

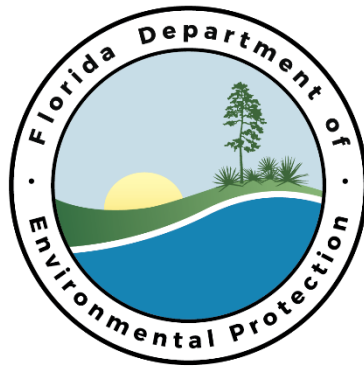
Revised Combined Total Storm Tide Frequency Analysis

PURPOSE

This document provides the 100-year combined total storm tide levels are excerpts from reports titled, “Combined Total Storm Tide Frequency Analysis”, prepared for each county with an established coastal construction control line (CCCL). The 100-year combined total storm tide levels, which include storm surge, dynamic wave setup and astronomical tide, are required to define the Flood Loads within section 3109.3.1 of the Florida Building Code.

The design professional should be aware that the “100-year storm elevations” as defined in the report, “*100-Year Storm Elevation Requirements for Habitable Structure Located Seaward of a CCCL*”, is the height of the breaking wave crest superimposed on the 100-year combined total storm tide levels.

The 100-year combined total storm tide levels relative to the current monument for each range of the counties with the established CCCL are tabulated in 4 regions below.



FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF WATER RESOURCE MANAGEMENT

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TALLAHASSEE, FLORIDA 32399-3000

I. Panhandle Region

Escambia County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 10	13.4	13.5
11 - 20	13.2	13.3
21 - 30	13.0	13.1
31 - 40	12.8	12.9
41 - 50	12.6	12.7
51 - 60	12.3	12.5
61 - 70	12.2	12.4
71 - 80	12.1	12.3
81 - 90	12.0	12.2
91 - 100	11.9	12.1
101 - 110	11.8	12.0
111 - 120	11.6	11.9
121 - 130	11.5	11.8
131 - 140	11.4	11.7
141 - 180	11.3	11.6
181 - 214	11.1	11.5

Okaloosa County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 16	11.1	11.5
17 - 50	11.0	11.4

Walton County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 25	10.3	10.7
26 - 50	10.2	10.6
51 - 75	10.1	10.5
76 - 85	10.2	10.6
86 - 95	10.3	10.7
96 - 105	10.4	10.8
106 - 115	10.5	10.9
116 - 127	10.6	11.0

Bay County

Range	100-Year Combined Total Storm Tide Level (ft.- NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 40	11.5	11.9
41 - 80	11.6	12.0
81 - 100	11.6	12.1
101 - 121	11.7	12.2
122 - 132	11.6	12.1
133 - 144	11.5	12.0

Gulf County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 31	12.2	12.7
32 - 40	10.4	10.9
41 - 50	10.2	10.7
51 - 60	10.0	10.5
61 - 70	9.8	10.3
71 - 80	9.6	10.1
81 - 90	10.0	10.5
91 - 100	10.4	10.9
101 - 110	10.8	11.3
111 - 115	11.2	11.7
116 - 120	12.4	12.9
121 - 162	13.6	14.1

Franklin County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 29	11.5	12.1
30 - 78	11.6	12.2
79 - 100	11.7	12.3
101 - 109	11.8	12.4
110 - 137	11.9	12.5
138 - 149	12.0	12.6
150 - 160	11.9	12.5
161 - 193	12.0	12.6
194 - 199	13.8	14.4
200 - 205	14.0	14.6
206 - 211	14.1	14.7
212 - 216	14.3	14.9
217 - 222	14.4	15.0
223 - 227	14.6	15.2
228 - 239	14.7	15.3

II. Lower West Coast Region

Pinellas County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 5	10.6	11.5
6 - 10	10.4	11.3
11 - 15	10.2	11.1
16 - 20	10.0	10.9
21 - 25	9.8	10.7
26 - 30	9.6	10.5
31 - 35	9.4	10.3
36 - 50	9.3	10.2
51 - 65	9.2	10.1
66 - 75	9.1	10.0
76 - 80	9.3	10.2
81 - 85	9.5	10.4
86 - 90	9.8	10.7
91 - 95	10.1	11.0
96 - 110	10.3	11.2
111 - 120	10.4	11.3
121 - 130	10.5	11.4
131 - 135	10.6	11.5
136 - 140	10.5	11.4
141 - 145	10.4	11.3
146 - 155	10.3	11.2
156 - 160	10.1	11.0
161 - 165	9.8	10.7
166 - 170	9.4	10.4
171 - 175	9.1	10.1
176 - 193	8.9	9.9

Manatee County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 10	11.3	12.3
11 - 20	11.4	12.4
21 - 40	11.5	12.5
41 - 50	11.6	12.6
51 - 60	11.7	12.7
61 - 67	11.8	12.8

Sarasota County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 20	11.9	12.9
21 - 40	11.8	12.8
41 - 60	11.7	12.7
61 - 100	11.5	12.6
101 - 140	11.6	12.7
141 - 183	11.7	12.8

Charlotte County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 15	12.0	13.1
16 - 30	11.9	13.0
31 - 45	11.8	12.9
46 - 60	11.7	12.8
61 - 68	11.6	12.7

Lee County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 14	11.4	12.5
15 - 26	11.3	12.4
27 - 40	11.1	12.3
41 - 100	11.0	12.2
101 - 105	11.1	12.3
106 - 110	11.2	12.4
111 - 114	11.3	12.5
115 - 118	11.4	12.6
119 - 122	11.5	12.7
123 - 126	11.6	12.8
127 - 130	11.7	12.9
131 - 134	11.8	13.0
135 - 138	11.9	13.1
139 - 142	12.0	13.2
143 - 146	12.1	13.3
147 - 150	12.2	13.4
151 - 154	12.3	13.5
155 - 158	12.4	13.6
159 - 162	12.5	13.7
163 - 166	12.6	13.8

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
167 - 170	12.7	13.9
171 - 174	12.8	14.0
175 - 177	12.9	14.1
178 - 180	13.0	14.2
181 - 183	13.1	14.3
184 - 186	13.2	14.4
187 - 189	13.3	14.5
190 - 192	13.4	14.6
193 - 195	13.5	14.7
196 - 210	13.6	14.8
211 - 239	13.5	14.7

Collier County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 4	14.0	15.2
5 - 8	13.9	15.1
9 - 12	13.8	15.0
13 - 16	13.7	14.9
17 - 20	13.6	14.8
21 - 24	13.5	14.7
25 - 28	13.4	14.6
29 - 33	13.2	14.5
34 - 38	13.1	14.4
39 - 43	13.0	14.3
44 - 48	12.9	14.2
49 - 53	12.8	14.1
54 - 58	12.7	14.0
59 - 63	12.6	13.9
64 - 68	12.5	13.8
69 - 73	12.4	13.7
74 - 78	12.3	13.6
79 - 83	12.2	13.5
84 - 88	12.1	13.4
89 - 93	12.0	13.3
94 - 99	11.9	13.2
100 - 106	11.8	13.1
107 - 127	11.7	13.0
128 - 148	11.6	12.9

III. Upper East Coast Region

Nassau County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 20	12.8	13.9
21 - 30	12.7	13.8
31 - 40	12.6	13.7
41 - 50	12.5	13.6
51 - 60	12.4	13.5
61 - 70	12.3	13.4
71 - 82	12.1	13.2

Duval County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 25	12.0	13.1
26 - 80	12.1	13.2

St. Johns County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 10	12.0	13.1
11 - 20	11.9	13.0
21 - 30	11.8	12.9
31 - 40	11.7	12.8
41 - 50	11.6	12.7
51 - 60	11.5	12.6
61 - 70	11.4	12.5
71 - 80	11.3	12.4
81 - 209	11.3	12.3

Flagler County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 10	11.6	12.6
11 - 20	11.5	12.5
21 - 25	11.4	12.4
26 - 30	11.3	12.3
31 - 35	11.2	12.2
36 - 40	11.1	12.1
41 - 45	11.0	12.0
46 - 50	10.9	11.9
51 - 55	10.8	11.8
56 - 60	10.7	11.7
61 - 65	10.6	11.6
66 - 70	10.5	11.5
71 - 75	10.3	11.4
76 - 80	10.2	11.3
81 - 85	10.1	11.2
86 - 90	10.0	11.1
91 - 95	9.8	10.9
96 - 100	9.6	10.7

Volusia County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
0 - 20	10.2	11.3
21 - 40	10.1	11.2
41 - 50	10.0	11.1
51 - 60	9.9	11.0
61 - 70	9.8	10.9
71 - 90	9.6	10.8
91 - 110	9.5	10.7
111 - 130	9.4	10.6
131 - 150	9.5	10.7
151 - 170	9.5	10.8
171 - 180	9.6	10.9
181 - 190	9.7	11.0
191 - 210	9.8	11.1
211 - 234	9.9	11.2

Brevard County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 30	9.3	10.7
30 - 50	9.4	10.8
51 - 70	9.5	10.9
71 - 90	9.6	11.0
91 - 120	9.7	11.1
121 - 140	9.8	11.2
141 - 160	9.9	11.3
161 - 180	10.0	11.4
181 - 200	10.1	11.5
201 - 219	10.2	11.6

IV. Lower East Coast Region

Indian River County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 40	9.8	11.2
41 - 80	9.8	11.3
81 - 100	9.9	11.4
101 - 119	10.0	11.5

St. Lucie County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 20	10.8	12.3
21 - 40	10.7	12.2
41 - 60	10.6	12.1
61 - 68	10.5	12.0
69 - 76	10.4	11.9
77 - 84	10.3	11.8
85 - 92	10.2	11.7
93 - 100	10.1	11.6
101 - 108	10.0	11.5
109 - 115	9.9	11.4

Martin County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 17	10.4	11.9
18 - 34	10.3	11.8
35 - 51	10.2	11.7
52 - 68	10.1	11.6
69 - 83	10.0	11.5
84 - 98	9.9	11.4
99 - 113	9.8	11.3
114 - 127	9.7	11.2

Palm Beach County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 60	9.7	11.2
61 - 85	9.6	11.1
86 - 105	9.7	11.2
106 - 125	9.8	11.3
126 - 145	9.8	11.4
146 - 185	9.9	11.5
186 - 227	10.0	11.6

Broward County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 10	10.9	12.5
11 - 20	11.0	12.6
21 - 30	11.1	12.7
31 - 40	11.2	12.8
41 - 50	11.3	12.9
51 - 60	11.4	13.0
61 - 70	11.5	13.1
71 - 80	11.6	13.2
81 - 90	11.7	13.3
91 - 100	11.8	13.4
101 - 110	11.9	13.5
111 - 128	12.0	13.6

Dade County

Range	100-Year Combined Total Storm Tide Level (ft. - NAVD)	100-Year Combined Total Storm Tide Level (ft. - NGVD)
1 - 30	11.9	13.5
31 - 60	12.0	13.6
61 - 80	12.1	13.7
81 - 90	12.2	13.8
91 - 100	12.3	13.9
101 - 113	12.4	14.0

References

1. Wang, S. Y., Manausa, M., Dean, R. G. and Walton, T. L., "Combined Total Storm Tide Restudy for Escambia County, Florida," Beaches and Shores Resource Center, Florida State University, Project for Bureau of Beaches and Coastal System, Florida Department of Environmental Protection, December 2008.
2. Wang, S. Y., Manausa, M., Dean, R. G. and Walton, T. L., "Combined Total Storm Tide Restudy for Okaloosa County, Florida," Beaches and Shores Resource Center, Florida State University, Project for Bureau of Beaches and Coastal System, Florida Department of Environmental Protection, April 2008.
3. Wang, S. Y., Manausa, M., Dean, R. G. and Walton, T. L., "Combined Total Storm Tide Restudy for Walton County, Florida," Beaches and Shores Resource Center, Florida State University, Project for Bureau of Beaches and Coastal System, Florida Department of Environmental Protection, November 2007.
4. Wang, S. Y., Manausa, M., Dean, R. G. and Walton, T. L., "Combined Total Storm Tide Restudy for Dog Island in Franklin County, Florida," Beaches and Shores Resource Center, Florida State University, Project for Bureau of Beaches and Coastal System, Florida Department of Environmental Protection, April 2007.
5. Wang, S. Y., Manausa, M., Dean, R. G. and Walton, T. L., "Combined Total Storm Tide Restudy for Gulf County, Florida," Beaches and Shores Resource Center, Florida State University, Project for Bureau of Beaches and Coastal System, Florida Department of Environmental Protection, January 2007.
6. Dean, R. G., Chiu, T. Y., and Wang, S. Y., "Combined Total Storm Tide Frequency Analysis for Bay County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Bureau of Beaches and Coastal systems, Division of Environmental Resource Permitting, May 1996.
7. Dean, R. G., Chiu, T. Y., and Wang, S. Y., "Combined Total Storm Tide Frequency Analysis for Pinellas County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Bureau of Beaches and Coastal systems, Division of Environmental Resource Permitting, March 1995.
8. Dean, R. G., Chiu, T. Y., and Wang, S. Y., "Combined Total Storm Tide Frequency Analysis for Palm Beach County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, April 1992.
9. Dean, R. G., Chiu, T. Y., and Wang, S. Y., "Combined Total Storm Tide Frequency Analysis for Duval County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, July 1991.
10. Dean, R. G., Chiu, T. Y., and Wang, S. Y., "Combined Total Storm Tide Frequency Analysis for Lee County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, July 1990.
11. Dean, R. G., Chiu, T. Y., and Wang, S. Y., "Combined Total Storm Tide Frequency Analysis for Volusia County, Florida," Beaches and Shores Resource Center, Florida State

- University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, July 1989.
12. Dean, R. G., Chiu, T. Y., and Wang, S. Y., "Combined Total Storm Tide Frequency Analysis for Collier County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, January 1989.
 13. Dean, R. G., Chiu, T. Y., and Wang, S. Y., "Combined Total Storm Tide Frequency Analysis for Sarasota County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, August 1988.
 14. Dean, R. G., Chiu, T. Y., and Wang, S. Y., "Combined Total Storm Tide Frequency Analysis for St. Lucie County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, March 1988.
 15. Dean, R. G., Chiu, T. Y., and Wang, S. Y., "Combined Total Storm Tide Frequency Analysis for Flagler County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, September 1987.
 16. Dean, R. G., Chiu, T. Y., and Wang, S. Y., "Combined Total Storm Tide Frequency Analysis for St. Johns County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, June 1987.
 17. Dean, R. G., Chiu, T. Y., and Wang, S. Y., "Combined Total Storm Tide Frequency Analysis for Manatee County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, March 1987.
 18. Dean, R. G. and Chiu, T. Y., "Combined Total Storm Tide Frequency Analysis for Indian River County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, October 1986.
 19. Dean, R. G. and Chiu, T. Y., "Combined Total Storm Tide Frequency Analysis for Brevard County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, May 1986.
 20. Dean, R. G. and Chiu, T. Y., "Combined Total Storm Tide Frequency Analysis for Martin County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, July 1984.
 21. Dean, R. G. and Chiu, T. Y., "Combined Total Storm Tide Frequency Analysis for Charlotte County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, April 1984.
 22. Dean, R. G. and Chiu, T. Y., "Combined Total Storm Tide Frequency Analysis for Nassau County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, Sept.1982.

23. Dean, R. G. and Chiu, T. Y., "Combined Total Storm Tide Frequency Analysis for Dade County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, May 1981.
24. Dean, R. G. and Chiu, T. Y., "Combined Total Storm Tide Frequency Analysis for Broward County, Florida," Beaches and Shores Resource Center, Florida State University, Study for Division of Beaches and Shores, Florida Department of Natural Resources, April 1981.