

Current Issues in Water Supply Management

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Current Issues in Water Supply Management

- Extraordinary Measures Taken by Southeast Tennessee Water Utilities and Efforts to Plan for Future Water Supply Challenges
- Water Storage Allocation and Accounting on J. Percy Priest and Other US Army Corps of Engineers Reservoirs
- Proposed regional water authority for the Memphis Sand Aquifer ([SB 776](#) by Kelsey/Harris; [HB 816](#) by Lollar)

The Memphis Sand Aquifer

“Sweetest Water in the World”

Dr. Jerry L. Anderson, Director of the Ground Water Institute at the University of Memphis

<http://www.waterworld.com/articles/print/volume-19/issue-11/washington-update/memphis-water-termed-sweetest-in-the-world.html>

“Memphis sands water is so pure when it comes from the approximately 250 wells in the Memphis area that it has only to be aerated to eliminate iron and dissolved gases. The water is then filtered and subsequently submitted to chlorination and fluoridation, which is required by law for public drinking water but not for industrial use.”

Dr. Anderson

"We don't really know the rate at which the Memphis aquifer is replenished, nor do we know what the potential is for water degradation. Our job is to make certain that we know the answers to those questions before it is too late and to make certain that our water is as plentiful and as of high quality in the future as it is today."

Dr. Brian Waldron

*University of Memphis Ground Water Institute**

*Part of the Center for Applied Earth Science and Engineering Research since 2015.

The Memphis Sand Aquifer

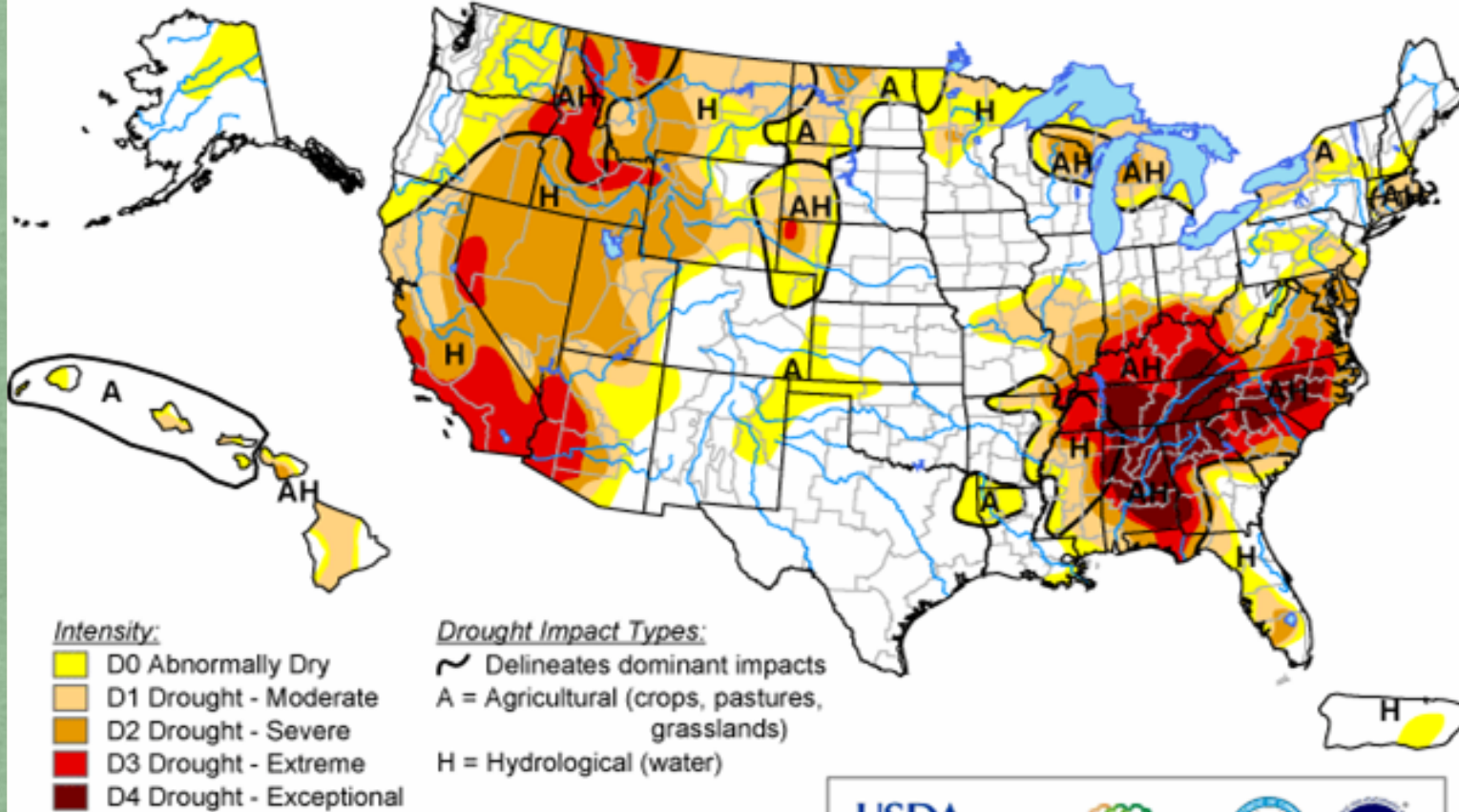
Anything this sweet has to be in high demand!

- Have wells serving the City of Memphis altered the flow of water in the Memphis Sand Aquifer?
 - The State of Mississippi said “yes” in a lawsuit originally filed against Memphis and then refiled against the State of Tennessee in the US Supreme Court in 2014.
 - The US Supreme Court appointed a special master in 2015.
 - The Special Master
 - agreed with Tennessee that Mississippi has no enforceable right to the unapportioned groundwater in the aquifer but
 - raised the question whether the aquifer is an interstate resource and
 - approved the parties’ agreement to develop by August 2017 a plan for an evidentiary hearing on that question.
- Does the Memphis Sand Aquifer need a “watchdog” to protect it from pollution?
 - Three state legislators say yes.
 - The Commercial Appeal says yes.
 - Memphis Light Water and Gas says yes.*

* ([SB 776](#) by Kelsey/Harris; [HB 816](#) by Lollar)

U.S. Drought Monitor

October 16, 2007
Valid 8 a.m. EDT



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>

Released Thursday, October 18, 2007

Author: Mark Svoboda, National Drought Mitigation Center

The 2007-08 Drought was the worst on record in Tennessee.

Key Responses To 2007-08 Drought

TDEC and the Corps Take Action

- TDEC's Water Resources Advisory Committee
 - Drought Management
 - [State Drought Management Plan](#), February 2009
 - [Guidance for Developing Community Water System Drought Management Plans](#), December 2009
 - Water Resources Regional Planning
 - Pilot Studies
 - [South Cumberland Regional Water Resources Planning Study](#), June 2011
 - [North Central Regional Water Resources Planning Study](#), December 2011
 - Planning Publications
 - [Regional Water Resources Guidelines for Tennessee](#), March 2013
 - [Regional Water Supply Plan Approval Process](#), June 2013
 - [Proposed Statewide System of Basic Hydrologic and Water System Information](#), December 2013
 - [Statewide Analysis of Hydrologic and Water System Information—WRTAC Recommendations \(DRAFT\)](#), June 2014
- US Army Corps of Engineers
 - [J. Percy Priest Lake Water Supply Study](#), in progress
 - [Proposed Rule on Use of U.S. Army Corps of Engineers Reservoir Projects for Domestic, Municipal & Industrial Water Supply](#), December 2016

J Percy Priest Reservoir

You can already see where this is going . . .

Source:

<http://www.lrn.usace.army.mil/Locations/Lakes/J-Percy-Priest-Lake/History/>

- Authorized but not funded in the federal Flood Control Act of 1938 as the *Stewarts Ferry Project*
- Originally commissioned in the federal Flood Control Act of 1946 as *Stewarts Ferry Reservoir*
- Public Law 85-496 changed the name to *J. Percy Priest* in honor of the late Congressman from Nashville in 1958
- Construction began in 1963, and the dam was completed in 1968

- Original purposes:

- Flood control
- Hydropower
- Recreation

- Added purposes:

- Fish and wildlife
- Water quality
- Water supply

J Percy Priest Reservoir

*Water, water
everywhere . . .*

Source: J. Percy Priest Water
Supply Reallocation Study
Progress Report, Loren V.
McDonald, P.E., PMP Project
Manager 08 August 2016

- The Water Supply Act of 1958 authorizes the Secretary of the Army to include water storage in Corps projects and to reallocate storage in existing projects to municipal and industrial water supply.
- Purposes that generate revenue repay a proportionate share of original project construction costs and annual operation and maintenance, repair, replacement and rehabilitation.
 - Water Supply
 - Hydropower
- A formal reallocation study determines storage amount.
- Water supply is added as an authorized project purpose only after the study is approved and the water storage agreements are executed.

J Percy Priest Reservoir

Serving water utilities in Rutherford County

- Smyrna
- Murfreesboro
- Consolidated Utility district of Rutherford County

- First JPP reallocation study begun in 1997 and approved in 2002

1990 population 118,570

2000 population 182,029

- First water storage agreements executed in 2003 through 2008

2005 population 221,318

- Record drought occurred in 2007 and 2008, storage yield recalculated via new model much lower

- Request for new reallocation study in 2008; needs assessment initiated in 2009

2010 population 262,604

2015 population 298,612

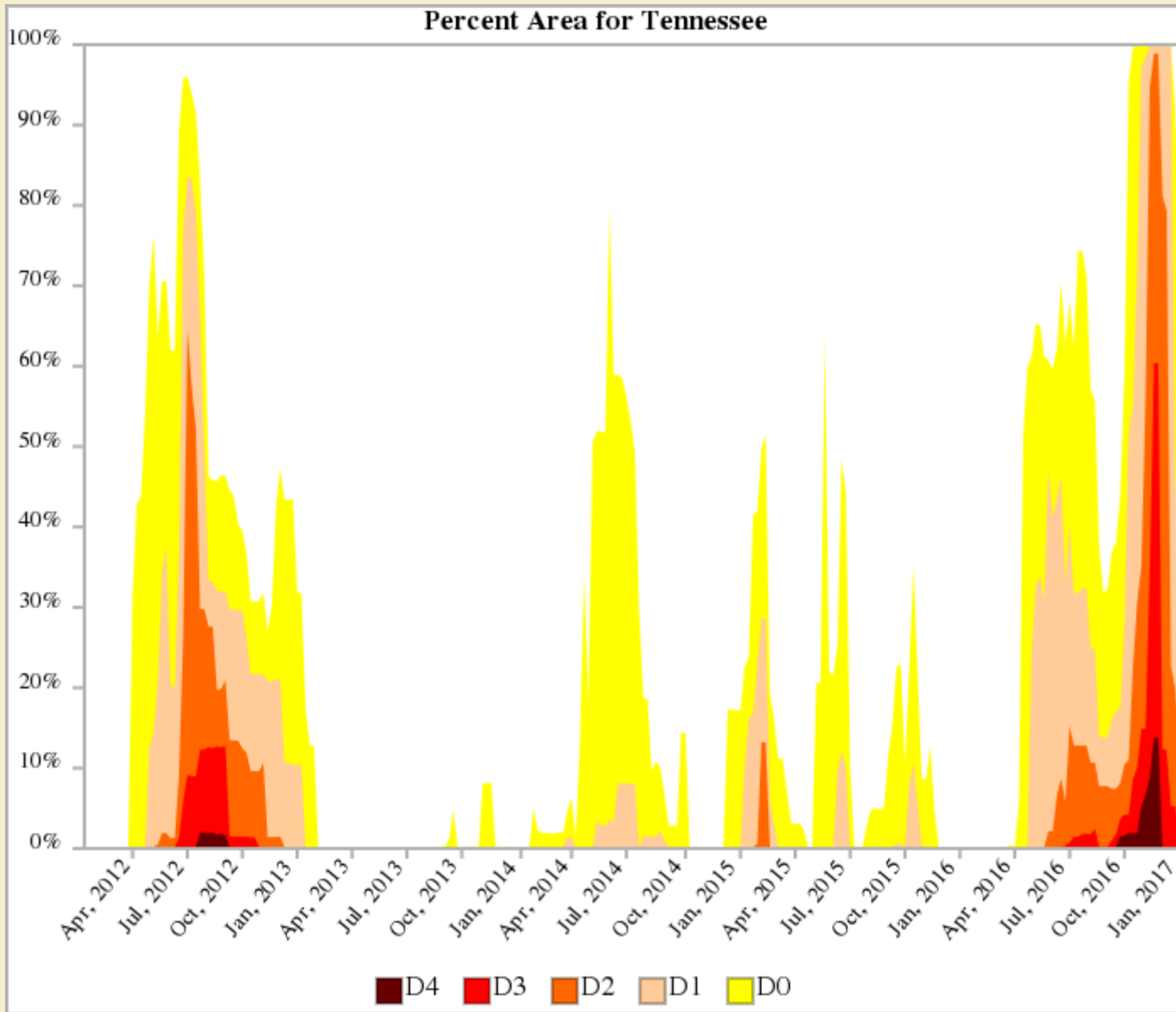
- Draft Reallocation Report and Water Storage Agreements in April 2016

- Review with affected water utilities through May 2017

J Percy Priest Reservoir

Regulatory and legislative changes affecting the Corps study





- 16 December 2016—US Army Corps of Engineers proposes rule to update and clarify policies governing the use of reservoirs for water supply, specifically to
 - define key terms under its statutes and
 - respond to issues that have arisen in exercising these authoritiesin order account for court decisions, legislative provisions, and other developments.
- 28 April 2017—Governor Bill Haslam signs into law Public Chapter 220 establishing the right of anyone who has a water storage contract with the Corps to any return flows they make to that reservoir.



Drought recurs with some intensity in Tennessee at least once every five years.

Drought Intensities

None: No Drought	D2: Severe Drought
D0: Abnormally Dry	D3: Extreme Drought
D1: Moderate Drought	D4: Exceptional Drought

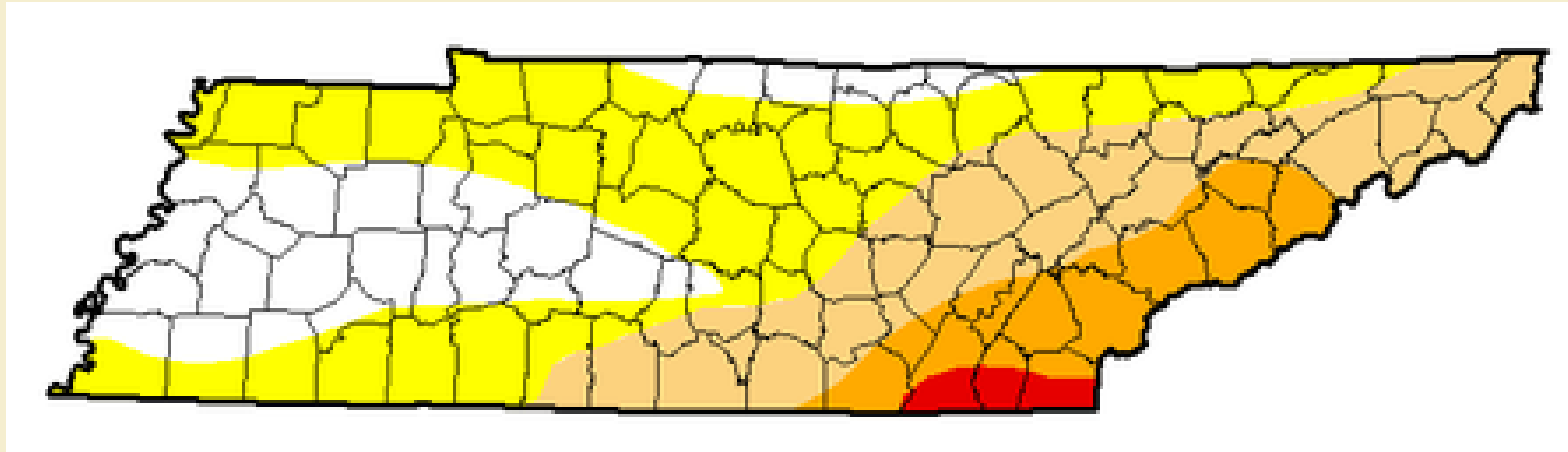





<http://droughtmonitor.unl.edu/>

U.S. Drought Monitor - Tennessee

As of January 10, 2017

Author: David Miskus, NOAA/NWS/NCEP/CPC



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current 1/10/2017	22.96%	77.04%	37.78%	13.03%	1.83%	0.00%
Three Months Ago 10/11/2016	4.39%	95.61%	51.78%	10.86%	4.03%	1.74%
One Year Ago 1/12/2016	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Tennessee Water Systems Affected by Declining Source Problems, Restrictions in Place January 2017

<http://www.tn.gov/environment/topic/wr-drought-planning>

SystemName	County	WaterSource	Measures in Place	Last Action
Ardmore (0000018)	Giles	Wells	² Voluntary Conservation	11/17/16
BCCX Water System (0000553)	Bledsoe	Big Creek Impoundment	¹ Mandatory Restrictions	11/10/16
Cagle Fredonia UD (0000927)	Sequatchie	Big Creek UD	¹ Mandatory Restrictions	11/10/16
Chapel Hill Water System (0000104)	Marshall	Town Well, Mary Fort Cave Well Marshall County connection	² Voluntary Conservation	11/28/16
Cherokee Hills (0000138)	Polk	4 Springs	¹ Mandatory Restrictions	11/10/16
Copper Basin Utility District (0000844)	Polk	Campbell Cove Lake	¹ Mandatory Restrictions	10/13/16
Copperhill Water Department (0000136)	Polk	City of McCaysville GA	¹ Mandatory Restrictions	10/13/16
Fall Creek Falls Utility District (0000552)	Van Buren	Taft Youth Center	¹ Mandatory Restrictions	10/28/16
Griffith Creek Utility District (0000278)	Marion	Big Creek connection	³ Mandatory Restrictions (Commercial car washes are permitted since they are generally lower flow nozzles and more water conservative)	10/28/16
Jasper Water System (0000325)	Marion	Sequatchie River	¹ Mandatory Restrictions	11/10/16
Lakeview (0000596)	Hawkins	Wells, Rogersville connection	² Voluntary Conservation	11/17/16
Maryville Water and Sewer (0000438)	Blount	Little River	² Voluntary Conservation	10/19/16
Monteagle Public Utility Board (0000470)	Grundy	Laurel Lake, Lake Louisa Sewanee connection	¹ Mandatory Restrictions	10/28/16
Murfreesboro Water Department (0000491)	Rutherford	J Percy Priest Lake	² Voluntary Conservation	10/28/16
<u>Oneida Water System (0000532)</u>	Scott	Baker Lake	² Voluntary Conservation	9/26/16
Sewanee Utility District (0000623)	Franklin	Lake O'Donnell, Lake Jackson	² Voluntary Conservation	12/22/16
Spring City (0000656)	Rhea	Piney River	¹ Mandatory Restrictions	11/28/16
Suck Creek (0000909)	Marion	3 Wells	² Voluntary Conservation	11/10/16
Tennessee American Sequatchie Valley (0000749)	Marion	Sequatchie River	¹ Mandatory Restrictions	10/28/16
Tracy City Water System (0000706)	Grundy	Big Fiery Gizzard, Big Creek connection, Monteagle connection	³ Mandatory Restrictions	10/28/16
Tuckaleechee Utility District (0000714)	Blount	Alcoa, Maryville connection (Little River)	² Voluntary Conservation	10/19/16

TDEC asked customers of ten utilities in six southeastern counties to limit water usage on October 28, 2016. Seven were still on the restrictions list in January 2017.

Source: TDEC;

<http://www.tn.gov/news/46465>

Fall Creek Falls Utility District – Van Buren County*

Pikeville Water System – Bledsoe County

Dunlap Water System – Sequatchie County

Cagel-Fredonia Utility District – Sequatchie County*

TN American Sequatchie Valley Water System – Marion County*

Griffith Creek Utility District – Marion County*

Big Creek Utility District – Grundy County

Tracy City Water System – Grundy County*

Monteagle Public Utility Board – Grundy County*

Sewanee Utility District – Franklin County*

*On TDEC's 1/12/2017 Declining Source w/Restrictions List.

Federal, state, and local agencies discuss solutions to the Sequatchie Valley drought problem

*Fentress
Morgan
Cumberland
Bledsoe
Rhea
Grundy
Sequatchie*

- National Weather Service: Chattanooga on pace in fall 2016 for the driest year on record; odds of a multi-year drought are high
- Utilities: Lack of reliable water supply hinders economic development; multiple ideas are offered, from interconnections to a new reservoir
- US Army Corps of Engineers: Joint Corps-non-federal partner study is first step toward a long-term fix
- Southeast Tennessee Development District: Offers to assist utilities in defining a study region

And then the rains came . . .

- USACE and TDEC: In the meantime, join in watershed study