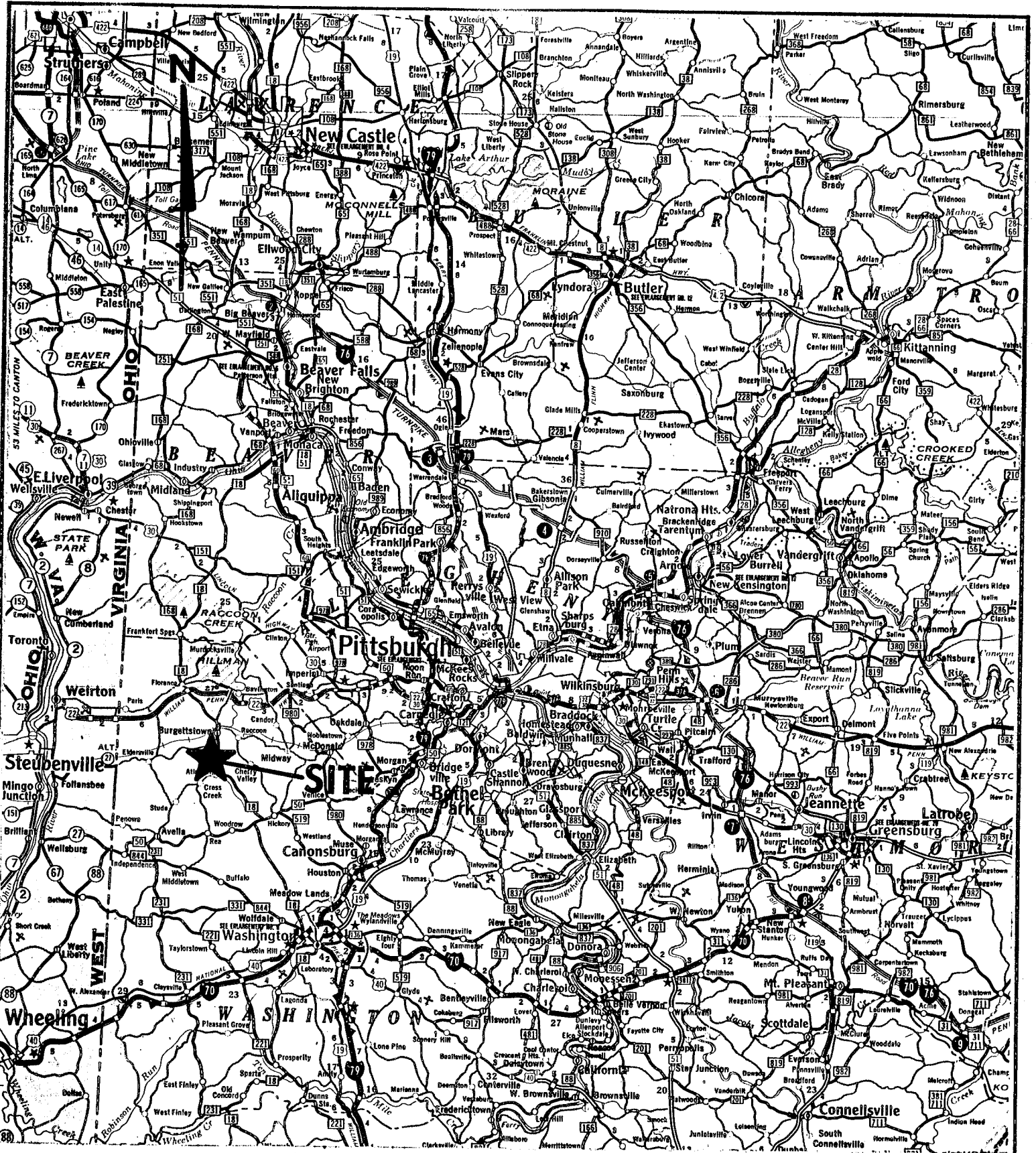


*E. D. Apollonia Consulting Engineers, Inc.*

FIGURES



SCALE



"DO NOT SCALE THIS DRAWING"

**EOCE**  
*E. D. Appolonia Consulting Engineers, Inc.*

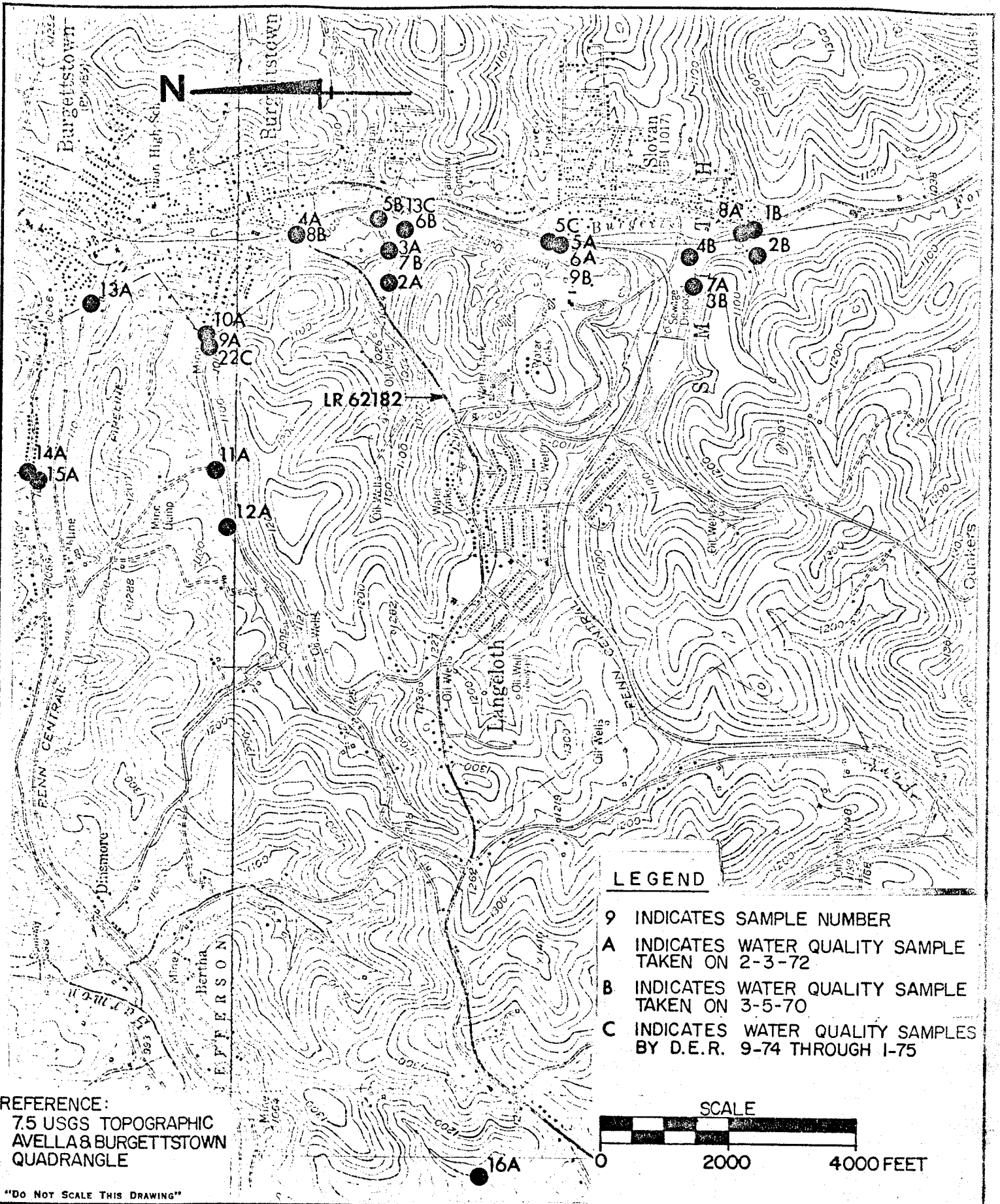
**SITE LOCATION MAP  
 LANGELOTH FRANCIS MINE COMPLEX**

**PITTSBURGH • CHESTERTON • WILMINGTON • DENVER • BRUSSELS**

**DEPARTMENT OF ENVIRONMENTAL RESOURCES  
 COMMONWEALTH OF PENNSYLVANIA**

DRAWN BY	JJL	12-5-75
CHECKED BY	SEP	12/6/75
APPROVED BY	AKO	12/6/75

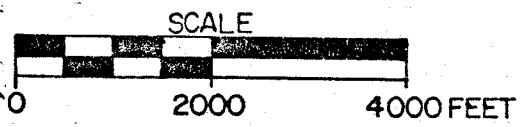
**DRAWING NO. 69-118-A6**  
**FIGURE NO. 1**




**LEGEND**

- 9 INDICATES SAMPLE NUMBER
- A INDICATES WATER QUALITY SAMPLE TAKEN ON 2-3-72
- B INDICATES WATER QUALITY SAMPLE TAKEN ON 3-5-70
- C INDICATES WATER QUALITY SAMPLES BY D.E.R. 9-74 THROUGH 1-75

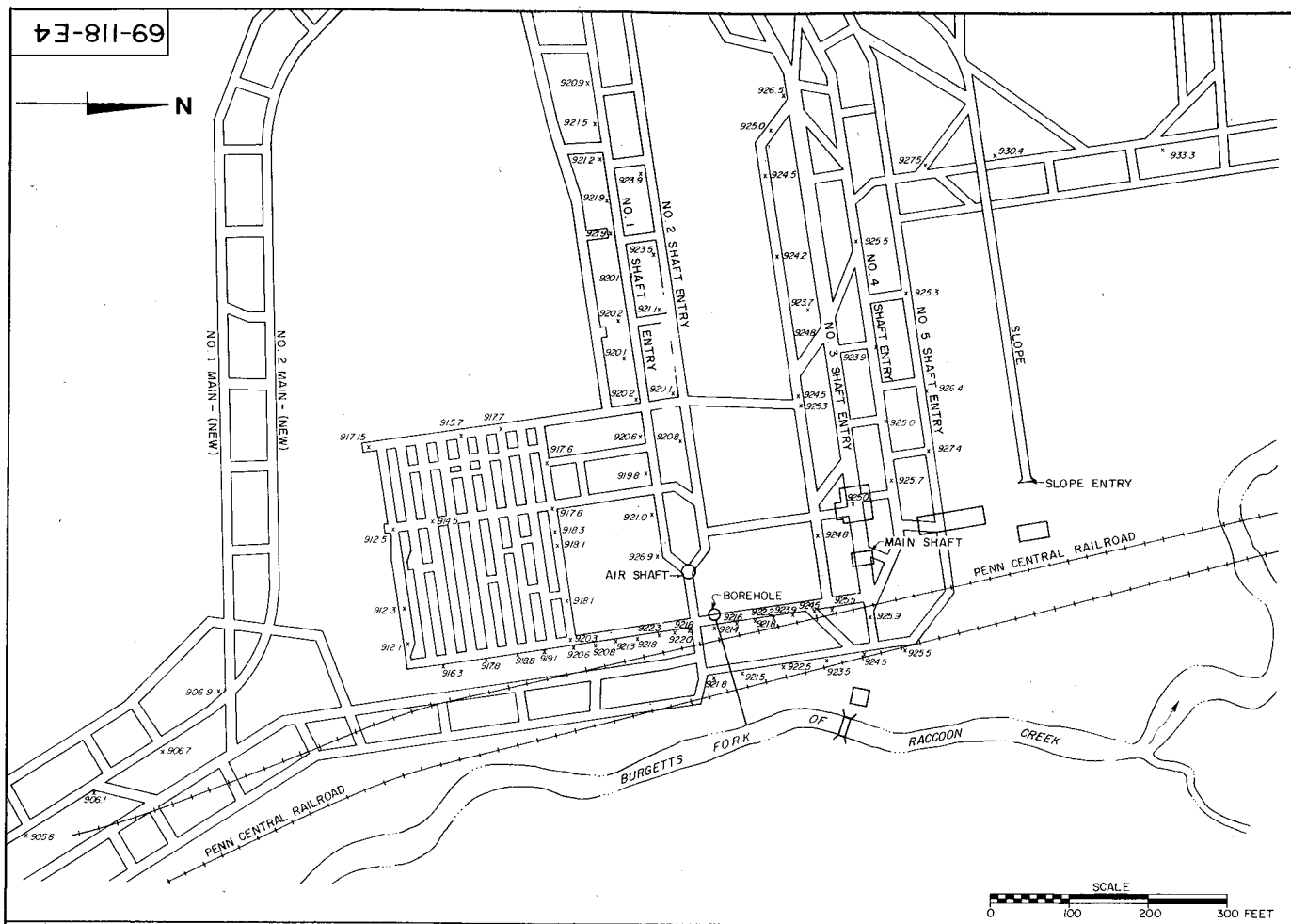
REFERENCE:  
7.5 USGS TOPOGRAPHIC  
AVELLA & BURGETTSTOWN  
QUADRANGLE



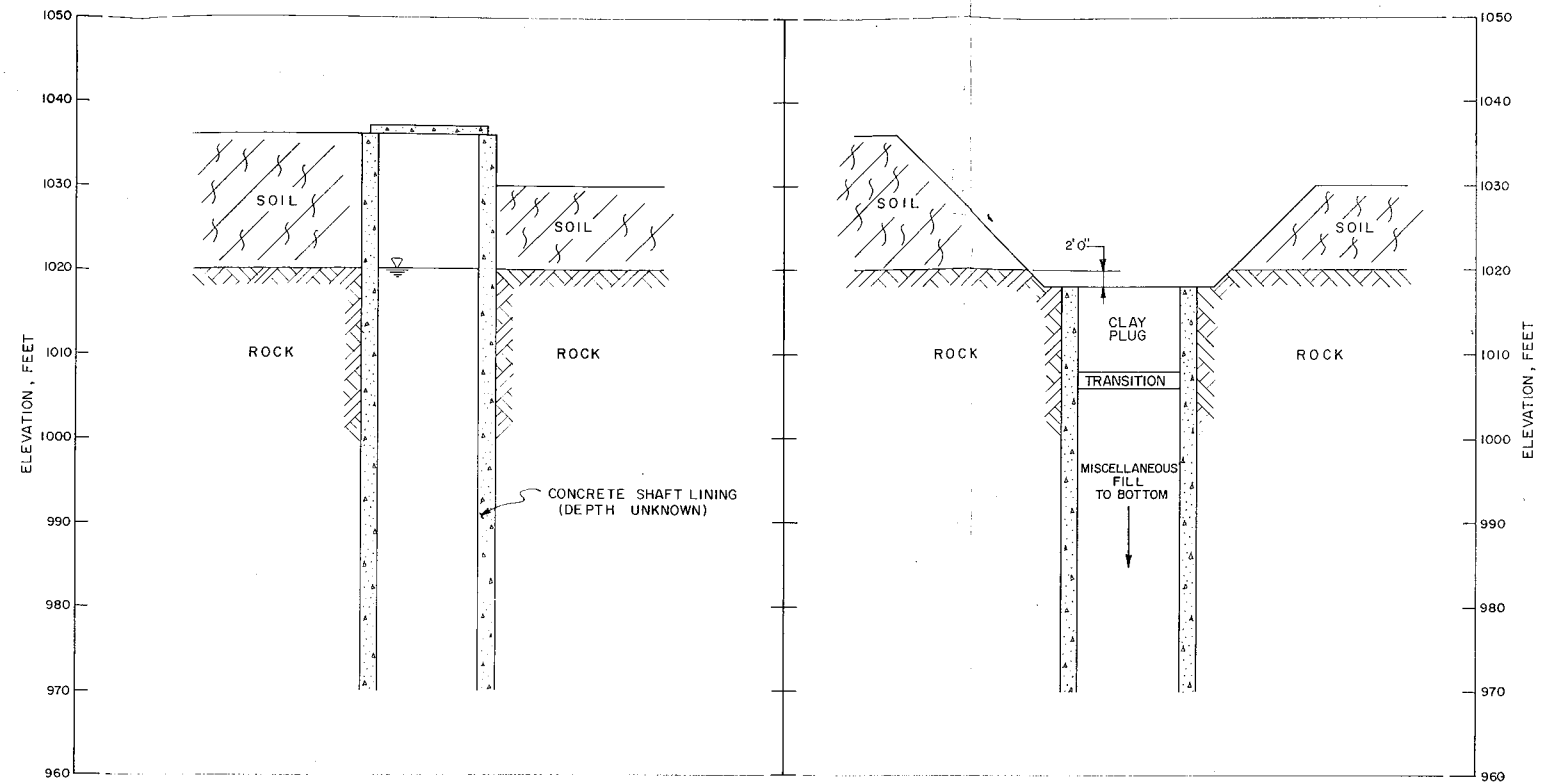
"DO NOT SCALE THIS DRAWING"

 E. D'APPOLONIA CONSULTING ENGINEERS, INC.	10 DUFF ROAD PITTSBURGH, PA. 15235	LOCATION OF WATER QUALITY SAMPLING POINTS	
	MR 522B CHESTERTON, IND. 46304		
DEPARTMENT OF ENVIRONMENTAL RESOURCES COMMONWEALTH OF PENNSYLVANIA	DRAWN BY <i>P J F</i>	12-7-72	DRAWING NO. 69-118-A5
	CHECKED BY <i>Basack</i>	12.13.72	

69-118-E4

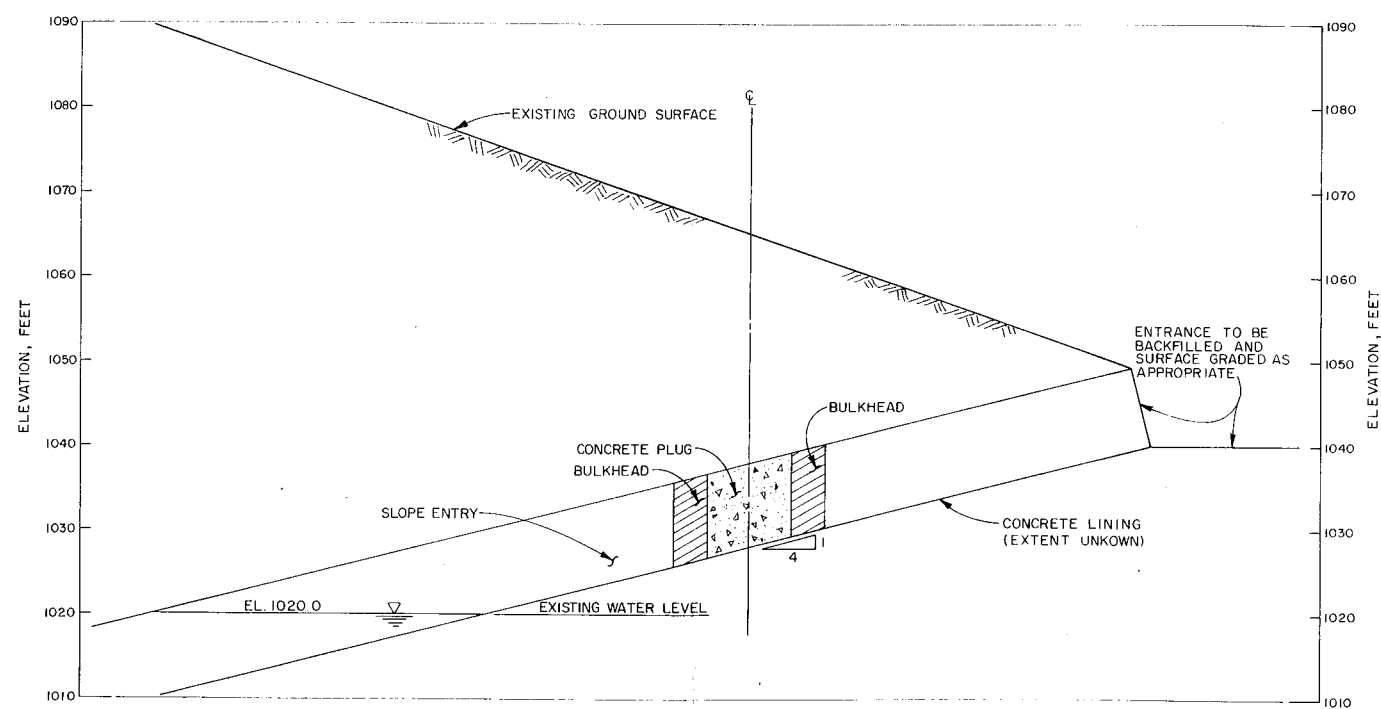


PLAN

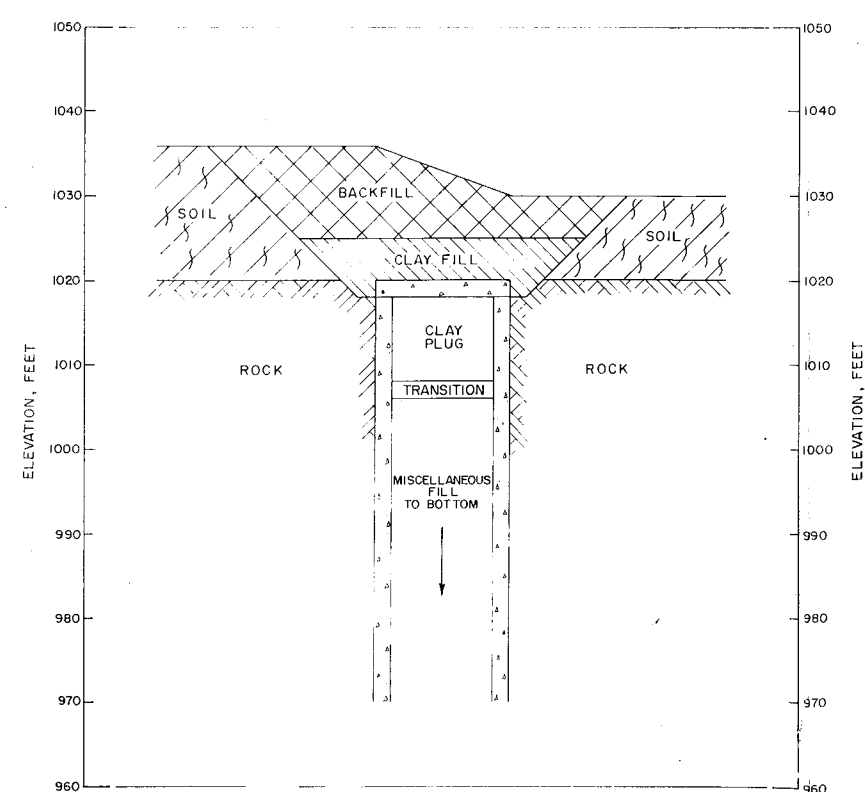


EXISTING CONDITIONS

EXCAVATION AND SHAFT BACKFILL



SLOPE ENTRY SEAL



SEALING COMPLETED

REVISION	DESCRIPTION

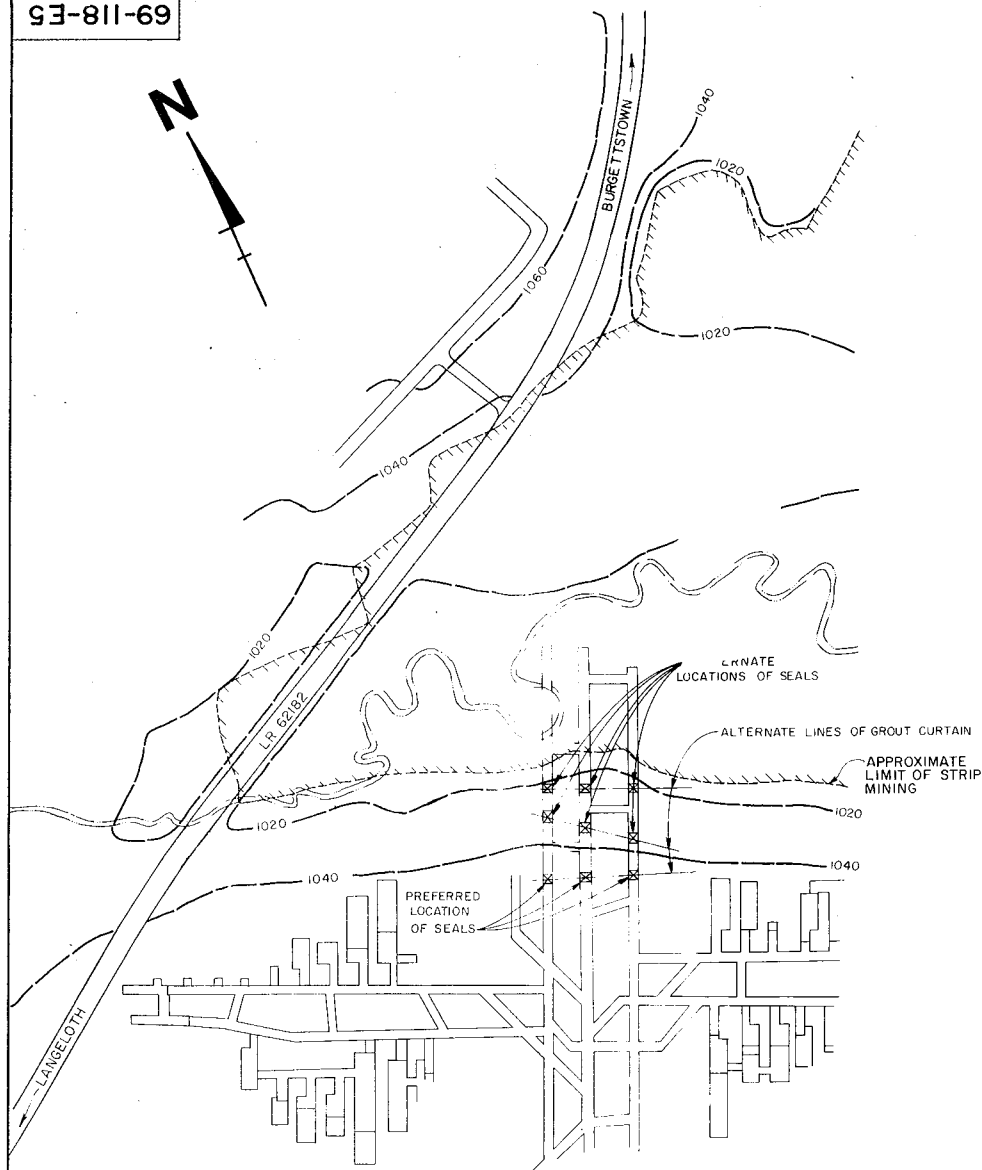
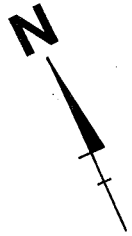
COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL RESOURCES  
HARRISBURG, PENNSYLVANIA

E. D'APPOLONIA CONSULTING ENGINEERS, INC.  
18 DUFF ROAD, PITTSBURGH, PA. 15235  
HR 522 B, CHESTERTON, IND. 46304  
BOX 836, CONCORD, MASS. 01742

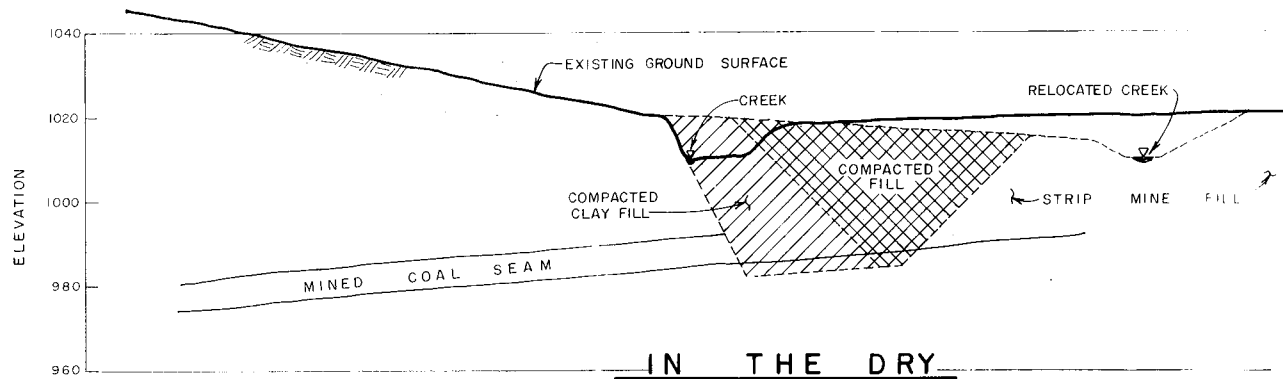
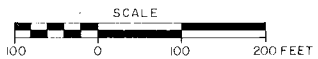
PLAN OF MAIN ENTRIES TO LANGELOTH MINE  
AND PROPOSED METHODS OF SEALING  
SLOPE AND SHAFT ENTRIES

DRAWN BY	CJB	12-8-72	DRAWING NO.
CHECKED BY	Bozak	12.13.72	69-118-E4

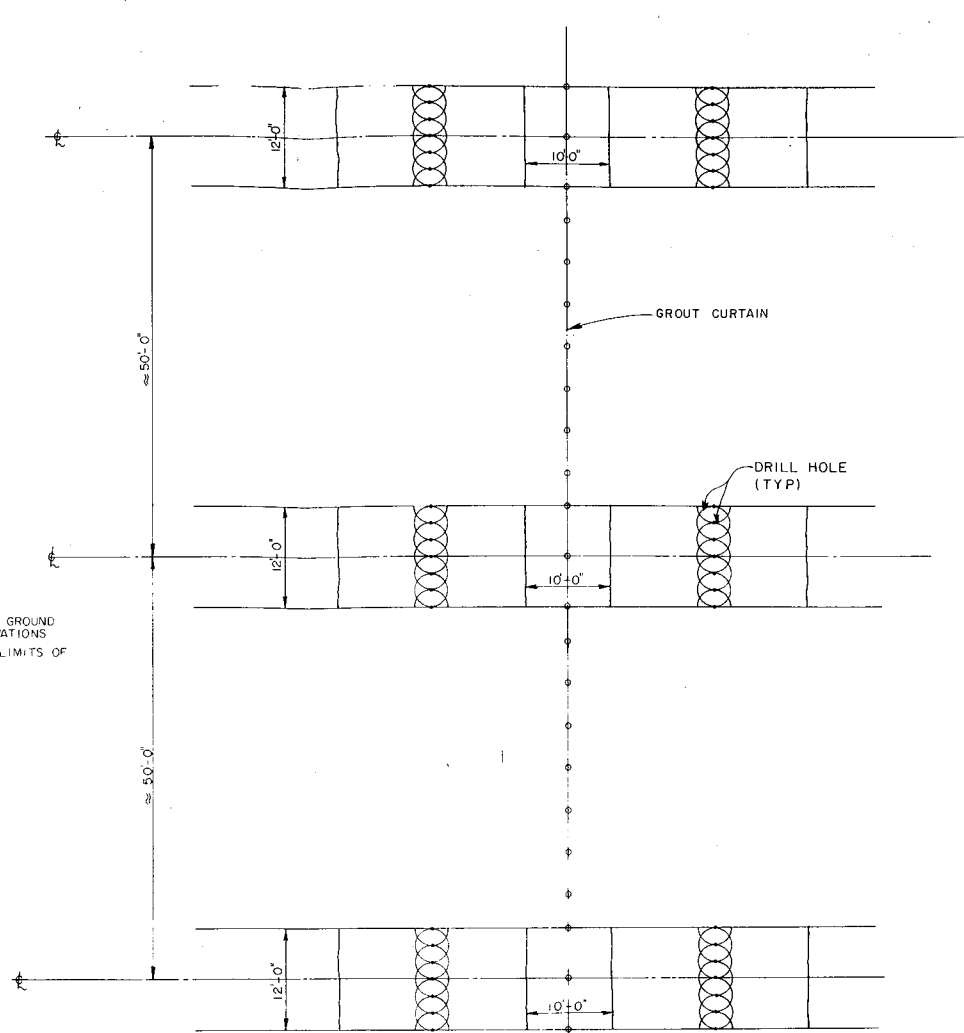
FIGURE 7



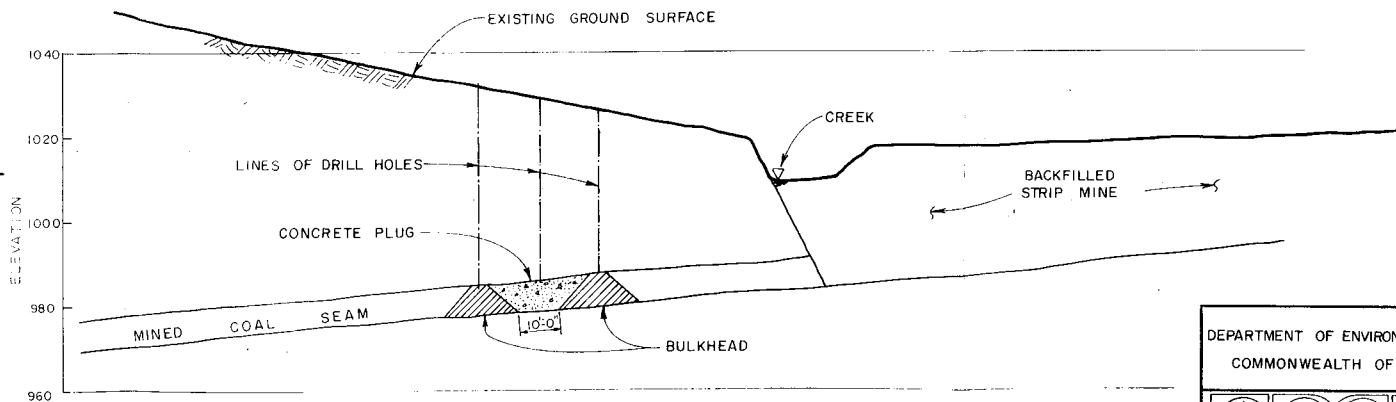
PLAN LOCATION OF SEAL



IN THE DRY

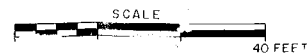


PLAN OF REMOTELY PLACED SEAL



REMOTELY PLACED SEAL

SEALING OF DRIFTS



REVISION	DESCRIPTION

REFERENCE DRAWINGS

DEPARTMENT OF ENVIRONMENTAL RESOURCES  
COMMONWEALTH OF PENNSYLVANIA

**E. D'APPOLONIA CONSULTING ENGINEERS, INC.**

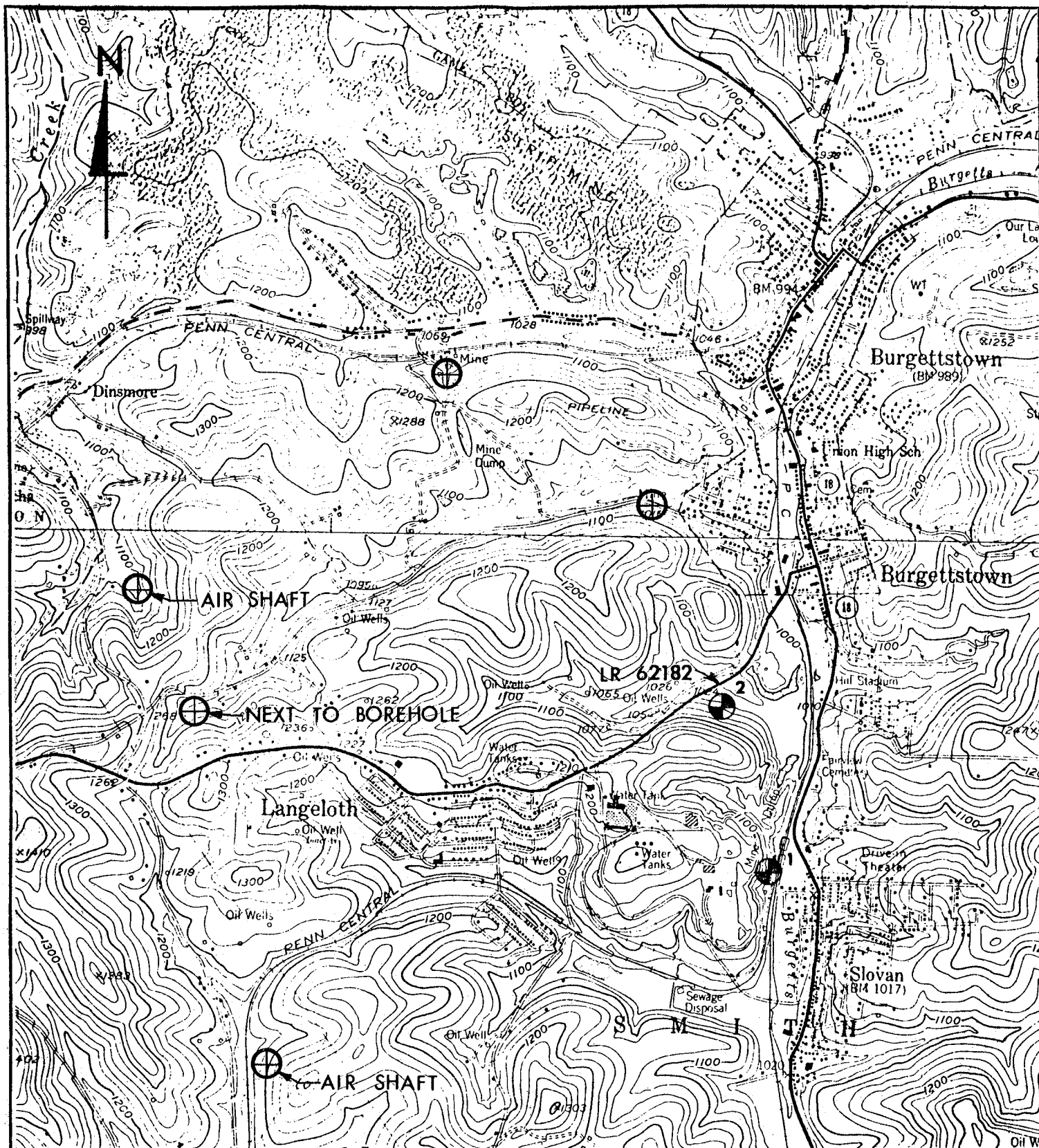
10 DUFF ROAD, PITTSBURGH, PA. 15235  
 MR 522 B, CHESTERTON, IND. 46304  
 BOX 538, CONCORD, MASS. 01742

PROPOSED METHODS OF SEALING HEADINGS INTERCEPTED BY STRIP MINING LANGELOTH MINE

DRAWN BY Szejka 12-8-72  
 CHECKED BY [Signature] 12-13-72

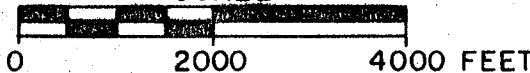
DRAWING NO. **69-118-E5**

\*DO NOT SCALE THIS DRAWING\*

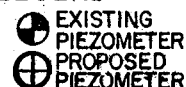


REFERENCE:  
7.5' USGS TOPOGRAPHIC, AVELLA &  
BURGETTSTOWN QUADRANGLE

SCALE



LEGEND:



**E. D'APPOLONIA**  
CONSULTING ENGINEERS, INC.

15 DUFF ROAD  
PITTSBURGH, PENNA. 15235

MR 522B  
CHESTERTON, IND. 46304

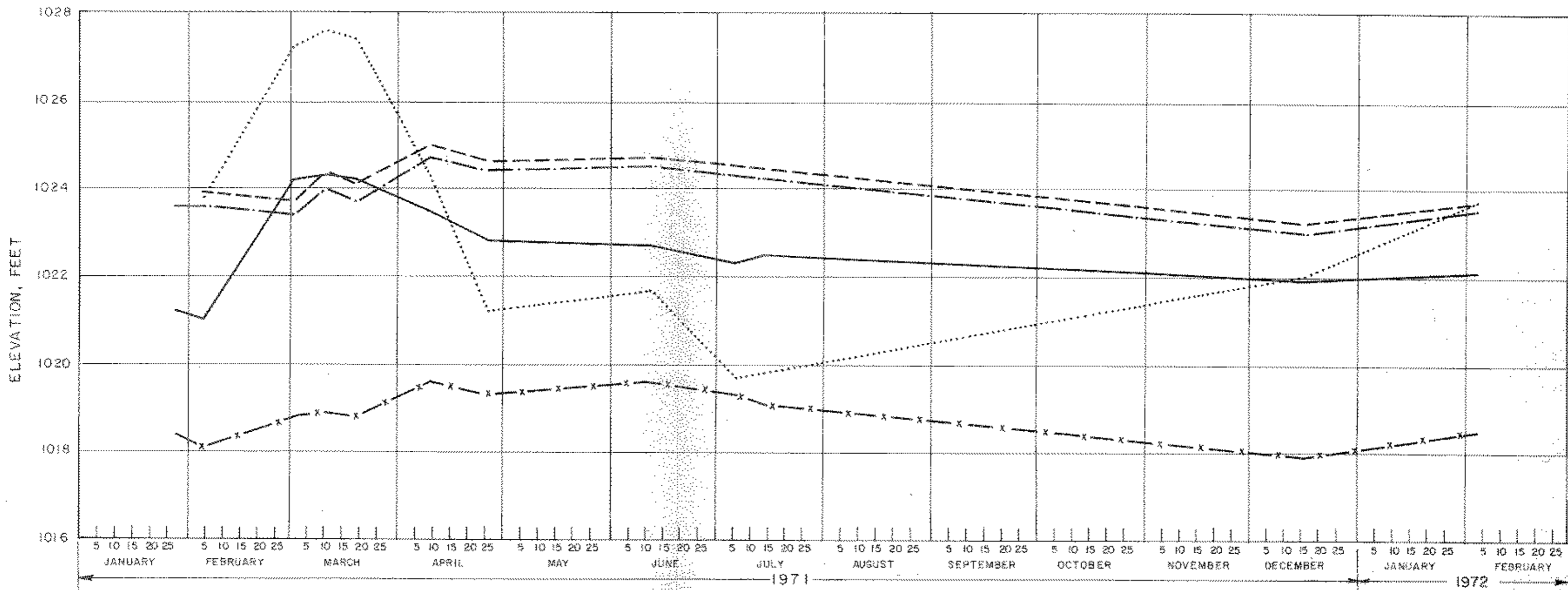
LANGELOTH MINE COMPLEX  
LOCATION OF PROPOSED ADDITIONAL  
PIEZOMETER INSTALLATIONS

DEPARTMENT OF ENVIRONMENTAL RESOURCES  
COMMONWEALTH OF PENNSYLVANIA

DWN. BY	NF	2-17-71
CKD. BY	BOSACK	2-26-71
APPR'D. BY	JHP	12-13-72

DRAWING NO.  
**69-118-A4**





**LEGEND**

- X — X — PIEZOMETER 1A (DEEP)
- PIEZOMETER 1B (SHALLOW)
- PIEZOMETER 2
- PIEZOMETER 2A (DEEP)
- ..... PIEZOMETER 2B (SHALLOW)

NOTE: FOR PIEZOMETER INSTALLATION  
 DETAILS SEE DRAWING NO. 69-118-E1  
 (FIGURE 4)

DEPARTMENT OF ENVIRONMENTAL RESOURCES  
 COMMONWEALTH OF PENNSYLVANIA

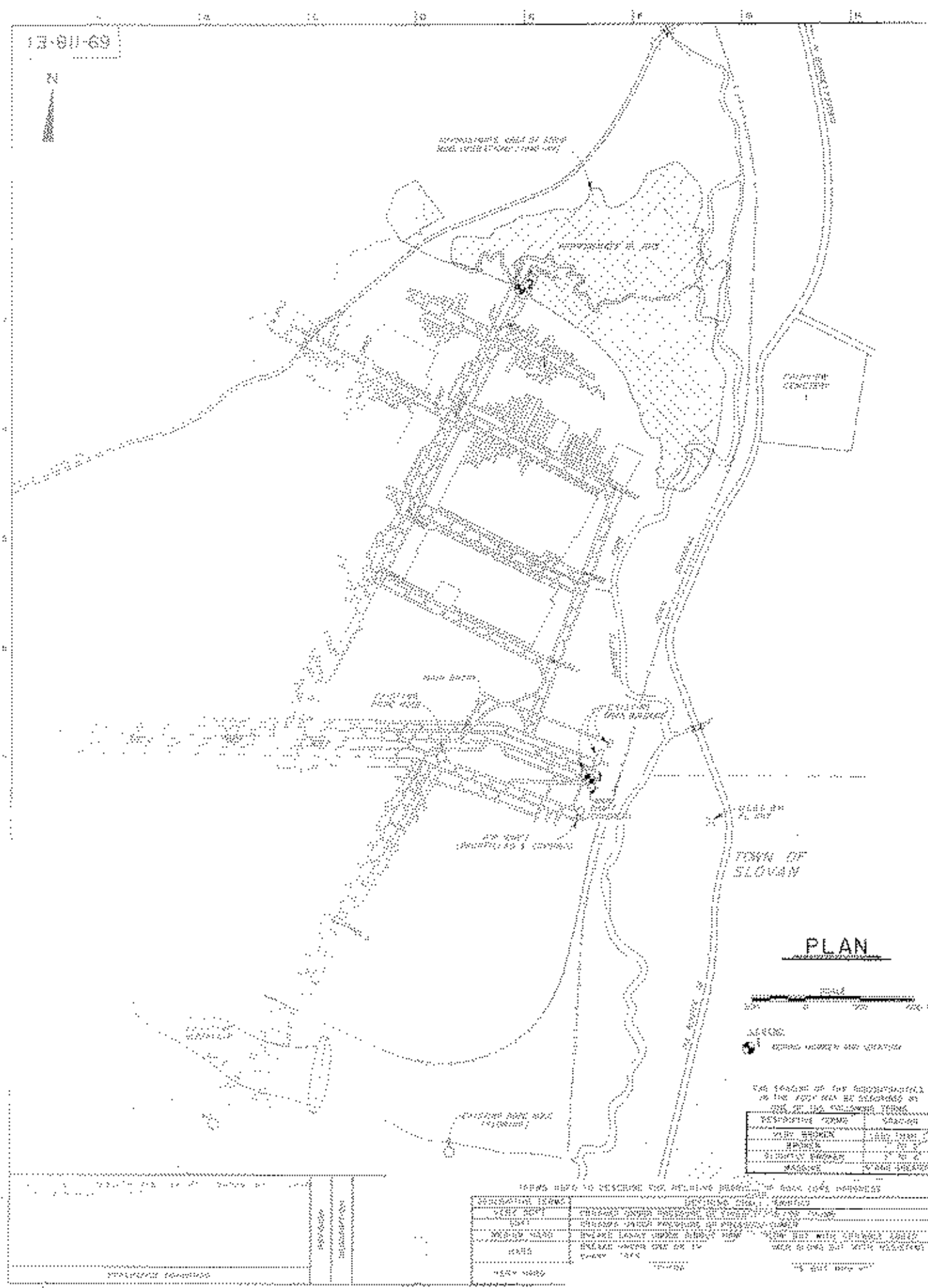


E. D'APPOLONIA CONSULTING ENGINEERS, INC.  
 10 DUFF ROAD, MR. ARAB  
 PITTSBURGH, PA. 15222 CRESTONTON, IND. 46034

LANGELOTH MINE  
 PIEZOMETER DATA  
 ELEVATION vs TIME

DRAWN BY	JUL	12-13-72	DRAWING NO.
CHECKED BY	[Signature]	1/2/73	69-118-C1

FIGURE 5



**SECTION I**

DEPTH (FEET)	ELEVATION (FEET)	DESCRIPTION	PENETRATION RESISTANCE				WATER CONTENT (%)	PLASTICITY INDEX (%)
			NO. OF TESTS	AVG. VALUE	MIN. VALUE	MAX. VALUE		
0	117.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
10	116.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
20	115.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
30	114.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
40	113.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
50	112.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
60	111.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
70	110.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
80	109.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
90	108.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
100	107.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
110	106.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
120	105.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
130	104.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
140	103.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
150	102.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
160	101.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
170	100.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
180	99.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
190	98.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
200	97.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
210	96.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
220	95.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
230	94.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
240	93.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
250	92.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
260	91.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
270	90.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
280	89.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
290	88.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
300	87.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
310	86.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
320	85.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
330	84.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
340	83.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
350	82.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
360	81.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
370	80.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
380	79.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
390	78.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
400	77.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
410	76.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
420	75.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
430	74.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
440	73.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
450	72.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
460	71.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
470	70.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
480	69.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
490	68.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
500	67.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	

**SECTION II**

DEPTH (FEET)	ELEVATION (FEET)	DESCRIPTION	PENETRATION RESISTANCE				WATER CONTENT (%)	PLASTICITY INDEX (%)
			NO. OF TESTS	AVG. VALUE	MIN. VALUE	MAX. VALUE		
0	117.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
10	116.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
20	115.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
30	114.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
40	113.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
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100	107.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
110	106.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
120	105.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
130	104.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
140	103.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
150	102.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
160	101.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
170	100.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
180	99.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
190	98.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
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220	95.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
230	94.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
240	93.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
250	92.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
260	91.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
270	90.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
280	89.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
290	88.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
300	87.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
310	86.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
320	85.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
330	84.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
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410	76.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
420	75.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
430	74.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
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450	72.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
460	71.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
470	70.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
480	69.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
490	68.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	
500	67.0	GRAVELLY SAND WITH SOME FINE SAND AND SILT	1	10	5	15	15	

GENERAL REMARKS: PENETRATION RESISTANCE IS THE NUMBER OF BLADES REQUIRED TO PENETRATE A 1 INCH DIA. TEST BAR... (text continues)

DEPARTMENT OF HYDROLOGICAL ENGINEERING  
COMMUNITY OF PENNSYLVANIA  
E. STAPPOLONIA  
CONSULTING ENGINEERS, INC.  
1400 MARKET STREET  
PHILADELPHIA, PENNSYLVANIA 19104  
PROJECT NO. 69-118-E1  
DATE: 11/1/69

FIGURE 4