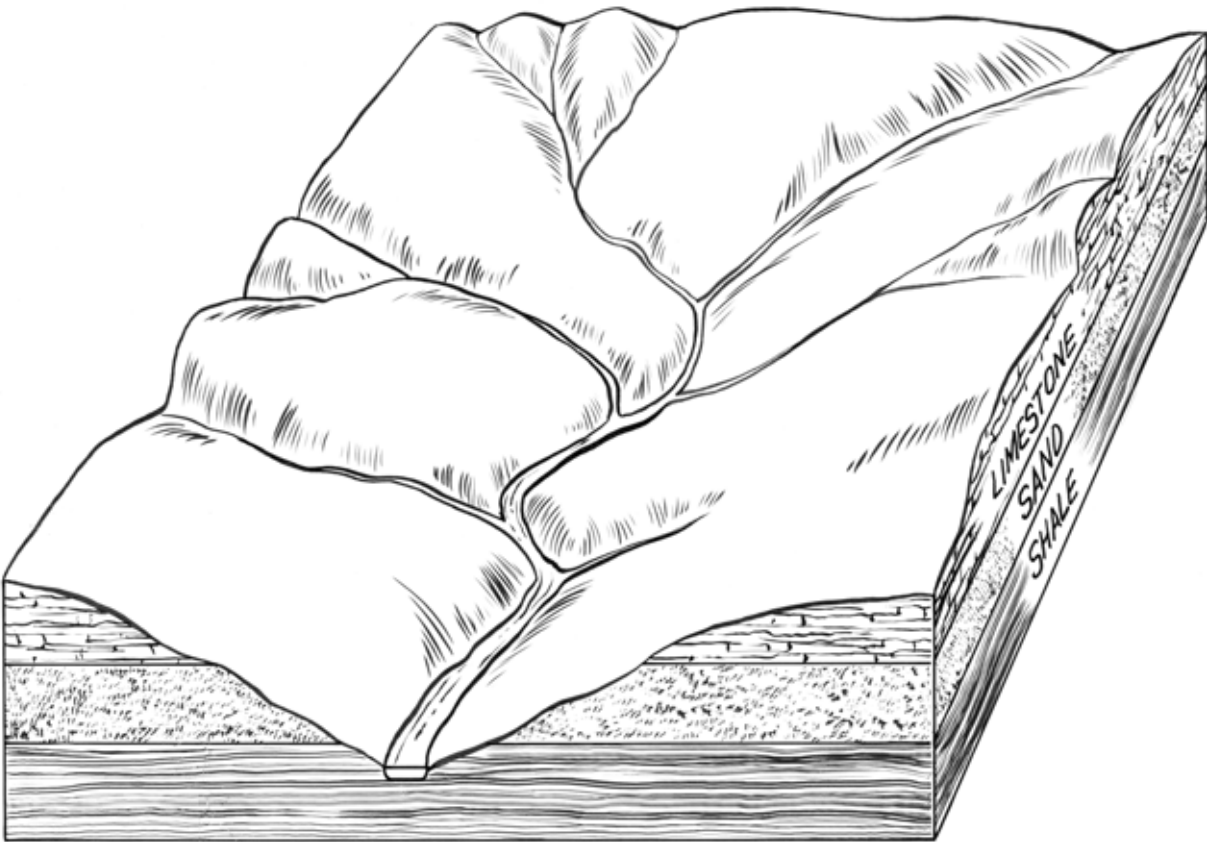


Watershed and Geology Module

A watershed is the land that drains its water into a stream. Missouri has five distinct physiographic regions which affect the character of Missouri watersheds. These geological conditions in conjunction with land use practices of humans impact the overall water quality and quantity of a given watershed.



Introduction

The day to day lives of Missouri citizens depend on the water in their watersheds. A watershed is a land area that drains into a river system. Everyone lives in a watershed. Land use practices within a watershed directly affect the surface and subsurface water quality and quantity. As precipitation falls over the land, surface and subsurface water flow carries pollutants to Missouri's streams and rivers.

Water pollution within a watershed can be identified as point and non-point pollution. Point source pollution can be traced to a single source, such as a pipe, culvert, or ditch. Non-point pollution originates from much wider sources and is not confined to a single outlet. Runoff from eroded fields, strip mines, fertilizers used on lawns, gasoline from roads, and feedlots are example of non-point pollution. Identifying and preventing water pollution in Missouri is important to the quality of life of Missouri citizens. Seventy-five percent of Missouri's residents depend on surface waters for their domestic water usage. Ninety-three percent of the land in Missouri is privately owned. Land use practices and other human activities within each watershed affect water quality and quantity for all.

The state of Missouri consists of five physiographic regions. These regions are defined according to geological factors. The regions are: Ozark, Osage Plains, Dissected Till Plains, St. Francois Mountains and Southeastern Lowlands (Bootheel).

These five physiographic regions are a determining factor in the formation of Missouri regional sub-basins and watersheds. Missouri consists of three regional sub-basins: Mississippi, Missouri, and White River. The three sub-basins are components of the entire Mississippi basin. Each sub-basin is composed of smaller watersheds. These watersheds are the result of the geology and topography of their immediate area. Missouri geology and topography are defining factors in the watershed boundaries in the state. Stream patterns in these watersheds vary in different physiographic regions.

Ozark Region: the south central portion of Missouri is composed of sedimentary rocks such as limestone and dolomite that were deposited by ancient seas millions of years ago. Today these rocks stand as bluffs and ridges as Ozark rivers carve through them. These entrenched meandering streams and river patterns are the result of uplifting that occurred during the Mesozoic era. The Ozarks is dotted with karst features, such as caves, sinkholes, springs and losing streams, which quickly deliver surface pollution to groundwater sources.

Osage Plains Region: in west central Missouri consists of rolling plains rather than the entrenched meanders which divide the ridges in the Ozarks. The Osage Plains were once the beginning of the great plains which rolled into the great grasslands of the middle part of the continent. The rivers in this region meander through prairie grasslands which have well-developed soil horizons. As a result, these rivers carry

more silt than Ozark streams as they slowly travel through once natural prairie grasslands.

Southeast Lowlands (Bootheel) Region: was the boundary between the present day Gulf of Mexico and Missouri and consists primarily of gravel and sand deposits from the Mississippi River. This region is naturally a wetland area, but after more than a century of drainage and channelization, the Bootheel has become one of Missouri's great bread baskets. Natural wetlands still exist in natural areas. Flooding still occurs, reminding the residents of the natural path of the great Mississippi. The channelization of the Bootheel can be clearly observed in the straight river patterns on a Missouri road map.

Dissected Till Plains Region: in northern Missouri is the product of the leading edge of the last continental glacier that once covered parts of North America. Since the leading edge of the glacier was only several hundred feet thick, glacier land forms are not easily identified today. The glaciated till assorted soils and rocks still cover northern Missouri and supports agriculture. The Osage Plains, Ozarks, and the Bootheel escaped glaciation.

St. Francois Mountains Region: in the east central part of the state displays the geology which underlies the entire state. Here igneous rocks are eroded by rivers that display the roots of volcanic islands which once rose above the ancient shallow seas covering Missouri. Elephant Rocks and Johnson's Shut-Ins are State Parks in the region which display this unique igneous geology.