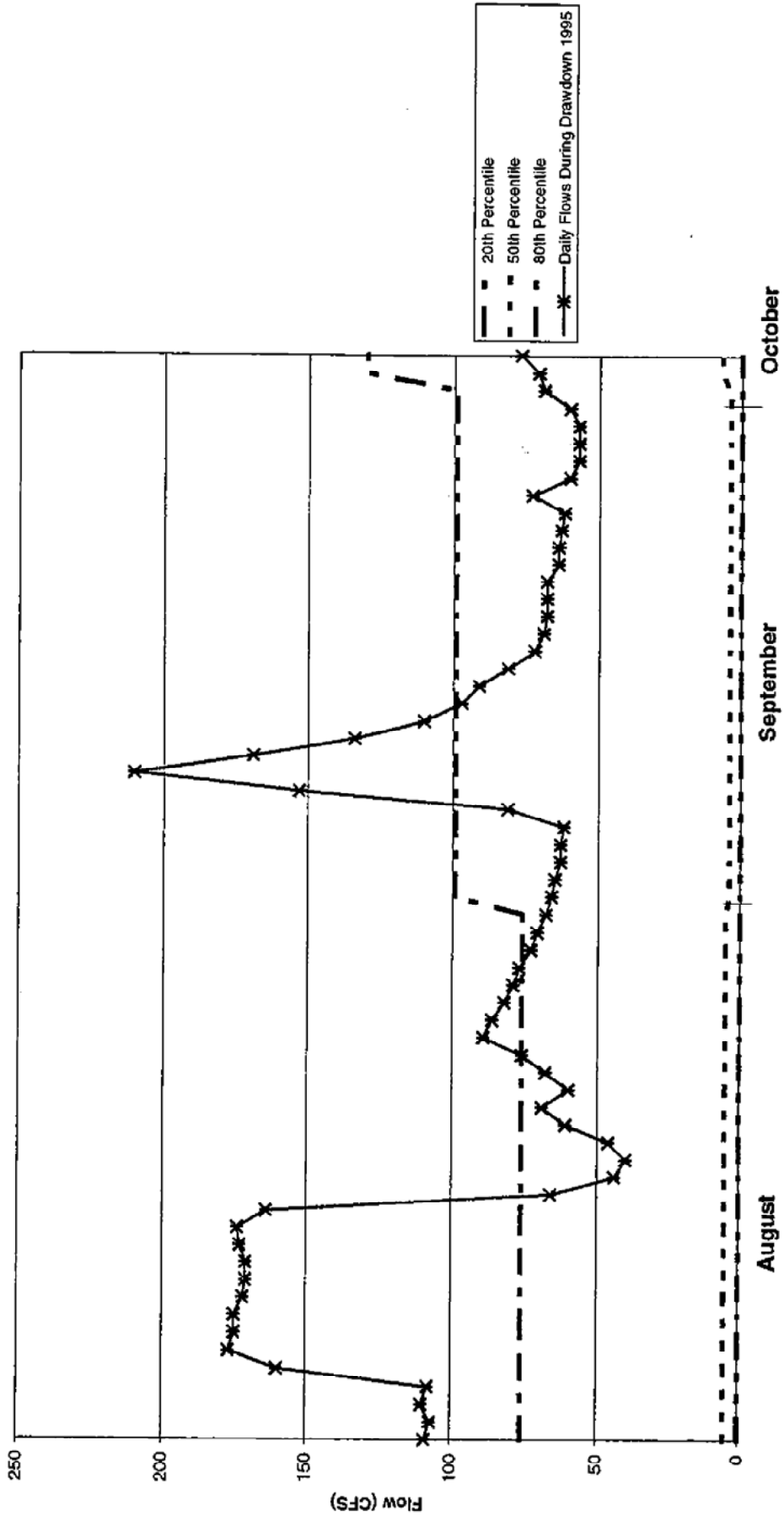


# THIEF RIVER

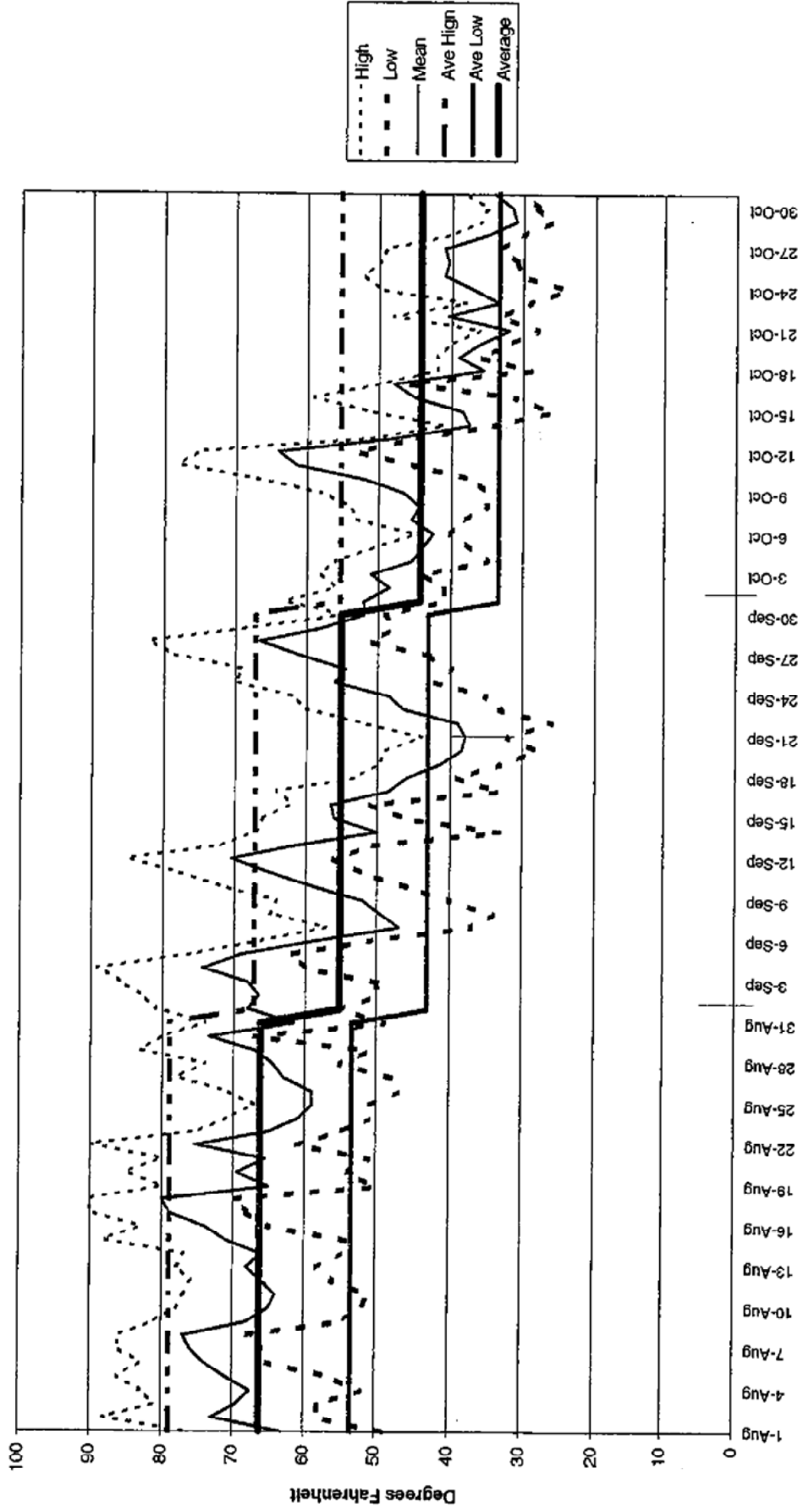


Source :

United States Geological Survey

Figure 4

OBSERVED AND AVERAGE RECORDED TEMPERATURES



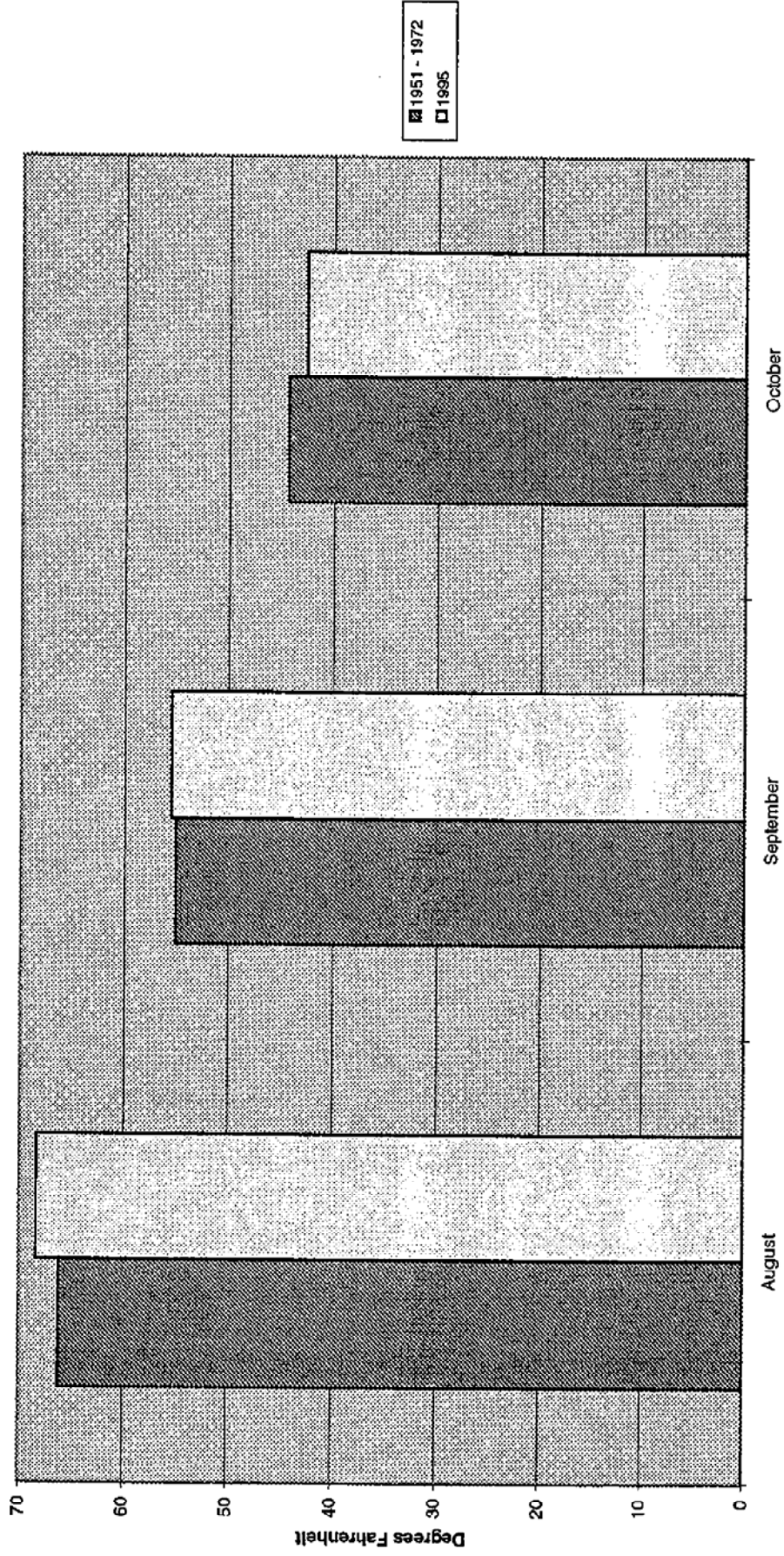
Source :

1995 : Mn Climatology Office

1951-72 : USDA, Pennington County Soil Survey

Figure 5

### Average Temperature for Thief River Falls, Minnesota

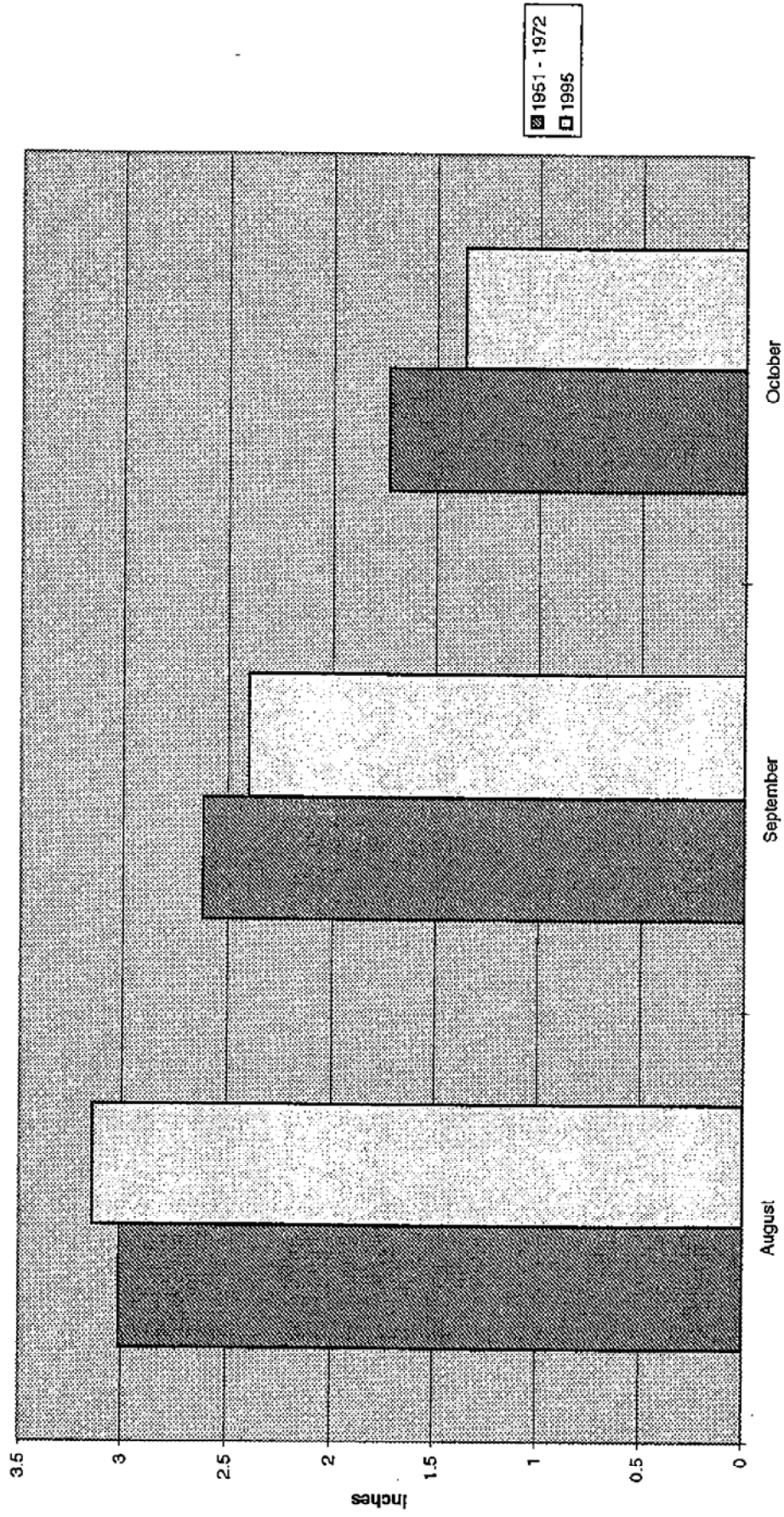


**Sources :**

1995 : Min Climatolgy Office

1951-72 : USDA, Pennington County Soil Survey

Average Precipitation Amounts for Thief River Falls, Minnesota



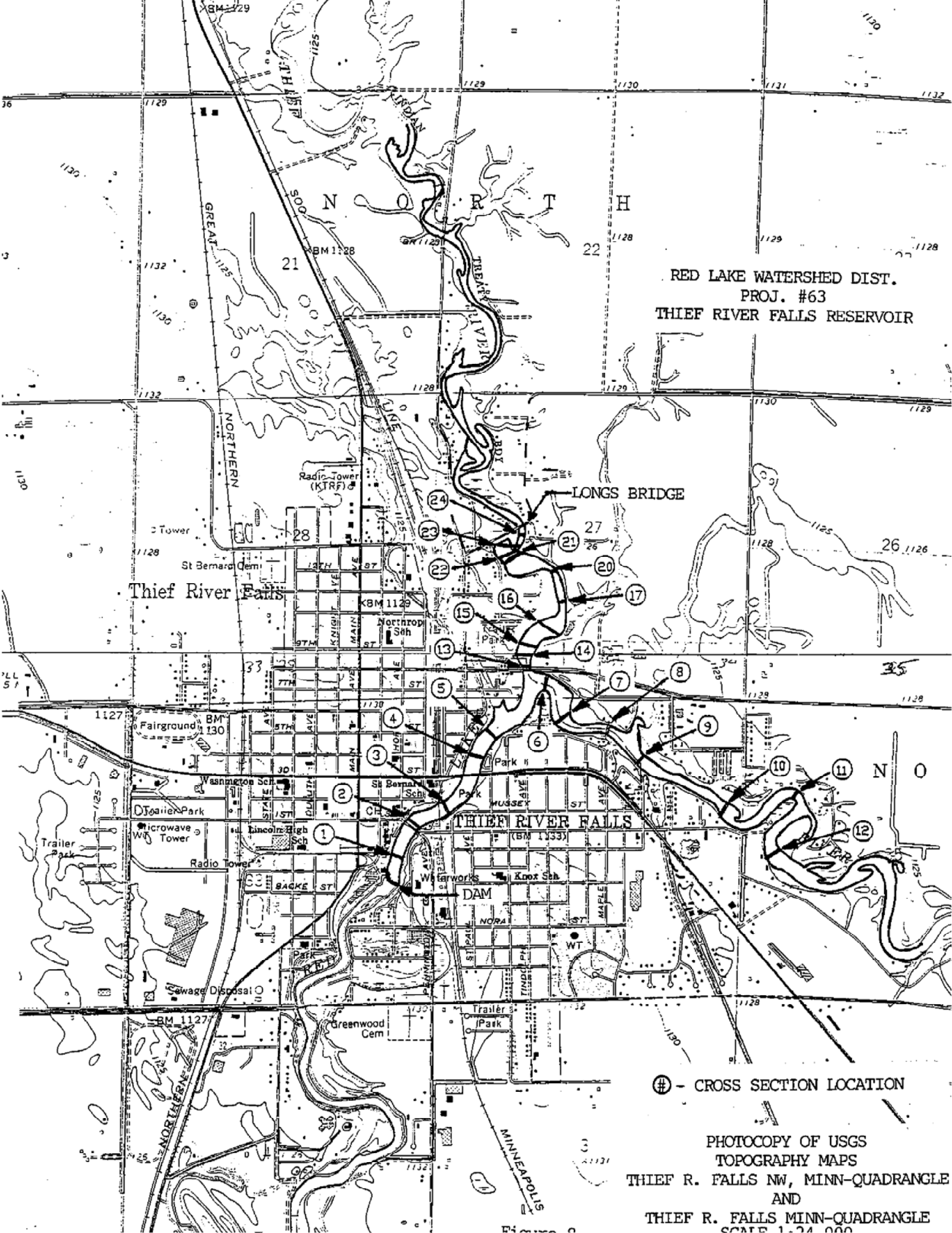
Sources :

1995 : Mn Climatology Office

1951-72 : USDA, Pennington County Soil Survey

Figure 7

RED LAKE WATERSHED DIST.  
PROJ. #63  
THIEF RIVER FALLS RESERVOIR

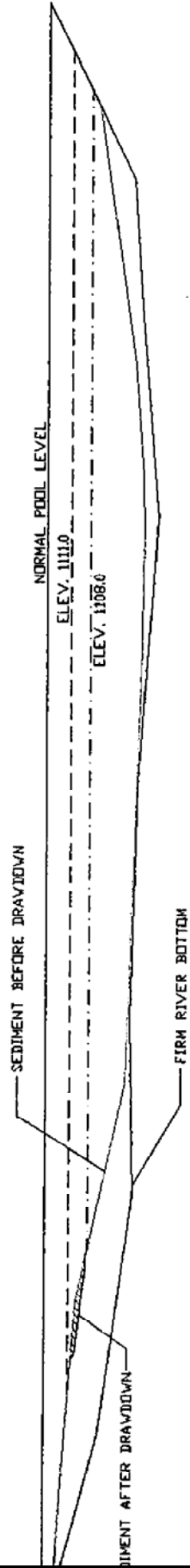


⊕ - CROSS SECTION LOCATION

PHOTOCOPY OF USGS  
TOPOGRAPHY MAPS  
THIEF R. FALLS NW, MINN-QUADRANGLE  
AND  
THIEF R. FALLS MINN-QUADRANGLE  
SCALE 1:24,000

RED LAKE WATERSHED DISTRICT  
PROJECT NO. 63  
THIEF RIVER FALLS RESERVOIR DRAWDOWN

TYPICAL SECTION



# **ANNEX A**



Equal Opportunity Employer

RECEIVED

JUN 7 1993

PHONE 681-2943

CITY OF THIEF RIVER FALLS  
ENGINEERING DEPARTMENT

**City of Thief River Falls**

MINNESOTA 56701

BOX 528

MAYOR &  
COUNCIL PRESIDENT  
BOB REEVE

May 13, 1993

*Ron Lindberg*  
FOR YOUR INFORMATION  
DATE 6-4-93  
CITY OF THIEF RIVER FALLS  
GERALD A. WIGNESS  
Clerk - Treasurer

Jerry Paul  
Department of Natural Resources  
2115 Birchmont Beach Road NE  
Bemidji, MN 56601

Dear Mr. Paul:

This is to inform you that a multi agency task force has met to procure a remedy to the accumulation of sediment within the reservoir at Thief River Falls. The group has decided to address the accumulated sediments by a temporary drawdown of the reservoir level with a result of consolidating the sediments. This maintenance technique for our reservoir will begin in August 1993. The contact person from this group is Bob Reeve, Mayor his phone number is 681-2943.

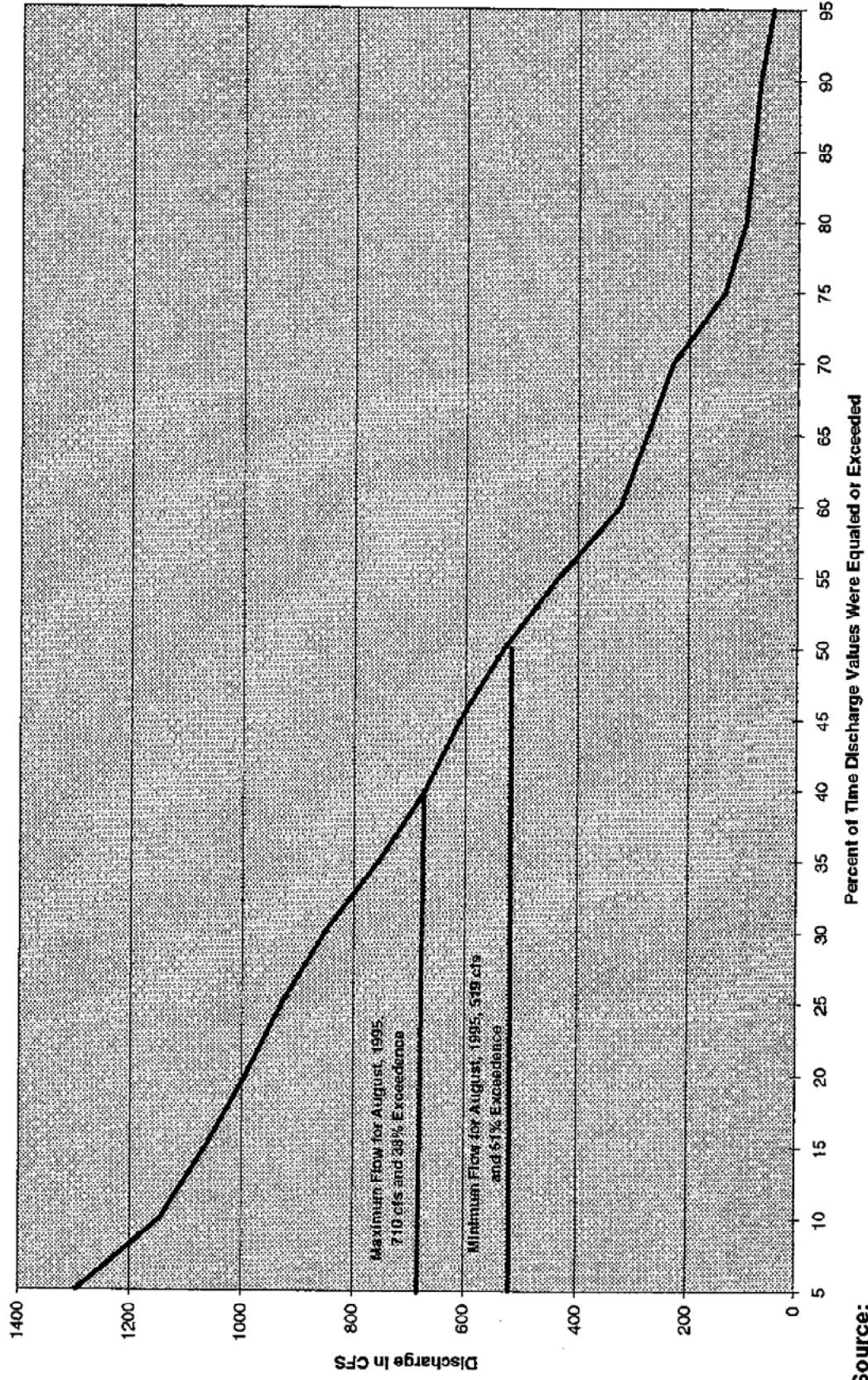
Bob Reeve, Mayor

Skip Swanson, Chairman



# **ANNEX B**

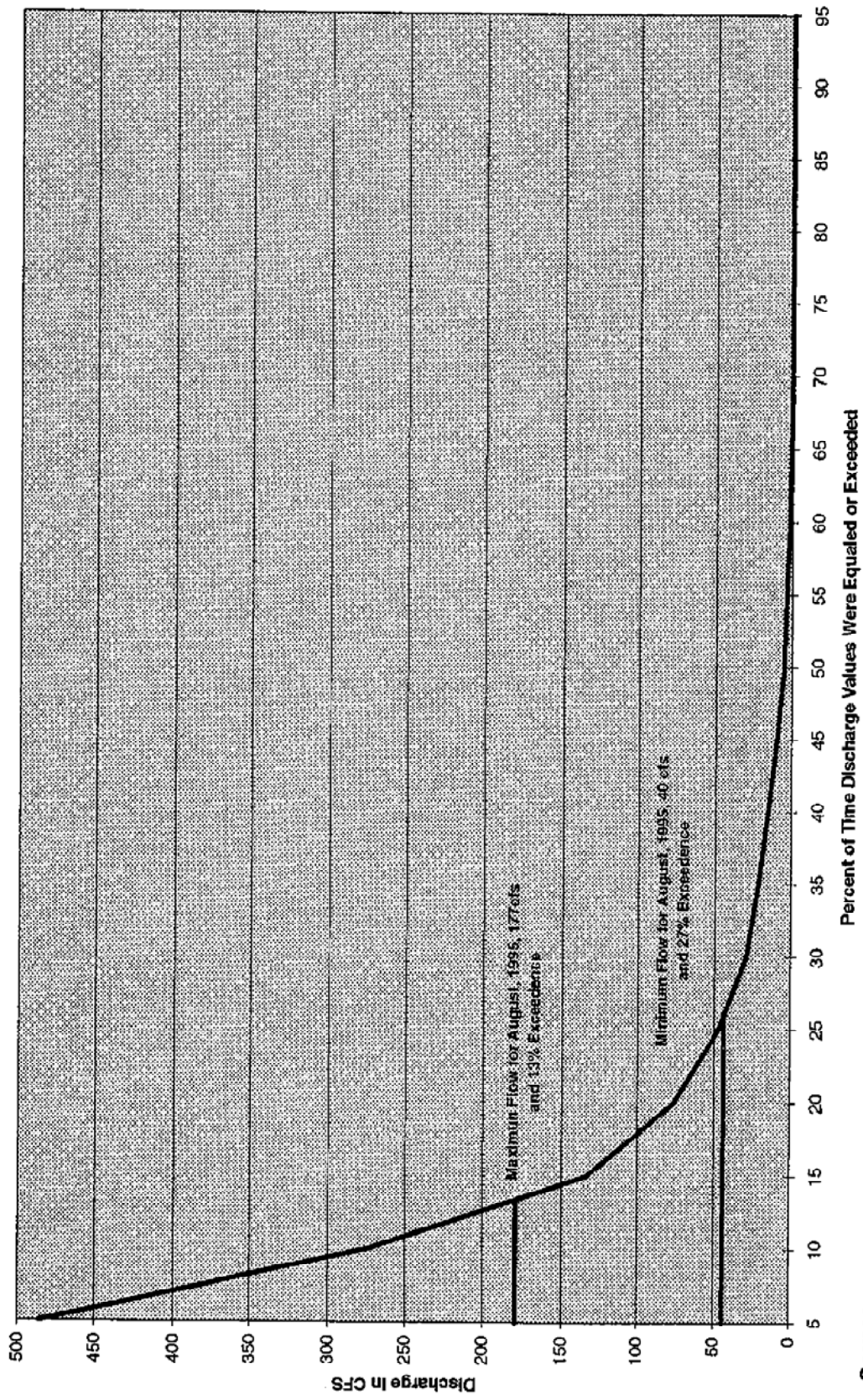
# Duration Frequency Plot for the Red Lake River for August



Source:

United States Geological Survey

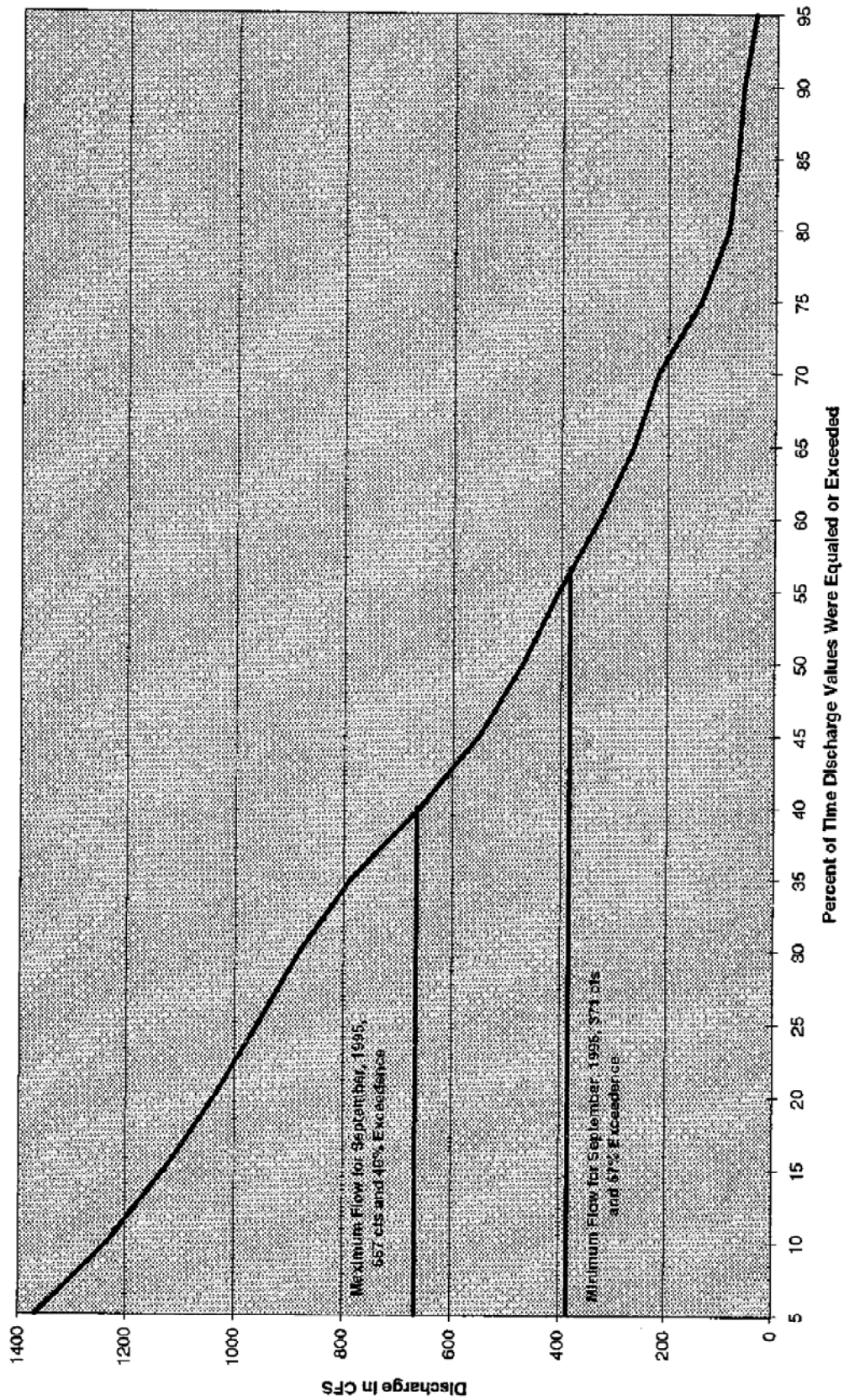
# Duration Frequency Plot for the Thief River for August



Source :

United States Geological Survey

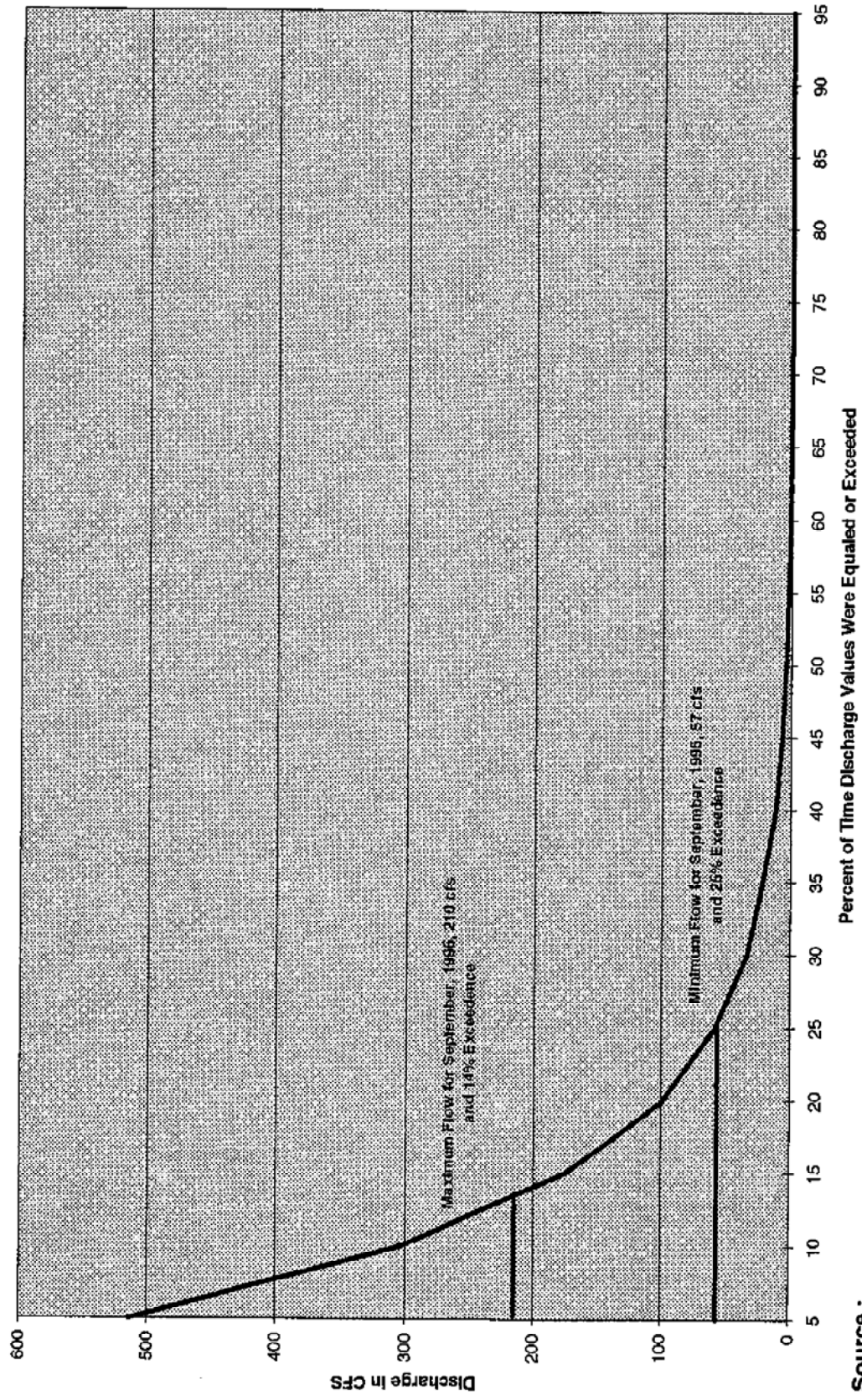
# Duration Frequency Plot for the Red Lake River for September



Source :

United States Geological Survey

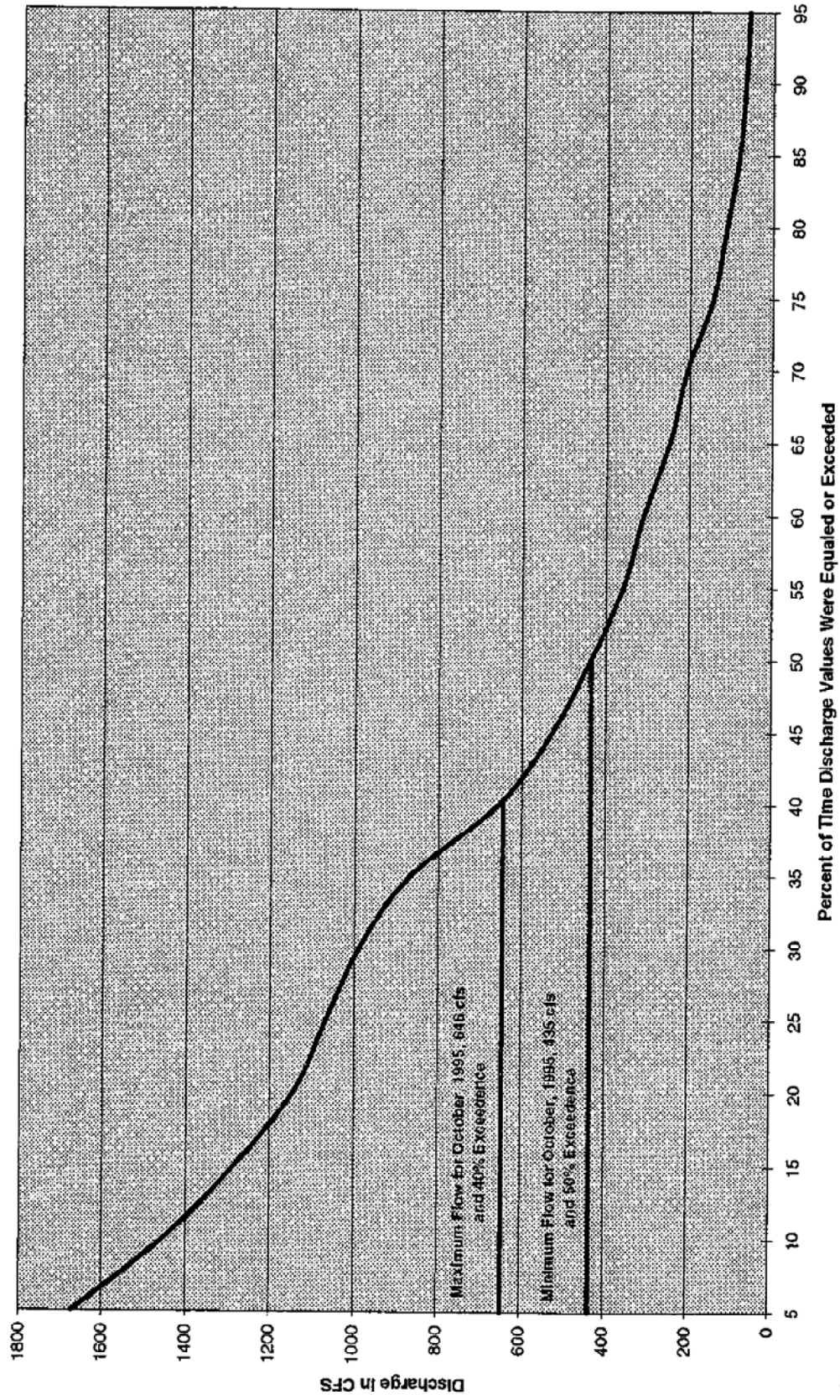
# Duration Frequency Plot for the Thief River for September



Source :

United States Geological Survey

# Duration Frequency Plot for the Red Lake River for October



Source :

United States Geological Survey

# **ANNEX C**

**Date : 11/3/95**

**To: Dave, Red Lake W.D.**

**From : State Climatology Office**

**The enclosed material may be of interest to you. Please phone if you have questions.**

**State Climatology Office  
Department of Natural Resources - Division of Waters  
(612) 296-4214**



## STATION: THIEF\_RIVER\_FALLS\_2

Year	Mo	Dy	High (F)	Low (F)	Precip- itation (in)
1995	08	01	77	49	0.00
1995	08	02	88	58	0.00
1995	08	03	81	58	0.50
1995	08	04	83	52	0.00
1995	08	05	86	56	0.00
1995	08	06	83	65	0.00
1995	08	07	86	66	0.00
1995	08	08	86	68	0.00
1995	08	09	81	55	0.00
1995	08	10	78	52	0.00
1995	08	11	77	51	0.00
1995	08	12	76	56	0.15
1995	08	13	78	58	0.00
1995	08	14	77	55	0.00
1995	08	15	88	54	0.00
1995	08	16	83	65	0.00
1995	08	17	90	68	0.00
1995	08	18	90	70	1.57
1995	08	19	80	50	0.04
1995	08	20	85	54	0.00
1995	08	21	80	51	0.00
1995	08	22	90	61	0.33
1995	08	23	75	55	0.00
1995	08	24	71	51	0.45
1995	08	25	67	51	0.00
1995	08	26	71	47	0.00
1995	08	27	78	48	0.00
1995	08	28	74	53	0.10
1995	08	29	83	51	0.00
1995	08	30	80	67	0.00
1995	08	31	74	49	0.00
1995	09	01	81	55	0.00
1995	09	02	83	50	0.00
1995	09	03	86	50	0.00
1995	09	04	89	60	0.15
1995	09	05	76	62	0.00
1995	09	06	66	51	0.98
1995	09	07	57	37	0.00
1995	09	08	65	34	0.00
1995	09	09	64	40	0.00
1995	09	10	72	46	0.00
1995	09	11	78	52	0.00
1995	09	12	85	56	0.00
1995	09	13	72	51	0.00
1995	09	14	67	33	0.00
1995	09	15	66	46	0.00
1995	09	16	62	51	0.00
1995	09	17	64	33	0.00
1995	09	18	53	39	0.28
1995	09	19	50	33	0.00
1995	09	20	49	28	0.00
1995	09	21	44	32	0.15

	High (F)	Low (F)	Precipitation (in)
1995 09 22	52	26	0.00
1995 09 23	60	33	0.00
1995 09 24	62	35	0.00
1995 09 25	70	42	0.00
1995 09 26	69	40	0.00
1995 09 27	79	43	0.00
1995 09 28	82	51	0.00
1995 09 29	68	48	0.84
1995 09 30	55	49	0.00
1995 10 01	53	41	M
1995 10 02	56	41	0.39
1995 10 03	58	44	0.11
1995 10 04	56	35	M
1995 10 05	M	M	M
1995 10 06	45	40	0.01
1995 10 07	53	38	M
1995 10 08	54	35	M
1995 10 09	58	35	M
1995 10 10	67	37	M
1995 10 11	78	45	M
1995 10 12	75	53	M
1995 10 13	51	45	M
1995 10 14	41	34	0.09
1995 10 15	51	26	M
1995 10 16	59	31	M
1995 10 17	50	46	M
1995 10 18	42	29	M
1995 10 19	42	36	0.35
1995 10 20	40	32	0.05
1995 10 21	36	28	M
1995 10 22	48	33	M
1995 10 23	38	29	M
1995 10 24	50	24	M
1995 10 25	52	30	M
1995 10 26	50	31	M
1995 10 27	49	33	M
1995 10 28	40	30	0.11
1995 10 29	36	26	M
1995 10 30	35	28	M
1995 10 31	38	30	0.25

# **ANNEX D**

TRF RESERVOIR STUDY								
SEDIMENT REDUCTION - RED LAKE RIVER								
X-SECT.	STATION	SEDIMENT ELEV. BEFORE DRAWDOWN	SEDIMENT ELEV. AFTER DRAWDOWN	SEDIMENT REDUCTION (FEET)				
3	0+59	1109.90	1108.90	-1.00				
	0+32	1111.90	1109.90	-2.00				
	0+10	1113.30	1113.30	0.00			AVERAGE	
4	2+19	1109.30	1109.20	-0.10			SEDIMENT	
	2+48	1110.50	1111.10	0.60			REDUCTION	
	2+63	1111.60	1111.60	0.00			-0.25	
5	3+26	1111.90	1113.20	1.30				
	3+01	1109.50	1110.50	1.00				
	2+67	1110.30	1110.40	0.10				
	2+45	1109.90	1110.20	0.30				
	2+24	1109.60	1109.80	0.20				
	2+01	1108.90	1108.20	-0.70				
	0+62	1109.20	1108.60	-0.60				
6	0+87	1109.30	1109.20	-0.10				
	1+16	1109.20	1109.10	-0.10				
	1+48	1109.30	1109.10	-0.20				
	1+77	1110.50	1109.20	-1.30				
	2+11	1109.50	1109.10	-0.40				
	2+44	1106.40	1105.20	-1.20				
	3+16	1103.80	1102.50	-1.30				
	3+44	1108.00	1109.00	1.00				
	3+54	1112.20	1112.10	-0.10				
	7	2+60	1107.20	1105.70	-1.50			
2+31		1104.50	1101.90	-2.60				
2+12		1102.40	1102.00	-0.40				
1+90		1102.40	1102.50	0.10				
1+32		1107.50	1108.40	0.90				
0+89		1108.00	1108.20	0.20				
0+50		1107.90	1107.00	-0.90				
0+23		1108.30	1107.50	-0.80				
8	0+19	1110.00	1110.60	0.60				
	0+33	1109.60	1109.10	-0.50				
	0+65	1109.80	1108.80	-1.00				
	0+97	1108.20	1106.60	-1.60				
	1+14	1106.10	1104.70	-1.40				
	1+38	1103.60	1103.20	-0.40				
	1+64	1103.20	1103.50	0.30				
	1+94	1103.20	1103.60	0.40				
9	2+23	1111.90	1110.90	-1.00				
	1+84	1108.80	1107.70	-1.10				
	1+60	1104.90	1104.40	-0.50				
	1+26	1104.20	1103.50	-0.70				
	1+05	1104.10	1104.00	-0.10				
	0+61	1105.00	1105.10	0.10				
	0+36	1108.80	1108.90	0.10				
	0+18	1112.80	1111.50	-1.30				