



South Carolina Department of Health and Environmental Control

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# Capacity Use Area Groundwater Management Plans

Bureau of Water

# Option to Call In

If you are experiencing audio problems, join the virtual meeting by phone:

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**Conference phone number: # 1-864-558-7311**

**AUDIO CONFERENCEING PIN: # 473 007 523**



Exits the meeting. (If you accidentally exit the meeting, you can rejoin.)

# Using MS Teams

Close all other applications running on your computer and turn off other streaming services or devices at your location.



Mute your mic to minimize background noise



Turn off your camera until your turn to speak



Opportunity for comments following presentation



# Water Quantity Programs

- **Groundwater Use and Reporting**

Since the 1970s

- Issue permits in designated capacity areas 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 Capacity Use Areas 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

- **Surface Water Withdrawal, Permitting and Reporting**

- Since June 2012
- Issue permits / registrations statewide if over 3 million gallons in any month
- All registered and permitted surface water withdrawers report their annual water use to the Department



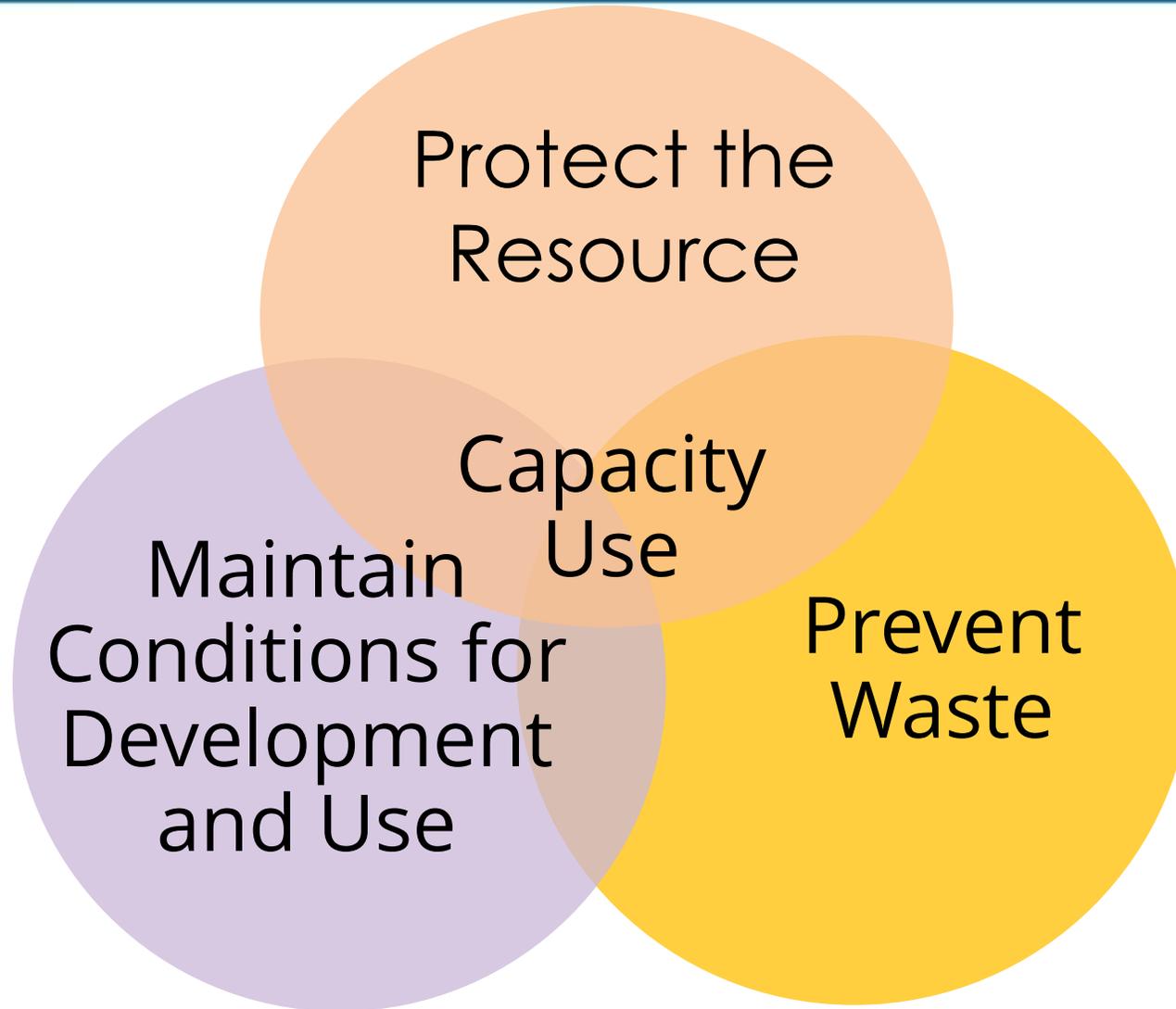
## What is a Capacity Use Area

“..[A]n area, designated by the Board, where excessive groundwater withdrawal presents potential adverse effects to the natural resource or poses a threat to public health, safety, or economic welfare or where conditions pose a significant threat to the long-term integrity of a groundwater source, including saltwater intrusion”



## 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.”





## What are the Capacity Use Areas?

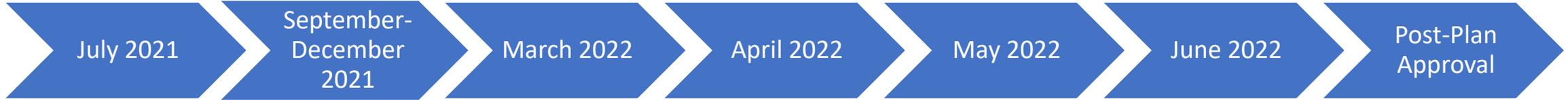
- **Waccamaw:** est. June 22, 1979, Horry and Georgetown Counties
- **Lowcountry:** est. July 24, 1981, Jasper, Beaufort, and Colleton Counties (Hampton county added June 10, 2008)
- **Trident:** est. August 8, 2002, Charleston, Berkeley, and Dorchester Counties
- **Pee Dee:** est. February 12, 2004, Marion, Marlboro, Darlington, Dillon, Florence, and Williamsburg Counties
- **Western:** est. November 8, 2018, Aiken, Bamberg, Barnwell, Calhoun, Allendale, Lexington, and Orangeburg Counties
- **Santee-Lynches:** est. July 15, 2021, Chesterfield, Clarendon, Kershaw, Lee, Richland, and Sumter Counties



## Groundwater Management Planning

After notice and public hearing, the department shall coordinate the affected governing bodies and groundwater withdrawers to develop a groundwater management plan to achieve goals and objectives stated in [Legislative Declaration of Policy] .

In those areas where the affected governing bodies and withdrawers are unable to develop a plan, the department shall take action to develop the plan.



<b>DHEC Board Designation of Santee-Lynches Capacity Use Area</b>	<b>Stakeholder Planning &amp; workgroup</b>	<b>Public Information and Comments</b>	<b>Publish in State Registrar</b>	<b>Public Comments from State Registrar</b>	<b>Proposed DHEC Board Review of Plan</b>	<b>Implement Program &amp; Permitting consistent with the Plan</b>
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<b>Opportunity for Comments</b>	<b>Public Hearing</b>
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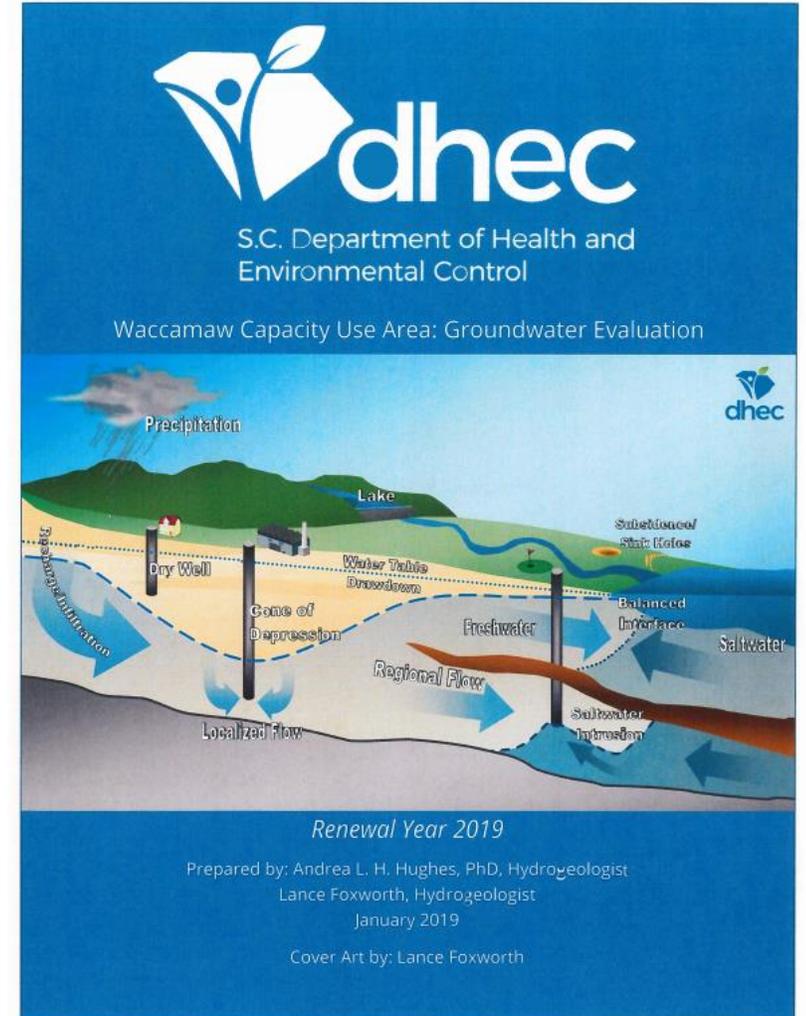
## Groundwater Management Plan Reports

Every 5 years, or length of the permitting cycle, total annual groundwater withdrawals will be compiled and compared to available aquifer potentiometric maps. The report includes the following

Listing of all permitted withdrawers, permitted withdrawal limits, and average groundwater withdrawal;

Evaluation of withdrawal by category and by aquifer;

Identification of areas of aquifer stress and all withdrawers utilizing the stressed aquifer(s).



## Aspects of Water Use Addressed in Groundwater Management Plan:

- 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 Goals:

- Ensure sustainable development of the groundwater resource by management of groundwater withdrawals
- Monitoring of groundwater quality and quantity to evaluation conditions
- The protection of groundwater quality from salt-water intrusion (coastal CUAs)
- Promote educational awareness of the resource and its conservation (Western CUA)



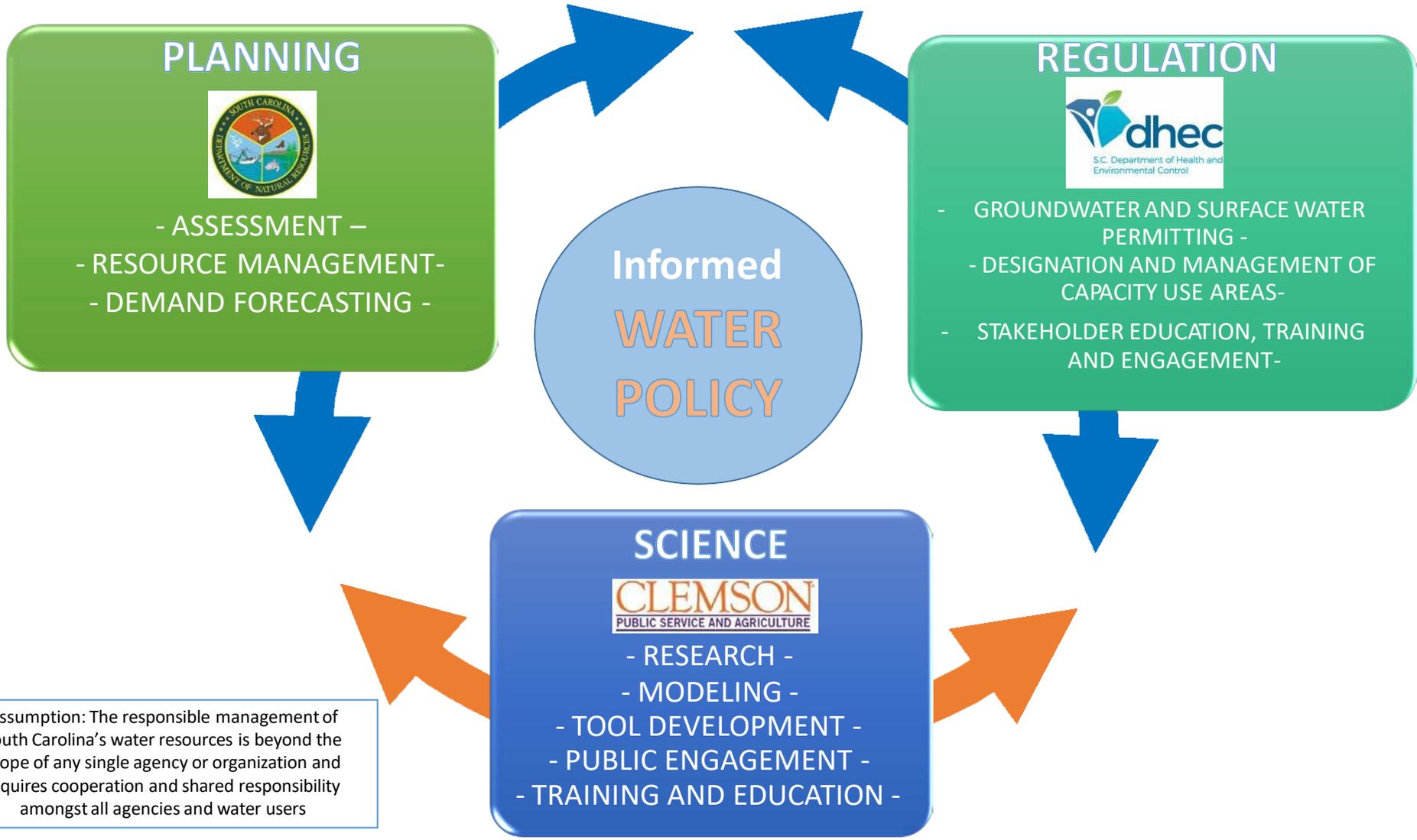
South Carolina Department of Health and Environmental Control

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# Santee-Lynches Capacity Use Area Groundwater Management Plan Development

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Bureau of Water



Assumption: The responsible management of South Carolina's water resources is beyond the scope of any single agency or organization and requires cooperation and shared responsibility amongst all agencies and water users



**PLANNING**



- ASSESSMENT -
- RESOURCE MANAGEMENT -
- DEMAND FORECASTING -

**REGULATION**



- GROUNDWATER AND SURFACE WATER PERMITTING -
- DESIGNATION AND MANAGEMENT OF CAPACITY USE AREAS -
- STAKEHOLDER EDUCATION, TRAINING AND ENGAGEMENT -

**Informed WATER POLICY**



**SCIENCE**



- RESEARCH -
- MODELING -
- TOOL DEVELOPMENT -
- PUBLIC ENGAGEMENT -
- TRAINING AND EDUCATION -



US Army Corps of Engineers



SOUTH CAROLINA GROUND WATER ASSOCIATION



# Groundwater Balance

## Groundwater Deposits

Recharge  
Surface water inflow  
Water injection



## Change in Groundwater Storage (Savings)

Lowering of water table  
System compaction



## Natural Withdrawals

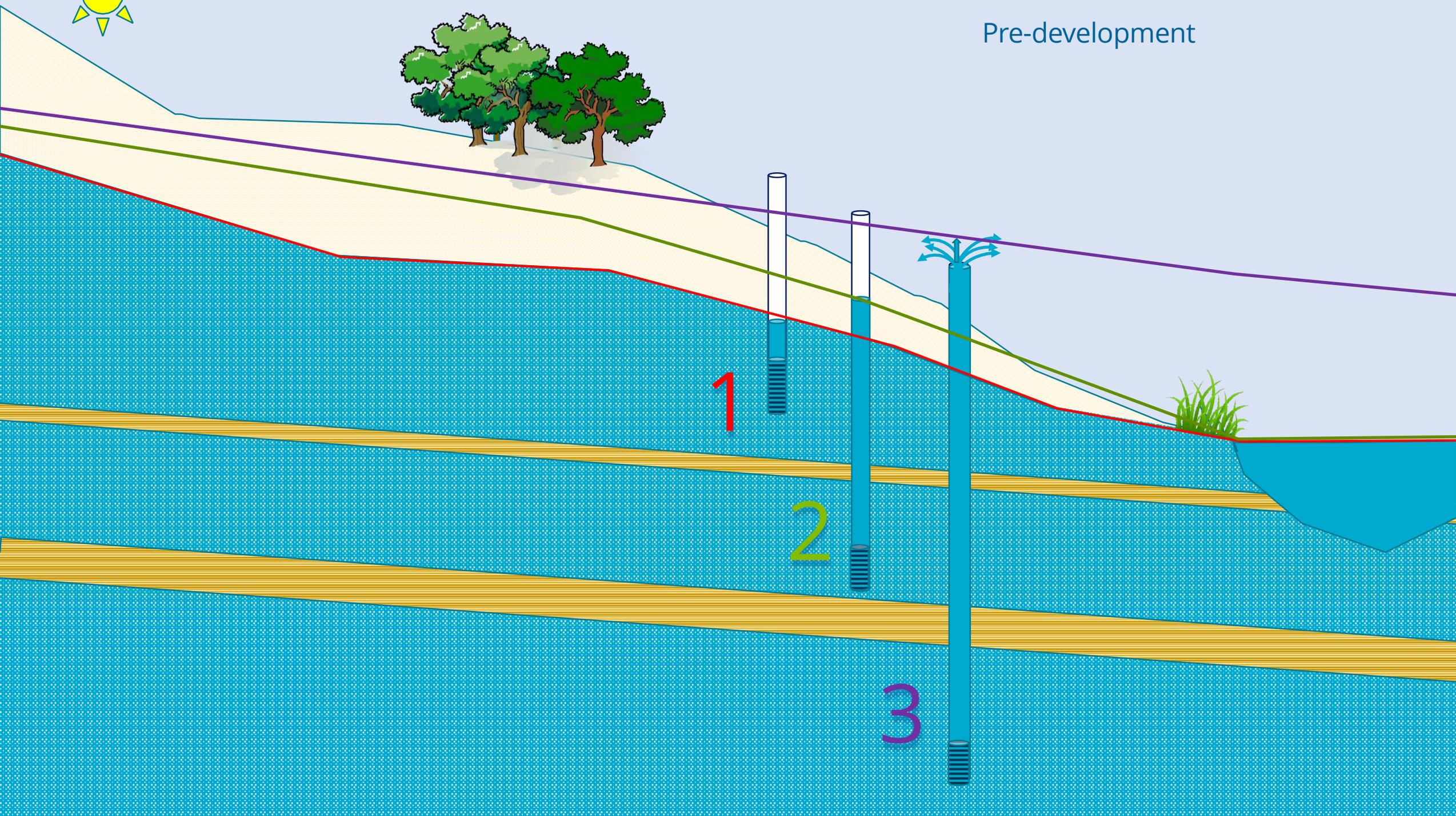
Surface water discharge  
Springs  
Evapotranspiration



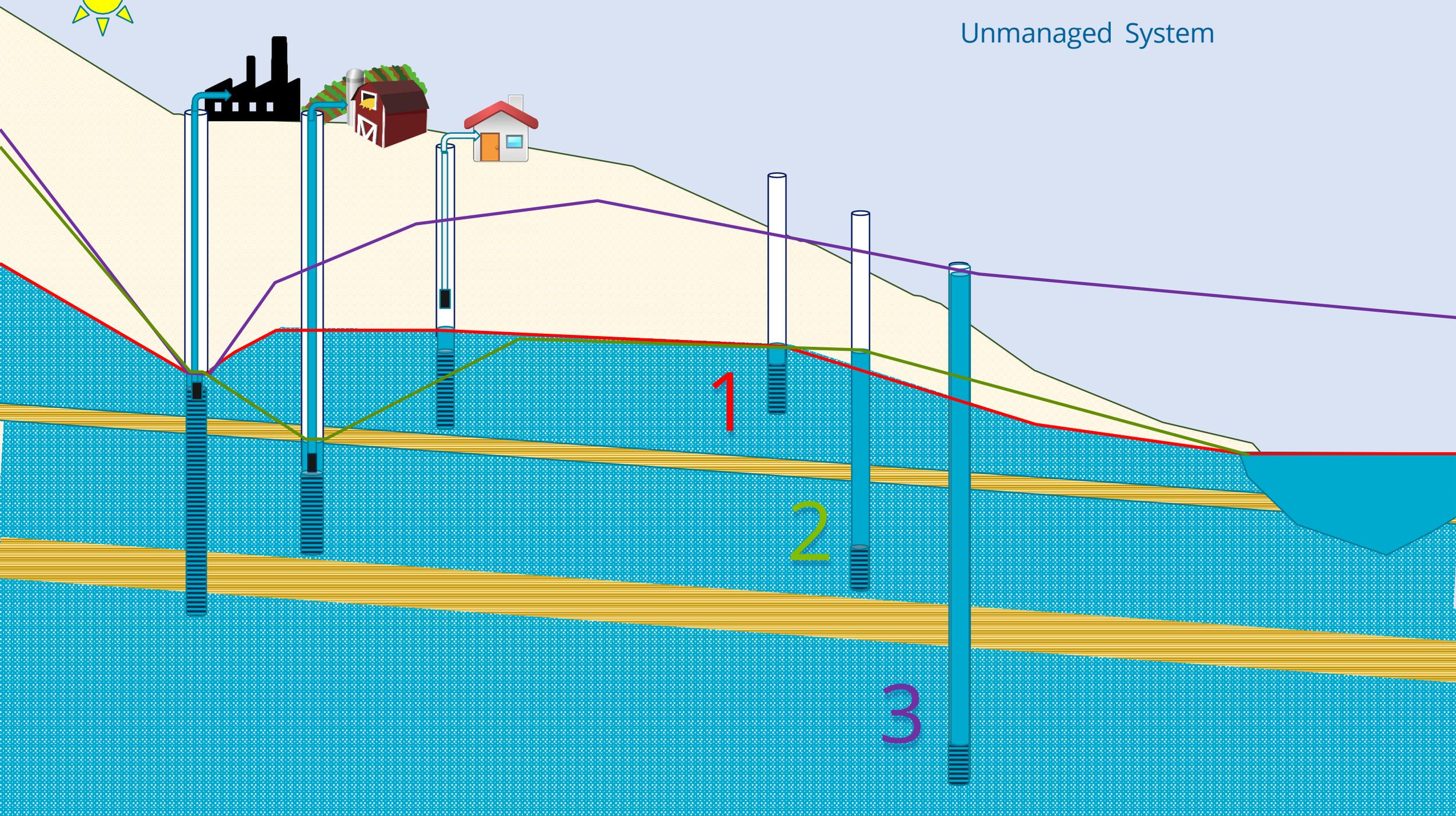
## Well Withdrawals

Water supply  
Industrial Irrigation

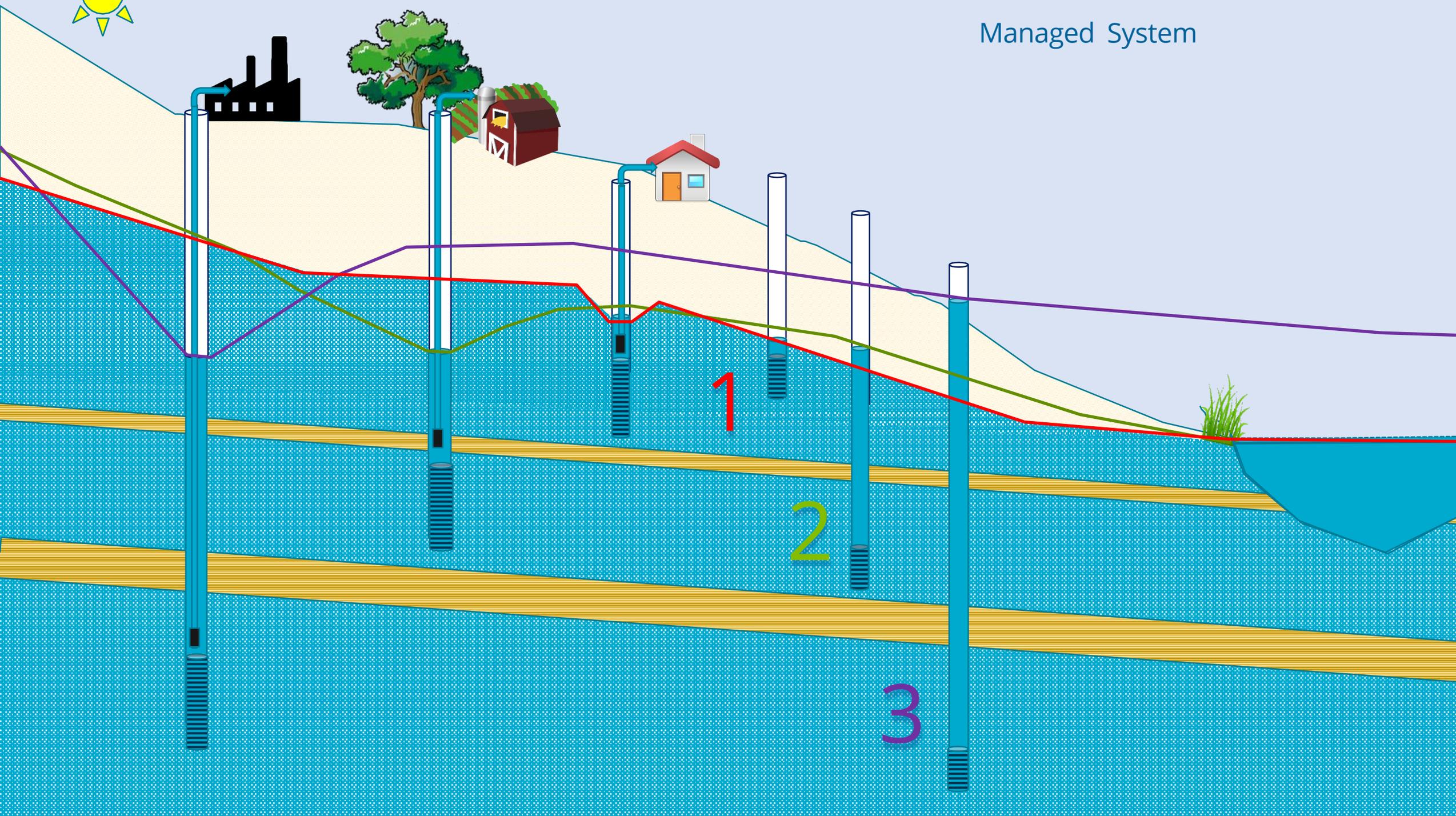
Pre-development



# Unmanaged System



Managed System





South Carolina Department of Health and Environmental Control

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Questions?

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# Example Groundwater Management Plan

Waccamaw Capacity Use Area

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## Typical GWMP Table of Contents

Executive Summary

Current Groundwater Demand

Introduction

Groundwater Demand Trends

Definitions

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Geo-Political Structure

Population, Growth, and Water Use Projections

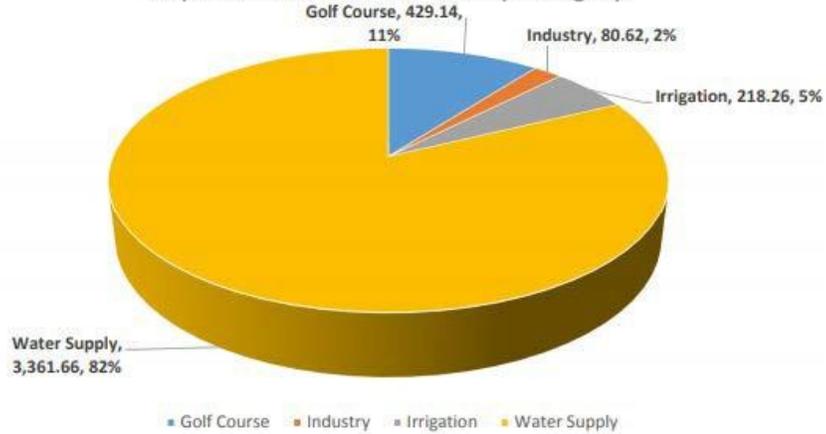
Regional Description

Groundwater Management Strategy

Groundwater Management Plan Reports

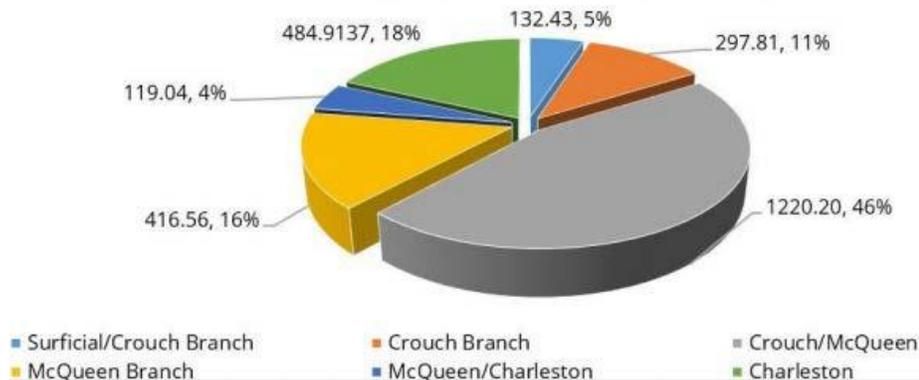
# Current Groundwater Demand

Reported Groundwater Use by Category

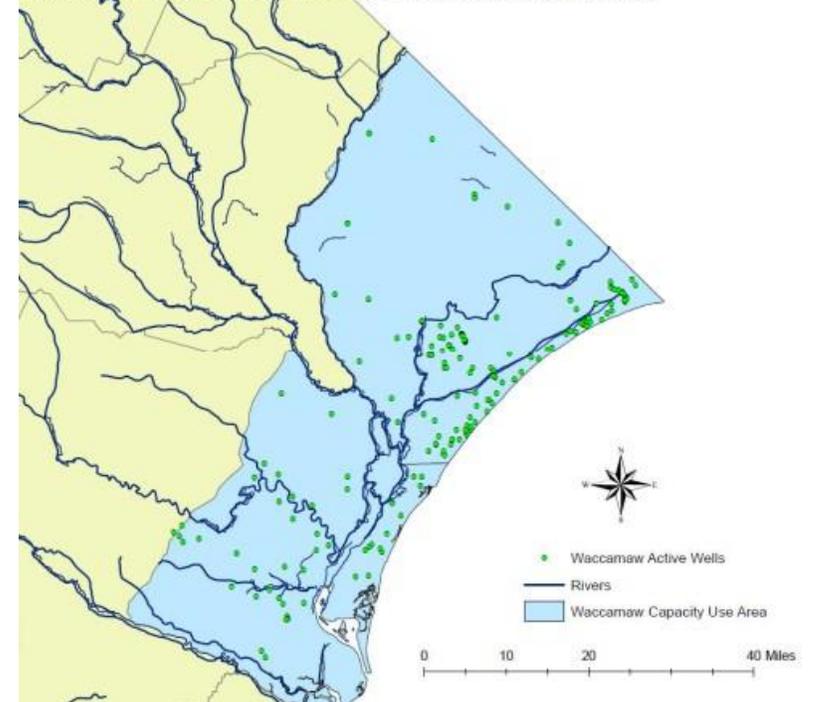


Category	Georgetown County	Horry County	Totals
Golf Courses	2	22	24
Industry	4	3	7
Agricultural Irrigation	1	7	8
Public Water Supply	5	6	11
Totals	12	38	50

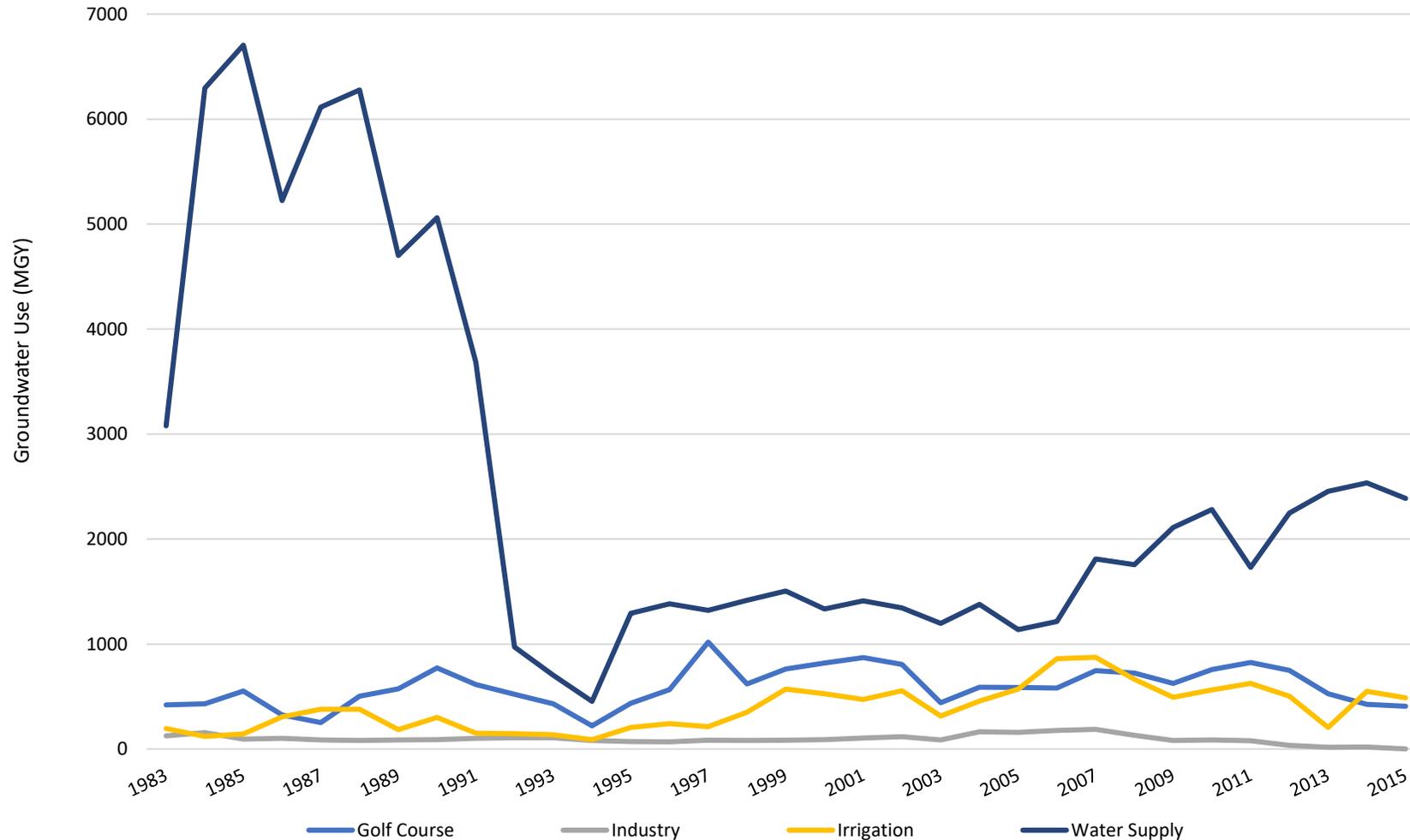
Groundwater Use by Aquifer for Horry County, 2015



Active Permitted Wells in the Waccamaw Capacity Use Area



# Groundwater Demand Trends



# Groundwater Level Trends

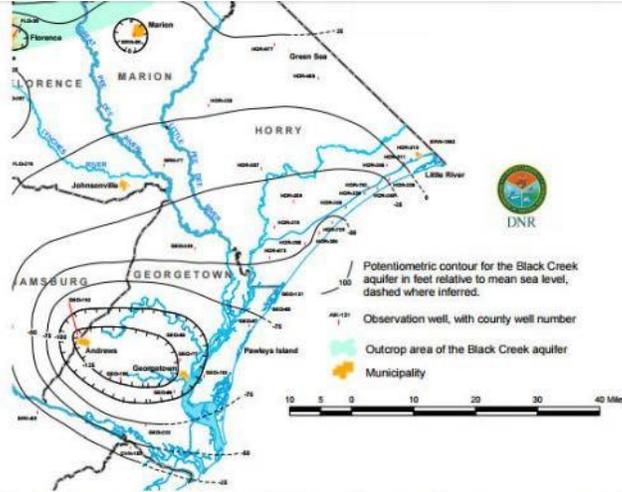


Figure 8. Water level map for the Black Creek Aquifer (Crouch Branch), 2004. Source: Hockensmith, 2008, SCDNR Water Resources Report 47.

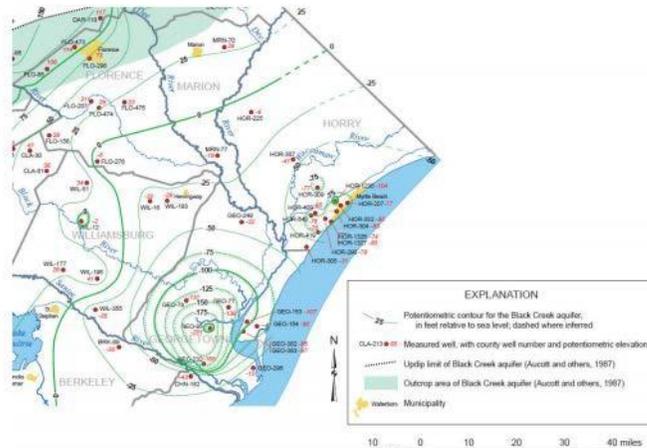


Figure 9. Water level map of the Crouch Branch Aquifer, 2015. Source: Wachob and Czwartacki, 2015, SCDNR Water Resources Report 59.

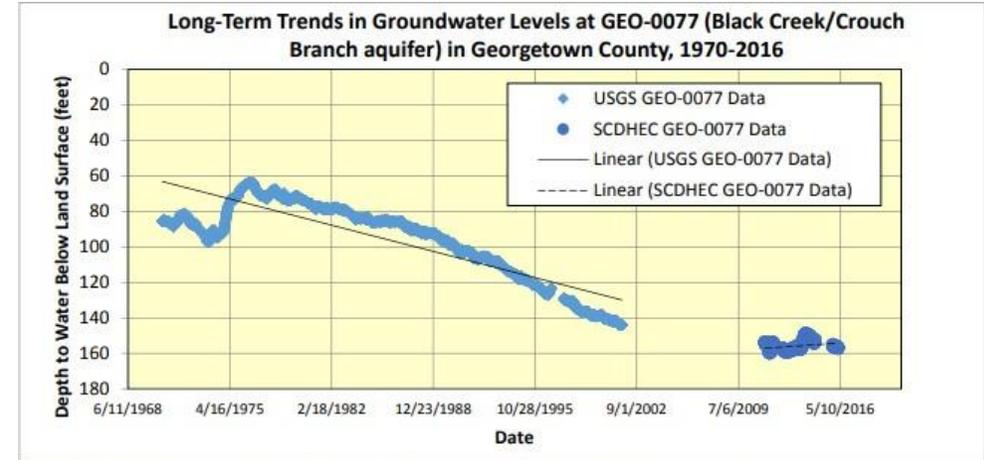
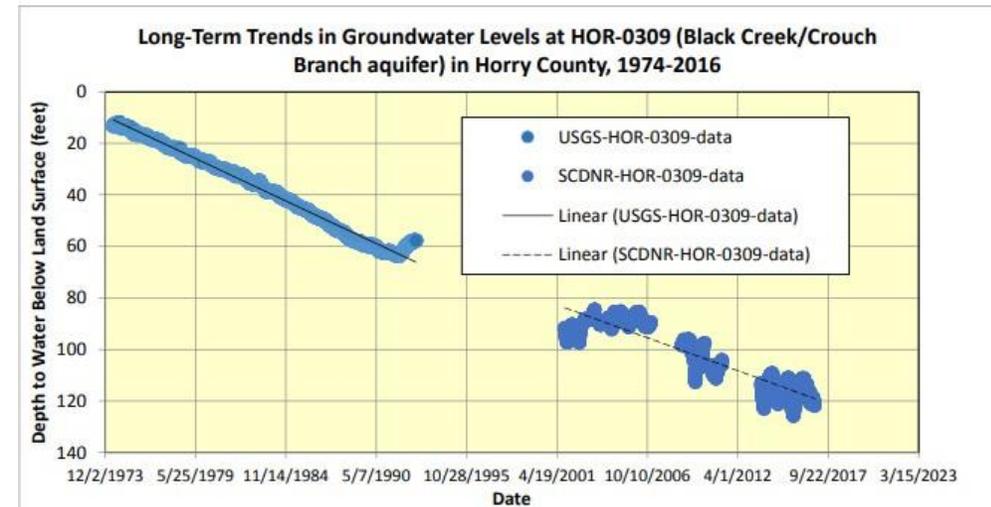


Figure 10: Long-Term Trends in Groundwater Levels at GEO-0077 in Georgetown County, 1970-2016



# Population, Growth, and Water Use Projections

Population Counts and Projections 2000-2030								
County	April 1, 2000 Census	April 1, 2010 Census	July 1, 2015 Projection	July 1, 2020 Projection	July 1, 2025 Projection	July 1, 2030 Projection	Projected Change	Projected Percent Change
Georgetown	55,797	60,158	61,300	62,500	63,800	65,100	9,303	17%
Horry	196,629	269,291	294,600	319,900	345,800	371,700	175,071	89%
<b>Waccamaw Area</b>	<b>252,426</b>	<b>329,449</b>	<b>355,900</b>	<b>382,400</b>	<b>409,600</b>	<b>436,800</b>	<b>184,374</b>	<b>73%</b>

Table 9. Total projected groundwater demand-Waccamaw Area (million gallons).

	2015	2020	2025	2030
<b>Water Supply</b>	3361.66	3,770.66	4,229.43	4,744.01
<b>Other</b>	728.03	816.61	915.96	1,027.40
<b>Total MGY</b>	4,089.69	4,587.27	5,145.39	5,771.41
<b>Total MGD</b>	11.20	12.57	14.10	15.81

\*\* SCDNR is currently developing demand projections as for updating the SC State Water Plan



## Groundwater Management Strategies

Strategy #1: Identify areas where a leveling and/or reduction in pumping is appropriate.

Prior to each permit renewal cycle, SCDHEC will consider the best available information on the geologic and hydrogeologic characteristics of the aquifer(s) and groundwater withdrawals of the area to protect against or abate unreasonable, or potentially unreasonable, adverse effects on the aquifer(s) and water users.



## Groundwater Management Strategies

Strategy #2: Review of permit applications based on demonstrated reasonable use.

Proposed withdrawals will be evaluated considering reasonableness of use and need, aquifer(s) being utilized, potential adverse effects on adjacent groundwater withdrawers, previous reported water use, anticipated demand for the proposed activities, availability of alternate water sources and reported water use at facilities with similar activities. Applications for groundwater withdrawal will incorporate a "Water Use Plan" or a "Best Management Strategy" detailing actual or proposed water use activities and all conservation techniques for site specific water management.



## Groundwater Management Strategies

Strategy #3: Establish a comprehensive groundwater monitoring program.

With increased population and a growing industrial base, water demand (from both surface and groundwater) is increasing at an expanding rate. Although water level declines are a normal response to groundwater withdrawals, not stabilizing these declines may cause serious impairment to the aquifers and groundwater quality of the region. SCDHEC will pursue partnerships with local entities, groundwater users and other agencies (both Federal and State) to facilitate the most effective use of resources in designing and maintaining a monitoring network.



## Groundwater Management Strategies

Strategy #4: Establish a conservation educational plan for the general public and existing groundwater withdrawers.

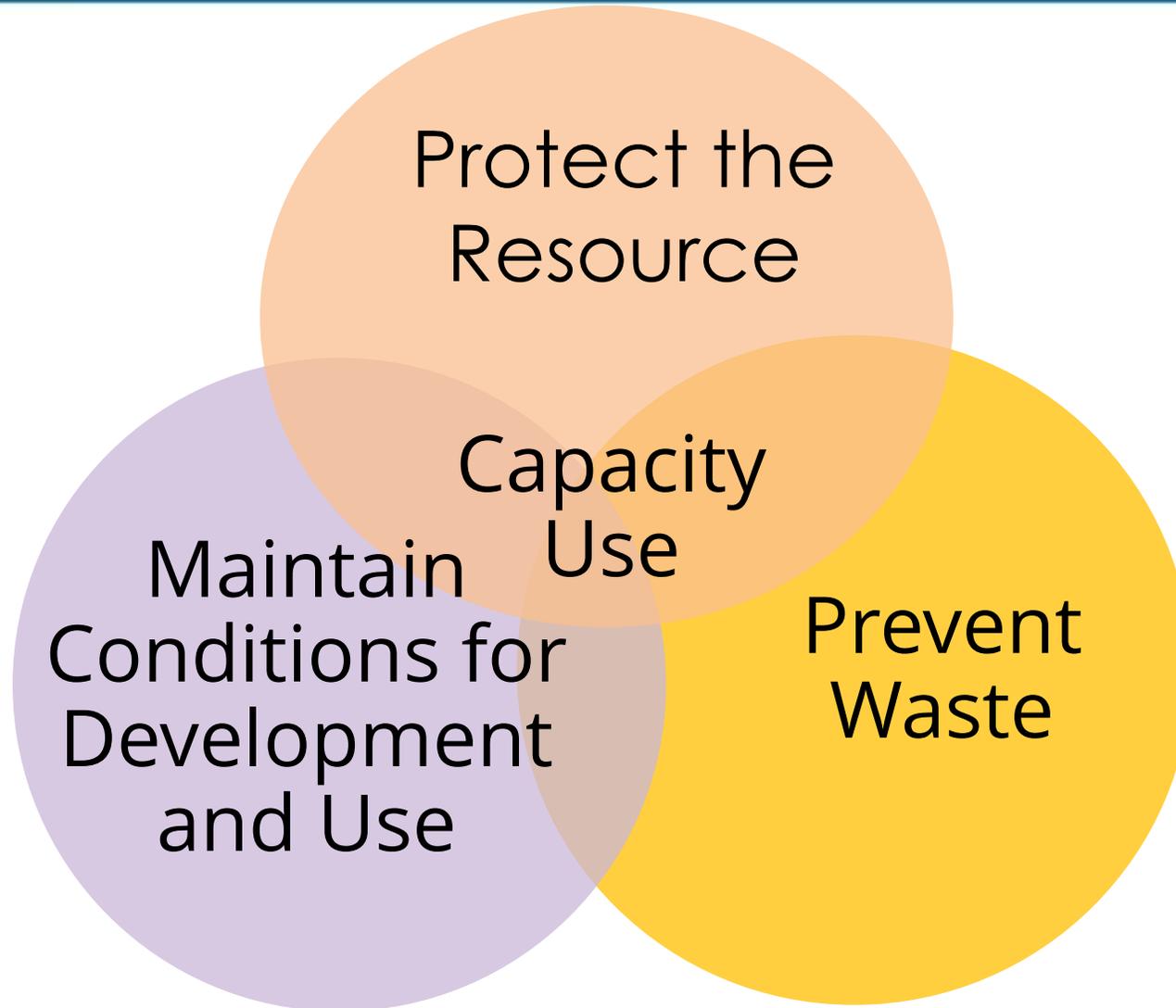
Water conservation has increasingly become a cornerstone to the development of water management strategies.



## Groundwater Management Strategies

### Strategy #5: Regulation and Planning.

The Groundwater Use and Reporting Act provides for regulation of water withdrawals in South Carolina. Groundwater regulation is necessary to protect and provide for the long-term sustainability of the resource. As data is developed on the groundwater resources of the designated Capacity Use Areas, the regulations will be reviewed to ensure that sufficient and adequate protection of the resource is provided.





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Questions?

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What strategies would be most useful for the Santee-Lynches Capacity Use Area?

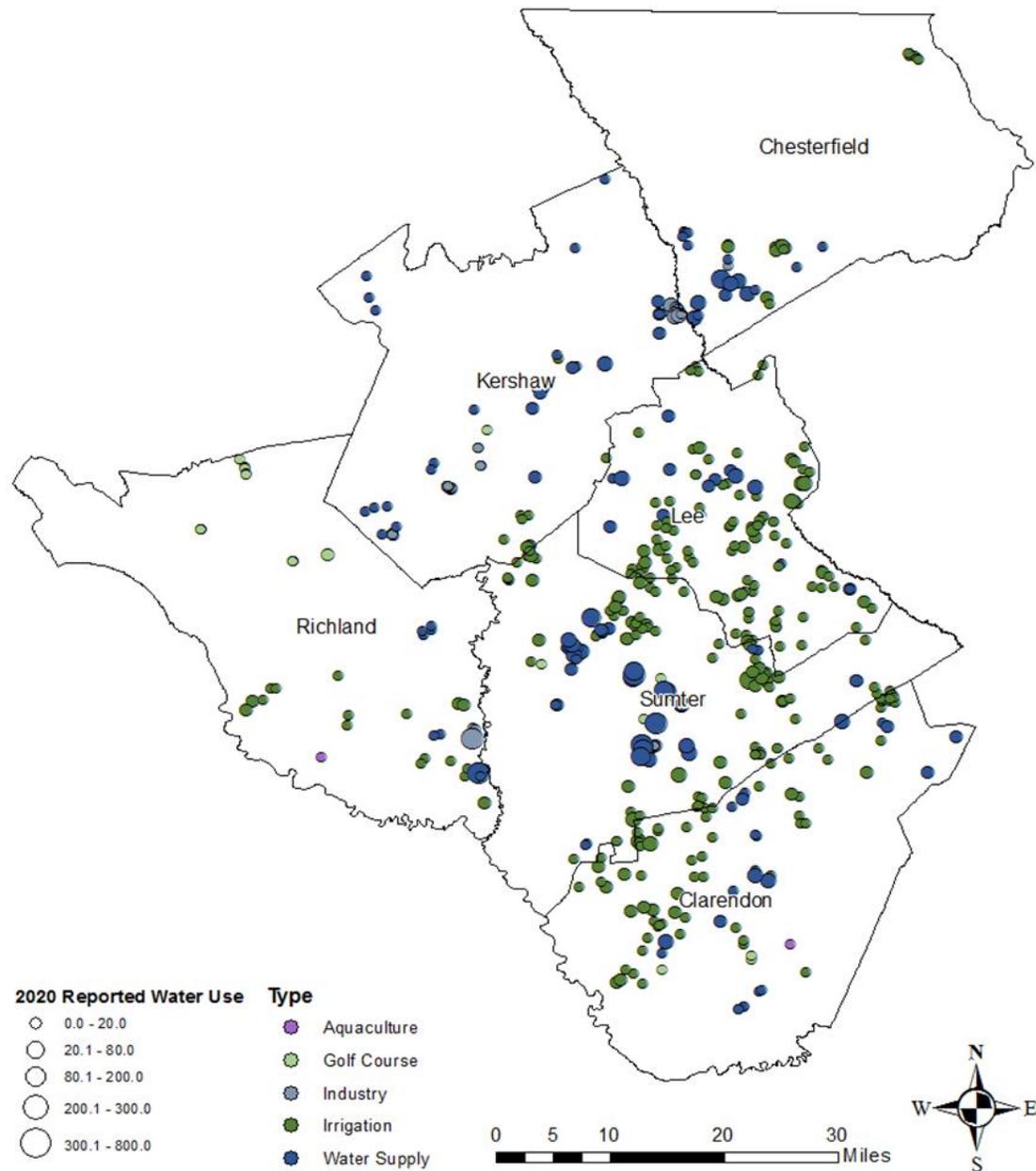
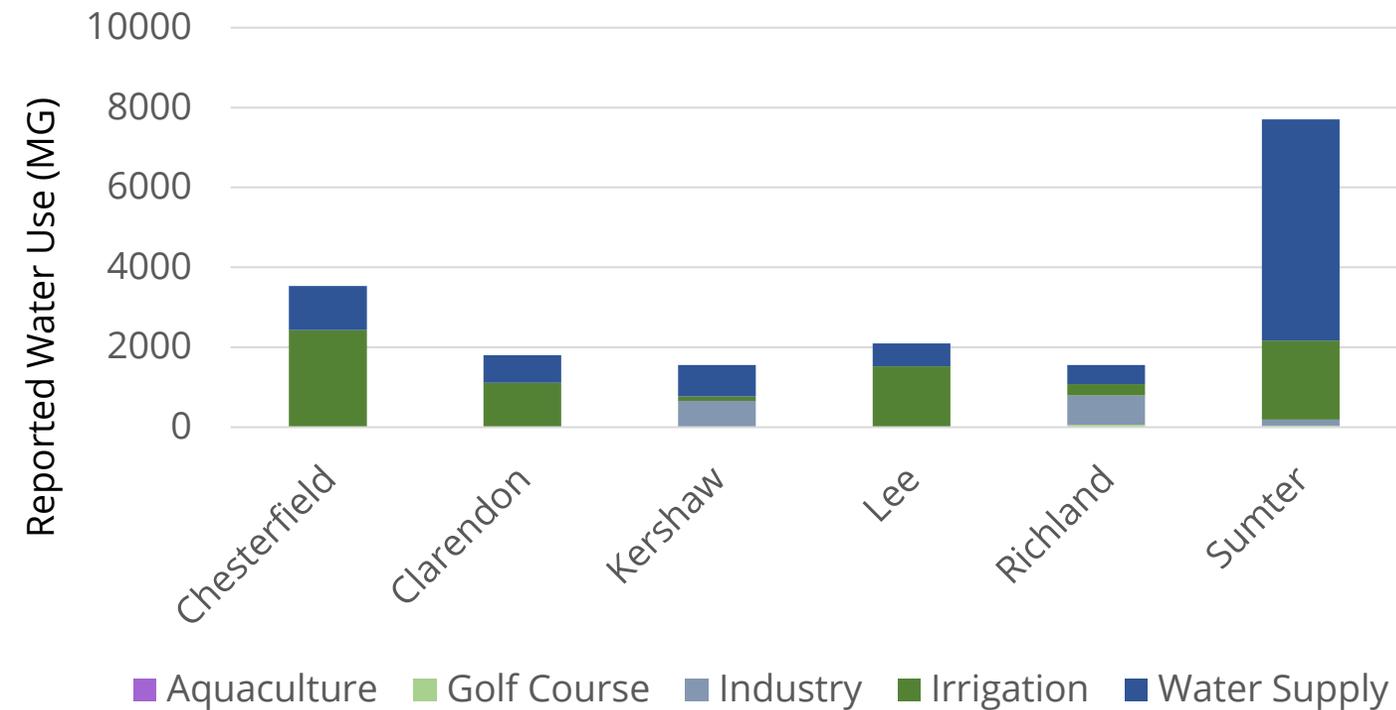


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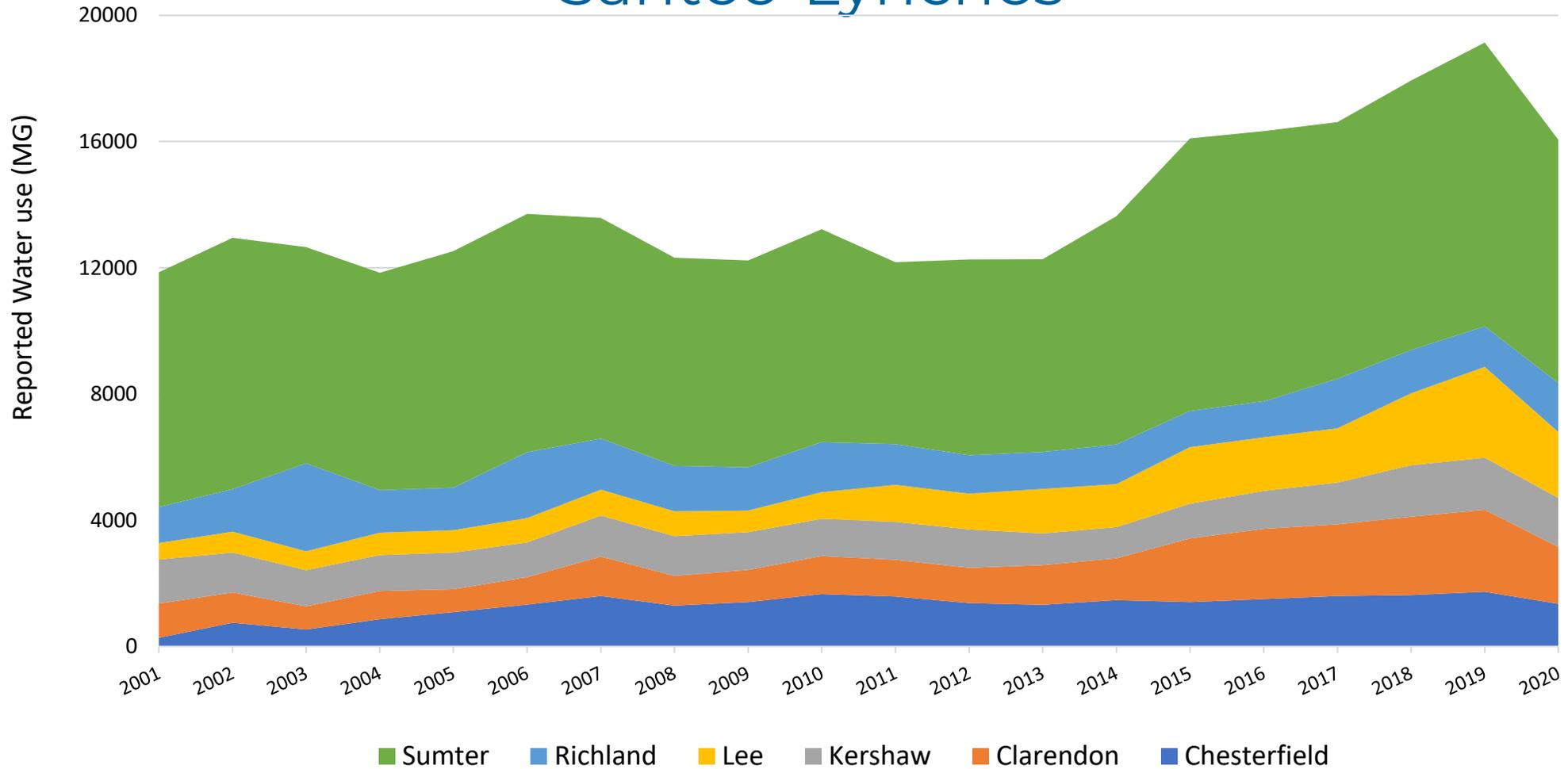
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# Groundwater Use in the Santee-Lynches Capacity Use Area

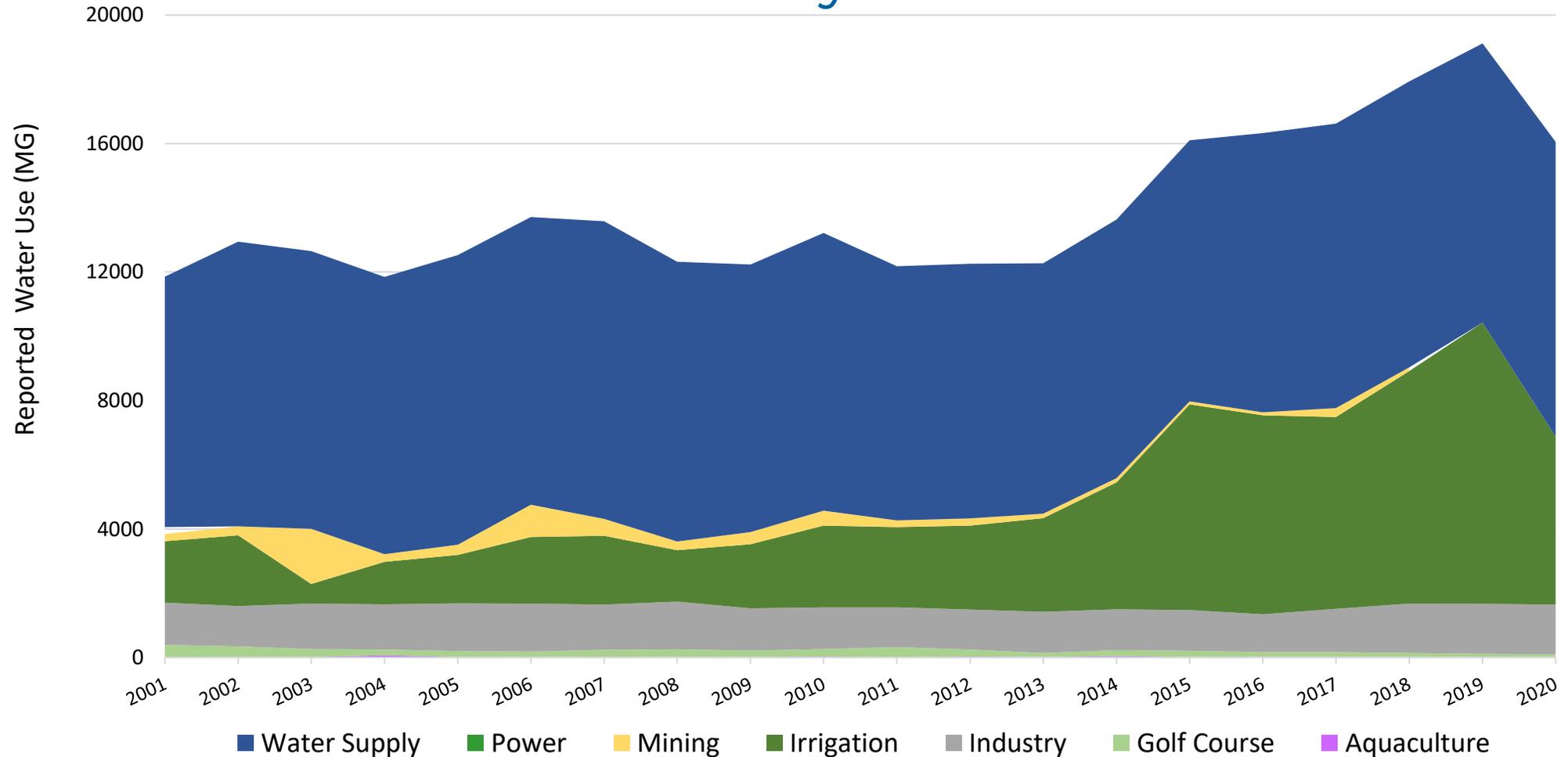
# 2020 Reported Groundwater Use



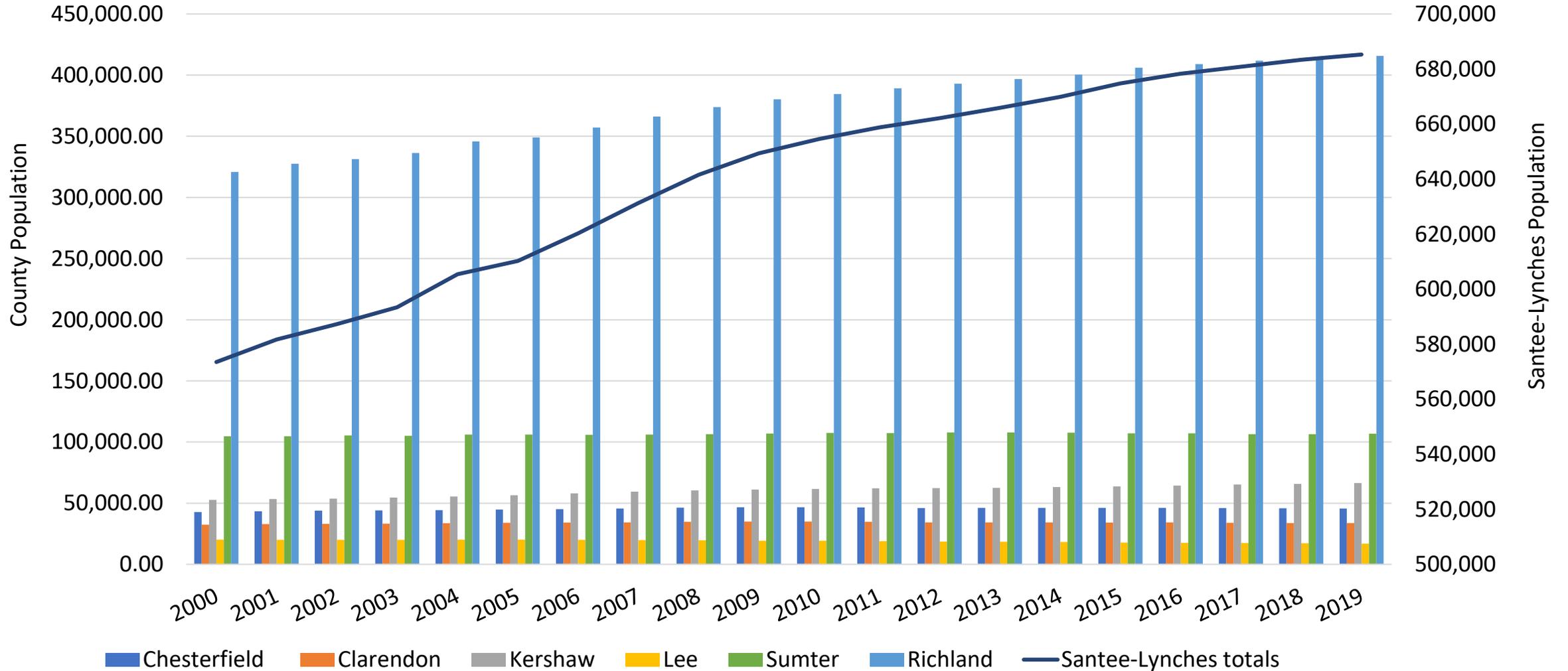
# Groundwater Use by County In the Santee-Lynches



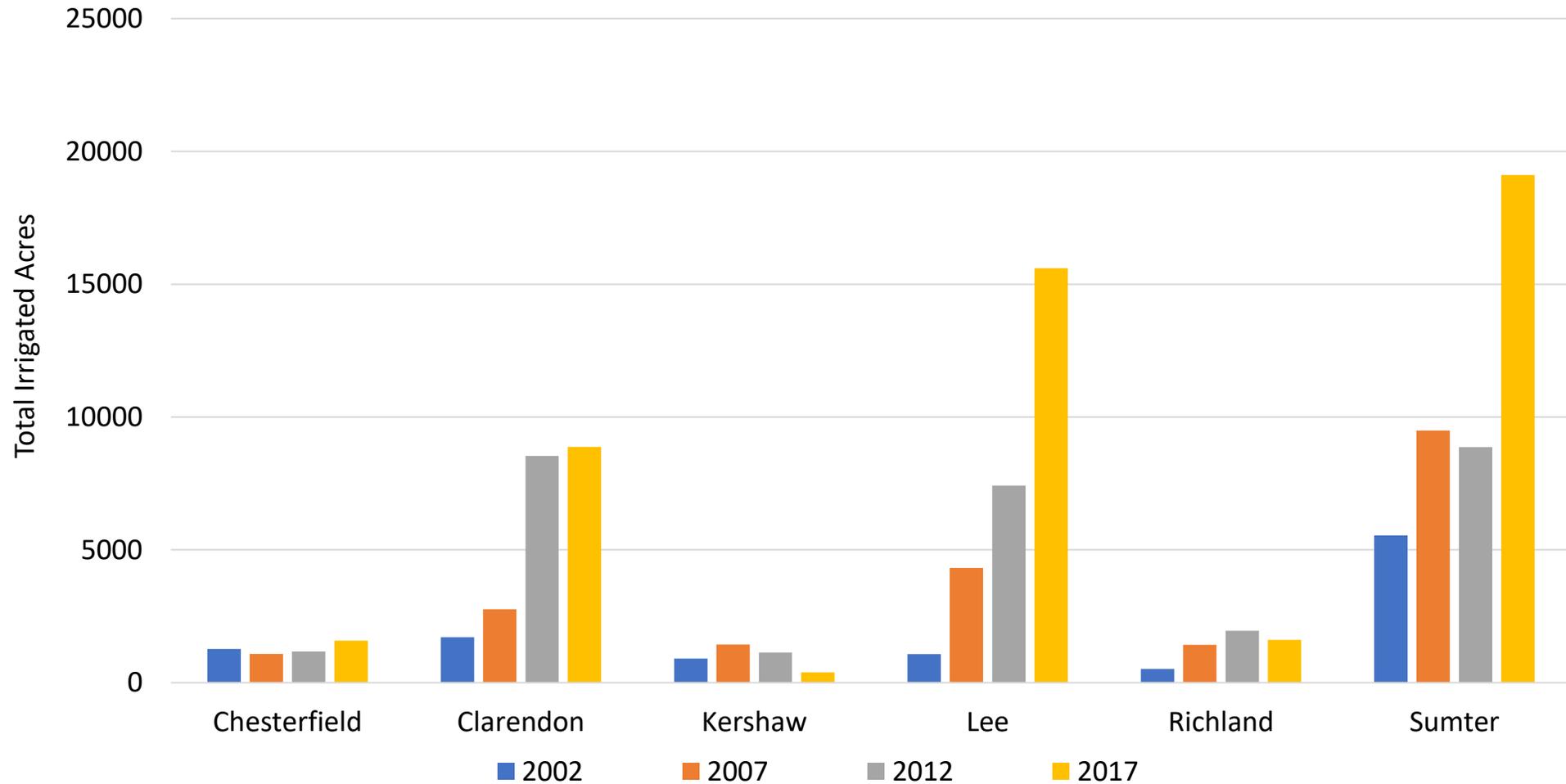
# Groundwater Use by Type In The Santee-Lynches



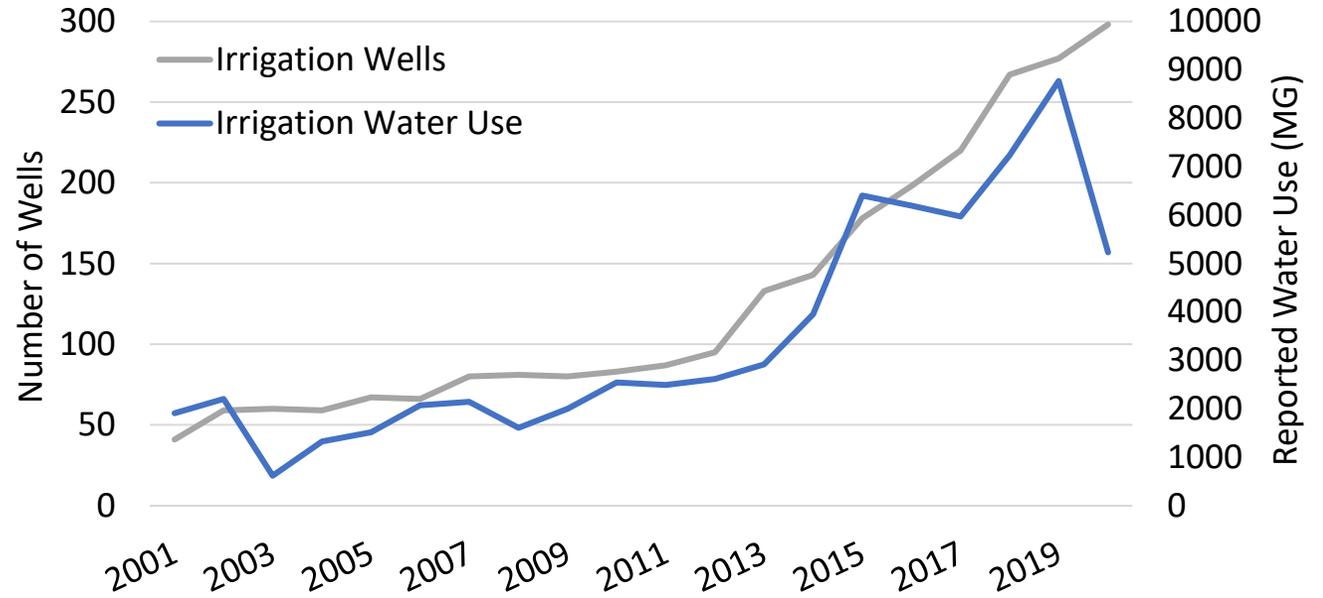
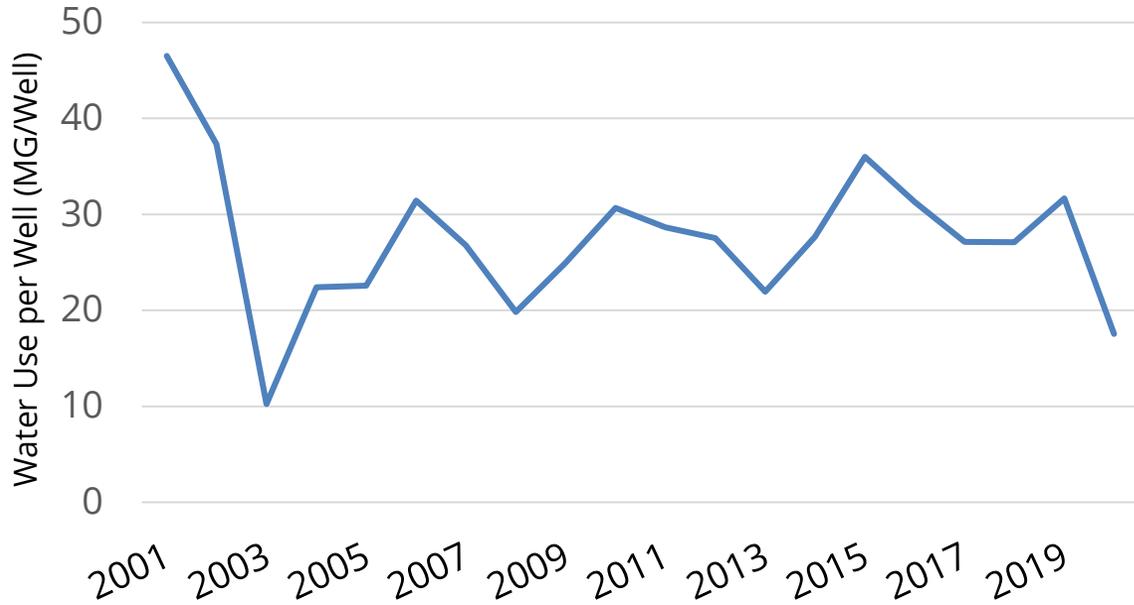
# Population growth



## Irrigated Acres In the Santee-Lynches



# Historical Irrigation Trends

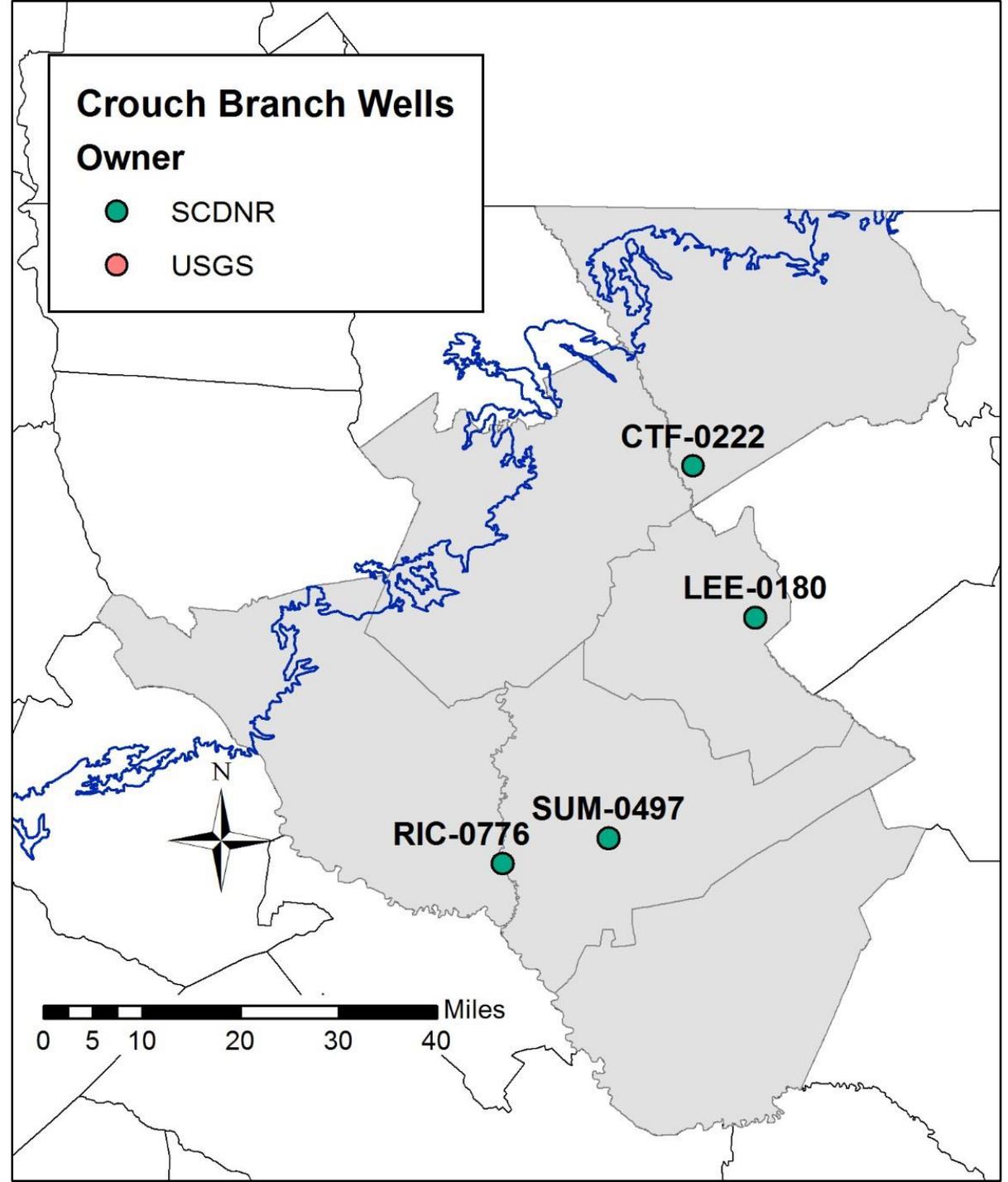




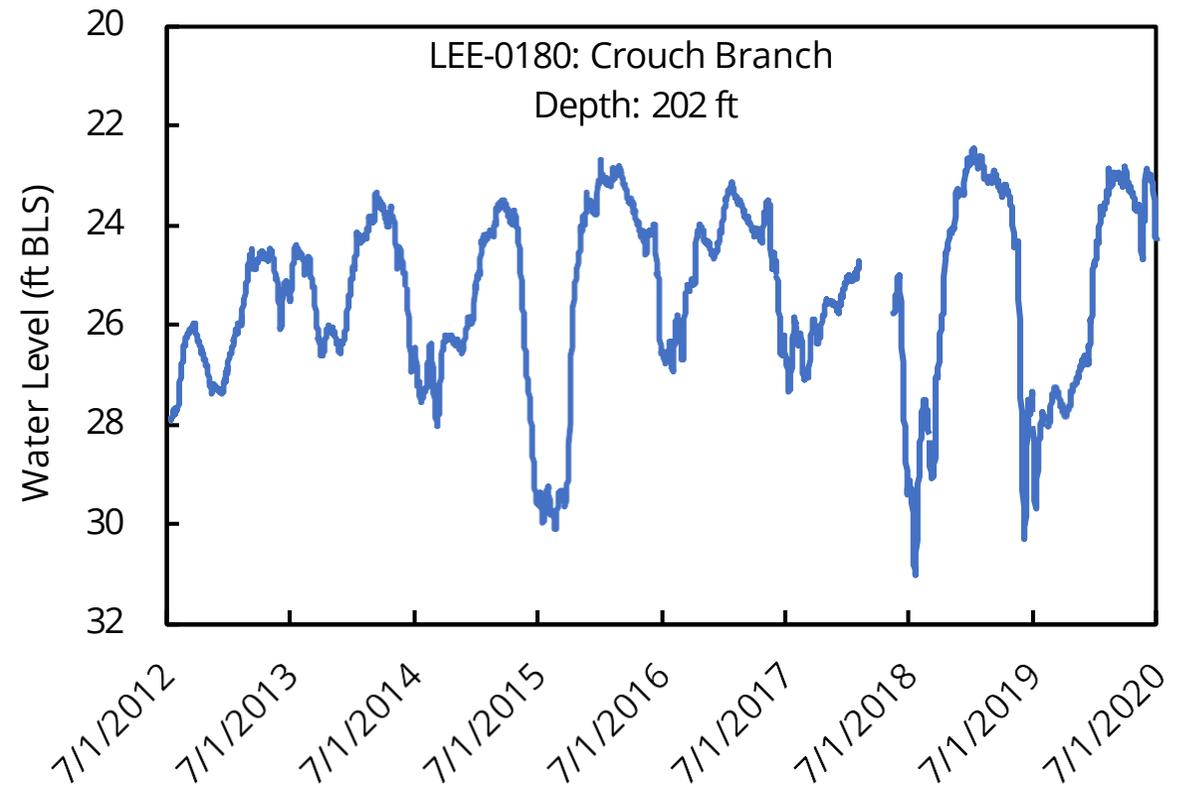
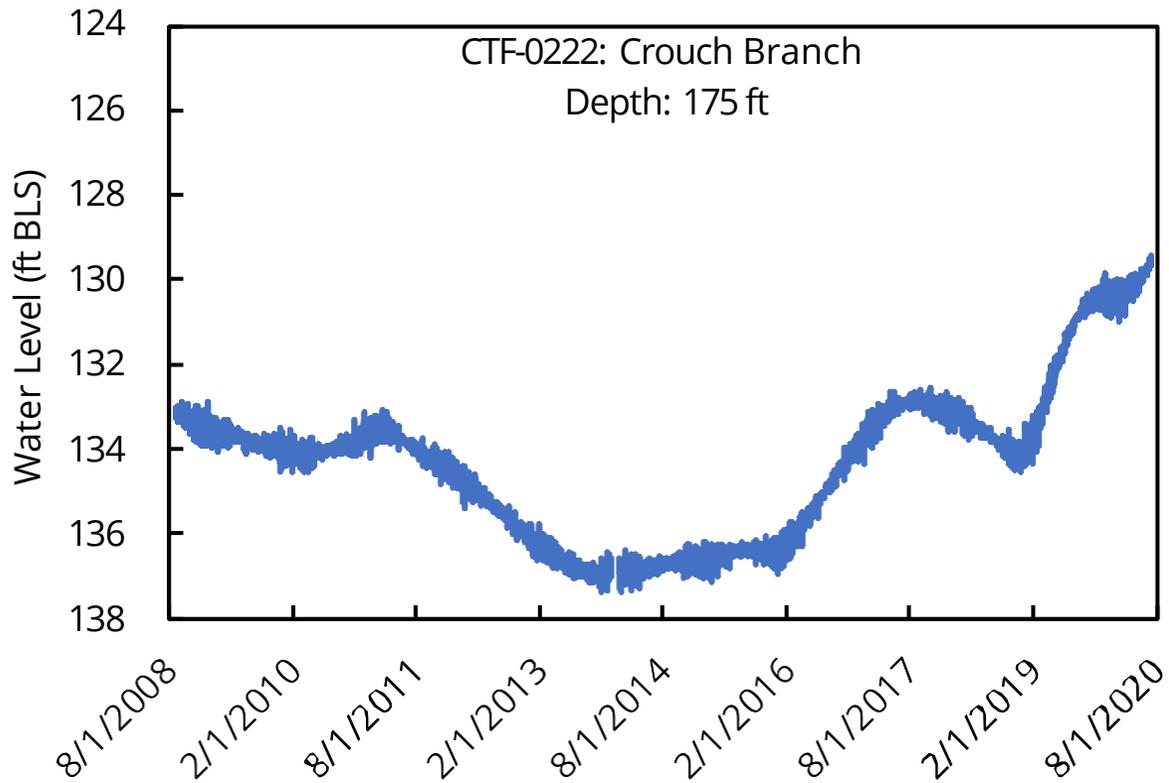
# Groundwater Levels in the Santee-Lynches Capacity Use Area



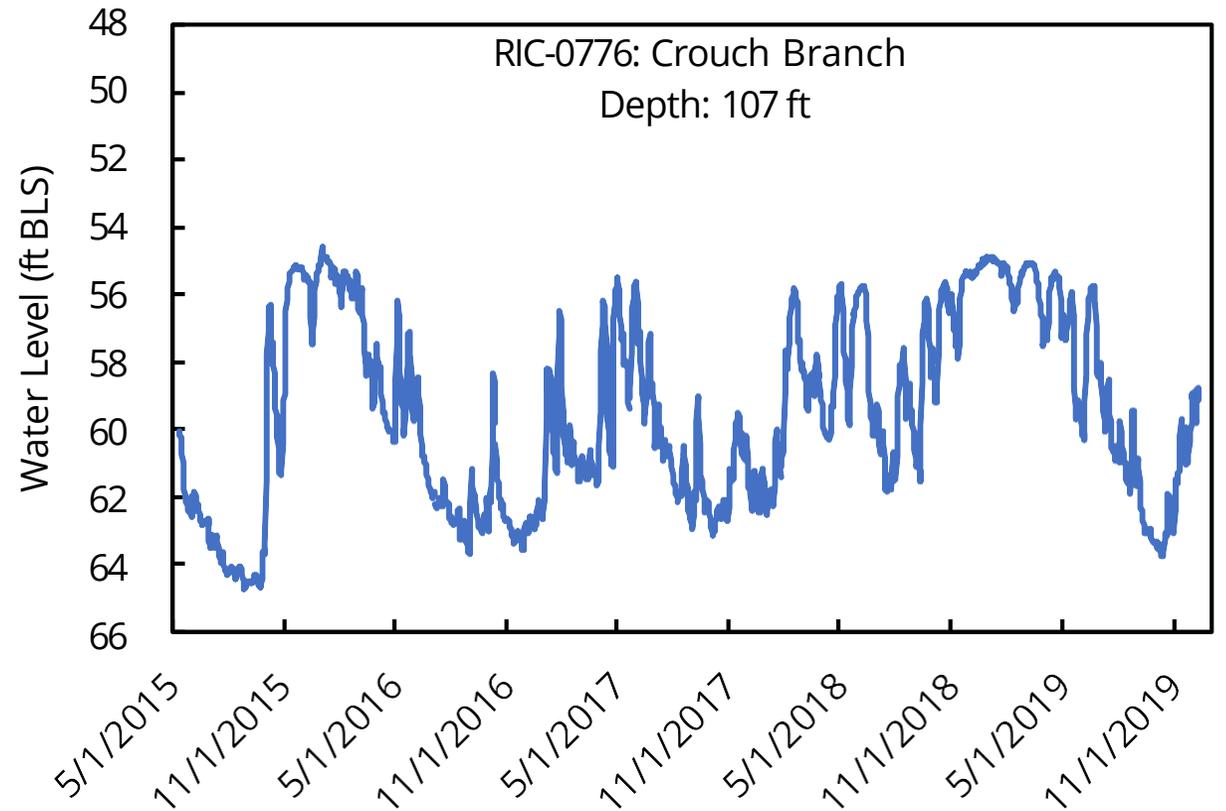
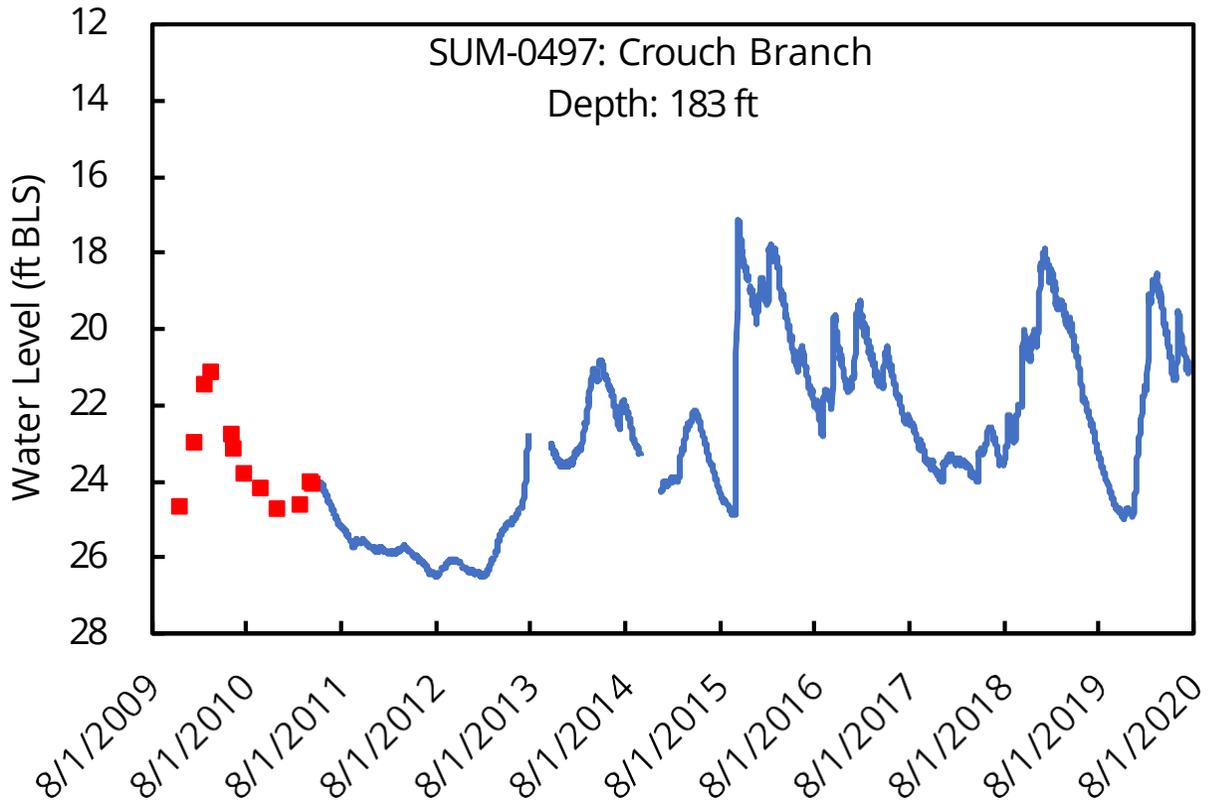
# Crouch Branch Aquifer



# Crouch Branch Aquifer

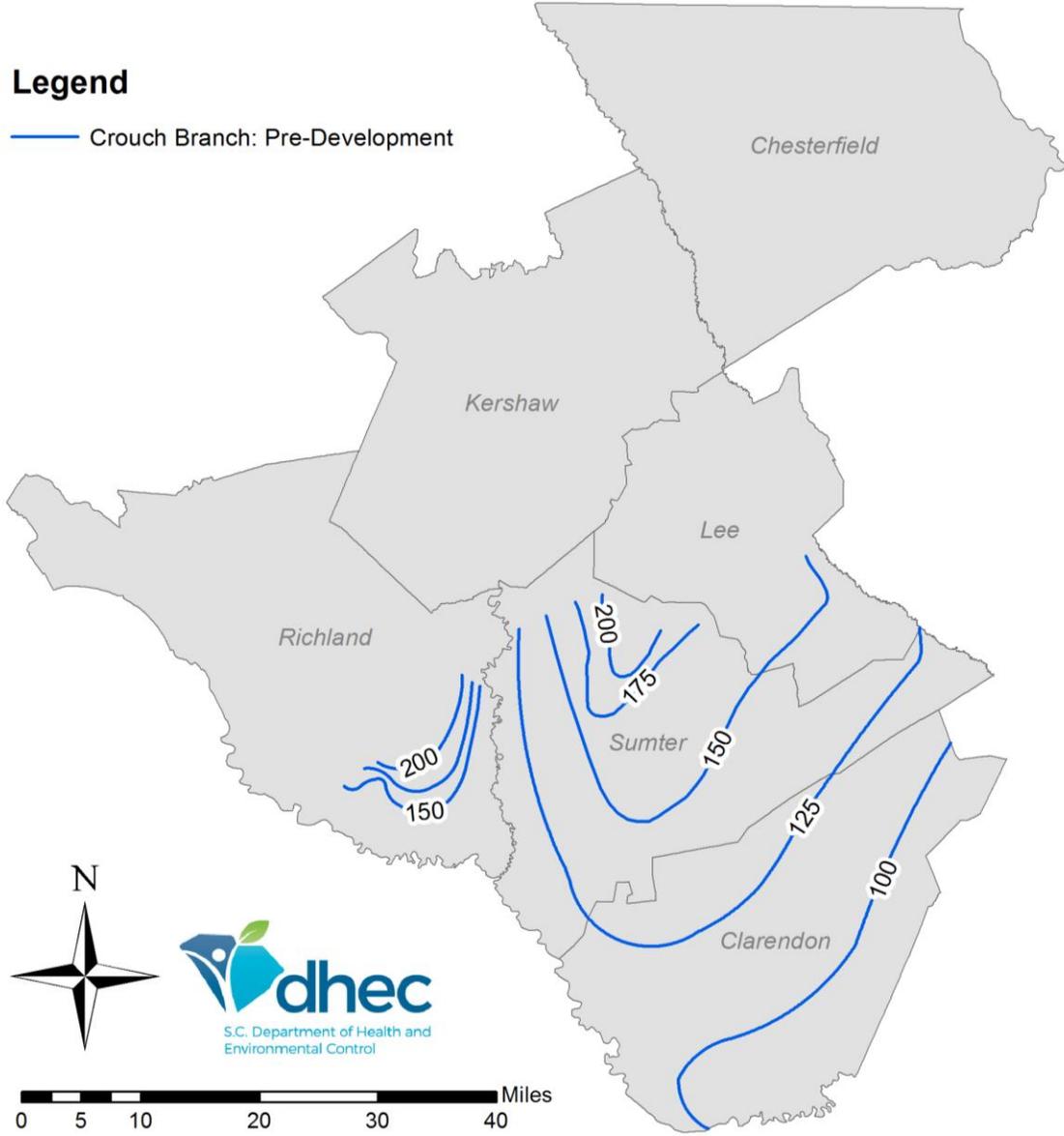


# Crouch Branch Aquifer



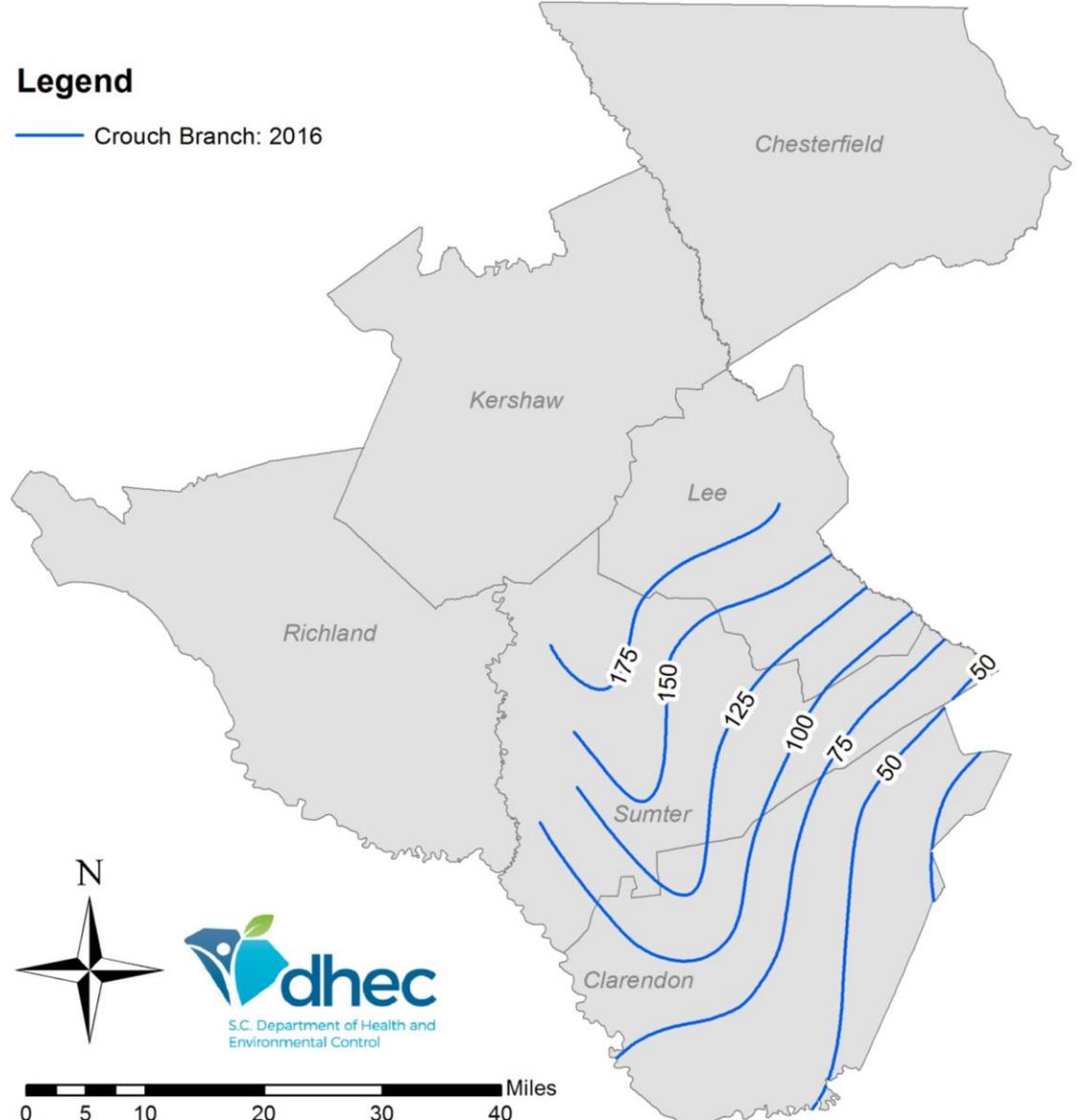
### Legend

— Crouch Branch: Pre-Development

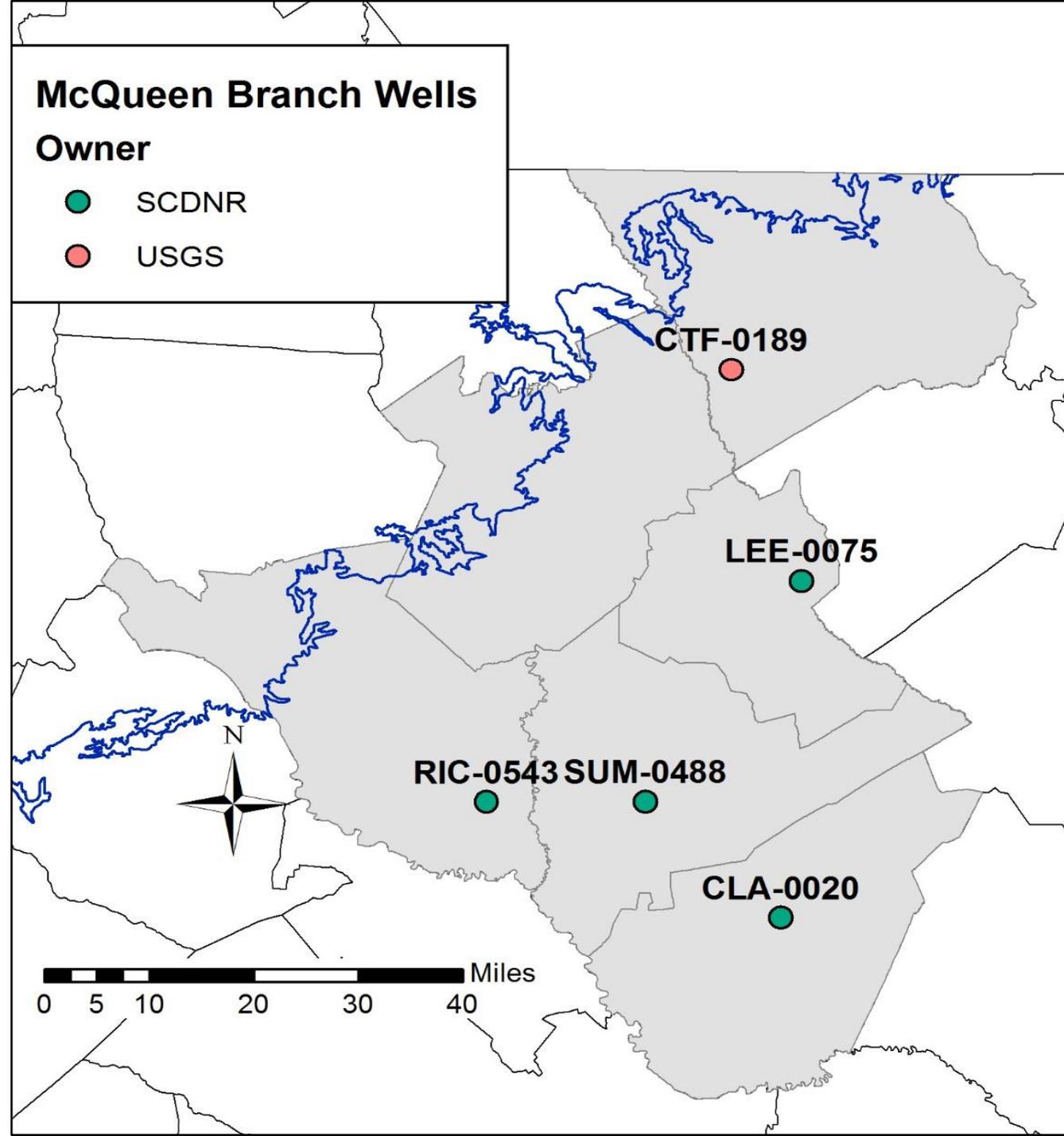


### Legend

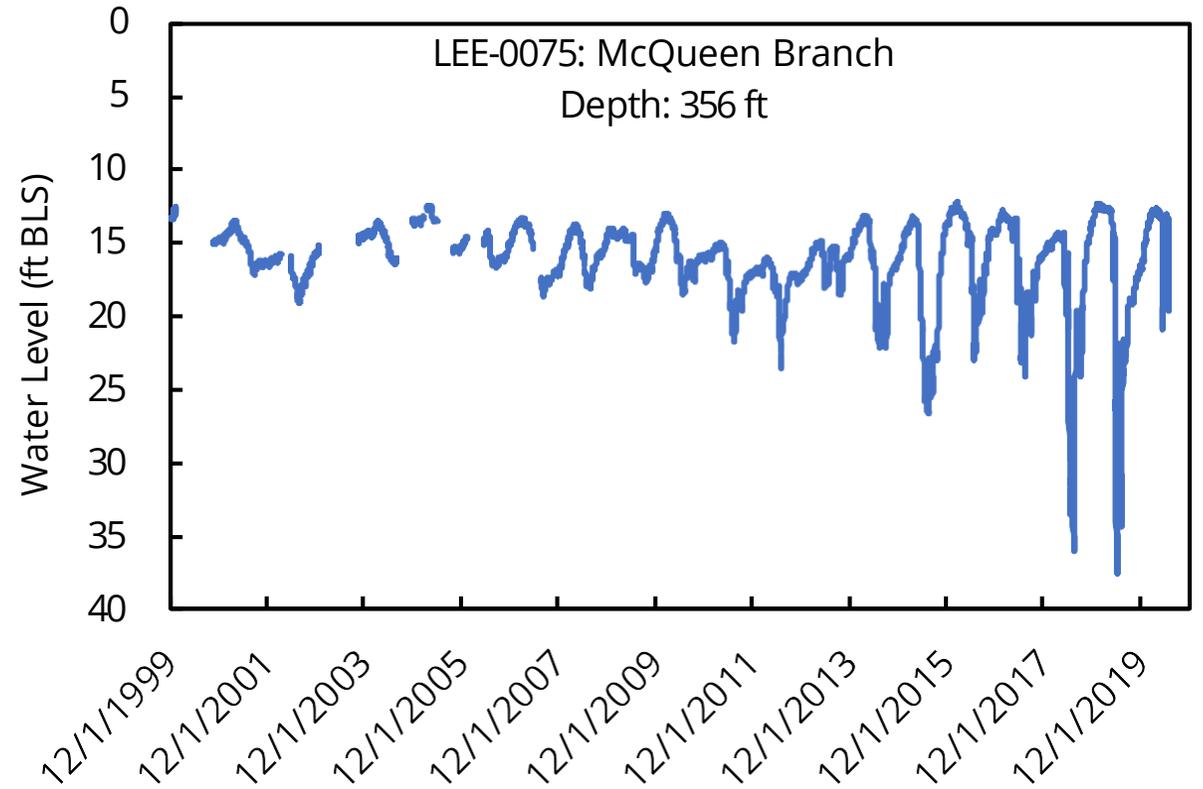
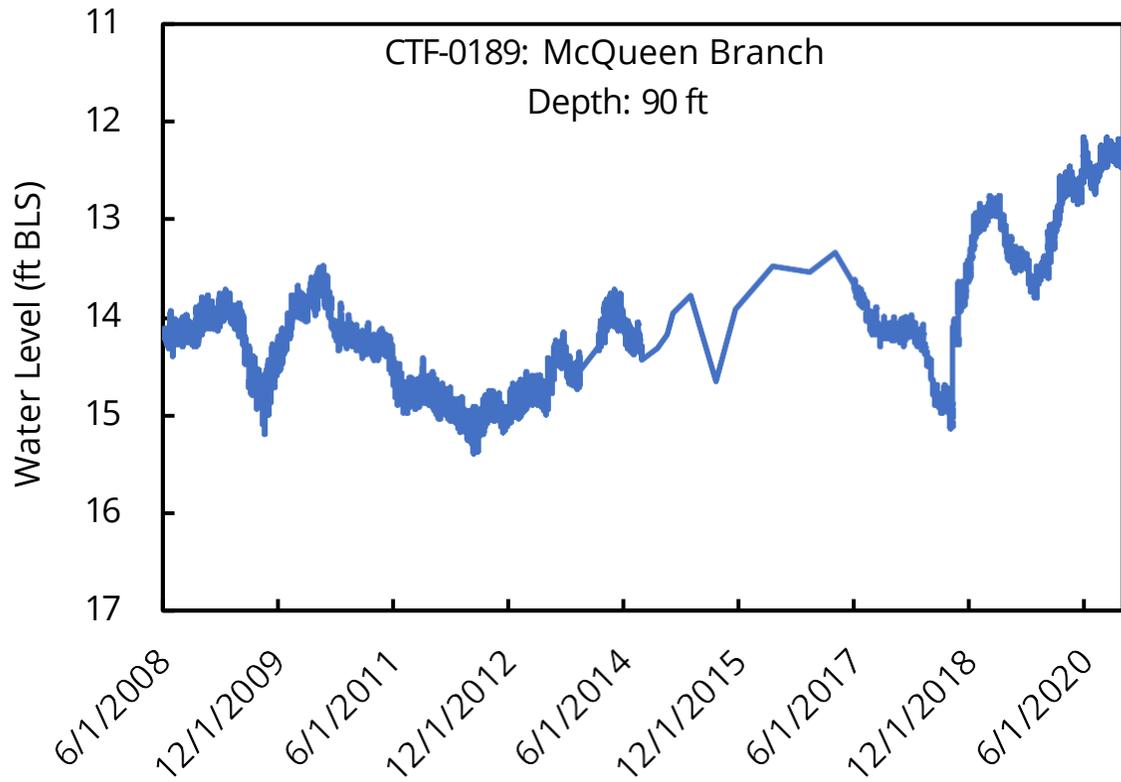
— Crouch Branch: 2016



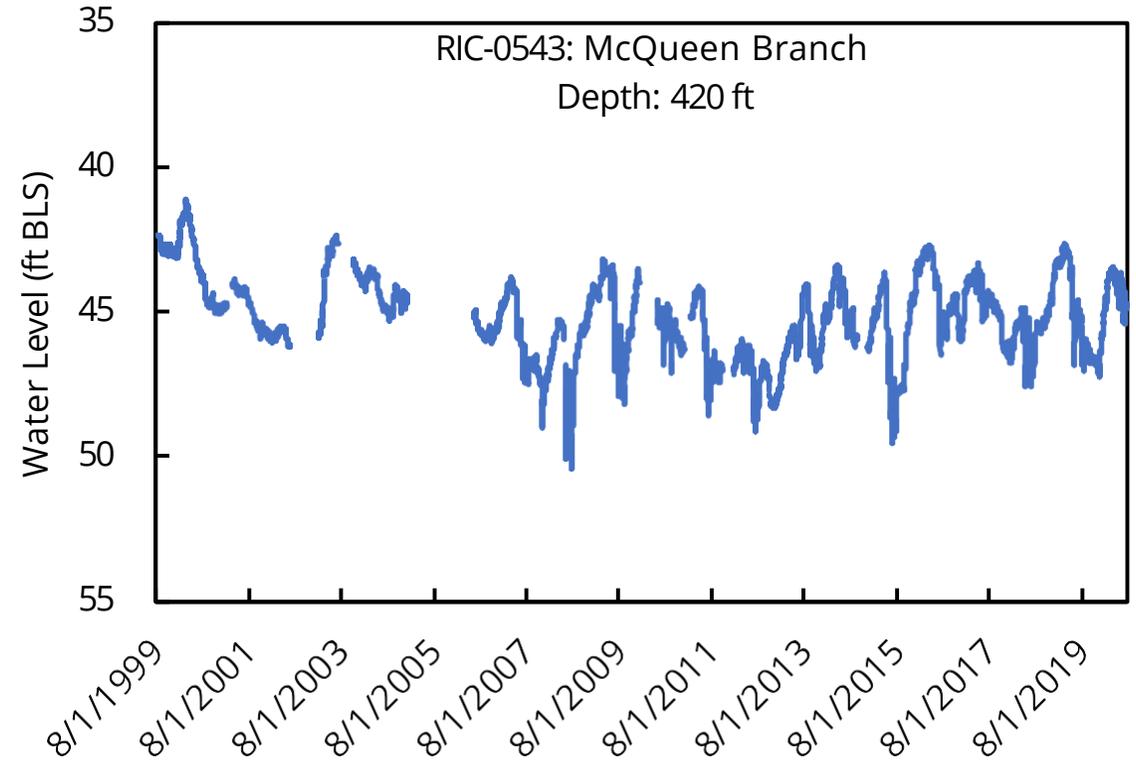
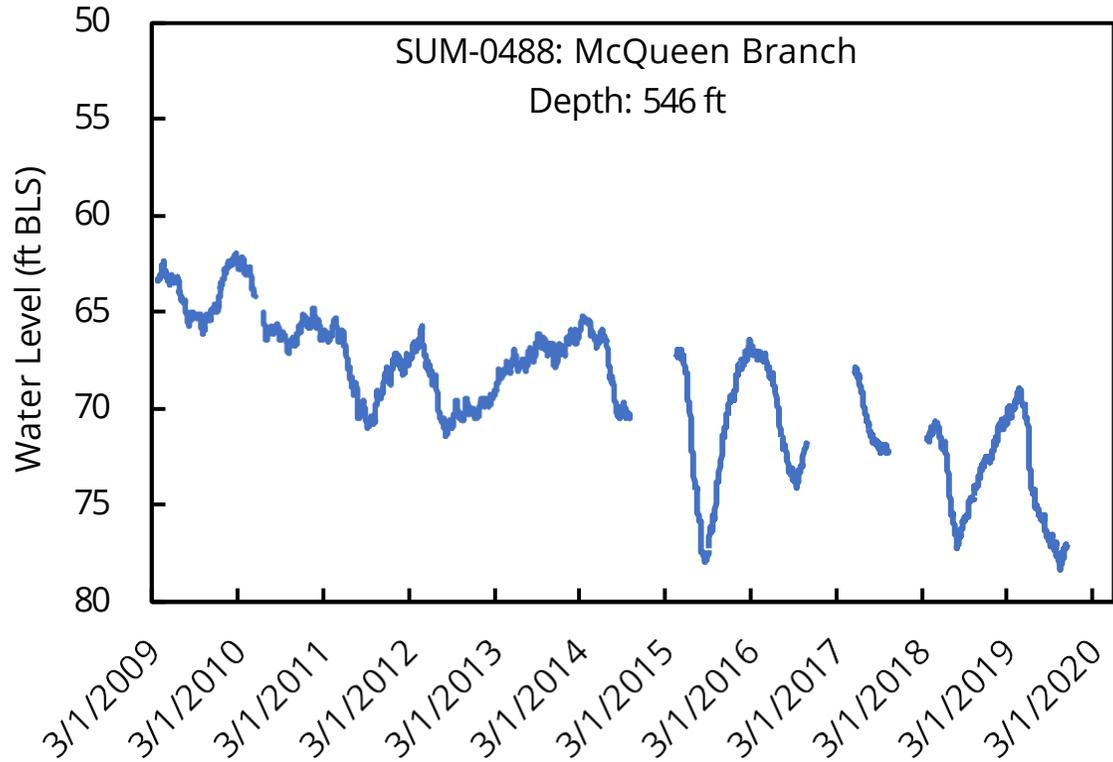
# McQueen Branch Aquifer



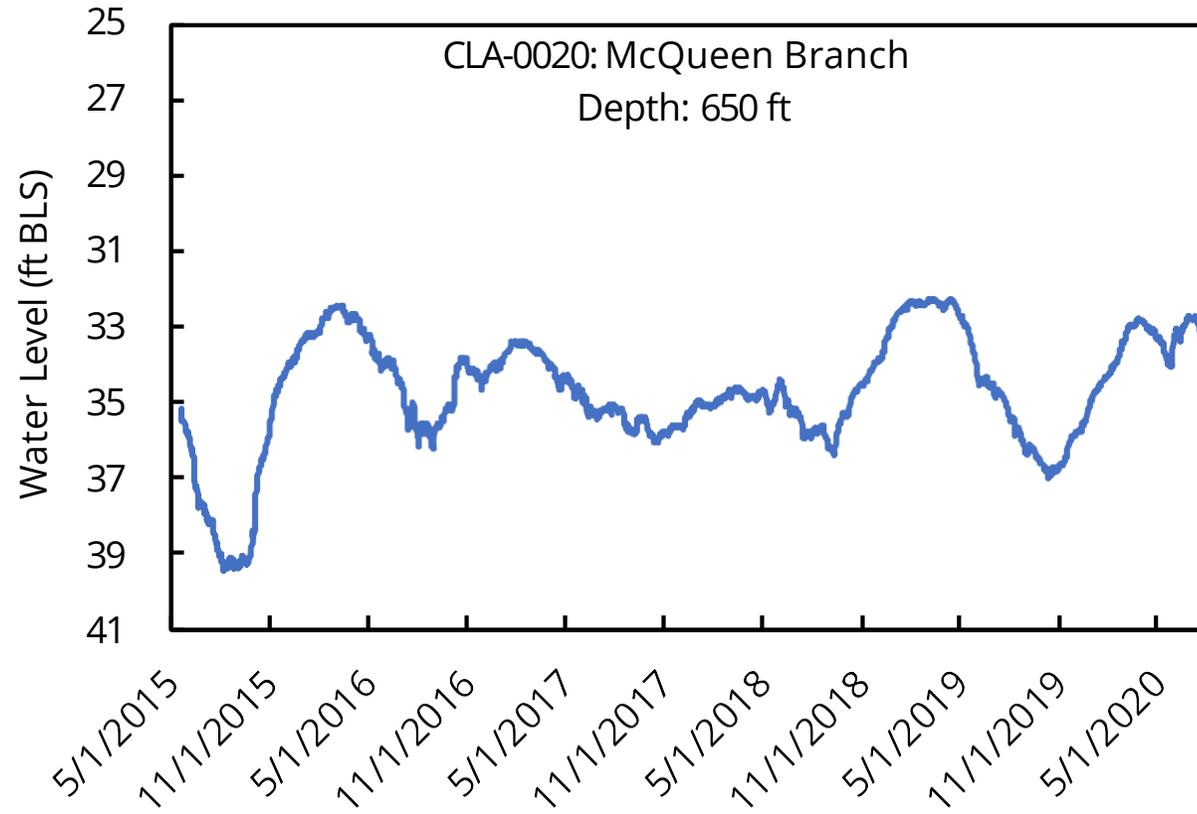
# McQueen Branch Aquifer



# McQueen Branch Aquifer

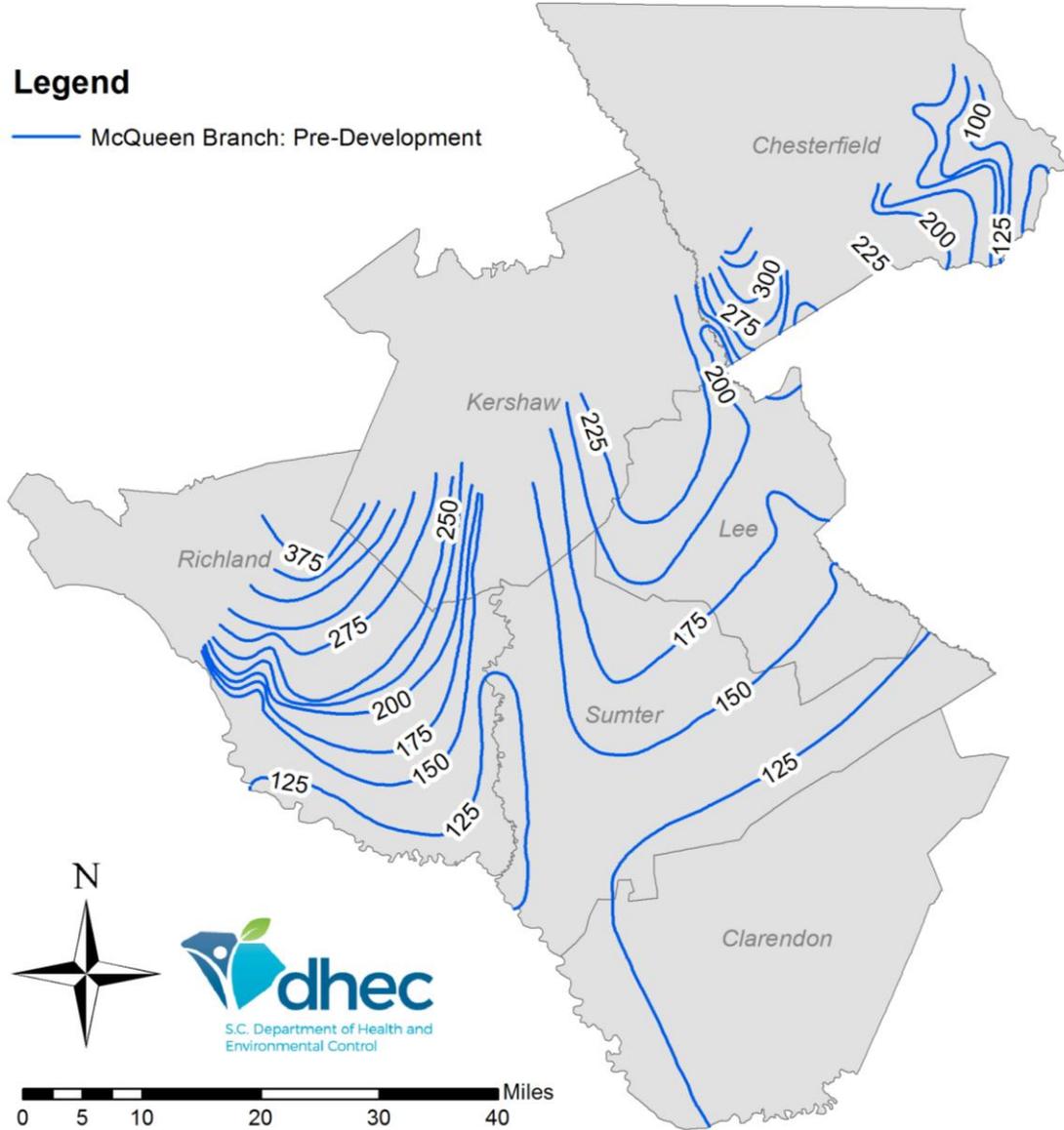


# McQueen Branch Aquifer



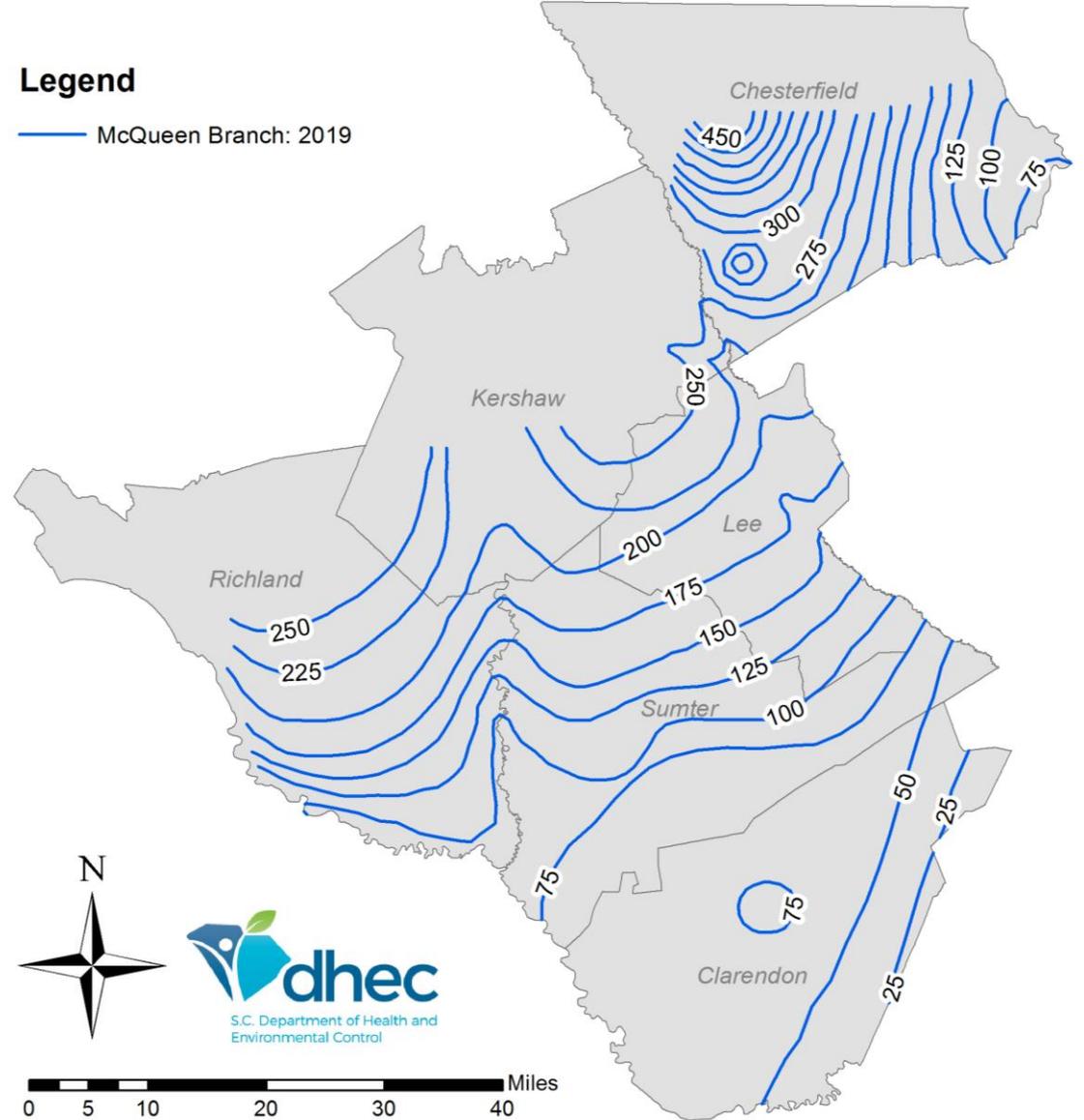
### Legend

— McQueen Branch: Pre-Development



### Legend

— McQueen Branch: 2019



What trends and concerns need to be addressed in the Santee-Lynches Groundwater Management Plan?



South Carolina Department of Health and Environmental Control

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Questions?

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## Stay Connected





# Permitting Process for the Santee-Lynches



# Permitting Process

1. An application and required documentation is submitted to the Department by a potential groundwater withdrawer
2. Department reviews application for completeness
3. Department performs a technical review of permit
4. All new and modified permits are Public Noticed
5. A Permit to Construct is issued if new wells are requested to be installed
  - Is not a Permit to Withdraw, only authorized construction of the well(s)
6. Permit to Withdraw is issued
  - If a new well was installed, the Department requires well records be submitted prior to issuance of a permit



**Groundwater Withdrawal Permit Application  
Bureau of Water**

**A. General Information.**

1. Facility Name:	
2. Facility Owner:	7. Contact:
3. Facility Address: City: _____ State: _____ Zip: _____	8. Contact Address: City: _____ State: _____ Zip: _____
4. Facility Telephone Number:	9. Contact Telephone Number:
5. Facility Fax Number:	10. Contact Fax Number:
6. Owner E-mail Address:	11. Contact E-mail Address:

12. Type of Application:     New         Modification         Renewal

13. Total Requested Withdrawal Rates.  
 A. Million Gallons per Month: \_\_\_\_\_ B. Million Gallons per Year: \_\_\_\_\_

14. Purpose of Groundwater Withdrawal: (please indicate number of wells beside description which best applies, total below should equal total number of wells owned).

Aquaculture (AQ)	Number: _____	Agricultural Irrigation (IR)	Number: _____
Golf Course Irrigation (GC)	Number: _____	Other (OT)	Number: _____
Industrial (IN)	Number: _____	Water Supply (WS)	Number: _____

15. Road map of Facility must be included for application review (please make sure all roads leading to the site entrance are labeled).

16. Site map of all wells labeled for the facility must be included for application review (wells for agricultural irrigation must indicate fields to be irrigated as well as the size of each field, and crop to be grown).

17. Describe all groundwater conservation practices in use, or to be in use, including Best Management Practices. (These include, but are not limited to, highly efficient equipment, wetting agents, other water sources, groundwater recycling, withdrawing from alternate aquifer, equipment maintenance.)

18. Complete the following table for proposed wells.

Well ID	Latitude	Longitude	Depth	Screened/Op- en Interval	Est. Yield (In GPM)	Flow Measurement Method
1)						
2)						
3)						
4)						
5)						
6)						
7)						
8)						

19. Complete the following table for all wells. Use abbreviations provided on previous page for Type of Use.

Well ID	Type of Use	Max. monthly withdrawal rate (in million gallons)	Max. yearly withdrawal rate (in million gallons)
1)			
2)			
3)			
4)			
5)			
6)			
7)			
8)			
9)			
10)			
11)			
12)			
13)			
14)			
15)			
16)			
17)			
18)			

20. Please complete the following table for all other sources of water.

Owner ID - Purchased, Effluent, or Surface Water	Type of Use	Million Gallons per Month	Million Gallons per Year

**B. Agricultural Irrigation.**

Field / Course ID	Vegetation	Acres
1)		
2)		
3)		
4)		
5)		
6)		
7)		
8)		
9)		
10)		
11)		
12)		
	<b>Total Acres Irrigated:</b>	

**2. Groundwater Requirements.**

Crop	Length of Growing Season (wks)	Water Requirement (in)
1)		
2)		
3)		
4)		
5)		
6)		
7)		

**C. Industry.**

1. Describe your operation, including the types of products produced, and the uses for groundwater in the industrial process. Please include reason to use groundwater rather than alternative sources of water.

2. Please Estimate to the best of your ability the volume of groundwater to be withdrawn and used for each industrial process. i.e. If you have 3 separate cooling processes, please list them separately by a known name such as 1,2,3, etc.

Process ID	Million Gallons per Month	Million Gallons per Year
Processing:		
Cleaning:		
Cooling:		

**D. Golf Course.**

1. Number of acres irrigated:

2. Type of grass on course:

3. Are there any groundwater alternatives available?

<b>E. Public Water Supply.</b>	
1. Current number of customers served: <input type="text"/>	
2. Current number of taps: <input type="text"/>	
3. Amount of water sold to other entities (i.e. public water supply, industry, etc.):	
Entity	Amount of Water Sold (million gallons)
1) <input type="text"/>	<input type="text"/>
2) <input type="text"/>	<input type="text"/>
3) <input type="text"/>	<input type="text"/>
4) <input type="text"/>	<input type="text"/>
5) <input type="text"/>	<input type="text"/>
6) <input type="text"/>	<input type="text"/>
7) <input type="text"/>	<input type="text"/>
8) <input type="text"/>	<input type="text"/>
<b>F. Signature.</b>	
I hereby certify the information enclosed is true, complete, and that conservation measures will be researched and enacted when economically feasible.	
<input type="text"/>	<input type="text"/>
Printed/Typed Name <input type="text"/>	Title <input type="text"/>
Personal information provided on this document is subject to public scrutiny or release.	
<input type="text"/>	<input type="text"/>
Signature	Date (MM/DD/YYYY) <input type="text"/>
<p>An application guideline, permitting process outline, and a brief summary of the Groundwater Use and Reporting Act is included with this application. The Groundwater Use and Reporting Act summary provides the owner with a brief description of the laws that govern this application. The guideline is provided to help the applicant correctly complete the application. The outline provides a list of steps to be completed by the applicant and the Department. It is important that these steps be followed closely, because no action will be taken by the Department until each step in the outline is completed and correct. If any information received is not correct then the party in charge of the permitting will be informed. If the required information is not received, or is late, and the Department is not notified at least 15 days prior, the permit may be delayed, denied, or revoked.</p>	

- Site Map showing proposed withdrawal locations
- Proposed well construction diagram
- Additional Information may be needed on site specific basis

\* No fee for application

## What is needed now?

- Existing registered users do not need to take action until contacted by the department.
  - When the GWMP is approved by the DHEC Board
  - Application for groundwater withdrawal permit will be needed at that time
- New or unregistered users should submit an application for Groundwater Withdraw to DHEC.
  - Permits will be reevaluated and reissued once the GWMP is approved