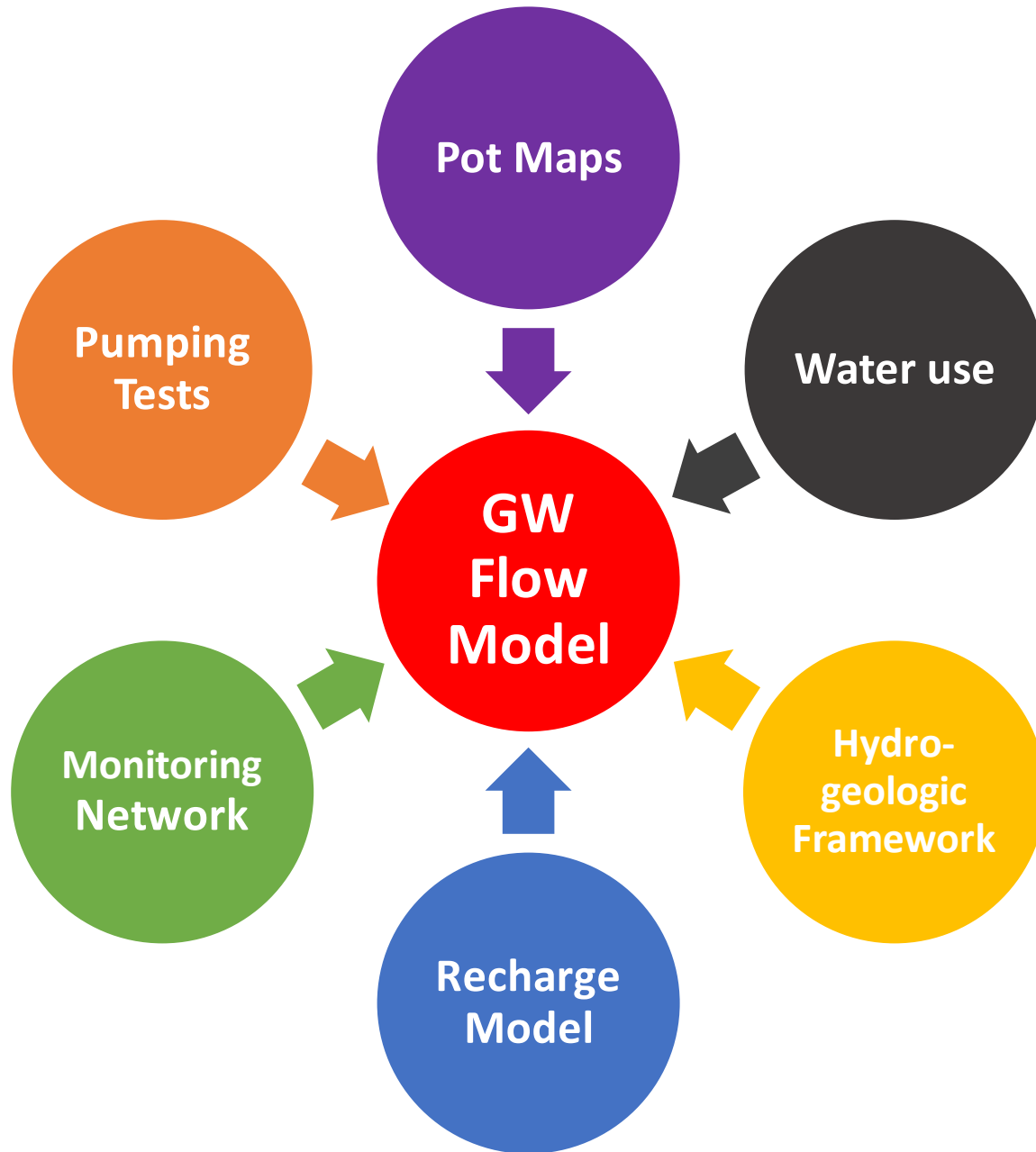


Status Report on the Hydrogeologic Framework

Groundwater TAC Meeting
Columbia, S.C.
June 22, 2018



Joe Gellici - Hydrologist
Land, Water and Conservation Division
S.C. Department of Natural Resources



Aquifer and confining-unit structure contour maps...

Aquifer and confining unit isopach maps...

Aquifer transmissive thickness maps...

Are all being done in ArcMap (Josh Williams, DNR)

The hydrogeologic cross sections, which were originally done in RAGWARE, are being redrawn in Illustrator.



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Eliminate subsurface uncertainty.

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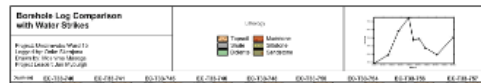
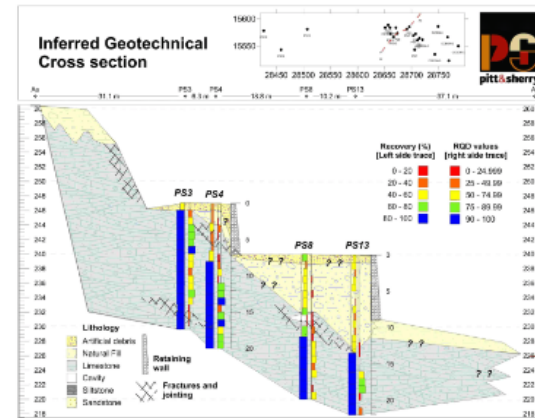
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Visualize Data

Eliminate subsurface uncertainty. Achieve insight and clarity by transforming raw, subsurface data into understandable well logs, borehole models, and cross sections/profiles. Easily create professional geotechnical reports that clearly communicate important information with Strater.

“My sincere compliments for your work with Strater. I have been working with Strater for two months delivering a daily report, sometime made in the forest, sometime in a running pickup, and Strater never let me down, it always works!”

Guillermo Chavez
Enel Geonica



Analyze Data

Get answers to all your subsurface questions. When displayed in Strater, subsurface data becomes clear and easy to understand. Strater's interactive

RESULTS OF PUMPING TESTS IN THE COASTAL PLAIN OF SOUTH CAROLINA

Compiled by Roy Newcome, Jr.

Second supplement to table included in South Carolina Water Resources Commission Report 174, published in 1993 and supplemented in 2000. This supplement includes the findings of 81 additional pumping tests that have become available since 2000.

≈ 750 tests

STATE OF SOUTH CAROLINA
DEPARTMENT OF NATURAL RESOURCES



LAND, WATER AND CONSERVATION DIVISION
WATER RESOURCES OPEN-FILE REPORT 10

2005

County well no.	SC Grid no.	Location	Elec. log	Depth (ft)	Aquifer/ thick. (ft)	Date of test	Duration (hr) (dd/recov)	Static WL (ft)	Q (gpm)	Trans. (gpd/ft)	Storage coef.	Sp. cap. (gpm/ft)	Well effic. (percent)	Hydro. bound.	Rating of test
BRN-79	35W-f1	Williston (West and Elko Streets)	X	685	BC,M/160	1/27/1978	17/6	129	1,404	110,000		11	20		G
BRN-253	38Y-o4	Savannah River Site	X	585	BC/110	4/28/1980	24/	104	754	66,000		19	60		P
BRN-268	37Y-f2	Savannah River Site		605	BM,E,PD/160	11/3/1951	24/8	131	540	50,000		25	100		F
BRN-269	38Y-o1	Savannah River Site		605	PD,BC/130	12/14/1952		92	567	110,000		38	75		F
BRN-281	38X-n8	Savannah River Site		820	M/	3/27/1978	21/5	121	1,500	230,000		75	80	R?	P
BRN-282	38X-n9	Savannah River Site		875	M/	5/20/1980	24/	119	1,500	230,000		45	50		P
BRN-284	38Y-m9	Savannah River Site		590	BC	2/8/1982	24/44	79	750	79,000		27	70	R	F
BRN-285	38Y-m10	Savannah River Site		602	BC/	4/5/1982	24/4	81	751	76,000		19	50	R	F
BRN-295	33Z-n1	Ulmer, 3 mi NW	X	200	S/100	12/12/1984	3.5/26	54	80	47,000		4.7	20		F
BRN-310	38Y-d1	Savannah River Site		585	E,BC/	10/12/1977	12/	109	754	72,000		13	40		F
BRN-363	36W-b1	Williston (Halford St.)	X	455	BC/100	2/19/1991	48/2.5	121	408	67,000		12	35		F
BRN-369	35X-a1	Blackville, 4 mi SW	X	450	E/40	9/1/1989	24/2	76	170	24,000		6.1	50		P
BRN-465	37Y-g3	Savannah River Site		374	BM/	7/2/1991	2/	81	128	11,000		4.2	75		F
BRN-466	37Y-g2	Savannah River Site		335	BM/	7/2/1984	24/	82	115	8,400		2.4	55	R	F
BRN-469	37W-x1	Savannah River Site		200	BM/45	9/4/1985	24/6	80	46	15,000		0.5	< 10		P
BRN-810	37X-w1	Savannah River Site		213	BM/160	8/19/1991	24/4	16	50	15,000	0.0003	1.1	10-15	D	G
BRN-811	38Y-h6	Savannah River Site		270	BM/	8/16/1990	26/2.5	122	25	1,300		0.5	75		P
BRN-812	38Y-o36	Savannah River Site		616	BC/	3/20/1989	24/2	95	775	140,000	0.0004	18	25	R	P
BRN-812	38Y-o36	(Additional test for BRN-812)		616	BC/	1/8/1990	24/2	108	500	100,000		29	40		P
BRN-886	34X-u1	Hilda	X	345	BM/54	1/18/1996	24/0.5	33	210	6,000		6.4	100		P
BRN-932	35W-e4	Williston		700	BC,M/	1/2/2001	24/3	127	1,346	79,000		15	40		F

BEAUFORT COUNTY

BFT-22	28HH-l7	Parris Island		84	F/	1/27/1956	6/	16	680	94,000	0.0001	50	100		F
BFT-114	27HH-o3	Parris Island		100	F/	7/1/1955	235/61	12±	225	26,000	0.00004				P
BFT-115	28HH-l2	Parris Island		95	F/	1/4/1975	25/	20	608	92,000	0.0001			D	F
BFT-310	29LL-l1	Daufuskie Island (Halg Point)		192	F/	10/8/1985	24/14	35	503	300,000	0.0001	97	75		P
BFT-449	24JJ-c1	Fripp Island		150	F/	3/19/1974	8.5/7	+1	280	14,000		6.7	100		P
BFT-499	28JJ-y2	Port Victoria	X	209	F/	5/14/1970	186/124	24	2,900	420,000	0.0002	145	85		G
BFT-652	27KK-h1	Hilton Head Island (Hospital)		200	F/	6/7/1975	8/1	19	1,500	480,000		200	100		P
BFT-671	27LL-d2	Hilton Head Island (Mariott Hotel)		221	F/	12/10/1980	12/5	18	2,225	600,000		80	25		P
BFT-758	27KK-x8	Hilton Head Island (Palmetto Dunes)		200	F/	1/26/1973	24/1.5	20	1,230	540,000	0.0001	123	50		F
BFT-795	27II-l5	Port Royal Clay Company		94	F/	8/27/1976	5/8		260	120,000	0.0003	54	100		F

E (Excellent) –

- Drawdown and recovery plots agree closely, or if only one plot is available it provides a definite value for transmissivity.
- Boundaries, if any, appear at close to same time on drawdown and recovery plots.
- Specific capacity is believable (well efficiency not above 100 percent).
- No unexplainable extraneous effects.
- Discharge effectively constant.

G (Good) –

- Narrow range in possible solutions for transmissivity.
- Discharge held reasonably constant.
- If drawdown and recovery plots do not agree closely, the reason is apparent.
- Specific capacity is believable.
- Few unexplainable extraneous effects.

F (Fair) –

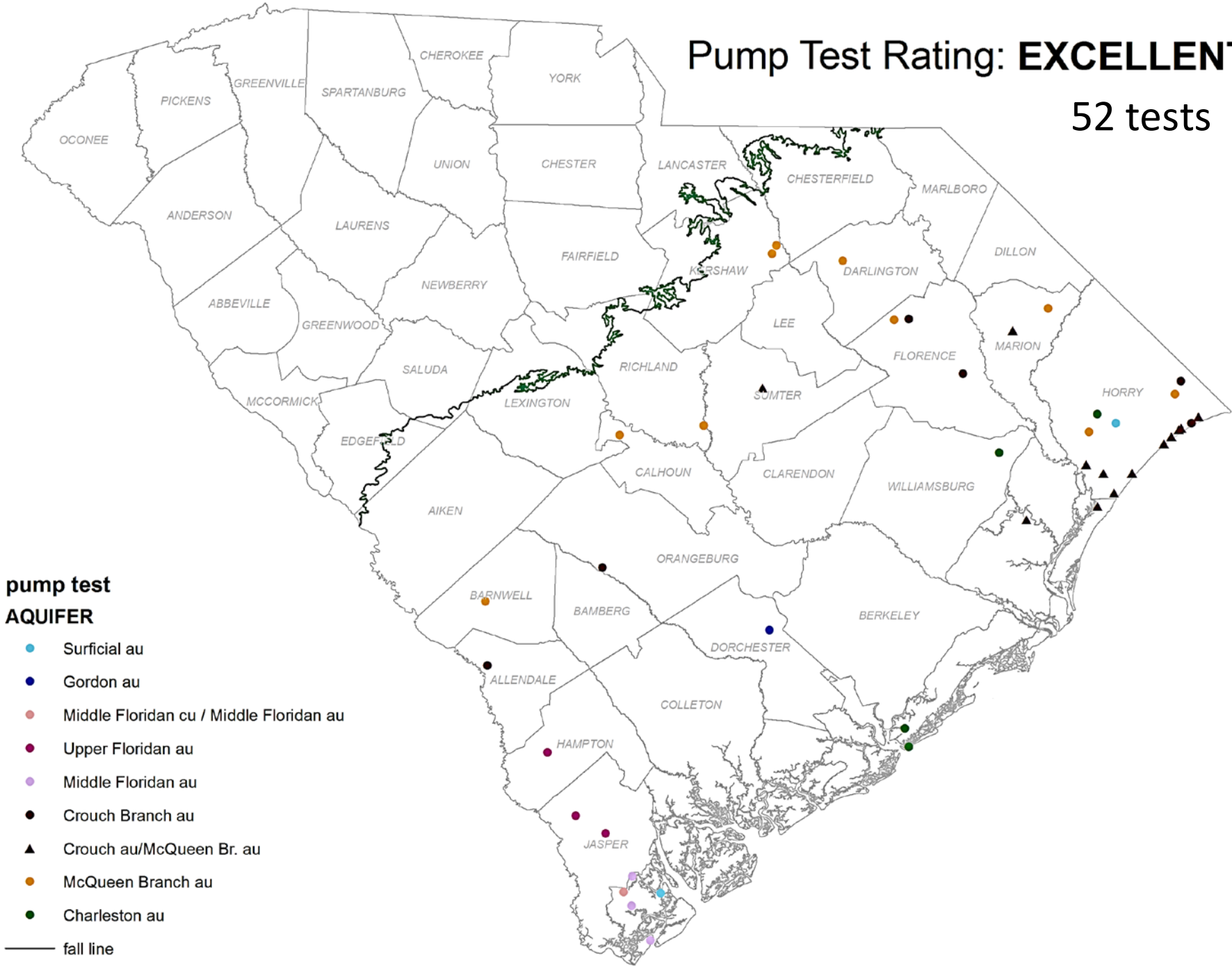
- Plot of one phase may be clear but other unclear, or where only one plot is available it may have significantly different possible interpretations.
- Discharge may not have been controlled well.

P (Poor) –

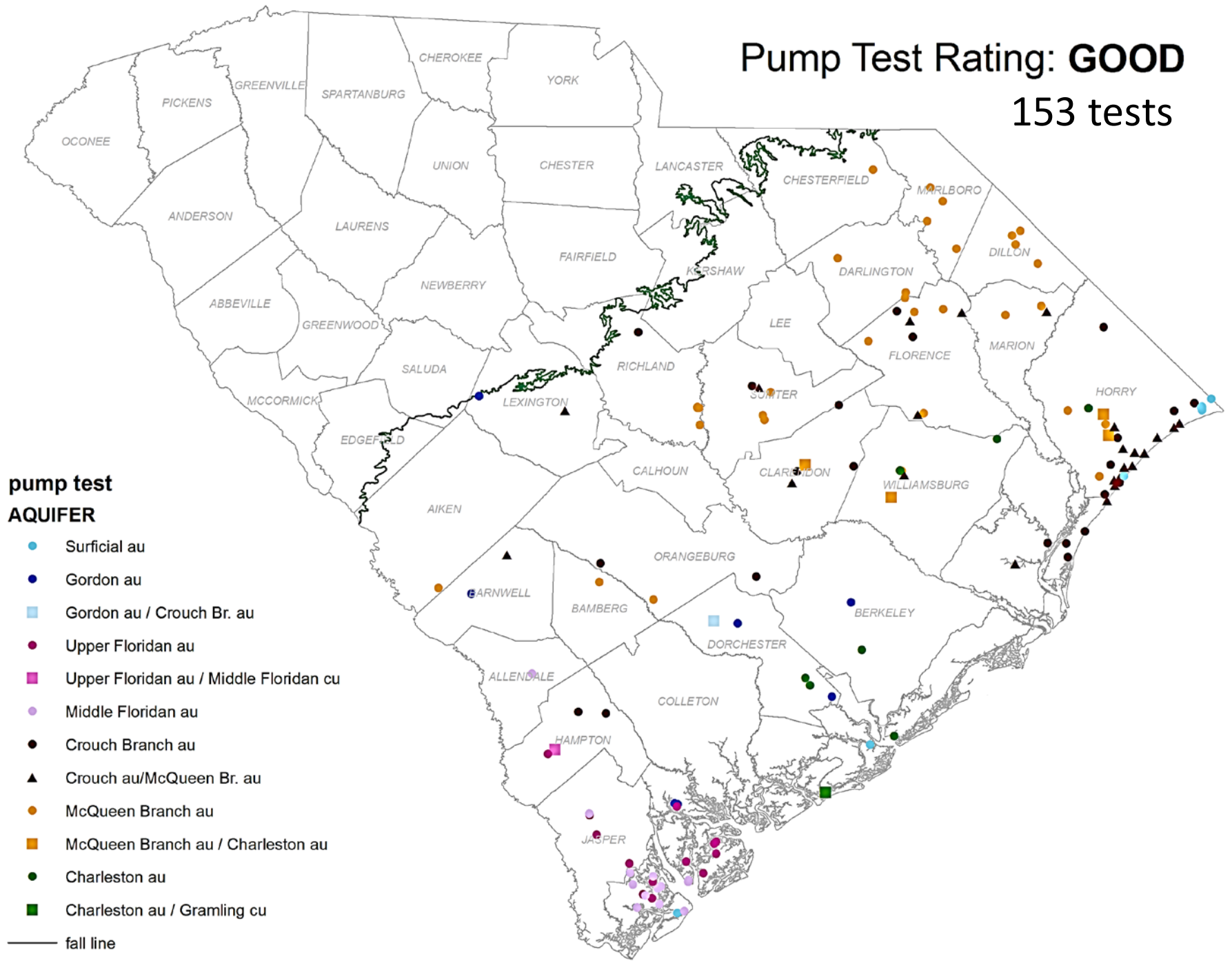
- Plot(s) difficult to interpret or drawdown and recovery do not agree reasonably well. Extraneous effects distort plots.
- Discharge not held constant. Discharge substantially increased or decreased near end of test, so recovery cannot be analyzed properly.
- There may be a substantial range in possible interpretations of the plots.

Pump Test Rating: **EXCELLENT**

52 tests



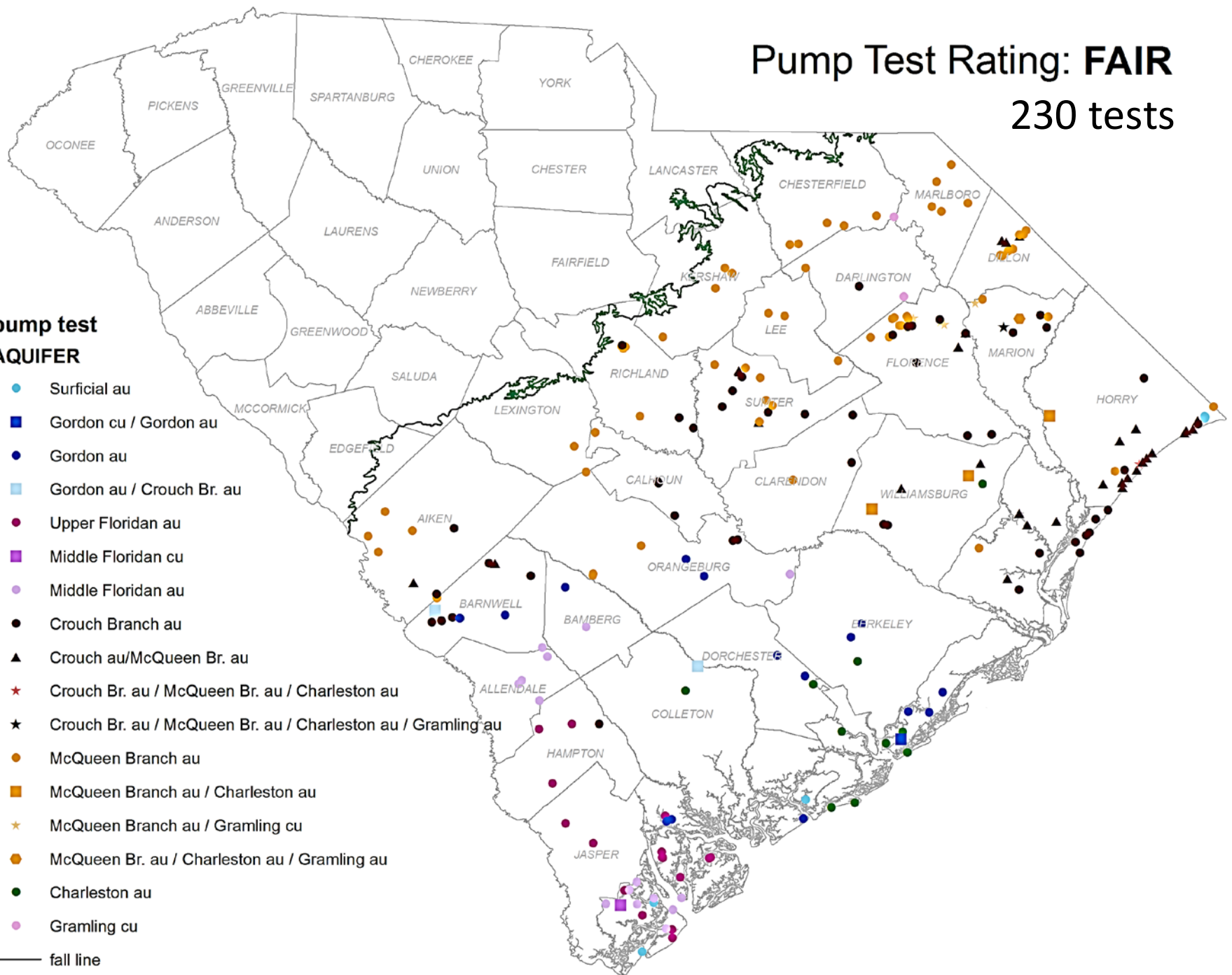
Pump Test Rating: **GOOD**
153 tests



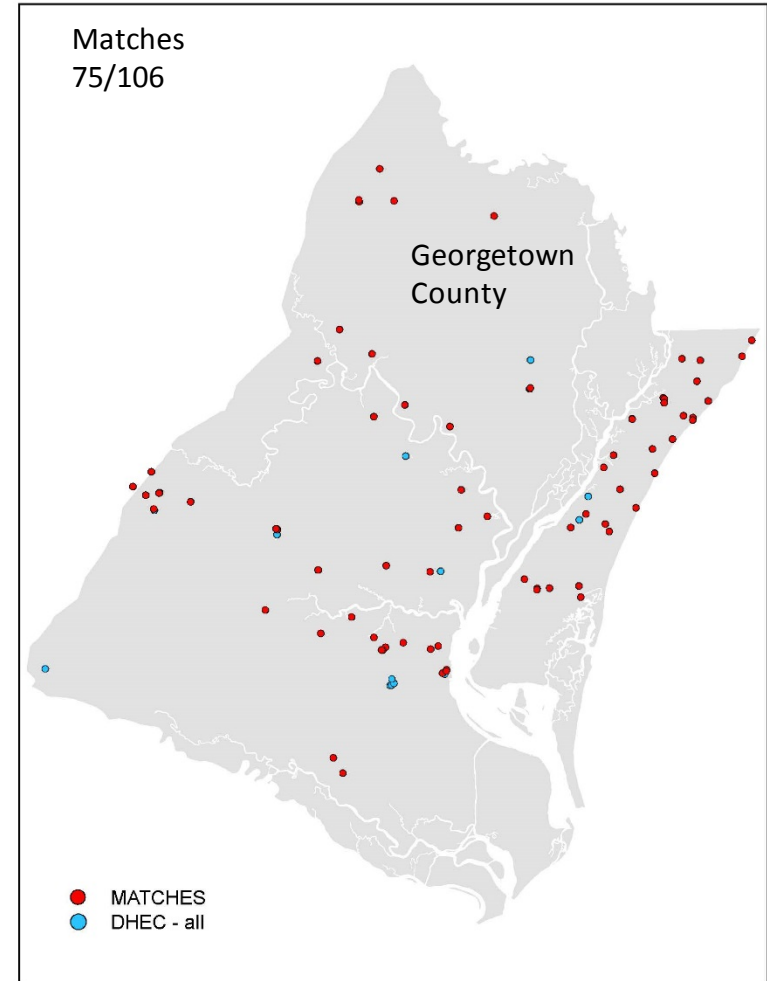
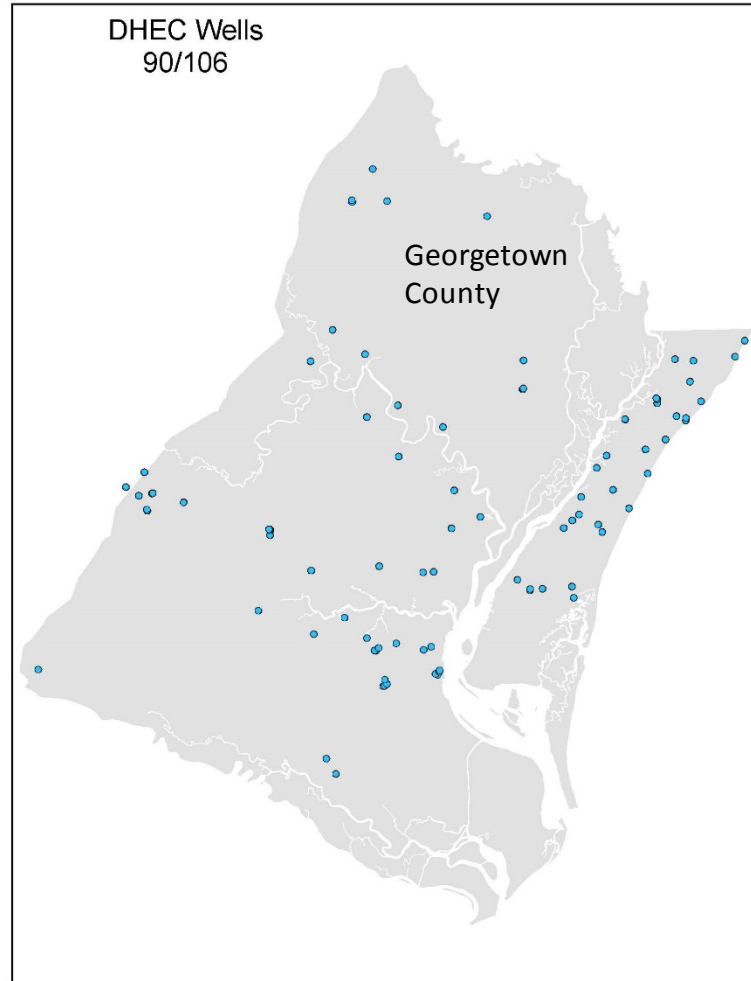
Pump Test Rating: **FAIR**
230 tests

**pump test
AQUIFER**

- Surficial au
 - Gordon cu / Gordon au
 - Gordon au
 - Gordon au / Crouch Br. au
 - Upper Floridan au
 - Middle Floridan cu
 - Middle Floridan au
 - Crouch Branch au
 - ▲ Crouch au/McQueen Br. au
 - ★ Crouch Br. au / McQueen Br. au / Charleston au
 - ★ Crouch Br. au / McQueen Br. au / Charleston au / Gramling au
 - McQueen Branch au
 - McQueen Branch au / Charleston au
 - ★ McQueen Branch au / Gramling cu
 - McQueen Br. au / Charleston au / Gramling au
 - Charleston au
 - Gramling cu
- fall line



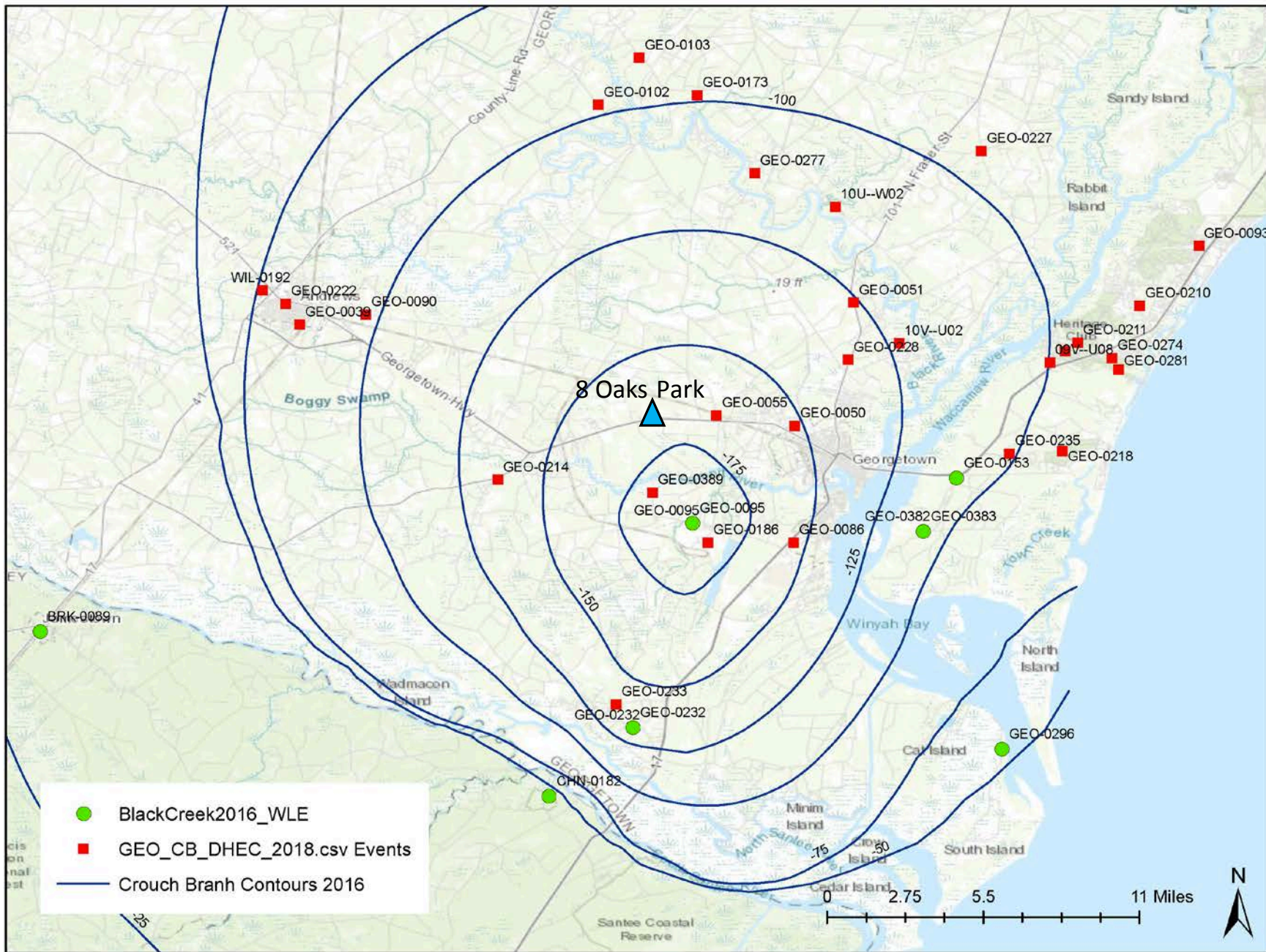
Matching up DHEC and DNR well records



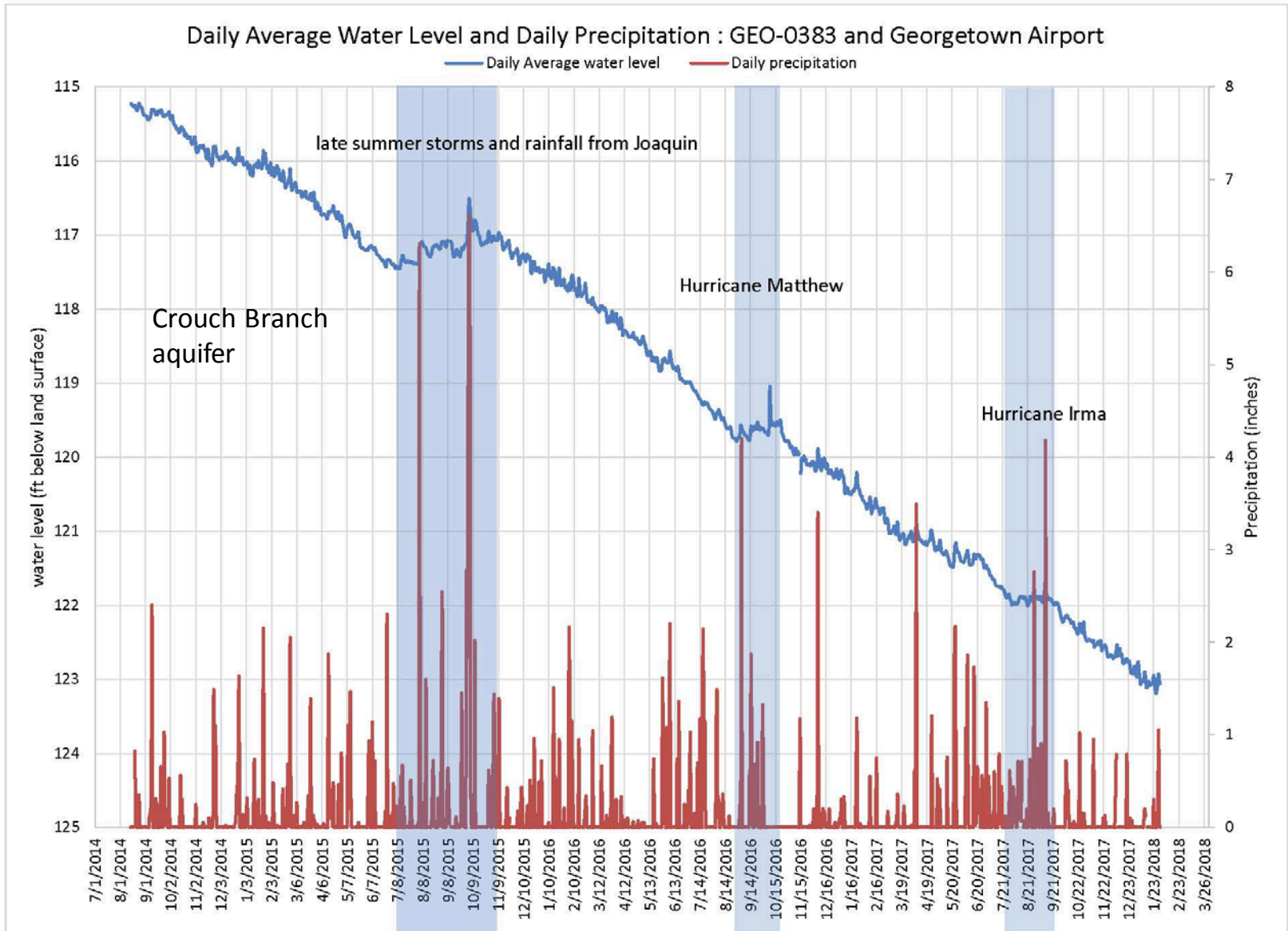
DHEC well id
22WS001G03

DNR/USGS well id
GEO-0103

Water Level Run in Georgetown Area and Drilling Project at 8 Oaks Park



Hobcaw Barony, Georgetown County, Screen: 530-550 ft, Crouch Branch aquifer



Courtesy: Brooke Czwartacki, DNR

9-185-July 1935
Revised

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES BRANCH

HAM-25

WELL SCHEDULE

Date 11-29, 1957 Field No. 25
Record by GES & RWT Office No. _____
Source of data ESCO Sta.

1. Location: State S.C. County Hampden
Map _____

_____ $\frac{1}{4}$ sec. _____ T N R _____ E
_____ S W

2. Owner: Town of Address Brunson
Tenant _____ Address _____
Driller Hughes Spec. Well Dr. Address Charleston

3. Topography flat

4. Elevation _____ ft. above
_____ ft. below

5. Type: Dug, drilled, driven, bored, jetted _____ 1900±

6. Depth: Rept. 745 ft. Meas. _____ ft.

7. Casing: Diam. 8 in., to _____ in., Type _____
Depth _____ ft., Finish _____

on north side
of RR track
on 5-25-52
near brick house

8. Chief Aquifer _____ From _____ ft. to _____ ft.

Others _____

9. Water level 66 ft. cap meas. _____ 1900 above
_____ below

_____ which is _____ ft. above
_____ below surface

10. Pump: Type none Capacity _____ G. M.

Power: Kind none Horsepower _____

11. Yield: Flow _____ G. M., Pump _____ G. M., Meas., Rept. Est.

Drawdown _____ ft. after _____ hours pumping _____ G. M.

12. Use: Dom., Stock, PS, RR., Ind., Irr., Obs. _____

Adequacy, permanence _____

13. Quality _____ Temp _____ °F.

Taste, odor, color _____ Sample Yes _____ No _____

Unfit for _____

14. Remarks: (Log, Analyses, etc.) _____

25

7151

TOWN OF BRUNSON

Well HAM-25
Open hole from 650-710 feet

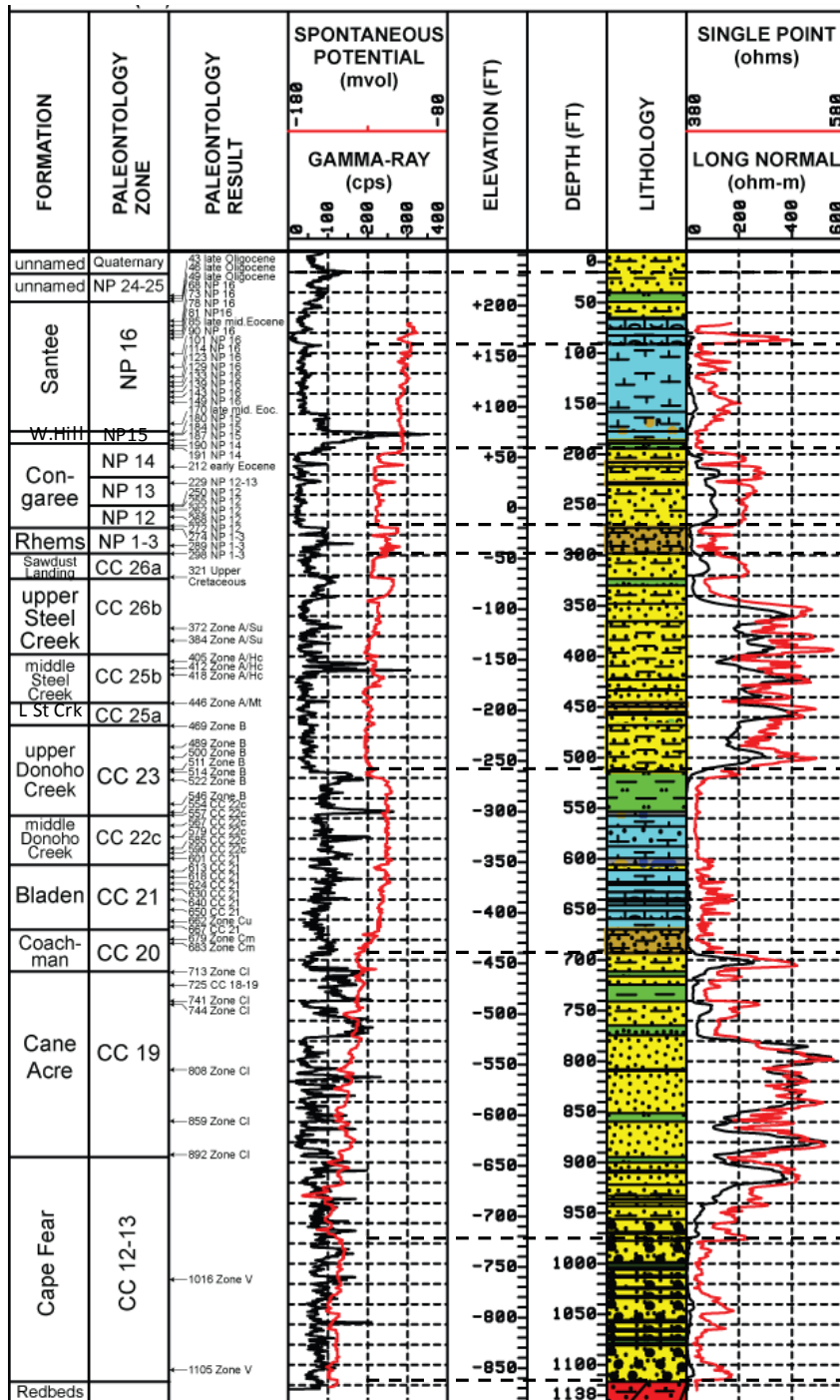
Well ID	HAM-25
Chemical Test	No
Geophysical Logs	Yes
Drill Logs	No
Pump Test	No
Well Use	Public Supply
Yield (gpm)	85
Depth (ft)	710

Rock/sediment repository at the S.C. Geological Survey



Photograph courtesy of Michael Foster, S.C. Wildlife Magazine

Orangeburg site Clark Middle School



Surficial aquifer (0-22 ft)

Upper Three Runs aquifer (22-92 ft)

Gordon confining unit (92-194 ft)

Gordon aquifer (194-273 ft)

Crouch Branch confining unit (273-298 ft)

Crouch Branch aquifer (298-514 ft)

Transmissivity: 11,100 ft²/day

Hydraulic conductivity: 85 ft/d
(SCE&G Cope Plant)

McQueen Branch confining unit (514-693 ft)

McQueen Branch aquifer (693-977 ft)

Transmissivity: 26,700 ft²/day

Hydraulic conductivity: 200 ft/d
(SCE&G Cope Plant)

Gramling confining unit (977-1,117 ft)

Bedrock




Boxes hold 8 feet of core; 2 feet per divider.

Upper left-hand corner is the top of the core.

Lower right-hand corner is the bottom of the core.

The number on the block is the depth in feet below land surface and represents the start of a new coring run.



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Water Plan (2004 Report)
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Hydrology Section

Groundwater Modeling and Assessments

Effective water planning and management requires an accurate assessment of the location and quantity of the water resources of the State, and one of the most useful tools for evaluating management strategies is a computer model that simulates groundwater flow. To that end, SCDNR, USGS, SCDHEC and the USACE are in the process of updating the 2010 groundwater flow model of the Coastal Plain province in South Carolina.

The model will be used to:

- Determine groundwater availability.
- Evaluate the impacts that pumping has on groundwater and surface water resources and on other groundwater users.
- Evaluate future withdrawal scenarios to maximize groundwater use and minimize undesirable effects of pumping.

Project Documents

For any questions regarding these reports and presentations, please contact Joe Gellici by phone (803-734-6428) or [email](#).

For information about stakeholder meetings, please visit the [Clemson Water Assessment Website](#).

For additional information on the project, visit the [USGS project website](#).

(Documents below are in [PDF](#) format.)

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