



Pender County
Hurricane Florence
After Action Report
JULY 18, 2019



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Executive Summary

Hurricane Florence was a powerful and long-lived hurricane that caused catastrophic damage in the Carolinas in September 2018, primarily as a result of freshwater flooding. Florence dropped a maximum total of 35.93 inches (913 mm) of rain in Elizabethtown, North Carolina. Despite making landfall as a weakened Category 1 hurricane, Florence still had enough wind speed to uproot trees and cause widespread power outages throughout the Carolinas. A ridge of high pressure over eastern North America stalled Florence's forward motion for several days while making landfall. This led to Florence moving forward at only 2–3 miles per hour; the storm continually dumped heavy rain along coastal areas from September 13, when the outer rain bands first began to be felt, to September 15, when the storm was still stalled out only a few miles west of Pender County. Coupled with a large storm surge, this caused widespread flooding along a long stretch of the North Carolina coast, from New Bern to Wilmington.



Figure 1 Radar Image of Hurricane Florence at Landfall

As the storm moved inland, from September 15 to 17, heavy rain caused widespread inland flooding, with major rivers including the Cape Fear River, Northeast Cape Fear and Black River spilling over their banks. Most major roads and highways in the area experienced some flooding, with large stretches of I-40, I-95, US 421, and US Route 70 remaining impassable for days after the storm had passed. Many places received record-breaking rainfall, with more than 30 inches measured in some locations. At least 57 deaths were attributed to the storm. Property damage and economic losses in North and South Carolina reached \$24 billion with estimated insured losses ranging between \$4.8–5 billion. One estimate for North Carolina was nearly \$17 billion (2018 USD), more than the damage from Hurricane Matthew and Hurricane Floyd in that state combined.

Pender County, NC was one of many jurisdictions impacted by Hurricane Florence. The County initially evacuated homes near the rivers and coastal regions but eventually instituted a county-wide mandatory evacuation. At the peak of the hurricane's impact every state-maintained road in Pender County was closed during the event. An estimated 1000 individuals were sheltered during the hurricane. Approximately 200 emergency workers supported response efforts, and mutual aid was provided state and local agencies and/or county governments.

Individual Assistance: 7817 Valid Applications -\$17,607,891 in assistance;
Public Assistance: \$3,806,239 in obligated funds to the County;
Pender County issued a mandatory evacuation for all citizens.
At storm peak all state-maintained roads were closed in the County;
Approximately 1200 people were sheltered;
Approximately 25,200 Meals were Served (Shelters);
Approximately 1500 Emergency Workers supported response and recovery efforts;
Approximately 1850 missions were run and over 3000 citizens were rescued.

AFTER ACTION REVIEW

An after-action review is the process of gathering information and feedback from key stakeholders following an incident, significant/major event or disaster.

The information and feedback gleaned from this process are then used to identify areas of concern for topic specific work groups. Each group then identifies strengths and opportunities for improvement with recommendations, priorities, timelines and budgets. The findings are then used to develop corrective actions and lessons learned that may be applied to future planning, mitigation, response, and recovery.

Meeting Process

A pre-meeting AAR survey was sent to focus the discussion at the AAR meetings. Four sessions were held in the morning and afternoons of February 27 and 28, 2019. Attendees of the meeting represented those who worked in the EOC, management, elected officials and outside organizations that were involved in the storm. The goal of the meeting was to identify all areas that need to be reviewed and to recruit staff to be a part of Working Groups that will identify detailed areas to improve, recommendations for improvement, identify responsibilities and whenever possible timelines to complete the recommendations.

Major Strengths

The groups major strengths identified during the After Action Review and pre-meeting survey response were as follows:

- County emergency management officials and first responders were very proactive in the preparation and response to Hurricane Florence;
- The Public Information Office provided multiple options for the dissemination of information (social media, print, internet, radio and television);
- County agencies work well with each other in providing services;
- Distribution and planning for the County's fuel needs during and after the Hurricane went well

Primary Areas for Improvement

The groups major areas of improvement identified during the After Action Review and pre-meeting survey response are as follows:

- The need for the identification and training of essential EOC staff
- The need for the development of standard operating procedures, work books and/or checklists for EOC staff as well as the reorganization of the EOC room to be more efficient and effective
- Debris management was noted as an area that should be further reviewed to identify opportunities to improve
- Shelter planning, management and training were recognized as areas to further review to improve functionality of shelters

Section 2: After Action Analysis

After the completion of the AAR meetings six areas were identified for further analysis; Communication, Debris Management, Shelter, Asset Management, EOC/Operations, and Training/Staffing. A work group was created for each area and facilitator appointed to steer the groups to identify what went well (Strengths) and what were the opportunities for improvement.

Communications

The Communications Work Group focused primarily on the systems, which support the flow of information and means of communication during an event. These systems include structural and digital platforms maintained and operated by Pender County, multiple municipalities and private companies. During and after the storm communication to citizens, business owners, tourists and responders was critical. A range of types of communication were used to try to disseminate information from social media, internet, television, email alerts, newspaper, to knocking on doors.

Strengths

1. The communications team had more members to assist the Public Information Officer (PIO), answer telephones and monitor social media;
 2. The daily updates were well received by call takers to keep them informed to assist citizens;
 3. Videos on Facebook and the broadcasts on the website were a tremendous asset. We felt these carried a lot of credibility because the message was delivered by the commissioners and department heads.
- 97 press releases were issued in less than a 4-week period – pre-storm and post storm. We established relationships with the media that carry through to today.

Communications, continued

Identified Areas for Improvement

AM Station

- Establish an AM system that is county-wide
- AM Station would need a marketing campaign and metal highway signs
- Use the station year-round

Facility improvements

- An isolated area to conduct Skype communications with local media
- A dedicated area for media briefings, live broadcasts, and Facebook live.

Establish a second call center in the Hampstead Annex if the county is fractured by flooded roads.

- This would double our post storm call takers,
- The second call center will include county employees along the US 17 corridor who can't get to Burgaw- this is a good time to emphasize that all county employees work during an event.
- During Hurricane Florence, residents were knocking on the doors of the Annex looking for answers and information. If we open the annex to questions, we should have a deputy stationed there as well.
- Have a "Pelican Box" (an independent communication device for field work) set up in case all communications went down to keep staff updated.

Improve communications with our municipalities

- Give town managers and town mayors the cell phone number of the PIO for direct access to the EOC.
- Meet with town managers and mayors now to establish better communications,
- Define their needs now.
- Make certain they are getting all press releases and updates.
- During storm, be certain to Skype them to keep in touch.

Facebook use

- Turn off all comment options on EM Facebook to eliminate misinformation given by third parties.
- Emphasize that the EM's Facebook page is the only source of emergency updates and information.
- Urge all readers to tune into the AM station

EOC App

- Establish an app for EM that will dispense updates of road closures, pre-storm information such as preparations or evacuations.
- If an app is too costly, partner with the Greater Topsail Area Chamber of Commerce and their app.

Website dashboard

- Create a dashboard that has sections like a filing cabinet. All press releases and updates are filed under one tab; all legal documents (state of emergency, mandatory evacuations, etc.) on another tab; all FEMA instructions on another tab.
- We want communications during an event to update the website as we send out information. This takes a burden from IT.

Debris Management

The Debris Work Group focused on the successes and challenges with debris hauling, and debris monitoring as well as the education of debris pick-up. After the hurricane debris pickup was extremely challenging and illegal dumping was prevalent. The use of signage, newspaper and television messaging about potential fines for illegal dumping was very effective in reducing occurrences as well as the Pender County Sheriff's Office participation.

Strengths

1. Placing "No Dumping" signs at known dumping locations greatly reduced illegal dumping.
2. Active involvement of sheriff's office for citing illegal dumping.
3. Using TV to broadcast information about illegal dumping. After broadcast, there was much less dumping from Onslow County was observed.



Figure 2 Debris

Identified Areas for Improvement

1. Re-visit the debris contract and require timeline and penalties for straying from the agreed timeline and schedule;
2. Include DOT in all discussions regarding debris;
3. Determine who picks up debris in St. Helena, Watha, Atkinson, Burgaw, Topsail Beach and Surf City.

Shelter

The Shelter Work Group focused on several areas: countywide emergency sheltering, evacuation, feeding operations and sheltering of agency support personnel. Initial discussions focused on emergency shelters and their safety during such events. Pender County's shelters are located at the county's schools and works closely with school officials. Shelters were opened at Burgaw Middle and Elementary, Topsail Elementary, Cape Fear Middle and Malpass Corner Elementary during the storm. Once roads were safer to pass the sheltered population was consolidated to Pender High and Burgaw Elementary and finally moved out of the schools to available space in Burgaw. The challenges of flooded roads and a large (870 square miles) geographic population to support were the greatest obstacles for sheltering.



Figure 3 Pender County Animal Shelter during Hurricane Florence

Strengths

1. No fatalities of people or pets.
2. Did not experience any legal issues.
3. Dedicated school staff performed well.
4. Partnership with Trillium to assist with mental health patients.
5. All DSS staff were Red Cross shelter trained pre-event.
6. DHS staff completed National Incident Command training 100, 200, 700 and 800 pre-event.

Identified Areas for Improvement

1. Develop Shelter plans with roles and responsibilities;
2. Complete Red Cross site approval of primary pre-storm shelters (Topsail HS, Pender HS, Heidi Trask HS and Burgaw Elementary);
3. Develop plan to manage sex-offenders in need of sheltering;
4. Determine and complete appropriate training for shelter personnel (ICS, Red Cross, First Aid);
5. Develop plan to manage special need citizens who need sheltering;
6. Complete Red Cross site approval of secondary post-storm shelters (Cape Fear Elem/Middle, Malpass Corner Elementary, Surf City Elementary, Topsail Middle).

Asset Management

The Asset Management Work Group focused on the acquisition, maintenance and management resources, needed to support event operations.

Generators and fuel are the main assets in need until power is restored during the event. Fuel management was not an issue because the Facilities Department had rented fuel cubes for storage and relocation of fuel to needed locations. Generator performance was uneven with some locations experiencing uninterrupted service and others no service.

Strengths

1. Rented Fuel Cubes;
2. County owned fuel depots were available;
3. Utilizing School System Fuel Depot;
4. Support from School, County Management and other depts. to transport needed items;
5. Communication with EM and County Management;
6. Warehouse Lease;
7. Food and Water for EOC workers.

Identified Areas for Improvement

1. Generator located at Burgaw Fuel Depot that will power: Fuel depot, refrigerators for Health Dept vaccines and IT server room located in the Health Department, lights for Government Complex;
2. Generator located at Agriculture Building that will power the entire building;
3. Fuel Cubes (3);
4. EOC Upgrades: add additional shower facilities, meeting rooms (convertible to sleeping when needed), expand kitchen with walk-in cooler;
5. Cots (500).

EOC and Operations

The EOC/Operations Work Group focused on the performance of the EOC during the event. The scope of the response to Hurricane Florence was greater than any prior event at the EOC and challenged the facility. The layout of the EOC was found to be inefficient for the flow of information.



Figure 4 Pender County EOC

Strengths

1. Faith based organizations opening doors to feed and supply citizens in need;
2. Response of EM Team;
3. Response of EMS and Fire;
4. State Highway Patrol sending resources;
5. EMS and Fire staff who provided food.

Identified areas for Improvement

1. Identify secondary and tertiary EOC locations and cost to upfit to make them serviceable;
2. Identify POD (Points of Distribution) locations for distribution of supplies pre-storm;
3. Identify additional County-owned site for sleeping and eating during activation;
4. Create policy to manage volunteers and volunteer organizations that want to help during an EOC activation;
5. Recommendation for Go Kits for personnel to bring when working EOC;
6. Research grant funding for Emergency Preparedness and Facility upgrades.

Training and Staffing

The Training and Staffing Work Group was charged with reviewing the success of the staffing and their level of preparation for responding when the EOC is activated.

Staffing for hurricane Florence presented the additional challenge of a slow-moving storm that flooded major roads and hindered County employee's ability to return to work. The EOC was staffed with two 12-hour shifts that supported, planning, finance, logistics and operations.

Answering citizens calls was the greatest staffing need and it was the hardest to project. The call-takers were charged with assisting citizens with a large range of needs and were identified as an area with an opportunity for improvement.

Strengths

1. Employees willingness to work during the event and display of positive attitude;
2. WebEOC/ICS Training;
3. Communication platforms during the event;
4. Team of dedicated call takers providing information to citizens;
5. Outside agency support from NCHP, NCDOT, PC Schools, etc.;
6. Executive leadership in the EOC during the event.

Identified areas for Improvement

1. Develop a policy to clearly identify overtime pay in relation to EOC activation and recovery;
2. Continue to foster the relationship of public service by recognizing contributions to the community in times of need through employee appreciation events as well as opportunities to illustrate back to the community the role county government has in disaster response;
3. Continue to provide opportunities for training on the WebEOC platform as well as ICS online training being a requirement for all employees;
4. Provide additional training on proper protocol for answering and directing calls through the call-taker position. Include a call-taker liaison for shifts to be able to disseminate updated information;
5. Provide specialized training for call-takers to be able to manage stressful situations.;
6. Develop manuals for call-taker positions that are organized and contain updated information through shift changes that covers all aspects of the event;
7. Develop a role for each county employee through pre/during/post event. Each role should be analyzed to determine needs for primary, secondary, and tertiary levels of response and based on activation level;
8. Provide for additional exercise trainings once roles have been defined and assigned;
9. Develop guideline or checklist for personal preparedness kits for employees based on their defined role in disaster participation;
10. Provide direct support to county employees that have been affected by an event in their personal lives.

Section 3: Recommended Actions

Pender County employees and partner agencies were tested beyond past experiences and responded in extraordinary ways, clearly demonstrating their commitment to proudly serving the community.

The enormous response effort transitioned quickly into the recovery phase that will continue well into the future.

The Emergency Management Department was tasked with completing an AAR for Hurricane Florence that outlines areas of strength and opportunity.

After conducting initial surveys, and review meetings; work groups were identified to delve deeper into areas of concern. Each work groups findings are summarized in this report. The report includes recommendations with items to be completed, responsible parties, and a timeline for completion. By completing these tasks, we will be better prepared for future emergencies.

The After Action Report is planned as a dynamic document that will change based on resources, funding and direct action to the identified recommendations.

Appendix I After Action Review Attendees

Pender County hosted an After-Action Review (AAR) based on its response to Hurricane Florence which impacted the County. The attendees for this meeting are listed below:

Daryl Steinbraker -Red Cross	Doug Shipley -Pender County Park and Recreation	Sharon Willoughby -Pender County Registrar of Deeds
Gary Winter -NC Baptist Men	Brandon Smith -Pender County Schools	James Horne -Surf City EM
Jewell Horton -Animal Shelter	Roy Horne -Pender County Veterans Services	Ashley Loftis -Town of Surf City Town Manager
Keith Ramsey -Animal Control	Aimee Mitchell -Pender County Library Services	Peter Cowan –Town of Burgaw Mayor
Alan Cutler -Pender County Sheriff	Mike Taylor -Pender County Library Services	Mike Rose –Town of Topsail Beach Town Manager
Craig Harris -Pender County Floodplain Administrator	Melony Malone -Pender County Health	Jason Turner –Town of Atkinson
Woody Sullivan - Pender County EMS	Deanne Everhart -Pender County Health	Noah Hoffer -Town of Surf City Fire
Earl Moore -Pender County IT	Aleisha Gurganious -Pender County Health	Reid Southerland -NC EM
Jackie Williams - Pender County Health	Kimberly Leonard -Pender County Finance	James Gantt -Town of Burgaw Town Manager
Tammy Proctor - Pender County Tourism/PIO	Carol Davis -Pender Memorial Hospital	Margie Craver -Town of Atkinson
Michael Carlisle -Pender County EM	Timothy Wells —NC Dept Public Safety	Everett Baysden -Pender County EMS
Mike Moser -NC Baptist Men	Melissa Long – Pender County Managers Office	Fred McCoy -Pender County Commissioner
Allen Vann -Pender County Facilities	Angela Miller -Pender County Finance	Brittany Kelly -Pender County HR
Tom Collins -Pender County EM	Todd Blumenreich -Pender County Schools	Allen Phillips -Bell-Pender County Library
Erik Harvey -Pender County IT	Steven Hill - Pender County Schools	Barbara Murray -Pender County Tax Office
James Rowell - Pender County Sheriff	Elisabeth Herndon -Pender County Utilities	Lily Stainback -Pender County Elections
Michael Collier - NC State Highway Patrol	Darren Lafon -Pender County Schools	Carolyn Moser -Pender County Health
Mark Seitz -NC Cooperative Extension	Josh Elixson -Pender County EM	Sharon Rowell -Pender County Sheriff
Billy Sanders - Pender Count Sheriff's Office	Trisha Newton -Pender County Finance	Jackie Ezzell -Pender County Sheriff
Randell Woodruff - Pender County Manager	Olivia Dawson -Pender County Tourism	David Piepmeyer -Pender County Commissioner
Tommy Batson - Pender County EM	Judy Herring -Pender County Housing	George Brown -Pender County Commissioner
Gracie Thomas -Pender County Inspections & Permitting	Scott Henry - Pender County Inspections & Permitting	
Shirley Steele -Pender County Health	Kyle Breuer -Pender County Planning	
Angela Blake -Pender County IT	Pat O'Mahony - Pender County Planning	
Jennifer Smith -Pender County Health	Kenny Keel -Pender County Utilities	
Zach White - Pender County Park and Recreation	Chad McEwen -Pender County Assistant County Manager	