

Product/Service Description Document Impact-Based Warnings for Flash Floods

Part I - Mission Connection

- a. Product/Service Description - The National Weather Service (NWS) will begin to implement the reformatting of Flash Flood Warnings (FFW) into Impact-Based Warning (IBW) format on or after September 16, 2019. This consistent, bulleted format provides easily readable information describing the hazard (Flash Flood), the source of the information (e.g., radar, gauge, trained spotter, Emergency Manager), and a brief description of the impact of the hazard.

The FFW IBW messages will include machine-readable tags to characterize the flash flood damage threat, source information, and causative event. All NWS Weather Forecast Offices (WFOs) will transition to issuing FFWs in IBW format by late November 2019. Once IBW format is fully implemented, Wireless Emergency Alerts (WEAs) will be limited to only those FFWs with the damage threat tags of "Considerable" or "Catastrophic". There will be no change to the information included in the FFW segment header block, including the Valid Time Event Code (VTEC) and Hydrologic VTEC (H-VTEC) strings.

- b. Product Type - Operational
- c. Purpose - This effort is a subset of the overall NWS Hazard Simplification (Haz Simp) project. This product enhances NWS Flash Flood Services by improving the consistency and clarity of the product formatting and by characterizing the damage threat, identified source, and cause of the flash flood in machine-readable tags.
- d. Audience - The target audiences for these products are customers and partners such as emergency managers, state and local officials including school superintendents, Departments of Transportation (DOTs), media and the general public. These changes affect all NWS WFOs.
- e. Presentation Format - These are text-based products which appear on the Watch, Warning, and Advisory page on weather.gov and all other standard dissemination methods. Some are sent via NOAA Weather Radio, Emergency Alert System, and Wireless Emergency Alert.
- f. Feedback Method - Feedback on the Impact-Based Warnings for Flash Floods (below) may be addressed to:

Dan Roman
National Weather Service
Analyze, Forecast and Support Office
Silver Spring, MD 20910
E-mail: daniel.roman@noaa.gov

Part II - Technical Description

- a. Format and Science Basis - NWS offices issue more than 12,000 FFWs each year for events with a range of impacts on lives and livelihoods. User perception is that NWS over-alerts FFWs. FEMA has also noted a large number of complaints about WEAs for FFWs during overnight periods with perceived little impact. With this change, NWS is aiming to improve the public response to FFWs by providing easily readable information and by issuing WEAs only for flash flood events that require immediate life-saving action.

Stakeholders were surveyed and had provided positive feedback for the reformatting of the FFWs and other short-fused products (i.e., Severe Thunderstorm Warning and Tornado Warning) to contain "Hazard", "Source", and "Impact" bullets. Reformatting FFWs to this consistent format will provide easily readable information describing the hazard (Flash Flood), the source of the information (e.g., radar, gauge, trained spotter, Emergency Manager) and a brief description of the impact of the hazard. The survey also recommended "tags" for machine parsing and to characterize the flash flood damage threat.

The flash flood damage threat characterization will include:

- **Base** - Most flash floods, with the potential for impacts and damage.
- **Considerable** - Flash floods capable of unusual severity of impact where urgent action is needed to protect lives and property.
- **Catastrophic** - Exceedingly rare, violent flash floods which threaten lives and cause disastrous damage when floodwaters are placing or will place people in life-threatening situations by rapidly rising to levels rarely, if ever, seen. Catastrophic flash flood damage threat tags will only appear in FFWs which include flash flood emergency language.

The flash flood source characterization may include, but is not limited to:

- **Radar indicated** - Evidence on radar and near storm environment is supportive, but no confirmation.
- **Observed** - Flash flood impacts confirmed by trained spotters, law enforcement, media, other credible human observers, etc.

The flash flood causative event characterization will include:

- **EXPECTED RAINFALL... [##-## INCHES PER HOUR or ##-## INCHES IN ## MINUTES or ## INCHES IN ## MINUTES]** - Use to identify rainfall rate leading to potential or observed flash flooding, including rain falling on a burn scar.
- **[DAM or LEVEE] FAILURE... [IMMINENT or OCCURRING]** - Use to provide additional information about the status of the failing dam or levee, whether it is "imminent" or "occurring".

- b. Availability - These products will be available at all times and issued when criteria are met.

Examples for Impact-Based Warnings for Flash Floods:

A. Flash Flood Warning - "Base" (No Tag)

BULLETIN - EAS ACTIVATION REQUESTED
Flash Flood Warning
National Weather Service Green Bay WI
729 AM CDT FRI OCT 23 2015

The National Weather Service in Green Bay has issued a

- * Flash Flood Warning for...
Northwestern Portage County in central Wisconsin...
South central Marathon County in central Wisconsin...

* Until 1030 AM CDT

- * At 729 AM CDT, a thunderstorm producing heavy rain across the warned area. Flash flooding is expected to begin shortly.

HAZARD...Flash flooding caused by heavy rain.

SOURCE...Radar estimates.

IMPACT...Flooding of small creeks and streams, urban areas, highways, streets and underpasses as well as other drainage areas and low-lying areas.

- * Some locations that will experience flooding include...
Stevens Point, Whiting, Plover, Stockton, Knowlton, Jordan, Park Ridge, Custer, Ellis, Dewey Marsh Wildlife Area, Shantytown, Polonia, Rocky Corners, Arnott, Dancy and North Star.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Move to higher ground now! Act quickly to protect your life.

&&

LAT...LON 4472 8939 4444 8940 4444 8966 4472 8980

FLASH FLOOD...RADAR INDICATED

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B. Flash Flood Warning - Considerable

BULLETIN - EAS ACTIVATION REQUESTED
Flash Flood Warning
National Weather Service Green Bay WI
729 AM CDT Fri Oct 23 2015

The National Weather Service in Green Bay has issued a

* Flash Flood Warning for...
Northwestern Portage County in central Wisconsin...
South central Marathon County in central Wisconsin...

* Until 1030 AM CDT

* At 729 AM CDT, flash flooding is already occurring. Local officials report Interstate Highway 90 is closed. A thunderstorm is producing heavy rain with rainfall rates of 1 to 2 inches per hour across the warned area.

HAZARD...Life-threatening flash flooding caused by heavy rain.

SOURCE...County officials and radar estimates.

IMPACT...Unusual and life threatening flash flooding of creeks and streams, urban areas, highways, streets and underpasses.

* Some locations that will experience flooding include...
Stevens Point, Whiting, Plover, Stockton, Knowlton, Jordan, Park Ridge, Custer, Ellis, Dewey Marsh Wildlife Area, Shantytown, Polonia, Rocky Corners, Arnott, Dancy and North Star.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

This is an extremely dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding.

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LAT...LON 4472 8939 4444 8940 4444 8966 4472 8980

FLASH FLOOD...OBSERVED

FLASH FLOOD DAMAGE THREAT...CONSIDERABLE
EXPECTED RAINFALL...1-2 INCHES PER HOUR

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C. Flash Flood Warning - Catastrophic

BULLETIN - EAS ACTIVATION REQUESTED
Flash Flood Warning
National Weather Service Green Bay WI
729 AM CDT Fri Oct 23 2015

...FLASH FLOOD EMERGENCY FOR PORTAGE AND MARATHON COUNTIES...

The National Weather Service in Green Bay has issued a

- * Flash Flood Warning for...
Northwestern Portage County in central Wisconsin...
South central Marathon County in central Wisconsin...
- * Until 1030 AM CDT
- * At 729 AM CDT, flash flooding is already occurring. Local officials are performing several swift water rescues. A thunderstorm was producing heavy rain with rainfall rates of 2 to 3 inches in 60 minutes across the warned area.

HAZARD...Life-threatening flash flooding caused by heavy rain.

SOURCE...County officials and radar estimates.

IMPACT...This is a PARTICULARLY DANGEROUS SITUATION. SEEK HIGHER
GROUND NOW! Unusual and life threatening flash flooding of
low water crossings, small creeks and streams, urban
areas,
highways, streets and underpasses.

- * Some locations that will experience flooding include...
Low water crossings...Route EE at The Foxtail River just north of
Whiting. Stevens Point, Whiting, Plover, Stockton, Knowlton,
Jordan,
Park Ridge, Custer, Ellis, Dewey Marsh Wildlife Area, Shantytown,
Polonia, Rocky Corners, Arnott, Dancy and North Star.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

This is a PARTICULARLY DANGEROUS SITUATION. SEEK HIGHER GROUND NOW!
This is an extremely dangerous and life-threatening situation. Do not attempt to travel unless you are fleeing an area subject to flooding or under an evacuation order.

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LAT...LON 4472 8939 4444 8940 4444 8966 4472 8980

FLASH FLOOD...OBSERVED
FLASH FLOOD DAMAGE THREAT...CATASTROPHIC
EXPECTED RAINFALL...2-3 INCHES IN 60 MINUTES

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D. Flash Flood Warning - Dam Failure

BULLETIN - EAS ACTIVATION REQUESTED
Flash Flood Warning
National Weather Service Sacramento CA
435 PM PST SUN FEB 12 2017

The National Weather Service in Sacramento has issued a

- * Flash Flood Warning for A Dam Failure in...
South central Butte County in northern California...
- * Until 415 PM PST Monday
- * At 419 PM PST, dam operators reported a hazardous situation is developing with the Oroville Dam auxiliary spillway. Severe erosion could lead to a failure of the structure. Failure of the auxiliary spillway structure will result in an uncontrolled release of flood waters from Lake Oroville.

This is a FLASH FLOOD EMERGENCY FOR LIFE-THREATENING CATASTROPHIC FLOODING. This is a PARTICULARLY DANGEROUS SITUATION. SEEK HIGHER GROUND NOW!

HAZARD...Life-threatening flash flooding caused by a potential uncontrolled release at Oroville Dam.

SOURCE...Oroville Dam operators.

IMPACT...This is a PARTICULARLY DANGEROUS SITUATION. SEEK HIGHER GROUND NOW! IMMEDIATE EVACUATION from Oroville to Gridley.

Low areas around the Feather River will experience rapid river rises.

This is not a drill. This is not a drill. Repeat...this is not a drill.

* Locations impacted include...

Oroville, Palermo, Gridley, Thermalito, South Oroville, Oroville Dam, Oroville East and Wyandotte.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

Move to higher ground now. Act quickly to protect your life.

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LAT...LON 3953 12139 3934 12156 3933 12172 3952 12163
3961 12149

FLASH FLOOD...OBSERVED

FLASH FLOOD DAMAGE THREAT...CATASTROPHIC

DAM FAILURE...IMMINENT

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E. Flash Flood Warning - Levee Failure

BULLETIN - EAS ACTIVATION REQUESTED

Flash Flood Warning

National Weather Service Sacramento CA

745 PM PST MON FEB 20 2017

The National Weather Service in Sacramento has issued a

* Flash Flood Warning for a levee failure in...

San Joaquin County in central California...

* Until 730 AM PST Tuesday

* At 729 PM PST, San Joaquin county officials have reported a failure of a levee on the San Joaquin River, southwest of Manteca.

HAZARD...Life-threatening flash flooding caused by a levee failure.

SOURCE...San Joaquin county officials

IMPACT...EVACUATE IMMEDIATELY AND SEEK HIGHER GROUND NOW! San Joaquin County has called for the evacuation an area east of the San Joaquin River between Woodard road on the north, Union road to the east and Mortensen road to the south.

Residents are urged to follow emergency instructions from local county authorities.

LAT...LON 3778 12123 3771 12121 3767 12125 3772 12130
3777 12131

FLASH FLOOD...OBSERVED
FLASH FLOOD DAMAGE THREAT...CONSIDERABLE
LEVEE FAILURE...OCCURRING

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