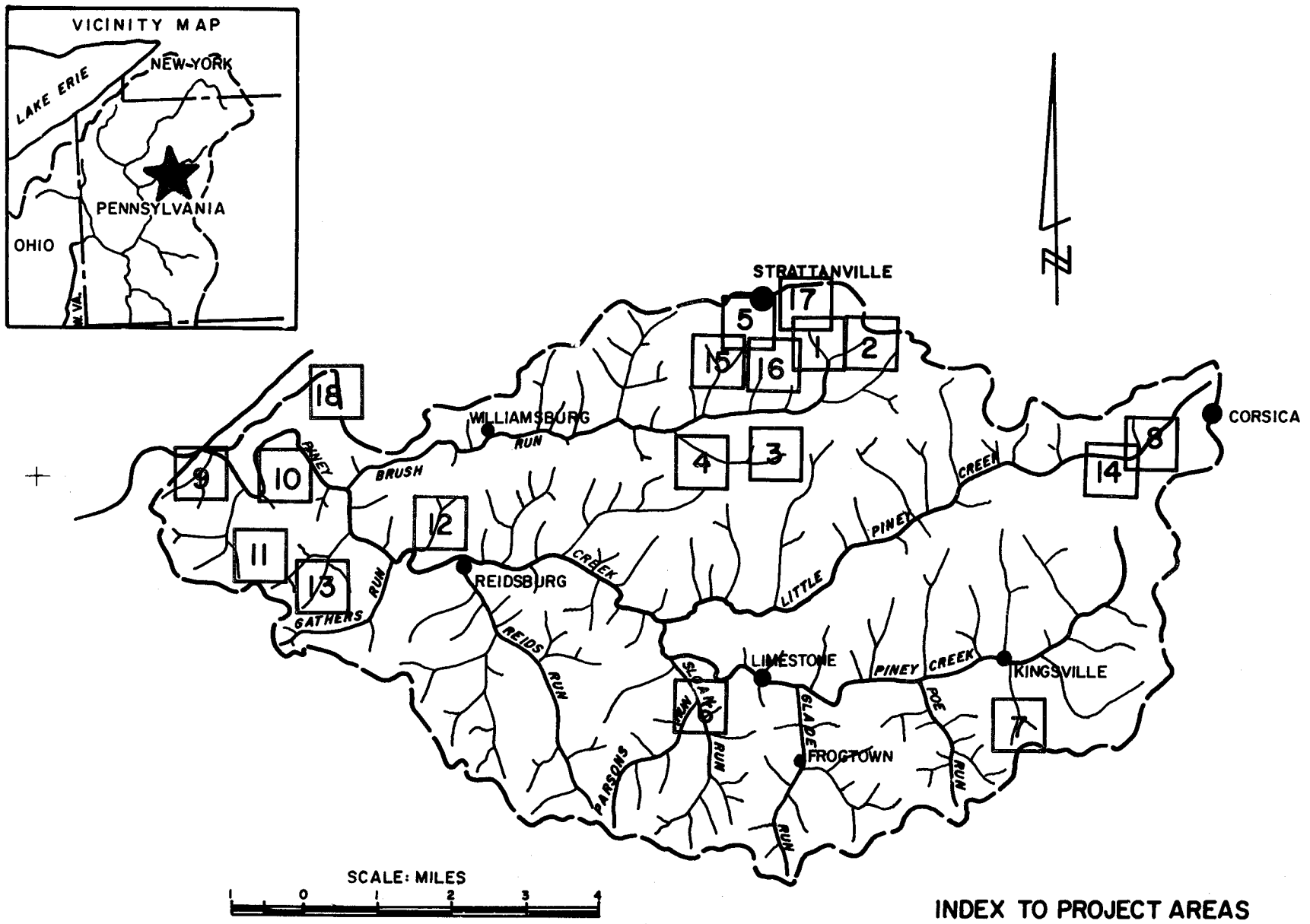


INDEX TO PROJECT AREAS
PINEY CREEK WATERSHED
CLARION COUNTY

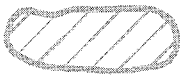
LEGEND FOR PROJECT AREA MAPS


DEEP MINE OPENING - NO SEALING RECOMMENDED


DEEP MINE OPENING - STRIPPED OUT


DEEP MINE OPENING - EXTENT OF MINED OUT AREA UNKNOWN


DEEP MINE OPENING - SEALING RECOMMENDED


STRIP MINE AREA - RECLAMATION RECOMMENDED


WELL - GAS OR OIL

RIP RAP CHANNEL, SLURRY TRENCH OR CLAY BLANKET - AS DESIGNATED

APPROXIMATE OUTCROP - LOWER KITTANNING COAL SEAM

APPROXIMATE OUTCROP - LOWER CLARION COAL SEAM

WEIR LOCATION WITH WATER QUALITY DATA


pH +6.0

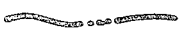

pH 5.0 to 6.0


pH -5.0

STREAMS INDICATING WATER QUALITY DATA

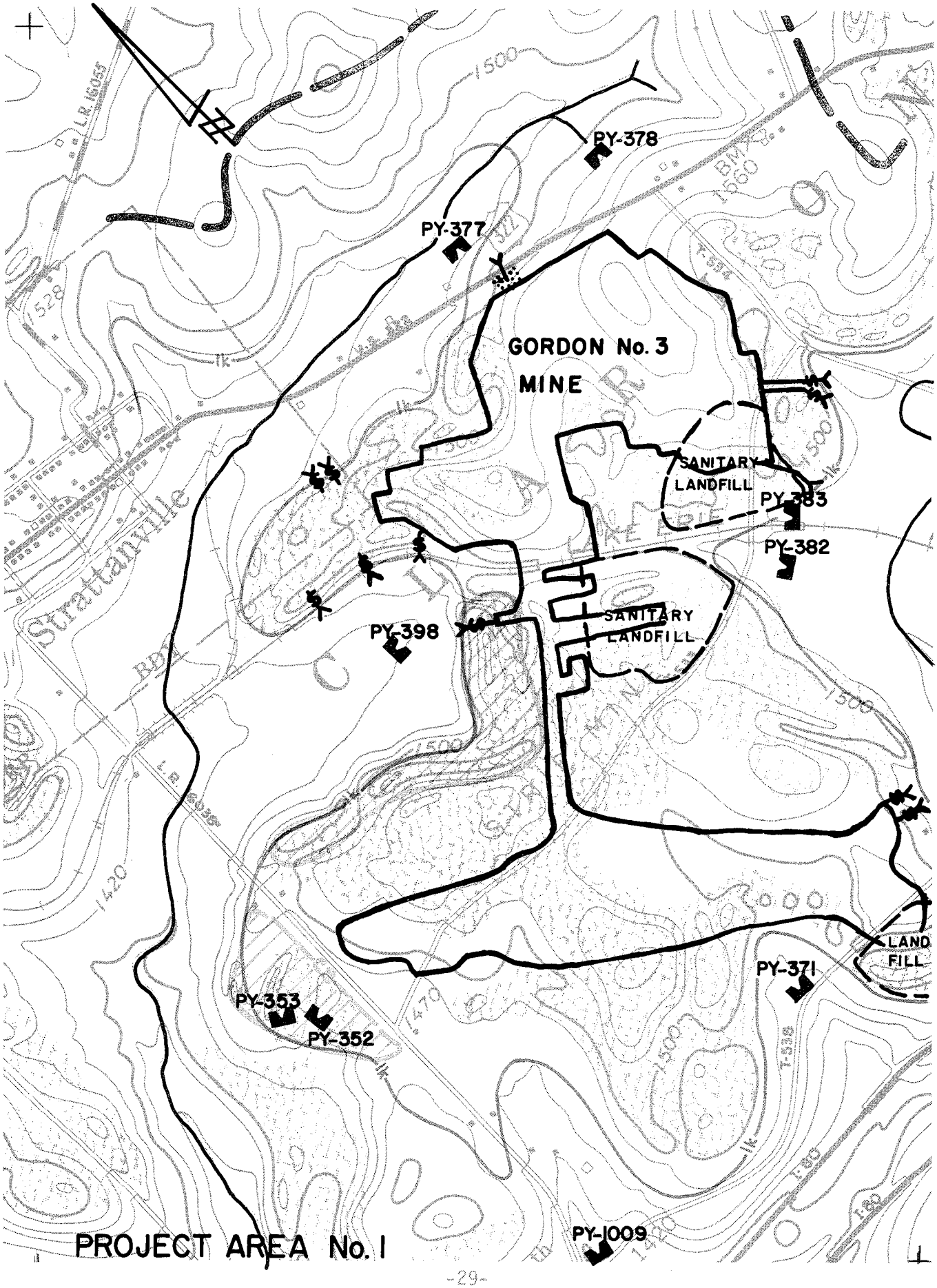
pH +6.0

pH 5.0 to 6.0


pH -5.0

WATERSHED BOUNDARY

PROJECT AREA MAP SCALE



PROJECT AREA No. 1

PROJECT AREA NUMBER 1

Location: Approximately 1000' southeast of Strattanville.

Township: Clarion

This project area consists of the Gordon number 3 mine complex, numerous country bank openings and extensive subsequent strip mining. The area of the Gordon mine has twelve (12) known openings, most of which have been stripped out. The drainage is monitored by weir numbers PY 352, 353, 371, 377, 378, 382, 383, 398 and 1009. The average and maximum acid loads as well as the average and maximum iron loads are listed for each weir below.

Weir Number	Avg.Flow(GPM)	Avq.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PY 352	122.0	385	1665	60	148
PY 353	11.0	33.4	95	2.11	7.75
PY 371	1.0	0.80	2.30	0.003	0.01
PY 377	82.0	208	616	36.8	98
PY 378	1.1	1.20	4.32	0.01	0.06
PY 382	0.6	0.73	2.40	0.06	0.23
PY 383	1.2	3.24	5.14	0.27	1.08
PY 398	91.0	211	613	12.5	46.3
PY 1009	10.0	14.3	17.0	0.32	0.94
	320	857.67	3020.16	112.07	302.37

The Gordon number 3 mine, active in the early 1900's, worked the Lower Kittanning coal seam in the area directly southeast of Strattanville. In the early 1970's the Leadbetter Coal Company, MDP #3671BSM17, and the Beveridge Coal Company, MDP #3674SM48, began stripping the crop coal on the outer limits of the deep mine complex. Weir numbers PY 371 and PY 1009 are monitoring the drainage from the Leadbetter and Beveridge strips in the extreme southern portion of the project area.

Recommendations for abating acid flow from this area will be withheld until stripping is completed.

The eastern portions of the project area have been extensively stripped. No information is available on the original operator, but the Leadbetter Coal Company is presently restripping this area.

In the northwest, drainage emanates from the intersected mine workings of the Gordon number 3 mine. It is monitored by weir number PY 398 which shows 211 ppd of acid. Reclamation at this site should include a deep mine seal at the opening with immediate backfilling.

Located in the central and south central sections are three (3) sanitary land fills; two are operated by James Lahr and are just north of T-533 on either side of the railroad tracks. The third is a Leadbetter Coal Company operation located in the extreme south. Drainage from the Lahr landfills is checked at weir numbers PY 382 and PY 383. Leadbetter's landfill does not show any appreciable drainage. Since these are active sites, no reclamation will be proposed at this time.

The extreme western portion of the area shows stripping into the mine workings

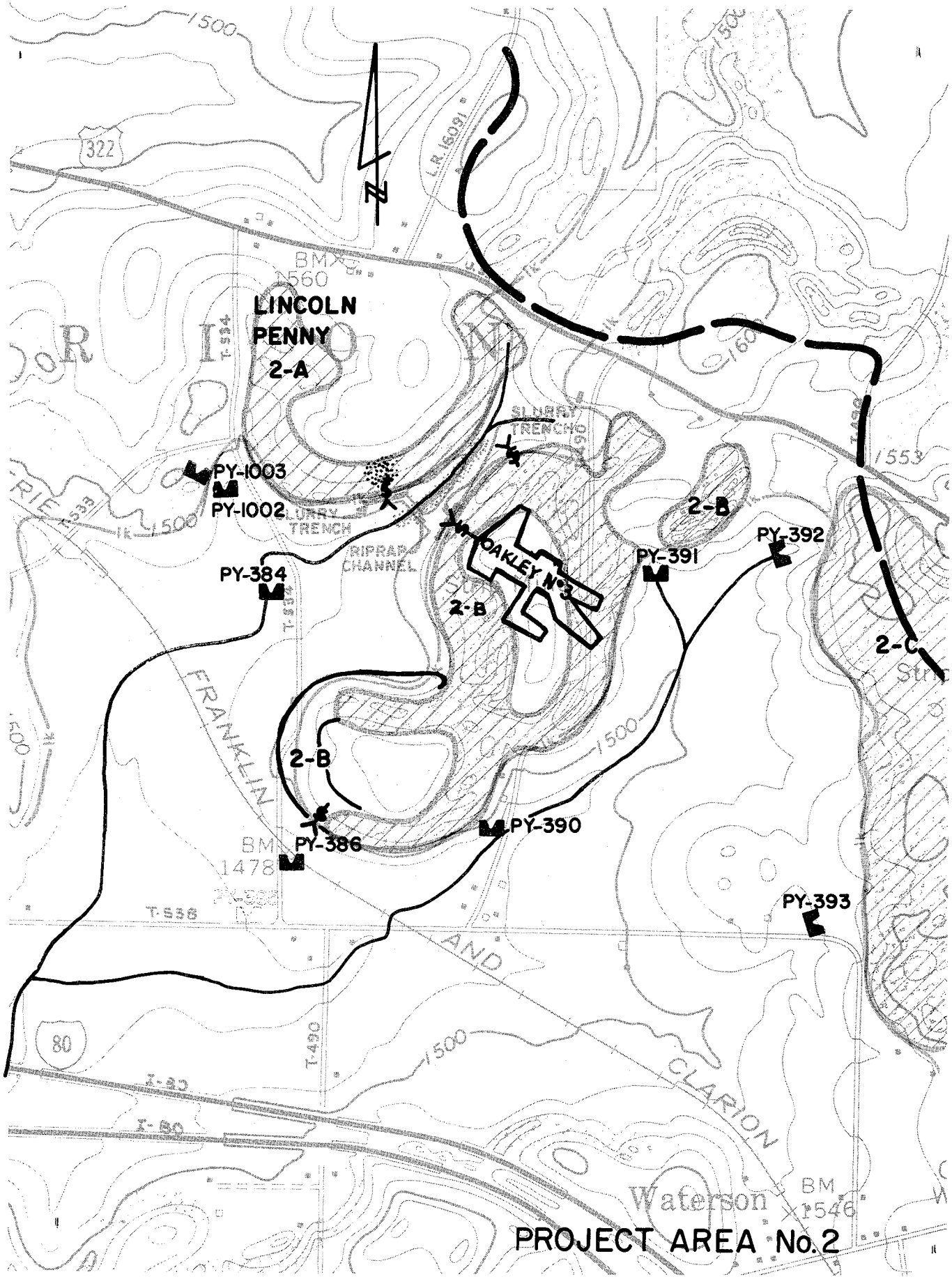
which resulted as seepage from the hillside as checked by weir numbers PY 352 and PY 353, which show at least 418 ppd of acid. Reclamation measures in this area include a clay blanket installed on the western side of L.R. 16038 near weir numbers PY 352 and PY 353. This is to be followed by backfilling in the same area.

Another opening of the Gordon No: 3 Mine is discharging badly in the north near weir number PY 377. Abatement measures here consist of a mine seal to be installed on the southern side of Route 322 near weir number PY 377. Correct installation will eliminate the majority of the 208 ppd of acid added to the watershed from this site.

Estimated Construction Costs

Backfilling	76,000
Mine Seals	20,000
Clay Blanket	192,500
Soil Treatment and Planting	23,940
	$312,440

cost/lb. ratio = $312,440.00/837 lbs. = $373.00/lb. acid



PROJECT AREA No. 2

PROJECT AREA NUMBER 2

Location: Between Route 322 on the north, T-538 on the south and T-534 on the west.

Township: Clarion

This project area is underlain by two (2) deep mines, the "Lincoln Penny" and the "Oakley No. 3". These mines have been stripped out in several places making exact limits of mining difficult to determine. Stripping of the entire northern por - tion, along with two strips in the southern and southeastern portions, are the cause of much acid drainage from this project area. Weir numbers PY 384, 385, 386, 390, 391, 392, 393, 1002 and 1003 have monitored this drainage and the results for average and maximum acid load as well as maximum iron load are listed below:

Weir Number	Avg.Flow(GPM)	Avg.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PY 384	51	102.0	189	0.92	2.07
PY 385	1.8	2.94	19.2	0.006	0.02
PY 386	7.5	31.8	147	0.25	1.55
PY 390	2.8	10.2	37.6	0.17	0.91
PY 391	41	96.3	201	14.2	34.4
PY 392	27	53.5	175	2.25	7.48
PY 393	7.5	30.7	92	0.16	0.32
PY 1002	5.5	15.6	39.7	0.31	0.55
PY 1003	4.4	9.91	11.5	0.44	0.70
	148.5	352.95	912.0	18.70	48.0

Work on strip mine 2-A was done in the early 1950's on the Lower Kittanning coal. No information is available as to who the original strippers were and no permits have been acquired to restrip the area as of this time. The area was not backfilled and the drainage is being monitored by weir numbers PY 1002 and PY 1003.

Reclamation measures to remove the 25 ppd of acid from this area. include back - filling the pit and contouring the area.

Two openings from the "Lincoln Penny" and the "Oakley No. 3" mines are discharging in the southern portion of 2-A and the northern portion of 2-B. The drainage is being monitored here by weir number PY 384. Both openings were stripped out years ago and no information is available on the responsible companies.

Abatement procedures include two (2) short slurry trenches installed at the stripped out openings in the south of 2-A and the north of 2-B and a riprap channel in between them to expedite movement of runoff through the area of acid spoil. If effective, those measures will eliminate the majority of the 102 ppd of acid entering the watershed at this site.

Work in the south of area 2-B was initiated by the Grasso Coal Company in 1951 on the Lower Kittanning coal, and is continued at present by the Leadbetter Coal Com - pany, MDP #3674SM18. A mine opening in the extreme south has been stripped out and the drainage is being monitored by weir number PY 386 while strip runoff is checked by weir numbers PY 385 and PY 390. These add an average of 45 ppd of acid to the

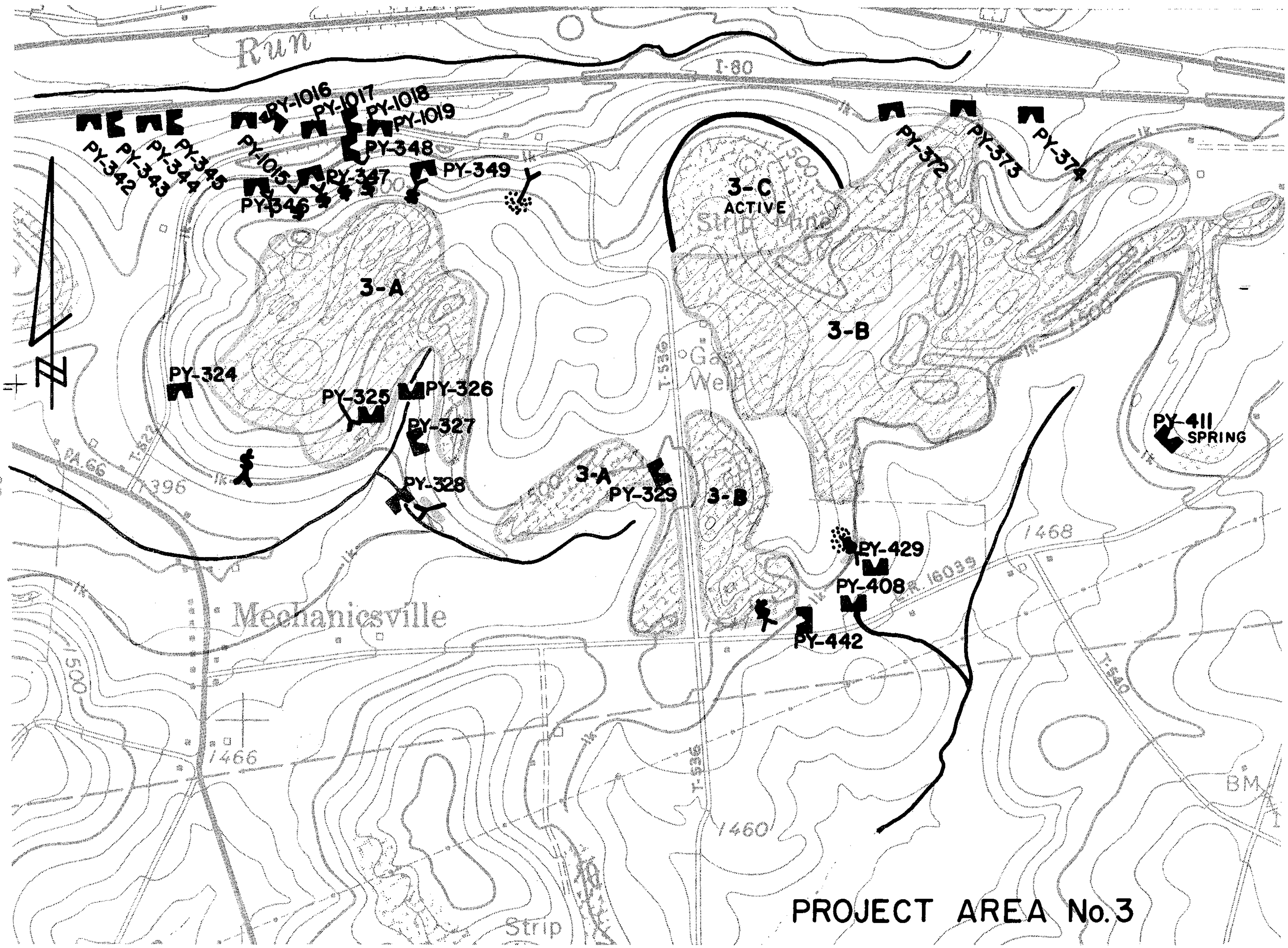
watershed. Since this area is active, the abatement procedures will be withheld at this time

The northeastern portion of area 2-B is an old strip with 96.3 ppd of acid in the form of strip runoff. Weir number PY 391 monitors the drainage from this strip. Reclamation measures include complete backfilling and contouring of the northeast portion of the 2-B strip.

Area 2-C has been stripped within the last ten years, but the operator is not known. Backfilling is incomplete and the area is covered with light tree and shrub growth. Drainage is monitored by weir number PY 392 in the north and PY 393 in the south. Although this area has not been stripped recently, a permit has been obtained by the M.S.M. Coal Company, MDP #3675SM78, to strip the section of land directly north of weir number PY 393. Abatement procedures in this area will be subject to the actions of the M.S.M. Coal Company. Otherwise recommendations for 2-C include complete backfilling and contouring especially to the south of weir number PY 392. When affected, these measures will eliminate most of the 84 ppd of acid at this time.

Area	Estimated Construction Costs		
2-A	Backfilling		54,000
	Slurry Trench		11,250
	Soil Treatment and Planting		17,010
	Riprap Channel		20,000
2-B	Backfilling		134,000
	Slurry Trench		11,250
	Soil Treatment and Planting		42,210
2-C	Backfilling		272,000
	Soil Treatment and Planting		85,680
		Total	647,400

cost/lb, ratio = $ 647,400 /307.95 lbs. = $2,100.00/lb. of acid



PROJECT AREA No. 3

PROJECT AREA NUMBER 3

Location: Approximately 1/2 mile northeast of Mechanicsville and just southwest of the crossing of 1-80 and T-490.

Township: Clarion

This project area consists of three (3) strip mines and a deep mine complex which underlies the entire area. The deep mine has twelve (12) known openings, some of which have been stripped out and are draining. The area is monitored pri marily by weir numbers PY 324-329, 342-349, 372-374, 408, 411, 429 and 442. A sec-ondary system of weirs was initiated late in the study to determine if ac id drainage was circumventing weir numbers PY 342-349 in the northeast corner of the project area. These secondary weirs are designated numbers PY 1015-1019. The itemized totals for average and maximum acid and iron loads follow.

Weir Number	Avg.Flow(GPM)	Avg.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PY 324	13	28.2	62.0	2.34	8.00
PY 325	0.4	0.99	9.98	0.04	0.37
PY 326	1.6	2.40	8.21	0.09	0.60
PY 327	0.42	0.68	3.98	0.02	0.15
PY 328	67	181	757	15.0	68.0
PY 329	2.3	6.28	17.5	0.09	0.25
PY 342	31	34.2	96.0	1.05	2.86
PY 343	12	9.07	16.8	1.58	3.02
PY 344	3	1.50	3.24	0.64	4.77
PY 345	6	6.80	13.8	0.45	0.81
PY 346	27	94.0	160.0	5.21	14.7
PY 347	4.4	13.7	28.4	0.17	0.35
PY 348	4.0	5.36	34.6	0.21	0.90
PY 349	1.6	2.76	13.8	0.08	0.37
PY 372	1.9	3.91	14.4	0.04	0.12
PY 373	6.3	11.3	25.1	0.99	2.21
PY 374	26	91.0	370	2.74	6.20
PY 408	10.7	34.3	68.0	0.54	1.11
PY 411	43	248	968.0	14.6	78.0
PY 429	1.1	4.63	10.5	0.57	1.95
PY 442	0.5	0.91	3.46	0.02	0.09
	263.22	780.99	2684,77	46.47	194.83

The secondary weirs show the following totals.

PY 1015	1	0.62	1.92	0.004	0.01
PY 1016	22	82.0	91.0	3.14	4.49
PY 1017	2	5.29	6.48	0.42	0.81
PY 1018	1.8	3.95	5.71	0.13	0.18
PY 1019	9	23.2	27.7	1.49	2.97
	35.8	115.0	133	5.18	8.46

Compared to the totals of weir numbers PY 346-349 the secondary weirs show very little acid escaping the primary monitors.

Strip mine 3-A is located directly northeast of Mechanicsville. The H. and G. Coal Company, Inc., MDP #2766BSM62, stripped the Middle and Lower Kittanning coal seams in 1966. Most mine openings were stripped out or were discharging, especially in the south and north sections near weir numbers PY 328 and PY 346. Weir numbers

PY 324-329, PY 342-349 and PY 1015-1019 monitor drainage from this area. The strip is partially backfilled with light tree growth on many of the spoil piles. Runoff forms many small pools among the uncontoured spoil piles which become acid and even actually enter the tributaries to Brush Run. Recommendations for this area include sealing the mine openings at weir numbers PY 328 and PY 346 by deep mine seals. If effective, these seals will eliminate the majority of the 275 ppd of acid at this site approximately 35% of the project area total. However, at this time the Cher nicky Coal Company is acquiring a permit to restrip the area just south of 1-80.

Complete backfilling and contouring should be done, especially in the northern and central portions of the area. Completion of these measures will eliminate most of the 112 ppd of acid added to Brush Rut by strip runoff in area 3-A.

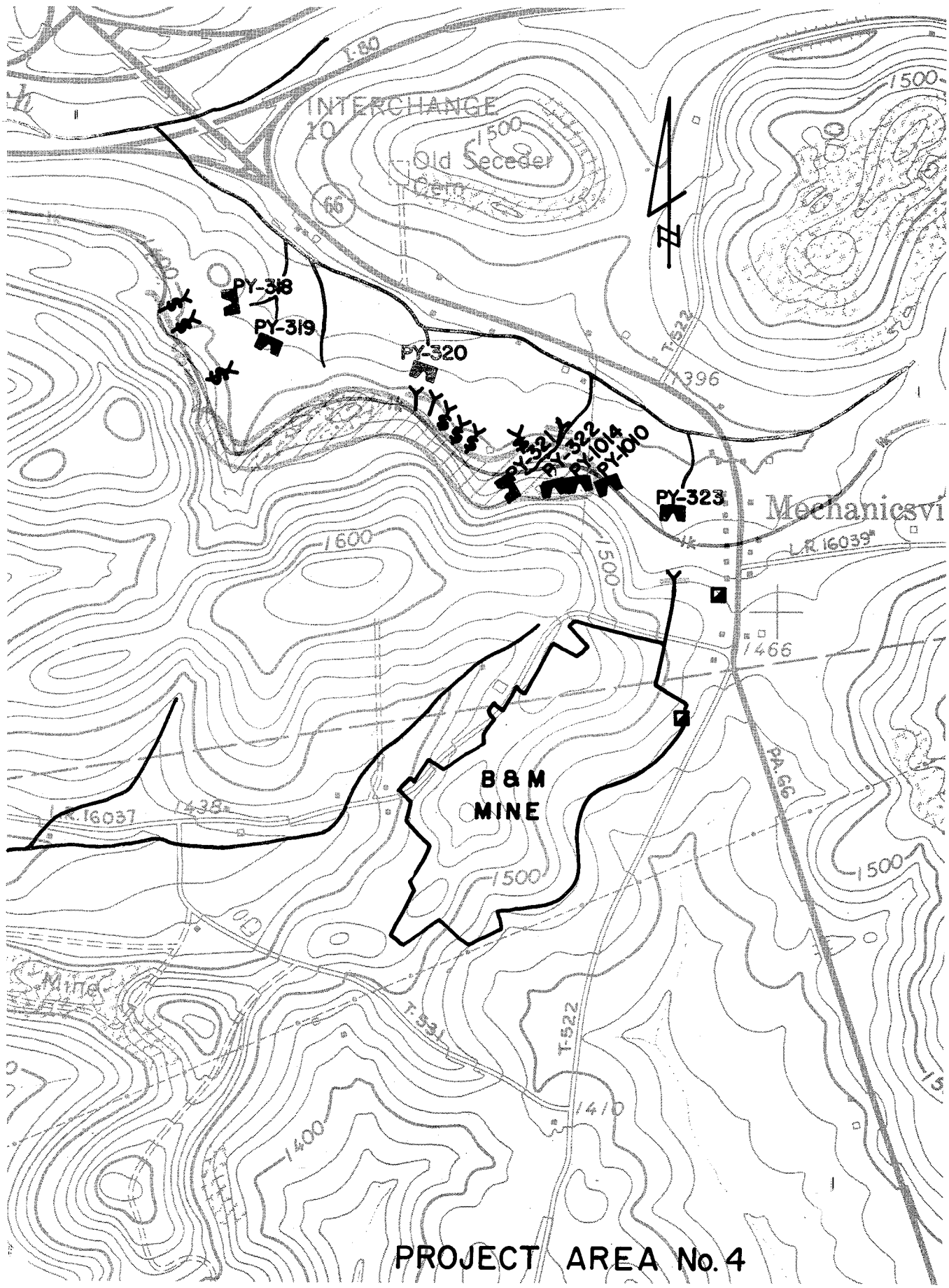
Strip 3-B is located east of T-536. It was stripped by the John N. Wilson Coal Company, MDP #2768BSM15 in 1968. The Middle Kittanning coal was removed and back - filling was not completed. Drainage emanates from two underground mine openings in the southwest portion of the area, monitored by weir numbers PY 408, PY 429 and PY 442. Strip runoff in the northern portion is checked by weir numbers PY 372 -374.

Abatement procedures include a mine seal in the opening near weir number PY 408. This will eliminate most of the 34 ppd of acid from this site. Complete backfilling, is needed to the north to eliminate the 106 ppd of acid, especially in the area a - round weir number PY 374 where acid load averages 91 ppd. Backfilling the southern portion will eliminate the 5 ppd of acid averaged at weir numbers PY 4 -29 and PY 442. The drainage at weir number PY 411 is from a natural spring which has been intercepted by a Lower Kittanning strip to the northeast and is showing 248 ppd of acid. Since this is a natural water course, we have no information on the point of entry. of the water into the strip. We, therefore, recommend a drilling project to determine the elevation and quality of the spring above the strip, the entry point into the strip and the feasibility of diverti ng the course of the spring around the contaminating spoil.

Strip area 3-C is an active operation located in the northern portion of the project area just east of T-536. It is run by the John N. Wilson Coal Company, MDP #2768BSM15 and is extracting coal from the Middle Kittanning seam. Since this is an active operation, no recommendations will be made at this time.

Estimated Construction Costs

Area		
3-A	Backfilling	156,000
	Mine Seals	80,000
	Soil Treatment and Planting	49,140
3-B	Backfilling	276,000
	Mine Seals	10,000
	Soil Treatment and Planting	86,940
	Exploratory Drilling	
cost/lb. ratio = $658,080.00/ 532 lbs.	$1,237.00/lb. acid Total	658,080



PROJECT AREA No. 4

PROJECT AREA NUMBER 4

Location: Just west of Route 66 at Mechanicsville.

Township: Clarion and Limestone

This project area consists of at least ten (10) deep mine openings and three (3) strip mines. Weir numbers PY 318, PY 319, PY 320, PY 321, PY 322, PY 323, PY 1010 and PY 1014 have been set up to monitor discharges from the area. Illustrated below are the totals for average and maximum iron and acid loads as well as average flow for each weir.

Weir Number	Avg.Flow(CPM)	Avg.Acd(ppd)	Max.Acd(ppd)	Avg. Iron (ppd)	Max.Iron(ppd)
PY 318	67.0	80.0	438.0	2.62	16.6
PY 319	5.1	2.14	11.4	0.006	0.34
PY 320	1.5	1.68	4.08	0.02	0.04
PY 321	2.2	6.05	12.8	1.34	3.21
PY 32.2	1.2	3.51	4.8	0.44	1.18
PY 323	41.0	80.0	153.0	22.2	38.4
PY 101.0	1.5	.14	0.86	0.01	0.06
PY 1014	7.5	20.7	33.1	2.52	3.14
	127.0	194.2	658.04	29.16	63.0

The major deep mine in the area is the B and M Coal Company Number 1 mine which is located in the extreme southeastern portion of the project area. The main opening and two (2) air courses are discharging and are being monitored by weir number PY 323. Determination of mining limits is difficult due to the subsequent stripping in 1975 by the Clarion Realty Company, MDP #3675SM48. Recommendations for abating the acid discharge from, this area include sealing the main opening and the adjacent air courses with mine seals. This measure should eliminate the majority of the 80 ppd of acid at this site.

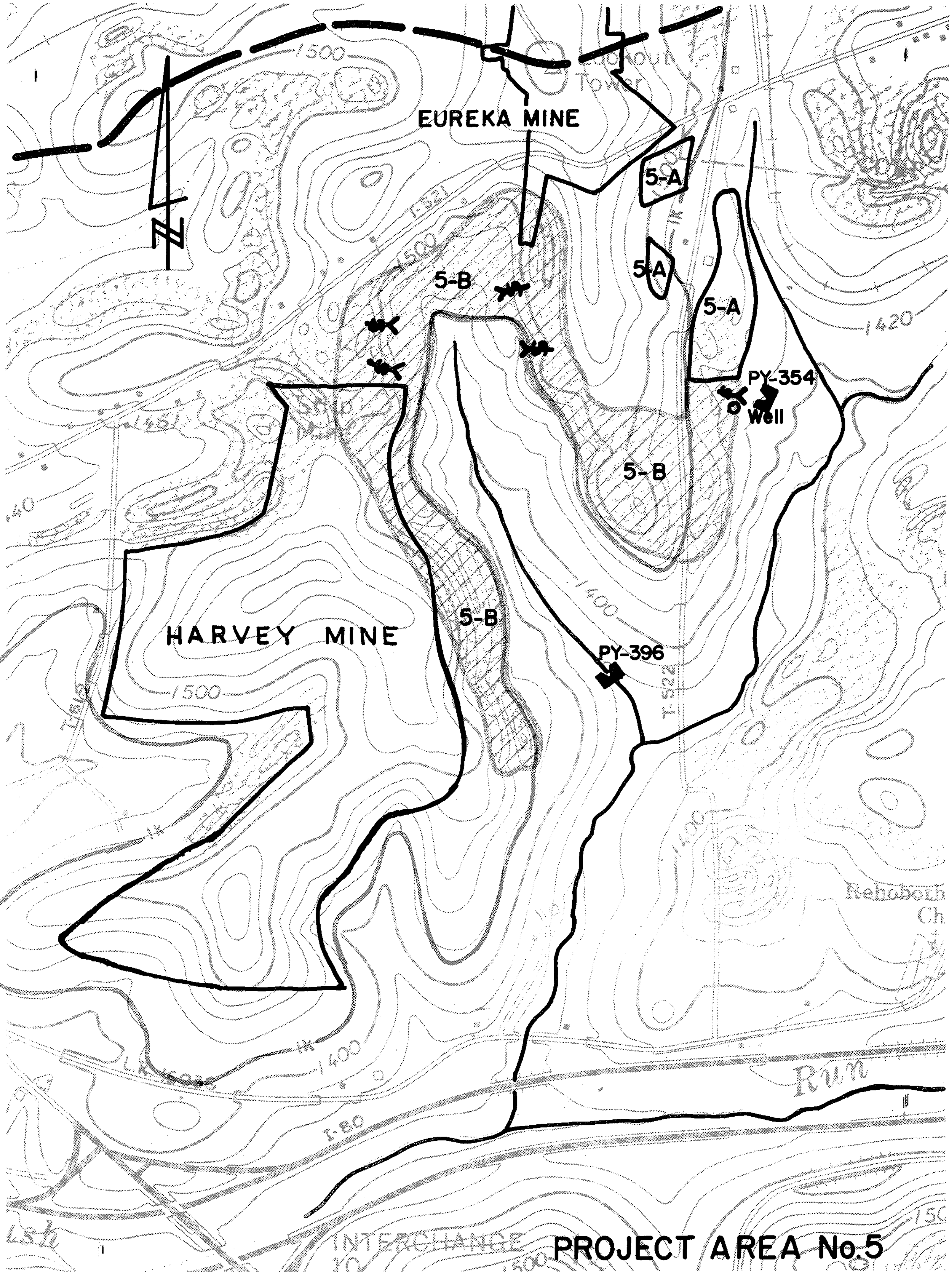
A strip mine located in the extreme northwestern portion of the project area was operated in 1975 by the K.I.T. Industries, MDP #3675SM57. Earlier stripping was performed on the Middle and Lower Kittanning seams and three (3) deep mine openings were stripped out. Drainage from these openings is monitored by weir numbers PY 318 and PY 319. An open pit remains from previous stripping of the area and a light tree growth covers the spoil area. Abatement procedures include a clay blanket installed over the stripped out openings near PY 318 and PY 319 and keyed into the highwall. These measures should eliminate most of the 82 ppd of acid added to the watershed from this site.

A second strip area is located in the central portion of the project area. The Middle and Lower Kittanning coal seams were stripped and in the process at least four (4) deep mine openings were stripped out. Drainage from these openings along with the drainage from two other openings is monitored by weir numbers PY 320 and PY 1014. Strip runoff in the area is checked at weir numbers PY 321, PY 322 and PY 1010. Suggested measures for reclamation include mine seals in the openings which were not

stripped out near weir numbers PY 320 and PY 1014. Effective completion of these measures will abate the 23 ppd of acid at this site. Also needed here is complete backfilling of the central portion of the project area. This is to eliminate seepage from the highwall near weir numbers PY 321, PY 322 and PY 1010 which averages 10 ppd of acid.

	Estimated Construction Costs
Backfilling	42,000
Clay Blanket	175,000
Mine Seals	60,000
Soil Treatment & Planting	13,230
Total	$290,230

cost/lb. ratio = $290,230.00/ 195.00 lb. =
$1,495.00/lb, acid


EUREKA MINE
5-A
5-A
5-A
5-B
5-B
5-B
PY-354
Well
HARVEY MINE
PY-396
T-521
T-522
1500
1420
1400
Run
I-80
PROJECT AREA No.5

PROJECT AREA NUMBER 5

Location: Approximately 1 mile northeast of Stone House along T-521.

Township: Clarion

This project area consists of two (2) strip areas and at least five (5) deep mine openings. Drainage from this area is monitored by weir numbers PY 354 and

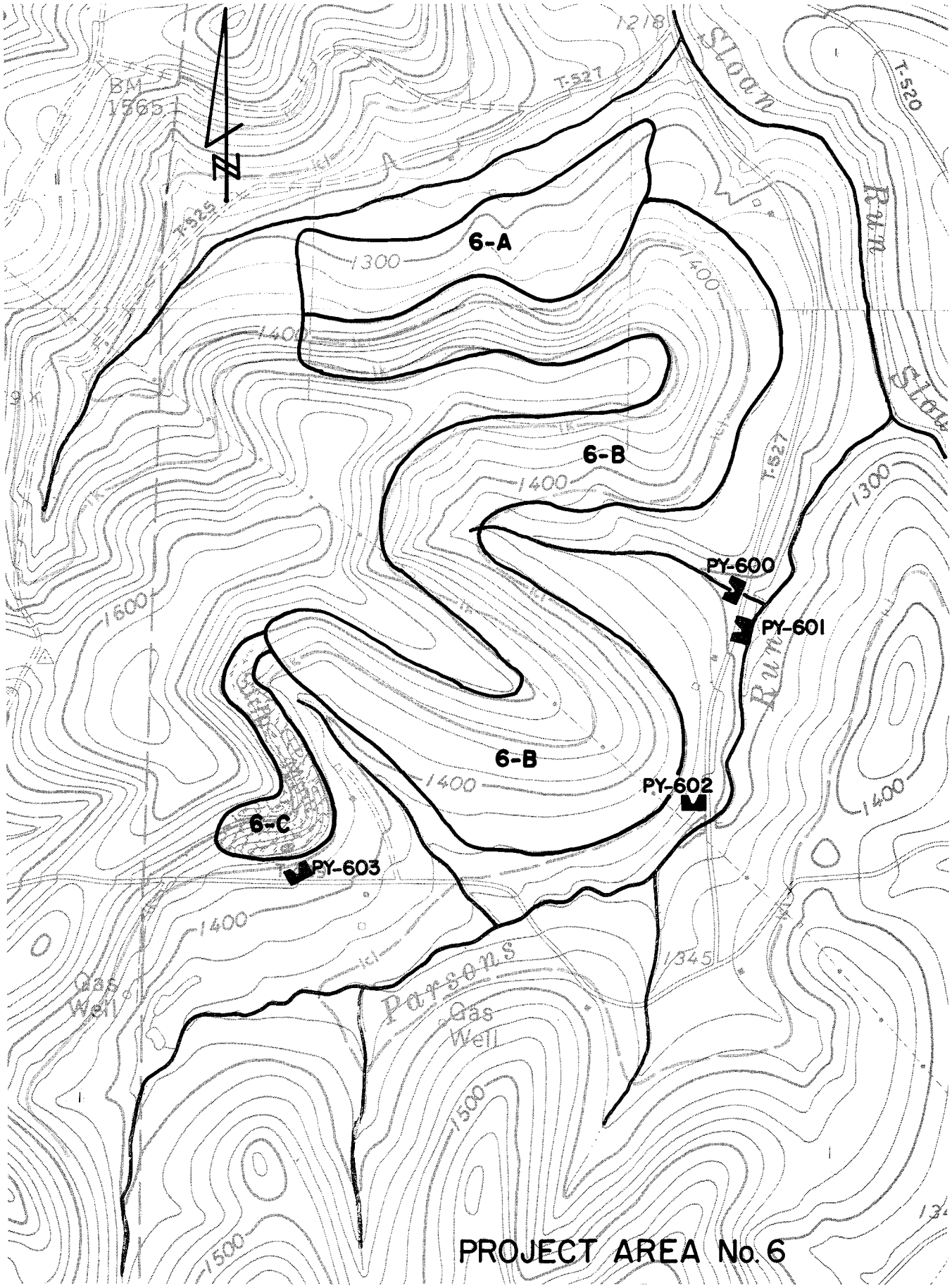
Weir Number	Avg. Flow(GPM)	Avg.Acd(ppd)	Max.Acd(ppd	Avg.Iron(ppd)	Max.Iron(ppd)
PY 354	40	101	595	19.5	95.0
PY 396	51	72	382	4.02	38.2
	91	173	977	23.52	133.2

Strip area 5-A, in the extreme northeastern portion of the area, is being re-stripped by the H. & G Coal Company, Inc., MDP #3675SM22. The Lower Kittanning crop coal is being mined from around the boundaries of the "Eureka Mine".

At weir number PY 354 we have found evidence of a stripped out deep mine opening. At this same point we have evidence of an abandoned well. The discharge has an artesian flow, therefore, we conclude that this discharge is from the abandoned well. It is our opinion that further subsurface exploration should be undertaken to determine the exact pollution source before any definite recommendations are made. However, we are withholding specific recommendations at this time since tree H. & G. Coal Company is still stripping in this area.

Strip area 5-B had been stripped previously by others on the Lower Kittanning coal. This ridge was also deep mined by the "Eureka Mine". The mining limits are now known, and from investigations the entry was from outside the watershed boundary west of Strattanville. In 1966 W.P. Stahlman Coal Company stripped the Middle Kittanning coal seam under MDP #2766BSM77 and Zacherl Coal Company, Inc. stripped the Lower Kittanning coal in the southwest area under MOP #2768BSM24. The drainage is monitored by weir number PY 396. The preact stripping should be backfilled and the area should be investigated more heavily if acid drainage persists.

	Estimated Construction Costs
Backfilling	$216,000
Soil Treatment and Planting	68,040
Subsurface Exploration	-
	$284,040+



PROJECT AREA No. 6

PROJECT AREA NUMBER 6

Location: 1.5 miles southwest of Limestone and directly northwest of the mouth of Parsons Run.

Township: Limestone

This project area consists of three (3) strip mines operated on the same hill. Drainage is monitored by weir numbers PY 600, 601, 602 and PY 603 and exhibits the following totals:

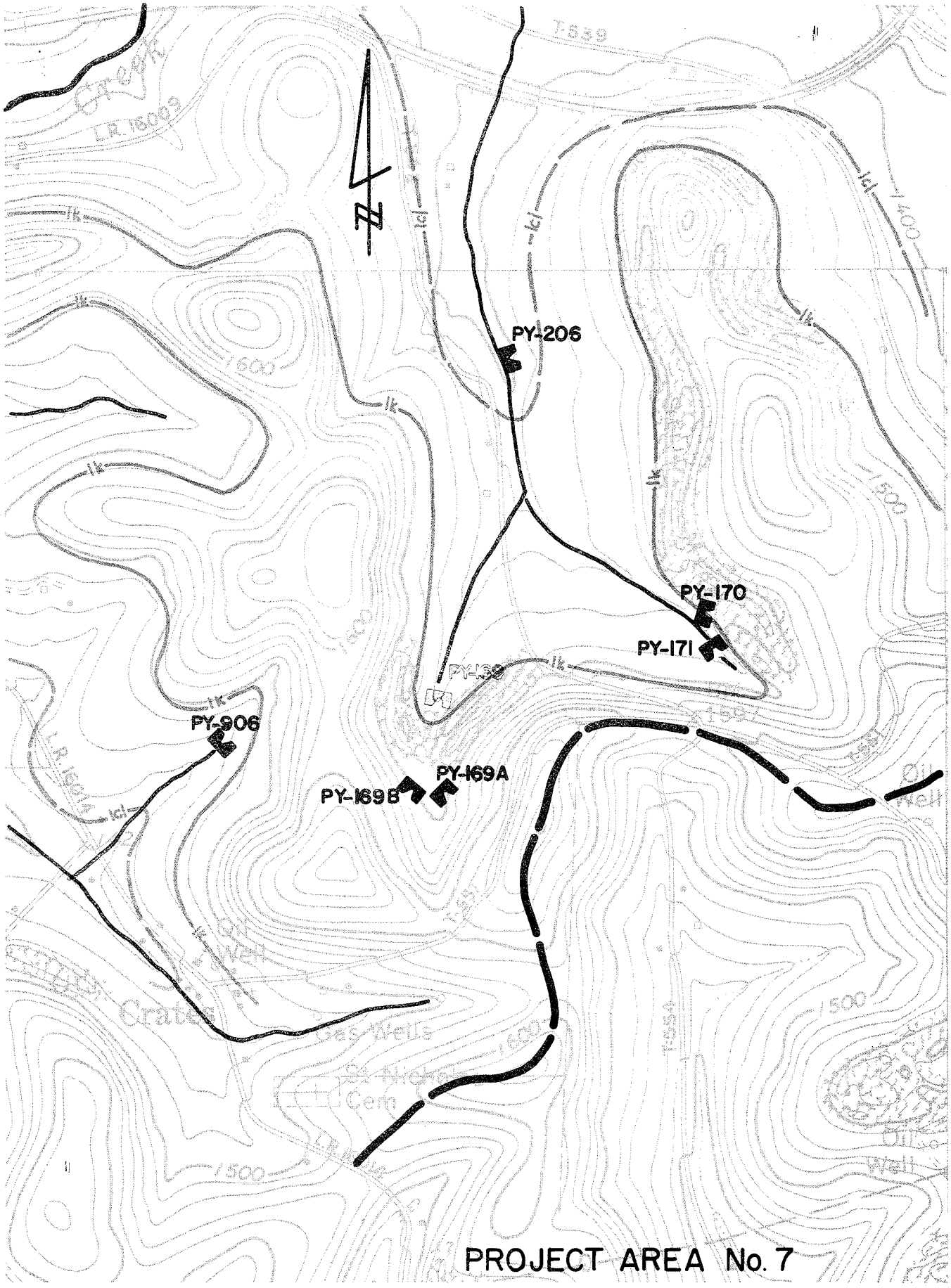
Weir Number	Avg.Flow(GPM)	Avg.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max. Iron (ppd)
PY 600	30	11.7	13.9	0.88	7.87
PY 601	2	0.16	0.58	0.02	0.19
PY 602	0	0	0	0	0
PY 603	3.8	9.00	35.4	0.02	0.08
	35.8	20.86	50	0.92	8.14

Strip mine 6-A is located in the northern portion of the project area and is the most recently completed. Operated by the Clyde Miles Coal Company, MDP #3671BSM7, it stripped the Upper Clarion and Lower Kittanning coal seams. The area was completely backfilled and contoured, but little or no planting was done. A large impound ment on the western side of the strip collects the strip runoff and feeds it into the un named tributary to Sloan Run, directly to the north. Recently a flow, originating near the base of the strip, has increased in acidity and iron content. The flow measu res approximately 34 gallons per minute and has until now been acceptable qual ity. No weir was installed here due to late development of the seep. Therefore, continued observation will be required before a ny recommendations can be made for abatement. A major concern at this time is this strip's vulnerability to massive erosion.

Strip mine 6-B covers 3/4 of the hill, running parallel to T -527 and T-489. It was stripped by the Terry Redinger Coal Company, MDP #2769BSMl2, from 1969 to 1975 and worked the Upper Clarion, Lower Kittanning, Middle Kittanning and Freeport seams. Backfilling, contouring and revegetation were completed, but seepage still emanates from several places along the base of the strip. Although not consistently of bad quality, these flows ha ve at times shown high acid levels. This is particularly true of the flow at weir number PY 600 which checks drainage from the base of the strip and seasonally flowing abandoned gas wells. Since high acid loads occur only during exceptionally wet months, n o recommendations will be offered at this time.

Strip mine 6-C is located in the south of the project area. It was operated by the Mauersburg Coal Company in the mid to late 1960's. No mine drainage permit in - formation is available. The coal seams mined we re the Middle and Lower Kittannings. Reclamation measures included backfilling, contouring and partial replanting. How - ever, a few seepages have been observed near the base of the strip and are monitored by weir number PY 603. Acid load for this weir is no t excessive, but shows an

increase during wet months. It is advised that this flow be monitored periodically to determine if the acid and iron loads have increased on a regular monthly basis.



PROJECT AREA No. 7

PROJECT AREA NUMBER 7

Location: 3/4 mile southwest of Kingsville.

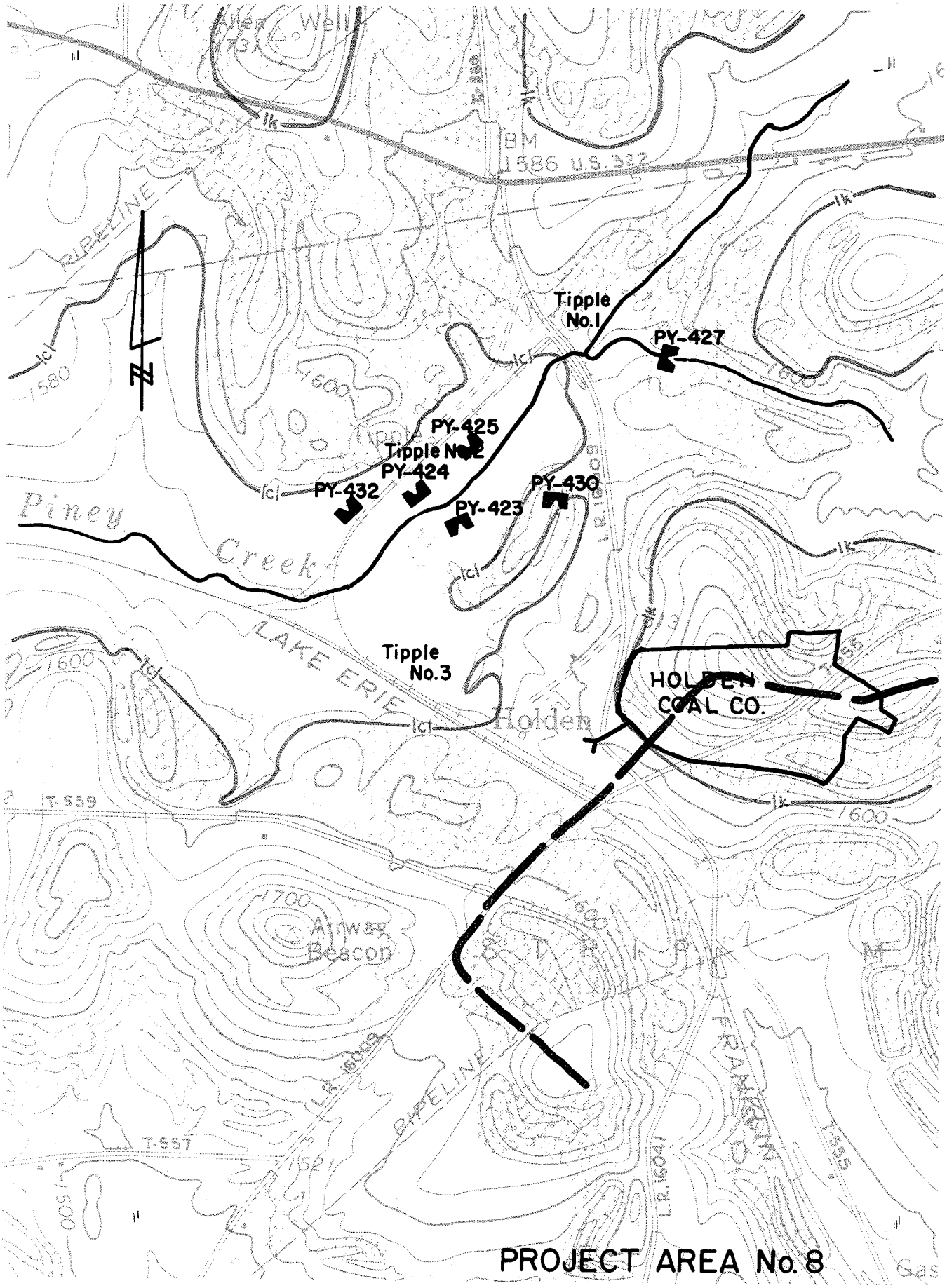
Township: Limestone

This project area consists of 2 (two) strip mines, portions of which have been completed. Weir numbers PY 169, 169A, 1693, 170, 171; 206 and 906 monitor the drainage and illustrate the following totals of average and maximum acid and iron loadings.

MaxIron(ppd)	Avg.Iron(ppd)	Max.Acd(ppd)	Avg.Acid(ppd)	Avg.Flow(gpm)	Weir Number	
1.09	0.41	175	21.6	31	169	PY
0.04	0.01	2.88	0.45	4.9	169A	PY
0.04	0.009	3.17	0.67	5.6	1693	PY
2.18	0.27	59.0	7.40	8.8	170	PY
0.4-8	0.06	19.2	2.40	6.3	171	PY
1.03	0.14	6.86	1.23	3.0	206	PY
19.40	6.28	384.0	81.0	18	906	PY
24.3	7.18	650	115	78		

The eastern portion of the area was stripped by Woodrow Yeaney Coal Co., MDP #3675SM45, in 1975. The eastern side of T-542 was completely stripped, but only partially backfilled. Weir numbers PY 170, 171 and 206 monitor drainage from the partially backfilled pit and the seepage along the base of the spoil piles in the south. Although this area is still under active permit, the completed portion is not sufficiently reclaimed to satisfy the law's requirements. The western side o T-542 is being stripped at present in the central and southern portions. Weir numbers 169, 169A and 1693 are monitoring drainage from an old strip in the south. This area is to be stripped again, therefore, no recommendations will be made at this time.

The western portion of the project area, east of L.R. 16014, is presently being stripped by the W.P. Stahlman Coal Company, MDP #3673SM1. Two (2) strip pits are being worked; one in the north, and one in the south. The central portion of the area is backfilled and contoured. Drainage from the southernmost pit is being monitored by weir number PY 906. Although acid load is high at this site, no reclamation measures will be recommended until stripping is completed.



PROJECT AREA No. 8

PROJECT AREA NUMBER 8

Location: At Holden, approximately 1 1/4 mile southwest of Corsica.

Township: Limestone.

This project area consists of two abandoned strip mines, two active tipples and one other coal loading facility. The drainage is monitored by weir numbers PY 423, 424, 425, 427, 430 and 432. Illustrated are the average acid maximum acid and iron loads along with the total acid and iron loads for the area.

Weir Number	Avg.Flow(GPM)	Avg.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PY 423	0.5	6.50	78.0	1.24	14.9
PY 424	5.3	54.0	204.0	11.4	54.0
PY 425	3.6	30.8	144.0	7.92	35.2
PY 427	30	180.0	705.0	25.9	103.0
PY 430	33.0	317.0	684.0	53.0	153.0
PY 432	2.1	24.1	66.0	3.12	9.6
	74.5	612.4	1,881	102.6	370

The first major strip mine is located southwest of Corsica and northeast of Holden. Discharge originates from two major sources. The first source is settling ponds accepting drainage pumped from tipple number 3 located in the northeastern portion of this area. This discharge is monitored by weir number PY 427.

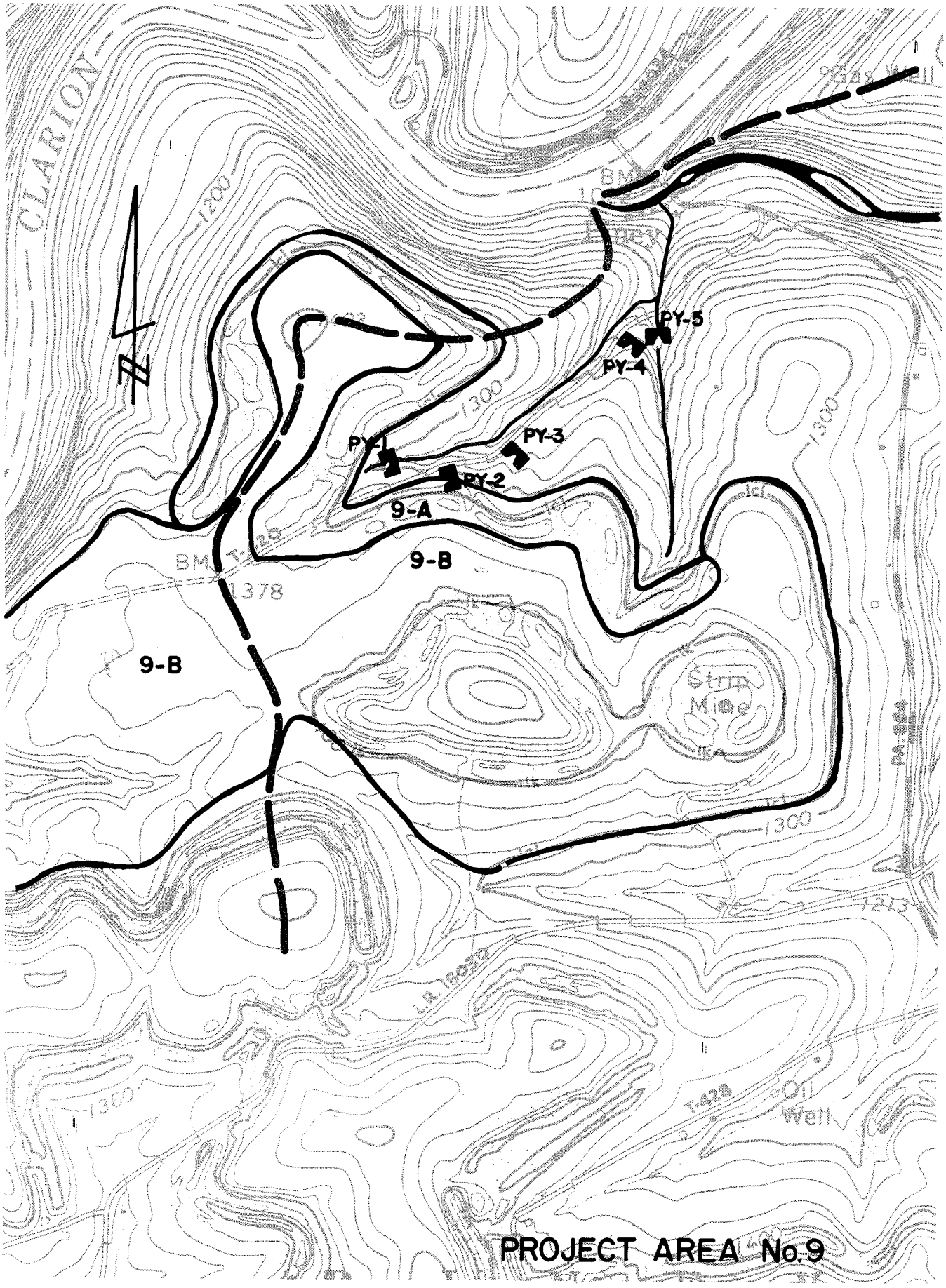
Another source of acid is an abandoned strip pit located in the southwestern portion of the strip mine. Weir numbers PV 423 and 430 monitor the drainage and show a total of 323 ppd of acid entering the watershed from this site. The strip mine has been backfilled and contoured and has a light growth of vegetation throughout its' length except for the abandoned pit which is serving as a holding basin for tipple discharge. Backfilling this strip pit would not abate much discharge for it is not the main source of pollution. However, correcting the pollution from tipple number 3 would eliminate most of the acid produced in this area.

A second strip mine is located west of Corsica and northwest of Holden. Discharge originates as seepage from the strip mine along with surface runoff passing through the stock piles of tipple number 2. Weir numbers PY 424, 425 and 432 monitor the discharge before merging with the head waters of Little Piney Creek. The directional flow of the discharge and tipple location are illustrated on the project area map. This strip mine has been backfilled and contoured and is covered by a heavy tree growth.

Recommendations for this area are mainly concerned with eliminating contact between ground water and runoff and the coal stock piles of tipple number 2. A flume directing the flow around or away from the tipple should suffice to eliminate the majority of the 110 ppd of acid supplied to the watershed by this site.

A third source of pollution is tipple number 1 which is located west of Corsica and north of Holden. It is operated on a part time basis and the source of pollution from the area is runoff through the stockpile area.

It is our notion that the responsibility to correct the runoff problems belong to the owners of the tipples. Therefore, we are not making any cost estimations to abate this form of pollution at this location.



PROJECT AREA No.9

PROJECT AREA NUMBER 9

Location: Approximately 1/2 mile south of Piney Creek mouth and 1/4 mile northwest of Shamburg.

Township: Piney

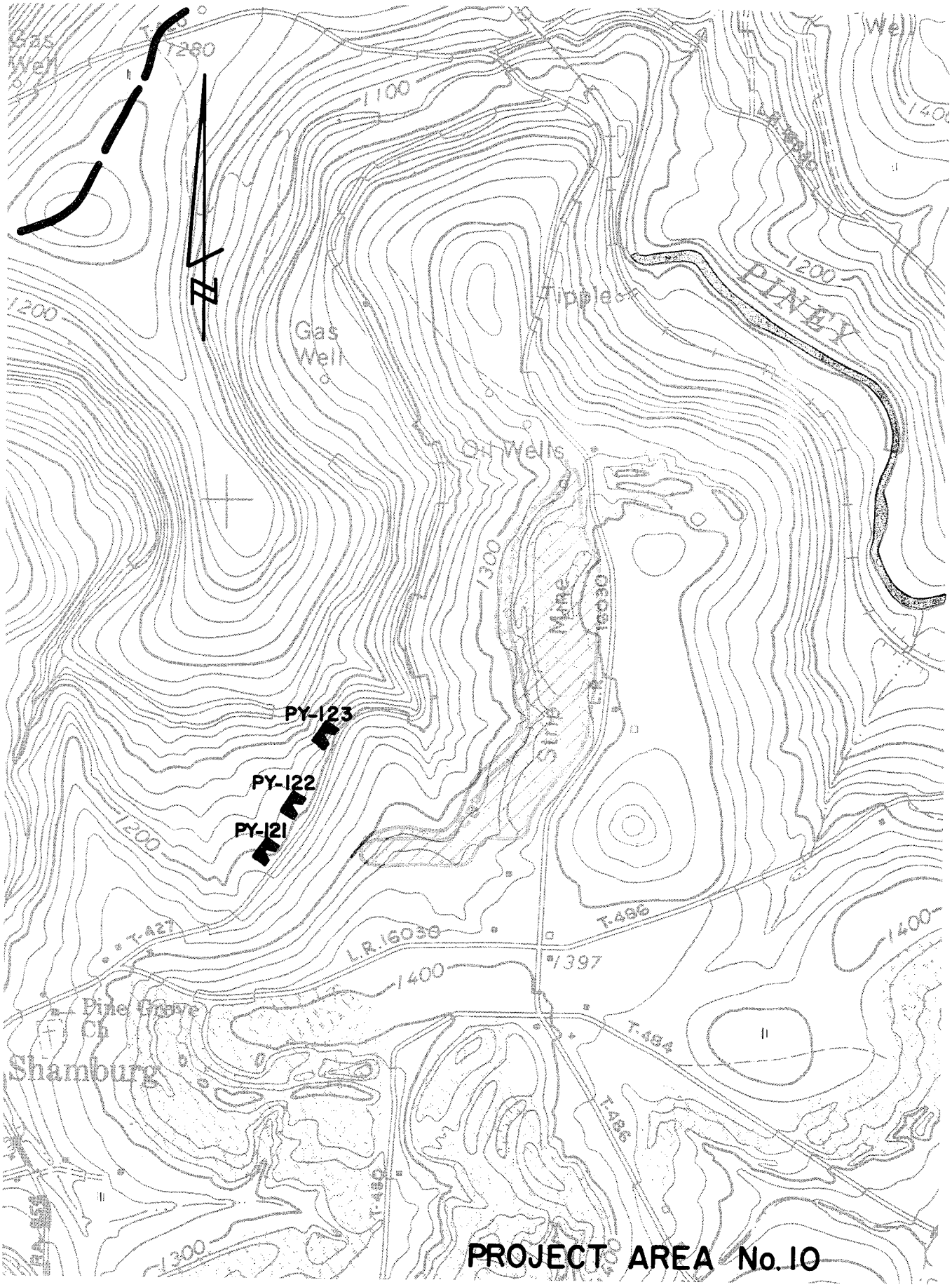
The project area consists of strip mines and is monitored by weir numbers PY 1, PY 2, PY 3, PY 4, and PY 5. Weir numbers PY 1, 2, 3, 4 and PY 5 monitor discharge from both strip mine 9-A and 9-B. Discharge through weir numbers PY 1 through PY 4 originates as seepage flowing out of the strip mine and into ditches along the road northwest of strip mines 9-A and 9-B. Runoff and seepage forms an unnamed tributary to Piney Creek from the northwest end of strip mine 9-B, through strip mine 9-A, which is then monitored by weir number PY 5. Illustrated are the average and maximum acid loads and iron loads for each weir along with the total acid and iron loads being discharged from the project area.

Weir Number	Avg.Flow(GPM)	Avg.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PY 1	9.3	27.1	47.2	0.92	2.28
PY 2	7.2	84	407	0.62	4.02
PY 3	22.0	207	1797	1.63	14.1
PY 4	4.2	13.4	30.7	0.03	0.26
PY 5	86.0	314	1077	3.0	9.50
	128.7	645.5	3358.9	6.20	30.16

Strip mine 9-A is located directly southwest of the mouth of Piney Creek and crosses T-420. It is an old abandoned Clarion coal strip mine Which was reworked and blended into strip mine 9-B.

Strip 9-B is a large area located adjacent to area 9-A. Work was begun in 1968 by the Allison Engineering Company, MDP #2768BSM12. It started at the limits of 9-A and worked southward, taking the Clarion and the Lower Kittanning coals from the W. Mauthe and K. Snyder properties. Backfilling has been completed, but the Clarion spoil, which was used to backfill most of the area, is composed mostly of a coarse sandstone with some carbonaceous streaks. This material has poor compactability and high permeability causing the pollution.

It is our recommendation that this area be handled in the same manner as State Game Lands No. 95 in SL 191-1-201.1, "Toby Creek Watershed". Here D.E.R. has an experimental testing program to determine the best of several methods to prevent infiltration of rainfall and runoff into acidic spoil. The results of this test will apply directly to the problem in this area.



PROJECT AREA No. 10

PROJECT AREA NUMBER 10

Location: Approximately 1 1/4 miles east of Piney Creek mouth and 1/2 mile south west of C & K tipple.

Township: Piney

This project area consists of a single strip mine and is located approximately the strip mine is monitored two miles east of the mouth of Piney Creek. Immediately northeast of is an active tipple operated by C & K Coal Company. The project area by weir numbers PY 121 through 127. Illustrated are the average and maximum acid loads and iron loads for each weir along with the total acid and iron loads being discharged from the project area.

Weir Number	Avg.Flow(GPM)	Avo.Acid(ppd)	Max.Acid(ppd)	Avg. Iron(ppd)	Max.Iron(pod)
PY121	1.8	0.35	1.06	0.02	0.10
PY122	4.7	0.83	6.53	0.01	0.07
PY123	10	1.61	13.4	0.26	2.27
PY124	66	328	785	44.2	241
PY125	37	454	2,353	8.34	34.7
PY126	15	180	1,446	3.72	29.5
PY127	37	121	403	1.35	4.40
	1/1.5	1085.79	5,008	58	312

Discharge into weir number PY 124 originates as strip runoff and strip seepage (which forms in the central part of the strip mine).

The other weirs monitor discharges which originate as seepage flowing from the hillside under the road west of the strip mine. The strip mine is relatively new and is partially backfilled, but lacks final contouring. The strip is also covered by sparse vegetation and small pines.

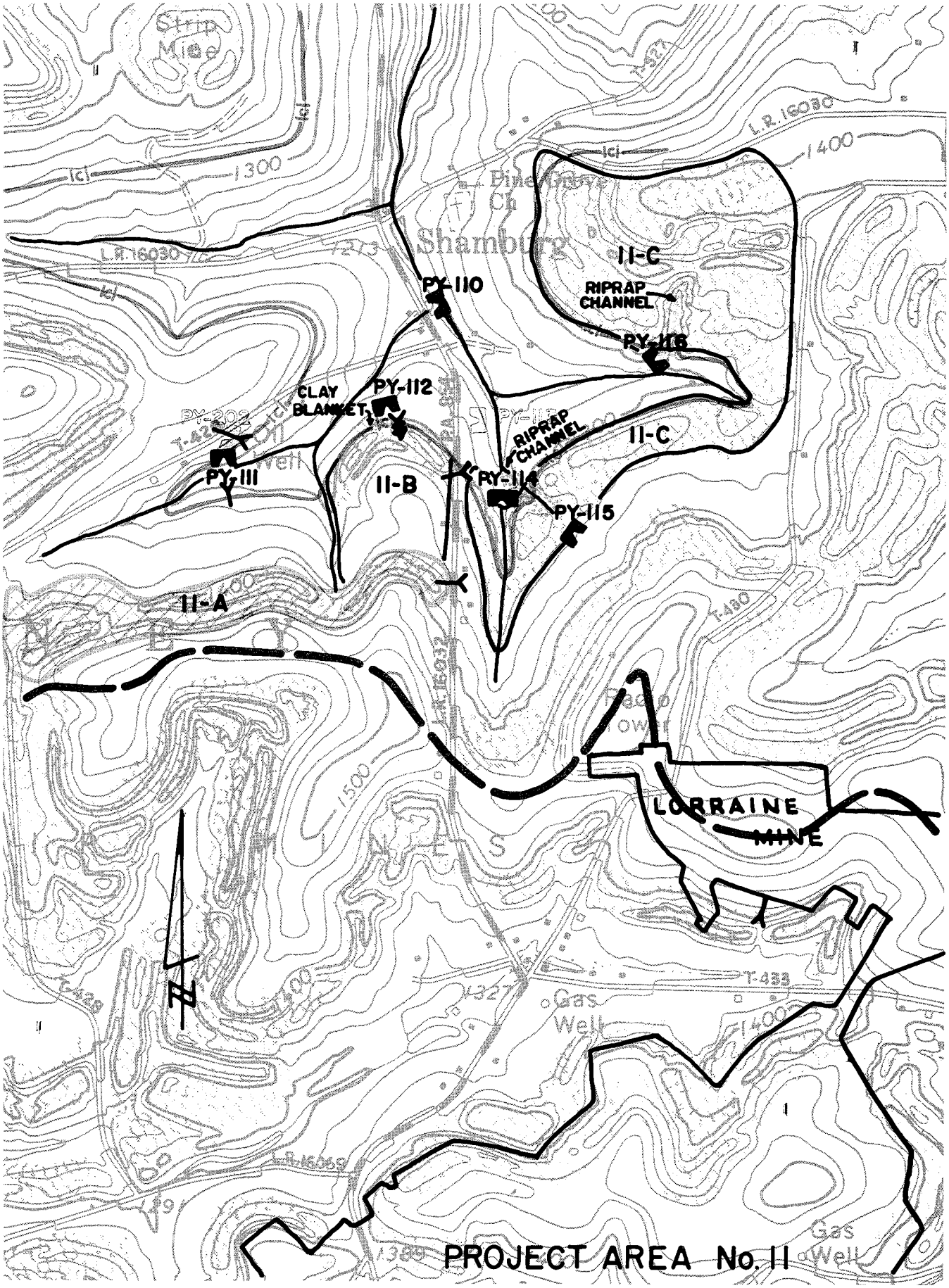
This area was originally stripped by the Mac Coal Company and the Western Allegheny Mining Company. The Lower Kittanning and Upper and Lower Clarion seams were stripped by both companies between L.R. 16030 and T-427. Auger mining was also done on the eastern side of L.R. 16030 in the Lower Clarion seam. It is understood that there was a default on the bonds and Resolute (the bonding agency) had to backfill the area. At present the southern portion of the area is also being investigated by the C & K Coal Company for stripping opportunities. Active stripping is estimated to begin in the spring of 1977.

Recommendations for the area include a clay blanket along the western edge of the strip mine from north of weir number PY 127 to south of weir number PY 124, and final contouring and planting of the entire strip mine. However, because of future plans of stripping near the strip, it is recommended that no abatement methods be undertaken until the activity surrounding the strip mine has ceased.

Estimated construction costs are as follows.

Estimated Construction Costs	
Clay Blanket	700,000
Contouring	20,000
Soil Treatment and Planting	25,200
Total	$745,200

cost/lb. ratio = $745,200.00/1085.78 ppd = $686.00/lb.



PROJECT AREA No. II

PROJECT AREA #11
Location: South of Shamburg
Township: Piney
This project area consists of five deep mines and three abandoned strip mines. The area is monitored by weir numbers PY 110 through PY 116 and PY 202. Illustrated are average and maximum acid loads for each weir along with the total acid loads being discharges from the project area.

Weir Number	Avg.Flow(GPM)	Avg.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PY 110	31	127.0	218	51.3	106
PY111	5,5	1.93	7.63	0.07	0.67
PY 112	9.9	154	571	17.5	42.1
PY113	0.3	0.15	1.49	0.003	0.02
PY114	20	43.4	144	0.71	3.36
PY115	10	71	326	1.14	3.88
PY 116	5.2	147	1,012	12.9	86
PY202	1.1	1.86	14.0	0.008	0.04
	83	546.34	2,294	83.63	242

Strip mine 11-A is located southwest of Shamburg and is monitored by weir PY 114 which also monitors the discharge from a deep mine located on the eastern portion of the strip. Mine drainage permits show that there were two companies that intended to perform a stripping operation on this area; C & K Coal Company MDP #2769SM15 and Vantage Coal Company MDP #3672BSM4, but tree growth indicates that the strip was not developed at that time. It is, therefore, concluded that this area is older than our (MDP) Mine Drainage Permits can identify. The strip has not been backfilled or contoured and contains a highwall along its' southern edge as illustrated on the project map. It is recommended that this strip be backfilled and contoured to eliminate ponding and then be planted in order to reclaim the land.

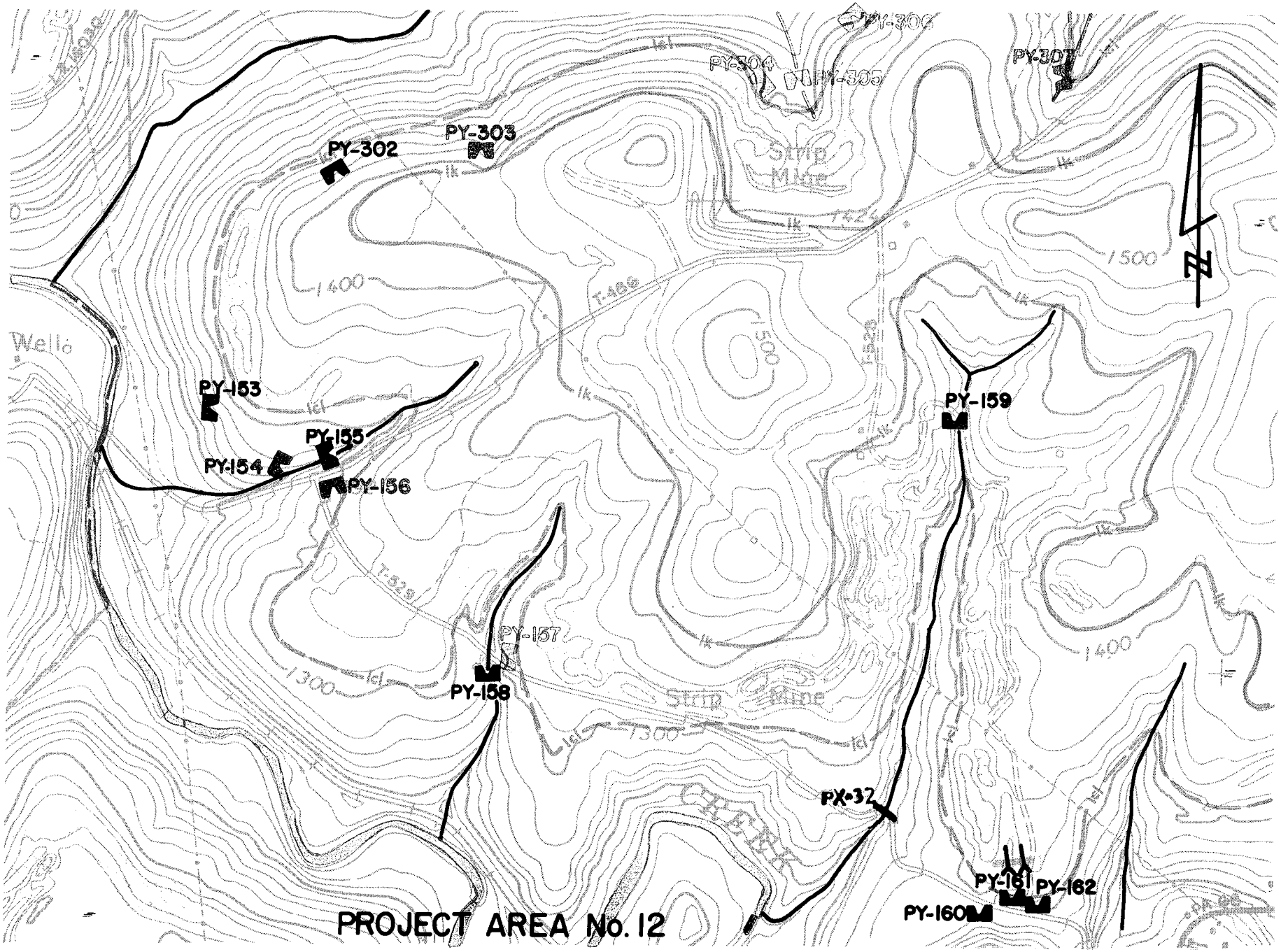
Strip mine 11-B located south of Shamburg contains a stripped out deep mine on its' northern border in the Lower Clarion coal seam. Weir number PY 112 monitors both strip runoff and abandoned deep mine discharge. Effective sealing of the mine opening and strip area with a clay blanket will eliminate the majority of the 154 ppd of acid added to the watershed at this site. Weir PY 113 monitors strip runoff and occasional discharge from a county bank mine along Route 854. No appreciable amounts of acid are coming from this portion of the strip, therefore, no abatement methods will be needed. The only reclamation needed in strip mine 11-B is the clay blanket in the area of the deep mine monitored by weir number PY 112.

Strip mine 11-C is located southeast of Shamburg and is operated by C & K Coal Company. The northern portion of the strip is to be expanded northeastward in the near future. A large natural drain runs through the center of the strip and is monitored by weir number PY 116. Recommendations for abatement include two (2) riprap channels which are to be installed in the drainage channel near weir number PY 114,

PY 115 and PY 116. (Weir PY 110 is positioned to accept the discharge from strips 11-A and 11-B.) If effective, a major part of the acid produced at this site will be eliminated.

	Estimated Construction Costs	
11-A	Backfilling	$62,000
	Soil Treatment and Planting	19,530
11-B	Clay Blanket	183,750
	Soil Treatment and Planting	3,150
11-C	Riprap Channel	27,000
	Total	$295,430

cost/lb. ratio = 295,430.00/541 lbs. = $546.00/lb. acid



PROJECT AREA No. 12

PROJECT AREA NUMBER 12

Location: Approximately 1 1/2 mile northwest of Reidsburg.

Township: Monroe

This project area consists of a stripped hillside, part of which is active. Drainage is monitored by weir number PY 153-162 and PY 302-307, which are located around the hillside. Illustrated below are the average and maximum acid and iron loads as well as the average flow discharged from the area.

Weir Number	Avg.Flow(GPM)	Avg.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PY 153	12.0	20.6	49.2	0.63	2.16
PY 154	1.1	0.12	0.58	0.03	0.17
PY 155	19.0	22.6	133	4.01	25.9
PY 156	0.27	0.06	0.53	0.002	0.02
PY 157	0.36	0.22	2.30	0.004	0.04
PY 158	140.0	479.0	3781	81	591
PY 159	144.0	398.0	3151	55	486
PY 160	0.6	0.36	1.34	0.01	0.04
PY 161	3.6	33.0	71	2.49	5.38
PY 162	33.0	78.0	641	5.53	51
PY 302	1.2	0.09	0.58	0.02	0.19
PY 303	1.9	0.16	0.67	0.04	0.42
PY 304	3.5	1.91	15.8	0.12	0.99
PY 305	20.0	24.0	137	1.99	15.3
PY 306	10.0	26.3	237	1.53	14.3
PY 307	17.0	10.9	118	0.10	0.34
	407.53	1,095.32	8340.0	152.51	1,193.25

Also monitoring acid and iron loadings in this area is PX 32, a cross section station located on an unnamed tributary to Piney Creek south of T -529. The totals for this monitoring station follow.

Cross Section	Avg.Flow(GPM)	Avq.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PX 32	320	637	1,279	28	71

The area is under permit to the C. & K. Coal Company, MDP #3671SM19, and is presently in the final stages of completion. Stripping of the Lower Kittanning and Upper and Lower Clarion coals was done on the hillside bounded by the merging of Piney Creek and Brush Run. Drainage in the northern section, north of T-486, is checked at weir numbers PY 153, 154, 155, 302, 303, 304, 305., 306 and 307 and con sists solely of strip runoff.

To the south of T-486 much of the runoff has been channeled off into natural tributaries to Piney Creek by north-south cut trenches. This is especially true in the tributaries monitored by weir numbers PY 158 and PY 159. Normal strip runoff is checked in the south by weir numbers PY 157 and PY 160. Since these areas are still active, we will withhold our recommendations at this time.

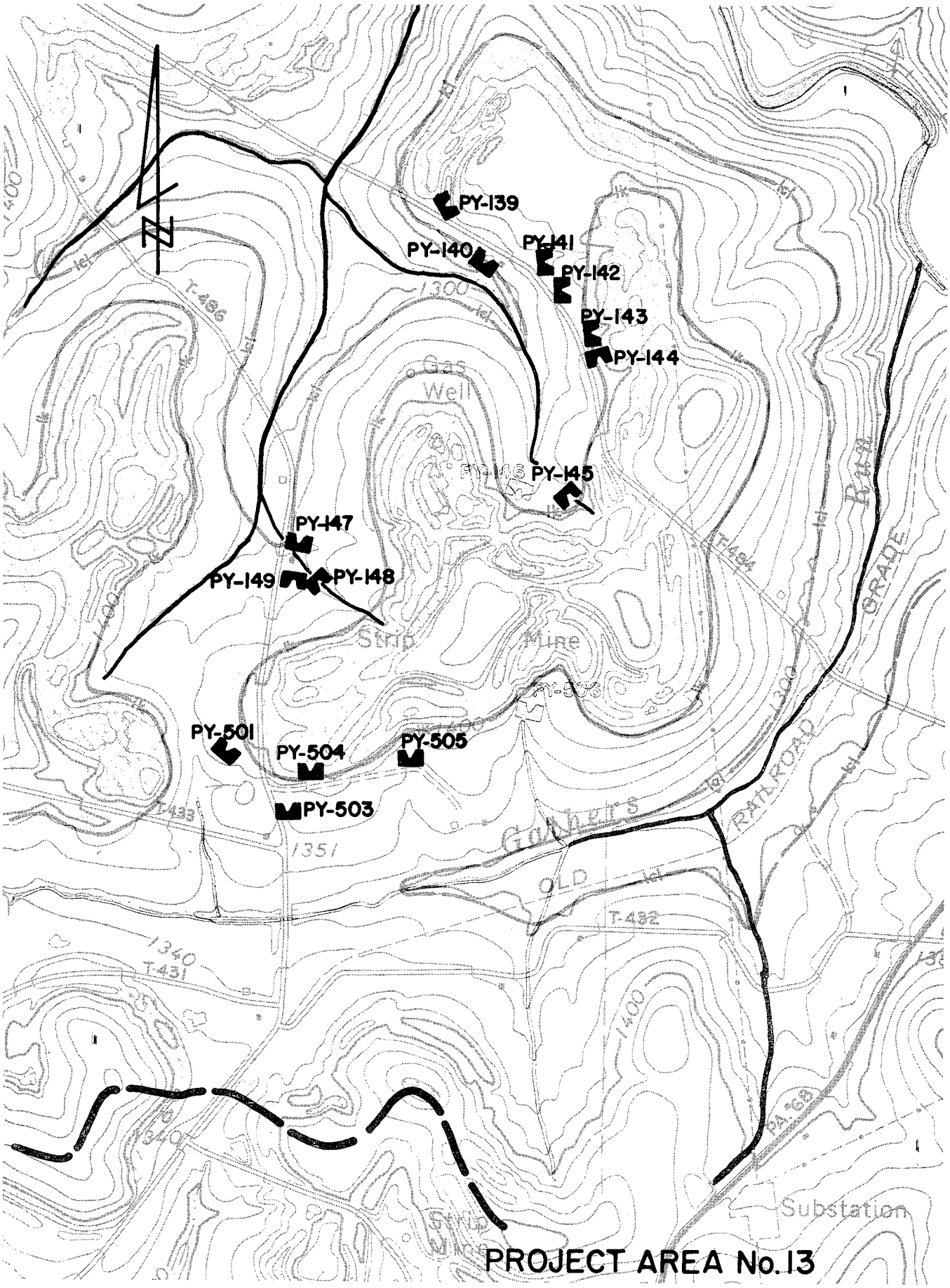
One spot in the extreme southeastern portion of the project area has two (2) deep mine air seals which are discha rging, but not stripped out. Drainage here is

checked by weir numbers PY 161 and PY 162. A plug or seal is needed in each air seal to eliminate the majority of the 111 ppd of acid added to the watershed at this site.

Estimated Construction Costs

Southeastern Portion	Mine Seals		20,000
		Total	20,000

cost/lb. ratio = $20,000.00/111 lb. = $180.00/lb. acid



PROJECT AREA No. 13

PROJECT AREA NUMBER 13

Location: Approximately 2 1/2 miles southeast of Shamburg and north of the head - waters of Gathers Run.

Township: Monroe

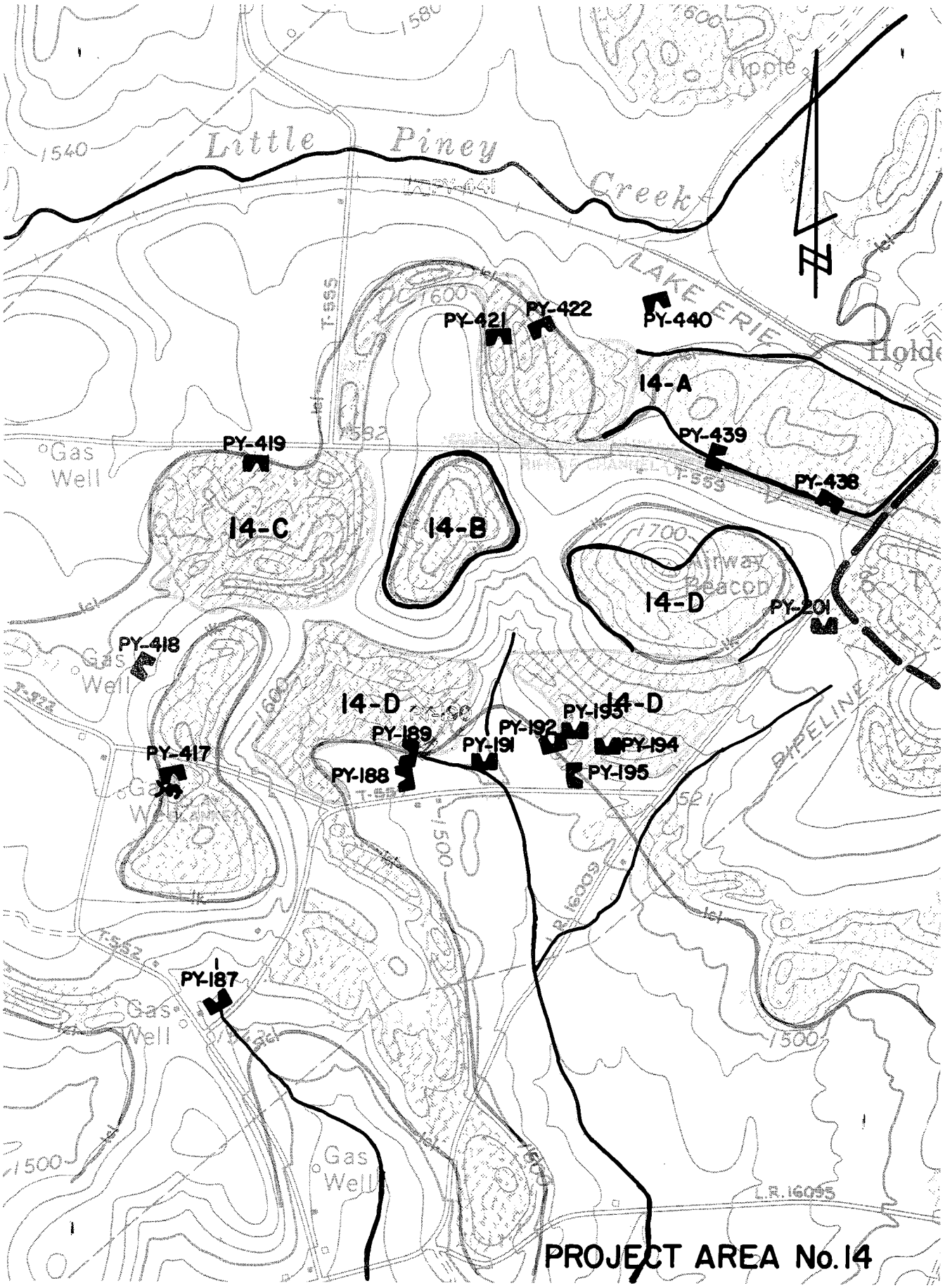
The project area consists of an abandoned strip mine which is monitored by weir numbers PY 139-149, PY 501, 503, 504, 505 and 506. Illustrated are the average and maximum acid and iron loads as well as average flows for each weir along with the total acid and iron loads being discharged from the project area.

Weir Number	Avg.Flow(GPM)	Avg.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PY139	7.17	28.3	133.0	1.61	8.16
PY140	15.2	16.7	64.0	0.23	1.39
PY141	0.8	3.2	18.2	0.19	1.80
PY 142	1.7	15.4	108.0	1.71	12.0
PY 143	0.29	0.98	6.86	.0003	0.002
PY 144	0.7	0.71	5.47	0.003	0.02
PY 145	1.5	1.42	7.20	0.16	0.86
PY 146	1.6	0.76	2.45	0.08	0.74
PY 147	2.1	2.78	10.5	0.08	0.60
PY 148	36.0	68.5	180.0	0.92	2.07
PY 149	2.7	8.9	23.0	0.09	0.42
PY 501	0.64	0.86	9.22	0.003	0.02
PY 503	11.2	25.6	53	0.64	1.34
PY 504	13.0	28.2	86	0.86	2.72
PY 505	1.6	4.64	27.6	0.01	0.06
PY 506	0.73	0.35	3.17	0.02	0.16
	96.93	207.3	738	6.61	32

The abandoned strip mine has not been backfilled, contoured or planted and con - tains many impoundments trapped between the mounds of spoil and in open pits. Information concerning the original stripping limits is not available, but the Donald W. Dietz Coal Company has been granted a permit to restrip the southwest portion of the area, MDP #3675SM6, near weir numbers PY 503, PY 504 and PY 505. Plans are developing to remove the Middle and Lower Kittanning and Upper and Lower Clarion coal seams at this site.

C. & K. Coal Company has also expressed interest in restripping this area. Plans to remove the Upper and Lower Clarion as well as the Middle and Lower Kittan - ning coals in the eastern portion, near weir numbers PY 141 -144, are included on updated permit, according to C. & K. representatives.

Because of the probability that stripping operations will begin here in the near future, we consider this an active site and will withhold all recommendations until such time as work is permanently completed.


Little Piney Creek
LAKE ERIE
PIPELINE
PY-421
PY-422
PY-440
PY-439
PY-438
PY-419
PY-418
PY-417
PY-187
PY-188
PY-189
PY-191
PY-192
PY-193
PY-194
PY-195
PY-201
14-A
14-B
14-C
14-D
14-D
Gas Well
Gas Well
Gas Well
Gas Well
Airway Beacon
T-555
T-552
T-553
T-552
T-552
L.R. 16095
1500
1600
1700
1540
1580
PROJECT AREA No. 14

PROJECT AREA NUMBER 14

Location: Due west of Holden and approximately 2 miles southwest of Corsica.

Township: Limestone

This project area consists of four (4) abandoned strip mines and is monitored by a system of weirs; PY 187-195, PY 201, PY 417-419, 421, 422 and PY 438-441. Illustrated below are the average and maximum acid and iron loads for each weir, along with the totals of the acid and iron loads being discharged from the area.

Weir Number	Avg.Flow(GPM)	Avg.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PY 187	40	58.0	195.0	0.20	0.77
PY 188	2.8	2.82	5.09	0.08	0.13
PY 189	9.8	16.0	70.0	0.18	0.60
PY 190	18	13.8	73.0	0.84	1.51
PY 191	70	85.0	217.0	1.78	3.84
PY 192	5.5	14.6	55.0	0.08	0.16
PY 193	2.3	6.94	12.4	0.05	0.12
PY 194	4.9	16.4	37.2	0.10	0.25
PY 195	3.1	7.84	46.1	0.04	0.17
PY 201	1.4	0.74	4.66	0.005	0.02
PY 417	1.0	3.43	7.54	0.09	0.26
PY 418	2.2	1.93	23.2	0.04	0.40
PY 419	18	36.7	148.0	0.47	1.68
PY 421	1.7	1.88	5.28	0.12	0.34
PY 422	5.2	139.0	368.0	39.8	140.0
PY 438	1.2	2.05	4.70	0.03	0.06
PY 439	1.0	2.52	5.38	0.05	0.07
PY 440	0.5	1.97	7.25	0.10	0.37
PY 441	1.5	0.73	1.68	0.07	0.28
	190.1	412.35	1286.48	44.13	151.03

The western portion of strip mine 14-A, older than the eastern half, is monitored by weir numbers PY 421 and PY 441. Discharge from PY 421 consists of both strip seepage and discharge from an impoundment located south of the weir. Weir number PY 441 monitors discharge from a swamp located between the strip mine and the Lake Erie, Franklin and Clarion railroad tracks. This mine has not been backfilled or contoured and shows a sparse tree growth throughout its' length. A highwall dividing the east and west portions remains from the stripping. The eastern portion of strip mine 14-A is monitored by weir number PY 422 and PY 440. Discharge through PY 422 originates from an impoundment located on the northern end of the mine, and PY 440. This portion has been partially backfilled and is covered with a light tree growth.

Both sites were previously used as a dumping area for tipple refuse which accounts for the 144 ppd of acid discharge from the area.. Recommended reclamation measures consist of diverting surface water away from the buried tipple refuse and acid spoil by some form of lined channel. Complete backfilling and contouring is needed to renovate this area.

There is no drainage from strip mine 14-B, therefore weir number PY 420 has been

eliminated. No reclamation is needed in this area.

Strip mine 14-C is monitored by four weirs; PY 417-419 and PY 187, for a total of 100 ppd of acid. Weir numbers PY 418 and PY 419 collect strip mine runoff; PY 417 monitors a stripped out deep mine opening, and PY 187 c ollects runoff from the entire southern portion of this area. Recommendations are backfilling and contouring in the northern part and a clay blanket sealing off the exposed deep mine workings.

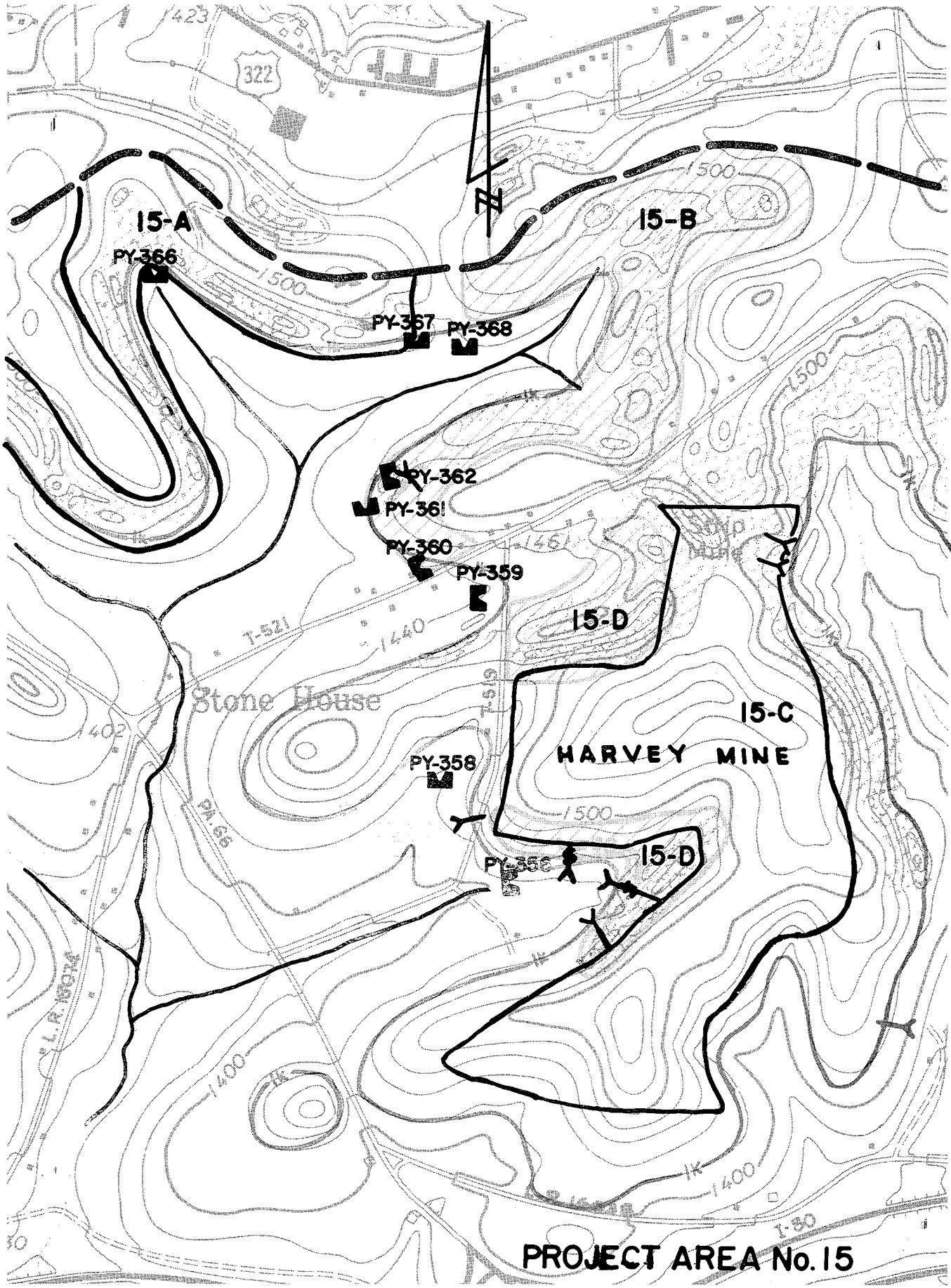
A series- of 11 weirs monitor acid drainage -from strip mine 14-D. Weir numbers PY 188-195 catch runoff and seepage along the southern side of the strip, a swampy area that has not been reclaimed. Approximately 163 ppd of acid is discharged from this area. Weir numbers PY 201, PY 438 and PY 439 collect runoff from the hill in the northern part of 14-D with an accumulation of 5.31 ppd of acid. The entire area is covered by a sparse tree growth. Recommended reclamation procedures are back-filling and contouring along the southern edge of 14-D.

However, C. & K. Coal Company has recently expressed an interest in stripping the area between the east and west portions of 14-A, possibly extending further south. Because of this, it is further recommended that any reclamation or acid abatement work be postponed until stripping has been completed or the intention of future stripping has. been rejected.

Estimated Construction Costs

Area		
14-A	Backfilling	$76,000
	Riprap Channel	80,000
	Soil Treatment and Planting	23,940
14-C	Backfilling	82,000
	Clay Blanket	61,250
	Soil Treatment and Planting	26,460
14-D	Backfilling	116,000
	Soil Treatment and Planting	36,540
	Total	$490,190

cost/lb. ratio = $490,190.00/412.35 lbs. = $1,188.00/lb. acid



PROJECT AREA No. 15

PROJECT AREA NUMBER 15

Location: Approximately 1/2 mile northeast of Stone House along T-521.

Township: Clarion

This project area consists of four (4) strip areas and at least six (6) deep mine openings. The major deep mine here is the "Al Harvey" mine, but a few country bank mines exist throughout the area. Drainage is checked by weir numbers PY 356 through 362, 366, 367-and 368. Results of average flow as well as average and maximum acid and iron loads are listed below.

Weir Number	Avg.Flow(GPM)	Avg.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PY 356	76.0	223.0	672.0	8.85	20.0
PY 357	7.5	3.93	31.0	0.55	2.63
PY 358	5.0	0.35	0.62	0.24	0.82
PY 359	2.3	3.83	8.64	0.17	0.54
PY 360	5.9	11.6	22.5	3.1	6.1
PY 361	16.0	21.2	40.8	3.0	6.3
PY 362	23.0	66.0	250.0	1.4	4.6
PY 366	0.91	2.55	21.3	0.33	3.6
PY 367	14.0	28.9	126.0	3.0	16.2
PY 368	7.4	9.0	19.2	1.6	3.4
	158.01	370.36	1192.06	22.14	64.19

Strip area 15-A is located in the extreme western end of the project area and was restripped by the Chernicky Coal Company, Inc., MDP #3674SM19. The Lower Kittanning coal was stripped here and a tipple is now being constructed on this site. Backfilling has been completed under this permit, but the area still lacks any vegetation. Drainage from the area is being checked at weir number PY 366. Since an active tipple is under construction and the strip has just been backfilled, no recommendations for mine drainage abatement can be made at this time.

Strip area 15-B was also restripped in 1971 by the H. and G. Coal Company, Inc., MDP #3671BSM13. The Lower Kittanning coal seam had been deep mined and strip mined previously at this site. Backfilling was not completed and many small runoff impoundments exist between the high spoil piles and in abandoned pits. The spoil piles are covered with a heavy growth of trees, but no secondary vegetation is evident. Stripping has intersected mine workings in the central portion of the project area, and the area is adding 70.0 ppd of acid to the watershed. Drainage from this mine opening along with strip runoff in the southern area is monitored by weir numbers PY 360, PY 361 and PY 362. The northern portion of strip 15-B is monitored by weir numbers PY 367 and PY 368. Drainage here consists solely of strip runoff from the north and east.

Suggested abatement procedures include plugging the mine opening at weir number PY 362 and subsequent backfilling of the entire strip area with the addition of water management controls. Successful execution of these measures will eliminate the majority of the recorded 137 ppd of acid at this site.

Strip area 15-C is presently operated by the Beveridge Coal Company, Inc., MDP #3676SM27, on the area overlying the limits of the "Al Harvey" mine workings. Only the Middle Kittanning coal is being stripped at this time and drainage is being monitored by weir numbers PY 357 and PY 358. Two (2) mine openings exist near T-519; one from the "Al Harvey" mine, and the other a small country bank. No appreciable drainage is coming from these mine openings at this time.

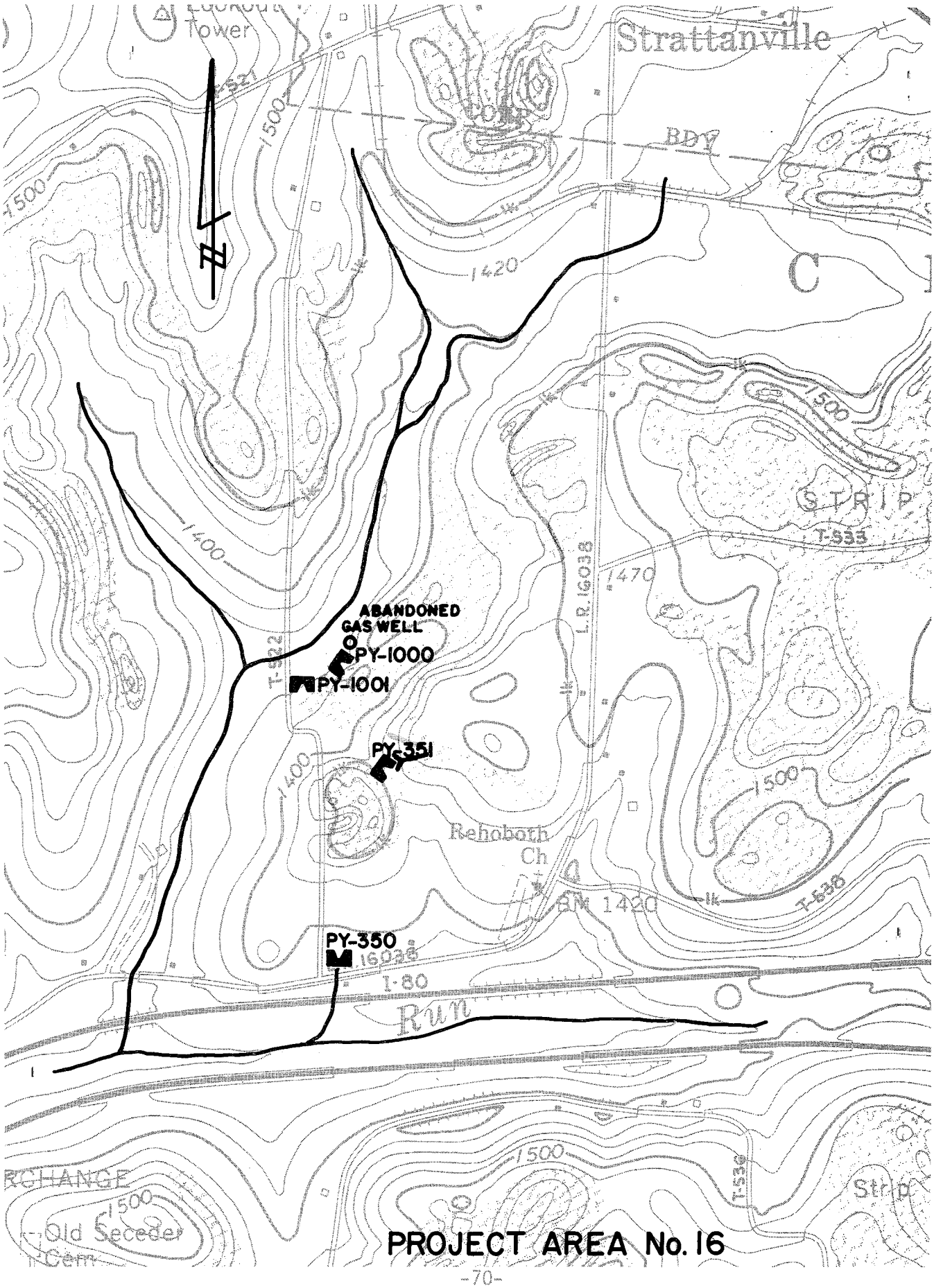
Since this area is an active strip, no recommendations for reclamation will be made at this time.

Strip area 15-D is an old strip on the crop coal of the "Al Harvey" mine. No information is available on the original stripper. The northern portion is not back-filled and drainage consists of strip runoff. Many impoundments exist between the spoil piles and in abandoned pits. Drainage is monitored here by weir number PY 359. The southern portion is only partially backfilled and two (2) mine openings and an area of mine workings have been intersected. These three areas are discharging and are monitored by weir number PY 356.

Reclamation measures include complete backfilling in the north, and a clay blanket with subsequent backfilling to be applied to the area near weir number PY 356 in the south. Effective installation of these measures will eliminate the majority of the 227 ppd of acid at this site.

Area	Estimated Construction Costs	
15-B	Mine Seal	$10,000
	Backfilling	142,000
	Soil Treatment and Planting	44,730
15-D	Backfilling	90,000
	Clay Blanket	262,500
	Soil Treatment and Planting	28,350
	Total	$577,717

cost/lb. ratio = $577,717.00/364 lbs. = $1,587.00/lb. acid



PROJECT AREA No. 16

PROJECT AREA NUMBER 16

Location: Approximately 1.5 miles south of Strattanville between L.R. 16038 and T - 522. Township: Clarion

This project area consists of an old strip mine with additional acid coming from an artesian flow in an abandoned gas well. The drainage is monitored by weir numbers PY 350, 351, 1000 and 1001. Illustrated below are the average and maximum acid and iron loads for each weir.

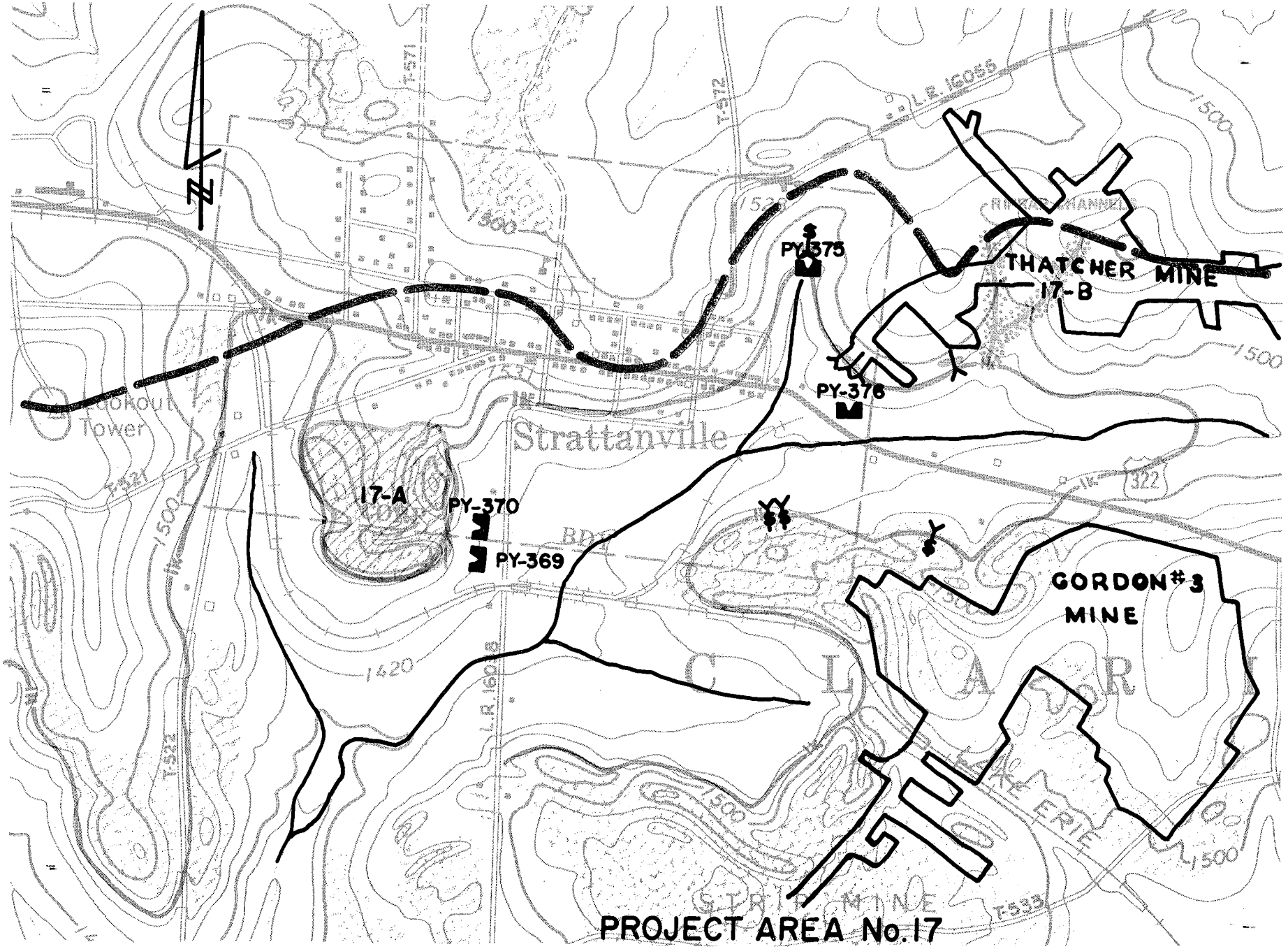
Weir Number	Avg.Flow(GPM)	Avq.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PY 350	0.57	0.53	2.26	0.002	0.01
PY 351	6.7	52	117	1.55	5.60
PY 1000	97	271	445	63	92
PY 1001	5.5	20.5	164	1.49	11.9
	110	344.03	728.26	66.042	109.51

The project area was stripped by several companies, among them Beveridge and W.P. Stahlman in the late 1960's, with limited renovatio n of the strip areas. Weir numbers 350 and 1001 monitor the drainage from the strip. Backfilling and contouring were completed and no appreciable acid was added by strip runoff. Therefore, no re - clamation is necessary for this area. Weir number PY 351 moni tors the drainage from a deep mine opening on the southern extent of the strip. Abatement procedure includes a deep mine seal installed at the opening. If effective, the seal will eliminate almost 50 ppd of acid from the project area.

Weir number PY 1000 monitors an artesian flow in an abandoned gas well. It is a rapidly flowing seep that adds 271 ppd of acid to the watershed. Abatement. pro - cedure includes a possible hydrological study to determine the source of the acid water and possible testing to deter mine the type of method needed to stop the flow. Correctly installed, the abatement method will eliminate nearly 78% of the acid load added at this site.

Estimated Construction Costs

Deep Mine Seals	$10,000
Hydrological Study	$10,000
Total	$20,000


PY-375
THATCHER MINE
17-B
PY-376
Strattanville
Lookout Tower
17-A
PY-370
PY-369
GORDON #3
MINE
PROJECT AREA No. 17

PROJECT AREA NUMBER 17

Location: East and southeast of Strattanville.

Township: Clarion

This project area consists of two strip mines and a deep mine complex with as many as five openings. Drainage in this area is monitored by weir numbers PY 369, PY 370, PY 375 and PY 376. The totals for average acid and iron loadings and average flow are listed below.

Weir Number	Avg.Flow(GPM)	Avg.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PY 369	9.5	26.4	316	0.06	0.77
PY 370	0.6	6.40	14.2	0.02	0.06
PY 375	20	42	82	1.42	2.09
PY 376	8.5	19.2	33.5	0.54	0.84
	38.6	94	445.7	2.04	3.76

Strip mine 17-A is located in the western portion of the project area and was stripped by the H. & G. Coal and Clay Company, Inc., MDP #3673SM14. Weir numbers PY 369 and PY 370 monitor strip seepage from this strip mine. Abatement methods recommended would include complete backfilling and planting of the area to reduce in-filtration into the spoil material.

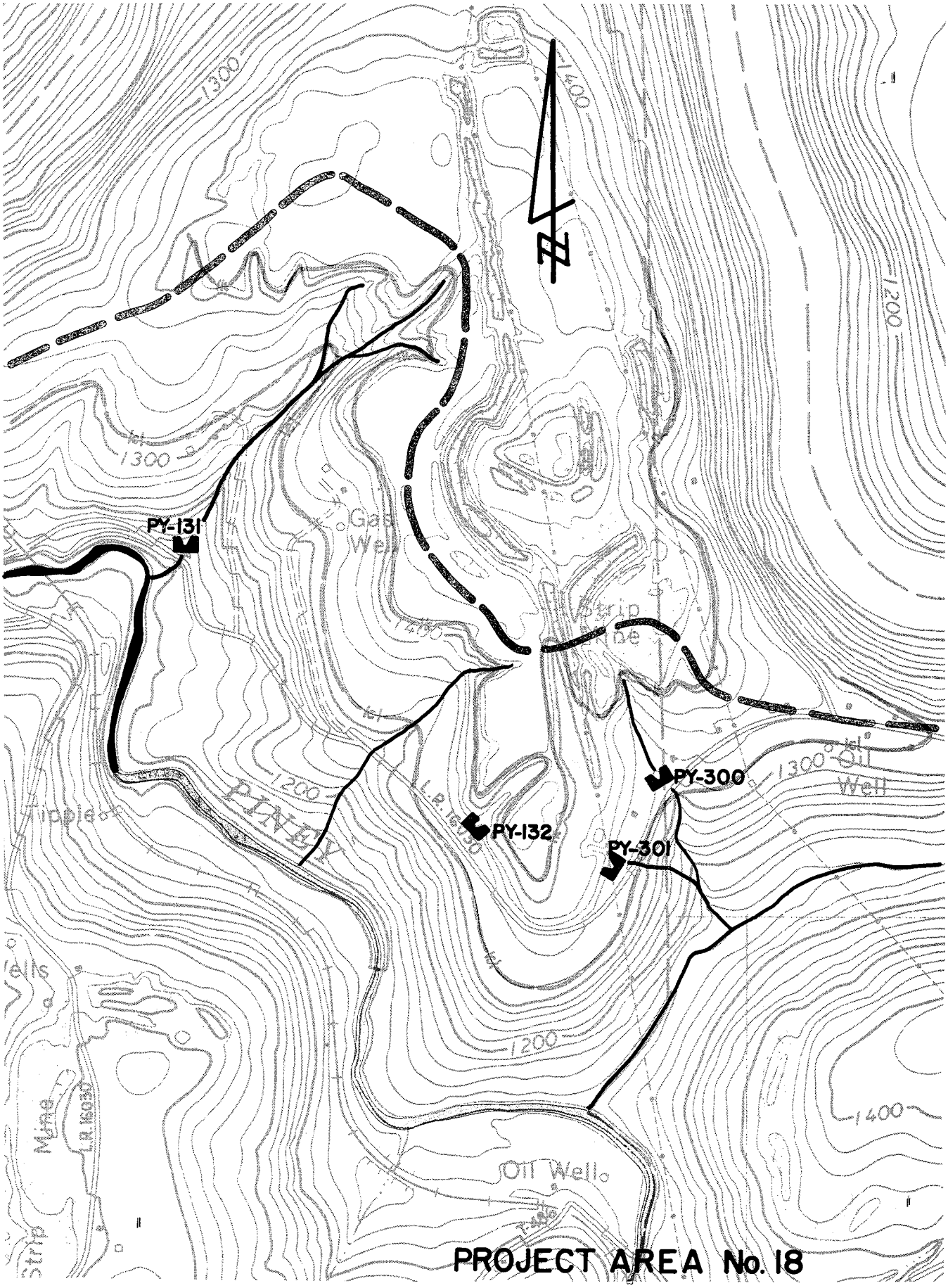
Strip mine 17-B is located in the northeastern portion of the project area. Drainage from the strip mine is monitored by weir number PY 376 and the cause of the pollution is runoff flowing over the strip mine area. Our abatement recommendations include a system of channels to prohibit water contact with the strip mine spoil material.

The deep mine complex located in the northern portion of the project area is what remains of the old Thatcher mine. Shown are five known mine openings, one of which is leaking and monitored by weir number PY 375. Abatement methods would include the sealing of the mine openings to restrain present and future leakage from the mine complex.

Estimated Abatement Costs

Area A	Backfilling	$48,000
	Soil Treatment and Planting	15,120
Area B	Riprap Channels	40,000
	Deep Mine Seals	50,000
	Total	153,120

cost/lb. ratio = $153,120.00/94 lbs. = $1,629.00/lb. acid



PROJECT AREA No. 18

PROJECT AREA NUMBER 18

Location: Approximately 1 1/2 miles west of Williamsburg and south of Piney Dam.

Township: Monroe and Piney

This project area consists of a large multi seam strip mine . It is monitored by weir numbers PY 131, 132, 300 and 301. Illustrated are the average and maximum acid loads and iron loads for each weir along with the total of the average acid and iron loads being discharged from the project area.

Weir Number	Avg.Flow(GPM)	Avg.Acd(ppd)	Max.Acd(ppd)	Avg.Iron(ppd)	Max.Iron(ppd)
PY 131	55	490	1,575	8.07	21.8
PY 132	9	152	734	137	85
PY 300	14	334	851	19.5	80
PY 301	1.5	17.5	64	1.37	9.90
	79.5	993.5	3,224	165.94	196.7

The strip mine is located west of Williamsburg and was stripped in 1966 by the Zacherl Coal Company MDP #2766BSM68. At this time the area is heavily discharging mine acid into Piney Creek and is monitored by a system of weirs located about the toe of the strip mine. The area is discharging approximately 993.5 ppd of acid, originating as runoff and seepage, into the main streams of Piney Creek and Brush Run.

No recommendations have been made to abate the discharge from the area on the basis that the area is presently under design for pollution control by the Mic hael Baker, Jr. Engineering firm under Pennsylvania Department of Environmental Resources Contract SL 192-1.

ESTIMATED ABATEMENT PROJECT COSTS

First Priority Project Areas

Project Area No.	Average Acid Load Pounds Per Day	Estimated Costs $
1	857.67	$ 312,440.00
3	780.99	658,080.00 +
10	1,085.78	745,200.00
12	1,095.32	20,000.00 +
18	993.5	N/C
	4,813.26	$1,735,720.00 +

Second Priority Project Areas

Project Area No.	Average Acid Load Pounds Per Day	Estimated Costs $
2	352.95	$ 647,400.00
9	645.5	N/C
11	546.34	295,430.00
14	412.35	490,190.00
15	378.36	577,717.00
16	344.03	20,000.00 +
8	612.0	N/C
	3,291.53	$2,030,737.00 +

Third Priority Project Areas

Project Area No.	Average Acid Load Pounds Per Day	Estimated Costs $
4	194.20	$ 290,230.00
5	173.00	284,040.00 +
6	20.59	N/C
7	115.00	N/C
13	207.29	N/C
17	94.00	153,120.00
	804.08	$ 727,390.00 +

TOTALS

Priority Rating	Average Acid Load Pounds Per Day	Estimated Costs $
1st	4,813.26	$1,735,720.00 +
2nd	3,290.52	$2,030,737.00 +
3rd	805.46	$ 727,390.00 +
	8,909.24	$4,493,847.00 +

N/C - Not Computed

KEY TO STRIPPING PERMITS ON BASE MAPS

Piney Creek - Mouth Subwatershed No.	MDP No.	Operator	Township
00-01	2768BSM12	Allison Engineering Co.	Piney
00-02	2769SM15	C & K Coal Co.	Piney
00-03	3672BSM4	Vantage Coal Co.	Piney
00-04	2768BSM26	C & K Coal Co.	Licking &.Piney
Piney Creek	Main Stream		
100-01	3675SM45	Woodrow Yeaney Coal Co.	Limestone
100-02	3674SM5	H & G Coal Co., Inc.	Limestone
100-03	3674SM44	John N. Wilson Coal Co.	Limestone
100-04	3675SM48	Clarion Realty Co.	Clarion & Limestone
100-05	3674SM56	Colt Resources, Inc.	Monroe
100-06	3675SM52	C & K Coal Co.	Monroe & Limestone
100-07	3675SM13	Leadbetter Coal Co.	Monroe & Limestone
100-08	3676SM19	Mauersberg Coal Co.	Limestone
100-09	2768BSM19	W.P. Stahlman Coal Co.	Limestone
100-10	2766BSM50	W.P. Stahlman Coal Co.	Limestone
100-11	2766BSM9	W.P. Stahlman Coal Co.	Limestone
100-12	3675SM58	V & K Coal Co.	Limestone
100-13	3674SM1	R.E.M. Coal Co., Inc.	Limestone
100-14	2767BSM33	W. Paul Glenn	Clarion
100-15	2767BSM28	James F. Kerle	Clarion
100-16	2766BSM68	Zacherl Coal Co., Inc.	Monroe
100-17	3675SM25	Donald Dietz Coal Co.	Clarion & Monroe
100-18	3675SM23	Thomas E. Siegel	Monroe
100-19	3671SM19	C & K Coal Co.	Monroe
100-20	3676SM25	Mauersberg Coal Co.	Limestone & Monroe
100-21	3676SM33	C & K Coal Co.	Monroe
100-22	3675SM72	Harold A. Siegel Coal Co.	Limestone
100-23	2769BSM4	W.P. Stahlman Coal Co.	Limestone
100-24	3671BSM7	Clyde Miles Coal Co.	Limestone
100-25	3675SM57	K.I.T. Industries	Clarion
100-26	3671SM4	W.P. Stahlman Coal Co.	Limestone

KEY TO STRIPPING PERMITS ON BASE MAPS

Brush Run

	MDP No.	Operator	Township
300-01	2769BSM20	W & M Coal Co.	Clarion
300-02	3671BSM13	H & G Coal Co., Inc.	Clarion
300-03	3671BSM16	John N. Wilson Coal Co.	Clarion
300-04	3675SM22	H & G Coal Co., Inc.	Clarion
300-05	3674SM18	Leadbetter Coal Co.	Clarion
300-06	3673SM14	H & G Coal Co., Inc.	Clarion
300-07	3675SM66	Midway Resources, Inc.	Clarion
300-08	3670BSM1O		Clarion
300-09	36745M19	Terry P. Kiefer	Clarion
300-10	Chernicky Coal Co., Inc.		Clarion
300-11	3674SM43	Zacherl Coal Co., Inc.	Clarion
300-12	3676SM27	Beveridge Coal Co.	Clarion
300-13	3675SM78	M.S.M. Coal Co.	Clarion
300-14	2766BSM39	H & G Coal Co., Inc.	Clarion
300-15	2766BSM62	H & G Coal Co., Inc.	Clarion
300-16	2768BSM15	John N. Wilson Coal Co.	Monroe
300-17	3672SM5	Patrick Carrol	Monroe
300-18	2768BSM16	Zacherl Coal Co., Inc.	Clarion
300-19	2767BSM12	W.P. Stahlman Coal Co.	Clarion
300-20	2766BSM77	W.P. Stahlman Coal Co.	Clarion
300-21	2768BSM24	Zacherl Coal Co.	Clarion
300-22	2766BSM35	Mays Coal Co.	Monroe
300-23	3671BSM17	Leadbetter Coal Co.	Clarion
	3674SM48	Beveridge Coal Co.	Clarion

Little Piney Creek

	2768BSM25	Jack Brothers Const. Co.	
400-01	3676SM3	C & K Coal Co.	Limestone & Clarion
400-02	2769BSM21	C & K Coal Co.	Limestone & Clarion
400-03	2766BSM29	H & G Coal Co., Inc.	Limestone
400-04	2766BSM30	H & G Coal Co., Inc.	Limestone & Clarion
400-05	2766BSM65	James F. Kerle	Limestone & Clarion
400-06	2767BSM30	H & G Coal Co., Inc.	Limestone & Clarion
400-07	2768BSM8	Clyde Miles Coal Co.	Limestone
400-08			Limestone & Clarion

KEY TO STRIPPING PERMITS ON BASE MAPS (cont'd)

Gathers Run Subwatershed No.	MDP No.	Operator	Township
500-01	3673SM15	C & K Coal Co.	Piney
500-02	3676SM17	C & K Coal Co.	Monroe
500-03,	3675SM6	Donald Dietz Coal Co.	Monroe
500-04	3674SM60	Shannon Coal Co.	Monroe
500-05	3674SM8	C & K Coal Co.	Monroe
500-06	3675SM37	C & K Coal Co.	Monroe
Reids Run			
550-01	3675SM34	Clarion Fossil Fuels Corp.	Monroe
550-02	3675SM36	C &.K Coal Co.	Monroe
550-03	3675SM46	C & K Coal Co.	Monroe
550-04	3676SM24	C & K Coal Co.	Monroe
550-05	3676SM30	Clarion Reality Co.	Monroe
550-06	3672SM16	Reddinger Coal Co.	Monroe
550-07	3676SM34	Clarion Fossil Fuels Corp.	Limestone & Monroe
550-08	3675SM70	R.E.M. Coal Co., Inc.	Monroe
550-09	3674SM55	H & G Coal Co., Inc.	Monroe
550-10	3675SM68	Clarion Fossil Fuels Corp.	Monroe
550-11	3675SM5	Donald Dietz Coal Co.	Monroe
Parsons Run			
600-01	2766BSM51	Allaman Mining Co.	Limestone
600-02	2769BSM12	Reddinger Coal Co.	Limestone
600-03	3670BSM8	Fairhill Coal Co.	Limestone
600-04	3670BSM1	Reddinger Coal Co.	Limestone
600-05	3672SM21	Lucinda Coal Co.	Monroe, Piney & Limestone
600-06	3675SM41	Midway Resources Inc.	Monroe, Piney & Limestone
Glade Run			
800-01	3675SM38	Mauersberg Coal Co.	Limestone
800-02	3675SM65	Zacherl Coal Co., Inc.	Limestone
800-03	3675SM59	R.E.M. Coal Co., Inc.	Limestone
800-04	3675SM39	Mauersberg Coal Co.	Limestone
800-05	2767BSM21	W.P. Stahlman Coal Co.	Limestone
800-06	3676SM12	Robert Fagley	Limestone

KEY TO STRIPPING PERMITS ON BASE MAPS cont'd)

Poe Run Subwatershed No.	MDP No.	Operator	Township
900-01	3671BSM1	W.P. Stahlman Coal Co.	Redbank & Limestone
900-02	3673SM1	W.P. Stahlman Coal Co.	Limestone
900-03	3675SM3	Glacial Minerals, Inc.	Redbank & Limestone