STORM-TIDE ELEVATIONS PRODUCED BY HURRICANE HUGO ALONG THE SOUTH CAROLINA COAST, SEPTEMBER 21-22, 1989

By R. Erik Schuck-Kolben

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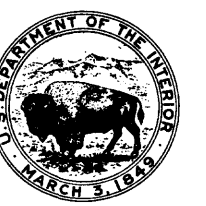

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MANUEL LUJAN, JR., Secretary

U.S. GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information
write to:

District Chief
U.S. Geological Survey
Stephenson Center-Suite 129
720 Gracern Road
Columbia, South Carolina 29210

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STORM-TIDE ELEVATIONS PRODUCED BY HURRICANE HUGO ALONG THE SOUTH CAROLINA COAST, SEPTEMBER 21-22, 1989

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ABSTRACT

High-water marks produced by the storm tide from Hurricane Hugo on September 21-22, 1989, were identified, described, and level-surveyed along the coast of South Carolina from North Myrtle Beach to Seabrook Island. Three hundred fifteen high-water marks are presented in tabular form listing mark number, quadrangle map, latitude, longitude, type of mark (inside or outside), quality of the mark (good: ± 0.10 foot, fair: ± 0.25 foot, and poor: >0.25 foot), water-surface elevation, and ground elevation. High-water marks and contours of approximate storm-tide elevation are plotted on a series of thirty-one $7\frac{1}{2}$ minute topographic quadrangle maps.

Average measured storm-tide elevations along the inner and outer coast are presented graphically and in tabular form. Average elevations of the storm-tide in feet above sea level near towns along the South Carolina coast are as follows: North Myrtle Beach was about 11 feet, 12 feet from Myrtle Beach to Pawleys Island Beach, 11 feet at Debidue Beach, 16 feet at McClellanville, 20 feet near Moores Landing, about 15 feet at Isle of Palms, 14 feet at Sullivans Island, 11 feet at Charleston, 12 feet at Folly Beach, 11 feet at Kiawah Island, and 7 feet at the North Edisto River mouth.

INTRODUCTION

Shortly after midnight on Friday morning, September 22, 1989, and one hour before high tide, Hurricane Hugo made landfall just north of Charleston, S.C. The hurricane, with sustained wind speed in excess of 135 miles per hour and moving west-northwestward at about 25 to 28 miles per hour (Purvis, 1989), left a path of destruction 60 to 100 miles wide from the coast inland to Charlotte, N.C. The storm tide peaked at about 20 feet above sea level in the vicinity of McClellanville, S.C., approximately 35 miles northeast of Charleston, S.C. High-water elevations of approximately 12 feet above sea level occurred as far as 80 miles to the northeast of Charleston in Garden City, S.C. The storm-tide was still powerful enough to destroy many beachfront homes in the areas.

The U.S. Geological Survey, in cooperation with the Federal Emergency Management Agency (FEMA), collected data in South Carolina on the flood elevations and depths caused by Hurricane Hugo. This report presents storm-tide elevation data collected at 315 sites, and maps that delineate inundated areas along the coast. The data presented here may be useful for flood-insurance purposes, and in guiding future development in these areas. Water-surface contours, high-water marks, and the approximate areas flooded by storm tides caused by Hurricane Hugo are shown on a series of $7\frac{1}{2}$ minute topographic quadrangle maps (plates 1-31). The area covered by the maps extends from the North Carolina-South Carolina border to Seabrook Island (North Edisto River mouth), a distance of approximately 135 miles (fig. 1). In general, the inland boundary of the area investigated was the landward extent of inundation.

Special thanks are extended to William Massey, Federal Emergency Management Agency; Andrew Garcia, and Robert Occhipinti, U.S. Army Corps of Engineers; Brian Jarvinen, Ray Smith, Milton Rutstein, and Doug Martin, National Oceanic and Atmospheric Administration; John Purvis, South Carolina State Climatologist; Luke Nance, U.S. Soil Conservation Service, and also to home and property owners who allowed high-water elevation surveys to be made.

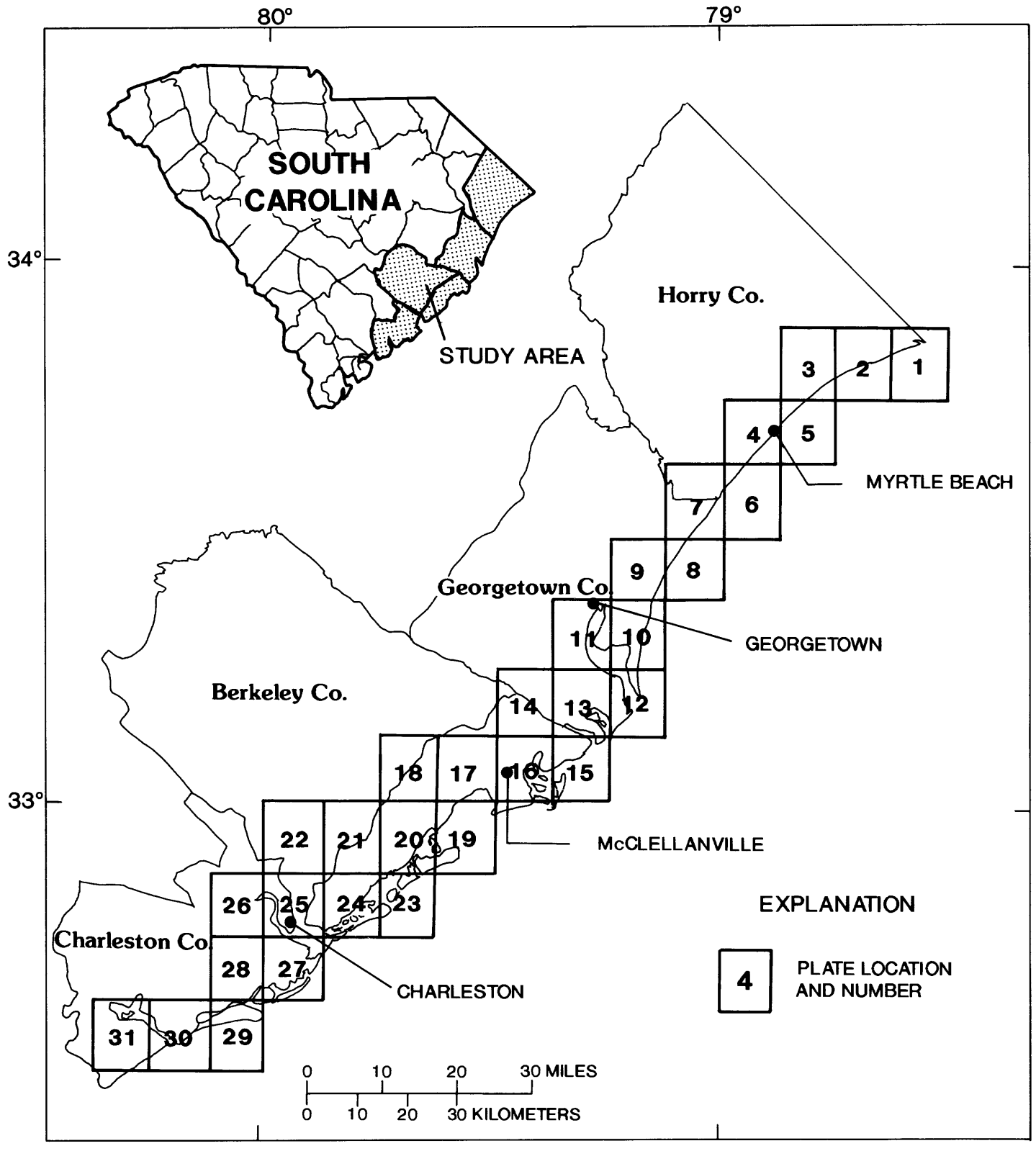


Figure 1.--Study area and quadrangles for which storm-tide elevations are delineated.

METHODS

Immediately after the storm, the U.S. Geological Survey sent crews to the coastal regions to investigate the extent of inundation caused by the storm tide. During this initial phase of the investigation, high-water marks were located and marked. A description of each mark that included a detailed description of its location, the type of mark (seedline, washline, driftline, stainline), and an assessment of the quality of the mark was prepared during this phase of the study. The quality of each mark was assigned a category for interpretation of the storm-tide elevation as follows:

Good -- A level, well-defined line of densely accumulated fine debris (or a distinct stain). Reliable to ± 0.10 foot.

Fair -- A level, but less distinct band of fine or coarse debris (or stain). Reliable to within ± 0.25 foot.

Poor -- A poorly defined band of sparsely accumulated coarse debris that may undulate due to surface wave action. Other examples include a discontinuous scatter of coarse debris on a structure, a coarse groundline of heavy-vegetative drift, or debris hung up in the branches of a tree. Uncertainty in true elevation greater than about 0.25 foot.

The best high-water marks for indication of maximum stillwater storm-tide elevation generally were found in small rooms of buildings, such as bathrooms and closets, or other locations where wave action was dampened. Outside marks are sometimes of poorer quality because of wave action or, in the case of debris lines, can be distorted considerably as a result of winds that followed the storm tide. Most of the 315 high-water marks used for this study, were judged to be good, and less than 5 percent were considered poor.

In the second phase of the study, the elevation of each high-water mark was determined. Most elevations were determined by using conventional direct leveling equipment and vertical control stations (bench marks) established by the U.S. Coast and Geodetic Survey and the South Carolina Geodetic Survey. In certain cases, such as on remote barrier islands where bench-mark elevations have not been referenced to NGVD, a Global Positioning System (GPS) was employed to establish vertical control. The GPS, in brief, is a system consisting of three telemetry units (two on known bench marks and one on the unknown point) that uses satellites in a triangulation scheme to determine latitude, longitude, and elevation.

The high-water mark elevations and ground elevations are shown on the topographic quadrangle maps. The maps are identified on figure 1 and presented as plates 1-31. Descriptions of the high-water marks are given in table 1 (at end of report).

VERTICAL DATUM

As stated in the Introduction of this report, the datum used for this study was the National Geodetic Vertical Datum of 1929 (NGVD of 1929). NGVD of 1929 is a geodetic datum derived by the U.S. Coast and Geodetic Survey (USCGS), which is now named the National Ocean Service (NOS), from an adjustment of the first-order (most precise) level nets of both the United States and Canada (Thompson, 1988).

This datum was formerly called "Sea Level Datum of 1929" because it was an average of all local mean sea levels in 1929. The local mean sea level, which varies with time and distance along the coastline, is the average, over selected time periods, of the midpoints in elevation between Mean Higher-High Water (MHHW) and Mean Lower-Low Water (MLLW) (fig. 2). The Mean Tide Level (MTL) established by the U.S. Department of Commerce, National Ocean Service (NOS), is physically the same as the local mean sea level of the USCGS, but is referenced to MLLW datum. That is, the MTL is the elevation of the local mean sea level above the MLLW. The Mean Lower-Low Water Datum also called the Chart Datum, is used by the NOS to minimize the reporting of negative values in predicting tide elevations (U.S. Department of Commerce, 1988).

Because sea levels have been rising in varying amounts with respect to location and time since 1929, the Mean Tide Level and local mean sea level are now higher than the NGVD of 1929 by varying amounts. During the most recent tidal epoch for which elevations are published (1960 to 1978), the approximate elevation of local mean sea level, in feet, with respect to NGVD of 1929 (d in fig. 2) at several stations along the coast of South Carolina is as follows: Charleston, 0.5, Winyah Bay, 0.6, and Myrtle Beach, 0.2 (Emory Balacz, National Geodetic Information Center, oral commun., January 1990). The above values are approximate and are based upon data from 1960 to 1978.

To convert high-water elevations published in this report from NGVD of 1929 to MLLW or Chart Datum for a specific location, refer to figure 2 and do the following:

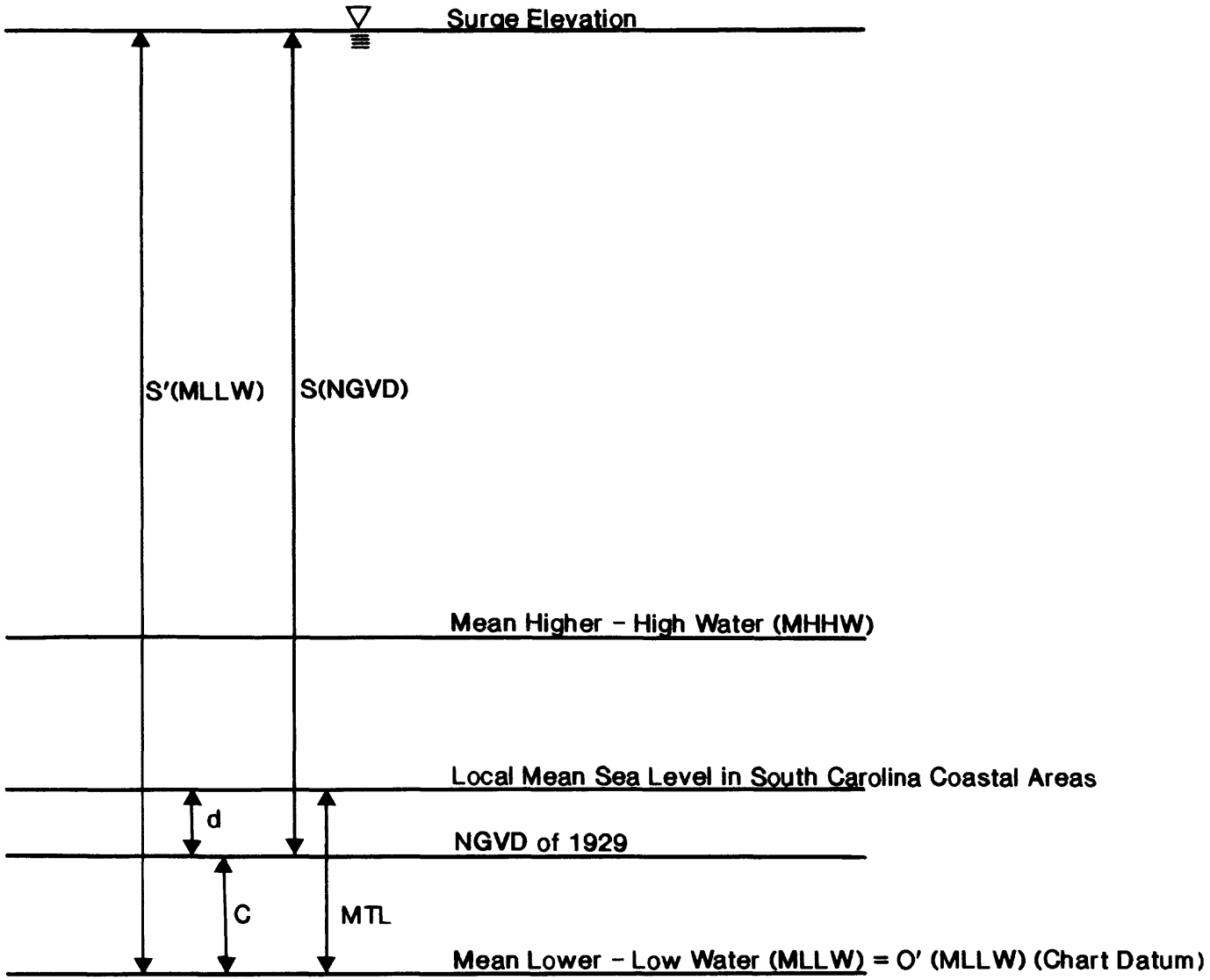
1) Look up published value for Mean Tide Level (MTL) (U.S. Department of Commerce, 1988) at closest location.

2) Determine the elevation (d) of Mean Tide Level referenced to NGVD of 1929 by linear interpolation between the values given above for Charleston, Winyah Bay, and Myrtle Beach. (See figure 4 for mileages for use in interpolation)

3) Compute the datum correction (C): C=MTL-d.

4) Convert the high-water elevation above NGVD of 1929 from this report in NGVD (S) to the storm-tide elevation in feet above MLLW (S') by the equation

$$S' = S + C.$$



S = SURGE ELEVATION REFERENCED TO NATIONAL GEODETIC VERTICAL DATUM OF 1929

S' = SURGE ELEVATION REFERENCED TO MEAN LOWER-LOW WATER (MLLW) (CHART DATUM)

d = DIFFERENCE BETWEEN NGVD OF 1929 AND MEAN TIDE LEVEL (MTL)

C = ELEVATION OF NGVD OF 1929 ABOVE MEAN-LOWER WATER (CHART DATUM) = MTL - d

$$S' = S + C$$

Figure 2.--Datum correction definition.

To determine the approximate height of storm surge (height of water above mean predicted tide elevation for any location), an easier approach may be to assume an approximate value of d equal to 0.6 foot (Jarvinen, 1989) and a mean predicted tide elevation at the time of maximum high water of 1.5 feet above mean tide level (MTL) (Jarvinen, 1989). Adding these two values will give a correction of 2.1 feet (0.6 + 1.5), which can be subtracted from the high-water elevation, in feet, in this report to obtain the height of the surge. For example, if the high water at a location was 20.0 feet (NGVD of 1929), the height of the surge for that location would be 20.0 - 2.1 = 17.9 feet. The reader needs to keep in mind that 17.9 is the surge height (or height of water above the predicted tide) and is not an elevation.

STORM-TIDE ELEVATIONS

The elevation of each high-water mark was plotted on the quadrangle maps (plates 1 to 31). High-water elevations were contoured at 1-foot intervals. In areas where there was an absence of data (such as across marshes or in bays), the contour lines are dotted to indicate that their positions are estimated. All water-surface elevations presented in this report are based on high-water marks described earlier. Discrepancies between adjacent high-water marks result from the effects of wave action, and (or) the effects of lag between occurrence of high water outside and the filling of rooms of houses where inside marks were obtained. Further evaluation of local inconsistencies between elevations of high-water marks is beyond the scope of this report.

Where possible, the inland extent of storm-tide inundation was mapped using observed debris lines in the field and is shown on the quadrangles. It was considered beyond the scope of this study to map the exact line of farthest landward inundation along the entire coast, especially in swampy, undeveloped areas. An attempt to define this boundary by using aerial photography was unsuccessful. Localized high or low ground surfaces in urbanized areas were often difficult to identify in the field or on topographic maps. The boundary line of inundation shown is approximate because of the limited information, and because it was determined by interpolation between observed inland extent locations by using topographic maps. In areas where more exact information is required than can be provided by the approximate water-surface contours and inundation lines presented in plates 1-31, surveys can be performed using the nearest surveyed high-water mark elevation as the probable maximum water-surface elevation for that area. Areas in which ground-surface elevations are lower than the elevation of the nearest surveyed high-water mark were probably inundated by the storm tides.

A plot of the average outer-coast and inner-coast storm-tide elevations along the coast from Seabrook Island to North Myrtle Beach is shown on figure 3. The outer coast is defined, for this report, as the portion of the coast that directly contacts the open ocean and is not protected by a barrier island. For example, Garden City Beach or oceanfront Sullivans Island are considered to be outer-coast locations. The inner coast is the

portion of the coast that is in contact with seawater (by a marsh or tidal river), but is protected by a barrier island or extensive marsh. One example of an inner-coast location would be McClellanville. The mileage baseline used to prepare figure 3 is shown on figure 4. The water-surface elevation data used to prepare this plot were taken from the contours on the plates. In addition to the alongshore profile of the storm tide, the distance to nearest open water from the inner-coast points and width of marsh in the direction of open water are also plotted. The data used to prepare this illustration are given in table 2. The distance to open water is defined, for the purposes of this report, to be the shortest (straight-line) distance over which the surge would pass to reach the inner-coast location. The reason for showing both the inner- and outer-coast elevations on the alongshore profile is to illustrate the slope of the storm tide (offshore component), as well as the effect of the marshes and barrier islands. This figure clearly illustrates the protection given to inland points by barrier islands from Rockville to the area north of Isle of Palms and between McClellanville and Debidue Beach. The highest storm-tide elevations were noted at the interior of Bulls Bay (fig. 3). This is the result of Bulls Bay being at the outer edge of the eye of the hurricane, where winds reached an estimated maximum speed of 135 miles per hour (Purvis, 1989). The inner-coast and outer-coast profiles converge near Debidue Beach, then diverge and show lower inner-coast elevations inland from Pawleys Island to the area north of Garden City, again showing the protection offered by the barrier islands. The inner-coast and outer-coast profiles converge near Myrtle Beach because no barrier islands exist from that point northward.

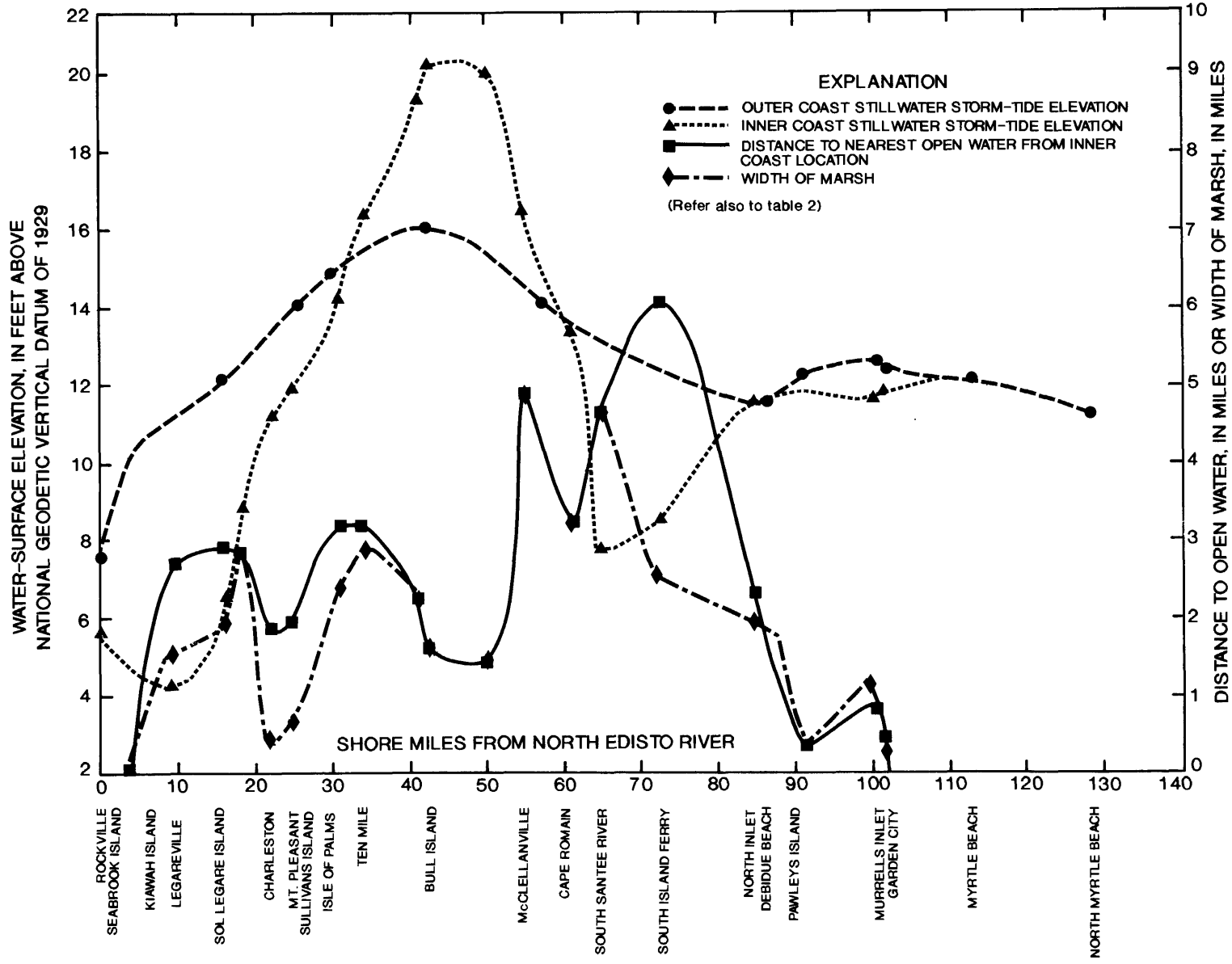


Figure 3.--Alongshore average still water storm-tide elevation for outer and inner coast, distance to open water, and width of marsh.

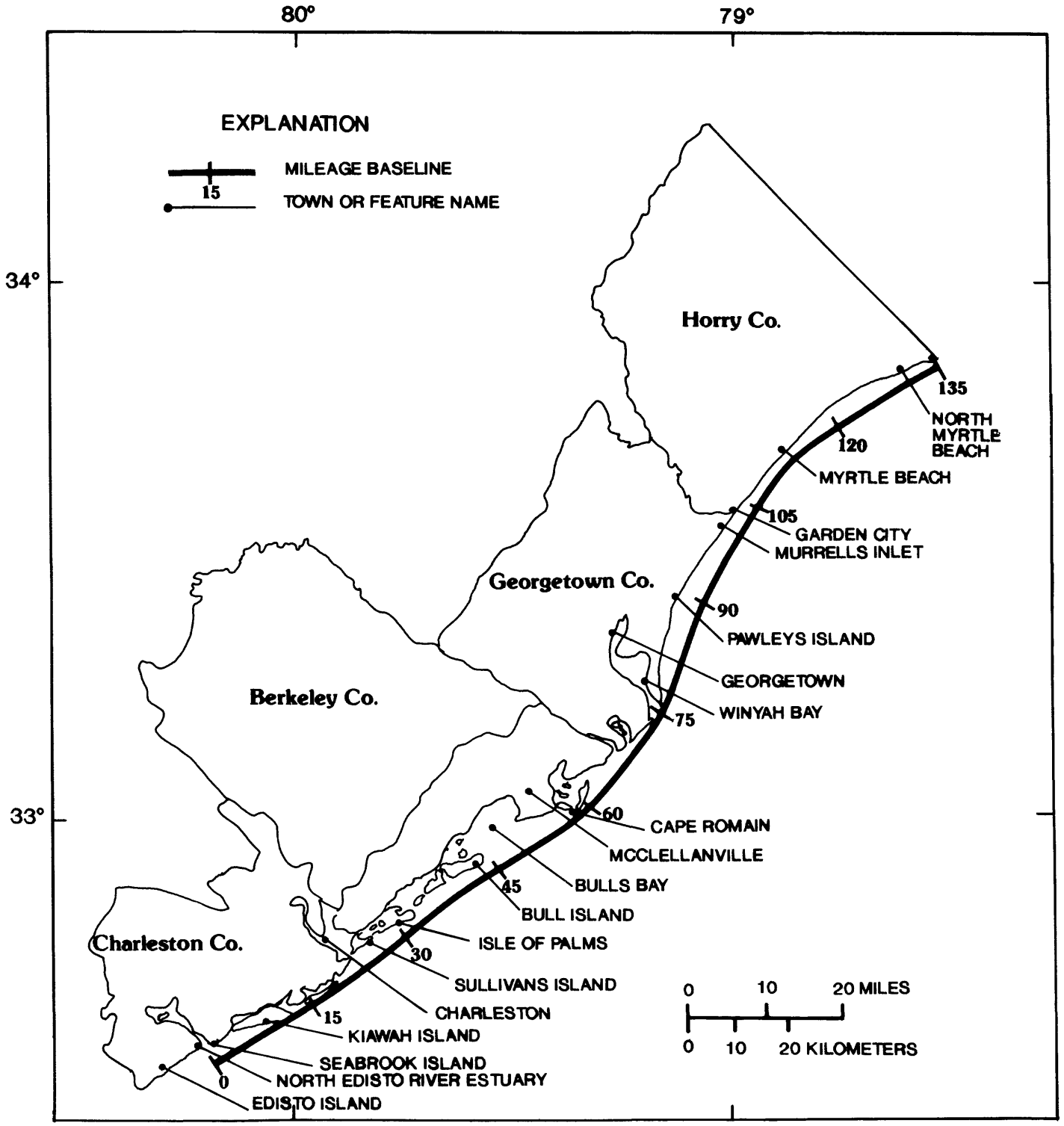


Figure 4.--Baseline for mileage along the South Carolina coast, used to prepare figure 3 and table 2.

Table 2.--Outer-coast and inner-coast storm-tide elevations, distance to open water, and marsh width at selected locations

Location	Distance from North Edisto River (miles)	Average storm-tide elevation (feet, above NGVD of 1929)	Distance to open water (miles)	Marsh width (miles)
Rockville	0	5.7	1.6	0
North Edisto River at mouth	0	7.5	7.5	0
South Kiawah Island	4.0	10.6	0	0
Stono Inlet	8.4	10.6	0	0
Legareville	9.3	4.3	2.8	1.6
Folly Beach	16.3	12.0	0	0
Sol Legare Island	16.3	6.5	2.9	2.0
Secessionville	18.3	8.8	2.9	2.9
Charleston Harbor	22.0	11.2	1.9	.5
Mount Pleasant	24.8	11.9	2.0	.7
Sullivans Island	25.6	14.1	0	0
Isle of Palms	29.9	14.8	0	0
Porcher Bluff (1 mile south)	31.0	14.2	3.2	2.4
Ten Mile	34.2	16.4	3.2	2.9
Moores Landing	41.1	19.3	2.3	2.3
One mile north of Moores Lodge	42.2	20.2	1.6	1.6
Bull Island	42.2	16.2	.8	0
Two miles north of Buck Hall	50.5	20.0	1.4	1.4

Table 2.--Outer-coast and inner-coast storm-tide elevations, distance to open water, and marsh width at selected locations--Continued

Location	Distance from N. Edisto River (miles)	Average storm-tide elevation (feet, above NGVD of 1929)	Distance to open water (miles)	Marsh width (miles)
McClellanville	55.1	16.4	4.9	4.9
Lighthouse Island	57.5	14.0	0	0
Four miles north of McClellanville	61.4	13.4	3.3	3.3
South Santee River below U.S. Highway 17	64.9	7.7	4.7	4.7
North Santee Bay	70.6	12.2	2.2	0
South Island at Ferry	72.4	8.6	6.1	2.6
North Inlet (Baruch Laboratory)	84.8	11.6	2.4	2.0
Debidue Beach	86.5	11.4	0	0
Pawleys Island Beach	90.8	12.2	0	0
Pawleys Island (mainland)	90.8	11.9	.5	.5
Murrells Inlet (beach)	100.2	12.6	0	0
Murrells Inlet (town)	100.2	11.6	.9	1.2
Garden City Beach	101.4	12.3	0	0
Garden City (town)	101.4	11.8	.5	.3
Myrtle Beach	112.9	12.1	0	0
North Myrtle Beach	128.3	11.1	0	0

SUMMARY

Hurricane Hugo made landfall just north of Charleston, S.C., shortly after midnight on Friday morning, September 22, 1989, one hour before high tide. The hurricane, with sustained wind speed in excess of 135-miles per hour and moving west-northwestward at 25 to 28 miles per hour, created a path of destruction 60 to 100 miles wide from the coast inland to Charlotte, N.C. The surge created by the storm peaked at an elevation of about 20 feet above sea level at Bulls Bay in the vicinity of McClellanville, S.C., approximately 35 miles northeast of Charleston, S.C.

High-water marks produced by the storm surge from Hurricane Hugo were identified, described, and level-surveyed along the coast of South Carolina from North Myrtle Beach to Seabrook Island. Three hundred fifteen high-water marks are described in this report. High-water marks, as well as contours of approximate surge elevation, are plotted on 31 topographic quadrangle maps.

Average measured storm tide elevations for both the inner and outer coasts are presented graphically and in tabular form. Average elevations of the storm tide in feet above sea level along the South Carolina coast are as follows: North Myrtle Beach was about 11 feet, 12 feet from Myrtle Beach to Pawleys Island Beach, 11 feet at Debidue Beach, 16 feet at McClellanville, 20 feet near Moores Landing, about 15 feet at Isle of Palms, 14 feet at Sullivans Island, 11 feet at Charleston, 12 feet at Folly Beach, 11 feet at Kiawah Island, and 7 feet at the North Edisto River mouth.

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Purvis, John C., 1989, Hurricane Hugo (1989): South Carolina Water Resources Commission, Columbia, S.C., State Climatology Series Report Number 6-37, 49 p.

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U.S. Department of Commerce, 1988, Tide tables 1989 high and low water predictions - East Coast of North and South America including Greenland: National Oceanic and Atmospheric Administration (NOAA). National Ocean Service, p. 222-224.

Table 1.--High-water marks; location, description, and elevations

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
2	Wampee	1	North Myrtle Beach	33°49'48"	78°38'28"	Good mark	O	9.4	8.0[e]
2	Wampee	2	North Myrtle Beach	33°49'46"	78°38'29"	Good mark	I	9.2	8.0[e]
2	Wampee	3	North Myrtle Beach	33°49'20"	78°39'36"	Good mark	O	9.4	9.0[e]
2	Wampee	4	North Myrtle Beach	33°49'20"	78°39'40"	Poor mark	O	13.0	8.0[e]
2	Wampee	5	North Myrtle Beach	33°51'05"	78°39'22"	Data from USGS[2] gaging station 02110777		8.6	--
3	Hand	1	Myrtle Beach	33°45'48"	78°46'56"	Poor debris line	O	11.8	11.8
3	Hand	2	Myrtle Beach	33°45'47"	78°46'54"	Good stain line	O	12.1	11.5[e]
3	Hand	3	Myrtle Beach	33°45'47"	78°46'54"	Good stain line	O	12.1	11.5[e]
4	Myrtle Beach	1	Myrtle Beach	33°40'45"	78°53'52"	Good mark	I	13.6	10.0[e]
4	Myrtle Beach	2	Myrtle Beach	33°40'44"	78°53'33"	Good mark	I	13.9	10.0[e]
4	Myrtle Beach	3	Myrtle Beach	33°40'50"	78°53'56"	Good mark	I	10.8	10.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
4	Myrtle Beach	4	Myrtle Beach	33°39'34"	78°55'07"	Good mark	I	12.1	8.0[e]
4	Myrtle Beach	5	Myrtle Beach	33°39'34"	78°55'10"	Good mark	I	12.3	8.0[e]
4	Myrtle Beach	6	Myrtle Beach	33°38'33"	78°56'10"	Good mark	I	12.5	8.0[e]
4	Myrtle Beach	7	Myrtle Beach	33°38'28"	78°56'26"	Good mark	I	12.2	9.0[e]
4	Myrtle Beach	8	Myrtle Beach	33°39'40"	78°55'09"	Good mark	O	12.0	12.0
5	Ocean Forest	1	Myrtle Beach	33°42'09"	78°52'02"	Poor debris line	O	11.0	11.0
5	Ocean Forest	2	Myrtle Beach	33°42'09"	78°52'02"	Good seed line	O	11.7	10.0[e]
5	Ocean Forest	3	Myrtle Beach	33°42'09"	78°52'02"	Good seed line	O	11.7	10.0[e]
6	Surfside Beach	1	Surfside Beach	33°36'20"	78°58'26"	Good mark	I	12.6	10.0[e]
6	Surfside Beach	2	Surfside Beach	33°36'15"	78°58'21"	Good mark	I	12.9	11.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
6	Surfside Beach	3	Surfside Beach	33°34'38"	78°59'57"	Good mark	I	12.4	11.0[e]
6	Surfside Beach	4	Surfside Beach	33°34'37"	78°59'59"	Good mark	I	12.0	11.0[e]
6	Surfside Beach	5	Surfside Beach	33°34'33"	78°59'58"	Good mark	I	12.6	11.0[e]
7	Brookgreen	1	Garden City	33°34'41"	79°00'01"	Good mud line	I	12.2	5.0[e]
7	Brookgreen	2	Garden City	33°34'46"	79°00'23"	Good mark	I	11.6	6.0[e]
7	Brookgreen	3	Garden City	33°34'34"	79°00'05"	Good seed line	I	12.5	6.0[e]
7	Brookgreen	4	Garden City	33°34'40"	79°00'26"	Good seed line	I	12.0	6.0[e]
7	Brookgreen	5	Garden City	33°34'36"	79°00'30"	Good seed line	O	12.0	6.5
7	Brookgreen	6	Garden City	33°34'16"	79°00'19"	Good seed line	I	12.7	6.0
7	Brookgreen	7	Garden City	33°34'14"	79°01'03"	Good seed line	I	11.7	8.0[e]
7	Brookgreen	8	Garden City	33°34'15"	79°01'10"	Good seed line	O	11.8	8.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
7	Brookgreen	9	Garden City	33°34'14"	79°01'28"	Good seed line	O	11.7	8.9
7	Brookgreen	10	Garden City	33°33'09"	79°01'08"	Good mark	I	11.1	8.1
7	Brookgreen	11	Garden City	33°33'02"	79°01'12"	Good mark	I	11.7	8.2
7	Brookgreen	12	Garden City	33°33'03"	79°01'19"	Good mark	I	11.5	6.6
7	Brookgreen	13	Murrells Inlet	33°33'06"	79°02'28"	Good seed line	O	11.6	8.9
7	Brookgreen	14	Garden City	33°32'37"	79°01'30"	Good debris line	I	11.2	7.7
7	Brookgreen	15	Garden City	33°32'28"	79°01'26"	Good stain line	I	12.5	9.2
7	Brookgreen	16	Garden City	33°32'24"	79°01'40"	Good seed line	I	11.5	7.1
7	Brookgreen	17	Garden City	33°32'21"	79°01'39"	Good mark	I	11.1	5.4
7	Brookgreen	18	Garden City	33°32'17"	79°01'34"	Good mark	O	11.3	8.3
7	Brookgreen	19	Garden City	33°32'09"	79°01'52"	Good mark	O	11.0	7.4
7	Brookgreen	20	Garden City	33°32'00"	79°01'50"	Good mark	I	12.6	6.9

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
7	Brookgreen	21	Murrells Inlet	33°32'07"	79°03'16"	Good seed line	O	11.7	11.0[e]
7	Brookgreen	22	Garden City	33°34'45"	79°00'12"	Fair seed line	I	12.0	5.0[e]
7	Brookgreen	23	Garden City	33°34'49"	79°00'19"	Good seed line	I	11.6	6.0[e]
7	Brookgreen	24	Garden City	33°34'56"	79°00'21"	Poor debris	O	11.5	11.5
8	Magnolia Beach	1	Litchfield Beach	33°29'45"	79°04'32"	Good seed line	O	11.1	10.5
8	Magnolia Beach	2	Litchfield Beach	33°29'43"	79°04'28"	Good seed line	O	11.1	8.4
8	Magnolia Beach	3	Litchfield Beach	33°29'38"	79°04'28"	Poor mud line	O	13.8	12.4
8	Magnolia Beach	4	Litchfield Beach	33°29'20"	79°04'54"	Good seed/ stain line	O	10.6	7.9
8	Magnolia Beach	5	Litchfield Beach	33°29'17"	79°05'06"	Good seed line	O	10.4	8.0[e]
8	Magnolia Beach	6	Litchfield Beach	33°29'12"	79°04'59"	Good mark	O	10.8	8.5
8	Magnolia Beach	7	Litchfield Beach	33°29'05"	79°05'11"	Good seed line	O	10.7	6.9

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
8	Magnolia Beach	8	Litchfield Beach	33°28'16"	79°06'11"	Good seed line	I	12.1	7.1
8	Magnolia Beach	9	Litchfield Beach	33°28'09"	79°05'54"	Good seed line	O	11.9	6.8
8	Magnolia Beach	10	Litchfield Beach	33°28'09"	79°05'57"	Good seed line	O	11.8	6.8
8	Magnolia Beach	11	Litchfield Beach	33°28'01"	79°06'00"	Good debris line	I	12.1	7.1
8	Magnolia Beach	12	Litchfield Beach	33°28'01"	79°06'04"	Good seed line	O	11.6	6.5
8	Magnolia Beach	13	Litchfield Beach	33°27'56"	79°05'59"	Good seed/ stain line	O	12.2	9.1
8	Magnolia Beach	14	Litchfield Beach	33°27'52"	79°06'02"	Poor stain line	I	11.0	8.6
8	Magnolia Beach	15	Litchfield Beach	33°27'43"	79°06'06"	Good seed line	I	12.9	9.4
8	Magnolia Beach	16	Litchfield Beach	33°27'36"	79°06'17"	Good seed line	I	13.0	7.8
8	Magnolia Beach	17	Litchfield Beach	33°27'30"	79°06'12"	Good seed line	I	13.4	10.2

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
8	Magnolia Beach	18	Pawleys Island	33°26'35"	79°06'49"	Good seed line	I	12.7	6.2
8	Magnolia Beach	19	Pawleys Island	33°26'23"	79°06'58"	Good seed line	O	12.8	7.2
8	Magnolia Beach	20	Pawleys Island	33°26'20"	79°07'04"	Good debris line	I	11.9	5.2
8	Magnolia Beach	21	Pawleys Island	33°26'13"	79°07'05"	Good seed/ mud line	I	12.4	5.8
8	Magnolia Beach	22	Pawleys Island	33°26'11"	79°07'10"	Good mud line	I	11.7	6.6
8	Magnolia Beach	23	Pawleys Island	33°26'11"	79°07'28"	Good seed line	O	11.9	9.0[e]
8	Magnolia Beach	24	Pawleys Island	33°25'43"	79°07'20"	Poor mud/ stain line	I	15.3	5.0[e]
8	Magnolia Beach	25	Pawleys Island	33°25'43"	79°07'22"	Good seed line	I	11.7	5.0[e]
9	Waverly Mills	1	Pawleys Island	33°25'38"	79°07'53"	Good seed line	I	12.0	8.0[e]
9	Waverly Mills	2	Pawleys Island	33°25'36"	79°07'54"	Good seed/ stain line	I	11.8	8.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
9	Waverly Mills	3	Pawleys Island	33°25'35"	79°07'56"	Good stain line	I	11.9	8.1
9	Waverly Mills	4	Pawleys Island	33°25'12"	79°07'38"	Fair stain line	O	11.1	8.0[e]
9	Waverly Mills	5	Pawleys Island	33°25'12"	79°07'39"	Fair mark	O	12.1	8.0[e]
9	Waverly Mills	6	Pawleys Island	33°24'39"	79°07'58"	Fair seed line	I	11.9	6.0[e]
10	North Island	1	Georgetown	33°22'26"	79°09'03"	Good mark	O	11.3	8.9
10	North Island	2	Georgetown	33°22'16"	79°09'57"	Good mark	O	11.4	9.0
10	North Island	3	Georgetown	33°21'59"	79°10'11"	Good mark	I	10.8	8.7
10	North Island	4	Georgetown	33°21'59"	79°10'11"	Fair mark	O	10.8	8.7
10	North Island	5	Georgetown	33°21'46"	79°09'23"	Fair mark	O	10.8	7.0[e]
10	North Island	6	Georgetown	33°21'46"	79°09'07"	Good mark	O	11.3	9.2

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
10	North Island	7	Georgetown	33°21'30"	79°09'07"	Good mark	O	11.6	8.3
10	North Island	8	Georgetown	33°20'57"	79°11'42"	Good seed line	O	11.6	5.0[e]
10	North Island	9	Georgetown	33°20'06"	79°11'40"	Good seed line	O	12.1	5.0[e]
10	North Island	10	Georgetown	33°18'09"	79°14'06"	Good seed line	O	12.6	6.0[e]
11	Georgetown South	1	Georgetown	33°22'10"	79°16'38"	Good mark	O	6.9	6.0[e]
11	Georgetown South	2	Georgetown	33°21'52"	79°16'15"	Good mark	O	7.7	7.5
11	Georgetown South	3	Georgetown	33°21'44"	79°21'15"	Fair mark	O	8.1	7.0[e]
11	Georgetown South	4	Georgetown	33°20'33"	79°17'23"	Good mark	O	9.2	5.6
11	Georgetown South	5	Georgetown	33°19'37"	79°17'36"	Fair mark	O	9.7	9.4
11	Georgetown South	6	Georgetown	33°15'21"	79°17'45"	Fair mark	O	8.7	7.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
11	Georgetown South	7	Georgetown	33°18'39"	79°16'28"	Good debris line	O	9.0	9.0
11	Georgetown South	8	Georgetown	33°17'55"	79°15'26"	Fair debris line	O	9.0	8.1
11	Georgetown South	9	Georgetown	33°15'03"	79°16'09"	Good mark	O	8.4	5.0[e]
11	Georgetown South	10	Georgetown	33°15'00"	79°16'04"	Good debris line	I	8.6	5.2
12	Santee Point	1	Georgetown	33°14'07"	79°12'16"	Good seed line	I	7.7	5.0[e]
12	Santee Point	2	Georgetown	33°14'03"	79°12'15"	Good seed line	I	7.6	5.0[e]
12	Santee Point	3	Georgetown	33°13'20"	79°11'07"	Good seed line	I	8.2	5.0
12	Santee Point	4	Georgetown	33°13'20"	79°11'05"	Good seed line	I	8.1	5.0
12	Santee Point	5	Georgetown	33°10'00"	79°14'12"	Good debris line	O	12.1	12.0
13	Minim Island	1	Georgetown	33°13'04"	79°16'19"	Good seed line	O	8.2	5.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
13	Minim Island	2	Georgetown	33°12'49"	79°17'47"	Poor debris line	O	6.8	5.4
13	Minim Island	3	Georgetown	33°12'28"	79°19'45"	Fair mark	O	7.7	4.0[e]
13	Minim Island	4	Georgetown	33°09'05"	79°21'41"	Good mark	I	7.7	5.0[e]
14	Santee	1	Georgetown	33°12'36"	79°23'03"	Data from USGS[2] gaging station 02171800		6.6	--
14	Santee	2	Georgetown	33°10'52"	79°24'11"	Good debris line	O	7.4	7.4
15	Cape Romain	1	McClellan-ville	33°01'07"	79°22'25"	Good stain/ seed line	I	14.0	7.5
15	Cape Romain	2	McClellan-ville	33°01'05"	79°22'27"	Good stain/ seed line	I	14.0	5.9
16	McClellan-ville	1	McClellan-ville	33°05'43"	79°27'12"	Fair seed line	O	13.4	9.3
16	McClellan-ville	2	McClellan-ville	33°05'27"	79°27'20"	Fair mark	O	16.1	9.3
16	McClellan-ville	3	McClellan-ville	33°05'22"	79°27'45"	Good seed line	O	15.5	9.8

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
16	McClellan-ville	4	McClellan-ville	33°05'34"	79°28'00"	Good seed line	O	15.2	10.7
16	McClellan-ville	5	McClellan-ville	33°05'44"	79°28'34"	Good mark	O	14.8	12.8
16	McClellan-ville	6	McClellan-ville	33°05'35"	79°28'29"	Good seed line	I	15.3	10.4
16	McClellan-ville	7	McClellan-ville	33°04'46"	79°27'34"	Good mud line	I	16.4	6.8
16	McClellan-ville	8	McClellan-ville	33°06'31"	79°24'16"	Good seed line	O	13.4	5.4
17	Awendaw	1	Awendaw	33°04'25"	79°30'53"	Good seed line	O	16.6	13.0[e]
17	Awendaw	2	Awendaw	33°04'11"	79°30'52"	Good seed line	O	18.5	9.8
17	Awendaw	3	Awendaw	33°03'36"	79°32'17"	Good mark	O	17.4	16.5
17	Awendaw	4	Awendaw	33°01'51"	79°37'26"	Good mark	O	15.4	8.7
17	Awendaw	5	Awendaw	33°01'45"	79°37'35"	2 good marks	I O	14.8 14.4	11.1
17	Awendaw	6	Awendaw	33°01'36"	79°37'11"	Good seed line	I	13.8	13.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
17	Awendaw	7	Awendaw	33°01'19"	79°36'03"	Good seed line	O	16.8	15.1
17	Awendaw	8	Awendaw	33°00'56"	79°35'34"	Good seed line	O	20.2	19.5
19	Bull Island	1	Awendaw	32°54'29"	79°36'46"	Good seed line	I	16.2	8.2
19	Bull Island	2	Awendaw	32°54'27"	79°36'45"	Good seed line	I	16.2	8.9
19	Bull Island	3	Awendaw	32°54'27"	79°36'43"	Good seed line	I	16.2	9.7
20	Sewee Bay	1	Awendaw	32°58'08"	79°38'15"	Fair mark	I	19.5	16.3
20	Sewee Bay	2	Awendaw	32°58'13"	79°38'15"	Good mark	O	19.4	17.6
20	Sewee Bay	3	Awendaw	32°57'42"	79°39'02"	Fair mark	O	18.8	18.0[e]
20	Sewee Bay	4	Awendaw	32°57'29"	79°38'51"	2 Good marks	I O	18.8 19.2	14.9
20	Sewee Bay	5	Awendaw	32°57'28"	79°38'44"	Good mark	O	19.7	13.1
20	Sewee Bay	6	Awendaw	32°57'20"	79°38'42"	Good mark	I	19.4	13.2
20	Sewee Bay	7	Awendaw	32°57'20"	79°38'46"	Good mark	O	20.0	14.0

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
20	Sewee Bay	8	Awendaw	32°57'16"	79°38'48"	Good mark	I	20.2	11.3
20	Sewee Bay	9	Awendaw	32°56'29"	79°39'30"	Good seed line	I	19.3	11.3
20	Sewee Bay	10	Awendaw	32°56'29"	79°39'30"	Good seed line	I	18.8	11.3
20	Sewee Bay	11	Awendaw	32°55'56"	79°41'10"	Fair debris lines	O	16.2 Avg[3]	16.0
20	Sewee Bay	12	Awendaw	32°55'55"	79°41'09"	Fair seed lines	O O	16.4 16.9	10.0[e]
20	Sewee Bay	13	Awendaw	32°55'10"	79°41'10"	Good mark	I	18.2 Avg[3]	9.5
20	Sewee Bay	14	Mount Pleasant	32°52'36"	79°44'55"	Good marks	I O	15.2 15.2	10.4
21	Cainhoy	1	North Charleston	32°52'49"	79°45'08"	Good mark	O	15.0	11.8
22	North Charleston	1	North Charleston	32°58'06"	79°56'11"	Good debris line	O	8.2	8.0[e]
22	North Charleston	2	North Charleston	32°58'00"	79°56'12"	Fair debris line	O	8.3	8.3
22	North Charleston	3	North Charleston	32°53'33"	79°58'23"	Fair debris line	O	7.7	7.7

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
22	North Charleston	4	North Charleston	32°52'31"	79°58'29"	Fair debris line	O	9.0	6.0[e]
23	Capers Inlet	1	Mount Pleasant	32°52'26"	79°44'45"	Fair mark	I	16.4	5.0[e]
23	Capers Inlet	2	Isle of Palms	32°52'29"	79°44'50"	Good mark	O	15.4	9.2
23	Capers Inlet	3	Isle of Palms	32°48'49"	79°43'26"	Good mark	O	14.2	10.4
23	Capers Inlet	4	Isle of Palms	32°48'37"	79°43'26"	Good mark	O	14.1	8.6
23	Capers Inlet	5	Isle of Palms	32°48'39"	79°43'44"	Good mark	O	12.7	7.0
23	Capers Inlet	6	Isle of Palms	32°48'09"	79°44'12"	Good mark	O	14.5	8.2
23	Capers Inlet	7	Isle of Palms	32°48'19"	79°44'13"	Good mark	O	13.0	9.7
23	Capers Inlet	8	Isle of Palms	32°48'04"	79°44'45"	Good mark	O	12.6	8.4
23	Capers Inlet	9	Isle of Palms	32°48'28"	79°44'56"	Good mark	O	12.7	8.0

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
23	Capers Inlet	10	Isle of Palms	32°48'28"	79°44'23"	Good mark	O	12.5	7.2
23	Capers Inlet	11	Isle of Palms	32°48'27"	79°44'14"	Good mark	O	13.8	8.0
23	Capers Inlet	12	Isle of Palms	32°48'25"	79°44'36"	Good mark	O	12.6	7.0
24	Fort Moultrie	1	Mount Pleasant	32°49'01"	79°48'27"	2 Good seed lines	O O	13.1 13.0	11.0[e]
24	Fort Moultrie	2	Isle of Palms	32°47'03"	79°47'42"	Good mark	I	12.1	8.6
24	Fort Moultrie	3	Isle of Palms	32°46'56"	79°47'38"	Good mark	I	16.2	11.7
24	Fort Moultrie	4	Isle of Palms	32°46'46"	79°48'18"	Good mark	O	10.9	8.3
24	Fort Moultrie	5	Isle of Palms	32°46'41"	79°48'15"	Good mark	I	14.4	8.9
24	Fort Moultrie	6	Sullivans Island	32°46'26"	79°48'58"	Fair mark	I	13.4	9.0[e]
24	Fort Moultrie	7	Sullivans Island	32°46'19"	79°49'17"	Good mark	I	11.7	6.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	8	Sullivans Island	32°46'12"	79°49'02"	Fair mark	O	16.0	15.4
24	Fort Moultrie	9	Sullivans Island	32°46'12"	79°49'06"	Good mark	O	16.2	15.0[e]
24	Fort Moultrie	10	Sullivans Island	32°46'12"	79°49'15"	Fair mark	O	13.3	7.5
24	Fort Moultrie	11	Sullivans Island	32°46'06"	79°49'15"	Good mark	I	13.8	12.0
24	Fort Moultrie	12	Sullivans Island	32°46'04"	79°49'14"	Good mark	O	15.8	7.0[e]
24	Fort Moultrie	13	Sullivans Island	32°45'49"	79°49'38"	Fair mark	I	15.8	10.5
24	Fort Moultrie	14	Sullivans Island	32°46'04"	79°49'49"	Good mark	O	11.6	8.0[e]
24	Fort Moultrie	15	Sullivans Island	32°46'03"	79°49'58"	Good mark	I	10.0	6.0[e]
24	Fort Moultrie	16	Sullivans Island	32°45'56"	79°50'12"	Good mark	O	10.2	6.0[e]
24	Fort Moultrie	17	Sullivans Island	32°45'45"	79°50'03"	Poor mark	I	11.0	8.1

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	18	Sullivans Island	32°45'54"	79°50'18"	Good seed line	I	11.6	8.3
24	Fort Moultrie	19	Sullivans Island	32°45'43"	79°50'15"	Good seed line	I	13.5	8.4
24	Fort Moultrie	20	Sullivans Island	32°45'33"	79°50'22"	Fair seed line	I	12.3	10.5
24	Fort Moultrie	21	Sullivans Island	32°45'26"	79°50'31"	2 Good seed lines	I O	13.0 13.0	8.1
24	Fort Moultrie	22	Sullivans Island	32°45'24"	79°51'05"	Good seed line	I	11.6	10.7
24	Fort Moultrie	23	Sullivans Island	32°45'32"	79°51'06"	Good seed line	I	11.0	8.2
24	Fort Moultrie	24	Sullivans Island	32°45'35"	79°51'14"	Good seed lines	I O	10.9 10.9	8.3
24	Fort Moultrie	25	Sullivans Island	32°45'36"	79°51'28"	Good seed line	O	10.9	8.0[e]
24	Fort Moultrie	26	Sullivans Island	32°45'37"	79°51'34"	Good seed line	O	11.5	6.9
24	Fort Moultrie	27	Mount Pleasant	32°48'38"	79°49'44"	Fair seed line	I	12.4	9.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	28	Mount Pleasant	32°48'09"	79°50'31"	Good mark	I	11.7	10.0[e]
24	Fort Moultrie	29	Mount Pleasant	32°52'13"	79°46'06"	Fair debris line	O	14.3	14.0[e]
24	Fort Moultrie	30	Mount Pleasant	32°51'20"	79°46'50"	Good seed line Fair seed line	O O	12.2 11.7	8.0[e]
24	Fort Moultrie	31	Mount Pleasant	32°50'35"	79°47'23"	Good mark	O	13.7	11.3
24	Fort Moultrie	32	Mount Pleasant	32°50'14"	79°46'57"	Good seed lines	I O	14.2 14.2	8.0[e]
24	Fort Moultrie	33	Mount Pleasant	32°49'50"	79°47'36"	Good mark	I	12.7	7.0[e]
24	Fort Moultrie	34	Mount Pleasant	32°47'40"	79°50'51"	Good mark	O	11.8	9.0[e]
24	Fort Moultrie	35	Mount Pleasant	32°47'38"	79°50'52"	Good mark	I	12.0	9.0[e]
24	Fort Moultrie	36	Mount Pleasant	32°47'36"	79°50'54"	Good seed line	I	11.8	9.0[e]
24	Fort Moultrie	37	Mount Pleasant	32°47'34"	79°50'56"	Good seed line	I	12.0	9.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	38	Mount Pleasant	32°47'27"	79°51'05"	Good seed line	O	12.3	10.0[e]
24	Fort Moultrie	39	Mount Pleasant	32°47'21"	79°51'10"	2 Good marks	I O	12.1 12.2	9.0[e]
24	Fort Moultrie	40	Mount Pleasant	32°47'12"	79°51'03"	Good mark	I	11.8	7.4
24	Fort Moultrie	41	Mount Pleasant	32°46'32"	79°50'46"	2 Good marks	I I	11.6 11.7	6.0[e]
24	Fort Moultrie	42	Mount Pleasant	32°47'14"	79°51'03"	Good mark	O	12.0	7.0
24	Fort Moultrie	43	Mount Pleasant	32°46'52"	79°51'45"	Good mark	O	12.0	11.0[e]
24	Fort Moultrie	44	Mount Pleasant	32°46'49"	79°51'48"	Good mark	O	11.4	6.0[e]
24	Fort Moultrie	45	Mount Pleasant	32°46'46"	79°51'52"	2 Good marks	I I	11.4 11.5	6.0[e]
24	Fort Moultrie	46	Mount Pleasant	32°46'48"	79°51'54"	Good mark	O	10.8	6.0[e]
24	Fort Moultrie	47	Mount Pleasant	32°46'47"	79°52'04"	Good mark	O	11.3	6.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	48	Mount Pleasant	32°46'49"	79°52'08"	Good mark	I	12.0	7.0[e]
24	Fort Moultrie	49	Mount Pleasant	32°46'55"	79°52'14"	Good mark	O	11.9	6.0[e]
24	Fort Moultrie	50	Mount Pleasant	32°46'52"	79°52'17"	Good mark	I	12.2	8.0[e]
24	Fort Moultrie	51	Mount Pleasant	32°46'52"	79°52'18"	Good mark	I	12.1	6.0[e]
24	Fort Moultrie	52	Sullivans Island	32°45'58"	79°49'22"	Good mark	I	14.1	9.3
24	Fort Moultrie	53	Isle of Palms	32°48'19"	79°45'30"	Good mark	O	12.9	7.4
24	Fort Moultrie	54	Isle of Palms	32°48'16"	79°45'21"	Good seed line	O	12.7	7.4
24	Fort Moultrie	55	Isle of Palms	32°47'55"	79°45'06"	Good mark	O	15.4	9.2
24	Fort Moultrie	56	Isle of Palms	32°47'56"	79°45'19"	Good debris line	I	15.1	10.0
24	Fort Moultrie	57	Isle of Palms	32°48'02"	79°45'20"	Good seed line	O	12.9	10.8

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	58	Isle of Palms	32°48'08"	79°45'45"	Good mark	O	12.6	7.0
24	Fort Moultrie	59	Isle of Palms	32°47'52"	79°45'37"	Good mark	O	15.5	11.2
24	Fort Moultrie	60	Isle of Palms	32°48'03"	79°46'04"	Good mark	O	12.6	7.7
24	Fort Moultrie	61	Isle of Palms	32°47'57"	79°46'03"	Good mark	I	12.4	6.4
24	Fort Moultrie	62	Isle of Palms	32°47'47"	79°45'55"	Fair mark Good mark	I O	12.4 12.6	11.5 12.1
24	Fort Moultrie	63	Isle of Palms	32°47'54"	79°46'27"	Good mark	O	12.6	7.0[e]
24	Fort Moultrie	64	Isle of Palms	32°47'38"	79°46'12"	Good mark	I	14.7	10.7
24	Fort Moultrie	65	Isle of Palms	32°47'31"	79°46'25"	Good mark	I	13.9	9.2
24	Fort Moultrie	66	Isle of Palms	32°47'45"	79°46'43"	Good mark	O	12.4	7.2
24	Fort Moultrie	67	Isle of Palms	32°47'43"	79°46'48"	Good mark	O	12.4	7.1

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	68	Isle of Palms	32°47'37"	79°47'08"	Good mark	I	12.3	7.7
24	Fort Moultrie	69	Isle of Palms	32°47'28"	79°47'02"	Good mark	I	12.5	7.0
24	Fort Moultrie	70	Isle of Palms	32°47'28"	79°46'50"	Fair mark	O	12.6	7.6
24	Fort Moultrie	71	Isle of Palms	32°47'18"	79°46'58"	Good mark	I	14.0	9.2
24	Fort Moultrie	72	Isle of Palms	32°47'42"	79°46'02"	Good mark	I	15.3	10.8
24	Fort Moultrie	73	Isle of Palms	32°46'56"	79°47'56"	Good mark	I	12.0	9.9
24	Fort Moultrie	74	Isle of Palms	32°46'50"	79°47'54"	Good mark	I	15.2	10.8
24	Fort Moultrie	75	Sullivans Island	32°45'48"	79°51'49"	Good seed line	I	10.9	6.7
24	Fort Moultrie	76	Sullivans Island	32°45'56"	79°51'45"	Good seed line	O	11.5	8.0
24	Fort Moultrie	77	Sullivans Island	32°45'57"	79°51'52"	Poor seed line	O	12.7	8.6

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
24	Fort Moultrie	78	Sullivans Island	32°45'32"	79°51'16"	Good seed line	O	10.8	8.0[e]
24	Fort Moultrie	79	Sullivans Island	32°45'26"	79°51'05"	Good seed line	I	11.1	7.6
24	Fort Moultrie	80	Sullivans Island	32°45'39"	79°50'43"	Good seed line	O	11.2	8.0
24	Fort Moultrie	81	Sullivans Island	32°45'39"	79°50'24"	Good seed line	I	10.7	9.4
24	Fort Moultrie	82	Sullivans Island	32°45'55"	79°50'19"	Good seed line	I	11.3	5.3
25	Charleston	1	Mount Pleasant	32°47'35"	79°52'58"	Poor mark	I	13.5	6.0[e]
25	Charleston	2	Mount Pleasant	32°47'40"	79°52'48"	Poor mark	O	14.8	6.0[e]
25	Charleston	3	Mount Pleasant	32°47'37"	79°52'47"	Poor mark	O	14.1	6.0[e]
25	Charleston	4	Mount Pleasant	32°47'32"	79°52'57"	Good mark	I	12.2	6.0[e]
25	Charleston	5	Mount Pleasant	32°47'42"	79°53'23"	Fair mark	O	11.3	6.2

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
25	Charleston	6	Mount Pleasant	32°47'06"	79°52'35"	Good mark	I	12.3	8.0[e]
25	Charleston	7	Mount Pleasant	32°47'03"	79°52'34"	Good mark	I	11.8	8.0[e]
25	Charleston	8	Mount Pleasant	32°47'00"	79°52'40"	Good mark	O	15.2	8.0[e]
25	Charleston	9	Mount Pleasant	32°47'19"	79°52'52"	2 Good marks	I I	11.9 11.8	7.5
25	Charleston	10	Mount Pleasant	32°47'46"	79°53'43"	Good seed line	I	11.5	8.5
25	Charleston	11	Mount Pleasant	32°47'47"	79°53'43"	Good seed line	I	10.2	8.5
25	Charleston	12	Mount Pleasant	32°48'04"	79°54'20"	2 Good debris lines	O O	12.1 12.1	12.0[e]
25	Charleston	13	Mount Pleasant	32°48'05"	79°54'22"	Good debris line	O	11.0	9.5
25	Charleston	14	Mount Pleasant	32°48'05"	79°54'19"	Good debris line	O	10.2	9.5
25	Charleston	15	Mount Pleasant	32°48'06"	79°54'16"	Poor debris line	O	9.5	9.5

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
25	Charleston	16	Charleston	32°45'05"	79°52'33"	2 Good marks	I I	11.6 11.8	5.0[e]
25	Charleston	17	Charleston	32°45'03"	79°53'54"	Good mark	O	11.3	8.0[e]
25	Charleston	18	Charleston	32°44'59"	79°54'05"	Good mark	I	10.3	7.0[e]
25	Charleston	19	Charleston	32°46'12"	79°54'46"	2 Good marks	I I	10.8 10.9	9.5
25	Charleston	20	Charleston	32°46'11"	79°55'48"	Good seed line	O	10.7	9.5
25	Charleston	21	Charleston	32°46'12"	79°55'52"	Good mark	O	10.4	9.5
25	Charleston	22	Charleston	32°46'46"	79°55'34"	Good mark	I	9.1	8.0[e]
25	Charleston	23	Charleston	32°46'47"	79°55'30"	Good mark	O	10.5	8.0[e]
25	Charleston	24	Charleston	32°46'51"	79°55'35"	2 Good marks	I O	10.2 12.9	8.0[e]
25	Charleston	25	Charleston	32°46'51"	79°55'39"	Good mark	I	10.4	6.0[e]
25	Charleston	26	Charleston	32°47'24"	79°55'49"	Good mark	O	10.1	8.0[e]
25	Charleston	27	Charleston	32°47'34"	79°56'02"	Good mark	I	7.1	5.6
25	Charleston	28	Charleston	32°48'02"	79°56'09"	Good seed line	I	8.7	8.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
25	Charleston	29	Charleston	32°48'04"	79°56'12"	Fair seed line	O	7.9	6.0[e]
25	Charleston	30	Charleston	32°48'05"	79°56'43"	Fair seed line	I	10.7	6.1
25	Charleston	31	Charleston	32°48'01"	79°56'51"	Fair seed line	I	10.3	6.0[e]
25	Charleston	32	Charleston	32°47'59"	79°56'55"	Fair seed line	I	8.9	6.0[e]
25	Charleston	33	Charleston	32°47'36"	79°57'44"	Good seed line	O	9.0	8.0[e]
25	Charleston	34	Charleston	32°47'35"	79°57'43"	Good seed line	O	9.0	8.0[e]
25	Charleston	35	Charleston	32°47'34"	79°57'41"	Good seed line	O	9.1	8.0[e]
25	Charleston	36	Charleston	32°47'02"	79°57'26"	Good debris line	O	10.0	10.0
25	Charleston	37	Charleston	32°46'37"	79°57'33"	Good seed line	O	9.1	6.0[e]
25	Charleston	38	Charleston	32°46'36"	79°57'39"	Fair seed line	O	9.4	6.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
25	Charleston	39	Charleston	32°46'34"	79°57'46"	Fair seed line	O	9.3	6.0[e]
25	Charleston	40	Charleston	32°46'01"	79°58'25"	2 Good seed lines	O O	8.1 8.7	6.0e
25	Charleston	41	Charleston	32°46'01"	79°58'29"	2 Good seed lines	O O	9.1 8.6	6.0[e]
25	Charleston	42	Charleston	32°46'50"	79°58'05"	Good debris line	O	9.0	8.9
25	Charleston	43	Charleston	32°46'50"	79°58'17"	Good debris line	O	8.9	8.9
25	Charleston	44	Charleston	32°49'35"	79°59'00"	Fair mark	O	7.5	7.5
25	Charleston	45	Charleston	32°49'48"	79°59'08"	Good seed line	O	8.8	6.0[e]
25	Charleston	46	Charleston	32°49'55"	79°59'09"	Good mark	O	9.7	8.0[e]
25	Charleston	47	Charleston	32°45'23"	79°57'17"	Good mark	O	9.6	6.7
25	Charleston	48	Charleston	32°52'09"	79°58'47"	Good mark	O	8.7	8.0[e]
25	Charleston	49	Charleston	32°52'09"	79°58'47"	Good mark	O	8.7	8.0[e]
25	Charleston	50	Charleston	32°52'09"	79°58'47"	Poor mark	O	8.1	8.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
26	Johns Island	1	Charleston	32°50'09"	80°02'47"	Good debris line	O	7.1	7.0
27	James Island	1	Charleston	32°42'15"	79°56'20"	Good mark	O	8.8	8.0[e]
27	James Island	2	Charleston	32°42'14"	79°56'21"	Good mark	O	9.0	8.0[e]
27	James Island	3	Folly Beach	32°39'41"	79°55'34"	Good mark	I	11.9	7.0[e]
27	James Island	4	Folly Beach	32°39'40"	79°55'38"	Good mark	O	12.1	7.0[e]
27	James Island	5	Folly Beach	32°39'38"	79°59'43"	Fair mark	I	8.5	7.0[e]
27	James Island	6	Folly Beach	32°40'07"	79°56'24"	Fair mark	O	9.1	6.0[e]
27	James Island	7	Folly Beach	32°40'09"	79°56'23"	Fair mark	O	9.1	6.0[e]
27	James Island	8	Folly Beach	32°39'23"	79°56'26"	Fair mark	I	8.2	6.5
27	James Island	9	Folly Beach	32°39'23"	79°56'29"	Good mark	O	9.9	6.5

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
27	James Island	10	Folly Beach	32°39'20"	79°56'27"	Fair mark	I	11.0	6.5
27	James Island	11	Charleston	32°41'29"	79°57'49"	Poor debris line	O	6.0	6.0
27	James Island	12	Charleston	32°41'27"	79°57'51"	Fair mark	O	6.9	6.0
27	James Island	13	Charleston	32°41'56"	79°59'02"	Good debris line	O	7.1	7.1
27	James Island	14	Charleston	32°43'16"	79°59'21"	Good debris line	O	7.2	7.1
28	Legare-ville	1	Charleston	32°43'32"	80°00'38"	Good mark	O	4.3	4.0[e]
28	Legare-ville	2	Charleston	32°42'49"	80°00'24"	Good mark	O	7.3	7.0[e]
28	Legare-ville	3	Kiawah Island	32°38'42"	80°03'53"	Good mark	O	4.3	4.0[e]
30	Rock-ville	1	Rockville	32°35'56"	80°11'39"	Good mark	O	5.7	5.0[e]
30	Rock-ville	2	Kiawah Island	32°35'18"	80°07'38"	Fair mark	O	10.6	6.0[e]

Table 1.--High-water marks; location, description, and elevations--Continued

Plate number (see fig. 1)	Quad-rangle	Mark no.	Nearest town	Latitude	Longitude	Type and/or quality	(I)nside (O)utside	Water-surface elevation (feet, NGVD[1])	Ground-surface elevation (feet, NGVD[1])
30	Rock-ville	3	Kiawah Island	32°35'25"	80°07'52"	Good mark	O	6.3	6.2
30	Rock-ville	4	Kiawah Island	32°33'49"	80°10'48"	Good mark	O	7.4	7.0[e]
31	Edisto Island	1	Edisto Beach	32°31'26"	80°16'36"	Good mark	O	4.9	4.8
31	Edisto Island	2	Edisto Beach	32°30'11"	80°17'47"	Good mark	O	9.9	7.0[e]

[1]National Geodetic Vertical Datum of 1929 (NGVD of 1929).

[2]USGS - U.S. Geological Survey

[e] estimate.

AVG[3] - Water-surface elvation is average of 3 marks.