South Carolina Department of Health and Environmental Control

PPAC Groundwater Permitting Update

Alex Butler

Bureau of Water

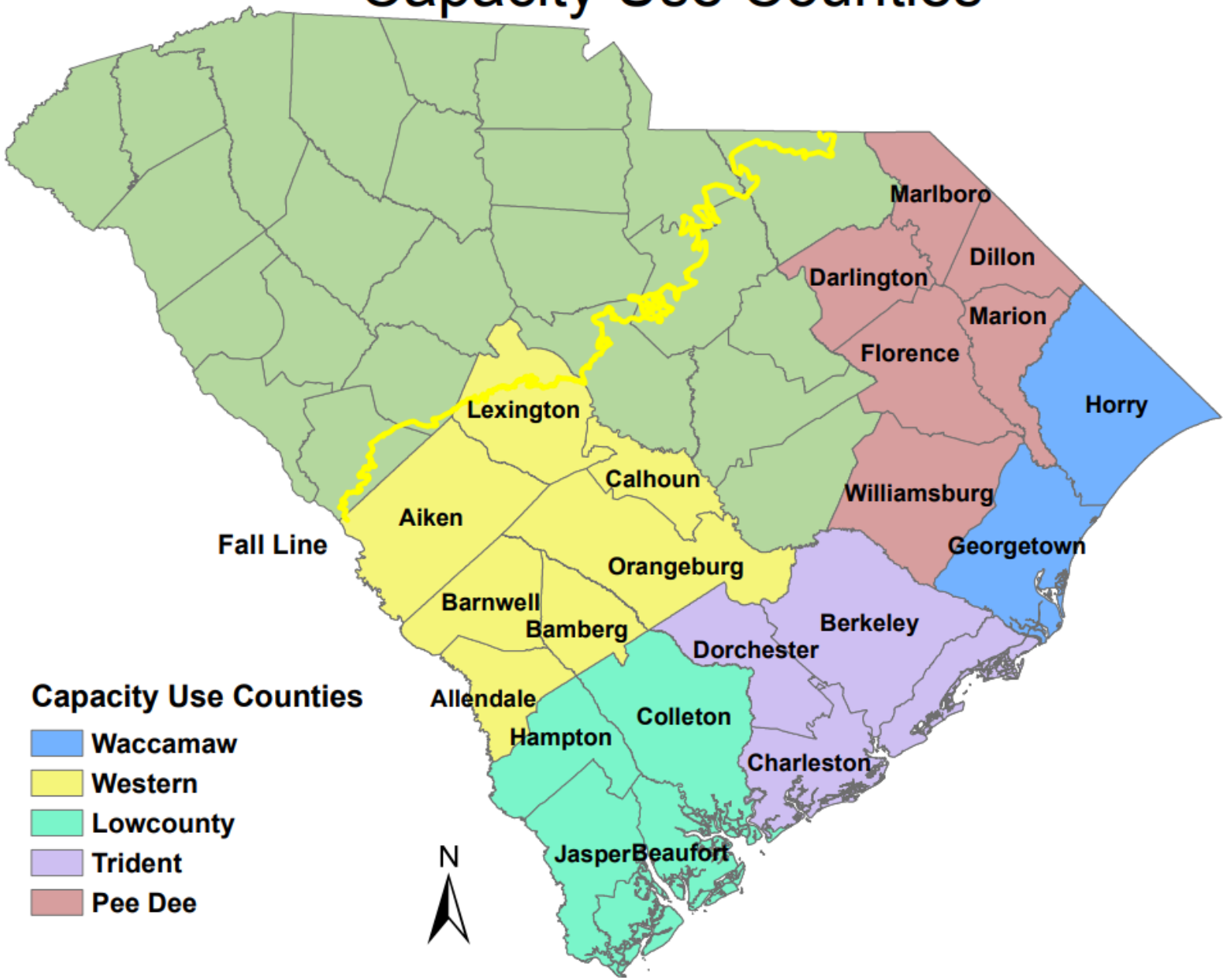
Groundwater Use and Reporting Act
Legislative Declaration of Policy

"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."

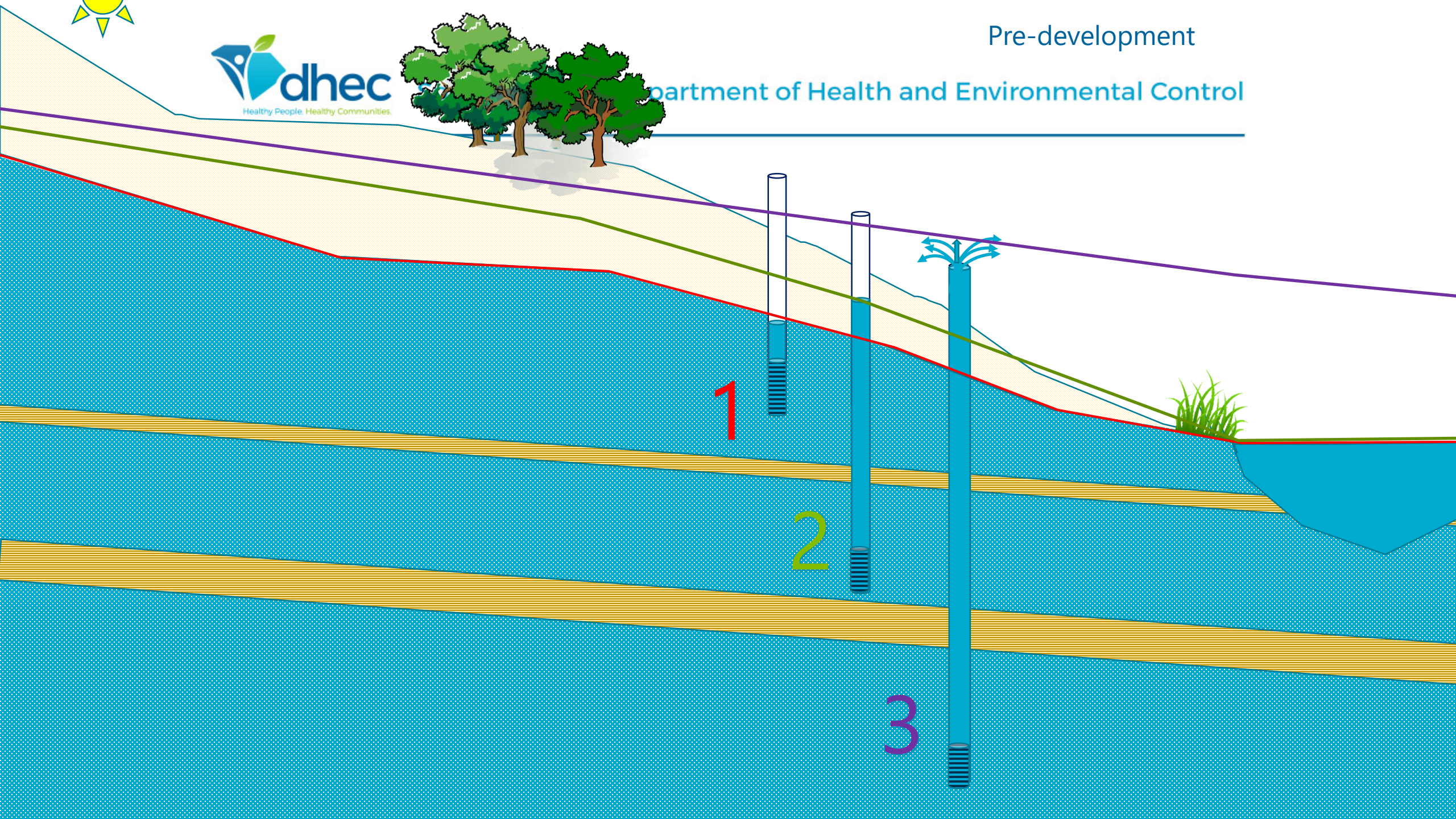
Capacity Use Area Designation 45-5-60(A)

In the State where excessive groundwater withdrawal presents potential adverse effects to the natural resources 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 salt water intrusion, the board, after notice and public hearing, in accordance with the Administrative Procedures Act, shall designate a capacity use area.

Capacity Use Counties

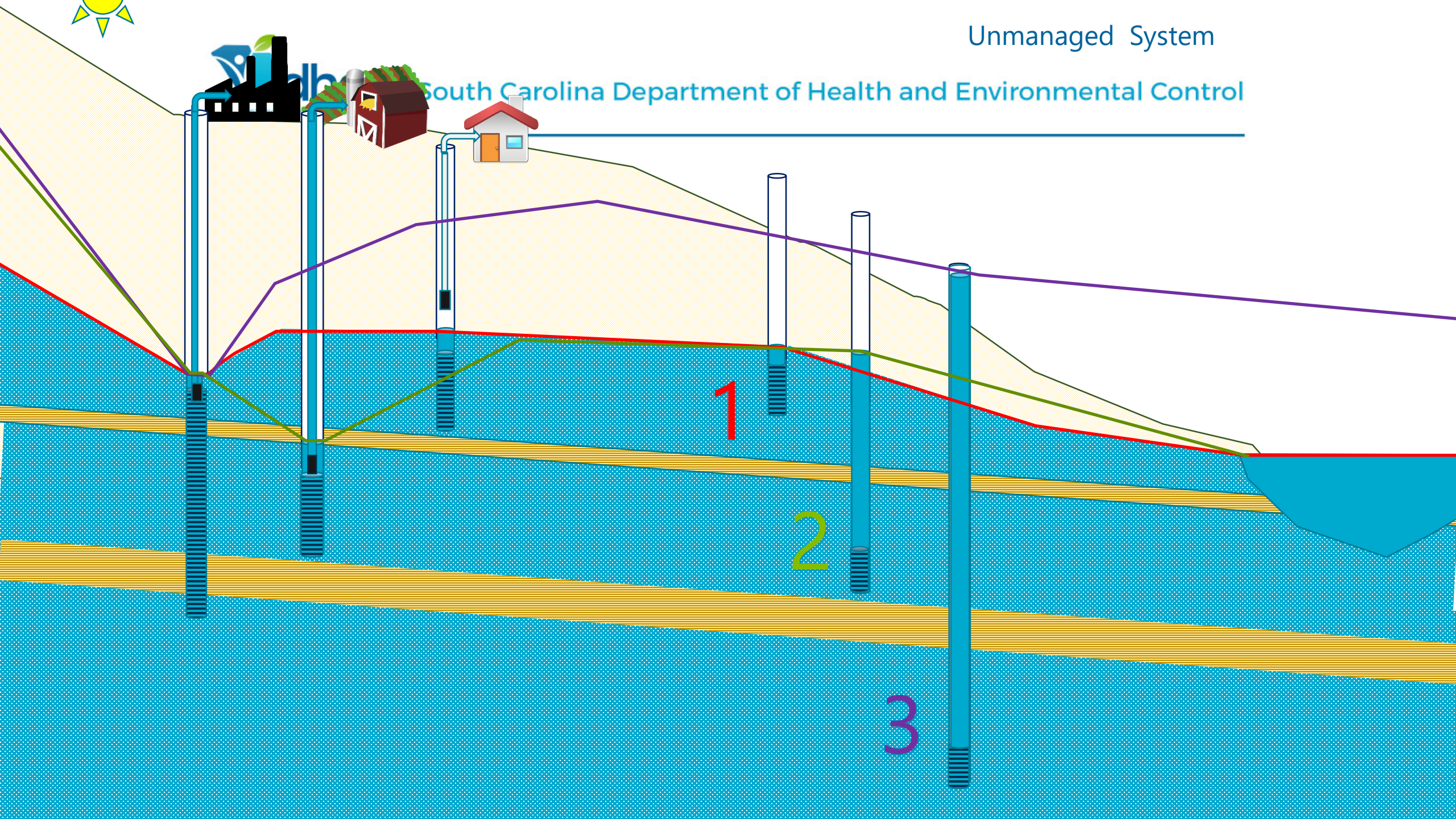


Pre-development

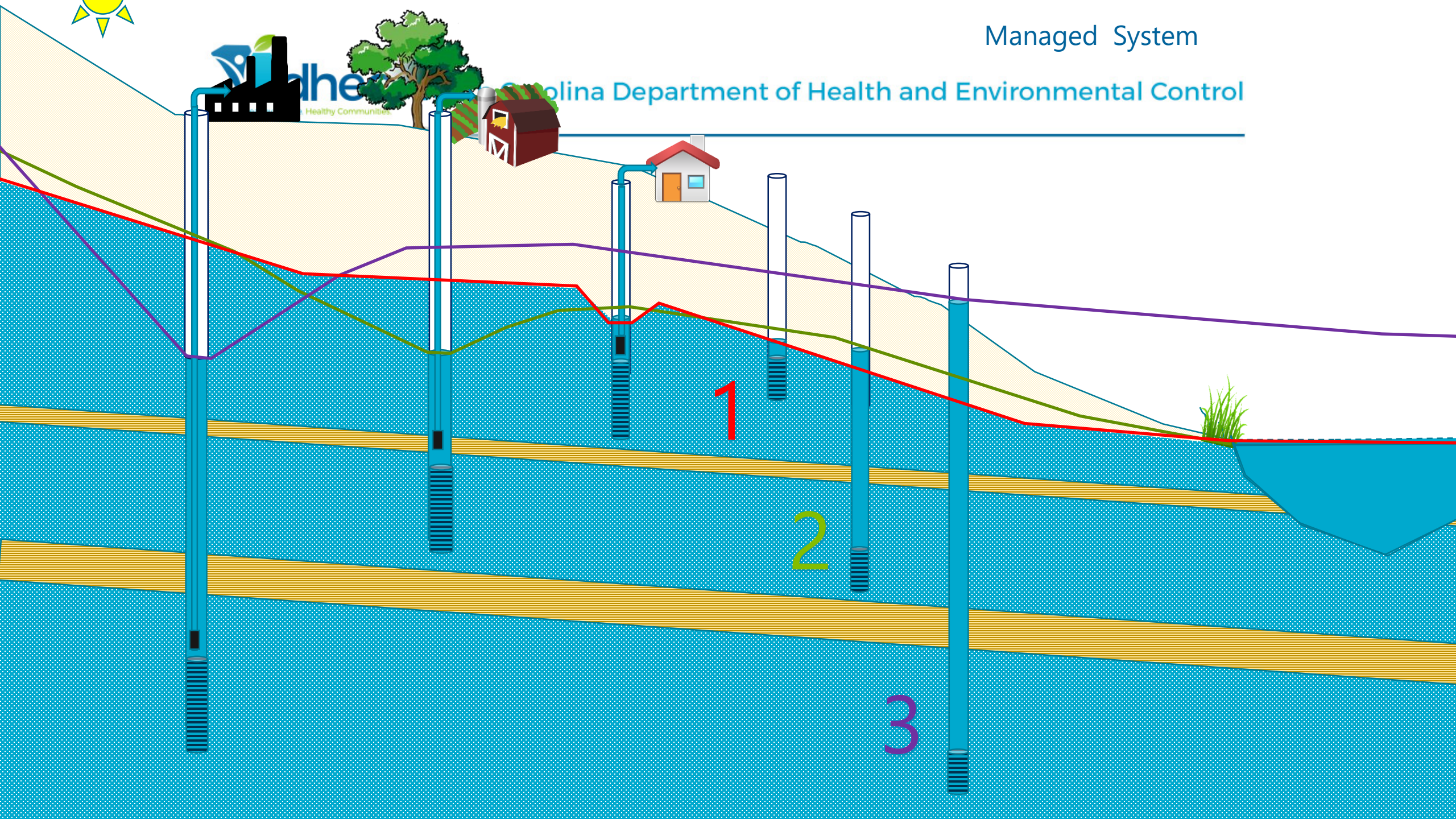


Unmanaged System

South Carolina Department of Health and Environmental Control



Managed System



Groundwater Management Planning 45-5-60(B)

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] .

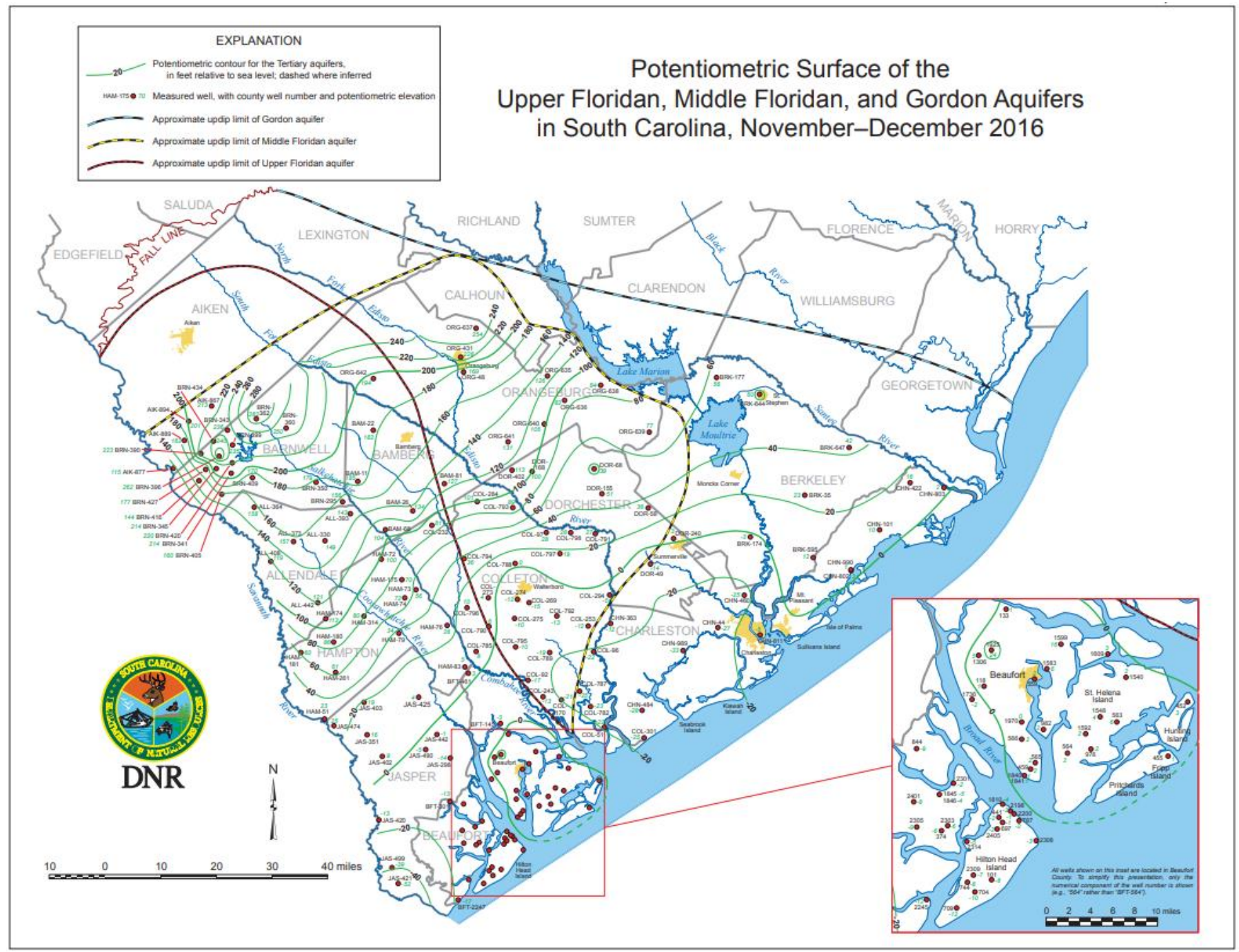
In those areas where the affected governing bodies and withdrawers are unable to develop a plan, the department shall take action to develop the plan.

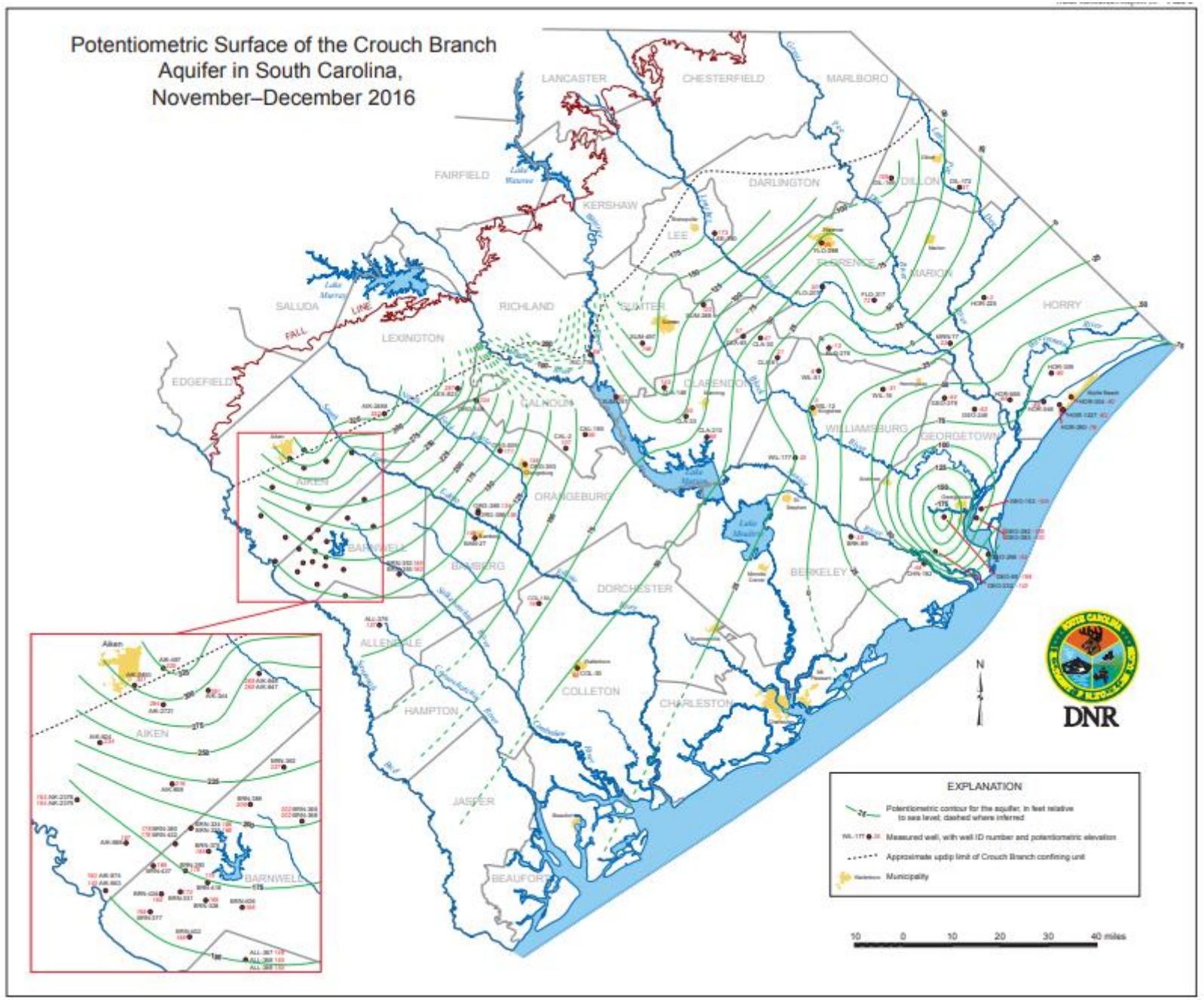
Groundwater Withdrawal Permitting 45-5-60(C)

Once the board approves the groundwater management plan for a designated capacity use area , each withdrawer shall make application for a groundwater withdrawal permit . The department shall issue groundwater withdrawal permits in accordance with the approved plan.

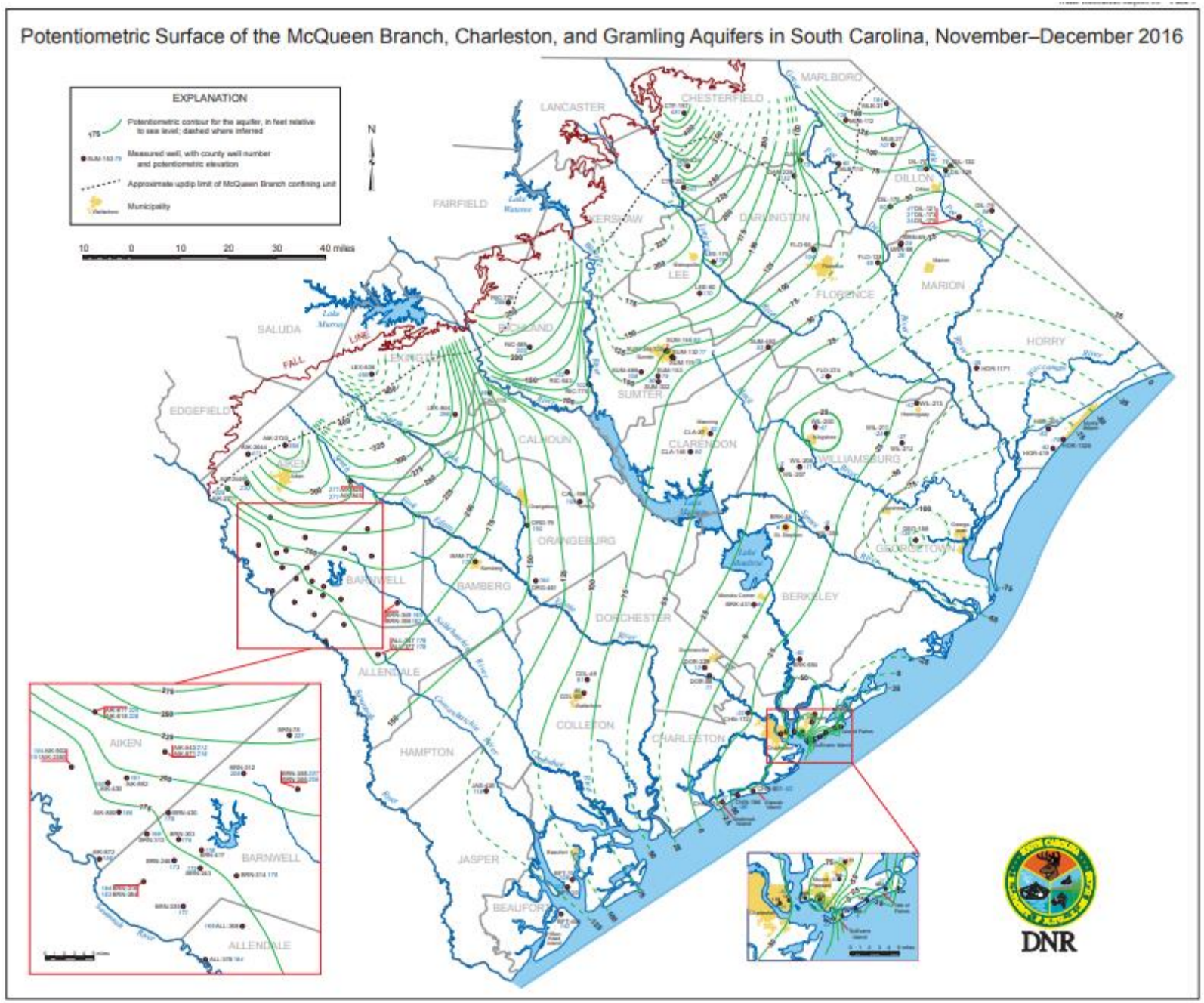
Strategy #1: Identify areas where a leveling and/or reduction in pumping is appropriate.

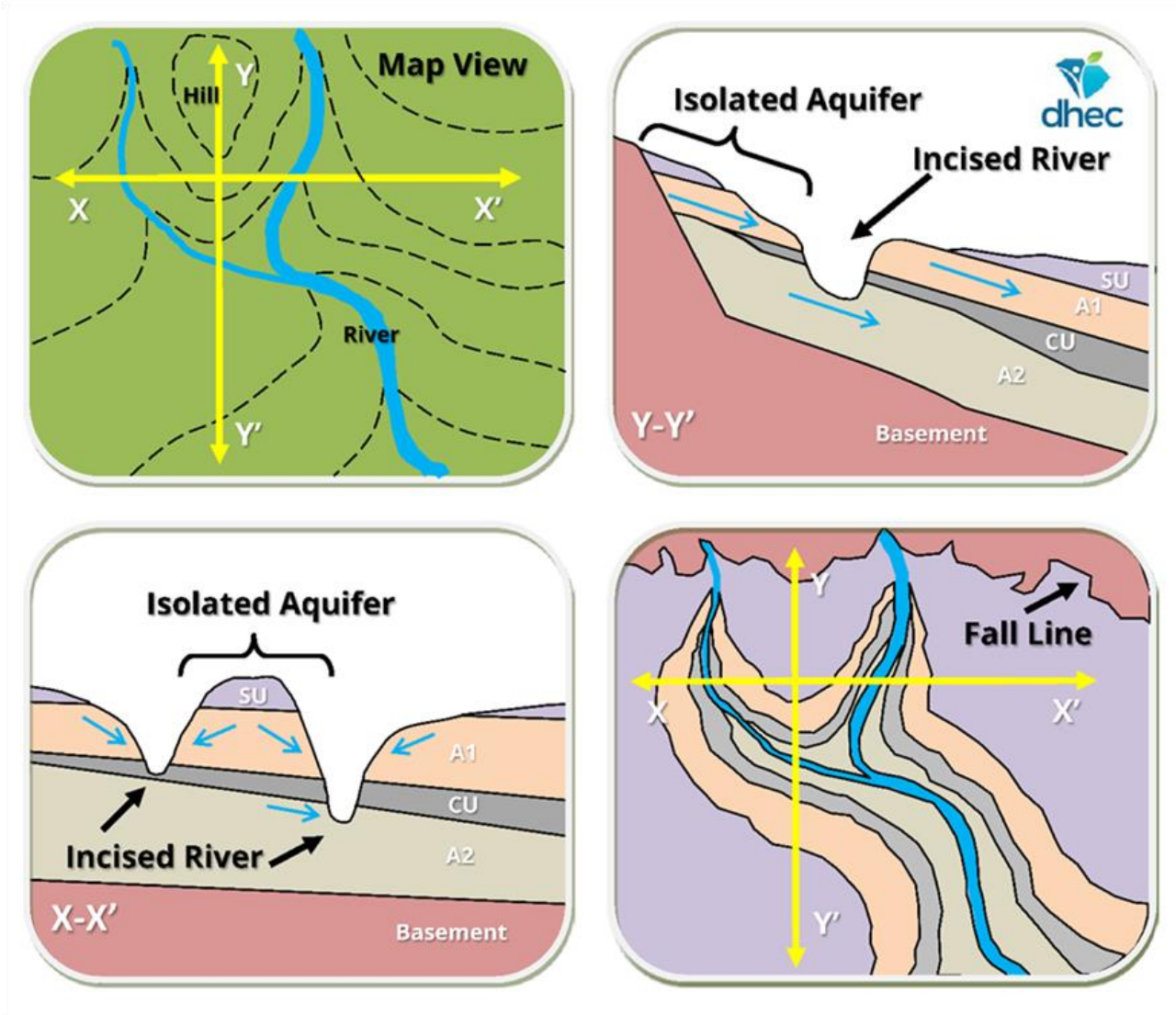
Prior to each permit renewal cycle, SCDHEC will consider the best available information on the geologic and hydrogeologic characteristics of the aquifer(s) and groundwater withdrawals of the area to protect against or abate unreasonable, or potentially unreasonable, adverse effects on the aquifer(s)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

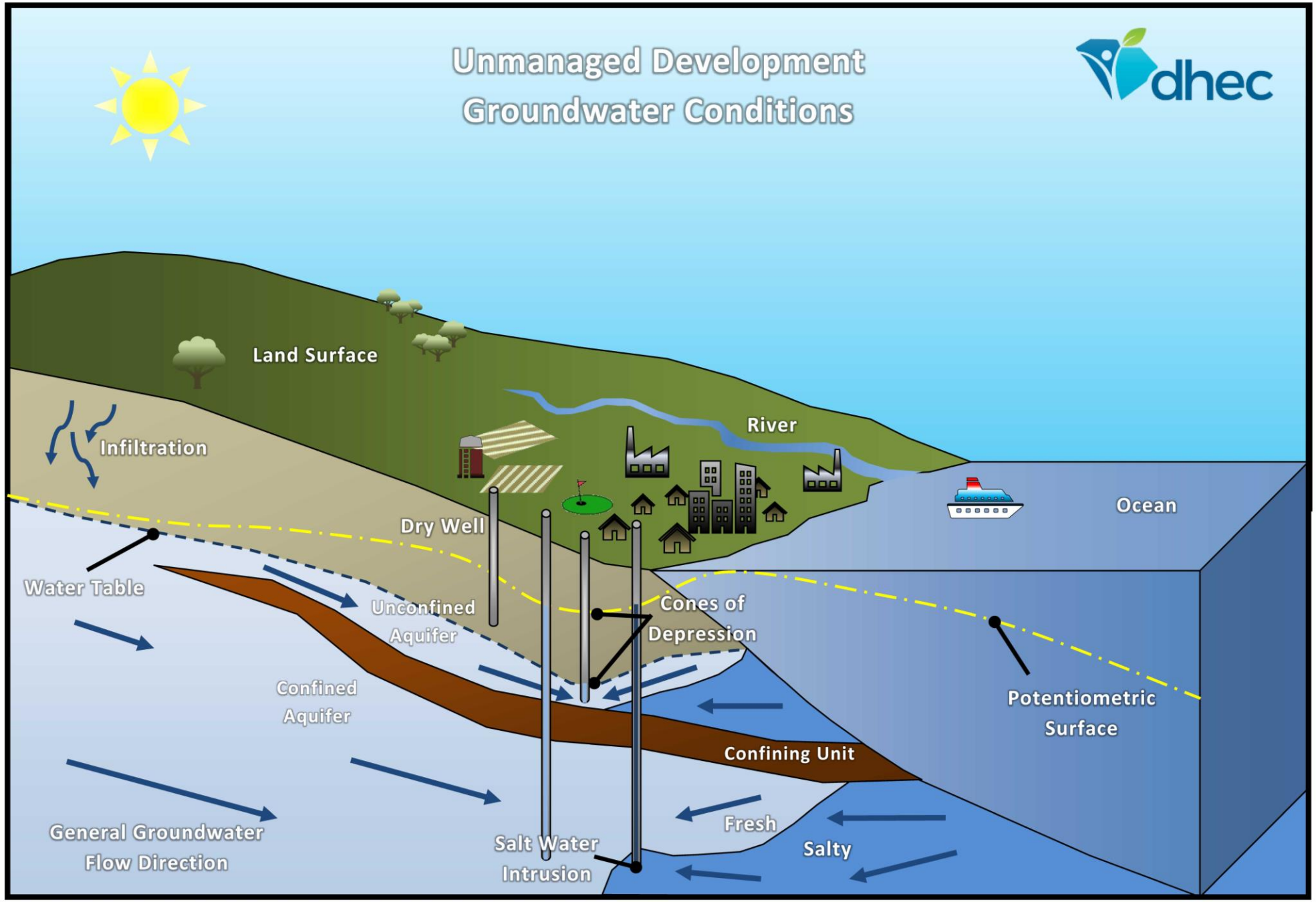

EXPLANATION
Potentiometric contour for the Tertiary aquifers, in feet relative to sea level; dashed where inferred
Measured well, with county well number and potentiometric elevation
Approximate updip limit of Gordon aquifer
Approximate updip limit of Middle Floridan aquifer
Approximate updip limit of Upper Floridan aquifer
Potentiometric Surface of the Upper Floridan, Middle Floridan, and Gordon Aquifers in South Carolina, November–December 2016
SALUDA
EDGEFIELD
FALL LINE
LEXINGTON
RICHLAND
SUMTER
FLORENCE
MARION
HORRY
AIKEN
CALHOUN
CLARENDON
WILLIAMSBURG
GEORGETOWN
ORANGEBURG
BARNWELL
BAMBERG
BERKELEY
DORCHESTER
ALLENDALE
COLLETON
HAMPTON
CHARLESTON
JASPER
BEAUFORT
Lake Marion
Lake Moultrie
North Fork Edisto
South Fork Edisto
Salkehatchie River
Savannah River
Coosawhatchie River
Combahee River
Black River
Santee River
Broad River
Beaufort
St. Helena Island
Hunting Island
Fripp Island
Pritchards Island
Hilton Head Island
All wells shown on this inset are located in Beaufort County. To simplify this presentation, only the numerical component of the well number is shown (e.g., "564" rather than "BFT-564").
DNR
N
10 0 10 20 30 40 miles
0 2 4 6 8 10 miles

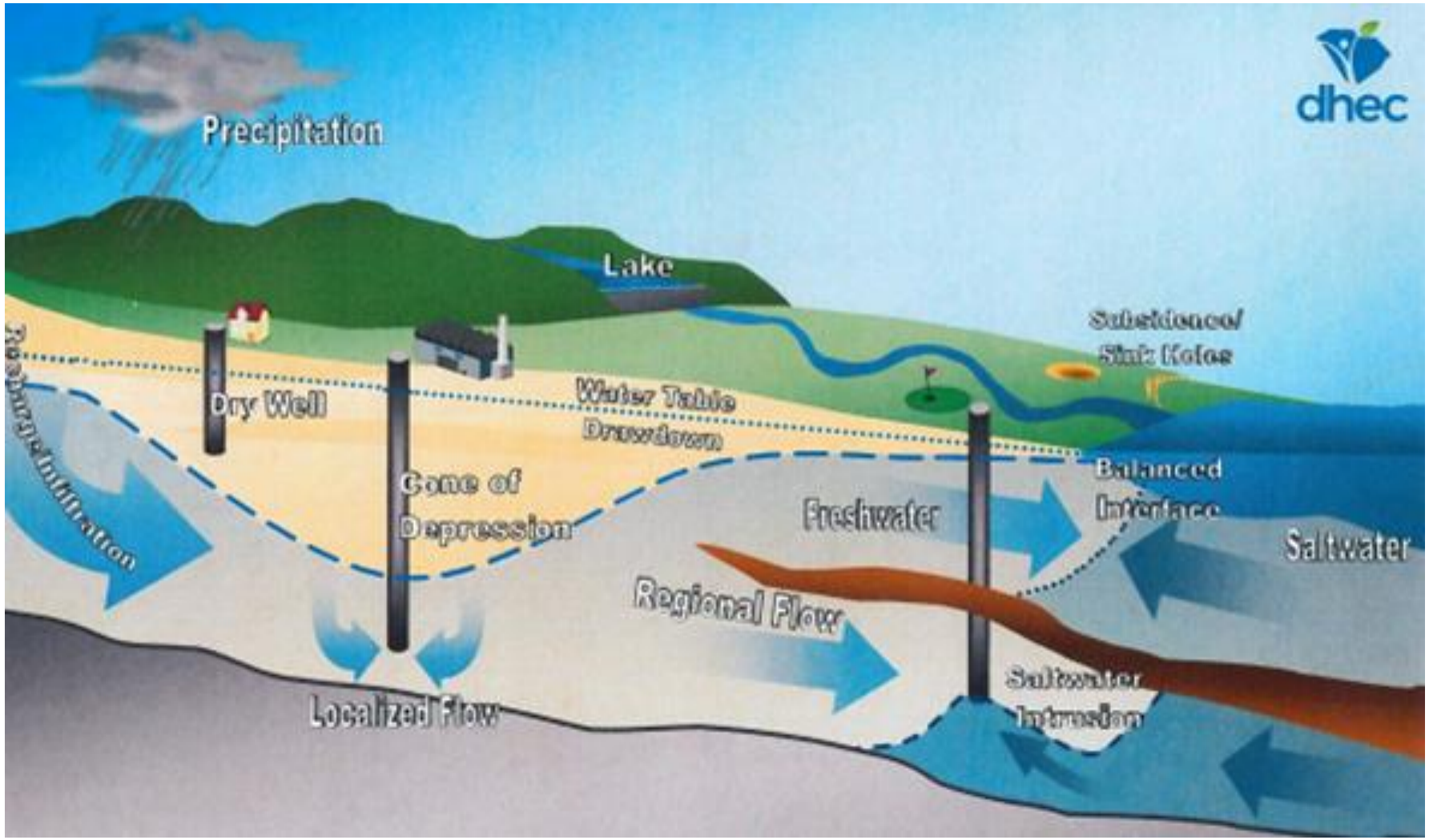

Potentiometric Surface of the Crouch Branch Aquifer in South Carolina, November–December 2016
LANCASTER
CHESTERFIELD
MARLBORO
FAIRFIELD
DARLINGTON
DILLON
KERSHAW
LEE
FLORENCE
MARION
SALUDA
RICHLAND
SUMTER
HORRY
LEXINGTON
EDGEFIELD
CLARENDON
CALHOUN
WILLIAMSBURG
GEORGETOWN
AIKEN
ORANGEBURG
BARNWELL
BERKELEY
BAMBERG
DORCHESTER
ALLENDALE
COLLETON
CHARLESTON
HAMPTON
JASPER
BEAUFORT
Lake Marion
Lake Moultrie
Lake Murray
Aiken
Barnwell
N
DNR
EXPLANATION
Potentiometric contour for the aquifer, in feet relative to sea level; dashed where inferred
Measured well, with well ID number and potentiometric elevation
Approximate updip limit of Crouch Branch confining unit
Municipality
10 0 10 20 30 40 miles

Potentiometric Surface of the McQueen Branch, Charleston, and Gramling Aquifers in South Carolina, November–December 2016




Map View
Hill
Y
X
X'
River
Y'
Isolated Aquifer
dhec
Incised River
SU
A1
CU
A2
Y-Y'
Basement
Isolated Aquifer
SU
A1
CU
Incised River
A2
X-X'
Basement
Y
Fall Line
X
X'
Y'


Unmanaged Development
Groundwater Conditions
dhec
Land Surface
Infiltration
River
Ocean
Dry Well
Water Table
Unconfined
Aquifer
Cones of
Depression
Confined
Aquifer
Potentiometric
Surface
Confining Unit
General Groundwater
Flow Direction
Salt Water
Intrusion
Fresh
Salty


Precipitation
Lake
Subsidence/
Sink Holes
Dry Well
Water Table
Drawdown
Recharge/Infiltration
Cone of
Depression
Freshwater
Balanced
Interface
Saltwater
Regional Flow
Localized Flow
Saltwater
Intrusion

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

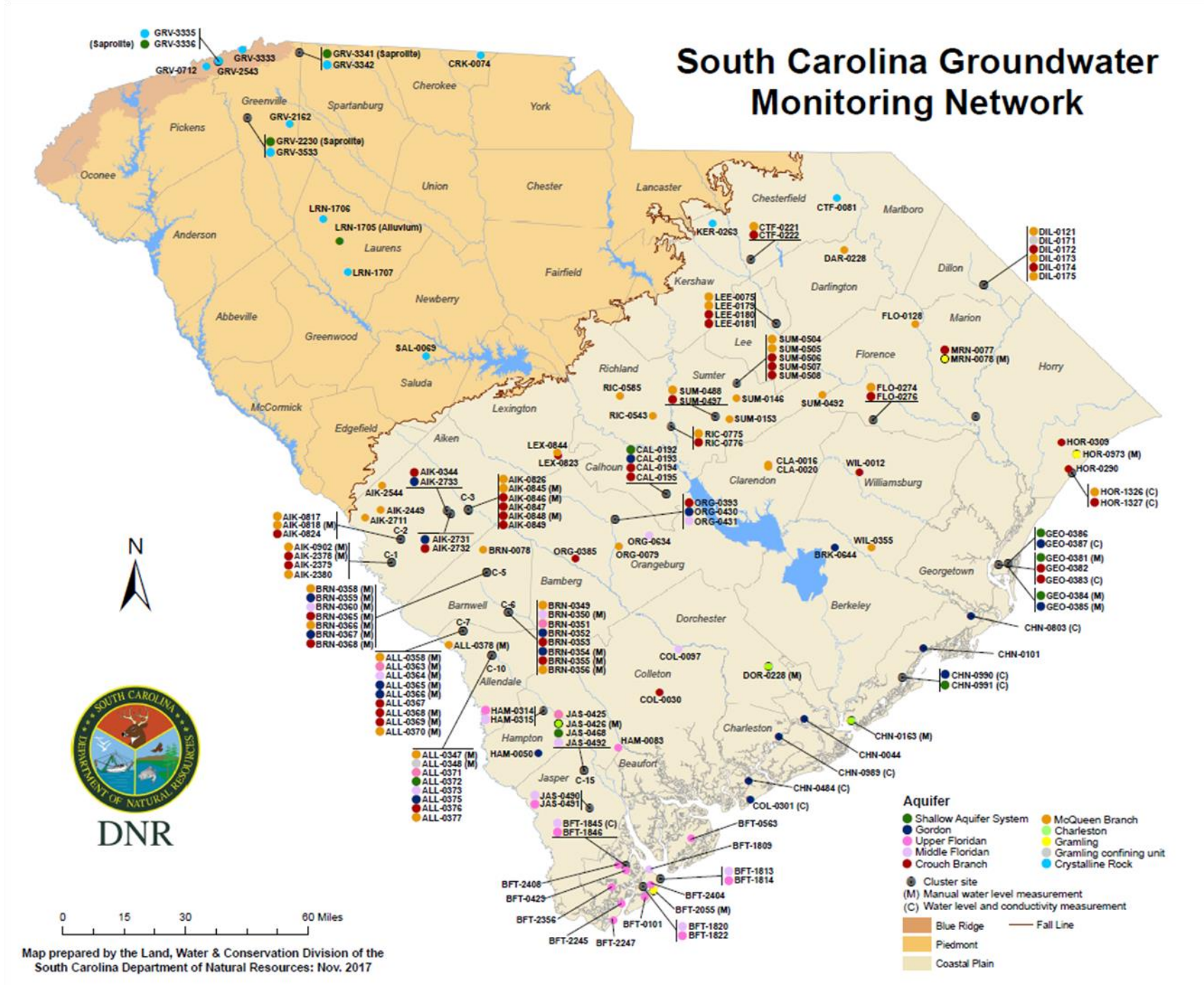
Proposed withdrawals will be evaluated considering reasonableness of use and need, aquifer(s) being utilized, potential adverse effects on adjacent groundwater withdrawers, previous reported water use, anticipated demand for the proposed activities, availability of alternate water sources and reported 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.

Reasonable Use Determination by Water Use Type

Water Use Type	General Reasonable Use Guidelines
Aquaculture (AQ)	• Size of operation (acreage) • Depth of holding ponds, lagoons, or lakes • Refill rates
Golf Course (GC)	• Based on current systematic and industry based standards • Application rates • Acreage irrigated • Duration of irrigation
Industry (IN)	• Based on current systematic and industry based standards • Variability based on size and type of industry
Irrigation (IR)	• Based on current systematic and industry based standards • Crop type • Irrigation method • Acreage irrigated • Duration of irrigation • Stress period buffering
Thermo Power (PT)	• Based on current systematic and industry based standards • Availability of alternative water sources
Nuclear Power (PN)	• Based on current systematic and industry based standards
Water Supply (WS)	• Based on current systematic and industry based standards • Population served • Per capita use
Other (OT)	• Variability based on size and type of industry

Strategy #3: Establish a comprehensive groundwater monitoring program.

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 for the Trident Area


South Carolina Groundwater Monitoring Network
GRV-3335 (Saprolite)
GRV-3336
GRV-3333
GRV-0712
GRV-2543
GRV-3341 (Saprolite)
GRV-3342
CRK-0074
Cherokee
York
Greenville
Spartanburg
GRV-2162
Pickens
GRV-2230 (Saprolite)
GRV-3533
Oconee
Union
Chester
Lancaster
Chesterfield
CTF-0081
Marlboro
LRN-1706
LRN-1705 (Alluvium)
Anderson
Laurens
KER-0263
CTF-0221
CTF-0222
DAR-0228
Dillon
DIL-0121
DIL-0171
DIL-0172
DIL-0173
DIL-0174
DIL-0175
LRN-1707
Fairfield
Kershaw
Darlington
Newberry
LEE-0075
LEE-0179
LEE-0180
LEE-0181
FLO-0128
Marion
Abbeville
Greenwood
SAL-0069
Lee
SUM-0504
SUM-0505
SUM-0506
SUM-0507
SUM-0508
Florence
MRN-0077
MRN-0078 (M)
Horry
Richland
Sumter
Saluda
RIC-0585
SUM-0488
SUM-0497
SUM-0146
SUM-0452
FLO-0274
FLO-0276
McCormick
Lexington
RIC-0543
SUM-0153
Edgefield
Aiken
RIC-0775
RIC-0776
LEX-0844
LEX-0823
CAL-0192
CAL-0193
CAL-0194
CAL-0195
Calhoun
CLA-0016
CLA-0020
WIL-0012
Clarendon
Williamsburg
HOR-0309
HOR-0973 (M)
HOR-0290
HOR-1326 (C)
HOR-1327 (C)
AIK-0344
AIK-2733
AIK-2544
AIK-0826
AIK-0845 (M)
AIK-0846 (M)
AIK-0847
AIK-0848 (M)
AIK-0849
C-3
AIK-2449
AIK-2711
C-2
AIK-0817
AIK-0818 (M)
AIK-0824
ORG-0393
ORG-0430
ORG-0431
AIK-0902 (M)
AIK-2378 (M)
AIK-2375
AIK-2380
C-1
AIK-2731
AIK-2732
BRN-0078
ORG-0385
ORG-0634
ORG-0079
Orangeburg
BRK-0644
WIL-0355
Georgetown
GEO-0386
GEO-0387 (C)
GEO-0381 (M)
GEO-0382
GEO-0383 (C)
GEO-0384 (M)
GEO-0385 (M)
C-5
Bamberg
BRN-0358 (M)
BRN-0359 (M)
BRN-0360 (M)
BRN-0365 (M)
BRN-0366 (M)
BRN-0367 (M)
BRN-0368 (M)
Barnwell
C-6
BRN-0349
BRN-0350 (M)
BRN-0351
BRN-0352
BRN-0353
BRN-0354 (M)
BRN-0355 (M)
BRN-0356 (M)
Dorchester
Berkeley
CHN-0803 (C)
C-7
ALL-0378 (M)
CHN-0101
COL-0097
DOR-0228 (M)
CHN-0990 (C)
CHN-0991 (C)
C-10
Allendale
Colleton
COL-0030
ALL-0358 (M)
ALL-0363 (M)
ALL-0364 (M)
ALL-0365 (M)
ALL-0366 (M)
ALL-0367
ALL-0368 (M)
ALL-0369 (M)
ALL-0370 (M)
HAM-0314
HAM-0315
JAS-0425
JAS-0426 (M)
JAS-0468
JAS-0492
HAM-0083
Hampton
Charleston
CHN-0163 (M)
CHN-0044
HAM-0050
CHN-0989 (C)
Beaufort
Jasper
C-15
CHN-0484 (C)
COL-0301 (C)
JAS-0490
JAS-0491
ALL-0347 (M)
ALL-0348 (M)
ALL-0371
ALL-0372
ALL-0373
ALL-0375
ALL-0376
ALL-0377
BFT-1845 (C)
BFT-1846
BFT-0563
BFT-1809
BFT-1813
BFT-1814
BFT-2408
BFT-0429
BFT-2404
BFT-2055 (M)
BFT-2356
BFT-0101
BFT-1820
BFT-1822
BFT-2245
BFT-2247
N
SOUTH CAROLINA DEPARTMENT OF NATURAL RESOURCES
DNR
0
15
30
60 Miles
Map prepared by the Land, Water & Conservation Division of the South Carolina Department of Natural Resources: Nov. 2017
Aquifer
Shallow Aquifer System
Gordon
Upper Floridan
Middle Floridan
Crouch Branch
McQueen Branch
Charleston
Gramling
Gramling confining unit
Crystalline Rock
Cluster site
(M) Manual water level measurement
(C) Water level and conductivity measurement
Blue Ridge
Fall Line
Piedmont
Coastal Plain

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

Water conservation has increasingly become a cornerstone to the development of water management strategies. An effective, viable water conservation program should incorporate the following:

- Provide public education and outreach programs;
- Determine and enhance water use efficiency;
- Determine water losses and establish corrective actions;
- Prepare for water shortages and provide appropriate responses.

Groundwater Use Reporting

Groundwater Withdrawals Overview

Since the 1960s, South Carolina has had laws relating to groundwater use. In the South Carolina Groundwater Use and Reporting Act, "(t)he 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." S.C. Code Ann. § 49-5-20 (2000). Groundwater users who are in designated capacity use areas of the Coastal Plain are required to request a permit to construct and/or operate any well which will use over 3 million gallons in any one month. Permits for usage are subject to review and renewal every 5 years.

3 million gallons in one month is equivalent to approximately 1 inch of irrigation per week for 28 acres or the average use for 1000 people.

Additionally, users outside of designated capacity use areas must register wells or well systems using over 3 million gallons per month. Statewide, all registered and permitted groundwater withdrawers to report their annual water use to the department.

Compliance

Each permit or permit application must comply with the construction, operation, and special conditions as set forth in R.61-113, Groundwater Use and Reporting Regulations.

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Downloads & Links

Overview

Laws and Regulations

Permitting Information

SC's Groundwater Resources

Groundwater Management Planning

Strategy #5: Regulation and Planning

As the results of the modeling effort and the updates to the State Water Plan become available, they will help inform potential regulatory and policy changes and will be incorporated into this Groundwater Management Plans.

Adaptive Management Strategy

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 / to TAC for comment
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.)

DHEC 2504 (Rev. 11/2017)

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18. Complete the following table for proposed wells.

Well ID	Latitude	Longitude	Depth	Screened/Open 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)		
	Total Acres Irrigated:	

2. Groundwater Requirements.

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

partment c

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 seperate cooling processes, please list them seperately 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?

E. Public Water Supply.

1. Current number of customers served:

2. Current number of taps:

3. Amount of water sold to other entities (i.e. public water supply, industry, etc.):

Entity	Amount of Water Sold (million gallons)
1)	
2)	
3)	
4)	
5)	
6)	
7)	
8)	

F. Signature.

I hereby certify the information enclosed is true, complete, and that conservation measures will be researched and enacted when economically feasible.

Printed/Typed Name | Title

Personal information provided on this document is subject to public scrutiny or release.

Signature | Date (MM/DD/YYYY)

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.

partment of Health and Environmental Control

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

*No fee for application