

### III DESCRIPTION OF STUDY AREA

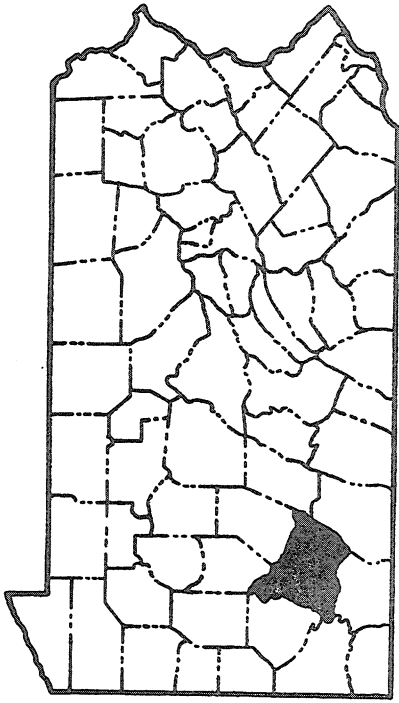
## DESCRIPTION OF STUDY AREA

### 1.0 General

The Latrobe Syncline Mine Pool lies within Westmoreland County, Southwestern Pennsylvania (See Fig. III-1). It lies within the Appalachian Plateau physiographic province. The Study Area is drained by the Youghiogheny River System. The specific object of this study was the Southern portion of the pool of groundwater formed in abandoned deep mine workings in the Pittsburgh Coal seam. Portions of this area were previously studied and the results are summarized in the report "Youghiogheny River Basin Mine Drainage Pollution Abatement Project, Operation Scarlift Project No, SL 103" and Operation Scarlift Project No. SL 122, "A Study of Mine Drainage Pollution Abatement Measures for the Loyalhanna Watershed".

Review of geologic and mine maps of the Labrobe Syncline indicate the presence of a number of structural lows in the Pittsburgh Coal. These low areas are generally delineated by the 850 foot contour. The northern pool was recognized by Buchart-Horn (1972) and is outside the area of study for this report. The southern mine pool (Buchart-Horn 1972) of the Latrobe Syncline appears to be composed of at least two distinct portions, northern and southern. The divide between the two portions approximates a line between Marguerite and Lycippus (See Vol. II-Plate 2), The existence of two distinct pools can not be proven with existing data, but is assumed to exist because of the following:

1. The structure contours indicate the existence of two distinct low areas delineated by the 850 foot



Key Map of Counties

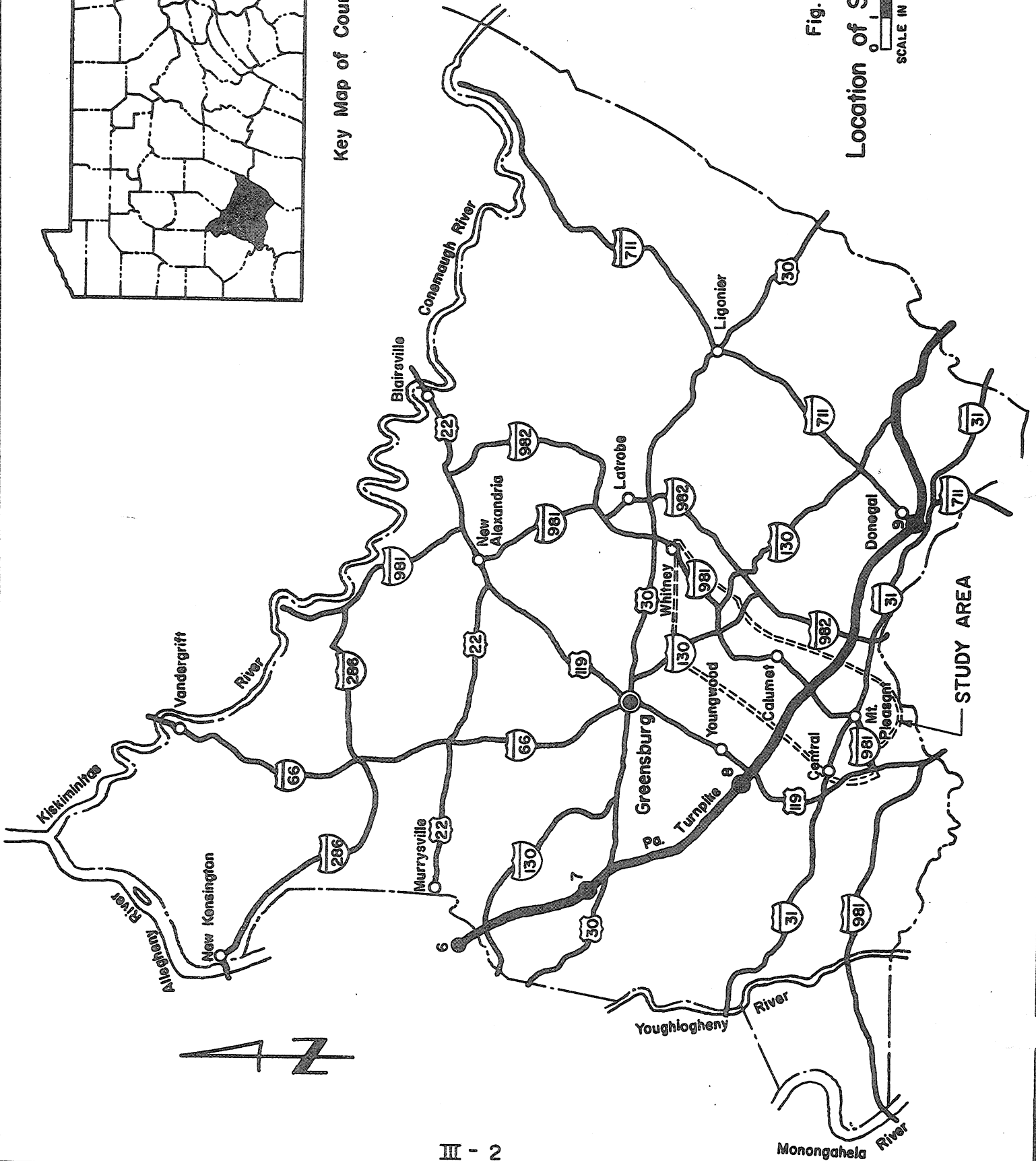


Fig. III - 1

Location of Study Area



contour (See Vol. II, Plates 1 and 2);

2. The AMD discharges considered as breakouts of the pool in the northern portion are generally higher in elevation than those of the southern portion (See Table IV-1 this report and Buchart-Horn, 1972);
3. The dip of units exposed at the surface along the assumed boundary is toward the NE, or has a tilt in that direction, and;
4. Lack of sufficiently detailed mine maps of this area to determine if the pool is continuous.

The existence of two distinct or one continuous pool in the southern portion of the Latrobe Syncline will not affect the abatement plan proposed in this report. In either case the pool level is not anticipated to undergo significant change in elevation.

## 2.0 Geography

The Southern Latrobe Syncline Mine Pool lies in south central Westmoreland County (Vol. II Plates 1 and 2). This pool underlies approximately 44 square miles of Westmoreland County including parts of East Huntington, Mt. Pleasant, Unity Townships and a small portion of Hempfield Township. The prominent towns in the area include Greensburg and Latrobe on the northern end and Mt. Pleasant on the southern end. The area is crossed by three major highways, U.S. Route 119 in a general north-south direction and U.S. Route 30 and Pennsylvania Turnpike (1-70 & 1-76) in a general east-west direction. (Figure III-1).

The Appalachian Plateau consists in most places of rounded hills and ridges, products of the submature dissection of a once featureless peneplain. The interstream crests of peneplain remnants lie between 1200 and 1250 feet above sea level and mark a slightly undulating surface, approximately horizontal when viewed on a regional basis.

The entire area is drained by the Mississippi River System. The streams in the study area are tributaries to the Youghiogheny River which flows into the Monongahela River at McKeesport, Pa., approximately 16 river miles above the confluence of the Monongahela and Allegheny Rivers which marks the start of the Ohio River.

### 3.0 Soils

As in any area the soils present are formed through a complex set of relationships including parent material, climate, existing biota, topography and length of time the material was exposed. To obtain a general idea of soil conditions in an area, soils are grouped in associations. An association consists of one or more major soil and at least one minor soil. The soils in one association may occur in another but in a different pattern.

The major soil association described by the Soil Conservation Service (Taylor, et al, 1963) in Westmoreland County for the Latrobe Syncline area is quoted below:

#### Westmoreland-Guernsey-Clarksburg Association

"(Deep and moderately deep, well-drained to somewhat poorly drained soils over interbedded sandstone, shale, and limestone).

This association consists chiefly of rounded hills that have long, smooth, convex slopes, and of nearly level to gently sloping benches and fans. It is mainly in the west-central part of the county and is at elevations above the Pittsburgh coal seam.

About 50 percent of the association consists of moderately deep to deep, well-drained Westmoreland soils, which are gently sloping to steep. About 30 percent consists of moderately well drained to somewhat poorly drained Guernsey soils. These soils are nearly level to moderately steep and occur on the lower parts of slopes, below Westmoreland soils. About 15 percent of the association consists of moderately well drained to somewhat poorly drained Clarksburg soils. These soils are nearly level to sloping. They are in drainageways and on benches and fans along streams. The rest of the association consists of Brooke and other soils. This association occupies about 9 percent of the county. The topography and the high natural fertility of the soils make this association well suited to farming. Moderate limitations affecting farming and moderate to severe limitations affecting residential and industrial development are the seasonal high water table of some soils, the moderate depth to bedrock of some, and the instability of others. Limitations affecting onlot disposal of septictank effluent are generally severe. In areas where coal has been removed, the level of the water table may have changed, and depressions are likely to form."

#### 4.0 Climate

The humid, continental climate of Westmoreland County is characterized by warm summers and cold winters. Precipitation is adequate and well distributed. The prevailing winds are from the west.

Almost daily changes in weather occur in winter and spring. From December through the early part of March, cold spells accompanied by brisk northwesterly winds occasionally last for several days. In summer and fall, changes are less frequent; the weather remains essentially the same for a few days to a week or more. For extended periods in summer, days are sunny, hot and humid, cooled only temporarily by afternoon showers and thunderstorms, and nights are warm. Dry sunny days and cool clear nights are typical of fall.

Most of the local differences in climate within the county result from differences in topography. Because of higher elevation and more rugged terrain, the eastern part has lower temperatures and more cloudiness, precipitation, and thunderstorms than the central and western parts. Variations in the central and western parts are confined mainly to nighttime drops in temperature that result from cool air drainage. Where air drainage is relatively poor as it is in valleys, throughout the county, temperatures are lower and growing seasons are shorter than on surrounding higher terrain.

Data on precipitation for Westmoreland County are given in Appendix C. The data are based on records kept at the Derry weather station, which is at an elevation of 1,150 feet, and are representative of all of the county except the extreme river valleys and the eastern mountains.

The warmest parts of the county are the valleys of the Monongahela and Youghiogheny Rivers, where the average annual

temperature is 55°F. The average annual temperature is 50°F in most of the central areas and 45°F in the Chestnut Ridge and Laurel Hill areas in the eastern part of the county. In January, normally the coldest month, the mean temperatures across the county range from 25° to 33°, and in July, the warmest month, from 67° to 75°. There is normally an 8° differential across the county throughout the year.

Temperatures generally remain above 50° from May through September. The maximum readings normally exceed 90° on 30 days in the western river valleys, and 10 to 20 days in the central areas, and on less than 5 days in the eastern mountains. Extremes of 100° or higher are rare anywhere in the county. A minimum temperature of 32° or below may be expected on 100 days each winter in the western part of the county, and on 175 days in the eastern part. A temperature of 0° or below normally occurs on 4 to 12 days each winter.

The interval between the last 32° temperature in spring and the first in fall is known as the growing season. The average length of the growing season in Westmoreland County is 160 days. The season is normally about 180 days in the western part of the county and about 150 days in the eastern part. The longest season on record is 203 days, and the shortest is 113 days.

Annual precipitation normally ranges from 40 inches in the western part of the county to more than 50 inches in the eastern part. the highest annual total recorded is 56 inches, and the lowest is 30 inches. Nearly half of the annual total



falls between the first of May and the end of September. Between 18 and 22 inches can be expected during this period, but the amounts have ranged from less than 14 inches to nearly 28 inches. The total monthly precipitation is ordinarily 3 to 5 inches but ranges from less than 0.15 to more than 13 inches. Short dry spells occur, but extended severe droughts are rare.

Rainfall in summer usually comes from showers and thunderstorms and is of short duration. Thunderstorms average 15 to 25 every year. Maximum amounts of 1.57 inches in 1 hour and 2.25 inches in 2 hours have been reported once every 5 and 10 years, respectively. Occasionally, there is a steady but less intense rainfall that lasts for 6 to 24 hours. An inch or more of rainfall in 1 day can be expected in any month. A fall of 2 inches in 1 day occurs about once a year, and 3.5 inches in 1 day about once every 5 years.

Snowfalls are frequent and sometimes heavy from December through March. The ground is generally covered with snow for about one-third of the winter. In some years it is covered from December through February. The total annual snowfall throughout the county ranges from less than 25 inches in the western part of the county to 40 inches in the central part and 70 inches in the eastern part. Occasionally, more than 80 inches falls in the eastern half of the county. There are few winters when the total snowfall is less than 25 inches. Frequently, a monthly total of 10 inches is reported. The highest monthly total at Derry, Pa., was 32 inches in December 1944. The highest seasonal total was 84 inches during the winter of 1960-1961.

## 5.0 Forest Cover

With the exception of the heavily urbanized or agricultural areas the bulk of Westmoreland County's land is forested.

The eastern one-third of the county from a line running north-south from Blairsville to Donegal and east to the Laurel Ridge summit is comprised of large contiguous blocks of forest land. The remainder of the county including the Latrobe Syncline area contains widely scattered and relatively small blocks of forest land.

The mixed oak-hickory forest type predominates throughout most of the county -- this type consists mainly of red, black, white, scarlet and chestnut oaks and pignut, mockernut, shag-bark and bitternut hickories.

Another forest type commonly found at higher elevations and on northerly exposures is the northern hardwood association consisting predominantly of beech, birch, red and sugar maple trees.

Other tree species commonly found throughout the county and often associated with the above mentioned species are tulip and cucumber poplars, basswood, wild black cherry, black locust and white ash.

Sycamore and several species of alder and willow trees are commonly found in the bottom lands of the various stream drainages.

Wild crabapple and hawthorne trees are commonly found growing in abandoned fields and pastures.

A wide variety of associated small trees and shrubs such as dogwood, serviceberry, spicebush, blueberry, mountain laurel and rhododendron are commonly found growing in the understory of the main forest types.