



Our Missouri Waters – Spring River Watershed (HUC11070207)



Our Missouri Waters fact sheet

11/2013

The Spring River watershed in southwest Missouri is an interstate watershed encompassing an area of 2,589 square miles. The headwaters originate in Missouri and generally flow west, downstream into southeast Kansas before joining the Grand Lake O' the Cherokees, a popular and well-known recreational lake in eastern Oklahoma.

The basin is diverse in characteristics from geology to land use, to water quality and water quantity challenges. Streams in the watershed vary from typical rugged, high gradient, Ozarks-type streams with gravel and bedrock substrates to sand and silt bottomed prairie streams. In Missouri, the watershed contains 335 miles of permanent flow streams and 269 miles of intermittent streams, as well as numerous karst features such as losing streams and springs.

The watershed includes:

- Portions of Barry, Barton, Christian, Dade, Jasper, Lawrence and Newton counties.
- Municipalities of Carthage, Joplin, Lamar, Monett, Mt. Vernon and Neosho.
- 1,307,520 acres (2,043 square miles); 1,657,518 acres (2,589 square miles) including Kansas and Oklahoma
- Land use: 51 percent grassland, 20 percent cropland, 18 percent forest, and 9 percent developed area.
- Population: 270,036 (104 people per square mile) with highest population centered in the Joplin area (50,150 people) (from 2010 U.S. Census data).

Major streams in the watershed and stream miles

- Spring River; 136 miles.
- North Fork Spring River; 82 miles.
- Shoal Creek; 80 miles.
- Center Creek; 66 miles.
- White Oak Creek; 23 miles.
- Brush Creek; 37 miles.
- Coon Creek; 34 miles.
- Turkey Creek; 21 miles.
- Cow Creek; 21 miles.
- Dry Fork; 27 miles.
- Honey Creek; 22 miles.
- Little North Fork; 22 miles.

- Duval Creek; 15 miles.
- Clear Creek; 29 miles.
- Buck Branch; 13 miles.
- First Cow Creek; 19 miles.
- Cow Creek; 21 miles.
- Little Shawnee Creek; 12 miles.

Communities in the Spring River Watershed

- Barry County: Butterfield, Exeter, Monett and Purdy.
- Barton County: Golden City, Lamar, Lamar Heights and Mindenmines.
- Jasper County: Alba, Asbury, Avilla, Carl Junction, Carterville, Carthage, Carytown, Duenweg, Duquesne, Fidelity, LaRussell, Jasper, Joplin, Neck City, Oronogo, Purcell, Reeds, Sarcoxie, Waco and Webb City.
- Lawrence County: Aurora, Freistatt, Hoberg, Marionville, Miller, Monett, Mount Vernon, Pierce City, Stotts City and Verona.
- Newton County: Diamond, Granby, Loma Linda, Neosho, Newtonia, Ritchey, Saginaw and Wentworth.

Public Lands in the Spring River Watershed

- Talbot (Robert E.) Conservation Area; 4,350 acres; Lawrence County.
- Shawnee Trail Conservation Area; 3,683 acres; Barton County.
- Fort Crowder Conservation Area; 2,174 acres; Newton County.
- Diamond Grove Prairie Conservation Area; 861 acres; Newton County.
- Capps Creek Conservation Area; 707 acres; Newton County.
- Bicentennial Conservation Area; 706 acres; Newton County.
- Bethel Prairie Conservation Area; 259 acres; Barton County.
- PA Sole Prairie Conservation Area; 238 acres; Barton County.
- George Washington Carver National Monument; 209 acres; Newton County.
- Providence Prairie Conservation Area; 190 acres; Lawrence County.
- Treaty Line Prairie Conservation Area; 167 acres; Barton County.
- Dorris Creek Prairie Conservation Area; 158 acres; Barton County.
- Kickapoo Prairie Conservation Area; 157 acres; Lawrence County.
- Wah-Sha-She Prairie; 154 acres; Jasper County.
- Neosho Towersite; 91 acres; Newton County.
- Tipton Ford Access; 88 acres; Newton County.
- Mon-Shon Prairie Conservation Area; 80 acres; Barton County.
- Walter Woods Conservation Area; 70 acres; Newton County.
- Mount Vernon Prairie; 40 acres; Lawrence County.
- Prairie State Park; 28 acres; Barton County.
- Wildcat Glade Natural Area; 18 acres; Jasper County.
- Allen Bridge Access; 12 acres; Newton County.
- Stones Corner Access; 10 acres; Jasper County.
- Lime Kiln Access; 9 acres; Newton County.
- Battle of Carthage State Historic Site; 8 acres; Jasper County.

- Neosho District Headquarters; 7 acres; Newton County.
- Cherry Corner Access; 6 acres; Newton County.
- Ozark Cavefish National Wildlife Refuge- Hearrell Spring Unit; 5 acres; Newton County.
- Carl Junction Access; 4 acres; Jasper County.
- Harry S Truman Birthplace State Historic Site; 3 acres; Barton County.
- Smack-Out Access; 2 acres; Newton County.
- La Russell Access; 1 acre; Jasper County.
- Wildcat Access; 1 acre; Newton County.
- Carthage (Kellogg Lake); Jasper County.
- Lamar Access; Barton County.
- Monett Sportsman League Trap Range; Lawrence County.
- Mount Vernon (Williams Creek Park Lake); Lawrence County.
- Neosho (Morse Park); Newton County.

Public Water Supplies

- 102 public drinking water systems (48 community systems and 54 non-community systems).
- The majority of the systems rely on groundwater, with 99 groundwater systems and only three surface water systems. Drinking water for the City of Joplin is from both surface and groundwater sources.
- Two surface water sources: Lamar Lake and Shoal Creek
- Three drinking water supplies with source water protection plans: Missouri American-Joplin, Southwest Rural Water District and City of Lamar.

Water Quality Monitoring

- Approximately 485 water quality sample sites in the watershed; samples are collected by MDNR, USGS, Stream Teams, and various local organizations, and include water, sediment, fish tissue, and algae samples.
- Parameters analyzed include: nutrients, bacteria, metals (lead, zinc, cadmium, etc.), total suspended solids, and various others.
- For FY13, approximately 500 samples have been collected at 73 of these sites in the watershed.

Point Sources of Pollution

There are 664 NPDES (National Pollutant Discharge Elimination System) permits, or point sources, in the Spring River watershed (Source: *Missouri Clean Water Information System, September, 2013*). The permitted sources include:

- 316 Stormwater discharges from land disturbance sites.
- 166 Stormwater discharges from industrial facilities, agricultural facilities, and others.
- 77 Land application sites for confined animal feeding operations.
- 72 Wastewater treatment facility discharges.
- 23 Other discharge types.
- 10 Communities with MS4 permits.

Nonpoint Source Pollution

Nonpoint source pollution in the watershed is most commonly associated with runoff from rural areas and mining. Streams on the 2012 303(d) list of impaired streams include impairment for high bacteria (*E. coli*), various mining-associated metals (cadmium, lead, and zinc), low dissolved oxygen, nutrients (eutrophication), ammonia, and others. Impaired stream uses include Whole Body Contact (recreation including swimming and wading) and Protection of Aquatic Life. For more detailed information on Missouri's impaired waterways, see the department's webpage: <http://dnr.mo.gov/env/wpp/waterquality/303d.htm>.

2012 303 (d) impaired streams in the Spring River Watershed

Stream	2012 303(d) Impairment	Impaired Miles	Impaired Use	Existing TMDLs	Planned TMDLs
Baynham Branch	E. coli	4.0 miles	Whole Body Contact	--	--
Blackberry Creek	Chloride Sulfate Chloride	6.5 miles 6.5 miles	Aquatic Life	--	Chloride and Sulfate Chloride
Capps Creek	E. coli	5.0 miles	Whole Body Contact	--	E. coli
Center Creek	Cadmium (S) Cadmium (W) Lead (S) Zinc (S) E. coli E. coli	26.8 miles 26.8 miles 26.8 miles 26.8 miles 21 miles 4.9 miles	Whole Body Contact, Aquatic Life	Dissolved Zinc and Total Zinc	E. coli, Cadmium (S), Cadmium (W), Lead (S), Zinc (S)
Chat Creek	Cadmium (W)	2.1 miles	Aquatic Life	--	Cadmium (W)
Clear Creek	E. coli Nutrients Dissolved Oxygen	11.1 miles 3.5 miles 3.5 miles	Whole Body Contact, Aquatic Life	Ammonia, BOD, and Non-filterable Residue	E. coli, Nutrients, and Dissolved Oxygen
Douger Branch	Lead (S) Zinc (S)	3.1 miles 3.1 miles	Aquatic Life	--	Lead (S) and Zinc (S)
Dry Fork	Aquatic Macro-invertebrates E. coli	3.4 miles 10.2 miles	Aquatic Life, Whole Body Contact	--	Aquatic Macro-invertebrates E. coli
Hickory Creek	E. coli	4.9 miles	Whole Body Contact	--	E. coli
Honey Creek	E. coli	16.5 miles 2.7 miles	Whole Body Contact	--	E. coli
Jacobs Branch	Zinc (W)	1.6 miles	Aquatic Life	--	Zinc (W)
Jenkins Creek	E. coli	2.8 miles	Whole Body Contact	--	--
Jones Creek	E. coli	7.5 miles	Whole Body Contact	--	--

Stream	2012 303(d) Impairment	Impaired Miles	Impaired Use	Existing TMDLs	Planned TMDLs
North Fork Spring River	E. coli Total Ammonia E. coli Dissolved Oxygen	17.4 miles 55.9 miles 55.9 miles 55.9 miles	Whole Body Contact, Aquatic Life	Total Suspended Solids	E. coli, Total Ammonia, and Dissolved Oxygen
Shoal Creek	E. coli	41.1 miles	Whole Body Contact	Fecal coliform	E. coli
Spring River	E. coli	61.7 miles 8.8 miles 11.9 miles	Whole Body Contact	--	E. coli
Thurman Creek	E. coli	3.0 miles	Whole Body Contact	--	--
Truitt Creek	Bacteria	6.4 miles	Whole Body Contact	--	E. coli
Turkey Creek	Cadmium (S) Cadmium (W) E. coli Lead (S) Zinc (S) Cadmium (S) E. coli Lead (S) Zinc (S)	7.7 miles 7.7 miles 7.7 miles 7.7 miles 7.7 miles 6.1 miles 6.1 miles 6.1 miles 6.1 miles	Whole Body Contact, Aquatic Life	Dissolved Zinc and Total Zinc	E. coli, Cadmium (s), Cadmium (W), Lead (S), Zinc (S)
White Oak Creek	E. coli	18.0 miles	Whole Body Contact	--	E. coli
Williams Creek	E. coli Aquatic Macro-invertebrates E. coli	1.0 mile 8.5 miles 8.5 miles	Whole Body Contact, Aquatic Life	--	E. coli and Aquatic Macro-invertebrates
Tributary to Chat Creek	Cadmium Zinc	--	General Criteria	--	Cadmium (W) and Zinc (W)

TMDL- Total Maximum Daily Load

For metals labeled as such: (S)- Sediment; (W)- Water

Department Studies in the Watershed

Bioassessment Studies

- Blackberry Creek, Jasper County (2010-2011) - <http://dnr.mo.gov/env/esp/docs/BlackberryCreekBioReportFY2011.pdf>
- Beef Branch and Jacob's Branch, Newton County (2010-2011) – <http://dnr.mo.gov/env/esp/docs/BeefJacobsBranchBioReportFY2011.pdf>

Recreational Use Attainability Analyses (2005-2008) by County

(<http://dnr.mo.gov/env/wpp/wqstandards/uaa/index.html>)

Barry County- http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_barry.htm

- Clear Creek
- Hudson Creek
- Joyce Creek
- Pogue Creek
- South Fork Capps Creek
- Shoal Creek

Barton County- http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_barton.htm

- Dick's Fork
- Glendale Fork
- North Fork Spring River

Dade County- http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_dade.htm

- North Fork Spring River

Jasper County- http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_jasper.htm

- Blackberry Creek
- Buck Branch
- Cave Springs Branch
- North Fork Spring River
- Opossum Creek

Lawrence County- http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_lawrence.htm

- Browning Hollow
- Clear Creek
- Douger Branch
- Dry Fork
- Dry Hollow
- Dry Valley Branch
- Honey Creek
- Spring River
- Stahl Creek
- Tributary to Spring River
- Tributary to Stahl Creek
- Tributary to White Oak Creek
- Truitt Creek
- Williams Creek

Newton County- http://dnr.mo.gov/env/wpp/wqstandards/uaa/uaa_newton.htm

- Dry Valley Branch
- Elm Spring Branch
- Tributary to Center Creek
- Warren Branch

Total Maximum Daily Load (TMDL) Studies:

Completed

- Center Creek and Turkey Creek (Total and Dissolved Zinc); 2006
<http://dnr.mo.gov/env/wpp/tmdl/3203-center-3216-3217-turkey-cks-record.htm>

- Clear Creek (Ammonia, BOD, and Non-Filterable Residue); 1999
<http://dnr.mo.gov/env/wpp/tmdl/3239-clear-ck-record.htm>
- North Fork Spring River (TSS); 2006
<http://dnr.mo.gov/env/wpp/tmdl/3188-n-fk-spring-r-record.htm>
- Shoal Creek (Fecal Coliform) 2007
<http://dnr.mo.gov/env/wpp/tmdl/3230-shoal-ck-record.htm>

Planned

TMDLs under development are listed above and can be found at:

<http://dnr.mo.gov/env/wpp/tmdl/wpc-tmdl-progress.htm>.

- Center Creek, Dry Fork, Honey Creek, North Fork Spring River, Spring River, Truitt Creek, Turkey Creek, White Oak Creek, Williams Creek (*E. coli*); 2013.
- Blackberry Creek (Chloride and Sulfate Chloride), and Capps Creek, Clear Creek, Hickory Creek, Shoal Creek, and Willow Branch (*E. coli*); 2015.
- Turkey Creek (Cadmium – sediment and water, Lead- sediment, and Zinc- sediment); 2016.
- Center Creek (Cadmium – sediment and water, Lead – sediment, and zinc- sediment), Chat Creek (Cadmium- water), Clear Creek (Nutrients/eutrophication), Douger Branch (Lead- sediment and Zinc- sediment), and Tributary to Chat Creek (Cadmium- water and Zinc- water); 2018.
- Dry Fork and Williams Creek (Aquatic Macro invertebrates); 2022.
- Jacobs Branch (Zinc- water); 2025.

Clean Water Act Section 319 Projects in the Spring River Watershed – (since 2003)

- Wildcat Glades Conservation and Audubon Center – Wildcat Glades Education Project (2006-2009; \$337,485 and 2011-2014; \$505,428)
- City of Carthage Spring River Nonpoint Source Watershed Management Plan Implementation (2012-2014; \$331,068)
- Spring River Watershed Management Plan planning and development (2012-2015; \$100,000)
- Upper Shoal Creek On-Site Implementation (2009-2012; \$145,560)
- Lower Shoal Creek Watershed Restoration Action Strategy Project (2007-2009; \$17,574)
- Upper White River Basin – Missouri Clean Marina Pilot Program (2013; \$10,000)
- Barton County Poultry Litter Fertility and Water Quality Demonstration (2005-2006; \$4,215)

USGS Gage Stations-Real Time Flow Data

- USGS 07185700 Spring River at La Russell, MO
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=07185700&PARAMeter_cd=00065,63160,00060
- USGS 07185765 Spring River at Carthage, MO
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=07185765&PARAMeter_cd=00065,63160,00060
- USGS 07185910 North Fork Spring River near Purcell, MO
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=07185910&PARAMeter_cd=00065,63160,00060
- USGS 07186000 Spring River near Waco, MO
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=07186000&PARAMeter_cd=00065,63160,00060

- USGS 07186900 Hickory Creek at Neosho, MO
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=07186900&PARAMeter_cd=00065,63160,00060
- USGS 07187000 Shoal Creek above Joplin, MO
http://waterdata.usgs.gov/mo/nwis/uv/?site_no=07187000&PARAMeter_cd=00065,63160,00060

For More Information

For more information about Our Missouri Waters initiative and the Spring River Watershed project, or to provide comments and suggestions about water resource issues in the Spring River Watershed, contact the department's southwest regional watershed coordinator, Gwenda Bassett.

Missouri Department of Natural Resources
Southwest Regional Office
Gwenda Bassett, Spring River Watershed Coordinator
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By email to: Gwenda.Bassett@dnr.mo.gov
By phone: 417-891-4300
Or on the Web at dnr.mo.gov/omwi.htm

Also, check out the project **Facebook page** at **Our Missouri Waters Spring River Watershed Initiative**.