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MAPPED KARST GROUND-WATER BASINS IN THE SOMERSET 30 x 60 MINUTE QUADRANGLE

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LEGEND

- Area of potential karst ground-water basin development
- Area of limited karst ground-water basin development
- Inferred perennial ground-water flow route
- Subsurface overflow (high-flow) route
- Surface overflow (high-flow) route
- Ground-water basin catchment boundary
- Stream sink or swallet
- Underflow spring (perennial)
- Overflow spring (high flow)
- Karst window or sinking spring
- Cave stream
- Other tracer-injection point
- (1263) Kentucky Division of Water AKGWA spring identification number
- *COVE* Spring name

EXPLANATION

This map shows karst ground-water basins in the Somerset quadrangle, determined primarily by ground-water tracer studies. It can be used to quickly identify the ground-water basins and springs to which a site may drain. Major springs and the relative size of their catchment areas can be evaluated for potential as water supplies. The map also serves as a geographic index to literature on karst ground water in the area.

This map is designed for regional and preliminary hydrologic investigations. Features such as springs and swallets are much too small to precisely locate on this map with a scale small enough to show regional relationships. The user is referred to the literature for detailed site descriptions. The data used to compile this map were obtained by numerous investigators over the last 25 years. The underflow spring draining a ground-water basin is assigned a unique identification number, referred to as the AKGWA number (Assembled Kentucky Ground Water Database). Individual basins are identified by the underflow spring name and AKGWA number. The authors of tracer data are identified by number in the "Data Source" column of the key, and are listed in "References Cited" in order of publication or research date.

Although ground-water flow routes shown here have been established by tracer studies, with the exception of mapped cave streams, the precise flow paths are unknown and are inferred or interpreted using water-level data, geologic structure, or surface features. Arrows show the direction of ground-water flow and tracer recovery locations. Conduit flow is illustrated as either thick trunk-flow lines or thin tributary-flow lines. The locations of some ground-water basins are inferred, based on the existence of a significant spring system and the delineation of adjacent basins. The position of ground-water basin boundaries should be considered approximate because of the map's scale and because boundaries can shift during high-water conditions. Also, excess flow may exit or enter a basin via surface or subsurface overflow routes. Additional overflow routes probably exist. Although most of the results of ground-water tracing shown on this map were obtained during moderate- or high-flow conditions, the ground-water basins are illustrated in base flow because base flow is the most common flow condition. The main spring draining the basin is assumed to be an underflow spring that preferentially drains base flow. Overflow springs discharge during high flow.[1] Generally, names of ground-water basins are derived from these main springs. Not all additional springs are shown because of the small map scale.

DISCLAIMER: This map is subject to revision upon receipt of new hydrologic data. The unshaded area (shown in white on the map) is karst. The shaded area (shown in light brown) is largely underlain by noncarbonate rocks and has minimal development of karst. Karst features are only shown in those areas where tracer tests have been conducted. The user should consult the "References Cited" for additional information.

[1]Worthington, S.R.H., 1991, Karst hydrogeology of the Canadian Rocky Mountains: Hamilton, Ontario, McMaster University, Ph.D. dissertation, 380 p.

N

1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 KILOMETERS
1 0 1 2 3 4 5 6 7 8 9 10 MILES
1000 0 5000 10 000 15 000 METERS
5000 0 10 000 20 000 30 000 40 000 50 000 FEET

SCALE 1:100 000
UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 16
Contour interval 50 meters

REFERENCES CITED

(1) Morris, F.R., IV, 1983, Karst hydrogeology of Cedar Creek and adjacent basins in east-central Pulaski County, Kentucky: Richmond, Eastern Kentucky University, Master's thesis, 126 p.

(2) Romanik, P.B., 1986, Delineation of a karst groundwater basin in Sinking Valley, Pulaski County, Kentucky: Richmond, Eastern Kentucky University, Master's thesis, 101 p.

(3) Leo, D.P., 1990, Hydrogeology of a limestone spring and its recharge area in southeastern Rockcastle County, Kentucky: Richmond, Eastern Kentucky University, Master's thesis, 81 p.

(4) Sendlein, L.V.A., Dinger, J.S., Minns, S.A., and Sahba, Arsin, 1990, Hydrogeology and groundwater monitoring of the John Sherman Cooper Power Station, Burnside, Kentucky: University of Kentucky, Department of Geological Sciences, 68 p.

(5) Ray, J.A., 1994, Unpublished ground-water tracing data: Kentucky Natural Resources and Environmental Protection Cabinet, Division of Water.

(6) Robertson, S.E., 1996, Unpublished ground-water tracing data: Kenvirons, Frankfort, Ky.

KEY

AKGWA No.	*Spring Name*	*Data Source*
0058	The Boils	3
0543	Peoples	5
0708	Bluehole	3
0709	Lovers	3
1244	Elihu	6
1251	J6	4
1252	H group	4
1254	Short Creek Resurgence	2
1255	unnamed	2
1256	HL-2	1
1257	IS- A, B, C	1
1258	Cedar Creek A	1
1259	Cedar Creek B	1
1260	BHL	1
1261	S23	3
1262	S11	3
1263	Cove	3
1264	Sand	3

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Base map compiled from U.S. Geological Survey digital line graphs.

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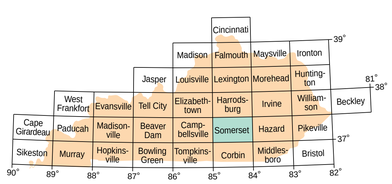

Locations of the 1:100,000-scale quadrangle maps covering Kentucky. This map, the Somerset quadrangle, is highlighted in green.

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