



State of New Jersey

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TO: David Rosenblatt, Assistant Commissioner

FROM: Chris Constantino for Bill Dixon, Director 

DATE: September 21, 2017

SUBJECT: Initial Coastal Storm Survey & Damage Assessment
Atlantic Ocean, Delaware Bay and Raritan Bay shorelines
September 20, 2017 – Hurricane Jose

SUMMARY:

The Jersey Shore has experienced relatively calm Spring and Summer seasons following the March 13 and 14, 2017 Nor-easter (Winter Storm Stella). There have been several periods of activity that resulted in higher surf conditions, however none have had the effects that would be expected of a nearby tropical system or winter storm event. This period of calmer conditions allowed the beaches and dunes to recover both naturally and through man-made efforts; thus, the levels of protection were more elevated at many locations. Recent beach nourishment construction (Ortley Beach, Atlantic City, Avalon, Stone Harbor) are areas that were afforded extra protection by these man-made efforts. Also, several areas adjacent to inlets have experienced continued or notable increases in erosion, possibly because of inlet channel re-configuration. These areas include Strathmere, Sea Isle City and North Wildwood. Since early August, there has been an increase in tropical activity in the Atlantic Basin which has sent long period swells (mostly from Irma and Jose) towards the New Jersey coast. When forecasts began to indicate that Hurricane Jose was going to directly affect the New Jersey coastal areas, the Division of Coastal Engineering (DCE) began to focus on a Coastal Storm Survey & Damage Assessment for the Atlantic Ocean, Delaware Bay and Raritan Bay shorelines of New Jersey.

On Tuesday September 5th, a well-organized tropical wave became Tropical Storm Jose in the central Atlantic between the Lesser Antilles and Cabo Verde (the Cape Verde Islands). Jose developed into a hurricane slightly over 24 hours later. The hurricane intensified so significantly that it reached Category 4 within 72 hours (September 8th) and remained a major hurricane until September 10th. The track was generally from the central Atlantic towards the Lesser Antilles until it re-curved towards the northwest where it slowed down and did a loop between the Bahamas and Bermuda. The storm was downgraded to a tropical storm on September 14th and 15th. Once it resumed a northwesterly track, Jose became a hurricane once again. Jose continued a northerly track and remained a hurricane until it was once again downgraded to a tropical storm just east of Delmarva/New Jersey (September 19th). Jose's peak effects along New Jersey's coasts were from late on September 18th through early September 20th. These seas and the strong winds generated a period of moderate to large surf and elevated water levels along much of the New Jersey coast. The elevated waters were also accentuated by the upcoming new moon. The turbulent surf zone conditions resulted in varying levels of erosion along the New Jersey Coast. Currently, Jose is positioned east of southern New Jersey and south of Nantucket, tracking northeasterly, and is forecast to reverse course drifting west-southwest near our region as a tropical and then post-tropical storm for the next 3 to 5 days.

During the peak of the event, wind directions ranged from the northeast, north-northeast and north and gusted to nearly 50 mph creating seas as high as 15 feet at the buoys offshore. Peak winds along the coast were reported to have been nearly 40 mph. These conditions developed surf ranging from 6 to 10 feet with greater heights around jetties, groins, inlets, and piers throughout the state. The conditions began to subside on September 20th.

Staff from DCE conducted a town-by-town visual post-storm survey of the New Jersey coastline on September 20th; the results of which are contained in this report. During the compilation of this report, the surf conditions around the state ranged from 3 to 8 feet with winds from the north and north-northwest, occasionally gusting up to 20 mph, depending on the location. A detailed summary listed by municipality from north to south is enclosed.

Of the 66 municipalities/beach areas surveyed, 55 were determined to have minor beach or dune erosion, 11 had moderate beach or dune erosion and 0 had major beach or dune erosion. Criteria for determining damage levels are listed at the end of this report.

The proximity of Jose will keep the surf heights elevated for the next 3 to 5 days with the possibility of swells and storm conditions from Hurricane Maria affecting the region during the latter part of the period and possibly beyond.

Please note that the storm damage assessments found herein were conducted in a rapid time interval with pre-storm and post-storm observations made immediately before and after the event in question. It is often the Division's experience that much of the material eroded from the "dry" beach area has not been lost, but rather redistributed within the beach profile system, such as creation or enlargement of offshore sand bars. Our expectation is that much of material will return to the "dry" beach in time following the storm, which may vary based on several contributing factors such as storm frequency and duration.

<u>LOCATION</u>	<u>INSPECTION NOTES</u>	<u>DAMAGE LEVEL*</u>
PERTH AMBOY	No major incidents or damage reported.	Minor
SOUTH AMBOY	No major incidents or damage reported.	Minor
OLD BRIDGE	300 - 400 linear foot vertical beach scarp 1' - 4' high.	Minor
ABERDEEN	No major incidents or damage reported.	Minor
ABERDEEN CLIFFWOOD BEACH	No major incidents or damage reported.	Minor
KEYPORT	No major incidents or damage reported. Some storm debris noted.	Minor
UNION BEACH	Up to 20' sloped erosion, 1' - 2' high.	Minor
KEANSBURG (POINT COMFORT)	Up to 20' sloped erosion, 1' - 2' high.	Minor
KEANSBURG BAYSHORE FLOODGATE	Up to 20' sloped erosion, 1' - 2' high.	Minor
MIDDLETOWN PORT MONMOUTH	50' of sloped erosion, 1' - 2' high.	Minor
MIDDLETOWN BELFORD	Some erosion of the dike at the ferry terminal.	Minor
MIDDLETOWN LEONARDO	No major incidents or damage reported; some redistribution of the sand on the beach and dunes.	Minor
ATLANTIC HIGHLANDS	No major incidents or damage reported.	Minor
HIGHLANDS	No major incidents or damage reported.	Minor
SEA BRIGHT	Up to 30' of sloped erosion, 1' - 2' high; some redistribution of the sand on the beach and dunes. No major incidents or damage reported.	Minor
MONMOUTH BEACH	Up to 50' of sloped erosion, 1' - 2' high; some redistribution of the sand on the beach and dunes. No major incidents or damage reported.	Minor
LONG BRANCH	Up to 25' of sloped erosion, 1' - 2' high; no significant erosion. No major incidents or damage reported.	Minor
DEAL	Up to 25' of sloped erosion, 1' - 2' high; no significant erosion. No major incidents or damage reported.	Minor
ALLENHURST	Up to 40' of sloped erosion, 1' - 2' high.	Minor
LOCH ARBOUR	Up to 40' of sloped erosion, 1' - 2' high.	Minor
ASBURY PARK	Up to 30' of sloped erosion, 1' - 2' high.	Minor
NEPTUNE OCEAN GROVE	Up to 30' of sloped erosion, 1' - 2' high.	Minor

BRADLEY BEACH	Up to 100' of sloped erosion, 2' - 3' high.	Minor
AVON	Up to 150' of sloped erosion, 2' - 3' high. Wave runup near boardwalk.	Minor
BELMAR	Up to 100' of sloped erosion, 2' - 3' high. Damage to the seaward edge of the Belmar Fishing Pier.	Minor
SPRING LAKE	Up to 150' of sloped erosion, 2' - 3' high. Wave runup to dune toe and/or boardwalk.	Minor
SEA GIRT	Up to 150' of sloped erosion, 3' - 4' high. Wave runup to dune toe. Some minor dune scarping at south end of Borough.	Moderate
MANASQUAN	Up to 150' of sloped erosion, 2' - 3' high. Wave runup to upper portion of the beach.	Minor
POINT PLEASANT BEACH	20' - 30' of sloped erosion, 5' - 6' high. Some wave runup to dune and to upper portion of beach at southern 2/3 of municipality.	Minor
BAY HEAD	20' - 30' of sloped erosion, 5' - 6' high. Some wave runup onto dune.	Minor
MANTOLOKING	20' - 30' of sloped erosion, 5' - 6' high. Some wave runup onto dune.	Minor
BRICK	30' of sloped erosion, 3' - 5' high. Some wave runup to dune.	Minor
TOMS RIVER NORMANDY BEACH	40' of sloped erosion, 3' - 5' high. Some wave runup to dune.	Minor
LAVALLETTE	40' - 60' of sloped erosion, 3' - 5' high.	Minor
TOMS RIVER ORTLEY BEACH	40' - 60' of sloped erosion, 3' - 5' high. Some wave runup to dune.	Minor
SEASIDE HEIGHTS	40' - 60' of sloped erosion, 3' - 5' high.	Minor
SEASIDE PARK	40' - 60' of sloped erosion, 3' - 5' high.	Minor
BERKELEY TWP. S. SEASIDE PARK	40' - 60' of sloped erosion, 3' - 5' high.	Minor
ISLAND BEACH STATE PARK	Sloped erosion, wave runup to the dune in many locations. Some redistribution of sand on the beach. State Park to further investigate the area over the next few days.	Minor
BARNEGAT LIGHT	75' of sloped erosion, 4' - 6' high.	Minor
LONG BEACH TWP. LOVELADIES	75' of sloped erosion, 4' - 6' high.	Minor
HARVEY CEDARS	50' - 75' of sloped erosion, 4' - 6' high.	Minor
LONG BEACH TWP. NORTH BEACH	50' of sloped erosion, 4' - 6' high.	Minor
SURF CITY	50' of sloped erosion, 4' - 6' high.	Minor
SHIP BOTTOM	50' of sloped erosion, 4' - 6' high.	Minor
LONG BEACH TWP. BRANT BEACH	50' to 75' of sloped erosion, 4' - 6' high.	Minor

BEACH HAVEN	75' of sloped erosion, 4' - 6' high. <u>Holyoke Ave. to south of Berkeley Ave.</u> - Vertical dune erosion, 4' - 8' high by 12' - 15' wide	Moderate
LONG BEACH TWP. HOLGATE	75' of sloped erosion, 4' - 6' high. <u>Wooden Jetty to Pershing Ave.</u> - Vertical dune erosion, 8' - 12' high by 25' wide	Moderate
BRIGANTINE	30' of sloped erosion, 2' in height. Ponding from wave run up. <u>Promenade to 1st Street</u> - Vertical dune erosion, 2' - 3' high by 4' wide. Damage to crossovers, dune grass, and fencing	Moderate
ATLANTIC CITY	40' of sloped erosion, 1' - 2' in height. <u>Caesar's to Revel:</u> Vertical berm erosion 2' - 4' high by 20' wide	Moderate
VENTNOR	40' of sloped erosion, 1' - 2' in height	Minor
MARGATE	100' of sloped erosion, 1' - 2' in height & minor ponding from run up <u>Gladstone Ave to Delavan Ave:</u> Vertical berm erosion, 2' - 3' high by 5' wide	Moderate
LONGPORT	50' of sloped erosion, 1' - 3' in height	Minor
OCEAN CITY	50' of sloped erosion, 1' in height <u>Music Pier to 3rd St.:</u> vertical dune erosion 2' - 5' high with a varying width throughout. Significant portion of material placed by town has eroded.	Moderate
UPPER TWP. STRATHMERE	<u>Corson's Inlet</u> - 75' sloped erosion, 2' - 3' in height <u>Seaview Avenue</u> - 75' sloped erosion, 2' - 3' in height. Vertical dune erosion 2' - 4' high by 6' - 8' wide <u>Oceanfront Beach</u> - 75' of sloped erosion 1' - 2' in height, ponding on beach from wave runup, damage to dune grass <u>Whale Beach</u> - 75' sloped erosion, 1' - 2' in height, damage to dune grass	Moderate
SEA ISLE CITY	60' of sloped erosion, 1' - 2' in height. Some beach ponding from run up, damage to dune grass <u>Townsend's Inlet</u> - 300' of vertical dune erosion 10' - 12' high by 6' - 8' wide. Condo deck experiencing undermining	Moderate
AVALON	60' of sloped erosion, 1' - 2' in height	Minor
STONE HARBOR	60' sloped erosion, 1' - 2' in height. <u>Dune Terminus</u> - 300' vertical dune erosion 1' - 5' high by 2' - 10' wide. About 200' sand fence damaged	Moderate
NORTH WILDWOOD	<u>Hereford Inlet</u> - 40' sloped erosion, 1' - 2' high <u>Oceanfront Beach</u> - 60' sloped erosion 1' - 2' high <u>2nd to 5th</u> - 100' vertical dune erosion 10' high by 15' - 20' wide. Dune loss exposed bulkhead, typical wave overtopping of seawall	Moderate

WILDWOOD CITY	80'- 100' of sloped erosion, 1'- 2' in height, ponding from wave runup	Minor
WILDWOOD CREST	80'-100' of sloped erosion, 1'- 2' in height, ponding from wave runup	Minor
LOWER TWP. DIAMOND BEACH	60' of sloped erosion, 1'- 2' in height	Minor
CAPE MAY CITY Poverty	30' of sloped erosion, 1'- 1.5' in height	Minor
LOWER TWP. WEST CAPE MAY	20' of sloped erosion, 1'- 1.5' in height	Minor
CAPE MAY POINT	30' of sloped erosion, 1'- 1.5' in height	Minor
DELAWARE BAY	<p><u>Villas/North Cape May</u> – 25' – 30' of sloped erosion, 1'- 2' in height. 1' – 2' high vertical beach erosion at Lincoln Blvd.</p> <p><u>Middle Twp./Reeds Beach</u> – 15' – 20' of sloped erosion, 1'- 2' in height. Some back-bay flooding noted. Minor bulkhead damage at Millman Blvd. in Del Haven.</p> <p><u>Dennis Township</u> – No major incidents or damage reported.</p> <p><u>East Point/Heislerville</u> – 15' – 20' of sloped erosion, 1'- 2' in height. Losses noted to temporary placed sand berm at Lighthouse. Minor scarping of side slopes and cross dike at Heislerville Dike. Some back-bay flooding noted.</p> <p><u>Bivalve</u> – No major incidents or damage reported.</p> <p><u>Fortescue</u> – North End, up to 30' of sloped erosion, 1' - 2' high. South End, up to 30' of sloped erosion, 1'- 2' high. Inlet Beach, up to 50' of sloped erosion, 1' – 2' high.</p> <p><u>Money Island/Gandy's Beach</u> – up to 30' sloped erosion, 1' to 2' high. No damage or overtopping of the bulkhead or revetment.</p> <p><u>Fairfield Township (Sea Breeze)</u> – **Access was obstructed due to tide.</p> <p><u>Greenwich Township</u> – No major incidents or damage reported.</p> <p><u>Lower Alloways Creek</u> – No major incidents or damage reported.</p> <p><u>Oakwood Beach</u> – Up to 25' sloped erosion, 1' - 2' high.</p>	Minor

*** Damage Levels:**

Major erosion – consists of significant or total beach berm loss and/or significant erosion and scarping of the dunes

Moderate erosion – consists of significant scarping and/or significant sloped erosion of beach berm and/or minor erosion of the dunes

Minor erosion – consists of redistribution of sand within the beach profile or loss of sand without significant scarping or significant sloped erosion