Adopted areawide water quality management plans recommend expansion of the areas served by sanitary sewers. The largest area of expansion is envisioned to be in the city of West Bend, where the majority of the population increase in the watershed is anticipated to occur over about the next 20 years.

WATER SUPPLY SERVICE

Groundwater contained on one of the three aquifers underlying the watershed is the sole source of potable water. Water obtained from these aquifers is either pumped from individual wells owned by home owners, commercial establishments, or industries or is obtained by larger municipal water supply pumping facilities.

Three communities--city of West Bend and the villages of Campbellsport and Kewaskum--have municipal water systems. They provide water service to about 6.9 square miles, or about 2.6 percent of the watershed and approximately 24,000 persons, or about 56 percent of the population. The remainder of the population--19,000 persons, or about 44 percent--rely on private, individual water supply systems.

NATURAL RESOURCE FEATURES

CLIMATE

The frequency, duration, and quantity of precipitation influences surface and groundwater quality and quantity, soil moisture content, run-off characteristics, and water course condition. Precipitation events throughout the watershed are most frequently moderate in duration and quantity. Approximately 50 events per year--defined as a distinct period when precipitation equal to or greater than 0.1 inch falls--occur in the watershed.

Annually, approximately 31 inches of precipitation falls on the watershed. The driest periods occur during the winter months of December, January, and February, when an average of 1.54 inches, 1.31 inches, and 0.95 inches of precipitation occurs. These are also the months of greatest snow accumulation, when more than 30 inches or 68 percent of the average annual snowfall occurs. The wettest months are June, July, August, and September when more than 14 inches, or 47 percent of the average annual total takes place.

TOPOGRAPHY

Surface deposits left by the most recent period of glaciation is primarily responsible for the variation in the watershed's landscape. The resulting topography is extremely variable, ranging in elevation from more than 1,300 feet above mean sea level in the northwest corner of the watershed in the town of Mitchell, to about 800 feet above mean sea level at the confluence with the Milwaukee River North Branch in the town of Fredonia.

The topography in the northern and central portions of the watershed, especially those areas within the Kettle Moraine State Forest, is undulating and abruptly irregular. The landscape includes steeply sloped hills known as kames, to shallow depressions and relatively deep holes known as kettles. The areas with the most uniform slopes include floodplains and upland areas where broad expanses of glacial outwash material accumulated.

Surface Water Resources

Streams: Perennial and intermittent streams are the predominant surface water drainage features. The undulating, irregular topography resulted in the natural creation of the more than 263 miles of streams. The principal water resources in the East-West Watershed are shown in Map 2.

Perennial streams are defined as those which maintain at least a small continuous flow throughout most of the year, except during unusually dry periods. Intermittent streams generally maintain continuous flow during those periods of the year when runoff and excessive groundwater discharge, resulting from rainfall and/or snow melt, is highest.

There are about 183 miles of perennial streams in the watershed. Approximately 159 miles, or 87 percent, have retained their natural condition, while 24 miles, or 13 percent, have been impounded by artificial structures or channelized. The longest perennial streams are the three branches of the Milwaukee River (Main Stem-58.4 miles, West Branch-21.6 miles, and East Branch-16.4 miles). Other perennial streams of significant length include Kewaskum Creek (8.0 miles), Auburn Lake Creek (7.5 miles), and Quaas Creek (6.2 miles).

Intermittent streams have a combined length of approximately 80 miles. More than 29 miles, or 36 percent, of these streams have been altered by channelization; with the remaining 51 miles, or 64 percent, retaining their natural condition.

Intermittent streams form the headwaters of many streams and rivers in the watershed. They are relatively short, narrow, and shallow, and drain small areas. Consequently they are particularly susceptible to nonpoint sources of pollution. However, their dynamic nature allows rapid improvement if the pollutant source is reduced or eliminated.

The East Branch of the Milwaukee River, located primarily in the Northern Unit of the Kettle Moraine State Forest, is the most buffered and protected branch of the Milwaukee River. Much of the East Branch remains in a natural, unchannelized condition. Siltation and nutrient enrichment are the primary factors that affect quality of the recreational and aquatic life uses for surface waters in the East Branch and its tributaries.