

# SC Drought Monitoring & Management

## Upper Savannah River Basin Council

Elliot D. Wickham & Hope Mizzell

South Carolina State Climatology Office

SC Department of Natural Resources

October 11<sup>th</sup>, 2023



# Drought: The Enigma Natural Hazard

Let's define drought. Drought is...

Is there a definition?

Yes! But also, no.

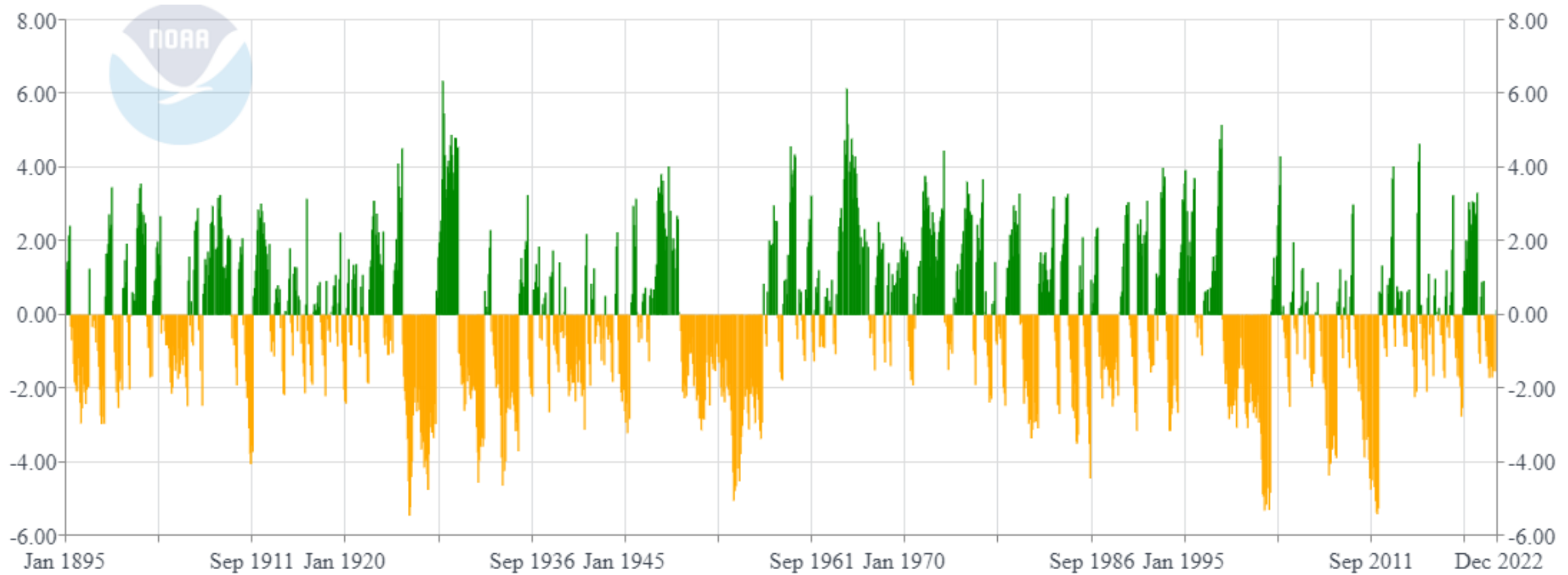
Clear as mud?

Conceptual Definitions & Operational Definitions

One of the values of this process for the Upper Savannah RBC is to better understand how different stakeholders think about drought. It also provides a more robust approach to protecting water resources for all users in the basin.

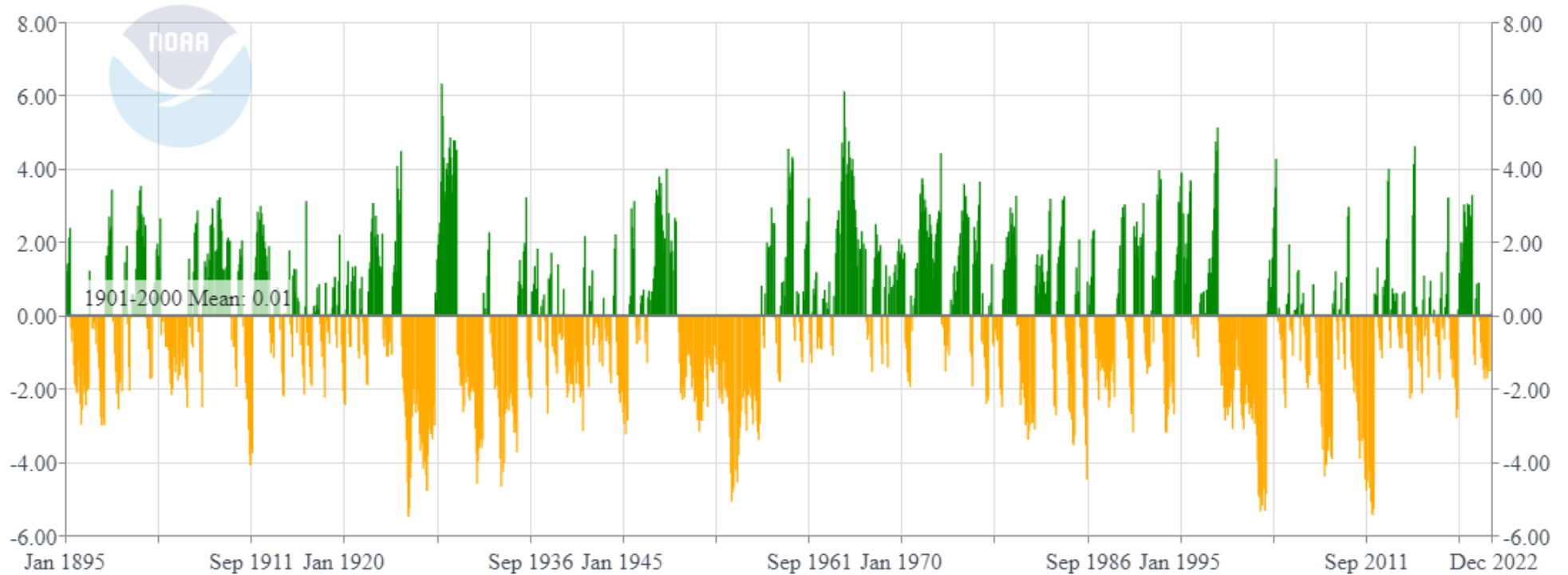
# Past Droughts in South Carolina

Palmer Drought Severity Index (PDSI) 1895 - 2022



# Past Droughts in South Carolina (PDSI)

Palmer Drought Severity Index (PDSI) 1895 - 2022



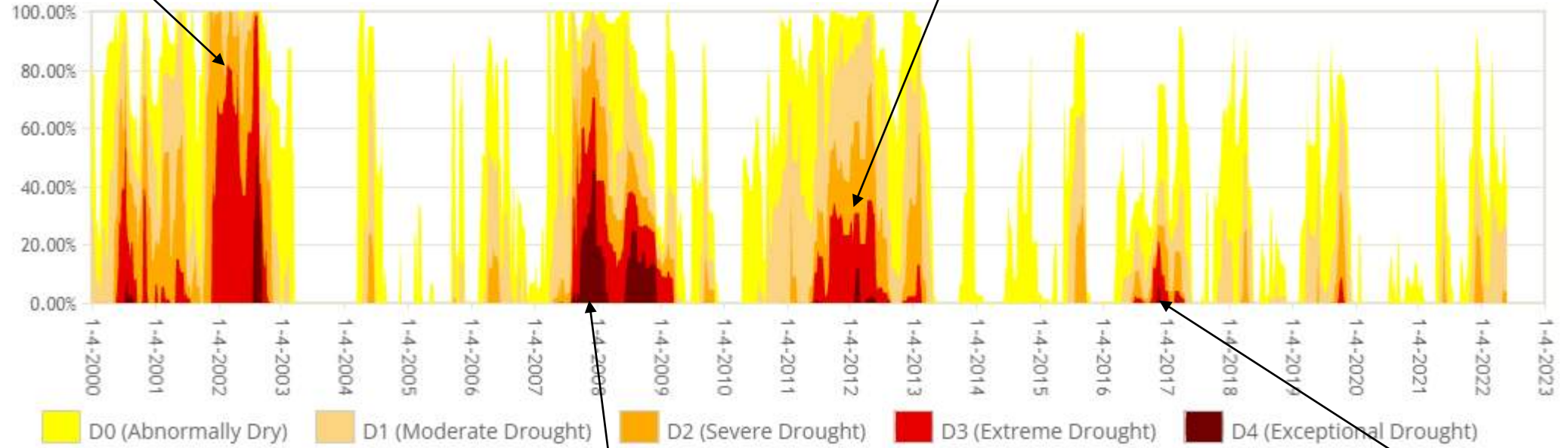
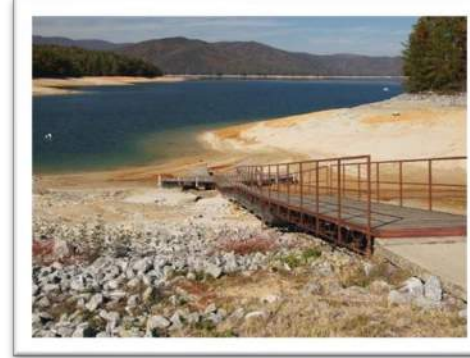
## Notable Droughts

- 1925-1927
- 1930-1935
- 1950-1957
- 1985-1986
- 1998-2002
- 2007-2008
- 2010-2012

**2002**



**2012**



**2007**



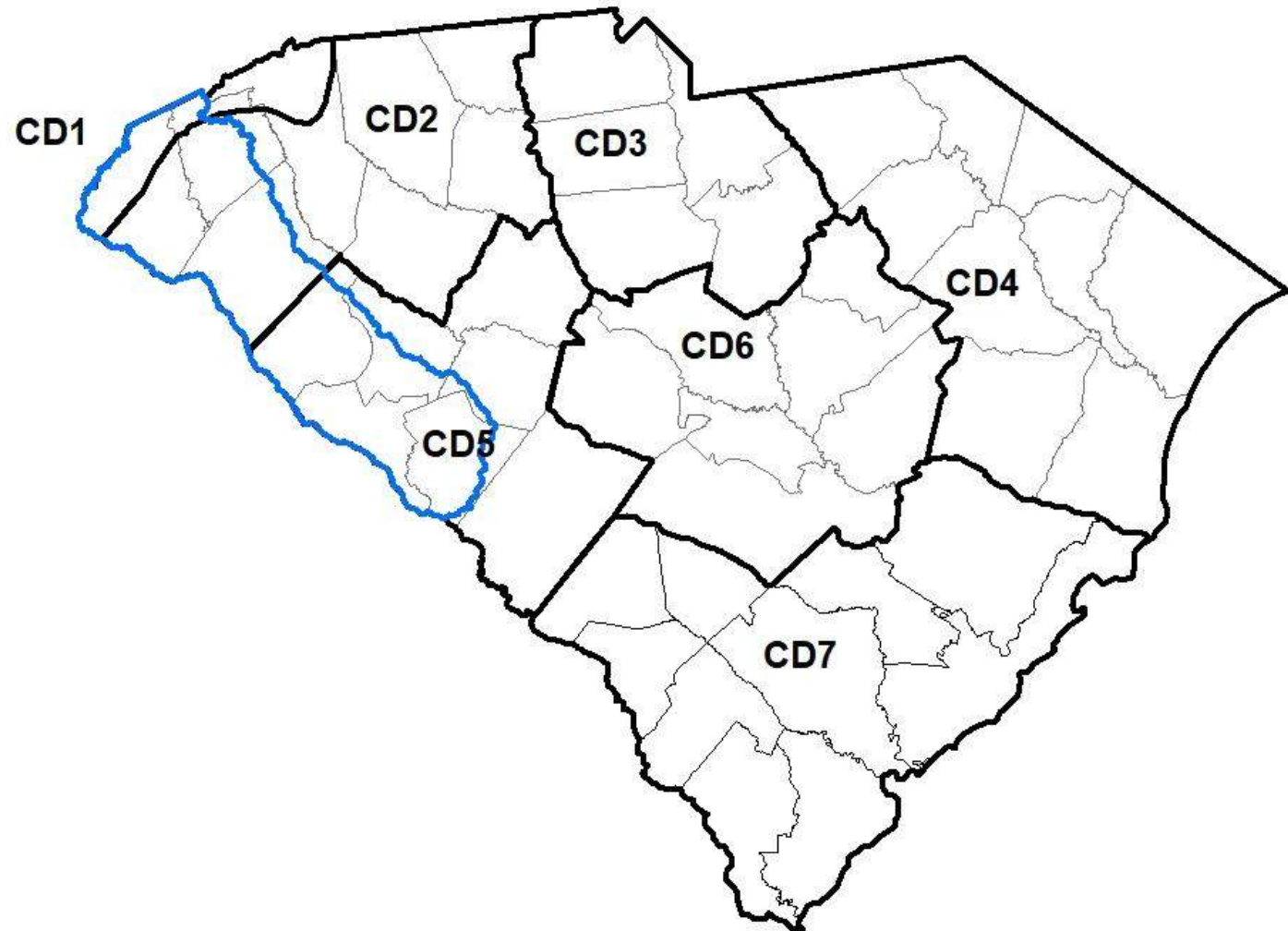
**2016**



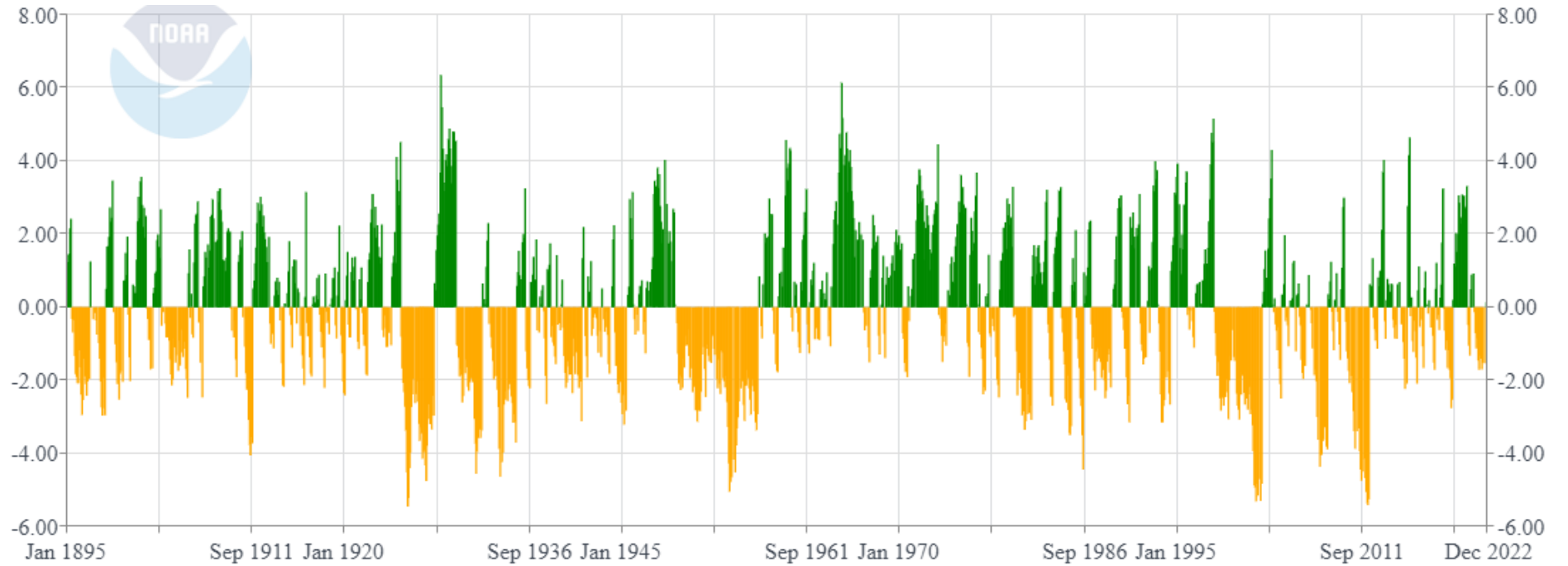


# South Carolina Climate Divisions

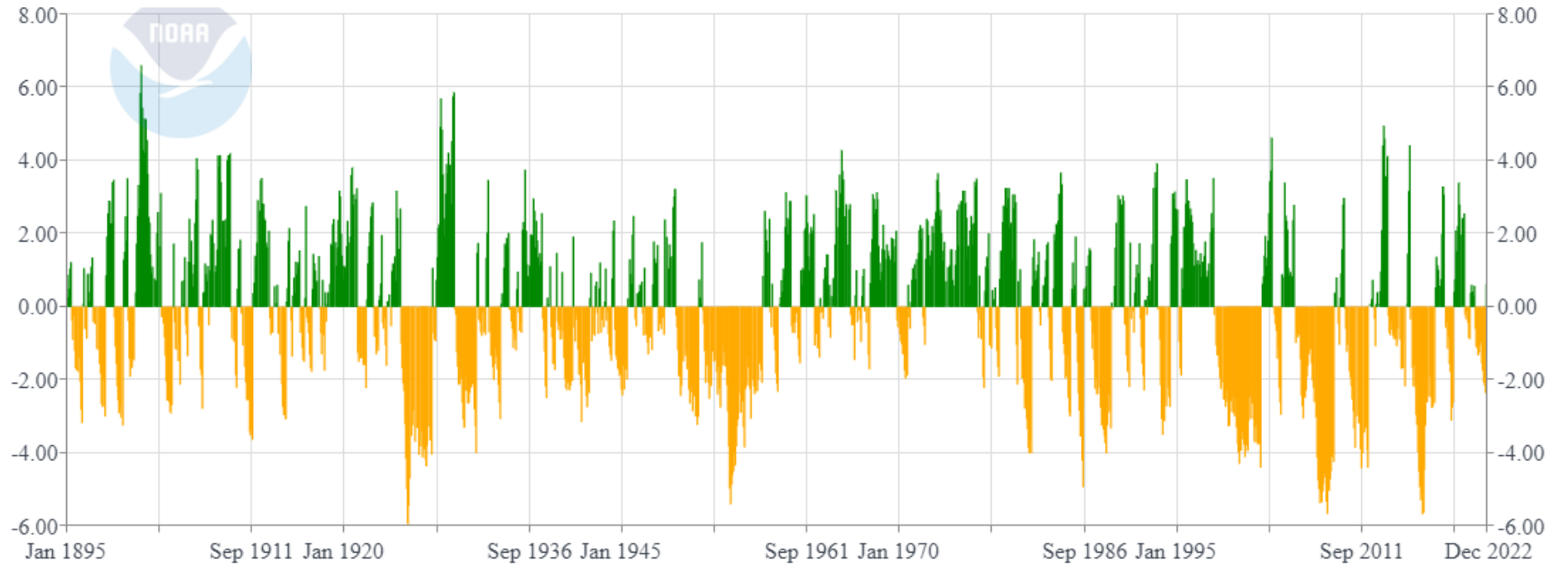
1. Mountains
2. Northwest
3. North Central
4. Northeast
5. West Central
6. Central
7. Southern



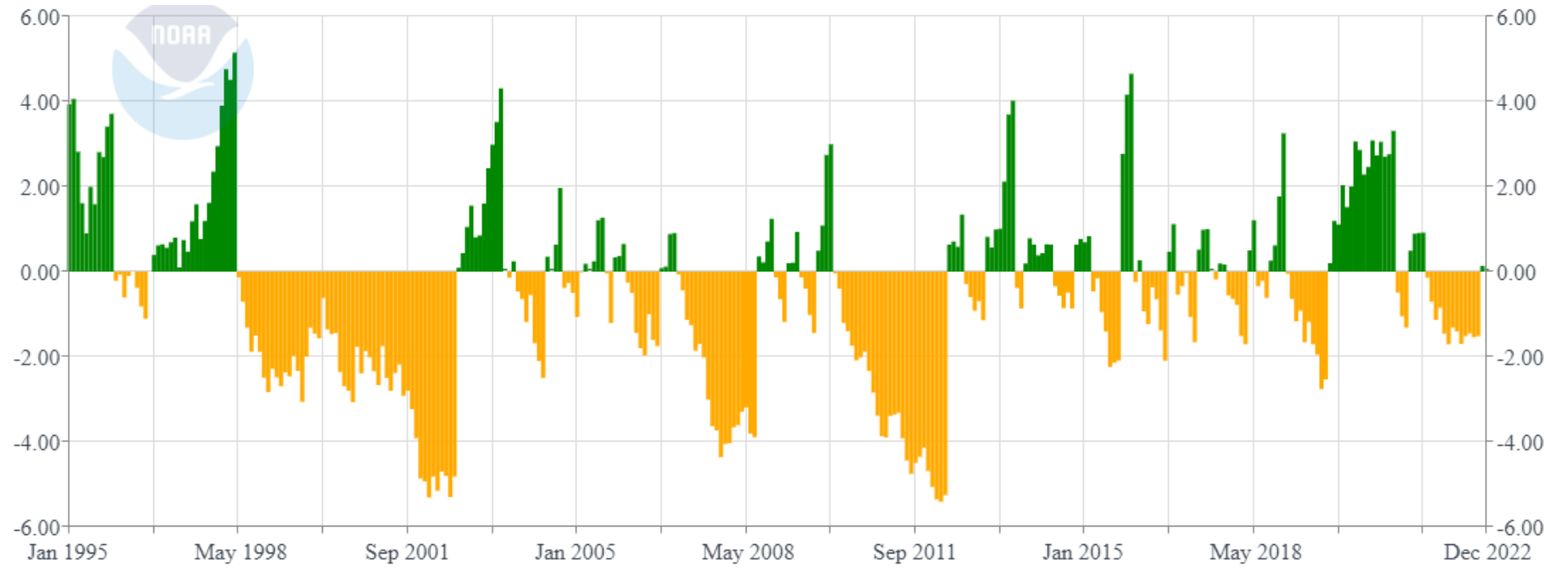
State PDSI



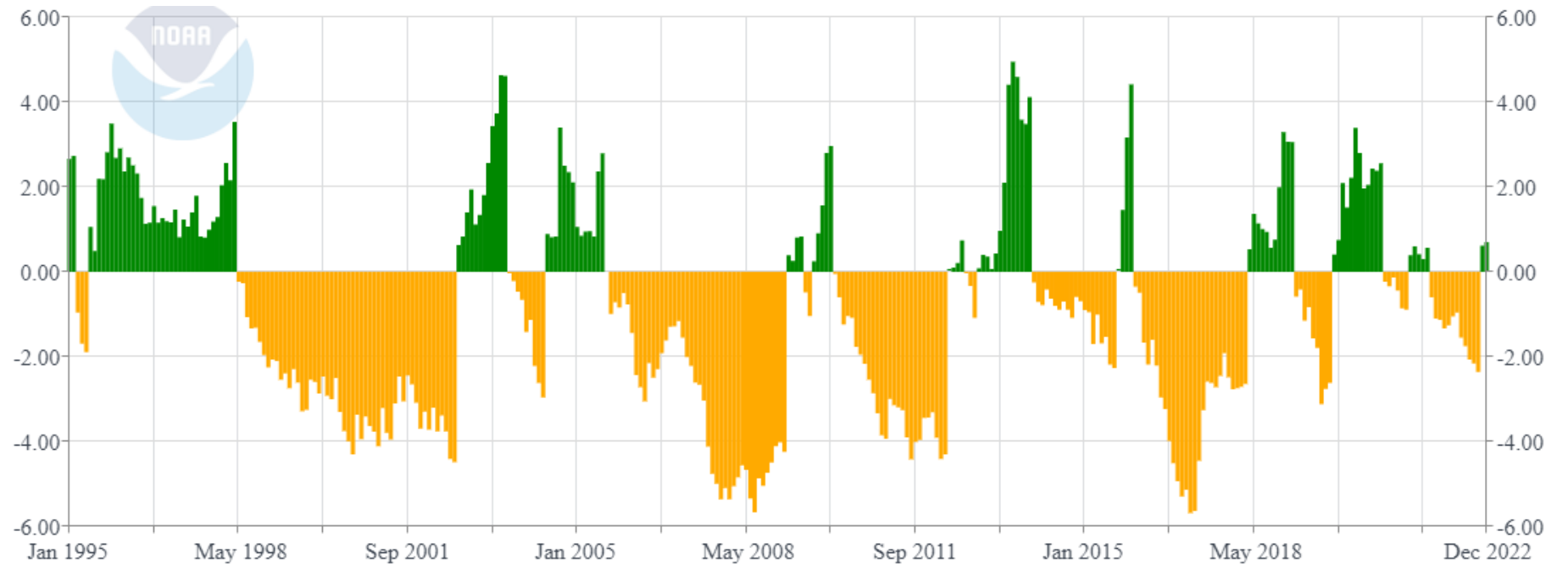
Climate Division  
2 (Northwest)  
PDSI



State PDSI

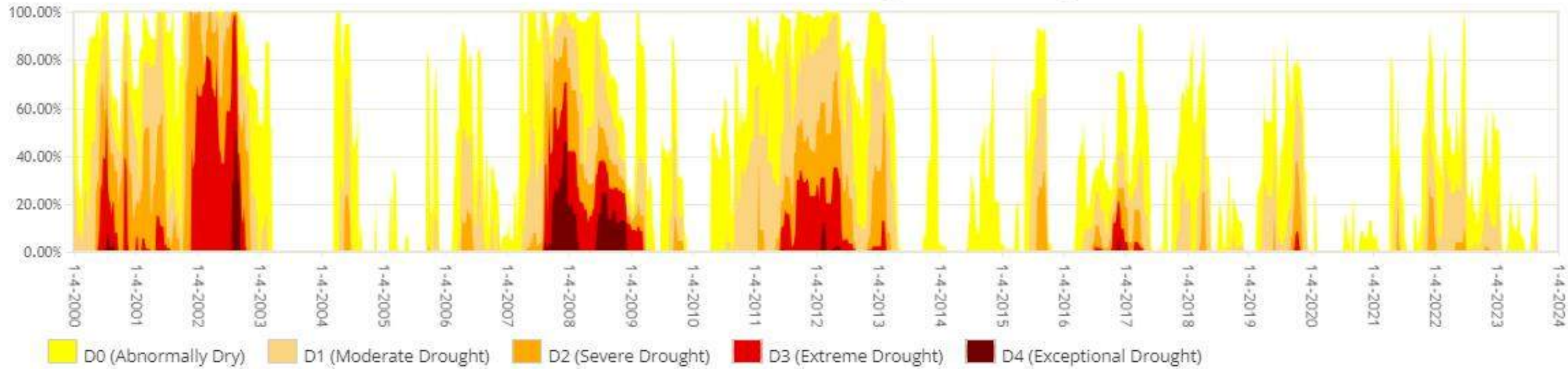


Climate Division  
2 (Northwest)  
PDSI

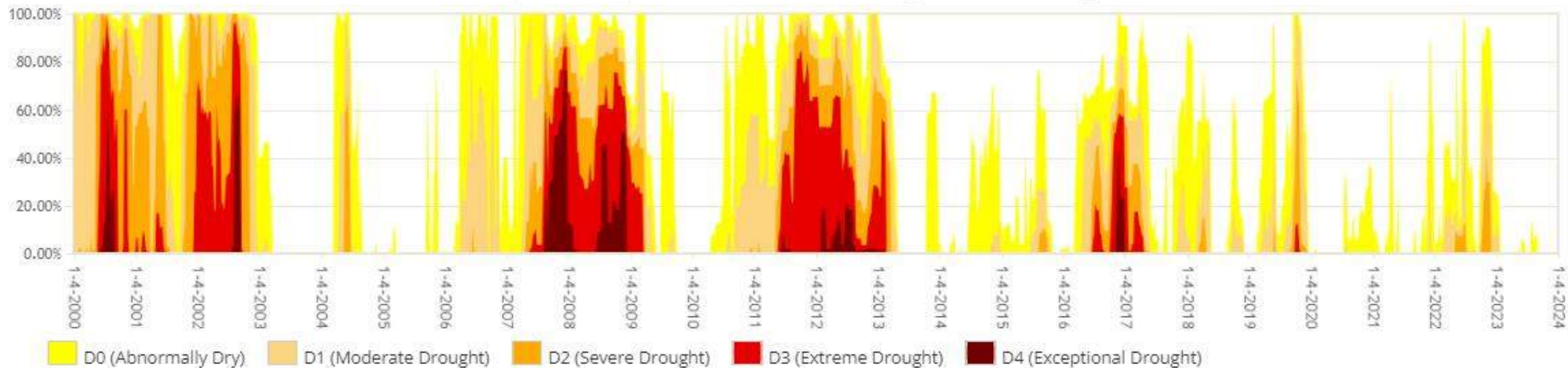




South Carolina Percent Area in U.S. Drought Monitor Categories



030601 (Savannah) Percent Area in U.S. Drought Monitor Categories

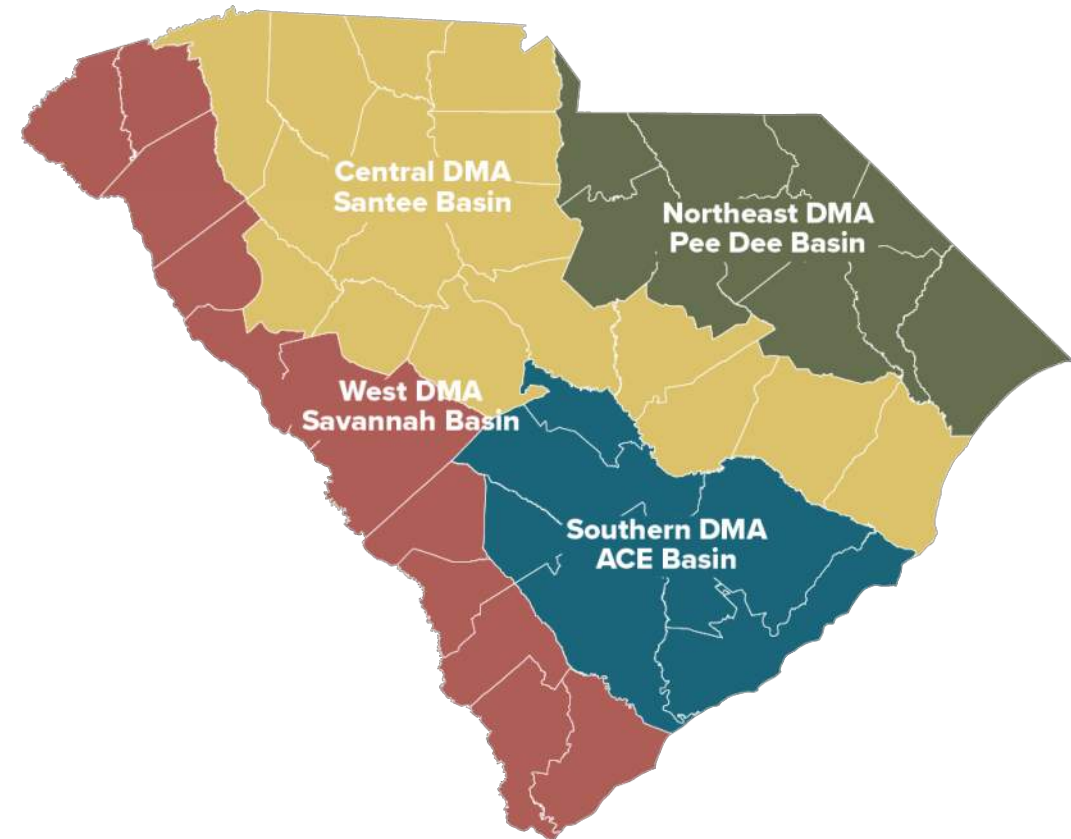


# Drought Monitoring and Response in SC

## South Carolina Drought Response Program

consists of legislation, regulations, and procedures that establish recommended and required response.

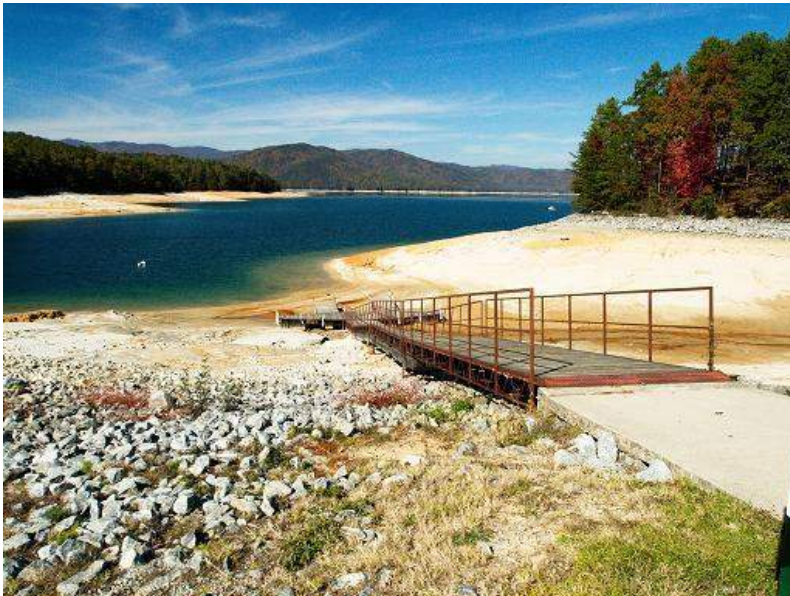
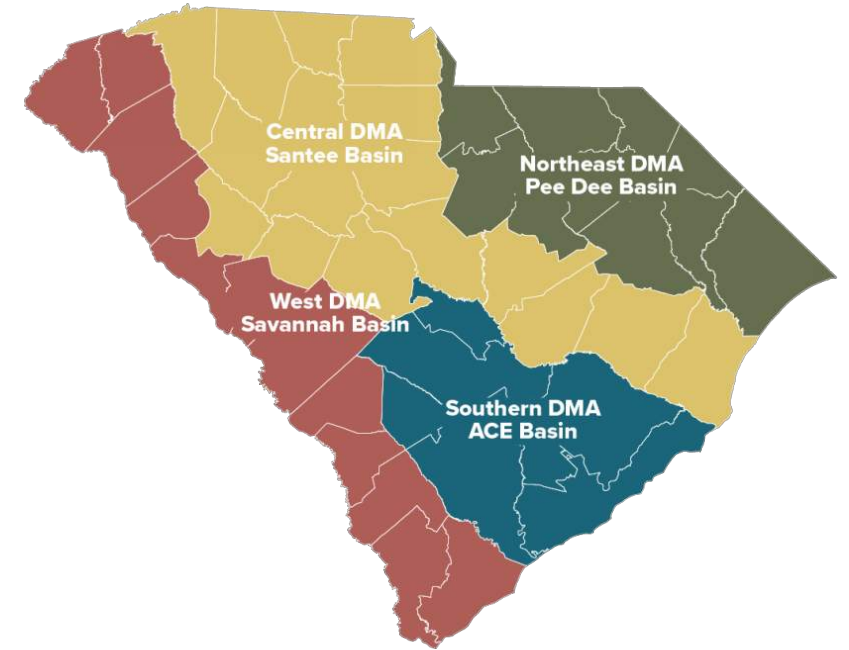
The **South Carolina Drought Response Act (2000)** and the **supporting regulations** formally establish and describe the responsibilities of the South Carolina State Climatology Office and the South Carolina Drought Response Committee, the major drought decision-making entities in the State.



# Drought Monitoring and Response in SC

**Why:** To carefully and closely monitor, conserve, and manage the State's water resources in the best interest of all South Carolinians.

**Who:** Drought Response Committee and Department of Natural Resources – State Climatology Office



## Statewide members

- Forestry Commission
- Department of Agriculture
- Emergency Management Division
- Department of Health and Environmental Control
- Department of Natural Resources

## Local members (12 per DMA)

- Water Utilities
- Regional Council of Governments
- Power Generation Facilities
- Soil and Water Conservation Districts



# West Drought Management Area








Group	Committee Member	County
Agriculture	Reg Williams	Edgefield
Commission of Public Works	Appointment Pending	McCormick
Counties	Vacant	
Domestic User	Vacant	
Industry	<a href="#">David Evans</a>	Pickens
Municipalities	Vacant	
Power Generation Facilities	<a href="#">Preston Pierce</a>	Oconee
Private Water Supplier	<a href="#">J. Scott Willett</a>	Anderson
Public Service District	<a href="#">Chris Rasco</a>	Anderson
Regional Council of Governments	Vacant	
Soil & Water Conservation Dist.	<a href="#">Yvonne Kling</a>	Aiken
Special Purpose District	<a href="#">Brian Chemsak</a>	Beaufort



Counties: Oconee, Pickens, Anderson, Abbeville, McCormick, Edgefield, Aiken, Barnwell, Allendale, Hampton, Jasper, Beaufort

# Drought Monitoring and Response in SC

**How:** The State uses multiple indicators and indices to monitor drought and determine drought severity levels.

Percent of Normal Rainfall		<ul style="list-style-type: none"><li>• Cumulative dryness or wetness compared to long-term averages</li></ul>
Crop Moisture Index (CMI)		<ul style="list-style-type: none"><li>• Agricultural growing season short-term (up to 4 weeks) dryness or wetness</li></ul>
Palmer Drought Severity Index (PDSI)		<ul style="list-style-type: none"><li>• Prolonged (month, years) abnormally dry or wet conditions</li></ul>
 Water Resources		<ul style="list-style-type: none"><li>• Streamflow levels</li><li>• Lake levels</li><li>• Groundwater levels</li></ul>
Keetch-Byram Drought Index (KBDI)		<ul style="list-style-type: none"><li>• Daily forest fire potential</li></ul>
U.S. Drought Monitor for South Carolina		<ul style="list-style-type: none"><li>• General areas of drought, labeled by intensity on a weekly basis</li></ul>

# Conditions and Response

## SC Drought Response Act and Regulations

### Incipient

- Drier than normal
- Soil moisture declines
- Water demand increases

### Moderate

- Water levels decrease
- Crops and plants wither
- Irrigation increases

### Severe

- Water levels continue to drop
- Number of wildfires increases
- Poor grazing and agricultural conditions

### Extreme

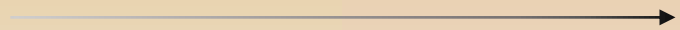
- Widespread impacts to agriculture, forestry, water utilities, and water-dependent businesses

- SCDNR, SCO and DRC monitor conditions, share information, and make recommendations to manage drought.
- State and federal agencies, water utilities, and reservoir managers monitor conditions.

Water utilities review drought plans and ordinances.

- Water utilities implement drought plans and ordinances.
- DRC may recommend voluntary or mandatory water conservation.

*As drought conditions and impacts become more severe, response actions increase accordingly.*



- State agencies increase monitoring and communications.
- Citizens may see local notices for burn bans, boat ramp closings, and water use restrictions.
- The Governor may:
  - request voluntary or mandatory water conservation.
  - assist with managing impacts, including requesting disaster declarations by the US Dept. of Agriculture and activating the National Guard to assist with wildfire suppression.

## State Emergency Operations Plan



- Water systems and citizens are without, or losing access to, water.
- Public safety, health, and welfare are threatened.
- The State Emergency Response Team (SERT) is activated to lead state-level response to the water shortage emergency.



**APPENDIX 10**  
**(SOUTH CAROLINA DROUGHT RESPONSE PLAN)**  
**TO THE SOUTH CAROLINA EMERGENCY OPERATIONS PLAN**

---

**I. INTRODUCTION**

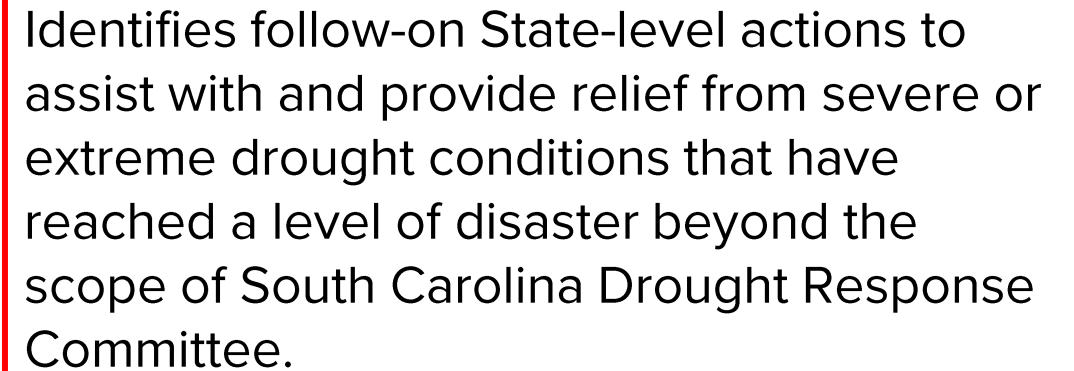
- A. A drought is a slowly developing disaster that may occur over several months or years. Impacts from drought may occur quickly for some sectors while for others it may take years to have an impact.
- B. A drought event can have a major impact on the State economy, and will affect everything from agriculture to industry to individuals.
- C. Droughts are naturally recurring events in South Carolina. The length and severity has varied greatly over the last 25 years. The worst recorded drought, from 1999 to 2002, was one of the longest and most severe in more than 100 years. The 2007-2008 drought was shorter in duration than the 1999-2002 drought, but it had a stronger intensity, especially for the Upstate region. Parts of the State experienced severe drought again in 2011-2012 and 2016-2017.

**II. PURPOSE**

- A. Establishes policies and procedures for the State and Counties when responding to a drought situation.
- B. Identifies follow-on State-level actions to assist with and provide relief from severe or extreme drought conditions that have reached a level of disaster beyond the scope of the South Carolina Drought Response Committee.
- C. Provides statewide planning and response strategies that allow State and County Emergency Management officials to effectively and efficiently plan and coordinate the application of local, State, and Federal resources in response to a severe or extreme drought event to prevent loss of life, minimize damage, lessen the economic impact, and protect the environment.

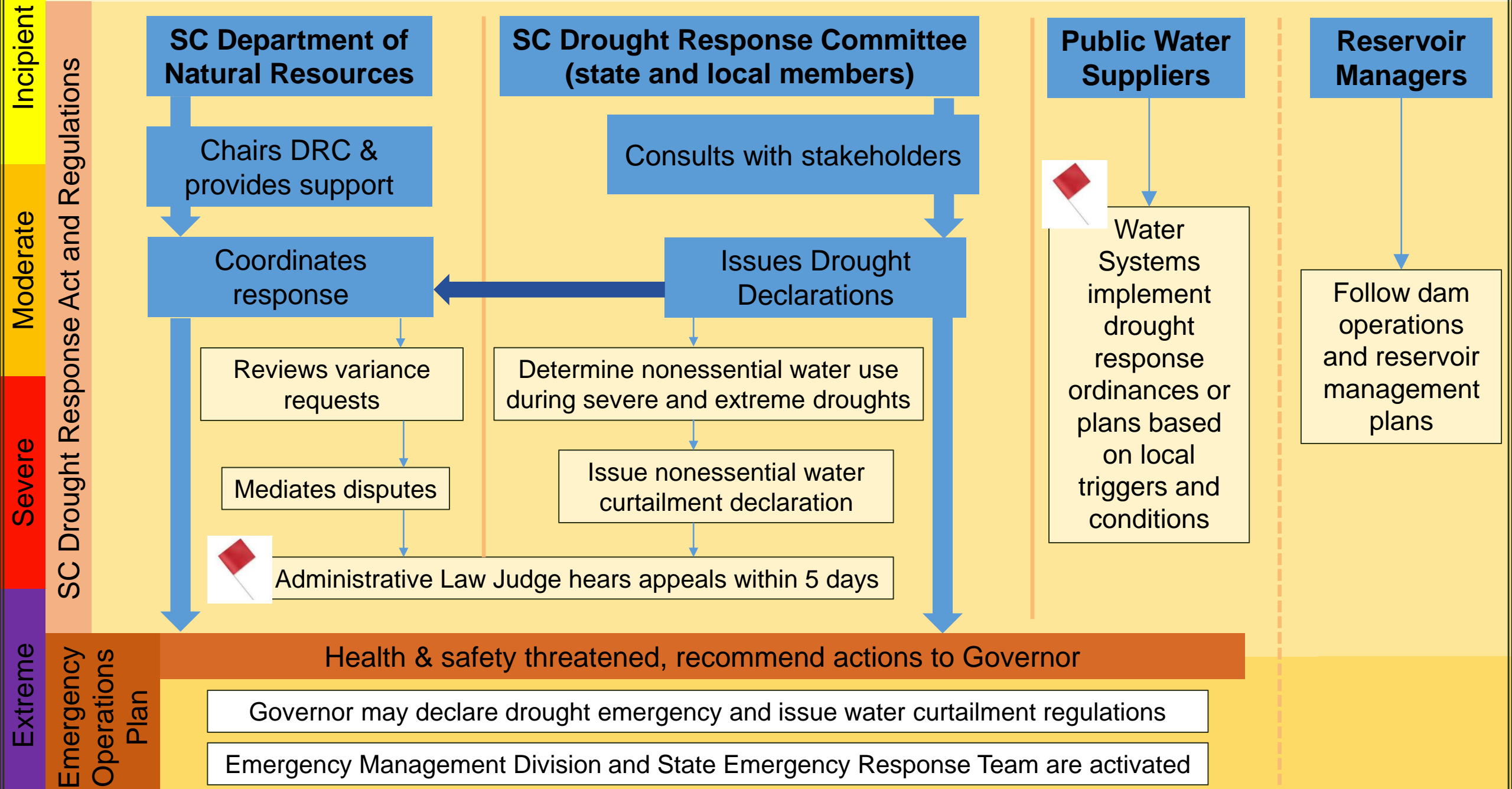
**III. ASSUMPTIONS**

- A. Not all areas of the State will be affected the same way at the same time during a drought. Therefore, different types of drought response operations may be occurring simultaneously in the State.
- B. State actions in response to "Severe" or "Extreme" drought conditions may be identical as individual communities may be in both conditions in varying degrees.
- C. The State Drought Response Plan may be in effect at the same time other measures are being implemented by the SC Drought Response Committee and local water systems.



Identifies follow-on State-level actions to assist with and provide relief from severe or extreme drought conditions that have reached a level of disaster beyond the scope of South Carolina Drought Response Committee.

# Components of South Carolina Drought Response Program



# Local Level Drought Plans

## Model Drought Management Plan and Response Ordinance

(Provided by the South Carolina Department of Natural Resources as required by the South Carolina Drought Response Act of 2000.)

### Contents

- Drought Management Plan..... 2
  - Section I: Declaration of Purpose and Intent ..... 2
  - Section II: Definition of Terms ..... 2
  - Section III: Drought Management Plan..... 4
    - A. Introduction ..... 4
    - B. Designation of Water System Drought Response Representative ..... 4
    - C. Description of Water System Layout, Water Sources, Capacities and Yields ..... 4
    - D. Identification of Water System Specific Drought or Water Shortage Indicators..... 4
    - E. Cooperative Agreements and Alternative Water Supply Sources ..... 6
    - F. Description of Pre-Drought Planning Efforts ..... 6
    - G. Description of Capital Planning and Investment for System Reliability and Demand Forecasting ..... 7
- Drought Response Ordinance ..... 8
  - A. Declaration of Policy and Authority..... 8
  - B. Moderate Drought Phase ..... 8
  - C. Severe Drought Phase..... 10
  - D. Extreme Drought Phase ..... 11
  - E. Rationing ..... 13
  - F. Enforcement of Restrictions ..... 13
  - G. Variances..... 14
  - H. Status of the Ordinance..... 15



While the Drought Response Act requires local water systems to have a drought plan, there is no legal requirement to update the plan.

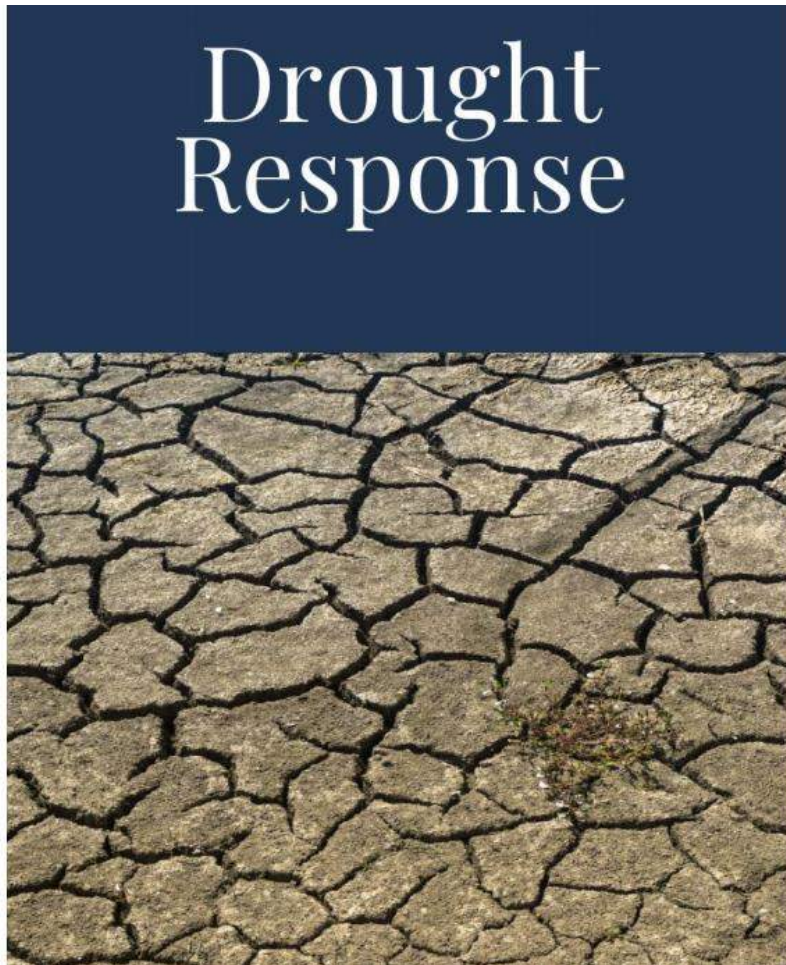
Many plans in the state have not been updated since 2003...

Updating Local drought plans can be an implementation item in the basin plan.

The Broad RBC has taken this approach. The Pee Dee and Saluda RBCs will likely follow



# Mount Pleasant Waterworks Drought Management and Response Plan Revised May 2020



**D. Identification of Water System Specific Drought or Water Shortage Indicators:** Operators of every water system must develop historical trends that are valuable indicators of a system's ability to meet demand when demand begins to outpace supply. Mount Pleasant Waterworks has developed triggers for use during drought or demand water shortages that describe when specific phases of the Drought Response Plan are implemented. Staff will monitor triggers and recommend action. The system triggers are as follows:

**Incipient Drought Phase:**

1. Drought Response Committee declaration (considering droughts can be localized.)

**Moderate Drought Phase:**

1. Drought Response Committee declaration (considering droughts can be localized.)
2. Average system storage levels fall below 60% for 48 hours.
3. Well pumping levels less than 100' above pump in one or more wells.

**Severe Drought Phase:**

1. Drought Response Committee declaration (considering droughts can be localized.)
2. Average system storage levels fall below 40% for 48 hours, and/or
3. Well pumping levels less than 75' above pump in one or more wells.

**Extreme Drought Phase:**

1. Drought Response Committee declaration (considering droughts can be localized.)
2. Average system storage levels fall below 20% for 48 hours, and/or
3. Well pumping levels less than 50' above pump in one or more wells.



## Severe Drought Phase

### Triggers:

1. Drought Response Committee (DRC) declaration, OR
2. Average system storage levels fall below 40% for 48 hours, OR
3. Well pumping levels less than 75' above pump in one or more wells.
4. Rationing when water pressure has been reduced to 40 psi and water storage levels drop below 20% for 48 hours.

### Goals: *To be implemented at Trigger #2 or #3 above*

1. **40% Reduction** of all water use
2. Voluntary reductions from customers in the use of water for all purposes
3. Mandatory restrictions on non-essential usage and restrictions on times when certain water usage is allowed

**Note:** Actions may be time-based to prescribe certain activities. For example, the request for 40% reduction in water usage may only be necessary after 30 or 45 days within this drought stage depending on other factors.

### Administrative Actions:

	<i>Task</i>	<i>Assignee (ICS Position*)</i>
<input type="checkbox"/>	Issue a Proclamation to be released to the local media, MPW customers, and to the South Carolina Department of Natural Resources Drought Information Center that Severe drought conditions are present.	General Manager
<input type="checkbox"/>	Provide written notification to the South Carolina Department of Natural Resources Drought Information Center.	General Manager
<input type="checkbox"/>	Communicate with the Southern Drought Management Area (DMA) DRC representative on MPW's drought conditions, impacts, and actions taken so DRC has this information when setting drought levels for the Southern DMA.	General Manager
<input type="checkbox"/>	Consider offering incentives to customers for finding and repairing leaks and/or for complying with voluntary restrictions.	General Manager
<input type="checkbox"/>	Communicate financial impacts of drought to Commissioners and customers.	General Manager
<input type="checkbox"/>	Provide written notification monthly to the South Carolina Department of Natural Resources Drought Information Center regarding the outcomes of the voluntary and mandatory restrictions.	General Manager
<input type="checkbox"/>	Encourage all residential water customers to voluntarily reduce overall monthly water usage to 60% of the customer's monthly average. If voluntary reduction of usage is not successful, the Mount Pleasant Waterworks may, at its option, implement the excessive use rate schedule for water, included at the bottom of this table. (Note: this rate modification is based on a reduction from actual average usage/REU vs. allocated capacity/REU.)	General Manager
<input type="checkbox"/>	Analyze AMI and other data to determine actual water usage reduction vs. goal. Determine customers not meeting 40% goal and generate customized notification to encourage.	Customer Services Manager

	<i>Task</i>	<i>Assignee (ICS Position*)</i>
<input type="checkbox"/>	Monitor and track daily/weekly call volume in Call Center. Consider invoking Emergency Call Takers to work in Contact Center to handle increased call volume.	Customer Services Manager
<input type="checkbox"/>	Suspend cut-offs.	Customer Services Manager
<input type="checkbox"/>	Activate new tier charges in CIS when decision to implement is made by General Manager. When modified rate structures are implemented, a comparison of actual usage vs. target of modified tier structure should be included in customer bills.	Customer Services Manager
<input type="checkbox"/>	Follow communication guidelines outlined in Mount Pleasant Waterworks Crisis Communication Plan to inform Mount Pleasant Waterworks' customers of the water system condition and voluntary and mandatory conservation measures that the customers are requested to follow during Severe drought conditions. See Appendix G for guidelines. Encourage self-policing by residents to alert the utility of system leaks.	PIO
<input type="checkbox"/>	Add bill inserts with conservation measures and updates on actual water usage reduction vs goal.	PIO
<input type="checkbox"/>	Collaborate and communicate with other water utilities and entities within the Southern Drought Management Area to ensure consistent messaging.	PIO
<input type="checkbox"/>	Work with CWS for consistent messaging to customers and public.	PIO
<input type="checkbox"/>	Develop and update ongoing list of Frequently Asked Questions (and answers) from Contact Center calls and Marketing/Communications.	PIO
<input type="checkbox"/>	Conduct regular (at least weekly) communications meetings between dispatch, customer service, and communications to review FAQ and develop consistent messaging.	PIO
<input type="checkbox"/>	Communicate to customers in advance when to expect higher water bills.	PIO
<input type="checkbox"/>	Publicize widely the penalties to be imposed for violations of mandatory restrictions and the procedures to be followed if a variance in the restrictions is requested.	PIO
<input type="checkbox"/>	Expand the use of education and public relations efforts and emphasize the penalties associated with violating the mandatory restrictions.	PIO
<input type="checkbox"/>	Conduct financial analysis of capacity buy-in vs. wholesale rates from CWS to determine the most cost-effective way to purchase additional water.	Finance Section Chief
<input type="checkbox"/>	Track and report billed revenues vs. collected revenues.	Finance Section Chief
<input type="checkbox"/>	Email and update all staff on current drought stage and conservation measures.	Planning Section Chief
<input type="checkbox"/>	Keep staff updated with current conditions on Canteen display board.	Planning Section Chief
<input type="checkbox"/>	Report drought-related conditions and impacts weekly to the National Drought Mitigation Center: <a href="http://bit.ly/droughtreport19">http://bit.ly/droughtreport19</a>	Planning Section Chief
<input type="checkbox"/>	Adjust regular meeting schedule (see schedule below).	Planning Section Chief
<input type="checkbox"/>	Attend DRC conference calls for updates.	Planning Section Chief

### Severe Drought Phase Excessive Use Rate Schedule

Tier I	0 – 3,000 gallons/REU	regular rate
Tier II	3,001 – 6,000 gallons/REU	2 times regular rate
Tier III	6,001 – 9,000 gallons/REU	3 times regular rate
Tier IV	Greater than 9,000 gallons/REU	4 times regular rate

#### Meeting Schedule (Severe Drought):

Day of Week	Time	Location	Attendees
Mondays	10:00 AM	MPW Conference Room	MPW ICS Team MPW Commissioners Town Staff (e.g., Public Services) CWS representatives
Thursdays, as determined by DRC	TBD	Conference Call	Drought Response Committee, MPW IC, Planning Section Chief & Operations Branch Director
Fridays	3:00 PM	Conference Call	MPW ICS Team MPW Commissioners Town Staff (e.g., Public Services) CWS representatives

#### Operations Actions:

	Task	Assignee (ICS Position*)
<input type="checkbox"/>	Utilize AMI and field inspections to identify water leaks and intensify maintenance efforts to correct water leaks in the distribution system.	Field Service Branch Director
<input type="checkbox"/>	Cease installation of new irrigation taps on the water system.	Field Service Branch Director
<input type="checkbox"/>	Contact all permitted hydrant users to cease using water until further notice. Notify all hydrant metered customers that meters will be pulled for the duration. Restoration of the meters will commence once conditions are favorable for normal use.	Field Service Branch Director
<input type="checkbox"/>	Communicate to all fire stations the reduction in pressures and procedure to follow to increase pressures during firefighting.	Field Service Branch Director
<input type="checkbox"/>	Adjust auto blowoffs to maintain minimum water quality goals.	Field Services Branch Director
<input type="checkbox"/>	Consider making provisions for emergency cooling/improved ventilation of critical machinery due to the stress increased demand and/or elevated environmental temperatures may place on the machinery.	Field Services Branch Director
<input type="checkbox"/>	Coordinate with Town, utilities and their associated contractors to enact/enforce restrictions on directional drilling to minimize damage risk to water lines during severe and/or extreme drought.	Field Services Branch Director

	Task	Assignee (ICS Position*)
<input type="checkbox"/>	Maintain regular (at least weekly) contact with CWS to receive updates on their assets and operational conditions. Provide updates to MPW staff during regular team meetings.	Operations Branch Director
<input type="checkbox"/>	Monitor usage, storage levels, and operation status of critical assets and report to regular management meetings.	Operations Branch Director
<input type="checkbox"/>	Consider increase in blending of raw water to increase production as needed.	Operations Branch Director
<input type="checkbox"/>	Reduce distribution pressures to ~40 psi. Per the AWWA M60 manual, lower water pressures typically result in an average of 6% reduction in water usage.	Operations Branch Director
<input type="checkbox"/>	Backfill storage tanks at night from CWS.	Operations Branch Director
<input type="checkbox"/>	Consider recycled water from wastewater treatment plants for commercial companies to collect and distribute to customers for irrigation.	Operations Branch Director
<input type="checkbox"/>	Consider increasing the frequency of monitoring and testing of water quality.	Operations Branch Director
<input type="checkbox"/>	Measure & report water levels in each of the deep wells weekly.	Water Supply Group Supervisor
<input type="checkbox"/>	Monitor fluoride levels for potential public notification.	Water Supply Group Supervisor

\* See Table 13.5 of the MPW Emergency Management Plan for the ICS Positions referenced above.



# Drought Plans in Other River Basins

## Edisto

Number of Public Water Systems	22
Number of Drought Plans from 2003	19
Number of Drought Plans Updated	3

*City of Charleston has the most recent plan update (2021)*

## Broad

Number of Public Water Systems	12
Number of Drought Plans from 2003	5*
Number of Drought Plans Updated	6

*Inman-Campobello Water District has the most recent plan update (2023)*

*\*One water system did not have a useable drought plan*

## Pee Dee

Number of Public Water Systems	19
Number of Drought Plans from 2003	17
Number of Drought Plans Updated	2

*Lancaster County Water and Sewer District has the most recent plan update (2012)*

## Saluda

Number of Public Water Systems	14
Number of Drought Plans from 2003	10
Number of Drought Plans Updated	4

*Laurens County Water and Sewer District has the most recent plan update (2023)*

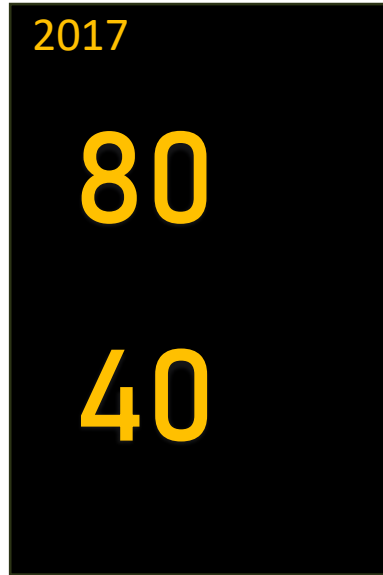
# Updating Local Level Drought Plans

If your water system has an updated plan, please send it to [drought@dnr.sc.gov](mailto:drought@dnr.sc.gov)

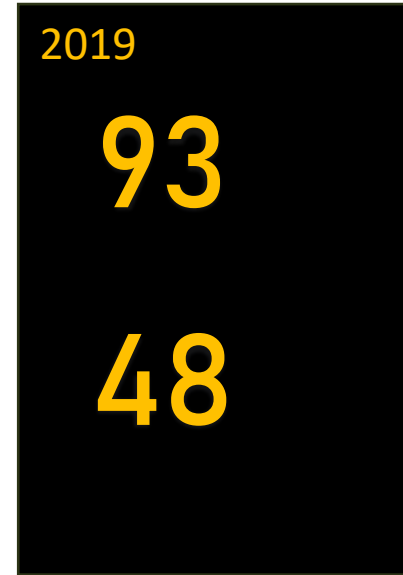
If your water system has not updated its plan, please consider the following:

1. When was the plan last updated?
2. Is the listed point of contact still valid?
3. Are water supplies (source and amount) still the same?
4. If you provide wholesale water, does the customer's plan account for your drought plan; or if you buy wholesale water, does your plan account for your provider's drought plan?
5. Are water demands still the same?
6. Are plan triggers (metrics and data points) still valid, and do triggers include DRC declarations?
7. Are water reductions (gal/day or gal/month) at different drought levels effective for supply conservation?
8. Are violation fees effective for getting noncompliant customers to reduce water demands?
9. Does your plan state that it will notify DNR ([drought@dnr.sc.gov](mailto:drought@dnr.sc.gov)) when there are changes to enacted conservation levels (worsening **and** improving)?

# SC Drought and Water Shortage Tabletop Exercise September 2017 and 2019 – SC Emergency Operations Center



Attendees  
-----  
Organizations



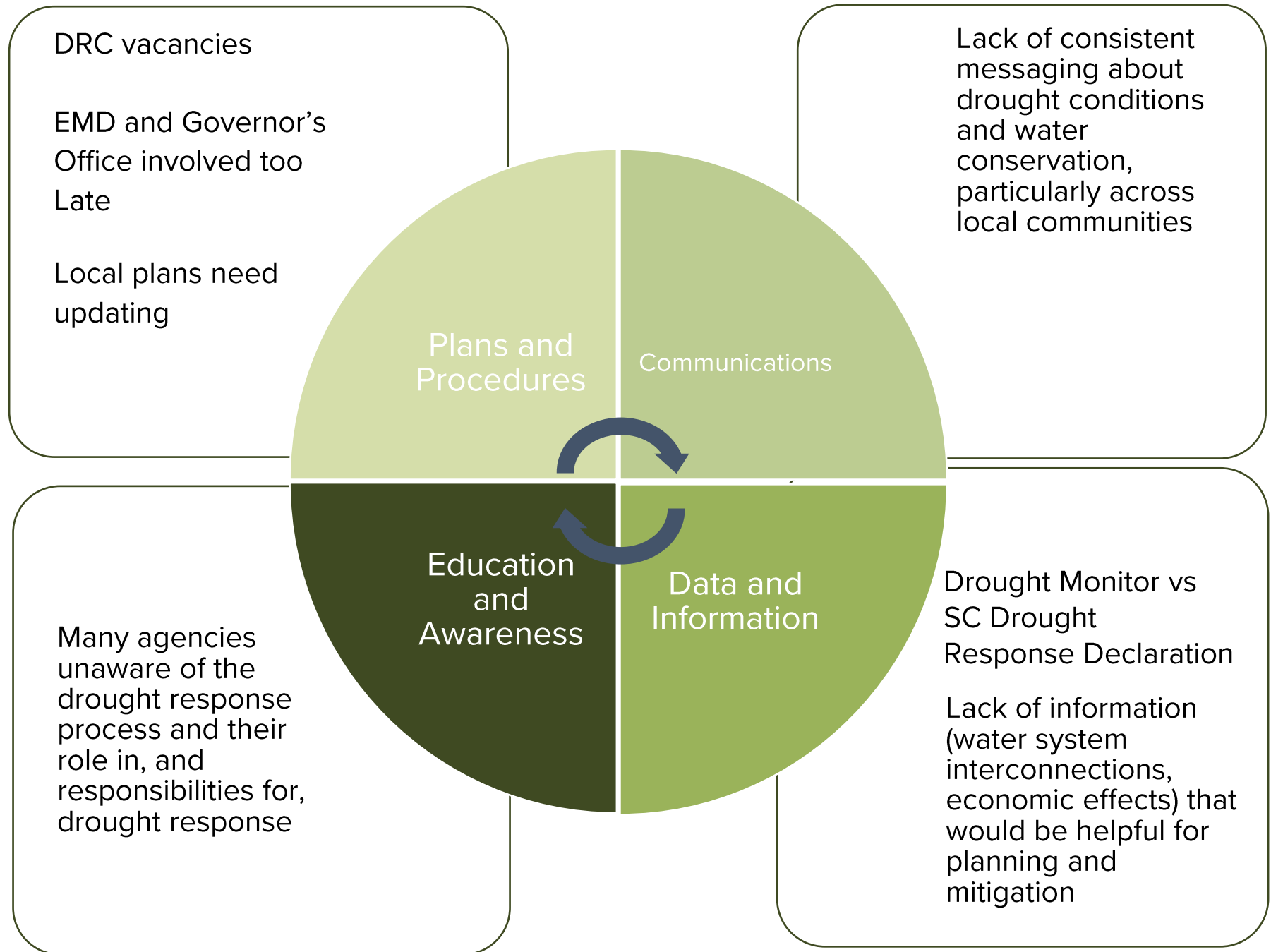
**SCEMD**

# Objectives of the Tabletop Exercise



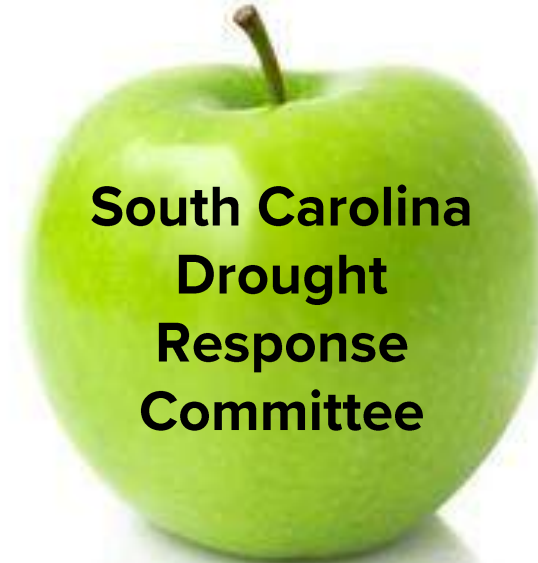
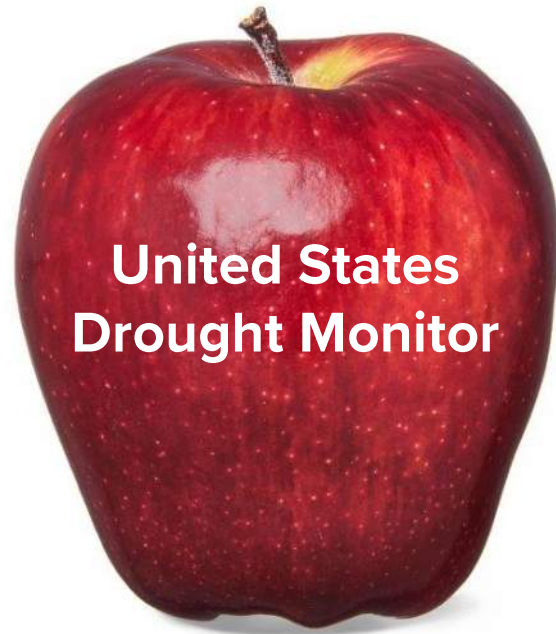
1. Identify and understand the breaking points in the *SC Drought Response Act*, *SC Drought Regulations*, *SC Emergency Response Plan Drought Annex*, and local drought plans and procedures.
2. Improve awareness of local, state, and federal players in South Carolina's drought response.
3. Identify key mission areas for Each State Emergency Support Function.
4. Collect ideas and strategies for future exercises.

# “Breaking Points”





# Understanding the USDM and the South Carolina Drought Response Committee







# Comparing the USDM and SC DRC Apples



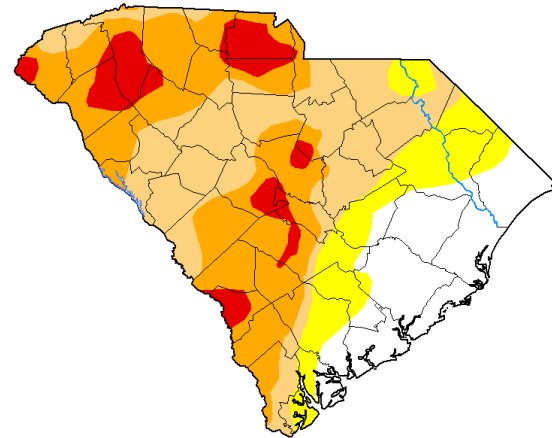
	USDM	SC DRC
Agency Leads	Authors are from Federal Agencies (NDMC, NOAA, and USDA)	Five State Agencies (DNR, DHEC, SCDA, EMD, SCFC)
Participants	Federal and State Agencies, as well as universities and other entities that monitor conditions	Local stakeholders (Water suppliers, agriculture, conservation districts, power generation, local gov.)
Frequency	Weekly product	Committee convenes as needed when conditions warrant discussion.
Severity Levels	Abnormally dry, Moderate, Severe, Extreme, & Exceptional Drought	Incipient, Moderate, Severe, and Extreme Drought
Allows for	Federal disaster declarations and loans for agriculture	Used to determine non-essential water use curtailment recommendations for public water suppliers in South Carolina.
Indicators...		

# USDM vs SC DRC Drought Indicators

## USDM Inputs

- Precipitation
- Soil Moisture
- Vegetation Health
- Surface Water
- Evaporation
- Groundwater
- Impacts & Condition Monitoring reports

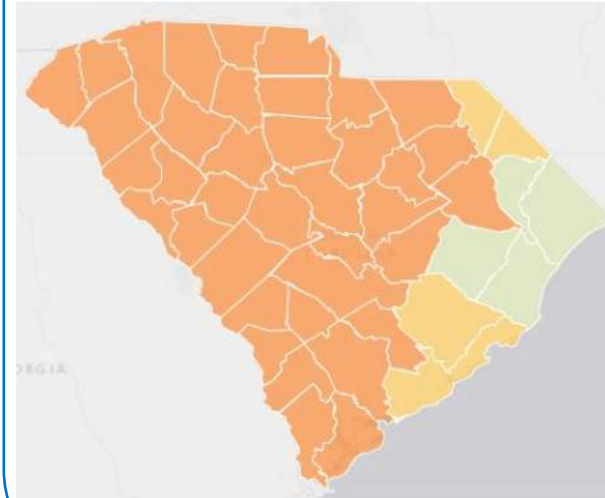
USDM Map  
10/15/2019



Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

SC Drought  
Declaration Map  
by County  
(10/17/2019)

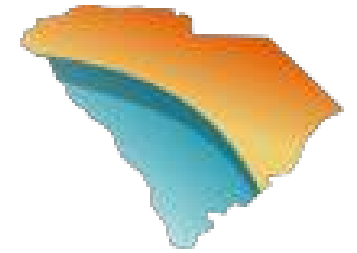


- Normal
- Incipient
- Moderate
- Severe
- Extreme

## Other Indicators used for SC

- Palmer Drought Severity Index (PDSI)
- Crop Moisture Index (CMI)
- Standard Precipitation Index (SPI)
- Keetch-Byram Drought Index (KBDI)
- Average daily streamflow
- Groundwater Levels

# scdrought.com

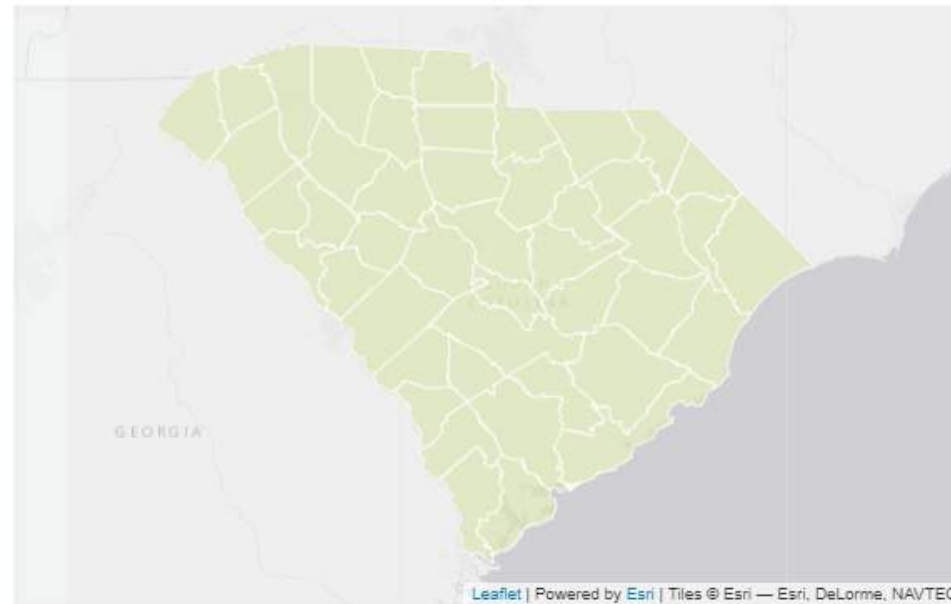


# Home Page

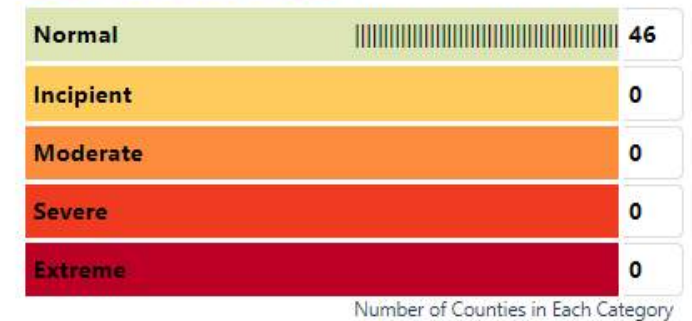
## 6 Main Tabs:

- Conditions
- Resources
- Impacts
- Conditions
- Planning
- FAQ's

## Drought in South Carolina



### Current Status



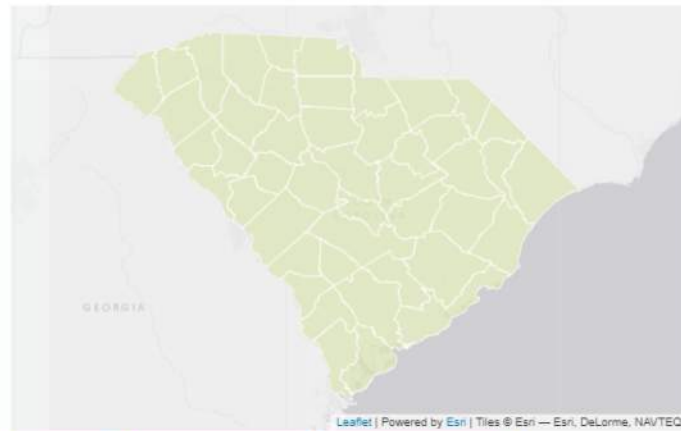
Latest Drought Committee Meeting: 02-07-2023

[Drought Conditions >>>](#) Find out more about current drought conditions, how drought status is determined in South Carolina, and view archived drought condition reports.

Even though the entire state is in "normal conditions", the Drought Response Committee constantly monitors drought relevant data and will reconvene when conditions warrant a meeting.

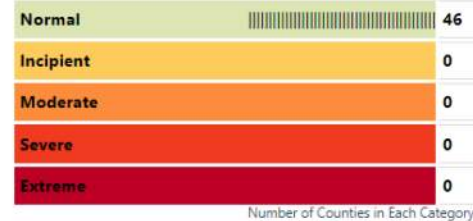


## Drought Conditions in South Carolina



Current Status as of 02-07-2023

Last Drought Response Meeting: 02-07-2023



Archived Drought Status

- [Table View](#)
- [Save Map as Image](#)
- [Drought Status Report](#)

### The Top Seven

South Carolina Drought Response Committee uses these seven indices and indicators to determine the current drought status.

The maps below are updated regularly to reflect current conditions. Data used for the following indices and indicators are released at different points during the week. To best capture current conditions, a week ranges from Saturday to Friday.

[United States Drought Monitor for South Carolina](#)

May 2, 2023

Archived Graphics

Archived graphics open in a new tab.

Crop Moisture Index

West ending April 29th, 2023

Archived Graphics

Archived graphics open in a new tab.

Palmer Drought

West ending April 29th, 2023

Archived Graphics

Archived graphics open in a new tab.

Streamflow Levels

14-Day average streamflow ending April 23, 2023

Archived Graphics

Archived graphics open in a new tab.

Lake/Reservoir Levels

Lake Level Deficit/Surplus on April 24, 2023

Groundwater Levels

WELL WATERING UNDERGROUND (WU) END OF CYCLE END OF CYCLE

Keetch-Byram Drought Index

South-Byram Drought Index: 452 May 25





# SC Drought Resources

- Learn about drought
- Water Conservation Tips and infographics
- Drought Photos from the 2007, 2008, and 2011 droughts
- Publications from both the SC SCO and Carolinas Integrated Sciences and Assessments (CISA)
- Other resources from CISA, National Drought Monitoring Center (NDMC), National Integrated Drought Information System (NIDIS), and National Centers for Environmental Information (NCEI)

## SC Drought Resources

### Learn about drought!

What is drought? How do we know when South Carolina is in drought? How does South Carolina Drought Response and Management work? Find the answers to these questions and many more with the resources below.

- [Drought 101](#)

Drought response and management in the South Carolina is directed by State law.

- [South Carolina Drought Response Act](#)
- [South Carolina Drought Regulations](#)
- [South Carolina Model Drought Management Plan and Ordinance](#)

### Water Conservation

Good water conservation habits are essential for drought preparation and response. Find out what you can do at home to conserve water. These PDF flyers can be printed and shared... spread the word!

- [Water Conservations Tips](#)
- [How much water can you save?](#)

### Drought Photo Gallery

Photos from past droughts are important for remembering the impact that drought conditions can have in South Carolina. They help us to compare droughts events over the years.

- [Drought Photos](#)

### Publications

Find research, publications, and reports related to drought in South Carolina.

- [Research, Publications, and Storm Reports from the South Carolina State Climate Office \(SCO\)](#)
- [Carolinas Integrated Sciences and Assessments \(CISA\) Library](#)

### Other Resources

Carolinas Integrated Sciences and Assessments (CISA)

- [Drought Planning and Preparedness](#)
- [CISA Outreach Videos and Interviews](#)
- [Atlas of Hydroclimate Extremes](#)

National Drought Resources

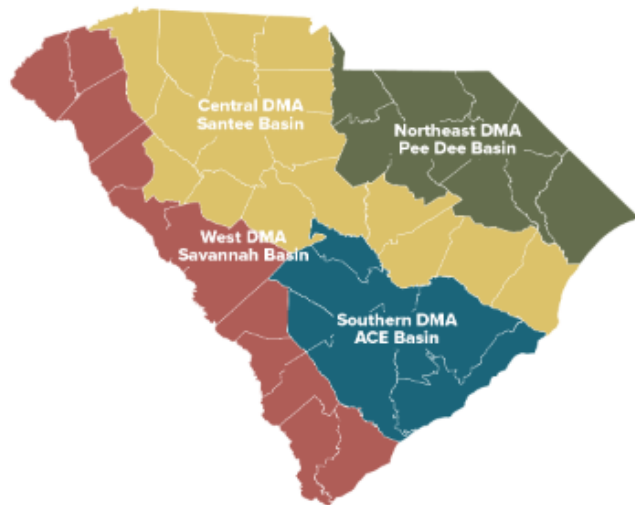
- [National Drought Mitigation Center's Condition Monitoring Tools](#)
- [National Drought Monitoring Center](#)
- [National Integrated Drought Information System \(NIDIS\)](#)
- [National Centers for Environmental Information \(NCEI\)](#)





## South Carolina Drought Response Committee

The SC Drought Response Committee consists of state and local members and governs drought related issues and response in South Carolina. Local members are organized according to Drought Management Areas. The DRC is chaired and supported by the South Carolina Department of Natural Resources and the SC State Climatology Office. The DRC monitors climatic conditions, evaluates drought indicators, and consults with stakeholders to issue drought status updates. During severe or extreme drought, the DRC determines nonessential water use and issues declaration for water curtailment.



The [Drought Response Flyer](#) will guide you through the Drought Response and Management Process.

To learn more about how the committee monitors and identifies drought, visit the [South Carolina Drought 101 page](#).

West Drought Management Area



Central Drought Management Area



Northeast Drought Management Area



Southern Drought Management Area



State Agency Members



# West Drought Management Area

Group	Committee Member	County
Agriculture	Reg Williams	Edgefield
Commission of Public Works	Appointment Pending	McCormick
Counties	Vacant	
Domestic User	Vacant	
Industry	<a href="#">David Evans</a>	Pickens
Municipalities	Vacant	
Power Generation Facilities	<a href="#">Preston Pierce</a>	Oconee
Private Water Supplier	<a href="#">J. Scott Willett</a>	Anderson
Public Service District	<a href="#">Chris Rasco</a>	Anderson
Regional Council of Governments	Vacant	
Soil & Water Conservation Dist.	<a href="#">Yvonne Kling</a>	Aiken
Special Purpose District	<a href="#">Brian Chemsak</a>	Beaufort



Counties: Oconee, Pickens, Anderson, Abbeville, McCormick, Edgefield, Aiken, Barnwell, Allendale, Hampton, Jasper, Beaufort



## South Carolina Drought Planning

The South Carolina Drought Response Program consists of legislation, regulations, and procedures that establish recommended and required response at moderate, severe, and extreme drought alert phases. The [South Carolina Drought Response Act](#) and the [supporting regulations](#) formally establish and describe the responsibilities of the [South Carolina Drought Response Committee \(DRC\)](#), the major drought decision-making entity in the State. The DRC is composed of statewide and local members, and state agency members include:

- Emergency Management Division
- Department of Health and Environmental Control
- Department of Agriculture
- The Forestry Commission
- Department of Natural Resources

📺 [Watch an interview](#) with South Carolina State Climatologist Hope Mizzell. Dr. Mizzell discusses the State Climate Office's role in administration of the South Carolina Drought Response Act.

The Drought Response Act requires all public water suppliers to develop and implement local drought plans and ordinances. *The Drought Regulations recognize that local governments have primary responsibility for alleviating drought impacts and encourage cooperation among neighboring water systems.* DNR created a [sample drought plan](#) and ordinance for local governments and water systems to use in developing their own documents.

You can search for and view approved water system drought plans and ordinances through the [Drought Management Plan and Response Ordinance Inventory](#).

The [South Carolina Drought Response Plan](#) is located in Appendix 10 of the State's Emergency Operations Plan (EOP). The Drought Response Plan describes actions when drought conditions have reached a level of severity beyond the scope of the DRC and local communities. The South Carolina Emergency Management Division (EMD) maintains the EOP and leads multi-agency response to hazard events. Upon an activation of the EOP, EMD and the State Emergency Response Team (SERT) assemble in the South Carolina Emergency Operations Center to coordinate the State's response.



SC State Climatologist, Dr. Hope Mizzell, and SC Emergency Management Division Dam Safety Coordinator, Marshall Sykes, walk attendees through a series of intensifying drought scenarios at South Carolina's first Drought and Water Shortage Tabletop Exercise in September 2017. Photo courtesy of CISA



# South Carolina Drought Frequently Asked Question's

Below you will find answers to the most frequently asked questions that we receive. If you don't see your question, please email us at [drought@dnr.sc.gov](mailto:drought@dnr.sc.gov).

The Drought Response Committee



The Local Committee Members



The U.S. Drought Monitor



The DRC vs the USDM in South Carolina



## The Drought Response Committee



### What is the Drought Response Committee (DRC)?

The DRC monitors climatic conditions, evaluates drought indicators, and consults with stakeholders to issue drought status updates for the purpose of managing water resources in the best interests of all South Carolinians. The DRC is made up of five state agencies and 48 local representatives to comprehensively address drought across multiple water using sectors in South Carolina.

### Which State Agencies are members of the DRC?

The five state agencies that sit on the DRC are the Department of Natural Resources, Department of Agriculture, Department of Health and Environmental Control (DHEC), State Forestry Commission, and Emergency Management Division. The DRC is chaired and supported by the Department of Natural Resources (SC DNR) and the SC State Climatology Office (SC SCO).

### Who serves as the local members?

There are 48 local members that sit on the DRC. There are 12 local groups to make sure water is available for multiple sectoral needs. All these groups are represented in each of the four Drought Management Areas. The 12 groups are agriculture, commission of public works, counties, domestic user, industry, municipalities, power generation facilities, private water supplier, public service district, regional council of governments, soil and water conservation districts, and special purpose districts. The description of each can be found [here](#).

### What are the Drought Management Areas (DMAs)?

The DMAs are based on the four major river basins of the State: The Savannah, the ACE, the Santee, and the Pee Dee. Typically, the DMAs are referred to by their geographic location rather than their corresponding river basin. The Savannah is the West DMA, the ACE is the Southern DMA, the Santee is the Central DMA, and the Pee Dee is the Northeastern DMA. Since the DRC makes drought status decisions at a county-level, the DMAs follow county boundaries. The DMAs were delineated using the river basins so that upstream and downstream problems can be considered in the DRC process, while keeping drought status decisions at a county level. Counties were used for drought status decisions as the public generally thinks in terms of political boundaries rather than natural boundaries, such as watersheds or water basins.



**Thank You!**

**Questions?**



Elliot:

[wickhame@dnr.sc.gov](mailto:wickhame@dnr.sc.gov)

803-465-1098

Hope:

[Mizzellh@dnr.sc.gov](mailto:Mizzellh@dnr.sc.gov)

803-734-9568