

## APPENDIX C

## HYDROLOGY

### Climate

The mean annual temperature in the Big Scrubgrass Creek Watershed is about 49° F. The average January temperature is about 28°F and the average July temperature is about 71°F. The mean minimum January temperature is 18°F and the mean maximum July temperature is 85°F. Figure C1 shows the average number of days without killing frost in Pennsylvania. There are about 140 days between killing frosts in the watershed.

On the average, 140 days during the year have some measurable precipitation. During the driest 25 percent of the years, the watershed received between 35 and 40 inches of rainfall and during the wettest years the watershed received between 40 and 50 inches of rainfall indicating very uniform annual precipitation. Figure C2 shows the average annual precipitation for Pennsylvania which shows the 40 inch line going through the southwestern part of the watershed. The amount of rain which falls during the growing season is of importance in the establishment of vegetation on strip mine spoils and in this respect the watershed is well favored. Figure C3 shows the average growing season precipitation for Pennsylvania with 22 inches indicated for the watershed area.

Less winter kill of vegetation will occur when a snow cover persists during cold weather. This is also important for the success of a winter recreation industry. Here the

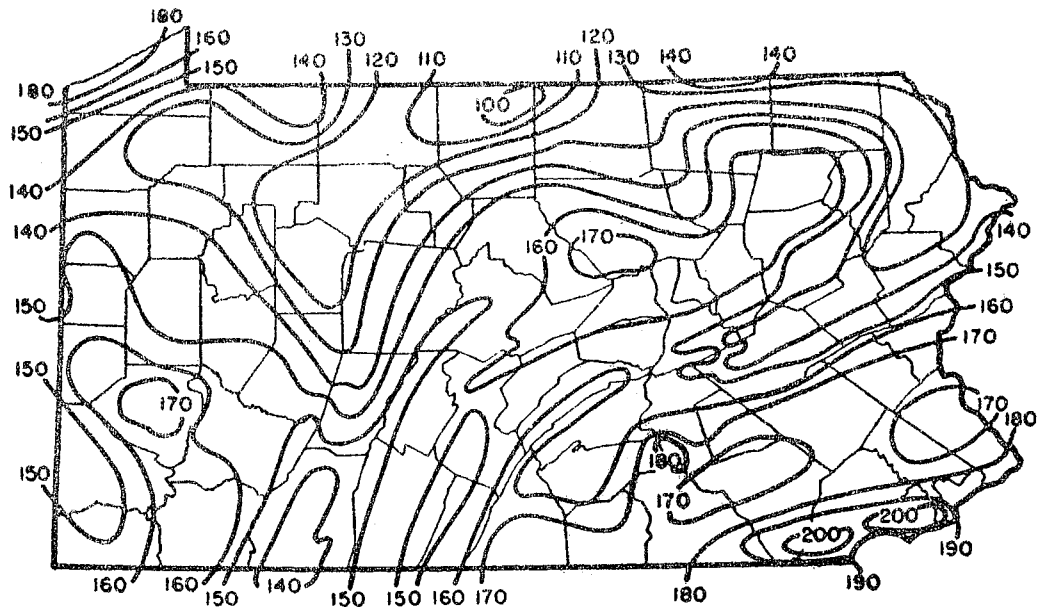


Figure C1. Average number of days without a killing frost in Pennsylvania.

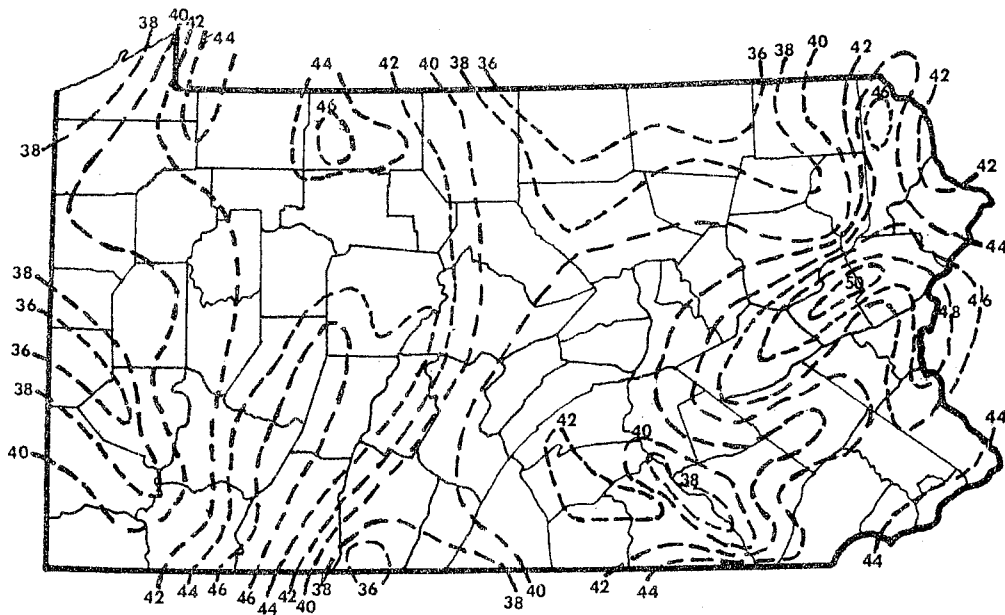


Figure C2. Average growing season (April through September) precipitation for Pennsylvania (inches).

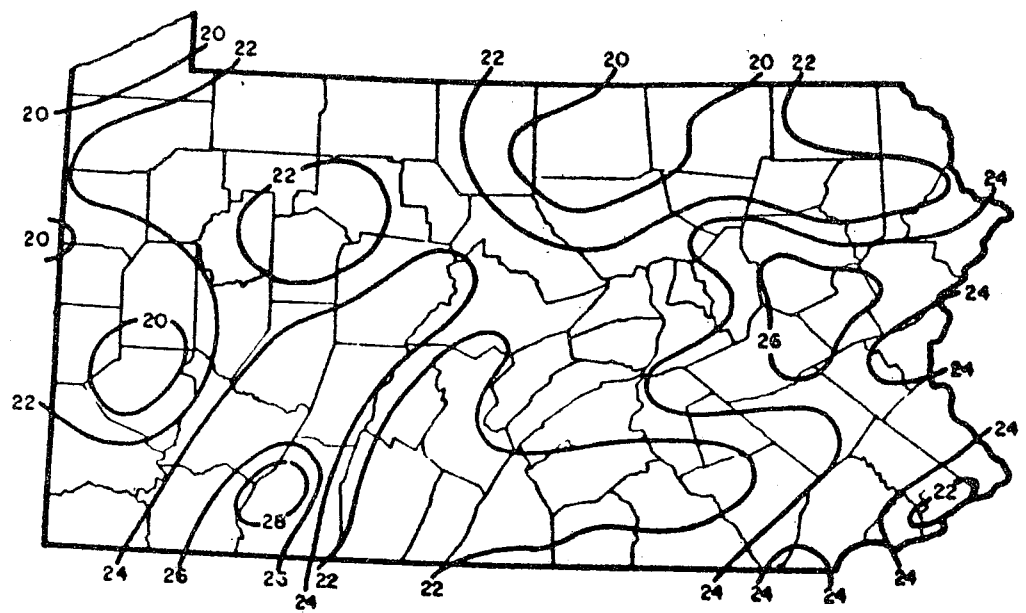


Figure C3. Average Growing Season (April through September) precipitation for Pennsylvania (inches).

watershed is particularly favored with an average annual snowfall of 50 inches and one inch or more on the ground during an average of 90 days per year.

The prevailing winds are from the northwest during the winter and from the west during the summer except for some erratic storms from the southeast during the summer.

### Precipitation

The location of the three U.S. Weather Bureau rain gaging stations nearest the Big Scrubgrass Creek Watershed are shown in Figure 15 in the main part of this report. Daily records for these stations during the project period are included in table C4 at the end of this appendix. To estimate the average rainfall depth on the watershed from these station records, the Thiessen method was used. This method assigns a weighting factor to each station which is equal to the percentage of the watershed area closest to that station, and these factors are used to determine a weighted average value of the rainfall measured at the stations. Daily totals during the project period, monthly totals during the project period, and long term monthly mean values were computed for the watershed by this method. The monthly and long term values are shown in table C1 and are compared graphically in Figure 16. Two rain gages were maintained within the watershed during the first twelve months of the project period. Daily average from these two gages are shown in table C4 at the end of this appendix and monthly

TABLE NO. C1

MONTHLY PRECIPITATION RECORDS

	<u>Parker</u>	<u>Slippery Rock</u>	<u>Franklin</u>	<u>Thiessen Average</u>	<u>Project Gages</u>	<u>Thiessen long term Average</u>
October, 1970	6.57	6.62	6.22	6.39		2.92
November, 1970	3.88	3.41	5.99	5.28	4.27	2.93
December, 1970	2.74	2.85	3.44	3.15	2.76	2.81
January, 1971	2.26	2.18	2.79	2.30	1.88	3.28
February, 1971	4.19	4.32	2.77	3.39	3.60	2.74
March, 1971	2.24	3.16	4.03	3.46	2.74	3.24
April, 1971	0.57	1.18	1.03	1.08	0.98	3.76
May, 1971	3.02	2.69	1.38	2.02	2.34	4.05
June, 1971	4.98	3.86	2.81	3.90	3.62	4.54
July, 1971	3.81	4.56	3.19	3.76	3.91	4.27
August, 1971	2.73	2.45	3.77	3.30	3.05	3.26
September, 1971	3.80	3.23	4.03	3.23	4.29	3.21
October, 1971	1.66	1.12	1.95	1.64	1.57	2.92
November, 1971	2.51	2.48	2.77	2.64		2.93
December, 1971	4.65	5.41	7.23	6.31		2.81
January, 1972	2.22	2.11	4.11	3.22		3.28
February, 1972	3.20	3.34	4.10	3.74		2.74
March, 1972	3.63	3.81	4.13	3.96		3.29
April, 1972	4.40	5.35	3.95	4.47		3.76
May, 1972	2.11	3.01	3.80	3.33		4.05
June, 1972	10.29	10.36	9.52	9.89		4.54

average totals are included in table C1 and Figure 16 for comparison purposes.

The precipitation shows that, while long term monthly averages do not fluctuate greatly throughout the year, the monthly totals measured during the project period had considerable fluctuation. The winters and springs were generally wetter than normal and the first summer and fall periods were generally drier than normal. This would help explain why the measured runoff during the project period was greater than that expected from the long term average runoff for this area.

### Soils

The rainfall-runoff relationship on a watershed depends on the types of soils in the watershed and their topography. The soils in the Big Scrubgrass Creek Watershed are classified into four groups or associations.

The Hanover-Gresham soil association covers the largest portion of the area, approximately 40%. This soil association is in the northwestern part of the watershed. These soils are medium textured, moderately well-drained to poorly drained on level to moderately steep slopes. The moderately well drained Hanover soil is the major soil and is on the higher elevations. In older soils reports, this soil was called the Titusville series. The somewhat poorly drained Gresham is on flat hilltops and depressions. A few acres of Shelmadine, the poorly drained soil in this association, are in lower lying depressions. These silt loam soils form in glacial till which is composed primarily of local sandstone and shale.

These soils all have a restrictive horizon which has a permeability ranging between 0.2 and 0.63 inches per hour which is in the slow class. These soils would produce a high percentage of runoff from storm rainfall.

The Cavode, Wharton, and Gilpin Association occupies about 15% of the Watershed in the highest hilltops. This is the area where most of the strip mines are located. The somewhat poorly drained Cavode and moderately well drained Wharton soils are on broad hilltops and gently sloping hillsides. The well drained Gilpin is on the sloping hillsides.

These silt loams are formed from shale, siltstone and some sandstone. Wharton and Cavode have claypans that restrict the movement of air and water through the soil and retard root penetration. The Cavode and Wharton soils have high runoff producing characteristics. The Gilpin soil has moderate permeability but because it generally occurs on the steeper slopes, it also has high runoff producing characteristics.

The Cookport-Hazelton Association occupies about 15% of the watershed. These are coarse to medium textured, moderately well to somewhat poorly drained sandy loams and loams formed from acid gray sandstone and shale. Cookport has a restrictive horizon with slow permeability and the Hazelton is located on the moderately steep hillsides. Both have high runoff producing characteristics.

The Hazelton-Gilpin Association is on steep and very steep slopes, on valley walls of the major streams. This association covers about 15% of the watershed. In older



soils reports the Hazelton soils was called Dekalb. These soils are foams and sand foams, usually very stony. They are underlain by sandstone, siltstone and shale bedrock. These soils are also high runoff producers.

### Runoff

Approximately 50 percent of the average annual rainfall on the Big Scrubgrass Creek Watershed shows up as runoff to the streams. Figure C4 is a map showing approximate lines of equal average annual runoff for Pennsylvania, which shows approximately 20 inches per year for the watershed area. No records of runoff are available for the Big Scrubgrass Creek except for those obtained during this project. Table C2 shows annual runoff for six USGS stream gages located near the watershed. These show that for the period covering the first twelve months of the project the runoff in the area ranged from 21 to 26 inches per year which is above the long-term average for these gages. Flow estimates made during the project period at the mouth of the main stream indicate an annual runoff of 24.34 inches per year which agrees closely with the surrounding gages.

The topography and soils on the watershed are a combination which would tend to produce storm runoff hydrographs which would have quick high peaks with rapid rise and fall of the water levels in the streams. On the tributary streams of the watershed this would cause the periodic flow measurements generally to be lower than the mean flow for the period.

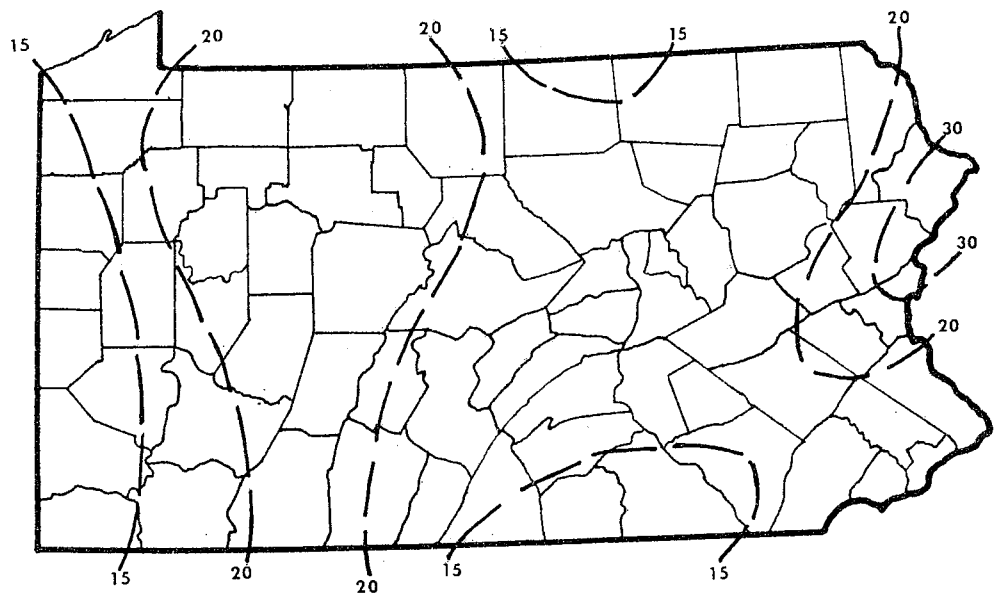


Figure C4. Average Annual Runoff in Pennsylvania  
(inches)

Source: U. S. Geological Survey

TABLE C2

Annual Runoff Records for USGS Stream  
Gaging Stations in the Watershed Area

<u>Gaging Station</u>	<u>DA Sq. Mi.</u>	<u>Average Runoff in./year</u>	<u>1970 Runoff in./year</u>	<u>Fm. Oct., 1970 to Sept., 1971 1971 Runoff in./year</u>
Sugarcreek at Sugarcreek, Pa.	166	21.35	18.63	24.03
Patchel Run near Franklin, Pa.	5.69	20.17	15.54	21.16
Oil Creek at Rouseville, Pa.	300	23.18	21.19	26.50
Allegheny River at Franklin, Pa.	5982	23.13	22.65	26.15
Slippery Rock Creek at Wurtemberg, Pa.	398	18.83	18.54	21.87
Allegheny River at Parker, Pa.	7671	22.80	22.83	26.17

Fluctuations on the main stream should be less pronounced and periodic measurements there should give good estimates of long term runoff averages.

As part of the sediment and erosion control study of Big Scrubgrass Creek, the Soil Conservation Service performed a hydrologic analysis to estimate runoff and peak discharge rates that can be expected at various points in the Watershed for various frequencies of storms. The watershed was divided into thirty-two subwatersheds from which twenty-three specific locations were selected to calculate discharges. Nineteen of these locations correspond with sampling stations used in the stream quality study for this report. Rainfall for the various frequency storms was taken from United States Weather Bureau Technical Paper 40 for 24-hour storms. Runoff was computed for present land use conditions and sub-hydrographs were routed through the stream channel system by computer.

Table C3 shows a summary of the results of this study on the watershed. The discharges are peak flows in cubic feet per second at the various sampling stations. Sampling station locations are shown in Figure 17. The runoff is the total volume of water expected to flow past the specific location from the specified storm in millions of gallons. Since the peak flows on Big Scrubgrass are associated with net acid water quality these tables would be valuable to estimate the amount of acid which might be discharged from the watershed during the various frequency storms.

TABLE NO. C3

Summary of Storm Runoff Analysis for the Watershed  
by the Soil Conservation Service

Sample Station or Sub-Area	Drainage Area	100 Yr.											
		25 Year		10 Year		5 Year		2 Year					
		5.0 Inches Peak Q cfs	4.2 Inches Runoff m-gal	3.7 Inches Q cfs	3.3 Inches Runoff m-gal	2.6 Inches Q cfs	2.6 Inches Runoff m-gal						
<u>STUDY AREA I SCRUBGRASS CREEK HEADWATERS</u>													
SS-60	.52	149	24.5	112	18.4	91	14.9	74	12.2	47	7.6		
SS-12	.69	198	32.5	149	24.5	121	19.8	98	16.0	62	10.3		
SS-11	.52	161	24.5	121	18.4	98	15.0	80	12.2	50	7.6		
SS-40	.25	111	11.8	84	8.9	67	7.1	55	5.7	35	3.6		
SS-14	3.70	1341	168.6	1006	126.8	807	103.0	655	83.7	410	52.7		
<u>STUDY AREA II GILMORE RUN</u>													
SS-9	0.40	145	18.3	102	13.6	87	11.0	71	8.9	44	5.6		
SS-8	0.43	156	19.7	109	14.6	94	11.8	76	9.6	47	5.9		
SS-10	2.96	1020	130.8	761	99.4	608	78.3	491	63.3	303	39.2		
<u>STUDY AREA II BULLION RUN</u>													
SS-6	.12	31	4.18	22	3.13	17	2.44	13	1.74	7	1.04		
SS-1	.62	175	27.3	130	20.4	104	16.4	84	13.2	52	5.39		
SS-4	3.61	879	141.3	644	103.0	505	81.1	401	64.0	238	37.8		
SS-7	7.33	1263	276.8	919	201.5	718	158.2	568	123.7	332	72.7		

TABLE NO. C3  
(Continued)

Sample Station or Sub-Area	Drainage Area	100 Yr. 5.0 Inches Peak Q Runoff		25 Years 4.2 Inches Q Runoff		10 Years 3.7 Inches Q Runoff		5 Years 3.3 Inches Q Runoff		2 Years 2.6 Inches Q Runoff	
		cfs	m-gal	cfs	m-gal	cfs	m-gal	cfs	m-gal	cfs	m-gal
<u>STUDY AREA IV TROUT RUN</u>											
SS-46	.06	32	2.96	24	2.26	20	1.91	16	1.57	10	1.04
SS-30	1.36	388	57.9	288	43.2	229	32.3	184	27.5	113	16.5
<u>SCRUBGRASS CREEK AT ROUTE 308</u>											
SS-15	19.24	4233	830	3144	616	2501	496	2013	399	1231	241
<u>SCRUBGRASS CREEK AT JUNCTION WITH ALLEGHENY RIVER</u>											
SS-34	40.02	5721	1630	4221	1121	3338	905	2671	773	1610	460
<u>OTHER SAMPLE STATIONS</u>											
SS-48	5.32	897	225.8	666	161.5	529	133.3	426	107.4	260	64.7
SS-45	0.55	111	25.0	83	18.8	67	15.1	54	12.2	34	7.6
SS-66	0.49	91	19.5	66	14.3	52	11.1	41	8.9	24	5.2

TABLE C4

## DAILY RAINFALL

November, 1970

Date	Project Gauges	Franklin	Parker	Slippery Rock	Thiessen Average
1	.11	.12	.16	.06	.106
2	.60	.97	.70	.20	.683
3	.17	.17	.17	.18	.173
4	.42	.62	.47	.21	.466
5	.015	--	T	.04	.013
6	.085	.11	.13	.03	.086
7	--	--	--	--	--
8	--	--	--	--	--
9	--	--	--	--	--
10	.055	.13	T	.04	.084
11	.4	.30	.47	.48	.380
12	.09	.06	.09	.13	.087
13	.235	.26	.4	.07	.214
14	.085	.12	.06	.08	.099
15	.365	.67	.54	--	.432
16	.08	.17	T	.07	.116
17	--	--	--	--	--
18	--	--	--	--	--
19	--	--	--	--	--
20	.405	.97	T	.03	.54
21	.53	.81	.34	.34	.597
22	--	--	--	--	--
23	--	T	T	T	--
24	.045	.11	.03	2.00	.724
25	--	T	T	--	--
26	--	T	T	--	--
27	--	--	T	--	--
28	.05	T	--	.12	.04
29	.075	.18	--	.01	.101
30	.455	.22	.03	.67	.345

TABLE C4 (Continued)

## DAILY RAINFALL

December, 1970

Date	Project Gauges	Franklin	Parker	Slippery Rock	Thiessen Average
1	--	--	--	--	--
2	.175	.11	--	--	.06
3	--	--	--	--	--
4	.535	.38	.69	.55	.475
5	.1	.23	T	.05	.143
6	.055	.12	.04	.01	.074
7	.03	.06	T	.03	.043
8	--	--	T	T	--
9	--	T	--	.01	.003
10	--	--	--	--	--
11	.08	.09	T	.17	.105
12	.545	.29	.18	.62	.386
13	.065	.33	.24	.24	.29
14	.065	T	.66	.17	.137
15	--	T	T	.01	.003
16	--	--	--	--	--
17	.52	.67	.41	.43	.558
18	.02	T	.02	.05	.019
19	--	--	--	--	--
20	.01	T	.02	T	.002
21	--	--	--	--	--
22	.295	.38	.26	.23	.316
23	.06	.14	T	.01	.08
24	.065	.12	.11	T	.08
25	--	T	--	T	--
26	.06	.13	T	.06	.091
27	.07	.07	.07	.07	.07
28	.055	.21	.04	.10	.153
29	.05	.11	--	.01	.063
30	--	T	T	T	--
31	--	--	--	--	--



TABLE C4 (Continued)

## DAILY RAINFALL

January, 1971

Date	Project Gauges	Franklin	Parker	Slippery Rock	Thiessen Average
1	--	--	.04	--	.005
2	--	--	--	.07	.023
3	.305	--	--	--	--
4	.38	--	.66	--	.081
5	--	T	.13	.57	.204
6	--	--	--	.02	.007
7	--	T	--	.02	.007
8	--	T	--	--	--
9	--	--	--	--	--
10	--	--	--	--	--
11	--	--	--	--	--
12	--	T	--	--	--
13	--	--	--	--	--
14	.565	--	.64	--	.079
15	--	--	--	.45	.149
16	.02	.07	.04	--	.043
17	.015	.17	.04	.07	.121
18	--	T	--	.14	.046
19	--	T	T	--	--
20	.025	.16	.06	.04	.108
21	--	--	T	.03	.01
22	--	.15	.08	--	.091
23	--	--	T	.12	.04
24	.085	--	--	--	--
25	.065	.27	.13	--	.056
26	.275	.11	.03	.13	.107
27	.13	1.17	.10	.06	.833
28	--	.05	T	.31	.059
29	.01	T	T	.03	.01
30	--	.12	.26	.01	.101
31	--	.11	--	.18	.119

TABLE C4 (Continued)

## DAILY RAINFALL

February, 1971

Date	Project Gauges	Franklin	Parker	Slippery Rock	Thiessen Average
1	--	T	T	--	--
2	--	--	--	--	--
3	--	--	--	--	--
4	.025	T	.04	.05	.022
5	.5	.31	.66	.6	.449
6	.01	T	.03	T	.004
7	--	--	--	--	--
8	.18	.14	.22	.2	.17
9	.685	.7	.56	.81	.717
10	--	T	T	T	--
11	--	--	--	--	--
12	--	--	--	--	--
13	.41	.37	.51	.34	.377
14	.43	.39	.54	.35	.395
15	.02	.07	--	T	.038
16	.02	T	.01	.04	.014
17	--	--	T	--	--
18	.26	.27	.22	.3	.274
19	.13	T	.21	.23	.102
20	--	--	T	.01	.003
21	.185	.18	.23	.15	.176
22	.20	T	.26	.18	.091
23	.37	.18	.57	.62	.373
24	.095	.07	.06	.15	.095
25	.01	T	T	.03	.01
26	--	--	--	--	--
27	.07	.09	.07	.08	.084
28	--	--	--	--	--

TABLE C4 (Continued)

## DAILY RAINFALL

March, 1971

Date	Project Gauges	Franklin	Parker	Slippery Rock	Thiessen Average
1	--	--	--	--	--
2	--	--	--	--	--
3	.05	T	.06	.05	.024
4	.79	.97	.63	.74	.852
5	--	T	T	--	--
6	--	--	--	--	--
7	.565	.79	.46	.34	.601
8	.14	.31	.02	.03	.182
9	.23	.19	.17	.31	.227
10	--	T	--	--	--
11	.105	.19	.04	.04	.122
12	--	--	--	T	--
13	.125	.09	--	.27	.138
14	--	--	--	--	--
15	--	--	--	--	--
16	.045	.09	--	.06	.069
17	.045	.07	.04	.03	.053
18	--	T	T	--	--
19	.08	.09	.06	.1	.089
20	.475	.47	.6	.36	.45
21	.235	.41	.06	.23	.307
22	--	--	--	--	--
23	--	--	--	--	--
24	.16	.23	.08	.22	.209
25	.105	T	--	--	--
26	--	--	--	--	--
27	--	--	--	--	--
28	--	--	--	--	--
29	--	--	--	--	--
30	.065	.23	.02	.05	.145
31	--	T	T	T	--

TABLE C4 (Continued)

## DAILY RAINFALL

April, 1971

Date	Project Gauges	Franklin	Parker	Slippery Rock	Thiessen Average
1	--	--	--	--	--
2	.19	.36	.07	.08	.232
3	--	T	--	T	--
4	--	T	--	--	--
5	--	--	--	--	--
6	--	--	--	--	--
7	--	--	--	--	--
8	--	--	--	--	--
9	--	--	--	.1	.033
10	--	T	.02	.2	.068
11	.085	--	--	--	--
12	--	--	--	--	--
13	--	--	--	.1	.033
14	--	.20	.12	.2	.19
15	.165	--	--	--	--
16	--	--	--	--	--
17	--	--	.28	--	.034
18	.115	.13	--	.5	.236
19	.23	--	--	--	--
20	--	--	--	--	--
21	--	T	--	--	--
22	--	--	T	T	--
23	--	--	--	--	--
24	--	--	--	--	--
25	.035	.08	.01	.01	.048
26	--	T	--	--	--
27	--	--	T	--	--
28	.115	.17	.01	.09	.124
29	.04	.09	T	.09	.079
30	--	T	T	.01	.003

TABLE C4 (Continued)

## DAILY RAINFALL

May, 1971

Date	Project Gauges	Franklin	Parker	Slippery Rock	Thiessen Average
1	--	T	--	--	--
2	.04	T	.08	.06	.03
3	.03	T	.04	.06	.025
4	--	T	--	.01	.003
5	--	--	--	--	--
6	.86	.28	1.06	1.36	.732
7	.075	.12	.06	.04	.086
8	.63	.42	.84	.63	.541
9	--	T	--	.01	.003
10	--	--	--	--	--
11	--	--	--	--	--
12	.11	.15	.08	.1	.125
13	.23	T	.51	.15	.113
14	--	--	--	--	--
15	--	--	--	--	--
16	--	--	--	--	--
17	.03	--	.07	.01	.012
18	--	--	--	--	--
19	--	--	--	--	--
20	--	--	--	--	--
21	--	--	--	--	--
22	--	--	--	--	--
23	--	--	--	--	--
24	--	--	--	--	--
25	.33	.41	.28	.27	.347
26	--	T	T	.01	.003
27	--	T	T	--	--
28	--	--	--	--	--
29	--	--	--	--	--
30	--	--	--	--	--
31	--	--	--	--	--

TABLE C4 (Continued)

## DAILY RAINFALL

June, 1971

Date	Project Gauges	Franklin	Parker	Slippery Rock	Thiessen Average
1	--	--	--	--	--
2	--	T	T	--	--
3	.36	.29	.43	.37	.334
4	--	--	--	--	--
5	--	--	--	--	--
6	.57	.48	.46	1.72	.888
7	.16	.33	.04	.05	.203
8	.775	.87	1.48	.04	.671
9	--	--	--	--	--
10	--	--	--	--	--
11	--	--	--	--	--
12	.185	--	.45	T	.55
13	.105	.15	.2	--	.107
14	.335	.13	.54	.41	.272
15	.015	T	.05	--	.006
16	--	T	--	--	--
17	--	--	--	--	--
18	--	--	--	--	--
19	--	--	--	--	--
20	--	--	--	--	--
21	.81	.49	.67	1.19	.743
22	--	--	--	--	--
23	--	--	--	--	--
24	--	--	--	--	--
25	.025	.07	--	--	--
26	.275	--	.66	--	.218
27	--	--	--	--	--
28	--	--	--	--	--
29	--	--	--	--	--
30	--	--	--	--	--

TABLE C4 (Continued)

## DAILY RAINFALL

July, 1971

Date	Project Gauges	Franklin	Parker	Slippery Rock	Thiessen Average
1	--	--	T	--	--
2	.285	.15	.31	.42	.259
3	--	--	--	--	--
4	--	--	--	--	--
5	--	--	--	--	--
6	.035	.08	--	.01	.047
7	--	--	--	--	--
8	--	--	--	--	--
9	.04	.11	--	--	.06
10	.78	.23	1.05	1.23	.661
11	.305	.11	.25	.53	.266
12	.23	.22	.29	.18	.215
13	--	--	--	--	--
14	.435	.27	.19	.75	.419
15	--	T	--	--	--
16	.085	.06	.12	.08	.074
17	--	T	--	--	--
18	.015	--	T	.04	.013
19	.095	.12	.07	.12	.115
20	.35	.16	.63	.16	.218
21	--	--	--	--	--
22	--	--	--	--	--
23	--	--	--	--	--
24	.175	.42	T	T	.23
25	.14	.14	.11	.18	.196
26	--	--	--	--	--
27	.225	--	.47	.19	.121
28	--	--	--	--	--
29	.46	.78	.13	.5	.608
30	.21	.34	.11	.17	.256
31	.04	T	.08	--	.01

TABLE C4 (Continued)

## DAILY RAINFALL

August, 1971

Date	Project Gauges	Franklin	Parker	Slippery Rock	Thiessen Average
1	--	--	--	--	--
2	--	--	--	--	--
3	.01	--	.03	.01	.007
4	.445	.22	.38	.7	.398
5	.095	--	.18	.12	.062
6	--	--	--	--	--
7	--	--	--	--	--
8	--	--	--	--	--
9	--	--	--	--	--
10	--	--	.01	--	.001
11	.055	.12	--	.01	.069
12	.05	.12	--	--	.066
13	--	--	--	--	--
14	--	--	--	--	--
15	.185	--	.01	.45	.15
16	--	--	--	--	--
17	--	--	--	--	--
18	--	--	--	--	--
19	--	--	--	--	--
20	.17	.17	.13	.22	.19
21	.745	1.69	.32	.02	.97
22	.12	T	.21	.21	.182
23	.456	.42	.51	.44	.438
24	--	--	--	--	--
25	--	T	--	--	--
26	.055	.1	.03	.04	.072
27	.315	.3	.47	.18	.281
28	.215	.41	.24	.02	.261
29	.135	.22	.21	.03	.156
30	--	--	--	--	--
31	--	--	--	--	--



TABLE C4 (Continued)

## DAILY RAINFALL

September, 1971

Date	Project Gauges	Franklin	Parker	Slippery Rock	Thiessen Average
1	--	--	--	--	--
2	--	--	--	--	--
3	--	--	T	--	--
4	--	--	--	T	--
5	--	--	--	--	--
6	--	--	--	--	--
7	--	T	--	--	--
8	--	--	--	--	--
9	--	--	--	--	--
10	--	--	--	--	--
11	--	--	--	--	--
12	.385	.56	.24	.31	.438
13	1.75	.84	1.39	.91	.966
14	.425	.50	.38	.75	.569
15	--	--	T	.01	.003
16	--	--	--	--	--
17	.145	--	.31	.11	.074
18	--	--	--	--	--
19	.225	.11	.31	.30	.197
20	.645	.21	.43	.17	.224
21	.115	.21	T	.20	.181
22	--	--	--	--	--
23	--	--	--	--	--
24	--	T	--	--	--
25	--	--	--	--	--
26	.205	.23	.24	.17	.212
27	.045	.08	.04	.02	.056
28	.11	.06	.17	.11	.09
29	.16	.06	.29	.12	.109
30	.075	.17	--	.05	.11

TABLE C4 (Continued)

## DAILY RAINFALL

October, 1971

Date	Project Gauges	Franklin	Parker	Slippery Rock	Thiessen Average
1	--	--	--	--	--
2	--	--	--	--	--
3	--	--	T	--	--
4	--	--	--	--	--
5	.015	T	.04	T	.005
6	.185	.3	.17	.09	.214
7	.125	.1	.1	.17	.123
8	.01	--	.03	.02	.011
9	.15	.21	.14	.1	.165
10	.375	.36	.41	.36	.366
11	.025	.06	--	.01	.04
12	.08	.19	.04	--	.109
13	--	--	--	--	--
14	--	--	--	--	--
15	--	--	--	--	--
16	--	--	--	--	--
17	--	--	--	--	--
18	--	--	--	--	--
19	--	--	--	--	--
20	--	--	--	--	--
21	--	--	--	--	--
22	--	--	--	--	--
23	.055	.13	--	.03	.081
24	.13	.23	.16	.03	.156
25	.41	.37	.54	.30	.367
26	.01	--	.03	.01	.007
27	--	--	--	T	--
28	--	--	--	--	--
29	--	--	--	--	--
30	--	--	--	--	--
31	--	--	--	--	--