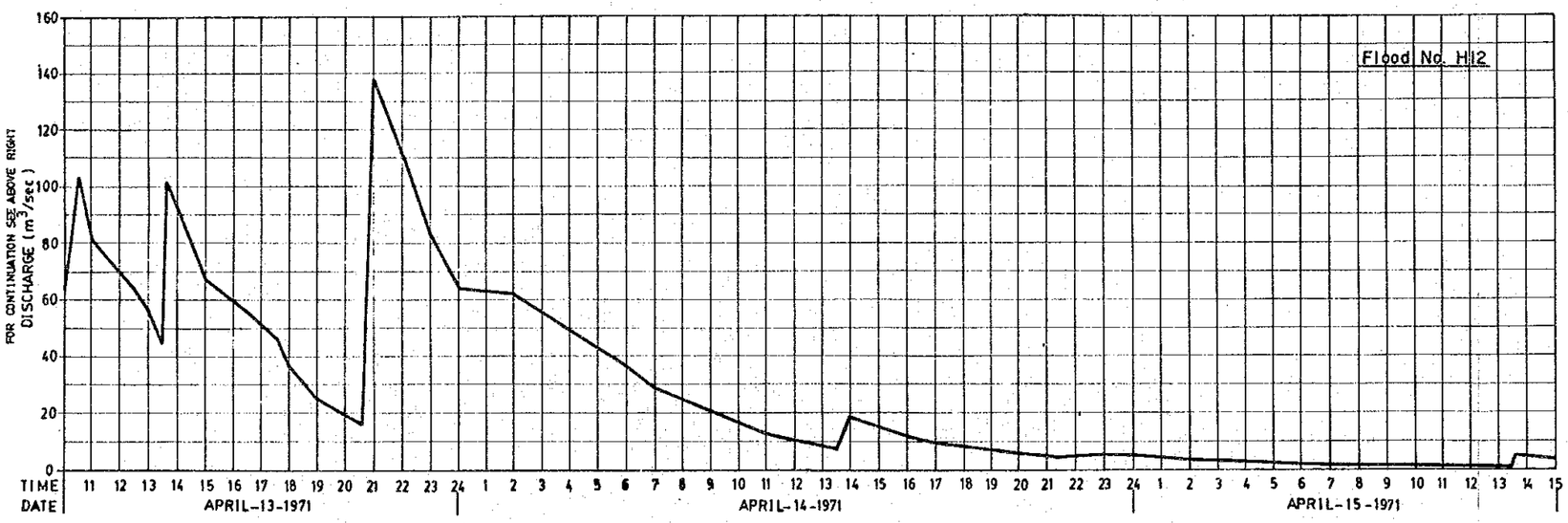
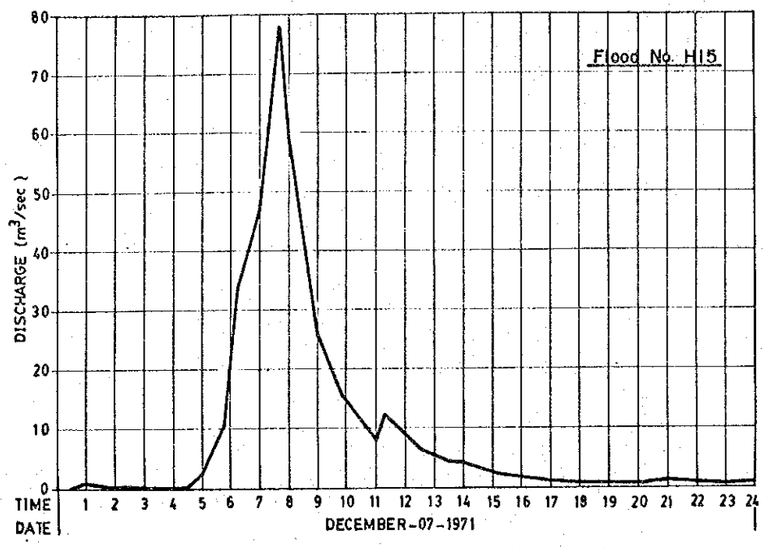
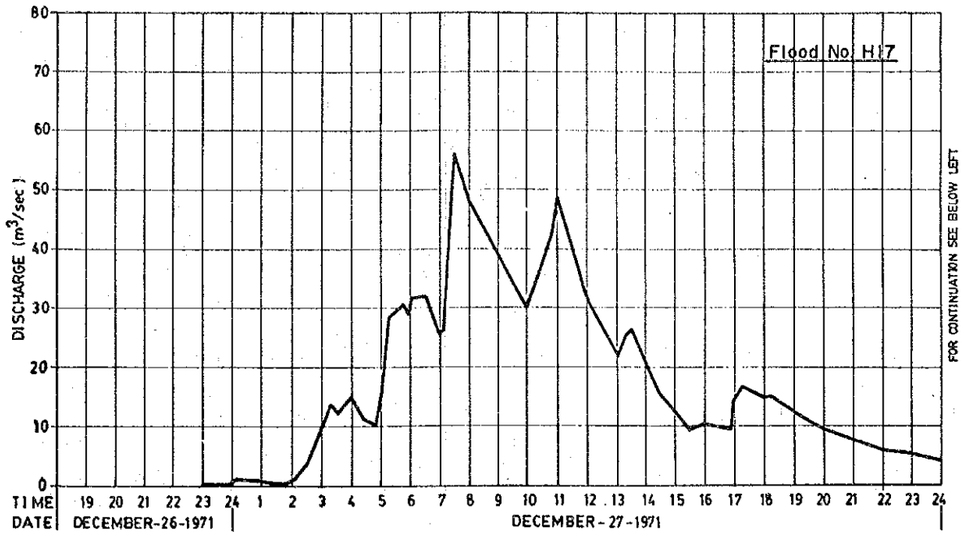


Fig.3.4 Hydrographs of Observed Large Floods of Hasa River (1/6)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY





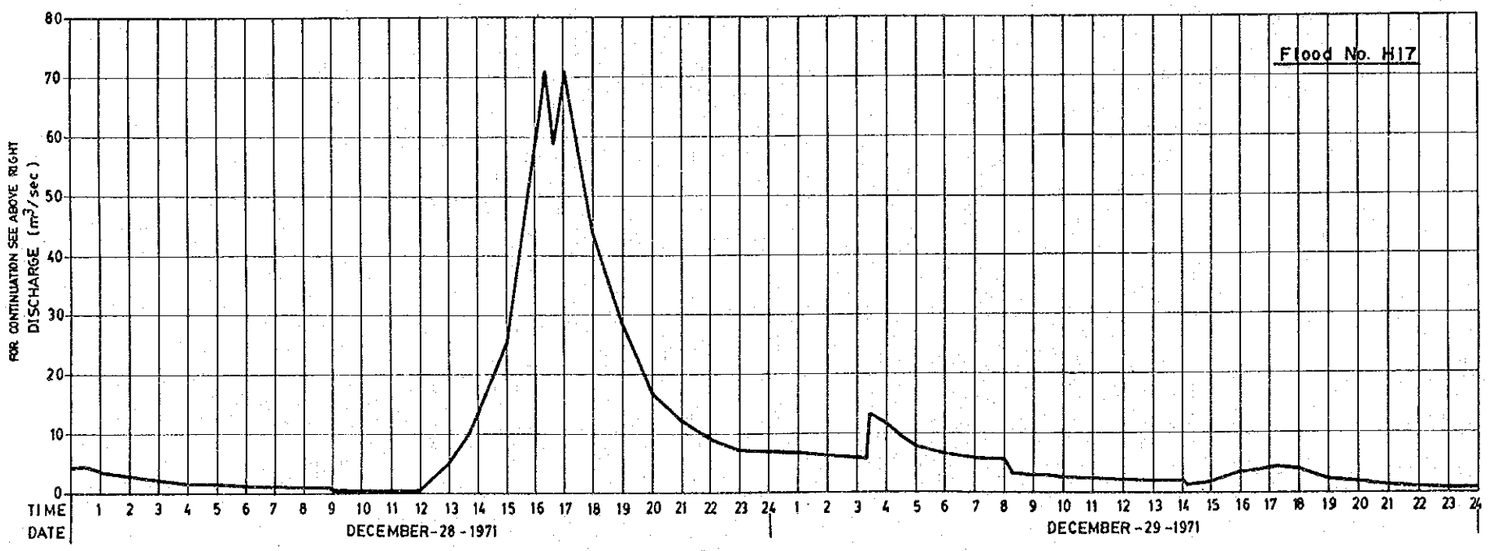
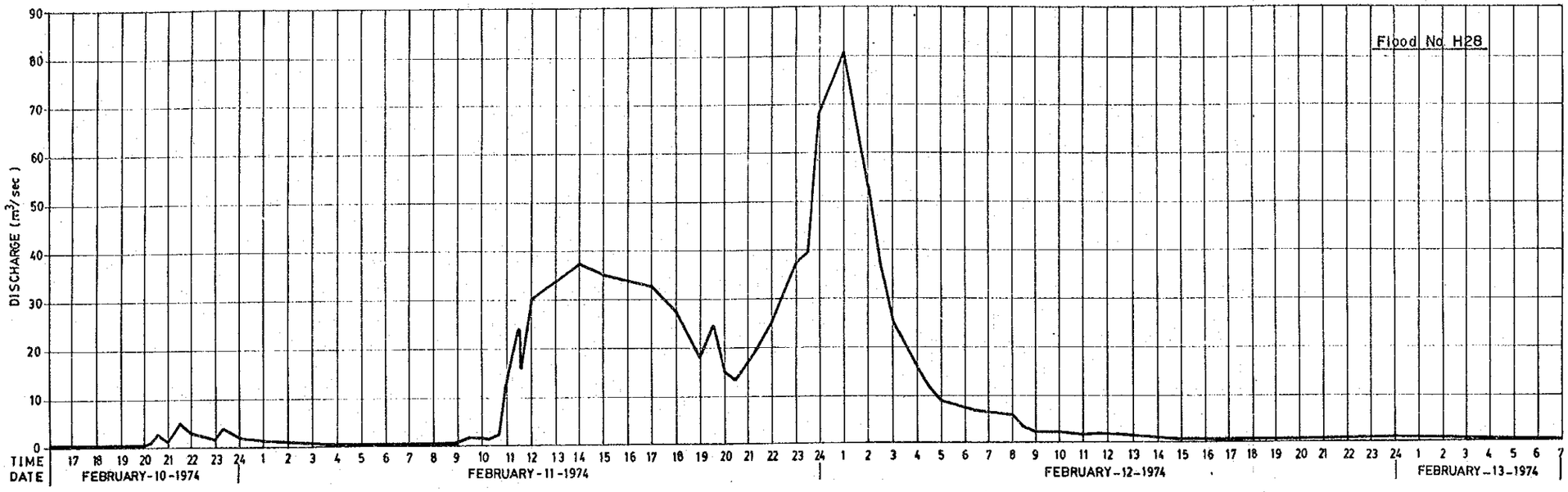


Fig.3.4 Hydrographs of Observed Large Floods of Hasa River (2/6)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY



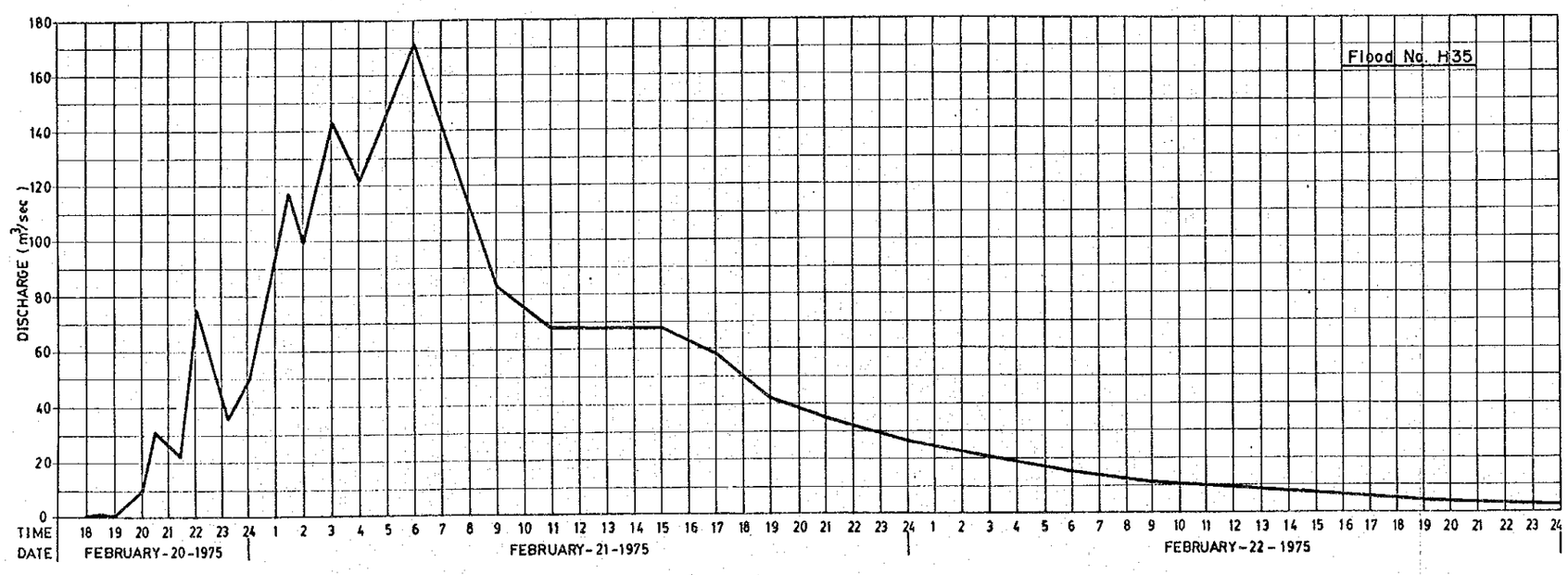
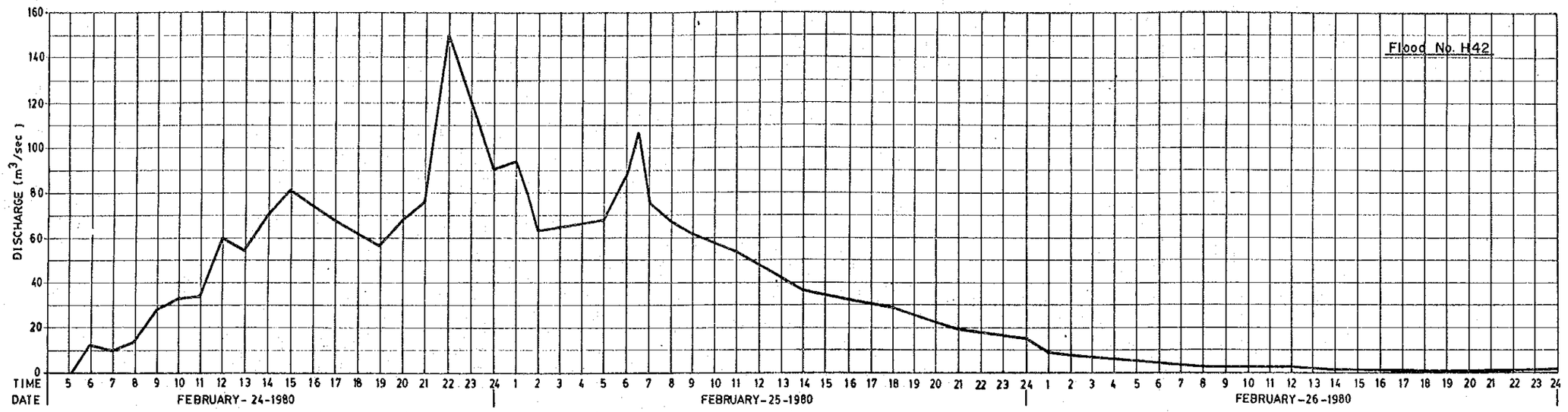


Fig.3.4 Hydrographs of Observed Large Floods of Hasa River (3/6)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY



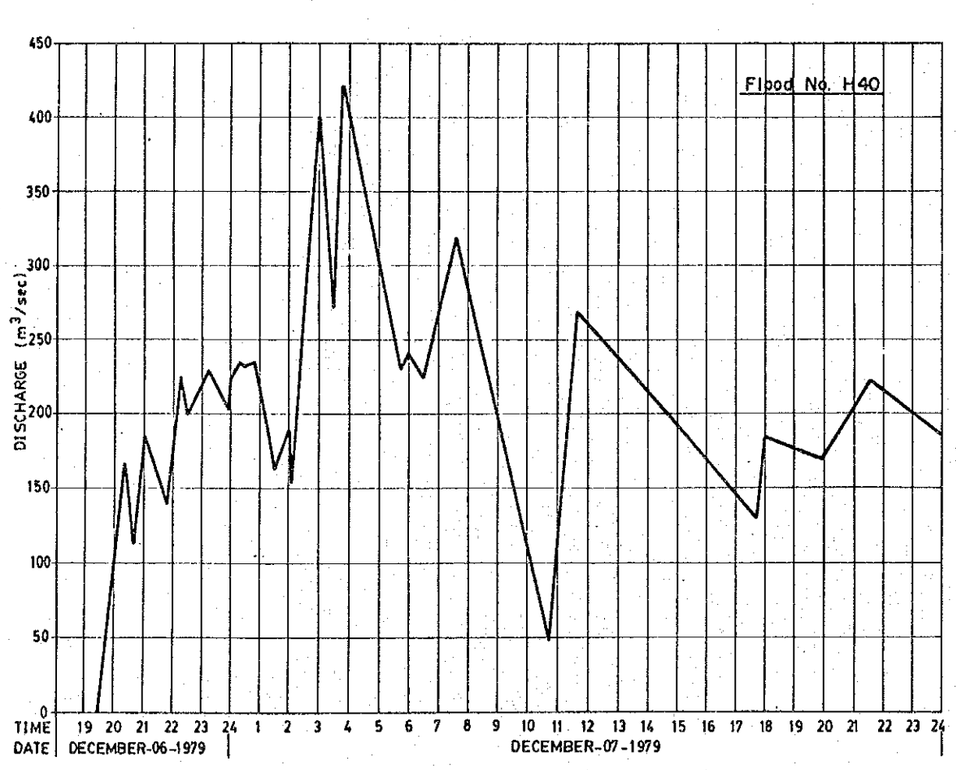
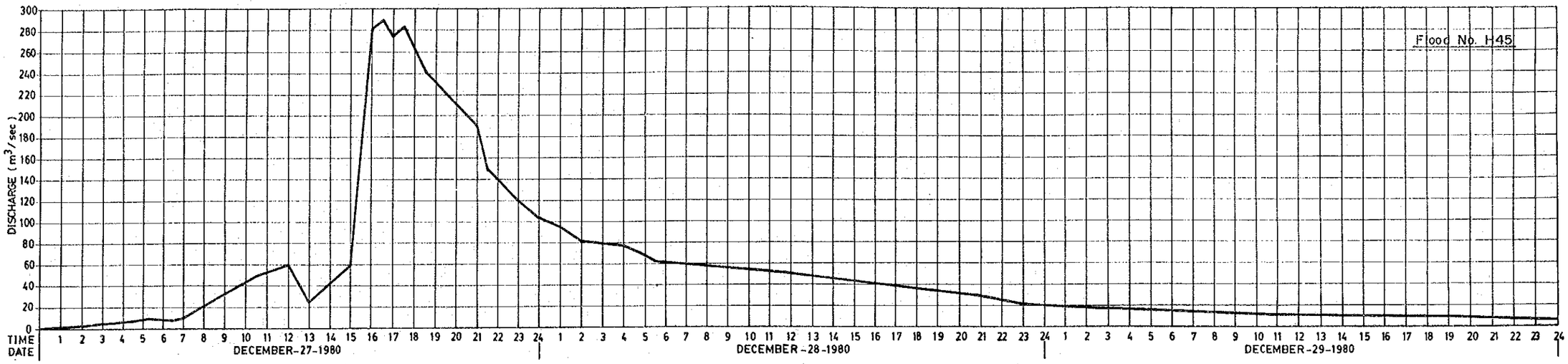


Fig.3.4 Hydrographs of Observed Large Floods of Hasa River (4/6)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY



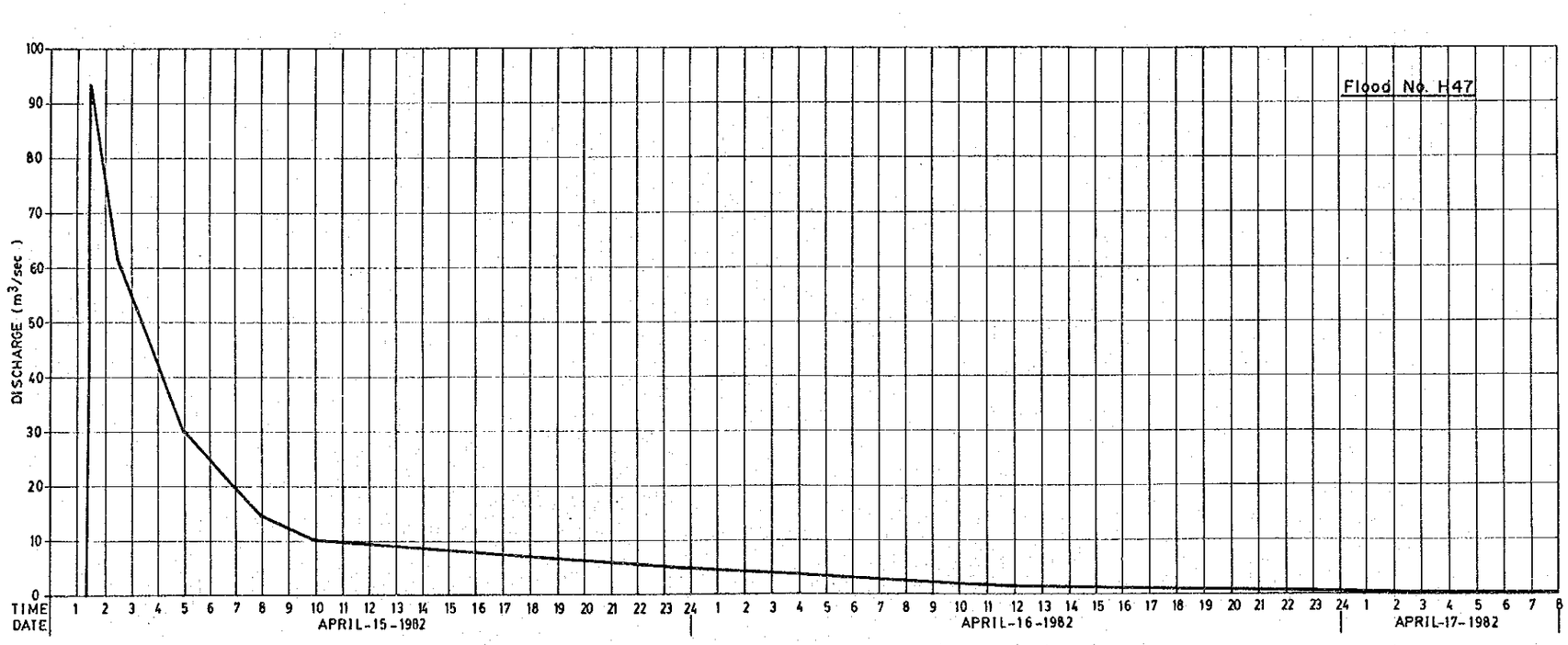
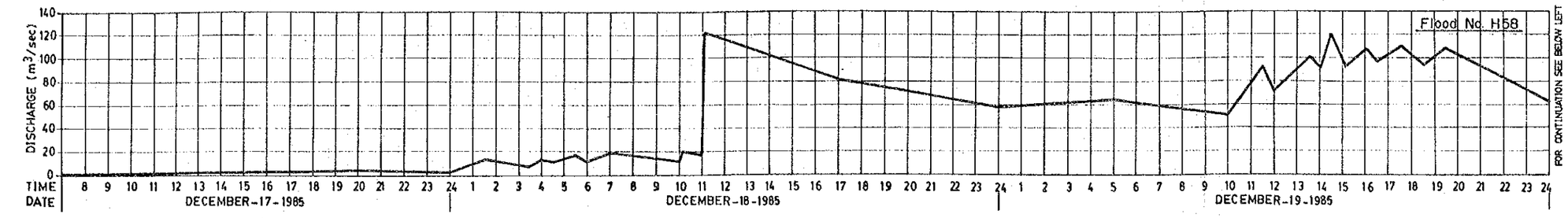
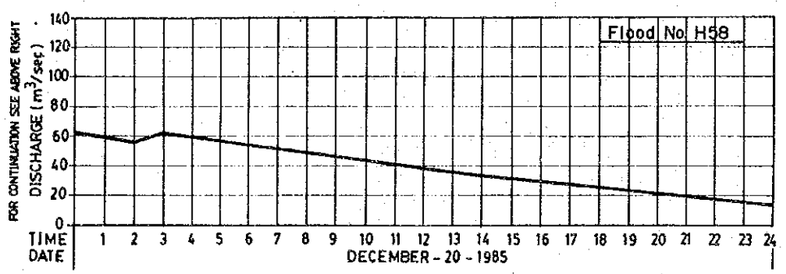
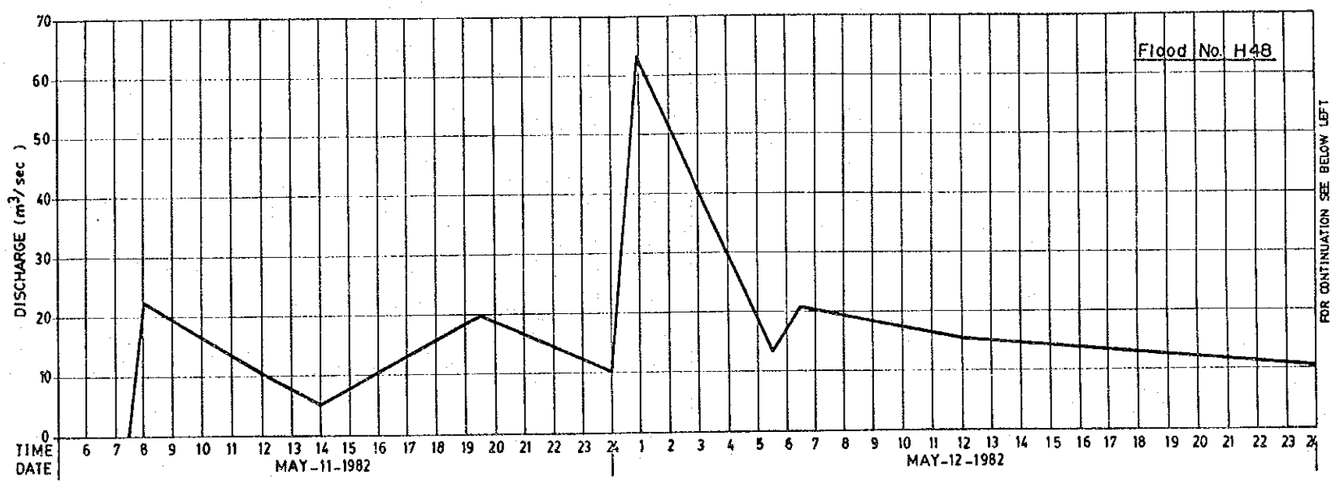


Fig.3.4 Hydrographs of Observed Large Floods of Hasa River (5/6)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY







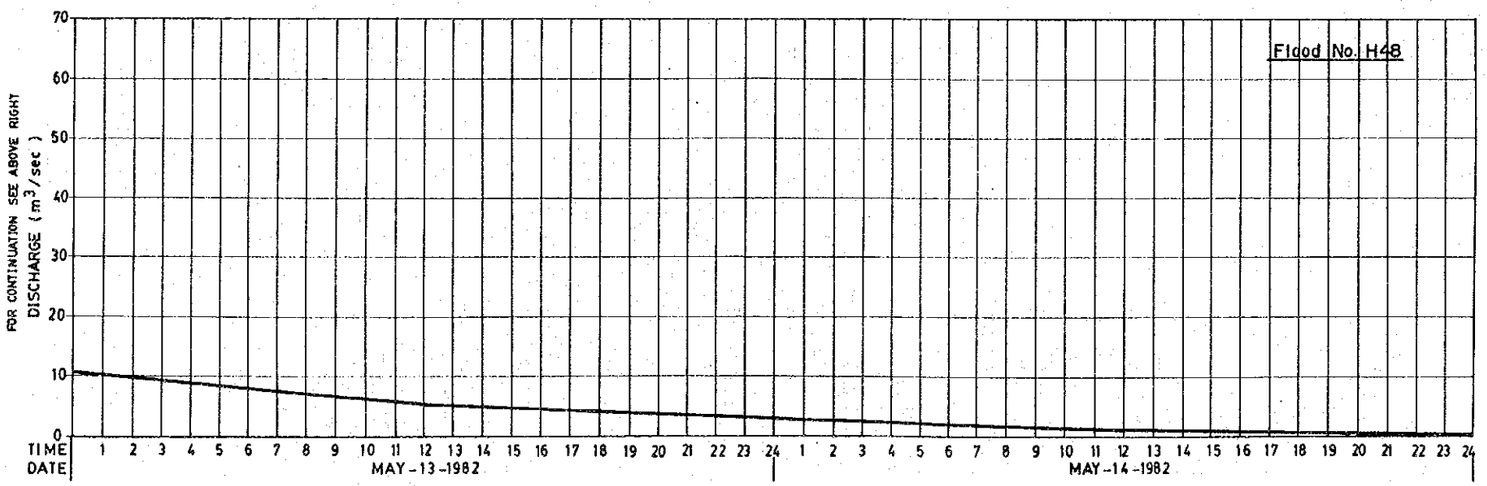
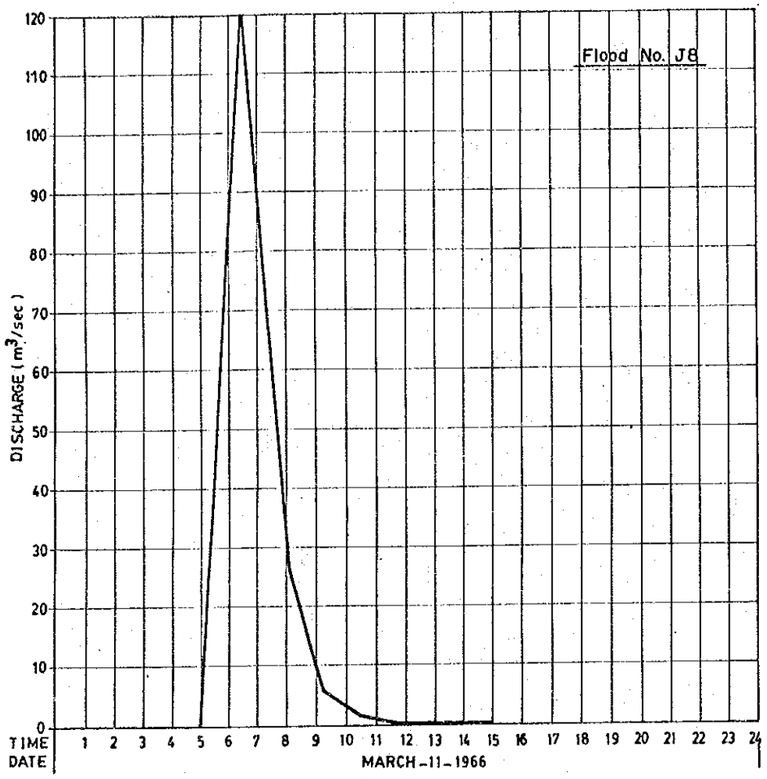
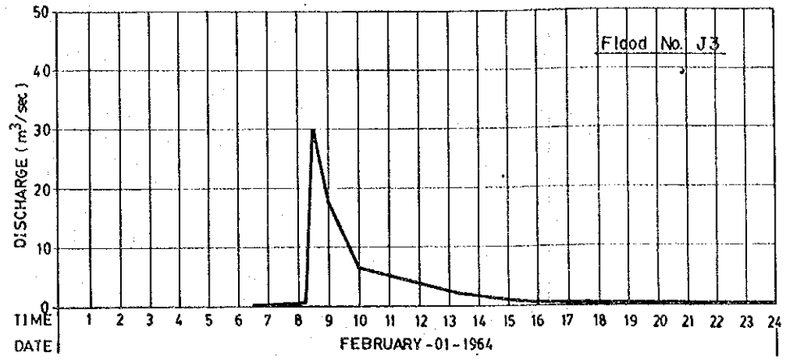
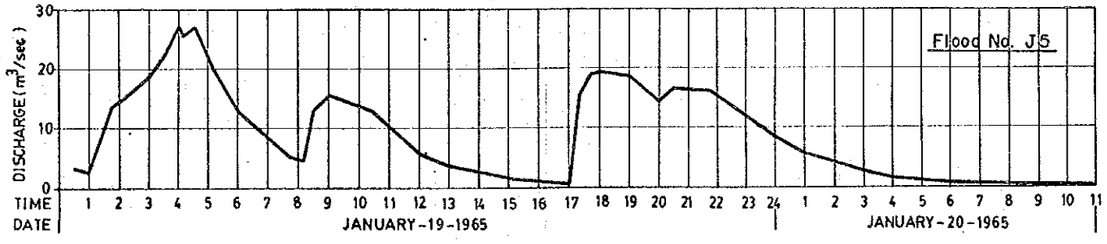


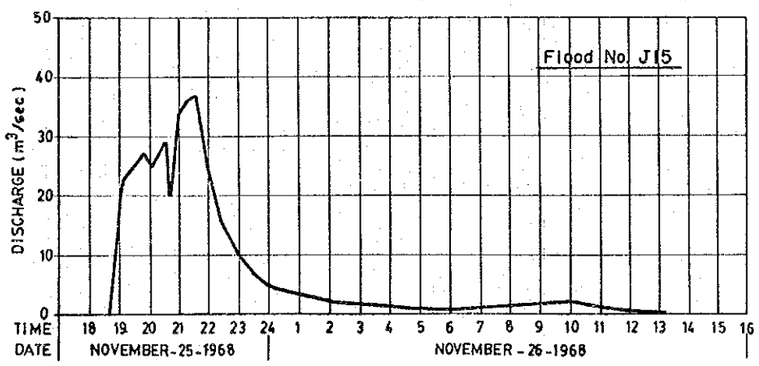
Fig.3.4 Hydrographs of Observed Large Floods of Hasa River (6/6)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY









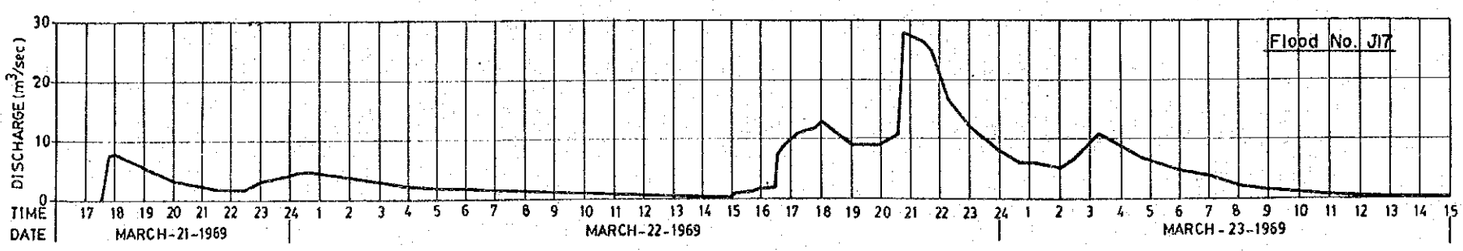
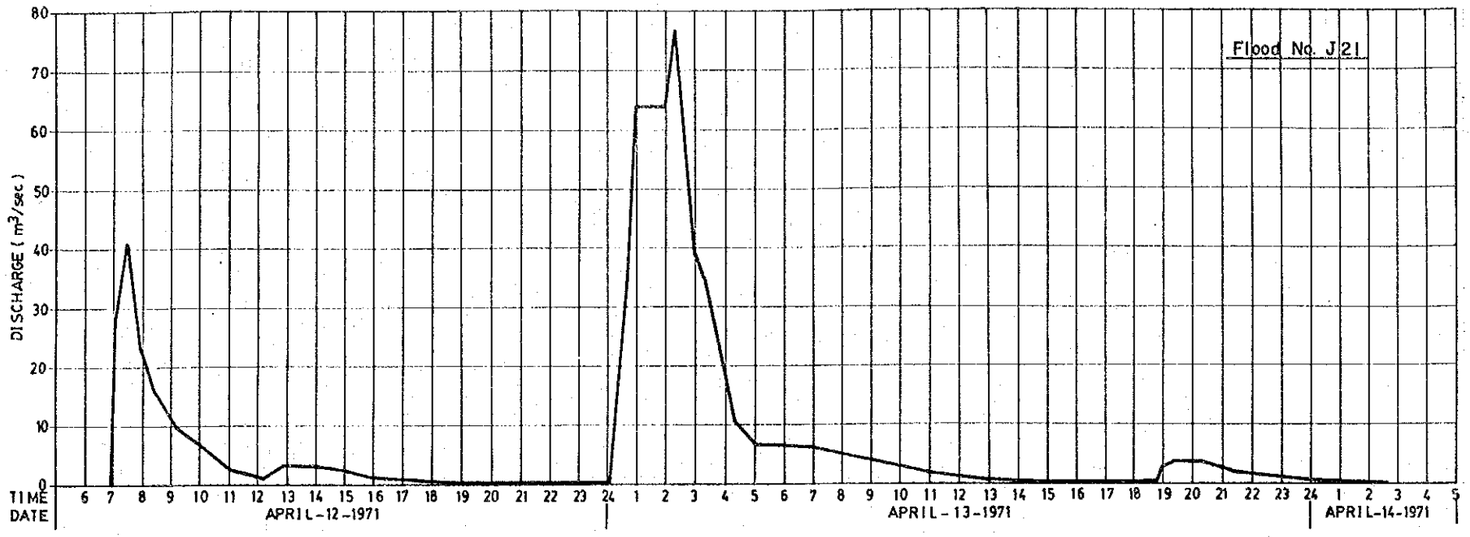
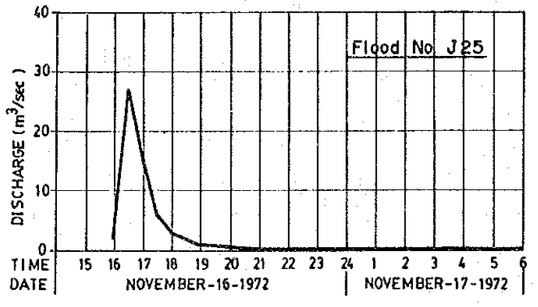
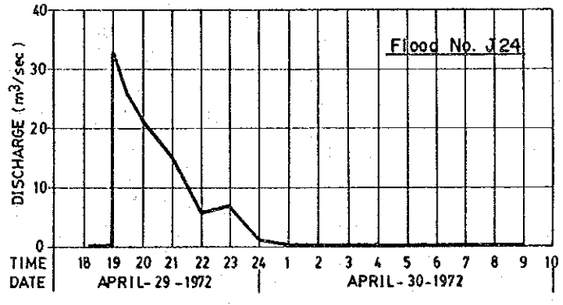


Fig.3.5 Hydrographs of Observed Large Floods of Wadi Jurdhan (1/2)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY







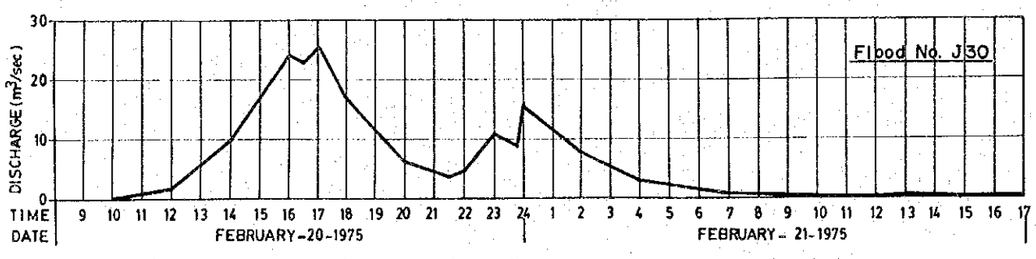


Fig.3.5 Hydrographs of Observed Large Floods of Wadi Jurdhan (2/2)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

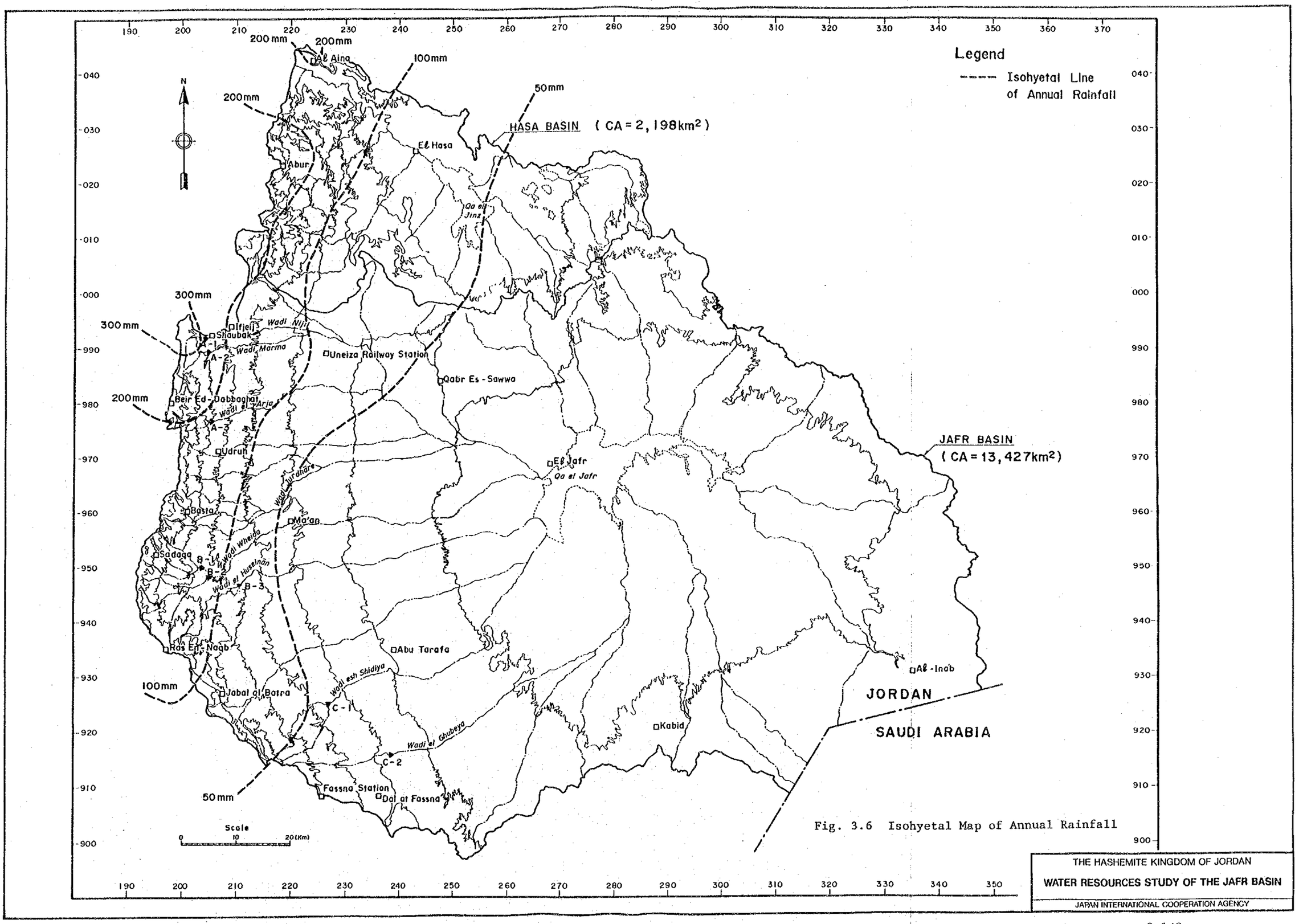


Fig. 3.6 Isohyetal Map of Annual Rainfall

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

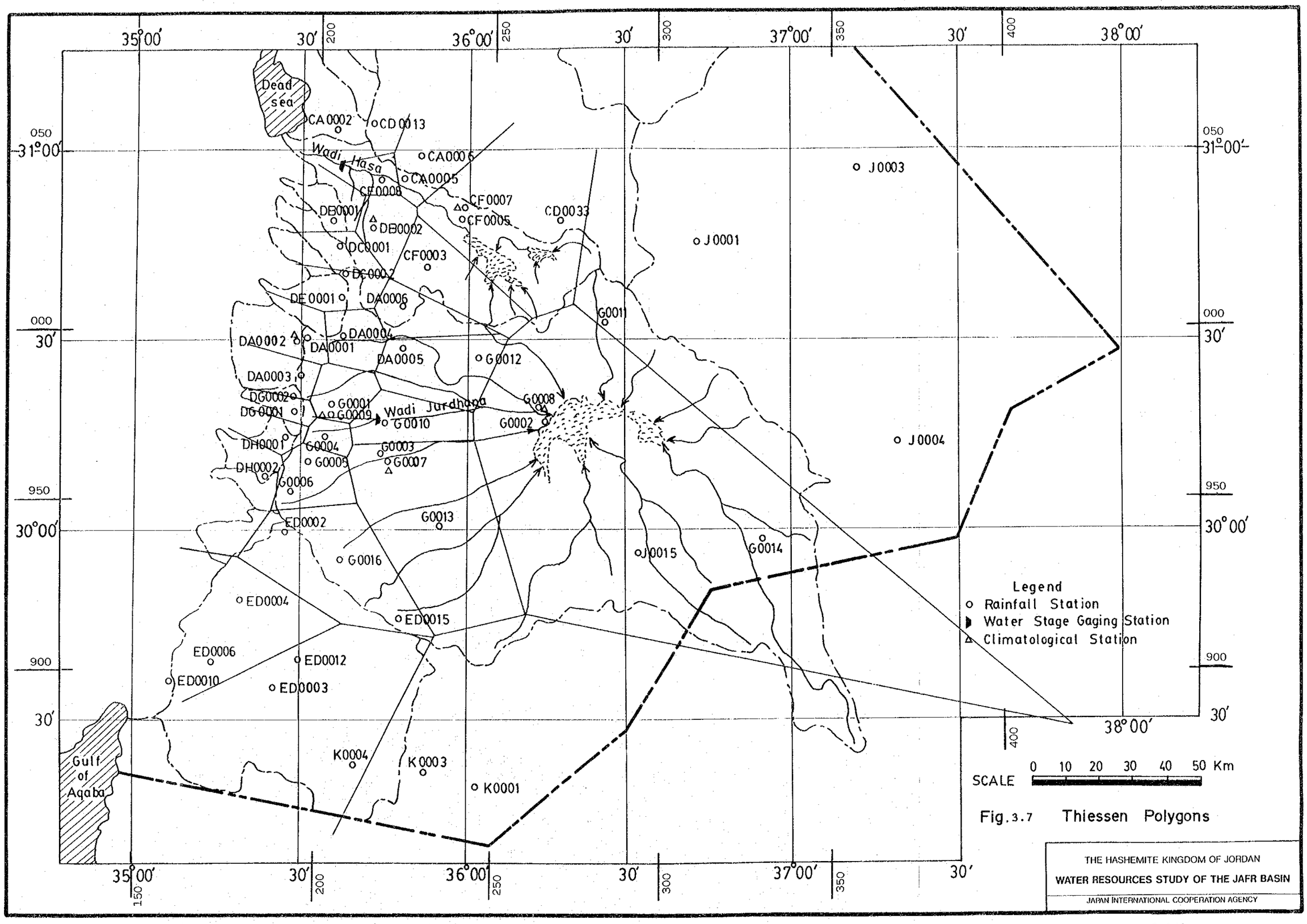
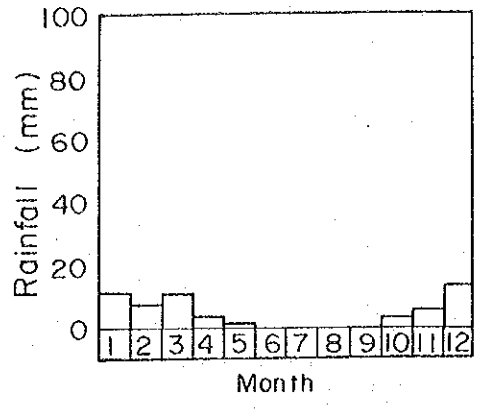
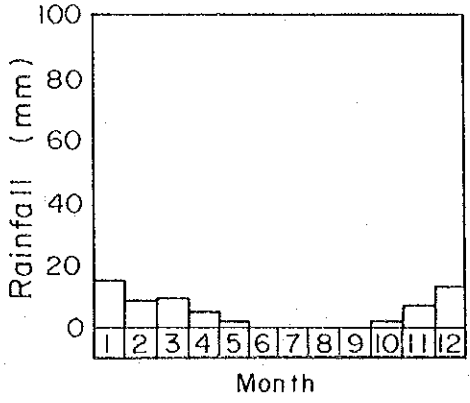


Fig.3.7 Thiessen Polygons

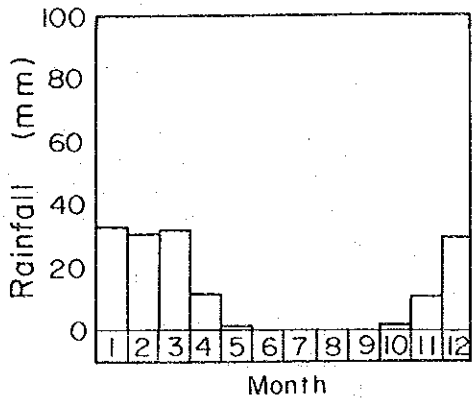
THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY



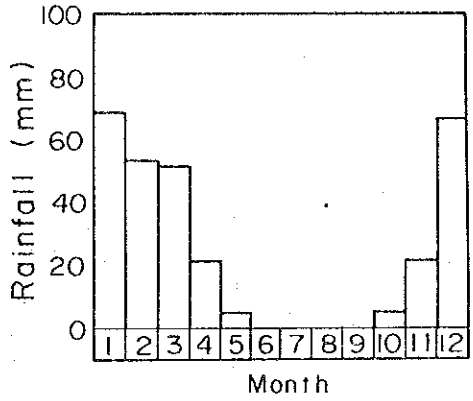
STA.NO. CF 0003



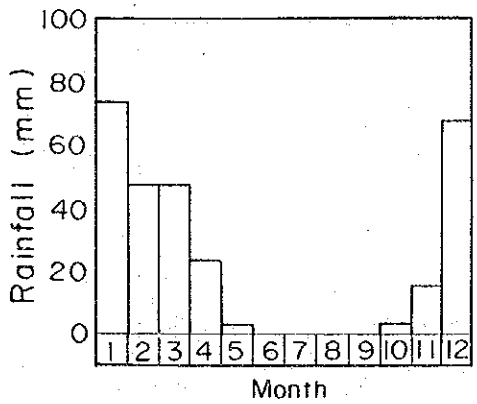
STA. NO. CF 0007



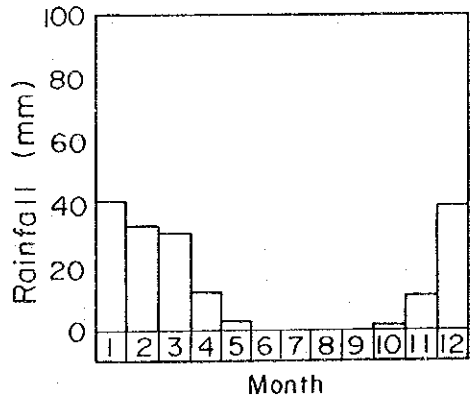
STA. NO. CF 0008



STA. NO. DA 0002



STA. NO. DB 0001



STA. NO. DG 0001

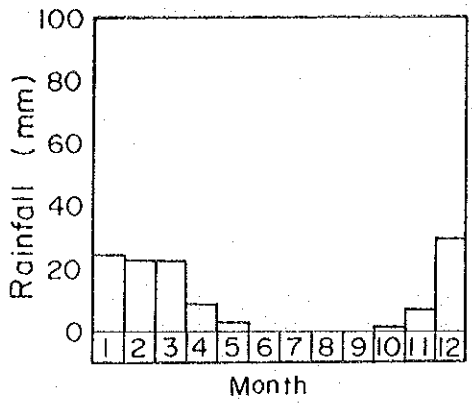
Fig.3.8

Monthly Rainfall Pattern (1/2)

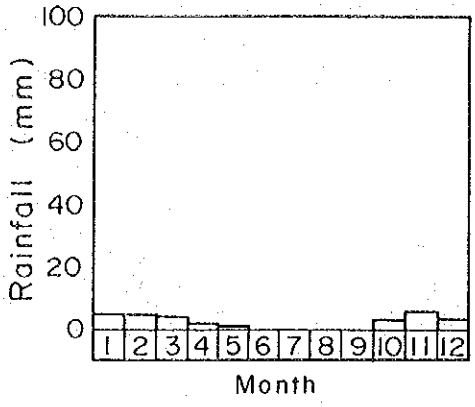
THE HASHEMITE KINGDOM OF JORDAN

WATER RESOURCES STUDY OF THE JAFR BASIN

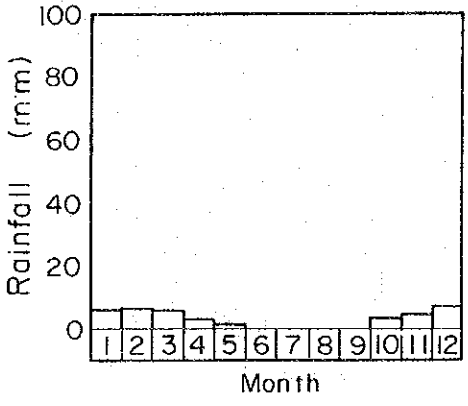
JAPAN INTERNATIONAL COOPERATION AGENCY



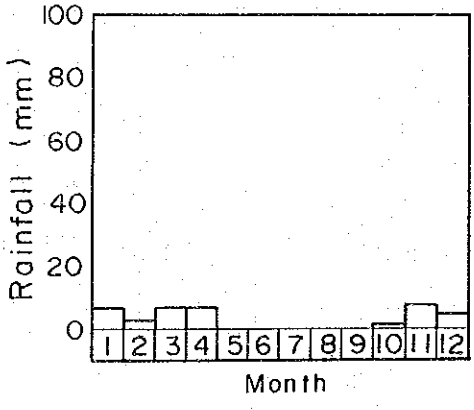
STA. NO. ED 0002



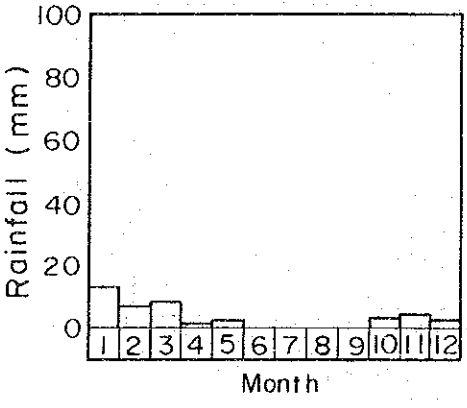
STA. NO. G 0002



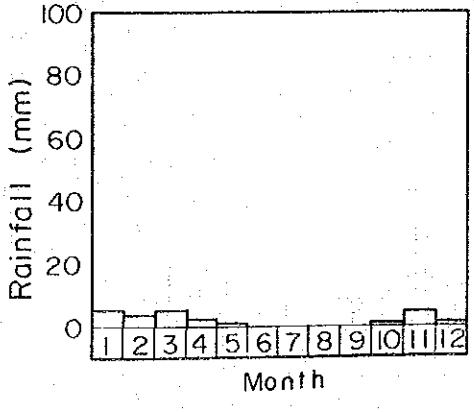
STA. NO. G 0007



STA. NO. G 0010



STA. NO. J 0001



STA. NO. K 0001

Fig.3.8

Monthly Rainfall Pattern (2/2)

THE HASHEMITE KINGDOM OF JORDAN

WATER RESOURCES STUDY OF THE JAFR BASIN

JAPAN INTERNATIONAL COOPERATION AGENCY

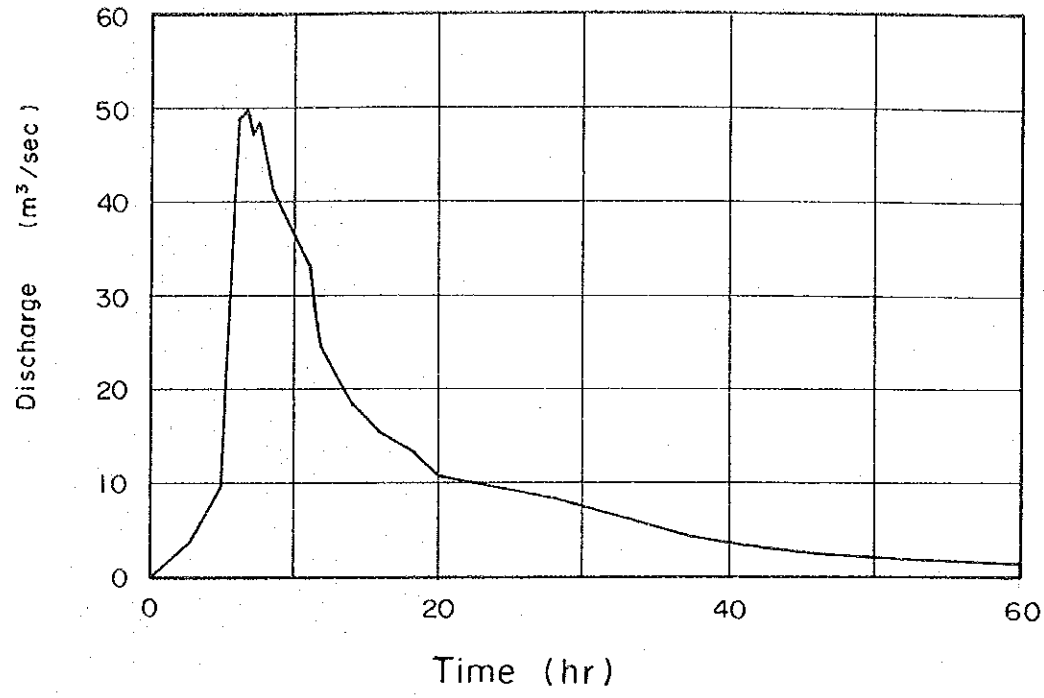


Fig.3.9
Unitgraph of Hasa River at Hasa Water Stage Gaging Station

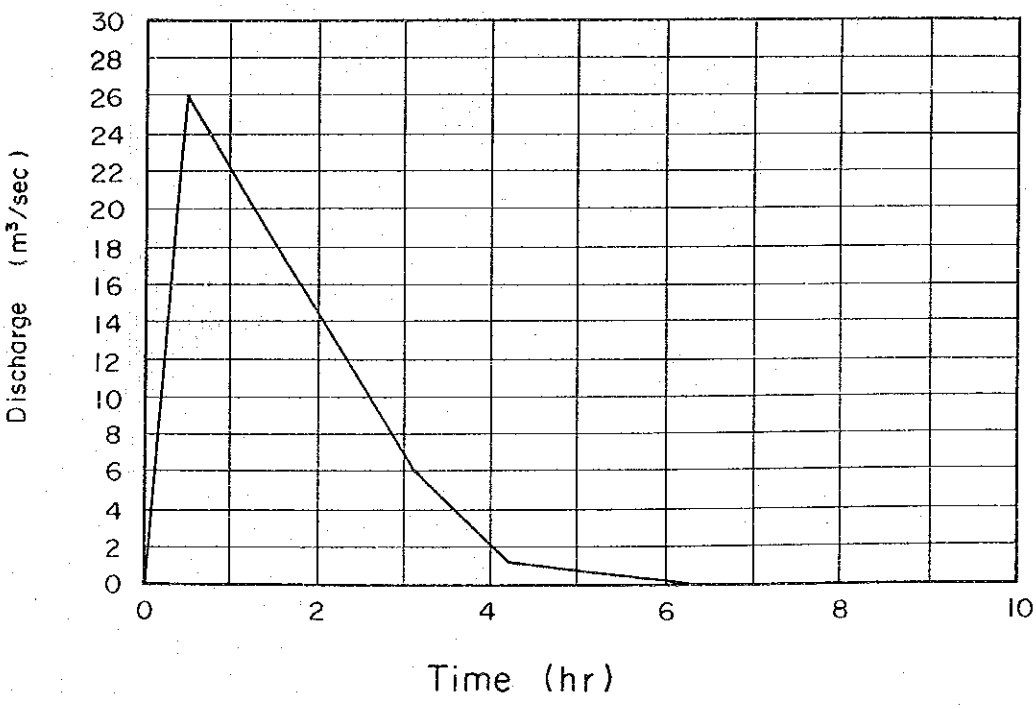


Fig.3.10
Unitgraph of Wadi Jurdhan at Water Stage Gaging Station

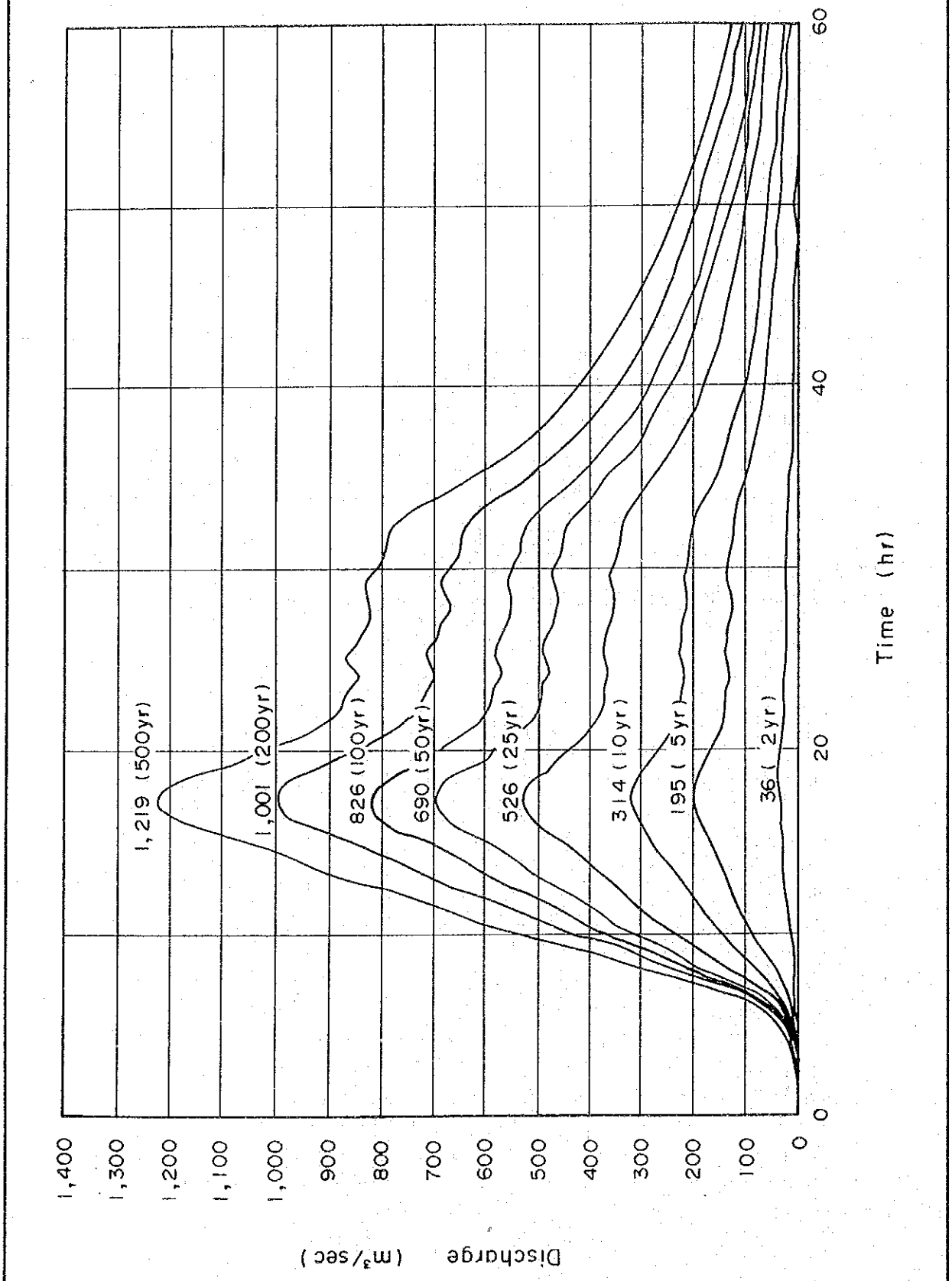


Fig.3.11
Hydrographs of Probable Floods of Hasa River

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

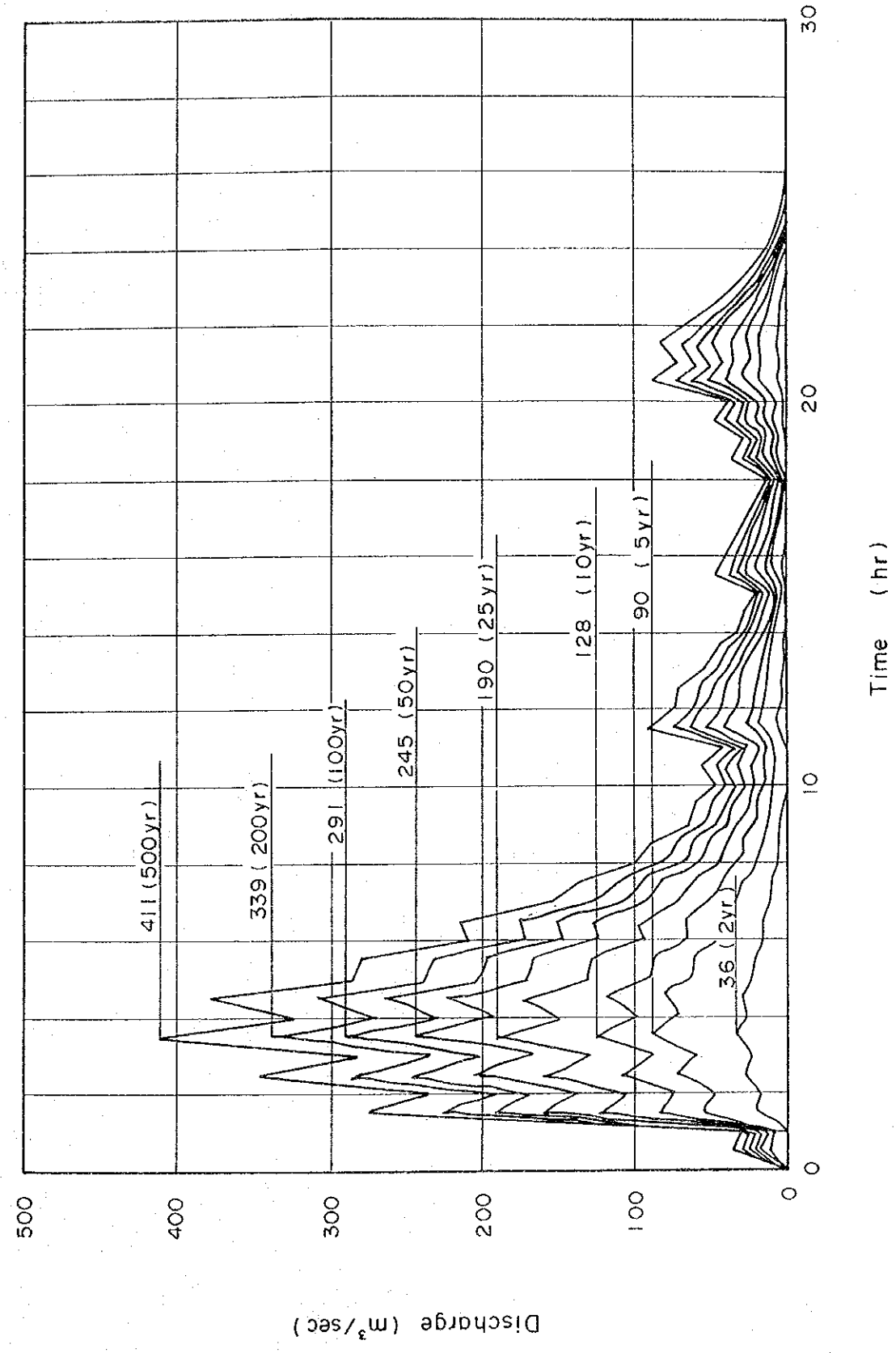


Fig.3.12
Hydrographs of Probable Floods of Wadi Jurdhan

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

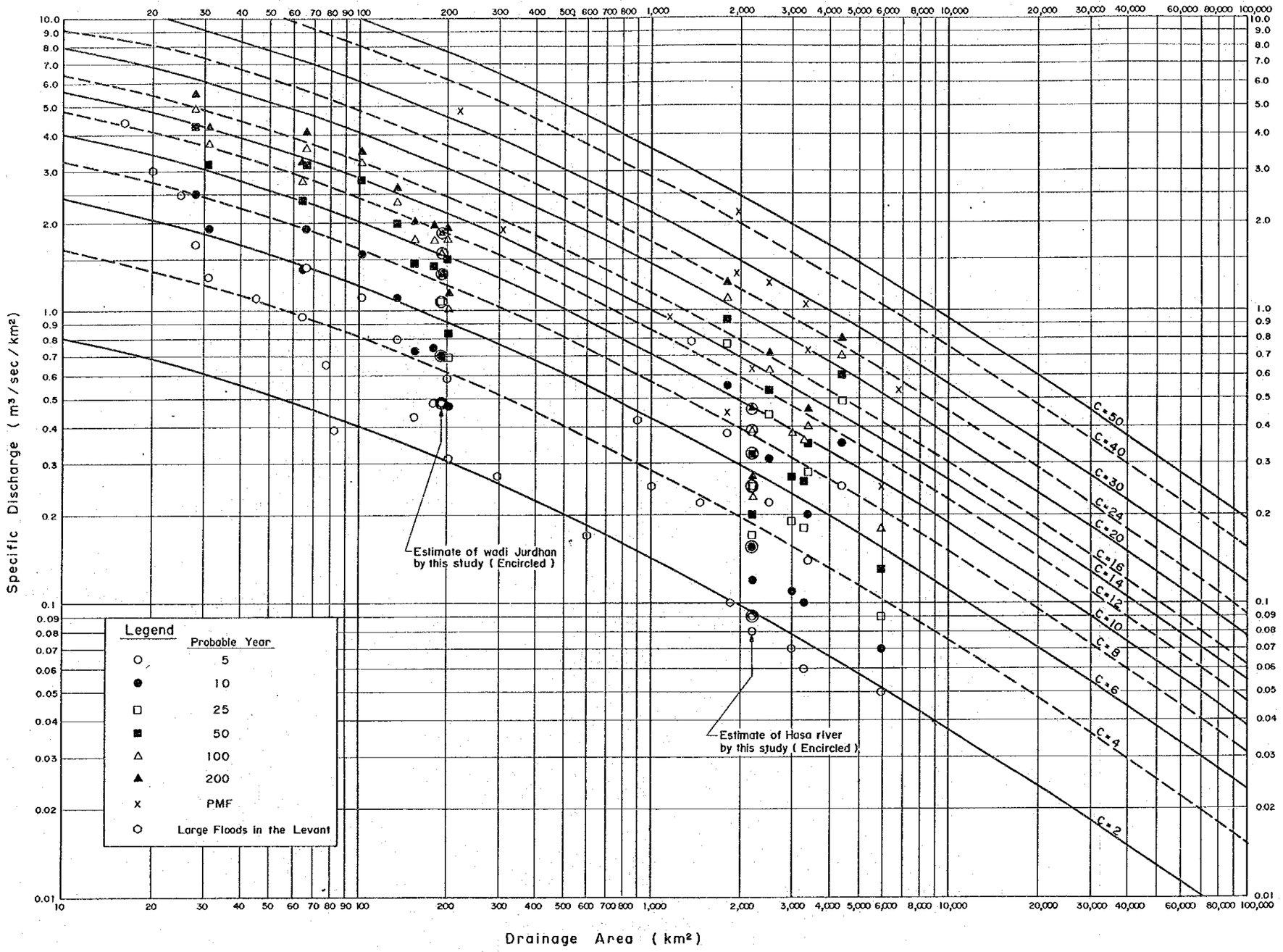
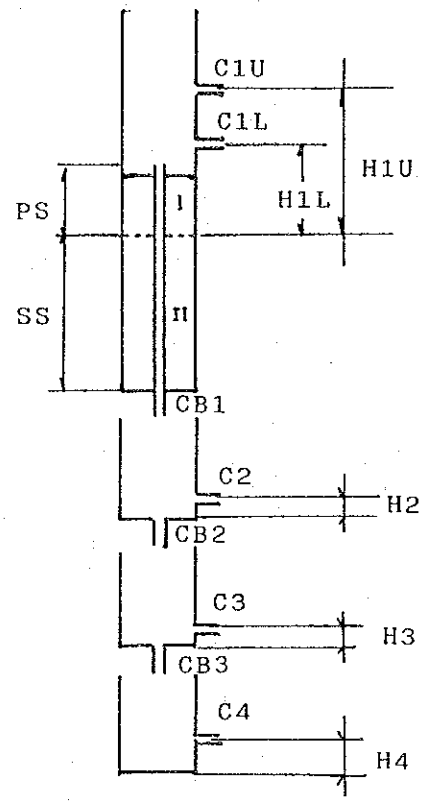


Fig.3.13
Creager's Curves of Large Floods in Jordan and Levant

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY



1. Parameter of Tanks

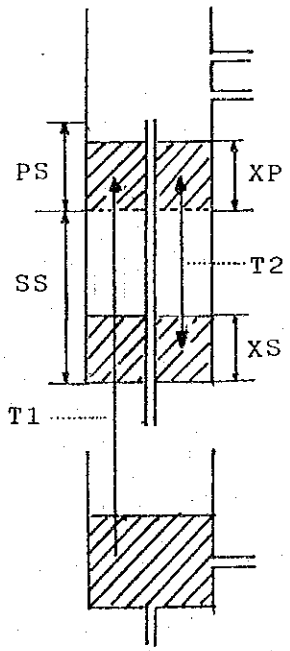
(1) C1U, C1L, C2, C3, C4:
Discharge coefficients of side holes

(2) CB1, CB2, CB3:
Discharge coefficients of bottom holes

(3) H1U, H1L, H2, H3, H4:
Height of side holes

(4) PS:
Capacity of primary soil moisture:

(5) SS:
Capacity of secondary soil moisture:



2. Parameter of Soil Moisture

(1) T1:
Transfer of soil moisture to primary soil moisture from second tank given by

$$T1 = TB\ (1 - XP/PS)$$

where TB: Transfer coefficient
XP: Primary soil moisture

(2) T2:
Transfer of soil moisture between primary soil moisture and secondary soil moisture given by

$$T2 = TC\ (XP/PS - XS/SS)$$

where TC : Transfer coefficient
XS : Secondary soil moisture

If T2 > 0 ,water moves from XP to XS. If T2<0, water moves from XS to XP.

Fig. 3.14
Basic Component of Tank Model

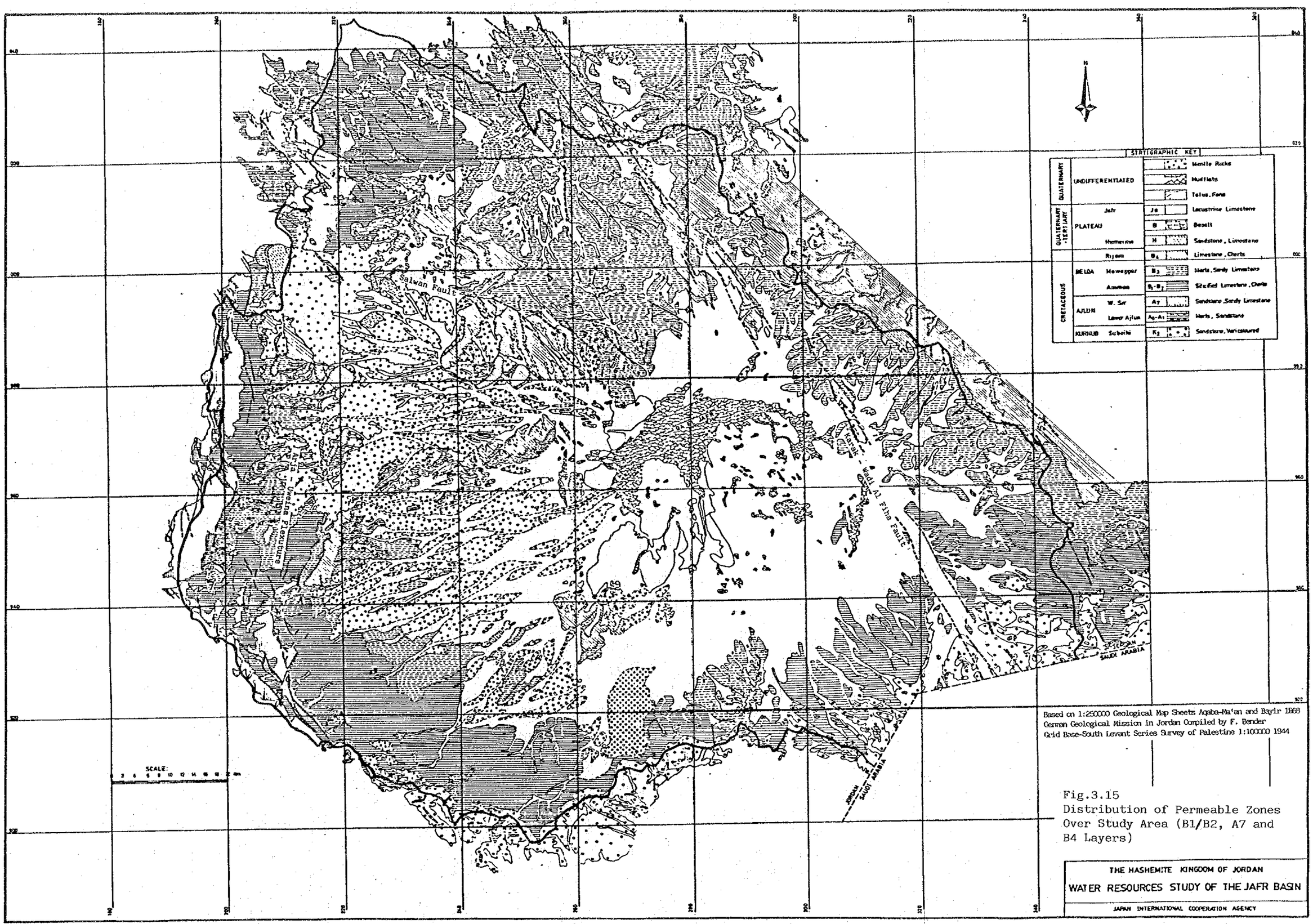


Fig.3.15
Distribution of Permeable Zones Over Study Area (B1/B2, A7 and B4 Layers)

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

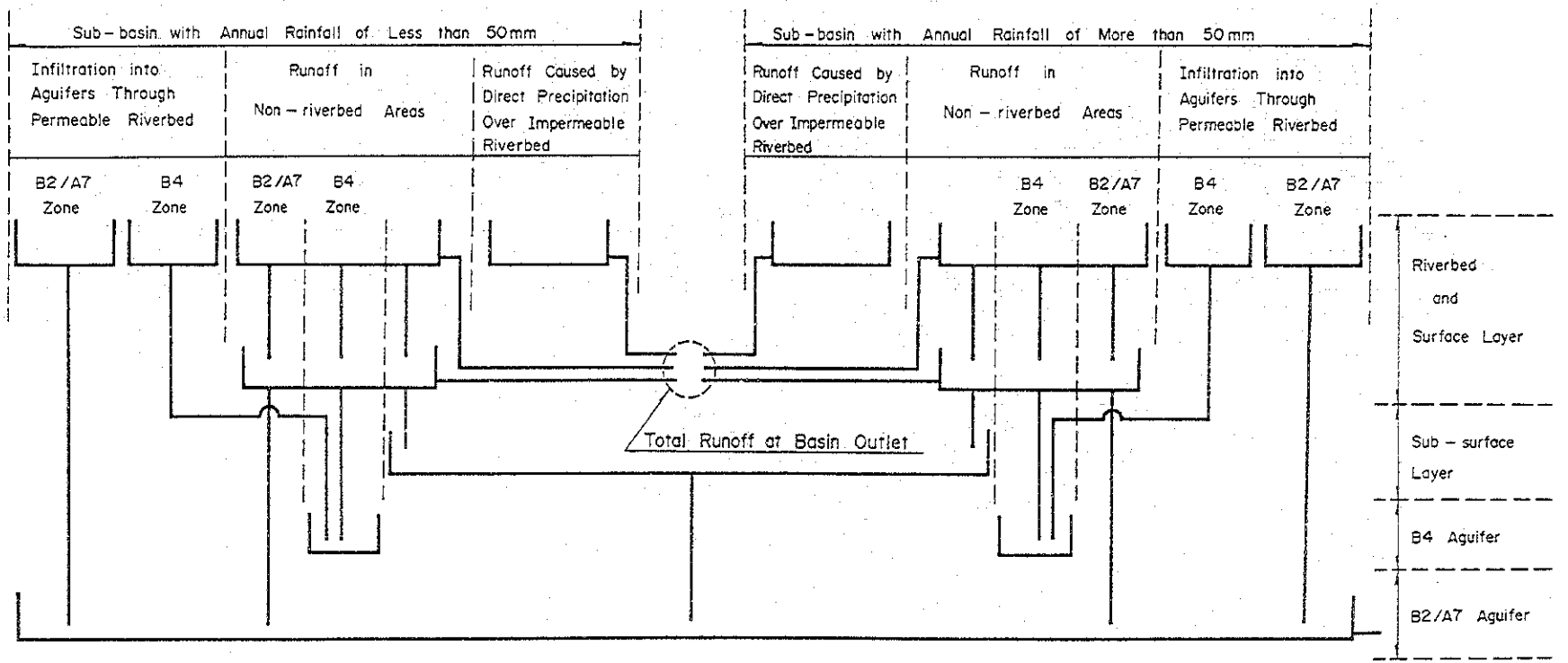


Fig. 3.16 Tank Model of Study Area

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

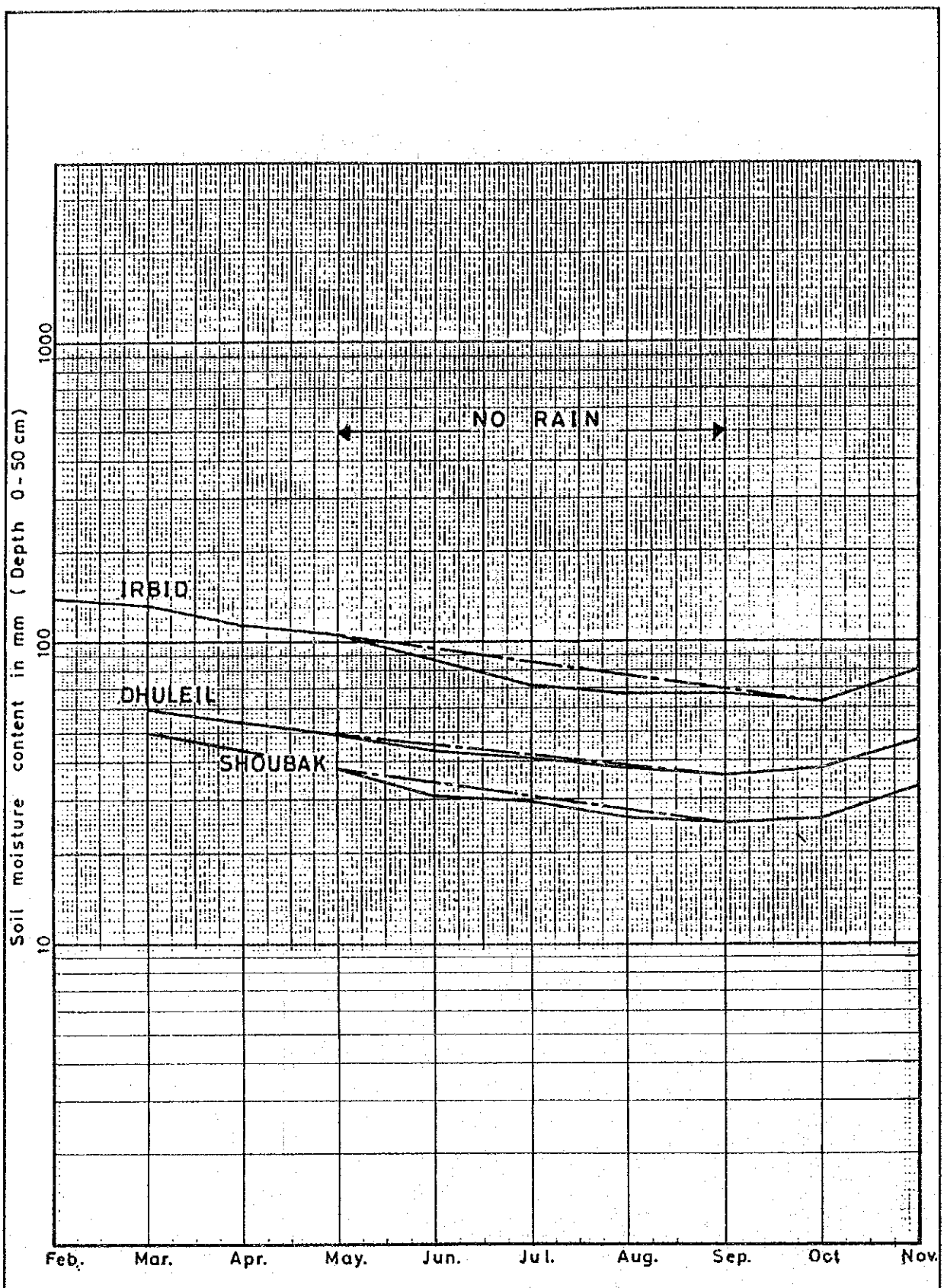


Fig. 3.17 Recorded Soil Moisture Content

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

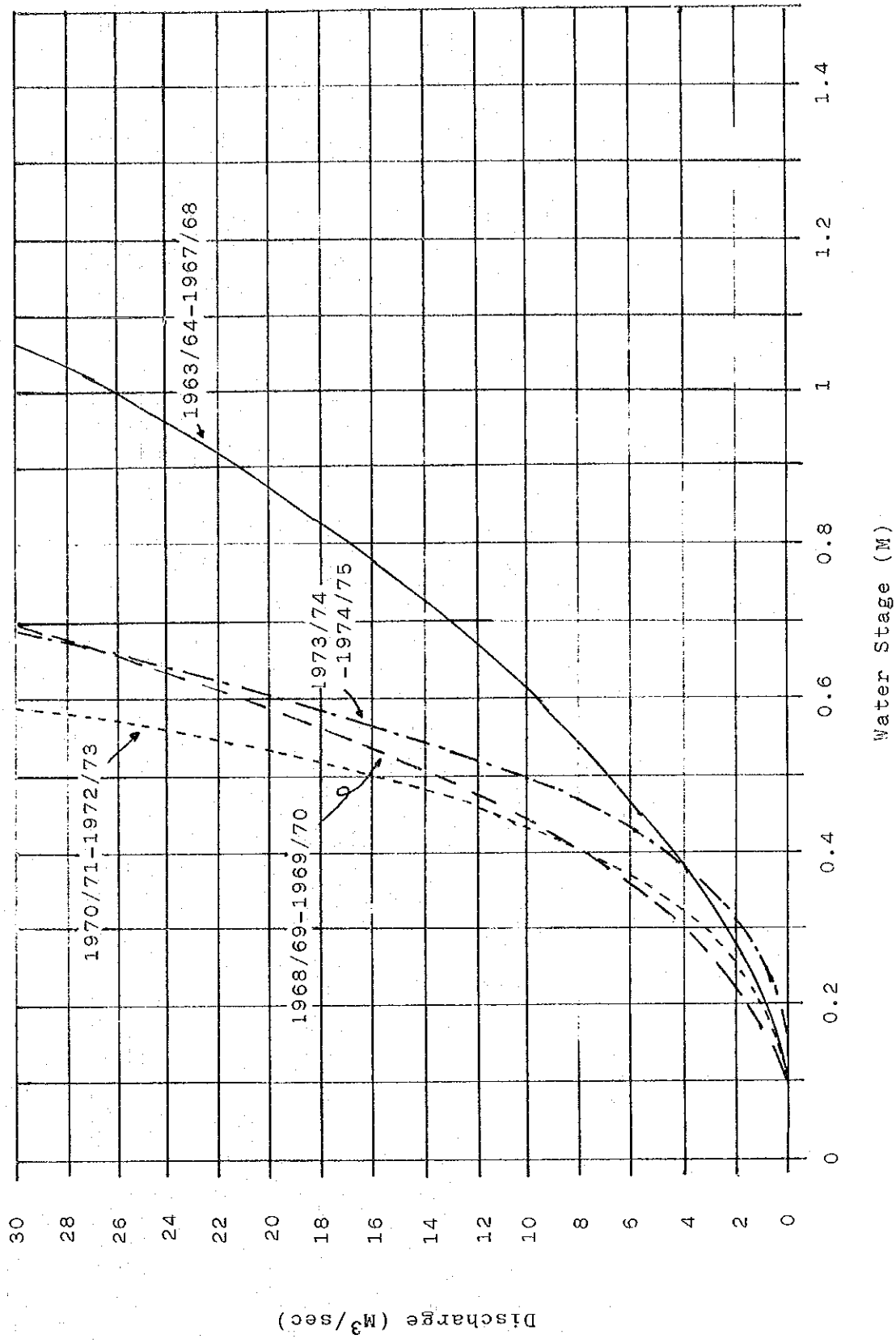
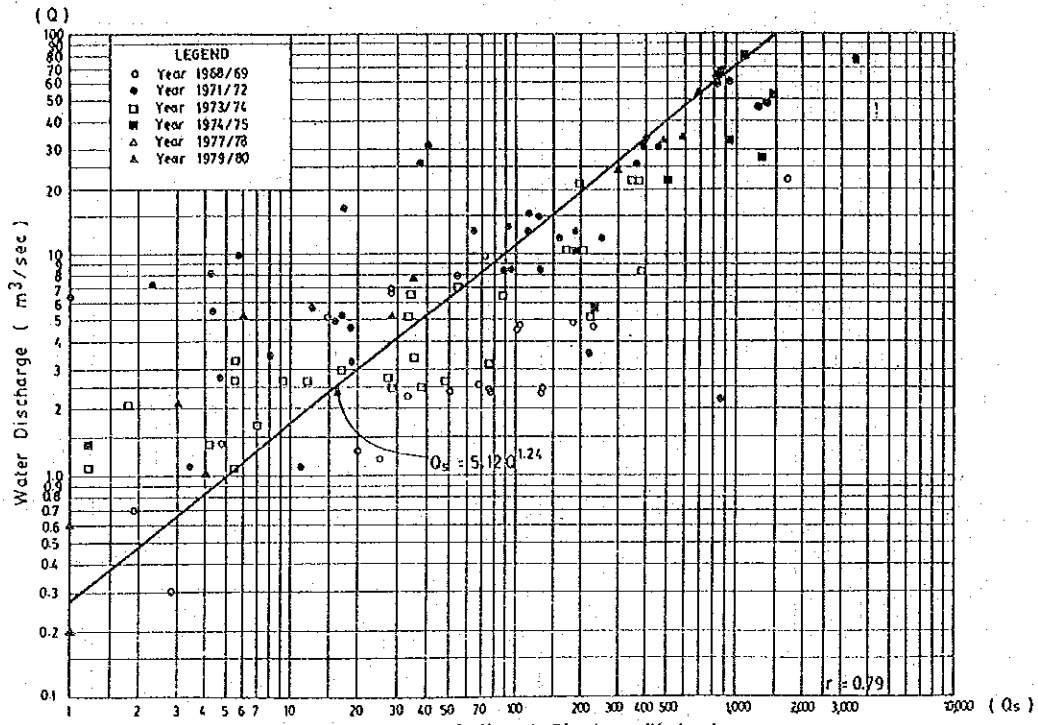


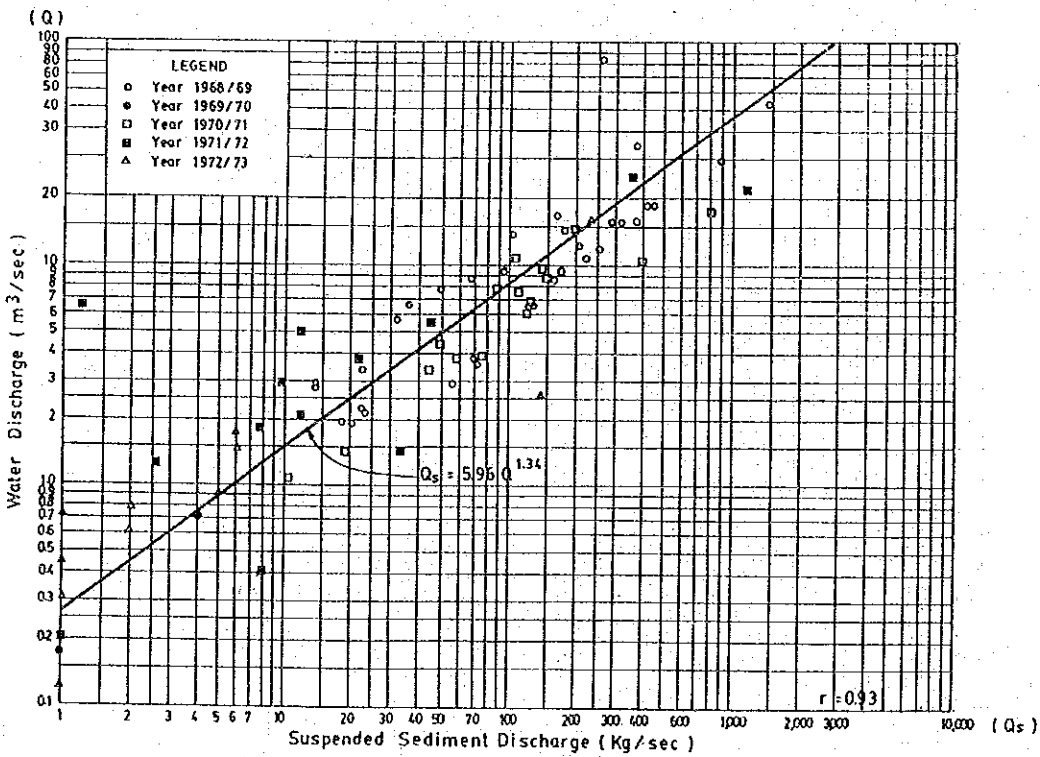
Fig. 3.18
Discharge Rating Curve of
Wadi Jurdhan

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY



Sediment Rating Curve of Hasa River at Tannour

Fig.3.19
Suspended Sediment Rating Curve
of Hasa River



Sediment Rating Curve of Wadi Jurdhan at Desert Road

Fig.3.20
Suspended Sediment Rating Curve
of Wadi Jurdhan

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY

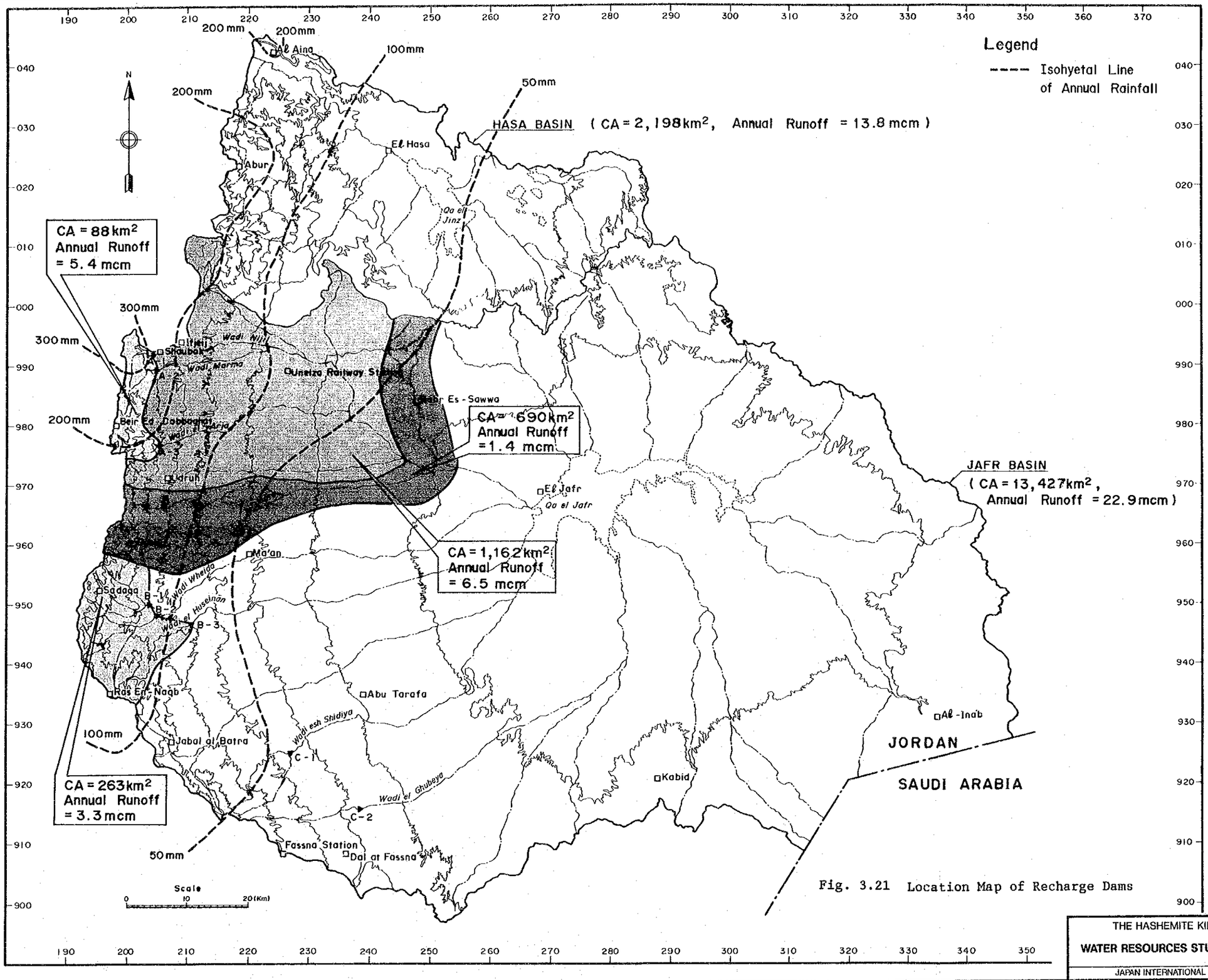


Fig. 3.21 Location Map of Recharge Dams

THE HASHEMITE KINGDOM OF JORDAN
WATER RESOURCES STUDY OF THE JAFR BASIN
JAPAN INTERNATIONAL COOPERATION AGENCY