

I. INTRODUCTION

This report presents the findings and recommendations of an acid mine drainage study, which encompassed a portion of the Loyalsock Creek Watershed, Sullivan County, Pennsylvania. The study was administered by the Pennsylvania Department of Environmental Resources, Bureau of Resources Programming, Division of Mine Area Restoration, and was financed under Pennsylvania Act 443 of 1967, "Land and Water Conservation and Reclamation Act".

In general, acid mine drainage is initiated when rainwater and runoff enter rock crevices, rock fractures, abandoned strip pits, or other avenues that direct water flow into underground mine workings. Here the water quality is affected, particularly if air enters these workings, and concentrations of acid, iron, and sulfate together with PH can be significantly altered. These deep mine pools eventually discharge through either drainage tunnels, drift, or slope openings, or other areas where the collapse or disturbance of the rock strata allows for such drainage. In addition, prior to the enactment and enforcement of effective deep mine, strip mine, and mine drainage regulations, the land and water resources were subjected to degradation on a large scale. The end result of these practices produced large open pits, spoil or culm piles of unneeded material, and drainage patterns not contiguous with the natural topography. Runoff from areas such as these as well as discharges from deep mine workings produce acid mine drainage. This drainage flows directly to streams and usually has an adverse affect on water quality, and consequently, sport fishing, recreational activity, and potable water supply.

It is this situation which characterizes a significant area in the Loyalsock Creek Watershed, and has necessitated this study. Indeed two discharge tunnels in particular act to drain an abandoned deep mine complex and have been doing so since the early 1900's.

A. PURPOSE

The purpose of this study was to determine the extent, characteristics, and residual affects of any acid mine drainage sources which discharge into the Loyalsock Creek Watershed from its head waters to its confluence with Little Loyalsock Creek at Forksville. The implementation of the study was divided into three phases.

Phase I - A reconnaissance survey, including stream sample analysis, was conducted for all major tributaries of the Loyalsock Creek, to determine stream quality and possible pollution from acid mine drainage.

Phase II - An indepth investigation was made of those tributaries designated under Phase I to be problem areas. This investigation included compilation of information and data from topographic maps, mining maps, state agencies, as well as discussions with local residents, mineral rights owners, and mining company personnel. Furthermore, field investigations were performed on mining operations, both active and inactive, to determine the source of acid mine drainage.

Phase III - An extensive analysis was made of the critical areas delineated under Phase II, including chemical analysis, flow measurements, and tabulation of pollution load data. In addition, a detailed examination of available data for the geology and hydrology of the basin was performed. Based on all this information, recommendations for abatement measures for each specific area were made, including cost estimates.