

トルコ共和国

キョプルチャイ川

ベシュコナック水力発電開発計画

調査報告書

—付 録—

1983年11月

国際協力事業団



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国際協力事業団

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## APPENDIX

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- A-3 GEOLOGICAL DATA
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- A-5 ECONOMIC EVALUATION DATA
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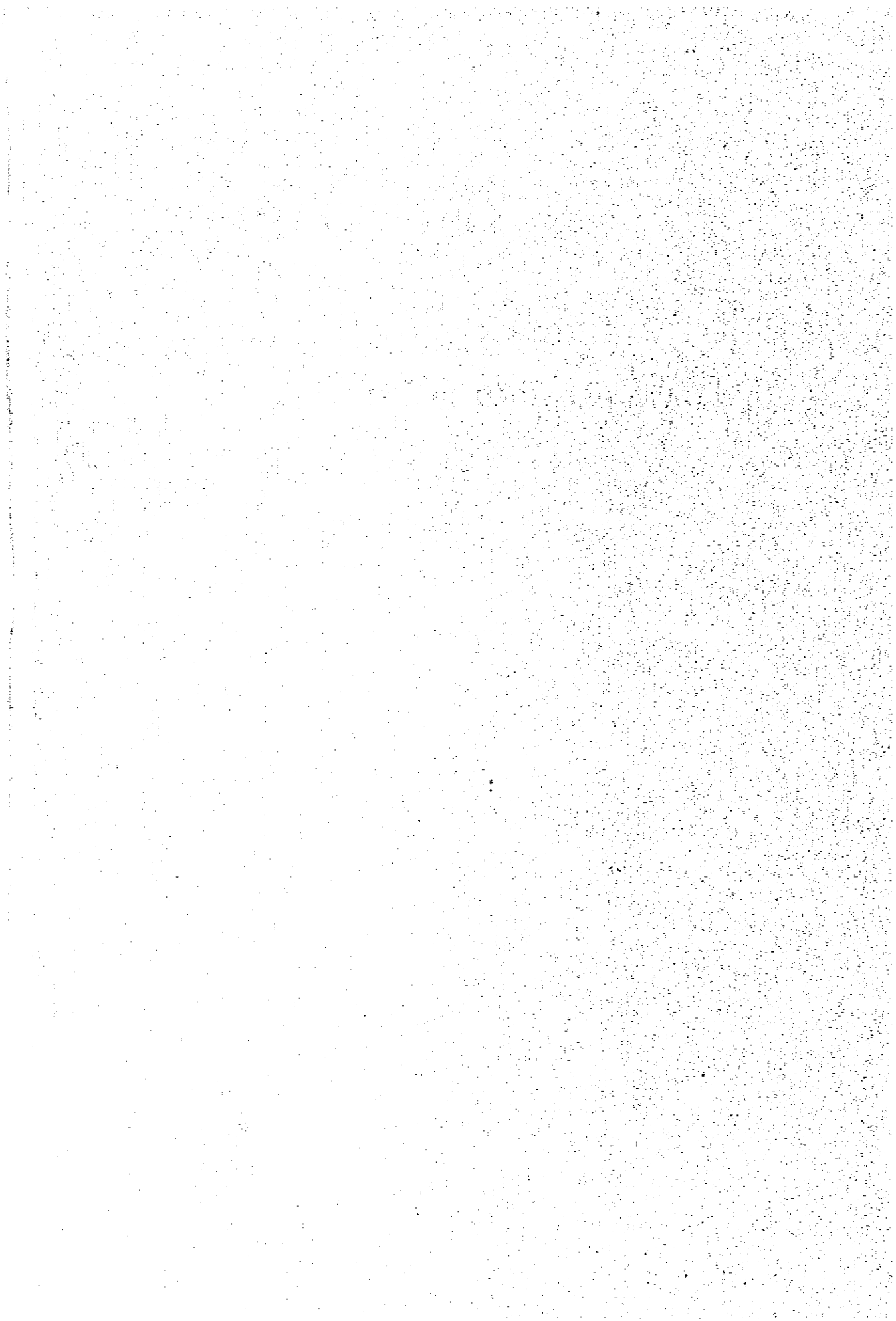
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**A-1**

**DATA PROVIDED BY DSI**





## List of Data Provided by DSI

The obtained fundamental data to study this project are as follows

### 1. Meteorological Data

#### (1) Location Map of Meteorological Stations in ANTALYA Province

#### (2) Precipitation Data

##### a) Daily Precipitation at Gauging Stations

ANTALYA	'29 ~ '80	SÜTCÜLER	'51 ~ '80
SERIK	'57 ~ '80	YENICE	'62 ~ '80
DÖSEMEALTI	'62 ~ '80	KARACAÖREN	'62 ~ '80
KOVADA	'63 ~ '80	ANAMAS	'64 ~ '80
BEŞKONAK	'64 ~ '80	KASIMLAR	'70 ~ '80
DEREBUCAK	'76 ~ '80		

##### b) Hourly Precipitation

ANTALYA '40 ~ '80

#### (3) Temperature Data

##### a) Daily or Monthly Maximum Temperature at Gauging Stations

ANTALYA (Monthly)	'29 ~ '80
SÜTCÜLER (Daily)	'64 ~ '80
SERIK (Daily)	'72 ~ '80

##### b) Daily or Monthly Minimum Temperature at Gauging Stations

ANTALYA (Monthly)	'29 ~ '80
SÜTCÜLER (Daily)	'64 ~ '80
SERIK (Daily)	'72 ~ '80

##### c) Daily Average Temperature at Gauging Stations

ANTALYA	'30 ~ '80	SÜTCÜLER	'64 ~ '80
SERIK	'72 ~ '80		

(4) Humidity Data

a) Daily Maximum Humidity at Gauging Stations

ANTALYA '30 ~ '80      SERIK '72 ~ '80  
SÜTCÜLER '64 ~ '80

b) Daily Minimum Humidity at Gauging Stations

SERIK '72 ~ '80      SÜTCÜLER '64 ~ '80

c) Daily Average Humidity at Gauging Stations

ANTALYA '30 ~ '80      SERIK '72 ~ '80  
DÖŞEMEALTI '76 ~ '80      SÜTCÜLER '64 ~ '80  
KARACAÖREN '62 ~ '80      KOVADA '71 ~ '80

(5) Daily Evaporation Data

ANTALYA '62 ~ '80      KOVADA '71 ~ '80  
DÖŞEMEALTI '76 ~ '80      KARACAÖREN '62 ~ '80  
YENICE '71 ~ '80

(6) Vapor Pressure Data

ANTALYA '29 ~ '80 (Daily Average)  
" '30 ~ '80 (Daily Maximum)

(7) Snowfall Data

BEYŞEHİR SAĞLIK OCAGI '77 ~ '82  
DUMANLI '77 ~ '82  
CARIKSARAYLAR '77 ~ '82

(8) Wind Data

ANTALA '30 ~ '80 (Daily Maximum Wind Speed & Wind Direction)

## 2. Hydrological Data

### (1) Run-off Data

#### a) Daily Flow at Gauging Station

BEŞKONAK '40 ~ '80 ('74 ~ '76 None)

#### b) Monthly Flow at Gauging Stations

BEŞKONAK '40 ~ '80 KISIK '41 ~ '64

BULASAN '63 ~ '70 ZINDAN BOGAZI '61 ~ '80

#### c) Monthly Max. & Min. Flow at Gauging Station

BEŞKONAK '40 ~ '80 (Apr. ~ Nov.)

### (2) Observed Flood Hydrographs at BEŞKONAK Gauging Station ('74 ~ '80)

### (3) Suspended Sediment Concentration and River Flow at BEŞKONAK Gauging Station ('69 ~ '80)

### (4) Location Map of Run-off Gauging Stations in ANTALYA Province

## 3. Geology and Construction Materials

### (1) Maps and Others

a) Geological Map of KÖPRÜÇAY Basin 1/25,000

b) Geological Map of BEŞKONAK Dam Site and Surroundings 1/5,000

c) Geological Map of BEŞKONAK Dam Site 1/1,000

d) Geological Section of BEŞKONAK Dam Site 1/10,000, 1/4,000

e) Logs of Drilling Holes

f) Diagram showing Relationship between Carstification and Water Losses in the Drilling Holes

g) Geological Map of the Grout Curtain Alignment on the Right Bank and its Vicinity

h) Geological Section of the Grout Curtain on the Left Bank

i) Geological Profile of Right Side Tunnels - RT3, RT4 & RT6

j) Geological Profile of Left Side Tunnels - LT1, LT2 & LA5

- k) Geological Map 1/100,000
- l) Record of River Water Level and Underground Water Level
- m) Record of Grout Test in the Drilling Holes

(2) Reports

- a) "Geological Engineering Investigation of Dam Site and Grout Curtain", K. Sümerman, 1973
- b) Eroskay, S.O., (1968), KÖPRÜÇAY-BEŞKONAK Reservuarı Jeolojik İncelemesi, EİE İdaresi, Rap. No. II-06-5,-6 (contents, Summary and Recommendation)
- c) Sümerman, K., (1973), KÖPRÜÇAY-BEŞKONAK Bent Yeri ve Enjeksiyon Perde Güzergahları, Mühendislik Jeolojisi İncelemesi
- d) Technical Report of UNDP/DSI Project on "Regime of Olukköprü and Kocadere Springs of Köprüçay Basin Based on Hydrograph Analysis", by J. Karanjac and A. Altug, 1976
- e) Final Technical Report of UNDP/DSI Project on "Karst Waters of Southern Turkey" by V. Yevjevich, 1981
- f) "Jeoloji Çalışma Raporu" by T. Tarıncı, 1982
- g) "Dalaman, Akköprü, Gökyar, Narlı, Sandarcık ve Beşkonak Baraj Yerleri Deprem Risk Analiz Raporu", 1982
- h) "Explanatory Notes on the Hydrogeology of Olukköprü Springs, Proceedings of First International Symposium on Karst Hydrogeology," by H. Atalay and H. Sipahi, 1979
- i) Test Report of Construction Materials
- j) Earthquake Data in Southern Turkey

#### 4. Topographical Data

- |   |                     |
|---|---------------------|
| (1) Topographical Map of KÖPRÜÇAY Basin                       | 1/100,000           |
| (2) Topographical Map of KÖPRÜÇAY Basin                       | 1/25,000            |
| (3) Topographical Map   | 1/25,000, 1/5,000   |
| (4) Topographical Map of BEŞKONAK Dam Site                    | 1/1,000             |
| (5) Topographical Map of BEŞKONAK Reservoir                   | 1/5,000             |
| (6) Topographical Map Covering Catchment Area of BEŞKONAK Dam | 1/100,000, 1/25,000 |
| (7) Topographical Map of Secondary Dam Site                   | 1/1,000             |
| (8) Topographical Map of KISIK Dam Site                       | 1/1,000             |
| (9) List and Data of Bench-Mark near the Project              |                     |

#### 5. Development Planning Data

- (1) Data about KÖPRÜÇAY Diversion Dam of DSI
- (2) Longitudinal Section of KÖPRÜÇAY River
- (3) Report on the Existing Irrigation Projects and Future Irrigation Projects on KÖPRÜÇAY River
- (4) Summary of Lower KÖPRÜÇAY Irrigation Project

#### 6. Power Demand/Supply and Electrical Data

- (1) List of Hydroelectrical Power Plants in Operation, under Construction, in Program and in Study and its Commissioning Date
- (2) Installed Capacity and the Commissioning Dates of Power Plants
- (3) Regional Distribution of Provinces
- (4) Forecast of Population, GDP, Total Investment, Industrial Output and Industrial Investment
- (5) Electric Power Supply
- (6) Thermal Power Plants under Construction
- (7) Generation Cost of Power Plants
- (8) Fuel Characteristics and Fuel Cost of Thermal Power Plant

- (9) Turkish Electricity Authority, Electricity Supply Tariff
- (10) Official Gazette Date: August 13, 1981 No. 17427
- (11) (1) Population Growth-Rate and Population in Last 5 Years and  
in Future in Turkey
- (2) Economic Growth-Rate and Per Capita GNP
- (12) The Most Highest Unit Prices that may be Offered  
(Appendix to List 1981)
- (13) TÜRKİYE ELECTIRIK ENERJISI İSTATISKLERİ 1981 : 6
- (14) TEK - Annual Report '79
- (15) TEK - Annual Report '80
- (16) Electric Power Situation
- (17) Demand Forecast, Demand and Supply Balance (TEK)
- (18) Construction Schedule of Power Stations in Turkey

7. Power System & Transmission Data

- (1) List of Hydraulic Power Plants in Operating and Planning - DSI -
- (2) Power Plant List in Operating and Planning - TEK -
- (3) Installed Capacity of Power Station in Turkey (1960-1981) - TEK -
- (4) Ratings of Power Stations and Substations in Operating  
and Planning - TEK -
- (5) Load Forecast for the Substations (1981-2000) - TEK -
- (6) Peak Load of Interconnected System (1975-1981) - TEK -
- (7) Power Flow Diagram (Peak Time in 1990) - TEK -
- (8) Ratings of Transmission Lines in Operating and Planning - TEK -
- (9) Impedance List of the Network, 380 kV and 154 kV - TEK -
- (10) 380 kV Transmission System in Operating and Planning - TEK -
- (11) Transmission Lines According to Years Based on their  
Voltages (1970-1981) - TEK -
- (12) Transmission Lines According to the Companies - TEK -

- (13) Power Load Capacity of Conductors - TEK -
- (14) Short-circuit Capacity According to Year (1983-1996) - TEK -
- (15) Construction Cost of Transmission Lines, 380 kV and 154 kV - TEK -
- (16) Kepez Annual Energy Report (1980) - KEPEZ -

#### 8. Cost Estimation Data

- (1) DSI Construction Cost General Index
- (2) DSI Unit Price Table for Civil Works and Hydraulic Works
- (3) Construction Cost of Relocation Road
- (4) Report on Compensation Cost Estimation of BEŞKONAK & KISIK Reservoir
- (5) Notes on Calculation of Transportation Cost
- (6) Construction Cost of Transmission Lines, 154 kV and 380 kV

#### 9. Economic Evaluation

- (1) Value for the Scale of the Alternative Oil-fired Thermal Power Plant
- (2) Values for the Scale of the Alternative Gas Turbine
- (3) Fuel Cost in Mar. of 1982
- (4) The Tariff of Electric Selling Prices in Dec. of 1981 (TEK)
- (5) Turkish Electricity Association Sold Energy and Income in 1982 (TEK)

#### 10. General Information Data

- (1) Statistical Yearbook of Turkey, 1981
- (2) Report on the Regional Activities of Project Area  
(geographical features, natural conditions, social and economic activities)
- (3) Water and Land Resources Potential and Investments by DSI 13th

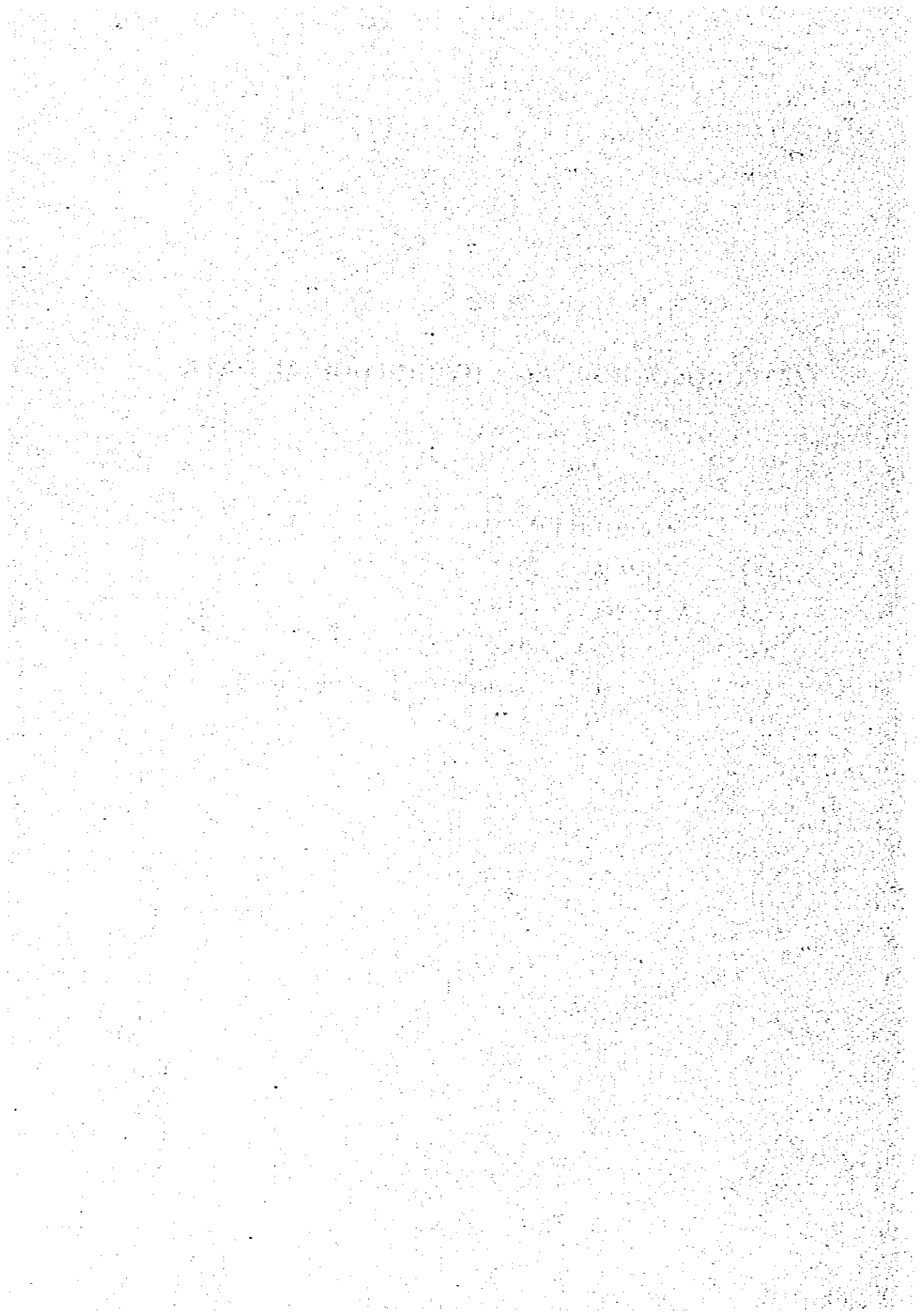
11. Others

- (1) "OYMAPINAR Dam and Reservoir Feasibility Study," ENERGO CO., 1967
- (2) "OYMAPINAR Dam and Hydroelectric Project, Second Phase Final Report," Coyne & Bellier, 1969
- (3) Feasibility Report of Yamula and Bayrambacili Project



**METEOROLOGICAL AND HYDROLOGICAL DATA**

- 2-1 Run-off Data
- 2-2 Precipitation Data
- 2-3 Temperature Data
- 2-4 Evaporation Data
- 2-5 Suspended Sediment and Run-off Data
- 2-6 Historical Floods Record at Beskonak G.S.



## 2-1-1 Monthly Flow at Beskonak Gauging Station

Year	Unit: 10 <sup>6</sup> m <sup>3</sup>												Total
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	
1951	139.03	171.09	476.36	403.64	391.71	394.27	309.77	249.76	179.13	169.32	176.66	115.23	3,455.77
1952	151.23	138.41	191.59	319.65	486.70	498.44	385.50	297.60	191.32	145.93	224.16	112.72	3,256.66
1953	137.53	240.83	296.32	492.30	252.72	232.60	319.46	289.58	186.96	139.52	116.99	104.52	2,824.73
1954	124.00	177.62	236.64	381.95	511.07	526.27	492.00	324.35	326.80	170.95	132.45	117.23	3,421.98
1955	120.93	209.23	311.51	459.39	334.01	292.16	350.31	342.27	211.42	156.33	129.19	112.01	3,028.67
1956	151.00	130.22	368.75	328.81	335.94	376.46	412.63	368.51	279.65	202.43	162.74	112.59	3,512.78
1957	127.03	101.97	468.89	396.49	504.30	291.54	230.15	212.11	145.33	112.49	83.14	76.24	2,267.53
1958	75.00	115.23	445.32	501.59	471.77	247.47	267.07	257.43	181.96	154.49	91.75	75.00	2,950.49
1959	70.60	64.00	103.72	141.00	155.49	428.71	337.20	295.65	154.84	115.45	83.41	70.78	2,028.85
1960	66.83	79.32	135.30	190.44	111.84	147.54	254.91	261.52	248.88	91.98	71.17	62.70	1,645.72
1961	62.33	58.47	92.85	378.63	182.97	385.01	365.43	345.95	263.88	213.17	178.23	162.24	2,690.11
1962	190.39	316.18	147.80	281.97	392.08	320.35	284.16	260.97	185.98	132.42	108.91	84.97	2,506.34
1963	85.62	310.55	1,137.61	891.86	452.57	450.90	350.00	337.39	249.07	176.63	127.32	106.94	4,676.56
1964	103.34	92.77	92.31	222.93	310.95	334.95	288.73	280.50	202.64	115.60	91.32	78.10	2,213.67
1965	88.93	161.04	381.97	510.52	328.52	265.16	248.31	189.92	137.57	105.81	88.48	80.76	2,556.99
1966	85.03	120.48	129.32	199.09	397.33	371.48	275.82	232.60	133.20	108.04	84.28	77.15	2,243.99
1967	71.17	102.16	132.74	159.18	159.66	303.32	179.06	197.04	139.91	91.99	75.44	69.92	1,683.52
1968	73.34	85.53	192.11	814.58	296.04	446.99	354.72	257.01	189.64	135.66	93.09	69.92	3,018.54
1969	71.68	69.92	327.21	662.26	265.34	172.86	189.97	173.15	135.70	102.57	78.80	82.63	2,921.02
1970	85.26	98.82	191.41	463.67	199.63	303.78	277.62	212.91	138.58	103.41	89.22	62.61	2,250.72
1961	85.40	80.60	258.00	267.00	483.00	207.00	342.00	186.00	117.00	95.60	83.70	83.16	2,282.30
1962	83.20	77.80	126.00	185.00	455.00	384.00	277.00	217.00	119.00	117.00	99.00	77.00	2,317.70
1963	102.00	93.00	474.00	506.00	458.00	318.00	282.00	297.00	218.00	145.00	114.00	92.79	3,132.30
1964	99.40	90.50	211.00	118.00	219.00	277.00	170.00	145.00	134.00	103.00	86.40	95.30	2,333.10
1965	79.60	81.30	178.00	297.00	539.00	438.00	447.00	406.00	217.00	133.00	109.00	78.80	3,024.60
1966	98.40	95.40	516.00	1,019.00	602.00	386.00	405.00	292.00	197.00	149.00	124.00	97.70	3,788.80
1967	92.50	85.00	371.00	343.00	230.00	277.00	423.00	330.00	180.00	140.00	119.00	105.00	2,621.50
1968	112.00	218.00	341.00	566.00	324.00	535.00	303.00	249.00	164.00	129.00	114.00	106.00	3,199.00
1969	112.00	165.00	383.00	558.00	305.00	372.00	373.00	352.00	206.00	151.00	126.00	124.00	3,229.00
1970	102.00	98.90	476.00	544.00	333.00	457.00	296.00	252.00	183.00	145.00	119.00	110.00	3,318.90
1971	116.82	136.91	191.45	196.09	305.10	332.29	276.26	238.25	165.78	117.84	100.47	107.00	2,247.84
1972	82.85	127.89	301.75	151.65	215.52	229.25	194.87	185.05	145.26	121.21	102.56	90.37	1,950.93
1973	128.03	114.16	97.04	120.43	288.74	338.79	235.75	202.47	142.37	108.56	93.06	92.18	1,919.00
1974	90.01	82.73	183.52	100.71	257.55	329.06	196.83	177.93	123.68	93.38	83.18	88.70	1,738.43
1975	93.65	102.95	353.43	436.81	322.63	331.74	349.79	374.63	222.27	142.51	113.83	93.95	2,956.01
1976	111.35	249.72	251.85	304.15	231.21	192.21	353.72	242.35	143.29	121.41	102.62	93.21	2,437.01
1977	144.06	120.87	485.75	276.11	209.18	241.31	308.76	234.69	140.24	108.40	95.64	94.06	2,419.67
1978	91.45	91.79	137.34	562.47	684.53	379.71	352.69	308.17	193.61	135.45	112.04	107.36	3,158.03
1979	134.91	175.83	343.56	683.11	414.70	256.47	225.04	245.38	221.10	140.02	108.43	95.43	3,655.74
1980	120.73	204.10	300.64	448.84	244.34	296.85	333.68	255.97	157.17	117.38	98.93	89.22	2,665.09
Ave.	104.32	129.91	306.52	406.42	345.65	332.97	326.85	264.28	181.33	131.22	106.25	94.30	2,709.93

## 2-1-2 Monthly Flow at Kisk Gauging Station

Year	Cfs: 10 <sup>6</sup>												Total
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	
1941	150.42	189.73	244.65	319.26	451.05	611.62	359.17	281.12	199.56	167.90	135.13	121.49	3,999.10
1942	165.31	174.23	214.86	414.53	573.91	576.45	431.55	343.80	218.06	158.40	132.31	118.48	3,762.63
1943	142.52	274.91	332.41	558.97	729.09	264.73	497.42	331.00	209.15	151.41	123.53	108.48	3,216.42
1944	132.33	136.42	249.74	450.32	643.56	622.54	471.67	376.69	380.19	189.39	148.43	124.08	3,944.93
1945	128.32	236.29	360.47	549.88	388.28	332.10	408.60	395.75	238.98	178.50	138.42	117.60	3,458.89
1946	164.93	139.81	471.90	381.78	463.74	438.93	484.78	454.63	322.24	227.66	179.29	126.39	4,055.14
1947	139.74	105.39	577.06	454.73	595.90	336.30	241.90	239.56	158.32	117.93	82.25	71.57	3,146.62
1948	69.95	194.76	522.59	592.54	554.92	282.73	302.05	295.63	203.06	169.19	92.43	72.45	3,337.10
1949	66.95	59.05	107.32	152.80	170.55	502.59	346.49	345.69	182.14	121.73	82.55	67.34	2,245.64
1950	82.45	77.65	145.92	213.28	117.26	185.18	292.12	299.21	162.73	95.74	67.76	57.44	1,718.26
1951	56.86	33.55	94.04	442.53	293.94	450.32	427.14	402.75	302.82	240.47	189.17	178.93	3,031.92
1952	213.07	122.78	161.11	324.70	658.50	371.57	327.86	299.12	207.96	141.93	113.72	84.45	2,826.97
1953	85.25	360.08	1,367.59	1,068.36	532.93	459.71	408.21	392.28	285.02	196.38	136.12	111.45	5,413.81
1954	106.95	93.08	92.94	232.78	369.17	289.32	333.46	322.91	228.28	121.84	93.45	76.26	2,371.42
1955	89.35	172.53	445.42	403.34	381.58	304.21	284.03	212.48	148.81	109.92	88.74	79.47	2,926.08
1956	145.51	254.90	263.33	429.25	939.18	470.45	594.97	497.91	338.26	240.11	178.01	139.81	4,675.54
1957	67.46	105.57	142.71	174.92	175.43	356.79	189.56	221.16	151.71	95.54	72.85	68.46	1,826.54
1958	70.36	79.59	215.37	974.14	341.95	515.88	414.02	294.33	212.47	146.52	90.74	81.25	3,446.92
1959	71.97	65.47	379.83	768.44	304.45	197.77	214.97	191.99	165.73	156.49	76.95	57.34	2,660.49
1960	95.45	93.36	311.82	593.75	266.42	345.50	306.74	231.47	168.53	110.54	89.45	82.17	2,474.41
1961	79.25	79.47	241.33	329.74	613.83	216.36	245.79	184.87	123.49	59.35	60.54	35.06	2,386.15
1962	72.57	78.07	155.70	254.25	568.00	411.41	296.94	226.35	145.60	109.84	89.86	86.65	2,530.67
1963	95.45	85.67	653.95	659.33	457.38	349.18	300.44	329.70	214.45	136.63	101.24	83.67	3,628.33
1964	129.73	111.45	258.44	1,163.13	267.12	313.72	214.36	300.00	-	-	-	-	-
Ave.	531.21	429.73	358.68	319.95	310.73	214.58	150.53	112.81	55.05	107.48	139.81	109.44	3,199.42

2-2-1 Monthly Total Precipitation at Yenice Meteorological Station

Unit: mm

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1963	154.9	169.1	77.7	78.4	164.9	48.3	44.5	0	0.2	45.7	39.1	59.1	851.9
1964	8.3	135.9	104.6	12.3	71.8	78.3	17.8	0	20.0	7.9	95.7	161.7	708.3
1965	125.1	257.6	101.2	122.6	98.1	45.6	3.8	10.8	0	19.7	65.6	333.3	1,164.4
1966	631.9	45.8	144.0	133.7	37.6	31.6	18.7	10.3	61.9	7.7	58.1	267.3	1,717.6
1967	99.8	50.8	69.1	135.5	68.1	7.6	14.4	0	43.5	69.8	95.1	206.9	852.6
1968	167.9	131.1	111.5	10.8	38.1	8.9	0	27.4	71.2	47.7	136.4	162.0	956.0
1969	205.7	123.9	68.4	165.4	69.0	13.5	1.9	0	4.1	24.3	55.6	252.1	953.9
1970	174.1	173.9	47.1	73.9	36.1	23.7	5.7	0	11.0	93.3	53.6	88.5	818.7
1971	43.5	106.1	91.1	65.5	73.4	69.8	15.9	34.1	19.6	12.4	123.9	223.5	852.8
1972	17.8	111.6	39.9	96.3	67.7	66.0	7.8	20.7	10.0	106.6	22.3	13.1	559.6
1973	117.5	137.8	98.1	60.6	61.1	22.5	9.5	7.7	27.8	54.9	27.4	73.3	693.2
1974	61.4	221.1	62.5	62.0	72.8	0.7	0	18.9	32.8	52.6	53.4	144.2	745.6
1975	250.2	66.8	130.5	115.5	131.9	54.9	0.8	41.5	0.7	65.6	76.4	116.4	1,051.4
1976	131.5	48.8	39.8	145.9	83.3	31.7	2.9	0	8.7	91.2	35.7	170.5	731.1
1977	51.9	52.2	67.1	144.7	15.8	32.0	9.7	0	34.9	49.3	23.7	90.5	582.3
1978	170.5	233.1	160.2	67.4	24.6	19.7	0	0	45.2	170.0	36.4	136.1	1,059.2
1979	773.2	64.9	29.5	64.4	119.6	64.0	4.2	4.2	2.3	100.8	169.4	93.4	918.9
1980	159.6	46.0	78.2	81.4	47.7	30.6	0	0	3.2	53.8	71.8	129.0	693.3
Av.	143.4	120.2	88.5	68.6	69.9	33.7	8.5	9.5	21.7	58.7	47.6	150.7	661.2

2-2-2 Monthly Total Precipitation at Anamas (Aksu) Meteorological Station

Unit: mm

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1964	5.0	127.3	106.9	14.4	83.2	72.7	23.3	0	18.8	2.0	90.3	141.1	643.9
1965	99.7	240.9	101.3	122.0	197.7	52.4	2.7	11.4	0	21.3	70.9	233.3	1,118.6
1966	379.6	48.8	142.4	129.1	38.9	33.5	30.5	10.1	42.1	12.7	56.4	227.2	1,151.6
1967	84.5	48.8	65.7	131.8	56.7	4.3	15.2	0	45.5	60.4	79.7	187.8	779.9
1968	158.6	97.1	127.9	11.0	40.4	19.0	0	29.3	51.0	45.7	128.3	147.1	879.4
1969	160.8	89.2	80.9	130.3	50.3	10.7	3.7	0.4	7.5	43.6	59.8	760.4	910.8
1970	168.9	204.4	91.3	95.2	32.9	15.7	4.0	0	30.3	87.1	53.4	81.6	850.0
1971	49.8	99.8	98.6	74.0	69.9	22.6	21.2	33.3	26.2	11.7	115.7	227.2	819.0
1972	13.3	119.1	33.9	65.3	47.8	80.0	21.2	21.5	6.7	114.7	24.1	19.3	554.9
1973	91.8	129.3	92.0	53.8	64.6	39.3	7.9	1.0	6.0	82.1	30.4	80.1	849.3
1974	37.8	204.7	58.1	35.3	84.4	7.7	0.2	17.7	33.8	47.6	53.0	134.6	693.1
1975	229.3	69.8	121.1	124.6	130.7	32.8	1.3	69.6	1.3	67.4	77.3	108.3	1,003.7
1976	137.5	47.5	35.0	112.0	84.5	37.2	4.6	0.7	11.8	93.8	33.5	183.5	851.6
1977	49.8	62.1	69.3	119.6	4.8	29.9	7.5	0	45.4	59.5	33.1	99.4	606.4
1978	157.6	250.6	152.1	71.3	23.8	12.1	0	0	74.1	169.7	40.6	144.4	1,099.4
1979	255.7	78.3	34.0	81.9	127.3	47.8	4.6	9.7	1.1	116.7	162.5	86.3	1,003.9
1980	176.8	68.4	92.7	38.4	54.9	29.9	0	0	3.4	63.7	76.8	154.5	800.0
Av.	114.5	114.6	86.4	90.2	83.3	31.3	8.8	11.7	22.2	63.5	69.6	131.3	832.1

2-2-3 Monthly Total Precipitation at Kasimlar Meteorological Station

Year	Cm (in)												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
1970	227.3	323.1	106.8	32.7	63.7	65.5	8.0	0	33.9	83.8	79.4	134.3	1,338.6
1971	134.2	229.2	133.1	92.5	62.8	65.9	17.9	88.5	20.0	30.3	172.8	265.9	1,290.1
1972	60.3	144.3	53.8	35.0	57.0	53.1	22.5	32.7	62.1	111.9	28.6	70.7	765.0
1973	177.9	272.7	97.2	53.7	15.9	36.3	3.8	35.2	9.7	84.0	14.7	97.1	872.7
1974	47.2	331.5	99.2	37.5	57.7	20.3	0.7	9.8	17.3	26.4	48.4	264.2	955.2
1975	433.8	168.8	70.0	170.0	117.3	45.5	33.6	48.8	0.4	63.2	116.3	137.3	1,295.0
1976	257.1	81.3	44.0	104.0	88.0	36.3	42.3	0.7	18.4	148.4	75.4	174.8	1,071.9
1977	93.8	57.1	81.6	135.1	15.5	42.2	7.7	0	37.4	78.1	31.3	225.7	845.7
1978	315.0	318.9	234.6	61.9	31.5	24.1	2.6	4.5	78.8	140.9	90.1	220.7	1,523.0
1979	434.7	112.5	52.7	56.1	141.4	63.9	50.2	33.8	17.0	175.5	182.3	187.0	1,473.1
1980	326.9	67.1	119.1	82.6	54.1	29.2	2.1	8.2	1.9	67.6	96.2	287.5	1,178.5
Ave.	228.0	155.6	58.5	77.4	61.4	43.5	17.3	22.6	27.0	97.4	82.0	179.1	1,328.4

2-2-4 Monthly Total Precipitation at Beskonak Meteorological Station

Year	Cm (in)												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
1964	-	-	63.5	2.0	65.5	72.0	0	5.0	59.5	0	85.0	205.5	
1965	353.5	568.5	177.0	136.6	134.0	39.2	0	2.8	0	72.8	59.0	577.5	2,180.9
1966	813.3	97.5	119.8	35.0	54.4	0	0	10.0	66.7	3.5	100.4	431.7	1,764.8
1967	211.8	138.1	166.9	300.5	39.8	5.2	6.2	0	47.3	31.6	264.2	364.7	1,596.1
1968	497.0	218.0	161.1	62.7	4.1	2.6	0	112.4	133.9	125.6	253.1	420.5	1,878.0
1969	368.9	259.5	148.8	154.0	68.7	21.2	0.2	11.4	15.0	31.9	43.1	517.2	1,609.9
1970	264.8	626.0	128.7	78.6	92.7	19.0	9.2	0.4	22.4	133.3	151.7	275.6	1,750.4
1971	129.5	304.2	126.6	85.5	39.4	7.3	0	10.0	33.9	34.0	248.9	114.9	1,114.7
1972	146.9	139.3	99.7	48.0	129.1	103.9	10.0	18.7	80.4	171.7	55.5	35.9	1,437.1
1973	272.6	204.8	26.5	107.0	4.7	83.1	10.7	11.1	0	63.1	56.9	127.7	964.7
1974	82.4	210.5	107.9	25.2	71.4	0.3	0	18.4	49.5	101.9	100.9	359.0	1,195.4
1975	699.9	221.6	26.6	85.8	113.6	54.3	0	3.5	0	124.7	296.6	312.0	1,769.4
1976	301.9	138.1	49.0	191.9	118.7	13.5	7.2	22.9	51.8	238.8	135.9	279.6	1,543.3
1977	177.4	58.6	107.5	241.8	10.7	17.5	0	0	65.0	26.4	131.9	363.2	1,200.0
1978	433.6	560.1	145.0	100.1	4.2	0	0	0	101.4	215.3	263.1	373.2	2,318.0
1979	357.7	192.3	85.3	70.8	44.3	47.7	5.8	0	0	110.8	181.7	295.8	1,427.7
1980	345.5	214.1	234.2	70.4	63.2	11.9	0	7.1	1.5	49.0	242.0	311.9	1,563.8
Ave.	321.4	239.3	171.4	107.8	61.3	26.7	2.7	14.0	45.1	101.3	160.0	322.8	1,545.5

2-2-5 Monthly Total Precipitation at Antalya Meteorological Station (1)

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1929				28.7	69.4	33.7	0	0	65.6	243.1	17.7	245.3	
1930	289.2	256.3	63.0	44.9	103.8	32.2	0	1.5	65.3	107.2	83.6	276.4	1,316.6
1931	429.2	553.3	62.6	47.8	24.3	5.0	0	5.1	8.0	11.7	27.0	279.3	1,453.5
1932	322.5	29.1	37.3	13.4	11.4	0	0	0	0	51.4	231.2	0.4	729.5
1933	229.7	151.1	20.2	34.8	3.9	78.6	0.2	0	3.5	0	135.0	174.3	830.3
1934	129.3	31.3	24.2	1.2	25.4	14.4	0	0	15.6	24.9	32.9	468.9	770.3
1935	247.6	292.0	67.7	30.1	0	0	0	0	4.6	42.9	408.3	102.0	1,235.4
1936	610.8	288.2	85.0	41.3	193.9	60.8	0	0	98.8	14.4	31.6	225.1	1,650.9
1937	219.3	131.3	12.2	53.1	21.2	0	0	0	0.1	69.1	250.6	89.2	845.3
1938	263.6	175.6	34.8	79.8	2.5	0	0	7.8	7.8	23.5	250.6	263.9	1,132.0
1939	281.7	119.7	137.5	1.5	3.1	44.5	0.4	0.2	2.4	24.3	56.8	469.1	1,675.2
1940	243.2	138.6	111.2	56.4	29.8	8.1	0.7	5.7	0	51.2	93.2	218.7	1,016.8
1941	170.1	107.3	118.7	35.3	0.2	4.9	0	0	0	13.8	53.3	82.5	586.1
1942	261.0	211.4	83.5	13.2	5.5	1.3	18.5	2.4	52.2	127.3	269.6	72.4	1,151.3
1943	179.6	64.4	66.4	182.2	31.0	6.7	0	0	4.8	186.0	70.2	218.4	1,009.9
1944	293.3	122.9	61.9	56.9	20.7	0	3.8	5.8	0	126.4	82.4	617.7	1,393.8
1945	411.4	184.1	28.0	12.5	0	0	4.0	0	0.3	14.2	194.1	356.8	1,235.3
1946	90.5	236.3	183.6	10.0	90.9	0	0	0	0	43.3	45.7	536.9	1,236.3
1947	191.1	125.1	20.0	2.8	12.4	4.4	0	0	0	31.4	74.9	322.3	784.8
1948	183.4	178.8	23.9	58.2	26.3	13.4	0	0	13.3	30.3	30.5	99.4	657.5
1949	137.2	57.5	175.2	29.1	0	1.0	0.4	0	0.2	1.8	9.4	522.8	1,025.6
1950	21.2	58.3	129.8	21.2	72.4	5.1	0	0.3	7.4	58.6	116.2	210.1	792.4
1951	413.1	115.7	216.3	2.4	16.3	7.9	0	1.3	6.7	125.3	99.4	117.8	1,116.6
1952	311.0	28.2	245.5	22.7	9.1	1.3	2.5	49.4	0	15.9	232.8	634.7	1,614.3
1953	416.7	52.9	54.0	67.9	15.1	15.8	0	0	0	7.4	84.9	270.9	585.6
1954	123.6	229.0	69.7	58.7	17.4	2.4	0	0	0.1	291.4	144.3	375.3	1,213.1
1955	147.2	122.8	45.0	96.8	2.4	0.4	32.3	10.2	1.9	21.6	45.1	120.9	647.6
1956	107.1	244.3	64.3	26.3	10.2	0.6	0	0	0.6	22.8	12.2	511.2	999.8
1957	25.3	37.1	124.0	49.7	76.3	3.8	1.8	0	29.5	43.7	84.9	67.5	560.8
1958	357.7	117.7	43.4	32.0	12.4	4.2	0.4	0	24.1	143.3	36.3	367.2	1,134.1
1959	334.1	0	1.8	32.1	0.8	9.5	1.7	1.0	5.1	48.9	118.1	233.2	813.3
1960	358.3	39.0	133.1	34.3	44.3	18.6	2.2	0	27.9	7.3	131.3	524.6	1,321.3
1961	204.4	169.6	21.7	131.7	1.4	34.2	0	0	13.2	14.4	37.2	319.4	915.8
1962	228.2	235.0	106.4	47.9	76.1	0	0.9	0	62.6	69.3	10.7	278.1	1,640.2
1963	148.7	300.0	91.8	25.2	78.9	3.4	1.8	0	0	4.4	86.8	185.1	537.9
1964	65.3	218.0	108.8	0.3	31.5	13.7	0	0	25.4	0	45.4	73.3	533.3
1965	301.7	264.7	234.7	65.3	80.3	2.1	0	1.4	0.1	37.2	21.5	366.3	1,375.3
1966	325.0	64.8	114.4	61.4	3.4	2.4	0	0.2	11.5	1.2	79.0	395.4	1,263.1
1967	139.8	102.1	103.5	107.7	34.1	5.6	2.2	0.3	13.6	330.7	189.4	176.1	1,204.1
1968	164.4	20.8	87.4	44.3	2.5	2.8	0	24.1	40.7	119.3	410.4	344.3	1,322.4
1969	137.8	148.4	223.2	32.3	31.2	3.8	0	0	6.2	30.7	55.7	585.0	1,914.3
1970	316.3	264.8	82.4	20.3	39.9	1.1	0	0.3	7.3	57.2	60.5	147.8	992.5
1971	117.5	394.8	61.7	39.3	16.3	3.8	41.9	0.3	0.9	9.1	146.2	206.0	1,068.0

2-2-5 Monthly Total Precipitation at Antalya Meteorological Station (2)

Year	Total mm												Total
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
1972	719.9	138.9	64.4	31.4	41.7	9.6	0	0	13.5	83.5	9.2	27.5	630.4
1973	92.6	220.8	35.3	17.3	3.6	16.2	0	0	0	22.6	55.6	89.9	552.9
1974	95.4	624.6	145.6	15.0	11.3	0.6	0	0.1	9.2	66.4	118.0	295.2	1,302.4
1975	465.3	202.0	10.9	27.8	53.7	12.1	0	3.4	0	54.5	112.5	308.4	1,280.4
1976	163.7	59.5	62.9	83.9	61.5	6.7	6.7	0.2	40.9	235.2	207.1	294.4	1,135.7
1977	162.7	35.9	113.4	107.0	10.6	9.6	0.6	0	0.2	68.1	61.1	426.1	955.3
1978	287.3	322.5	135.6	43.0	0.5	0	0	0	8.8	121.6	127.4	368.4	1,436.3
1979	381.3	219.9	63.4	3.9	16.6	5.9	0	0.5	0.8	145.0	292.3	155.2	1,280.9
1980	218.2	82.9	79.7	58.6	32.5	2.4	0	0	41.6	21.5	96.8	192.1	826.3
Ave.	255.2	172.6	90.0	43.7	29.8	9.3	2.4	2.4	13.2	62.9	113.2	222.5	1,067.2



2-2-6 Monthly Total Precipitation at Kovada Meteorological Station

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1963	-	-	-	-	-	-	-	0	0	65.8	50.5	130.6	
1964	23.4	204.1	145.0	15.3	54.0	145.7	13.3	0	65.1	0	85.7	241.0	976.4
1965	216.2	313.8	160.1	199.3	168.2	33.1	2.0	13.3	0	42.6	113.6	452.6	1,722.8
1966	617.6	130.1	232.8	137.6	27.9	30.0	10.0	9.2	21.7	6.7	83.0	493.5	1,710.3
1967	188.5	89.7	129.5	212.4	53.7	9.3	3.0	0	47.3	103.4	136.0	369.6	1,352.4
1968	438.0	174.6	218.2	50.5	38.8	12.5	0	34.7	47.9	67.9	160.2	342.6	1,565.9
1969	339.1	192.7	159.1	149.9	84.2	12.1	14.4	7.7	1.8	38.2	75.9	433.4	1,583.5
1970	283.2	321.4	116.2	150.3	51.4	47.0	3.3	2.5	24.1	70.7	91.7	156.2	1,316.0
1971	73.3	215.3	179.9	81.6	53.3	27.5	14.0	35.5	2.4	17.6	212.2	220.2	1,132.8
1972	31.0	172.9	56.5	47.2	192.6	89.0	63.0	5.5	14.8	142.0	28.5	9.2	767.2
1973	131.4	242.2	147.8	57.6	46.8	32.8	29.4	1.0	4.0	79.5	43.8	95.5	932.6
1974	74.7	392.4	103.9	39.5	45.0	1.5	0.4	22.9	44.1	57.0	113.8	270.3	1,165.5
1975	611.0	133.7	87.3	170.2	183.6	70.9	3.0	19.2	0	46.7	127.3	160.6	1,428.5
1976	232.1	76.6	70.3	312.7	68.5	37.6	33.5	1.5	7.7	142.2	65.4	250.6	1,318.7
1977	89.8	91.4	98.3	160.9	35.3	31.7	23.2	0	36.1	45.6	33.7	131.4	413.4
1978	304.6	436.2	241.5	331.8	31.8	10.1	0	0.6	51.5	156.2	111.7	227.8	1,703.2
1979	457.4	163.2	53.2	48.8	144.3	106.9	31.8	0.2	25.9	122.2	233.1	209.9	1,616.9
1980	260.8	74.6	119.6	96.6	51.0	40.2	11.4	0	15.9	56.0	130.5	343.7	1,202.7
Ave.	245.0	202.9	137.3	127.2	74.3	43.5	14.9	9.0	23.0	70.3	109.1	259.8	1,311.1

2-2-7 Monthly Total Precipitation at Karacaören Meteorological Station

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1962	-	-	-	-	-	-	-	-	38.4	69.1	36.6	377.1	
1963	633.2	300.8	69.5	81.9	161.8	12.6	1.3	0	0	61.1	70.0	162.6	1,334.8
1964	26.6	217.0	64.1	0	64.7	50.7	0	0	39.0	0.1	70.6	179.8	694.6
1965	177.6	395.1	155.2	113.5	163.0	6.3	1.0	13.3	0	29.0	197.0	456.7	1,652.2
1966	513.3	106.0	252.5	370.8	6.1	25.1	0	0	5.7	1.2	91.2	523.8	1,992.7
1967	163.1	59.5	115.0	167.0	45.3	7.0	3.9	0.0	16.2	143.6	173.6	311.4	1,504.6
1968	270.9	168.6	145.0	44.3	4.6	7.3	0	19.9	53.8	104.2	232.4	325.6	1,373.2
1969	457.2	179.2	152.5	181.7	30.8	3.0	3.9	18.4	5.7	32.2	177.0	629.3	1,860.9
1970	320.1	300.1	153.5	57.1	12.8	14.3	9.3	2.6	64.7	94.0	49.9	121.5	1,242.1
1971	84.5	245.9	238.7	27.8	39.4	15.0	67.1	21.6	0.9	13.2	364.3	424.7	1,535.1
1972	93.5	156.0	50.4	54.9	66.7	69.8	44.5	35.9	83.0	236.8	333.3	13.5	1,017.3
1973	159.0	217.4	185.6	44.4	2.3	45.4	7.1	0	0	57.6	70.5	148.9	801.4
1974	70.0	314.7	201.1	24.7	20.6	7.2	0	22.6	27.2	45.6	60.7	271.8	1,169.2
1975	194.8	105.7	247.8	158.5	86.8	40.7	0.0	3.1	0	63.5	225.1	244.3	1,492.3
1976	191.8	37.1	63.5	264.9	99.6	46.1	27.5	0	2.1	155.0	97.3	342.7	1,326.7
1977	121.7	48.9	64.1	293.6	13.0	61.2	4.3	0	65.9	49.4	86.5	227.0	1,070.6
1978	307.3	367.6	259.3	84.1	73.7	17.6	0	0	301.8	202.4	68.3	240.9	2,018.9
1979	540.8	172.0	48.7	99.4	93.5	57.6	1.3	0	0	197.7	314.7	153.5	1,579.0
1980	265.0	69.8	73.0	70.8	28.1	18.9	0	0	10.5	62.6	217.4	406.5	1,129.5
Ave.	265.5	205.9	135.1	121.3	55.5	27.8	9.2	7.6	34.5	85.0	147.0	300.8	1,330.3

2-2-8 Monthly Total Precipitation at Serik Meteorological Station

Units: mm

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1957	81.4	67.0	91.3	61.6	29.9	3.1	0	0	6.3	26.3	51.0	170.5	549.6
1958	138.5	72.6	152.7	19.4	7.7	35.0	0	0	7.1	16.3	24.5	202.9	856.3
1959	329.4	7.3	0	24.9	6.7	13.7	0	0	3.7	78.3	82.8	369.9	916.7
1960	276.3	87.9	83.1	84.3	17.4	3.8	0	0	6.6	10.6	73.5	306.9	950.4
1961	223.9	322.7	30.9	14.1	2.4	65.1	0	0	9.2	34.7	11.8	322.1	1,039.0
1962	256.3	291.3	25.8	19.4	58.0	0	0	0	137.3	112.2	6.9	352.7	1,259.9
1963	280.5	247.8	103.8	22.8	95.7	7.7	0	0	0	52.2	122.1	159.3	1,696.9
1964	28.6	225.9	32.7	0	34.5	0	0	0	13.9	0	112.7	163.2	611.5
1965	302.3	252.1	98.4	47.1	103.9	3.9	0.9	0	0	115.0	22.2	300.2	1,266.0
1966	358.8	150.9	75.5	57.4	14.8	2.5	0	9.9	12.9	0	120.5	272.0	1,075.1
1967	195.4	160.7	81.5	186.5	22.2	34.7	0	0	4.9	54.8	176.2	291.7	1,209.6
1968	186.3	164.7	94.5	66.1	6.2	0	0	10.0	39.1	51.7	275.2	435.9	1,317.7
1969	304.7	152.0	167.9	51.8	50.1	7.6	0	0	0	29.8	41.5	656.4	1,271.8
1970	233.9	289.3	73.5	9.5	69.8	9.9	6.9	0	35.5	131.1	95.6	218.4	1,315.4
1971	87.2	289.3	95.1	113.9	22.2	6.7	8.0	23.9	68.6	7.4	156.9	107.0	1,066.0
1972	129.0	75.7	95.9	52.8	118.6	27.0	0	0	1.6	139.4	29.0	61.0	721.0
1973	206.9	92.1	35.3	29.2	12.4	2.1	0	0	0	83.1	86.4	57.2	597.7
1974	111.5	185.9	71.3	24.3	16.0	0	0	0	22.6	36.2	127.8	287.8	850.4
1975	430.4	228.8	14.2	33.3	62.5	37.8	1.2	0.2	0	35.5	155.1	244.9	1,234.9
1976	345.2	121.6	51.8	87.2	93.7	6.0	0	4.2	7.7	138.1	186.3	160.5	1,285.3
1977	170.9	39.1	51.3	93.4	4.6	16.2	0	0	13.5	65.6	122.3	647.0	1,022.7
1978	342.9	337.5	208.5	56.7	0	0	0	0	0.6	132.5	129.9	369.8	1,638.4
1979	194.3	240.0	62.0	45.3	18.8	3.4	0	0	0	164.0	173.1	289.6	1,190.5
1980	211.1	140.3	110.4	46.5	69.6	6.9	0	0	15.3	42.8	56.9	167.7	838.5
Av.	232.4	176.3	79.5	51.2	37.7	12.2	0.6	2.0	16.8	71.5	103.1	259.4	1,040.8

2-2-9 Monthly Total Precipitation at Dösemalti Meteorological Station

Units: mm

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1952	-	-	-	-	-	-	-	-	-	-	-	230.5	
1953	118.6	355.9	49.6	70.3	236.9	20.2	5.7	0	0	27.0	54.8	137.0	1,065.0
1954	80.2	241.9	78.5	0	16.7	17.1	0	0	0.8	0.7	41.5	39.1	565.3
1955	255.1	151.4	206.4	69.1	81.8	28.3	0	4.4	0.1	20.3	10.5	550.2	1,392.6
1956	376.3	56.3	158.1	67.8	11.9	42.3	0	0	14.2	0.3	61.9	649.5	1,410.6
1957	149.8	72.5	75.2	91.2	52.7	1.4	0	0	11.4	117.1	112.7	64.5	715.1
1958	175.0	85.5	99.5	88.0	97.8	1.5	0	42.3	31.0	100.3	272.1	219.1	1,275.7
1959	932.5	218.8	209.0	78.0	57.1	1.8	0	0	9.7	69.7	45.1	647.1	2,335.0
1970	239.1	160.6	74.5	74.0	77.0	12.6	0.3	2.6	9.7	25.8	46.5	78.1	800.0
1971	109.9	458.2	54.9	31.3	29.4	5.0	1.1	13.0	0	11.7	111.7	156.4	1,082.6
1972	110.3	137.2	41.8	51.0	73.7	24.2	6.1	7.7	5.3	143.0	18.9	8.3	620.8
1973	161.0	127.8	12.0	59.7	33.6	6.6	0	0	0	14.2	16.3	61.9	592.1
1974	82.0	436.5	175.4	15.7	10.6	0	0	8.2	7.1	18.0	15.7	124.2	1,348.4
1975	437.8	122.5	70.8	169.4	66.4	41.3	9	2.9	0	24.3	107.4	139.9	1,343.3
1976	244.0	105.1	54.6	112.3	103.9	19.2	34.1	2.0	1.3	99.2	135.2	42.8	884.7
1977	115.8	55.5	64.3	28.4	12.7	21.4	15.2	0	11.0	64.4	32.3	158.0	819.0
1978	247.3	345.4	334.6	63.0	6.9	0	0	0	36.8	67.0	38.4	217.9	1,347.3
1979	315.5	191.4	39.2	32.3	57.8	78.3	5.0	0	2.4	86.5	259.2	169.4	1,177.0
1980	131.5	90.6	91.4	68.8	35.0	58.2	0	0.2	3.3	24.1	47.1	609.3	954.9
Av.	243.6	211.3	104.6	66.8	37.9	20.4	3.8	6.6	8.8	69.9	82.2	211.3	1,011.5

2-2-10 Monthly Total Precipitation at Sütlüer Meteorological Station

Unit: mm

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1951	119.0	22.1	241.0	31.4	55.2	41.5	37.2	0	9.9	125.3	69.9	35.0	787.3
1952	0	70.1	110.6	0	128.1	15.0	58.3	30.0	0	34.1	213.7	116.1	726.0
1953	337.6	119.1	88.0	36.0	128.0	138.1	0	29.7	15.5	49.2	51.7	46.5	1,037.6
1954	209.4	179.9	122.7	98.1	52.8	10.0	0	10.0	7.0	111.0	117.0	167.5	1,076.4
1955	151.1	80.9	56.3	123.5	18.2	10.5	18.3	24.9	31.2	38.7	124.7	75.7	754.0
1956	71.3	141.1	95.3	58.3	60.3	0	25.0	0	1.5	14.6	72.5	173.0	762.9
1957	38.2	43.0	73.9	56.1	69.9	32.0	6.3	0	22.1	59.9	44.0	85.6	533.0
1958	252.7	19.5	122.8	115.6	88.2	98.1	15.7	0	25.5	72.4	21.1	161.0	1,043.6
1959	252.3	0	4.5	25.4	19.3	27.8	14.6	12.6	6.9	-	-	-	-
1960	-	-	47.2	90.4	47.4	46.9	0	0	35.7	10.7	16.5	25.8	-
1961	168.4	184.4	45.0	47.5	9.0	29.7	0	0	10.0	37.7	10.0	206.6	738.5
1962	106.9	308.7	107.6	71.4	49.1	5.0	0	18.5	50.0	67.3	33.0	250.2	1,058.7
1963	252.1	206.4	42.3	93.7	149.7	16.0	19.3	0	0	87.3	36.8	63.5	935.6
1964	6.4	141.0	92.4	5.0	72.6	122.8	0	0	28.1	0	49.5	125.4	644.4
1965	121.3	170.6	138.8	99.7	121.0	35.2	0	9.2	0	22.1	91.6	295.7	1,106.2
1966	306.1	49.0	134.0	141.4	41.6	6.8	14.8	8.5	55.0	0	93.4	155.5	1,008.4
1967	45.4	32.1	63.5	100.3	53.8	-	-	-	-	30.4	245.7	155.1	-
1968	138.0	97.0	114.7	34.8	60.7	4.8	0	16.8	24.9	59.9	138.3	220.2	969.1
1969	242.9	138.1	149.8	132.1	43.9	5.5	0	2.0	2.6	44.4	66.7	264.1	1,073.1
1970	111.8	212.7	83.8	55.7	13.0	63.6	13.3	2.0	20.0	55.1	42.8	84.7	763.5
1971	53.3	245.9	116.4	52.9	34.9	29.3	2.4	43.1	3.3	7.6	149.7	133.5	771.3
1972	42.4	95.2	47.0	65.7	71.0	49.9	16.8	33.9	49.6	159.0	85.4	15.9	732.0
1973	125.7	122.9	98.6	48.3	1.9	114.4	33.7	9.2	13.4	44.8	28.4	69.8	711.4
1974	52.1	209.6	60.2	33.6	40.4	12.4	0	7.8	29.3	36.4	48.1	206.8	735.7
1975	287.9	96.7	143.7	152.3	124.1	21.4	0	9.2	0	52.2	58.6	145.8	1,141.9
1976	149.4	60.4	56.6	151.7	65.8	109.0	9.3	3.0	3.5	113.2	65.9	159.0	945.8
1977	25.0	63.7	81.0	229.1	9.4	14.6	8.1	0	45.3	59.6	43.3	155.7	725.8
1978	217.6	175.6	134.5	72.9	43.5	7.1	0	0	133.7	137.3	65.7	153.0	1,169.9
1979	227.8	126.3	47.8	113.3	117.4	31.5	6.7	4.5	12.7	174.8	186.1	80.2	1,199.1
1980	183.6	59.8	87.0	169.1	45.2	12.1	0	0	12.2	64.2	165.7	145.1	827.1
Ave.	142.6	122.3	101.1	82.5	65.8	49.4	12.1	9.7	24.9	63.7	82.1	149.8	895.1

2-2-11 Monthly Total Precipitation at Derebucak Meteorological Station

Unit: mm

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1977	89.7	38.2	71.0	262.9	9.1	36.5	1.2	0	45.3	22.2	14.3	151.8	677.2
1978	249.1	311.8	151.4	45.3	13.9	20.5	0	0	55.4	122.4	77.5	185.0	1,233.5
1979	277.1	66.6	53.4	52.9	74.6	17.3	33.2	25.1	10.2	90.3	159.7	170.0	1,042.6
1980	263.2	99.6	124.8	84.7	63.6	15.3	0	0	7.5	21.3	114.2	213.0	1,062.2
Ave.	217.5	128.9	101.2	96.7	40.8	22.4	8.6	6.3	29.9	76.6	93.9	180.7	1,003.5

2-3-1 Monthly Average Temperature at Antalya Meteorological Station (1)

Year	Unit: °C											
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1929	10.5	11.3	14.1	16.7	19.6	25.6	28.3	28.3	25.1	19.7	15.3	13.4
1931	11.3	10.9	12.8	16.0	20.8	26.2	29.8	28.8	25.4	19.5	13.8	11.1
1932	8.8	9.9	12.0	15.3	19.3	25.3	28.2	28.6	25.1	22.7	15.5	10.7
1933	8.8	10.9	12.1	13.8	18.4	22.4	26.5	26.3	21.9	18.3	16.4	10.7
1934	9.6	8.1	13.6	17.3	20.5	24.7	28.2	26.9	23.3	18.9	15.9	11.7
1935	10.1	10.9	12.5	14.2	23.7	26.5	26.9	27.0	24.2	19.7	13.9	13.1
1936	11.8	11.0	13.7	16.9	19.0	23.3	27.6	26.6	23.3	19.6	14.2	8.3
1937	7.8	12.0	13.6	16.3	20.1	25.5	27.4	26.9	24.4	20.9	16.8	13.1
1938	9.4	9.0	11.7	16.5	21.0	26.5	29.1	29.2	24.8	20.5	14.9	12.4
1939	10.7	10.3	12.2	17.2	21.0	25.9	29.5	28.1	25.9	22.2	15.3	12.9
1940	9.6	12.1	12.5	16.4	20.8	24.5	27.7	26.9	25.0	21.5	16.2	12.3
1941	11.6	12.8	13.6	17.5	21.9	24.7	28.3	28.3	23.5	18.8	15.0	8.8
1942	7.9	11.2	13.7	17.1	21.8	26.6	28.8	27.1	25.0	19.8	13.4	11.5
1943	9.0	9.8	11.0	15.1	19.8	23.8	27.8	28.7	26.6	21.7	17.7	13.3
1944	9.0	11.1	12.4	17.5	20.3	25.2	27.6	27.1	24.1	20.4	14.9	11.6
1945	10.2	8.7	11.1	15.5	22.7	26.1	29.2	28.9	25.5	19.4	15.5	11.3
1946	9.9	10.3	12.1	17.1	20.5	26.5	28.9	29.5	26.3	19.5	17.4	12.8
1947	9.7	12.1	14.0	18.6	22.1	25.3	28.8	29.2	25.3	19.8	15.7	13.2
1948	12.8	11.2	10.7	15.5	20.4	23.8	27.6	28.9	25.0	20.6	14.5	8.9
1949	9.8	9.1	11.3	14.8	22.1	24.3	27.4	27.9	23.8	20.4	17.5	12.9
1950	7.4	9.8	13.3	17.8	20.7	25.4	29.0	28.0	25.4	19.4	15.7	13.5
1951	10.7	12.1	13.4	17.6	21.2	25.8	28.2	28.8	25.7	18.4	14.7	9.9
1952	10.3	19.9	11.4	16.6	20.0	25.1	27.4	28.7	26.4	20.7	15.5	13.3
1953	10.1	19.6	9.7	15.6	19.2	24.2	30.1	28.4	24.5	20.6	12.8	9.3
1954	8.7	10.3	13.4	15.3	11.9	26.0	29.0	28.7	25.9	20.4	15.3	18.9
1955	11.9	12.8	12.5	15.8	21.2	26.1	28.4	26.9	24.7	21.8	15.9	12.1
1956	10.2	19.4	11.3	16.4	20.0	25.5	29.6	28.3	25.4	18.9	14.5	9.8
1957	9.5	11.3	13.4	16.0	18.7	25.9	27.4	28.1	24.6	15.7	-	10.9
1958	10.5	11.2	13.5	15.9	21.0	24.0	27.0	29.1	24.4	20.4	16.3	12.4
1959	10.5	7.4	12.5	16.5	20.4	24.0	27.0	27.8	23.8	18.7	14.7	12.6
1960	10.4	11.1	12.5	16.3	21.7	24.8	28.2	28.6	24.7	21.9	17.0	14.1
1961	9.8	10.2	13.1	17.0	20.4	24.7	28.3	28.9	24.0	20.0	15.4	12.5
1962	11.4	10.1	14.6	16.4	21.0	25.0	28.1	28.0	25.3	20.5	18.7	9.7
1963	11.5	12.5	12.1	16.9	19.4	24.6	29.4	30.0	25.9	21.4	15.9	12.8
1964	7.8	10.0	14.2	16.7	18.9	25.0	27.7	28.0	24.5	21.1	16.2	11.8
1965	10.5	9.7	13.4	15.2	19.5	26.3	-	27.0	25.1	20.7	16.6	12.1
1966	11.1	13.1	13.1	18.7	20.0	24.7	27.9	28.2	24.6	22.3	18.3	12.4
1967	10.1	8.6	11.7	13.7	23.1	24.7	28.7	29.4	24.7	20.1	14.6	12.3
1968	9.2	11.1	12.7	17.8	23.5	25.4	28.6	26.4	23.6	19.3	15.0	12.1
1969	9.9	11.5	13.9	14.7	21.6	25.5	27.3	27.6	25.4	20.5	15.8	12.7
1970	11.9	12.0	14.1	18.3	19.7	26.2	27.6	29.1	25.0	19.6	14.6	11.1

2-3-1 Monthly Average Temperature at Antalya Meteorological Station (2)

Units: °C												
Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1971	12.9	10.4	12.9	16.3	21.6	26.1	27.4	28.6	25.3	19.6	15.9	11.4
1972	9.6	10.3	14.7	17.4	20.5	24.6	26.7	27.4	25.3	19.8	15.1	11.7
1973	10.0	12.1	12.8	15.6	21.8	25.9	28.2	28.4	26.6	21.8	14.4	13.3
1974	8.5	11.8	15.0	16.0	19.8	24.8	29.5	27.6	25.4	22.0	16.3	11.4
1975	10.8	10.0	14.5	18.3	19.3	24.4	27.6	26.1	24.4	18.6	13.8	9.5
1976	8.8	7.8	12.2	15.3	19.8	24.2	26.4	26.6	22.5	18.9	14.4	11.3
1977	8.8	11.5	12.1	15.6	20.4	25.0	29.4	27.7	24.0	17.2	15.7	9.5
1978	10.5	11.0	12.6	15.3	20.8	25.7	29.2	26.9	23.0	19.6	13.2	10.9
1979	10.4	11.7	13.0	15.5	19.9	26.1	28.4	27.1	25.2	19.8	14.7	11.2
1980	8.6	9.3	11.3	15.1	18.8	24.9	27.5	28.0	23.1	19.2	15.1	11.3
Ave.	10.0	10.7	12.9	16.3	20.4	25.1	28.2	28.0	24.7	20.0	15.5	11.8

2-3-2 Monthly Maximum Temperature at Antalya Meteorological Station (1)

Year	Units °C												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Max.
1929	-	-	-	26.7	35.3	37.5	-	-	35.6	28.0	29.0	20.9	
1930	19.6	19.5	27.0	29.5	32.6	35.4	39.9	41.8	39.2	39.8	25.8	21.0	41.8
1931	18.9	21.0	22.7	25.5	35.4	38.9	40.9	42.1	40.3	32.2	24.7	19.5	42.1
1932	17.5	19.6	25.0	22.5	32.9	40.9	42.0	39.9	35.5	37.9	27.4	20.9	42.0
1933	17.4	18.5	23.9	23.9	26.5	38.0	38.3	37.7	32.2	39.6	32.7	19.7	39.3
1934	20.1	18.5	23.2	30.4	32.0	40.0	43.4	40.2	34.0	34.6	30.0	21.1	43.4
1935	18.6	18.8	21.8	27.6	37.8	39.3	38.5	40.9	35.7	34.6	29.3	22.1	40.9
1936	20.4	19.4	25.5	26.5	28.4	32.0	40.0	35.4	37.3	31.2	27.4	18.5	40.0
1937	17.2	20.0	25.2	27.7	32.3	35.7	41.9	40.6	34.0	34.3	27.0	22.0	41.9
1938	19.2	18.8	22.3	26.0	33.0	38.0	41.4	40.4	42.5	30.6	24.4	20.2	42.5
1939	19.1	20.0	21.5	29.5	31.3	39.6	40.0	40.4	37.0	34.0	26.0	20.8	40.4
1940	18.9	22.4	22.5	27.9	27.5	35.5	39.4	38.4	36.2	34.7	27.1	21.4	39.4
1941	20.6	20.1	21.5	26.9	35.0	39.0	40.7	42.0	31.5	32.5	25.4	20.0	42.0
1942	18.2	18.9	24.9	27.5	38.1	41.5	40.8	39.2	37.0	39.2	26.8	20.5	41.5
1943	17.5	19.7	19.5	27.9	30.0	-	-	40.7	39.6	37.9	27.9	22.9	
1944	19.0	19.2	20.7	30.8	31.1	35.9	42.9	34.5	39.8	34.9	28.2	20.9	42.9
1945	17.3	19.3	22.5	23.4	38.7	37.2	41.9	41.0	36.9	29.7	25.3	20.1	41.9
1946	18.5	20.3	29.5	26.0	32.4	37.3	39.5	40.0	33.7	30.9	28.5	20.6	40.0
1947	17.4	18.8	27.5	32.5	32.4	32.6	42.1	40.7	36.3	32.8	26.4	23.0	42.1
1948	19.5	21.7	19.5	26.2	34.6	35.5	43.2	40.2	37.7	33.2	28.4	18.4	43.2
1949	18.8	19.2	19.8	25.8	32.9	36.4	41.4	39.0	34.2	33.0	27.2	21.4	41.4
1950	18.0	20.0	25.1	32.2	36.0	37.8	40.7	39.4	36.3	29.8	27.4	22.8	40.7
1951	18.2	19.8	21.9	26.9	31.7	38.7	40.0	41.4	40.0	28.2	23.2	20.5	41.4
1952	19.1	18.4	29.4	28.1	31.3	40.4	39.9	43.6	38.6	30.4	24.3	23.3	43.6
1953	18.7	20.1	23.0	24.4	27.6	34.8	42.0	39.5	35.2	34.0	25.1	21.2	42.0
1954	16.6	17.9	23.1	29.2	31.2	40.0	41.4	43.1	38.0	34.5	24.3	21.9	43.1
1955	18.5	19.5	24.3	27.4	34.3	39.7	41.9	38.5	35.4	33.6	27.5	22.1	41.9
1956	19.2	19.3	19.1	32.8	35.2	39.4	43.9	43.3	39.9	34.8	26.4	22.4	43.9
1957	18.1	20.0	27.1	26.3	33.2	39.8	41.2	41.4	30.4	33.3	24.9	20.9	41.4
1958	18.3	21.2	22.4	22.4	36.7	35.0	40.3	44.4	36.5	34.2	24.8	19.1	44.4
1959	19.7	16.8	21.6	28.4	29.3	35.6	37.9	39.4	36.2	29.9	26.8	29.9	39.4
1960	18.0	22.1	24.6	25.2	38.0	36.9	40.4	41.0	39.0	35.1	28.9	23.5	41.0
1961	18.8	19.9	25.2	26.1	29.9	39.1	42.2	40.4	35.0	34.4	27.9	23.4	42.2
1962	20.1	18.8	22.4	26.4	35.9	37.7	42.4	39.8	39.9	31.5	28.2	22.2	42.4
1963	20.2	19.2	22.2	26.2	29.1	39.2	41.4	42.2	36.9	34.8	24.4	22.3	42.2
1964	17.9	16.4	22.3	26.2	30.5	37.2	41.4	38.1	32.2	35.4	29.0	21.0	41.4
1965	17.5	20.2	23.0	27.4	35.4	38.3	40.4	39.1	37.9	30.3	24.4	19.4	40.4
1966	20.1	25.9	29.3	29.2	31.0	39.9	41.1	37.9	37.0	32.4	30.1	22.3	41.1
1967	19.2	18.4	19.3	26.4	31.2	35.8	40.0	42.3	34.2	30.9	24.4	20.3	42.3
1968	19.2	17.2	23.4	27.5	36.8	38.1	40.1	39.1	34.9	28.9	24.5	18.9	40.1
1969	17.5	18.3	21.2	24.9	34.2	34.4	38.6	39.3	34.4	32.4	23.4	19.9	39.3

2-3-2 Monthly Maximum Temperature at Antalya Meteorological Station (2)

Year	Unit: °C												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Max.
1970	18.7	19.6	23.5	31.6	29.3	38.4	39.3	41.8	35.1	29.7	28.6	20.3	41.8
1971	21.9	17.7	24.3	32.3	36.1	40.8	39.2	39.2	35.6	30.3	25.8	21.4	40.9
1972	16.5	17.9	23.2	31.7	33.3	39.1	39.3	39.4	36.9	30.0	26.7	22.0	39.4
1973	18.3	20.0	25.2	23.0	35.6	40.6	42.7	39.6	37.7	37.5	25.9	22.0	42.7
1974	17.1	18.8	26.6	27.2	32.9	37.0	41.9	39.5	36.3	29.9	23.3	19.8	41.9
1975	17.9	17.6	22.3	30.6	32.9	37.7	39.6	38.6	37.8	32.1	26.2	19.5	39.4
1976	17.6	16.1	25.8	27.7	31.4	34.9	36.8	39.3	35.0	33.8	28.0	21.1	39.3
1977	14.6	21.6	27.7	27.4	31.7	37.2	43.7	39.6	37.2	28.2	28.8	19.1	43.7
1978	19.3	20.1	23.7	25.3	32.4	39.8	42.2	39.2	35.0	35.5	25.1	20.3	42.2
1979	20.1	22.6	23.3	30.8	32.3	40.4	41.0	29.9	40.6	34.9	25.7	21.2	41.0
1980	18.1	19.3	24.4	24.6	33.1	39.5	42.3	40.8	34.5	34.6	28.3	20.7	42.3
Max.	23.9	25.9	27.7	32.8	38.7	41.5	44.7	44.6	42.5	38.1	32.7	23.6	44.7

2-3-3 Monthly Minimum Temperature at Antalya Meteorological Station (1)

Year	Celsius °C												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Min.
1929	-	-	-	5.0	12.3	12.2	-	-	12.0	9.7	8.0	2.9	-
1930	1.3	-0.9	4.3	6.1	9.4	14.4	17.1	16.1	15.0	9.5	9.1	3.1	-0.9
1931	1.1	3.4	-0.9	6.3	8.9	15.3	17.9	18.6	10.3	8.9	0.7	0.1	-0.9
1932	0.5	-4.5	1.5	5.0	6.3	13.2	15.0	17.0	12.6	12.0	6.3	0.9	-4.5
1933	-1.1	2.4	1.2	3.3	9.4	11.5	16.1	15.9	12.1	7.8	6.0	-1.5	-1.5
1934	-0.3	0.2	3.7	7.8	11.5	13.6	17.3	16.9	11.2	10.7	5.3	4.7	-0.3
1935	0.7	0.6	3.2	4.9	10.1	15.3	16.6	13.6	14.6	9.0	6.2	2.1	0.6
1936	5.2	-9.1	4.0	6.8	10.8	14.0	16.7	17.0	10.5	10.3	0.9	-0.1	-0.1
1937	-1.0	3.6	4.5	7.6	10.1	13.1	17.6	17.2	13.4	12.8	8.7	5.0	-1.0
1938	3.2	-0.4	1.2	6.9	11.5	17.5	20.7	21.4	13.4	10.6	7.0	3.5	-0.4
1939	2.5	0.5	2.0	7.3	13.0	14.6	20.6	19.7	17.8	13.9	6.2	3.4	0.5
1940	0.6	5.6	1.4	8.0	12.8	15.2	18.4	19.9	16.9	13.0	6.8	6.5	0.6
1941	1.9	4.0	2.0	5.8	11.5	16.5	20.7	19.4	15.3	8.1	5.5	-1.1	-1.1
1942	-4.3	4.4	2.0	9.5	13.2	16.4	19.6	20.0	15.7	12.1	7.4	4.4	-4.3
1943	0.9	2.0	0.4	4.6	11.9	13.7	18.8	18.4	19.3	14.2	10.0	2.0	0.6
1944	0.7	3.2	5.3	4.4	7.9	15.5	20.0	18.6	15.9	12.2	6.9	3.2	0.7
1945	0.3	0.4	0.9	8.0	13.4	18.1	20.1	20.9	18.3	10.7	6.0	2.5	0.3
1946	-3.6	-3.3	4.3	6.0	12.5	15.4	20.9	20.5	17.5	9.2	9.5	2.6	-3.6
1947	0.5	2.3	7.4	7.5	13.4	15.2	21.6	22.4	17.4	8.1	7.4	3.0	0.5
1948	4.2	2.3	1.4	4.4	10.7	15.4	19.3	20.7	16.6	8.4	0.0	-0.4	-0.4
1949	1.3	-2.2	1.5	6.0	11.3	16.3	18.0	18.6	17.1	12.5	9.9	5.6	-1.2
1950	-2.5	-5.6	5.0	8.0	12.1	16.4	18.5	23.2	19.0	9.1	6.2	6.6	-4.6
1951	0.2	5.0	7.3	10.0	12.4	17.0	19.0	20.8	12.6	8.4	5.5	-1.7	-1.7
1952	0.3	1.5	2.8	7.0	11.1	15.5	19.5	20.2	15.3	10.6	6.9	6.3	0.3
1953	2.1	1.7	0.3	8.1	10.6	13.8	18.2	17.5	14.1	6.9	4.2	-0.6	-0.6
1954	-1.8	1.7	3.6	6.4	9.9	15.3	19.5	19.8	15.5	13.1	6.6	2.0	-1.1
1955	3.4	5.2	3.8	6.6	8.8	17.6	17.6	18.5	13.6	12.1	5.4	3.3	3.3
1956	-2.2	0.1	4.0	4.9	9.8	12.8	19.4	19.8	14.9	2.9	2.4	0.0	-2.2
1957	-0.9	1.0	3.9	6.9	11.4	16.8	18.3	17.9	16.0	13.7	3.5	3.0	-0.9
1958	2.3	0.8	2.9	2.8	4.5	14.4	17.8	20.0	15.2	10.0	5.6	3.5	0.8
1959	0.5	0.1	1.0	2.8	11.2	14.8	16.5	18.1	13.5	10.6	4.0	4.9	0.1
1960	1.2	-1.0	4.3	9.1	12.1	15.9	19.5	19.4	15.0	11.7	6.8	7.0	-1.0
1961	-3.2	0.5	0.0	9.0	12.1	15.0	19.9	21.3	15.3	10.4	4.0	2.0	-1.7
1962	4.0	2.4	2.7	7.9	11.3	16.6	18.4	19.4	14.4	13.6	9.9	4.9	2.4
1963	3.0	4.4	1.4	8.4	12.3	15.7	21.9	21.7	15.5	10.9	7.6	0.9	0.9
1964	-3.4	1.3	6.3	2.4	9.3	15.4	19.9	20.4	12.7	12.9	5.9	4.7	-3.4
1965	2.0	0.6	3.1	0.5	8.2	17.4	20.4	19.9	17.0	9.6	5.6	3.8	0.6
1966	2.2	5.0	5.3	2.6	11.3	15.1	18.3	22.4	15.6	13.7	11.3	2.4	2.2
1967	-2.0	1.0	3.4	6.3	10.8	14.5	16.8	20.9	17.3	13.2	3.4	-0.1	-2.0
1968	-3.5	2.9	1.4	9.2	14.8	17.2	21.3	18.9	15.2	12.3	8.2	-1.5	-1.5
1969	-1.2	2.1	6.9	6.7	11.9	17.9	18.3	19.4	17.4	9.8	6.8	6.3	-1.2



2-3-3 Monthly Minimum Temperature at Antalya Meteorological Station (2)

Year	Unit: °C												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Min.
1970	2.7	3.0	6.0	9.5	9.1	16.0	20.9	19.6	12.4	11.8	9.9	3.4	2.7
1971	4.5	2.8	2.0	8.1	12.2	15.2	18.3	20.3	17.5	8.7	6.7	2.9	1.8
1972	0.4	1.0	0.8	9.1	11.5	14.7	19.1	19.3	17.6	10.4	6.3	6.5	0.4
1973	-2.1	5.4	3.7	7.9	14.2	17.3	20.5	21.2	19.3	12.3	5.5	-2.8	-2.8
1974	0.0	2.4	7.4	9.2	11.2	15.2	19.9	20.9	16.2	13.9	8.9	4.0	0.0
1975	4.0	0.8	6.6	7.8	8.9	12.2	16.0	15.3	12.8	8.8	3.8	0.6	0.6
1976	0.0	-1.2	2.7	7.5	10.9	13.4	16.7	16.2	12.4	10.4	5.4	3.5	-1.2
1977	1.0	3.4	0.5	5.1	9.4	13.6	18.4	17.1	15.6	6.2	6.6	2.1	0.5
1978	2.9	2.7	3.4	7.0	10.0	13.2	18.6	15.5	13.8	12.0	6.5	2.9	2.7
1979	-0.6	3.8	4.1	4.8	10.0	15.2	14.9	18.4	12.9	12.5	6.7	1.5	-0.6
1980	-2.0	1.5	2.2	6.3	6.7	11.6	18.2	17.6	12.1	10.0	2.0	1.1	-2.0
Min.	-4.3	-4.6	-0.9	3.3	6.3	11.5	15.0	13.6	10.3	2.9	0.0	-1.7	-4.4

2-3-4 Monthly Average Temperature at Sütçüler Meteorological Station

Year	Celtis °C											
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
1964	3.0	3.7	6.7	9.5	12.0	17.7	20.9	26.4	16.6	14.7	7.7	3.0
1965	1.0	2.2	-	7.7	13.1	22.0	21.9	21.6	16.4	9.2	4.7	1.9
1966	1.2	3.2	6.2	10.1	11.8	18.1	21.8	20.5	16.2	12.8	8.8	4.1
1967	0.7	1.2	2.3	5.9	10.2	-	-	-	-	10.2	6.9	6.6
1968	2.2	5.2	6.5	14.0	16.7	20.2	24.9	22.0	18.2	13.9	9.8	5.9
1969	3.9	4.8	7.8	8.0	17.7	21.2	22.7	21.5	21.1	14.9	10.4	6.3
1970	5.8	5.7	8.2	13.2	14.5	21.3	23.7	24.4	29.1	13.0	10.7	4.2
1971	6.4	3.6	6.5	10.3	16.6	20.9	23.1	23.1	20.5	13.8	9.6	4.1
1972	3.1	2.7	7.7	12.0	15.8	22.0	22.2	22.2	20.2	14.0	8.9	5.5
1973	3.3	5.3	6.1	9.9	17.8	19.8	21.2	23.8	20.7	16.0	7.6	6.5
1974	1.3	4.9	8.8	9.9	15.2	20.9	25.4	22.6	19.3	17.5	9.3	6.3
1975	3.5	2.9	8.2	12.2	14.8	19.6	24.0	23.4	20.4	16.9	8.9	4.1
1976	3.2	1.4	7.1	9.8	15.7	19.6	21.7	22.3	18.7	15.5	10.7	6.1
1977	2.9	7.0	7.4	19.6	16.8	20.8	25.0	24.7	19.6	12.8	10.4	3.3
1978	4.1	5.5	7.1	10.6	17.0	20.9	25.2	22.8	17.8	15.5	8.0	5.6
1979	3.8	6.1	8.3	10.7	14.8	29.4	22.9	23.8	21.1	14.8	9.2	5.5
1980	2.0	3.5	5.9	9.9	14.6	21.3	24.7	24.6	19.3	15.5	10.3	5.2
Ave.	3.0	3.9	6.8	10.3	15.1	20.3	23.9	23.3	19.1	14.3	9.1	4.9

2-3-5 Monthly Maximum Temperature at Sütçüler Meteorological Station

Year	Celtis °C												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Max.
1964	9.5	10.0	16.3	19.8	22.8	33.8	32.0	31.3	25.3	21.5	23.5	11.3	33.8
1965	7.2	6.8	-	15.0	27.0	31.2	32.8	34.4	25.2	18.5	10.0	6.7	32.8
1966	5.2	12.6	12.3	19.1	17.5	25.7	32.4	32.4	23.2	20.7	17.3	12.0	32.4
1967	7.2	5.6	7.4	10.0	17.0	-	-	-	-	25.1	20.1	14.1	25.1
1968	22.0	16.4	18.0	25.5	28.2	30.0	35.0	32.2	31.0	23.5	18.7	13.2	35.0
1969	22.3	17.7	18.2	20.7	31.0	32.3	33.2	34.5	35.5	28.2	20.7	12.2	35.5
1970	15.7	13.5	19.5	28.5	27.4	31.0	33.0	34.0	31.5	23.2	22.3	13.5	34.0
1971	16.3	31.4	17.8	25.5	30.5	32.0	32.5	32.2	32.5	25.2	21.3	14.3	32.2
1972	12.5	13.6	19.8	23.5	28.5	31.2	33.1	33.5	32.0	28.0	19.3	17.5	33.5
1973	14.0	14.3	19.9	22.1	32.5	33.6	35.5	34.5	32.5	30.3	19.3	14.2	34.5
1974	11.6	14.6	21.5	21.4	27.8	31.5	33.9	34.2	30.2	28.2	17.6	12.2	35.3
1975	11.8	22.3	22.8	26.2	28.0	32.2	33.5	35.8	31.2	26.1	19.2	14.0	35.1
1976	11.2	12.2	18.5	23.5	26.1	29.4	31.5	35.0	32.2	29.0	24.2	13.0	35.0
1977	13.2	29.8	25.2	26.0	32.5	32.2	34.5	35.3	33.1	28.5	23.8	15.0	36.3
1978	13.3	17.0	20.5	22.3	28.4	32.2	33.8	33.5	30.0	31.5	20.2	12.5	35.8
1979	14.2	19.2	19.5	25.2	22.5	32.0	35.0	32.0	34.2	29.5	21.2	16.5	32.0
1980	10.0	15.5	21.0	21.3	31.3	35.0	34.0	35.0	30.4	31.0	23.0	16.8	34.0
Max.	11.3	29.8	25.2	28.5	31.3	35.0	32.8	32.0	33.5	31.5	24.2	12.5	32.0

### 2-3-6 Monthly Minimum Temperature at Sütçüler Meteorological Station

Year	Unit: °C												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Min.
1964	-0.5	-5.7	-2.7	3.0	6.5	9.6	15.5	9.5	4.2	4.3	0.5	-3.9	-0.5
1965	-4.7	1.3	-	0.1	4.0	14.7	14.0	13.7	9.3	1.3	3.5	0.0	-4.7
1966	-3.3	-1.3	-3.5	3.0	7.0	12.0	16.0	13.5	10.0	6.0	6.1	-0.6	-3.5
1967	-4.8	-3.0	-1.3	7.0	6.7	-	-	-	-	7.2	3.5	0.0	-4.8
1968	-10.5	-5.8	-5.7	4.4	10.7	10.2	14.5	12.8	7.2	7.0	3.5	-3.0	-10.5
1969	-0.0	-3.3	0.0	-3.6	7.5	12.5	23.3	17.5	13.5	1.2	0.0	0.5	-0.0
1970	-3.0	-3.7	-7.0	2.0	4.5	9.5	16.0	13.7	5.0	3.5	4.2	-6.8	-6.8
1971	-2.1	-6.5	-7.8	1.5	0.0	9.7	14.0	15.5	12.5	7.0	2.6	-4.5	-7.8
1972	-0.0	-0.0	-3.5	1.6	0.0	10.5	13.0	13.5	17.0	2.2	-2.7	-5.0	-0.0
1973	-0.4	-4.0	-5.4	2.0	7.0	10.3	13.3	14.5	13.8	5.5	-3.4	-3.8	-0.4
1974	-10.5	-5.5	1.5	0.6	7.0	11.0	11.5	14.5	7.5	0.0	0.0	-4.5	-10.5
1975	-4.5	-5.0	-4.4	1.7	4.5	0.5	13.0	14.4	11.2	5.5	-3.0	-5.6	-9.0
1976	-7.8	-9.8	-4.5	3.0	7.0	9.2	14.6	12.4	8.8	-	0.0	-3.0	-9.8
1977	-6.4	-2.8	-6.2	1.0	7.0	11.0	16.3	14.5	10.1	0.0	1.5	-5.0	-6.8
1978	-3.0	-3.5	-1.5	2.0	5.5	9.0	20.5	14.0	8.3	5.2	1.0	-2.0	-3.5
1979	-0.0	-3.0	0.3	1.0	6.5	9.5	12.5	14.7	11.3	7.0	-0.8	-5.0	-0.0
1980	-0.2	-4.5	-6.2	-1.0	2.7	8.0	15.0	15.5	9.3	5.3	-2.5	-2.7	-0.2
Min.	-10.5	-9.0	-7.0	-2.4	2.7	0.0	10.5	0.5	4.2	0.0	-3.4	-6.8	-10.5

### 2-3-7 Monthly Average Temperature at Serik Meteorological Station

Year	Unit: °C												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	
1972	8.5	7.7	11.1	14.1	17.3	22.6	-	23.3	20.9	16.2	10.9	6.6	
1973	7.6	7.1	9.0	12.1	16.4	18.3	23.1	23.8	19.8	16.5	9.4	9.8	
1974	6.7	9.6	11.8	12.6	16.0	19.3	19.7	21.8	15.0	17.0	11.3	9.0	
1975	0.5	0.4	9.2	11.3	16.9	19.7	23.9	25.0	20.9	16.6	9.7	8.5	
1976	0.2	6.8	10.5	12.8	17.5	20.5	22.9	20.7	17.3	16.0	12.8	11.0	
1977	0.0	10.3	9.3	12.1	15.1	20.1	20.6	23.0	20.7	12.3	12.8	9.0	
1978	10.2	10.5	12.3	-13.6	14.7	15.0	19.8	20.5	19.3	16.0	9.4	10.7	
1979	10.5	11.6	12.8	15.3	19.8	25.8	27.5	26.6	24.9	19.8	14.7	10.6	
1980	0.1	7.6	9.4	12.7	15.0	19.1	24.3	22.8	17.0	14.2	12.1	9.4	
Ave.	4.6	8.8	10.5	12.8	16.5	20.0	22.8	23.0	19.6	15.8	11.5	9.4	

### 2-3-8 Monthly Maximum Temperature at Serik Meteorological Station

Year	Units: °C												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Max.
1972	17.0	18.0	22.0	30.5	33.5	37.5	-	39.0	39.0	31.7	24.8	23.5	39.6
1973	20.5	21.7	26.5	25.2	35.5	41.6	43.5	38.3	38.8	37.0	29.4	21.8	43.5
1974	17.6	22.2	25.7	28.5	31.1	37.0	42.0	38.8	36.7	33.4	24.8	19.7	42.0
1975	17.5	19.3	27.3	32.7	33.6	36.8	38.4	38.3	39.4	31.0	26.5	19.8	39.4
1976	18.2	18.5	25.7	28.5	31.9	35.2	37.0	40.5	36.0	35.1	28.7	20.5	40.5
1977	19.7	22.1	27.5	28.5	34.0	35.5	43.0	40.3	38.4	29.7	30.0	19.5	43.0
1978	20.0	20.4	24.5	25.2	33.0	39.5	41.8	39.2	36.7	37.1	25.4	20.4	41.8
1979	20.0	23.0	23.7	31.2	31.3	39.5	40.5	40.2	40.5	38.7	25.4	21.5	40.5
1980	17.5	19.2	24.5	25.1	34.5	37.7	40.9	41.2	34.5	35.2	28.0	20.5	41.2
Max.	20.5	23.0	27.5	32.7	36.5	41.4	43.5	43.2	40.5	37.1	30.0	23.5	43.5

### 2-3-9 Monthly Minimum Temperature at Serik Meteorological Station

Year	Units: °C												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Min.
1972	-2.3	-1.3	2.4	4.4	10.1	15.0	-	17.0	14.4	2.8	2.5	-4.7	-4.7
1973	-2.2	0.0	-1.5	5.4	9.9	13.2	14.5	16.7	13.6	5.7	-1.5	1.5	-2.1
1974	-4.3	-2.8	4.0	5.0	8.5	14.5	17.0	17.7	9.2	9.5	0.3	-2.9	-4.3
1975	-2.0	-3.7	0.1	5.8	8.2	12.8	16.3	12.9	11.1	3.2	1.1	-1.2	-3.7
1976	-1.4	-4.2	-2.0	5.5	10.3	12.2	14.8	16.1	9.6	9.2	3.5	0.7	-4.2
1977	0.4	0.2	3.5	5.8	8.4	14.0	16.2	15.0	14.2	3.0	1.2	-0.2	-0.2
1978	0.2	1.0	1.8	7.0	7.5	11.7	16.0	13.6	10.4	8.2	-2.0	0.7	-2.0
1979	-3.0	1.8	2.5	2.8	2.6	13.6	15.5	16.0	11.0	10.9	4.8	0.2	-3.0
1980	-3.0	-1.0	1.0	3.9	5.8	12.1	17.5	16.4	10.0	7.5	-1.1	-1.1	-3.0
Min.	-4.3	-4.2	-2.0	2.4	2.6	11.2	14.8	12.9	9.2	2.8	-2.0	-4.7	-4.7

2-4 Monthly Evaporation at Antalya G.S.

Year	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
1953	90.3	68.9	119.1	151.1	137.1	207.9	305.5	332.7	238.1	157.7	83.7	83.6	1,972.2
1954	69.4	61.3	113.8	156.0	147.9	210.8	234.0	255.0	231.2	122.5	105.1	82.0	1,822.0
1955	85.3	65.2	102.8	102.2	134.1	193.3	280.9	189.3	161.9	118.4	84.1	54.7	1,569.5
1956	41.5	57.4	80.5	85.0	152.3	193.7	231.0	193.1	173.7	135.9	67.5	68.5	1,458.1
1957	79.8	74.7	106.1	106.2	167.0	299.1	330.8	303.1	215.6	151.4	95.1	51.6	1,592.5
1958	82.7	87.4	103.9	122.7	202.9	223.5	261.4	231.5	169.1	112.9	56.1	41.8	1,661.4
1959	63.1	58.5	72.6	134.0	173.3	277.4	311.7	252.9	247.3	173.5	94.7	68.0	1,877.0
1970	82.9	56.0	103.3	149.3	197.4	268.5	190.8	265.3	239.1	150.7	66.5	61.8	1,771.8
1971	68.3	75.9	105.3	127.9	191.6	259.2	237.4	233.3	143.5	159.9	88.6	91.9	1,770.8
1972	69.3	73.7	96.1	118.7	145.3	194.3	185.1	205.0	135.8	108.4	97.7	73.6	1,520.8
1973	64.3	73.4	129.0	118.0	176.6	233.8	239.2	249.5	197.5	149.4	110.2	87.6	1,818.5
1974	76.7	68.2	106.1	136.8	147.2	202.3	316.2	245.8	242.7	125.3	117.6	96.6	1,881.5
1975	72.0	74.1	120.0	141.2	142.7	208.8	252.4	232.5	245.2	160.4	73.3	85.6	1,811.9
1976	78.1	87.2	54.9	121.2	159.3	224.1	243.6	258.3	199.9	104.5	69.7	82.0	1,733.3
1977	75.9	71.3	63.5	112.2	173.9	223.2	347.2	264.3	183.2	149.7	71.0	75.5	1,833.9
1978	72.0	65.2	93.7	151.2	187.7	256.4	287.1	148.4	161.1	185.9	96.6	71.4	1,834.7
1979	71.0	72.4	102.8	126.2	183.2	252.7	270.8	223.7	192.0	122.8	73.9	82.7	1,734.2
1980	70.7	86.9	101.1	106.1	134.2	235.3	233.7	242.6	187.5	129.6	64.3	87.6	1,700.0
Ave.	72.2	71.0	100.7	126.2	163.0	229.7	265.7	238.8	197.9	137.0	85.2	75.2	1,765.6

2-5 Suspended Sediment and Runoff at Begkonak G.S. (1)

Date	Q (m <sup>3</sup> /sec)	C (ppm)	Date	Q (m <sup>3</sup> /sec)	C (ppm)
Aug. 28, 1969	42.7	30	Jan. 11, 1973	34.0	46
Oct. 31, 1969	38.3	79	Feb. 10, 1973	58.4	30
Nov. 25, 1969	40.4	43	Mar. 3, 1973	179.0	944
Dec. 29, 1969	194.0	511	Apr. 13, 1973	99.9	89
Jan. 12, 1970	153.0	541	May 8, 1973	87.9	138
Jun. 14, 1970	45.3	44	Jun. 20, 1973	54.2	140
Jun. 24, 1970	51.1	42	Jul. 10, 1973	40.0	32
Jun. 29, 1970	62.5	51	Aug. 20, 1973	34.2	73
Sep. 9, 1970	40.2	28	Sep. 19, 1973	32.4	50
Oct. 13, 1970	39.7	15	Oct. 19, 1973	30.1	129
Nov. 10, 1970	42.6	15	Nov. 23, 1973	30.1	33
Dec. 10, 1970	53.2	25	Dec. 15, 1973	38.5	54
Jan. 12, 1971	102.0	57	Jan. 27, 1974	38.1	114
Feb. 27, 1971	146.0	208	Feb. 26, 1974	190.0	1,065
Mar. 14, 1971	86.0	51	Mar. 23, 1974	125.0	54
Apr. 10, 1971	101.0	24	Apr. 13, 1974	71.6	16
May 16, 1971	78.9	100	May 16, 1974	66.0	48
Jun. 11, 1971	68.9	151	Jun. 15, 1974	46.8	12
Jul. 13, 1971	43.7	25	Jul. 13, 1974	35.2	41
Aug. 14, 1971	36.7	20	Aug. 13, 1974	33.5	28
Sep. 13, 1971	33.5	35	Nov. 20, 1974	34.1	35
Nov. 26, 1971	71.1	172	Dec. 18, 1974	185.0	479
Dec. 16, 1971	114.0	85	Jan. 4, 1975	196.0	346
Jan. 22, 1972	69.1	51	Feb. 18, 1975	116.2	52
Feb. 17, 1972	175.0	25	Mar. 18, 1975	116.2	93
Mar. 14, 1972	83.3	7	Apr. 18, 1975	130.0	257
Apr. 9, 1972	83.8	9	May 16, 1975	183.0	437
Jun. 7, 1972	54.5	100	Jun. 13, 1975	86.7	56
Jul. 23, 1972	36.9	170	Jul. 8, 1975	60.8	50
Aug. 13, 1972	36.8	54	Aug. 26, 1975	40.4	39
Sep. 18, 1972	35.6	79	Sep. 13, 1975	37.9	30
Nov. 23, 1972	34.2	47	Oct. 21, 1975	35.7	29
Dec. 18, 1972	40.2	33	Nov. 14, 1975	35.0	21

2-5 Suspended Sediment and Runoff at Beşkonak G.S. (2)

Date	Q (m <sup>3</sup> /sec)	C (ppm)	Date	Q (m <sup>3</sup> /sec)	C (ppm)
Dec. 27, 1975	86.0	215	Sep. 12, 1978	43.8	31
Jan. 20, 1976	122.0	74	Oct. 17, 1978	36.5	17
Feb. 22, 1976	74.3	25	Nov. 22, 1978	39.0	19
Mar. 12, 1976	68.6	35	Dec. 22, 1978	96.2	11
Apr. 17, 1976	256.0	1,391	Jan. 9, 1979	136.4	104
May 15, 1976	75.6	47	Feb. 23, 1979	118.0	34
Jun. 11, 1976	61.8	24	Mar. 23, 1979	91.7	56
Jul. 17, 1976	47.0	65	Apr. 12, 1979	79.0	9
Aug. 22, 1976	41.0	31	May 17, 1979	88.0	40
Sep. 18, 1976	33.7	45	Jun. 15, 1979	72.3	26
Oct. 10, 1976	89.5	69	Jul. 9, 1979	54.4	85
Oct. 16, 1976	76.0	449	Aug. 14, 1979	39.6	19
Nov. 20, 1976	39.1	98	Sep. 28, 1979	34.8	21
Dec. 29, 1976	133.0	143	Oct. 18, 1979	36.0	14
Jan. 14, 1977	55.0	323	Nov. 16, 1979	57.6	49
Feb. 4, 1977	83.2	68	Dec. 21, 1979	132.0	109
Mar. 19, 1977	88.3	15	Jan. 14, 1980	117.0	75
Apr. 15, 1977	88.2	59	Feb. 15, 1980	134.7	108
May 14, 1977	82.7	31	Mar. 22, 1980	98.2	117
Jun. 16, 1977	54.5	25	Apr. 10, 1980	137.2	139
Jul. 14, 1977	42.9	6	May 16, 1980	90.7	20
Aug. 13, 1977	38.2	39	Jun. 20, 1980	57.2	16
Sep. 23, 1977	35.5	7	Jul. 17, 1980	41.0	8
Oct. 15, 1977	33.1	3	Aug. 22, 1980	35.2	11
Dec. 13, 1977	37.7	23			
Jan. 8, 1978	248.0	352	Ave.		112.4
Jan. 9, 1978	193.0	168			
Feb. 7, 1978	308.0	598			
Mar. 17, 1978	92.1	61			
Apr. 15, 1978	144.6	101			
May 16, 1978	120.0	55			
Jun. 15, 1978	70.8	49			
Aug. 23, 1978	40.0	12			

2-6 Historical Floods observed at Beşkonak G.S. (1)

Date	Time (hr.)	Discharge (m <sup>3</sup> /sec)
Jan. 29, 1973	1	202
Jan. 29, 1973	12	180
Jan. 29, 1973	18	94
Jan. 30, 1973	6	317
Jan. 30, 1973	9	259
Jan. 30, 1973	14	395
Jan. 30, 1973	24	196
Jan. 31, 1973	24	107
Feb. 1, 1973	10	94
Feb. 1, 1973	24	85.5
Feb. 2, 1973	24	72.5
Feb. 4, 1973	24	63.2
Feb. 5, 1973	24	59.3
Feb. 6, 1973	24	58
Feb. 7, 1973	24	56.9
Feb. 8, 1973	24	55.8
Feb. 9, 1973	24	55.7
Feb. 10, 1973	24	56
Feb. 11, 1973	24	61.9
Feb. 12, 1973	24	83
Feb. 13, 1973	24	130
Feb. 14, 1973	24	111
Feb. 15, 1973	24	92.4
Feb. 16, 1973	24	84.5
Feb. 17, 1973	24	78.5
Feb. 18, 1973	24	86
Feb. 19, 1973	24	86
Feb. 20, 1973	24	78.5
Feb. 21, 1973	24	75.5
Feb. 22, 1973	24	69.7
Feb. 23, 1973	24	64.5
Feb. 24, 1973	24	194
Feb. 25, 1973	24	130
Feb. 26, 1973	20	752
Feb. 27, 1973	10	443
Feb. 28, 1973	15	620
Feb. 28, 1973	24	515
Mar. 1, 1973	24	268
Mar. 2, 1973	24	201
Mar. 3, 1973	24	168

Date	Time (hr.)	Discharge (m <sup>3</sup> /sec)
Dec. 31, 1974	12	66
Dec. 31, 1974	24	68.8
Jan. 1, 1975	12	105
Jan. 1, 1975	24	230
Jan. 2, 1975	6	515
Jan. 2, 1975	14	660
Jan. 2, 1975	24	515
Jan. 3, 1975	12	294
Jan. 4, 1975	12	206
Jan. 5, 1975	12	166
Jan. 6, 1975	12	143
Jan. 7, 1975	12	124
Jan. 8, 1975	12	114
Jan. 8, 1975	24	114
Jan. 9, 1975	24	515
Jan. 10, 1975	24	246
Jan. 11, 1975	24	175
Jan. 12, 1975	24	143
Jan. 13, 1975	24	124

Date	Time (hr.)	Discharge (m <sup>3</sup> /sec)
Dec. 18, 1975	24	66.8
Dec. 19, 1975	12	66.8
Dec. 19, 1975	18	77.2
Dec. 19, 1975	22	108
Dec. 20, 1975	6	740
Dec. 20, 1975	12	360
Dec. 20, 1975	24	236
Dec. 21, 1975	12	185
Dec. 21, 1975	24	156



2-6 Historical Floods observed at Beşkonak G.S. (2)

Date	Time (hr.)	Discharge (m <sup>3</sup> /sec)
Dec. 31, 1977	24	68.8
Jan. 1, 1978	12	70.2
Jan. 1, 1978	19	80
Jan. 1, 1978	24	166
Jan. 2, 1978	5	192
Jan. 2, 1978	9	918
Jan. 2, 1978	12	870
Jan. 2, 1978	24	475
Jan. 3, 1978	8	324
Jan. 3, 1978	12	280
Jan. 3, 1978	24	213
Jan. 4, 1978	12	181
Jan. 4, 1978	24	164
Jan. 5, 1978	12	151
Jan. 5, 1978	24	138
Jan. 6, 1978	12	130

Date	Time (hr.)	Discharge (m <sup>3</sup> /sec)
Jan. 30, 1978	12	156
Jan. 31, 1978	12	152
Jan. 31, 1978	16	154
Jan. 31, 1978	21	366
Jan. 31, 1978	23	348
Feb. 1, 1978	1	381
Feb. 1, 1978	12	264
Feb. 1, 1978	18	251
Feb. 1, 1978	24	280
Feb. 2, 1978	12	425
Feb. 2, 1978	24	315
Feb. 3, 1978	15	258
Feb. 4, 1978	9	239
Feb. 4, 1978	18	425
Feb. 4, 1978	22	303
Feb. 5, 1978	8	432
Feb. 5, 1978	24	315
Feb. 6, 1978	4	297
Feb. 6, 1978	8	435
Feb. 6, 1978	12	421
Feb. 6, 1978	24	360
Feb. 7, 1978	12	315
Feb. 7, 1978	24	286
Feb. 8, 1978	12	300
Feb. 8, 1978	24	425
Feb. 9, 1978	12	345
Feb. 9, 1978	24	315
Feb. 10, 1978	12	271
Feb. 11, 1978	12	212
Feb. 12, 1978	12	191
Feb. 13, 1978	12	173
Feb. 14, 1978	12	160
Feb. 15, 1978	12	149
Feb. 15, 1978	24	271
Feb. 16, 1978	2	286
Feb. 16, 1978	24	235
Feb. 17, 1978	24	192
Feb. 18, 1978	12	181
Feb. 18, 1978	24	246

Date	Time (hr.)	Discharge (m <sup>3</sup> /sec)
Jan. 18, 1978	0	113
Jan. 18, 1978	8	114
Jan. 18, 1978	14	128
Jan. 18, 1978	22	101
Jan. 18, 1978	24	126
Jan. 19, 1978	12	143
Jan. 19, 1978	21	156
Jan. 20, 1978	3	815
Jan. 20, 1978	10	1,200
Jan. 20, 1978	24	425
Jan. 21, 1978	12	300
Jan. 21, 1978	24	246
Jan. 22, 1978	5	239
Jan. 22, 1978	11	351
Jan. 22, 1978	18	271
Jan. 23, 1978	1	345
Jan. 23, 1978	12	268
Jan. 23, 1978	24	239

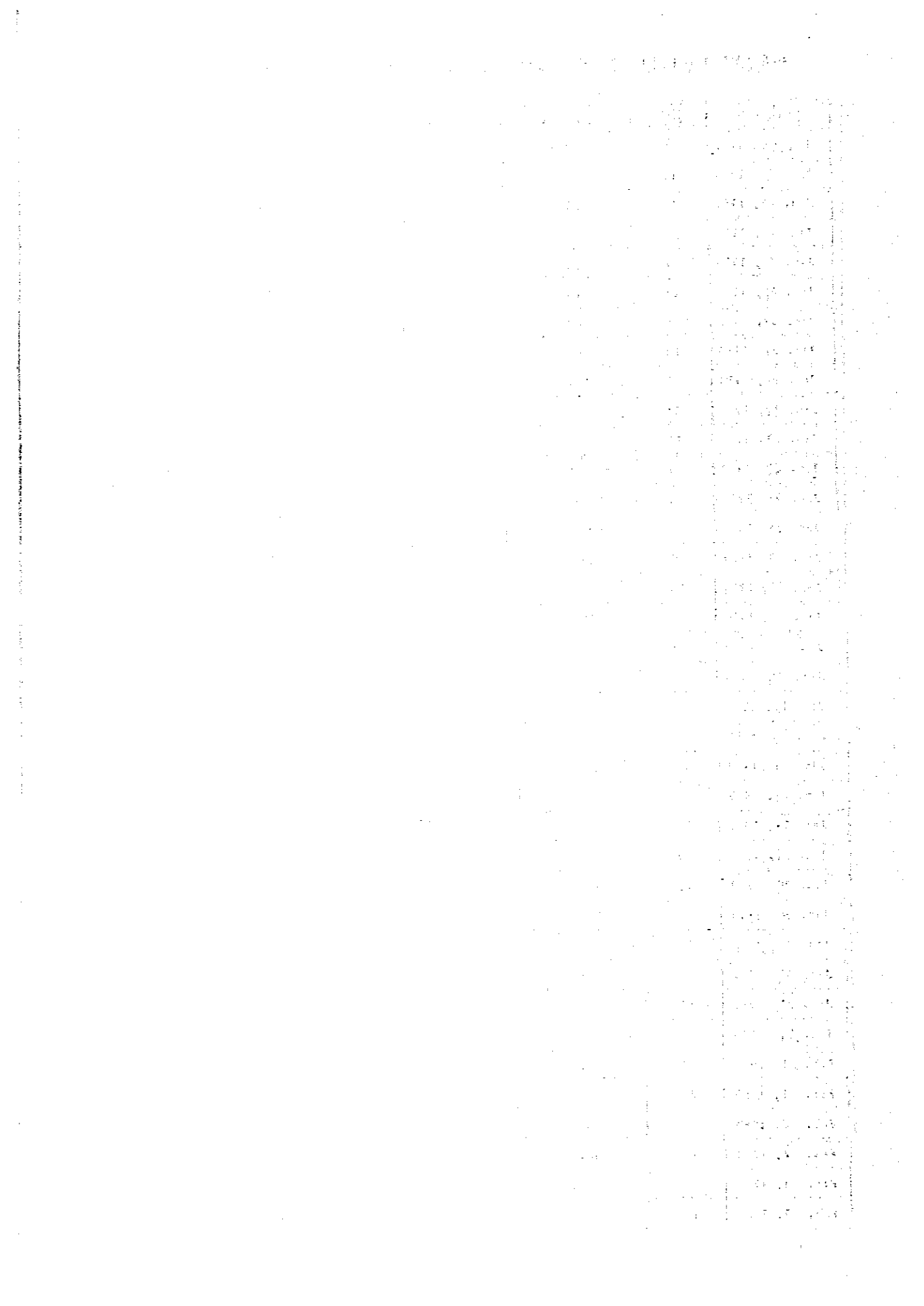
2-6 Historical Floods observed at Begkonak G.S. (3)

Date	Time (hr.)	Discharge (m <sup>3</sup> /sec)
Mar. 21, 1978	12	98
Mar. 22, 1978	24	145
Mar. 23, 1978	12	327
Mar. 23, 1978	24	216
Mar. 24, 1978	12	179
Mar. 24, 1978	24	166
Mar. 25, 1978	12	152
Mar. 25, 1978	24	147
Mar. 26, 1978	14	477
Mar. 26, 1978	24	309
Mar. 27, 1978	12	246
Mar. 28, 1978	12	212
Mar. 29, 1978	12	190
Mar. 29, 1978	20	179
Mar. 30, 1978	3	184
Mar. 30, 1978	20	158
Mar. 31, 1978	16	154

Date	Time (hr.)	Discharge (m <sup>3</sup> /sec)
Nov. 27, 1978	24	42.4
Nov. 28, 1978	12	42.4
Nov. 28, 1978	17	44
Nov. 28, 1978	18	48.5
Nov. 29, 1978	24	123
Nov. 29, 1978	2	191
Nov. 29, 1978	4	168
Nov. 29, 1978	5	157
Nov. 29, 1978	7	158
Nov. 29, 1978	8	215
Nov. 29, 1978	9	176
Nov. 29, 1978	11	299
Nov. 29, 1978	12	360
Nov. 29, 1978	13	366
Nov. 29, 1978	14	425
Nov. 29, 1978	14.30	725
Nov. 29, 1978	15	840
Nov. 29, 1978	17	693
Nov. 29, 1978	18	664
Nov. 29, 1978	21	425
Nov. 30, 1978	24	312
Nov. 30, 1978	8	256
Nov. 30, 1978	12	237
Nov. 30, 1978	24	177
Dec. 1, 1978	12	167
Dec. 1, 1978	24	130
Dec. 2, 1978	12	124
Dec. 2, 1978	24	118
Dec. 3, 1978	12	113
Dec. 3, 1978	24	106
Dec. 4, 1978	12	99.6
Dec. 4, 1978	24	95.5

2-6 Historical Floods observed at Begkonak G.S. (4)

Date	Time (hr.)	Discharge (m <sup>3</sup> /sec)
Jan. 26, 1980	8	80.1
Jan. 26, 1980	12	84.1
Jan. 26, 1980	16	83.4
Jan. 26, 1980	19	86
Jan. 26, 1980	22	93
Jan. 26, 1980	24	95.8
Jan. 27, 1980	4	103
Jan. 27, 1980	12	106
Jan. 27, 1980	17	109
Jan. 27, 1980	23	123
Jan. 27, 1980	24	138
Jan. 28, 1980	2	142
Jan. 28, 1980	4	200
Jan. 28, 1980	8	312
Jan. 28, 1980	10	280
Jan. 28, 1980	13	271
Jan. 28, 1980	16	242
Jan. 28, 1980	18	219
Jan. 28, 1980	24	193
Jan. 29, 1980	8	168
Jan. 29, 1980	12	159
Jan. 29, 1980	17	149
Jan. 29, 1980	22	144
Jan. 29, 1980	24	142
Jan. 30, 1980	8	135
Jan. 30, 1980	12	131
Jan. 30, 1980	16	128
Jan. 30, 1980	24	123
Jan. 31, 1980	8	115
Jan. 31, 1980	12	114
Jan. 31, 1980	24	108
Feb. 1, 1980	12	102
Feb. 1, 1980	24	97.2
Feb. 2, 1980	12	94.4
Feb. 2, 1980	24	90.2
Feb. 3, 1980	12	88.1
Feb. 3, 1980	24	86

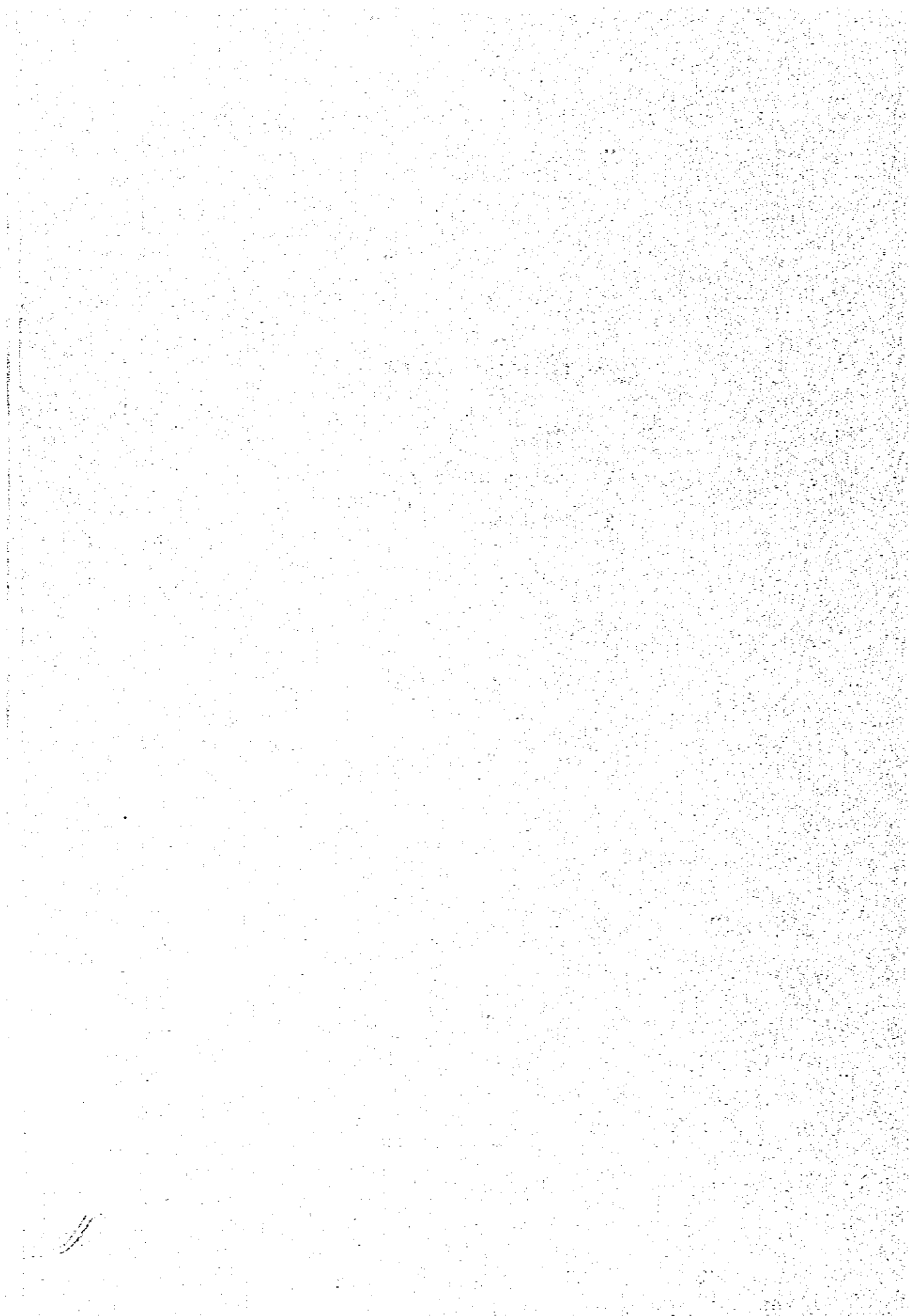


**A-3**

**GEOLOGICAL DATA**

**3-1 Log of Drillhole**

**3-2 P-Q Diagram**



3-1 Log of Drillhole (scale 1:1,000)

Original data is the log of drillhole (scale 1:100) attached to Sumerman's report, entitled "The Geological Engineering Investigation of Koprucay - Beskonak Dam Site and Grout Curtain Courses (1973)".

In calculating the Lugeon value, hydro static head is considered in addition to the gauge pressure.

01.00		
02.00		
03.00		
04.00		
05.00		
06.00		
07.00		
08.00		
09.00		
10.00		
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28.00		
29.00		
30.00		
31.00		
32.00		
33.00		
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35.00		
36.00		
37.00		
38.00		
39.00		
40.00		
41.00		
42.00		
43.00		
44.00		
45.00		
46.00		
47.00		
48.00		
49.00		
50.00		

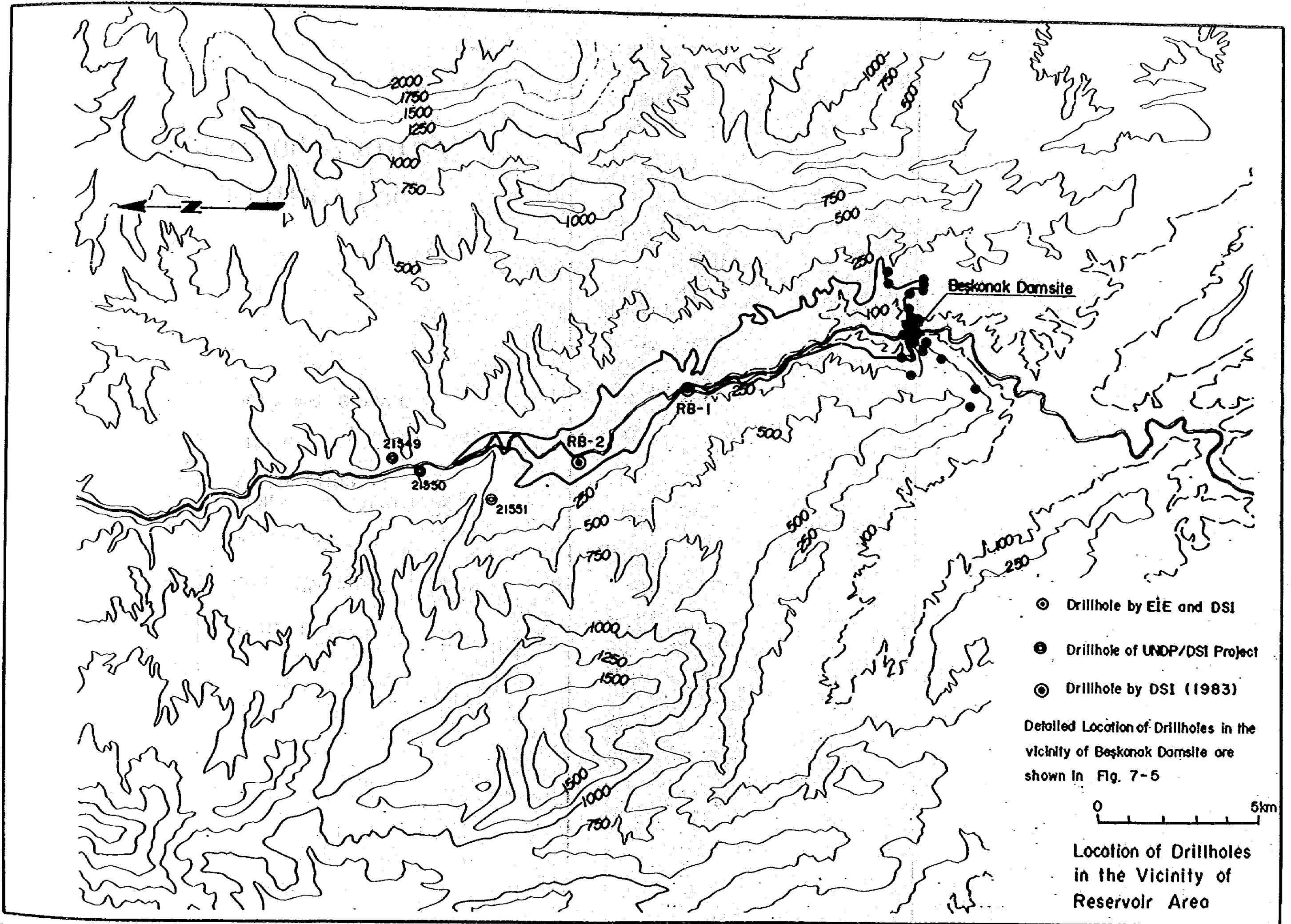
List of Drillholes at Beskonak Dam Site  
and its Vicinity

Name	Elevation (m)	Coordination		Length (m)	Remarks
		X	Y		
*LS-1	180.24	4,103,863.29	609,625.83	360.00	Inclined hole (53°)
*LSI-2	177.05	4,103,823.93	609,734.37	392.23	
*RS-3	89.83	4,103,891.09	609,427.18	140.10	In Adit RT-3
*LS-4	72.59	4,103,948.43	609,590.69	90.20	In Adit LT-1
*LS-5	113.73	4,103,948.84	609,656.59	125.00	In Adit LT-2
LS-6	196.74	4,103,745.98	609,894.05	400.22	
*RH-7	-	-	-	150.70	
*RH-8	-	-	-	125.00	
RH-10	-	-	-	150.25	
LS-11	193.22	4,103,811.40	610,193.62	300.00	
RS-12	115.40	4,104,040.99	608,722.27	150.00	
RS-13	243.90	4,103,685.95	609,225.64	353.23	
LS-14	207.62	4,103,806.20	610,569.61	330.17	
RS-15	267.71	4,103,463.14	609,051.62	314.80	
RS-16	198.86	4,103,421.63	609,264.01	230.00	
LS-17	136.75	4,103,565.07	609,903.42	190.00	
RS-18	297.64	4,102,666.64	608,592.24	371.00	
LS-19	194.14	4,104,551.58	611,376.23	431.00	
RS-20	289.52	4,101,652.78	607,867.06	375.00	
LS-21	137.94	4,104,417.59	610,852.60	228.00	
RS-22	254.70	4,103,792.75	608,257.28	260.00	
LS-23	68.68	4,104,128.61	609,744.94	152.00	
RS-24	272.20	-	-	320.00	
H1	164.79	4,103,540.21	610,709.94	100.00	Secondary dansite
H2	143.95	4,103,527.75	610,821.18	200.00	-
H3	164.05	4,103,524.00	610,960.37	65.00	-
<b>Total</b>		26 holes		6,310.68	

Note 1: Drillholes except RS-24, which was drilled by DSI in 1977, were drilled by EIE between 1967 and 1971.

2: Drillholes marked with \* are located at Dansite





- Drillhole by EIE and DSI
- Drillhole of UNDP/DSI Project
- ⊙ Drillhole by DSI (1983)

Detailed Location of Drillholes in the vicinity of Beşkonak Dam site are shown in Fig. 7-5

Location of Drillholes in the Vicinity of Reservoir Area

# LEGEND OF FACIES IN BORING LOG



SAND and GRAVEL



SHALE



ALTERNATION of  
SHALE and SANDSTONE



SANDSTONE



CONGLOMERATE



THIN SHALE

NO. LS - 1

TOP EL. 180.24

DEPTH: 360.00

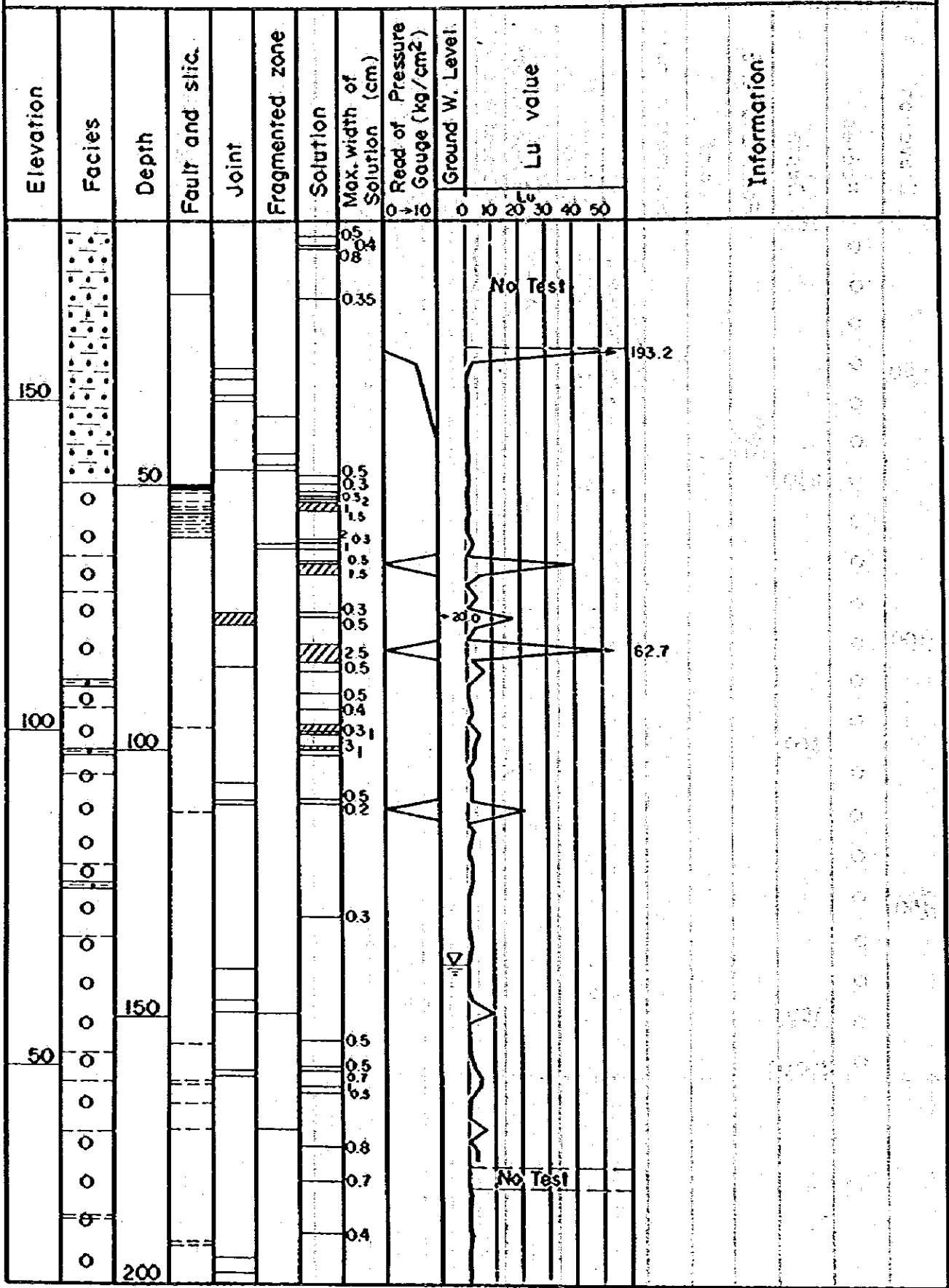
Elevation	Facies	Depth	Fault and slic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level		Lu value	Information
									0	50		
150	○	50				0.2	0.3	No Test	29.6	56.8		
	○				1	1.5						
	○				3	4						
100	○	100				0.5	0.8					
	○				0.3	0.2						
	○				0.2	0.2						
	○				0.2	0.2						
50	○	150				0.2	0.2					
	○				3	0.1						
	○				4	2						
0	○	200				2	2					
	○				2	0.2						
	○				0.5	0.5						



NO. LSI - 2

TOP EL. 177.05

DEPTH: 392.23



NO. LS 1-2

TOP EL. 177.05

DEPTH: 392.23

Elevation	Facies	Depth	Fault and slic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
								0 → 10	0 10 20 30 40 50		
0	○						0.5				Inclined hole
	○						2			No Test	
	○						0.8				
	○						1			No Test	
	○						4				
	○						0.5				
	○	250					0.3				
	○						1				
	○						1.2				
	○						1.5				
	○						0.2				
	○						0.3				
-50	○						0.5				
	○						0.3				
	○	300					0.5				
	○						1				
	○						0.4			No Test	
	○						1				
	○						0.5				
	○						0.4				
-100	○						1				
	○	350					1				
	○						0.6				
	○						1				
	○						0.5				
	○	392.23									









NO. L S - 6

TOP EL. 196.74

DEPTH: 400.22

Elevation	Facies	Depth	Fault and slic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
								0 10	0 10 20 30 40 50		
150		50					0.2				
							0.4				
							0.2				
							0.2				
							0.2				
							0.2				
100			100				0.2				
							1				
							0.1				
							0.4				
						0.4					
						0.2					
						0.4					
						0.4					
						0.5					
						0.5					
50		150				1					
						0.3					
						0.2					
0		200									

← coal

← coal

← coal

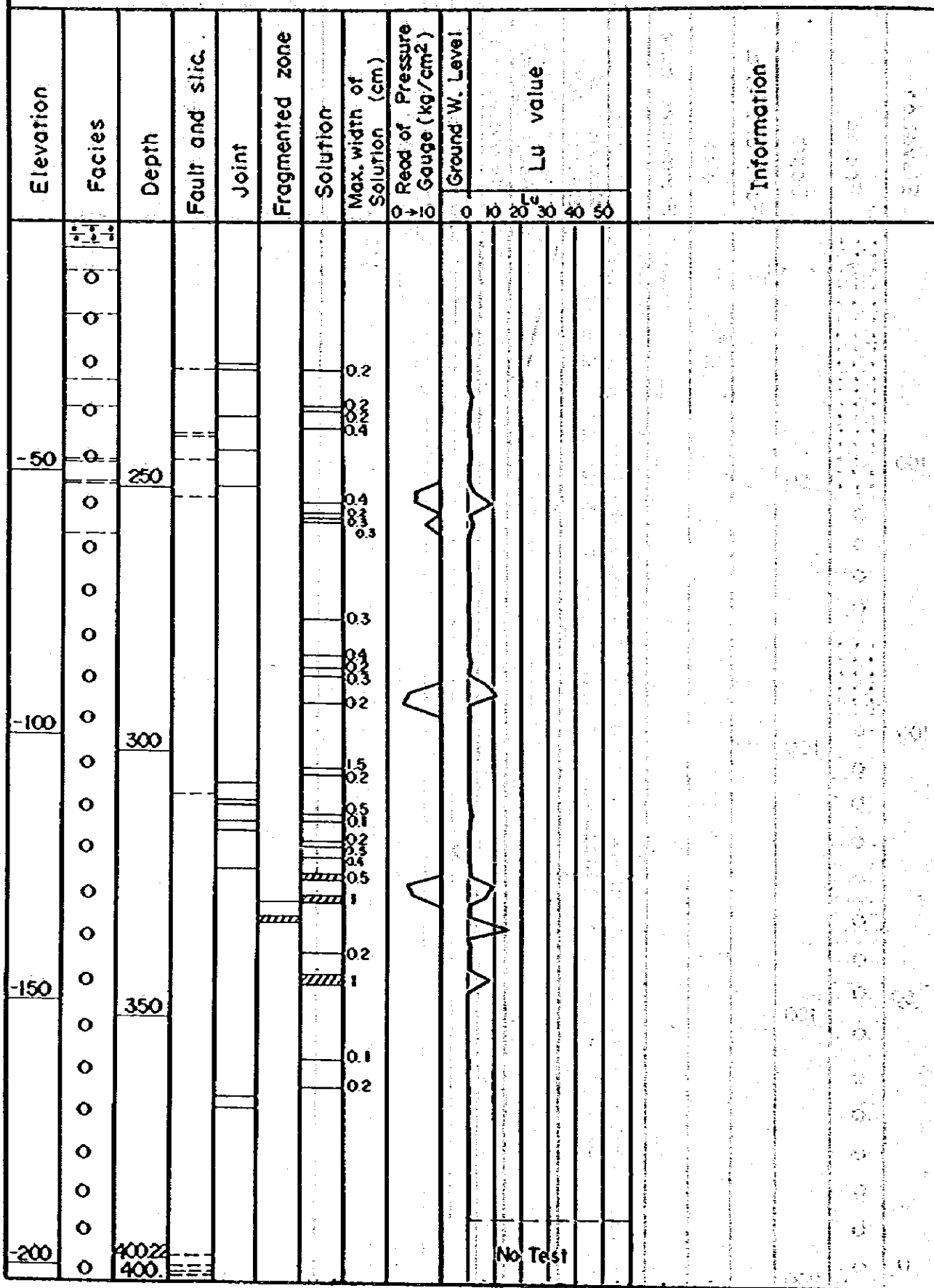
← coal

No Test

NO. LS - 6

TOP EL. 196.74

DEPTH: 400.22



NO. RH-7

TOP EL.(28.00)

DEPTH: 150.70

Elevation	Facies	Depth	Fault and strc.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
0		50					0.2 0.4	0 10		0 20 30 40 50	No Test
-50		100					0.2 0.4	0 10			No Test
-100		150.70					0.2 0.4	0 10			No Test

NO. R H - 8		TOP EL.(28.00)		DEPTH: 125.00							
Elevation	Facies	Depth	Fault and slic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
0		50					0.3				
							0.5				
-50		125.00					0.3				
							0.5				
							0.2				
							0.2				
							0.5				
							0.1				
							0.5				
							0.4				
							0.2				
							1.15				
							1.03				
							1.05				
2											
0.5											
1.5											
1.03											
1.5											
0.2											
1											
0.5											

NO. RH 10

TOP EL. (28.00)

DEPTH: 150.25

Elevation	Facies	Depth	Fault and stic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read. of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
0		50					0.2			No Test	
-50		100					0.3			No Test	
-100		150					0.3 0.5 1.0 1.5			No Test	
150.25		150.25					3				73.6 78.4 61.3 73.6

NO. LS - 11

TOP EL. 193.22

DEPTH 300.00

Elevation	Facies	Depth	Fault and slice	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read. of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
150		50					0.2				<p>Information</p> <p>300</p> <p>200</p> <p>100</p> <p>50</p> <p>0</p>
100		100					0.2				
50		150					0.3				
							0.3				
							0.3				
							0.2				
							0.4				
							0.2				
							3				
200											





NO, RS - 12

TOP EL. 115.40

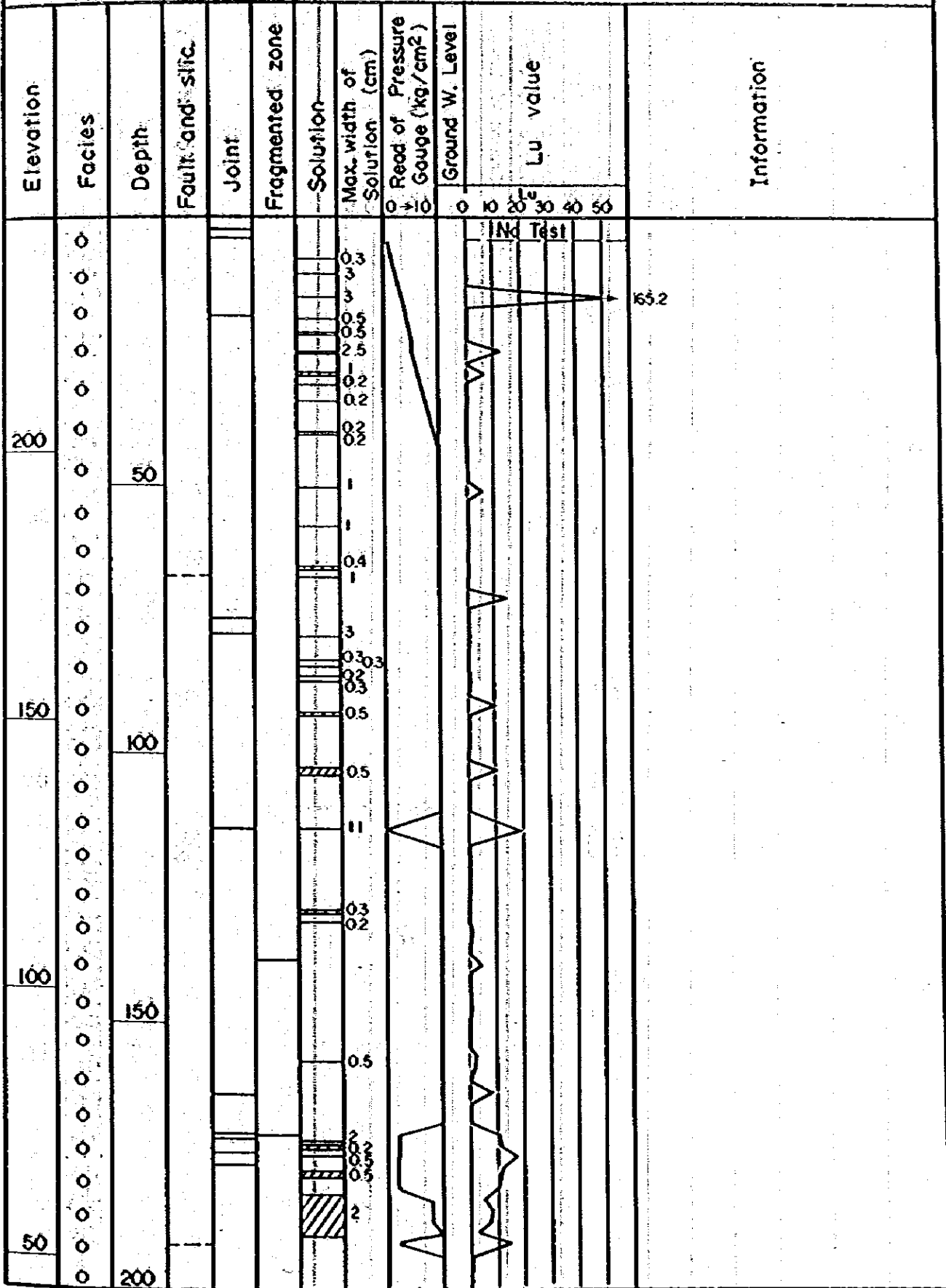
DEPTH: 150.00

Elevation	Facies	Depth	Fault and stic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read. of Pressure Geuge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
100		100					0.5				<p>Information</p> <p>57.7</p> <p>No Test</p>
50		50				0.4					
0		100				11					
		150									

NO. RS - 13

TOP EL. 243.90

DEPTH: 353.23





NO. LS 14

TOP EL. 207.62

DEPTH: 330.17

Elevation	Facies	Depth	Fault and slic.	Joint	Fragm. zone	Solution	Max. width of Solution (cm)	Read. of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
200							0.3				<p>Information</p>
150		50				0.3				No Test	
100		100									
50		150									
200							0.5				
							0.2				

NO. L S -14		TOP EL. 207.62		DEPTH: 330.17		
Elevation	0					
Facies	o p o					
Depth		250		300	330.17	
Fault and slt.						
Joint						
Fragmented zone						
Solution						
Max. width of Solution (cm)			00	33		
Read of Pressure Gauge (kg/cm <sup>2</sup> )	0	10				
Ground W. Level	0	10	20	30	40	50
Lu value						
Information	<p>330.17</p>					

NO. R S - 15

TOP EL. 267.71

DEPTH: 314.80

Elevation	Facies	Depth	Fault and slic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
250	o o o o						0.3	0			
200	o o o o	50					0.1	10			
150	o o o o	100					0.2	20			
100	o o o o	150					0.3	30			
	o o o o	200					0.5	40			
	o o o o						0.5	50			
	o o o o						0.1				
	o o o o						0.2				
	o o o o						0.3				
	o o o o						0.5				
	o o o o						1				
	o o o o						0.3				
	o o o o						1				
	o o o o						0.3				
	o o o o						2				
	o o o o						1				

NO. RS - 15		TOP EL. 267. 71		DEPTH: 314.80	
Elevation	8		0		
Facies	0		0		
Depth	250		300		
Fault and slic.	34.80				
Joint					
Fragmented zone					
Solution					
Max. width of Solution (cm)			0 10 20 30 40 50		
Read of. Pressure Gauge (kg/cm <sup>2</sup> )			0 10 20 30 40 50		
Ground W. Level					
Lu value					
Information					
			2		
			3		
			02		
			02		
			02		
			1		
			03		
			03		
			02		
			02		
			4		
			2		
			05		
			No Test		

NO. RS - 16

TOP EL. 198.86

DEPTH: 230.00


Elevation	Facies	Depth	Fault and slic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read. of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
150		50					0.3			No Test	
100		100					0.3			No Test	
50		150					0.2				
0		200					0.3				
							0.2				
							0.4				
							0.4				
							0.3				
							0.3				
							0.5				
							0.4				
							0.4				



NO. RS - 16

TOP EL. 198.86

DEPTH: 230.00

Elevation		
Facies		○ ○ ○ ○ ○
Depth		230.00
Fault and' slic.		
Joint		
Fragmented zone		
Solution		
Max. width of Solution (cm)		
Read of Pressure Gauge (kg/cm²)		0 10
Ground W. Level		0 10 20 30 40 50
Lu value		
Information		

NO. LS - 17

TOP EL. 136.75

DEPTH: 190.00

Elevation	Facies	Depth	Fault and slic	Joint	Fragmented zone	Solution Max. width of Solution (cm)	Read of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level Lu value	Information
100						0.3	0 → 10 0 10 20 30 40 50	No Test	
50		50			0.3 0.3 0.2 0.3 0.3 0.3 0.4 0.3 0.2 0.3 0.2 0.2 0.2				
0		100				0.2 0.2			
		150				0.5			
		180.00				0.3 0.2 0.2 0.3 0.2			





NO. LS - 19

TOP EL. 194.14

DEPTH: 431.00

Elevation	Facies	Depth	Fault and slic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information	
0	[Diagrammatic representation of rock facies]	150					0	0	0		[Information field]	
		100	50				0	10	20	30		
		50	100					0	10	20		
200.		150						0	10	20		

NO. LS - 19

TOP EL. 194.14

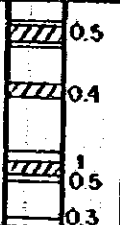
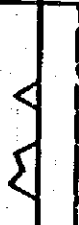

DEPTH: 431.00

Elevation	Facies	Depth	Fault and slic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read-off Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Information
-50		250								
-100		300								
-150		350								
-200		400				0.5				

NO. LS - 19

TOP EL. 194.14

DEPTH: 431.00

Elevation	Facies	Depth	Fault and slic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
	○ ○ ○ ○ ○	431.00					0.5 0.4 0.5 0.3			No Test	





NO. RS - 20

TOP EL. 289.52

DEPTH: 375.00

Elevation	Facies	Depth	Fault and slic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read. of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
50		250					0.05 0.02				
0		300					0.02				
-50		350					0.03 0.01 0.03				
		375.00									

NO. LS - 21

TOP EL. 137.94

DEPTH: 228.00

Elevation	Facies	Depth	Fault and shic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read. of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information	
										Lu		
100		50								No Test		
		100								No Test		
50		150								No Test		
0		200								No Test		
												No Test
												No Test
												No Test
												No Test
												No Test
												No Test



NO. RS - 22 TOP EL. 254.70 DEPTH: 260.00

Elevation	Facies	Depth	Fault and slic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read. of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
250	o						0 10	0 10 20 30 40 50			
200	o	50				10	0.5	No Test			
150	o	100				0.3	1	No Test			
100	o	150				0.5	2	No Test			
200	o	200				0.3	0.5				166.7

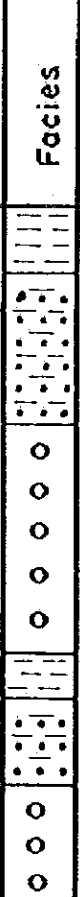


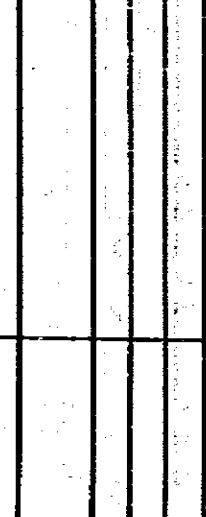
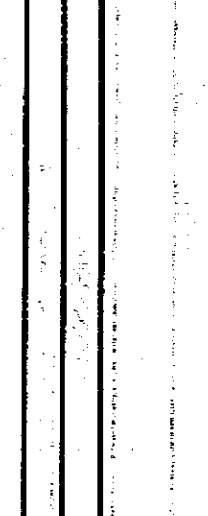
NO. RS - 22		TOP EL. 254.70		DEPTH: 260.00	
Elevation		8			
Facies		o o o o o o o o o o			
Depth		250		260.00	
Fault and slic.					
Joint					
Fragmented zone					
Solution					
Max. width of Solution (cm)		0.2 0.5		0.2 0.5	
Read of Pressure Gauge (kg/cm <sup>2</sup> )				0 10 20 30 40 50	
Ground W. Level					
Lu value					
Information					

NO. L.S. - 23

TOP EL. 68.68

DEPTH: 152.00

Elevation	Facies	Depth	Fault and slic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
							0-10	0-10	0 10 20 30 40 50		
80		50									
0		100									
-30		150					3x3	0.5 2.2 5			
											55.0 55.7 56.0 54.5 54.5 66.7 67.8
											No Test
											No Test
											61.1
											53.6 50.7

NO. H - I		TOP EL. 164.70		DEPTH: 100.00	
Elevation	150	100		100.00	
Facies					
Depth	50				
Fault and slic.					
Joint					
Fragmented zone					
Solution					
Max. width of Solution (cm)	Hole				
Read. of Pressure Gauge (kg/cm <sup>2</sup> )					
Ground W. Level					
Lu value	No Test				
Information	No Test				





NO. H - 3

TOP EL. 164.05

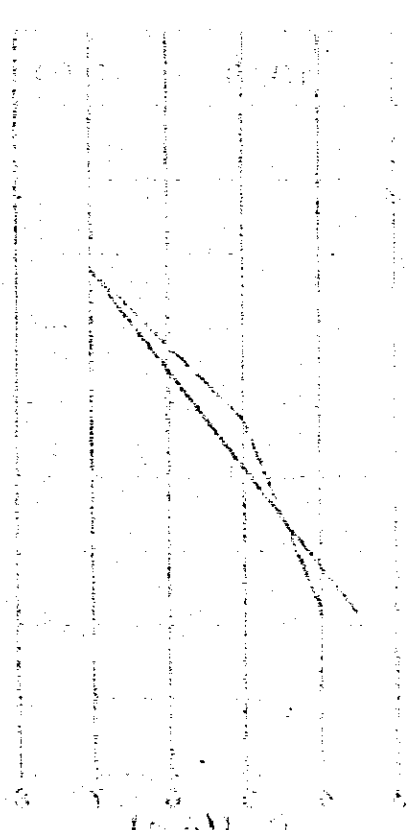
DEPTH: 65.00

Elevation	Facies	Depth	Fault and slic.	Joint	Fragmented zone	Solution	Max. width of Solution (cm)	Read of Pressure Gauge (kg/cm <sup>2</sup> )	Ground W. Level	Lu value	Information
100		65.00								<p>No Test</p>	
150		50								<p>No Test</p>	

3-2 P-Q Diagram

In order to obtain the indirect informations about the state of openings, such as joints, cracks and cavities, P-Q diagrams were drawn. P-Q diagrams of those permeability test sections are shown below, in which sections Lugeon value showed more than 1 Lu and tests were executed under specified pressure steps.

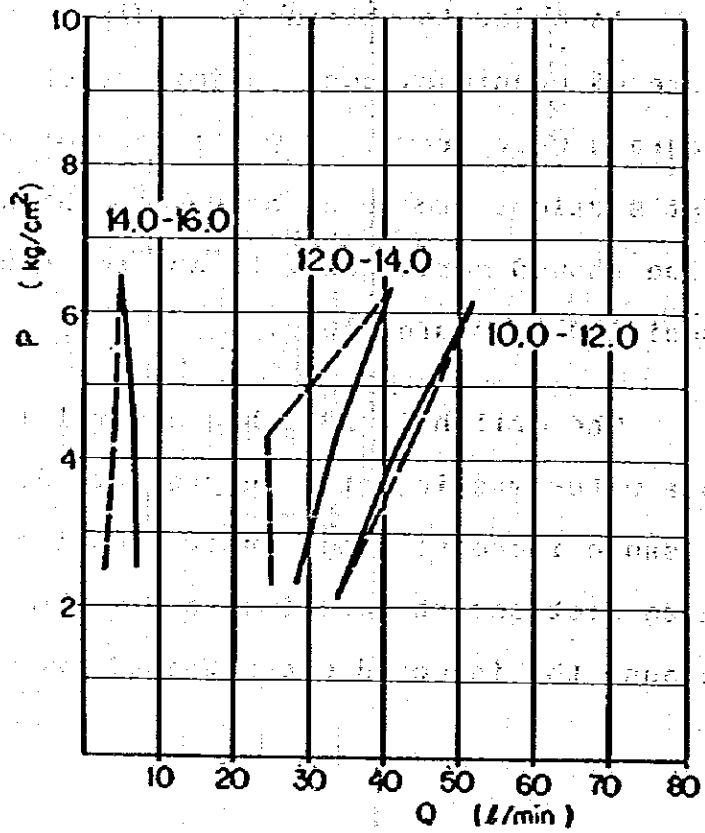
The drillhole RB-2 has several test sections where more water was injected in pressure decrease stage than in pressure increase stage under same injection pressure. In these sections the openings are supposed to be widened because the injected water washed away the filled materials.



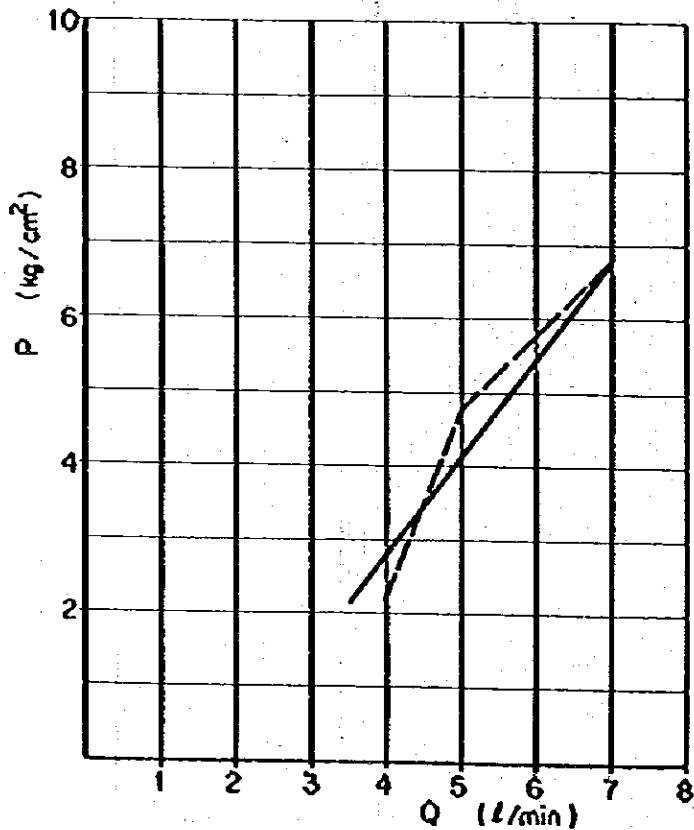
P - Q Diagram Drillhole RB - 1 (1<sup>st</sup> 3<sup>rd</sup>)

10.0 ~ 12.0 m  
 12.0 ~ 14.0 m  
 14.0 ~ 16.0 m

— Pressure increase  
 - - - Pressure decrease

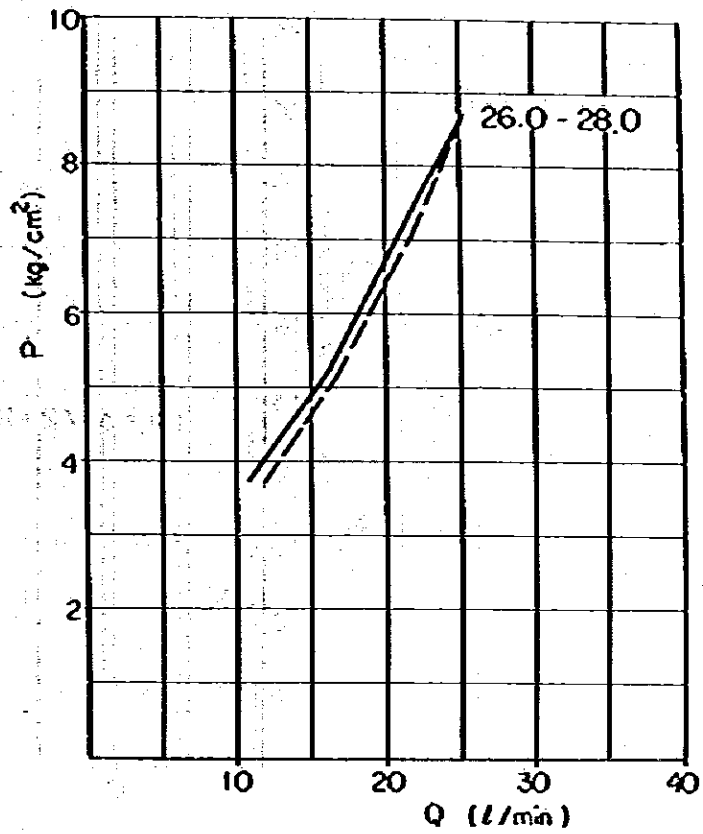
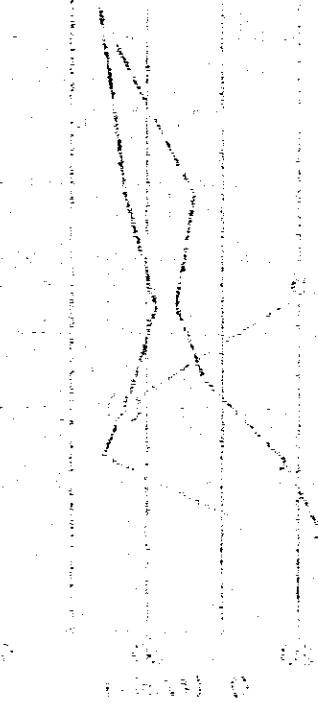


16.0 ~ 18.0 m

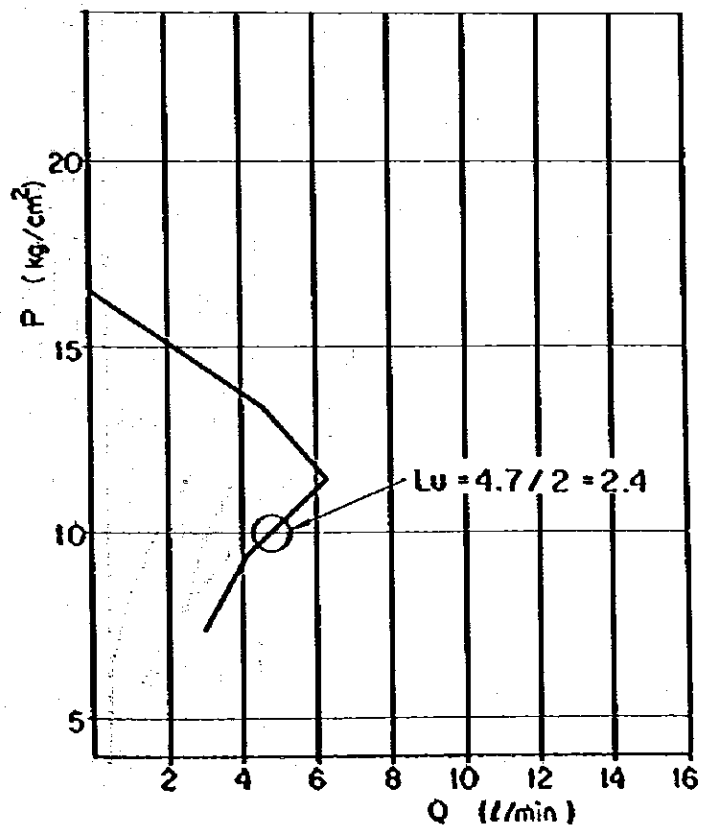
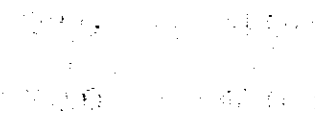


P - Q Diagram Drillhole RB - 1 (2 - 3)

26.0 ~ 28.0 m



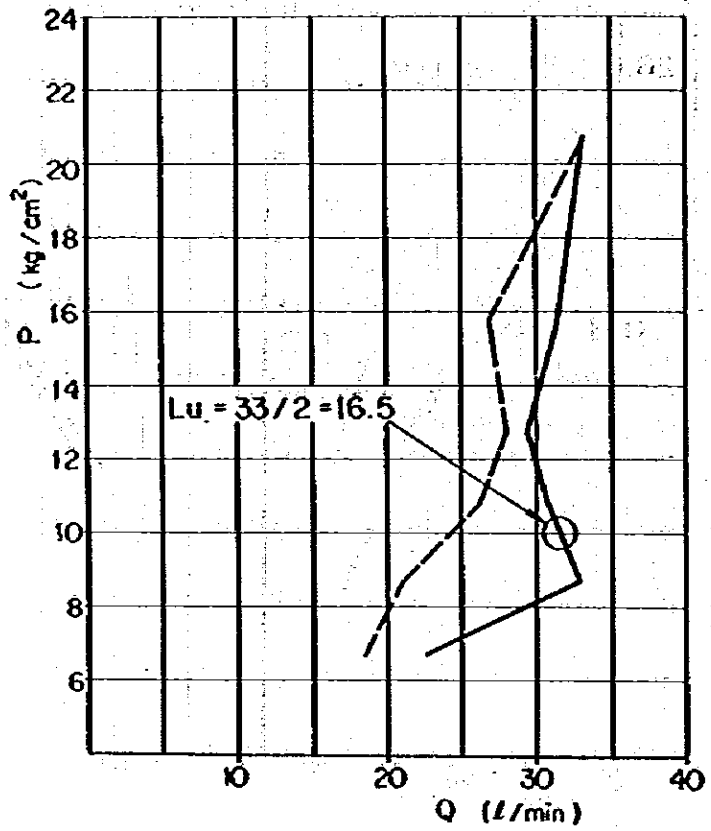
60.0 ~ 62.0 m



P - Q Diagram

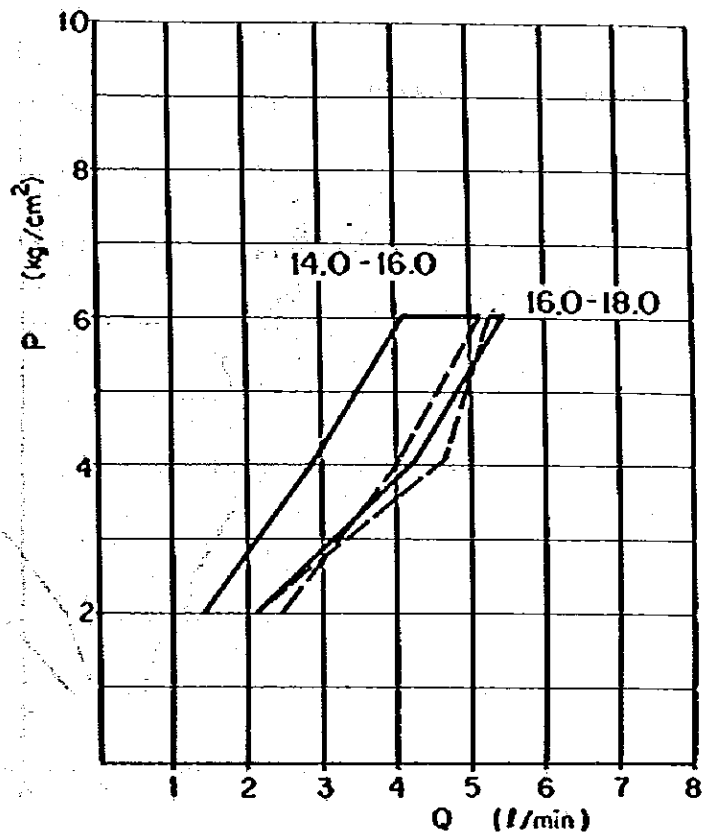
Drillhole RB - 1 (3-3)

86.0 ~ 88.0 m

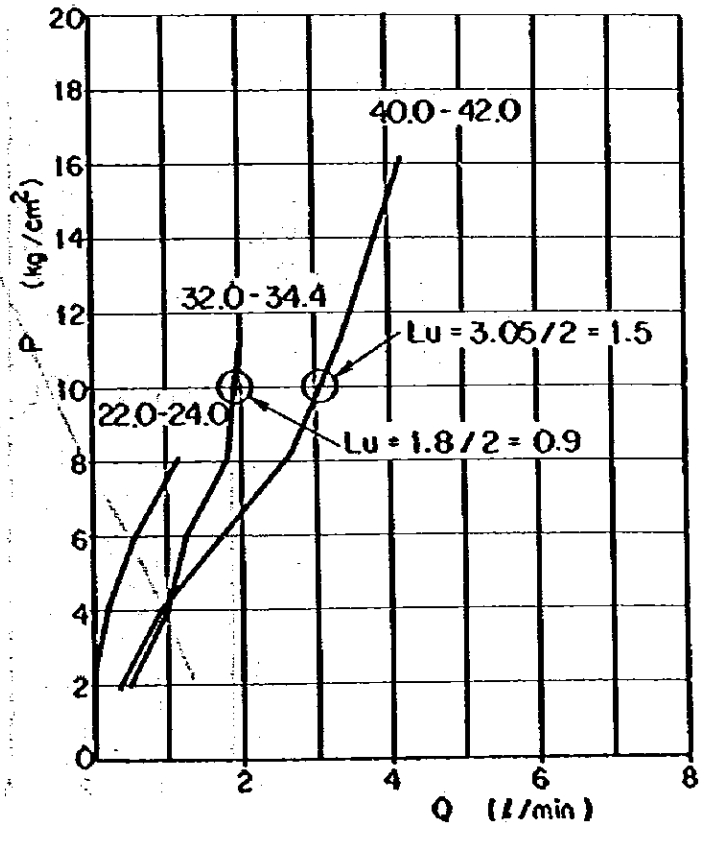


P-Q Diagram of Drillhole RB - 2 (1 - 7)

14.0 ~ 16.0m  
 16.0 ~ 18.0m

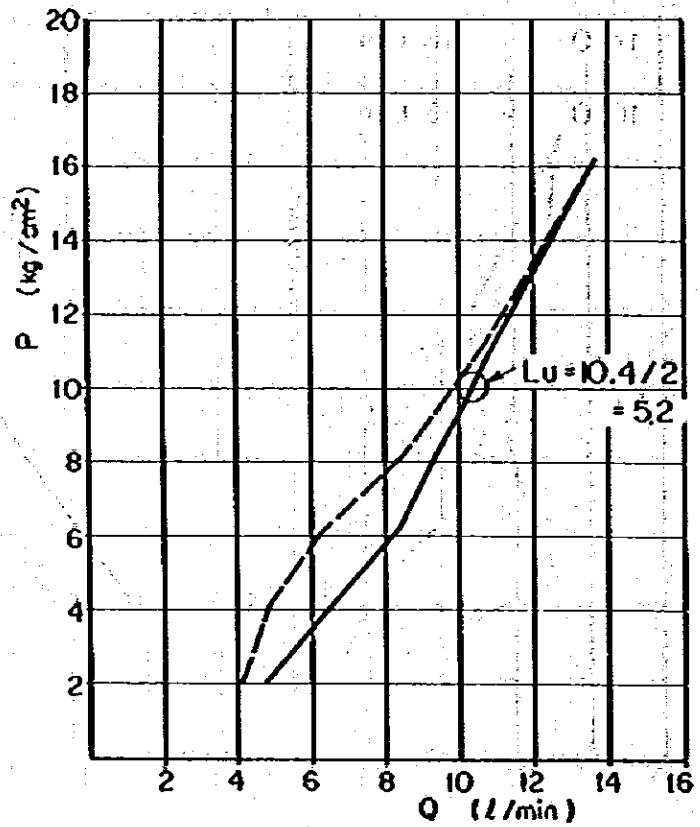


22.0 ~ 24.0m  
 32.0 ~ 34.0m  
 40.0 ~ 42.0m

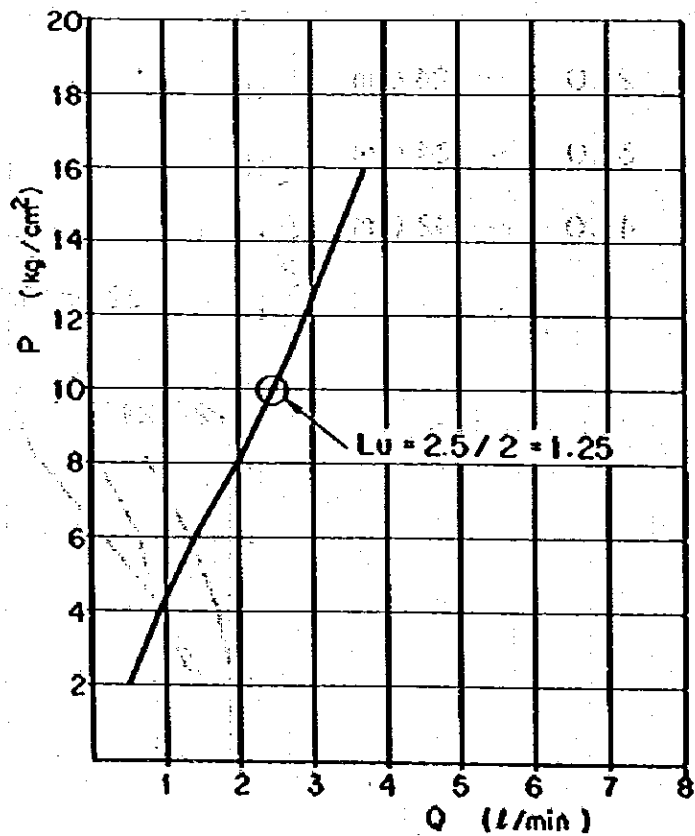


P - Q Diagram Drillhole RB - 2 (2-7)

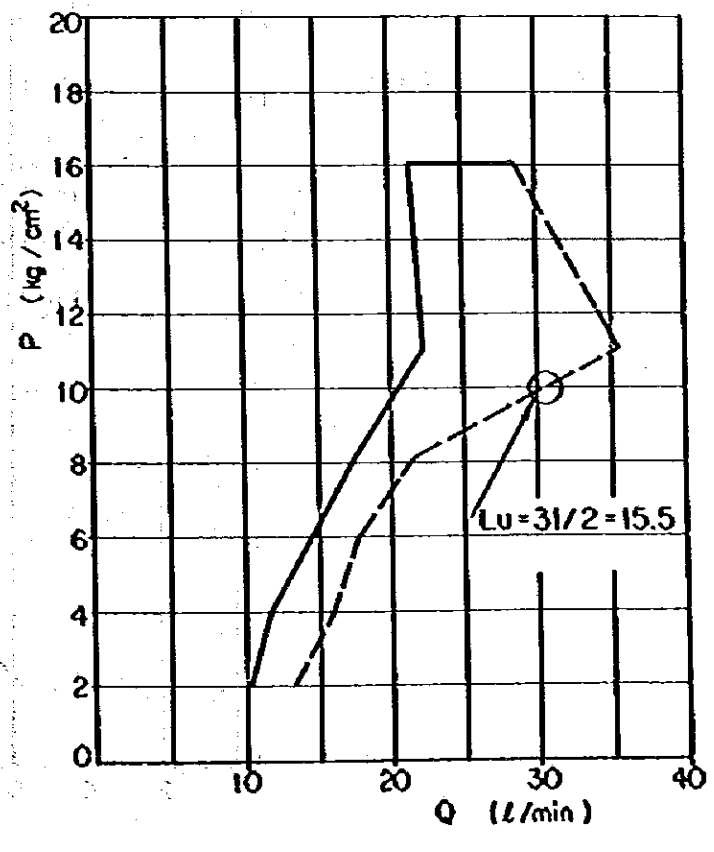
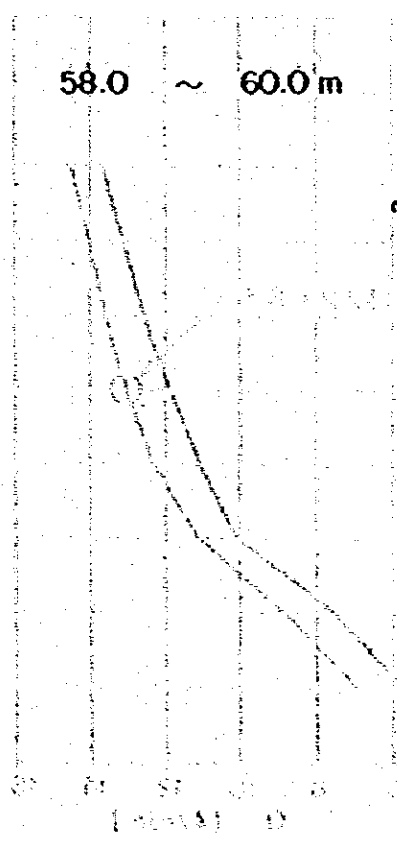
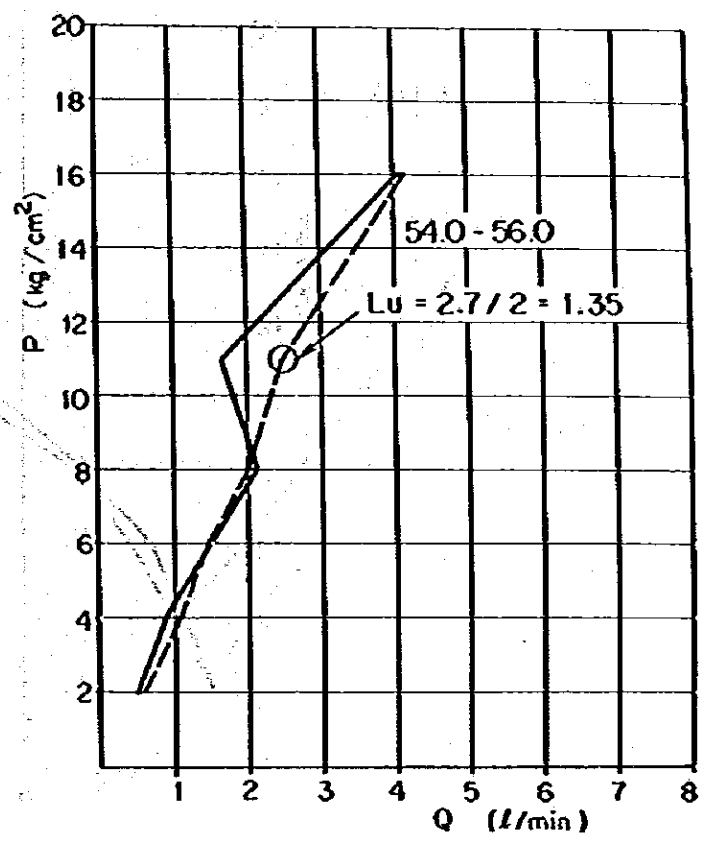
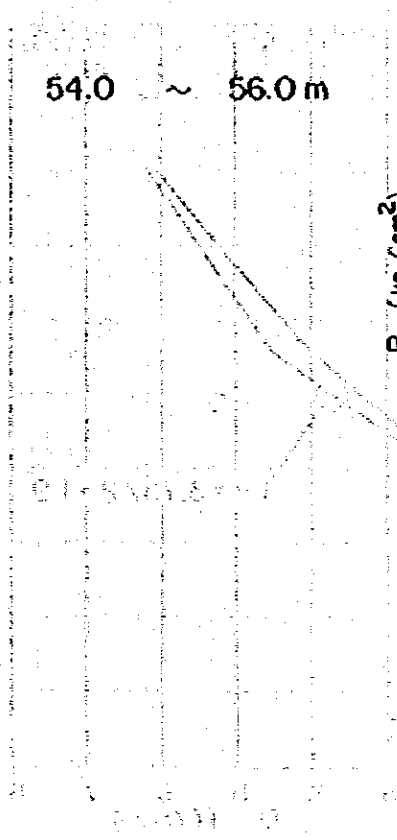
50.0 ~ 52.0 m



52.0 ~ 54.0 m



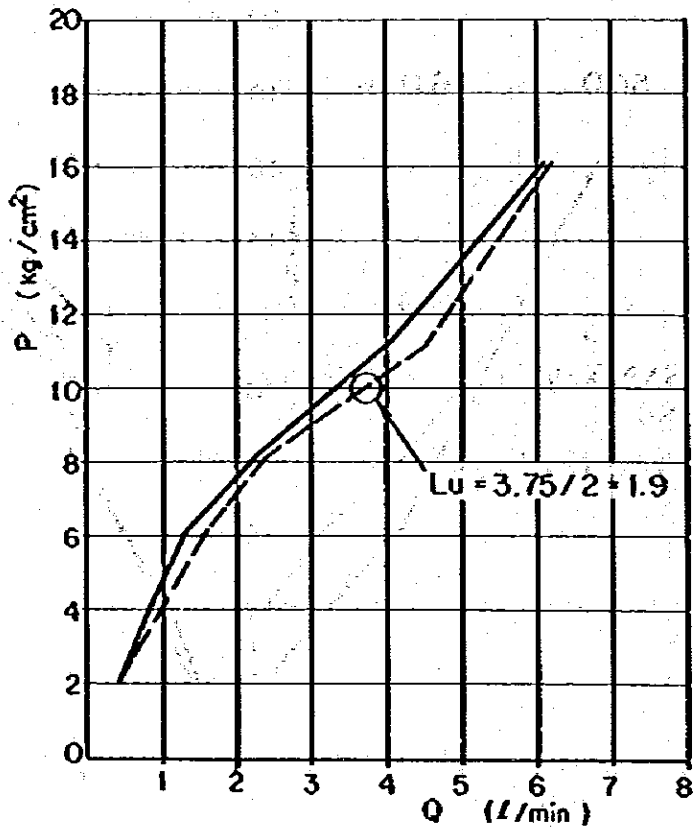
P - Q Diagram Drillhole RB - 2 (3 - 7)



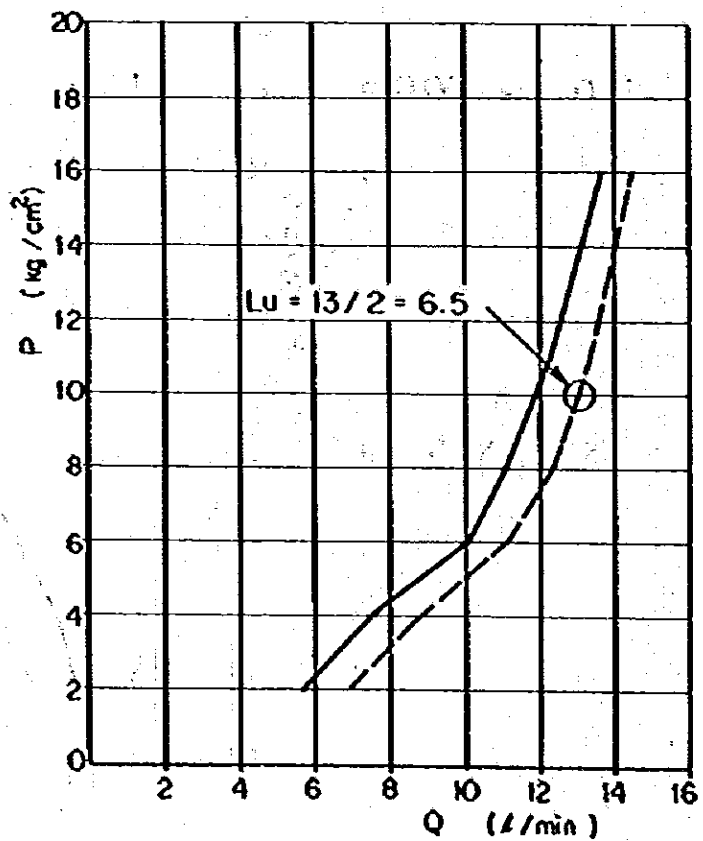


P - Q Diagram Drillhole RB - 2 (4 - 7)

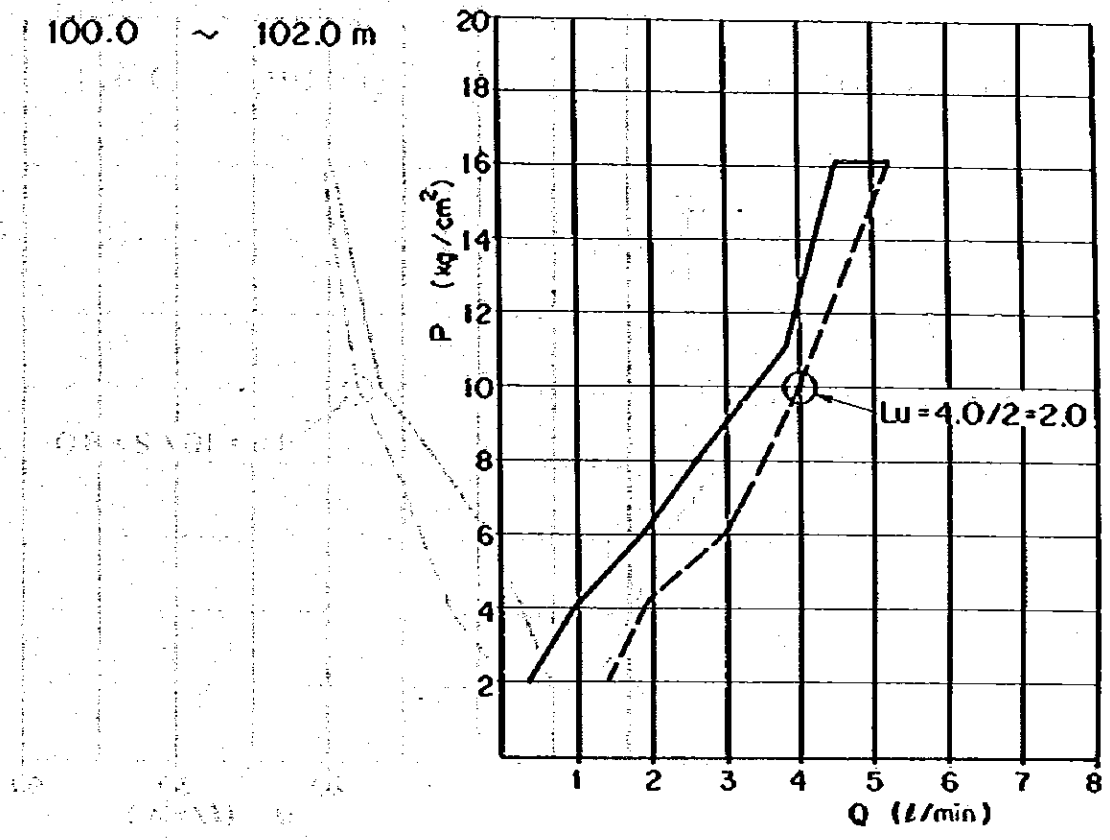
74.0 ~ 76.0m



90.0 ~ 92.0m

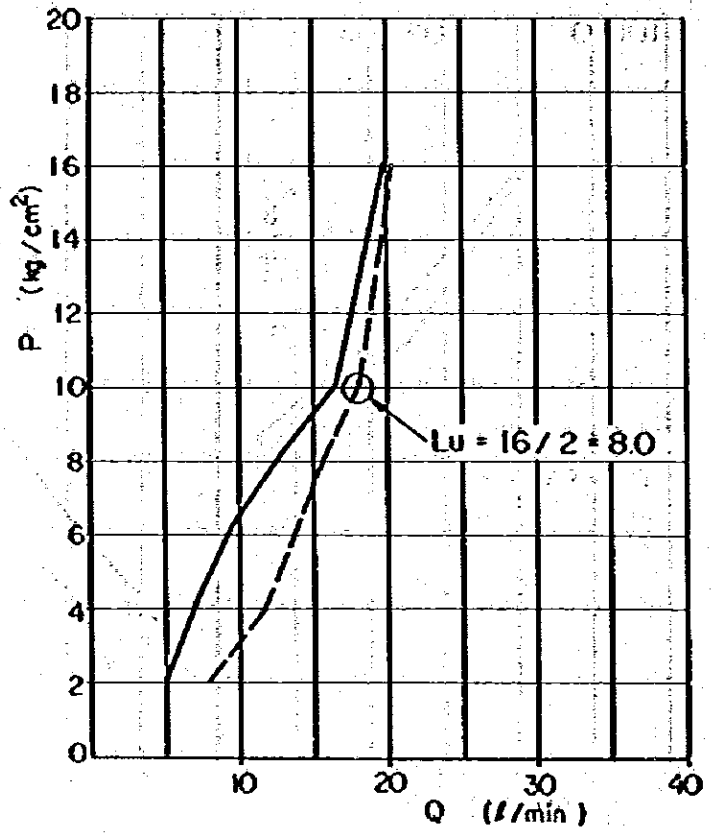


P-Q Diagram Drillhole RB-2 (5-7)

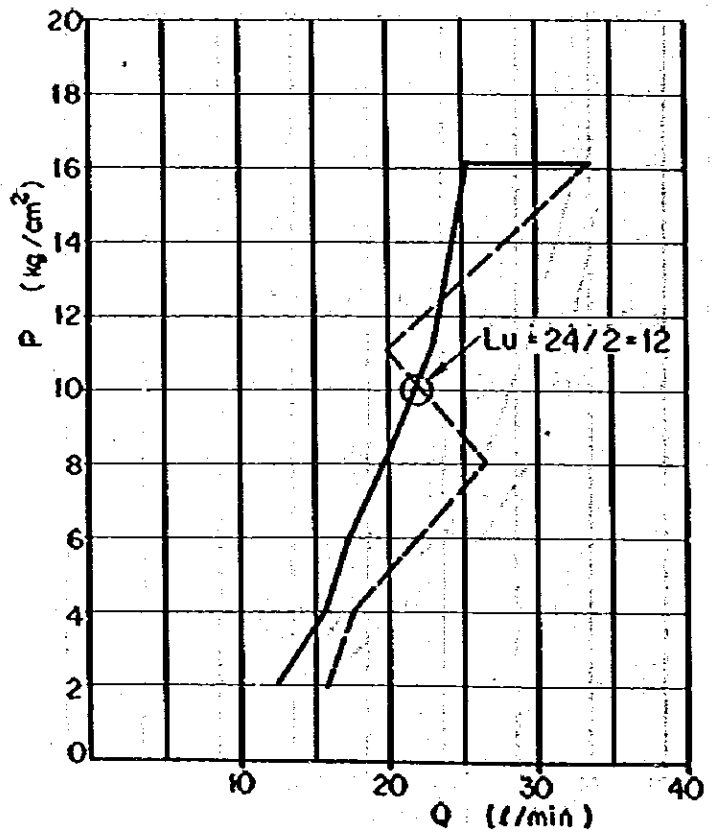


P - Q Diagram Drillhole RB - 2 ( 6 - 07 )

102.0 ~ 104.0 m



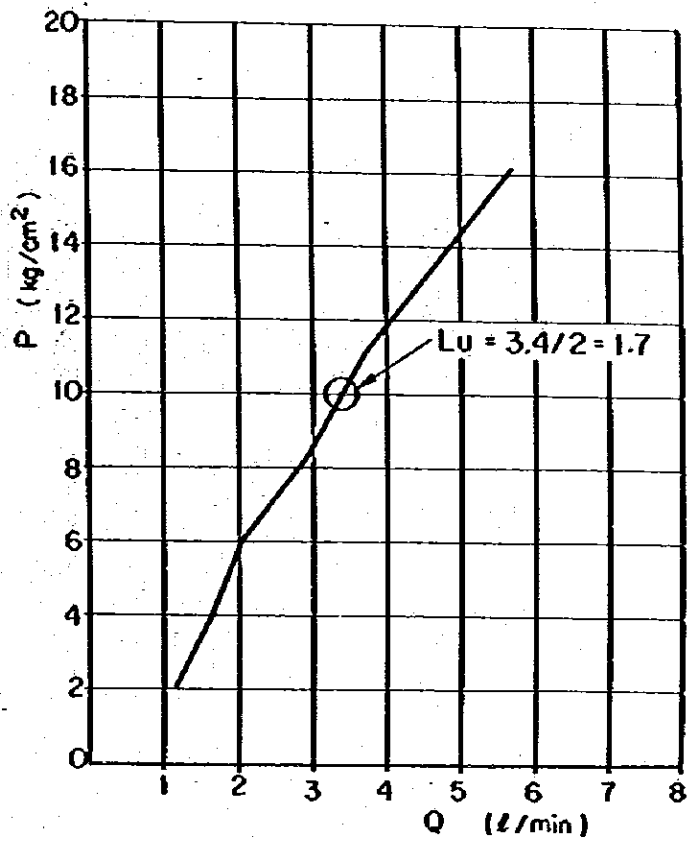
104.0 ~ 106.0 m



P - Q Diagram

Drillhole RB - 2 (7 - 7)

108.0 ~ 110.0 m



PROBATION DEPENDENT VARIABLE:  $\ln(\text{GDP})$  INDEPENDENT VARIABLE:  $\ln(\text{GDP})$

