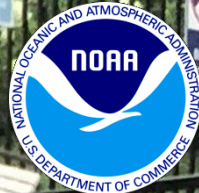


The July 8 Flash Flood in the DC Metro



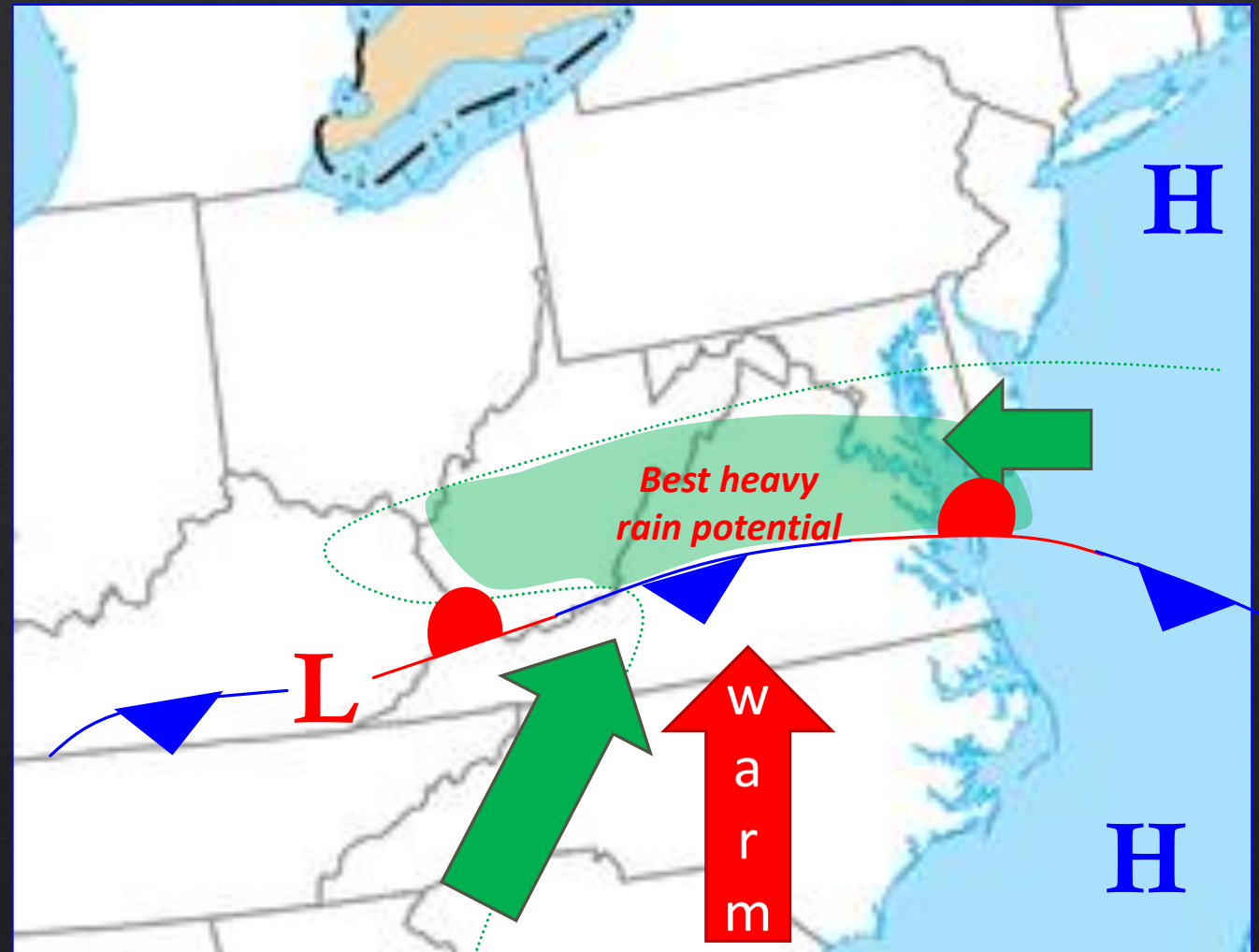
Four Mile Run, Arlington
Photo by @lottapub on Twitter
Used with permission

2020 LWX Media Workshop
April 9th, 2020



Favorable Weather Patterns

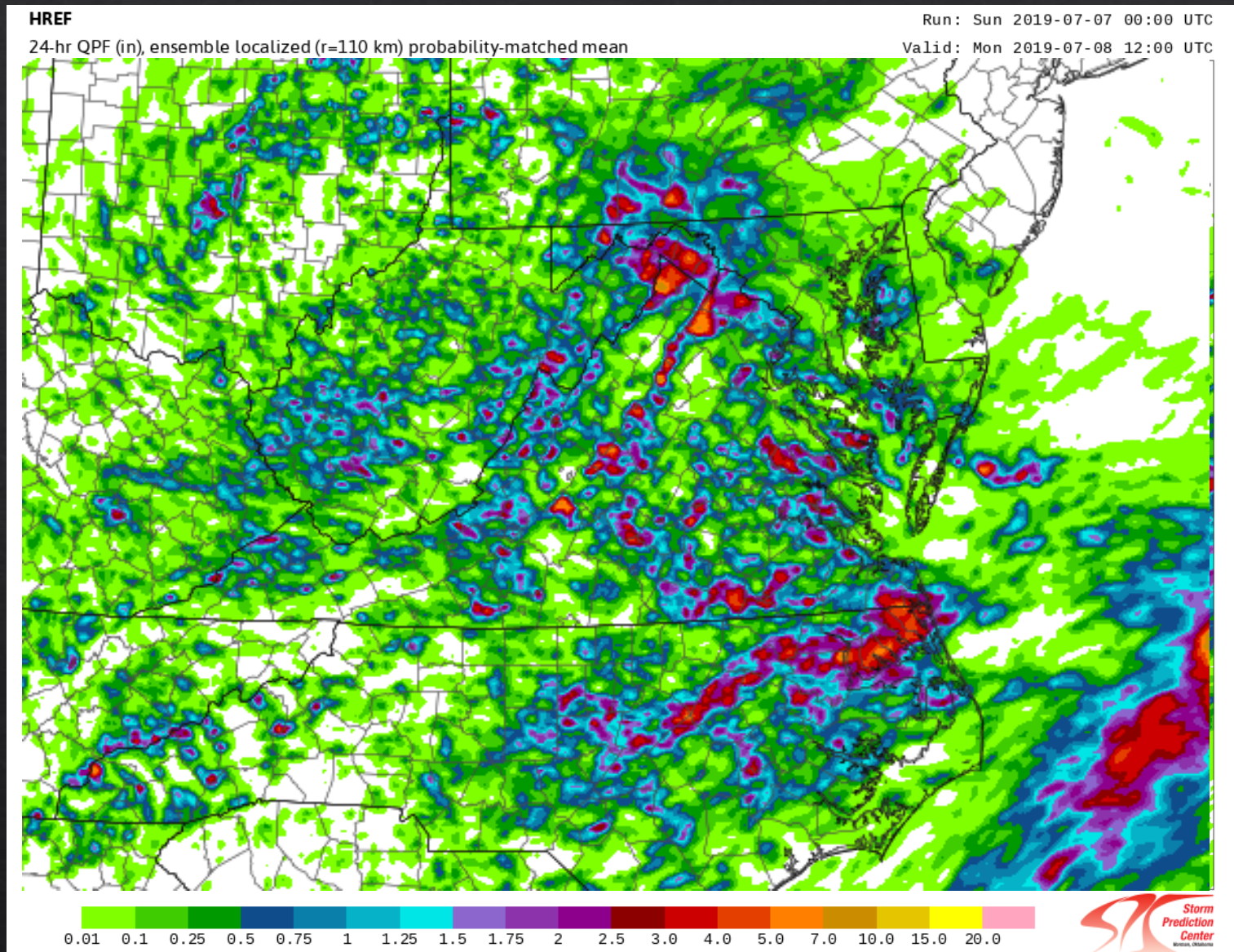
- ◇ Slow-moving or Stationary Fronts



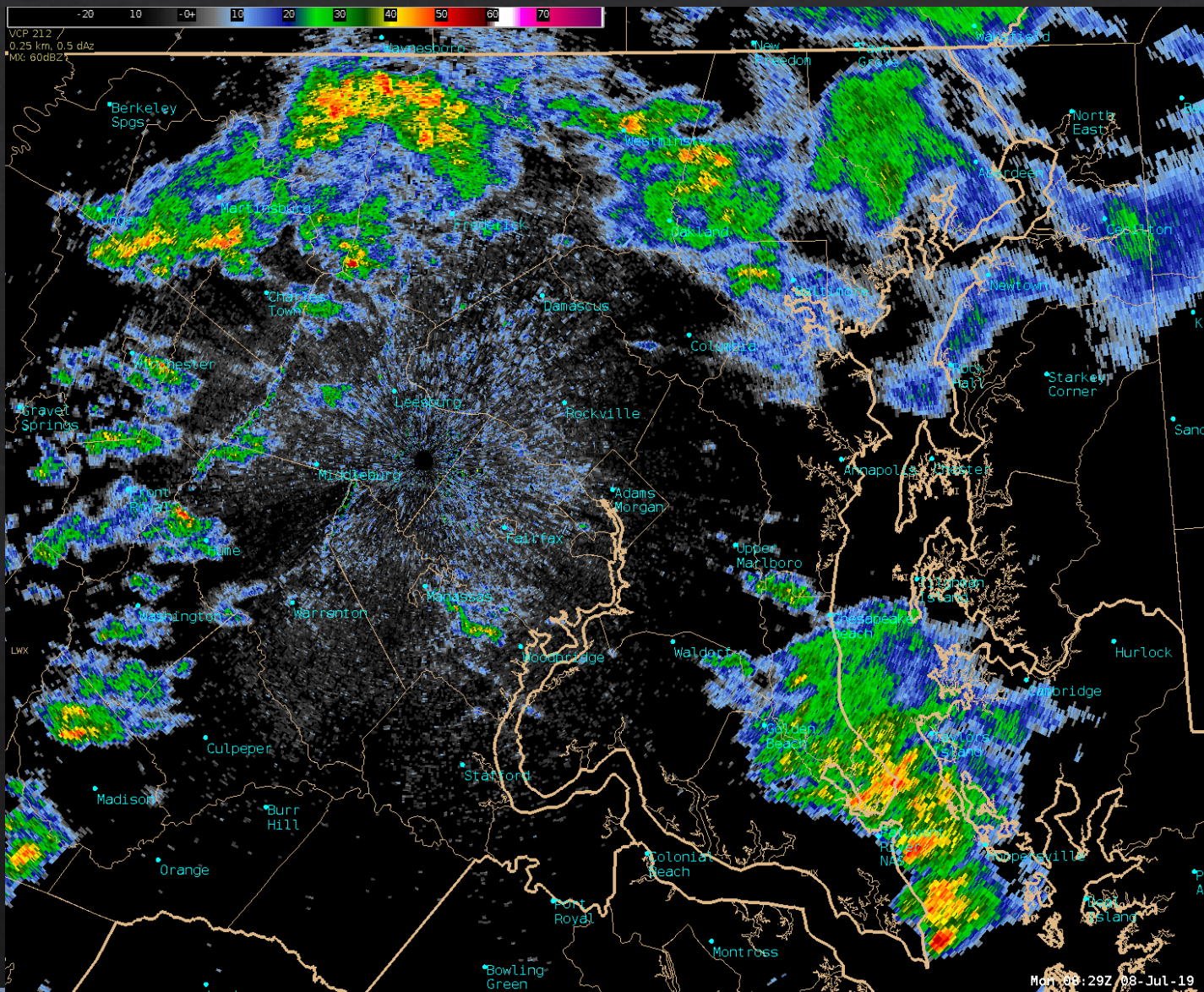
◆ Pre-Dawn Hours of Monday



00 UTC HREF



Radar Loop



National Weather Service Baltimore/Washington

Timeline

Hazardous Weather Outlook

- Sunday flood potential is mentioned Sat AM
- Monday flood potential is mentioned Sun AM

Flash Flood Watch

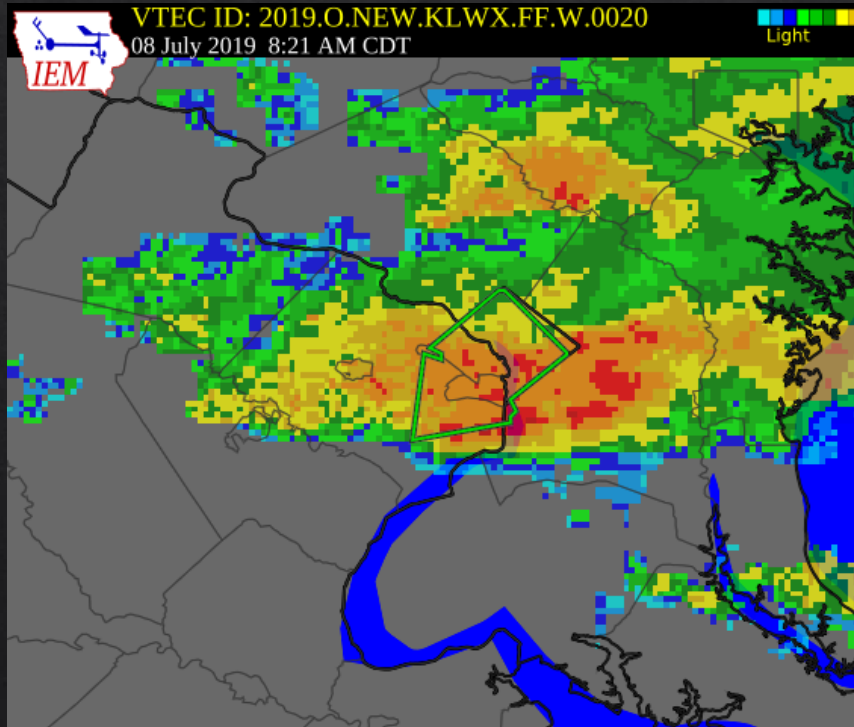
- 4:06 AM Sunday: Issued for Sunday noon – midnight
- 11:56 AM Sunday: Extended through 6 AM Monday
- 5:21 AM Monday: Extended through 10 AM Monday

Flash Flood Warning

- 7:46 AM Monday: NW DC, Arlington, Falls Church, North Fairfax, EC Loudoun, SE Montgomery
- 8:20 AM Monday: Rest of DC, Rest of Fairfax, Fairfax City, Alexandria, Prince Georges

Flash Flood Emergency

- ❖ Issued at 9:21 AM Monday, after coordination with emergency management



BULLETIN - EAS ACTIVATION REQUESTED

Flash Flood Warning

National Weather Service Baltimore MD/Washington DC

921 AM EDT Mon Jul 8 2019

...FLASH FLOOD EMERGENCY FOR WASHINGTON DC...THE CITY OF ALEXANDRIA...AND THE EASTERN PORTIONS OF FAIRFAX COUNTY AND ARLINGTON COUNTY...

The National Weather Service in Sterling Virginia has issued a

* Flash Flood Warning for...

The District of Columbia...

Arlington County in northern Virginia...

East central Fairfax County in northern Virginia...

The City of Alexandria in northern Virginia...

* Until 1115 AM EDT.

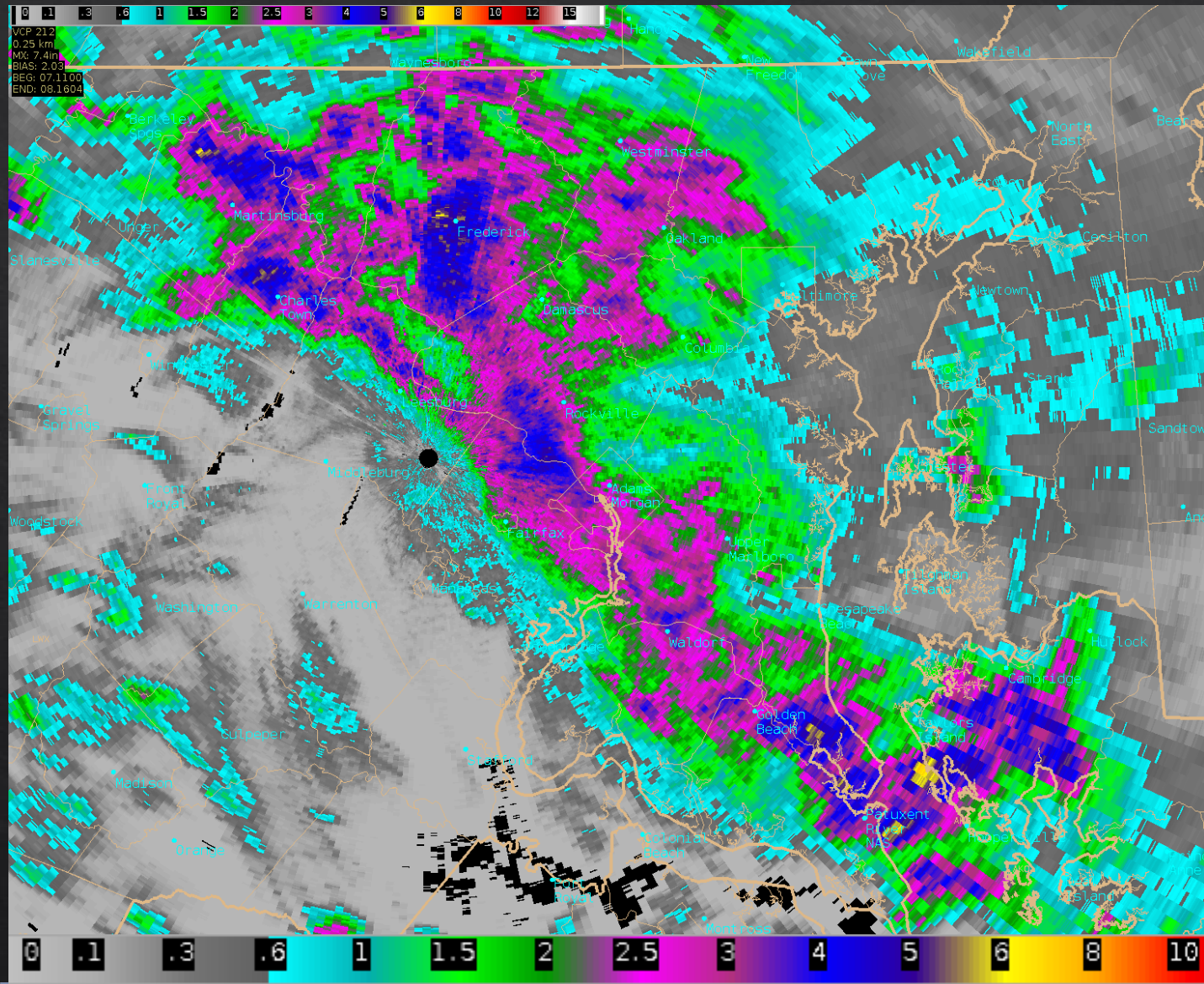
* At 919 AM EDT, emergency management reported heavy rain across the warned area. Up to three inches of rain have already fallen and heavy rain continues. Flash flooding is already occurring.

THIS IS A FLASH FLOOD EMERGENCY FOR WASHINGTON DC... ALEXANDRIA... ARLINGTON... AND EASTERN PORTIONS OF FAIRFAX COUNTY. This is a PARTICULARLY DANGEROUS SITUATION WITH SIGNIFICANT FLASH FLOODING OCCURRING AND LIKELY TO EXPAND IN AREA OVER THE NEXT COUPLE HOURS. SEEK HIGHER GROUND NOW!

* Some locations that will experience flooding include...

Arlington, Alexandria, Annandale, Springfield, Fort Hunt, Groveton, Huntington, Fort Belvoir, National Harbor, Fort Totten, Reagan National Airport, Rosslyn, Crystal City, RFK Stadium, Nationals Park, Howard University, Gallaudet University, Lincolnia, Franconia and Hybla Valley.

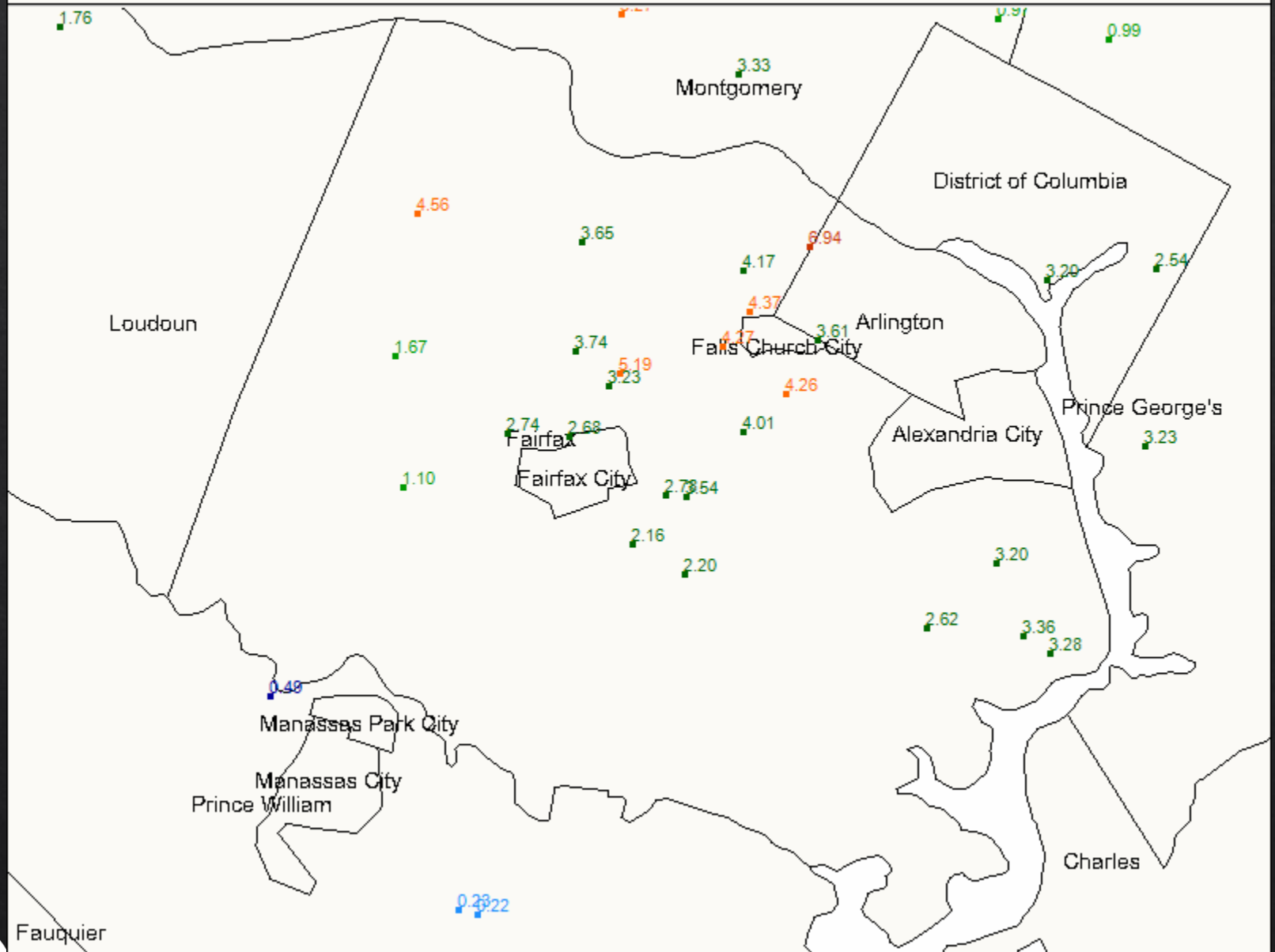
Radar Estimated Precipitation



Daily Precipitation (inches x.xx), for the 24 hour period ending ~7:00 am

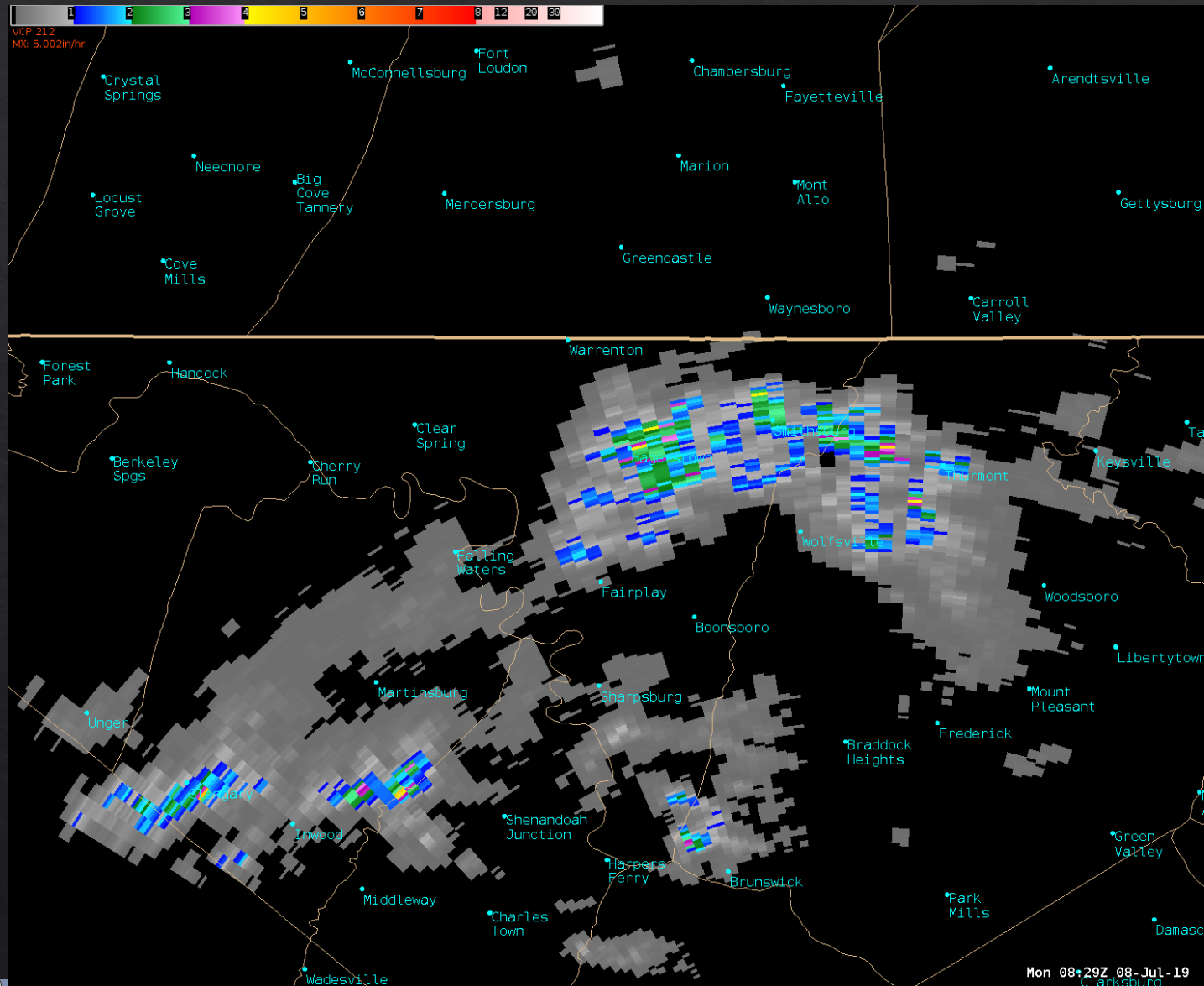
Fairfax County, Virginia 7/9/2019

0.0 Trace 0.01 - 0.35 0.36 - 0.70 0.71 - 1.74 1.75 - 4.17 4.18 - 6.25 6.26 - 6.94



National Weather Service Baltimore/Washington







Extremely Intense Rainfall











National Weather Service Baltimore/Washington

Storm Reports From Past 24 Hours

Damage Type

-  Flash Flood
-  Flood
-  Tornado
-  Wind Gust
-  Wind Damage
-  Lightning

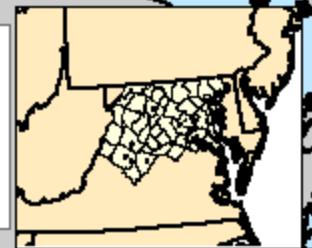
Hail Size In Inches

-  0.75
-  0.88
-  1.00
-  1.25
-  1.50
-  1.75
-  2.00
-  2.50 +

0 10 20 40 Miles



Reports were collected by the National Weather Service from spotters, law enforcement, broadcast media or emergency managers. A summary of the reports can be found on the Storm Prediction Center's website at: www.spc.noaa.gov/climo



Sources: National Weather Service WFOs, Storm Prediction Center, IEM

As of: 3 PM 7/8/2019

Created by the National Weather Service Forecast Office Baltimore/Washington

Statistical Performance

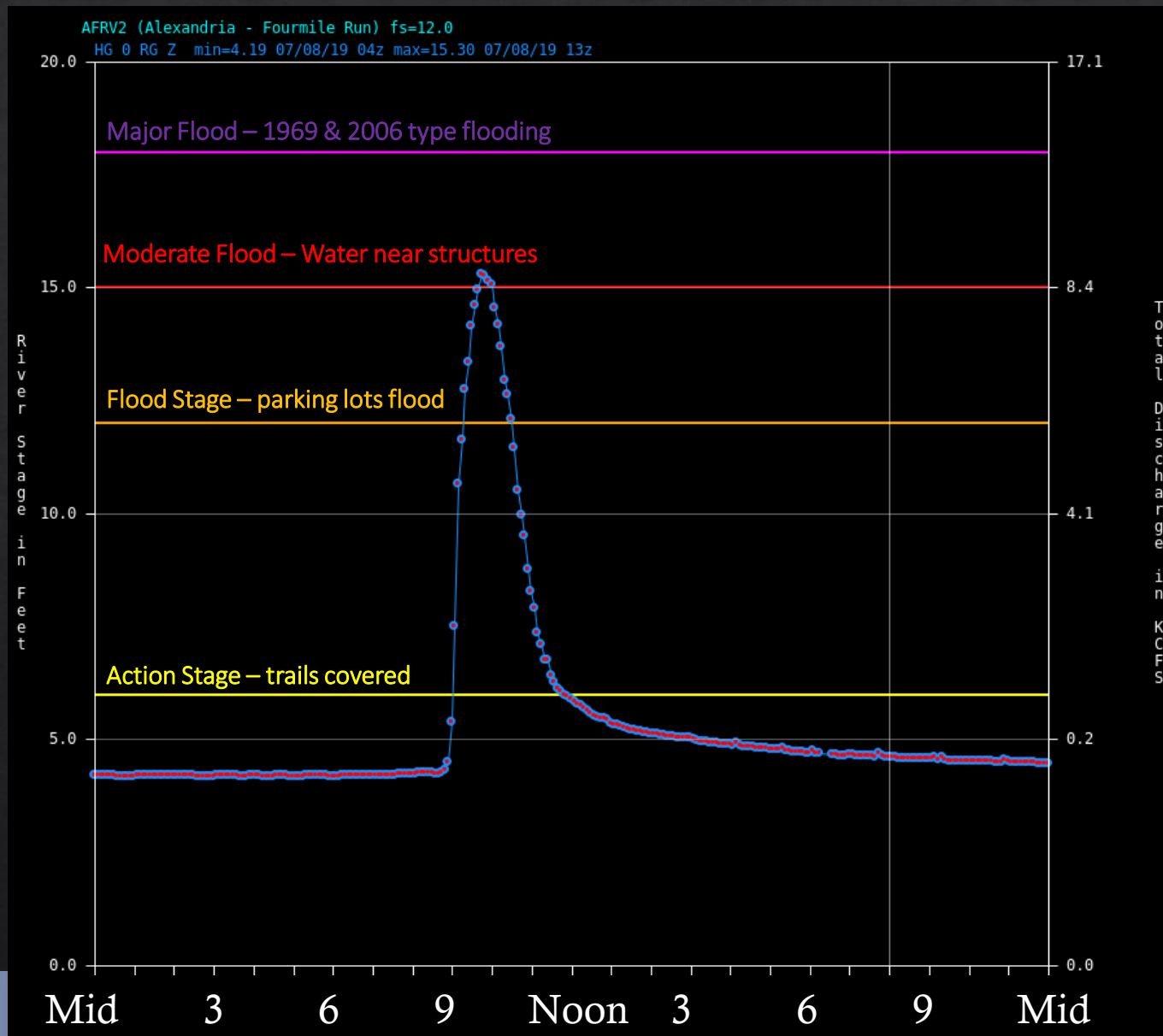
- ◇ 13 Flash Flood Warnings issued (including 1 Emergency)
- ◇ 45 initial reports; ultimately hundreds
- ◇ Probability of Detection (POD) = 100%
- ◇ False Alarm Ratio (FAR) = 15.4%
- ◇ Average Lead Time = 1 hr 44 min
- ◇ Minimum Lead Time = 32 minutes (Frederick)
- ◇ Maximum Lead Time = 149 minutes (multiple in S Fairfax Co.)

Canal Road

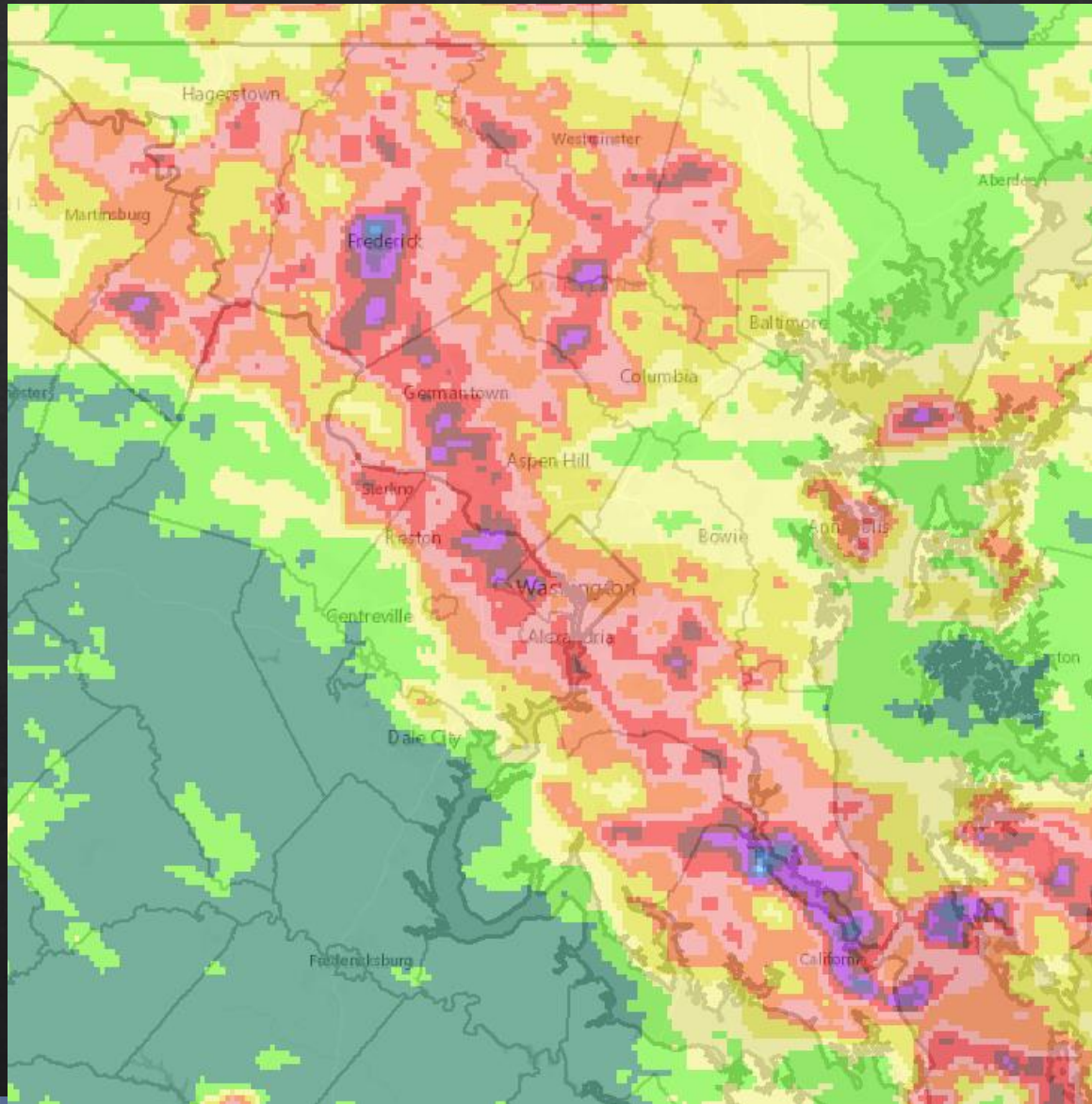


Pictures from Dave Dildine/WTOP. Used with permission.

Four Mile Run at Shirlington



DC Dodged a Bullet!



1" – Yellow
2" – Salmon
3" – Red
4"+ – Purple

The most important statistic

- ◆ The number of fatalities that occurred in this event, despite it happening at rush hour, with dozens of water rescues:

ZERO!

New Impact-Based FFWs

FLW – Flood Warning	FFW – Base (no ‘tag’ at the bottom)	FFW – Considerable tag	FFW – Catastrophic tag EMERGENCY
Issued for less urgent and/or longer duration flooding	Issued for <i>potential</i> / marginal flash flood situations	Issued when flash flooding capable of life/property threat is likely	Issued when a significant flash flood event is ongoing
<u>Example:</u> Minor street flooding that will not rapidly grow in significance	Heavy rain to cause flooding but less certain if it will persist long enough to worsen	Most flash floods we’ve had in the last 5 years fall in this category	Ellicott City / 7/8/2019 style events – most years issued once or less

Only these two set off cell phones now

EMERGENCY always gets a new, separate warning



Key Point to Know

- ❖ Despite these new tags, our warning philosophies remain the same as they have been for most of the last decade.
- ❖ The only real difference is that a marginal threat happening at 2 AM won't set off a cell phone (unless it worsens after initial issuance)

Contact Information

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NWS Baltimore/Washington

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