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Today's Focus: Groundwater Resources & Updating the State Water Plan

Time	Agenda
1:00 pm	Welcome & Leading the Charge for WaterSC
1:20 pm	State of Groundwater in SC: Groundwater Resource Management
1:40 pm	Groundwater Questions & Discussions
2:10 pm	Updating the State Water Plan
2:30 pm	Break
2:45 pm	State Water Planning Discussions
3:30 pm	Next Steps
3:55 pm	Closing Remarks
4:00 pm	Adjourn & Networking

The Charge for WaterSC

Executive Order No. 2024-22

- Balance the State's ***economic, environmental, and social needs***;
- Ensure the ***reliability, resiliency, sustainability, and sufficiency*** of the State's water resources ***for all existing and future uses***, while simultaneously ***protecting the environment***; and
- Support and facilitate additional ***collaboration*** with ongoing efforts and existing initiatives.

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The Charge for WaterSC

Executive Order No. 2024-22

Stakeholder Engagement Plan
October 31, 2024

Report to Surface Water Study Committee
January 31, 2025

Advise on updated State Water Plan
December 31, 2025

Surface Water Study Committee

Established by Proviso 117.184

- Report by March 1, 2025

January 23, 2025 Meeting

- Changed Scope: Groundwater & Surface Water
- Change Timeline: March 2026

Updated Charge

- Quarterly updates to Study Committee
- Informed by State Water Plan

The Charge for WaterSC

Executive Order No. 2024-22

Stakeholder Engagement Plan
October 31, 2024

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Advise on updated State Water Plan
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Working Group Meetings

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The WaterSC Working Group

- Have a statewide resource-focused approach
- Remain committed to the process
- Serve as a voice and connection for stakeholder sectors and categories
- Provide transparency
- Be collaborative and solution-focused

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January WaterSC Concepts

Incentive-based approaches

13 2

Compliance with permit requirements (Grandfathered and new permit alignment)

12 3 2

Data Needs, Improved Data, Modeling & Ongoing Assessment

7 6

Conjunctive Use & Inter-relationship of Groundwater & Surface Water

7 1

Conservation Practices & Approaches

8

Reasonable Use Criteria

12 3 1

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Managing Groundwater Resources

Leigh Anne Monroe

February 20, 2025

Outline

- Groundwater Withdrawal Permitting Background
- Permitting a Managed System
- Groundwater Management Plans
- Groundwater Evaluations

Groundwater Use and Reporting Act
Legislative Declaration of Policy

"The General Assembly declares that the general welfare and public interest require that the groundwater resources of the State be put to beneficial use to the fullest extent to which they are capable, subject to reasonable regulation, in order to conserve and protect these resources, prevent waste, and to provide and maintain conditions which are conducive to the development and use of water resources."

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Groundwater Use and Reporting Act Capacity Use Area Designation

Where groundwater withdrawal :

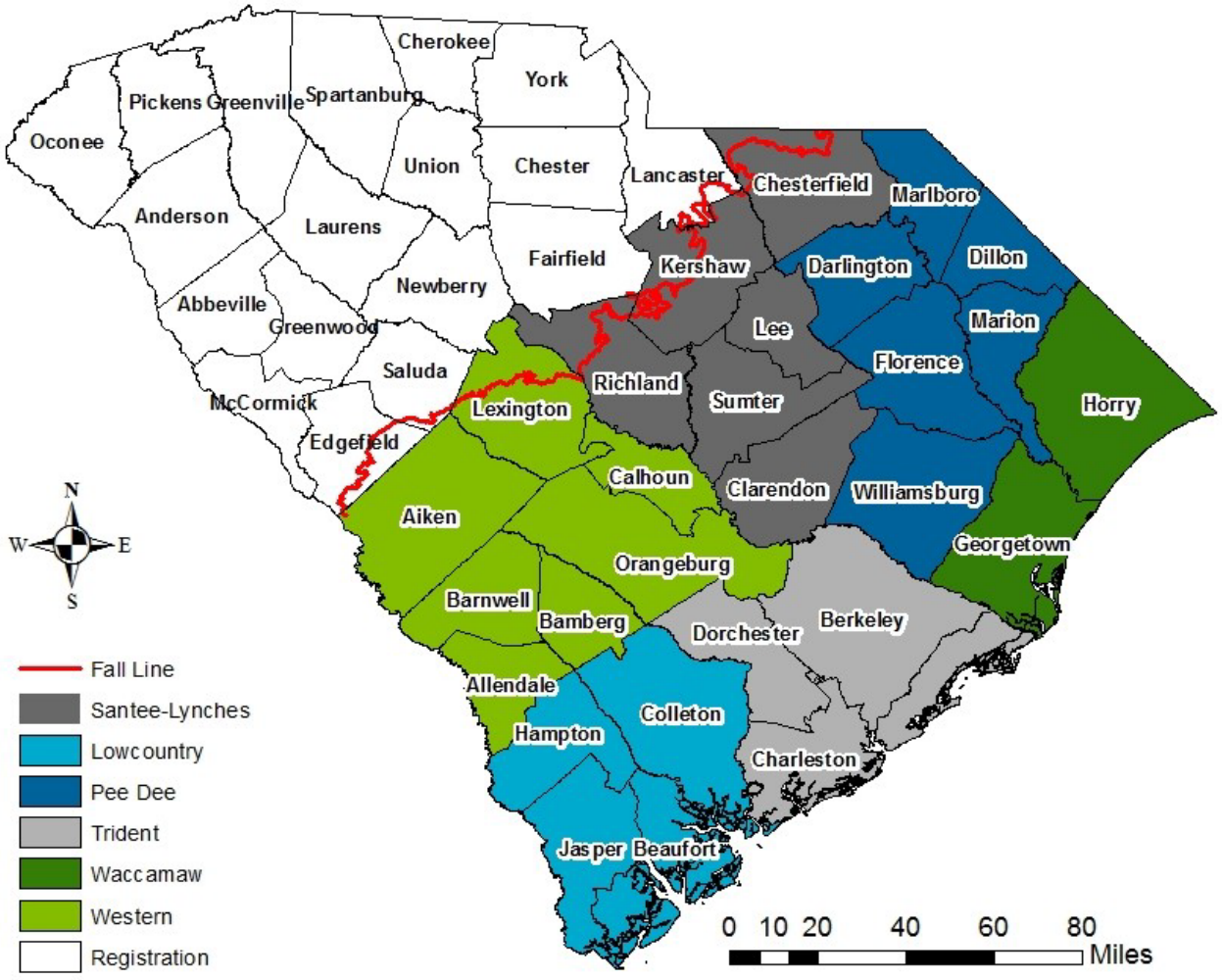
- Presents potential adverse effects to the natural resources
- Poses a threat to public health, safety, or economic welfare
- Poses a significant threat to the long-term integrity of the groundwater source

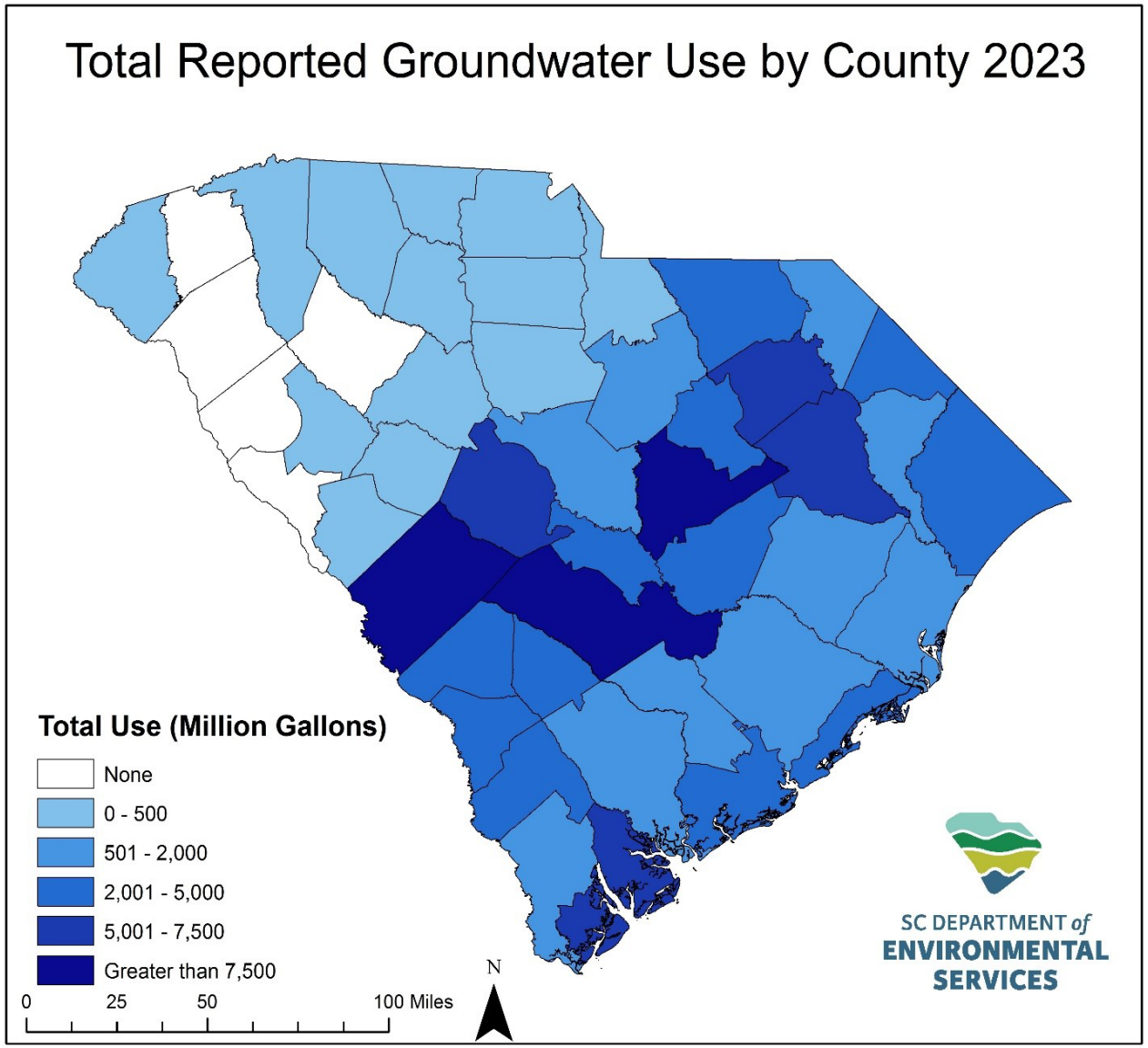
The Department, local government or groundwater withdrawers may initiate a Capacity Use Area (CUA) designation process

Review of Groundwater Withdrawal Permitting

6 CUAs:

- Waccamaw (1979)
- Lowcountry (1981)
- Trident (2002)
- Pee Dee (2004)
- Western (2018)
- Santee-Lynches (2021)



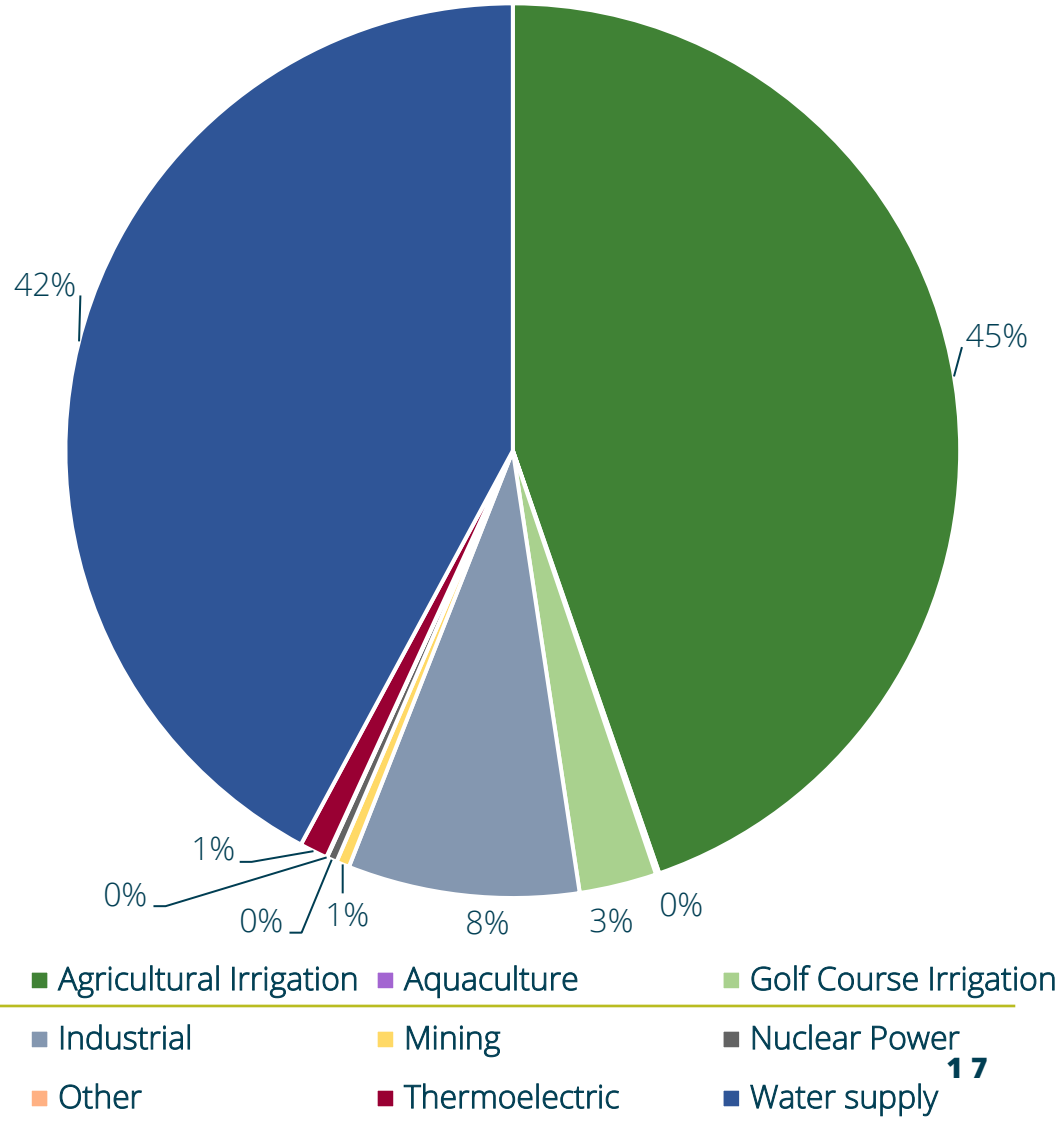


Groundwater Withdrawal Permitting

- Issues permits in designated CUAs of the coastal plain over for use over **3 million gallons in any month** (~1in of water per week for 28 acres or average use for 1,000 people)
- Users outside of CUAs must register wells if well or well system will use over 3 million gallons in any month
- All registered and permitted groundwater withdrawers report their annual water use to the Department

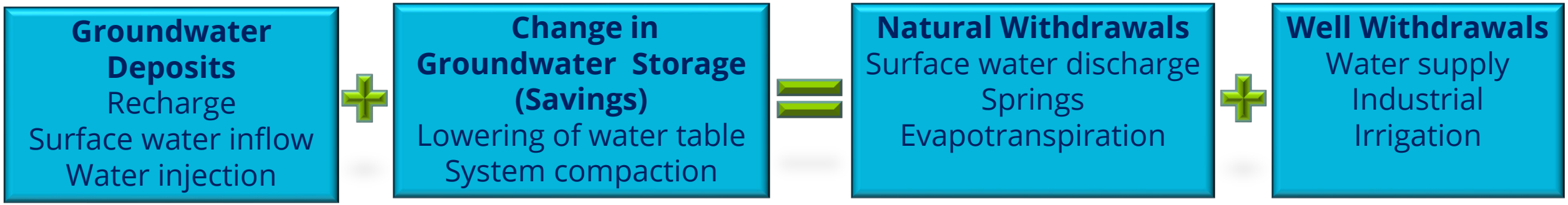
2023 Reported Groundwater Withdrawals

Water Use Sector	Reported Use (Million Gallons)
Agricultural Irrigation	45,239
Aquaculture	123
Golf Course Irrigation	2,831
Industrial	8,464
Mining	482
Nuclear Power	377
Other	25
Thermoelectric	1,025
Water Supply	42,658

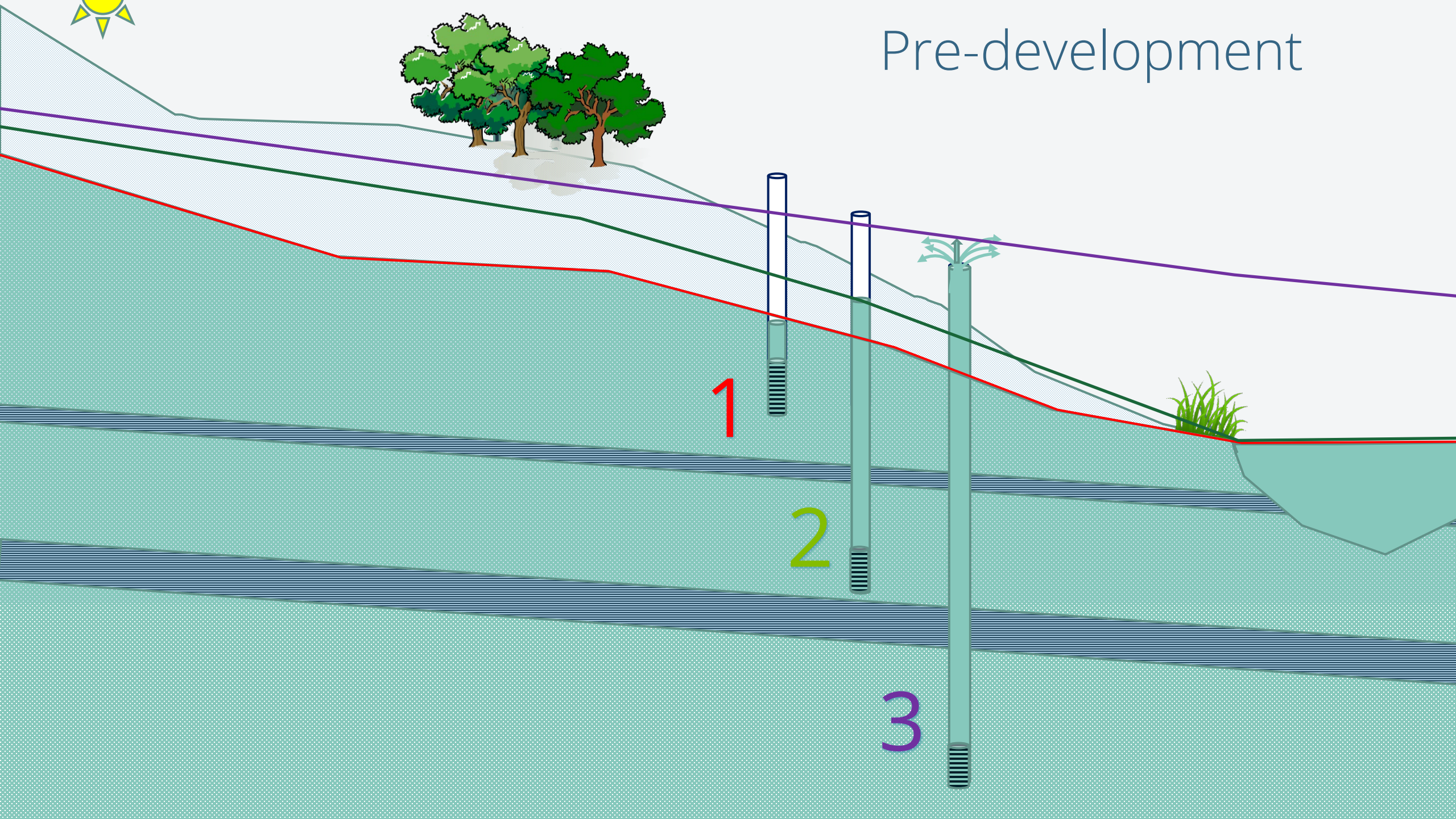


Permitting a Managed System

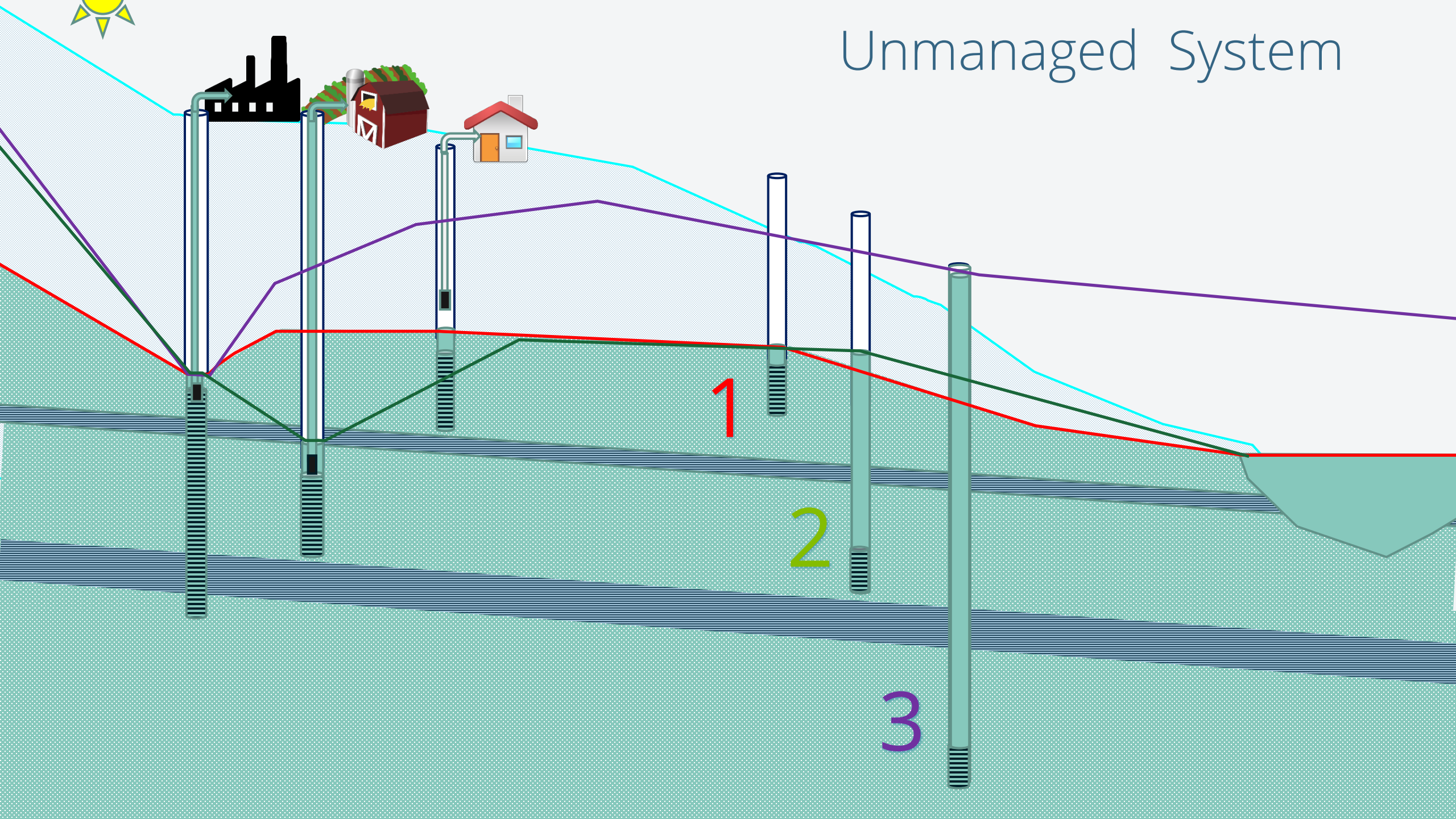
Groundwater Balance



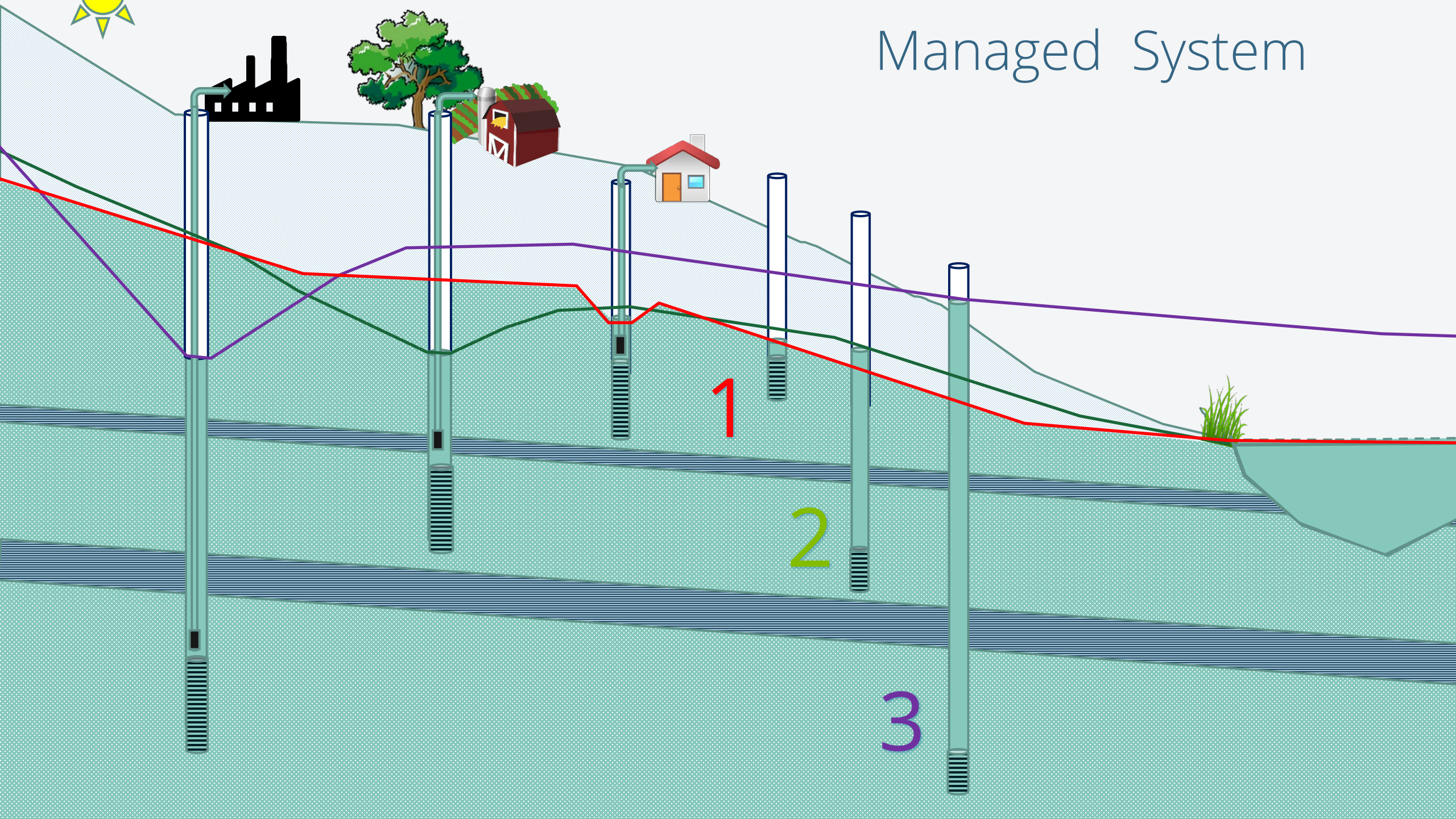
Pre-development

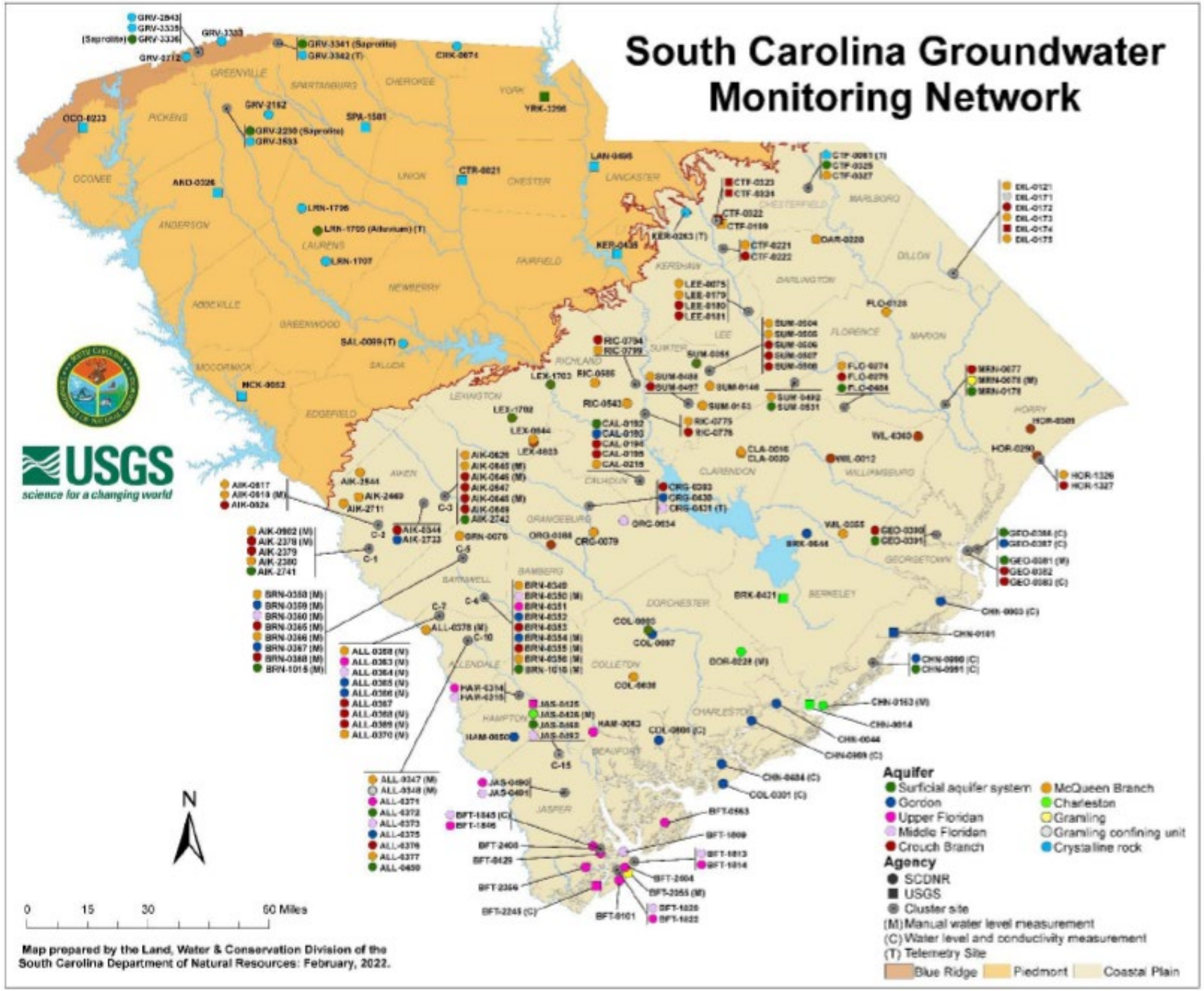


Unmanaged System



Managed System




South Carolina Groundwater Monitoring Network
USGS
science for a changing world
N
0 15 30 60 Miles
Map prepared by the Land, Water & Conservation Division of the South Carolina Department of Natural Resources: February, 2022.
Aquifer
Surficial aquifer system
Gordon
Upper Floridan
Middle Floridan
Crouch Branch
McQueen Branch
Charleston
Gramling
Gramling confining unit
Crystalline rock
Agency
SCDNR
USGS
Cluster site
(M) Manual water level measurement
(C) Water level and conductivity measurement
(T) Telemetry Site
Blue Ridge
Piedmont
Coastal Plain

Groundwater Reasonable Use Criteria

WATER SUPPLY

- population served
- anticipated growth
- annual use statistics

AGRICULTURAL IRRIGATION

- irrigated acreage
- major crops/water needs
- calculated irrigation requirement
- growing season

INDUSTRY

- industry type
- anticipated growth
- annual water use statistics

GOLF COURSE

- irrigated acreage
- water use per acre
- calculated irrigation requirement
- annual water use statistics

Resource-Centered Approach

- All users across coastal plain require permit
- Protect existing users to ensure they are not negatively impacted by proposed uses
- Ensure the resource is available to the applicant
- Require reasonable conservation practices (best management plans)
- Evaluate groundwater management areas on a five-year basis to track aquifer conditions

Groundwater Management Plans and Evaluations

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Review of Groundwater Management Plans

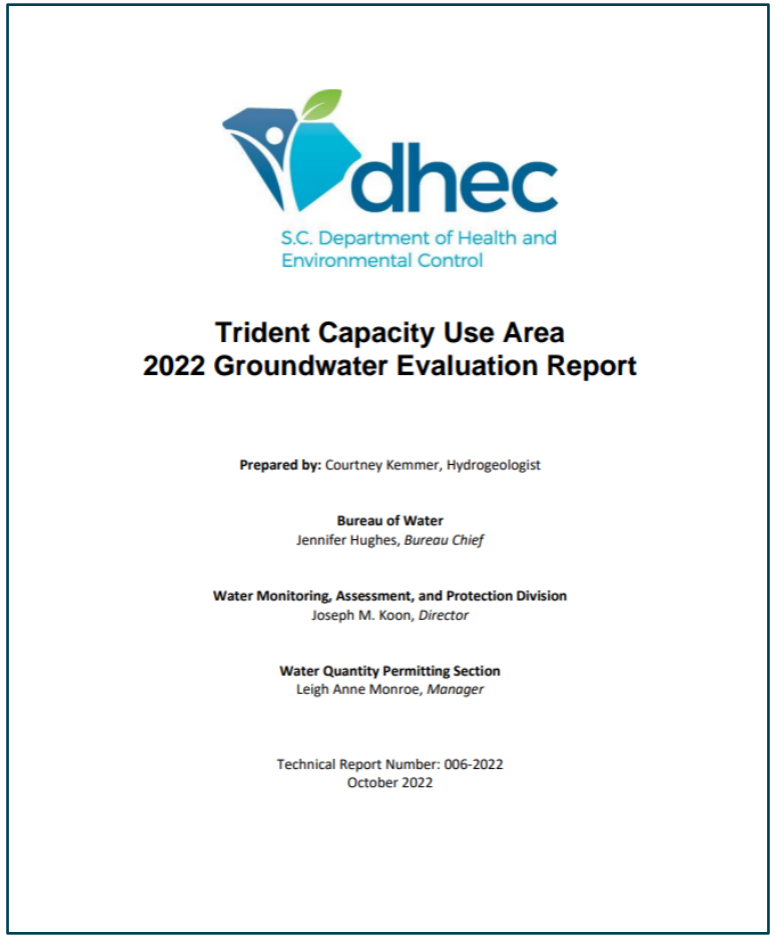
Aspects of water use addressed in Groundwater Management Plans:

- Current groundwater sources used
- Current water demand by type and amount
- Current aquifer storage and recovery (ASR) and water reuse
- Projected population and growth
- Projected water demand
- Projected opportunities for ASR, and water reuse
- Projected groundwater and surface water options
- Water conservation measures

Groundwater Management Strategies

- Strategy: Identify areas where a leveling and/or reduction in pumping is appropriate.
- Strategy: Review of permit applications based on demonstrated reasonable use.
- Strategy: Establish a comprehensive groundwater monitoring program.
- Strategy: Manage Through Regulation, Assessment, and Planning
- Strategy: Establish a conservation educational plan for the general public and existing groundwater withdrawers.
- Strategy: Establish a Plan for Continual Stakeholder Engagement and Awareness of Groundwater Development

Capacity Use Area Evaluations



dhec
S.C. Department of Health and Environmental Control

Trident Capacity Use Area
2022 Groundwater Evaluation Report

Prepared by: Courtney Kemmer, Hydrogeologist

Bureau of Water
Jennifer Hughes, *Bureau Chief*

Water Monitoring, Assessment, and Protection Division
Joseph M. Koon, *Director*

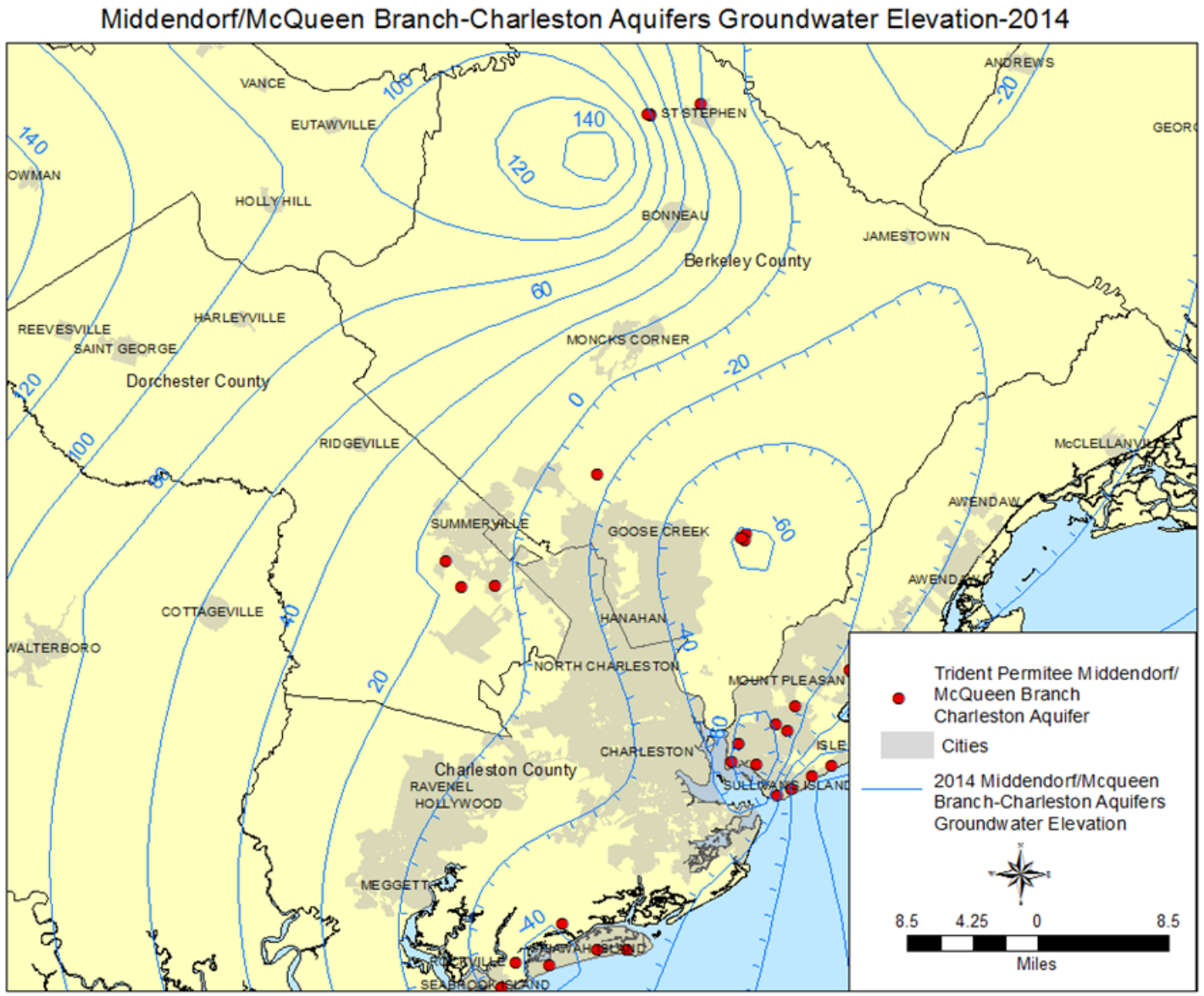
Water Quantity Permitting Section
Leigh Anne Monroe, *Manager*

Technical Report Number: 006-2022
October 2022

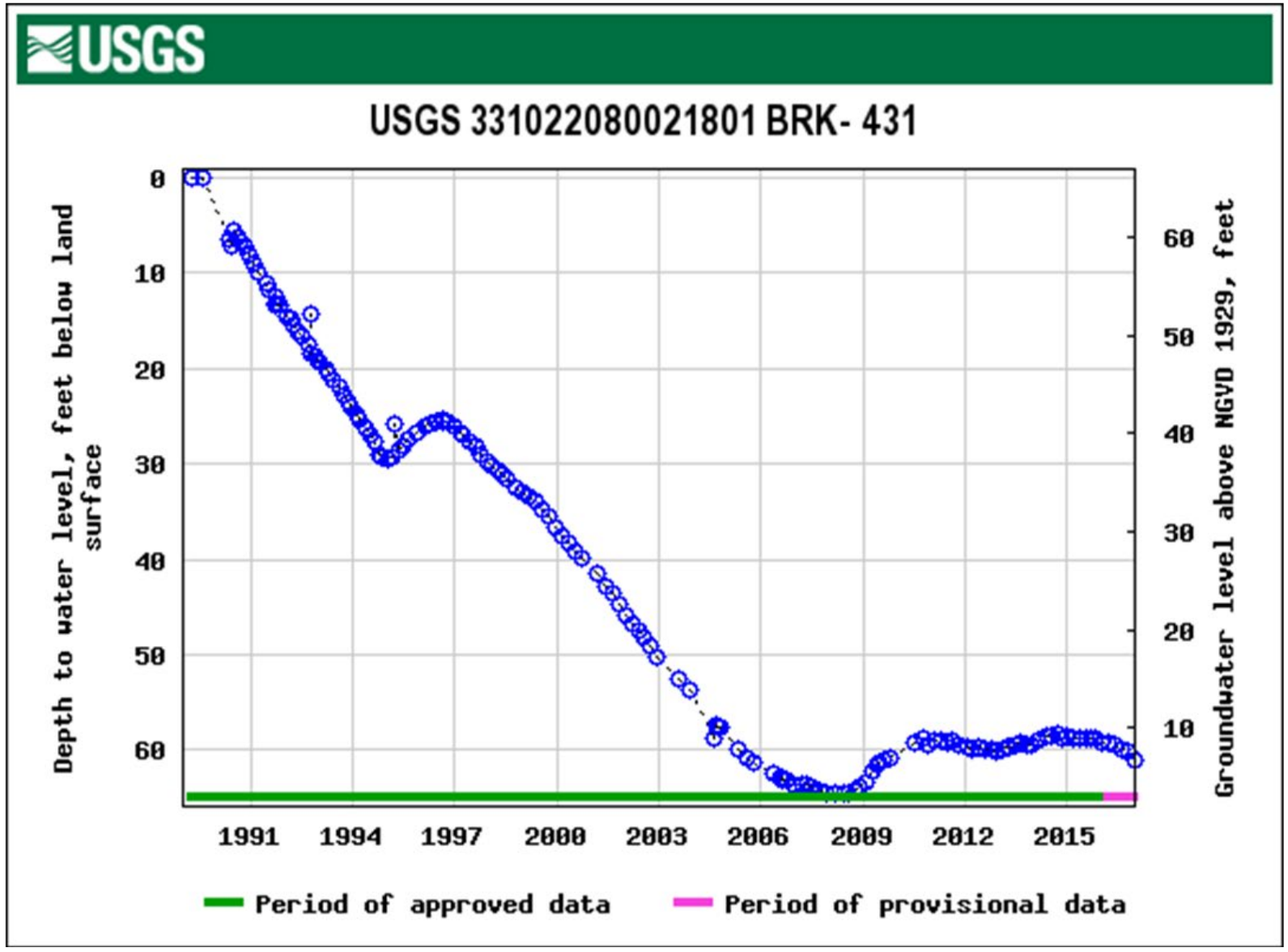
Every five years, total annual groundwater withdrawals are compiled and compared to available aquifer potentiometric maps. The report includes:

- List of all permitted withdrawers, permitted limits, and average groundwater withdrawal;
- Evaluation of withdrawals by category and by aquifer;
- Identification of areas of aquifer stress and all withdrawers utilizing the stressed aquifer(s).
- Recommendations based on aquifer level data and reported withdrawals

Capacity Use Area Evaluations



Middendorf/McQueen Branch Aquifer Groundwater Level Trends



Benefits to Water Resource Management

- Track resources available
- Track resources being used
- Ability to adjust and redirect when issues arise
- Ensuring resource for future generations
- Identify areas for economic growth

Goals of Capacity Use

- Groundwater resources of the State be put to beneficial use to the fullest extent to which they are capable
- Subject to reasonable regulation

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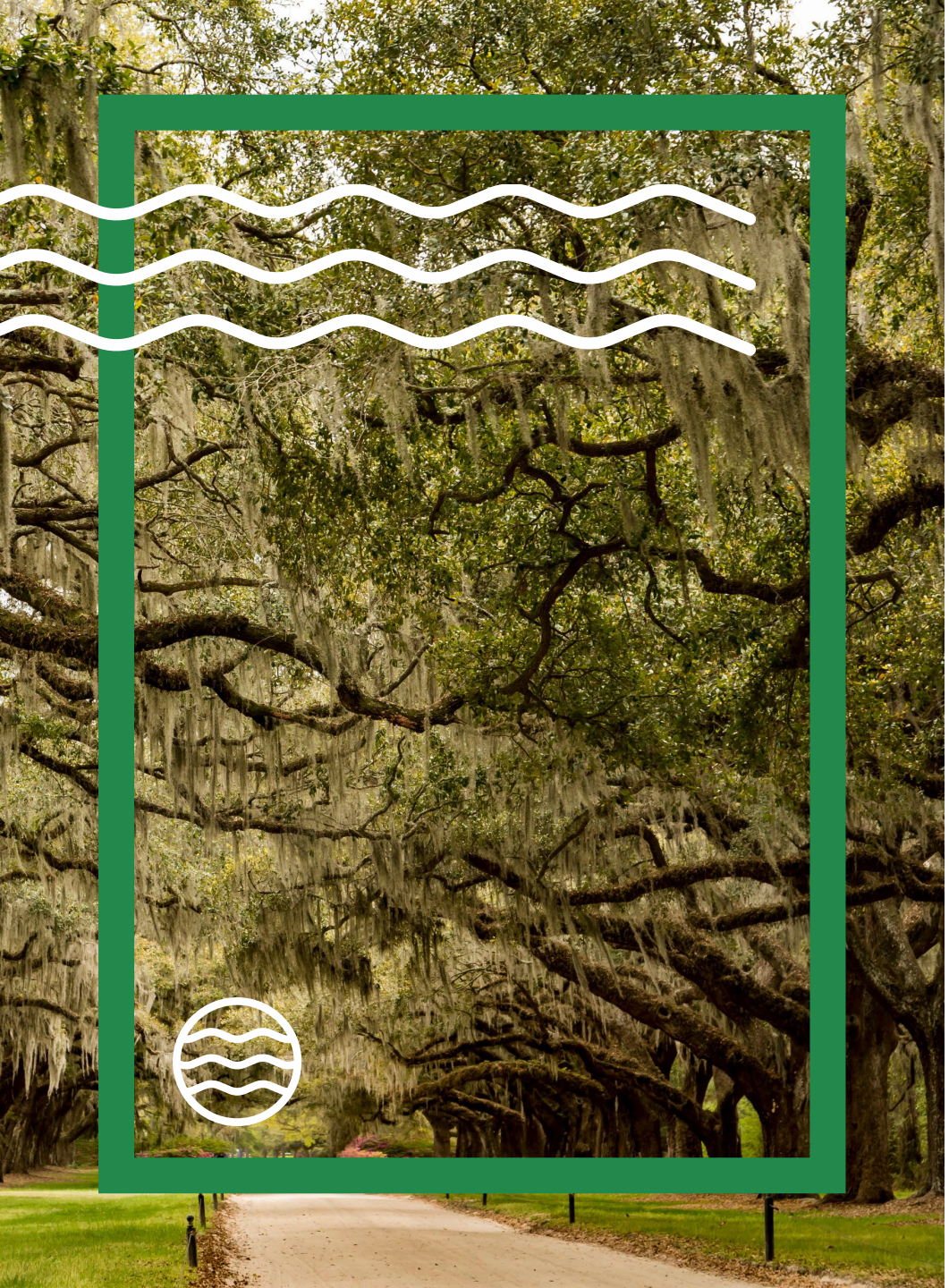
Updating the State Water Plan

Joe Koon, Director
Division of Water Resources



Topics

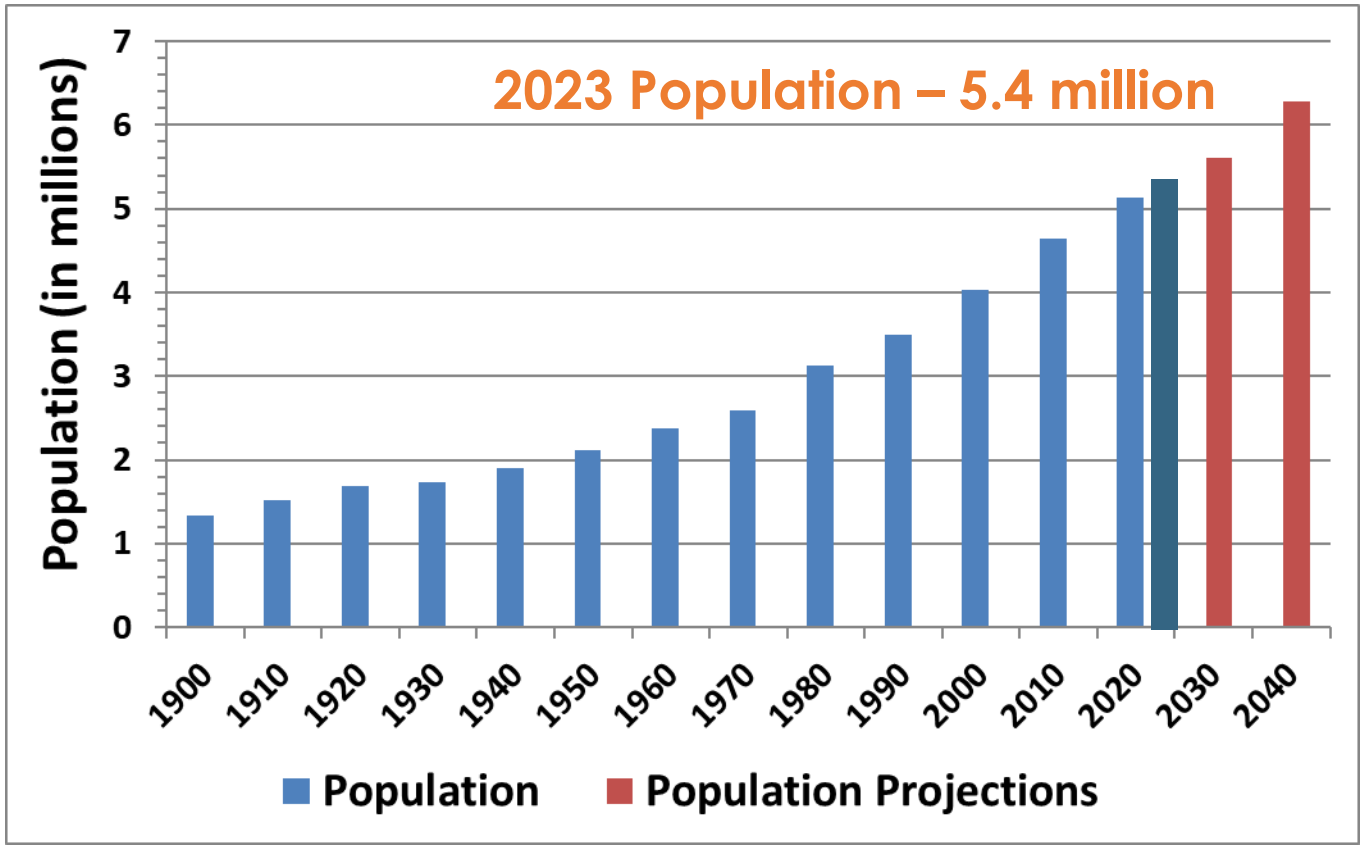
- Water planning history and accomplishments
- Stakeholder Collaboration in water planning
- Updating the State Water Plan

Water Planning History and Accomplishments

Need for State Water Planning

Population Growth → Increased Water Demand

- From 1990 – 2023, SC population increased from **3.5** to **5.4** million and is forecasted to increase to **6.3** million by 2040.
- Our growing population may increase future water demands and stress our water resources.



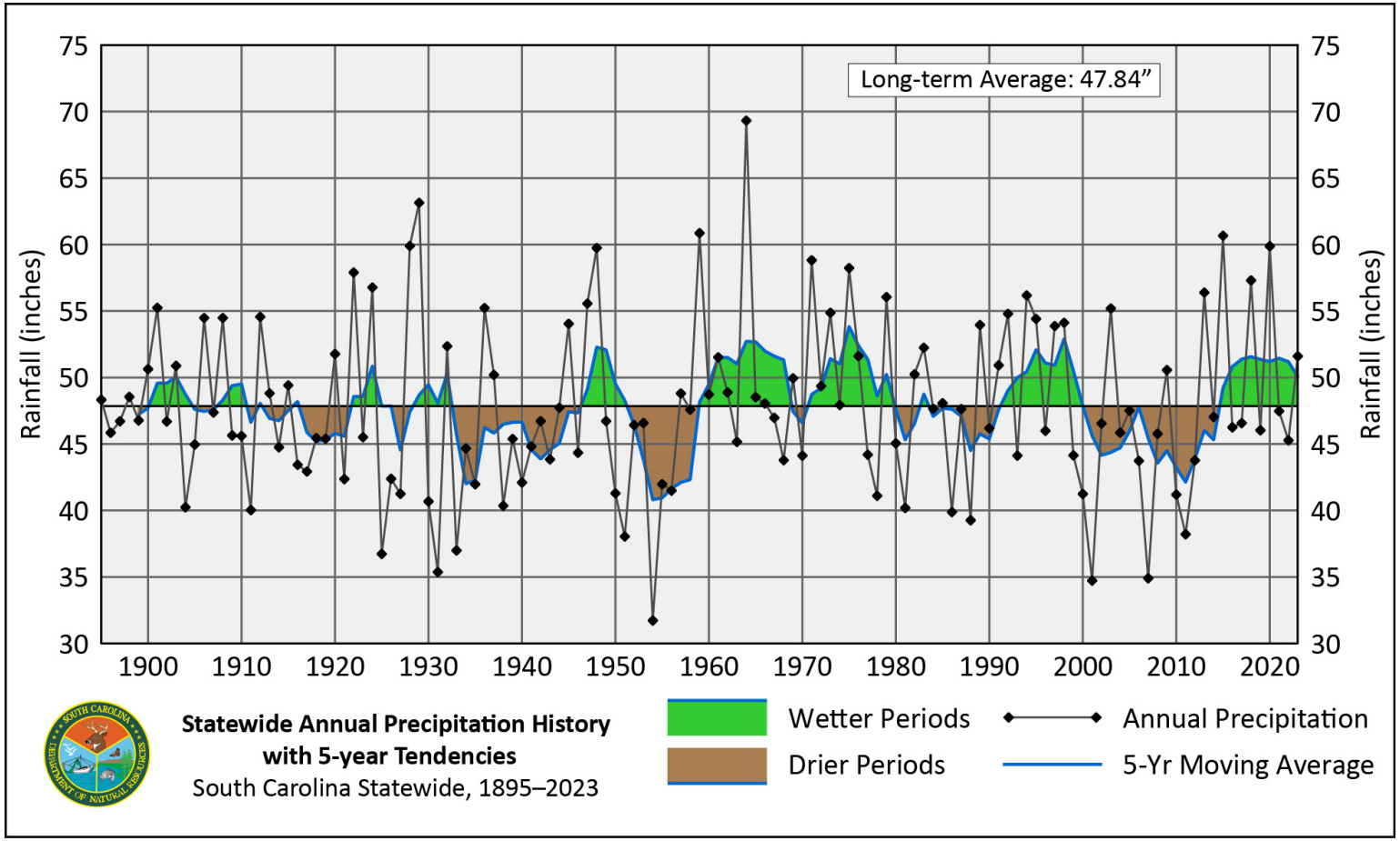
SC Population Growth from 1900 – 2023 and Projections for 2030 – 2040

Data from the SC Office of Revenue and Fiscal Affairs, 2024, and U.S. Census Bureau, 2024.

Need for State Water Planning

Drought

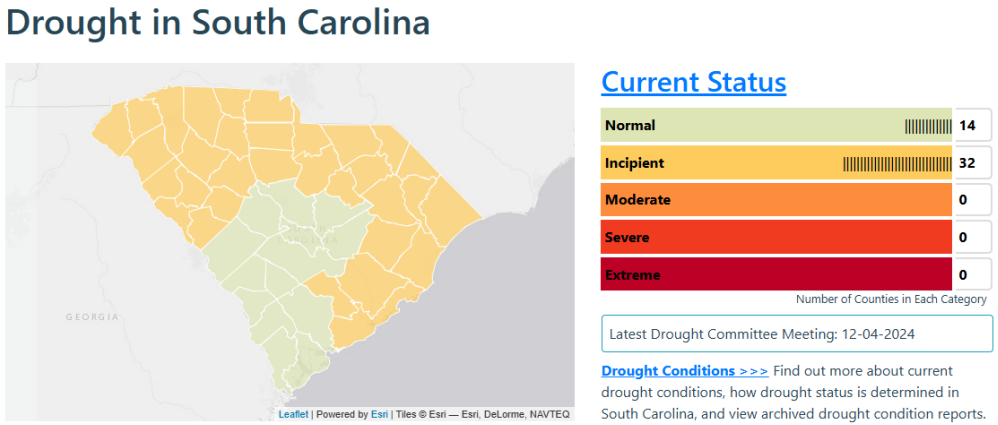
SC generally has an abundance of water, but recent droughts (**1998-2002**, **2007-2008**, **2011-2012**, **2016**, **2019**, **2021**, **2024**) have stressed the State's water resources.



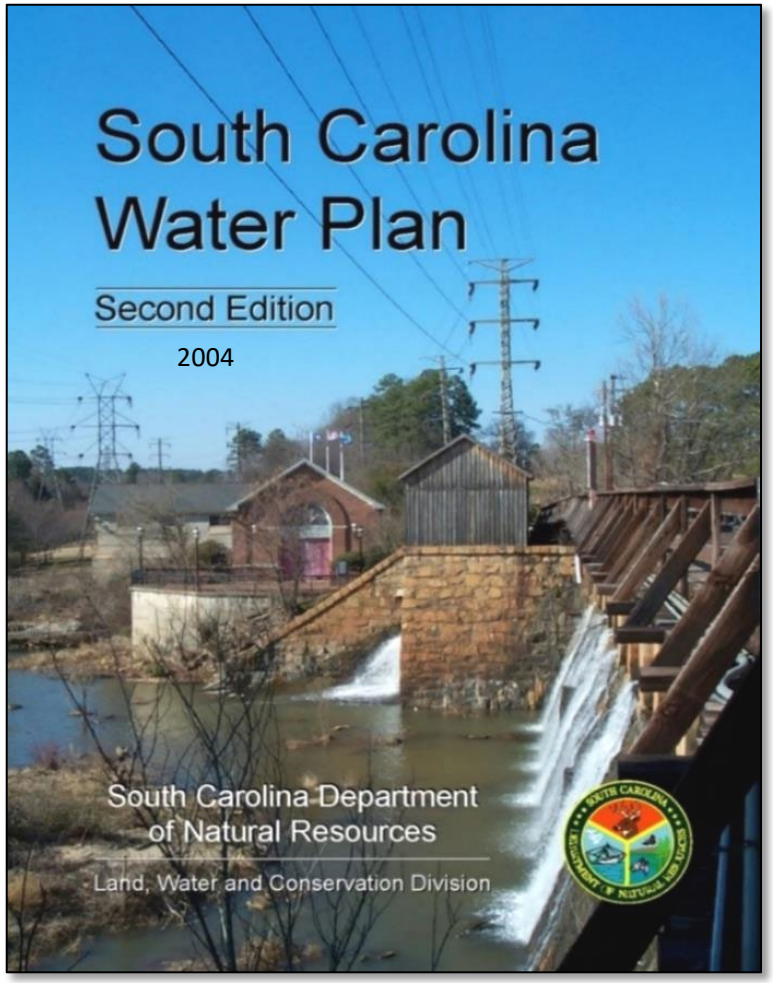
Statewide Average Annual Rainfall (inches) and 5-year Running Average

Drought Status

- February 26, next Drought Response Committee Meeting
- March 5, SC Drought Tabletop Exercise
  - Simulate response process
  - Identify gaps
  - Increase awareness



History of State Water Planning



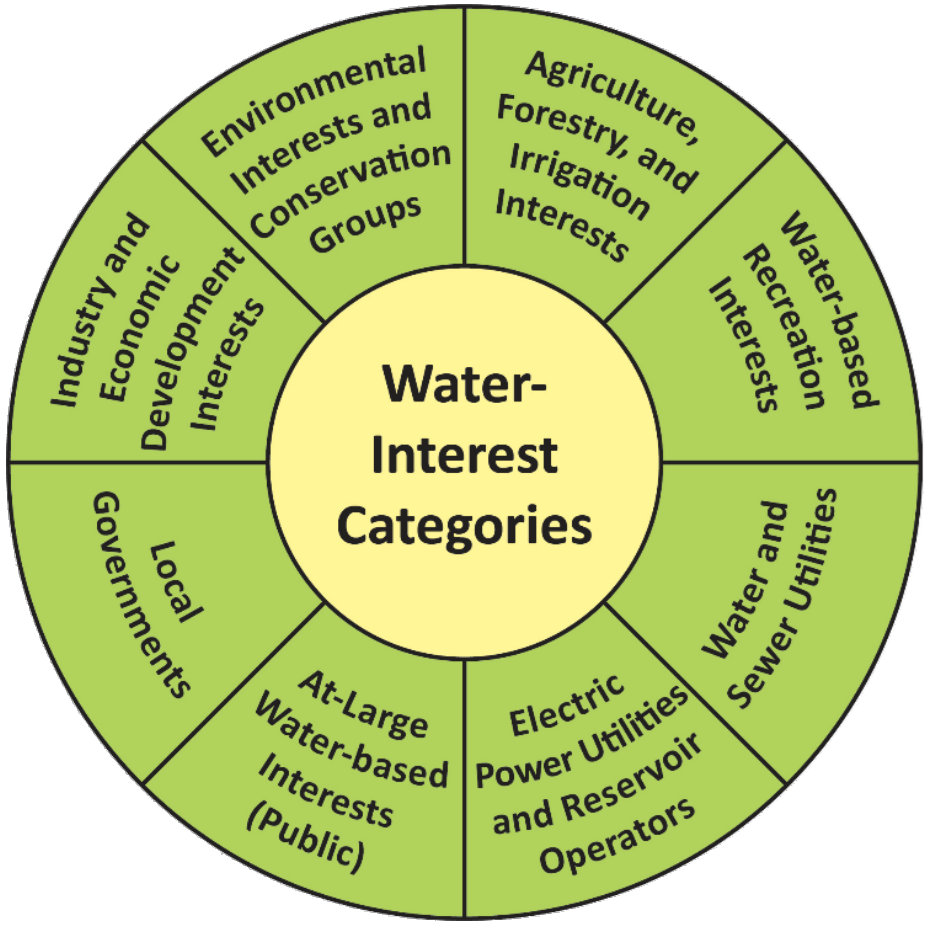
- SCDNR published the **first edition of the State Water Plan in 1998.**
- In **2004, SCDNR published the second edition** of the South Carolina Water Plan incorporating lessons learned from the drought of 1998-2002.
- Recommended developing a **regional water plan for each major river basin** in the State.
- In 2014, SCDNR initiated the first steps to developing regional water plans, now formally called **River Basin Plans**.
- SCDES coordinates a broad collaborative stakeholder process to **update the State Water Plan**.

2004 Water Plan Accomplishments

- The State should work to **establish a River Basin Advisory Committee** for each of its four River Basins
- To effectively **manage the State's water resources**, a comprehensive and accurate **monitoring of water use** is needed
- To **protect aquifer systems** and ensure the long-term sustainability of groundwater resources, the entire **coastal plain province should be designated as a Capacity Use Area**
- A comprehensive **groundwater flow model of the coastal plain** should be developed and used to **predict the effects of future pumping**
- **Potentiometric maps of each aquifer** should be constructed at least **every 5 years to identify areas where over pumping is occurring**

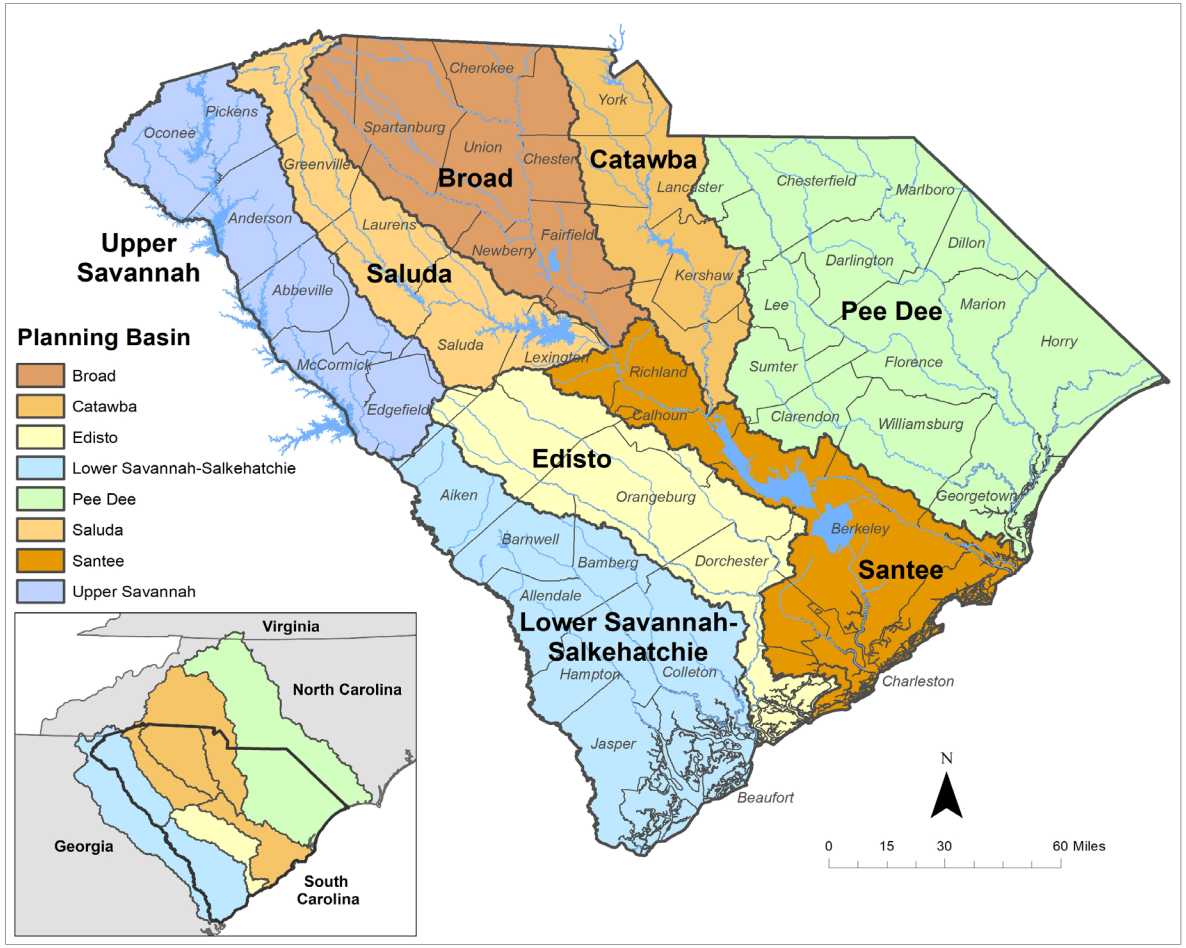
Stakeholder Collaboration in Water Planning

River Basin Councils



River Basin Plans

- River Basin Plans are being implemented for the State's eight major river basins
- Plans are using a "bottom-up" approach where **stakeholders in each basin lead the development of their basin plan**
- Collectively, the River Basin Plans will **inform the State Water Plan**



River Basin Plans Status

Basin	Status	Completion Date
Edisto	Completed	June 2023
Broad	Completed	February 2024
Pee Dee	June 2022 – present	March 2025
Saluda	March 2023 – present	June 2025
Upper Savannah	July 2023 – present	May 2025
Lower Savannah/ Salkehatchie	November 2023 – present	August 2025
Catawba	CWWMG's Integrated Resource Plan 2020 – present	Fall 2025
Santee	December 2024 – present	Fall 2025

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Stakeholder Forums

- Academia
- Public Water Supply
- Conservation & Historic Preservation
- Agriculture & Forestry
- Industry
- Energy
- Tourism & Hospitality

Monthly Working Group Meetings

Statewide Listening Sessions

Provide advisement, assistance, and recommendations to SCDES

Coordinate and update the State Water Plan

Informed by the River Basin Plans

WaterSC recommendations

Supported by cooperating agencies and consultants

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Updating the State Water Plan

Updating the State Water Plan

Acknowledgements and Executive Summary

Introduction

Current and Future Water Demand

Water Availability Assessments and Management Strategies

Conservation Recommendations

Planning Process and Program Recommendations

Updating the State Water Plan

- Drought and Drought Responses
- Policy and Legislative Recommendations
- Adaptive Management Strategies
- Summary of Water Quality Programs
- Special Topics
- Implementation and Resource Needs

“The effective management of South Carolina’s water resources is beyond the scope of one agency or organization and will require cooperation and shared responsibility…”

2004 South Carolina Water Plan

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Get in touch

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State Water Planning for South Carolina Discussions

Working Group Meetings

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