Potentiometric Surface of the Floridan and Tertiary Sand Aquifers in South Carolina, November 2010

by
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EXPLANATION

20 — Potentiometric contour for the Floridan/Tertiary sand aquifer, in feet relative to sea level; dashed where inferred

COL-255 ● -8 — Measured well, with county well number and potentiometric elevation

Updip limit of Tertiary sand aquifer (Aucott and others, 1987)

Updip limit of extended Floridan aquifer (Aucott and others, 1987)

Updip limit of Floridan aquifer (Miller, 1985)

Updip limit of upper Floridan aquifer

Walterboro — Municipality

10 0 10 20 30 40 miles

The Floridan aquifer and its updip clastic equivalent, the Tertiary sand aquifer, is the source of water for many public, industrial, and agricultural supplies in much of the South Carolina Coastal Plain. This important resource is monitored by regularly measuring nonpumping water levels in selected wells. The potentiometric surface of an aquifer is defined by the elevations at which water stands in tightly cased wells completed in the aquifer.

The boundaries of the Floridan aquifer and the Tertiary sand aquifer used in this investigation are those defined by Aucott, and others (1987). The Floridan aquifer generally includes the Cooper Formation, the Ocala Limestone, and the Santee Limestone (Aucott and others, 1987).

The Tertiary sand aquifer is divided into upper and lower units. The upper unit is the sand facies equivalent of the Floridan aquifer, and extends from northwestern Allendale County to Orangeburg and curves eastward into southern Georgetown County (extended Floridan aquifer). It is composed of sediments from the Barnwell, McBean, and Congaree Formations and ranges in age from Early to Late Eocene. The lower unit consists of clastic sediments of Early Eocene and Paleocene ages and includes part of the Black Mingo Formation.

The base of the Floridan dips southeastward and is at elevation 300, -600, and -1,400 ft msl (feet, referenced to mean sea level) at Aiken, Walterboro, and Hilton Head Island, respectively. Thickness ranges from 0 ft at the updip limit to more than 1,000 ft at Hilton Head Island.

For this map, water-level data from upper Floridan wells in Beaufort and Jasper Counties and most of Hampton County were used. Data from middle and/or lower Floridan wells were used within the boundary shown for the Floridan aquifer. Elsewhere, data from wells in the Tertiary sand aquifer were used.

The potentiometric map presented here was constructed by using water levels measured in 203 wells in late 2010 (see table). Data were collected by the South Carolina Department of Natural Resources, the U.S. Department of Energy, the South Carolina Department of Health and Environmental Control, and the U.S. Geological Survey. Similar maps have been produced for the Floridan and Tertiary sand aquifers describing the potentiometric surface in 2004 (Hockensmith, 2009), 1998 (Hockensmith, 2001), and 1986 (Crouch and others, 1987).

The potentiometric surface of the Floridan aquifer and its updip clastic equivalent, the Tertiary sand aquifer, for late October, November, and early December 2010 shows a generally southeastward groundwater flow affected by several potentiometric depressions. These cones of depression have developed because of groundwater pumping in Colleton and Dorchester Counties. Water levels in Jasper and Beaufort Counties continue to be affected by pumping in the Savannah, Ga. area.

References

Aucott, W.R., Davis, M.E., and Speiran, G.K., 1987, Geohydrologic framework of the Coastal Plain aquifers of South Carolina: U.S. Geological Survey Water-Resources Investigations Report 85-4271, 7 sheets.

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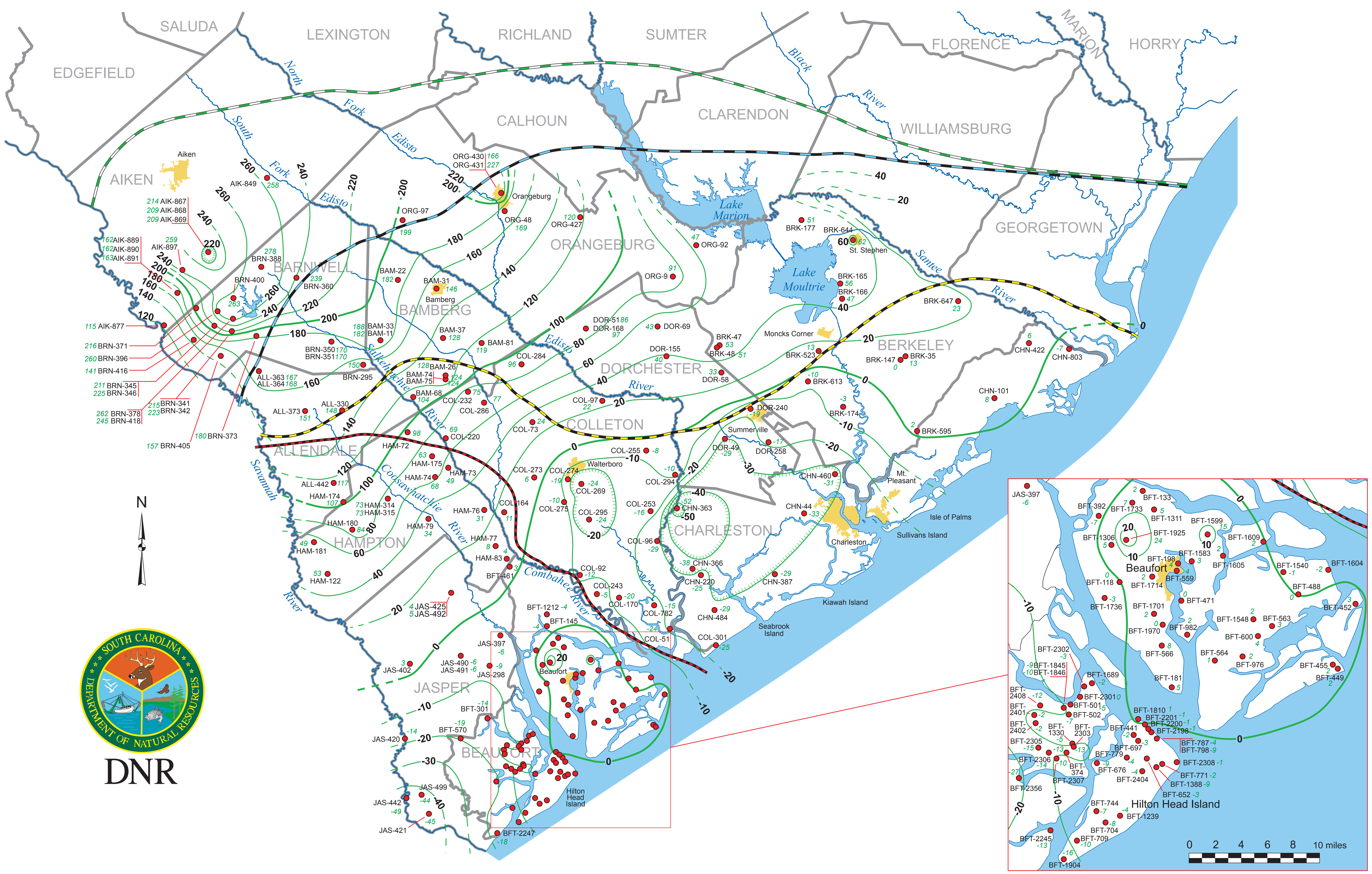

Well ID county number	Well ID grid number	Latitude (decimal degrees)	Longitude (decimal degrees)	Water level elevation (ft msl)	Remarks
AIK-849	36U-o6	33.54222	-81.48556	258	
AIK-867	38W-n7	33.37734	-81.64085	214	
AIK-868	38W-n6	33.37730	-81.64088	209	
AIK-869	38W-n5	33.37724	-81.64093	209	
AIK-877	40Y-k12	33.21435	-81.75902	115	
AIK-889	39X-n65	33.28679	-81.72217	162	
AIK-890	39X-n66	33.28683	-81.72216	162	
AIK-891	39X-n67	33.28687	-81.72215	163	
AIK-897	39W-w8	33.33778	-81.70870	259	
ALL-330	34AA-r2	33.02611	-81.28639	148	
ALL-363	37Z-t4	33.11361	-81.50639	167	
ALL-364	37Z-t5	33.11333	-81.50639	166	
ALL-373	35AA-q6	33.02472	-81.38444	151	
ALL-442	34CC-q1	32.86528	-81.30833	117	
BAM-11	33Y-v1	33.18167	-81.18528	182	
BAM-22	32X-g2	33.31611	-81.13833	182	
BAM-26	31Z-t1	33.10306	-81.01222	128	
BAM-31	31X-m9	33.29694	-81.03694	146	
BAM-33	33Y-v2	33.18222	-81.18500	188	
BAM-37	31Y-s1	33.18667	-81.01972	128	
BAM-68	32AA-j2	33.05583	-81.09833	104	
BAM-74	31Z-u5	33.09500	-81.01111	124	
BAM-75	31Z-u6	33.09444	-81.01222	124	
BAM-81	30Y-u1	33.17611	-80.91667	119	
BFT-118	27HH-y1	32.42167	-80.74972	0	
BFT-133	27GG-q1	32.52361	-80.71861	2	
BFT-145	27GG-f1	32.55028	-80.74167	-4	
BFT-181	27JJ-j1	32.30639	-80.68000	5	
BFT-198	27HH-t7	32.44194	-80.67194	4	
BFT-301	29II-x8	32.34528	-80.89944	-14	
BFT-374	28KK-f3	32.23310	-80.81746	-13	
BFT-392	28HH-b4	32.49556	-80.77694	-7	
BFT-441	27KK-d2	32.24945	-80.72857	-2	
BFT-449	24JJ-c1	32.32694	-80.46139	2	
BFT-452	24II-i1	32.39806	-80.43750	3	1
BFT-455	24JJ-d1	32.33139	-80.46750	2	1
BFT-461	29EE-u1	32.68028	-80.84222	3	
BFT-471	27II-a1	32.40222	-80.66750	0	
BFT-488	25II-a1	32.40917	-80.51278	0	
BFT-501	28JJ-n1	32.28705	-80.81393	-5	
BFT-502	28JJ-q1	32.27500	-80.81528	-7	
BFT-559	27HH-u1	32.43111	-80.67333	4	
BFT-563	25II-m2	32.37444	-80.54722	3	
BFT-564	26II-w2	32.33556	-80.62361	1	
BFT-566	27II-s1	32.35222	-80.69333	8	
BFT-570	30JJ-g2	32.30139	-80.97056	-19	
BFT-600	25II-q3	32.36283	-80.56619	4	
BFT-652	27KK-h1	32.22371	-80.71113	-3	
BFT-676	28KK-i7	32.21957	-80.77818	-9	
BFT-697	27KK-d4	32.24361	-80.72278	-3	
BFT-704	28LL-a1	32.15376	-80.76505	-8	
BFT-709	28LL-m5	32.13379	-80.80387	-10	
BFT-744	28LL-b1	32.16616	-80.77812	-7	
BFT-771	27KK-i2	32.21930	-80.69097	-2	
BFT-779	27KK-f13	32.22603	-80.73781	-4	
BFT-787	27KK-b2	32.24828	-80.69841	-4	2
BFT-798	27KK-b2	32.24828	-80.69841	-9	
BFT-976	26II-u5	32.34022	-80.58725	2	
BFT-982	26II-p1	32.36458	-80.65985	2	
BFT-1212	27GG-e1	32.57722	-80.74139	-4	
BFT-1239	27LL-e8	32.16217	-80.74707	-4	
BFT-1306	28HH-k5	32.46298	-80.75988	5	
BFT-1311	27GG-w3	32.50301	-80.70417	5	
BFT-1330	28KK-d6	32.24028	-80.81028	-5	
BFT-1388	27KK-i10	32.21858	-80.69849	-9	
BFT-1540	25HH-s3	32.43327	-80.53292	-1	
BFT-1548	25II-o8	32.38125	-80.57279	2	
BFT-1583	26HH-p7	32.44607	-80.65436	3	
BFT-1599	26HH-l3	32.47583	-80.63278	15	
BFT-1604	24HH-q4	32.43639	-80.47389	-2	
BFT-1605	26HH-l4	32.45198	-80.61284	2	
BFT-1609	25HH-n2	32.46389	-80.55917	2	
BFT-1689	28JJ-i1	32.30746	-80.78347	-2	
BFT-1701	27II-h8	32.38719	-80.70364	2	
BFT-1714	27HH-w3	32.42825	-80.70756	2	
BFT-1733	27GG-y3	32.51037	-80.73254	7	
BFT-1736	28II-b4	32.40552	-80.76935	-3	
BFT-1810	27JJ-q3	32.26750	-80.72278	1	3
BFT-1845	28JJ-p6	32.28056	-80.82167	-9	
BFT-1846	28JJ-p5	32.28056	-80.82167	-10	
BFT-1904	28LL-p3	32.11062	-80.82190	-16	
BFT-1925	27HH-f16	32.46999	-80.74112	24	
BFT-1970	27II-l27	32.37517	-80.69304	0	
BFT-2198	27JJ-w1	32.25972	-80.71111	-1	2
BFT-2200	27JJ-w3	32.25667	-80.70722	-1	2
BFT-2201	27JJ-w4	32.26278	-80.71417	-1	2
BFT-2245	29LL-j9	32.14806	-80.83778	-13	
BFT-2247	29LL-w14	32.09028	-80.87194	-18	
BFT-2301	28JJ-m10	32.29528	-80.79917	0	
BFT-2302	28JJ-h6	32.30444	-80.79472	-3	
BFT-2303	28KK-d19	32.23833	-80.80861	-13	
BFT-2305	29KK-b8	32.23861	-80.85583	-15	
BFT-2306	29KK-j3	32.23056	-80.84028	-14	
BFT-2307	28KK-f4	32.22472	-80.82944	-10	
BFT-2308	27KK-j9	32.22111	-80.67194	-1	2
BFT-2356	29KK-m6	32.20306	-80.88028	-27	
BFT-2401	29JJ-s5	32.27139	-80.85861	-2	2
BFT-2402	29JJ-v4	32.26472	-80.85889	-2	2
BFT-2404	27HH-e9	32.21278	-80.71750	-4	
BFT-2408	29II-v3	32.28464	-80.85146	-12	
BRK-35	16Z-h1	33.13868	-79.79762	13	
BRK-47	22Y-w1	33.17140	-80.28790	53	
BRK-48	22Y-w2	33.16727	-80.29419	51	

Well ID county number	Well ID grid number	Latitude (decimal degrees)	Longitude (decimal degrees)	Water level elevation (ft msl)	Remarks
BRK-147	16Z-n2	33.13122	-79.81078	0	
BRK-165	18X-g1	33.30684	-79.96944	56	
BRK-166	18X-r1	33.27340	-79.96324	47	
BRK-174	18AA-q1	33.03105	-79.96768	-3	
BRK-177	19V-p2	33.44867	-80.06841	51	
BRK-523	19Z-b7	33.15821	-80.02493	13	
BRK-595	16BB-i1	32.97551	-79.77235	2	
BRK-613	19Z-x7	33.09097	-80.05322	-10	
BRK-644	18W-b2	33.40417	-79.93389	62	
BRK-647	14X-y52	33.26167	-79.65750	23	
BRN-295	33Z-n1	33.12833	-81.23111	150	
BRN-341	37Y-o7	33.20238	-81.57804	215	
BRN-342	37Y-o9	33.20238	-81.57804	223	
BRN-345	38Y-m42	33.21417	-81.62388	211	
BRN-346	38Y-m43	33.21418	-81.62383	225	
BRN-350	34Y-x2	33.17917	-81.31500	170	
BRN-351	34Y-x3	33.17861	-81.31472	170	
BRN-360	35X-e4	33.32083	-81.40750	239	
BRN-371	39X-u5	33.25295	-81.67250	216	
BRN-373	37Y-t2	33.19128	-81.51329	180	
BRN-378	37Y-f6	33.22970	-81.57525	262	
BRN-388	37W-u7	33.34459	-81.50028	278	
BRN-396	38Y-b8	33.24611	-81.61614	260	
BRN-400	37X-p8	33.27505	-81.57354	263	
BRN-405	38Z-i11	33.14677	-81.60752	157	
BRN-416	39Y-u8	33.18258	-81.67868	141	
BRN-418	37Y-f9	33.22972	-81.57529	245	
CHN-44	19DD-o1	32.79583	-80.07056	-33	
CHN-101	13AA-n2	33.04583	-79.56250	8	
CHN-220	23FF-a1	32.65912	-80.34076	-25	
CHN-363	23DD-f1	32.81010	-80.40067	-52	
CHN-366	23EE-v1	32.67361	-80.36306	-38	
CHN-387	20FF-d1	32.66048	-80.14545	-29	
CHN-422	12Y-x1	33.16827	-79.47058	6	
CHN-460	18CC-o1	32.88167	-79.98861	-31	
CHN-484	22GG-d1	32.58194	-80.30611	-29	
CHN-803	11Z-b1	33.15559	-79.36377	-7	4
COL-51	24GG-k1	32.53806	-80.42167	-24	
COL-73	28AA-v1	33.00092	-80.78219	24	
COL-92	26FF-e1	32.66158	-80.65731	-12	
COL-96	24EE-c1	32.73639	-80.45250	-29	
COL-97	26AA-k1	33.04769	-80.59764	22	
COL-164	29DD-i1	32.80014	-80.85708	11	
COL-170	25FF-q2	32.61072	-80.55358	-20	
COL-220	31BB-k1	32.96464	-81.01114	69	
COL-232	30AA-c4	33.06725	-80.95378	75	
COL-243	26FF-l2	32.61889	-80.61175	-5	
COL-253	24DD-g1	32.80261	-80.47019	-16	
COL-255	24BB-q1	32.93697	-80.48119	-8	
COL-269	26CC-p1	32.86386	-80.65325	-24	
COL-273	28CC-l2	32.87739	-80.77836	6	
COL-274	27CC-l2	32.87361	-80.68881	-19	
COL-275	27DD-b1	32.82294	-80.69903	-10	
COL-284	28Z-n1	33.12847	-80.81192	96	
COL-286	29AA-o1	33.04358	-80.91008	77	
COL-294	23CC-f1	32.88383	-80.40436	-10	
COL-295	26DD-m2	32.78500	-80.63278	-24	
COL-301	22GG-w4	32.51167	-80.29944	-25	
COL-782	24FF-w3	32.59306	-80.46436	-15	
DOR-49	22BB-l1	32.96389	-80.27500	-29	
DOR-51	26Y-n1	33.20763	-80.64123	86	
DOR-58	22Z-r1	33.11081	-80.28270	33	
DOR-69	24Y-m1	33.21280	-80.45171	43	
DOR-155	24Z-j2	33.14705	-80.42787	40	
DOR-168	26Y-n2	33.20764	-80.64114	97	
DOR-240	21AA-r3	33.03075	-80.20540	-19	
DOR-258	20BB-o6	32.95564	-80.16009	-17	
HAM-72	32BB-i1	32.97806	-81.11278	98	
HAM-73	31CC-j2	32.89917	-81.00528	49	
HAM-74	31CC-m1	32.87833	-81.04000	68	
HAM-76	29DD-f1	32.80583	-80.90972	31	
HAM-77	29EE-h1	32.72500	-80.88028	8	
HAM-79	31DD-n1	32.78528	-81.05806	34	
HAM-83	29EE-s1	32.69722	-80.85083	4	
HAM-122	34FF-e2	32.66361	-81.32500	53	
HAM-174	34DD-b1	32.82278	-81.28389	107	
HAM-175	31BB-w1	32.92472	-81.04806	63	
HAM-180	34DD-u1	32.76194	-81.25944	84	
HAM-181	35EE-b1	32.73417	-81.36083	49	
HAM-314	32DD-e2	32.83051	-81.16566	73	
HAM-315	32DD-e3	32.83051	-81.16566	73	
JAS-298	29HH-n5	32.45917	-80.89667	-9	
JAS-397	29GG-r4	32.52611	-80.86806	-6	
JAS-402	32HH-l3	32.46361	-81.10750	3	
JAS-420	32JJ-m1	32.29778	-81.12028	-14	
JAS-421	31LL-n1	32.13139	-81.05667	-45	
JAS-425	30FF-o1	32.61806	-80.99528	4	3
JAS-442	30GG-s1	32.16555	-81.11556	-49	
JAS-490	30HH-g7	32.48161	-80.97231	-6	
JAS-491	30HH-g8	32.48161	-80.97231	-6	
JAS-492	30FF-o3	32.61806	-80.99556	5	3
JAS-499	31KK-y2	32.17303	-81.07631	-44	
ORG-9	23X-e3	33.32361	-80.41111	91	
ORG-48	29V-i1	33.46806	-80.85611	169	
ORG-92	23W-j1	33.39306	-80.34889	47	
ORG-97	32V-r3	33.44806	-81.12611	199	
ORG-427	26V-o2	33.45528	-80.65583	120	
ORG-430	29U-v2	33.50833	-80.86500	166	
ORG-431	29U-v3	33.50833	-80.86500	227	

Remarks:
1. Tidal effects probable
2. DHEC ADR November average
3. November average
4. Tidally affected