



DNREC, Shoreline and Waterway Management Section Fall 2011/Winter 2012

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## Delaware's Beaches are Gaining Sand

The United States Army Corps of Engineers has contracted with Great Lakes Dredge & Dock to pump sand on beaches in Fenwick Island, South Bethany, Bethany Beach, Dewey Beach and Rehoboth Beach. This is the re-nourishment part of the Storm Damaged Reduction Plan that began six years ago. Fenwick Island was completed in the beginning of August. The Dredge Illinois began pumping South Bethany in October and moved to Bethany in November. The Dredges Dodge Island and Padre Island began pumping in Dewey Beach in mid-November and moved to Rehoboth Beach in beginning of January.



The US Army Corps of Engineers also contracted with Cottrell Contracting Corporation to pump sand onto the west end of Lewes Beach on the Delaware Bay. The Lewes project began in mid-November and was completed just before the holidays.

The purpose of these projects is to provide coastal storm damage reduction and shoreline protection. To ensure public safety portions of the beaches are closed. In order to find out where beach access is closed please go to the DNREC website <http://www.dnrec.delaware.gov/swc/Shoreline/Pages/DelawareBeachFillProjectsUpdate>



### Upcoming Events:

#### '62 Storm 50/50 Workshop

Coastal Vulnerability and Sustainability from 1962 to 2062  
March 7, 2012  
Rehoboth Convention Center  
8:30 AM—1:00 PM  
Movie Screening 2:00 PM  
For more information contact  
Wendy Carey  
(302) 645-4258

#### Beach Grass Planting

March 24, 2012  
9 AM – Noon  
For more information contact  
Jennifer Luoma  
(302) 739-9921

**HAPPY  
NEW YEAR!**



## Hurricane Irene



A week prior to the Labor Day weekend, visitors to Delaware's Beaches were required to evacuate as were residents who live within 3/4 of a mile to the Atlantic Ocean, Inland bays, Delaware Bay and Delaware River. Hurricane Irene was forecasted to cause hurricane conditions to occur in the State of Delaware. Fortunately, for not really knowing how a Category 1 Hurricane could affect our coastline, relatively little damage was had, because the strong winds occurred at low tide, and never reached Category 1 strength.

Hurricane Irene maintained category 1 strength as the eye of the storm passed within 27 miles of our coast. Category 1 hurricanes are characterized by sustained winds of 75 miles per hour or greater. As what typically occurs in Delaware during a coastal storm, we sustained storm surge and flooding. Flooding occurred in low lying coastal areas with a tidal level of 8.2 feet and occurred in areas where significant amounts of rain had fallen. Rainfall totals ranged from 7.47 inches in Sussex County, to 8.81 inches in Kent County, and 8.34 inches in New Castle County. Storm surge was 2.98 above an astronomical high tide. A significant amount of erosion occurred on beaches such as Broadkill Beach,

Below: The picture on the left is the view from North Carolina Avenue in Broadkill Beach the day before the storm. The picture to the right is taken the day after the storm. The broken concrete slabs seen in the picture on the right are buried in the sand in the picture on the left. The State Highway Department placed the concrete here to protect the shoreline from future erosion after the storm of 1962.



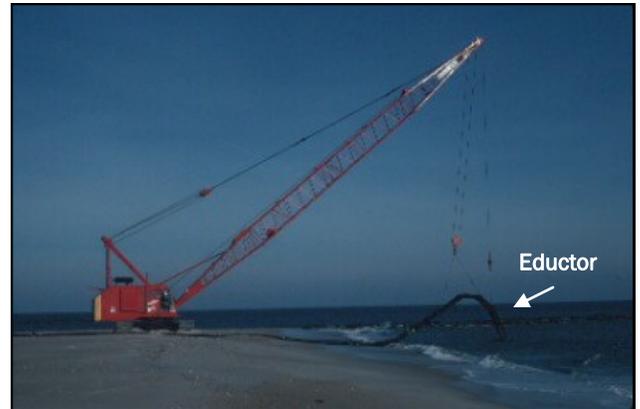
The picture below shows a trailer damaged during Hurricane Irene in Big Stone Beach to the point that it was condemned and removed. The picture to the left is what the trailer looked like in 2008.



## Sand Bypass System

### Why is it needed...

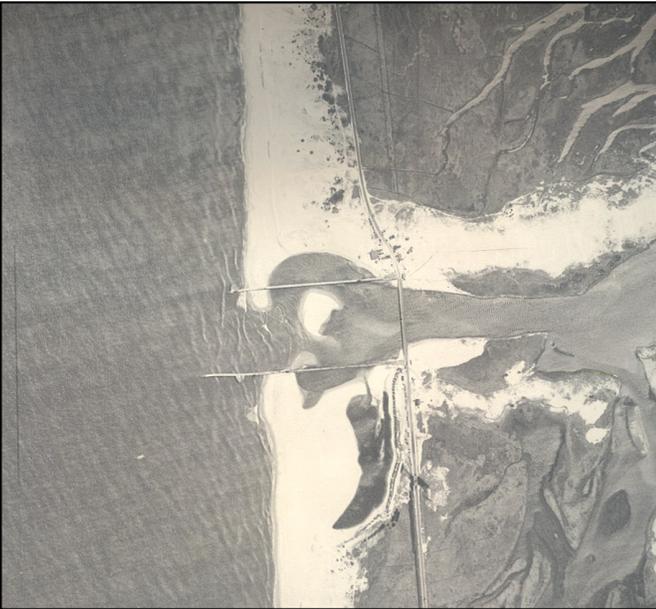
Jetties were constructed by the US Army Corps of Engineers on the north and south sides of the Indian River Inlet to stabilize the inlet as a navigable channel. When the construction occurred in the mid 1930's the shoreline was relatively even on both sides. The net longshore transport of sand along the beach from Bethany Beach to Cape Henlopen is to the north. Therefore over time, sand has built up on the south side of the inlet and a deficit has occurred on the north side of the inlet. In order to mitigate the erosion on the north side and to protect the Indian River Inlet Bridge, a sand bypass system was installed on the south side of the jetties. Pumping began in 1990.



Eductor working on the south side of the Indian River Inlet

### How it works...

A crane holds an eductor in the surf zone on the south side of the inlet. Through a pump house the sand is sucked up by the eductor is pushed through a pipe attached to the bridge over to the north side, where it is deposited close to the surf zone and feeds the beach.



### Challenges associated with it...

Because the sand bypass system is located in a popular swimming area, the times that it can operate are limited to the off season months. This poses a challenge in that the offseason months are typically less favorable when it comes to weather conditions. During the winter months Delaware's coast tends to endure a lot of northeast winds. Northeast winds tend to cause beach erosion and even if the erosion is slight and short lived, it can affect the operations at the bypass plant. Without any beach to stand on the eductor is rendered useless until the beach builds back to a certain point. Also, if sand is eroded from the beach, there may not be enough sand at the south side of the Inlet to pump to the north side.

Below: This photograph shows the extent of displacement of the shoreline from the south side of the Inlet to the north side.

*In the aerial photograph above, is what the shoreline near the Indian River Inlet looked just after the jetties were constructed to stabilize it.*



## Coastal Cleanup

This year's International Coastal Cleanup was held on September 17, 2011. Over 2,000 volunteers collected more than 10 tons of trash from sites along the Coastline of Delaware, stretching from Wilmington in New Castle County to Fenwick Island in Sussex County. This year special efforts were made to properly dispose of recyclable materials. In addition to plastic bottles, glass bottles and aluminum cans, over 10,000 cigarette butts were collected. Smoking related items still seem to be the majority of items picked up off the beach. A couple more unusual items found were a porta-potty in Bethany Beach and a tire in Dewey Beach.

Another unusual thing that happened this year is the day after the cleanup several Delaware Bay beach communities found their beaches covered with more litter. It is believed that this trash was washed downstream from areas near Philadelphia, Pennsylvania as a result from flooding from Hurricane Irene and Tropical Storm Lee. Those communities with the assistance of DNREC, organized other cleanups along their beaches to attempt to clean them again.



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### *For Your Reference:*

Beach Preservation Act

Title 7, Chapter 68

<http://delcode.delaware.gov/title7/c068/index.shtml>

Regulations Governing Beach  
Protection and the Use of Beaches

<http://www.dnrec.state.de.us/bechregs.htm>

Link to Applications for Coastal  
Construction

Scroll to the bottom of the page for list of  
applications

[http://www.swc.dnrec.delaware.gov/services/Pages/  
PermitsLicensesApprovals.aspx](http://www.swc.dnrec.delaware.gov/services/Pages/PermitsLicensesApprovals.aspx)

FEMA's National Flood Insurance Program

[http://www.fema.gov/about/programs/nfip/  
index.shtm](http://www.fema.gov/about/programs/nfip/index.shtm)

If you have any questions regarding the information found in this publication, please contact Jennifer Luoma at (302) 739-9921 or

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