

BORGARDY RUN SUB-BASIN

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BORGARDY RUN SUB-BASIN

Discussion of Sub-Basin

Borgardy Run has a drainage area of approximately 650 acres. The sources of pollution from within this sub-basin are a portion of Area 14, the largest strip-mined area in the East Branch Clarion River Watershed, and Smith Mine (Area 17). The acid discharges from these sources to the Borgardy Run drainage basin represent less than 1.5 percent of the total acid mine drainage pollution in the East Branch Clarion River Watershed.

Water Quality Sampling Stations

Two sampling stations were established in the Borgardy Run sub-basin. The location, drainage area and summary of water quality test results for each of the sampling stations are:

Station 5919 was located just upstream of the culvert under Township Road 367 and downstream of the point Borgardy Run receives acid discharges from Area 14. The drainage area at this point is 214 acres. Station 5919 was sampled 26 times between November 20, 1968 and December 18, 1969. Minimum and maximum water quality test values were as follows.

	<u>Minimum</u>	<u>Maximum</u>
pH	3.60	4.15
Total Acidity (mg/l)	29.0	102.0
Free Acidity (mg/l)	6.0	39.0
Alkalinity (mg/l)	0.0	0.0
Sulfate (mg/l)	95.	610.
Total Iron (mg/l)	0.42	5.36
Manganese (mg/l)	4.9	13.0
Flow (Cfs)	0.02	1.43

Station 5968 was established just below the point where seepage emanates from the location of the obliterated heading of Smith Mane. This station was sampled four times between May 29, 1969 and November 20, 1969 and test results indicated the average daily acid discharge from this source was only about 5 lbs. per day during the testing period.

Minimum and maximum values were as follows:

Water Quality Prior to Strip-Mining

In 1948, when the first water samples were collected by the Pennsylvania Department of Health, the Julaette Coal Company was stripping the southern part of the area 14 strap-mane. Laboratory record cards for 1948 note

	<u>Minimum</u>	<u>Maximum</u>
pH	3.15	3.30
Total Acidity (mg/l)	315.0	345.0
Free Acidity (mg/l)	143.0	174.0
Alkalinity (mg/l)	0.0	0.0
Sulfate (mg/l)	1360.	1540.
Total Iron (mg/l)	2.60	18.80
Manganese (mg/l)	---	80.0
Flow (cfs)	0.002	0.002

such facts as: 1) a small discharge of water being pumped occasionally from strap pits into Borgardy Run (pH 4.69 - total acidity 14.4), 2) water standing in a cut of Julaette No. 9 Mane - pumped to Borgardy Run (pH 3.9 - total acidity 60.0), 3) mane drainage laying an old workings of Julaette No. 9 Mane (pH 2.6 - total acidity 4440.0), and 4) Julaette No. 9 Mane, an old mane now leased by the Julaette Coal Company (pH 3.02 - total acidity 1294.0).

The Julaette No. 9 Mane as not to be confused with the Nashedka Mane which was located on the other side of the same hall as the East Branch Swamp Creek sub-basin. The Nashedka Mane was designated "No: 9" on the sketch map made by the Pennsylvania Department of Health as a result of the numerical presentation used in the August 1953 report to the Sanitary Water Board.

Some of the Pennsylvania Department of Health's water quality test results for the first few years of sampling on Borgardy Run are as follows:

1) Borgardy Run at Township Road 367 - Same Location as Station 5919

<u>Date</u>	<u>pH</u>	<u>Total Acidity</u>	<u>Sulfate</u>	<u>Total Iron</u>
6/10/48	5.32	7.2		
7/8/48	5.9	7.2		
2/29/49	4.8	8.0		
4/10/51	3.9	56.0		
5/1/51	3.85	48.0		
3/10/53	*10.05	0.0	70.	
7/23/53	4.05	32.0	120.	3.4

2) Borgardy Run Near the Mouth

<u>Date</u>	<u>pH</u>	<u>Total Acidity</u>	<u>Sulfate</u>	<u>Total Iron</u>
7/8/48	5.5	4.0	32.	
2/25/49	4.85	8/0		
4/10/51	4.4	12.0		
5/1/51	4.42	10.0		
3/12/53	*4.85	6.0	23.	
7/24/53	4.3	12.0	50.	1.1

*Lime treatment of acid discharges at strip-mine.

Although records could not be found of water quality tests for Borgardy Run prior to the start of strip-mining operations, it is believed the water quality before strip-mining was equivalent to the water quality of Swamp Creek before strip-mining began in that sub-basin, i. e. , pH over 6 and the water slightly to moderately alkaline.

Mines Shown on Pennsylvania Department of Health's Sketch Map

No. 8 Mine - The Pennsylvania Department of Health sketch map showing, deep mines and strip-mines in the East Branch Clarion River Watershed shows a mine in the Borgardy Run sub-basin which is designated as No. 8 on the maps. In the Department's August 1953 report to the Sanitary Water Board, this mine was reported to be located 450 feet west of Township Road 367 and about 0.95 miles south of the junction of Township Roads 367 and 371.

It was further stated the heading was covered and there was no drainage from the mine. In February 1967, another stream survey made by the Pennsylvania Department of Health again reported there was no drainage from this mine.

During the investigation, made for the preparation of this report, no evidence of the mine could be found in the field or on aerial photographs. According to local residents, this mine was not much more than a prospect.

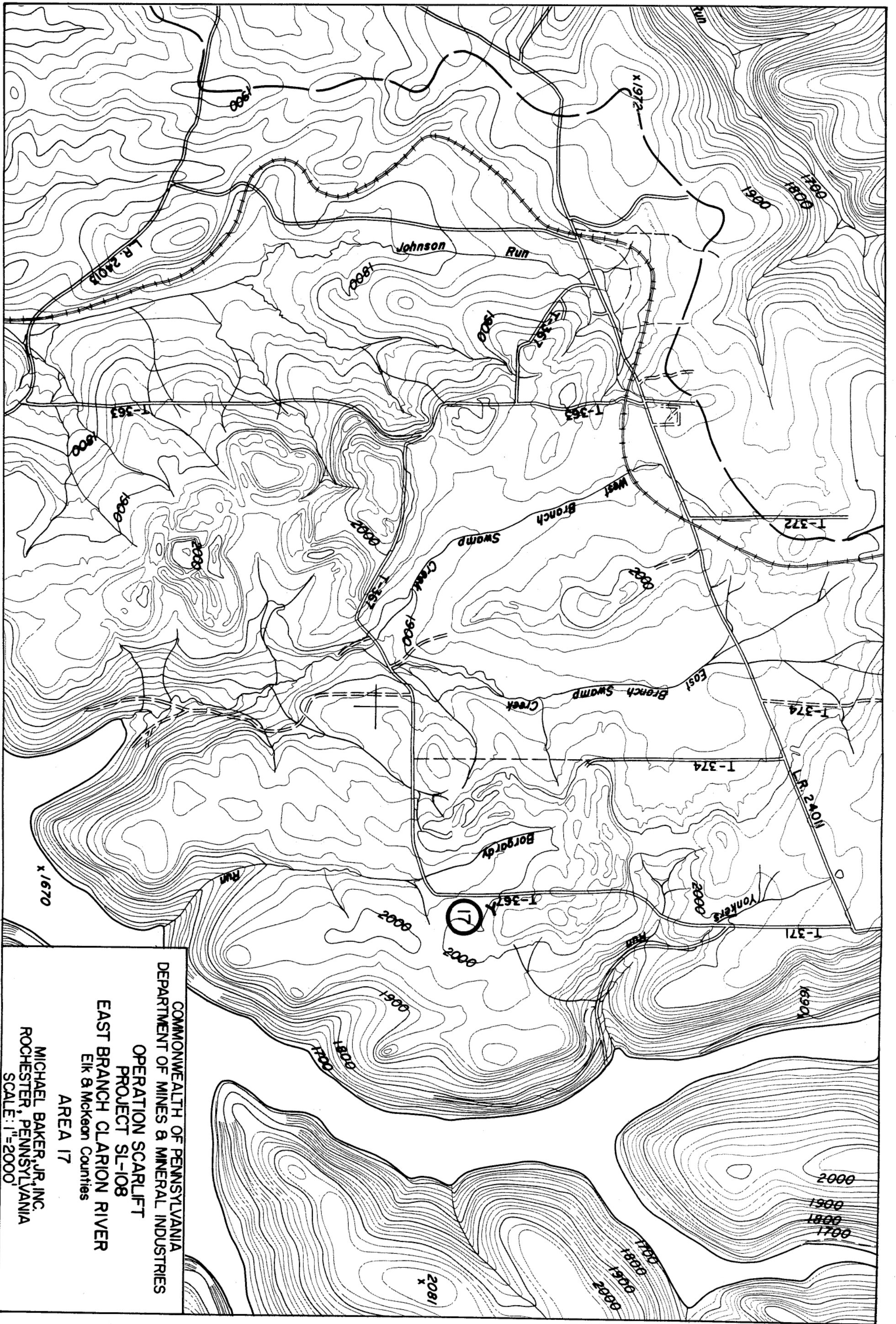
Sources of Pollution

AREA 17

According to information obtained from a local resident, the Smith Mine (designated as Area 17) was opened prior to 1890 and was never anything more than a local source of house coal. Very little, 30 to 40 cubic yards, mine refuse was observed in the, area. Seepage from the old mine workings, although highly acid, has very little effect on the water quality of Borgardy Run.

Recommended Abatement Methods - The average acid discharge from the Smith Mine (Area 17) is estimated to be approximately 5 lbs. per day or less than 0. 1 percent of the total average daily acid load contributed by all pollution sources in the East Branch Clarion River Watershed.

Since this is such an insignificant source of pollution no recommendation for abatement is presented.



Source of Pollution

AREAS Discussed in Other Sub-Basins

AREA 14

This is the largest strip-mined area in the East Branch Clarion River Watershed and about 64 percent of the area is in the Swamp Creek and Yonkers Run sub-basins. In the Swamp Creek Sub-Basin this strip-mined area is a major source of acid mine drainage pollution. Within the Borgardy Run Sub-Basin the average acid discharge from this source is estimated, on the basis of water quality tests performed over a year period, to be approximately 70 lbs. per day or about 8 percent of the total average daily acid load produced by this source. Area 14 is discussed in the Swamp Creek Sub-Basin section of the report, page A-58.