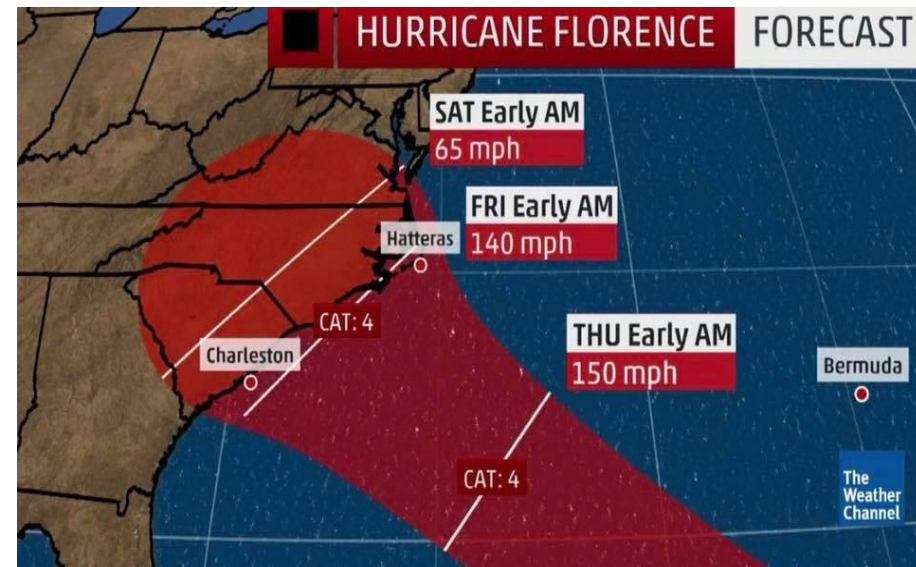
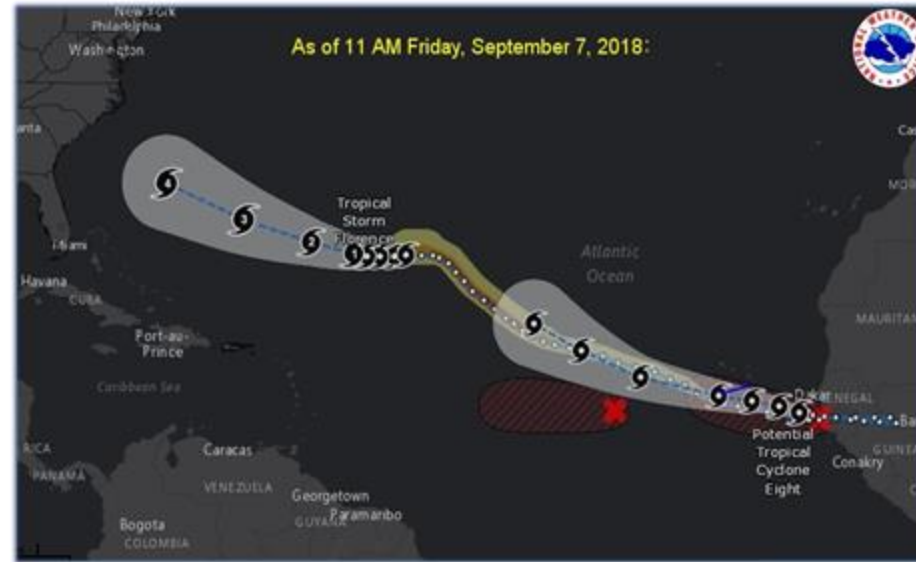


Water Utility Emergency Response – Lessons Learned from Recent Events



Advance Preparation Critical to Success

- Since 2008, we worked extensively to prepare for an events of this magnitude
- Adopted National Incident Management System (NIMS) as basis for all-hazards planning & response
- Conducted table-tops, functional, and full-scale exercises
- Resource Typed & Categorized equipment and teams per AWWA standards
- Essential Employee Shift Roster
- Emergency Contractor/Vendor Roster
- Established strong working relationships with local and state EMA
- Working Emergency Operations Center



Before

During

After

Advance Preparation Critical to Success (cont.)

- Free tools/publications: **EPA NIMS Compliance Objectives for the Water Sector**; EPA Table-Top Exercise Tool; EPA Toolkits for Water/Wastewater.
- FEMA Emergency Management Institute online and classroom course offerings, full use of Incident Command System (ICS) forms as appropriate.
- Utilize software and technology: WebEOC Situational Awareness websites; NCDOT Traffic Information Management System; USACE/FEMA/NOAA HURREVAC software; NWS/USGS real-time river and flood monitoring.
- Review water sector after-action reports to identify our gaps.
- WaterISAC webinars, DHS Infrastructure Surveys.
- NCWaterWARN Mutual Aid Program member with NC State Re-Entry Credential issued.

Before

During

After

Lessons-Learned From Real Life Events

- Essential Employee Policy > Extended Operations Shift Roster > Incorporates Succession & 24/7 contact information



Administrative Policy – HR-0015 Name: Emergency Management Policy & Procedures	Corresponding Requirements: ISO Standard: 4.4.2
Prepared By: Denise Matroni, Human Resources Director Human Resources & Eric Hatcher, Security and Emergency Manager	Revision #: 3 Revision Date: 7/30/2018
Approved By: Jim Flechtner, Executive Director Signature:	Effective Date: 10/20/2010 Page 1 of 5

1.0 Background

1.1 This policy addresses how CFPUA will ensure drinking water, sewage treatment, and other utility services are provided in an emergency to reduce the threat to the health, safety, and welfare of the public.

Many positions are vital to maintaining business continuity and managing essential operations. Employee positions are classified as essential by scalable event categorization based on the four phases of emergency management and the event level. There are four phases of emergency management: 1) preparedness, 2) response to disasters or emergencies, 3) recovery operations, and 4) mitigation activities. All CFPUA employees are considered essential employees and may be called upon to serve as an essential employee, depending on the emergency or operational needs.

2.0 Phase of Emergency Management

2.1 Phases of Emergency Management are identified as the types of activation to address the criticality of the emergency. The phases do not need to be sequential and may happen simultaneously. Combined with the event level, these phases will determine which employees are activated for the emergency.

2.1.1 **Preparedness:** Preparedness typically happens when a known or anticipated future event will occur and there is time to prepare before immediate impact. During this phase both individual employees and the organization will have sufficient time to make necessary arrangements. Employees will have time to prepare for evacuation or safety of family and/or preparation and securing of personal property. The organization will have time to gather supplies and prepare workspaces for operational continuity or security for the impending emergency.

2.1.2 **Response to disaster or emergency:** Where essential employees are engaged in addressing the emergency or providing continuity of mission critical services for the duration of the actual event.

2.1.3 **Recovery:** The period at the end of the emergency or just after where actions are taken to restore operations and business continuity.

2.1.4 **Mitigation activities:** The final phase of the emergency where evaluation, documentation, and close out of the emergency takes place including activities to reduce, minimize or eliminate the damaging effects or risk in the future for unavoidable emergencies.

3.0 Event Level

3.1 **Event Level:** Is the classification of the event by severity and determines the required number, level and type of essential employees who will be activated to respond to the emergency. Events may change type as the emergency unfolds and employees will be activated or released to meet the parameters of the event. Types are from the smallest-a five (5) smallest to the most complex- a one (1). The vast majority of all events will be type 5 to type 3.

3.1.1 **Type 5 Event:** Smallest type of emergency event with a limited resources, duration and impact to the entire organization. This level requires a limited implementation/activation of essential employees to manage the event. Activated essential employees handle all phases of the emergency. Duration of the event will be short and contained in the first operational period or within a few hours after resources arrive on the scene. Typically, implemented in response to an immediate emergency without opportunity for preparedness. No Incident Action Plan (IAP) is required.

CFPUA HRDOC-033.442-Essential Employee Policy & Procedures- Essential Employee Team Schedule Form-
Quarter: 3rd - Year: 2013 (phone numbers listed are area code 910 unless otherwise listed)

Group	Group/Location	Shift A (Chief)	Shift B (Deputy)	Shift C (Deputy)
1	EOC Management Group			
	Incident Commander	Interim Chief Executive Officer <i>Jim Flechtner</i> 332-6669(o), 512-6003(c), [REDACTED]	Interim Chief Operations Officer <i>Mike Richardson</i> 332-6723(o), 470-3009(c), [REDACTED]	Director of Engineering <i>Frank Styers</i> 332-6670(o), 470-1583(c), [REDACTED]
	Operations Section Chief	WWT Superintendent <i>Ken Vogt</i> 332-6586(o), [REDACTED]	Water Resources Manager VACANT	Util. Svc. Superintendent <i>Jim Craig</i> 332-6639(o), 515-6140(c), [REDACTED]
	Planning Section Chief	Director of Emergency Mgmt. <i>Beth Eckert</i> 332-6586(o), 470-8701(c), [REDACTED]	Human Resources Director <i>Tom Morgan</i> 332-6659(w), 617-0620(c)	Emergency Mgmt. Coord. <i>Eric Hatcher</i> 332-6508(o), 599-1554(c), [REDACTED]
	Logistics Section Chief	Asset Mgmt. Sr. Program Mngr. <i>Steve Mongeau</i> 332-6658(o), 297-6455(c), [REDACTED]	Asset Mgmt. Prog. Mngr. <i>Allen Coward</i> 332-6428(o), 367-8632(c)	Property Acquisition Specialist <i>Chris Neal</i> 332-6625(o), 395-5477(c)
	Finance Section Chief	Chief Financial Officer <i>Cheryl Spivey</i> 332-6668(o), 616-7733(c), [REDACTED]	Budget/Finance Manager <i>Julie McLawhon</i> 332-6657(o), [REDACTED]	Intentionally not filled
	Safety Officer	Safety Program Manager <i>Kevin House</i> 332-6653(o), 508-3827(c), [REDACTED]	Environmental Program Mgr <i>Joel Bing</i> 332-6551(o), 471-2845(c), [REDACTED]	VACANT
	Emergency Management Coordinator	Emergency Mgmt. Coord. <i>Eric Hatcher</i> 332-6508(o), 599-1554(c), [REDACTED]	Emergency Mgmt. Coord. <i>Eric Hatcher</i> 332-6508(o), 599-1554(c), [REDACTED]	Emergency Mgmt. Coord. <i>Eric Hatcher</i> 332-6508(o), 599-1554(c), [REDACTED]
	Liaison Officer	Assistant to the CEO <i>Karen Durso</i> 332-6542(o), 547-3039(c), [REDACTED]	Clerk/Executive Secretary <i>Donna Pope</i> 332-6660(o), 508-4932(c), [REDACTED]	Intentionally not filled
	Emer. Support Func. Coord. 3 (ESF-3: Report Location-NHC EOC)	Engineering Manager-Dev. Ser. <i>Kent Harrell</i> 332-6674(o), 470-6643(c), [REDACTED]	Project Manager <i>Jamison Fair</i> 332-6633(o), [REDACTED]	Project Manager <i>Tige Brubaker</i> 332-6436(o), 508-0143(c), [REDACTED]
2	Public Information Group			
	Public Information Officer	Chief Communications Officer <i>Mike McGill</i> 332-6704(o), 622-8472(c), [REDACTED]	Public Info/Comm.Out Special <i>Jacqueline Valade</i> 332-6579(o), 470-5991(c), [REDACTED]	Intentionally not filled

Form# HRDOC-033.442
Effective Date: 08/30/10
Revision#: 10

Electronic Version and Controlled Original-Human Resources
All other copies are uncontrolled

Revision Date#: 7/10/13 Page: 1
Associated Policy: HR-0015.442

Before

During

After

Lessons-Learned From Real Life Events (cont.)

- Water Emergency Management Plan > Tiered Critical Customer List > Notification Responsibilities Assigned > Consistent Messaging
- System maps commissioned depicting system interconnects, service-lines, pump stations, well sites
- Emergency Contractor & Vendor List > Managed by appropriate division & revised as necessary
- 800 MHz interoperable radios were purchased
- Building a functional emergency operations center which could support all-hazards response
- Began an exercise program utilizing the EPA Table-top exercise tool to identify gaps

Before

During

After

Lessons-Learned From Other Utilities

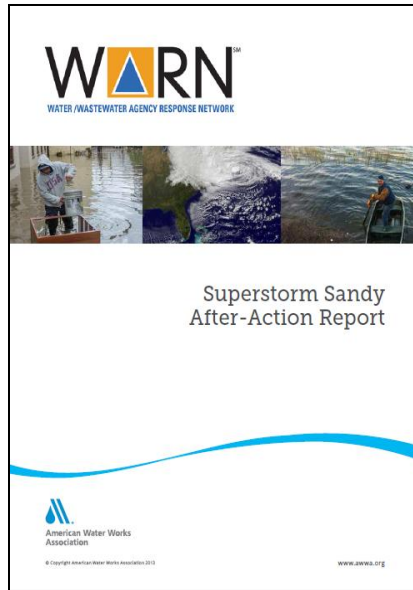
- Train Derailments (petroleum spills)
- Coal Ash Spills - TN, NC, VA
- Chemical Spills – Elk River, WV; Hagerstown, MD
- Algal Blooms – Toledo, OH
- Ice Storms
- Severe Drought and Flooding
- Hurricanes
- HAZMAT Discharges (Charlotte Water – PCB Incident)

Before

During

After

Lessons Learned from Other Utilities: Hurricane Sandy



- Need for local mutual aid agreement – State MOA (NCWaterWARN) would be insufficient
- Formal emergency fuel contracts
- Re-entry credentials for utility
- Generator run times & fuel capacity
- USACE Emergency Power Assessment Tool



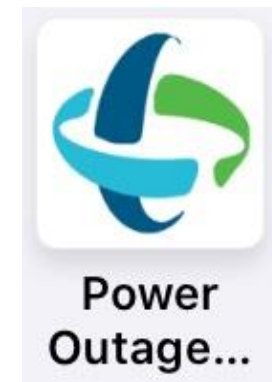
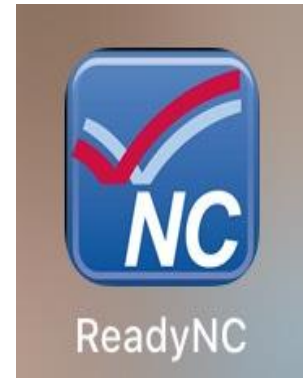
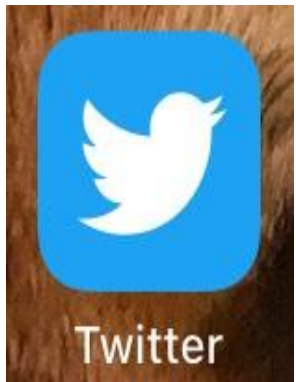
Before

During

After

Situational Awareness - Technology

“Information gathered from a *variety of sources* that when communicated can form the basis for incident management decision-making.” Homeland Security Act 2002



Esri



Collector

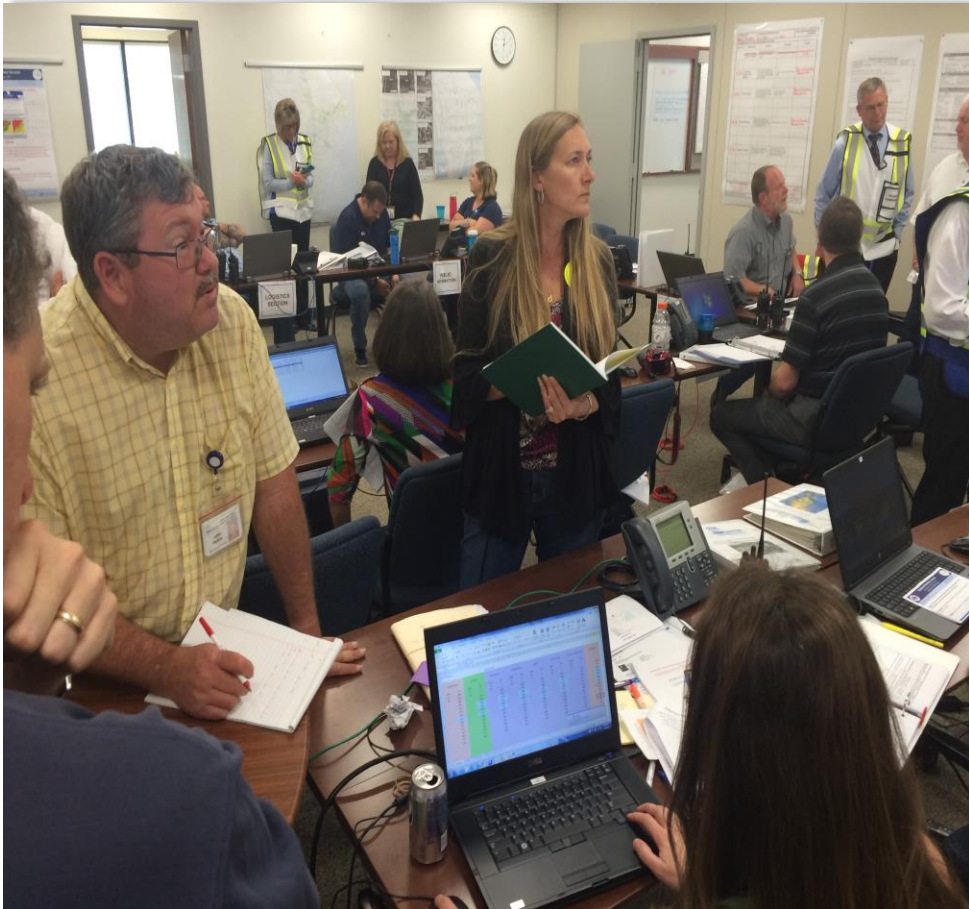
- DHS ICS – CERT
- WaterISAC
- InfraGard

Before

During

After

Use of NIMS/ICS – Language of Emergency Response



- We use it because it works! Don't have to reinvent the wheel – Existing Framework, Training, Forms
- Use Incident Action Plans to manage events and incident response
- Typing & Categorizing Teams and Equipment
- Have established relationships with local, state, and federal partners.
- Mutual Aid Programs (Local, State, and Federal)

Before

During

After

Real Life Use of NIMS & ICS – Hurricane Matthew



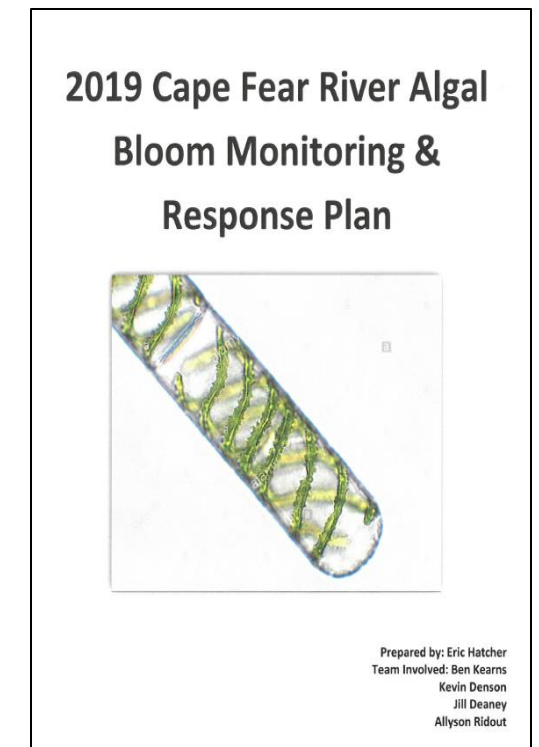
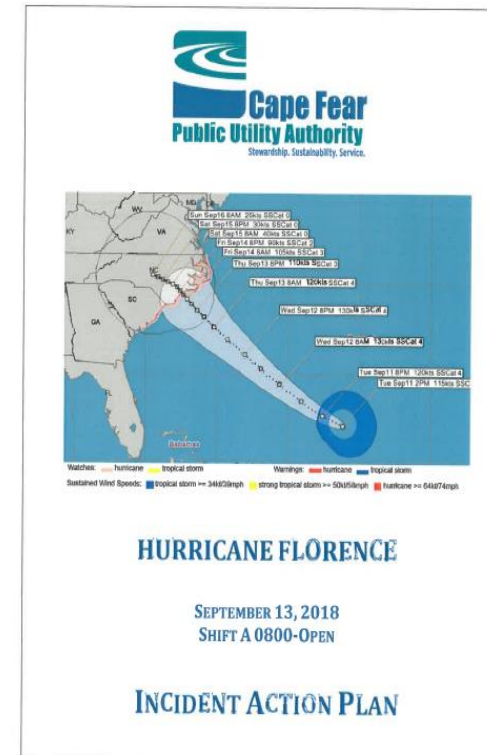
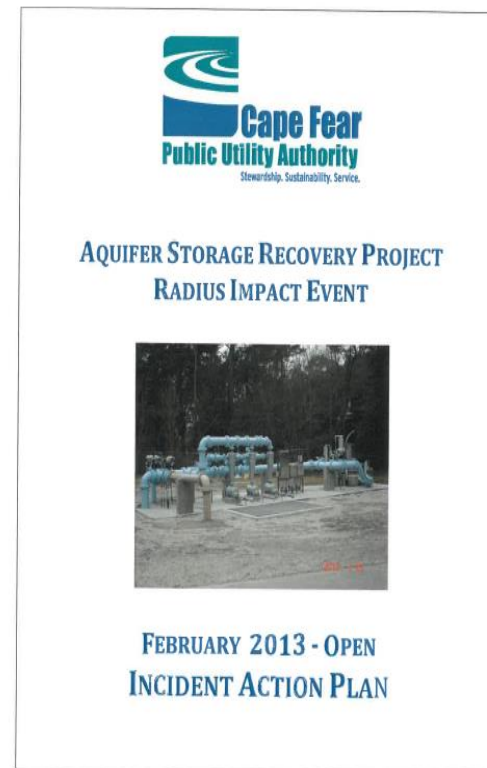
- Regional Water Main Repair Event – Mutual Aid Enacted
- Activated CFPUA Emergency Operations Center
- Unified Command Established
- Public Messaging & Emergency Conservation Measures
- Staging Area for Teams & Equipment
- Unified Command daily calls to County EM, NCEM & Governor's Office

Before

During

After

Incident Action Plans – Our Culture



- Aligns actions with priorities and goals for response and recovery
- Useful for large complex operations and routine critical construction projects
- Use of ICS forms forces a deliberate planning process and contingency thinking

Before

During

After

Florence Infrastructure Preparation



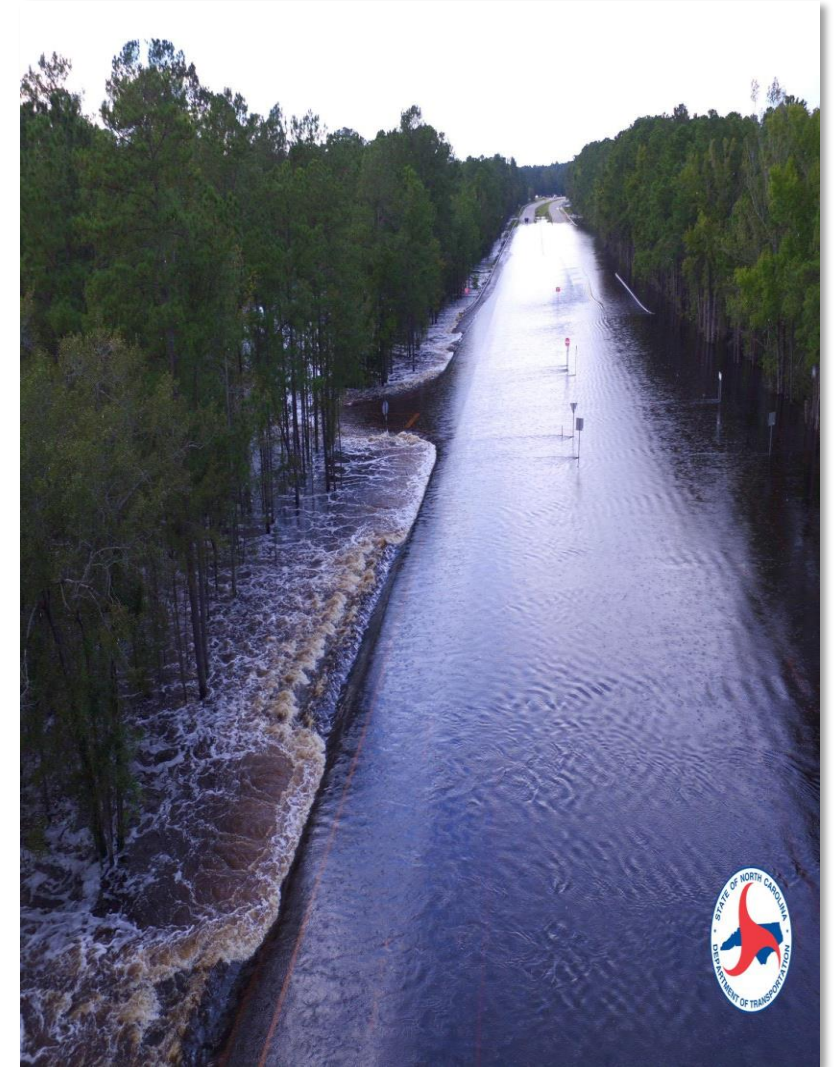
- Deployed and tested generators at all facilities and pump stations.
 - Topped off chemical tanks, fuel tanks, and water tanks.
 - Suspended manual and automatic flushing in the distribution system.
 - Installed collection system bypasses at sites with historic SSO capacity-related issues.
 - Replicated all IT network applications and utility data to off-site disaster recovery facility.
-
- Updated contact information for emergency contractors, CFPUA facility information, and resource inventories.

Before

During

After

Isolated Due to Flooding & Washouts



Before

During

After

Power Supply During the Storm

- Fuel tanks were filled up before the hurricane arrived.
- Generators started on Thursday before strong tropical storm winds arrived (11:00 am Thursday).
- All facilities lost commercial power from Duke Energy during the hurricane.
- Winds in excess of 50 mph remained on all day Friday.
- By Saturday morning, most generators had run for over 48 hours.
- Maintained generators running into Sunday when refueling commenced.

Facility	Fuel Storage	Approximate Run-time
Sweeney WTP	20,000 gallons	6 days
Richardson WTP	10,600 gallons	5 days
Well sites	Varies	3 days
Northside WWTP	16,000 gallons	5 days
Southside WWTP	1,000 gallons	3 days
Pump Stations (148)	Varies	3 days

Before

During

After

Power Supply During the Storm (Cont.)

- Saturday AM to Sunday AM
 - Contacted CFPUA's emergency fuel supplier – unable to deliver.
 - Contacted fuel suppliers throughout NHC and surrounding areas – unable to deliver.
 - Requested assistance from NHC EOC and State EOC for fuel per established protocol.
 - Fuel supply from Raleigh secured – unable to deliver due to road closures.
 - Coordinated with Duke Power to restore power to treatment plants – started on repairs but unable to provide timeframe.
- Sunday
 - Generators continued to run. Water plants approaching 48 hours of fuel remaining.
 - Issued press release regarding fuel status.
 - NHC Airport Authority identified potential source of fuel – secured 2500-gallon fuel delivery for treatment plants.
 - Secured additional sources of fuel delivery for treatment plants.
 - Mounted small 100-gallon fuel tanks on CFPUA trucks to deliver fuel to remote pump stations.
 - Contractor provided a 1,000-gallon fuel truck and driver to deliver fuel – obtained fuel at emergency fuel supplier and delivered where needed.
 - LCFWASA fuel supply approaching 30 hours—fuel delivery scheduled.

Responding to Damage During the Storm

- Southside Wastewater Treatment Plant lost generator power and bypassed partially treated wastewater for several hours.
- Sweeney WTP ozone roof membrane was damaged and torn causing leaks.
 - Protected key equipment
 - Arranged temporary repair with roofing contractor



Before

During

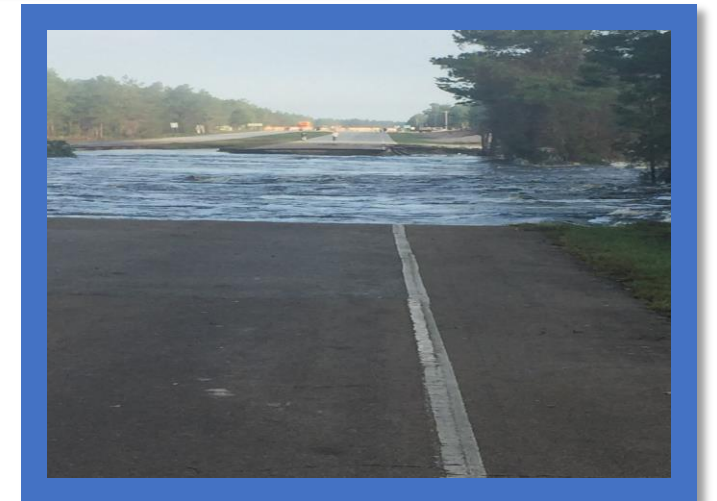
After

CFPUA Emergency Work at U.S. 421 Protects Raw Water Supply Main

- Extreme flooding eroded road shoulder, exposing the Lower Cape Fear Water and Sewer Authority raw water supply main.
- Crews mobilized late Friday night to stabilize the water line.
- At 3:30 am the crews successfully stabilized the water main, preventing rupture and securing water supply to the public.



Raw water main
washout location



Before

During

After



Damage Assessments

- The Damage Assessment process began on Sunday. All pump stations, well sites, and treatment plants were assessed.
- Staff conducted an aerial assessment by helicopter of the raw water system.
- Except for the Sweeney roof, the system did not sustain major damage.
- Sink holes required water and sewer main repairs.
- Normal Fence and Antenna Tower Damage

Before

During

After

After-Action Items / Lessons Learned

CFPUA - Hurricane Florence



After Action Report

After Action Report / Improvement Plan
November 20, 2018

- Strengthen emergency fuel supply resiliency - contract details with suppliers; increase on-site storage capacity; establish delivery capability redundancy.
- Assess Richardson Plant generator – employee safety; relocate/modify generator; install carbon monoxide meters in plant.
- Southside WWTP Generator – replace existing generator (already in capital plan); increase fuel storage.
- Spare parts – increase inventory of key spare parts.
- Policy improvements - essential employee/extended shift roster; sheltering; employee check-in; payroll; food service; preparing for extended operations.
- Targeted customer notification – investigate means to notify customer by geographic area.

Before

During

After

After-Action Items / Lessons Learned (cont.)

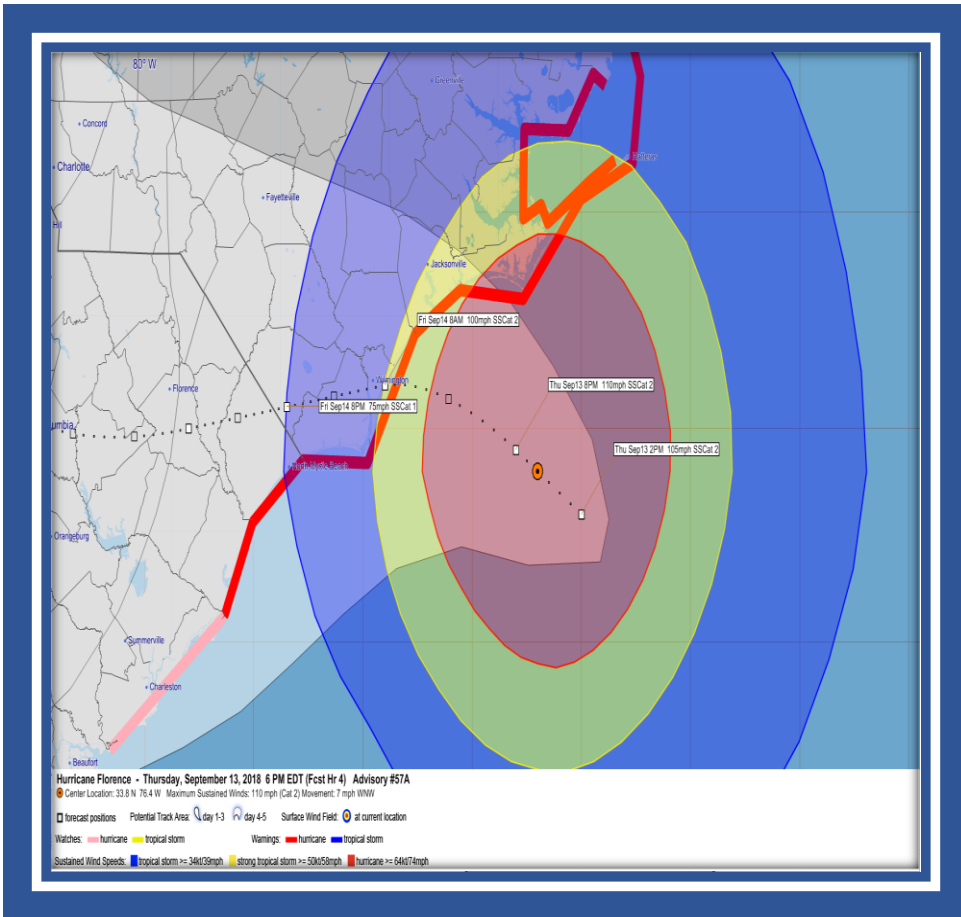


Before

During

After

Questions?



Eric Hatcher, CFPUA - Security & Emergency Manager
910 332-6508 eric.hatcher@cfpua.org