LITTLE BEAVER CREEK BASIN

Between the Mahoning River and the Muskingum River in southeastern Ohio is an area of about 2,500 square miles drained by several small tributaries of the Ohio River. The largest stream is Little Beaver Creek, with an area of 510 square miles.

Physiography

Most of the Little Beaver Creek Basin is glaciated but the remainder of the area is part of the unglaciated Allegheny Plateau. The plateau is well dissected and the topography is rough, with the steepest slopes near the Ohio River. The northern part of Columbiana County, in the Little Beaver Creek drainage, is a broken glacial plain. South of this area is a belt of terminal moraines, with generally thin till but with occasional hills and lobes of thick drift.

The unglaciated plateau is decidedly hilly, with deep valleys, and in the lower ends of several streams, narrow gorges. The thick sandstone formations are resistant and form steep cliffs, particularly toward the Ohio River. The lower courses of Short Creek and Yellow Creek, for example, are entrenched, narrow and sinuous. The upland areas are flatter, but rough terrain predominates.

Geology

The rocks exposed in this area dip toward the southeast and consist of sandstones, shales, coal, and clay with occasional thin calcareous formations. The rocks are of Pennsylvanian and Permian age.

The glacial drift and outwash has some appreciable effect on the flow characteristics of Little Beaver Creek. South of the glacial boundary the soils are thin, and there is relatively little natural storage in the bedrock. The sandstones are permeable and contribute toward sustained dry-weather flow of streams, but generally storage is small. Many of the coarser sandstone units are well above stream drainage. There are large areas denuded by strip mining.

Soils

The soils of the glaciated part of this area are predominantly the well-drained, moderately permeable Wooster and the moderately well drained, slowly permeable Canfield soils series. These soils developed from Wisconsin medium-textured glacial till on sandstone and shale. South of the glacial boundary the soils are shallow, with thin fill even in the valleys. Steep topography and erosion have prevented the normal development of soil profiles. Over large areas the soils are classified as the Gilpin, Berks, Hazleton, Westmoreland, Lowell, and Upshur series, with surface textures ranging from gravelly loam to silty clay loam. These are residual soils, and differences in their profile characteristics are due almost entirely to the underlying rock on which they developed. Permeability of the soils is generally moderate to slow.

Flow Characteristics

In the northern part of the area the streams are affected somewhat by glacial deposits. The higher low-flow index for Little Beaver Creek indicates the additional increment of

ground water furnished by the glacial deposits. North Fork and Middle Fork contribute the major portion of the dry-weather flow of Little Beaver Creek. These tributaries extend into the glaciated area and their main channels are underlain with glacial outwash deposits.

Figure 56: Little Beaver Creek Watershed

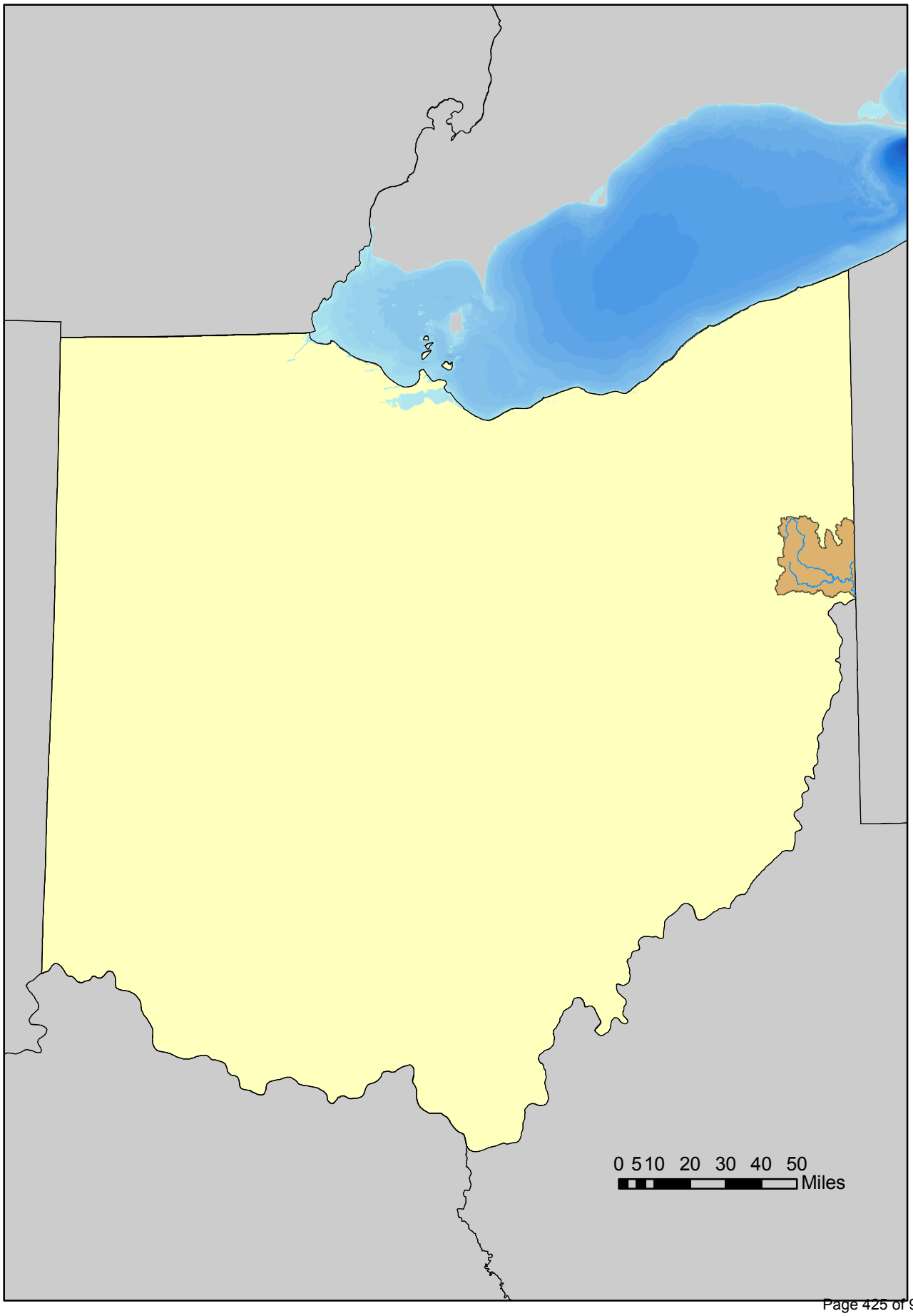

Figure 57: Little Beaver Creek Watershed Land Cover

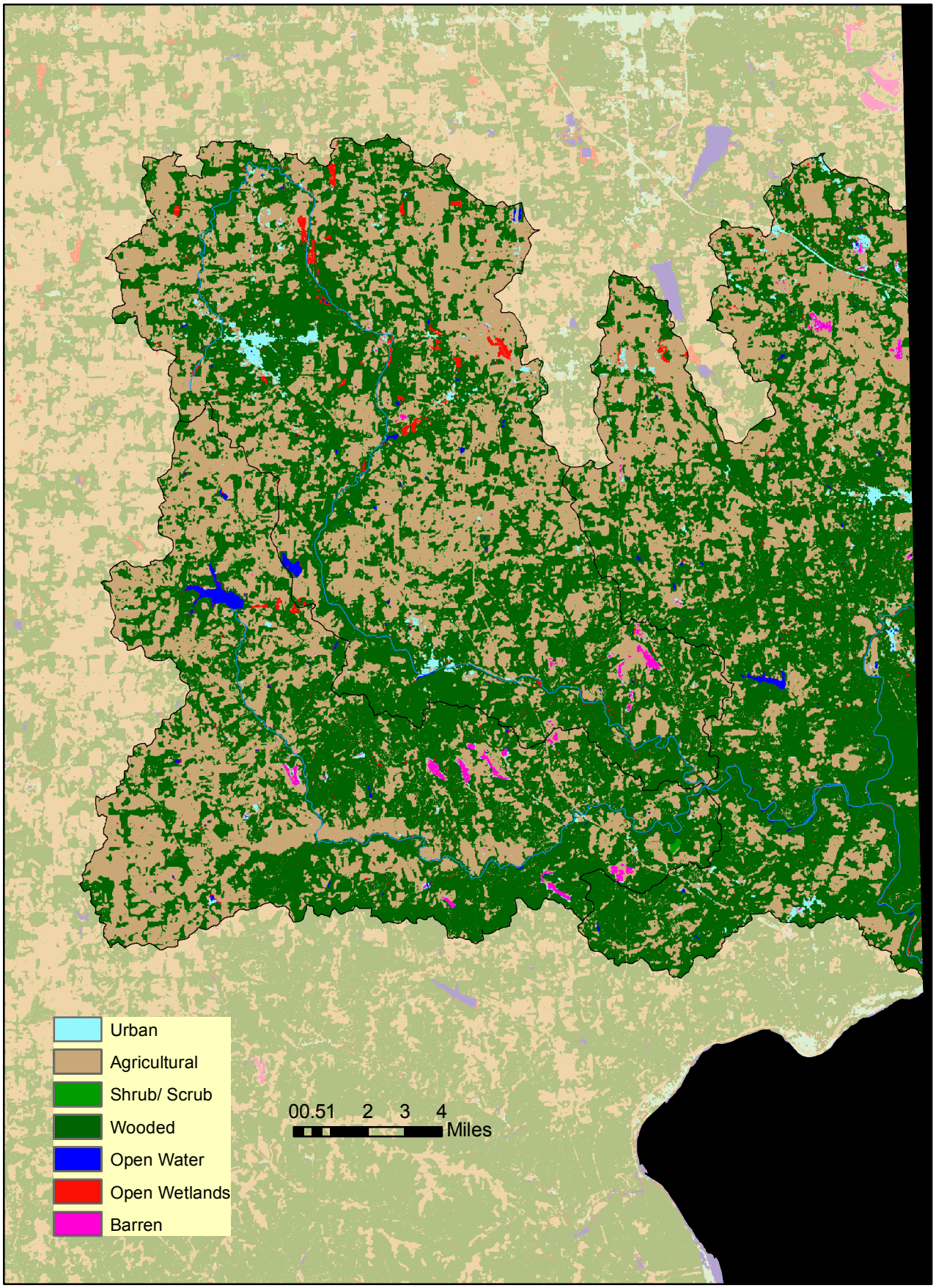
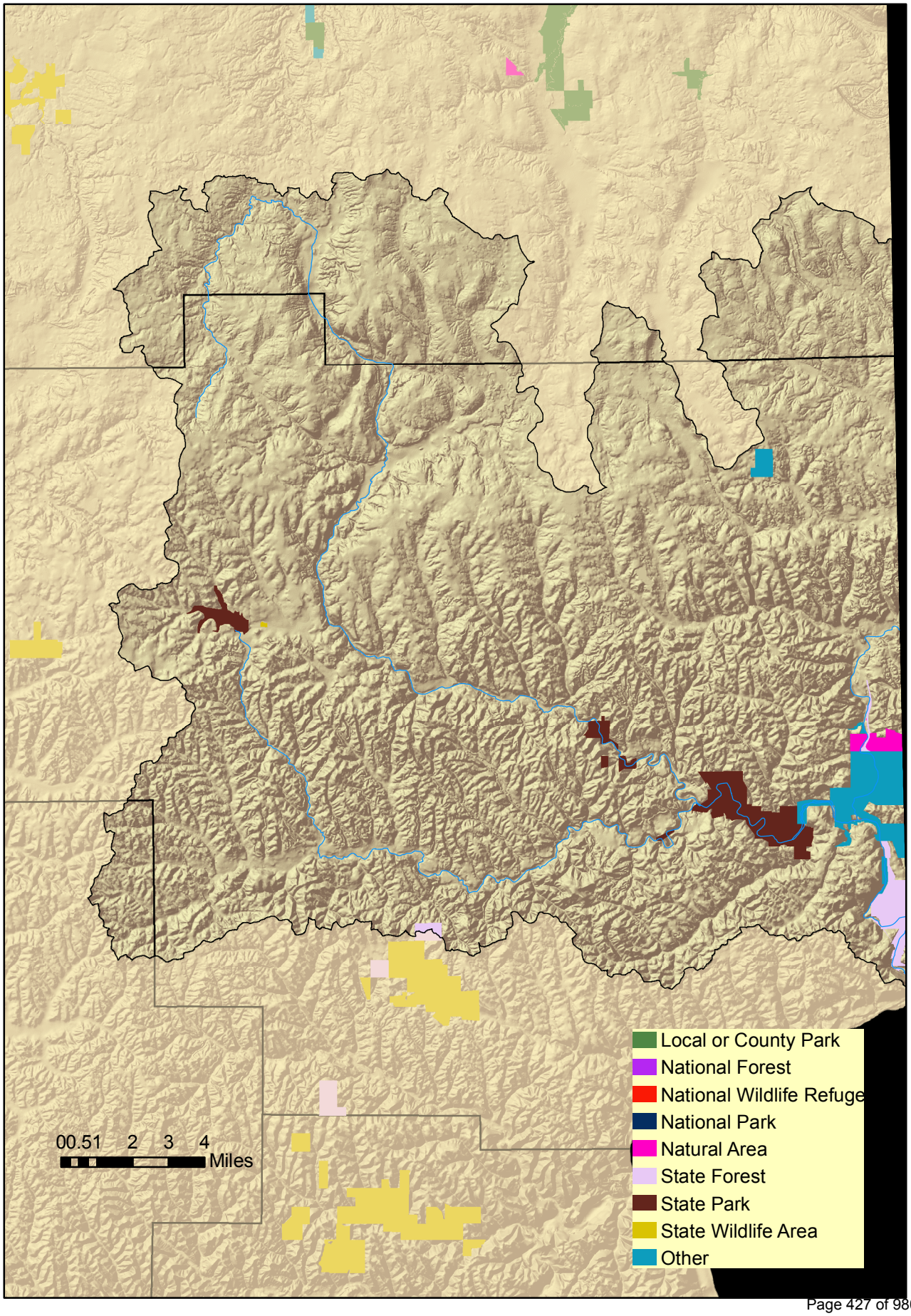
Figure 58: Little Beaver Creek Watershed Protected Lands