



January 12, 2016

*Hurricane Matthew Dam Safety Emergency Response  
NCDEQ/DEMLR Fayetteville Regional Office (FRO)*

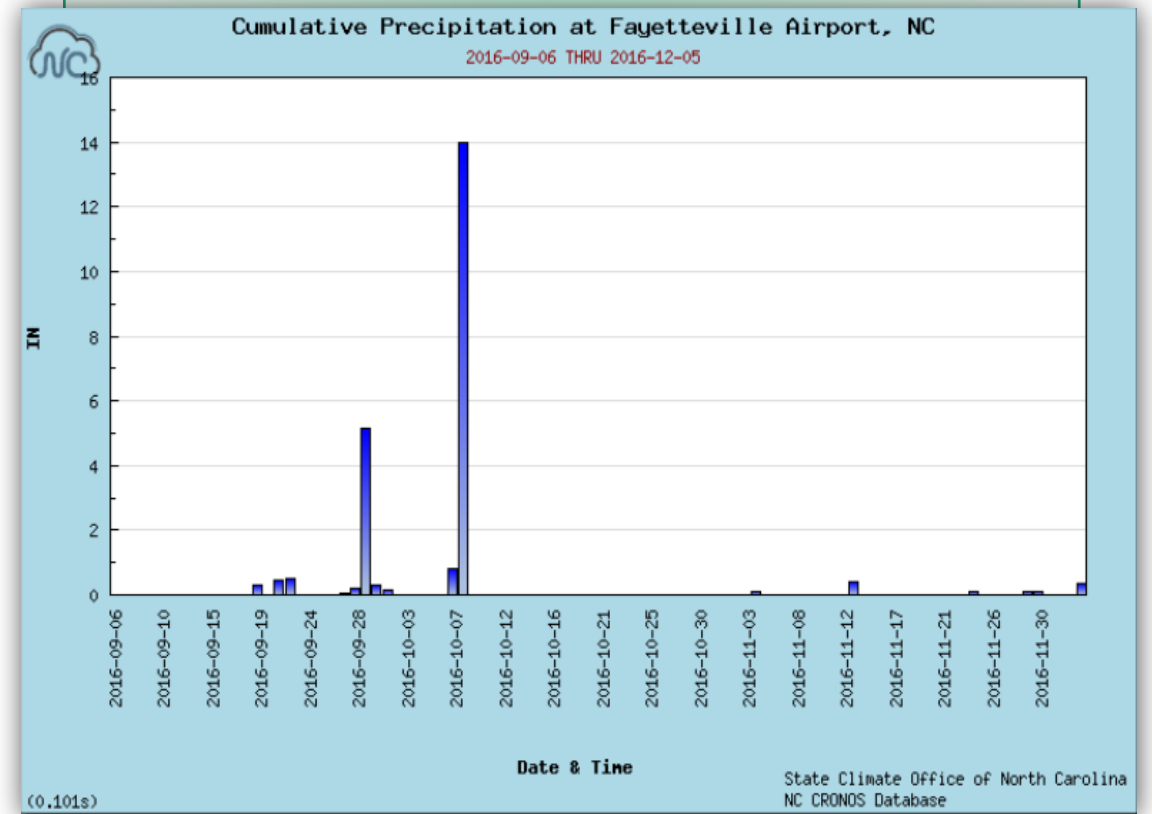
Timothy L. LaBounty, PE  
DEMLR FRO Regional Supervisor



## Hurricane Matthew



## Fayetteville (CRONOS) Precipitation Data



# Dam Failures and Significant Damage

## *Fayetteville Regional Office*

- Approximately 20 dams either failed or were significantly damaged within four Counties:
  - Cumberland (12)
  - Sampson (3)
  - Hoke (3)
  - Moore Counties (2)



- Initial efforts focused resources on high-hazard structures (Probable Loss of Life)
- Since the storm we have identified some non-regulated and low-hazard structures
- Will likely be more as we continue with inspections

# General Process

## *Division of Energy, Mineral, and Land Resources*

- Local emergency management notifications provided to DEMLR/EOC
- DEMLR Central Office/EOC coordinated directly with DEMLR FRO staff for dispatch of DEMLR staff to incidents
- Mobilized DEMLR FRO staff to reported incidents
- Provided periodic updates to Central Office/Dam Safety at Emergency Operations Center (EOC) and contacted local emergency management personnel



# Emergency Response Roles

## *Division of Energy, Mineral, and Land Resources*

- Provide consultation to local Emergency Management incident managers
- Advise as to the degree of danger and if evacuation and/or road closure is necessary
- Coordinate with dam owners/engineers/local Emergency Management and provide technical guidance on actions that may be taken to prevent failure or lessen the impact of failure



## Initial Response Team

### *FRO and DEMLR*

- DEMLR-Only Teams or DEMLR-Led Teams
- 3 two-person DEMLR / FRO teams
- 1- Regional Engineer/One-Staff team
- Division of Air Quality (DAQ) staff volunteered to assist with DEMLR Staff (Woodlake)
- 16 Regional Office teams from across the State performed **over 300 inspections** in Fayetteville, Washington and Raleigh Regions during second week following Hurricane Matthew



# Woodlake Dam

## Staff Coordination



## FRO Staff reported incident to DEMLR Central Office/EOC

- Localized depression/irregular flow observed in concrete spillway of 1100 acre reservoir
- Coordinated with Central Office/State Dam Safety
  - Shane Cook, PE, DEMLR State Dam Safety Engineer
    - National Guard/Moore County Emergency Management Coordination
    - Procurement of water drawdown pumps
    - Procurement of infrared camera equipped National Guard Helicopter
  - Toby Vinson, PE, DEMLR Chief of Program Operations
    - Secured FEMA Pumps
    - Provided central office staff resources/support
    - Managed EOC operations/reporting/media updates
  - Brad Cole, PE, DEMLR Chief of Regional Operations – Provided on-site support, 24/7 monitoring, and coordination of other Regional Office resources to address multiple county emergencies
  - Tracy Davis, PE, DEMLR Director – Provided State-level coordination and resources as well as onsite assistance
  - Donald van der Vaart, NCDEQ Secretary - Visited the site and committed DEQ backing for necessary resources
  - DEMLR Central Office Dam Safety Staffing of EOC/Coordination of Field Reporting
    - Bill Denton, PE, Erica Robinson, Daniel Kang, Francis Tubolino, Mega Dashbold, Yusuf Sharif, Boyd DeVane

# Woodlake Dam

## Site-Specific Activities



- Dam was monitored continuously for about a week
- Continuous pumping and draining for about two weeks
- Coordinated with Dam Owner and Consultants regarding stabilization/emergency response measures
- Coordinated with Moore County Emergency Management
  - Moore County provided periodic drone videos
  - Provided sustenance resources for all parties onsite
  - Provided 24-7 on-site staffing for coordination of resources
  - Implemented notifications/evacuations

# *Woodlake Dam*

## **Spillway Impacts**



## Current Efforts / Status

### *FRO and DEMLR*

- Coordinating with owners
  - Permitting Guidance
  - Repairs
  - Breaching dams that cannot be repaired
  - Performing hazard classifications
- Continuing post-hurricane Dam Safety inspections including low and intermediate hazard dams
- Coordinating with local emergency management to address on-going conditions/developments

**Approx. 45% of FRO Dam Safety Full-time Equivalent (FTE) Budget for FY 2017 was consumed between October and November 2017**



## *Take-Aways*

- Successful partnership and team effort by Local, State, Federal and private-sector parties
- DEMLR Regional/Central Office/EOC and Local Emergency Management Teams delivered under very challenging circumstances
- Dedicated DEMLR and DAQ personnel (actually volunteered to help)
- Very special thank you to the National Guard staffing personnel/teams for providing on-site emergency response resources. Their actions were directly responsible for reducing flow into the spillway compromise area which not only reduced potential damage but also allowed for timely observation by drone and infrared camera technologies to better assess the situation
- Availability of Emergency Action Plans proved invaluable in assisting DEMLR and local emergency managers in notifying affected parties of compromised dams and in evacuating downstream residents (while there was some damage to property and roads, there was no loss of life due to dam failures)
- Power of Moving Water and potential consequences

## *Rhodes Pond Dam*

Spillway Abutment Wall Breach



Embankment Overtopping



## *Mt. Vernon Estates Dam*

Embankment Breach



Adjacent Downstream Road Taken Out

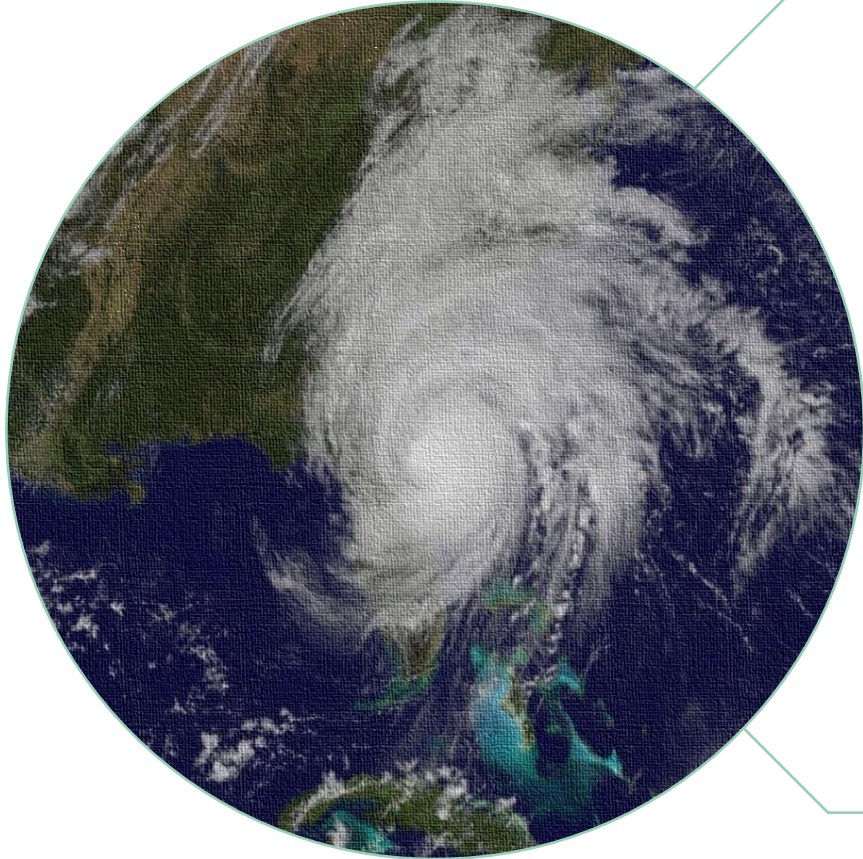


## *Jessup Mill Dam Hwy 53*

Dam Embankment Breach / Highway 53 Taken Out



## *Questions?*



**Tim LaBounty, PE**

DEMLR Fayetteville Regional Supervisor

[Tim.LaBounty@ncdenr.gov](mailto:Tim.LaBounty@ncdenr.gov)

**Mollie Young**

Director of Legislative Affairs, NCDEQ

[Mollie.Young@ncdenr.gov](mailto:Mollie.Young@ncdenr.gov)

919-339-9433