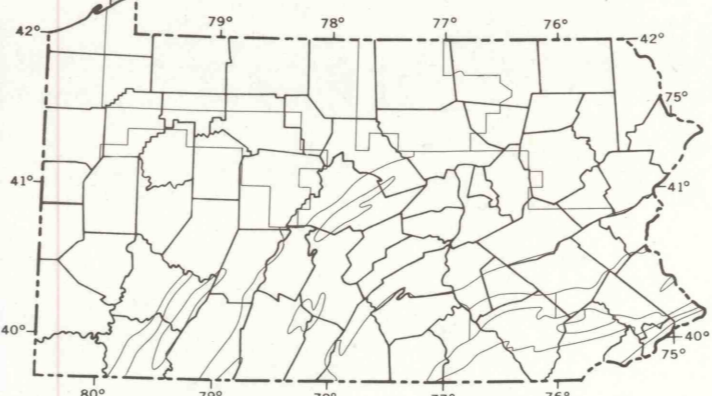


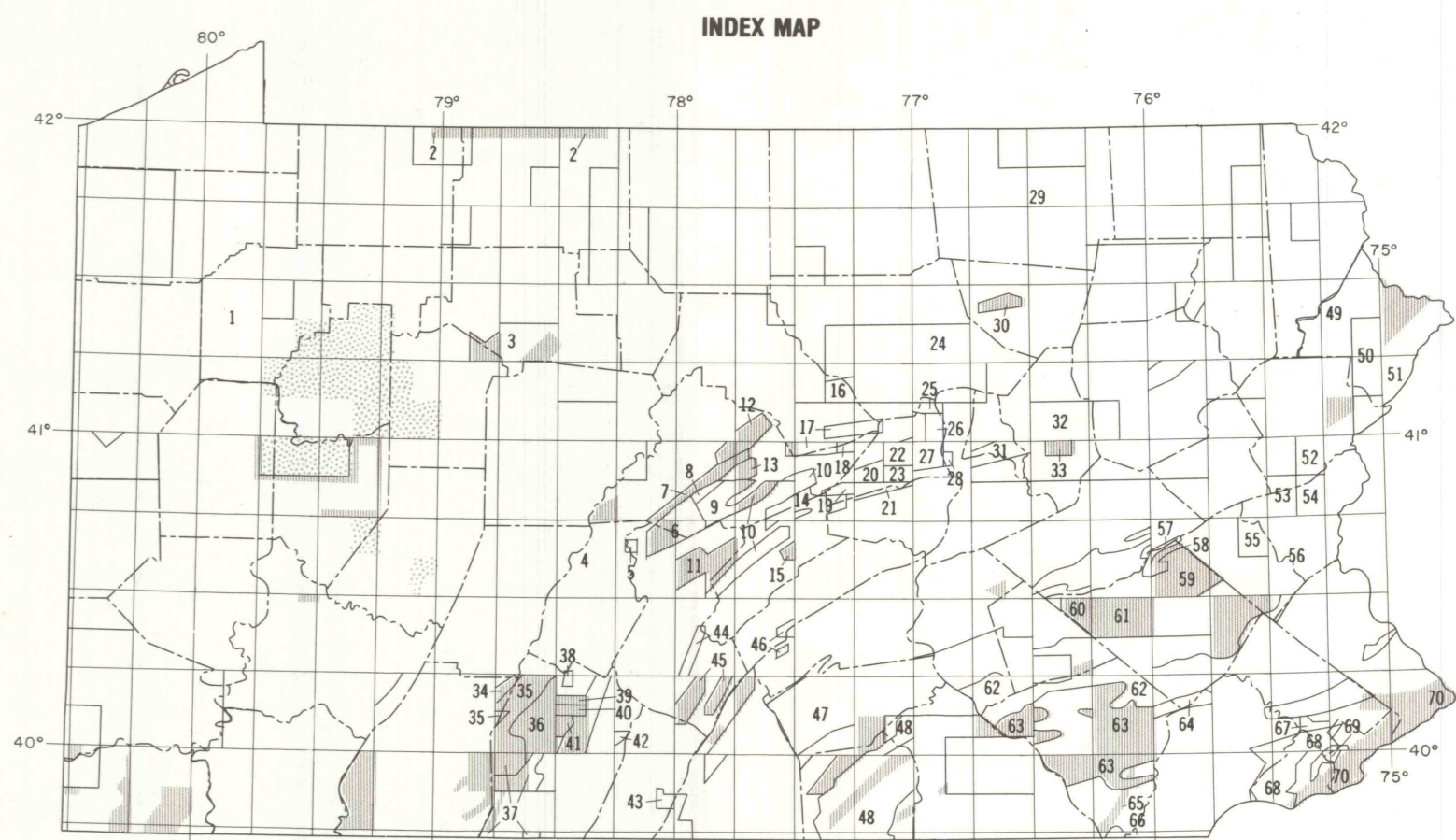
F PENNSYLVANIA

80

COMPILED RESPONSIBILITY



SOURCE OF DATA



N. Y.

N. Y.

N. J.

DEL.

MD.

EXPLANATION

- U. S. Geological Survey Geologic Quadrangle Maps and Miscellaneous Investigations Series published since 1962, based on Pennsylvania Geological Survey maps.
- Geologic maps published by the Pennsylvania Geological Survey since 1962 based on Pennsylvania Geological Survey maps.
- Geologic maps compiled from 1880 to 1962, based on maps of the Pennsylvania Geological Survey or U. S. Geological Survey.
- Geologic maps compiled from 1880 to 1962, based on maps of the Pennsylvania Geological Survey or U. S. Geological Survey.
- Geologic maps compiled from 1880 to 1962, based on maps of the Pennsylvania Geological Survey or U. S. Geological Survey.
- Minor modifications by compiler.
- Structure contour and some coal outcrop lines from W. A. Ruppel, Hackett & Pilsbury Coal Co.

NUMERICAL SOURCES

The list of sources below refers to numbered items on the index map above.

Number	Source	Scale	Year	Author
1	U. S. Geological Survey	1:50,000	1962	T. M. Gray
2	U. S. Geological Survey	1:50,000	1962	A. D. Oliver
3	U. S. Geological Survey	1:50,000	1962	S. I. Rice
4	U. S. Geological Survey	1:50,000	1962	M. E. Edwards
5	U. S. Geological Survey	1:50,000	1962	D. M. Haslow
6	U. S. Geological Survey	1:50,000	1962	M. D. Sipes
7	U. S. Geological Survey	1:50,000	1962	A. F. Cooper
8	U. S. Geological Survey	1:50,000	1962	D. R. MacArthur
9	U. S. Geological Survey	1:50,000	1962	A. A. Slaughter

KEY TO TYPE OF DATA

- Geologic contact
- Structure contour
- Coal outcrop
- Glacial border

GLACIAL BORDERS

North and North-eastern Pennsylvania: The glacial borders shown on this map are based on the work of C. C. Young, U. S. Geological Survey, and are shown in red. They represent the limits of the last glacial advance, which occurred about 12,000 years ago. The glacial borders are shown in red on the map.

SYMBOLS

- Geologic contact
- Structure contour
- Coal outcrop
- Glacial border
- Boundary and name of U. S. Geological Survey 7 1/2-minute quadrangle

SILURIAN

CENTRAL AND EAST-CENTRAL PENNSYLVANIA

- WILLS CREEK FORMATION: Silurian, upper part, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.
- BRIDGEPORT FORMATION: Silurian, middle part, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.
- WATERLOO FORMATION: Silurian, lower part, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.

EASTERN PENNSYLVANIA

- CLINTON GROUP: Silurian, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.
- YONKONING FORMATION: Silurian, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.

ORDOVICIAN

CUMBERLAND VALLEY SEQUENCE

- CHERRY CREEK FORMATION: Ordovician, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.
- WATERLOO FORMATION: Ordovician, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.

LEHIGH VALLEY SEQUENCE

- LEHIGH VALLEY FORMATION: Ordovician, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.

LANCASTER VALLEY SEQUENCE

- LANCASTER VALLEY FORMATION: Ordovician, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.

ORDOVICIAN AND CAMBRIAN

CUMBERLAND VALLEY SEQUENCE

- CHERRY CREEK FORMATION: Ordovician, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.
- WATERLOO FORMATION: Ordovician, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.

LEHIGH VALLEY SEQUENCE

- LEHIGH VALLEY FORMATION: Ordovician, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.

LANCASTER VALLEY SEQUENCE

- LANCASTER VALLEY FORMATION: Ordovician, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.

CAMBRIAN

GREAT VALLEY AND NORTHERN REDONTO

- LEHIGH VALLEY SEQUENCE: Cambrian, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.

CUMBERLAND VALLEY SEQUENCE

- CHERRY CREEK FORMATION: Cambrian, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.

PROBABLY LOWER PALEOZOIC

CUMBERLAND VALLEY SEQUENCE

- CHERRY CREEK FORMATION: Probably Lower Paleozoic, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.

PRECAMBRIAN

SHASTA MOUNTAIN

- SHASTA MOUNTAIN: Precambrian, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.

EASTERN PENNSYLVANIA

- SHASTA MOUNTAIN: Precambrian, shales, shaly limestones, and shaly sandstones, with shaly sandstones and shaly limestones, and shaly sandstones and shaly limestones.