V. ANALYSIS OF DATA

A. CHEMICAL CHARACTERISTICS OF WATER

With the exception of Poplar Creek, mentioned previously, water flowing in all streams within the study area is acidic. Below Tremont Good Spring Creek, representing the total effluent from the study area, (including Middle Creek), contributes an average of 8,962 lbs/day of acid and 953 lbs/day of iron to Swatara Creek.

Generally speaking iron content in the waters of streams in the study area is not a large problem. The maximum iron content recorded during the study was 80 mg/l and that occurred during a heavy rain and presumably contained considerable residual iron which was flushed from the stream bed. In general the various remedial measures recommended to abate acid will also apply to the iron problem.

Special check samples to determine the ratio of ferric/ferrous iron were obtained from the Middle Creek Mine Water Pool overflow, and the Renninger Mine discharge. These samples indicated that the iron was essentially in the ferrous state, with less than 1 percent having been oxidized to the ferric state.

Coal Run is the most heavily polluted stream in the watershed studied, contributing an average of 4,189 lbs/day of acid to lower Middle Creek, thence to Swatara Creek via the lower 3,000 feet of Good Spring Creek. The major part of this heavy acid load emanates from the "Tracy Overflow", our Sampling Station C-34, which represents the discharge from the Middle Creek Mine Water Pool.

Plate Nos. 10 through 21 graphically depict flow and chemical characteristics at a number of the most significant sources of acidic mine drainage within the study area, as well as that at Sampling Station GS-61 which represents total effluent from the study area.

Of the above Plates Nos. 12, 17 and 20 graphically depict the acid/flow relationship for variable flows at the three most significant sources of acidic mine water within the watershed. Using the "least squares" method of analysis a straight line acid/flow relationship was established. The same method was used to develop the iron/flow relationships, with the exception of Sampling Station C-34, where a predictable relationship could not be established.

These acid-iron/flow relationships reflect the water quality at some of the worst sources as determined in the survey.They are significant when relating to possible treatment plant design and in understanding the fluctuations with increased or decreased flow for all types

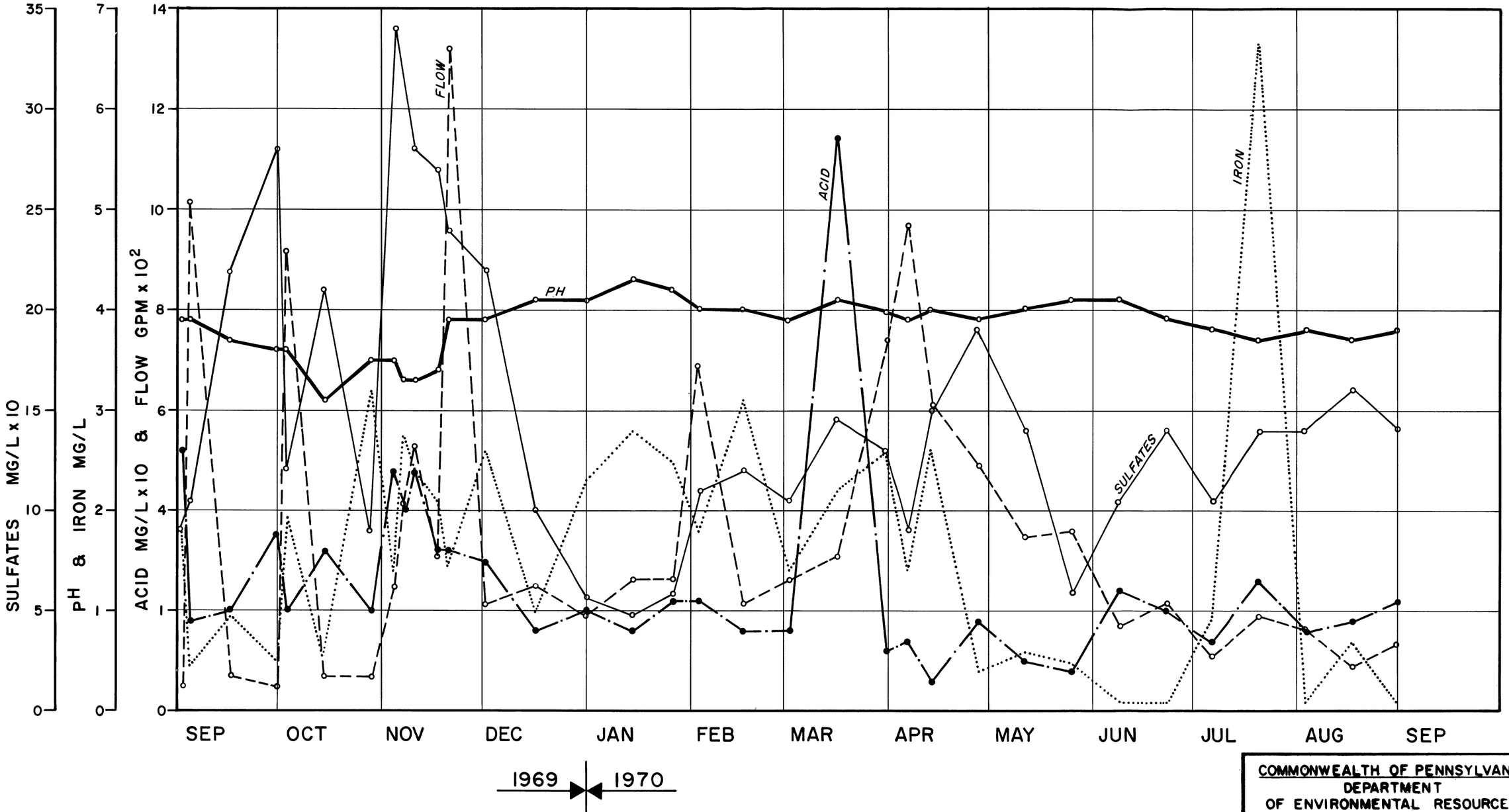
of remedial measures. However, caution must be exercised in that the curves will be altered subject to the various remedial projects completed.

The Pennsylvania Department of Health conducted a limited water sampling survey in the study area during the period April, 1967 through September, 1969. It is our understanding that these were sampling stations only and that no flow measurements were made during this survey. The Department of Environmental Resources (then Mines and Mineral Industries) selected the sampling points which are tabulated below. Also listed is the equivalent sampling station used during the subject watershed survey which is at or near to the sampling point used by the Department of Health:

LIST OF SAMPLING POINTS

DEPARTMENT OF MINES AND MINERAL INDUSTRIES
AND DEPARTMENT OF HEALTH

Station No.	Sampling Point Location	Watershed Survey (Part 2) Station No.
A	Middle Creek at US 209	MC-17
B	Middle Creek, 25 ft. above Coal Run	MC-13
C	Coal Run, 25 ft. above Middle Creek	C-39
D	Middle Creek diversion ditch 200 feet above Coal Run	MC-12
E	Coal Run at T-571	C-40
F	Coopers Run at T-571	
G	Coopers Run 350 ft. east of T-571 and T-631, above strip pit No.3	
H	Middle Creek at T-571	MC-12
I	Gebhard Run at T-571	
J	Middle Creek, 200 ft. north of US 209	G-26
K	Bailey Run, 100 ft. east of Rt.125 and T-571	B-47
L	Martins Run on Rt.125, 0.2 mile west of T-571	MR-55
M	Good Spring Creek at north boundary line of Tremont Borough	GS-68
#1	Strip discharge - 0.2 mile south of Routes T-571 and T-631 and 200 ft. east of T-631	C-37
#2	Strip discharge - between No.1 and Middle Creek diversion ditch	C-38
#3	Strip discharge - 400 ft. north of T-571 (Trag Strip)	C-34
#4	Swatara Creek at Suedberg	-
#5	Swatara Creek at Inwood T-575	-



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT
OF ENVIRONMENTAL RESOURCES

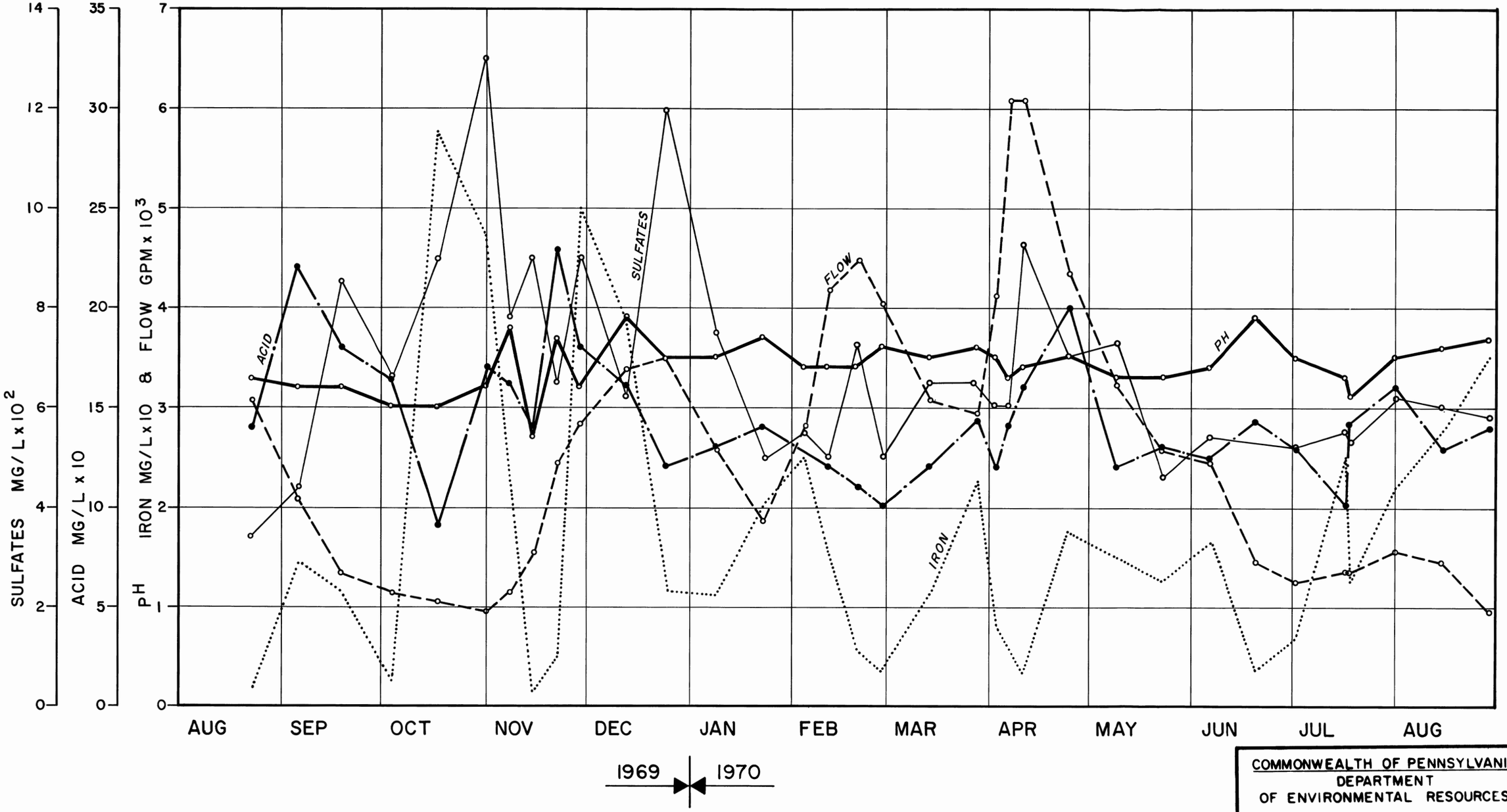
SWATARA CREEK WATERSHED

PROJECT No. SL-126-2
SCHUYLKILL COUNTY, PENNSYLVANIA

WATER QUALITY DATA
SAMPLING STATION MC-1 JUNE, 1971

PREPARED BY
BERGER ASSOCIATES, INC.
HARRISBURG, PENNSYLVANIA

PLATE NO. 10



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT
OF ENVIRONMENTAL RESOURCES

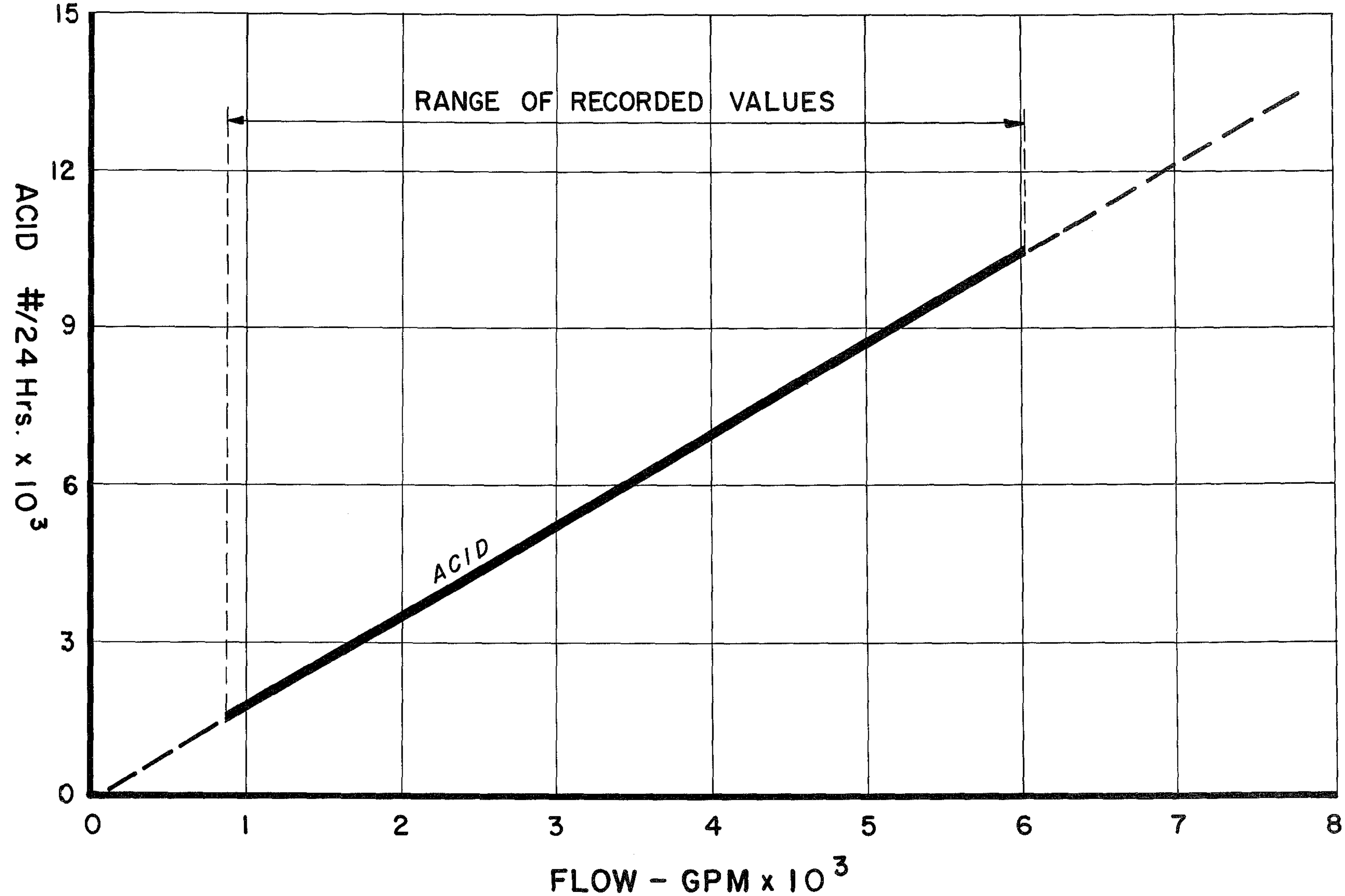
SWATARA CREEK WATERSHED

PROJECT No. SL-126-2
SCHUYLKILL COUNTY, PENNSYLVANIA

WATER QUALITY DATA
SAMPLING STATION C-34 JUNE, 1971

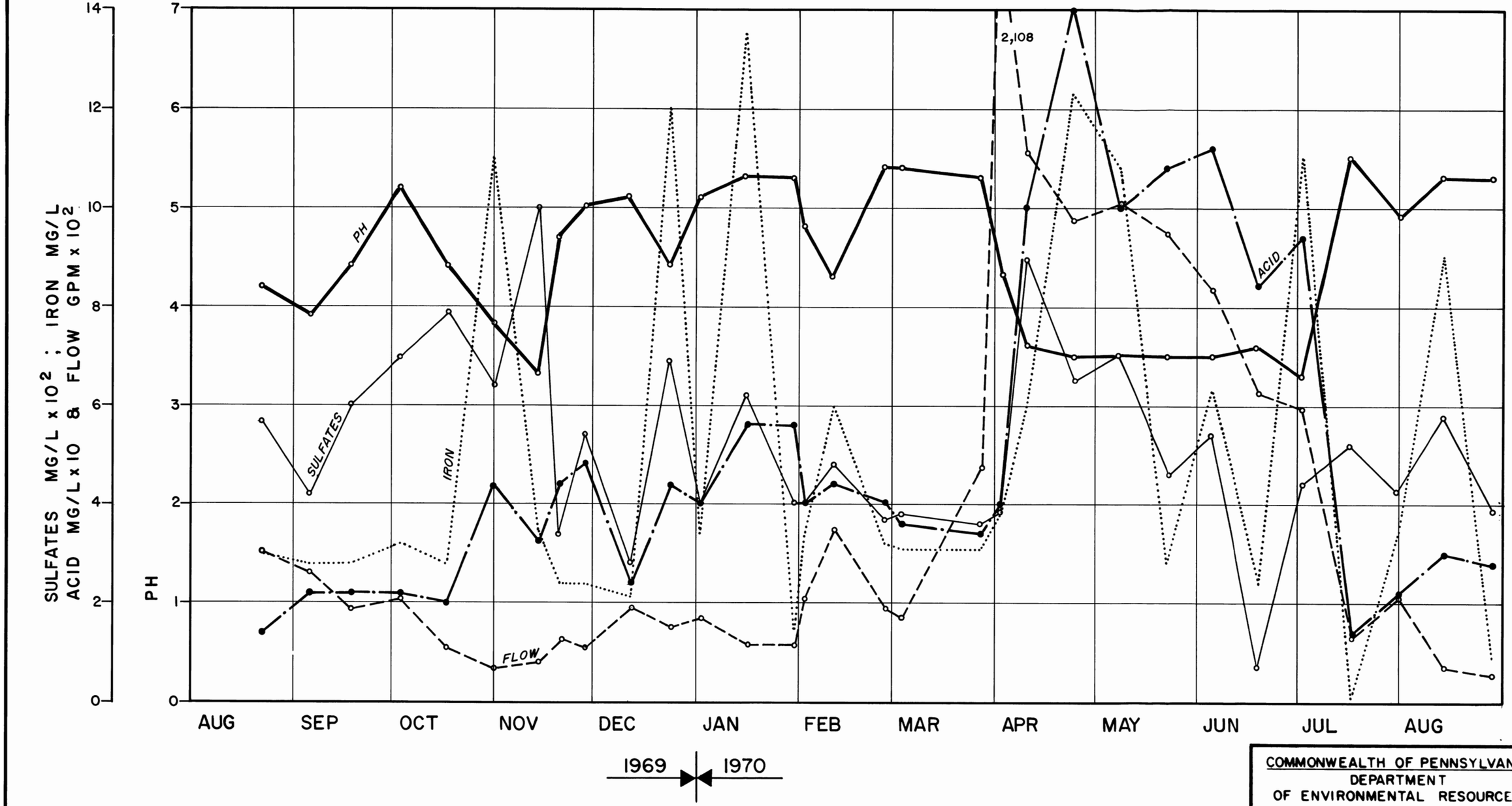
PREPARED BY
BERGER ASSOCIATES, INC.
HARRISBURG, PENNSYLVANIA

PLATE NO. 11



ACID/FLOW RELATIONSHIP
SAMPLING STATION C-34

PLATE NO 12



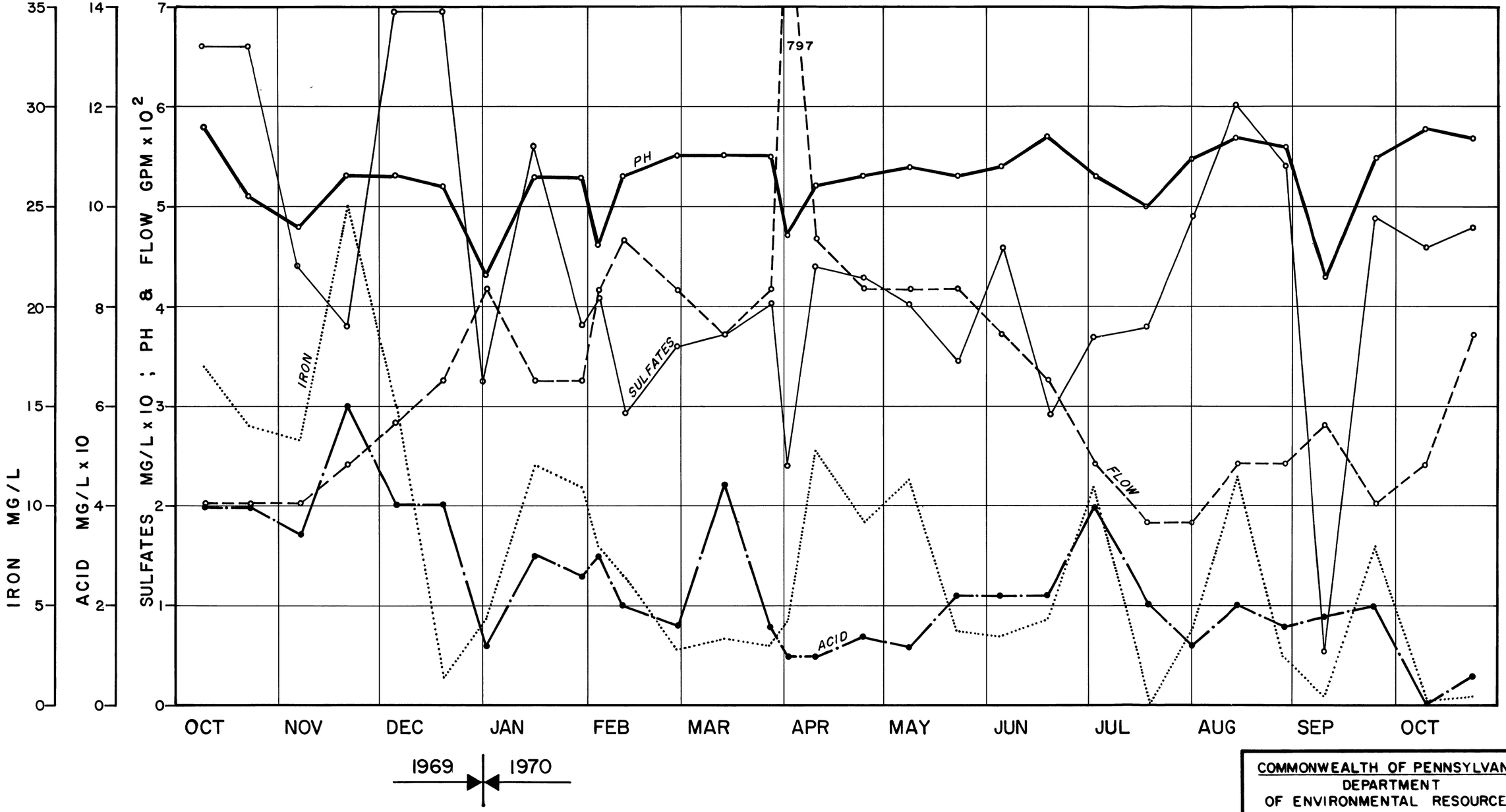
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT
OF ENVIRONMENTAL RESOURCES

SWATARA CREEK WATERSHED

PROJECT No. SL-126-2
SCHUYLKILL COUNTY, PENNSYLVANIA

WATER QUALITY DATA
SAMPLING STATION C-37 JUNE, 1971

PREPARED BY
BERGER ASSOCIATES, INC.
HARRISBURG, PENNSYLVANIA



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT
OF ENVIRONMENTAL RESOURCES

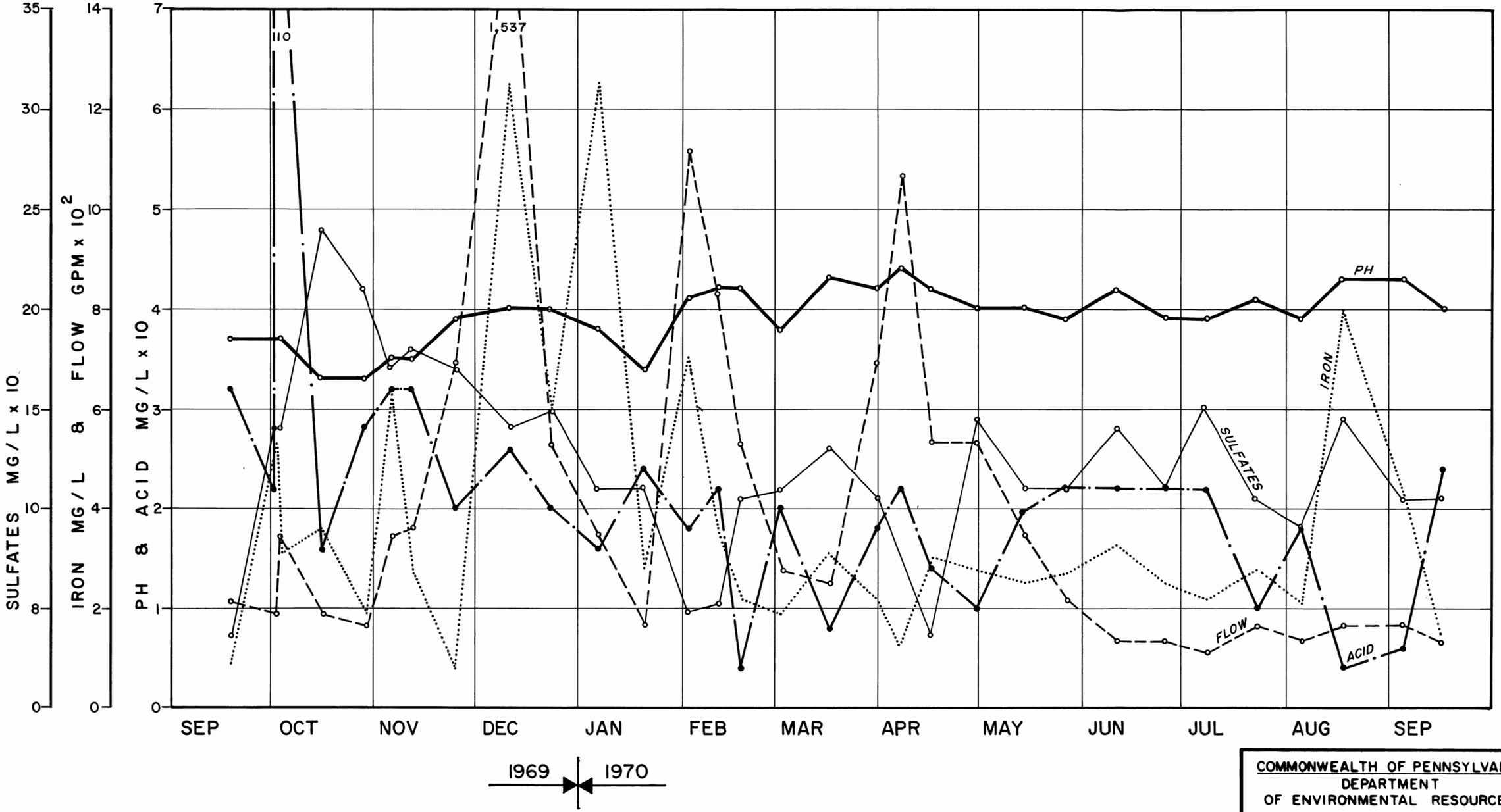
SWATARA CREEK WATERSHED

PROJECT No. SL-126-2
SCHUYLKILL COUNTY, PENNSYLVANIA

WATER QUALITY DATA
SAMPLING STATION C-38 JUNE, 1971

PREPARED BY
BERGER ASSOCIATES, INC.
HARRISBURG, PENNSYLVANIA

PLATE NO.14



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT
OF ENVIRONMENTAL RESOURCES

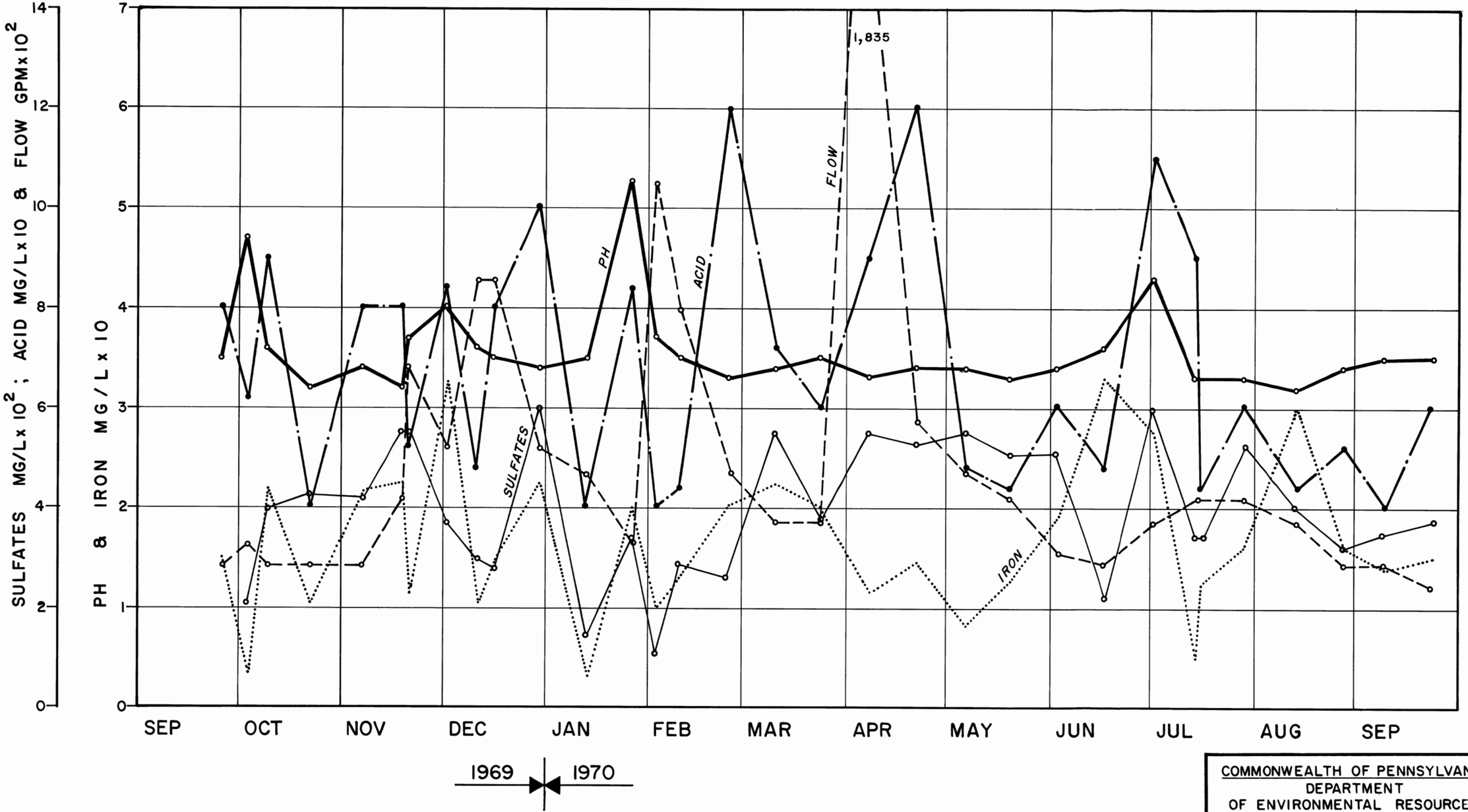
SWATARA CREEK WATERSHED

PROJECT No. SL-126-2
SCHUYLKILL COUNTY, PENNSYLVANIA

WATER QUALITY DATA
SAMPLING STATION MR-52 JUNE, 1971

PREPARED BY
BERGER ASSOCIATES, INC.
HARRISBURG, PENNSYLVANIA

PLATE NO 15



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT
OF ENVIRONMENTAL RESOURCES

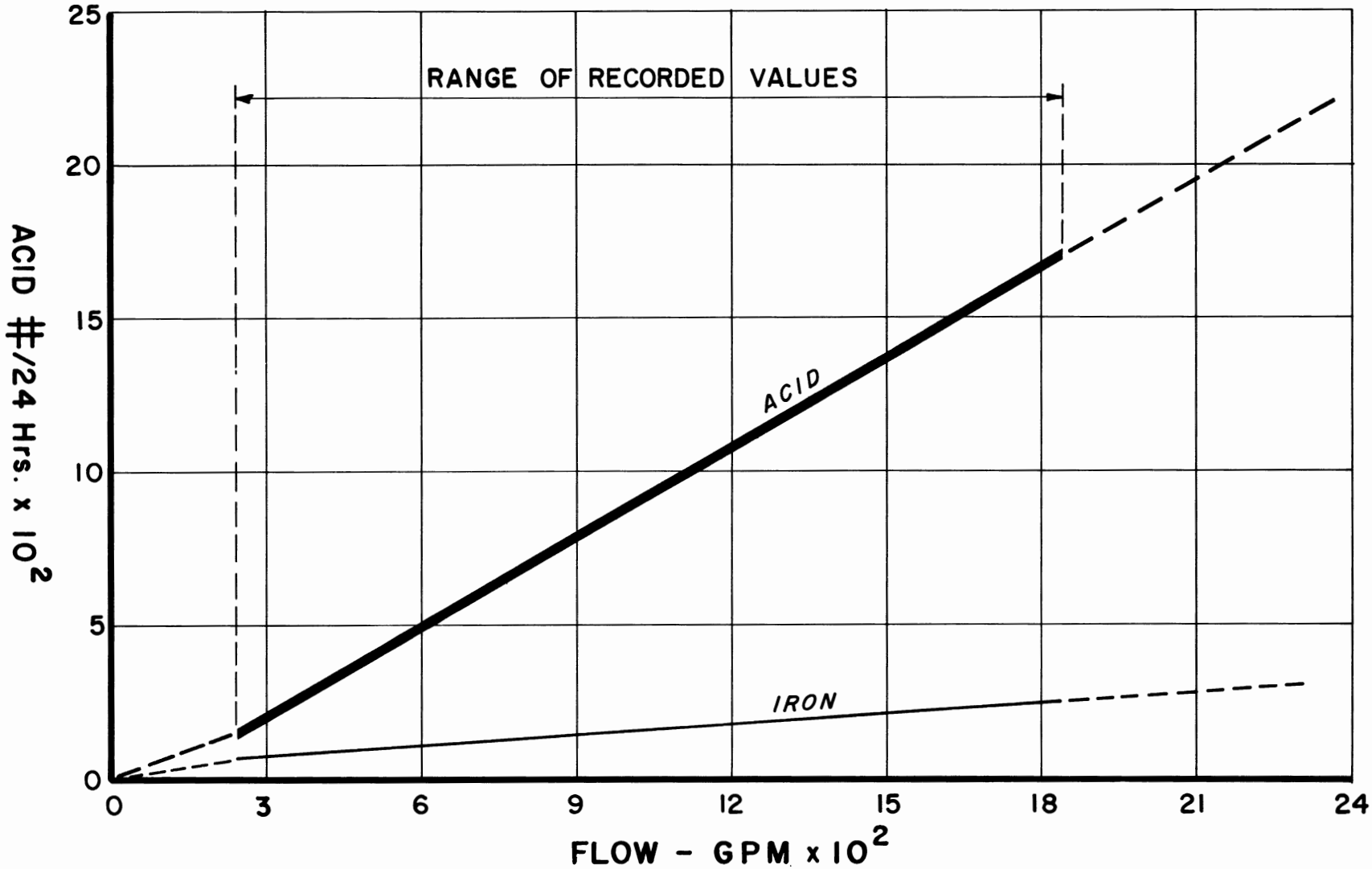
SWATARA CREEK WATERSHED

PROJECT No. SL-126-2
SCHUYLKILL COUNTY, PENNSYLVANIA

WATER QUALITY DATA
SAMPLING STATION MR-53 JUNE, 1971

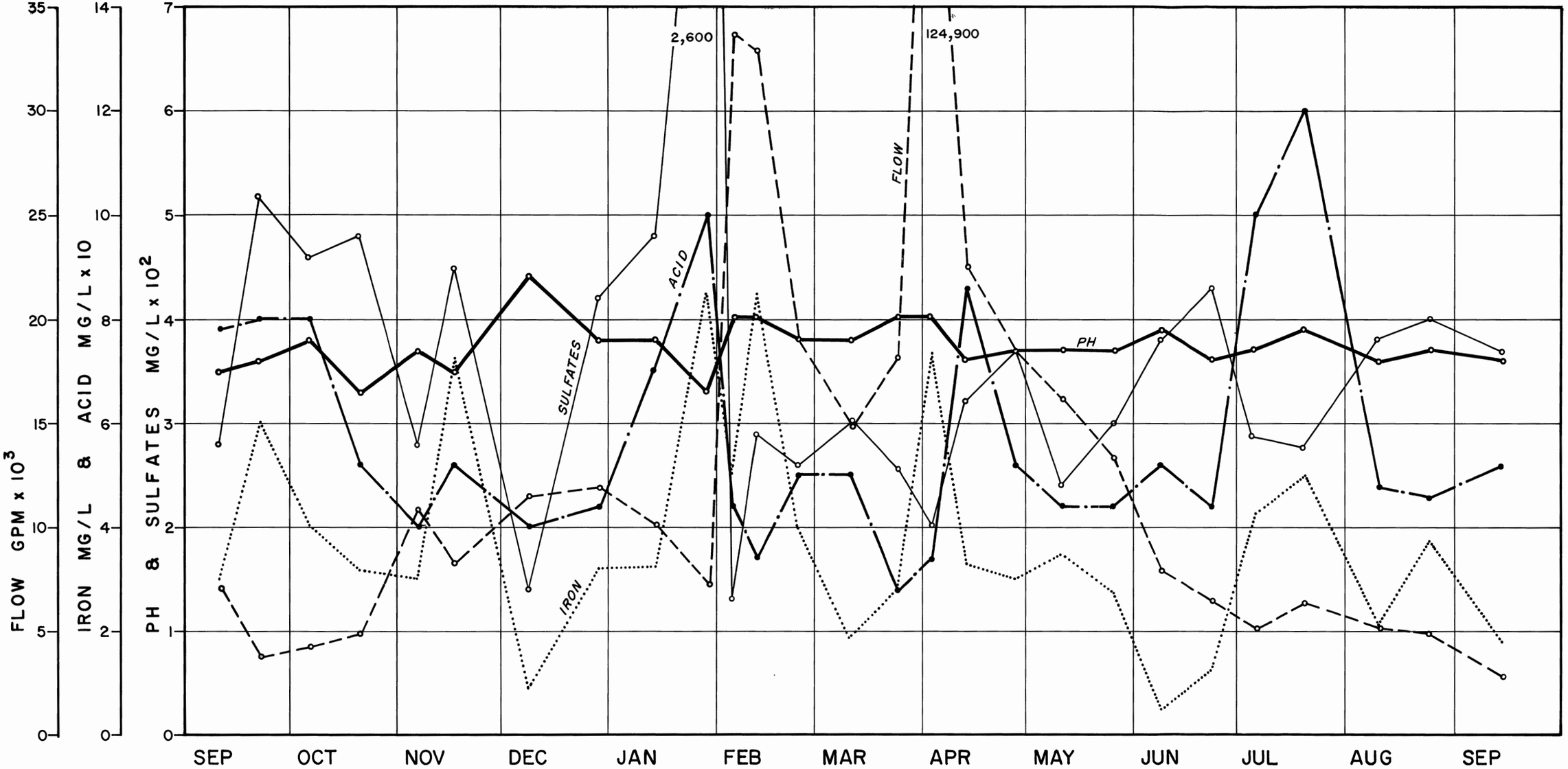
PREPARED BY
BERGER ASSOCIATES, INC.
HARRISBURG, PENNSYLVANIA

PLATE NO. 16



ACID/FLOW RELATIONSHIP
SAMPLING STATION MR-53

PLATE NO. 17



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT
OF ENVIRONMENTAL RESOURCES

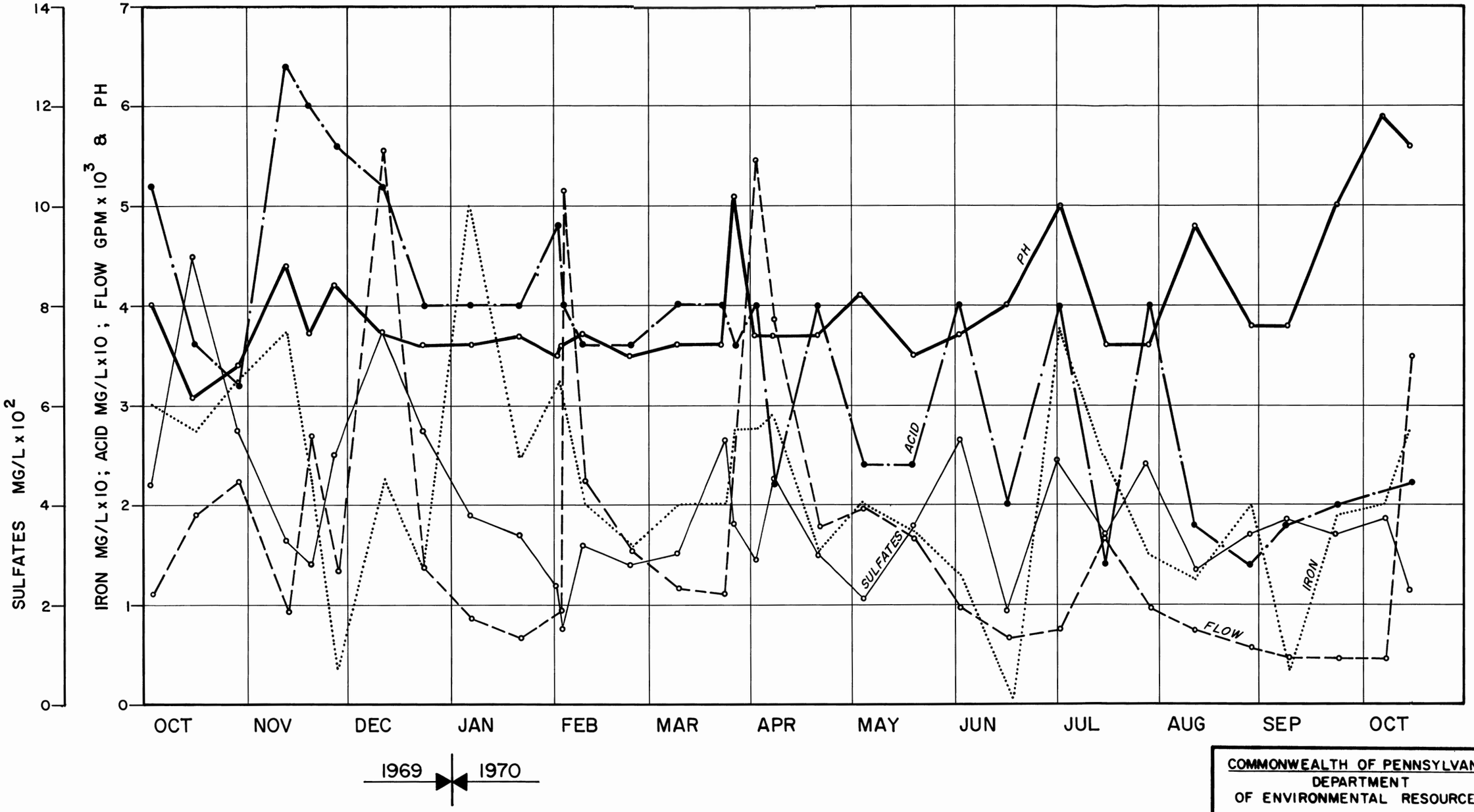
SWATARA CREEK WATERSHED

PROJECT No. SL-126-2
SCHUYLKILL COUNTY, PENNSYLVANIA

WATER QUALITY DATA
SAMPLING STATION GS-61 JUNE, 1971

PREPARED BY
BERGER ASSOCIATES, INC.
HARRISBURG, PENNSYLVANIA

PLATE NO. 18



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT
OF ENVIRONMENTAL RESOURCES

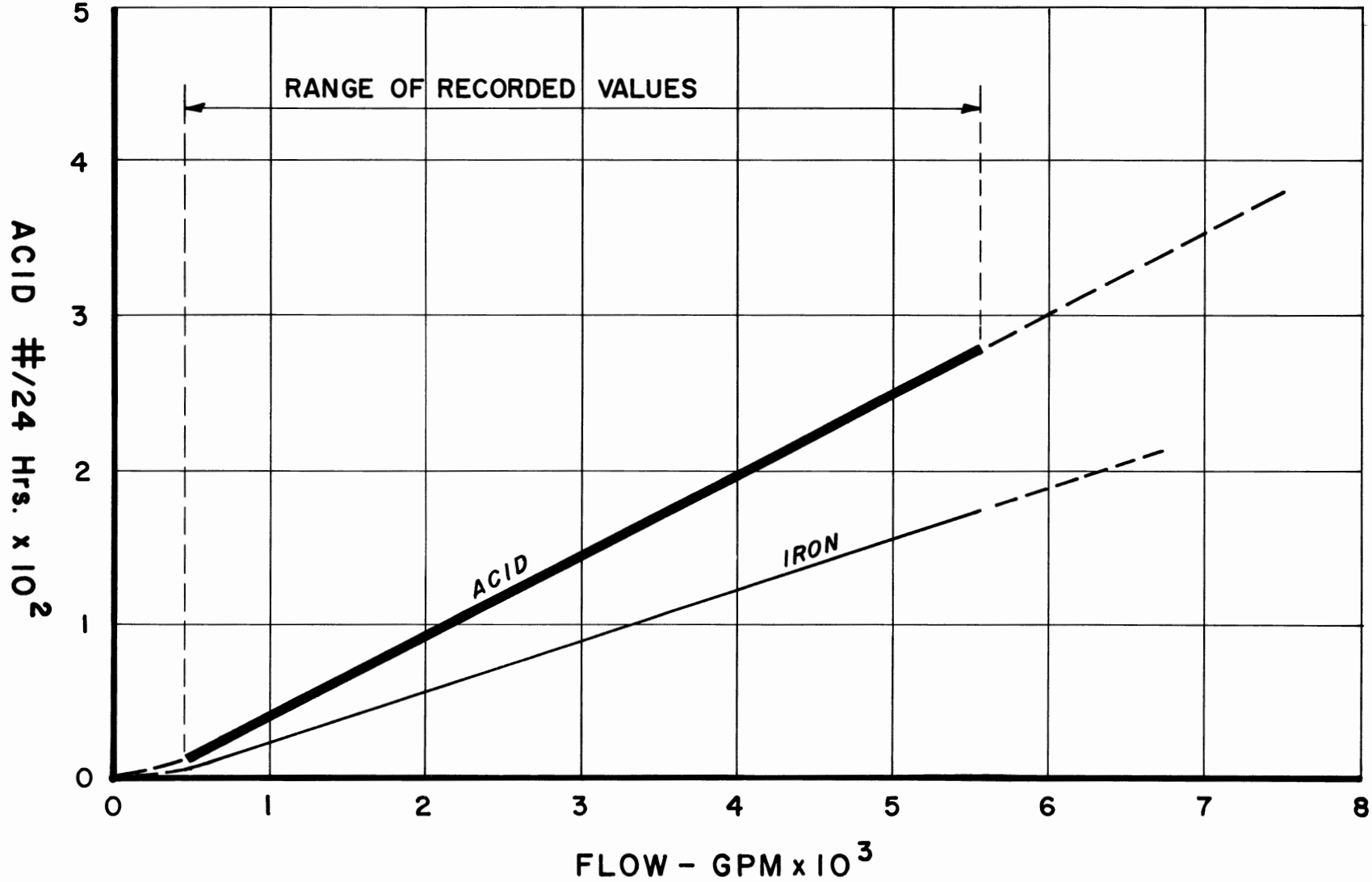
SWATARA CREEK WATERSHED

PROJECT No. SL-126-2
SCHUYLKILL COUNTY, PENNSYLVANIA

WATER QUALITY DATA
SAMPLING STATION GS-95 JUNE, 1971

PREPARED BY
BERGER ASSOCIATES, INC.
HARRISBURG, PENNSYLVANIA

PLATE NO. 19



ACID/FLOW RELATIONSHIP
SAMPLING STATION GS-95

PLATE NO. 20

IRON MG/L & ACID MG/L x 10

SULFATES MG/L x 10^2 & FLOW GPM x 10^2

PH

FLOW

PH

SULFATES

ACID

IRON

OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEP OCT

1969 1970

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT
OF ENVIRONMENTAL RESOURCES

SWATARA CREEK WATERSHED

PROJECT No. SL-126-2
SCHUYLKILL COUNTY, PENNSYLVANIA

WATER QUALITY DATA
SAMPLING STATION GS-119A JUNE, 1971

PREPARED BY
BERGER ASSOCIATES, INC.
HARRISBURG, PENNSYLVANIA

PLATE NO 21

A review of the test results obtained by the Departments of Health/Mines and Mineral Industries indicates that they are comparable to those obtained during the watershed survey. Precise comparison is not possible with respect to total acid and iron stream conditions since no flow data was obtained in the prior sampling.

B. A.M.D. DISCHARGES

For purposes of this discussion A.M.D. discharges are placed in three categories, namely: (l) Deep mines and mine water pools; (2) Strip mines; (3) Springs.

They are treated separately as follows:

l. Deep Mines and Mine Water Pool Overflows

These include both active and abandoned deep mine discharges and mine water pool overflows. The deep mines discharge water by gravity flow, by pumping or a combination of the two, while the mine water pools all discharge by gravity overflow.

2. Strip Mines

These include all of the strip pits in the watershed which produced a discharge.Discharges from these pits are the result of the natural movement of ground water through breaches in aquifers, artesian pressure, interconnections with water-filled abandoned deep workings, overflowing strip pits, etc.

3. Springs

The study area contains several springs discharging an average of 25 g.p.m./spring, with a range of l-78 g.p.m. The water discharged from the majority of springs is acidic indicating that at least part of the natural aquifers contain acid producing material.

The following is a tabulation of the percentages of water discharged and acid contribution from the various sources:

Type of AMD Source	Percent(1) Water Discharged	Percent Acid Contributed
Active Deep Mines (2)	8	2
Abandoned Deep Mines and Mine Water Pool Overflows	68	61
Refuse Banks	Nil	32
Strip Mines	16	4
Springs	8	1
	100 percent	100 percent

(1) These percentages do not include general seepage from spoil and refuse banks, etc.

(2) Daily pumping time for active/inactive deep mines is variable.

It is quite obvious from this tabulation that abandoned deep mine and mine water pool overflows contribute the bulk of flow from underground sources in this watershed. They also constitute the major acid/iron sources contributing to the streams of the study area.

C. SEASONAL EFFECT ON DISCHARGES

As shown previously the major discharges to the study area are from abandoned deep mines and particularly mine water pool overflows.

It has also been stated that the acid/iron concentrations from these sources remain more or less constant even with increased flow. Therefore, seasonal increases have a strong influence on the total pounds of acid/iron contributed to the study area streams, at least from the standpoint of abandoned deep mines and mine pool overflows. (Refuse banks and spoil areas are proportionately less influenced by seasonal factors).

Flows increase through the late fall and winter until maximum flows are recorded in the spring. (In this case April, 1970). From the high point the flows slowly decrease in volume in the summer and early fall when they reach their lowest flow. (Some streams such as Middle Creek were dry during one period in September of the water year of measurements).

The study area, being in the headwaters of Swatara Creek, is composed of steeply rising subwatersheds. Therefore, very high peak flows can be expected to occur which are considerably above the average

flows. This factor should be considered in the design of raw water detention basins for the proposed treatment facilities.

Wide fluctuations do occur in the water levels in the mine water pools. As discussed above, and contrary to the generally accepted belief, wide fluctuations in the levels of the mine pools do not appear to cause significant changes in the quality of mine water discharge. The additional flush-out of acid salts appears to offset the increased flow so that the water quality discharged remains more or less constant. The major import of this statement is that the total pounds of acid discharged during high flows is considerably more than if dilution had occurred.

D. FIELD AND LABORATORY TEST RESULTS

The following pages are a summary of the field and laboratory test results for the sources and/or stream sampling stations having significant amounts of acid. The total number of sampling stations for which information is given is ninety.

The field and laboratory results include pH, Flow (Maximum, Minimum and Average), Acid in mg/l and lbs/214 hours (Maximum, Minimum and Average), and Iron in mg/l and lbs/214 hours (Maximum, Minimum and Average).

FIELD AND LABORATORY TEST RESULTS

Sampling Station Number	pH Range	FLOW (Gallons Per Minute)			ACID				IRON			
					mg/l Range	Lbs./24 Hours			Mg/l Range	Lbs./24 hours		
		Max.	Min.	Ave.		Max.	Min.	Ave.		Max.	Min.	Ave.
MIDDLE CREEK SUB-WATERSHED												
MC-1	3.1-4.3	1,321	48	346	6-140	507	16	105	Tr.-12	23	Tr.	7
MC-2	3.8-5.9	415	0*	96	(-6)-36	107	(-8)	3	Tr.-1.15	2	0	Tr.
MC-3	3.7-5.6	113	66	111	0-20	27	0**	10	Tr.-10	14	Tr.	2
†MC-4	4.3-5.4	547	175	343	0-14	73	8	24	Tr.-7.5	27	Tr.	3
†MC-5	3.4-5.3	490	48	210	(-6)-44	67	(-5)	17	Tr.-15.5	16	Tr.	2
†MC-6	3.6-6.6	900	367	566	(-10)-28	147	(-47)	32	Tr.-4	19	Tr.	6
MC-7	4.8-5.2	80	4	25	(-8)-8	6	0**	Tr.	Tr.	Tr.	Tr.	Tr.
MC-8	5.3-6.8	146	62	140	(-18)-6	11	(-15)	(-8)	Tr.-3.7	6	Tr.	1
MC-9	4.0-5.5	10	0*	4	(-4)-16	2	0**	Tr.	Tr.-3.0	Tr.	Tr.	Tr.
MC-10	4.3-5.0	85	5	29	(-6)-8	8	(-4)	1	Tr.-2.86	Tr.	Tr.	Tr.
MC-11	3.8-7.2	364	33	130	0-34	149	0**	22	Tr.-2.66	4	Tr.	Tr.
†MC-12	4.4-5.8	15,742	0*	2,112	0-14	1,630	0**	188	Tr.-8	1,512	Tr.	60

Sampling Station Number	pH Range	FLOW (Gallons Per Minute)			ACID				IRON			
					mg/l Range	Lbs./24 Hours			Mg/l Range	Lbs./24 hours		
		Max.	Min.	Ave.		Max.	Min.	Ave.		Max.	Min.	Ave.
MIDDLE CREEK SUB-WATERSHED (CONTINUED)												
†MC-13	3.4-4.8	2,540	0*	893	0-90	366	0**	89	Tr.-11.5	32	0	5
†MC-14	2.8-4.4	8,769	888	2,752	6-220	14,738	102	3,526	Tr.-19	669	5	247
†MC-15	2.8-3.6	10,066	880	3,142	48-450	14,501	1,056	3,889	1.2-18	880	63	236
†MC-16	2.8-4.0	11,634	1,147	3,727	56-280	15,642	1,472	4,774	1.5-11.5	440	64	179
†MC-17	2.9-3.8	12,961	1,336	4,708	44-260	17,115	1,498	5,023	Tr.-10	1,167	3	247
GEBHARD RUN SUB-WATERSHED												
† G-21	4.2-6.0	2,359	0*	216	(-92)-16	113	(-88)	6	Tr.-13.3	42	0	2
G-22	4.1-7.0	24	22	24	(-80)-44	13	(-23)	(-12)	Tr.-14	4	Tr.	2
G-23	3.7-5.8	125	1	44	(-4)-22	23	0**	5	Tr.-13.3	3	Tr.	Tr.
G-24	5.8-6.1	8	6	7	(-10)-(-8)	(-1)	(-Tr.)	(-1)	Tr.	Tr.	Tr.	Tr.
† G-26	3.0-5.0	11,657	96	1,223	0-280	1,869	66	514	Tr.-11	1,539	Tr.	66
† G-27	3.4-4.4	1,824	55	565	(-10)-400	1,667	(-219)	760	Tr.-1	15	Tr.	4
G-28	4.7-6.7	150	10	88	(-68)-32	29	(-122)	(-41)	Tr.-2.8	4	Tr.	2
G-29	4.8-4.9	75	1	34	(-6)-4	4	0**	1	Tr.	Tr.	0	0
G-30	5.6-6.0	150	3	73	(-10)-(-6)	(-Tr.)	(-7)	(-3)	Tr.-3.0	Tr.	Tr.	Tr.

Sampling Station Number	pH Range	FLOW (Gallons Per Minute)			ACID				IRON			
					mg/l Range	Lbs./24 Hours			Mg/l Range	Lbs./24 hours		
		Max.	Min.	Ave.		Max.	Min.	Ave.		Max.	Min.	Ave.
COAL RUN SUB-WATERSHED												
C-31	4.4-5.4	200	1	78	0-8	13	0**	3	Tr.-1.1	2	0	Tr.
C-32	4.4-4.9	115	3	68	(-6)-6	5	(-4)	Tr.	Tr.	Tr.	Tr.	Tr.
C-34	2.7-3.9	6,029	866	2,471	32-250	11,580	366	4,294	Tr.-57.5	1,689	6	447
C-37	3.3-6.5	2,108	15	368	(-20)-140	1,639	(-8)	304	Tr.-13.5	144	0	25
C-38	4.3-5.8	797	202	343	10-60	196	41	95	Tr.-25	72	Tr.	30
† C-39	2.7-3.6	8,164	888	2,843	44-180	14,701	1,279	4,189	Tr.-17	718	18	255
† C-40	4.6-5.0	500	0*	202	(-4)-6	24	(-4)	9	Tr.-6.4	38	Tr.	9
BAILEY RUN SUB-WATERSHED												
B-43	3.4-6.9	2	2	2	(-34)-80	2	(-1)	Tr.	Tr.-23	Tr.	Tr.	Tr.
B-44	5.3-6.3	15	15	15	(-10)-6	2	(-1)	Tr.	Tr.-5	1	Tr.	Tr.
† B-47	3.7-5.5	500	30	140	0-80	120	0**	32	Tr.-2.6	9	Tr.	2
B-49	3.6-4.0	15	1	5	8-44	7	Tr.	Tr.	Tr.-1	Tr.	0	0

Sampling Station Number	pH Range	FLOW (Gallons Per Minute)			ACID				IRON			
					mg/l Range	Lbs./24 Hours			Mg/l Range	Lbs./24 hours		
		Max.	Min.	Ave.		Max.	Min.	Ave.		Max.	Min.	Ave.
MARTINS RUN SUB-WATERSHED												
†MR-51	4.4-4.9	60	7	22	0-4	Tr.	0**	Tr.	Tr.	Tr.	0	0
MR-52	3.3-4.4	1,537	110	407	4-110	480	8	108	Tr.-12.5	231	2	23
MR-53	3.2-5.3	1,835	241	491	(-62)-120	1,983	(-243)	382	3-33	253	13	90
MR-54	3.7-6.4	21	18	20	(-26)-68	16	(-6)	(-1)	Tr.-25	6	Tr.	3
†MR-55	3.0-6.0	2,089	468	719	4-74	1,304	31	354	Tr.-67	529	5	134
GOOD SPRING CREEK SUB-WATERSHED												
§GS-61	3.3-4.4	124,900	2,787	16,024	28-120	50,979	553	8,962	Tr.-8.5	10,870	48	953
GS-62	2.3-3.0	20	4	10	200-1,000	126	13	56	1.65-65	16	Tr.	2
GS-64	5.8-6.4	15	7	11	(-60)-(-50)	(-5)	(-9)	(-7)	Tr.	0	0	0
†GS-67	3.0-4.0	27,158	2,787	10,447	30-110	20,626	2,141	7,201	1.8-13.5	4,401	129	673
†GS-68	3.3-4.3	13,536	1,052	5,303	20-70	3,647	303	1,894	Tr.-15	2,437	32	298
GS-69	5.8-6.5	60	15	34	(-30)-(-10)	(-7)	(-11)	(-9)	Tr.-3	2	Tr.	Tr.
GS-70	5.7-6.4	21	6	14	(-20)-(-8)	Tr.	(-4)	(-3)	Tr.	Tr.	0	0

Sampling Station Number	pH Range	FLOW (Gallons Per Minute)			ACID				IRON			
					mg/l Range	Lbs./24 Hours			Mg/l Range	Lbs./24 hours		
		Max.	Min.	Ave.		Max.	Min.	Ave.		Max.	Min.	Ave.
GS-71	5.5-6.7	75	60	71	(-30)-(-18)	(-13)	(-27)	(-18)	Tr.	Tr.	Tr.	Tr.
GS-72	4.4-6.2	125	60	89	(-32)-22	20	(-25)	3	Tr.-3.3	4	Tr.	2
GS-73	3.7-6.0	150	3	50	(-18)-32	19	(-27)	1	Tr.-5.75	8	Tr.	2
GS-74	5.3-6.6	250	150	165	(-40)-12	22	(-72)	(-4)	Tr.-4.65	8	Tr.	2
†GS-76	5.2-6.5	80	12	31	(-74)-(-8)	(-2)	(-11)	(-6)	Tr.	Tr.	0	Tr.
GS-78	4.0-4.6	100	6	31	26-134	72	3	19	Tr.-2.96	Tr.	0	Tr.
GS-79	3.2-3.6	100	7	27	36-100	58	4	23	Tr.-3.5	2	0	Tr.
GS-91	5.7-7.2	31	31	31	(-96)-(-64)	(-21)	(-32)	(-30)	0-1.4	Tr.	Tr.	Tr.
GS-92	3.4-4.4	225	15	71	6-28	49	2	15	Tr.-3.5	4	Tr.	1
†GS-94	3.2-4.3	6,014	564	2,076	8-110	2,525	75	612	3-18.5	578	4	222
GS-95	3.1-5.1	5,567	468	1,758	14-64	3,475	112	794	Tr.-50	1,847	3	499
GS-96	3.6-5.9	400	0	185	(-10)-52	125	(-14)	40	Tr.-22.5	101	0	37
GS-97	5.5-6.4	30	20	24	(-18)-4	1	(-4)	(-1)	Tr.-1.4	Tr.	0	Tr.
GS-99	3.0-3.9	9	9	9	34-100	11	4	7	1.35-5	Tr.	Tr.	Tr.
GS-100	3.8-4.8	301	46	114	4-22	22	3	10	Tr.-8	8	Tr.	3

Sampling Station Number	pH Range	FLOW (Gallons Per Minute)			ACID				IRON			
					mg/l Range	Lbs./24 Hours			Mg/l Range	Lbs./24 hours		
		Max.	Min.	Ave.		Max.	Min.	Ave.		Max.	Min.	Ave.
GS-101	4.2-5.9	30	2	7	(-8)-16	Tr.	(-Tr.)	Tr.	Tr.-27.5	Tr.	Tr.	Tr.
†GS-102	4.0-4.9	452	67	140	0-16	23	0**	10	Tr.-15	56	Tr.	4
†GS-103	4.3-5.0	5	3	4	0-16	Tr.	0**	Tr.	Tr.	Tr.	0	0
GS-104	5.4-6.5	20	1	9	(-6)-(-4)	(-Tr.)	(-Tr.)	(-Tr.)	Tr.-1.25	Tr.	0	Tr.
†GS-105	4.7-5.8	75	15	38	0	N E U T R A L			Tr.	Tr.	0	Tr.
GS-106	3.6-4.9	500	6	116	0-40	156	0	18	Tr.-75	450	0	24
GS-111	5.3-6.2	15	1	5	(-14)-2	Tr.	(-Tr.)	(-Tr.)	Tr.-1.5	Tr.	Tr.	Tr.
GS-112	2.5-5.2	10	2	5	400-500	48	8	20	Tr.-20	Tr.	0	Tr.
GS-116	4.0-5.3	100	6	48	(-6)-14	12	(-7)	2	Tr.	Tr.	0	Tr.
GS-117	4.4-5.6	100	1	44	4-22	20	Tr.	7	Tr.	1	0	Tr.
GS-118	4.4-4.8	150	5	59	2-40	36	1	11	Tr.-2	Tr.	0	Tr.
GS-119	3.7-5.7	30	5	19	(-18)-16	4	(-6)	1	2-30	6	Tr.	3
GS-119A	3.3-5.8	1,195	30	415	0-210	756	0**	319	Tr.-18	168	Tr.	23
GS-120	3.1-5.6	10	0	3	0-14	Tr.	Tr.	Tr.	Tr.-25	Tr.	0	Tr.
GS-121	4.6-7.2	75	2	26	(-60)-6	Tr.	(-32)	(-23)	Tr.-3.2	3	0	Tr.
†GS-122	4.4-6.1	150	1	69	(-6)-6	7	0**	3	Tr.-10	12	0	1

Sampling Station Number	pH Range	FLOW (Gallons Per Minute)			ACID				IRON			
					mg/l Range	Lbs./24 Hours			Mg/l Range	Lbs./24 hours		
		Max.	Min.	Ave.		Max.	Min.	Ave.		Max.	Min.	Ave.
GS-124	3.2-5.6	694	31	118	0-90	267	0**	49	Tr.-9.5	79	0	5
GS-125	5.9-6.1	75	6	41	(-12)-(-10)	(-Tr.)	(-9)	(-5)	Tr.	Tr.	0	Tr.
GS-126	5.8-6.0	30	20	25	(-18)-(-12)	(-4)	(-4)	(-4)	Tr.	Tr.	0	Tr.
GS-130	5.0-5.7	125	0*	74	(-6)-8	10	(-Tr.)	2	Tr.-1	2	Tr.	Tr.
GS-135	4.1-4.7	10	0*	4	20-70	8	Tr.	2	Tr.-8.5	Tr.	0	Tr.
GS-136	4.2-4.4	60	2	21	18-60	22	Tr.	8	Tr.-1	Tr.	0	Tr.
GS-137	4.8-6.3	100	1	21	(-26)-40	36	(-3)	1	Tr.-13.5	12	0	2
GS-137A	6.0-6.1	60	45	53	(-10)-(-4)	(-3)	(-5)	(-4)	Tr.	Tr.	Tr.	Tr.
GS-138	4.7-6.4	125	1	27	0-20	12	0**	2	Tr.-80	120	0	17
GS-139	5.7-6.7	60	3	28	(-40)-12	9	(-3)	(-Tr.)	Tr.	Tr.	0	Tr.

NOTES:

†	Stream Measuring Station
§	Total Watershed
*	Source sometimes has no flow
**	Source occasionally slightly alkaline or neutral
Tr.	(Trace) - < 1 mg/l OR < 1#/24 hours
(-)	Alkalinity - mg/l OR #/24 hours