



**NEW BERN**  
CITY OF NEW BERN

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RE: GIS Data and Hurricane Florence  
How I used GIS data, where I got data/applications, tools.

As GIS Manager for the City of New Bern for the past 18 years, I have had to think about best ways to help my City with GIS during a hurricane event more often than I want to think about. Never have I been more thankful in the capabilities of GIS and the staff, which surrounded me on Sept 14, & 15, 2018 during Florence.

A great deal of the tools/data I used I had set up for Matthew. Though we were very lucky with Matthew, it was a great trial run for what was to come. In previous hurricanes including Matthew, we look back and see what worked and what did not. In addition, more and more data has been available, and more tools/apps are now available to either use or tweak parts of for use. During Irene in 2011, we were hit hard as well. Then we used a lot of paper maps everywhere and Inspectors went out afterwards to assess damage, using paper FEMA forms and those were brought back, geocoded and mapped. As you can imagine this was very time consuming. Our offices were damaged, so any GIS work was hindered as it was, trying to provide maps/data was a struggle.

With Matthew and Florence, we took advantage of all the tools, data and apps we could, and it paid off, both in real-time data, being able to respond quickly and collaborating with a variety of agencies, including the County, FEMA and the National Guard. Our first task was to utilize a public app called "damage assessment" that ESRI made available. It had all the attributes, icons, etc., we would need to do an initial assessment of damaged buildings and infrastructure using an app downloaded on their iPad. With Irene, we took weeks and many staff to do what we were able to accomplish in 5 ½ days with Florence, covering every road in the City in 5 teams of two. Not only did we have real-time data, we were able to share the same daily with the County and FEMA staff. It also included a dashboard component, so we could share with the Emergency Operations Center (EOC) and City Manager what areas were damaged the worse so that teams could be dispatched and utilities turned off, and a plan to work with other agencies who would come to help.

Just prior to the storm, I was inundated with links for public maps/data/apps – too much really, and if I had to complain, or make a comment it would be great if these agencies could collaborate and even create setups for live data such as stream gages, radar, projected paths and transportation, and the end user could configure to their community. This would be beneficial for GIS staff who are scrambling to get EOCs set up and for those communities without GIS staff. I heard many great comments on the public maps we shared and setup for sharing information. These would not have been available if the GIS community from all levels were not publishing the maps/data, including ESRI's living Atlas, NOAA's storm information and NC OneMaps's imagery, roads, stream gages, and road networks. At one point, our City and County declared a mandatory evacuation. I heard from many that, based on these maps and apps we shared, they decided to evacuate and were glad they did as their homes would be inundated with water. Unfortunately, many did not evacuate, and we had over 400 water rescues to do during the height of the storm. This was true not only for New Bern, but a neighboring community – Pollocksville located in Jones County would reach out to our EOC for help during the storm for water rescue. In the EOC, I was seated next to our Fire staff who was the communicate between our water rescue crew and the EOC. Many were not familiar with

the area and called in looking for help to relocate rescued citizens to higher ground. My first thought at 1:00 AM was I don't have data outside Craven County/New Bern - then I immediately recalled NC OneMap had statewide data, and I was able to download the 2-foot contours and point them to a building with a high first floor elevation. I have no doubt that the ability to access this data saved lives that night/early morning. We would use elevation data as well to dispatch our P&R buses to take rescued citizens to shelters, directing them to safe locations for group pickup.

After the storm GIS continued to play a role as we set up locations for help resources, set up areas to be protected by the National Guard to keep non-property owners out, and to work with FEMA for damage assessments. We continue to use it as we look at ways to rebuild and determine areas that we may exclude from re-development.

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