This isopachous map depicts the thickness of unlithified, Quaternary (Pleistocene and Holocene) sediments that have been eroded by a regional river drainage system (Kempton and others, 1991). The modern land surface is relatively flat, but the effects of recent incision by the Embarras River and its tributaries are readily discernible on the drift isopachs, as well as on the modern topographic surface. Several glacial moraines occur in the Villa Grove Quadrangle (Figure C), but their effect on the drift thickness is far outweighed by the influence of the bedrock. It is thinnest (less than 25 feet) in two areas, near the quarry in the west-central part and in the south-central part (Figure E). Most of the material was deposited during the Pleistocene Epoch when the sources; some material was eroded from nearby outcrops of rock (at the time), and some was eroded from areas as far away as eastern Canada. Diamicton, deposited by the glaciers, is the prevalent lithology of the Quaternary material, but gravel, sand, silt, and clay deposited by fluvial, lacustrine, deltaic, and aeolian processes are also present. The sediments occur in layers and in lenses, some of which exceed thicknesses of 50 feet (for additional details, see Hanzel and others, 1999).

The map was produced using Dynamic Graphics Inc.'s EarthVision software to calculate the difference between digital grids of elevations of the bedrock surface (from Weibel, 1999) and elevations of the land surface (USGS topographic contours and for the overall compilation of the map. Weibel (1999) included a map displaying locations of data used to derive the digital grid of the bedrock surface (Figure F); this distribution also is relevant to the reliability of this map. The map is based on a surficial geology map of the Villa Grove Quadrangle, Illinois—Topography, glacial drift stratigraphy and hydrogeology (Hansel, A. K., R. C. Berg, and C. C. Abert, 1999, Surficial Geology Map, Villa Grove Quadrangle, Douglas County, Illinois: Illinois State Geological Survey, Illinois Geologic Quadrangle IGQ Villa Grove-SG, map scale 1:24,000).

References