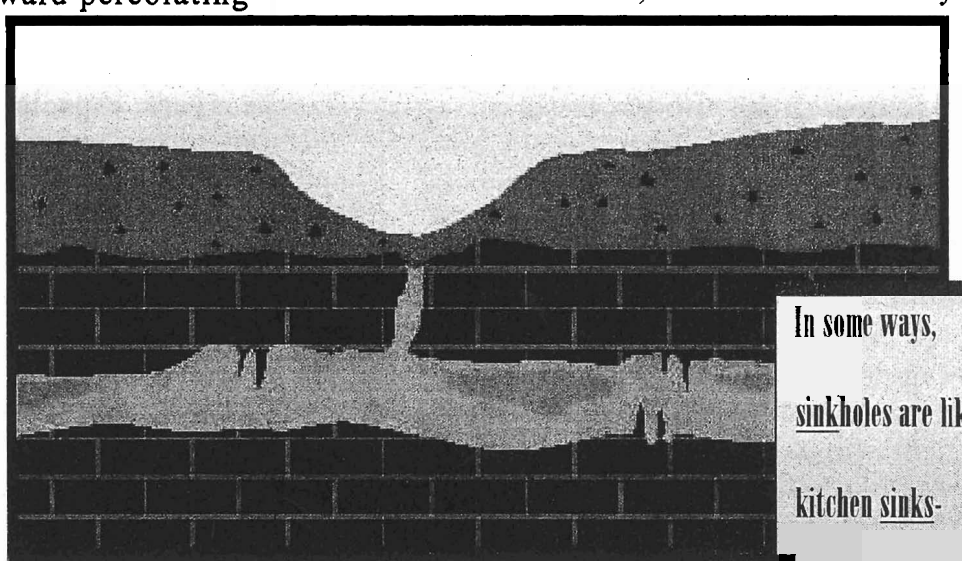
SINKHOLES, INLETS FOR THE UNDERGROUND WATER SYSTEM

Watershed Committee *of the Ozarks*

Sinkholes are prominent features of karst terrain. Karst landscapes form where the bedrock is mostly limestone or dolomite, as it is in much of the Ozarks. These rocks will dissolve in downward percolating rainwater that has become slightly acidic from contact with carbon dioxide in the soil. (The carbon dioxide comes from soil organisms breathing, just like we do.) Over thousands of years, rainwater flowing through cracks and crevices in the bedrock enlarges then to form an underground network of pipes called conduits. Soil sinks into the flared ends of these conduits near the ground surface, forming sinkholes. Sinkholes can also form suddenly when a portion of a cave roof collapses. Sinkholes come in various shapes and sizes, but they share this common feature–they serve as inlets for the underground drainage system. This drainage system produces other familiar features of karst–springs, caves and "losing streams"–streams that lose some or all of their flow directly into the groundwater system.

There are thousands of sinkholes in the Ozarks. Over 2,500 sinkholes have been identified in Greene county alone. In the eastern Ozarks, large sinkholes have wetlands developed on their floors, with distinct and unique species of plants. In southwest Missouri, there are some very large, deep sinkinkholes, such as Devil's Den in Webster county and the Avin sink near Nixa.



In some ways, sinkholes are like kitchen sinks–they are basins that will hold water, but usually for only a short time. The water finds its way to the drain (conduit), then flows through the underground drainage system toward the outlet, often a spring. Some of this water may also seep down into the deeper groundwater. But unlike a kitchen sink, sinkholes continue to grow in size as they funnel more and more of the surface runoff into themselves, dissolving more of the underlying bedrock.

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Do you have a sinkhole on your property? Sinkholes vary so greatly in size and shape, it is sometimes hard to recognize them. Some sinkholes are acres in size; others are as small as a few feet across. Some are shallow, saucer-shaped depressions; others are funnel-shaped, with very steep sides. There may or may not be a well developed swallow-hole, or eye, in the bottom of a sinkhole, indicating the actual opening into the conduit system. Often sinkholes in our area can be spotted by the presence of a circular grove of trees growing in the middle of a pasture. *Any depression* in the ground, in the Ozarks, should be treated as if it were a sinkhole.

Because sinkholes drain rapidly, and because they have a direct connection with our groundwater (and often our drinking water), we need to be careful what goes into them. Sinkholes are terrible places to dump trash, for instance. Waste oil or other chemicals could be flushed directly into the groundwater, where they could easily pollute a spring or someone's drinking water well. Sinkholes are bad places to build sewage lagoons or to install septic tanks. In fact, the best thing to do with sinkholes is to leave them alone.

If you must build a home or other building in an area that drains to a sinkhole, leave a vegetated buffer area around the sinkhole to filter out sediment and pollutants that might wash off of lawns, driveways, or parking lots. Be very careful about applying fertilizers or pesticides in yards that might be flushed into a sinkhole with the next rain.

Sinkholes are natural drainage points for our groundwater system, so should not be filled. If a sinkhole is plugged, water will not drain properly and will run off onto adjacent property, possibly causing flooding. Water that has been replenishing our groundwater supplies will now be diverted away as surface runoff. There are appropriate ways that collapsed sinkholes, if they present hazardous conditions, can be filled so that the natural drainage abilities are maintained. For information on how to properly fill sinkholes, contact the Watershed Committee office.

Sinkholes are natural and interesting features of our karst landscape. They are also an essental part of our groundwater system. To keep Ozark springs and groundwater clean, we must protect sinkholes from pollution. Springs sustain the flow of Ozarks rivers, especially in dry times, so polluted spring water could affect fishing and swimming in our streams and lakes. Pollution in sinkholes can even threaten our health by showing up in our drinking water. For all of these reasons, we need to keep a watchful eye on our local sinkholes and make sure that the runoff flowing into them is as clean as possible.

What goes into a sinkhole, may come out in our taps. By recognizing sinkholes for what they are, and respecting them for what they do, we have an opportunity to see that our groundwater, streams, springs, and lakes will be clean enough for future generations to use and enjoy.

Watershed Committee *of the Ozarks*

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The Watershed Committee of the Ozarks is a not-for-profit citizens advisory group dedicated to the protection of drinking water sources in the Springfield area.

Other publications available from the Watershed Committee:
Watershed News-Quarterly newsletter (free)
Maintaining Your Septic System–A brochure discussing the proper design, installation and maintenance of septic tank systems (free)
Springs–Early warning systems for our groundwater (free)
Water Protection At Home–What you can do to prevent water pollution in your community (free)