SAMPLING AND MEASURING RESULTS

The study of the watershed revealed fifty eight (58) significant sources of mine drainage pollution from both deep and surface mined areas. These are described in detail under "Abatement Plan". In addition, the pollution load data indicates that the streams are, to some extent, being adversely affected by ground water pollution which could not be visually detected.

The pollution sources and the areas disturbed by surface mining are distributed as follows:

Sub-Basin	No. of Sources	Acid Load Pounds Per Day	i otai Disturbed Acres
Flat Run	3	478	221
Mons Run	10	3,135	141
Browns Run	26	9,185	457
Alder Run	19	16,470	1,245
Total	58		2,064

All of the pollution loads which emanated from specific sources were not continually monitored, but were sampled and measured sufficiently to give an order of magnitude to each source, which was useful in the analyses of priorities of abatement measures.

DATE

WEATHER

CES.

G.P.M.

Η

CONC. LBS/DAY

CONC. LBS/DAY

CONC

768 566

UU/Y 21,1969 Sept 8,1969 Sept 22,1969 Oct 6,1969 Oct 20,1969

Sept 8, 1969 Rain Sept 8, 1969 Rain Sept 22, 1969 Fair Oct 6, 1969 Fair Oct 20, 1969 Rain Nov. 3, 1969 Rain Nov. 17, 1969 Fair Dec. 1, 1969 Fair Dec. 12, 1970 Fair Mar. 16, 1970 Fair

0.15 0.00 0.00 0.00 0.00 0.03 0.15 0.15 0.16 0.16 0.16

3.5 0 3.5 0 0.0

566 51 86 97 938 2372

2.5 1.6 26.4 67.

/5 15.

87 87

May 29,1970

Fair

246

15.

400. 400. 700. 180. 180. 240.

4.3 3. 6.75

0. 1400 0 0. 1050 0 1.50 0 2.5 1050 623 2.4 1000 808 1.9 1400 394 2.5 1050 905 1.6 900 485 26.4 750 2931 67. 725 7816

Nov. 3,1969
Nov.17,1969
Dec. 1,1969
Dec. 23,1969
Jon. 12,1970
Mar. 16,1970
Apr. 7,1970

65 237

Dec. 1, 1969
Dec. 23,1969
Jan. 12, 1970
Mar. 16, 1970
Apr. 7,1970

May 29,1970

1.07

SULFATES ALUMINUM
CONC. LBS/DAY CONC. LBS/DAY

DATE

WEATHER

SAMPLING

WEATHER FLOW C.F.S.

CONC. LBS/DAY CONC. LBS/DAY CONC. LBS/DAY CONC. LBS/DAY

SAMPLING

STATION

0.25	0.70	0.20	*	0.00	0.06	0.06	0.06	0.00	0.00	0.00	0.00	0.02	CFS.	FLOW	
													G.P.M.	FLOW	3
3.4	3.7	3.9	I	3.8	3.7	3.5	3.0	3.2	3.2	3.4	3.3	3.5	7	2	
128.	40	72	1	180	64.	100.	180.	160.	160.	120.	110.	180.	CONC.	ACI	3
271	151	78		0	21	32	58	0	0	0	0	/9	LBS/DAY	ACIDITY	,
			!										CONC.	ALKA	3
													LBS/DAY	ALKALINITY	7
5.8	3.4	2.0			5.5	3.	6.	9	8.5	9.	18.	4.5	CONC.	TOTA	
7.8	12.8	2.2			18	1.	1.9	0.	0.	0.	0.	0.5	LBS/DAY	TOTAL IRON	r
750. 1011	220.	250.		660.	300	650.	850.	650.	850	580.	900.	700.	CONC	SULFATES	
1011	830	270		0	283	210	275	0	0	0	0	75	LBS/DAY	ATES	
15.													CONC.	ALUMINUM	
20													LBS/DAY	MON	
May 29,1970	Apr. 7,1970	Mar. 16, 1970	Jan. 12, 1970	Dec. 23, 1969	Dec. 1 ,1969	Nov. 17, 1969	Nov. 3,1969	Oct 20,1969	Oct. 6, 1969	Sept. 22,1969	Sept 8,1969	JULY 21.1969	Ç.	2	
\rightarrow			-		-	-	-	-	-	-	- 1	~	_	,	

			SAM	SAMPLING	ត	STA	STATION		<u>N</u> 0.	ω					
DATE	Gantram	FLOW	₩07∃	-	ACI	ACIDITY	ALKALINITY		TOTAL IRON	IRON	SULFATES	ATES	ALUI	ALUMINUM	
2	מכאו חבא	C.F.S.	GPM.	po	CONC.	LBS/DAY	CONC.	CONC. LBS/DAY CONC.	CONC	LBS/DAY	CONC.	CONC. LBS/DAY	CONC.	LBS;/DAY	DATE
July 21, 1969	Rain	0.47		3:0	450.	1140			4.25	П	10.8 1050.	2660			duly 21, 1969
Sept 8, 1969	Rain	0.41		6.5	700	1547			100	221	1900.	4/99			Sept 8, 1969
Sept 22,1969	Foir	*		2.9	1000.	I			2.15		2700				Sept 22/969
Oct. 6,1969	Fair	0.09		2.8	550.	267			1.6	0.8	2500	1213			Oct. 6, 1969
Oct. 20, 1969	Fair	0.18		2.4	450	437			4.4	4.3	2300.	2231			Oct. 20, 1969
Nox 3, 1969	Rain	0.41		2.4	550.	1215			20.5	45.3	45.3 1750.	3867			Nov 3,1969
Nov. 17, 1969	Fair	0.14		2.8	650.	490			2.15	16.2	16.2 2700, 2037	2037			Nov 17, 1969
Dec. 1, 1969	Fair	0.18		3.0	.0001	965			42.5	4/.	2700. 2605	2605			Dec. 1, 1969
Dec. 23, 1969	Fair	0.43		3.3	524	1223			2.3	5.4	5.4 1850. 4318	43/8			Dec. 23, 1969
Jan. 12, 1970	Fair	0.13		3.2	540	379			25.	18.	1975. 1384	1384			Jan. 12, 1970
Mar. 16, 1970	Fair	1.33		3.3	280.	2001			12.	85.8	900.	900. 6432			Mar. 16, 1970
Apr. 7, 1970	Fair	4.68		3,3	200.	200. 5045			5.75	145.	750.	750. 18,919			Apr. 7,1970
May 29,1970	Foir	1.71		3.1	220.	2028	,		12.5	1152	1325.	12212	22.	203	Muy 29, 1970
Average		0.85		3.0	547.	/395			19.6	591	1877.	5173	22	203	Average

	₩ T A T	
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	FLOW	C.F.S. G.P.M.
SAM	FLOW	G.P.M
SAMPLING	10	7
G	ACIDITY	CONC
7.TS	ΥΤΙ	BS/DAY
STATION	ALKALINITY	CONC
2	NITY	YAC/SB I
0	TOTAL IRON	CONC. LBS/DAY CONC. LBS/DAY CONC. LBS/DAY
4	IRON	LBS/DAY

LBS/DAY CONC. LBS/DAY

CONC. LBS/DAY

CONC 800.

SULFATES LBS/DAY

26.5														CONC. LBS/DA	ALUMINUM	
_			_		_	_		_	<u></u>	_		L	_	¥		J
Average	May29,970	Apr. 7,1970	Mar. 16,1970	Jan. 12,1970	Dec. 23, 1969	Dec. 1, 1969	Nov. 17, 1969	Nov. 3, 1969	Oct. 20,1969	Oct. 6,1969	Sept 22,1969	Sept. 8, 1969	July 21, 1969	2	DATE	
	Fair	Fair	Fair	Fair	Foir	Fair	Fair	Rain	Fair	Foir	Fair	Rain	Roin	-	WE AT HER	
0.67	1.67	3.00	1.38	0.44	0.46	0.09	0.09	0.50	0.22	0.02	0.00	0.33	0.50	C.F.S.	FLOW	S
														G.P.M.	FLOW	SAMPLING
3.0	3.1	3.3	3.2	3.2	3.3	3.0	2.8	2.7	2.4	2.8	3.0	2.9	3.0	70		LNG
458	200	200.	240.	440.	524.	750.	500.	650.	500.	450.	500.	500.	500.	CONC.	ACI	
106	1800	3234	1780	1034	1285	364	.243	1752	593	49	0	889	/348	LBS/DAY	ACIDITY	STATION
														CONC	ALKA	ioN
											1			LBS/DAY	ALKALINITY TOTAL IRON	7
58	7.	5.15	9,	2.9	2.7	6	4.5	18.	6.	2.5	217	2.3	6.75	CONC.	TOTAL	NO.
238	63.	83.	66.7	7.	6.6	2.9	2.2	48.5	7.7	0.3	0.	4.1	18.2	CONC. LBS/DAY	RON	G
/657	1100.	900.	290.	1500.	1850.	2300	2100	2200.	2100.	1850.	2100.	2000.	1250.	CONC.	SULFATES	
4105	100. 9901	14,553	2151	3542	4537	9///	1019	6929	2490	199	0	3557	3369	LBS/DAY	ATES	
00	20.				ĺ									CONC	ALU	
Ŝ	180													LBS/DAY	ALUMINUM	

SAMPLING
STATION
NO.

DATE	WEATHED	FLOW	FLOW	1	ACIDITY	YTI	ALKA	ALKALINITY TOTAL IRON	TOTAL	IRON	SULFATES	ATES	ALUMINUM	MOM
1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	C.F.S.	G.P.M.	ν,	CONC.	LBS/DAY	CONC.	LBS/DAY	CONC.	LBS/DAY	CONC.	LBS/DAY	CONC.	LBS/DAY
JULY 21,1969	Rain	0.00		3.5	180.	0			14.	0.	340	0		1
Sept 8,1969	Rain	0.00		3.5	170.	0			3.2	0.	460.	0		T
Sept. 22,1969	Foir	0.00		3.7	172	0			.85	0	460	0		
Oct. 6, 1969	Foir	0.00		3.5	200.	0			2.15	0.	460	0		
0c+20,1969	Fair	*			1						1			
Nov. 3, 1969	Rain	*												
Nov. 17, 1969	Fair	0.02		3.7	206	22			.∾	0.2	750.	8/		
Dec. 1,1969	Snow	0.02		3.7	212	23			.65	0.1	700.	75		
Dec. 23,1969	Fair	0.22		4.0	100.	//9			.55	0.7	320.	379		
Jan. 12, 1970	Fair	0.09		3.9	124.	6/			.55	0.3	410.	201		
Mar. 16, 1970	Fair	0.77		3.8	100.	415			ij	1.2	290.	1204		
Apr. 7,1970	Fair	2.00		3.6	70.	755			.66	7.7	240.	2587		
May 29,1970	Fair	0.76		3.6	92.	376			2.2	9.0	160.	654	8.5	35
Average		0.35		3.7	148.	/6/			2.5	/.7	4/7	47/	8.5	35

PROJECT NO. SL-143

SAMPLING AND DATA

MEASURING

0.01 112. 181 25. 4.15 65 450. 450. 296 728

SAMPLING STATION S

			SAN	SAMPLING	0	ST/	STATION	Ż	N 0	10					
DATE	WE AT USO	W07	FLOW	, L	ACII	ACIDITY	ALKA	ALKALINITY	TOTAL IRON	RON	SULFATES	ATES	ALUMINUM	MOM	
3	TON ACA	C.F.S.	G.P.M.	ρn	CONC.	LBS/DAY	CONC.	LBS/DAY	CONC.	LBS/DAY	CONC	CONC. LBS/DAY CONC.		LBS/DAY	
July 21,1969	Rain	11.0		3.9	28.	77			1.52	0.9	140.	83			404
Sept. 8.1969	Rain	0.05		4.0	20.	S			.67	0.2	280	75			Sepi
Sept 22,1969	Fair	Ď.00		3.9	38.	0			1.47	0.	340	0			Sept
Oct. 6, 1969	Fair	0.03		3.9	20.	3			.5	0.1	320.	52			Oct.
Oct. 20, 1969	Fair	0.03		4.3	42	7			.6	0.1	360.	58			Oct
Nov. 3, 1969	Rain	0.09		4.3	24	12			1.9	0.9	320.	155			Nov.
Nov. 17, 1969	Fair	0.20		4.6	40.	43			.86	0.9	290.	3/3			Nov.
Dec. 1 , 1969	Snow	0.12		4.7	30.	19				0.8	260.	/68			Dec.
Dec. 23, 1969	Fair	0.48		4.7	34.	88			10.25	26.5	245.	634			Dec
Jan. 12, 1970	Fair	0.75		4.6	34.	28			1.75	1.4	220.	178			Jan.
Mor. 16, 1970	Fair	*		1							1			Í	Mor
Apr. 7, 1970	Fair	0.25		4.6	16.	22			./	1.	108.	/46			Apr.
May 29,1970	Fair	0.39		4.1	36.	76			į,	0.6	230.	483	3.7	8	May

Sept 8, 1969
Sept 8, 1969
Sept 22,1969
Oct 6, 1969
Oct 70, 1969
Oct 17, 1969
New 17, 1969
Dec 1, 1969
Dec 23,1969
Dec 12,1970
Mai 16,1970
Apr. 7,1970

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74 252 466

DATE

WEATHER FLOW C.F.S.

G.P.M.

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CONC

LBS/DAY

CONC. ALKALINITY

LBS/DAY

CONC. TOTAL IRON

LBS/DAY

CONC SULFATES

LBS/DAY

CONC. LBS./DAY

ALUMINUM

SAMPLING

STATION

N0

6

* Not Measured

TWENTY TWENTY-THREE NORTH SECOND STREET HARRISBURG PENWSYLVANIA ENGINEERS CONSULTANTS Skelly and Loy

DEPARTMENT OF MINES AND MINERAL INDUSTRIES

8

COMMONWEALTH OF PENNSYLVANIA

STATION Z O

900 437 2.3 3200. 931

Fair Fair Fair Fair Fair

Fair Fair Fair Rain

ALDER RUN WATERSHED

776 792 868 711 906 873 998 1434 1085

CONC. LBS/DAY

ALUMINUM

SAMPLING STATION **N**0 2

SAMPLING

STATION

Mor It	Jon. 12		Dec 2	Dec. /	Nov /	Nox	Oct 2	Oct.	Sept.	Sept	duly.	5	DATE
1010	_	Jan. 12, 1970	Dec. 23, 1969	Dec. 1, 1969	Nov 17, 1969	Nov 3,1969	Oct 20, 1969	Oct. 6, 1969	Sept. 22,1969	Sept 8, 1969	July 21, 1969		
FOIL		Foir	Foir	Foir	Fair	Rain	Fair	Foir	Fair	Rain	Rain	ווראו וורא	WEATHED
0.40	*	*	0.08	0.02	0.03	0.03	0.00	0.00	0.00	*	*	C.F.S.	FLOW
												G.P.M.	FLOW
2.9	1	1	4.1	4.2	3.8	2.7	2.8	3.2	3.3	3.2	3.8	70	È
450.			34.	32.	28.	220.	220.	90.	76.	90.	50.	CONC.	ACI
970			15	4	5	36	0	0	0			LBS/DAY	ACIDITY
												CONC	ALKAL
												LBS/DAY	ALKALINITY
32.5	1		3.1	2.7	.4	11.5	12.5	13.5	5.75	33.5	2.5	CONC	TOTAL IRON
70.			1.4	0.3	0.1	1.9	0.	0.	0.		1	LBS/DAY	IRON
550.	1		140.	120.	110.	1500.	320.	130.	200	290.	350.	CONC.	SULFATES
1186			62	/5	18	243	0	0	0.			LBS/DAY	ATES
												CONC	WUNIWUJA
												LBS./DAY	MON
Apr. 1	Mor. I	Jan. 12	Dec. 2.	Dec. 1	y now	Nov 4	Oct 2	Oct 6	Sept.	Sept	duly :	2	

550. 86

T	Ā	Ź	8	0	0	2	≷	0	0	Se	Se	8		
May 29,1970	Apr. 7, 1970	Mar. 16, 1970	Jan. 12, 1970	Dec. 23, 1969	Dec. 1 , 1969	Nov. 17, 1969	Nov 4, 1969	Oct. 20, 1969	Oct. 6, 1969	Sept.22,1969	Sept 8, 1969	July 21, 1969		DATE
Fair	Foir	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Foir	Rain	Rain		WE ATUED
0.88	*	*	0.12	0.19	0.03	0.02	0.02	0.08	0.00	0.00	0.02	90.0	C.F.S.	FLOW
													GPM.	FLOW
3.6		1	3.9	4.0	3.7	3.5	3.2	3.3	3.6	3.6	3.4	3.4	ν.,	3
64.			100.	92.	120.	80.	110.	36.	44.	110.	90.	120.	CONC	ACIDITY
304			65	96	17	9	12	16	0	0	10	39	LBS/DAY	ΉΤΥ
													CONC	ALKAI
													LBS/DAY	ALKALINITY
2.3			6	.9	3./	1.16	2.4	2.6	8.	2.13	3.	3.7	CONC.	TOTAL IRON
6.01			0.6	0.9	0.4	0.1	0.3	1.1	0.	0.	0.3	1.2	LBS/DAY CONC LBS/DAY CONC LBS/DAY	IRON
280.			320	270.	450	260.	650.	420	180	300	190	650.	CONC	SULFATES
1328			208	282	64	28	70.2	181	0	0	20	210	CONC. LBS/DAY CONC.	ATES
9.5													CONC	ALUN

_	≺	9AY		_			_	_		_	ļ.,	L	L	_	-	_	
0	TOTAL IRON	DAY CONC.	3.7	3.	213	.8	2.6	2.4	1.16	3.1	9	. 9			2.3	i	2.7
3	IRON	LBS/DAY	1.2	0.3	0.	0.	1.1	0.3	0.1	0.4	0.9	0.6			10.9		1.4
	SULFATES	CONC	650.	190	300	180	420	650.	260.	450	270.	320	1	1	280		36/.
	ATES	LBS/DAY	210	20	0	0	181	70.2	28	64	282	208			1328	ì	217
	ALUN	CONC.													9.5		9.5
	ALUMINUM	CONC. LBS/DAY													45		45
	╝	CAIE	July 21, 1969	Sept 8,1969	Sept. 22,1969	Oct. 6,1969 Fair	Oct 20,1969 Foir	Nov. 4, 1969	Nov. 17, 1969	Dec. 1 , 1969	Dec. 23, 1969	Jan. 12, 1970	Mar. 16, 1970	Apr. 7,1970	May29,1970 Fair		Average
		WEAI HEK	Rain	Rain	Fair	Fair	Foir	Foir	Foir	Fair	Fair	Foir	Fair	Foir	Fair		
S	FLOW	C.F.S.	0.36	0.12	0.01	0.06	0.43	0.65	0.19	0.19	0.37	0.22	0.86	1.75	0.98		0.48
SAMPLING	FL0W	G.P.W.		-													
Ľ	:	РН	3.3	3.3	3.4	3.2	2.9	2.8	3./	3.5	3.6	3.6	3.6	3.7	3.4		3.3
.,	ACI	CONC.	220.	160	110.	180.	500.	400	200.	240.	120.	112.	276	36.	120.		206.
STATION	ACIDITY	LBS/DAY	427	103	6	58	1159	1401	205	242	237	135	1275	340	634		478
ģ	ALKA	CONC.															
7	ALKALINITY	LBS/DAY															
0	TOTAL IRON	CONC	4.	2.5	2.17	3.04	7.25	2.1	4	5	2.5	4.3	ÇM		3.95		3.5
4	IRON	LBS/DAY	7.8	1.6	0.1	,	16.8	7.4	4.1	5	4.9	<u>.</u> 51	13.9	9.4	20.9		7.5
	SULF	LBS/DAY CONC.	700.	360.	280.	250.	1450.	1700.	550.	340.	340.	240.	600.	210.	180.		554
	SULFATES	LBS/DAY	1358		/5	8/	3361			343	67/	290	2772	1981	95/		1429
	ALUMINUM	\neg	1												17.2		172
		LBS/DA	\rightarrow		_	_	-	_	\neg	\neg	_	\neg	\neg	\neg	9/		9/

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DATE	WEATHED	FLOW	FLOW	2	ACIDITY	NΤΥ	ALKAI	ALKALINITY	TOTAL IRON	IRON	SULFATES	ATES	ALUN	ALUMINUM
		C.F.S.	GPM.	7,1	CONC.	LBS/DAY CONC.	CONC.	LBS/DAY	CONC.	LBS/DAY CONC. LBS/DAY	CONC.	CONC. LBS/DAY CONC.		LBS/DAY
July 21, 1969	Rain	0.05		4.6	14.	4			0.25	0.1	160.	43		
Sept. 8, 1969	Rain	20.0		5./	12.	\			. /	0.	59.	6		
Sept. 22,1969	Fair	10.0		5.1	4	0			2.17	0.7	12	`		
Oct. 6, 1969	Fair	10.0		5.1	0.	0			.,	0.	44.	0		
Oct. 20, 1969	Fair	0.05		4.4	4.	\			4	0./	42.	1		
Nov 3, 1969	Fair	0.07		4.7	1	I	6.	2	1.1	0.4	110.	42		
Nov 17, 1969	Fair	0.04		4.8	4	,			-	0	56.	12		
Dec. 1,1969	Fair	700		5.3	4	2			.35	0.7	52.	21		
Dec. 23, 1969	Fair	0.18		5.0	0.	0	0	0	1.9	1.8	60.	58		
Jan. 12, 1970	Foir	0.14		5.2	0.	0	0.	0		0.1	48.	37		
Mar. 17, 1970	Fair	*		1	F		1					i		
Apr. 7, 1970	Fair	*		1	1									
May 29,1970	Fair	0.29		5.1	6.	9			1.7	2.7	36.	56	33	G ₁
														i
Average		0.08	L	4.9	5	2	2	_	0.8	0.5	62.	26	3.3	Ġ

			SAN	SAMPLING	9	ST/	STATION	z	N 0.	16				
STAG	ME ATUED	FLOW	FLOW	2	ACI	ACIDITY	ALKA	ALKALINITY	TOTAL IRON	IRON	SULFATES	ATES	ALUMINUM	MON
	ייראי אכא		G.P.M.	þn	CONC.	LBS/DAY	CONC.	CONC. LBS/DAY	CONC.	LBS/DAY	CONC.	LBS,/DAY	CONC.	LBS./D
JULY 21,1969	Rain	0.42		3.4	140.	3/7			4.5	10.2	210.	475		
Sept. 8, 1969	Rain	0.14		3.3	180.	/36			3.1	2.3	220.	166		
Sept 22,1969	Fair	0.01		5.4	6	0			.68	0	72.	۵		
Oct. 6, 1969	Fair	0.06		3.3	160.	52			2.2	0.7	240.	78		
Oct. 20, 1969	Foir	0.51		2.8	260	715			7.	19.2	370.	1017		
Nov. 3, 1969	Fair	0.67		3.0	180.	650			1.9	6.9	1600	5778		
Nov. 17, 1969	Foir	0.21		3.3	110.	125			2.15	2.4	320.	362		
Dec. 1,1969	Foir	0.22		3.7	40.	47			4	4.7	220.	261		
Dec. 23,1969	Fair	0.94		3.8	96.	486.			1.45	7.3	245	1241		
Jan. 12, 1970	Fair	0.56		3.8	96.	290			1.9	4.4	280.	739		Ì
Mar. 17, 1970	Foir	*			ſ									
Apr. 7, 1970	Foir	*			1				i		1			
May 29,1970	Fair	2.00		3.6	79.	852			1.3	14.	280.	3018	11.2	121
Average		0.52		3.6	122.	334			2.7	6.6	369.	//94	112	121

				SAM	SAMPLING	G	STATION	N N		<u>N</u> 0	8				
MINUM	DATE	WEATHER FLOW	FLOW	FL0W	200	ACIDITY)TY	ALKA	ALKALINITY	TOTAL IRON	IRON	SULFATES		ATES	ATES ALUMINUM
LBS./DAY	f		C.F.S.	G.P.M.	7	CONC.	CONC. LBS/DAY	CONC.	CONC. LBS/DAY CONC.		LBS/DAY	CONC.		LBS/DAY	LBS/DAY CONC.
	JUNY 21,1969	Rain	1.00		3.5	100.	539			<u>,3</u>	16.2	150.		809	809
	Sept. 8, 1969	Fair	0.32		4.3	60	104			1.35	2.3	230.	_	397	397
	Sept 22,1969	Fair	0.04		4.0	22.	5			5.	1.1	165.	_	36	36
	Oct. 6, 1969	Rain	0.14		3.4	90.	68			1.25	0.9	320.	\neg	242	242
	Oct 20,1969	Fair	1.12		3.1	220.	1328			4.	24.	340	N.	2053	053
	Nov. 3 , 1969	Fair	1.48		3.3	.001	798			8.0	63.8	290.	Ν,	2313	23/3
	Nov. 17, 1969	Fair	0.50		3.6	48.	129			13.8	37.2	240	\neg	647	647
	Dec. 1, 1969	Fair	0.58		4.0	100.	3/3			3.1	9.7	180.		563	563
	Dec. 23,1969	Fair	1.48		4.0	32.	255			.95	7.6	200.	_	1595	595
	Jan. 12,1970	Fair	*									1			
	Mar. 17, 1970	Fair	3.00		3.8	100.	1617			33.5	541.7	260.	A	4204	204
	Apr. 7, 1970	Fair	4.00		4.2	10.	216			υ,	6,5	90.	$\overline{}$	1940	940
121	May 29,1970	Fair	2.40		3.7	56.	724			1.38	17.9	185.	N-	2393	2393 6.9
121	Average		1.34		3.7	78.	508			63	60.7	221.	◡	1433	433 6.9

SAMPLING STATION <u>N</u>0 9

1		FLOW	FLOW	:	ACI	ACIDITY	ALKAL	ALKALINITY	TOTAL IRON	IRON	SULFATES	ATES	ALUMINUM	NUM
7	אב או חבא	C.F.S.	6.P.M.	рп	CONC.	LBS/DAY	CONC.	CONC. LBS/DAY	CONC.	LBS/DAY CONC.	CONC.	LBS/DAY	CONC. LBS/DAY	LBS/D/
duly 21, 1969	Roin	71.0		2.9	1000	9/6			45.	41.2	1400	1283		1
Sept. 8, 1969	Rain	0.11		2.8	1650.	978			160.	94.9	2900.	1719		
Sept 22,1969	Fair	0.03	-	2.9	2100.	340			450.	72.8	3400.	550		
Oct. 6,1969	Fair	0.05		2.7	/800.	485			25.	6.7	2700.	728		
Oct 20, 1969	Foir	0.13		2.4	900.	63/			14.5	10,2	2800.	1962		
Nov 3 , 1969	Fair	0.22		2.5	750.	889			4	4.7	1700.	2016		
Nox 17,1969	Fair	0.15		2.6	800.	647			148.	119.7	2300.	1860		
Dec. 1,1969	Fair	0.26		3.0	1150.	1582			200.	275.	2500.	3440		
Dec. 23,1969	Fair	0.17		3.0	850.	765			125.	112.5	2900.	2610		
Jan. 12,1970	Fair	0.12		2.9	1000	649			170.	110.	2300	1493		
Mor. 17, 1970	Fair	0.07		2.8	550.	196			103.	36.7	1450.	5/7		
Apr. 7, 1970	Fair	141		3.4	172.	1307			2.75	20.9	600.	4560		
May 29/1970	Fair	050		2.9	500.	/348			95	256.	1700.	4582	34.5	93
Average		026		2.8	1017	826			118.7	893	2204	2101	345	93

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1	CAMPLING	
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		SAN	SAMPLING	ē	STA	STATION		<u>N</u> 0	20				
Muly 21, 1969 Roi Sept 8, 1969 Roi Sept 22, 1969 Fail Oct. 6, 1969 Fail Oct. 20, 1969 Fail Nov. 3, 1969 Fail Nov. 17, 1969 Fail Dec. 1, 1969 Fail Dec. 12, 1970 Fail Mar. 17, 1970 Fail	FLOW	OW FLOW	_	ACIDITY	ΉTΥ	ALKA	ALKALINITY	TOTAL IRON	IRON	SULFATES	ATES	ALUMINUM	MUN
	C.F.S.	S. G.P.M.	7	CONC.	LBS/DAY CONC. LBS/DAY CONC.	CONC.	LBS/DAY	CONC.	LBS/DAY	CONC	CONC. LBS/DAY	CONC.	LBS/DAY
	iin 0.83	83	2.8	1050.	4697			40.	1789	1070.	4787		
		0.26	2.7	1400.	1962			14.	19.6	3100.	4344		
		0.08	2.8	2000.	862			2.1	0.9	3200.	/380		
	iir 0.14	4	2.6	1150.	868			27.5	20.8	2400	1811		
 	ir 0.39	9	2.3	900.	1892			14.	29.4	2500.	5255		
+-+-	ir 0.81	9/	2.3	1000.	4366			30.	131	2450	2450 10,696		
 	ir 0.43	Ĝ	2.6	1000.	2318			125.	289.7	2350. 5447	5447		
+	iir 0.22	22	2.9	1300. 1542	1542			170.	201.6	2150. 2549	2549		
+++	ir 0.61	5/	2.9	1000.	3288			108.	355./	2450. 8055	8055		
	ir 0.41	11	2.9	1200.	2652			135.	298	2450. 5415	5415		
_		.37	2.8	600.	4420			50.	368.3	1400 10,313	10,313		
_	ir 4.70	8	2.9	200.	5067			335	849	1050. 26,600	26,600		
May 29,1970 Fair	ir 1.42	12	2.9	550.	4210			60.	4592	2000 15,308	15,308	55.	421
	_												
Average	L		2.7	1027.	2934			62.2	2463	2198.	7843	55.	421

July 21, 1969 Rain Sept 6, 1969 Rain Sept 22,1969 Fair Oct 6,1969 Fair Oct 20,1969 Fair Nov. 17, 1969 Fair Dec. 1, 1969 Fair Dec. 23, 1969 Fair Jan. 12, 1970 Fair

| ACIDITY | ALKALINITY | TOTAL | IRON | SUCONC | LBS/DAY | CONC | LBS/DAY | LBS/D

V CONC LBS/DAY CONC. LBS/DAY O 40 267 1050 7018 2.05 3.6 2100 3735 1.93 1.1 1600 949 2.2 2.1 1800 1746 5.5 15.7 2400 6856 35. 216.9 1750 10,947 37.5 101.1 1800 4851 51. 183 1450 5197 35. 216. 1450 8956 35. 216. 1450 8956 35. 216. 1450 8956 36. 1425 3917 18.5 178.5 1100 10,613 15. 242.6 900 14,553 20. 126.1 900, 5676

42

265

DATE

FLOW G.P.M.

SAMPLING

STATION

<u>N</u>

22

ALKALINITY TOTAL IRON SULFATES

CONC. LBS/DAY ALUMINUM

* Not Measured

ENGINEERS CONSULTANTS Skelly and

TWENTY TWENTY-THREE NORTH SECOND STREET HARRISBURG PENNSYLVANIA

DEPARTMENT OF MINES AND MINERAL INDUSTRIES

COMMONWEALTH OF PENNSYLVANIA

ALDER RUN WATERSHED

PROJECT NO. SL-143

MEASURING

SAMPLING DATA AND

1	
	SAMPLING
	STATION
	NO. 2
	23

 	77	4.5	1410	/63.	185	1.9			4/3	40.	3.9		1.63		Average
(von	ò	4.0	1340	120.	04./	.\$			400	00.	Ç		0.00	, 0,1	10/03/07
	77	4 5	1010	100	647	•			125	Š	4 6		700	_	10201 66 110M
Apr			2668	110.	26.	1.06			1407	58.	3.7		4.50	Foir	Apr. 7, 1970
Max			3482	170.	20.5	7.			1352	66.	4.0		3.80	Fair	Mar. 17, 1970
Jon			564	110.	N	4			123	24.	4.2		0.95	Fair	Jan 12,1969
Dec			1008	110.	8.5	.4			293	32.	4./		1.70	Fair	Dec. 23, 1969
Dec.			746	120.	3.4	.55			124	20.	4.0		1.15	Fair	Dec. 1, 1969
Nov			1009	180.	24.7	4.4			29/	52.	3.6		1.04	Fair	Nov. 17, 1969
Nov			4398	425.	62.1	6.			455	44.	3.4		1.92	Foir	Nov 3, 1969
Oct.			860	210.	13.9	3.4			197	48.	3.6		0.76	Fair	Oct 20, 1969
00			202	170.	2.3	1.9			52	44.	3.7		0.22	Fair	Oct. 6, 1969 Fair
Sep			4	20.	0	./5			,	4.	5.7		0.04	Fair	Sept. 22,1969 Foir
Sep			578	290.	1.4	.7			104	52.	3.6		0.37	Roin	Sept. 8, 1969
dut			873	90	12.1	1.25			485	50.	3.7		1.80	Rain	July 21, 1969
₽	LBS./DAY	CONC	LBS/DAY	CONC	LBS/DAY	CONC	LBS/DAY	CONC.	LBS/DAY	CONC.	μn	G.P.M.	C.F.S.		
	ALUMINUM	ALUN	ATES	SULFATES	TOTAL IRON	TOTAL	ALKALINITY	ALKA	YTIC	ACIDITY	2	FLOW	FLOW	WEATHED	DATE .

	1	₹.	1	1	Ž.	Ž.	₹·	1	Ž.	717	ž	Š	in	
1.63	3.00	4.50	3.80	0.95	1.70	1.15	1.04	1.92	0.76	0.22	0.04	0.37	1.80	
39	3.8	3.7	4.0	4.2	4.1	4.0	3.6	3.4	3.6	3.7	5.7	3.6	3.7	
40.	30.	58	66.	24	32.	20.	52.	44	48.	44.	4.	52.	50.	
4/3	485	1407	1352	123	293	124	29/	455	197	52	,	104	485	
1.9	<i>A</i>	1.06		4	.4	.55	4.4	6.	3.4	1.9	./5	.7	1.25	
18.5	64.7	26.	20.5	N	8.5	3.4	24.7	62.1	13.9	2.3	0	1.4	12.1	
/63	120.	110.	170.	110.	110.	120.	180.	425.	210.	170.	20.	290.	90.	
1410	1940	2668	3482	564	1008	746	1009	4398	860	202	4	578	873	
4.5	4.5													
73	73													

	WEATUED FLOW	FLOW	FLOW	2	ACIDITY	YTIC	ALKAI	ALKALINITY	TOTAL IRON	RON	SULFATES	ATES	ALUMINUM	NUM
7	ייראי חבא	C.F.S.	GPM.	70	CONC	LBS/DAY	CONC.	LBS/DAY	CONC.	LBS/DAY	CONC.	LBS./DAY	CONC.	o/'sen
Uly 21,1969	Rain	0.62		5.3	0.	0	0.	0		6.7	26.	87		
ept. 8, 1969	Rain	0.40		5.7			8.	17	.85	1.8	36.	78		-
ept.22,/969	Fair	0.06		3.9	24.	80			.47	0.1	90.	29		
ct 6, 1969	Fair	0.08		5.3			4.	2	.45	0.2	42.	18		
ct. 20, 1969	Fair	0.24		4.8			4	Si	و.	1.2	34.	44		
lov. 3,1969	Fair	0.67		5.3			10.	36	.,	0.4	36.	130		
юч. 17, 1969	Fair	0.46		5.3	0.	0	0.	0	2.2	55	28.	69		
Pec. 1,1969	Fair	0.46		5.5	.0	0	0.	0	.,	0.3	16.	39		
iec. 23, 1969	Fair	0.67		5.1	6.	22			.,	0.4	36.	129		
lan. 12, 1970	Fair	0.46		5.2	0.	0	4	,	2.2	<u>.</u> 5	44.	108		
Nar. 17, 1970	Fair	0.41		5.2	.01	22			.4	0.9	52.	//5		
pr. 7,1970	Fair	2.00		4.6	20.	216			.,	1.1	64.	690		
10y 29, 1970	Foir	0.30		5.7	0.	0	0	0	./	0.2	74.	120	.75	,
Average		0.53		5.1	7.5	34	3.	7	0.8	1.8	44	127	.75	_

7	WE AT LIED	FLOW	FLOW		ACIDITY	Ϋ́	ALKA	ALKALINITY TOTAL IRON	TOTAL	RON	SULFATES	ATES	ALUMINUM	MUM	_	,
î	ווראו חבת	C.F.S.	G.P.M.	ρn	CONC	LBS/DAY	CONC.	LBS/DAY	CONC.	LBS/DAY	CONC.	LBS./DAY	CONC.	LBS/DAY		
1421,1969	Rain	0.62		5.3	0.	0	0.	0	Ņ	6.7	26.	87			6	400
ot. 8, 1969 Rain	Rain	0.40		5.7			8	/7	.85	1.8	36.	87			۵.	1 <i>09</i> 5
ot.22,1969	Fair	0.06		3.9	24.	80			.47	0.1	90.	29			6	Sept
£ 6, 1969	Fair	0.08		5.3			4.	2	.45	0.2	42.	18			~	Oct.
t. 20, 1969	Fair	0.24		4.8			4	Si		1.2	34.	44			6	Oct.
v. 3,1969	Fair	0.67		5.3			10.	36	.,	0.4	36.	130			51	Nov.
v. 17,1969	Fair	0.46		5.3	0.	0	0.	0	2.2	5.5	28.	69			_	Nov,
c. 1,1969	Fair	0.46		5.5	.0	0	0.	0	.,	0.3	16.	39			7	Dec
c. 23, 1969	Fair	0.67		5.1	6.	22			.,	0.4	36.	129			7	Dec.
n. 12, 1970	Fair	0.46		5.2	0.	0	4.	,	2.2	<u>5</u>	44	108				Jon.
11,1970	Fair	0.41		5.2	10.	22			.4	0.9	52.	115			>	Mar.
1. 7,1970	Fair	2.00		4.6	20.	216			.,	1.1	64.	690				Apr.
y 29, 1970	Foir	0.30		5.7	0.	0	0	0	1.	0.2	74.	120	.75	/	*	. NOW
verage		0.53		5./	7.5	34	3.	7	0.8	1.8	44	127	.75	/		Ā

SAMPLING	FLOW	, Mag	60.49.	+	+	-+			- 							
LIN (Н		5.3	5.7	3.9 2	5.3	4.8	3	5.3	5.5		5.2	5.2 /	4.6		
	ACIDITY	CONC. LBS/DAY	0.		24	-			0.	0.	6	0.	10.	20. 2	0.	7.5
STA	Ц	S/DAY	0		00				0	0	22	0	22	216	0	34
STATION	ALKAL	CONC.	0.	8		4.	4	10.	0.	0.		4.			0.	.S
Z	ALKALINITY	CONC. LBS/DAY	0	17		0	S	36	0	0		,			0	7
Z 0	TOTAL IRON	CONC.	<i>!</i>	.85	.47	.45	.,	.,	2.2	1.	.,	2.2	.4	./	./	0.8
24	RON	LBS/DAY	6.7	1.8	0.1	0.2	1.2	0.4	5.5	0.3	0.4	5.	0.9	1.1	0.2	1.8
	SULFATES	CONC.	26.	36.	90.	42.	34.	36.	28.	16.	36.	44	52.	64.	74.	44
	ATES	LBS/DAY CONC. LBS/DAY	87	78	29	18	44	130	69	39	129	108	//5	690	120	127
	ALUN	CONC													.75	.75
	ALUMINUM	LBS./DAY													/	\
		2	JULY 21,1969	Sept 8,1969	Sept. 22,1969	Oct. 6, 1969	Oct 20, 1969	Nov. 3, 1969	Nov, 17, 1969	Dec 1, 1969	Dec. 23,1969	Jan. 12, 1970	Mar. 17, 1970	Apr. 7, 1970	May 29,1970	Averoge
	MEVINED	WCWI NEW	Rain	Rain	Fair	Fair	Fair	Foir	Fair	Fair	Fair	Fair	Fair	Fair	Fair	
	FLOW	C.F.S.	3.66	1.10	0.21	0.48	1.53	3.74	00.5	2.28	3.52	1.92	6.00	00.01	5.33	3.20
SAMPLING	FLOW	G.P.M.														
PLIN	2	707	3.3	3.0	3.1	2.9	2.7	2.7	3.1	3.3	3.5	3.4	3.5	3.6	3.6	3.2
ū	ACII	CONC.	160.	500.	500.	400.	500.	24.	200.	160.	82.	130.	124.	80.	40.	223.
	10177	LBS/D/	3156	2965	566	1035	4123	484	2156	1966	1556	1343	4010	4312	1149	2217
STAT		3														
STATION		CONC.														
STATION N	ALKALINITY	CONC. LBS/DAY CONC. LBS/DAY														

DAY CONC. LBS/DAY CONC. LBS/DAY CONC. LBS/DAY

80. 1578. 250. 4932

2.05 12.2 1100. 6522

3.7 4.2 1400. 1585

2.4 6.2 850. 2199

7.25 598 850. 7010

2.9 585. 1700. 34,269

10.1 109. 550. 5929

10.1 525 6452

3.2 60.7 280. 5312

10. 103. 500. 5166

4. 129.4 450. 14,553

7.6 41. 180. 9702

3.25 93.4 220. 6320 4. 1/5

TOTAL IRON SULFATES

ALUMINUM

	70	5.3	5.7	3.9	5.3	4.8	5.3	5.3	5.5	5.1	5.2	5,2	4.6	5.7		5./
ACII	CONC.	0.		24.				0.	0.	6.	0.	10.	20.	0.		7.5
ACIDITY	LBS/DAY	0		8				0	0	22	0	22	216	0		34
ALKA	CONC.	0.	8.		4.	4.	10.	0.	0.		4			0.		3
ALKALINITY	LBS/DAY	0	17		0	5	36	0	0		/			0		7
TOTAL IRON	CONC.		.85	.47	.45	.9	./	2.2	./	./	2.2	.4	1.	1.		8.0
RON	LBS/DAY	6.7	1.8	0.1	0.2	1.2	0.4	5.5	0.3	0.4	5.	0.9	1.1	0.2		1.8
SULFATES	CONC.	26.	36.	90.	42.	34.	36.	28.	16.	36.	44	52.	64.	74.		44
ATES	LBS/DAY	87	78	29	18	44	130	69	39	129	108	//5	690	120		127
ALUMINUM	CONC													.75		.75
MUM	LBS./DAY													/		\
) H	2	JULY 21,1969	Sept. 8, 1969	Sept. 22,1969	Oct 6, 1969	Oct. 20, 1969	Nov. 3, 1969	Nov, 17, 1969	Dec 1, 1969	Dec. 23,1969	Jan. 12, 1970	Mar. 17, 1970	Apr. 7, 1970	MOY 29,1970		Average
WE AT HED	2	Rain	Rain	Fair	Fair	Fair	Foir	Foir	Fair	Fair	Fair	Fair	Fair	Fair		
FLOW	C.F.S.	3.66	1.10	0.21	0.48	1.53	3.74	2.00	2.28	3.52	1.92	6.00	10.00	5.33		3.20
FLOW	G.P.M.															
) E	7	3.3	3.0	3.1	2.9	2.7	2.7	3./	3.3	3.5	3.4	3.5	3.6	3.6		3.2
$\overline{}$				_				-			-				_	_

	Moy 29, 1970	Apr. 7, 1970	Mar. 17, 1970	Jan. 12, 1970	Dec. 23, 1969	Dec. 1,1969	Nov. 17, 1969	Nov. 3,1969	Oct. 20, 1969	Oct. 6, 1969	Sept 22/969 Fair	Sept. 8, 1969 Rain	July 21, 1969	'	DATE		Average	May 29, 1970	Apr. 7,1970	Mar. 17, 1970	Jan. 12, 1970	Dec. 23, 1969	Dec. 1,1969	Nov. 17, 1969	Nov. 3,1969	001.20,1303
	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Rain	Rain		WEATHER			Foir	Fair	Fair	Fair	Fair	Fair	Fair	Fair	rair
	1.20	2.00	0.29	0.22	0.29	0.21	0.29	0.26	0.21	0.18	0.16	0.19	0.23	C.F.S.	FLOW		0.53	0.30	2.00	0.41	0.46	0.67	0.46	0.46	0.67	0.24
														G.P.M.	FLOW	SAMDING										
	2.8	2.7	2.7	2.9	2.7	2.8	2.5	2.3	2.3	2.6	2.8	2.7	3.0	3	È	<u>v</u> Z	5./	5.7	4.6	5,2	5.2	5./	5.5	5.3	5.3	4.0
	850.	750.	1000.	1450.	1050.	/250.	1250.	1250.	1100.	1500.	1500. 1294	1400. 1434	850.	CONC. LBS/DAY	ACIDITY	a	7.5	0.	20.	10.	0	6	0.	0.		
	5498	8085	1568	1751	1647	1408	1954	1752	1245	1455	1294	1434	1054	LBS/DAY	ΤΥ	ST A	34	0	216	22	0	22	0	0		
														CONC.	ALKALINITY	STATION	3.	0			4.		0.	0	10.	4.
														CONC. LBS/DAY CONC. LBS/DAY CONC. LBS/DAY	.iNITY		7	0			\		0	0	36	G
	/33.	116.	150.	170.	160.	220	170.	30.	15.5	125.	22.5	3.1	115.	CONC.	TOTAL IRON	Z O	0.8	.,	:,	4	2.2	.,	./	2.2	./	ي:
	860.2	1250.	2353	205.	251.	248.	265.7	42.	17.5	121.3	19.4	3.2	142.6	LBS/DAY	RON	ວິ	1.8	0.2	1.7	0.9	.Sī	0.4	0.3	5.5	0.4	1.2
	1900.	2100.	2000.	2300.	2300	1400.	2200.	2000.	2300.	2100.	2200.	3.2 2150.	1250.	CONC.	SULFATES		44	74.	64.	52.	44	36.	16.	28.	36.	34.
	12,289	22,638	3/37	2777	3608	1577	3439	2803	2603	2037	1897	2202	1550	LBS/DAY	TES		/27	120	690	//5	108	129	39	69	130	44
	37.													CONC.	ALUMINUM		.75	.75								
	239													LBS/DAY	NUM		\	`								
	_		_														_									
	Moy 29,1970	Apr. 7, 1970	Mar. 17, 1970	Jan. 12,1970	Dec. 23,1969	Dec. 1,1969	Nov. 17, 1969	6961'E 110N	Oct 20,1969	Oct. 6,1969	Sept. 22,1969	Sept. 8, 1969	July 21, 1969	,	PATE		Average	Moy 29,1970	Apr. 7, 1970	Mar. 17, 1970	Jon. 12, 1970	Dec. 23,1969	Dec 1, 1969	Nov, 17, 1969	Nov. 3,1969	001.20,1303
-	_	-				-	_	_		-	_	_	$\overline{}$	_				 	_	_	_	\neg	$\overline{}$	$\overline{}$	$\overline{}$	-

WEATHER

G.P.M.

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SAMPLING

STATION

NO. 31X

ALKALINITY TOTAL IRON

SULFATES

ALUMINUM

CONC. LBS/DAY

			SAN	SAMPLING	9	ST/	STATION	z	N 0.	34			
	DE ATUEO	FLOW	FLOW	2	ACI	ACIDITY	ALKA	ALKALINITY	TOTAL IRON	IRON	SULFATES	ATES	ALUN
2	MCAI DCX	C.F.S.	G.P.M.	100	CONC	LBS/DAY		CONC. LBS/DAY	CONC.	LBS/DAY	CONC.	CONC. LBS/DAY	CONC.
JULY 21.1969	Rain	2.80		2.9	650.	9810			<i>90</i> .	/358.	1200.	1200. 18,110	
Sept. 0. 1969	Rain	0.85		2.7	.0001	5040			2.4	.//	2200.	2200. 10,079	
Sept. 22,1969	Fair	1.00		2.7	750.	4043			23.5	127.	1550.	8 355	
Oct 6, 1969	Rain	0.88		2.6	1050.	4980			150.	7//.	2150	10,198	
Oct 20, 1969	Fair	0.51		2.3	650	1787			6.	/6.5	2000	5498	
Мж 3, 1969	Fair	1.39		2.3	700.	5244	,		80.	599	1700.	1700. 12,737	
Nox 17, 1969	Fair	0.87		2.6	900.	4220			95.	445.5	1500.	7034	
Dec. 1, 1969	Fair	0.60		2.8	1500	4851			145.	469.	1850.	5983	
Dec 23,1969	Fair	2.75		2.9	1050	15,564			110.	/630	2200	2200 32610	
Jan. 12, 1970	Fair	*		1					-				
Mar. 17, 1970	Fair	3.00		2.7	900	14,553			150.	24255	1800.	29,106	
Apr. 7, 1970	Fair	6.00		2.7	1000.	32,340			200.	6468	2250.	2250. 72,765	
May 29, 1970	Fair	2.60		2.8	800.	11,211			100.	14014	2100.	2100. 29,429	37.
Average		/94		2.7	921.	9470			96.0	1305.0	1875.	20,159	37.
verage		1.94				27	2.7 921.	2.7 921.	2.7 921.	2.7 921. 9470	2.7 921. 9470	2.7 921, 9470 96.0 /3050 /875	2.7 921. 9470

Vuly 21, 1969 Rain Stept 8, 1969 Rain Stept 22, 1969 Fair Oct 6, 1969 Fair Oct 20, 1969 Fair Nex 3, 1969 Fair Nex 17, 1969 Fair Dec. 11, 1969 Fair Dec. 23, 1969 Fair Mai 17, 1970 Fair

1482 205 1477 6003

145. 175. 170. 170. 170. 390. 260.

171.9 1850. 358.4 2100. 189. 2000. 533.6 1900. 183 2200. 1859.6 3000. 1859.6 3000. 1859.6 3450.

5929 2479 3/69 1/40/ 1504 2194 230/ 2365 3565

175.

2800.

DATE

WEATHER

FLOW C.F.S.

G.P.M.

Ā

CONC. LBS/DAY CONC. LBS/DAY

ACIDITY

ALKALINITY

TOTAL IRON CONC. LBS/DAY

CONC LBS/DAY SULFATES

CONC. LBS/DAY

ALUMINUM

SAMPLING

STATION

Z 0

32

Oct 20, 1969
Nox 3, 1969
Nox 17, 1969
Dec. 1, 1969
Dec. 23, 1969
Jan. 12, 1970

90. 80. 72. 72. 80. 80. 80. 80. 72. 72. 72. 72.

75 4716 608

7.6 2.6 2.6 4.8.8 7.78

189 65 120 120 348 3380 175 1613 687 408 408 2474 2274 3547

380. 1900. 120. 1100. 280. 280. 340. 1300. 1700.

0.

1169. 2318

110.0 281.6 2015. 4812

37. 239

 Rain
 0.18

 Rain
 0.16

 Fair
 0.14

 Fair
 0.12

 Fair
 0.12

 Rain
 0.12

 Fair
 0.13

 Fair
 0.18

 Fair
 0.18

 Fair
 1.50

 Fair
 0.61

CONC. L85/DAY 1/250, 1/2/3 1/500, 1/32/1/500, 1/32/1/500, 1/32/1/500, 1/32/1/500, 1/32/1/500, 1/32/1/500, 1/32/1/500, 1/32/1/500, 1/3/2/500, 1/3/2/500, 1/3/50, 1/2/50

MY CONC LBS/DAY CO

3.6

Roin Roir Roir Roir Roir Foir Foir Foir Foir

DATE

WEATHER

FLOW C.F.S.

E.P.M.

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CONC. LBS/DAY CONC. LBS/DAY CONC. LBS/DAY

CONC LBS/DAY

CONC. LBS/DAY

390. 370.

ACIDITY ALKALINITY

TOTAL IRON

SULFATES

ALUMINUM

STATION

N0.

28

SAMPLING

| · Same |
|-----------------|
| · No. |
| · None |
| · An manager |
| · No management |
| * Per Anguarda |
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| WEATHER FLOW FLOW PH CONC. LBS/DAV CONC. LBS/DAV | | | | SAMPLING | PLIN | മ | STATION | T ON | z | NO. | 35 | | | | |
|--|----------------|------------|------|----------|------|-------|---------|------|---------|-------|---------|-------|---------|-------|--------|
| CES. GPM. CONC. LBS/DAY CONC. ABS/DAY CONC. | ı | WE AT USD | FLOW | FLOM. | | ACIC | ۲۲۱ | ALKA | LINITY | TOTAL | RON | SULF | ATES | ALUN | MUNIV |
| Rain 1.22 3.0 450 2959 47.5 312. 650 4274 Rain 0.32 2.7 1250. 2156 1.85 3.2 1900. 3277 Foir 0.47 2.7 1500. 3800 5. 1.2.7 1850. 4687 Rain 0.45 2.6 1150. 2789 140. 339.6 2150. 5215 Fair 0.02 2.2 750. 2789 140. 339.6 2150. 5215 Fair 0.05 2.3 750. 2708 6. 21.7 1600. 5778 Fair 0.07 2.8 900. 346 95. 36.6 1600. 323 Fair 1.06 2.9 750. 4689 110. 687.8 1800. 11254 Fair 1.00 2.7 1000. 5390. 220. 14.4 1.2 1300. 350 Fair 1.75 2.7 <th></th> <th>ארכייי טרע</th> <th></th> <th>G.P.M.</th> <th>7</th> <th></th> <th>LBS/DAY</th> <th>CONC</th> <th>LBS/DAY</th> <th>CONC.</th> <th>LBS/DAY</th> <th>CONC.</th> <th>LBS/DAY</th> <th>SONC.</th> <th>LBS/DA</th> | | ארכייי טרע | | G.P.M. | 7 | | LBS/DAY | CONC | LBS/DAY | CONC. | LBS/DAY | CONC. | LBS/DAY | SONC. | LBS/DA |
| Rain 0.32 2.7 1250 2156 1.85 3.2 1900 3277 Fair 0.47 2.7 1500 3800 5 12.7 1850 4687 Rain 0.45 2.6 1150 2789 140 3396 2150 5215 Fair 0.02 2.3 750 2789 11 7.7 1700 1000 Fair 0.67 2.3 750 2708 6. 21.7 1600 5778 Fair 0.07 2.8 900 346 95. 36.6 1600 5778 Fair 1.16 2.9 750. 4689 110. 687.8 1800 11254 Fair 1.00 2.7 1000 5390 220 14.4 1.2 1300 350 Fair 1.75 2.7 600 5660 120 1131.9 2100 19809 33. Fair 0.75 2.7 <td>JULY 21,1969</td> <td>Rain</td> <td>1.22</td> <td></td> <td>3.0</td> <td>450.</td> <td>2959</td> <td></td> <td></td> <td>47.5</td> <td>3/2.</td> <td>650.</td> <td>4274</td> <td></td> <td></td> | JULY 21,1969 | Rain | 1.22 | | 3.0 | 450. | 2959 | | | 47.5 | 3/2. | 650. | 4274 | | |
| Foir 0.47 2.7 1500 3800 5. 1.27 1850. 4687 Rolin 0.45 2.6 1150. 2789 140. 339.6 2150. 5215 Fair 0.02 2.2 750. 485 11. 7.1 1700. 1100 Fair 0.05 2.5 750. 202 225. 6.1 1200. 323 Fair 0.05 2.8 900. 346 95. 36.6 1600. 5778 Fair 0.05 2.9 750. 4689 110. 687.8 1800. 11254 Fair 0.05 2.9 750. 4689 110. 687.8 1800. 11254 Fair 1.00 2.7 1000. 5390 220. 1185.8 2900. 1531 Fair 1.75 2.7 600. 5660 120. 1131.9 2100. 19809 33. Fair 0.75 2. | Sept. 8, 1969 | Rain | 0.32 | | 2.7 | 1250. | 2156 | | | 1.85 | | /900. | 3277 | | |
| Rein 0.45 2.6 1/50 2789 140 339.6 2150 52/5 Foir 0.12 2.2 750 485 11. 7.1 1700 1100 Fair 0.67 2.3 750 2708 6. 21.7 1600 5778 Fair 0.05 2.8 750 202 22.5 6.1 1600 5778 Fair 1.16 2.9 750 4689 110 687.8 1600 616 Fair 1.00 2.9 900 243 110 687.8 1800 11254 Fair 1.00 2.7 1000 5390 110 687.8 2900 1559 Fair 1.75 2.7 600 5660 120 1/31.9 2100 19809 Fair 1.75 2.7 600 2426 100 4043 2400 9702 33. Fair 1.75 2.7 600 <td>Sept. 22, 1969</td> <td>Fair</td> <td>0.47</td> <td></td> <td>2.7</td> <td>1500.</td> <td>3800</td> <td></td> <td></td> <td>5</td> <td>12.7</td> <td>1850.</td> <td>4687</td> <td></td> <td></td> | Sept. 22, 1969 | Fair | 0.47 | | 2.7 | 1500. | 3800 | | | 5 | 12.7 | 1850. | 4687 | | |
| Foir 0.12 2.2 750. 485 11. 7.1 1700. 1100 Fair 0.67 2.3 750. 2708 6. 21.7 600. 5778 Fair 0.05 2.5 750. 202 22.5 6.1 1200. 323 Fair 1.6 2.9 750. 4689 110. 95. 36.8 1800. 11.254 Fair 1.06 2.9 750. 2683 110. 87.8 1800. 11.254 Fair 1.05 2.9 900. 243 4.4 1.2 1300. 350 Fair 1.05 2.7 600. 55390 220. 1185.8 2900. 15,631 Fair 1.75 2.7 600. 2426 100. 4043. 2400. 9702. 33. Fair 0.75 2.7 600. 2426 100. 4043. 2400. 9702. 33. | Oct. 6, 1969 | Roin | 0.45 | | 2.6 | 1150. | 2789 | | | 140. | 339.6 | 2150. | 52/5 | | |
| Fair 0.67 2.3 750. 2708 6. 21.7 1600. 5778 Fair 0.05 2.5 750. 202 22.5 6.1 1200. 323 Fair 0.07 2.8 900. 346 95. 36.6 1600. 616 Fair 1.16 2.9 750. 4689 110. 687.8 1800. 1,254 Fair 0.05 2.9 900. 243 4.4 1.2 1300. 350 Fair 1.00 2.7 1000. 5390 220. 1/858 2900. 1/631 Fair 0.75 2.7 600. 2426 1/20. 1/31.9 2/00. 9702. 33. Fair 0.75 2.7 600. 2426 1/00. 4/04.3 2400. 9702. 33. Fair 0.75 2.7 600. 2426 1/00. 4/04.3 2400. 9702. 33. | Oct 20,1969 | Fair | 0.12 | | 2.2 | 750. | 485 | | | 11. | 7.1 | | 1100 | | |
| Fair 0.05 2.5 750. 202 22.5 6.1 1200. 323 Fair 0.07 2.8 900. 346 95. 36.6 1600. 616 Fair 1.16 2.9 750. 4689 1/0. 687.8 1800. 1/254 Fair 0.05 2.9 900. 243 4.4 1.2 1300. 350 Fair 1.00 2.7 1000. 5390 220. 1/85.8 2900. 15631 Fair 0.75 2.7 600. 2426 100. 4043 2400. 9702. 33. Fair 0.75 2.7 600. 2426 100. 4043 2400. 9702. 33. | Nov. 3,1969 | Fair | 0.67 | | 2.3 | 750. | 2708 | | | 6. | 21.7 | | 5778 | | |
| Fair 0.07 2.8 900. 346 95. 36.6 1600. 616 Foir 1.16 2.9 750. 4689 1/0. 687.8 1800. 1/254 Foir 0.05 2.9 900. 243 4.4 1.2 1300. 350 Foir 1.00 2.7 1000. 5390 220. 1/85.8 2900. 15631 Fair 1.75 2.7 600. 2426 120. 1/31.9 2/00. 9702. 33. Fair 0.75 2.7 600. 2426 100. 4043. 2400. 9702. 33. | Nov. 17,1969 | Fair | 0.05 | | 2.5 | 750. | 202 | | | 22.5 | 6./ | .0051 | 323 | | |
| Fair 1.16 2.9 750. 4689 1/0. 687.8 1800. 1/254 Foir 0.05 2.9 900. 243 4.4 1.2 1300. 350 Fair 1.00 2.7 1000. 5390 220. 1/85.8 2900. 15631 Fair 0.75 2.7 600. 2426 120. 1/31.9 2/00. 9702. 33. Fair 0.75 2.7 600. 2426 1/00. 4043. 2400. 9702. 33. | Dec. 1,1969 | Fair | 0.07 | | 2.8 | .000 | 346 | | | 95. | 36.6 | 1600. | 6/6 | | |
| Foir 0.05 2.9 900. 243 4.4 1.2 1300. 350 Fair 1.00 2.7 1000. 5390 220 1/85.8 2900. 15631 Fair 1.75 2.7 600. 5660 120. 1/31.9 2/00. 19809 Fair 0.75 2.7 600. 2426 1/00. 4043. 2400. 9702. 33. Fair 0.62 2.7 600. 2426 1/00. 4043. 2400. 9702. 33. | Dec. 23,1969 | Fair | 1.16 | | 2.9 | 750. | 4689 | | | .011 | 8.789 | .008/ | 11,254 | | |
| Fair 1.00 2.7 1000 5390 220 1/85.8 2900 15,631 Fair 1.75 2.7 600 5660 120 1/31.9 2/00 19,809 Fair 0.75 2.7 600 2426 1/00 4043 2400 9702 33. | Jan. 12, 1970 | Fair | 0.05 | | 2.9 | .006 | 243 | | | 4.4 | 1.2 | | 350 | | |
| Fair 1.75 2.7 600 5660 120 1131.9 2100 19,809 5661 100 4043 2400 9702 33. | Mar. 17, 1970 | Fair | 1.00 | | 2.7 | 1000. | 5390 | | | 220 | 1185.8 | 2900 | 15,631 | | |
| Fair 0.75 2.7 600 2426 100. 4043 2400. 9702 33. | Apr. 7, 1970 | Fair | 1.75 | | 2.7 | 600. | 5660 | | | 120. | 1131.9 | | 19,809 | | |
| 0.00 | May 29,1970 | | 0.75 | | 2.7 | 600. | 2426 | | | 100. | 4043 | 2400 | 9702 | 33. | /33 |
| | Averone | | 80 | | 37 | 872 | 2604 | | | 670 | 3/03 | | 200 | 1 | 1 |

Not Measured

ENGINEERS CONSULTANTS Shelly and Loy

TWENTY TWENTY-THREE NORTH SECOND STREET HARRISBURG PENNSYLVANIA

DEPARTMENT OF MINES AND MINERAL INDUSTRIES

COMMONWEALTH OF PENNSYLVANIA

ALDER RUN WATERSHED PROJECT NO. SL-143

SAMPLING MEASURING AND DATA

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| DEPARTMENT OF MINES AND MINERAL INDUSTRIES | соммо |
|--|------------------------------|
| MINES | NWEALTI |
| AND | 유 |
| MINERAL | COMMONWEALTH OF PENNSYLVANIA |
| INDUSTRIES | NIA |

 July 21,1969
 Rain
 0.35

 Sept. 8,1969
 Rain
 0.05

 Sept. 22,1969
 Fair
 0.01

 Oct. 6,1969
 Fair
 0.02

 Oct. 20,1969
 Fair
 0.05

 Mex. 17,1969
 Fair
 0.05

 New. 17,1969
 Fair
 0.15

 Dec. 1,1969
 Fair
 0.35

 Dec. 23,1969
 Fair
 0.35

 Jon. 12,1970
 Fair
 0.35

 Mar. 17,1970
 Fair
 0.93

 Apr. 7,1970
 Fair
 0.46

4.00 3.6 3.6 3.5

180. 134. 142. 200. 160. 244. 180. 146.

340 36 8 8 22 78 460 108 279

0.26

54

371

.26

185.

459

6

40

0.50

100.

539 270

220.

728

22

Oct 20,1969
Nov. 3, 1969
Nov. 17, 1969
Dec. 1, 1969
Dec. 23,1969
Jan. 12,1970
Mar. 17, 1970
Apr. 7, 1970
Apr. 7, 1970

Rain 5.79
Fair 2.20
Fair 1.03
Rain 1.80
Fair 2.90
Fair 3.59
Fair 5.59
Fair *--Fair 12.00
Fair 5.50

22

Average

4.53

11,642

225

7//7

3.8

0.4

380.

0.2

3/5 165/ 5/7 325 725

Aufy 21, 1969 Rain
Sept 8, 1969 Fair
Sept 22,1969 Fair
Sept 22,1969 Fair
Oct 6, 1969 Fair
Oct 20, 1969 Fair
Not 3, 1969 Fair
Not 17, 1969 Fair
Dec 23,1969 Fair
Dec 23,1969 Fair
Apr. 7, 1970 Fair
Apr. 7, 1970 Fair
Apr. 7, 1970 Fair

0.93 0.22 0.08 0.56 0.50 0.61 0.72 0.86

290. 224. 230. 220. 270. 110. 124.

344 97 694 593 888 427 1669 622

6 45

CONC LBS/DAY
425. 2/30
660. 783
680. 293
660. 1992
925. 2493
1/50. 378/
700. 27/7
540. 2503
340. 1704

250. 480. 400 660. 650. 875. 600.

472 129 22 71

DATE

WEATHER

FLOW C.F.S.

FLOW 6.P.M.

H

ACIDITY ALKAL CONC. LBS/DAY CONC.

LBS/DAY

CONC. LBS/DAY CONC. LBS/DAY CONC. LBS/DAY

ALKALINITY TOTAL IRON SULFATES

ALUMINUM

DATE

WEATHER

FLOW CF.S.

G.P.M.

ЪН

CONC. ACIDITY

LBS/DAY CONC.

TOTAL IRON
Y CONC. LBS/DAY
3.2 /6.

ALKALINITY LBS/DAY

SULFATES

SAMPLING

STATION

NO.

48

SAMPLING

STATION

N0

47

| Skelly | |
|--------|--|
| | |

TWENTY TWENTY-THREE NORTH SECOND STREET HARRISBURG PENNSYLVANIA INEERS CONSULTANTS and Loy

*Not Measured

PROJECT NO. SL-143

ALDER RUN WATERSHED

SAMPLING STATION <u>N</u>0 37

| | | | | | | | | | | | | | | ĺ |
|----------|-------|---------|-------------|-----------------------|------------|-----------------------------|------|---------|-------|-----|--------|------|---------|---------------|
| 123 | 40. | 6605 | 2/50. | 276.5 | 90. | | | 1997 | 650. | 2.8 | | 0.57 | Fair | Moy 29,1970 |
| | | 19,404 | 1800. | 970. | 90. | | | 6468 | 600. | 2.7 | | 2.00 | Foir | Apr. 7, 1970 |
| | | 31,498 | 2150. | 1977.8 2150. | 135. | | | 14,650 | 1000. | 2.8 | | 2.72 | Fair | Mor. 17, 1970 |
| | | 4079 | 1850. | 276. | 125. | | | 2095 | 950. | 2.9 | | 0.41 | Fair | Jan. 12, 1970 |
| | | 7527 | 2100. | 286.7 | 80. | | | 3047 | 850. | 2.9 | | 0.67 | Fair | Dec. 23, 1969 |
| | | 2666 | 1700. | 173. | 110. | | | 1255 | 800. | 2.8 | | 0.29 | Fair | Dec. 1 , 1969 |
| | | 2970 | 1900. | 160.2 | 102.5 | | | 1563 | 1000. | 2.5 | | 0.29 | Fair | Nov. 17, 1969 |
| | | 4215 | 68.2 1700. | 68.2 | 27.5 | | | 1860 | 750. | 2.3 | | 0.46 | Fair | Nov. 3, 1969 |
| | | 4641 | 2100. | 28.7 | /3. | | | 1768 | 800. | 2.3 | | 0.41 | Foir | Oct 20, 1969 |
| | | 2611 | 155.8 2850. | /55.8 | 170. | | | 1420 | 1550. | 2.6 | | 0.17 | Rain | Oct 6, 1969 |
| | | 1401 | 91.6 2600 | 91.6 | 170. | | | 916 | 1700. | 2.8 | | 0.10 | Fair | Sept 22/969 |
| | | 2035 | 2.2 2360. | 2.2 | 2.6 | | | 1294 | 1500. | 2.7 | | 0.16 | Fair | Sept 8, 1969 |
| | | 2257 | 625. | 144. | 40. | | | 1445 | 400. | 3.1 | | 0.67 | Roin | July 21, 1969 |
| LBS/DAY | CONC. | LBS/DAY | CONC. | LBS/DAY CONC. LBS/DAY | CONC | LBS/DAY CONC. LBS/DAY CONC. | CONC | LBS/DAY | CONC. | 7 | G.P.M. | CES. | | |
| ALUMINUM | ALUN | ATES | SULFATES | . IRON | TOTAL IRON | ALKALINITY | ALKA | ACIDITY | ACI | Ē | FLOW | FLOW | WEATHER | DATE |
| | | | | | | | | | | | | | | |

July 21, 1969 Roin Sept 8, 1969 Fair Sept 22,1969 Fair Oct 6, 1969 Fair Oct 20, 1969 Fair Nov. 3, 1969 Fair Nov. 17, 1969 Fair

2.90 0.95 1.10 0.98 0.61 1.49 0.97 0.70 2.85

550. 1050. 1300. 1250. 800. 550.

/.65 /25. /5.5

51.

Y CONC. LBS/DAY
900: 14,068
3 2700: 13,825
9 2500: 14,823
1900: 50,036
1800: 16,062
2200: 11,502
1900: 7 169
2100: 32,259

2.3 550, 4417 2.6 650, 3398 2.9 750, 2830 2.9 850 1757

95. 108. 27.5

48. 497. 407.

422.

850, 13057

DATE

WEATHER)

FLOW G.P.M.

ЪН

LBS/DAY

LBS/DAY

CONC. ALUMINUM
CONC. LBS/DAY SAMPLING

STATION

<u>z</u>

36

Dec. 23,1969
Jan. 12, 1970
Mar. 17, 1970
Apr. 7, 1970
May 29, 1970

4.00 6.00 3./3

1000. 900. 750.

21,560 29,106 12,653

190.

4096.4 2400 6468. 2100 1855.8 2150.

51,744 67,914 36,272

33 33.

557

867.

9828

2054.

23,466

88.9 354.7 1991. 7070 40.

/23

| ! | | | SAN | SAMPLING | 26 | ST/ | STATION | z | <u>и</u> | 44 | | | | |
|---------------|----------|-------|--------|----------|-------|---------|---------|------------|----------|------------|----------|------------|----------|-------|
| DATE | OBUTA 3M | FL0₩ | M07 | 7. | ACII | ACIDITY | ALKA | ALKALINITY | TOTA | TOTAL IRON | SULFATES | ATES | ALUMINUM | NOM |
| 5 | | CES. | G.P.M. | þn | CONC. | LBS/DAY | CONC. | LBS/DAY | CONC. | LBS/DAY | CONC. | LBS/DAY | CONC. | O/SB1 |
| JULY 21,1969 | Roin | 4.16 | | 2.6 | 250. | 5606 | | | 44 | 99 | 700. | /5,696 | | |
| Sept 0.1969 | Fair | 1.60 | | 3.0 | 500. | 4312 | | | 1.9 | 16 | 430. | 3 708 | | |
| Sept 22,1969 | Fair | 0.71 | | 3.2 | 260 | 995 | | | 1.48 | 6 | 1200. | 4592 | | |
| Oct 6, 1969 | Rain | 0.98 | | 2.9 | 550. | 2905 | | | 2.7 | 14 | 1300. | 6 867 | | |
| Oct 20,1969 | Fair | 2.03 | | 2.6 | 500. | 5471 | | | 7.5 | 82 | 1200. | /3,/30 | | |
| Nov. 3 , 1969 | Fair | 4.24 | | 2.7 | 400. | 1116 | | | 5.5 | 126 | 2200 | 50,278 | | |
| Nov. 17, 1969 | Fair | 2.50 | | 3.0 | 220. | 2965 | | | 4. | 54 | 300. | 4043 | i | |
| Dec. 1,1969 | Fair | 278 | | 3.3 | 160 | 2397 | | | 10.5 | /57 | 550 | 8241 | | |
| Dec. 23, 1969 | Foir | 4.00 | | 3.5 | 124. | 2673 | | | 4.1 | 88 | 500 | 500 10,780 | | |
| Jan. 12, 1970 | Fair | * | | | 1 | | | | | | | | | I |
| Mar. 17, 1970 | Fair | * | | | 1 | | | | ١ | | 1 | | | |
| Apr. 7, 1970 | Fair | 10.00 | | 3.6 | 114. | 6/45 | | | 1.75 | 94.3 | 290. | 15,631 | | |
| May 29,1970 | Foir | 9.00 | | 3.4 | 100. | 4851 | | | 3.25 | 157.7 | 370. | 17.949 | 11.2 | 543 |
| | | L. | | | | | | | | | | | | |
| Average | | 3.82 | | 3./ | 289. | 43/5 | | | 4.3 | 81.3 | 822. | 13,719 | 11.2 | 543 |
| | | | | | | | | | | | | | | |

Vuly 21, 1969 Roin
Sept 8, 1969 Fair
Sept 22,1969 Fair
Oct 6, 1969 Roin
Oct 20, 1969 Fair
Nou 3, 1969 Fair
Nou 17, 1969 Fair
Dec. 1, 1969 Fair
Dec. 23,1969 Fair
Dec. 23,1969 Fair
Apr. 7, 1970 Fair
Apr. 7, 1970 Fair
Apr. 7, 1970 Fair

0.60 0.19 0.14 0.16 0.27 0.27 0.37

ACIU CONC. 64. 100. 160. 110. 82. 82.

138 160 185 219 164

225. 490. 1500. 900. 320. 525. 280. 290.

SULFATES ALUMINUM
CONC. LBS/DAY
225. 5437
490. 634
1/500. 2660
900. 2814
320. 1/332
525. 3877
280. 987
290. 3398
360. 2814

1.35

0.56

0.83

3.0

500.

4716.

2.5

11.2

1700. 725.

10.7

48

48

187.

643

DATE

WEATHER C.F.S.

FLOW G.P.M.

무

LBS/DA

CONC.

LINITY LBS/DAY

TOTAL IRON

CONC. LBS/DAY

CONC

SAMPLING

STATION

<u>N</u>0

43

| | | | | | | VAM | DAMPLING | G | VIA | SIALION | | Z
C | 45 | | | | |
|-------|--------------|----------------|--------------------|----------|--------|--------|----------|-------------|---------------------|---------|-----------------------|--------------|---------------|--------------|---------|----------|----------|
| ES | ALUM | ALUMINUM | DATE | WEATHER | FLOW | FLOW | 2 | ACIDITY | YTIC | ALK | ALKALINITY TOTAL IRON | TOTAL | IRON | SULFATES | ATES | ALUMINUM | NUM |
| S/DAY | CONC. | CONC. LBS./DAY | | | C.F.S. | G.P.M | 7 | CONC | CONC. LBS/DAY CONC. | CONC | LBS/DAY CONC. | CONC. | LBS/DAY CONC. | CONC. | LBS/DAY | CONC | LBS./DAY |
| ,696 | | L | JUNY 21,1969 | Rain | 4.76 | | 2.6 | 250. | 64/4 | | | 4.0 | 103. | 350. | 8980 | | |
| 708 | | | Sept 8, 1969 | Fair | 1.88 | | 3.0 | 500. | 5067 | | | 2.7 | 27. | 1050. | 10,640 | | |
| 592 | | | Sept. 22,1969 | Fair | 0.85 | | 3.5 | /50. | 687 | | | . , | 0.6 | 640 | 2932 | | |
| 867 | | | Oct. 6, 1969 | Roin | 1.14 | | 3.0 | 450. | 2765 | | | 2 | 12. | 900 | 5 530 | | |
| ,130 | | | Oct 20,1969 | Fair | 2.30 | , | 2.6 | 400. | 4959 | | | è. | 74. | 1100. | 13,637 | | |
| 278 | | | Nov. 3, 1969 | Fair | 4.67 | | 2.7 | 450. | 11,327 | | | 1.95 | 49. | 700. | 17,620 | | |
| 043 | | | Nov. 17, 1969 | Fair | 2.87 | | 2.9 | 220. | 3403 | | | 6.25 | 97. | 280. | 4 33/ | | |
| 241 | | | Dec 1,1969 | Foir | 3.15 | | 3.3 | 170. | 2886 | | | 8 | ای | 525. | 8914 | | |
| 780 | | | Dec. 23, 1969 | Fair | 4.56 | | 3.4 | 120. | 2949 | | | 6. | 147 | 550. | 13,5/8 | | |
| | | | Jan. 12, 1970 | Fair | * | | | ۱ | | | | | | 1 | | | |
| _ | | | Mor. 17, 1970 | Foir | * | | | | | | | | | | | | |
| 63/ | | | Apr. 7, 1970 | Fair | 11.00 | | 3.3 | 160. | 9486 | | | 3.8 | 225. | 240. | 14,230 | | |
| 949 | 11.2 | 543 | May 29, 1970 | Foir | 9.00 | | J. 4. | 100. | 4851 | | | 2.15 | 1043 | 370. | 17.949 | ? | 534 |
| | | | | | | | | | | | | | | | | | |
| 7/9 | 11.2 | 543 | Average | L | 4.20 | | 3./ | 270. | 4981 | | | 5.0 | 107.1 | 6/0. | 10,753 | * | 534 |
| | | | | | | | | | | | | | | | | | |
| S | ALUMINUM | MOM | | | FLOW | FLOW | | ACI | DITY ALKA | ALKA | ALKALINITY | Y TOTAL IRON | RON | SULFATES | TES | AIMMINIM | Z |
| j/DAY | CONC. LBS/DA | LBS/DAY | 7 | ACVI DEX | | G.P.M. | Τ̈́ | CONC. | LBS/DAY | CONC | | CONC | LBS/DAY | CONC. | | CONC. | LBS/DAY |
| 130 | | | July 21, 1969 Rain | Rain | 5.79 | | 2.6 | 250. | 7802 | | | 8.5 | 265. | 475. | 14,824 | | |
| 783 | | | Sept. 8, 1969 Fair | Fair | 220 | | 3.1 | 550. | 6522 | | | 2.5 | 30 | _ | 13,044 | | |
| 293 | | | Sept 22,1969 Fair | Fair | 1.03 | | 3.0 | 550. | 3053 | | | 49.5 | 275 | _ | 7772 | | |
| 392 | L | | Oct. 6, 1969 Rain | Rain | 1.80 | | 2.9 | 450. | 4366 | | | 80. | 776. | | /3,583 | | |
| 493 | | | Oct 20,1969 | Fair | 2.90 | | 2.5 | 500. | 7816 | | | 7. | 109. | - 1 | 18,757 | | |
| 187 | | | Nov. 3, 1969 | Fair | 5.38 | | 2.7 | 400. 11,599 | 11,599 | | | 5.25 | 152 | | 20,299 | | |
| 7/7 | | | Nov. 17, 1969 | Fair | 3.59 | | 2.9 | 200. | 3870 | | | > | 213. | _ | 4257 | | |
| 503 | | | Dec. 1, 1969 | Foir | 4.01 | | 3.4 | 180. | 3891 | | | 17.5 | 378. | 320 . | 69/6 | | |
| 104 | | | | + | 5.59 | | 3.5 | 128. | 3857 | | | 5.75 | 173. | 375. | 11,299 | | |
| 1 | | | Jan. 12,1970 | | 1 | | 1 | 1 | | | | | | 1 | | L | |
| | | | Mar. II, 19/0 Fair | | 1 | | | | | | | | _ | | _ | | |

| | | | | SAMPLING | FIN | വ | STATION | S | z | N O. | 45 | | | | |
|-----|---------------|---------|--------|----------|-----|---------|---------------|-------|-----------------------|-------------|---------|----------|---------------|----------|----------|
| | DATE | WEATHER | FLOW | FLOW | 2 | ACIDITY | 7110 | ALKA | ALKALINITY TOTAL IRON | TOTA | LIRON | SULFATES | ATES | ALUMINUM | MUM |
| DAY | | | C.F.S. | G.P.M | 7 | CONC. | CONC. LBS/DAY | CONC. | LBS/DAY | CONC. | LBS/DAY | CONC. | CONC. LBS/DAY | CONC | LBS./DAY |
| L | JUNY 21,1969 | Rain | 4.76 | | 2.6 | 250. | 64/4 | | | 4.0 | 103. | 350. | 8980 | | |
| L. | Sept. 8, 1969 | Fair | 1.88 | | 3.0 | 500. | 5067 | | | 2.7 | 27 | 1050. | 10,640 | | |
| | Sept. 22,1969 | Fair | 0.85 | | 3.5 | 150. | 687 | | | . / | 0.6 | 640 | 2932 | | |
| | Oct 6, 1969 | Roin | 1.14 | | 3.0 | 450. | 2765 | | | 2 | 12. | 900 | 5 530 | | |
| | Oct. 20, 1969 | Fair | 2.30 | , | 2.6 | 400. | 4959 | | | 6 | 74. | 1100. | 13,637 | | |
| | Nov. 3, 1969 | Fair | 4.67 | | 2.7 | 450. | 11,327 | | | 1.95 | 49. | 700. | 700. 17,620 | | |
| | Nov. 17, 1969 | Fair | 2.87 | L | 2.9 | 220. | 3403 | | | 6.25 | 97. | 280. | 4 33/ | | |
| | Dec. 1,1969 | Foir | 3.15 | | 3.3 | 170. | 2886 | | | 20 | 340. | 525. | 8914 | | |
| | Dec. 23, 1969 | Fair | 4.56 | | 3.4 | 120. | 2949 | | | 6. | 147. | 550. | 13,518 | | |
| | Jon. 12, 1970 | Fair | * | | 1 | | | | | | | 1 | | | |
| | Mor. 17, 1970 | Foir | * | | 1 | | | | | | j | | | | |
| L | Apr. 7, 1970 | Fair | 11.00 | | 3.3 | 160. | 9486 | | | 3.8 | 225. | 240. | 14,230 | | |
| Cui | May 29,1970 | Fair | 9.00 | | 3.4 | 100. | 4851 | | | 2.15 | 1043 | 370. | 17.949 | ? | 534 |
| | | | | | | | | | | | | | | | |
| ۵ | Averoge | | 4.20 | | 3./ | 270. | 4981 | | | 5.0 | 107.1 | 6/0. | 10,753 | > | 534 |

| Ave | Mak | Apr | Mor. | Jon / | Dec. 2 | Dec | Nov. 1 | Nov. | Oct 2 | Oct. | Sept | Sept | duly | T . | P |
|---------|-------------------|--------------|---------------|--------------|--------------|--------|---------------|-------------|---------------|-------------|---------------|--------------|---------------|---------------|-------------|
| Average | May 29, 1970 Foir | Apr. 7, 1970 | Mor. 17, 1970 | Jan. 12,1969 | Dec. 23,1969 | 1,1969 | Nov. 17, 1969 | Nov. 3,1969 | Oct. 20, 1969 | Oct. 6,1969 | Sept. 22,1969 | Sept 8, 1969 | July 21, 1969 | | DATE |
| | Foir | Foir | Fair | Fair | Fair | Fair | Fair | Foir | Fair | Rain | Fair | Fair | Rain | | WEATHER |
| 0.25 | 0.37 | 1.24 | 0.61 | 0.13 | 0.17 | 0.08 | 0.10 | 0.12 | 0.08 | 0.04 | 0.04 | 0.09 | 0.17 | C.F.S. | LON |
| | | L | | | | | | | Į. | | | | | G.P.M. | 1504 |
| 3./ | 3.0 | 2.8 | 3.0 | 3.3 | 3.4 | 3.5 | 3.1 | 2.7 | 2.7 | 3.0 | 3.0 | 3.0 | 3.3 | 7 |) |
| 522 | 560. | 600. | 500. | 500. | 272. | 240 | 300. | 500. | 500. | 650. | 1000. | 850. | 320 | CONC. | 201011 |
| 709 | 1117 | 4010 | 1630 | 353 | 245 | 106 | 162 | 323 | 216 | /40 | 216 | 412 | 293 | LBS/DAY | - |
| | | | | | | | | | | | | | | CONC. | 3000 |
| | | | | | | | | | | | | | | CONC. LBS/DAY | ACAMPINIT 1 |
| 29.2 | 76. | 54 | 17.5 | /3. | 8.5 | 1.25 | 15. | 5.75 | 14.5 | 1.6 | .7 | 152. | 20. | CONC | TOTAL INON |
| 54.0 | 151.6 | 361. | 57.1 | 14. | 7.7 | 9.0 | 8.1 | 3.7 | 6.3 | 0.3 | 0.2 | 73.7 | 18. | LBS/DAY CONC. | IRON |
| 1594 | 1800. | 2200. | 2600. | 1600 | 1025. | .006 | 1100. | 1400 | 1800. | 1900. | 1950. | 2800. | 650. | | SOLLAIES |
| 2637 | 3590 | 14,704 | 8478 | 1130 | 923 | 398 | 593 | 906 | 776 | 4/0 | 420 | 1358 | 596 | LBS/DAY | AIES |
| 32 | 32 | | | | | | | | | | | | | CONC | ALUN |
| 64 | 64 | | | | | | | | | | | | | LBS /DA | ALUMINUM |

| | VAMPLING |
|---|----------|
| | ING |
| | VIALON |
| | |
| | NO. 39 |
| 1 | 4 |

SAMPLING AND DATA

MEASURING

39 -

SAMPLING STATION

<u>z</u>

(5)

DATE

WEATHER FLOW C.F.S.

PH CONC. LBS/DAY

CONC

CONC

LBS/DAY

SAMPLING STATION NO.

53

Nouly 21,1969 Rain
Sept 8,1969 Fair
Sept 8,2969 Fair
Oct 6,21969 Rain
Oct 20,1969 Fair
Noul 3,1969 Fair
Noul 7,1969 Fair
Dec 21,1969 Fair
Dec 23,1969 Fair

1.20 2.17 1.46 1.17 3.79

2.0

500.

5.25 62.5 50.

850. 1200. 1400.

16. 14. 15. 45. 61. 492. 315.

1211 14,445 14,602 9702 9942 9943 8829 22,471

1500.

500.

10,214 3**9**35 3/53 DATE

WEATHER

FLOW FLOW

P

ACIDITY

ALKALINITY TOTAL IRON

SULFATES ALUMINUM

CONC. LBS/DAY CONC. LBS/DAY

CONC. LBS/DAY CONC. LBS/DAY

CONC. LBS/DAY

SAMPLING

STATION

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50

May 29,1970

Average

673. 9185

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1452.

906

750.

93. 57.5

4010

2300. 1500.

99,176

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906

| | FLOW | FLOW | FLOW | - | ACI | ACIDITY | ALKA | ALKALINITY | TOTAL IRON | IRON | SULFATES | ATES | ALUMINUM | MON |
|---------------|-------------|-------|--------|-----|-------|--------------|------|-----------------------------|------------|---------|----------|---------------|----------|---------------|
| 77.1 | ייראי דיראי | CFS. | G.P.M. | pn | CONC | CONC LBS/DAY | | CONC. LBS/DAY CONC. LBS/DAY | CONC | LBS/DAY | CONC | CONC. LBS/DAY | CONC. | CONC. LBS/DAY |
| July 21,1969 | Rain | 9.63 | | 2.4 | 400. | 20,762 | | | 27.5 | 1427 | 525. | 27,250 | | |
| Sept 8.1969 | Foir | 3.50 | | 2.6 | 730. | 730. 13,771 | | | 2.4 | 45 | 1600. | 1600. 30,184 | | |
| Sept 22,1969 | Foir | 2.37 | | 2.9 | 1000. | 1000 12,774 | | | 2.4 | 3/ | 3400. | 3400. 43,432 | | |
| Oct. 6. 1969 | Roin | 3.09 | | 2.7 | 900. | 14,990 | | | 2.4 | 40 | 2100. | 2100. 34,976 | | |
| Oct 20, 1969 | Fair | 4.10 | | 2.4 | 450 | 9,945 | | | 7. | /55 | 1300 | 28,729 | | |
| Nov. 3, 1969 | Fair | 7.55 | | 2.4 | 550. | 22,382 | | | 8.5 | 346 | 1200. | 48,833 | | |
| Nov.17,1969 | Foir | 5./5 | | 2.7 | 450. | 12,491 | | | 62.5 | 1735 | 900. | 24,983 | | |
| Dec. 1,1969 | Fair | 5.28 | | 3.0 | 500. | 14,230 | | | 32.5 | 925 | 900. | 25,613 | | |
| Dec. 23,1969 | Foir | 9.38 | | 3.0 | 220. | 1,123 | | | 27.5 | 1390 | 750. | 37,9/9 | | |
| Jan. 12, 1970 | Fair | * | | | I | | | | | | | | | |
| Mar. 17, 1970 | Fair | * | | 1 | | | | | 1 | | 1 | | | |
| Apr. 7,1970 | Fair | 20.00 | | 2.8 | 700. | 75,460 | | | 95 | 10,241 | 1800. | 1800. 194,040 | | |
| May 29,1970 | Fair | 10.00 | | 29 | 500 | 26,950 | | | 42.5 | 2291 | 1400. | 1400. 75,460 | 33. | 1779 |
| | | | | | | | | | | | | | | |
| Average | | 7.27 | | 27 | 582 | 20.443 | | | 28.2 | 1693 | 1443. | 1443 51,947 | 33. | 1770 |

 OUNY 21,1969
 Rein
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 Sept 8,1969
 Rein
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 Oct 6,1969
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 Fair
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 New 3, 1969
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 Dec. 1,1969
 Fair
 0.46

 Dec. 23,1969
 Fair
 0.70

 Jan. 12,1970
 Fair
 **—

 Apr. 17,1970
 Fair
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 Apr. 17,1970
 Fair
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 Apr. 17,1970
 Fair
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0.70 0.08 0.03 0.09 0.19 0.50 0.43 0.46

2792 47 16 30 30 34 474 474 199 196

641 138 52 103 246 782 603 540

May29,1970

540 265

| Average | | May 29,1970 | Apr. 7, 1970 | Mar. 17, 1970 | Jan. 12,1970 | Dec. 23, 1969 | Dec. 1 , 1969 | Nov. 17, 1969 | Nov 3, 1969 | Oct. 20, 1969 | Oct. 6, 1969 | Sept. 22,1969 | Sept. 8, 1969 | 1 |
|-----------|---|-------------|--------------|---------------|--------------|---------------|---------------|---------------|-------------|---------------|--------------|---------------|---------------|---|
| e e | _ | 70 Foir | 70 Fair | 70 Fair | 70 Fair | 59 Fair | 59 Fair | 59 Fair | 9 Fair | 69 Fair | 69 Rain | 69 Fair | 69 Fair | |
| 0.5/ | | * | * | * | * | 1.26 | 0.26 | 0.59 | 0.84 | 0.09 | 0.04 | * | * | |
| | | | | | | | | | | | | | | |
| 3.0 | | | 1 | 1 | 1 | 3.3 | 3.3 | 2.9 | 2.7 | 2.7 | 2.9 | 3.1 | | |
| 467. | | | 1 | 1 | 1 | 500. | 370. | 500. | 600. | 500. | 400. | 400. | | |
| 1651 | 3 | | | | | 3396 | 525 | /590 | 2717 | 1590 | 86 | | | |
| | | | | | | | | | | | | | 1 | |
| | | | | | | | | | | | | | | |
| 25.1 | | | 1 | 1 | ١ | 6.5 | 22.5 | 7.5 | 6.25 | 8. | 75. | 50. | | |
| 28.3 | | | | | | 44.1 | 32. | 23.9 | 28.3 | 25.4 | 16.2 | | | |
| 1164 | | 1 | İ | | 1 | 1700 | 1050. | 700. | /300. | 1300. | 1300. | 800. | ! | |
| 1164 4260 | | | | | | 11,545 | /490 | 2226 | 5886 | 4/34 | 280 | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

Not. 3, 1969 Fair Not. 17, 1969 Fair Dec. 1, 1969 Fair Dec. 23, 1969 Fair Jan. 12, 1970 Fair Mar. 17, 1970 Fair

0.09

2.7 2.7 2.9 2.9 2.7

46 |40 |243 |270 |267 |267 |355

6.75

0. 0.5 3.3 3.2

78 237 237 582 593 437 317

1450.

640. 850. 500.

Fair *

3.2

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550. 500.

6. 4.36 3.2 7.55

1200. 1100. 900. 1050.

5.8

Apr. 7, 1970 May 29,1970

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120.3

700.

3509 528

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524. 374

7.07

152

760 42.

32

Sept 22/969 Fair
Oct. 6. 1969 Rain
Oct. 20, 1969 Fair
Nov. 3. 1969 Fair
Nov. 17. 1969 Fair
Dec. 1. 1969 Fair
Dec. 23, 1969 Fair
Dec. 23, 1969 Fair
Dec. 23, 1969 Fair
Ann. 12, 1970 Fair
Ann. 17, 1970 Fair

Fair Fair

750, 10,147 400, 7136 140, 3381 450, 20,010 260, 8086 220, 6996 200, 11,125 400, —

1.8 3.0 6.25 6.25 21.5 22.5 10.5 17.5 12.5 3.9

54. 151. 278. 669. 716.

Y CONC LBS/DW 425. 24,213 1/200. 23,802 1/400. 18,940 900. 16,057 1/050. 25,355 1/100. 27,835 1/050. 33,391 500. 27,812 500. 27,812 500. 56,595 650. 77,077 5725. 65,03

1010.6 4624.6 1122.5

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15.00 16.66

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Sept 22,/969 Oct. 6, /969 Oct. 20, /969

DATE

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DATE

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TOTAL

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<u>z</u>

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TOTAL IRON

SAMPLING

STATION

<u>N</u>0

54

| | ALUMINUM | _ | | | FLOW S | SAMPLING
V FLOW | | AC. | STATION | ALKA O | ALKALINITY TOTAL IRON | NO. | RON 55 | SULFATES | ál. | S | S ALUMINUM |
|-------------|-------------------|----------|----------------------|---------|--------|--------------------|--------|-------|---|--------|-----------------------|------|--------|----------|-----|---------------|---------------------------|
| <i>></i> | 13 | ₹1. | DATE | WEATHER | | 3 E O # | P
H | 3 | l ac foav | 2 2 | ac hav | | | ء ا د | 3 | OF WILES | 3 2 |
| - ≥ | AY CONC. LBS./DAY | 4 | | | C.F.S. | G.P.M. | 7 | CONC. | CONC. LBS/DAY CONC. LBS/DAY CONC. LBS/DAY | CONC | LBS/DAY | CONC | | S | ก็ | CONC. LBS/DAY | VC. LBS/DAY CONC. LBS/DAY |
| | | c | July 21, 1969 | Roin | * | | ١ | | | ۱ | | | | П | 1 | 1 | 1 |
| | | 6 | Sept 8.1969 | Fair | * | | 1 | 1 | | ١ | | | | | | _ | 1 |
| | | <u>د</u> | Sept. 22,1969 | Foir | * | | 1 | | | l | | | | | ' | | |
| 0 | | 6 | Oct 6,1969 | Roin | * | | | ١ | | ı | | | | П | ' | | <u>'</u> |
| ~ | | 2 | Oct 20,/969 Fair | Fair | * | | | | | 1 | | | | | | _ | <u>'</u> |
| U) | | > | Nov. 3,1969 | Fair | 8.15 | | 2.5 | 500. | 21,964 | | | 7.5 | 329. | 700. | .> | 30,750 | 2 30,750 |
| 0 | | > | Nov. 17, 1969 | Fair | 5.67 | | 2.7 | 240. | 7,335 | | | 17.5 | 535. | 200 | ٠, | 1000. 30,561 | 30,561 |
| 0 | | 7 | Dec 1,1969 | Fair | 5.80 | | 3.1 | 240. | 7503 | | | 25. | 782. | 840 | .0 | 26,573 | 26,573 |
| Q. | | 7 | Dec 2 3, 1969 | Fair | 10.22 | | 3.2 | 220. | 12,119 | | | 13. | 716. | 85 | 22 | 850. 46,823 | 2 46,823 |
| | | | Jan. 12, 1970 | Fair | * | | 1 | 1 | | | | 1 | | ı | | · | • |
| | | > | Mar. 17, 1970 | Fair | * | | | | | | | ļ | | | | | |
| | | | Арг. 7, 1970 | Fair | * | | 1 | 1 | , | | | | | П | _' | _ | |
| 1 1 | | - | May 29,1970 | Fair | 1320 | | 3.1 | 200. | 200. 14,230 | | | 9.5 | 676. | 700. | | 49804 | |
| ŀ | | | | | | | | | | | | | | | | | |
| 0 | | _ | Average | | 8.61 | | 2.9 | 280. | 280. 12,630 | | | 14.5 | 608. | 818 | - 1 | - 1 | 36,902 30 2134 |

| | | | | | | | | | | | | | | 1 |
|-----------------------|----------|--------|-------|-----|---------|-------------|------|---------------|------------|--------------|----------|---------------|----------|--------|
| 7 | שב אדעבם | FLOW | FLOW | | ACIDITY | YTIC | ALKA | ALKALINITY | TOTAL IRON | IRON | SULFATES | ATES | ALUMINUM | Z |
| | ALW UCK | C.F.S. | 6.P.M | ή | CONC. | LBS/DAY | CONC | CONC. LBS/DAY | CONC. | CONC LBS/DAY | CONC. | CONC. LBS/DAY | CONC | LBS/DA |
| 6961'12 Ann | Roin | * | | | | | ۱ | | | | | | | \neg |
| Sept 8, 1969 | Fair | * | | 1 | 1 | | ۱ | | | | | | | |
| Sept. 22,1969 | Foir | * | | 1 | | | l | | | | | | | \neg |
| Oct 6,1969 | Roin | * | | _ | 1 | | I | | | | 1 | | | _ |
| Oct 20,/969 | Fair | * | | - | | | 1 | | | | | | | |
| Nov. 3,1969 | Fair | 8.15 | | 2.5 | 500. | 21,964 | | | 7.5 | 329. | 700. | 30,750 | | |
| Nov. 17, 1969 | Fair | 5.67 | | 7.5 | 240. | 7,335 | | | 17.5 | 535. | 1000. | 30,561 | | |
| Dec 1,1969 | Fair | 5.80 | | 3.1 | 240. | 7503 | | | 25. | 782. | 840. | 26,573 | | |
| Dec. 2 3, 1969 | Foir | 10.22 | | 3.2 | 220. | 12,119 | | | 13. | 716 | .058 | 46,823 | | |
| Jan. 12, 1970 | Fair | * | | 1 | | | | | 1 | | | | | |
| Mar. 17, 1970 | Fair | * | | | | | | | ļ | | | | | |
| Apr. 7, 1970 | Fair | * | | _ | | | | | | | 1 | | | |
| May 29,1970 | Folr | 1320 | | 3./ | 200. | 200. 14,230 | | | 9.5 | 676. | 700. | 4980 4 | 30. | 2134 |
| | | | | | | | | | | | | | | |
| Average | | 8.6/ | | 9.9 | 280. | 280. 12,630 | | | 14.5 | 608. | 818. | 36,902 30 | 30 | 2134 |

| | | 1 | | |] | | l | | 1 | | | | | |
|----------------------|----------|--------|--------|------|------|---------|------|-----------------------|-------|---------|----------|--------------|----------|---------------|
| 0 4 7 6 | WE ATUED | FLOW | FLOW | | ACII | ACIDITY | ALKA | ALKALINITY TOTAL IRON | TOTAL | IRON | SULFATES | ATES | ALUMINUM | = |
| CATE | acw nex | C.F.S. | G.P.M. | TO I | CONC | LBS/DAY | CONC | CONC. LBS/DAY | CONC | LBS/DAY | CONC. | LBS/DAY | CONC | LBS/DA |
| July 21, 1969 | Roin | * | | | | | | | | | | | | - |
| Sept 8, 1969 | Fair | * | | 1 | I | | | | | | ١ | | | $\overline{}$ |
| Sept. 22,1969 | Foir | * | | 1 | | | | | I | | I | | | $\overline{}$ |
| Oct 6,1969 | Roin | * | | I | I | | | | | | I | | | _ |
| Oct 20,1969 | Fair | * | | | 1 | | 1 | | 1 | | 1 | | | \neg |
| Nov. 3,1969 | Fair | 8.15 | | 2.5 | 500. | 21,964 | | | 7.5 | 329. | 700. | 30,750 | | \neg |
| Nov. 17, 1969 | Fair | 5.67 | | 2.7 | 240. | 7,335 | | | 17.5 | 535. | 1000. | 30,561 | | |
| Dec 1,1969 | Fair | 5.80 | | 3.1 | 240. | 7503 | | | 25. | 782. | 840. | 26,573 | | |
| Dec 2 3, 1969 | Fair | 10.22 | | 3.2 | 220. | 12,119 | | | 13. | 716. | 850. | 46,823 | | \neg |
| Jan. 12, 1970 | Fair | * | | 1 | | | | | 1 | | I | | | \neg |
| Mar. 17, 1970 | Fair | * | | | | | | | [| | 1 | | | |
| Apr. 7, 1970 | Fair | * | | 1 | | , | | | | | 1 | | | |
| May 29,1970 | Fair | 1320 | | 3./ | 200. | 14,230 | | | 5.6 | 676. | 700. | <i>49804</i> | 30. | 2134 |
| Average | | 8.6/ | | 2.9 | 280. | 12,630 | | | 14.5 | 608 | 818. | 36,902 | 30 | 2134 |

TWENTY TWENTY-THREE NORTH SECOND STREET HARRISBURG PENNSYLVANIA ENGINEERS CONSULTANTS

Shelly and Loy

6°83

87.8%

Not Measured

ALDER RUN WATERSHED PROJECT NO. SL-143

SAMPLING MEASURING AND DATA

40 -

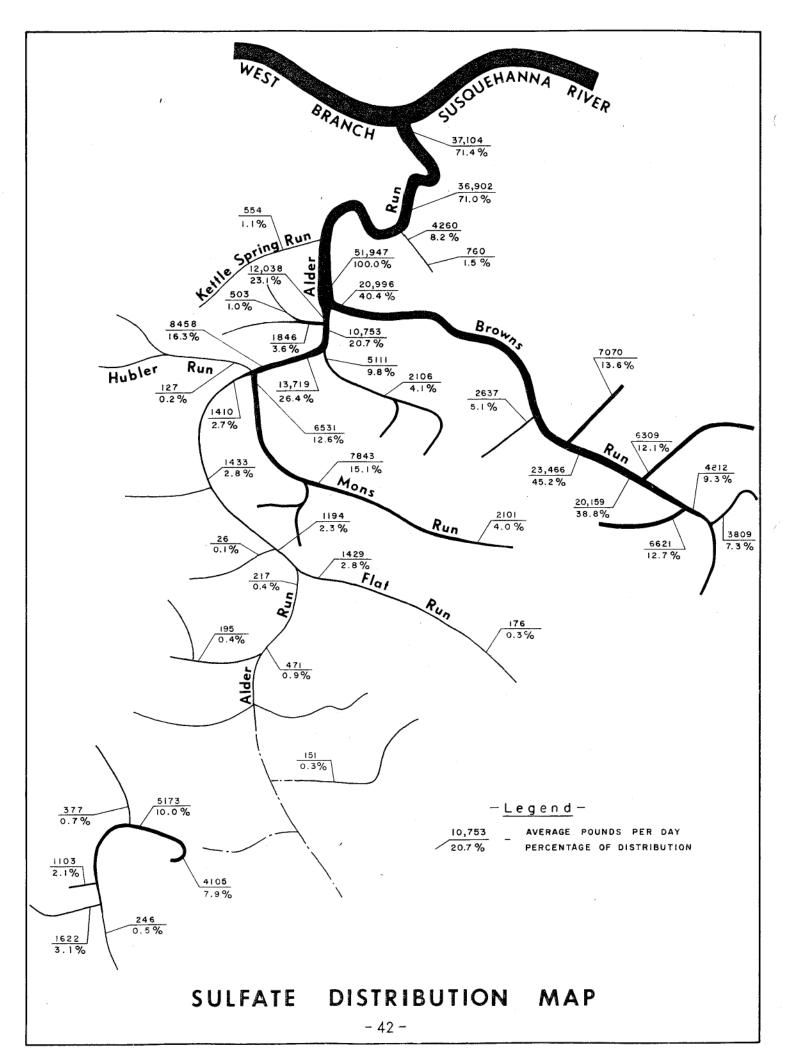
As a result of the regular sampling and flow measurement at forty-three (43) points on the watershed, the data on the tabulation pages was compiled.

Sulfate Materials Balance

The data was studied to determine if a reasonable materials balance could be achieved by utilization of the sulfate ion as an indicator. Sulfate was chosen because it is prevalent in mine drainage and it does not significantly degrade or precipitate from solution at the relatively constant pH's exhibited by the watershed's streams.

The materials balance assists in defining portions of streams where undetected pollution, such as polluted ground water, is entering the surface stream system. It also helps to compare pollution loads among numerous tributaries since the sulfate ion concentration is essentially affected only by dilution. This is unlike acid and iron which are more chemically reactive and therefore changing in concentration for reasons other than dilution.

A review of the materials balance data (see the exhibit next page) indicates mixed results which are generally difficult to correlate. The sulfate load at the mouth of Alder Run corresponds very well with a sampling station about one mile upstream and with the sum of the loads in Alder Run and Browns Run above the confluence of these two streams. The sampling station below this confluence, however, indicated a sulfate load 53% higher than expected. There was also a discrepancy between the analyses at Browns Run's mouth and stations upstream on Browns Run. An assessment of the flows and analyses at some of these points leads us to believe the principal error is in the



sulfate analysis. For example, the average flow at Station 51 was 7.27 cfs and increased to 9.03 cfs (24%) at Alder Run's mouth (Station 56) as would be expected when comparing the areas tributary to these stations. A comparison of sulfates indicates a decrease in concentration of 552 mg/L or 38%. Such a large decrease in sulfate concentration is inexplicable. The sulfate analyses at the other stations where discrepancies exist also appear erroneous. Overall, these discrepancies have decreased the potential benefits of the sulfate materials balance on this watershed.