

MIKAS and NIKAS springs photo gallery

NORTH AMERICA

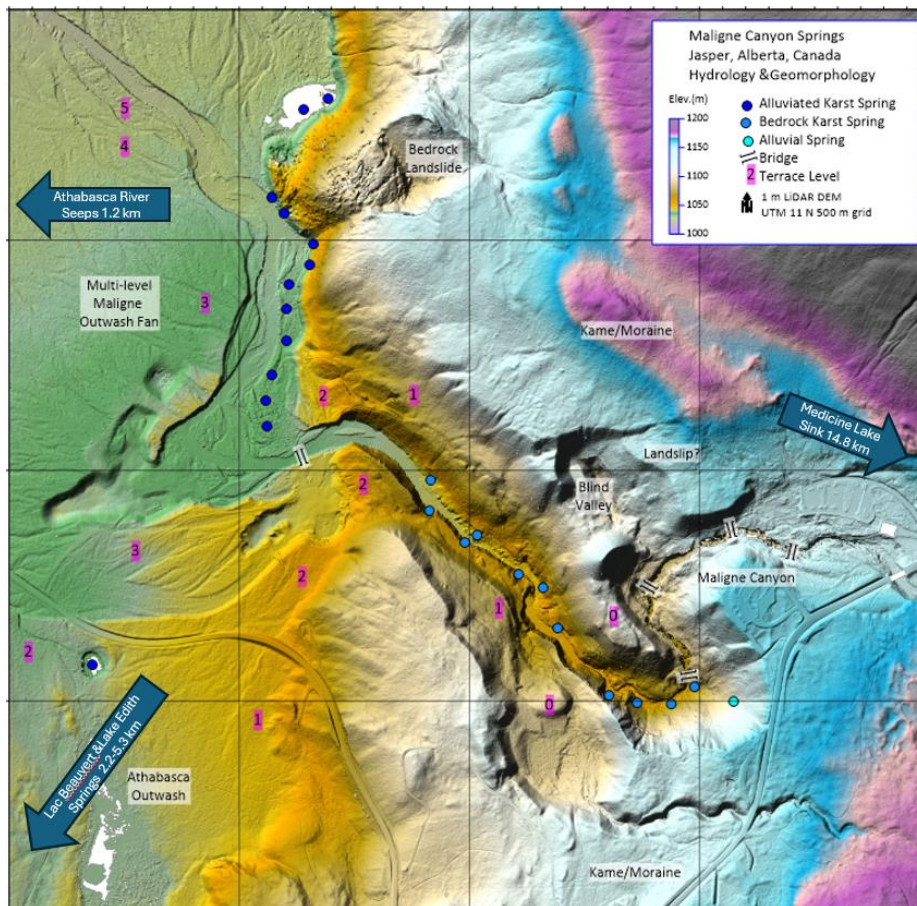
CANADA



MIKAS – Maligne spring



Google Earth Image. The main karst sectors are Surprise Valley and the Maligne Valley between Medicine Lake and the springs. Maligne Valley hangs some 120m above the present Athabasca valley.

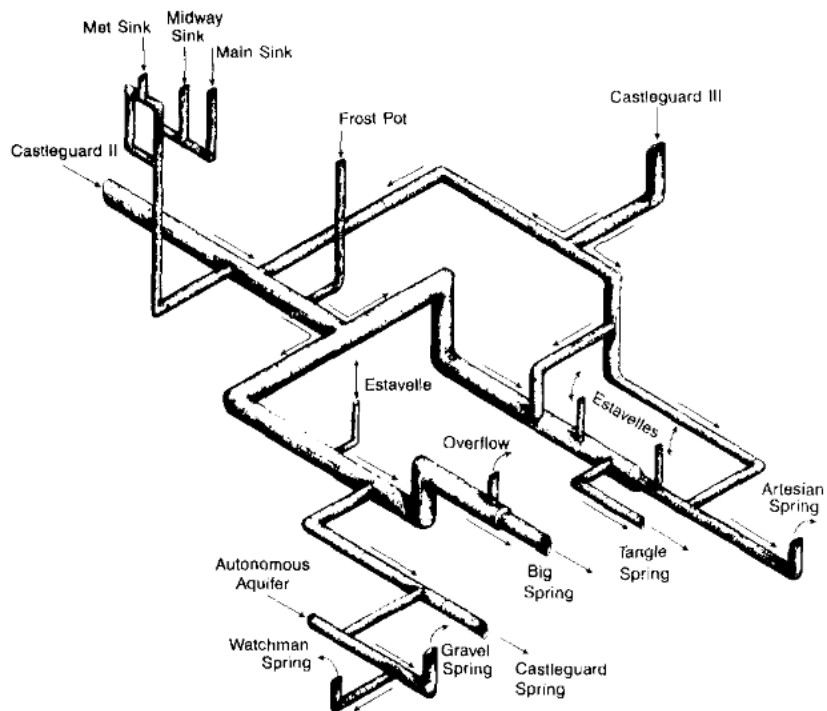


LiDAR colour relief map of the Maligne Canyon springs. Traced conduit outlet springs occur over a 50 m elevation range. Numerous lower altitude alluvial springs are likely lowest elevation outlets, but have not been positively traced. The karst conduit likely terminates under the bedrock landslide, but at some depth below the current valley fill.



Maligne spring main outlet (photo by C.C. Smart)

MIKAS – Castleguard springs



From Smart 1983 (reproduced in Smart 1988) A sketch structural model of the Castleguard Aquifer. Not to scale and limited to monitored sites.



Castleguard Big Spring 22 July 2023. [Sara McLean with permission.] Several fracture springs are seen right of the main outlet. Turbid water in the foreground is Castleguard Glacier runoff. The small clear stream is fed by the overflow outlet to Big Spring.

USA



MIKAS – Chassahowitzka no. 1 / 7 Sister Springs

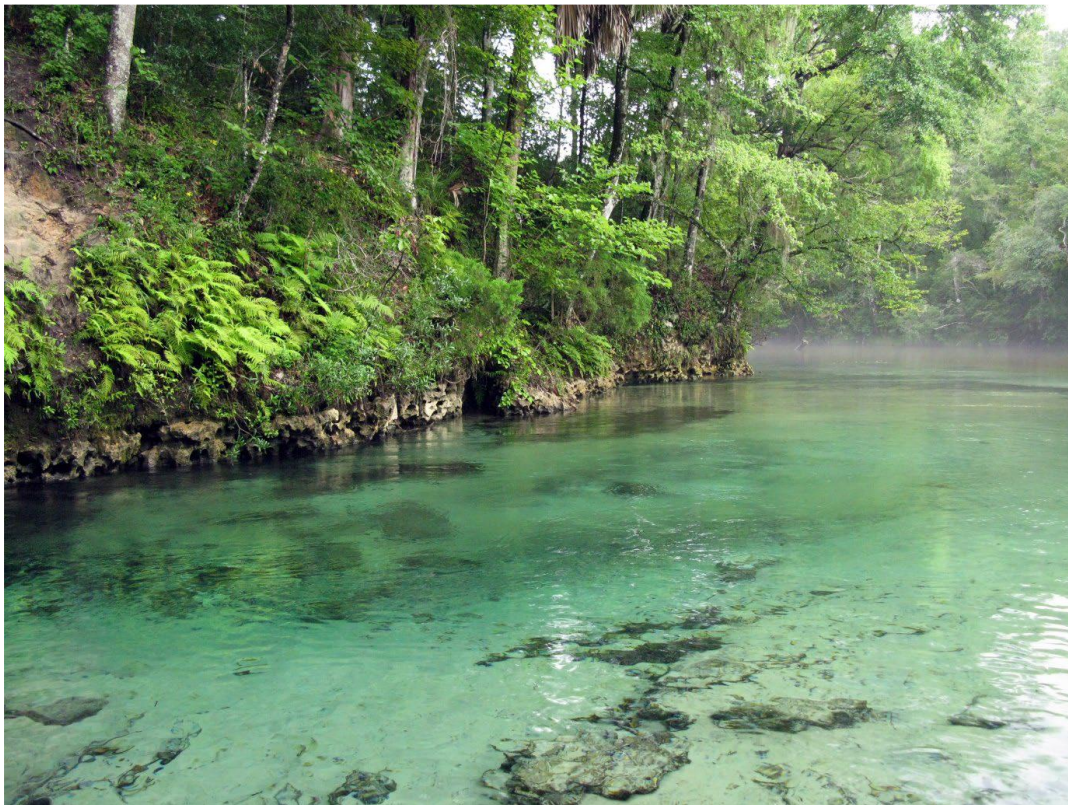


*Chassahowitzka/7 Sister Springs
(FGS)*



Inside view of cavern at Chassahowitzka/7 Sister Springs (FGS)

MIKAS – Gainer spring



Gainer spring (FGS Photo)

MIKAS – Ichetucknee



Ichetucknee Head Spring (Photo by Tom Scott)

MIKAS - Jackson Blue Spring

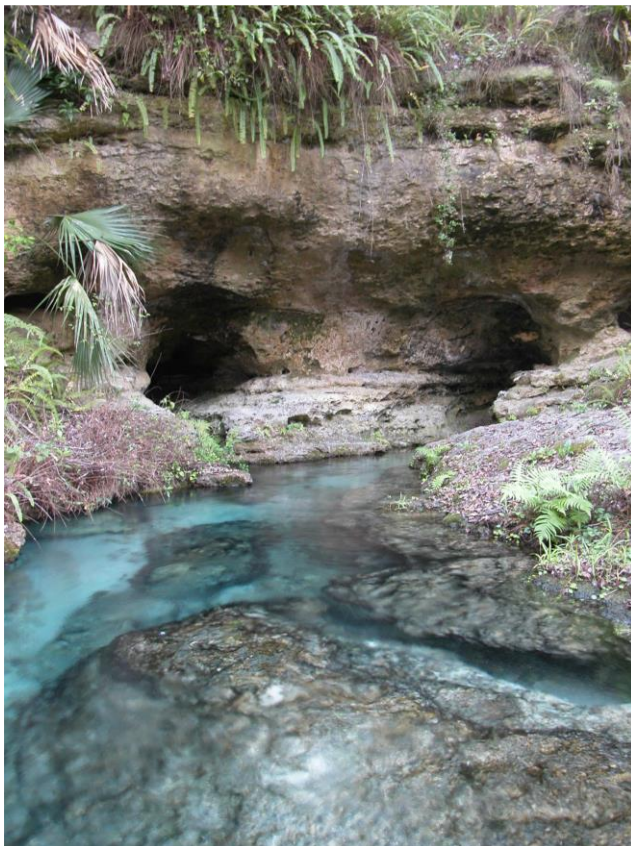


Aerial view of Jackson Blue Spring (Photo by Tom Scott)



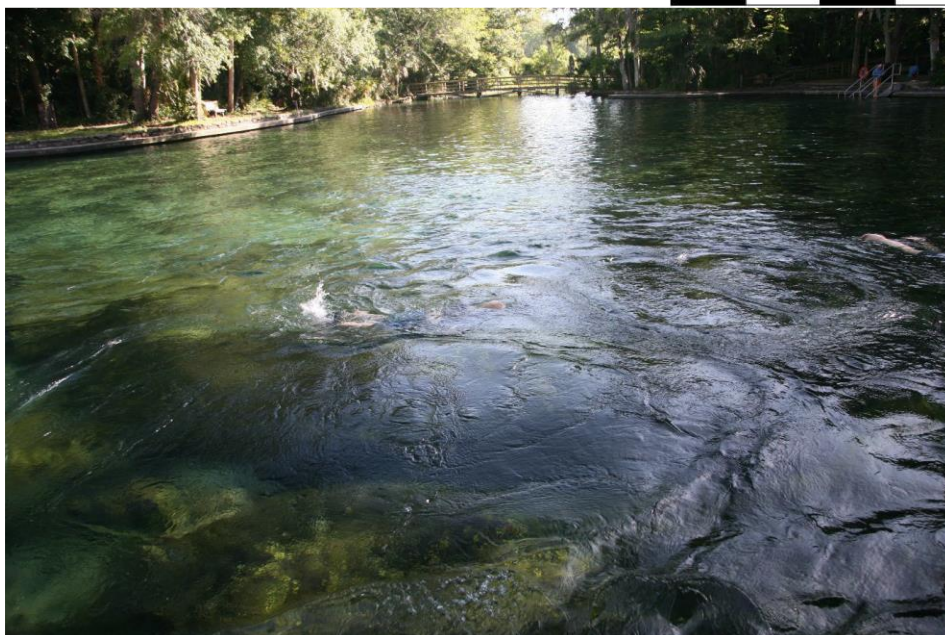
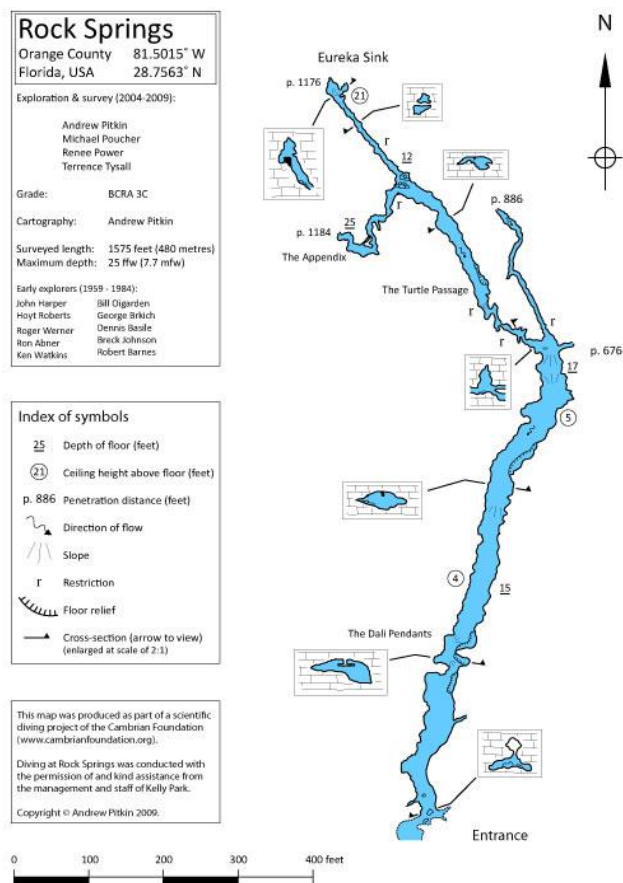
Jackson Blue looking towards Merritts Mill Pond (FGS Photo)

MIKAS – Rock Springs and Wekiwa Springs



Rock Spring vent (Photo by FGS staff)

Cave map of Rock Springs (after Pitkin, 2009)



Wekiwa Spring Boil (Photo by FGS Staff)

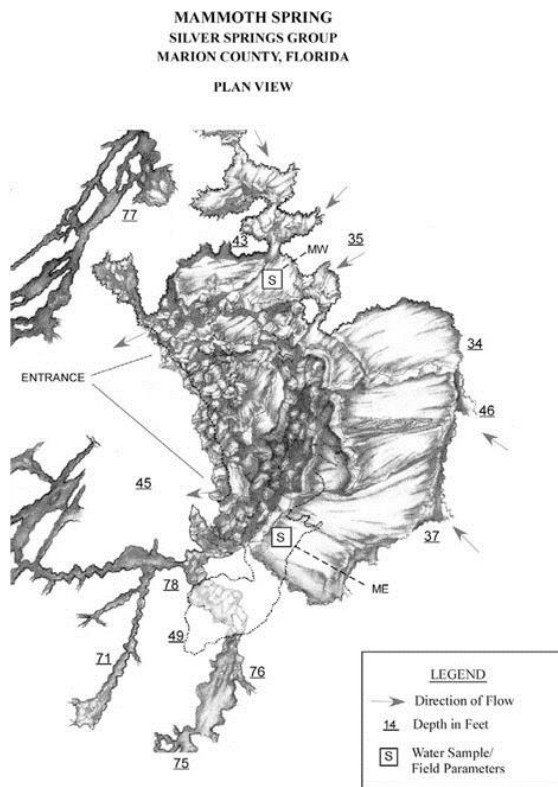
MIKAS – Silver Springs Group



Silver Springs run (Photo by H. Means, FGS)



Silver Springs (Photo by FGS)

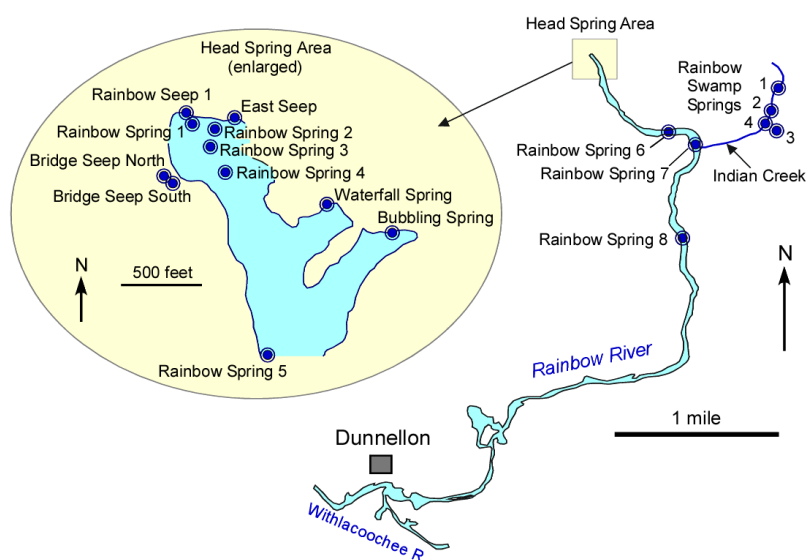


Adapted from "Silver Springs Cave System" Map
 by Eric Hutcheson and the Silver Springs Cave diving Team, 1993

KARST ENVIRONMENTAL SERVICES, INC. 2007

Mammoth Spring cave map (Karst Env. Services, Inc., 2007)

MIKAS – Rainbow Springs



Locations of spring vents in the Rainbow Springs spring complex. From Kresic, 2024; modified from Jones et al., 1996. USGS records the flow of the Rainbow River at Dunnellon. Discharge rate of the Headspring area is not reported.

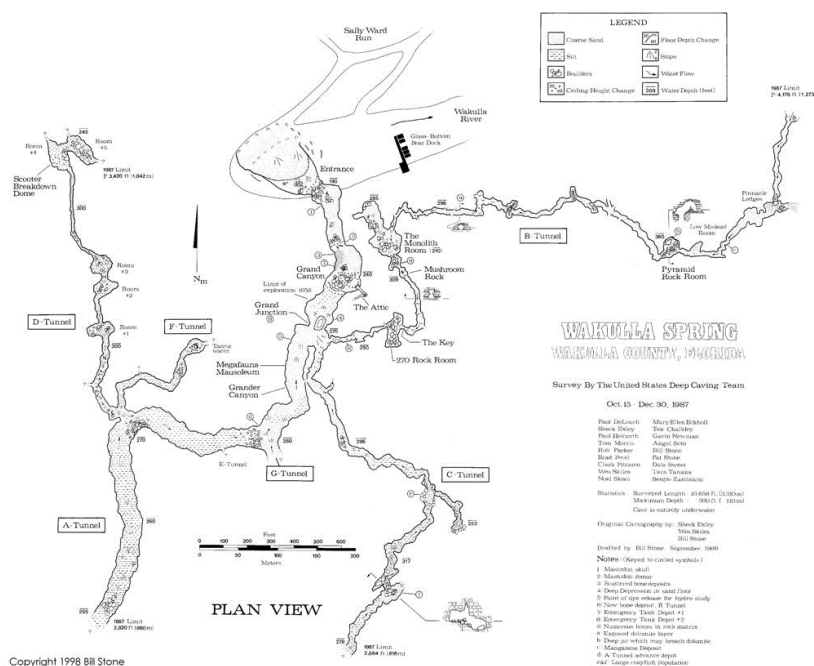


Pool of the headspring of Rainbow Springs, December 2023. Red buoys mark the swimming area with crystal-clear water and a sandy bottom. Left: Looking east. Right: Looking west. (Photo N. Kresic)



Rainbow River, December 2023 (Photo N. Kresic)

MIKAS – Wakulla Spring



Wakulla Springs cave system map (Bill Stone, 1988)

<http://www.caveatlas.com/systems/system.asp?ID=84>



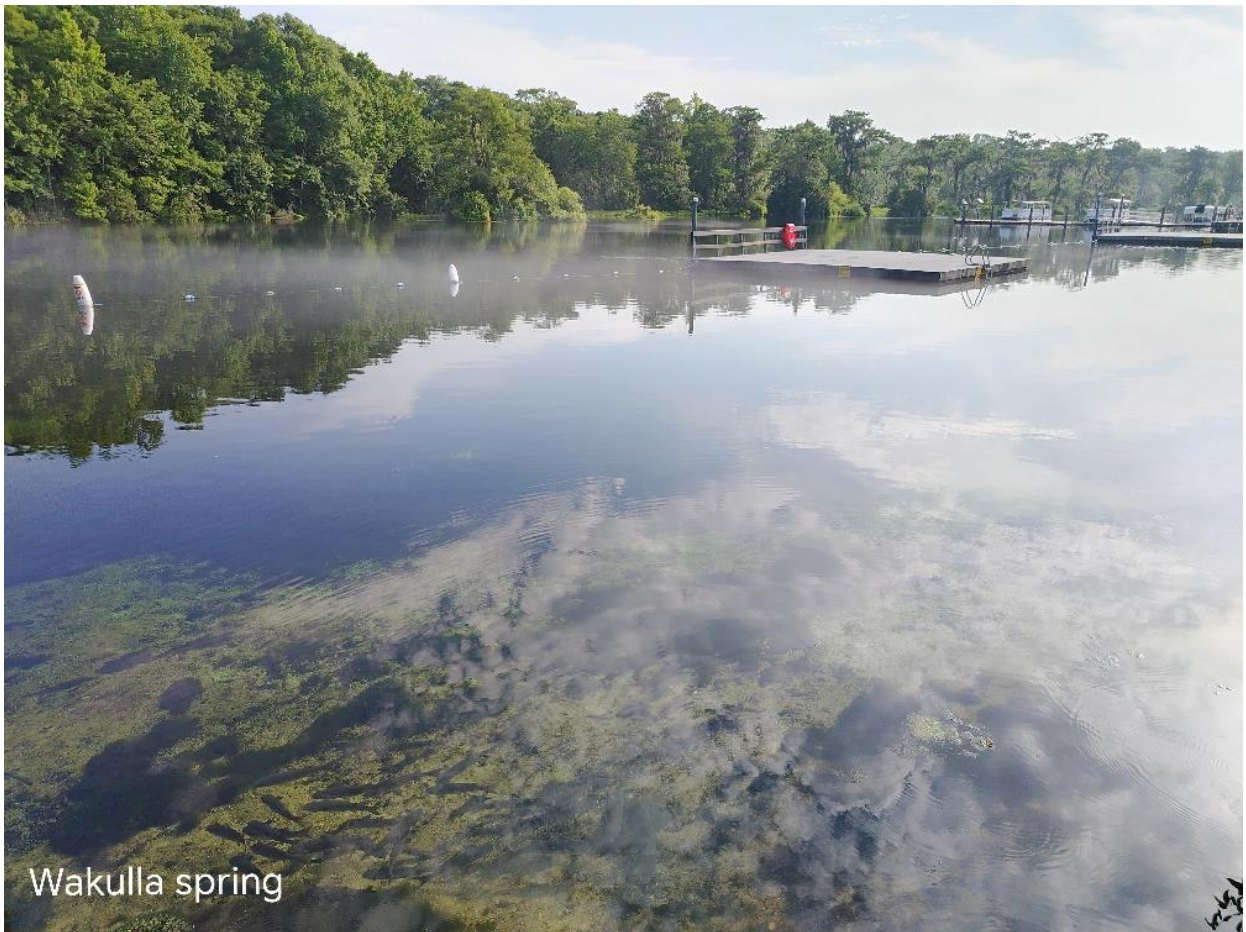
Pictured are George Christie, geologist Herman Gunter, Gerald M. Ponton and diving team member J. Clarence Simpson (FGS Photo)



Aerial photo of Wakulla Springs main vent



Divers preparing to recover mastodon remains from Wakulla Springs and its recovered skeleton

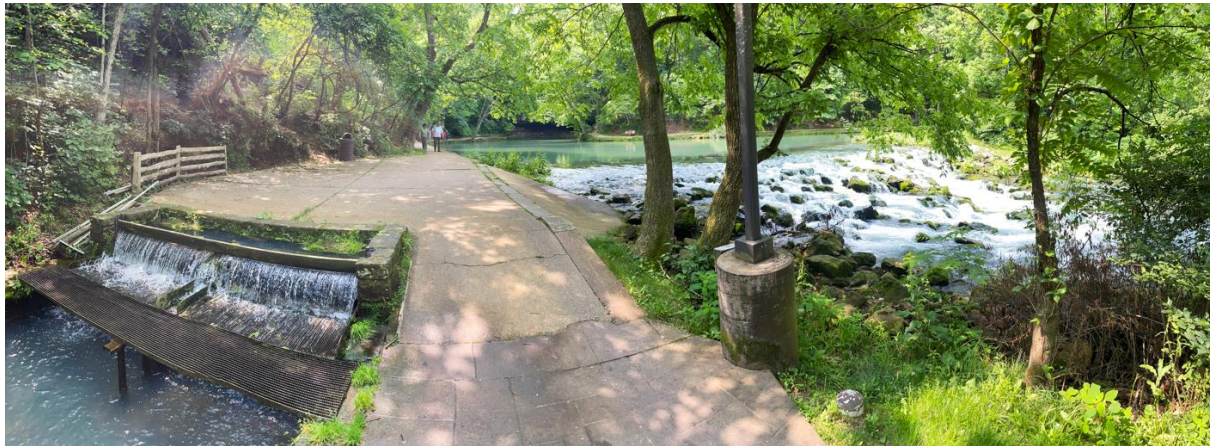


Spring in May, 2025 (photo Z. Stevanović)

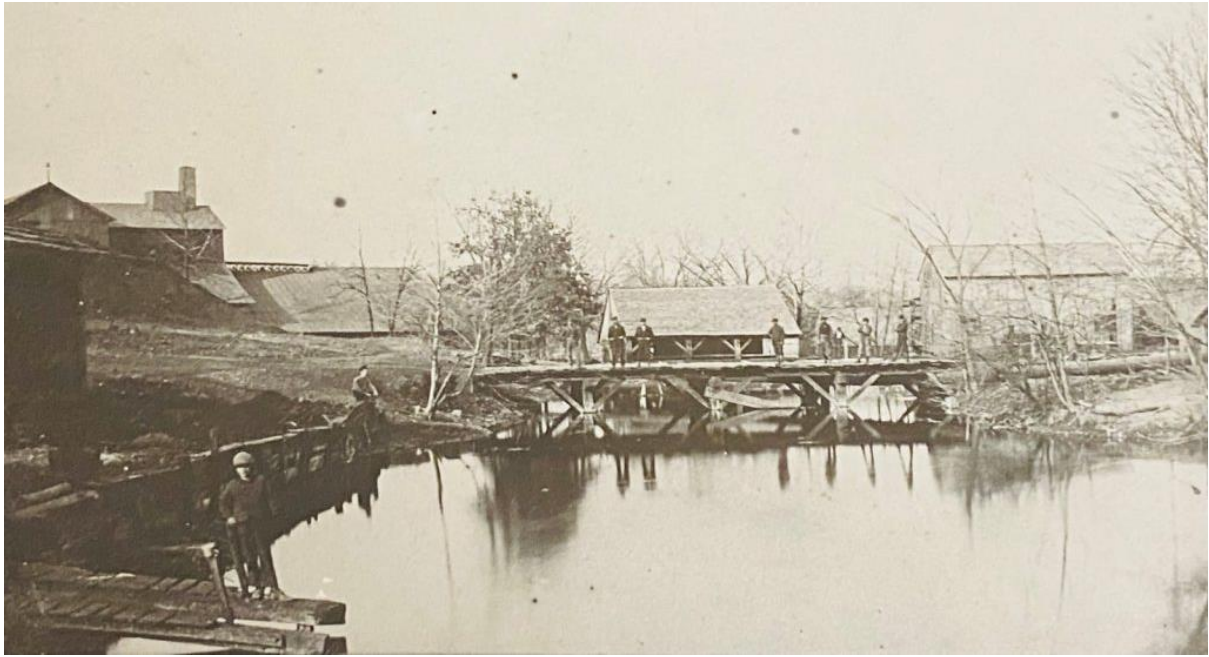
MIKAS – Maramec spring



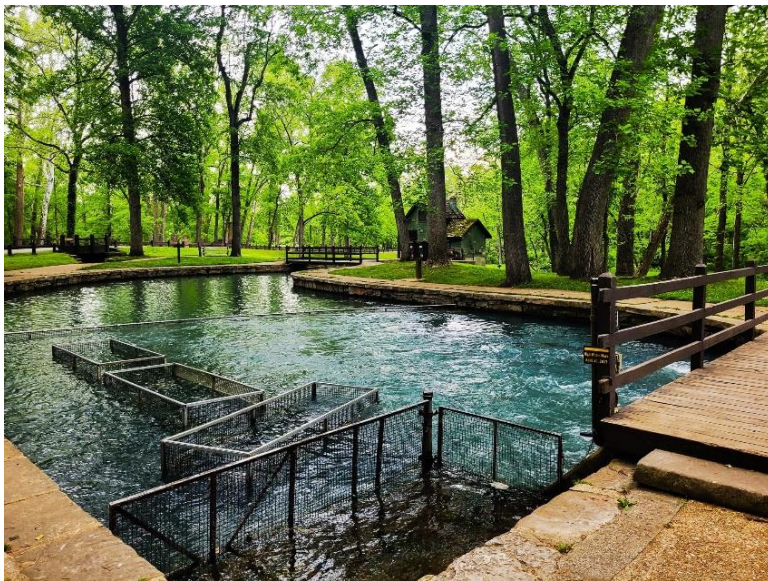
Maramec Spring pool during high flow in June 2025 (Photo N. Kresic)



Outflows from the Maramec Spring pool, June 2025. The left outflow provides water for the state hatchery (Photo N. Kresic)



Historic photo of the Maramec Iron Works from the Forebay, Courtesy of Maramec Spring Park



Maramec Spring is filled with rainbow trout, stocked daily by the Missouri Department of Conservation. Trout season starts March 1st until October 31. Catch and release fishing runs from November through February. Courtesy of Maramec Spring Park. Photo by Tammie Leigh.

MIKAS – Giant Springs



Left: Giant Springs, Montana (Photo courtesy of Geary Schindel). Right: Drone photograph of Giant Springs. Courtesy of fwp.mt.gov

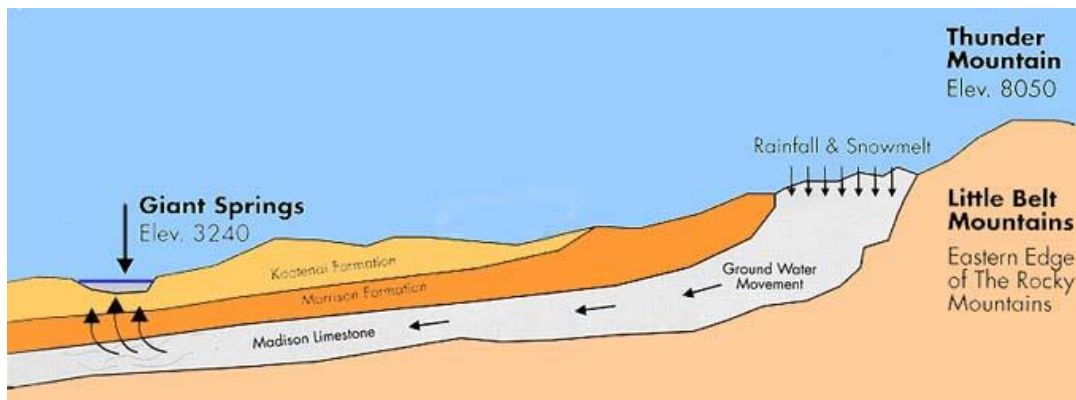


Diagram courtesy of Giant Springs Bottled Water Company

MIKAS – Warm Springs VA

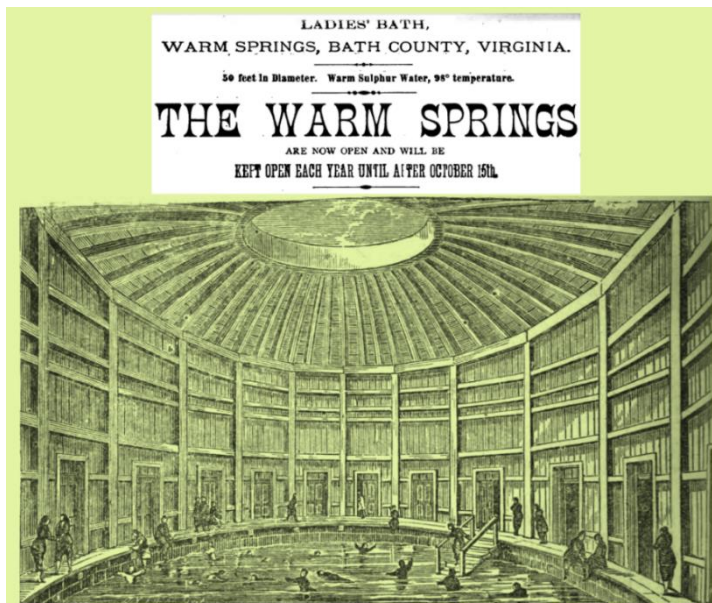


Ladies' (left) and Gentlemen's (right) Pools of the Warm Springs (Courtesy of the Omni Homestead Resort)

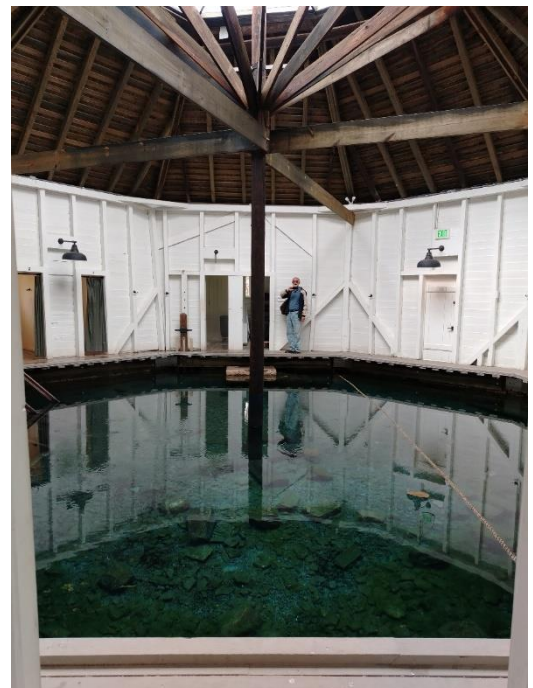


Thermal water outflow from the Gentlemen's Pool

Past and present:



The Ladies' Bath at Warm Springs Pool advertised 98°F water source in: "The Chesapeake & Ohio Railway Directory, Containing an Illustrated History and Description of the Road," Ladies' Bath, Warm Springs, Bath County, Virginia (p.331)



Swimming pool nowadays (May, 2025)

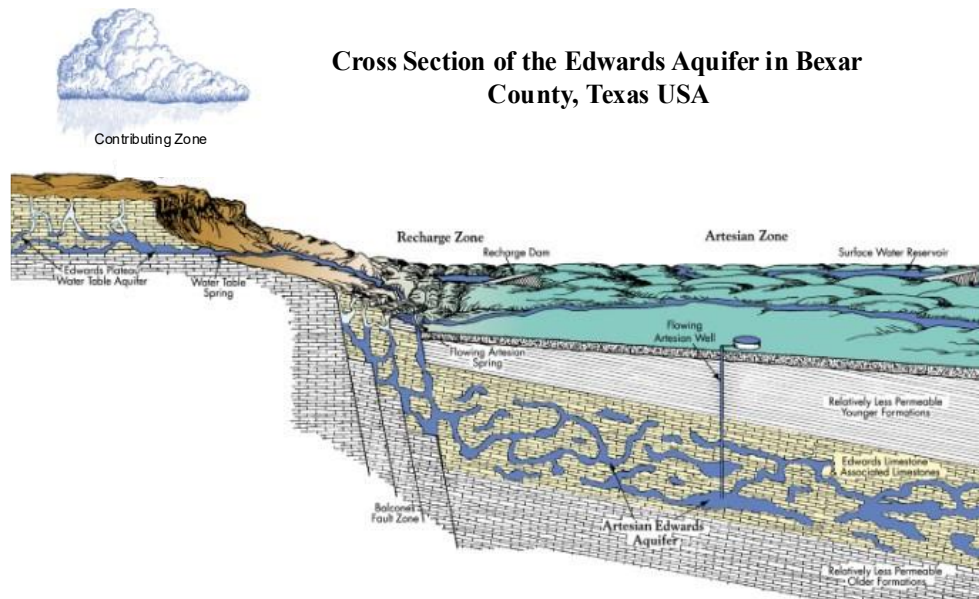
MIKAS – Comal Springs



Comal spring and information plate at the spring site (Photo by Z. Stevanovic)



Comal Springs - Spring Run 3 (Photo by G. Schindel)

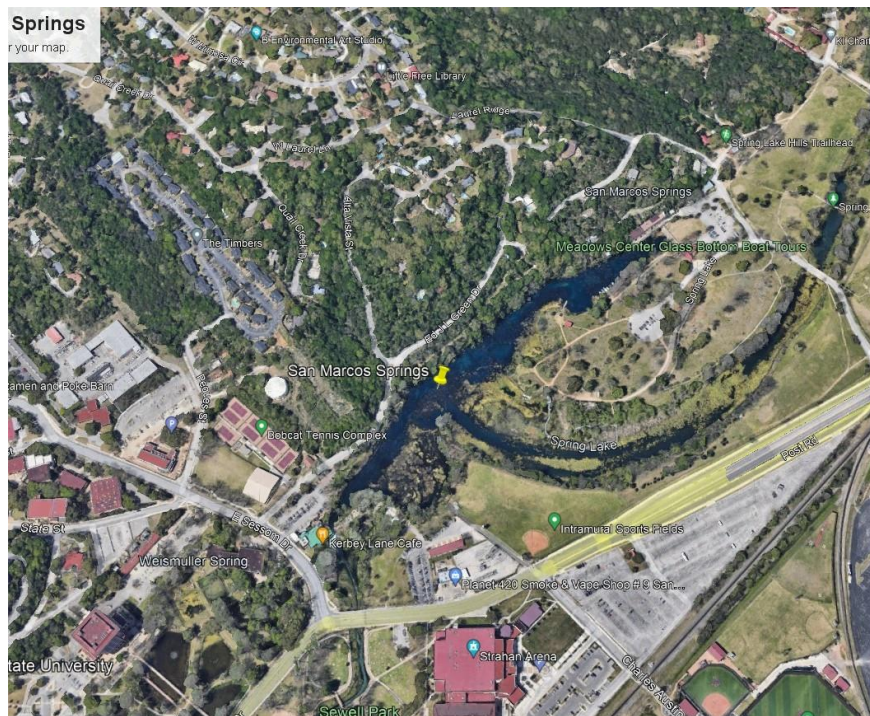


Scheme of Edwards Aquifer functioning (Courtesy of Edwards Aquifer Authority)

MIKAS – San Marcos springs



San Marcos ascending spring and formed stream (Photo by Z. Stevanović)



Google Earth View of San Marcos Springs

MIKAS – San Solomon spring



San Solomon main spring pool (San Solomon Springs from Texas Parks and Wildlife Webpage)



Enlarged view on Solomon Springs (from Google Earth)

MIKAS – Alley spring

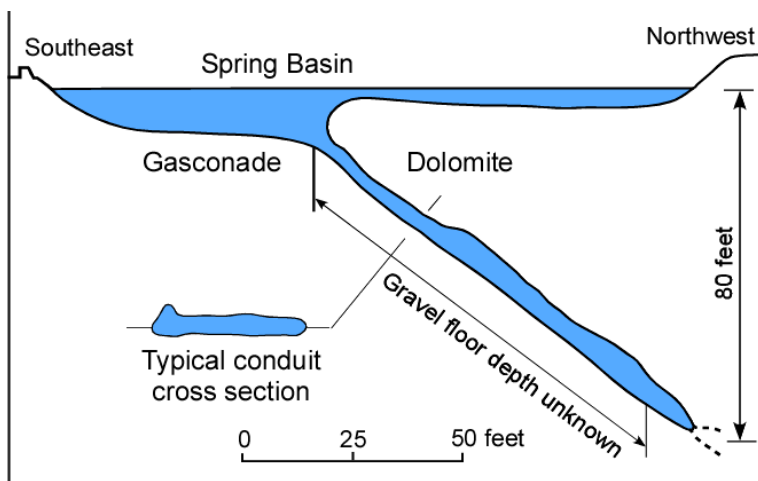


Close up Google Earth image of Alley Spring rise pool and mill in the big springs area of the Missouri Ozarks



Alley Spring, Missouri, and the mill that are part of the Ozark National Scenic Riverways. Visual estimate of intermediate spring discharge is provided by flow over dam on right side of mill (Photo Z. Stevanović)

MIKAS – Bennett spring



Top: Bennet Spring in Dallas County, Missouri; photo courtesy of Missouri Department of Natural Resources, in public domain. Bottom: Longitudinal cross-section through Bennet Spring. Data supplied by D. Rimbach, M. Tatalovich, and M. Grussemeyer. Modified from Vineyard and Feder, 1974/1982.

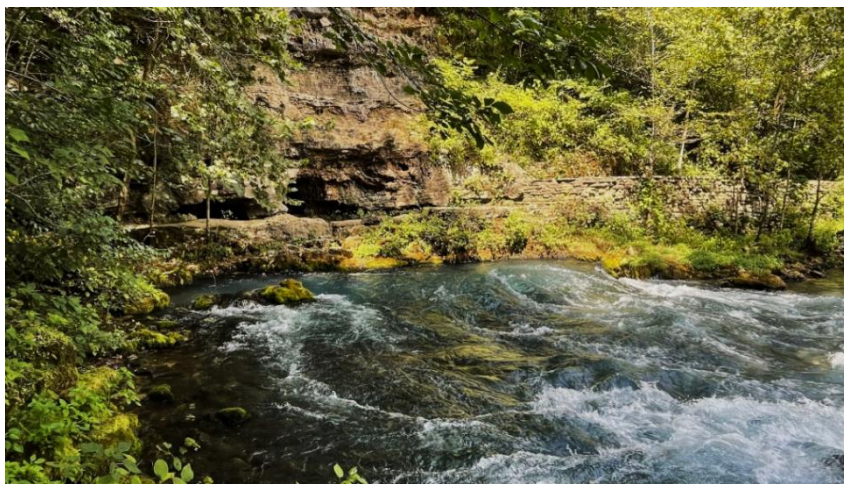
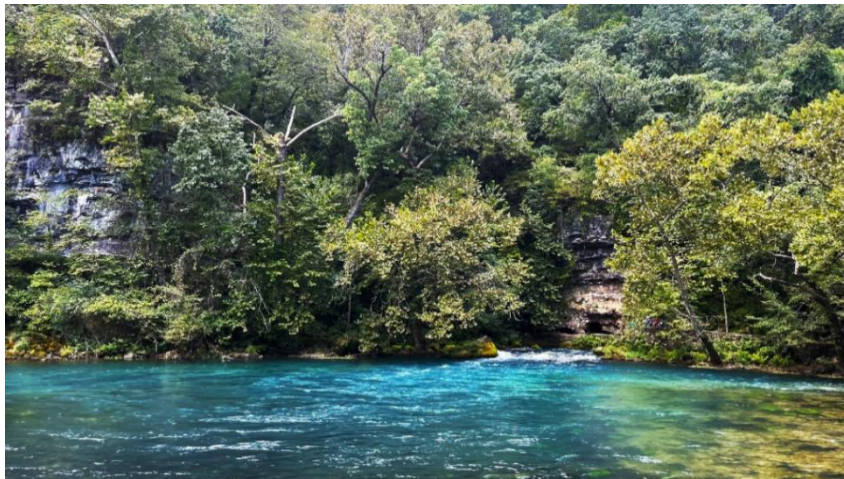


Historic image from a 1914 post card shows a crude wood structure seen here blocking the spring run from Brice Springs – now called Bennett Spring. Bennett Spring is now a Missouri state park. Photo credit: <http://www.dammingtheosage.com/brice-spring-now-bennett-spring-state-park-on-the-niangua-river/>



Fishermen line the bridge cheek to jowl across the outflow from Bennett Spring State Park to test their luck during a winter day. Bennett Spring State Park was previously known as Brice State Park. Image credit: <https://mostateparks.com/park/bennett-spring-state-park>

MIKAS – Big Spring (MO)



Two views of Big Spring (Photos by Neven Kresic)

Ozark National Scenic Riverways

National Park Service
U.S. Department of the Interior



Big Spring: A Karst Topography

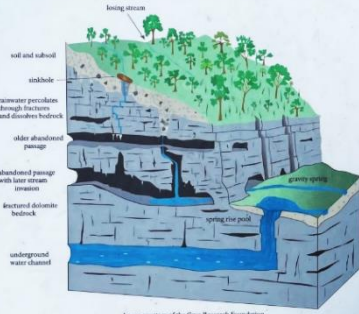


Image courtesy of the Cave Research Foundation

Karst is a special type of landscape that is formed by the dissolution of water-soluble sedimentary rock layers. Dolomite is the sedimentary rock found predominately throughout Ozark National Scenic Riverways. Dolomite is similar to limestone, but contains more magnesium than calcium carbonate.

Karst topography is characterized by weathered rolling hills, deep hollows, springs, caves, sinkholes, and losing streams.

Rain water becomes slightly acidic as it seeps through the soil on its way to the subsoil layers. This acidic water penetrates cracks and joints, slowly dissolving the ancient dolomite bedrock. Through time, cracks and joints enlarge, creating a vast network of underground caves, caverns and drainage systems.



United States Karst Regions courtesy of U.S. Geological Survey

A spring occurs when water reemerges from this underground network, often from the pressure of an aquifer. Some springs are tiny trickles while others are large enough to create rivers and lakes.

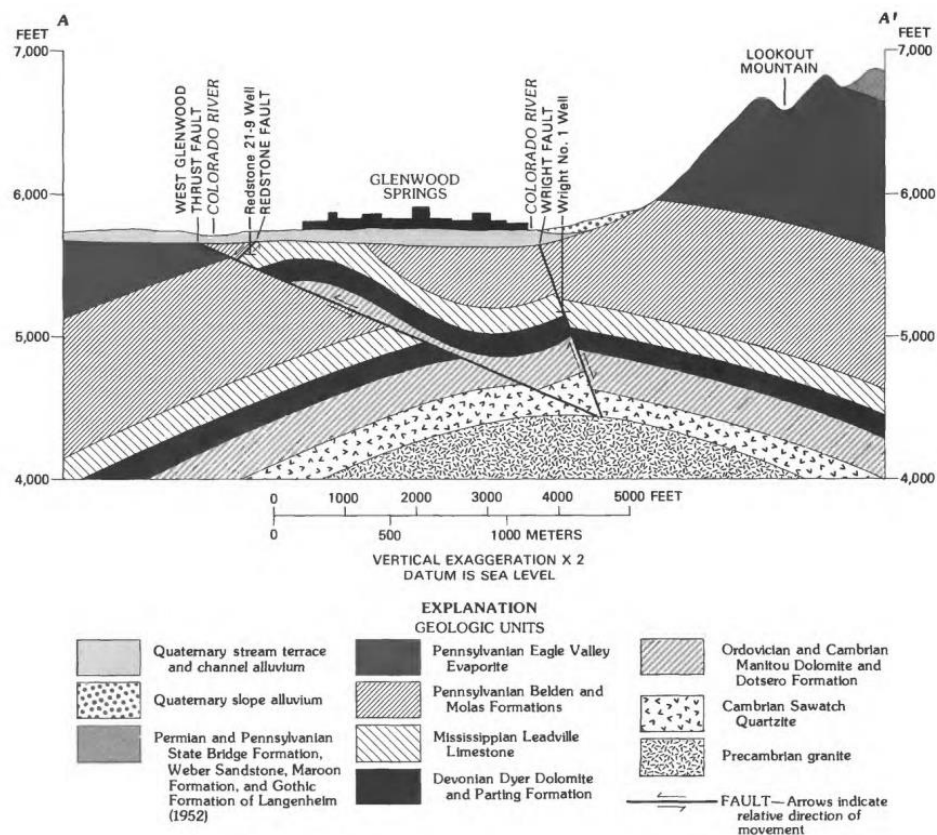
Big Spring's 286 million gallons of water carry 173 tons of dissolved dolomite bedrock away daily. Over the course of a year, this would equate to a new single passage nearly 11 feet wide, 12 feet high and spanning 1 mile in length.

Ozark National Park Service plate at the Big Spring



Big Spring, Carter County, Missouri. Ascending flow resurging from the base of a bluff in the Eminence Dolomite, where flow is into spring run to the Current River. Photo source: Patti Wheatley-Bishop in National Park Service [accessed 13.08.2023]

MIKAS – Glenwood Hot Springs



Geology and structure at Glenwood Springs. From Geldon, 1989.



Glenwood Springs' main thermal pool. Photo courtesy of Glenwood Hot Springs Resort.



One of popular recreational features at Glenwood Hot Springs Resort fed by thermal spring water. Photo courtesy of Glenwood Hot Springs Resort

MIKAS – Blue Spring (MO)



Image of Blue Spring (Shannon County) Missouri, during low-flow. Blue Spring has the reported deepest formation of an Ozark spring in the Missouri Ozarks (Photo by Neven Kresic)



Whereas the sign leading to Blue Spring boasts that it's the eighth-largest spring in Missouri, the Missouri Department of Conservation asserts it's now the sixth-largest (Photo by Neven Kresic)



Photo looking upward toward the surface resurgence showing a cave diver moving vertically downward along the spring bore, a distance of about 85meters. Diving in this spring requires a research permit, and dive times greater than 17 hours to reach the full extent of the mapped cave (Photo credit: <https://www.ocda.org/exploration/projects/photo-of-the-month/>)

MIKAS – Greer Spring



Image of Greer Spring resurging in its rise pool (two hundred yards down gradient of the bluff cave resurgence) at greater discharge in the big springs area of the Missouri Ozarks (Photo by Neven Kresic)



Ground level image of Greer Spring resurgence from a bluff in the Gasconade Formation during low flow (Photo by John Van Brahana)

MIKAS – Mammoth Spring

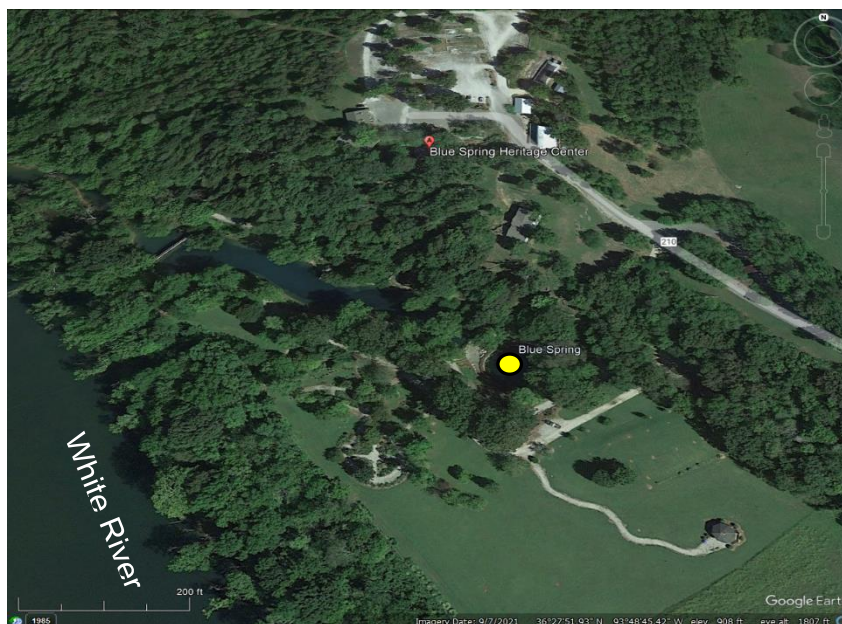


Southern outlet from Mammoth Spring rise pool showing intermediate discharge (Photo by Neven Kresic)

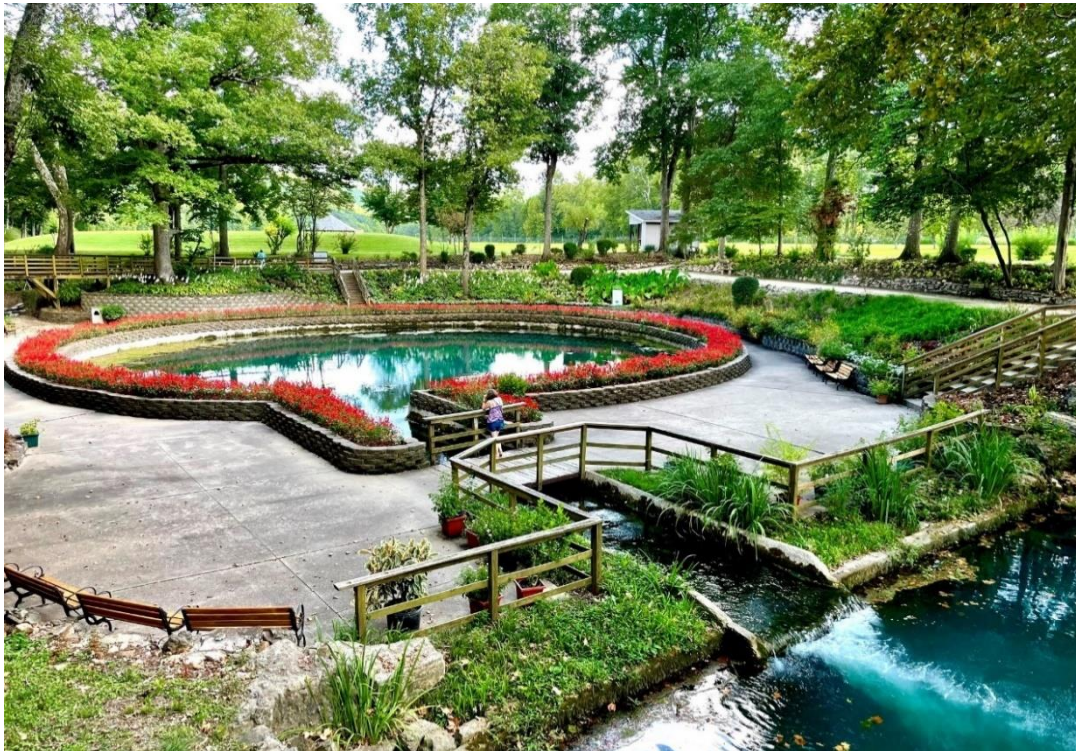


Hydroelectric dam at the distal end of the spring run of Mammoth Spring, Arkansas, where the spring water flows over the dam and creates the headwaters of the Spring River. The hydroelectric aspects of the structure are no longer operational (Photo by Neven Kresic)

MIKAS – Blue Spring (AR)



Enlarged Google Earth View of Blue Spring in Arkansas



Blue Spring basin with the overflow to the trout lagoon (Photo by Neven Kresic)



The Bluff Shelter at Blue Spring with Native American pictographs is listed on the National Register of Historic Places (Photo by Neven Kresic)

MIKAS – Blue Spring (AZ)



View southeast toward upper and middle spring of Blue Spring, Little Colorado River (Courtesy of USGS, collection by George Billingsle)



View east toward normal blue Little Colorado River spring water flowing over travertine dam deposits, just upstream of Big Canyon. Courtesy of USGS, collection by George Billingsle.

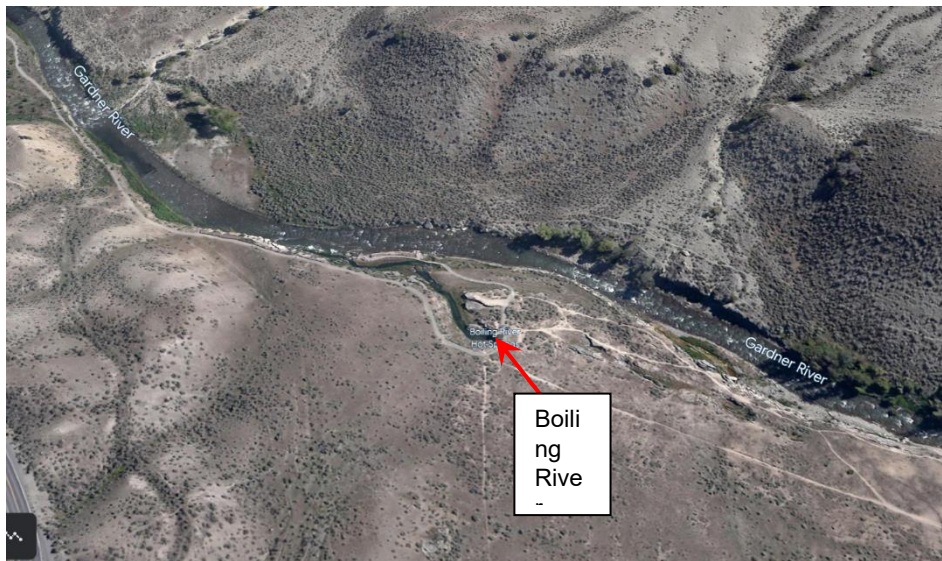


Confluence of the Little Colorado River (blue color) and the Colorado River (green color). Screenshot from a video Virtual Tour—Grand Canyon, AZ Dams Threaten the Little Colorado River, produced by EcoFlight in cooperation with Grand Canyon Trust. Available at <https://www.grandcanyontrust.org/little-colorado-river-dam-proposals>

MIKAS – Boiling River Springs (Yellowstone)



Left: Spring of the Boiling (Hot) River. Right: Boiling River (seen in the left of the photo) cascading into the Gardiner River with bathers enjoying in the mixing zone of two rivers (71°C temperature of the Boiling River is too high for bathing)



Google Satellite Images of the Boiling River Spring, Yellowstone National Park

MIKAS - Havasu Spring



View southeast toward Havasu Falls from trail in Cataract Canyon (Courtesy of USGS, collection by George Billingsle)



Google Earth satellite image of the Havasu Springs near Supai Village, Grand Canyon, Arizona



Travertine pools below Havasu Falls, Havasu Creek, Cataract Canyon (Courtesy of USGS, collection by George Billingsle)

MIKAS - Kitch-iti-kipi

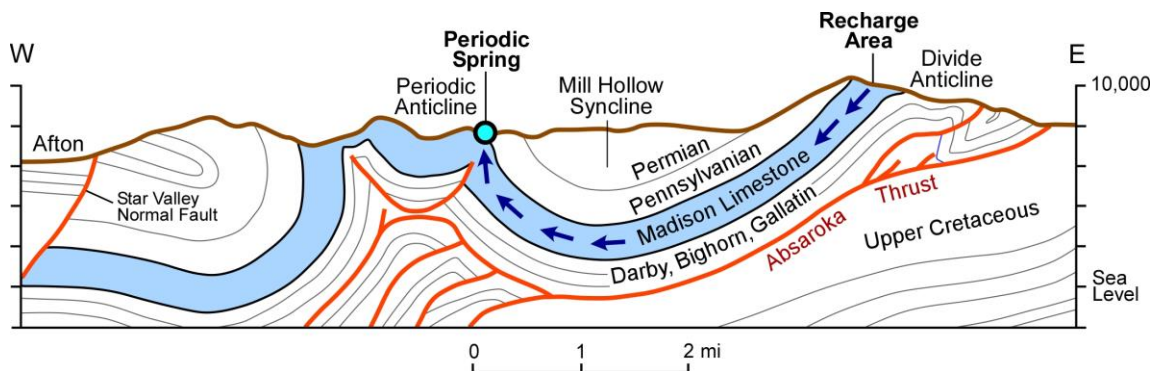


Kitch-iti-kipi (Big Spring), Michigan. Photo courtesy of Jill Halpin, <https://mymichiganbeach.com/kitch-iti-kipi/>

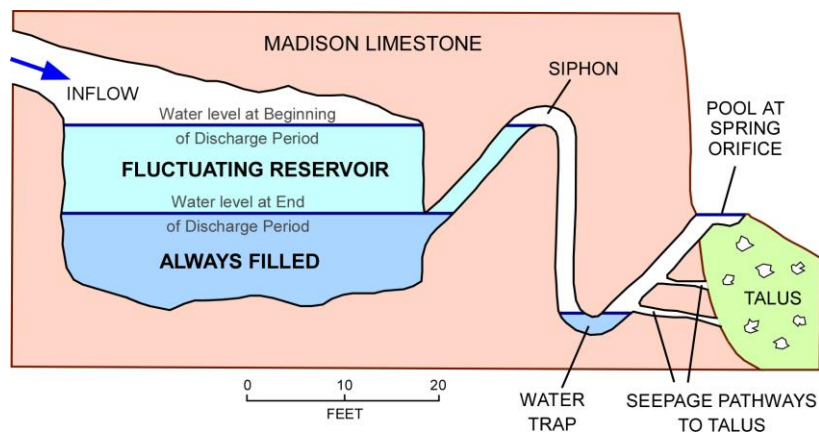


Kitch-iti-kipi, Michigan. Photo courtesy of travel-mi.com

MIKAS – Periodic spring



Portion of an East-West cross section through the overthrust belt developed by Huntoon and Coogan (1987). Arrows denote the probable flow of groundwater in Madison aquifer (colored blue) from the recharge area on the eastern topographic high of the Salt River Range (Divide Anticline) through Mill Hollow Syncline to Periodic Spring Faults and Absaroka Thrust are shown in red. From Kresic, 2024, modified from Blanchard et al., 1990.



Siphon model of Periodic Spring reservoir. When the reservoir water level reaches the siphon level flow commences. Flow continues until the reservoir level drops to base level. From Kresic, 2024; modified from Blanchard et al., 1990; and Huntoon and Coogan, 1987.



Periodic Spring, no flow and flow cycles. Images by Mark Fisher, courtesy of Geology of Wyoming, <https://www.geowyo.com/periodic-spring.html>

NIKAS – Blanchard Spring



Blanchard Spring at intermediate flow resurging as a cave stream in Blanchard Spring Caverns. An historic conduit currently dry is visible above and to the right of the existing cave stream (Photo credit: modified from Eric White)

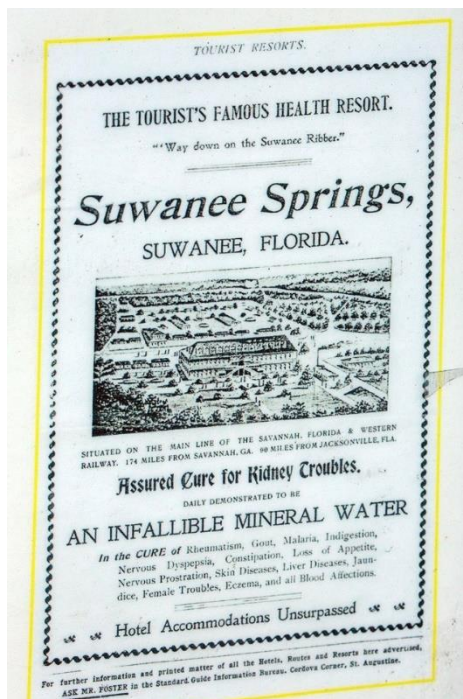


Speleothems provide visual documentation of downward flowing recharge moving from impermeable chert layers near the roof of the cavern in the Boone Formation to a lower level in the cave (Photo credit: <https://arkansaslivingmagazine.com/article/underground-arkansas-discover-blanchard-springs-caverns/#prettyPhoto/3/>)

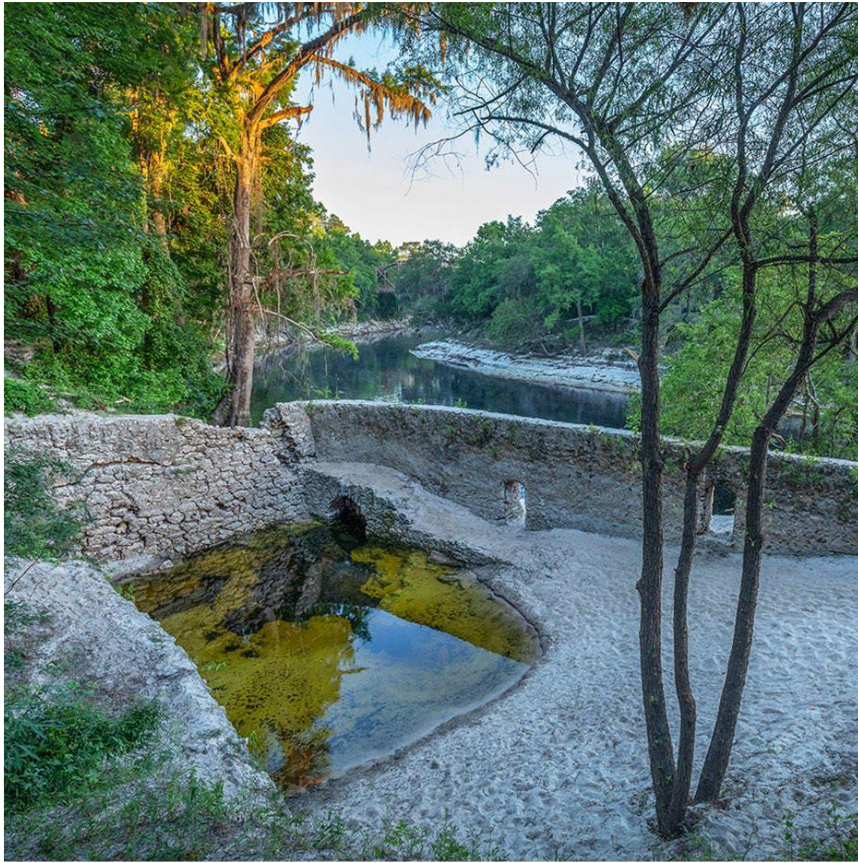


Image of overflow of dam at Mirror Lake downstream from Blanchard Spring along the spring run

NIKAS – Suwannee Springs

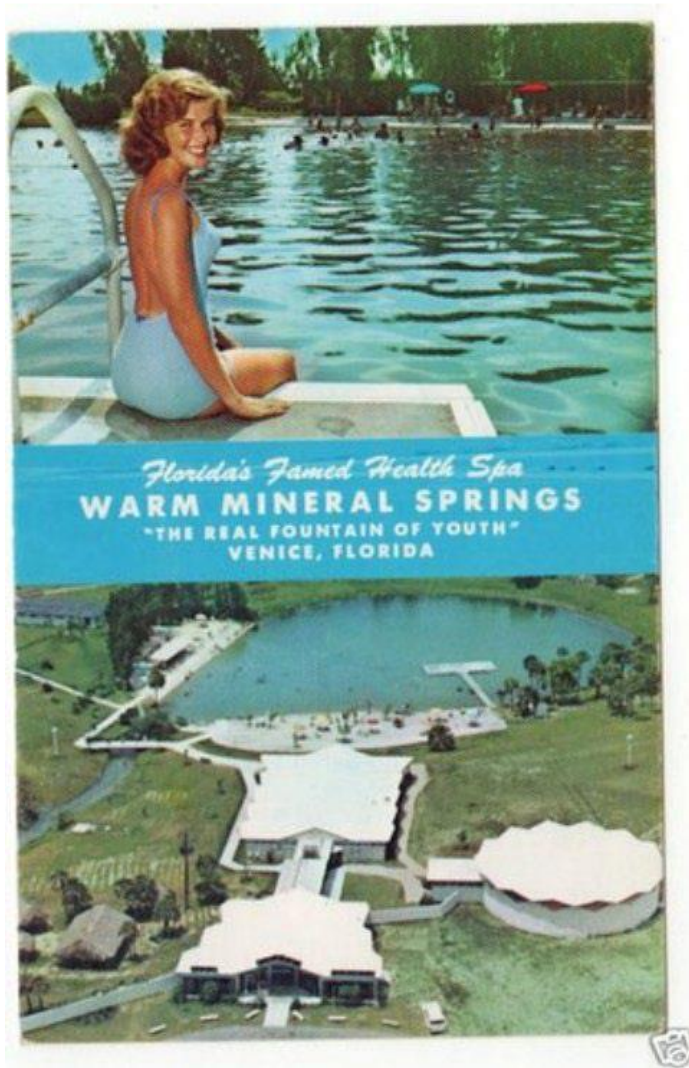


1800s advertisement of Suwannee Springs Resort

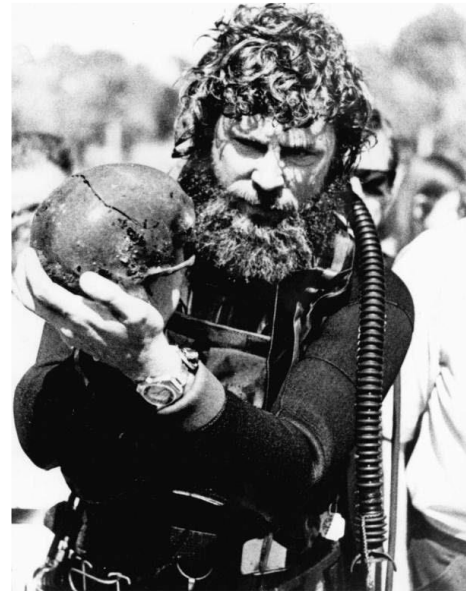


*Image of Suwannee Springs by
John Moran*

NIKAS – Warm Mineral Springs



Historic Poster of Warm Mineral Springs



Marine archaeologist W.A. "Sonny" Cockrell with skull found at Warm Mineral Springs in Sarasota County (photo by Jim Purks 1973)