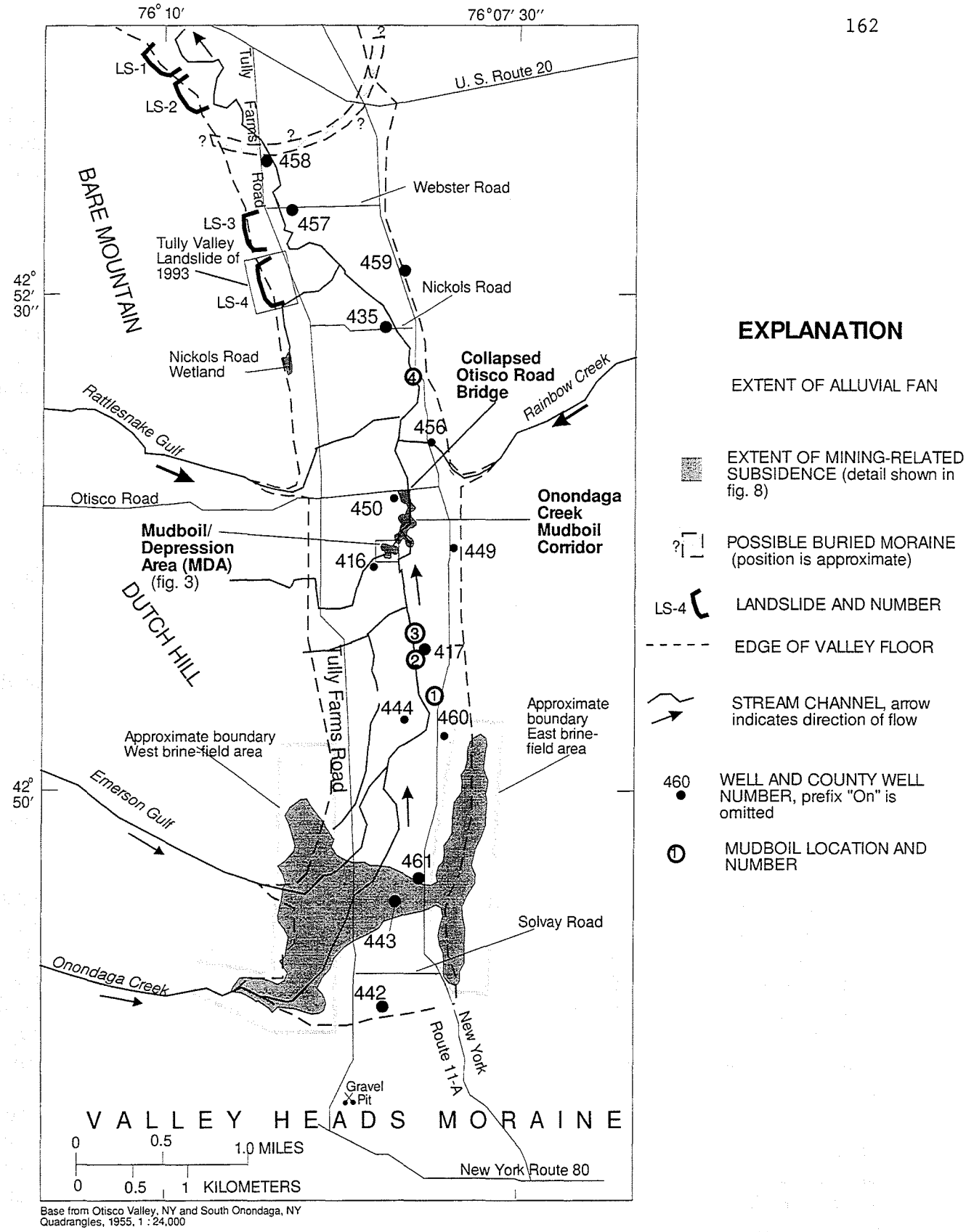

Figure 2. Principal geographic features of the Tully Valley showing wells, brinefield areas, landslides, and mudboil areas. (From Kappel and others, 1996, fig. 2.)

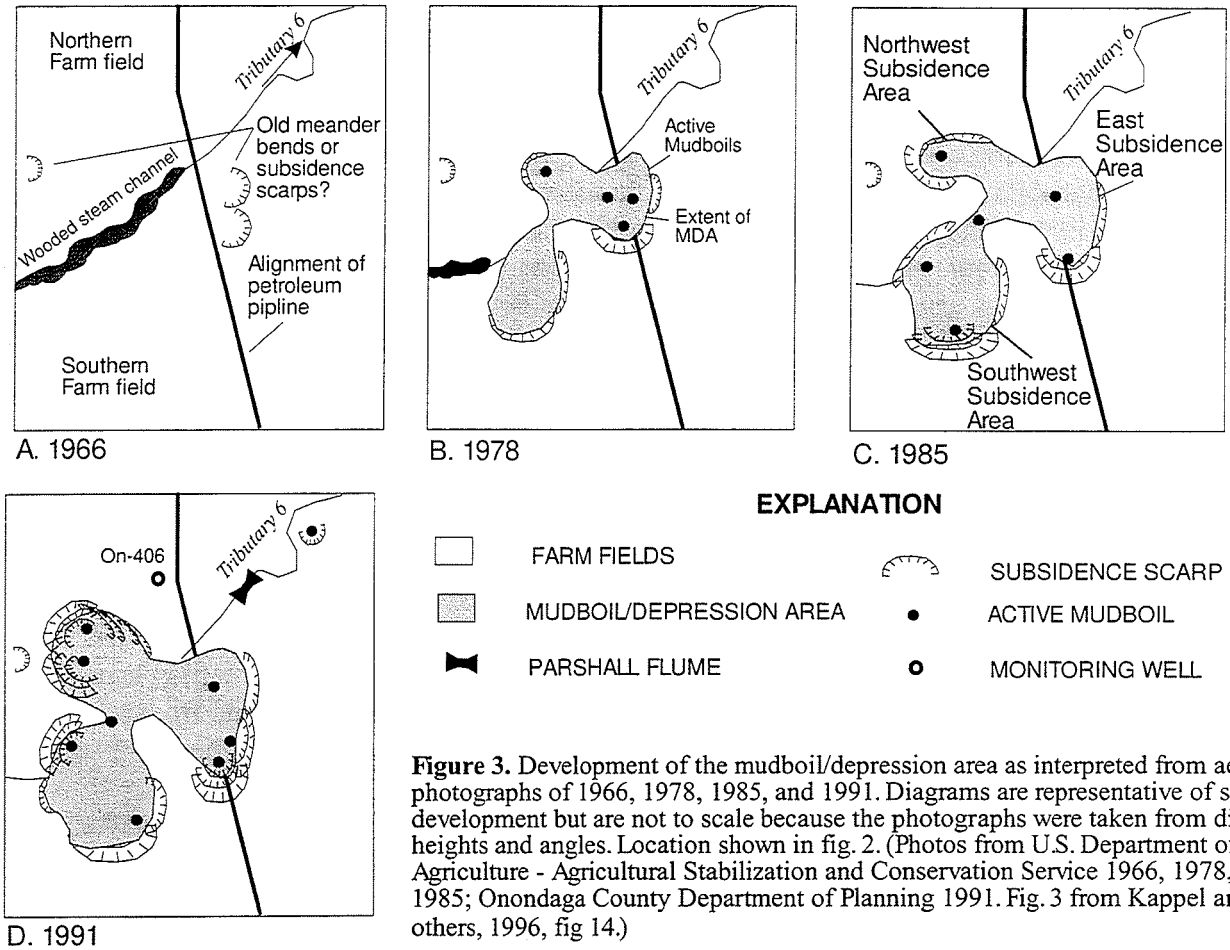

Figure 3. Development of the mudboil/depression area as interpreted from aerial photographs of 1966, 1978, 1985, and 1991. Diagrams are representative of scarp development but are not to scale because the photographs were taken from differing heights and angles. Location shown in fig. 2. (Photos from U.S. Department of Agriculture - Agricultural Stabilization and Conservation Service 1966, 1978, and 1985; Onondaga County Department of Planning 1991. Fig. 3 from Kappel and others, 1996, fig 14.)

The topographic character of the east-facing slope of the Bare Mountain hillside from Route 20 south to Otisco Road is much different from that of the other slopes in the valley. The base of the hillside is generally less steep near the valley floor, and the middle and upper slopes do not have deeply incised stream channels such as are found elsewhere in the Tully Valley. The colluvial soils and weathered bedrock on this slope allow greater water storage than do other slopes in the valley, which allow water to drain more freely to incised stream channels and flow to the valley floor. The massive Tully Limestone is found near the top of Bare Mountain, and, in several areas, is exposed as a straight wall; in one location the wall is more than 1,000 feet long and about 40 feet high (known locally as the 'Grand Canal') and these features have secondary ridges below them. The ridgetop contains fracture traces and blocklike features aligned with the Grand Canal. The flow of water from the ridgetop to the valley floor is most likely through internal (subsurface) drainage in the colluvial soils as well as through the fractured and weathered shale bedrock. A detailed discussion of the bedrock structure of the Bare Mountain hillside is given by Drs. Robert Fakundiny and Carleton Brett, in this volume.

Mudboils, or "mud volcanoes", are found on the floor of the Tully Valley near Onondaga Creek, south of the Rattlesnake and Rainbow alluvial fans. Intermittent mudboil activity has also been reported in the backscarp of the 1993 landslide area. The mudboils are small, volcanolike cones of fine sand and silt that range from several inches to several feet high, and from several inches to more than 30 feet in diameter. In some areas these mudboils can be dynamic ebb-and-flow features that erupt and form large cones of sediment within several days and cease flowing soon thereafter; others may discharge continuously for several years. Mudboils can discharge either freshwater or brackish water and together have discharged as much as 30 tons of sediment per day to Onondaga Creek. Associated with the mudboil discharge is land-surface subsidence due to the removal of fine-grained sediment at depth. More than 15 feet of land subsidence has occurred in a 5-acre area in which active mudboils have been erupting since the mid 1970's. (fig. 3). A discussion of the hydrogeology of the Tully Valley mudboils is given by this author, in this volume.

The geologic and hydrologic characteristics of the Tully Valley are typical of the Finger Lake valleys of central New York. Anomalous conditions in the central part of the valley floor and along the east-facing Bare Mountain hillside create unique hydrogeologic conditions that may have been exacerbated by man's activities. The following articles describe some noteworthy features of the valley and the research taking place.

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