



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Watershed and Land Management

Division of Resilience Engineering & Construction

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MEMORANDUM

TO: Vince Mazzei, Assistant Commissioner
Dennis Reinknecht, Director

FROM: Chris Constantino through William Dixon, Assistant Director 

DATE: January 19, 2022

SUBJECT: Initial Coastal Storm Survey & Damage Assessment
Atlantic Ocean, Delaware Bay and Raritan Bay shorelines
January 16, – January 17, 2022 – Winter Storm (aka Izzy)

Late summer and early fall 2021 were generally dominated by frequent periods of elevated seas and surf caused by medium to long period swells, followed by the month of October 2021 experiencing several periods of short- to medium-period swells and stronger onshore winds. Despite the increased wave activity, most locations fared well except for a few 'hot spot' locations which experienced more pronounced impacts. Local beach maintenance efforts, as well as recently completed periodic nourishment projects within Cape May County, Atlantic County and Monmouth County continued to help dampen the wave activity and alleviate some of the coastal erosion at the traditional 'hot spot' locations. A trend of smaller to moderate sized surf and less stormy conditions prevailed from November 2021 until mid-January 2022.

Late on Friday, January 14th, a low-pressure system moved off the northern Delmarva coast and intensified east of New Jersey. This weather system introduced a period of elevated, medium- to long-period surf, beginning on Saturday January 15th, which coincided with increasing tidal elevation due to the upcoming full moon (January 17th). By midday Sunday January 16th, the effects from another low-pressure system approaching from the Southeast states began to impact the area. Moderate to strong onshore winds increased the sea heights and the resulting surf heights. This strong low-pressure system took a more inland track northerly through eastern Pennsylvania to New England. As a result of this track, the strong winds were generally from the east and southeast during the peak of the event before rotating to a more southerly, southwesterly, and westerly direction by Monday afternoon, January 17th.



Surf heights peaked on Monday in the 5- to 8-foot range along the South Jersey coast and in the 8- to 12-foot range along the North Jersey coast. Throughout the period, the greatest surf heights were generally observed around jetties, groins, inlets, and piers.

Off the New Jersey coast, buoys recorded wind gusts over 50 mph at the nearshore locations and over 60 mph at the offshore locations. Inland reporting stations recorded gusts over 50 mph during the peak of the event, with the strongest period occurring early Monday January 17th. During this period, nearby buoys recorded peak sea heights between 15 and 23 feet. The oceanfront and back bay locations reached minor flood stage levels during one high tide cycle on Monday morning January 17th with several back bay locations reaching moderate flood stage. These elevated tidal events were a product of the moderate to strong onshore winds as well as the upcoming full moon.

A full post-storm assessment for the January 16, – January 17, 2022 – Winter Storm was conducted on Tuesday January 18, 2022; the results of this assessment are contained in this report. During the compilation of this report, the surf conditions were in the 2- to 4-foot range with west-northwest and northwest winds gusting over 30 mph at several locations. A detailed summary listed by municipality from north to south is enclosed.

Of the 81 sites surveyed, 76 had minor beach or dune erosion, 5 had moderate beach or dune erosion and 0 had major beach or dune erosion. Criteria for determining damage levels is listed at the end of this summary.

Please note that the storm damage assessments found herein were conducted in a rapid time interval with pre-storm and post-storm observations being made immediately before and after the event in question. Please note that the changes documented in this report are from this event; pre-existing conditions (i.e. scarps in dunes prior to the event) and what caused these conditions are not always reported herein. 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 this material will return to the "dry" beach in time following the storm; this time frame may vary based on several contributing factors such as storm frequency and duration.

*** 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.

<u>LOCATION</u>	<u>INSPECTION NOTES</u>	<u>DAMAGE LEVEL*</u>
PERTH AMBOY	Minor sloped erosion and redistribution of sand. No major incidents or damage observed or reported.	Minor
SOUTH AMBOY	Minor sloped erosion and redistribution of sand. No major incidents or damage observed or reported.	Minor
OLD BRIDGE	Some additional minor erosion to pre-existing scarp. No major incidents or damage observed or reported. Wave runup/tide to the upper beach.	Minor
ABERDEEN	No major incidents or damage observed or reported.	Minor
ABERDEEN CLIFFWOOD BEACH	Wave runup/tide to the upper beach. Sand over wash reported along Lakeshore Dr. and Ocean Blvd. Wind-blown sand. No major incidents or damage observed or reported.	Minor
KEYPORT	Minor sloped erosion and redistribution of sand. No major incidents or damage observed or reported. Wave runup/tide to the upper beach.	Minor
UNION BEACH	Minor sloped erosion and redistribution of sand. Wave runup/tide to the upper beach. No major incidents or damage observed or reported.	Minor
KEANSBURG – BAYSHORE FLOODGATE	Minor sloped erosion and redistribution of sand. No major incidents or damage reported. Gate was closed consistent with the Operations Manual.	Minor
KEANSBURG	Floodgate Facility to Point Comfort: Minor sloped erosion and redistribution of sand. Some wave runup/tide to the upper beach/dune. Minimal additional erosion to the pre-existing 5' high vertical beach scarps. Point Comfort to Ideal Beach: Minor sloped erosion and redistribution of sand. Some wave runup/tide to the upper beach/dune. Additional vertical beach scarping up 1' in height, 1'- 2' in width, and 20' in length to the pre-existing scarps near Point Comfort. No major incidents or damage observed or reported. Ideal Beach to Pews Creek: Minor sloped erosion and redistribution of sand. Some wave runup/tide to the upper beach/dune. Some wave runup to the upper beach/dune. No major incidents or damage observed or reported.	Minor
MIDDLETOWN	Pews Creek Pump Station: Gate was closed consistent with the Operations Manual.	Minor
	Port Monmouth: Up to 15' of sloped erosion. 1' in height. Some wave runup/tide to the upper beach/dune. No major incidents or damage observed or reported.	Minor
	Belford: Existing 6' scarp along the dike at the ferry terminal increased in width by an additional 2'. No major incidents or damage observed or reported.	Minor
	Leonardo: Minor sloped erosion and redistribution of sand. Some wave runup/tide to the upper beach/dune. No major incidents or damage observed or reported.	Minor
ATLANTIC HIGHLANDS	Minor sloped erosion and redistribution of sand. Some wave runup/tide to the upper beach. No major incidents or damage observed or reported.	Minor
HIGHLANDS	Minor sloped erosion and redistribution of sand. Some wave runup/tide to the upper beach/dune. No major incidents or damage observed or reported.	Minor

SEA BRIGHT	Up to 70' of sloped erosion with some wave runup/tide to the upper beach/dunes. Some berm-top ponding in North Beach section. Windblown sand overtopped crossovers and the seawall at various locations. Several sinkholes along the seaward toe of the seawall between Center St. and Peninsula Ave. No major incidents or damage observed or reported.	Minor
MONMOUTH BEACH	Riverview Road to Beach Rd.: Up to 45' of sloped erosion with some wave runup/tide to the upper beach. Some windblown sand overtopped crossovers and the seawall. Steel bulkhead groin more exposed near Cottage Rd.	Minor
	Beach Rd. to South end of Borough: Up to 35' of sloped erosion with some wave runup/tide to the upper beach. Some windblown sand overtopped crossovers and the seawall.	Minor
LONG BRANCH	Seven Presidents to Seaview Ave.: Up to 35' of sloped erosion. Some wave runup/tide to the upper beach/bulkhead.	Minor
	Seaview Ave. to Cottage Pl.: Up to 65' of sloped erosion. Wave runup/tide to the upper beach.	Minor
	Cottage Pl. to Pullman Ave.: Up to 45' of sloped erosion with various sections of vertical beach scarps up to 1' in height. Wave runup/tide to the upper beach/bulkhead, especially south of Lake Takanassee. Bulkhead overtopped by wave runup during this winter storm.	Moderate
DEAL	Up to 75' of heavy sloped erosion with various sections of vertical beach scarping, up to 3' in height – most notable especially south of Marine Pl. Wave runup/tide to the upper beach. No major incidents or damage observed or reported. Active beachfill in southern half of Borough	Moderate
ALLENHURST	Minor sloped erosion and redistribution of sand. Wave runup/tide to the upper beach. No major incidents or damage observed or reported. Beachfill nearby in Deal; some limited access.	Minor
LOCH ARBOUR	Up to 35' of sloped erosion and redistribution of sand. Wave runup/tide to the upper beach. No major incidents or damage observed or reported. Beachfill nearby in Deal; some limited access.	Minor
ASBURY PARK	Up to 35' of sloped erosion and redistribution of sand. Wave runup/tide to the upper beach. No major incidents or damage observed or reported. Beachfill nearby in Deal.	Minor
NEPTUNE OCEAN GROVE	Up to 60' of sloped erosion and redistribution of sand. No major incidents or damage observed or reported.	Minor
BRADLEY BEACH	Up to 20' sloped erosion and redistribution of sand. Wave runup/tide to the upper beach. No major incidents or damage observed or reported.	Minor
AVON	Minor sloped erosion and redistribution of sand. Wave runup/tide to the upper beach. Windblown sand to boardwalk. No major incidents or damage observed or reported.	Minor
BELMAR	Up to 50' of sloped erosion and redistribution of sand. Windblown sand to boardwalk and near street. Wave runup/tide to the upper beach. No major incidents or damage observed or reported.	Minor

SPRING LAKE	Up to 20' of sloped erosion and redistribution of sand. Windblown sand along boardwalk and near street. Evidence of recent beach maintenance observed. Wave runup/tide to the upper beach. No major incidents or damage observed or reported.	Minor
SEA GIRT	Up to 30' of sloped erosion and redistribution of sand. Wave runup/tide to the upper beach/dune. No major incidents or damage observed or reported.	Minor
MANASQUAN	Up to 20' of sloped erosion and redistribution of sand. Windblown sand along promenade. Wave runup/tide to the upper beach. No major incidents or damage observed or reported.	Minor
POINT PLEASANT BEACH	Up to 20' of sloped erosion, up to 5' - 8' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
BAY HEAD	Up to 30' of sloped erosion, up to 5' - 8' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
MANTOLOKING	Up to 30' of sloped erosion, up to 5' - 6' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
BRICK	Up to 30' of sloped erosion, up to 5' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
TOMS RIVER NORMANDY BEACH through MONTEREY BEACH	Up to 20' of sloped erosion, up to 5' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
LAVALLETTE	Up to 25' of sloped erosion, up to 5' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
TOMS RIVER ORTLEY BEACH	Up to 30' of sloped erosion, up to 6' in height, and some redistribution of sand. Some minor vertical beach scarping. Pre-existing vertical dune scarping, in the center stretch of this reach. Wave runup/tide to the upper beach/dune.	Minor
SEASIDE HEIGHTS	Up to 60' of sloped erosion, up to 5' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
SEASIDE PARK	Up to 30' of sloped erosion, up to 5' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
BERKELEY TWP. S. SEASIDE PARK	Up to 20' of sloped erosion, up to 5' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
ISLAND BEACH STATE PARK	No major incidents or damage observed or reported as of report time.	Minor
BARNEGAT LIGHT	Minor sloped erosion and redistribution of sand. No major incidents or damage observed or reported.	Minor
LONG BEACH TWP. LOVELADIES	Up to 30' of sloped erosion, up to 3' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
HARVEY CEDARS	Up to 30' of sloped erosion, up to 3' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor

LONG BEACH TWP. NORTH BEACH	Up to 30' of sloped erosion, up to 3' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
SURF CITY	Up to 30' of sloped erosion, up to 3' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
SHIP BOTTOM	Up to 30' of sloped erosion, up to 3' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
LONG BEACH TWP. BRANT BEACH through N. BEACH HAVEN	Up to 30' of sloped erosion, up to 3' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune.	Minor
BEACH HAVEN	Up to 30' of sloped erosion, up to 3' in height, and some redistribution of sand. Pre-existing vertical dune scarps, from Fairview Ave. to Belvoir Ave. experienced some additional erosion, up to 2' in height.	Minor
LONG BEACH TWP. HOLGATE	Up to 30' of sloped erosion, up to 3' in height, and some redistribution of sand. Wave runup/tide to the upper beach/dune. Pre-existing steep and vertical dune faces. Evidence of recent maintenance.	Minor
BRIGANTINE	Up to 20' of sloped erosion, 1' - 2' in height throughout the City. Some wave runup/tide to the upper beach/dunes/revetment. Some ponding noted on upper beach. 15 th St. N. south to 10 th St. N. continues to experience more enhanced erosion; vertical dune scarp, up 2' - 4' in height near 15 th St. N. pedestrian crossover.	Minor
ATLANTIC CITY	<u>Inlet Seawall and Terminal Jetty area:</u> No incidents or damage observed or reported.	Minor
	<u>Inlet Jetty to Ventnor Border:</u> Up to 40' of sloped erosion, 1' - 2' in height throughout the City with several stretches of vertical beach scarping, up to 1' in height north of the Steel Pier (Maryland Ave.). Some wave runup/tide and debris to the upper beach/dunes. Some ponding noted on upper beach.	Minor
VENTNOR	Up to 25' of sloped erosion, 1' - 2' in height throughout the City with several stretches of vertical beach scarping, up to 2' in height. Some wave runup/tide to the upper beach/dunes.	Minor
MARGATE	Minor sloped erosion, 1' - 2' in height, with sand redistribution throughout the City. Some wave runup/tide to the upper beach/dunes throughout the City.	Minor
LONGPORT	Minor sloped erosion, 1' - 2' in height. Some wave runup/tide to the upper beach/dunes throughout the Borough.	Minor
OCEAN CITY	Up to 40' of sloped erosion, 1' - 2' in height throughout the City. Various sections of vertical beach scarps, up to 2' in height north of the Music Pier (8 th Street). Additional erosion to the pre-existing 6' high vertical dune/stockpile scarp in the vicinity of 5 th St. through 7 th St.; up to 5' additional feet in width. Some wave runup/tide to the upper beach/dunes throughout City.	Minor

UPPER TWP. STRATHMERE	Up to 30' of sloped erosion, 1' in height. Additional erosion to the pre-existing 4' high vertical dune scarp; additional 2' in width near Seaview Avenue. Wave runup/tide to the upper beach/dune. No major incidents or damage observed or reported.	Minor
SEA ISLE CITY	Whale Beach to 90th Street: Up to 50' of sloped erosion, 1' – 2' in height. Wave runup/tide to the upper beach/dune. 90th Street to Townsend Inlet Waterfront Park: Up to 40' of both heavily sloped to vertically scarped erosion, 1' - 4' in height (93 rd St. to bridge). Wave runup/tide to the upper beach/dune. Existing dune scarp at Waterfront Park minimally impacted.	Minor
AVALON	Up to 40' of sloped erosion, 1' – 2' in height with vertical cut to dune up to 6' in height and up to 10' in width (between 11 th St. and 15 th St.). 200' of dune fence lost between 13 th and 15 th St. Wave runup/tide to the upper beach/dune.	Moderate
STONE HARBOR	Up to 35' of sloped erosion, 1' - 2' feet in height. Wave runup/tide to the upper beach/dune. No major incidents or damage observed or reported.	Minor
NORTH WILDWOOD	Hereford Inlet & Surf Ave: No major incidents or damage observed or reported to the inlet beach and inlet seawall. Wave runup/tide to the upper beach/dune	Minor
	2nd Ave. to 8th Ave.: Up to 30' of sloped erosion, 1' to 2' in height. Wave runup/tide to the upper beach/bulkhead.	Moderate
	8th Ave to 15th Ave.: Up to 55' of heavily sloped erosion with vertical beach scarps, up to 2' in height and new vertical dune scarps, up to 7' in height and 15' in width (13 th Ave and 15 th Ave.) Wave runup/tide to the upper beach/dune. 15th Ave. to Wildwood border: Up to 35' of sloped erosion, 1' - 2' in height. Wave runup/tide to the upper beach/dune.	
WILDWOOD CITY	Up to 40' of sloped erosion, up to 1' in height. No major incidents or damage observed or reported. Wave runup/tide to the upper beach. Evidence of berm top ponding throughout.	Minor
WILDWOOD CREST	Up to 35' of sloped erosion, up to 1' in height. No major incidents or damage observed or reported. Wave runup/tide to the upper beach/dune. Evidence of berm top ponding.	Minor
LOWER TWP. DIAMOND BEACH	Up to 30' of sloped erosion, 1' in height. No major incidents or damage observed or reported. Wave runup/tide to the upper beach/dune	Minor
CAPE MAY CITY	Up to 20' of sloped erosion, 1' to 2' in height. Wave runup/tide to the upper beach/dune.	Minor
LOWER TWP./WEST CAPE MAY	Up to 20' of sloped erosion, 1' to 2' in height. No major incidents or damage observed or reported.	Minor
CAPE MAY POINT	Minor sloped erosion and redistribution of sand. No major incidents or damage observed or reported.	Minor

LOWER DELAWARE BAY	North Cape May/Villas: Minor sloped erosion and minor scarping with redistribution of sand. Wave runup/tide to the upper beach/dune. No major incidents or damage observed or reported.	Minor
	Del Haven/Pierces Point/Reeds Beach: Minor sloped erosion and redistribution of sand. Wave runup/tide to the upper beach and into the roadway. No major incidents or damage observed or reported.	Minor
DELAWARE BAY/RIVER	East Point: Minor sloped erosion and wave runup/tide to the upper beach/geotubes/gabion baskets. Ponding observed waterward of Bay Ave. Dune erosion behind geotubes, 3' in width up to 2' in height and 150' long. No major incidents or damage reported.	Minor
DELAWARE BAY/RIVER (continued)	Heislerville Dike: Sections along the Maurice River have up to 2' of erosion and settlement on crest and shoulder of dike. Bayside slope has up to 3' of erosion and settlement for approx. 1,200' along the crest and shoulder of dike. Sink holes and crack lines continue to grow.	Moderate
	Bivalve (Commercial): Gabion baskets at NJ State Police Marine – Bivalve Station in deteriorated state – much of which is pre-existing. No major incidents or damage reported.	Minor
	Fortescue: Up to 3' in width and 2' in height of erosion to pre-existing vertical scarps. Minor sloped erosion on top of dune along vegetation line. Some damage to existing bulkhead cap. No major incidents reported.	Minor
	Downe Township: Gandy's Beach: Some overtopping and scour noted around concrete bin block revetment. Some windblown sand and ponding on the road. No major incidents or damage reported. Money Island: Ongoing eco-restoration project. No major incidents or damage reported.	Minor
	Lawrence Twp. - (Bay Point): No major incidents or damage reported.	Minor
	Fairfield Twp. (Sea Breeze): Road continues to erode due to storms. Some additional vertical scarping. More debris accumulating in area. Wave runup/tide to the upper beach.	Minor
	Oakwood Beach: Minor sloped erosion and redistribution of sand. Debris noted on entire beach. Minor damage to sand fence and redistribution of stones at the southern end. Wave runup/tide to the upper beach.	Minor