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October 30, 2015

Linda Tucker, City Administrator
City of Isle of Palms
PO Box 508
Isle of Palms, SC 29451

RE: Isle of Palms Post-Storm Survey Results [CSE 2447-01]

Dear Linda:

This letter is submitted to provide an assessment of the beach condition and volume change associated with passage of Hurricane *Joaquin*. While the storm was offshore, it interacted with an area of low pressure over the East Coast to produce significant onshore winds and extreme tides over the course of several days in early October 2015. The combination of wind, waves, and tides resulted in water levels over 2 feet (ft) higher than the predicted tide (Fig 1). Additionally, heavy rains contributed to flooding of low-lying areas of the island.

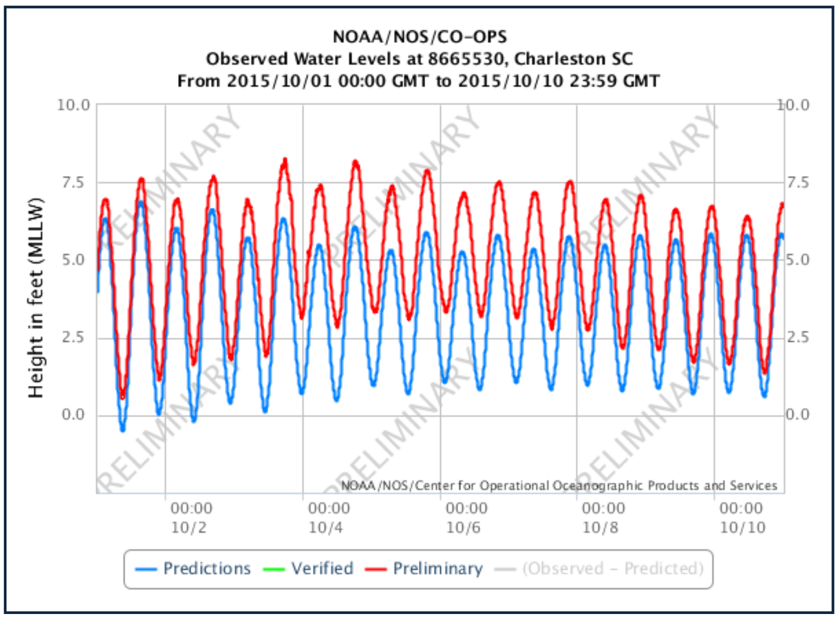

FIGURE 1. Water levels at the NOAA tide gauge in Charleston Harbor during the early October 2015 storm event. Water levels were over 2 ft higher than the predicted tide during the storm.

The typical beach response to storm events is erosion of the dune and buildup of an underwater bar or ridge and runnel system. Increased water level and wave energy flattens the beach profile, typically producing a wider wet-sand beach and a scarped dune (where a dune existed prior to the storm). In areas lacking sufficient sand (eroded areas fronting a seawall), the beach elevation can drop during a storm and the beach width narrows as no sand is available to shift from the dunes to the lower profile (Fig 2). During calmer conditions following the storm, sand from the underwater bar or intertidal ridges is worked up the beach by waves and wind, depositing along the toe of the dune and rebuilding the typical recreational beach.

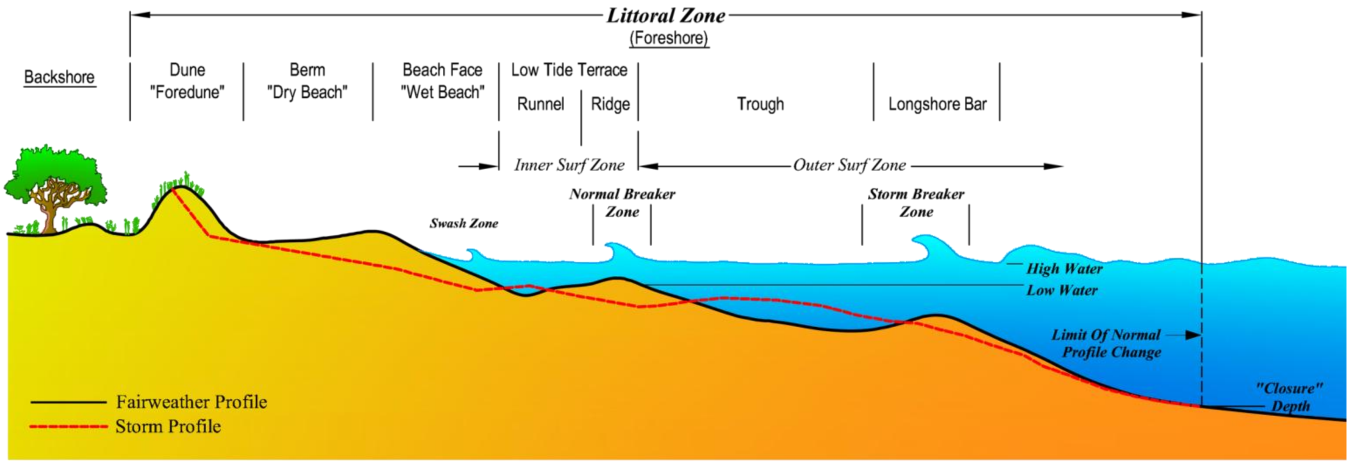

FIGURE 2. Schematic of a typical beach profile response to a storm. During the storm, sand shifts from the dune to lower in the profile, often building an underwater sandbar seaward of the low tide line.

This letter provides volume changes by stations and established reaches referenced in prior monitoring reports for the City, shown in Figure 3. Volume change results of the survey for each reach are provided in Table 1. The first group of rows shows the total beach volume for each reach and for the downcoast area (Reaches 2–4 excluding Breach Inlet), the 2008 project areas (Reaches 5–7), and the entire island (Reaches 1–7). The middle rows show the volume change for each reach since the previous survey. Note that the time interval between surveys varies from year to year. The last set of rows shows the volume change in the 2008 project areas since March 2008 (just prior to nourishment). The reach volumes provide an indication of how the beach compares to the pre-nourishment condition.

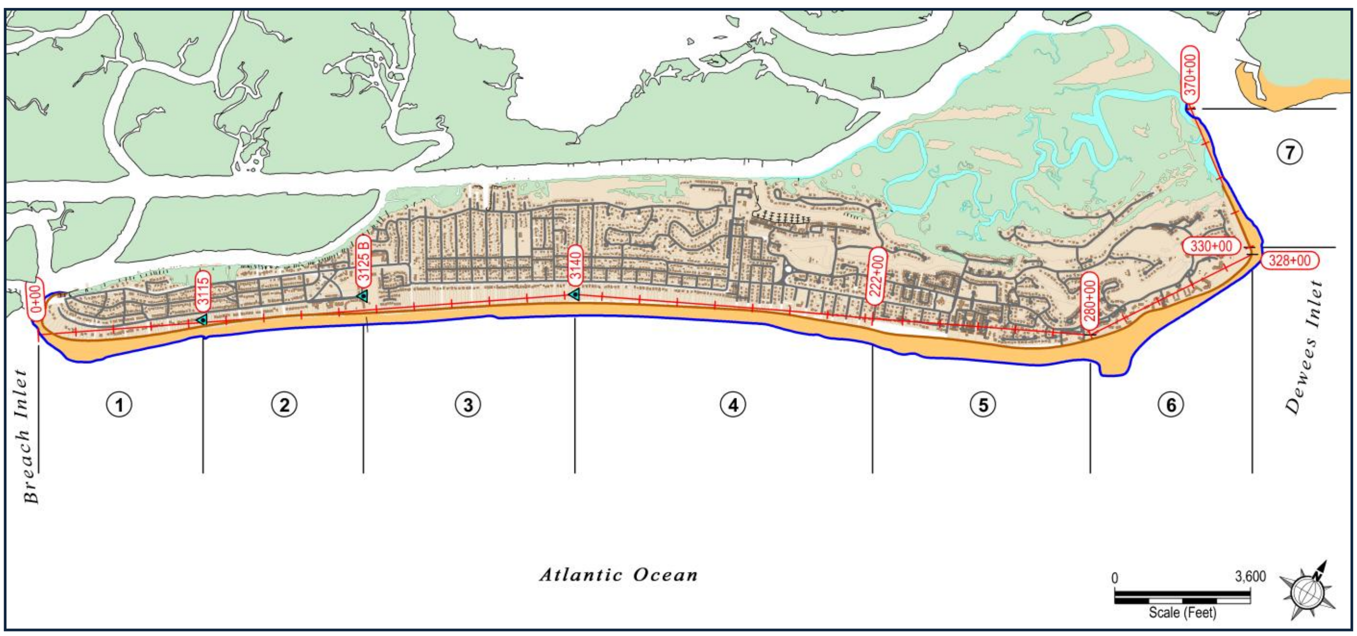

FIGURE 3. Location map of the reaches used in post-project monitoring at Isle of Palms. The 2008 beach restoration project occurred in subareas within Reaches 5, 6, and 7.

TABLE 1. Beach volumes to local closure depth for Isle of Palms monitoring reaches. All volumes are in cubic yards (cy).

			Total Volume (cy)									
Reach	Limits	Length (ft)	Mar-08	Jul-08	Sep-09	Sep-10	Jun-11	Jul-12	Jul-13	Sep-14	Aug-15	**Oct-15**
Reach 1	0-3115	4,390	-	-	1,357,979	1,413,097	1,376,054	1,288,983	1,230,930	1,289,781	1,309,927	**1,354,884**
Reach 2	3115-3125	4,280	-	-	1,204,056	1,224,707	1,219,874	1,270,043	1,290,942	1,263,051	1,264,888	**1,304,277**
Reach 3	3125-3140	5,620	-	-	1,756,250	1,822,223	1,791,564	1,844,155	1,912,700	1,915,699	1,949,317	**1,968,665**
Reach 4	3140-222	7,910	-	-	2,329,333	2,403,086	2,455,964	2,566,721	2,653,128	2,666,687	2,733,757	**2,736,400**
Reach 5	222-280	6,000	1,643,654	1,961,934	1,889,689	1,844,446	1,764,364	1,609,354	1,501,967	1,472,128	1,406,612	**1,389,680**
Reach 6	280-328	4,900	1,109,721	1,737,374	1,743,807	1,647,178	1,574,542	1,509,881	1,487,043	1,476,023	1,581,622	**1,634,002**
Reach 7	330-370	4,000	766,568	816,758	810,992	832,184	852,642	857,028	880,678	904,210	911,460	**903,294**
Reaches 2-4	3115-222	17,810	-	-	5,289,639	5,450,017	5,467,403	5,680,920	5,856,770	5,845,436	5,947,962	**6,009,343**
Reaches 5-7	222-370	14,900	3,519,943	4,516,066	4,444,487	4,323,808	4,191,549	3,976,263	3,869,688	3,852,360	3,899,694	**3,926,976**
Reaches 1-7	0-370	37,100	-	-	11,092,105	11,186,922	11,035,006	10,946,166	10,957,388	10,987,576	11,157,583	**11,291,203**
			Net Change Since Previous									
Reach	Limits	Length (ft)		Jul-08	Sep-09	Sep-10	Jun-11	Jul-12	Jul-13	Sep-14	Aug-15	**Oct-15**
Reach 1	0-3115	4,390				55,118	-37,043	-87,071	-58,053	58,851	20,147	**44,957**
Reach 2	3115-3125	4,280				20,651	-4,833	50,169	20,898	-27,891	1,837	**39,389**
Reach 3	3125-3140	5,620				65,973	-30,659	52,591	68,545	2,998	33,618	**19,349**
Reach 4	3140-222	7,910				73,754	52,878	110,757	86,407	13,559	67,071	**2,643**
Reach 5	222-280	6,000		318,280	-72,245	-45,243	-80,082	-155,010	-107,387	-29,840	-65,516	**-16,932**
Reach 6	280-328	4,900		627,653	6,433	-96,628	-72,636	-64,661	-22,838	-11,020	105,599	**52,380**
Reach 7	330-370	4,000		50,190	-5,766	21,192	20,459	4,385	23,650	23,532	7,250	**-8,166**
Reaches 2-4	3115-222	14,900				160,378	17,386	213,517	175,850	-11,334	102,526	**61,381**
Reaches 5-7	222-370	4,900		996,123	-71,579	-120,679	-132,259	-215,286	-106,575	-17,328	47,334	**27,282**
Reaches 1-7	0-370	37,100				94,817	-151,916	-88,840	11,222	30,189	170,006	**133,620**
			Net Change Since Prenourishment (cy)									
Reach	Limits	Length (ft)	Mar-08	Jul-08	Sep-09	Sep-10	Jun-11	Jul-12	Jul-13	Sep-14	Aug-15	**Oct-15**
Reach 5	222-280	6,000	-	318,280	246,034	200,792	120,710	-34,300	-141,687	-171,527	-237,043	**-253,974**
Reach 6	280-328	4,900	-	627,653	634,086	537,458	464,822	400,161	377,322	366,302	471,901	**524,281**
Reach 7	330-370	4,000	-	50,190	44,424	65,615	86,074	90,459	114,109	137,641	144,892	**136,726**
5-7 Total Change Since Prenourishment			-	996,123	924,544	803,865	671,606	456,320	349,745	332,417	379,750	**407,033**

Volume change associated with the storm event is considered to equal the change occurring between August and October 2015. Any background volume change occurring over that time is necessarily incorporated into the reported volumes. The measured changes in cubic yards (cy) due to the storm are:

Reach 1	Breach Inlet to 6th Ave	44,957 cy
Reach 2	6th Ave to Sea Cabins Pier	39,389 cy
Reach 3	Sea Cabins Pier to 31st Ave	19,349 cy
Reach 4	31st Ave to 53rd Ave	2,643 cy
Reach 5	53rd Ave to Property Owners Beach House	−16,932 cy
Reach 6	Property Owners Beach House to Dewees Inlet	52,380 cy
Reach 7	Dewees Inlet Shoreline	−8,166 cy

Overall, the island gained 133,620 cy between August and October 2015. Most profiles along the central island showed minor erosion of the lower dune face coupled with buildup of an underwater sand bar. This is very typical of storm response in beaches as shown in Figure 2.

While grouping many profiles into reaches provides for more rapid assessments of overall beach condition, variations within each reach are masked by the summation. Especially in the area near the attaching shoal, localized changes may differ from the larger trend. Also, volume change does not necessarily reflect the position of the waterline or beach width. A profile may gain a substantial volume of sand in the lower profile (under the water) while the upper beach may erode. Table 2 provides volume change and dune erosion distances (measured at the +6 ft NAVD contour, which is approximately located at the toe of a primary dune). Figure 4 shows the unit volume change and dune position change for each profile for each station (recall stations increase moving east from the Breach Inlet bridge; ie – station 222 is 22,200 ft from the bridge and is at 53rd Avenue).

Measures of dune erosion are more variable than the volume change as variations in localized topography can skew some of the results. For instance, at station 228, there is an apparent net recession of almost 80 ft; however, inspection of the profile shows that the measured loss is a result of erosion of a small incipient dune feature which existed on the seaward edge of the berm in August 2015 (profiles included in Attachment 1). This dune feature intersected the +6 ft elevation contour in August, but was flattened in October. The primary dune remained intact and did not show any signs of recession. Additionally, gains in the lower portion of the profile led to a net increase in volume at station 228.

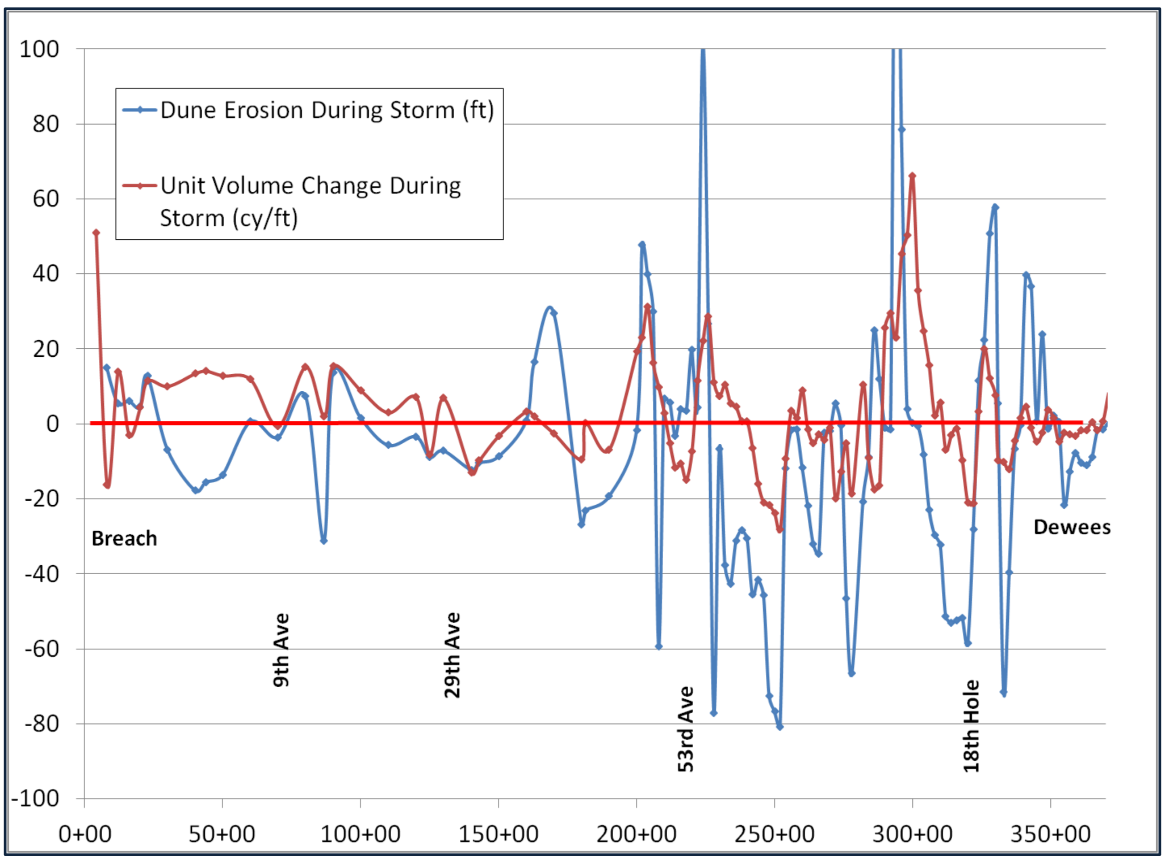

FIGURE 4. Plot showing linear dune erosion (in feet and measured at the +6 ft NAVD contour) and unit volume change (in cy/ft) occurring between August and October 2015. Positive values indicate accretion and negative values erosion.

TABLE 2. Unit volumes for Isle of Palms and dune position changes due to the storm event of October 2015. Dune position was measured at the +6 ft NAVD contour.

Reach	Line	Elevation Lens (ft NAVD)	Distance to Next (ft)	Profile Unit Volume (cy/ft) Jul-08	Sep-14	Aug-15	Oct-15	Storm Change (cy/ft)	Dune Position Change (ft)
Reach 1	3100	-13	0		378.1	417.7	431.3	13.6	8.3
	3105	-11	0		511.9	472.4	487.1	14.7	-29.8
	0	-10	400		188.5	218.6	211.2	-7.4	-
	4	-10	400		277.6	319.4	370.5	51.1	-
	8	-10	400		320.3	327.3	311.2	-16.1	15.1
	12	-10	400		399.1	354.0	368.0	14.0	5.5
	16	-10	400		357.2	331.4	328.4	-3.0	6.2
	20	-10	270		283.8	287.9	292.2	4.4	4.5
	3110	-11	730		286.1	300.6	312.1	11.5	12.9
	30	-12	1000		280.2	282.7	292.8	10.1	-6.8
	40	-12	390		252.4	243.8	257.3	13.5	-17.7
Reach 2	3115	-12	610		279.5	372.5	386.6	14.1	-15.5
	50	-12	1000		283.6	278.6	291.5	12.9	-13.6
	60	-12	1000		279.5	272.7	284.6	11.9	0.6
	70	-12	1000		302.5	296.8	296.2	-0.6	-3.5
	80	-12	670		300.5	289.6	304.9	15.2	7.5
Reach 3	3125	-12	330		347.9	345.5	347.6	2.0	-31.1
	90	-13	1000		336.5	330.8	346.3	15.5	13.7
	100	-13	1000		342.9	342.5	351.4	8.9	1.6
	110	-13	1000		332.3	337.0	340.1	3.0	-5.7
	120	-13	500		349.9	362.3	369.4	7.2	-3.3
	3135	-12	500		325.4	342.8	334.6	-8.2	-8.8
	130	-13	1000		306.9	321.8	328.7	6.9	-7.1
	140	-13	290		399.7	405.1	392.2	-12.9	-12.2
Reach 4	3140	-12	710		319.2	324.5	314.8	-9.8	-10.4
	150	-13	1000		337.9	348.8	345.6	-3.1	-8.6
	160	-13	290		328.2	355.2	358.6	3.4	0.9
	3145	-12	710		307.9	333.2	335.2	2.0	16.5
	170	-13	1000		339.3	361.2	358.6	-2.6	29.6
	180	-12	150		332.8	344.3	334.8	-9.5	-26.8
	3150	-12	850		356.4	350.4	350.6	0.2	-23.1
	190	-12	1000		324.0	332.8	326.0	-6.8	-19.3
	200	-12	200		355.5	352.5	371.8	19.3	-1.6
	202	-12	200	280.5	356.9	361.0	384.1	23.1	47.7
	204	-12	200	286.8	357.7	358.4	389.7	31.3	39.8
	206	-12	200	288.7	361.7	365.0	381.3	16.2	29.9
	208	-11	200	255.9	332.7	331.3	341.1	9.8	-59.3
	210	-11	200	287.8	373.4	367.6	370.6	3.0	6.7
	212	-11	200	258.0	335.8	333.1	327.9	-5.2	5.7
	214	-11	200	251.7	315.7	332.2	320.5	-11.7	-3.1
	216	-11	200	253.4	320.3	323.9	313.3	-10.6	3.9
	218	-11	200	274.5	344.5	340.5	325.7	-14.8	3.5
	220	-11	200	269.5	358.7	340.8	333.4	-7.4	19.8
Reach 5	222	-10	200	261.0	346.5	325.7	337.2	11.5	4.5
	224	-10	200	233.5	310.4	289.0	311.2	22.2	101.0
	226	-10	200	225.3	304.0	276.3	305.1	28.7	26.7
	228	-10	200	252.1	296.3	262.9	274.0	11.1	-77.0
	230	-10	200	284.4	287.1	263.3	270.6	7.4	-6.6
	232	-10	200	316.6	300.0	279.7	290.1	10.4	-37.7
	234	-10	200	320.5	282.1	262.6	268.1	5.4	-42.7
	236	-10	200	295.1	252.3	236.8	241.4	4.6	-31.3
	238	-10	200	294.6	249.4	235.4	236.2	0.8	-28.4
	240	-10	200	277.6	232.1	218.2	219.0	0.7	-30.5
	242	-10	200	273.6	223.2	219.0	212.6	-6.4	-45.6
	244	-10	200	283.1	233.9	238.1	222.2	-15.9	-41.6
	246	-10	200	271.0	211.7	217.8	196.9	-20.9	-45.8
	248	-10	200	272.2	217.5	211.6	190.0	-21.6	-72.6
	250	-10	200	282.2	217.8	200.4	176.5	-23.9	-76.7
	252	-10	200	291.9	199.5	172.2	144.0	-28.2	-80.8

Reach	Line	Elevation Lens (ft NAVD)	Distance to Next (ft)	Profile Unit Volume (cy/ft) Jul-08	Sep-14	Aug-15	Oct-15	Storm Change (cy/ft)	Dune Position Change (ft)
Reach 5 (continued)	254	-10	200	298.1	172.7	142.6	133.3	-9.3	-11.9
	256	-10	200	313.2	164.1	133.8	137.4	3.6	-1.6
	258	-10	200	297.6	155.1	115.0	116.6	1.7	-1.5
	260	-10	200	305.9	139.2	117.3	126.3	9.0	-11.7
	262	-10	200	346.2	121.7	140.4	139.1	-1.4	-21.8
	264	-10	200	392.1	149.3	170.2	165.1	-5.2	-32.0
	266	-10	200	437.5	200.9	201.3	198.6	-2.7	-34.6
	268	-10	200	408.5	210.5	210.0	205.7	-4.3	-2.4
	270	-10	200	422.7	248.8	245.5	244.5	-1.0	-2.0
	272	-10	200	420.9	266.9	290.7	270.8	-19.9	5.4
	274	-10	200	344.6	215.9	231.9	219.1	-12.8	-0.4
	276	-10	200	459.1	367.1	346.6	341.5	-5.1	-46.5
	278	-10	400	415.2	345.9	324.6	305.9	-18.7	-66.5
Reach 6	280	-10	200	436.6	439.0	454.6	465.2	10.6	-20.7
	282	-10	200	440.4	449.7	490.1	481.0	-9.0	-8.9
	284	-10	200	522.2	541.2	607.0	589.5	-17.4	24.9
	286	-10	200	471.8	543.9	593.3	576.8	-16.4	11.9
	288	-10	200	423.8	453.6	525.3	551.0	25.7	-1.0
	290	-10	200	357.3	429.5	483.3	512.8	29.5	-1.5
	292	-10	200	355.6	453.9	514.0	537.1	23.1	183.8
	294	-10	200	363.0	426.3	424.4	469.7	45.4	78.5
	296	-10	200	354.7	369.4	344.9	395.3	50.4	4.0
	298	-10	200	354.1	318.6	300.7	366.8	66.1	0.2
	300	-10	200	347.5	289.4	253.6	289.1	35.5	-0.6
	302	-10	200	339.3	271.6	233.1	257.9	24.8	-8.2
	304	-10	200	333.2	236.4	226.0	241.6	15.6	-22.9
	306	-10	200	372.6	275.4	266.9	269.1	2.2	-29.6
	308	-10	200	341.0	200.7	213.8	219.4	5.6	-32.3
	310	-10	200	312.9	149.5	172.0	165.2	-6.9	-51.4
	312	-10	200	281.0	115.2	124.2	121.1	-3.1	-53.0
	314	-10	200	246.1	100.2	100.5	99.3	-1.2	-52.4
	316	-10	200	309.3	173.8	190.8	181.2	-9.6	-51.8
	318	-10	200	312.0	162.4	205.2	184.2	-21.0	-58.4
	320	-10	200	324.5	186.4	232.8	211.5	-21.2	-28.1
	322	-10	200	368.5	225.7	264.2	267.5	3.3	11.5
	324	-10	200	361.7	252.2	292.7	312.7	20.0	22.5
	326	-10	200	291.2	251.1	284.1	296.3	12.2	50.7
	328	-10	100	285.3	284.4	331.4	339.0	7.6	57.7
Reach 7	330	-18	200	262.4	352.8	357.7	347.9	-9.8	5.4
	332	-18	200	333.6	424.5	407.8	397.8	-10.1	-71.4
	334	-18	200	295.8	406.4	393.3	381.3	-12.1	-39.7
	336	-18	200	284.0	362.8	362.2	357.7	-4.4	-6.6
	338	-18	200	261.2	304.9	312.2	313.7	1.5	-0.4
	340	-18	200	244.6	246.4	255.1	259.7	4.6	39.6
	342	-18	200	246.4	264.2	272.6	271.5	-1.1	36.7
	344	-18	200	209.5	222.2	233.2	228.5	-4.8	0.8
	346	-18	200	198.1	203.8	215.4	213.1	-2.3	23.9
	348	-15	200	147.2	150.7	163.0	166.8	3.8	-1.3
	350	-15	200	169.7	181.4	190.3	191.9	1.6	2.1
	352	-15	200	160.4	174.2	181.0	176.2	-4.7	0.4
	354	-15	200	171.1	185.4	188.1	185.8	-2.4	-21.5
	356	-15	200	185.6	190.9	189.3	186.6	-2.7	-12.6
	358	-15	200	171.9	164.8	160.2	157.0	-3.2	-7.8
	360	-15	200	172.0	155.4	148.6	146.8	-1.8	-10.3
	362	-15	200	167.4	143.6	137.5	135.9	-1.6	-11.0
	364	-15	200	141.2	108.4	102.3	102.8	0.5	-8.8
	366	-13	200	131.6	138.6	135.1	133.5	-1.6	-1.7
	368	-13	200	174.2	209.1	215.9	216.6	0.7	-1.4
	370	-13	0		-	230.5	238.8	8.3	0.5

The plot of Figure 4 showed areas of significant volume loss or dune recession separated by areas showing little dune impacts and accretion. In some areas, the beach showed a net gain of sand but erosion of the dune line (for example stations 30+00 – 60+00 between 5th and 8th Avenues and 230+00 – 238+00 between 55th and 57th Avenues). Photos show the dune erosion of up to 20 ft along the stretch of beach extending from 4th Avenue to approximately 8th Avenue; however also note a flat storm berm ~40-50 ft wide along the upper wet sand beach (Fig 5). A runnel was present in the wet sand beach just below the flat berm. Along this area, multiple ridge and runnels were present along the beach.

FIGURE 5. Ground photo from October 2015 of the beach at 5th Avenue looking east. The storm produced a large escarpment and ridge and runnel along the low intertidal beach. A relatively flat storm berm ~50 ft wide extends along the upper beach just below the dune. This is a typical post-storm beach condition (see Fig 2).

The areas showing the most severe dune erosion were between 4th and 8th Avenues, 41st and 43rd Ave, 55th Ave and the Grand Pavilion, and Port O'Call through the 18th Hole. The most severely eroded area was the area near the Grand Pavilion, which lost up to 80 ft of dune and dry sand area and up to 28 cy/ft of sand volume. Most all of the dry sand area created in the 2008 nourishment project was eroded between the Grand Pavilion boardwalk and Seagrove (Fig 6).

FIGURE 6. October 2015 post-storm aerial images of the area near the Grand Pavilion (upper) and Beachwood East (lower). The Grand Pavilion walkover is in the foreground of the upper image. This area experienced the most dune erosion and volume loss during the storm. The experimental wave dissipation device along Beachwood East was damaged during the storm. Houses here have installed sandbags and have little-to-no, dry-sand beach fronting the structures.

Just east of the Grand Pavilion area, the area fronting Beachwood East also eroded significantly, losing up to 30 cy/ft in volume. The lack of dunes in the area prior to the storm, coupled with the emergency sandbags and experimental wave dissipation system, resulted in little measured dune erosion despite the sand loss. Prior to the storm, there was no obvious evidence that the wave dissipation system was preserving the upland sand. Essentially there was no dune to erode prior to the storm. The storm caused visible damage to the wave dissipation system by uplifting piles and displacing the horizontal members. Erosion eliminated all of the vegetated area fronting several houses along Beachwood East leaving several portions of decks, swimming pools, or other infrastructure at the escarpment line (see Fig 6). This area has been impacted by focused erosion over the last year and remains the most vulnerable to structural damage. Due to the existing conditions of the permit for the experimental wave dissipation system, CSE is unsure of the allowable emergency measures in this area.

Similar to the beach near Grand Pavilion, the area fronting Port O'Call, Seascape, Ocean Club, and the 18th hole lost up to 60 ft of dry sand or dunes, much of which was sand remaining from the shoal management project completed the previous winter. The resulting condition left no dry sand beach fronting the eastern end of Seascape or the entire Ocean Club building (Fig 7). There is still a dry sand buffer fronting Port O'Call, though ~40 ft was lost during the storm. Ocean Club currently has a wave dissipation system installed, though it does not appear to be maintaining a dry beach landward of the structure.

FIGURE 7. October 2015 post-storm aerial images of the area near Seascape and Ocean Club. The intertidal beach width is narrow in front of Ocean Club, limiting the availability and practicality of emergency sand scraping.

As mentioned previously, erosion due to the storm eroded up to 20 ft of the dune along the beach along 5-6th Avenues, where previous erosion had already left the area with a narrow beach. There appears to be some influence of the Sea Cabins Pier on the beach condition in this area, as there is a buildup of sand east of the pier, and an erosional arc south of it (Fig 8). Though houses along this stretch have sufficient setbacks from the water, the dune filed is low, and the only substantial storm protection is the higher primary dune where the erosion occurred. It would be advantageous to utilize the available emergency measures to scrape sand and rebuild the primary dune along this area.

The storm did have the effect of pushing the attaching shoal landward, resulting in up to 200 ft of landward migration along the main body of the shoal between August and October. The eastern end of the shoal near Mariners Walk and Shipwatch attached to the intertidal beach. The western end of the shoal remains offshore although the merging bar is increasing in elevation and moving closer to the beach (see profile 276+00 at Beachwood I).

FIGURE 8. October 2015 post-storm aerial images of the area between Breach Inlet and Front Beach. The intertidal beach width is wide in this area, despite an erosional arc centered at 5th Avenue. Emergency sand scraping may be beneficial in restoring the eroded primary dune.

Digital terrain models of the shoal from August and October are shown in Figure 9 and highlight the migration and attachment of the shoal (red hues). The attachment at the east end should facilitate sand spreading toward the east from the attachment site. CSE does not expect recovery of the western site (Beachwood) until the western edge of the shoal fully attaches (Fig 10). This is being prevented by additional sand seaward of the shoal along the western side. Also note the continued buildup of the trailing ebb spit offshore of the northeast tip of the island. This feature has built substantially over the past four years, gaining sand which was lost from the beach. Eventually this sand will return to the beach as a shoal-bypass event.

The shoal is positioned favorably for a shoal management project, which would transfer sand from the seawardmost accessible portion of the shoal and place it along the most severely eroded areas where existing permits presently allow. Any emergency erosion measures in areas receiving sand would need to be removed in conjunction with a sand transfer project.

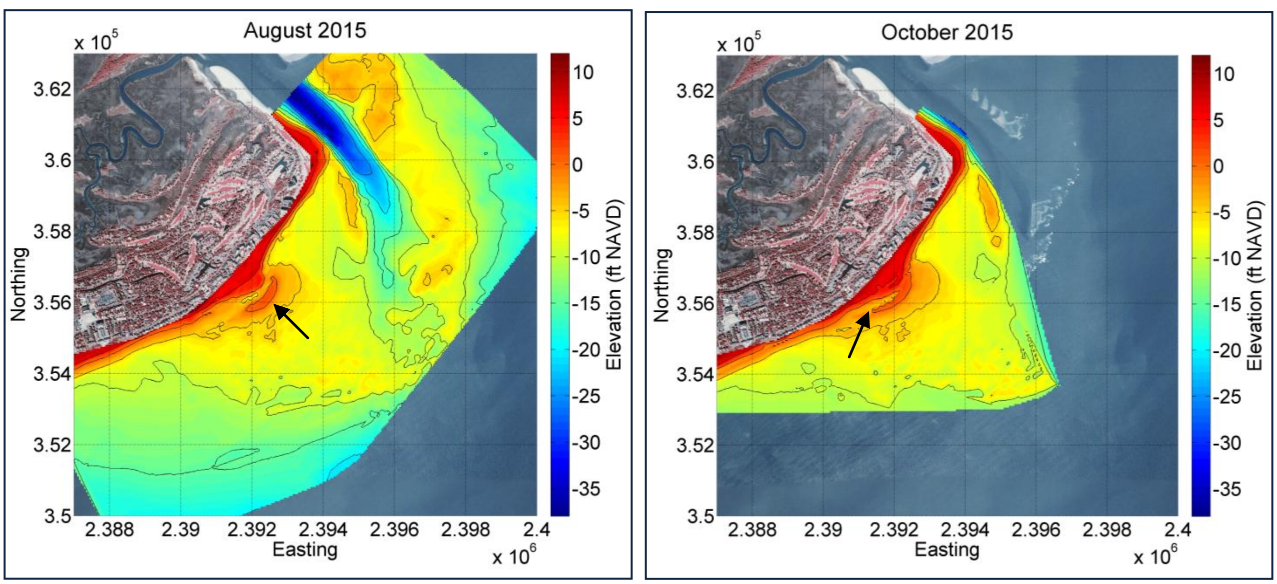

FIGURE 9. Digital terrain models of the Dewees Inlet delta and east end of Isle of Palms. The shoal is visible as the red hue separated from the beach in the left image, and attached on the right image (arrow). The October storm resulting in the offshore shoal fully merging with the beach along the east end, while the main body of the shoal migrated ~200 ft landward. The western end of the shoal remains unattached.

FIGURE 10. October 2015 post-storm aerial image of the attaching shoal along Wild Dunes community. The western edge of the shoal remains unattached (lower portion of image), while the eastern edge is attached. Transferring sand from the attached shoal to the eroded areas would be beneficial to facilitate additional merging of the shoal sand.

In summary, while the overall volume change due to the October 2015 storm event was low, certain areas experienced significant dune erosion and/or volume loss. Emergency sand scraping may be beneficial in areas where the primary dune was eroded (near Breach Inlet) or in areas presently lacking storm protection (Beachwood East). Additionally, a shoal management project would facilitate recovery of the beach in some areas, although it would not likely provide a sufficient long-term beach due to the continued presence of the offshore shoal. There is sufficient area presently without emergency erosion measures (sandbags or wave dissipation systems) to allow for a shoal management project.

Overall, there is a sediment deficit along the beach at the east end of the island. While excess sand exists in the shoal and offshore area to eliminate the deficit along the entire east end, only ~200,000 cy are accessible to land-based equipment at present. Additional sand is continuing to migrate onshore; however, sand is simultaneously being lost to downcoast areas (central Isle of Palms and Dewees Inlet).

Please let us know if you have any questions or if you need any additional information.

Sincerely,

Coastal Science & Engineering (CSE)

Steven Traynum
Project Manager

cc: Desirée Fragoso (City of Isle of Palms)
Tim Kana (CSE)