



Building a Weather-Ready Nation

Utilizing FEMA's Nation Flood Hazard Layer Web Mapping Service and Flood Insurance Studies in the National Weather Service's Advanced Hydrologic Prediction Services

New Steps in Flood Risk Communication and Decision Support Services

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Eastern Region Headquarters

National Weather Service

National Oceanic and Atmospheric Administration



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Background

Flood Risk Communication to the public and state/local partners remains a significant challenge for Federal Agencies.

Facts:

- The National Weather Service's Advanced Hydrologic Prediction Service (AHPS) is an authoritative source of flood forecasting/warning information
- FEMA is an authoritative source of flood risk information
- In June 2013, FEMA Mapping Information Platform, came online with a National Flood Hazard Layer Web Mapping Service (WMS)

FEMA Flood Insurance Studies (FIS) also support Weather-Ready Nation (WRN) initiatives for **impact-based decision support services**.



Challenge: How do you Effectively Communication Flood Risks?

Booz Allen Hamilton Report (2008) – itemizes principles for an effective strategy

- Principle #1 – Communicate in **Multiple Ways**
- Principle #2—Understand How High Stress Changes the Rules!
- Principle #3—Probability Plus Values Equals Real Risk
- Principle #4—Recognize and Address Audience Fear and Anger
- Principle #5—**Acknowledge Uncertainty**
- Principle #6—**Explain Complex and Technical Information**
- Principle #7—**Anticipate, Prepare,** and Practice for Media Interaction

The communication is needed before, during and after a flood.



Inclusion of the FEMA WMS and FIS Information into AHPS

Multi-purpose:

- Another means to share/communicate flood risk
- Promote the availability of FEMA information to audience already interested in the topic of flooding
- Utilize good information from FEMA for Impact-based Decision Support
 - *On AHPS, the hydrograph pages > 90 % of all web visits*
- This combines flood risk information and impacts from two trusted, credible, and authoritative sources.



Examples of NFHL WMS Use in AHPS

Westwood, NJ – gage map – Before and After

Flood Categories (in feet)

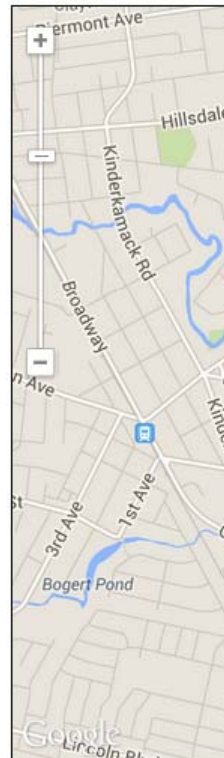
Major Flood Stage:	5.5
Moderate Flood Stage:	5
Flood Stage:	4
Action Stage:	3.5

Historical Crests

(1) 11.40 ft on 09/16/1999

Low Water Records

Currently none available.



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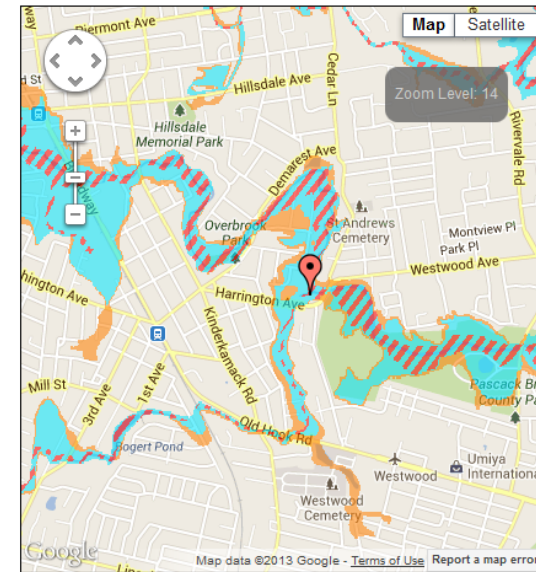


For more information on your flood risk go to www.fema.gov.

Show FEMA's National Flood Hazard Layers

FEMA's National Flood Hazard Layers not showing?

Note: Your zoom level may have changed. Google's zoom levels must be between 14 and 16 to show National Flood Hazard layers.



Legend

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee

FEMA Layer



Gauge Location

[Disclaimer](#)

Latitude/Longitude Disclaimer: The gauge location shown in the above map is the approximate location based on the latitude/longitude coordinates provided to the NWS by the gauge owner.



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Examples of NFHL WMS Use in AHPS

Rivervale, NJ – gage map – before and after

Flood Categories (in feet)

Flood Stage: 5
Action Stage: 4.8

Historical Crests
Currently none available.


Low Water Records
Currently none available.

Flood Categories (in feet)

Flood Stage: 5
Action Stage: 4.8

Historical Crests
Currently none available.

Low Water Records
Currently none available.


 **FEMA**

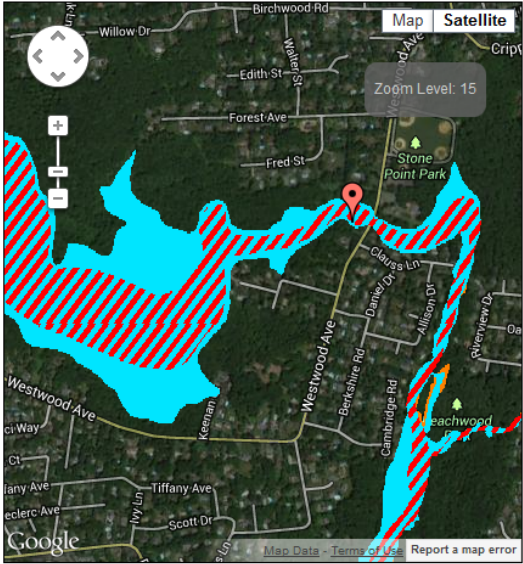
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Show FEMA's National Flood Hazard Layers








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Downstream Gauge 



Legend

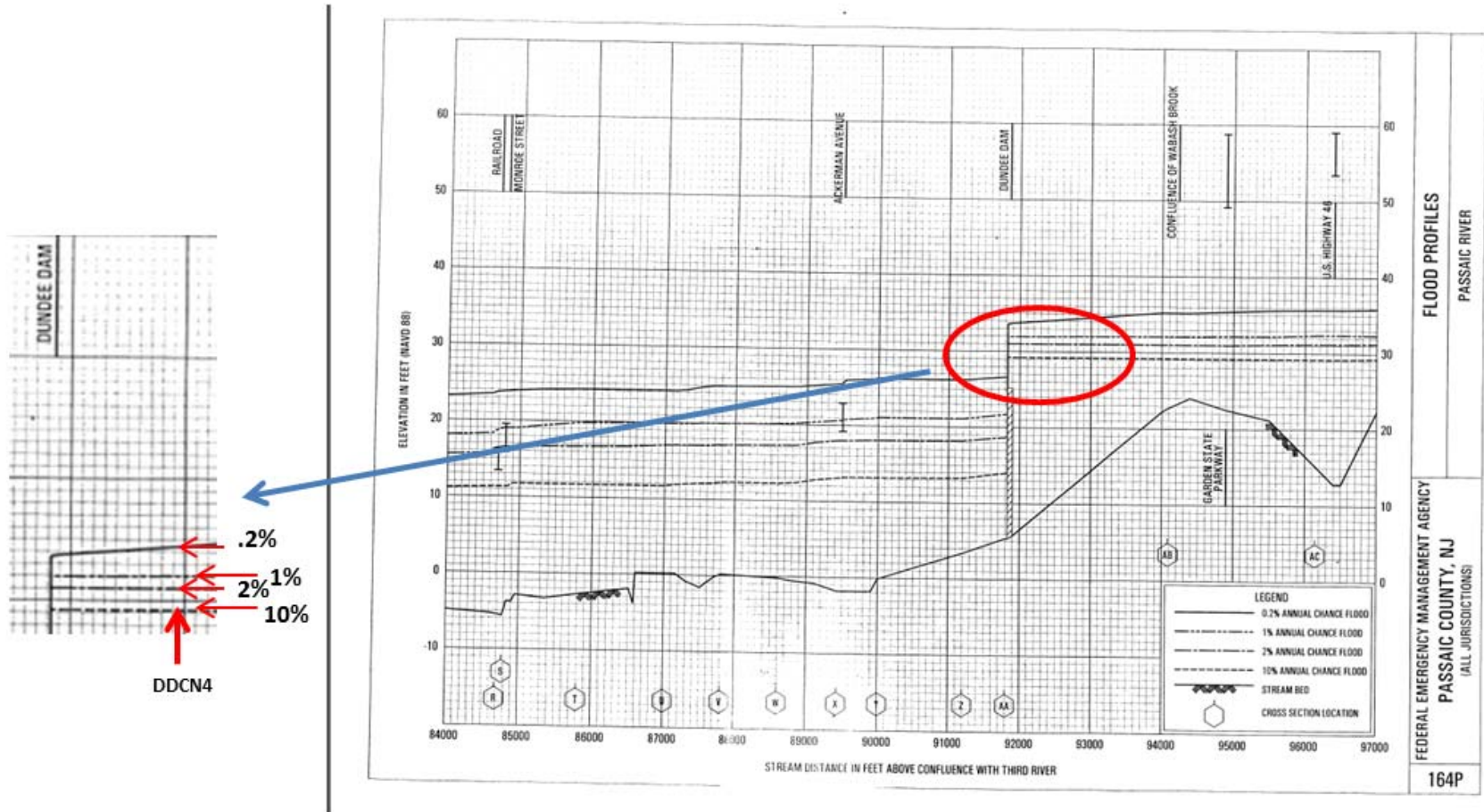
-  1% Annual Chance Flood Hazard
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-  Special Floodway
-  Area of Undetermined Flood Hazard
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-  Area with Reduced Risk Due to Levee

FEMA Layer

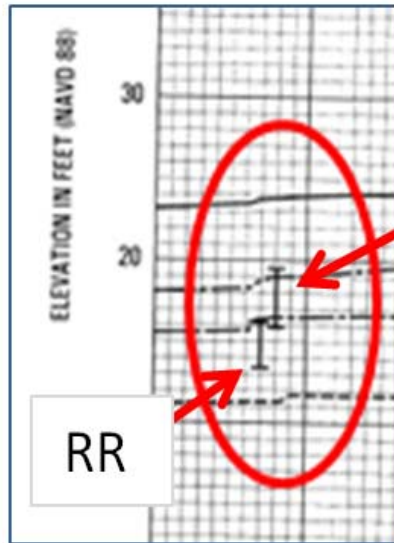
 Gauge Location  Disclaimer



Example of FEMA FIS Info for AHPS Impacts



Example of FEMA FIS Info for AHPS Impacts



Monroe
St.



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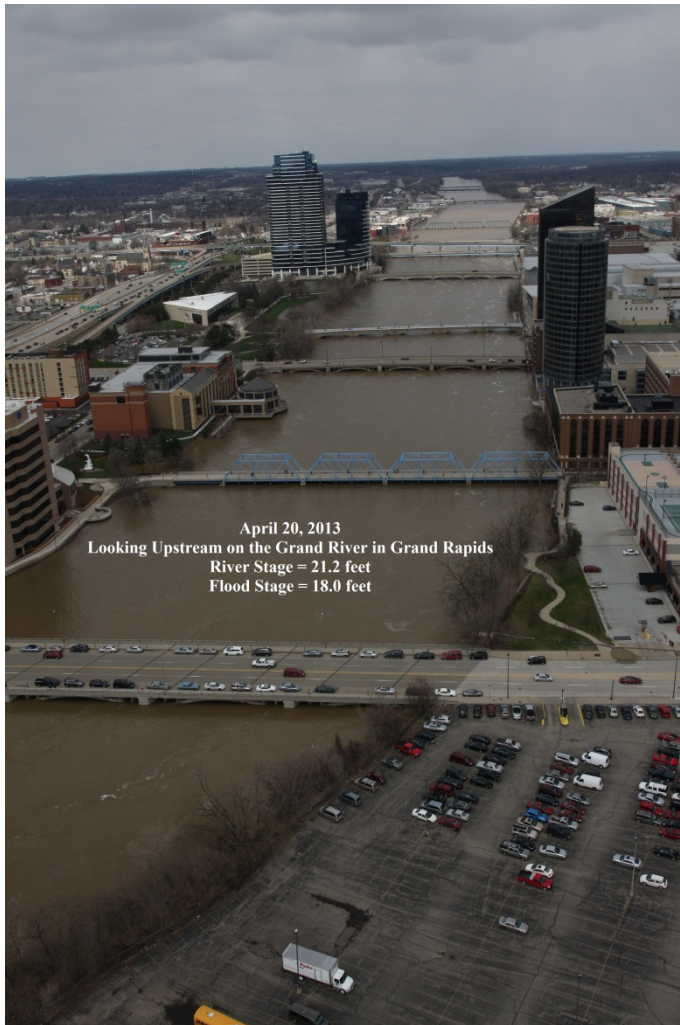
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Example of AHPS Impacts Statements

- Consistent wording for flood plains impacts:
11 - FEMA flood insurance maps indicate that at 11 ft., if you are located in the 0.2% (500 year) flood plain, your property is at a high risk for flooding. A 0.2 percent flood is a flood that has a 0.2 percent chance of occurring in any year.
- Consistent wording for transportation impacts:
25.5 – At 25.5 ft., flood waters begin to reach the bottom edge of the Garden State Parkway Bridge near Clifton and Garfield/Elmwood Park.



AHPS Examples of Impacts using FIS Info



Photos: Mark Walton, WFO Grand Rapids, Michigan



NWS Implementation Internal Support Team

- Mark Walton – Grand Rapids, MI (CR)
- Nicole Belk – Taunton, MA (ER)
- Jonathan Brazzell – Lake Charles, LA (SR)
- Mark Strudley – Monterey, CA (WR)
- Britt Westergard – Albany, NY (ER)



Team Results

Three Job Sheets with Detailed Instructions

1. Obtaining FEMA Map Service Center account
2. Determining Flood Hazard Layer availability and instructions to add to the AHPS gage map
3. Determining the inclusion of the FEMA Flood Insurance Study information in AHPS/WHFS Impact Statements, Flood Damage tables (these stay internal).



Team Results

Job Sheets focus on:

- Clearly detailing task steps
- Providing annotation to help WFO HPMs understand terminology and symbology used by FEMA
- Providing an example for a complex AHPS location
- Providing example wording for consistent implementation of impacts on AHPS
- Reference links to associated tools/resources
- Email address for assistance/questions



Implementation Strategy

- Implementation will progress on a regional basis
- Implementation will be dependent on the local/regional NWS resource – it may need coordination with local EMs, county officials, and USGS
- The plan is have the team begin these efforts and assist other NWS WFO offices as experts
- The NWS sees this as another opportunity to educate and **inform the public about flood risk and provided impact-based decision support services.**





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Each year, people in this country are killed or seriously injured by all types of extreme weather, despite advance warning. In 2012, there were more than 450 fatalities and nearly 2,600 injuries due to extreme weather, like tornadoes, hurricanes, floods, extreme heat, and wildfires.

NOAA's Weather-Ready Nation initiative is about building community resilience in the face of increasing vulnerability to extreme weather and water events. As part of the Weather-Ready Nation initiative, NOAA, along with partners such as the Federal Emergency Management Agency (FEMA), wants to motivate individuals and communities to take actions that will prepare them in the event of a weather disaster and to share their preparedness steps with others. These actions can save lives anywhere - at home, in schools, and in the workplace before tornadoes, hurricanes, and other extreme types of weather strike.

However, NOAA and its partners can't do it alone. A key member of the team is the public. That is why we are encouraging everyone to do their part. We ask everyone to **"Be a Force of Nature"**.

Be a Force of Nature by knowing your risk, taking action and being an example in your community.

Preliminary Significant U.S. Weather and Climate Events for 2012



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Questions?



<http://water.weather.gov>

