



SPECIAL EDITION: FLOOD INFORMATION NEWSLETTER

Fall 2014

This is the Town's special newsletter publication designed to promote awareness of emergency management and storm-related issues.

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Storm Preparedness Issue

Early settlers of the Outer Banks and the coastal areas located behind the barrier islands quickly learned the dangers of exposure to wind and waves. In 1733, a land owner at Powell's Point in lower Currituck County reported that a massive wind storm flooded his property and wiped out nearly all the buildings housing his family and livestock. It also destroyed the pier that allowed shallow draft boats to deliver goods and export the crops produced on the farm.

Forensic meteorologists have since determined that the storm documented by this account was a Category 4 hurricane that decimated the Leeward Islands and the Eastern Caribbean before finally making landfall in North Carolina. Numerous deaths were reported as a result of this storm. The lack of any type of advanced warning undoubtedly contributed to the number of fatalities.

Today, residents of the Outer Banks are protected by the most advanced forecasting technologies available. Knowing that a storm is approaching, however, is only half the battle. Understanding the danger of flooding and taking appropriate measures will protect your family and property. This publication intends to cover some basic considerations that property owners, residents, and vacationers should keep in mind to mitigate storm-related hazards and to stay out of harm's way.



Hurricane Irene had significant impacts within the Town of Duck in



Town of Duck News

Website: townofduck.com • Facebook: [Town of Duck](https://www.facebook.com/TownofDuck) • Twitter: [DuckOBX](https://twitter.com/DuckOBX)

Storms — Wind, Flooding, and Storm Surge

The Town of Duck is surrounded by water. Buildings along the shoreline are susceptible to wave action and high tides associated with storm surges generated in the Atlantic Ocean and Currituck Sound.

Properties in low-lying areas are prone to flooding from overwash or significant rainfall, particularly when the seasonal groundwater table is high due to consecutive rain events. When the groundwater table is high, the soil cannot absorb water quickly, and water stands at the surface for longer periods of time.

The Town is also vulnerable to shoreline erosion, which over a period of time will increase the vulnerability of ocean and soundfront structures to these forces.

Flooding from the Atlantic Ocean occurs when offshore storms create storm surge and wave conditions that result in ocean overwash. Overwash can flood oceanfront structures as it passes inland, and can often create ponds of water behind the primary frontal dune that can flood low-lying areas.

Hurricane Isabel, which hammered the Outer Banks in September 2003, generated 90 mph east winds that caused significant erosion along the oceanfront. Areas in Ocean Pines and Carolina Dunes experienced overwash that resulted in moderate flooding behind the primary frontal dune. The storm destroyed approximately 90 percent of the ocean walkways and dune decks from Sanderling to the southern Town line, and flooded a number of ground floor enclosures. Damage to beach walkways and flooding of ground floor enclosures also resulted from the Thanksgiving nor'easter of 2006, the September nor'easter of 2008, the November nor'easter of 2009, and Hurricane Sandy.



Hurricane Irene

Hurricane Irene made landfall in North Carolina in late August 2011. This Category One storm produced sustained southwesterly winds of 82 mph. It caused widespread damage to homes from Cape Lookout northward, and produced extensive power outages. On Hatteras Island, the flow from the sound to the ocean damaged Highway 12, cutting several breaches. The most severe surge damage occurred between Oregon Inlet and Cape Hatteras, but significant storm surge damage also occurred along southern portions of Currituck Sound, including Duck.

The heaviest flood damage sustained in Duck affected the commercial buildings along the sound in the village, and lower level residential enclosures north of the Army Corps of Engineers Field Research Facility. In addition to flooding, heavy wave action damaged nearly all the piers and bulkheads along Duck's Currituck Sound shoreline. Wave action coupled with torrential rains also caused severe erosion on the high bluffs located above the sound shoreline near the Town's border with Southern Shores. Low lying sections of the Town of Duck Soundside Boardwalk also sustained moderate structural damage.

Flooding along Duck's Currituck Sound shoreline occurs when prevailing winds gust for several days from a southerly or westerly direction. Hurricane Irene set the new standard for severe soundside flooding with the highest flood heights ever recorded since the Army Corps of Engineers began documenting sound water elevations in 1979. The flooding that occurred during Irene topped the 1993 "Storm of the Century" flooding by an additional four to six inches.

The Town has experienced a number of torrential rainfall events in recent years that resulted in widespread flooding in low lying areas throughout Duck. Hurricanes Alex, Bonnie, and Charlie passed over or near the Outer Banks in quick succession in the last of days of summer 2004, bringing 20 plus inches of rainfall in less than a month. Two years later, in September 2006, Tropical Storm Ernesto dumped eight inches of rain in a 24-hour period. Hurricane Earl brushed the Outer Banks in September 2010, bringing moderate wind damage and torrential rainfall.

The result in each of these storms was flooding in the low-lying areas immediately west of the dunes in many of the subdivisions throughout town and moderate flooding in low lying areas throughout the Sanderling subdivision. Flooding along NC 12 also continues to occur in spot areas however the flooding in the Tuckahoe area has been alleviated due to the drainage improvements that were recently completed in this area.

These events have helped the Town better understand and assess the vulnerabilities and risks that exist in specific areas of Duck. They also highlight the importance of properly siting, designing, and constructing buildings and infrastructure, as well as taking precautions to ensure property is protected and risks are minimized.

Floodplain Regulations and Insurance Requirements

Approximately one-half of the properties in Duck are located within a regulatory floodplain or “*Special Flood Hazard Area*”. These are areas identified by the Federal Emergency Management Agency’s (FEMA) Flood Insurance Rate Maps (FIRM) as being particularly susceptible to flooding and wave action.

The Town of Duck is a participant in the National Flood Insurance Program which makes property owners eligible to purchase federally-backed flood insurance. As a primary requirement of this program, the Town must apply and enforce regulations within the Special Flood Hazard Area which are designed to reduce the risk of flooding and wind damage.

Special Flood Hazard Areas are assigned risk classifications based on elevation and topography, as well as proximity to water. Structures in these areas with enclosed habitable space are required to be constructed at a minimum elevation above mean sea level. This minimum elevation varies depending on the area and the risk classification assigned by the FIRM.

This is called the Base Flood Elevation and is estimated through a detailed engineering study to be the flood level of the 100-year storm. This means that, in any given year, there is a one percent chance that structures below this Base Flood Elevation could be flooded. The Special Flood Hazard Areas in Duck include properties on the oceanfront or in low-lying areas which generally have ground elevations of between zero and 10 feet above mean sea level.

If you conduct a development project in the Special Flood Hazard Area, the Town of Duck issues a Floodplain Development Permit to determine that the project is consistent with the Base Flood Elevation and all other minimum construction standards established by the National Flood Insurance Program. The Town maintains copies of Flood Insurance Rate Maps published by FEMA for the Town of Duck (or Dare County prior to the Town’s incorporation). Staff from the Town’s Department of Community Development can determine the Flood Zone and Base Flood Elevation that applies to your property if it is located in the Special Flood Hazard Area. This service is free and is available at the Town’s administrative office.

The map to the right overviews the Town of Duck’s Flood Zones as of September 20, 2006.

The Town also maintains a record of FEMA elevation certificates for properties and can provide these to property owners upon request, if available. Often lenders and insurance agents will ask for elevation certificates when issuing loans or insurance policies since they contain accurate elevation and flood zone data which is used to determine insurance premiums or



Town of Duck, North Carolina
Flood Zones



- VE, 14
- VE, 12
- AE, 10
- AE, 9
- AE, 8
- AE, 7
- AE, 6
- SHADED X



mortgage eligibility. Property owners should inquire with their agent to ensure that correct flood zone information is being used.

When purchasing an existing structure, premiums should be estimated based on the flood zone in effect at the time the structure was built. In many cases, grandfathering provisions will apply that can result in significantly reduced premiums. Only in cases when “substantial improvements” have been will the structure be required to meet all recent flood elevation and construction standards. A substantial improvement is a project or a series of projects within any consecutive 12-month period where the cost equals or exceeds 50% of the building’s market value.

Purchase Flood Insurance!

It is important to understand that a standard homeowner's insurance policy does NOT cover flood-related losses. While flood insurance is typically only required for properties with federally-backed mortgages, FEMA and the Town strongly encourage all property owners to purchase flood insurance, even if the property is not in a designated Special Flood Hazard Area. Outside the Special Flood Hazard Area, preferred risk policies can be purchased which carry a relatively low premium. Flood policies generally cover up to \$250,000 for flood-related damage to single-family dwellings, with an additional \$100,000 of coverage to the contents of the building.

Watch for Flood Insurance Changes

Some flood insurance premiums required under a 2012 law now won't be raised until the fall of 2015 at the earliest.

The Federal Emergency Management Agency (FEMA) said the \$1 trillion bipartisan funding bill passed by Congress last month contains a provision that will put off higher premiums required by new flood maps. A provision in the spending bill blocks FEMA from using any funds to implement premium increases due to re-mapping, at least through the end of September when the fiscal year ends.

However, it now appears that it will take FEMA another year or longer to get its re-mapping and rating program back on track after, and if, Congress unlocks the funding related to remapped properties in the next fiscal year.

The issue affects hundreds of thousands of homeowners who pay "grandfathered," below-market rates for insurance because their homes were in compliance with earlier flood codes. Many of them were facing large increases over the five years due to new maps being drawn up.

The remapping and other changes being delayed were required under the Biggert-Waters Flood Insurance Reform Act of 2012, a bipartisan law intended to reform the money-losing National Flood Insurance Program. But the higher premiums required under the new law have spooked many homeowners living near coastlines or in flood plains, threatening them with, in some cases, multifold increase in their premiums.

FEMA was ordered to delay work on implementing new premium increases on grandfathered properties by a provision written by Rep. Bill Cassidy, R-La., and Sen. Mary Landrieu, D-La., and attached to last month's

omnibus spending bill. Cassidy is running to unseat Landrieu this fall.

Senate Joins House in Approving Spending Bill with Narrow Flood Insurance Fix

Other flood insurance changes would still take place as planned, including higher premiums for frequently flooded properties and businesses and on second homes.

Also, people getting subsidized premiums still won't be able to pass them on to people who purchase their homes.

The Senate has already passed broader legislation requiring delays of most premium increases on a sizable bipartisan vote, 67-32. House Speaker John Boehner, R-Ohio, has said that the House would address the issue this year but he and other Republican leaders in the House do not support the sweeping delays passed by the Senate. The White House has also raised concerns about the Senate's broad delay, as well as about an insurance agent and broker licensing reform that is part of the Senate bill.

According to Rep. Steven Palazzo, (R-Miss.), one of the sponsors of original legislation in the House to delay the reforms and increases, a memo from FEMA acknowledges that the provision in the spending bill could set the agency back 12 to 18 months in addressing rates for grandfathered policies after the spending prohibition is lifted.

"In the initial delay language that was crafted in the House, we made sure to halt all FEMA activity to implement these drastic rate increases on some homeowners," Palazzo said in a statement. "Because of that language, FEMA admitted today that our actions will have much further reaching impact on their ability to enact rate increases. This could buy homeowners as much time as two extra years as we continue to fight flawed and unfair FEMA practices and work to enact further reforms in both houses of Congress."

Action to Take

Homeowners and business owners are encouraged to learn their flood risk and talk to their insurance agent to determine if their policy will be affected by the new law. Property owners who face increased premiums should discuss options such as verifying the accuracy of the rate determination, increasing the deductible, or retrofitting to or rebuilding at a higher elevation. Town staff may be able to answer questions or provide documentation such as the most recent elevation certificate for a property if available.

For more information visit

<http://www.fema.gov/flood-insurance-reform-act-2012>.

Written by Andrew Taylor; Contributed to by Andrew Simpson; "Flood Insurance Premium Hikes from New Maps Could Be Delayed Until 2015"; Insurance Journal; February 10, 2014.

Floodplain Development Basics — Altering the Land to Fit the Structure, or Altering the Structure to Fit the Land?

Historically, a common practice on the Outer Banks has been to construct houses using pile-supported foundations with all portions of the structure elevated above grade. This method of construction served a number of purposes, one of which was to avoid flooding and associated property damage. In recent times, structures are often enclosed at the ground level to provide additional living space and amenities for families and renters. While this practice is beneficial to maximize the use of valuable property, it can increase the risk of damage, not only to the structure itself and its contents, but also to adjacent properties.

In recent years with the significant rain events that the Town has experienced, there has been an increase in the number of homes that have had water enter either the ground floor living space or storage area. After Ernesto in 2006 and the winter rains in 2009/2010, numerous homes located at-grade were flooded or had standing water beneath the foundation for weeks, or even months, in some cases. While the nuisance of standing water would not totally be alleviated by elevating the structure alone, property damage could have been avoided if all portions of the structure were above grade.

In many cases properties are built-up with fill, rather than elevated on a wood foundation. The practice of building up property with fill can have detrimental impacts on adjacent properties or neighborhoods by displacing water and raising the overall flood height in a particular area or drainage basin. While this practice may have limited impacts on an individual basis, cumulatively this can have significant effects, changing the dynamics of water runoff, storage, and absorption

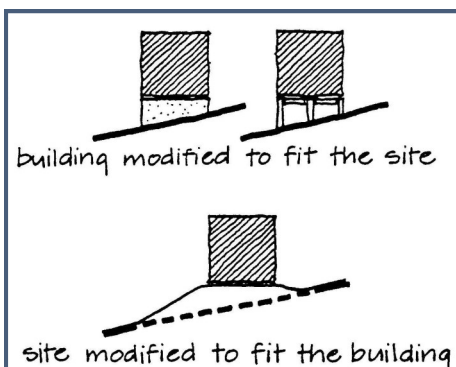
capacity. Filling in a floodplain is similar to placing sand in a glass of water. The more sand that goes in, the less water the glass can hold, and eventually the

glass overflows.

The floodplains in Duck are sensitive areas, which many times of the year are only a few feet above the groundwater table. Water has the ability to more readily infiltrate if it is spread over a large area. If more of the ground surface is filled and paved, water will collect in lower, open areas where it will either evaporate or infiltrate into the soil. Over time, increasing impervious surfaces and adding fill reduces the capacity of an area to evenly distribute and absorb the water from larger storms. In effect, water will remain at the surface for longer periods of time in the remaining areas that it is able to collect. Limiting impervious surfaces and fill increases the natural storage and infiltrative capacity of floodplains. Preserving trees and vegetation also increases the amount of water that is absorbed, since they contribute significantly to water uptake.

Many property owners claim that their homes, which never flooded in previous years, have experienced more recent problems due to newer adjacent developments where impervious areas have increased and when substantial filling has occurred. The Town now has regulations to limit the placement of fill but these regulations only provide a minimum level of protection to adjacent property owners. The Town would ask property owners to carefully consider impacts to adjacent property owners when contemplating filling, clearing, or development activities, particularly in the Special Flood Hazard Area, and certainly encourages the practice of structurally elevating buildings as a means to avoid flooding rather than placing significant amounts of fill. The Town also encourages the use of pervious paving materials for driveways, parking areas, and decks, such as gravel over sand or wood slatted decking to increase the surface area of the land that can absorb water.

Please remember that any development, including building construction, septic installation or repair, filling and grading activity, or the installation of a pool, requires a Floodplain Development permit to be issued by the Town of Duck Department of Community Development. Town staff can provide you with information on permitting requirements and are available to discuss your project, including an on-site review, at your convenience. Please keep this service in mind as you plan your next project.



Courtesy Design Manual Cape Hatteras
National Seashore National Park Service

Before, During, and After a Storm

Fortunately a number of sources exist to track storms and monitor evacuation notifications and emergency procedures.

Website: The Town of Duck maintains a page on its website dedicated to Emergency Preparedness and provides current storm-related information.

This website is found at the following address:
<http://www.townofduck.com/emergencypreparedness.htm>.

This page contains a number of useful links to track and monitor storms, to understand evacuation orders and procedures, and to assist with developing a personal storm preparedness plan. Other useful emergency management websites include:

National Weather Service Watches, Warnings, and Advisories: <http://www.srh.noaa.gov/>

Dare County, North Carolina Emergency Management: <http://darenc.com/EmgyMgmt/Alert/index.asp>

State of North Carolina Emergency Preparedness: <http://www.readync.org/>

Other Information Sources: Town information can also be found through Facebook, Twitter, YouTube, our Information Line, and an RSS feed on our News page.

Nixle: Nixle is a new service that the Town is using which is a secure and municipality-based information delivery system. A user can choose to receive information from a municipality or agency, or multiple agencies, based upon location. The information can be delivered via SMS text, e-mail, or by logging into the service based upon user choice. Duck plans to use Nixle for event, public safety, and weather-related updates in conjunction with our other information venues. Sign-up at: <https://local.nixle.com/register/> and enter in your Duck address to select the Town.

Facebook: [Town of Duck](#)

Twitter: [DuckOBX](#)

YouTube: [DuckPR](#)

News: www.townofduck.com/news

Information Line: 252.255.1286

Nixle: <https://local.nixle.com/register/>

252.255.1234 | 1200 Duck Road

YouTube

Follow the Town of Duck on YouTube on the DuckPR channel for video updates. Video recordings of Town Council meetings, monthly segments of Dare County's news magazine program *Destination Dare*, other Duck features, and upcoming event and other PSA's.

Prepare a Personal Evacuation Plan

- Identify ahead of time where you could go if you are told to evacuate. Choose several places—a friend's home in another town, a motel, or a shelter.
- Keep handy the telephone numbers of these places as well as a road map of the area. You may need to take alternative or unfamiliar routes if major roads are closed or clogged with traffic.
- Listen to NOAA Weather Radio, local radio, or TV stations for evacuation instructions. The primary Early Alert System (EAS) radio station for this area is WRSF (105.7) Columbia, North Carolina.
- In addition, other local radio stations and local Government Access Charter Cable Channel 20 provide important information and warning messages.
- If advised to evacuate, do so **immediately!**

Assemble a Disaster Supplies Kit With:

- First aid kit and essential medications.
- Canned food and can opener.
- At least three gallons of water per person.
- Protective clothing, rainwear, and bedding.
- Battery-powered radio, flashlight, and extra batteries.
- Special items for yourself, infants, elderly, or disabled family members including medicines and medical records.
- Items for your pet including food, water, medicines, and medical records.
- Written instructions on how to turn off electricity, gas, and water if authorities advise you to do so. Remember, you may need a professional to turn them back on.

Prepare for High Winds

- Install hurricane shutters or purchase precut 1/2" outdoor plywood boards, along with the screws to install them, for each window of your home.
- Install anchors for the plywood and pre-drill holes in the plywood so that you can put it up quickly.
- Make trees more wind resistant by removing diseased and damaged limbs, then strategically remove branches so that wind can blow through.

Continued on page 7

Before, During, and After a Storm (cont'd from page 6)

Know What to do

When a Hurricane Watch is Issued

- Listen to NOAA Weather Radio, local radio, or TV stations for up-to-date storm information.
- Prepare to bring inside any lawn or deck furniture, outdoor decorations or ornaments, trash bins, hanging plants, and anything else that can be picked up by the wind.
- Prepare to cover all windows of your home. If shutters have not been installed, use pre-cut plywood as described earlier. Note: Tape does not prevent windows from breaking, so taping windows is not recommended.
- Fill your car's gas tank.
- Recheck manufactured home tie-downs.
- Check batteries and stock up on canned food, first aid supplies, drinking water, and medications.

When a Hurricane Warning is Issued

- Listen to the advice of local officials, and leave if they tell you to do so. The Hurricane Evacuation Route for Duck is NC 12 (south) to US 158 (west) towards Elizabeth City, North Carolina and Norfolk, Virginia.

- Remember: There are no American Red Cross Approved shelters in Dare County. Inland shelter locations may be broadcast on local radio stations or on Charter Cable Channel 20.
- Complete preparation activities. If you are not advised to evacuate, stay indoors and away from windows.
- Be aware that the calm of the "eye" is deceptive; the storm is not over. The worst part of the storm will happen once the eye passes over and the winds blow from the opposite direction. Trees, shrubs, buildings, and other objects damaged by the first winds can be broken or destroyed by the second winds.
- Be alert for tornadoes as they can happen during a hurricane and after it passes over. Remain indoors, in the center of your home, in a closet, or bathroom without windows.
- Stay away from flood waters. If you come upon a flooded road, turn around and go another way. If you are caught on a flooded road and waters are rising rapidly around you, get out of the car and climb to higher ground. FEMA maintains a useful website with information on this topic titled, "Turn Around Don't Drown", and the URL is <http://www.srh.noaa.gov/tadd/>.



When a Hurricane is Over

- Keep listening to NOAA Weather Radio, local radio, or TV stations for instructions.
- If you evacuated, return home only when local officials tell you it is safe to do so. Town personnel and public safety will be extra busy with clean-up, damage assessment, and providing emergency services. Be smart, and follow the advice of local officials.
- Inspect your home for damage.
- Use flashlights in the dark; do not use candles.
- Some things that you could encounter:
 - ⇒ Polluted water;
 - ⇒ Severe flooding;
 - ⇒ Limited communications and services;
 - ⇒ Stores to be closed;
 - ⇒ No electricity, telephone, and/or water;
 - ⇒ Septic tanks backed up and flooding;
 - ⇒ Structures undermined;
 - ⇒ Severe erosion to shorelines;
 - ⇒ Trees and limbs on roads;
 - ⇒ Damage to personal property.



TOWN COUNCIL

- ◆ Don Kingston, Mayor
- ◆ Monica Thibodeau, Mayor Pro Tempore
- ◆ Chuck Burdick
- ◆ Jon Britt
- ◆ Nancy Caviness

TOWN STAFF

- ◆ Christopher Layton, Town Manager
- ◆ Joe Heard, Director of Community Development
- ◆ Denise Walsh, Public Information Officer/ Special Events
- ◆ Lori Kopec, Town Clerk
- ◆ Cory Tate, Building Inspector
- ◆ Sandy Cross, Permit Coordinator/ CAMA LPO
- ◆ Beth Morr, Public Relations
- ◆ Phillip Ferguson, Chief of Police
- ◆ Jeff Ackerman, First Sergeant
- ◆ Missy Clark, Sergeant
- ◆ Joe Knight, Master Police Officer
- ◆ Tammy Bybee, Officer
- ◆ Chuck Edwards, Officer
- ◆ Jason Garrett, Officer
- ◆ Tara Poulin, Officer
- ◆ Jason Rigler, Officer
- ◆ Donna Black, Chief of Fire
- ◆ William Walker, Deputy Fire Chief
- ◆ Jeffrey Del Monte, Captain
- ◆ Jared Smith, Captain
- ◆ Anthony Bartolotta, Lieutenant
- ◆ Christie Moseman, Public Safety Administrative Assistant
- ◆ Mirek Dabrowski, Ocean Rescue Director

Town Office: 252.255.1234
 Events Info: 252.255.1286
 1200 Duck Road

Website: The Town of Duck’s website is www.townofduck.com. It contains easy -to-find information regarding town meetings, events, ordinances, zoning requirements, and services.



Email List: The Town of Duck maintains an email list which provides weekly updates on meetings, events, and other news that occurs between the printings of this newsletter. To be added to our list, please visit www.townofduck.com, click on “Subscribe to E-Newsletter” on the upper right side of the page, and use the automated form to subscribe.

Nixle: Nixle is an emergency communication tool that the Town of Duck uses for advisories specifically related to weather or other emergency incidents. Subscribers receive advisories directly to their mobile phone and email. To sign up, click the Nixle icon (📶) on the website.

Upcoming Meetings & Events

Town Council: Council meets the 1st Wednesday of each month at 7:00 p.m. and the 3rd Wednesday of each month at 1:00 p.m. (as needed) in the Duck Meeting Hall.

Planning Board: The Planning Board meets the 2nd Wednesday of each month at 6:30 p.m. in the Duck Meeting Hall, with additional meetings scheduled as needed.

Duck Yuletide Celebration: Saturday, December 6, 2014 from 3 p.m. to 5 p.m. on the Duck Town Green. Enjoy live music by Emme St. James & Her Jazz Gentlemen, a special appearance by Santa Claus, and the lighting of the Town Crab Pot Tree.

Town of Duck
P.O. Box 8369
Duck, NC 27949

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