SINKHOLES AND KARST-RELATED FEATURES
OF CHESTER COUNTY, PENNSYLVANIA

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Introduction

This report is part of a state-wide project undertaken to identify areas of carbonate bedrock in Pennsylvania that have had a reported history of sinkhole occurrence as well as those areas that may be susceptible to sinkhole development. This report serves as a source of background information for land development and foundation design to help avoid subsidence and groundwater contamination problems.

The six maps covered in this report are based on office studies and field investigations to identify subsurface features in carbonate bedrock areas that have some surface expression. The mapped areas of surface karst features (depressions, individual sinkholes and clusters of sinkholes) are indicators of those places where additional subsidence is considered to be more likely to occur. However, subsurface karst features can occur where there is no discernible surface expression indicating their location. These carbonate features, therefore, are not necessarily restricted to areas delineated on the maps prepared for this report.

These maps should be used to develop information for preliminary site investigations for land use and development. They are not a substitute for a site specific subsurface investigation. For example, if examination of these maps indicates sinkholes or surface depressions on the land to be developed, special emphasis should be given in the planning stage of the project to address the potential problems related to karst topography such as storm-water management, groundwater contamination, or land subsidence.

Map Preparation

Most of the data for this report was derived from aerial photographic interpretation and field observations. Initially, one set of aerial photographs was reviewed and surface features (sinkholes, depressions, patterned ground, abandoned surface mines, outcrops, and other anomalous features) were outlined on the aerial photographs and then later transferred to 7.5 minute geologic base maps. These surface features were then field checked and bedrock exposures examined. Once the field study had been completed, additional sets of aerial photographs were reviewed to complete the survey. The aerial photographs used were U.S.D.A., black and white stereo pairs, 1:20,000 scale, for the years 1947, 1958, 1964 and 1971.

Additional data was compiled by reviewing available literature, municipal questionnaires, and through consultation with individuals representing local government, state and federal agencies, private consultants, and the general public. The carbonate geology used in constructing the base maps was obtained from Berg and others (1980) and survey compilation maps from Berg and Dodge (1981). Additional information regarding the carbonate geology and karst topography of Chester County was derived from Berg and others (1983); Bascom and Stose (1932 and 1938); Bascom and others (1909); Chajkowski (1971); Crawford and Crawford (1974); Geyer and Wilshusen (1982); Miller (1934); O'Neill (1964), Rogers (1858) and Rogers and others (1883). A description of the geologic formations labeled on the maps is shown on Figure 1.

The bedding and joint orientations shown on the maps were obtained directly from field measurements.