



National Weather Service

Freshwater Prediction and Flood Warning Services

FEMA National Flood Conference

Chicago, Illinois

May 9, 2008

Thomas Graziano, Ph.D.
Chief, Hydrologic Services Branch
National Weather Service Headquarters
Silver Spring, MD



National Weather Service

Presentation Overview

- **NWS Mission**
- **Socioeconomic Impacts of Floods**
- **NWS Operational Infrastructure**
- **Advanced Hydrologic Prediction Service (AHPS)**
- **Water Resources Forecasting Program**
- **Flood Inundation Mapping Overview**
- **Flood Inundation Mapping Demonstration**
- **Education and Outreach**



NWS Mission and Goals

NOAA NWS Mission

- Issue weather, water, and climate forecasts and warnings for the protection of life and property and the enhancement of the national economy.



Socioeconomic Impacts

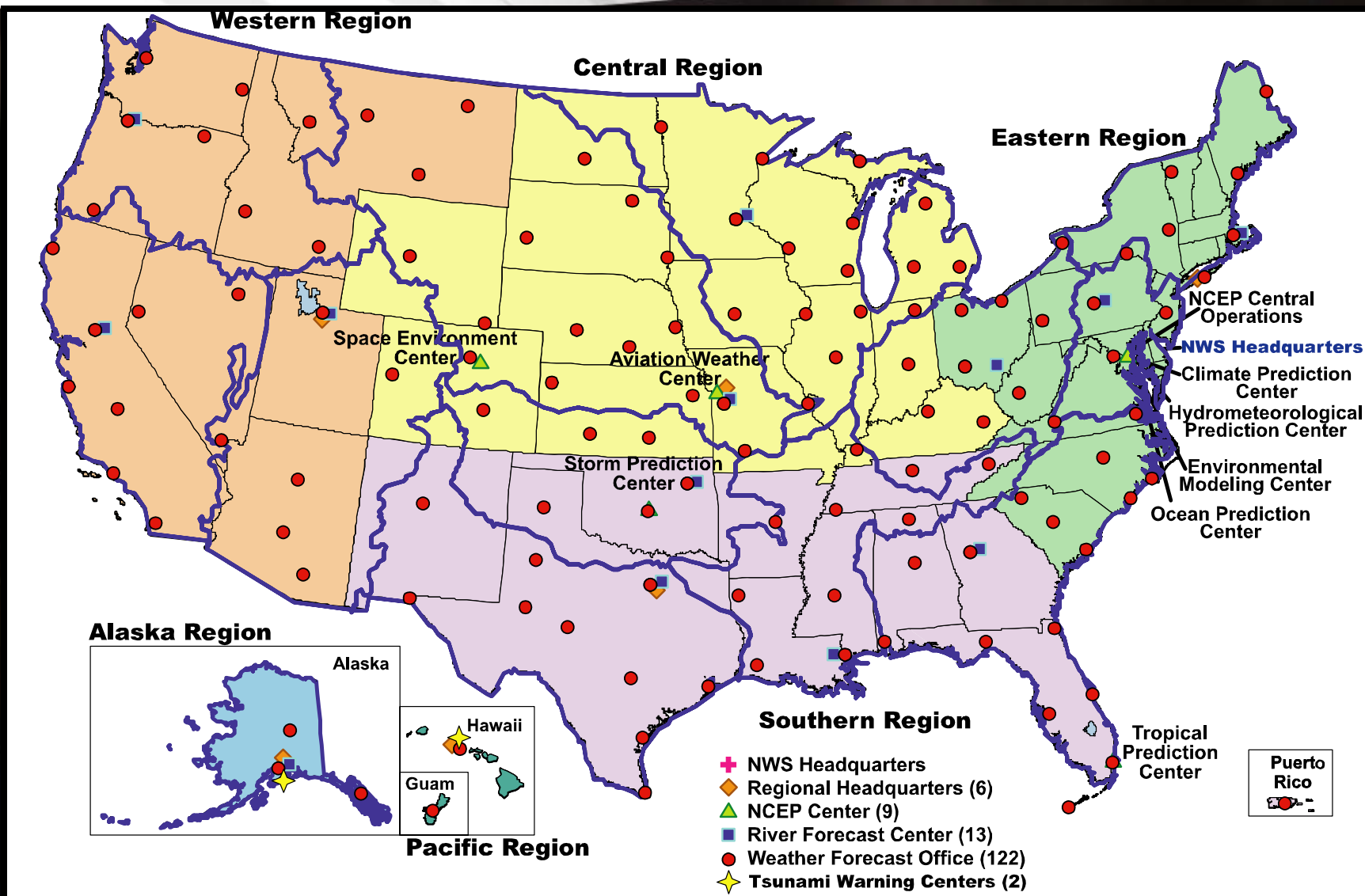
On average, over the past 20 years, flooding has claimed over 90 lives and caused damages in excess of \$7 billion annually

- Flooding can occur in all 50 states and is a threat all months of the year.
- Flooding is responsible for more fatalities than any other severe weather related phenomenon.
- More than half of all flood-related deaths result from motorists being swept away in their vehicles.





NWS Operational Infrastructure





Advanced Hydrologic Prediction Service (AHPS)

- Provide enhanced water availability and flood warning information by leveraging NOAA's infrastructure and expertise
- Modernize services through infusion of new science and technology
 - *Flash-flood to seasonal freshwater forecasts*
 - *Quantification of forecast certainty*
 - *More accurate and timely forecasts and warnings*
 - *Partnered flood inundation mapping*
 - *Visually-oriented products*
- Provide consistent access to standardized graphics via web interface



Advanced Hydrologic Prediction Service

- \$60 million/10 year program (completion year of 2014)
- \$766 million estimated annual recurring benefit (National Hydrologic Warning Council study)





Accessing AHPS Information

<http://weather.gov/>

“click on” the water tab for current river conditions

National Oceanic and Atmospheric Administration's
National Weather Service

Site Map News Organization Search

Local forecast by "City, St"

City, St Go

XML RSS Feeds

Warnings Current By State/County... UV Alerts

Observations Radar Satellite Snow Cover Surface Weather... Observed Precip

Forecasts Local Graphical Aviation Marine Hurricanes Severe Weather Fire Weather

Text Messages By State By Message Type National

Forecast Models Numerical Models Statistical Models...

Climate Past Weather Predictions

Weather Safety Weather Radio Hazard Assmt... StormReady / TsunamiReady

Education/Outreach

...Potential For Significant Severe Weather Across The Mississippi Valley...
A strong cold front moving through the Mississippi Valley will trigger severe thunderstorms with large hail and damaging winds. Isolated tornadoes could also develop. The threat of severe weather extends from the Upper Mississippi Valley and Great Lakes to the Gulf Coast area. The greatest threat area will be in the Mid-Mississippi Valley from extreme northern Louisiana to central Illinois. Details...

Warnings & Forecasts Graphical Forecasts National Maps Radar **Water** Air Quality Satellite Climate

Warnings By State Go Click Below To Zoom In. Tabs At A Glance

Created: 05/02/08 at 20:10 UTC

American Samoa · Guam · Puerto Rico/Virgin Islands

Tornado Warning	Severe Weather Statement	Brisk Wind Advisory
Severe Thunderstorm Warning	Gale Warning	Lake Wind Advisory
Flash Flood Warning	Flood Statement	Wind Advisory
Blizzard Warning	Freeze Warning	Freeze Watch
Heavy Snow Warning	Red Flag Warning	Special Weather Statement
Winter Storm Warning	Snow And Blowing Snow Advisory	Marine Weather Statement
High Wind Warning	Winter Weather Advisory	Hazardous Weather Outlook
Flood Warning	Flood Advisory	Short Term Forecast
Tornado Watch	Coastal Flood Advisory	
Flash Flood Watch	Small Craft Advisory	

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Forecast Models Numerical Models Statistical Models...

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National Hydrologic Assessment is Now Available: Above Average Flood Risk in Nation's Midsection, Northeast and Parts of the West

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River Observations River Forecasts Precipitation River Download Other Information

All Locations Go Click The Map To Zoom In.

American Samoa · Guam · Puerto Rico/Virgin Islands

3810 Total Gauges
72 Locations in Flood

307 Gauges: Observations older than 24 hours	12 Gauges: Major Flooding
15 Gauges: Out of Service	20 Gauges: Moderate Flooding
	40 Gauges: Minor Flooding
	69 Gauges: Near Flood Stage
	3347 Gauges: No Flooding

Last map update: Fri, May, 02, 2008 at 03:52:47 pm EDT.



Accessing AHPS Information

“click on” the forecast location to access local hydrograph

Advanced Hydrologic Prediction Service

Home News Organization Search for: [] NWS

ALERT! A Flood Warning is in effect for portions of the area. [View all valid statements/warnings](#) or choose a specific point or river to get the details for that location.

Weather Forecast Office Quad Cities, IA

River Observations River Forecasts Within 48 Hours Precipitation Download

05/02/2008 02:19 PM CDT

Map Legend

- Hydrograph Available
- Probability and Hydrograph Available
- Major Flooding
- Moderate Flooding
- Minor Flooding
- Near Flood Stage
- No Flooding
- Observation More Than 24 Hours Old
- Out of Service

67 Total Gauges 26 Locations in Flood

National Weather Service

Advanced Hydrologic Prediction Service

Home News Organization Search for: []

Weather Forecast Office Quad Cities, IA North Central River Forecast Center

Flood Warning Flood Statement

[View all valid statements/warnings](#)

Hydrograph River at a Glance Download Weekly Chance of Exceeding Levels During Entire Period

Mississippi River AT Rock Island LD15

Universal Time (UTC)

18Z	18Z	18Z	18Z	18Z	18Z	18Z	18Z	18Z	18Z
Apr 29	Apr 30	May 1	May 2	May 3	May 4	May 5	May 6	May 7	May 8
25									
24									
23									
22									
21									
20									
19									
18									
17									
16									
15									
14									

Site Time (CDT)

1pm Tue Apr 29 1pm Wed Apr 30 1pm Thu May 1 1pm Fri May 2 1pm Sat May 3 1pm Sun May 4 1pm Mon May 5 1pm Tue May 6 1pm Wed May 7 1pm Thu May 8 1pm Fri May 9

Flow (kcs)

315 290 270 250 232 215 195 175 161 147

Record Stage: 22.6' Major Stage: 18.0' Moderate Stage: 16.0' Flood Stage: 15.0'

Latest observed value: 18.65 ft at 2:00 PM CDT 2-May-2008. Flood Stage is 15.0 ft. Forecast data shown here are guidance values only. Please refer to your local NWS office for the latest official public river forecasts.

19.22 ft

Graph Created (2:21pm May 2, 2008) - Observed - Forecast (issued 10:09am May 2)

RCK12 (plotting HTRZ) "Gage 0" Datum: 542.50' Observations courtesy of the U.S. Army Corps of Engineers

<http://weather.gov/>



Accessing AHPS Information

National Weather Service
Advanced Hydrologic Prediction Service

Home News Organization Search for: MWS All NOAA Go

Weather Forecast Office Quad Cities, IA North Central River Forecast Center

This probabilistic forecast is issued by the North Central River Forecast Center.

Hydrograph River at a Glance Download Weekly Chance of Exceeding Levels Chance of Exceeding Levels During Entire Period

1 Week Chances of Exceeding River Levels on the MISSISSIPPI R at QUAD CITIES
Latitude: 41.3 Longitude: 90.4
Forecast for the period 4/28/2008 - 7/21/2008
This is a conditional simulation based on the current conditions as of 4/21/2008

Exceedance Probability
 10 - 50% (Red)
 50 - 90% (Blue)
 >= 90% (Grey)

Flood Level 15.0 (Feet)

NOTE: River forecasts for this location take into account past precipitation and the precipitation amounts expected approximately 24 hours into the future from the forecast issuance time.

Forecasts for the Mississippi River at Rock Island are issued routinely

“click on” tabs for probabilistic forecasts

Home News Organization Search for: MWS All NOAA Go

Weather Forecast Office Quad Cities, IA North Central River Forecast Center

This probabilistic forecast is issued by the North Central River Forecast Center.

Hydrograph River at a Glance Download Weekly Chance of Exceeding Levels Chance of Exceeding Levels During Entire Period

Chances of Exceeding River Levels on the MISSISSIPPI R at QUAD CITIES
Latitude: 41.3 Longitude: 90.4
Forecast for the period 4/28/2008 - 7/27/2008
This is a conditional simulation based on the current conditions as of 4/21/2008

Maximum Stage (FT)

Flood Level 15.0 (Feet)

NOTE: River forecasts for this location take into account past precipitation and the precipitation amounts expected approximately 24 hours into the future from the forecast issuance time.

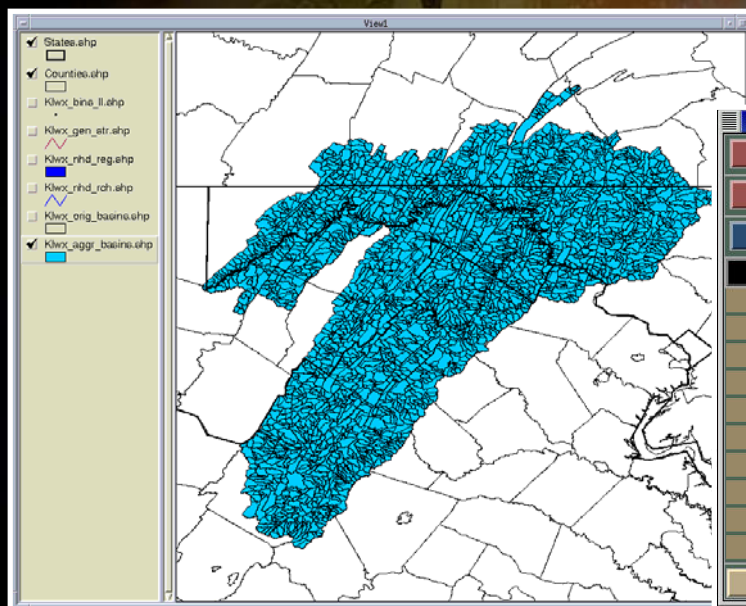
Currently demonstrating short-range ESP capability at 4 River Forecast Centers and plan to begin national implementation in FY12



AHPS Flash Flood Decision Assistance

Flash Flood Monitoring and Prediction (FFMP)

- Continuous monitoring of rainfall with comparison to flash flood guidance for high resolution stream basins
- Basin data set developed by NOAA in collaboration with USGS
- Alerts forecasters when a dangerous flash flood situation may be developing



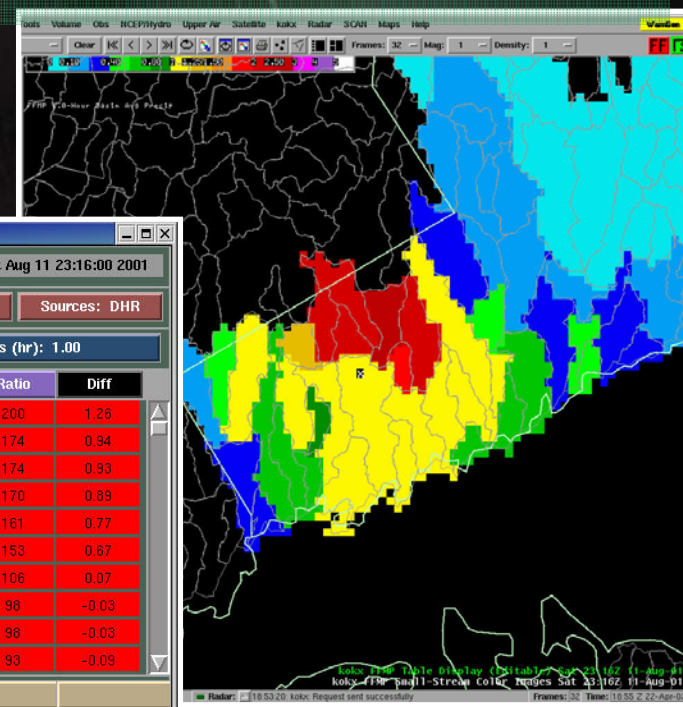
KOKX FFMP Threat BASIN Table

Ending Time: Sat Aug 11 23:16:00 2001

Refresh D2D Display Rate Thresh Type: precip Sources: DHR

County: CT,FAIRFIELD Durations (hr): 1.00

Area_id	Rate	Precip	FFG	Ratio	Diff
295	1.47	2.51	1.26	200	1.26
294	1.98	2.20	1.26	174	0.94
1132	0.72	2.19	1.26	174	0.93
1129	0.57	2.15	1.26	170	0.89
1131	0.49	2.03	1.26	161	0.77
1128	0.17	1.93	1.26	153	0.67
273	0.96	1.33	1.26	106	0.07
274	0.08	1.23	1.26	96	-0.03
275	0.08	1.23	1.26	98	-0.03
252	0.26	1.17	1.26	93	-0.09





Water in the News

Rescue work continues in flood-ravaged Washington

By Jack Broom

Seattle Times staff reporter

Efforts resumed today to rescue people from flood-stricken homes in Southwest Washington after

Flooding forces thousands in Kansas, Oklahoma and Texas

The Associated Press

Published: July 1, 2007

Officials shut salmon fishing in seven coastal areas of California, Oregon

By Matt Weiser - mweiser@sacbee.com

Thursday, March 13, 2008

Wildlife officials moved Wednesday for early closure of seven coastal salmon

Scotts Valley wants to sell surplus irrigation water

San Jose Mercury News, USA - March 11, 2008

SCOTTS VALLEY, Calif.—A Santa Cruz County town has too much water.

Current Major Flooding in U.S. a Sign of Things to Come: NOAA Urges Communities to Prepare During Flood Safety Awareness Week (March 20, 2008)

National Weather Service tweaks Red River flood outlook

(Doug Barrett, KNOX, Grand Forks)

GRAND FORKS, N.D. (AP) The

National Weather Service

the spring flood outlook

River Valley. March

Global Warming May Put U.S. in Hot Water

By SETH BORENSTEIN

AP Science Writer

WASHINGTON (AP) -- As the world warms, water - either too little or too much of it - is

likely to be the major problem for the United

said

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ortages

Australia's epic drought: The situation is grim

By Kathy Marks in Sydney

Friday, 20 April 2007

Australia has warned that it will have to switch off the water supply to the continent's food bowl unless heavy rains break an epic drought - heralding what could be the first climate change-driven disaster to strike a developed nation.

West Looking Again at Building New Dams

By NICHOLAS K. GERANIOS - Mar 2, 2008

SPOKANE, Wash. (AP) — The Western states' era of massive dam construction — which tamed rivers, swallowed towns, and created irrigated agriculture. clean hydro power and

Relentless N. Carolina drought could be devastating in '08

RALEIGH, N.C. (AP) — The record-setting drought that has forced the governor to plead for conservation,

home

spring

Lake Mead could run dry by 2021, study warns

Arizona Republic, AZ - Feb 12, 2008

Climate changes and an unquenched demand for water on the Colorado

Published: Feb 11, 2008



Expanding Our Service

NOAA's Water Resources Program

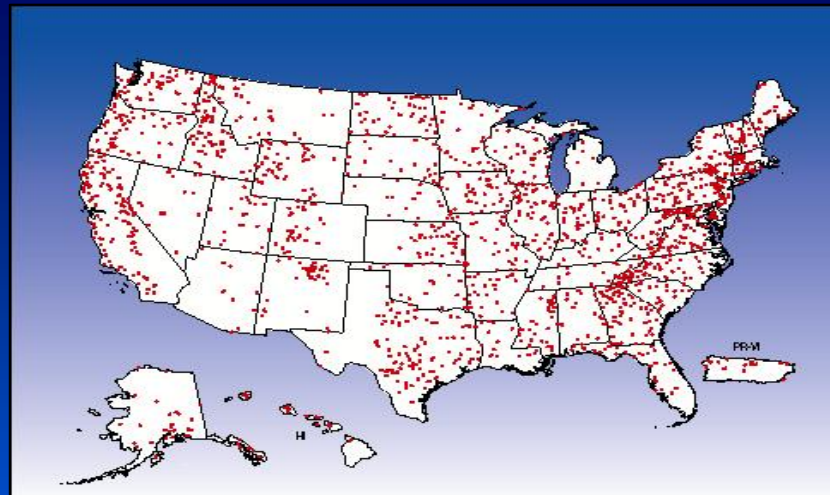
Now:

- Forecasts of stream flow provided at 4000 point locations on rivers

Needed:

- Forecasts of several water resource elements provided at all locations (grid), at scale of event (high resolution)

- *Snow water equivalent*
- *Snow depth & cover*
- *Precipitation*
- *Soil moisture*
- *Runoff*
- *Evaporation*

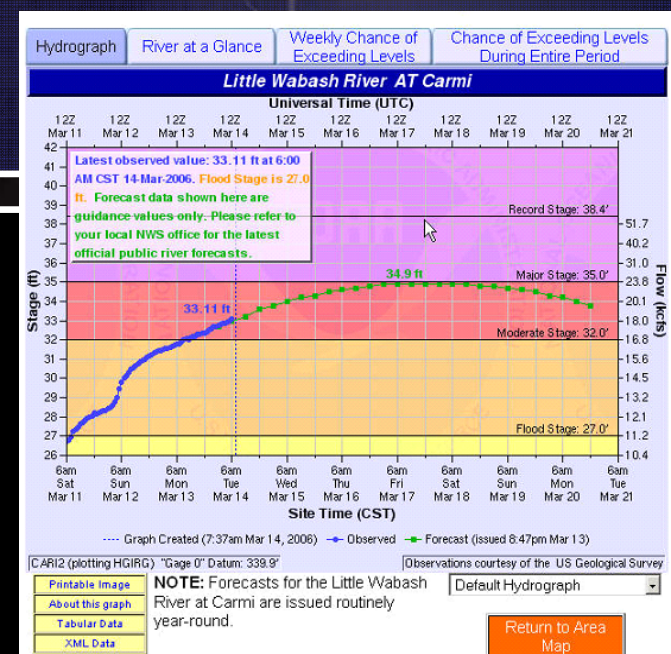


NOAA water forecasts are made at the locations identified in red.



Enhancing the Communication of Flood Risk

- For over 30 years, the NWS has utilized a **3-tier, impact based, flood severity scale** with the categories **minor**, **moderate**, and **major** flooding
- For each NWS river forecast location, flood stage and the stage associated with each of the NWS flood severity categories are established in cooperation with local public officials



NCC049-107-070200-
/O.NEW.KMHX.FL.W.0001.010407T1300Z-00000T0000Z/
/KINN7.1.ER.010407T1300Z.010412T0100Z.000000T0000Z.NO/
200 PM EDT FRI APR 6 2001

THE NATIONAL WEATHER SERVICE IN NEWPORT HAS ISSUED A

- FLOOD WARNING FOR NEUSE RIVER AT KINSTON
- FROM SATURDAY MORNING UNTIL FURTHER NOTICE
- AT 9 AM EDT FRIDAY THE STAGE WAS... 13.5 FEET
- **MINOR FLOODING IS FORECAST * FLOOD STAGE IS...14.0 FEET**
- FORECAST...FLOOD STAGE WILL BE REACHED AT 900 AM SATURDAY. MAXIMUM STAGE WILL BE 15.0 FEET AT 900 PM EDT WEDNESDAY. THE RIVER MAY REMAIN ABOVE FLOOD STAGE FOR SEVERAL WEEKS. THE EXACT FLOOD DURATION IS DIFFICULT TO PREDICT DUE TO THE VERY SLOW RISE AND FALL TIMES FOR THIS RIVER.
- AT 14 FEET...WATER WILL BEGIN TO OVERFLOW INTO LOWLANDS ADJACENT TO THE NEUSE RIVER. \$\$

<http://www.weather.gov/ahps/>



Enhancing the Communication of Flood Risk

• The Inland Flood Forecasting and Warning System Act of 2002, Pub. Law No. 107-253

- ✓ Championed by Representative Bob Etheridge (2nd District NC)
- ✓ Authorized NOAA to conduct activities to improve inland flood forecasting, develop a new flood warning index, train and educate officials regarding improved forecasting techniques and the inland flood warning index

PUBLIC LAW 107-253—OCT. 29, 2002 116 STAT. 1781

Public Law 107-253
107th Congress

An Act

To authorize the National Oceanic and Atmospheric Administration, through the United States Weather Research Program, to conduct research and development, training, and outreach activities relating to inland flood forecasting improvement, and for other purposes.

Oct. 29, 2002
(H. R. 2487)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Inland Flood
Forecasting and
Warning System
Act of 2002.
15 USC 211 note.

SECTION 1. SHORT TITLE.

This Act may be cited as the "Inland Flood Forecasting and Warning System Act of 2002".

SEC. 2. AUTHORIZED ACTIVITIES.

The National Oceanic and Atmospheric Administration, through the United States Weather Research Program, shall—

15 USC 211c.

(1) improve the capability to accurately forecast inland flooding (including inland flooding influenced by coastal and ocean storms) through research and modeling;

(2) develop, test, and deploy a new flood warning index that will give the public and emergency management officials fuller, clearer, and more accurate information about the risks and dangers posed by expected flooding;

(3) train emergency management officials, National Weather Service personnel, meteorologists, and others as appropriate regarding improved forecasting techniques for inland flooding, risk management techniques, and use of the inland flood warning index developed under paragraph (2);

(4) conduct outreach and education activities for local meteorologists and the public regarding the dangers and risks associated with inland flooding and the use and understanding of the inland flood warning index developed under paragraph (2); and

(5) assess, through research and analysis of previous trends, among other activities—

(A) the long-term trends in frequency and severity of inland flooding; and

(B) how shifts in climate, development, and erosion patterns might make certain regions vulnerable to more continual or escalating flood damage in the future.

SEC. 3. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to the National Oceanic and Atmospheric Administration for carrying out this Act \$1,250,000 for each of the fiscal years 2003 through 2005, of which \$100,000 for each fiscal year shall be available for competitive

15 USC 211c.
note.



Enhancing the Communication of Flood Risk

- Since 2002, NWS has conducted extensive outreach to objectively determine whether our current flood severity index satisfies user needs

- ✓ Partnered with Claes Fornell International (CFI) Group to survey users of NOAA's hydrologic information via the American Customer Satisfaction Index (ACSI)

- ✓ Conducted user forums with State and Local Officials in North Carolina

- ✓ Partnered with David Ford Consulting Engineers, Inc to conduct a national survey of emergency managers

- ✓ Conducted additional local and regional user outreach

October 2004

Evaluation of National Weather Service Flood Severity Categories and Use of Gage Station Flood History Information



Prepared by:



A report of Riverside Technology, Inc. for the National Oceanic and Atmospheric Administration prepared for NOAA Contract No. NA17-004-001-0001, 7 page 0000



National Weather Service Customer Satisfaction Survey

Hydrologic Services Program

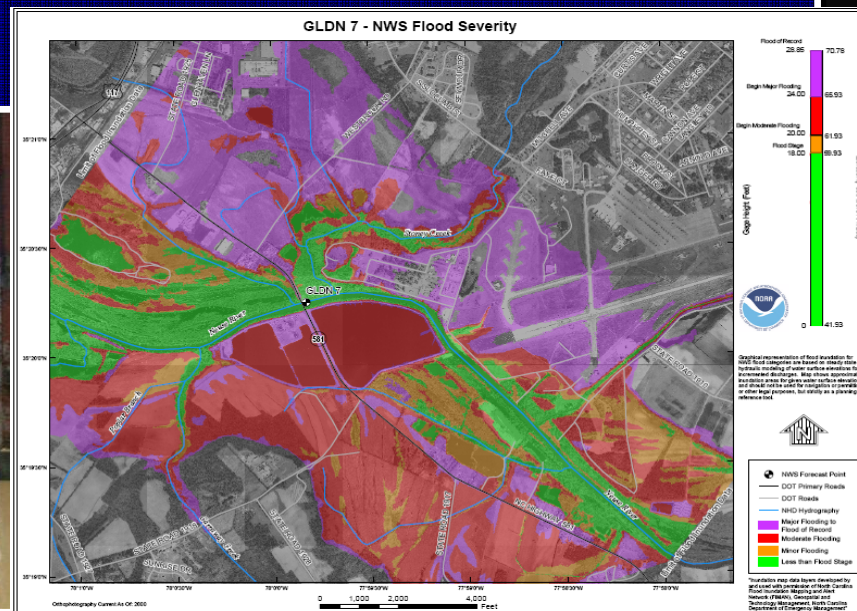
Executive Report 2006

CFI Group
Claes Fornell International



Enhancing the Communication of Flood Risk

- **Customers are telling us they....**
 - are familiar with NWS flood severity categories
 - find them useful
 - do not want changes to the existing flood severity indices
 - need communication of flood risk to be enhanced by use of inundation graphics (maps)





Enhancing the Communication of Flood Risk

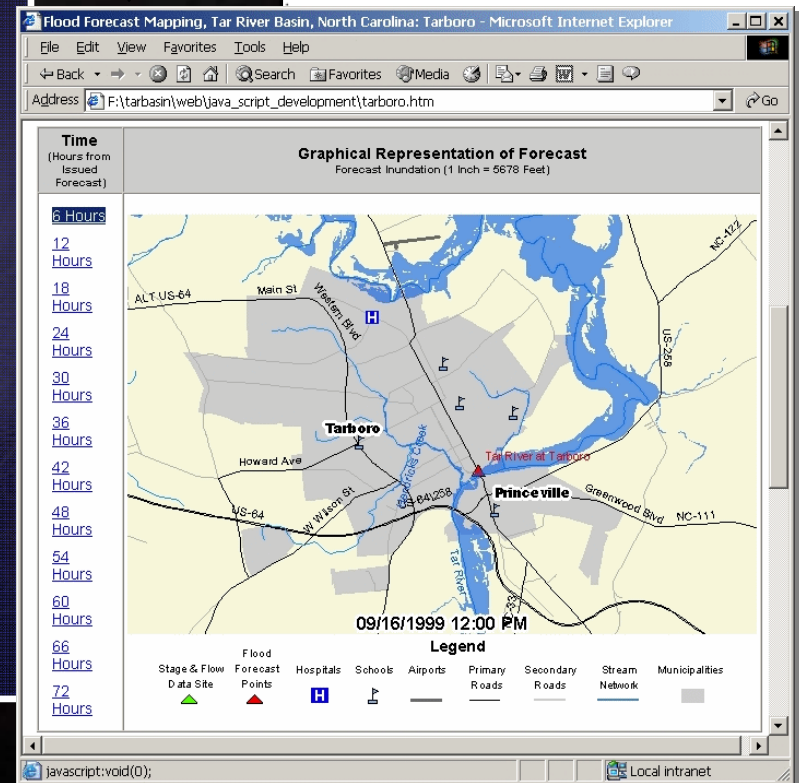
Goal – To provide real-time flood inundation maps to emergency managers during flood events.

- Used partnered data (LIDAR Topo Engineering Data) from FEMA and NC Floodplain Mapping Program
- Built unsteady hydraulic model for 73 miles of Tar River
- Mapped flood forecasts in a GIS and presented results via the Web
- SERFC used as flood forecast tool during Hurricane Isabel – Sept. 2003



Example Text-Based Flood Forecast

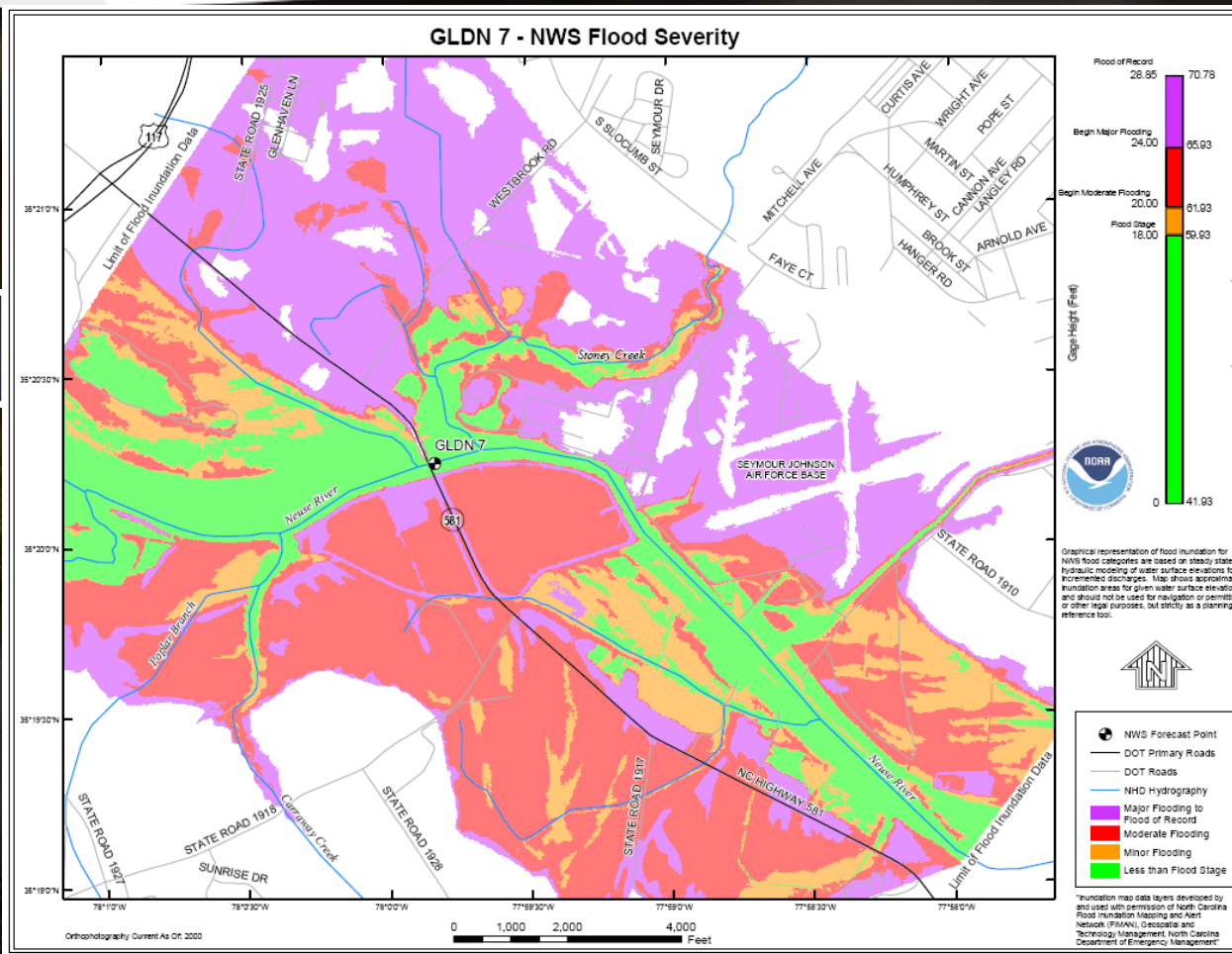
FGUS52 KALR 011551
RVFRDU
RIVER FORECAST
NATIONAL WEATHER SERVICE
SOUTHEAST RIVER FORECAST CENTER ATLANTA GA
1049 AM EST FRI NOV 01 2002
: FORECAST ISSUED BY NORTH CAROLINA FORECASTER
.....
:HAW RIVER - Haw River (471.69 + FORECAST STAGE = HEIGHT IN MSL)
:FLOOD STAGE 18.0





Enhancing the Communication of Flood Risk

Neuse River at Goldsboro, NC



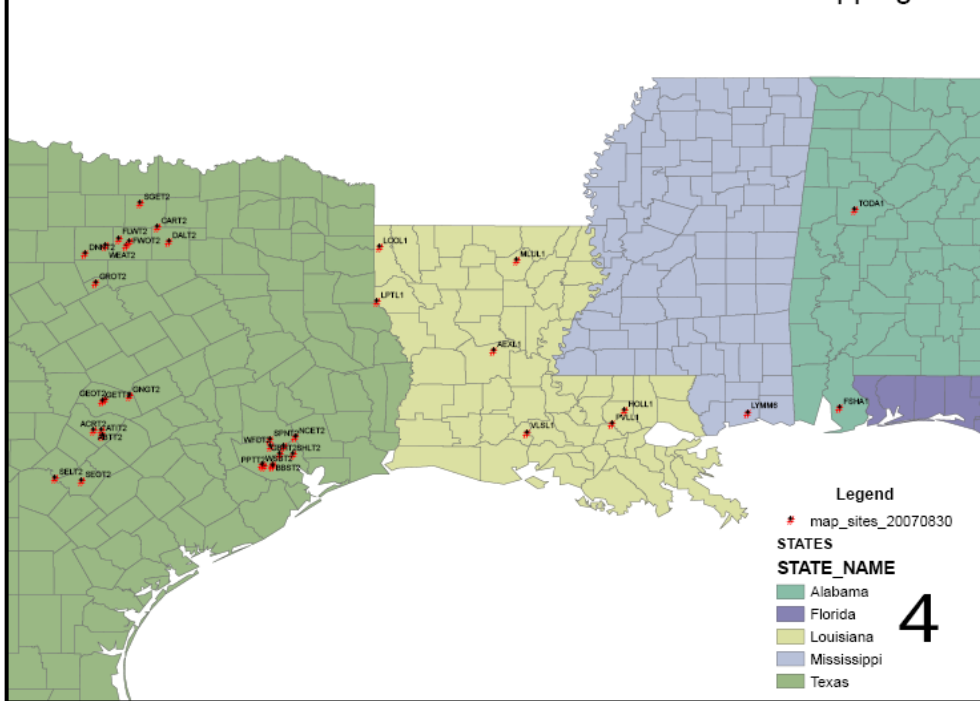
Partnered with NC Floodplain Mapping Program Office, FEMA, and USGS to develop prototype user-requested graphics to better convey flood threat



Enhancing the Communication of Flood Risk

- Provided Web Access to 16 North Carolina Flood Inundation Map Libraries at NWS forecast points on October 22, 2007
- Hurricane Katrina Supplemental Funds are being used to create an additional 25-35 libraries in 4 Gulf Coast States

Forecast Points with Sufficient Data for Inundation Mapping



National Weather Service
Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC
Southeast River Forecast Center

Home News Organization Search for: NWS All NOAA

To see all current watches and warnings, click here.

Data Type

- Inundation Levels
- Flood Categories
- Current Forecast

Inundation Levels

Water Depth	Stage
71	20
70	27
69	29
68	25
67	24

Main Flooding Region

66	23
65	22
64	21
63	20

Flooding Region

62	19
61	18

Inundation Feedback

Inundation in partnership with

Selected Inundation

Water Depth: 67 ft
Stage: 24.0 ft

Moose Locations

Water Depth: 0 ft
Latitude: 35.3396 N
Longitude: -77.8784 W

Flood Categories (in feet)

Water Depth	Flood Stage	Action Stage	Reserve Flood Stage
24	24	24	24
23	23	23	23
22	22	22	22
21	21	21	21
20	20	20	20
19	19	19	19
18	18	18	18
17	17	17	17
16	16	16	16
15	15	15	15
14	14	14	14
13	13	13	13
12	12	12	12
11	11	11	11
10	10	10	10
9	9	9	9
8	8	8	8
7	7	7	7
6	6	6	6
5	5	5	5
4	4	4	4
3	3	3	3
2	2	2	2
1	1	1	1

Historical Crests

- 28.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 09/23/1945
- 26.21 ft on 08/21/1996
- 25.19 ft on 10/29/1994



NOAA-FEMA Partnership

- **Both agencies convey flood risk**
 - FEMA for regulatory/legal insurance purposes to reduce damage costs
 - NOAA/NWS for protection of life and property
- **Opportunity for enhanced relationship between NFIP flood zones and NWS flood categories/libraries**
- **Decision-makers need additional/integrated inundation maps/information to most effectively mitigate the impacts of floods**
- **Integrate NOAA/NWS inundation library guidelines with FEMA/FIS guidelines**





Partnering to Reduce Costs and Improve Efficiency



Costs go down



Efficiency goes up

- Additional cost to complete one inundation map library as part of the FIS: **5 – 10 K (~3% cost increase)**
- Cost doubles and time increases if inundation map library is created after FIS is completed: **10 – 20 K**
- Developing inundation libraries in conjunction with FIS yields significant user benefit for small incremental cost.



Enhancing the Communication of Flood Risk

- **For NWS river forecast locations.....**
 - Enhance the communication of flood risk by a developing a library of inundation maps and linking them with observed/forecast river stages
 - Each library includes NWS flood severity categories and regulatory FEMA flood frequency events





National Weather Service

Victor Hom

***National Flood Inundation Mapping
Service Leader***

NOAA's National Weather Service

***FEMA National Flood Conference
Chicago, Illinois
May 9, 2008***



National Weather Service

Presentation Focus

- Making Informed Decisions
- Water Forecasting
- New AHPS Product



National Weather Service

Advanced Hydrologic Prediction Service (AHPS)

Water Predictions
for
Life Decisions

Reference: <http://www.weather.gov/ahps>



National Weather Service

Advanced Hydrologic Prediction Service

National Oceanic and Atmospheric Administration's
National Weather Service

Home > Water

National Hydrologic Assessment Is Now Available: Above Average Flood Risk in Nation's Midsection, Northeast and Parts of the West

3810 Total Gauges
79 Locations in Flood

- 333 Gauges: Observations older than 24 hours
- 15 Gauges: Out of Service
- 13 Gauges: Major Flooding
- 20 Gauges: Moderate Flooding
- 46 Gauges: Minor Flooding
- 71 Gauges: Near Flood Stage
- 3312 Gauges: No Flooding

Last map update: Fri, May, 02, 2008 at 09:32:50 am EDT.

Hydrologic Resources

- Text Products
- River Forecast Centers
- National AHPS
- Partners
- AHPS Feedback
- AHPS RSS
- Inundation Mapping Locations

Additional Resources

- National Significant River Flood Outlook
- U.S. Geological Survey Streamflow Information
- Snow Information

... numerous flooding

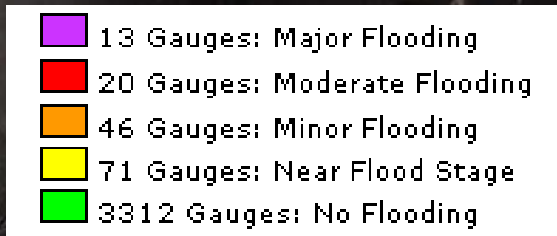
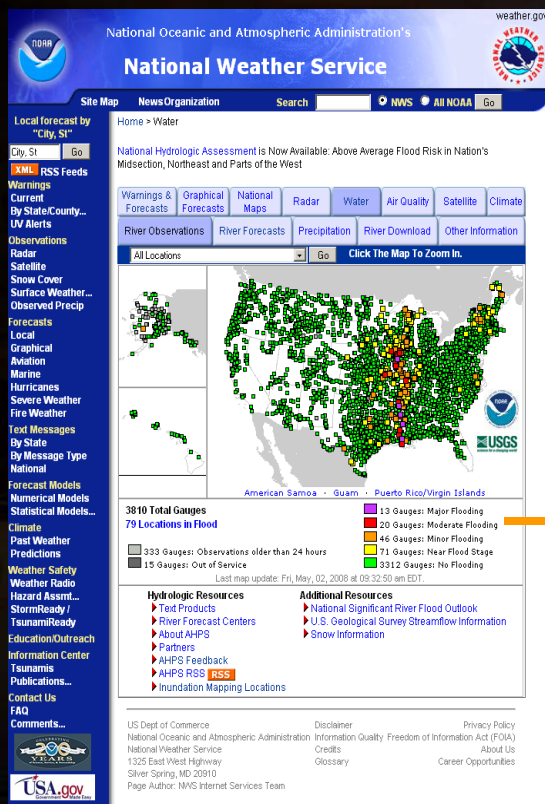
Water Predictions
for
Life Decisions

Reference: <http://www.weather.gov/ahps>



National Weather Service

Advanced Hydrologic Prediction Service



... flooding at nearly 150 forecast locations

Reference: <http://www.weather.gov/ahps>

Water Predictions for Life Decisions



National Weather Service

Advanced Hydrologic Prediction Service

National Oceanic and Atmospheric Administration's
National Weather Service

Home > Water

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- about AHPS
- Partners
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Additional Resources

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- U.S. Geological Survey Streamflow Information
- Snow Information

Warnings & Forecasts | Graphical Forecasts | National Maps | Radar | **Water** | Air Quality | Satellite | Climate

River Observations | River Forecasts | Precipitation | River Download | Other Information

All Locations [Go] Click The Map To Zoom In.

... to the forecast area

Water Predictions
for
Life Decisions

Reference: <http://www.weather.gov/ahps>



National Weather Service

“Water Predictions for Life Decisions”

The screenshot displays the National Weather Service Advanced Hydrologic Prediction Service interface. At the top, there are navigation buttons: 'River Observations' (circled in orange), 'River Forecasts Within 48 Hours', 'Precipitation', and 'Download'. Below the navigation bar is a map of the central United States showing river networks and gauge locations. A 'River Menu' is visible, listing various rivers such as the Illinois River, Des Plaines River, and Mississippi River. The page also includes a 'Resources' section with links to 'Hydrologic Resources' and 'Additional Resources'.

Review of the different sections.

Water Predictions
for
Life Decisions

Reference: <http://www.crh.noaa.gov/ahps2/index.php?wfo=lot>



National Weather Service

“Water Predictions for Life Decisions”

River Observations River Forecasts Within 48 Hours Precipitation Download

Topo Gauges Counties States Major Rivers Other Rivers Highways Cities
 HSA Names Names Names

46 Total Gauges 7 Locations in Flood **RSS**

Water Predictions
for
Life Decisions

Reference: <http://www.crh.noaa.gov/ahps2/index.php?wfo=lot>



National Weather Service

“Water Predictions for Life Decisions”

River Observations River Forecasts Within 48 Hours Precipitation Download

Topo Gauges Counties States Major Rivers Other Rivers Highways Cities
 HSA Names Names Names

46 Total Gauges 7 Locations in Flood [RSS](#)

Major Flooding
Moderate Flooding
Minor Flooding
Near Flood Stage
No Flooding

Water Predictions
for
Life Decisions

Reference: <http://www.crh.noaa.gov/ahps2/index.php?wfo=lot>



National Weather Service

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“Water Predictions for Life Decisions”

River Observations
River Forecasts Within 48 Hours
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Topo Gauges Counties States Major Rivers Other Rivers Highways Cities
 HSA Names Names Names

46 Total Gauges 7 Locations in Flood RSS

River Menus

Illinois River	Little Calumet River	Kishwaukee River
Des Plaines River	Thom Creek	Vermilion River
Kankakee River	Pecatonica River	Fox River
Iroquois River	Rock River	

Resources

<p>Hydrologic Resources</p> <ul style="list-style-type: none"> ▶ Text Products ▶ Past Precipitation ▶ Forecast Precipitation ▶ River Forecast Centers ▶ Northern IL/ NW IN Precipitation last 24 hrs. ▶ Precipitation Frequency Information ▶ Inundation Mapping Locations 	<p>Additional Resources</p> <ul style="list-style-type: none"> ▶ Area Hydrographs ▶ U.S. Drought Monitor ▶ Snow Information ▶ Flood Safety
--	---

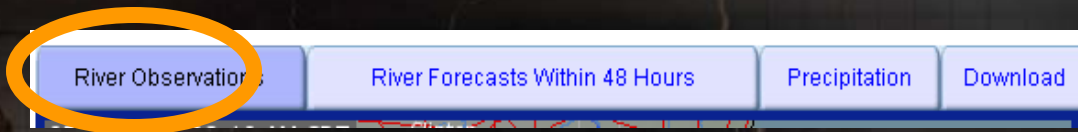
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National Weather Service

AHPS River Observations/Forecasts



... three ways to the forecast

Water Predictions
for
Life Decisions

Reference: <http://www.crh.noaa.gov/ahps2/index.php?wfo=lot>



National Weather Service

AHPS River Observations/Forecasts

The screenshot shows the AHPS website interface. At the top, there's a search bar and navigation tabs: 'River Observations', 'River Forecasts Within 48 Hours', 'Precipitation', and 'Download'. Below the tabs is a map of the United States with various river basins highlighted in different colors. To the right of the map is a 'River Menu' section with dropdown lists for various rivers. An orange arrow points from the 'River Menu' section to the 'River Forecasts Within 48 Hours' tab.

The close-up view shows the 'River Menu' section of the AHPS website. It consists of a grid of dropdown menus for selecting a river basin. The rivers listed are: Illinois River, Des Plaines River, Kankakee River, Iroquois River, Little Calumet River, Thorn Creek, Pecatonica River, Rock River, Kishwaukee River, Vermilion River, and Fox River. A red arrow points to the 'Rock River' dropdown menu.

... three ways to the forecast

Water Predictions
for
Life Decisions

Reference: <http://www.crh.noaa.gov/ahps2/index.php?wfo=lot>



National Weather Service

AHPS River Observations/Forecasts

Navigation tabs: River Observations | River Forecasts Within 48 Hours | Precipitation | Download

River Menu

Illinois River	Little Calumet River	Kishwaukee River
Des Plaines River	Thom Creek	Vermilion River
Kankakee River	Pecatonica River	Fox River
Iroquois River	Rock River	

Resources

Hydrologic Resources	Additional Resources
<ul style="list-style-type: none"> ▶ Text Products ▶ Past Precipitation ▶ Forecast Precipitation ▶ River Forecast Centers ▶ Northern U.S. IN Precipitation last 24 hrs. ▶ Precipitation Frequency Information ▶ Inundation Mapping Locations 	<ul style="list-style-type: none"> ▶ Area Hydrographs ▶ U.S. Drought Monitor ▶ Snow Information ▶ Flood Safety

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Water Predictions for Life Decisions

Reference: <http://www.crh.noaa.gov/ahps2/index.php?wfo=lot>



National Weather Service

AHPS River Observations/Forecasts

The screenshot shows the AHPS interface with a map of the central United States. A red arrow points to the 'River Observations' tab. Below the map is a 'River Menu' with dropdown lists for various rivers including Illinois, Des Plaines, Kankakee, Iroquois, Little Calumet, Thom Creek, Pecatonica, and Rock. There are also 'Resources' and 'Additional Resources' sections with links to hydrologic data and flood safety information.

This close-up shows the navigation tabs: 'River Observations', 'River Forecasts Within 48 Hours', 'Precipitation', and 'Download'. Below is the 'River Menu' with a grid of dropdown menus for river selection. A red arrow points to the 'River Observations' tab, and another red arrow points to the 'River Menu' dropdown.

River Menu		
Illinois River	Little Calumet River	Kishwaukee River
Des Plaines River	Thom Creek	Vermilion River
Kankakee River	Pecatonica River	Fox River
Iroquois River	Rock River	

Below the menu is a 'Resources' section with two columns: 'Hydrologic Resources' and 'Additional Resources'. A red arrow points to the 'Hydrologic Resources' list.

... three ways to the forecast

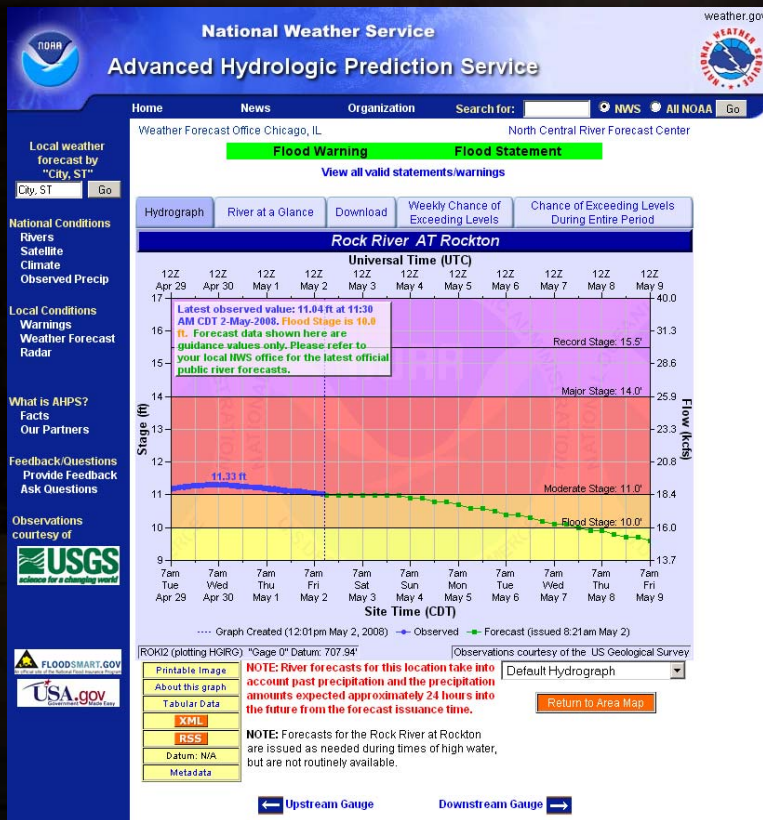
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National Weather Service

AHPS Forecast Page



- Forecast Hydrograph
- Flood Categories
- Probabilistic Forecasts
- Data Downloads in XML, RSS
- Pertinent Information

Water Predictions
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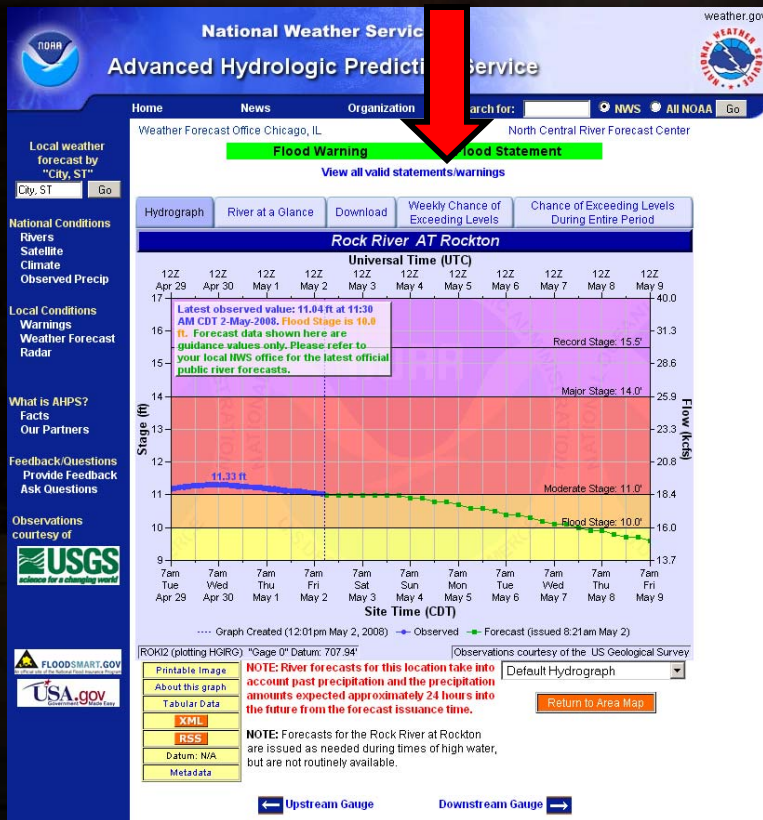
Reference:

<http://www.crh.noaa.gov/ahps2/hydrograph.php?wfo=lot&gage=roki2>



National Weather Service

AHPS Forecast Page and Important Statement



Water Predictions
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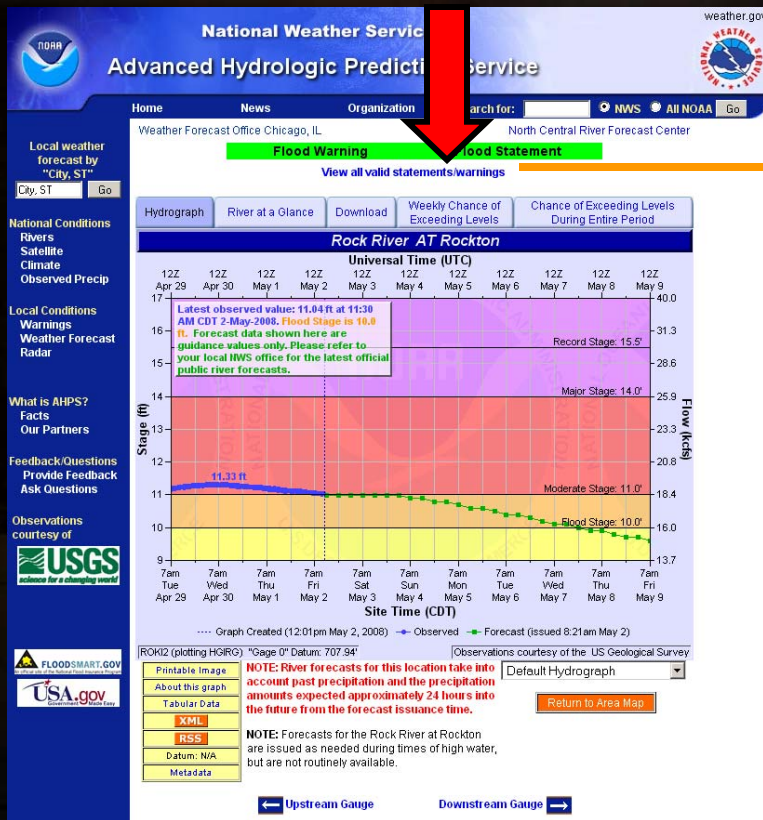
Reference:

<http://www.crh.noaa.gov/ahps2/hydrograph.php?wfo=lot&gage=roki2>



National Weather Service

AHPS Link to Flood Statement



Flood Statement

WGUS83 KLOT 021450
 FLSLOT
 FLOOD STATEMENT
 NATIONAL WEATHER SERVICE CHICAGO/ROMEEOVILLE IL
 950 AM CDT FRI MAY 02 2008

THE FLOOD WARNING CONTINUES FOR THE FOLLOWING RIVERS IN ILLINOIS...

- ROCK RIVER AT ROCKTON AFFECTING WINNEBAGO COUNTY
- ROCK RIVER AT LATHAM PARK AFFECTING WINNEBAGO COUNTY
- PECATONICA RIVER NEAR SHIRLAND AFFECTING WINNEBAGO COUNTY

.SHOWERS AND THUNDERSTORMS MOVING ACROSS SOUTHERN WISCONSIN AND NORTHERN ILLINOIS TODAY MAY CAUSE MINOR ADDITIONAL RISES ON AREA RIVERS THROUGH THE WEEKEND.

SAFETY MESSAGE...IF YOU ENCOUNTER A FLOODED ROADWAY...TURN AROUND AND FIND AN ALTERNATE ROUTE.

ILC201-030250-
 /O.EXT.KLOT.FL.W.0055.000000T0000Z-080508T0600Z/
 /ROK12.2.RS.080328T0125Z.080415T2030Z.080508T0000Z.NO/
 950 AM CDT FRI MAY 02 2008

THE FLOOD WARNING CONTINUES FOR THE ROCK RIVER AT ROCKTON.

- * UNTIL LATE WEDNESDAY NIGHT...OR UNTIL THE WARNING IS CANCELLED.
- * AT 830 AM FRIDAY THE STAGE WAS 11.0 FEET.
- * MODERATE FLOODING IS OCCURRING AND MODERATE FLOODING IS FORECAST.
- * FLOOD STAGE IS 10.0 FEET.
- * FORECAST...THE RIVER WILL REMAIN NEARLY STEADY THE NEXT COUPLE OF DAYS BEFORE IT BEGINS TO SLOWLY FALL AND GO BELOW FLOOD STAGE BY WEDNESDAY EVENING.
- * IMPACT...AT 10.5 FEET...WATER BEGINS TO FLOW OVER PORTIONS OF EDGEMERE TERRACE NEAR ROSCOE.

\$\$

Water Predictions
 for
 Life Decisions

Reference:

<http://www.crh.noaa.gov/ahps2/hydrograph.php?wfo=lot&gage=roki2>



National Weather Service

AHPS Forecast Page

#1

National Weather Service
Advanced Hydrologic Prediction Service

Home News Organization Search for: All NOAA Go

Local weather forecast by "City, ST" City, ST Go

National Conditions Rivers Satellite Climate Observed Precipitation

Local Conditions Warnings Weather Forecast Radar

What is AHPS? Facts Our Partners

Feedback/Questions Provide Feedback Ask Questions

Observations courtesy of USGS

FLOODSMART.GOV

USA.GOV

Rock River AT Rockton

Universal Time (UTC)

12Z Apr 29 12Z Apr 30 12Z May 1 12Z May 2 12Z May 3 12Z May 4 12Z May 5 12Z May 6 12Z May 7 12Z May 8 12Z May 9

Latest observed value: 11.04 ft at 11:30 AM CDT 2-May-2008. Flood Stage is 10.0 ft. Forecast data shown here are guidance values only. Please refer to your local NWS office for the latest official public river forecasts.

Record Stage: 15.5' Major Stage: 14.0' Moderate Stage: 11.0' Flood Stage: 10.0'

Stage (ft)

Site Time (CDT)

Graph Created (12:01pm May 2, 2008) Observed Forecast (issued 8:21am May 2, 2008)

ROK12 (plotting GAGE) "Gage 0" Datum: 707.94'

Printable Image About this graph Tabular Data XML RSS Datum: N/A Metadata

Forecast

Flood Categories (in feet)

- Major Flood Stage: 14
- Moderate Flood Stage: 11
- Flood Stage: 10
- Action Stage: 7

Historical Crests

- 15.54 ft on 03/25/1975
- 14.08 ft on 03/22/1904
- 14.08 ft on 04/04/1958
- 14.06 ft on 03/30/1916
- 13.92 ft on 03/26/1948

Show More Historical Crests

Flood Impacts & Photos

- 14.0 Prairie Hill Road 3 miles north is inundated.
- 13.5 Old River Road west of Roscoe Bridge is inundated.
- 12.0 Water begins to flow over low lying roads along the river in Roscoe.
- 10.5 Water begins to flow over portions of Edgemere Terrace near Roscoe.
- 10.0 Water overflows into low lying areas near the river in Rockton.
- 8.5 Flooding begins to some backyards of homes near the river in Machesney Park.
- 7.0 flooding in Riverside Park near Roscoe

Photos

- Looking upstream from right bank. Stage 2.00 ft.
- Looking downstream from right bank. Stage 2.00 ft.

About This Location

Other Data Sources:

- Corps of Engineers (COE) Info for Rockton
- U.S. Geological Survey (USGS) Data and Site Info for Rockton

Additional Information

How low could the river get?

Resources

Hydrologic Resources

- Text Products
- Past Precipitation
- Forecast Precipitation
- River Forecast Centers
- Northern IL/NW IN Precipitation last 24 hrs.
- Precipitation Frequency Information
- Inundation Mapping Locations

Additional Resources

- Area Hydrographs
- U.S. Drought Monitor
- Snow Information
- Flood Safety

Collaborative Agencies

The National Weather Service prepares its forecasts and other services in collaboration with agencies like the US Geological Survey, US Bureau of Reclamation, US Army Corps of Engineers, Natural Resource Conservation Service, National Park Service, ALERT Users Group, Bureau of Indian Affairs, and many state and local emergency managers across the country. For details, please click here.

NWS Information

National Weather Service
Chicago Weather Forecast Office
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(815) 834-1435
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Water Predictions
for
Life Decisions

Reference:

<http://www.crh.noaa.gov/ahps2/hydrograph.php?wfo=lot&gage=roki2>

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National Weather Service

AHPS Forecast Page

#1

Forecast

#2

History

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Life Decisions

Reference:

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AHPS Forecast Page

#1

National Weather Service
Advanced Hydrologic Prediction Service

Home News Organization Search for: All NOAA Go

Weather Forecast Office Chicago, IL North Central River Forecast Center

Flood Warning **Flood Statement**

View all valid statements/warnings

Hydrograph River at a Glance Download Weekly Chance of Exceeding Levels Chance of Exceeding Levels During Entire Period

Rock River AT Rockton

Universal Time (UTC)

12Z Apr 29 12Z Apr 30 12Z May 1 12Z May 2 12Z May 3 12Z May 4 12Z May 5 12Z May 6 12Z May 7 12Z May 8 12Z May 9

Latest observed value: 11.04 ft at 11:30 AM CDT 2-May-2008. **Flood Stage is 10.0 ft.** Forecast data shown here are guidance values only. Please refer to your local NWS office for the latest official public river forecasts.

Record Stage: 15.5' Major Stage: 14.0' Moderate Stage: 11.0' Flood Stage: 10.0'

Stage (ft)

Flow (cfs)

Site Time (CDT)

Graph Created (12:01pm May 2, 2008) Observed Forecast (issued 8:21am May 2, 2008)

ROK12 (plotting GAGE) "Gage 0" Datum: 707.94' Observations courtesy of the U.S. Geological Survey

Printable Image About this graph Tabular Data XML RSS Datum: N/A Metadata

Forecast

#2

History

Flood Categories (in feet)
 Major Flood Stage: 14
 Moderate Flood Stage: 11
 Flood Stage: 10
 Action Stage: 7

Historical Crests
 (1) 15.54 ft on 03/25/1975
 (2) 14.08 ft on 03/22/1904
 (3) 14.08 ft on 04/04/1959
 (4) 14.06 ft on 03/30/1916
 (5) 13.82 ft on 03/20/1946
 (6) 13.82 ft on 03/20/1946
 (7) 13.82 ft on 03/20/1946
 (8) 13.82 ft on 03/20/1946
 (9) 13.82 ft on 03/20/1946
 (10) 13.82 ft on 03/20/1946
 (11) 13.82 ft on 03/20/1946
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 (97) 13.82 ft on 03/20/1946
 (98) 13.82 ft on 03/20/1946
 (99) 13.82 ft on 03/20/1946
 (100) 13.82 ft on 03/20/1946

#3

Map

Rock River at Rockton, IL

Flood Impacts & Photos

14.0 Prairie Hill Road 3 miles north is inundated.
 13.5 Old River Road west of Roscoe Bridge is inundated.
 12.0 Water begins to flow over low lying roads along the river in Roscoe.
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Photos
 (1) Looking upstream from right bank. Stage 2.00 ft.
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Other Data Sources:
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Additional Information
 How low could the river get?

Resources

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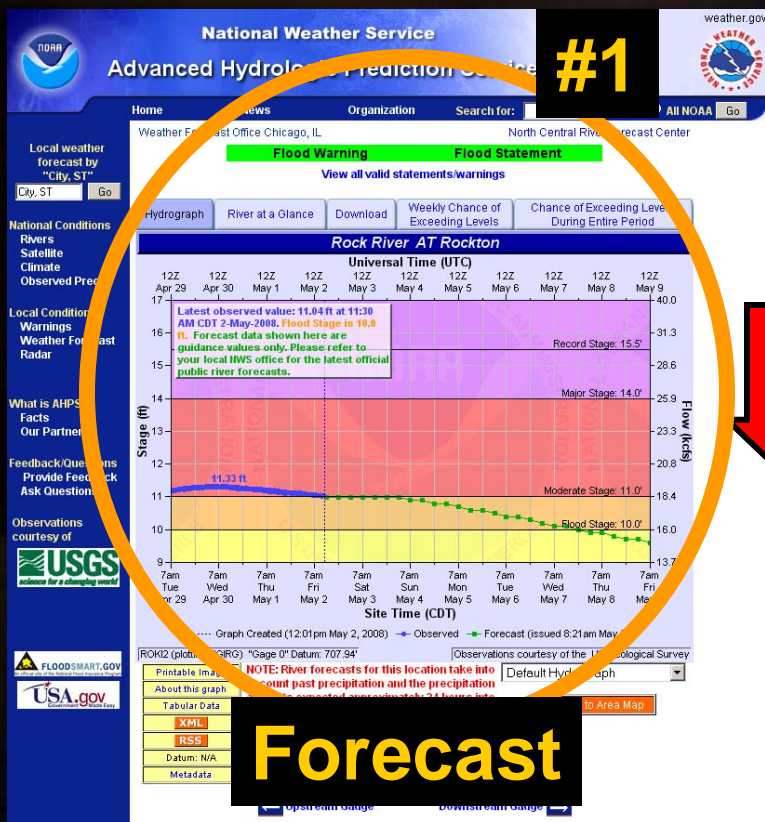
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National Weather Service

AHPS Forecast Page



#2

History

#3

Map

#4

Impacts

Flood Categories (in feet)

- Major Flood Stage: 14
- Moderate Flood Stage: 11
- Flood Stage: 10
- Action Stage: 7

Historical Crests

- (1) 15.54 ft on 03/25/1975
- (2) 14.08 ft on 03/22/1904
- (3) 14.08 ft on 04/04/1959
- (4) 14.06 ft on 03/30/1916
- (5) 13.82 ft on 03/20/1946

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Resources

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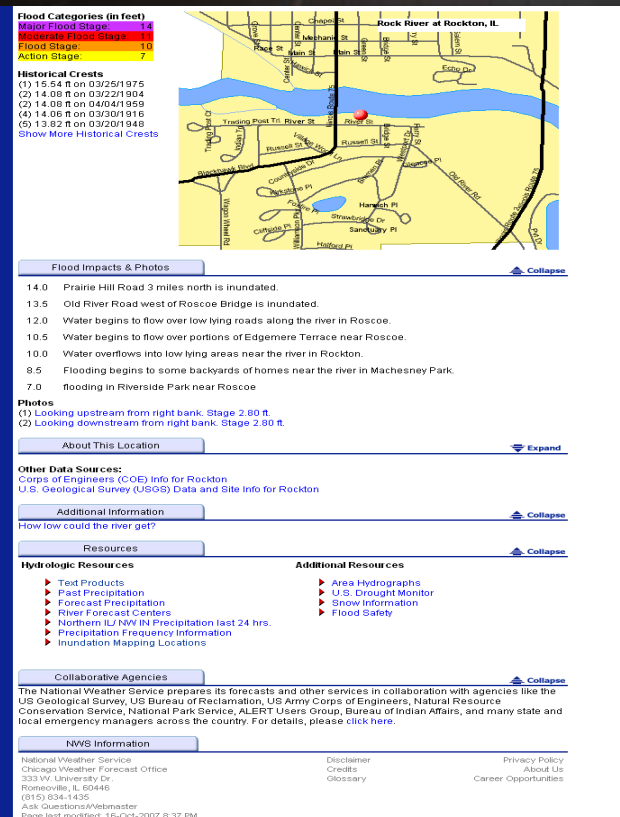
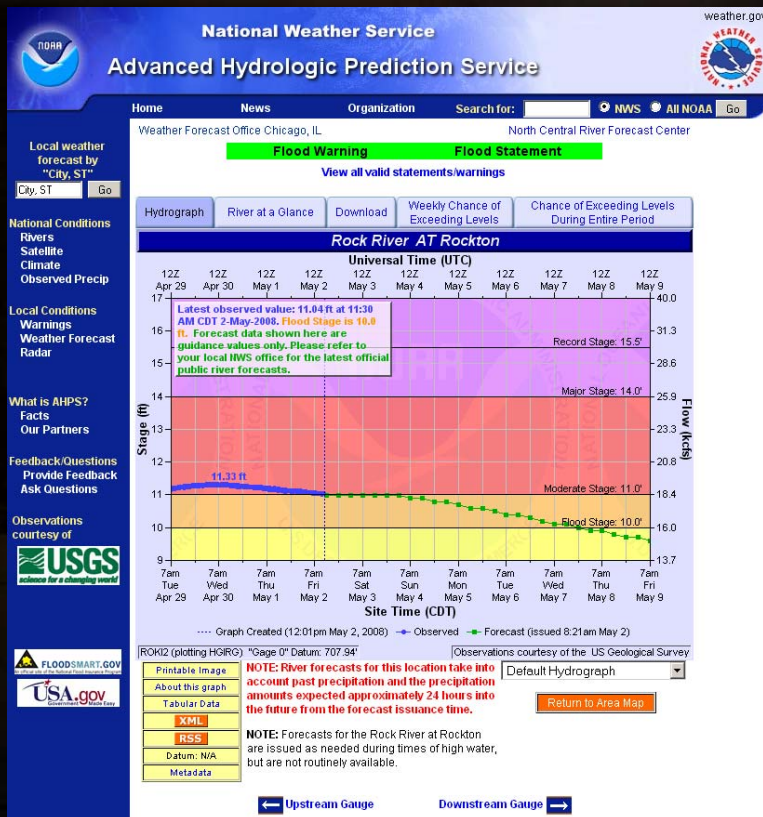
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National Weather Service

Now the \$20,000 Question



Water Predictions
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Life Decisions

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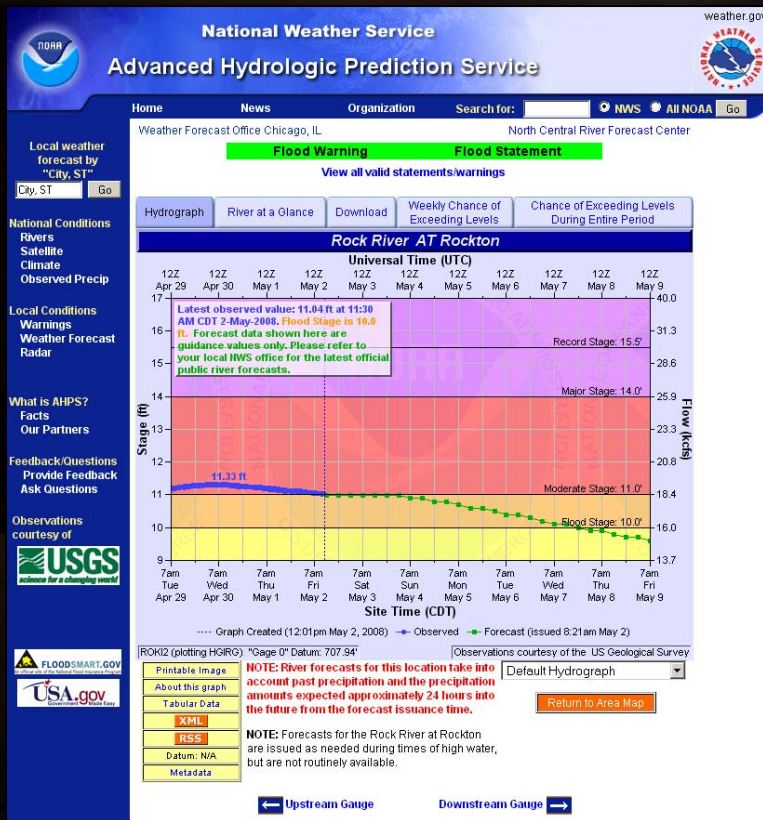
<http://www.crh.noaa.gov/ahps2/hydrograph.php?wfo=lot&gage=roki2>



National Weather Service

How Does this Forecast Affect My Community and Me?

Now the \$20,000 Question



Flood Categories (in feet)

- Major Flood Stage: 14'
- Moderate Flood Stage: 11'
- Flood Stage: 10'
- Action Stage: 7'

Historical Crests

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- 14.06 ft on 03/30/1919
- 13.82 ft on 03/26/1914

Show More Historical Crests

Flood Impacts & Photos

- 14.0 Prairie Hill Road 3 miles
- 13.5 Old River Road west of
- 12.0 Water begins to flow over
- 10.5 Water begins to flow over
- 10.0 Water overflows into low
- 8.5 Flooding begins to some
- 7.0 flooding in Riverside Park

Photos

- Looking upstream from right bank. Stage 2.80 ft.
- Looking downstream from right bank. Stage 2.80 ft.

Other Data Sources:

- Corps of Engineers (COE) Info for Rockton
- U.S. Geological Survey (USGS) Data and Site Info for Rockton

Additional Information

How low could the river get?

Resources

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National Weather Service

Look at the Inundation Maps of the Water Surface and Depths for answers.



Flood Categories (in feet)
 Major Flood Stage: 14
 Moderate Flood Stage: 13
 Flood Stage: 10
 Action Stage: 7

Historical Crests
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 (2) 14.08 ft on 03/22/1904
 (3) 14.08 ft on 04/04/1958
 (4) 14.06 ft on 03/30/1916
 (5) 13.92 ft on 03/26/1948
 Show More Historical Crests

Flood Impact

14.0	Prairie Highway 3 rd
13.5	Old River
12.0	Water
10.5	Water
10.0	Water
8.5	Flood
7.0	Flood

Other Data Sources:
 Corps of Engineers (COE) Info for Rockton
 U.S. Geological Survey (USGS) Data and Site Info for Rockton

Additional Information
 How low could the river get?

Resources

Hydrologic Resources

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- Flood Safety

Collaborative Agencies

The National Weather Service prepares its forecasts and other services in collaboration with agencies like the US Geological Survey, US Bureau of Reclamation, US Army Corps of Engineers, Natural Resource Conservation Service, National Park Service, ALERT Users Group, Bureau of Indian Affairs, and many state and local emergency managers across the country. For details, please [click here](#).

NWS Information

National Weather Service
 Chicago Weather Forecast Office
 333 W. University Dr.
 Romeoville, IL 60446
 (815) 834-1435
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Water Predictions
for
Life Decisions

Reference:

<http://www.crh.noaa.gov/ahps2/hydrograph.php?wfo=lot&gage=roki2>



National Weather Service

That's Great! Show us?

Look at the Inundation Maps of the Water Surface and Depths for answers.



Flood Categories (in feet)

- Major Flood Stage: 14
- Minor Flood Stage: 13
- Flood Stage: 10
- Action Stage: 7

Historical Crests

- 15.54 ft on 03/25/1975
- 14.08 ft on 03/22/1904
- 14.08 ft on 04/04/1958
- 14.06 ft on 03/30/1916
- 13.92 ft on 03/26/1948

Show More Historical Crests

Flood Impact

- 14.0 Prairie Highway 3 mi
- 13.5 Old River
- 12.0 Water
- 10.5 Water
- 10.0 Water
- 8.5 Flood
- 7.0 Flood

Other Data Sources:

- Corps of Engineers (COE) Info for Rockton
- U.S. Geological Survey (USGS) Data and Site Info for Rockton

Additional Information

How low could the river get?

Resources

Hydrologic Resources

- Tide Products
- Past Precipitation
- Forecast Precipitation
- River Forecast Centers
- Northern IL/NW IN Precipitation last 24 hrs.
- Precipitation Frequency Information
- Inundation Mapping Locations

Additional Resources

- Area Hydrographs
- U.S. Drought Monitor
- Snow Information
- Flood Safety

Collaborative Agencies

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Reference:

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National Weather Service

If NOAA has an inundation map library, that's easy to do!



Flood Categories (in feet)
 Major Flood Stage: 14
 Moderate Flood Stage: 13
 Flood Stage: 10
 Action Stage: 7

Historical Crests
 (1) 15.54 ft on 03/25/1975
 (2) 14.08 ft on 03/22/1904
 (3) 14.08 ft on 04/04/1958
 (4) 14.06 ft on 03/30/1916
 (5) 13.92 ft on 03/26/1948
 Show More Historical Crests

Flood Impact

14.0	Prairie Highway 3 rd
13.5	Old River
12.0	Water
10.5	Water
10.0	Water
8.5	Flood
7.0	Flood

Other Data Sources:
 Corps of Engineers (COE) Info for Rockton
 U.S. Geological Survey (USGS) Data and Site Info for Rockton

Additional Information
 How low could the river get?

Resources

Hydrologic Resources

- Tide Products
- Past Precipitation
- Forecast Precipitation
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- Northern IL/NW IN Precipitation last 24 hrs.
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- U.S. Drought Monitor
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Reference:

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National Weather Service

Please show me!

If NOAA has an inundation map library, that's easy to do!



Flood Categories (in feet)

- Major Flood Stage: 7.0
- Minor Flood Stage: 6.5
- Flood Stage: 6.0
- Action Stage: 5.5

Historical Crests

- 15.54 ft on 03/25/1975
- 14.08 ft on 03/22/1904
- 14.08 ft on 04/04/1958
- 14.06 ft on 03/30/1916
- 13.92 ft on 03/26/1948

Show More Historical Crests

Flood Impact

- 14.0 Prairie Highway 3 mi
- 13.5 Old River
- 12.0 Water
- 10.5 Water
- 10.0 Water
- 8.5 Flood
- 7.0 Flood

Other Data Sources:

- Corps of Engineers (COE) Info for Rockton
- U.S. Geological Survey (USGS) Data and Site Info for Rockton

Additional Information

How low could the river get?

Resources

Hydrologic Resources

- Tide Products
- Past Precipitation
- Forecast Precipitation
- River Forecast Centers
- Northern IL/NW IN Precipitation last 24 hrs.
- Precipitation Frequency Information
- Inundation Mapping Locations

Additional Resources

- Area Hydrographs
- U.S. Drought Monitor
- Snow Information
- Flood Safety

Collaborative Agencies

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NWS Information

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Reference:

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National Weather Service

Available Inundation Map Library

DEMO

Selected Inundation
NAVD88: 60 ft
Stage: 17.0 ft

Mouse Location*
Water Depth: Off
Latitude: 35.3657 N
Longitude: -77.9528 W
* All mouse location values are approximate only.

Flood Categories (in feet)
Major Flood Stage: 24
Minor Flood Stage: 24
Flood Stage: 18
Action Stage: 15
Return Flood Stage: 15

Historical Crests
(1) 26.85 ft on 09/20/1999
(2) 27.30 ft on 10/05/1929
(3) 26.70 ft on 09/23/1945
(4) 26.21 ft on 09/12/1996
(5) 26.10 ft on 1/03/1964
Show More Historical Crests

Impacts

- 31.0 WATER COVERS THE FLOOR OF THE SR 1915 BRIDGE
- 26.0 WATER COVERS PORTIONS OF THE VILLAGE OF SEVEN SPRINGS AT A DEPTH OF FOUR TO SIX FEET
- 25.0 WELLS AND SEPTIC TANKS BEGIN TO FLOOD
- 23.0 STROBE LIGHTS AT THE END OF THE RUNWAY AT SEYMOUR JOHNSON AIR FORCE BASE ARE FLOODED
- 22.5 EVACUATION OF HOMES AT THE MAR-MAC AREA AND POSSIBLY BUCHHORN ISLAND SUBDIVISION MAY BE NECESSARY
- 22.0 THE MUNITIONS AREA AT SEYMOUR JOHNSON AIR FORCE BASE BEGINS TO FLOOD
- 21.0 RIVERVIEW TRAILER PARK HOMES AND STEVENS MILL ROAD BEGIN TO FLOOD
- 20.0 ARRINGTON BRIDGE ROAD AND ROADS AROUND SEYMOUR JOHNSON AIR FORCE BASE FLOOD
- 19.5 FERRY BRIDGE ROAD FLOODS
- 18.0 WATER OVERFLOWS BANKS NEAR THE SR1915 BRIDGE AND UPSTREAM OF THE US117 BRIDGE

Other Data Sources:
U.S. Geological Survey (USGS) Data and Site Info for Goldsboro

Additional Information

Gage Photos

Resources

Hydrologic Resources

- Test Products
- Past Precipitation
- River Forecast Centers
- Tar River Basin Multimedia - Includes Photos and Panoramas
- Tar River Inundation Mapping
- Cape Fear River Basin Multimedia
- Neuse River Basin Multimedia
- Rosario River Basin Multimedia
- Pee Dee River Basin Multimedia
- Inundation Mapping Locations

Additional Resources

- Area Hydrographs
- Southeast River Forecast Center
- Snow Information

Collaborative Agencies

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NWS Information

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Reference:

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National Weather Service

Inundation Map Interface – Inundation Level

National Weather Service
Advanced Hydrologic Prediction Service

Home News Organization Search for: NWS All NOAA Go

Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

1372 2720 3200 Feet

Data Type

- Inundation Levels
- Flood Categories
- Current/Forecast

Inundation Levels

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24

Major Flooding Begins

66	23
65	22
64	21
63	20

Moderate Flooding Begins

62	19
61	18

Flooding Begins

60	17
59	16
58	15
57	14
56	13

Inundation Feedback

Inundation in partnership with

Selected Inundation

NAVD88: 60 ft
Stage: 17.0 ft

Mouse Location*

Water Depth: Off
Latitude: 35.3657 N
Longitude: -77.9528 W
* All mouse location values are approximate only.

Flood Categories (in feet)

Major Flood Stage	24
Moderate Flood Stage	20
Flood Stage	18
Action Stage	15
Minor Flood Stage	12

Historical Crests

- 28.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 08/23/1945
- 26.21 ft on 09/12/1996
- 26.10 ft on 10/09/1964

Show More Historical Crests

Water Depth in Feet

25
20
15
10
5
0

Transparency Level 100 Year Flood 500 Year Flood Floodway Data

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Click on the image to zoom in

Return to Area Map

Data Type

- Inundation Levels
- Flood Categories
- Current/Forecast

Water Predictions
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Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Inundation Level

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Home News Organization Search for: NWS All NOAA Go

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To see all current watches and warnings, [click here](#).

1372 2720 3200 Feet

Data Type

- Inundation Levels
- Flood Categories
- Current/Forecast

Inundation Levels

NAVD88	Stage
71	26
70	27
69	26
68	25
67	24
Major Flooding Begins	
66	23
65	22
64	21
63	20
Moderate Flooding Begins	
62	19
61	18
Flooding Begins	
60	17
59	16
58	15
57	14
56	13

Selected Inundation

NAVD88: 60 ft
Stage: 17.0 ft

Flood Categories (in feet)

- Major Flood Stage: 24
- Minor Flood Stage: 20
- Flood Stage: 18
- Action Stage: 15
- Minor Flood Stage: 12

Historical Crests

- 25.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 08/23/1945
- 26.21 ft on 09/12/1996
- 26.10 ft on 10/09/1964

Show More Historical Crests

[Return to Area Map](#)

Data Type

- Inundation Levels
- Flood Categories
- Current/Forecast

Inundation Levels

NAVD88	Stage
60	17

Selected Inundation

NAVD88: 60 ft
Stage: 17.0 ft

Water Predictions
for
Life to Decisions

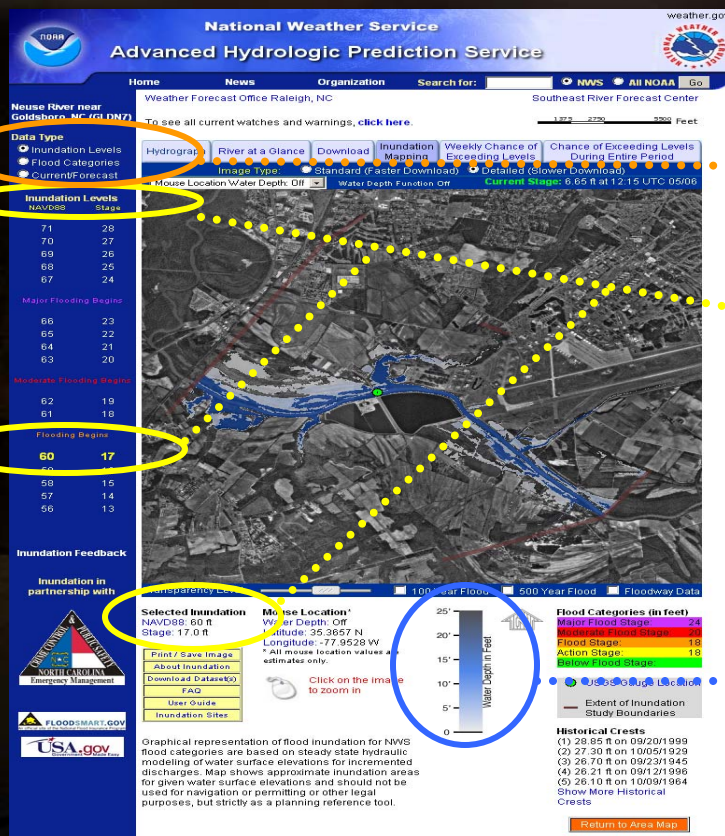
Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Inundation Level



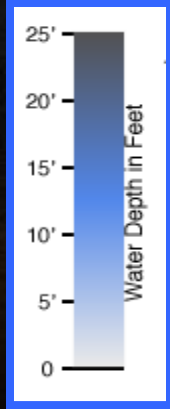
Data Type

- Inundation Levels
- Flood Categories
- Current/Forecast

Inundation Levels

NAVD88	Stage
60	17

Selected Inundation
NAVD88: 60 ft
Stage: 17.0 ft



Water Predictions
for
Life to Decisions

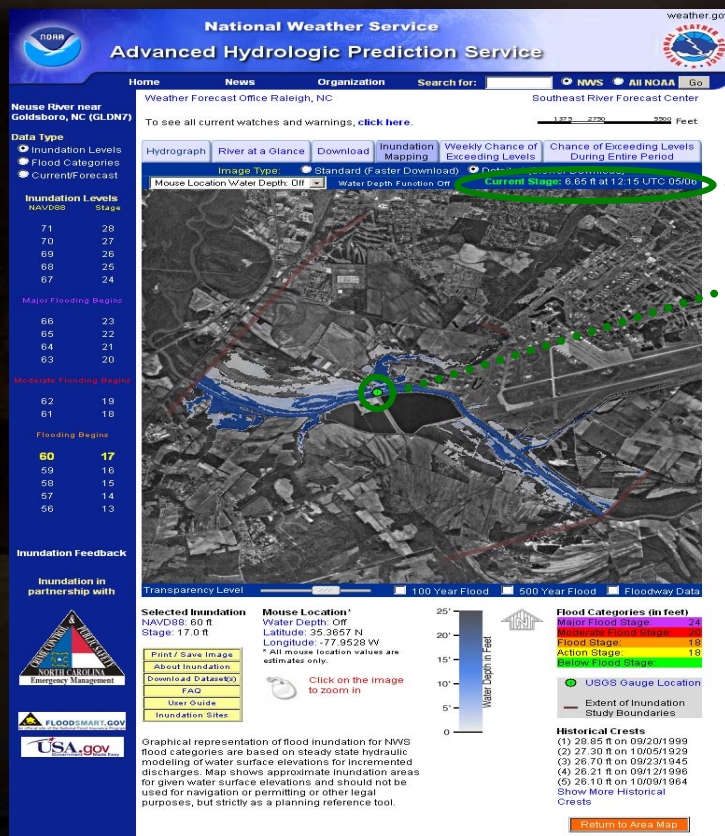
Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Current Stage



Current Stage: 6.65 ft at 12:15 UTC 05/06

Water Predictions
for
Life to Decisions

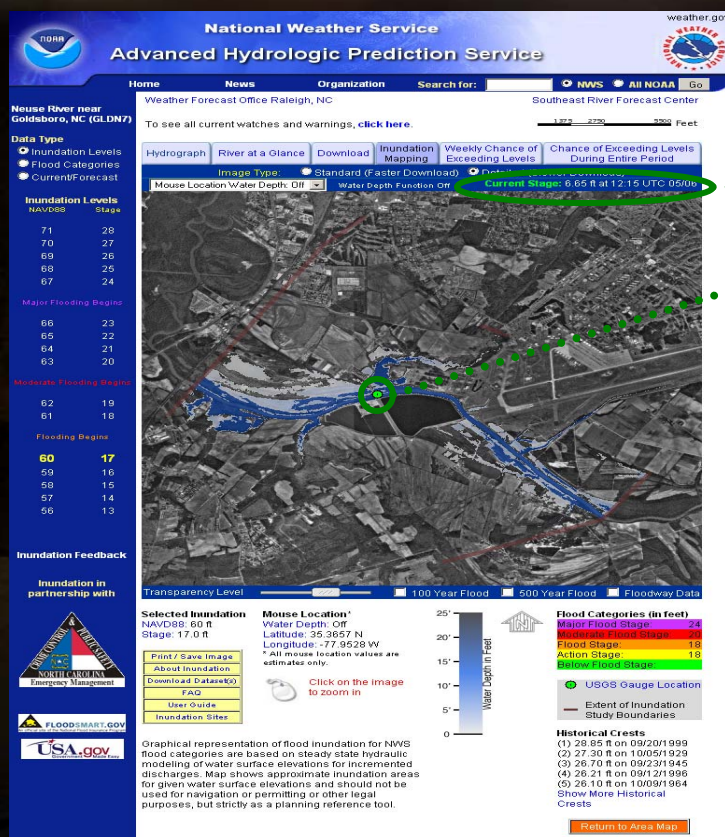
Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Current Stage



Current Stage: 6.65 ft at 12:15 UTC 05/06

There's no troubles, until stage rises above 17.0 feet as depicted on map.



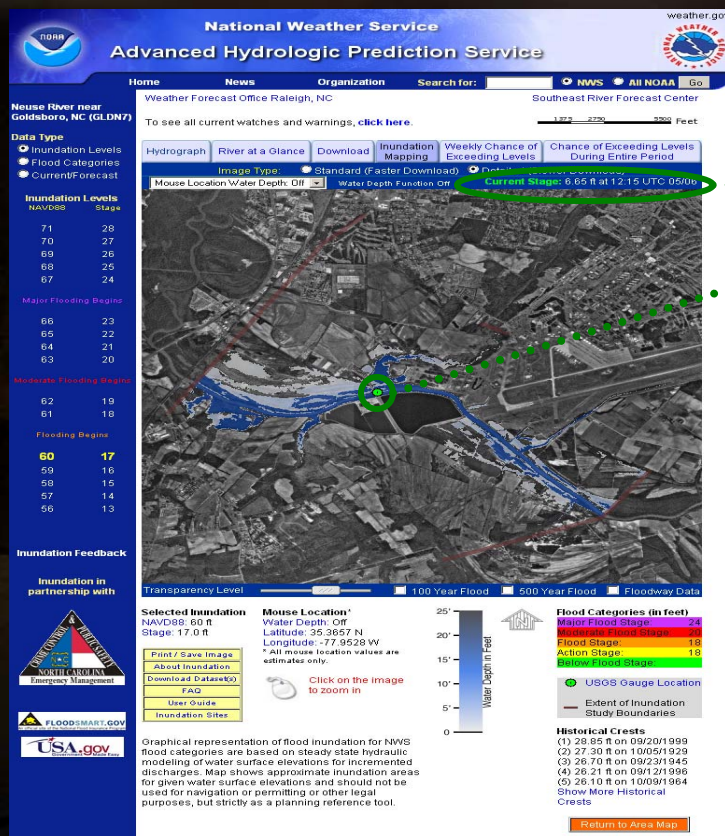
Water Predictions for Life to Decisions

Reference:
<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Current Stage



Current Stage: 6.65 ft at 12:15 UTC 05/06

Next slide will show what a stage of 17 feet means to you.



Water Predictions for Life to Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Zoom Features

National Weather Service
Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

1372 2720 3200 Feet

Hydrograph River at a Glance Download Inundation Mapping Weekly Chance of Exceeding Levels Chance of Exceeding Levels During Entire Period

Image Type: Standard (Faster Download) Detailed (Slower Download)

Mouse Location Water Depth: Off Water Depth Function: On Current Stage: 0.85 ft at 12:15 UTC 05/08

Click Here

Transparency Level 100 Year Flood 500 Year Flood Floodway Data

Selected Inundation
NAVD88: 60 ft
Stage: 17.0 ft

Mouse Location*
Water Depth: Off
Latitude: 35.3657 N
Longitude: -77.9528 W
* All mouse location values are approximate only.

Flood Categories (in feet)
Major Flood Stage: 24
Moderate Flood Stage: 20
Flood Stage: 18
Action Stage: 15
Minor Flood Stage: 12

Historical Crests
(1) 25.85 ft on 09/20/1999
(2) 27.30 ft on 10/05/1929
(3) 26.70 ft on 08/23/1945
(4) 26.21 ft on 09/12/1996
(5) 26.10 ft on 10/09/1964
Show More Historical Crests

Water Predictions for Life to Decisions

Water Predictions for Life to Decisions

Reference:

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Inundation Map Interface – Zoom Features

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1372 2720 3200 Feet

Hydrograph River at a Glance Download Inundation Mapping Weekly Chance of Exceeding Levels During Entire Period Chance of Exceeding Levels

Image Type: Standard (Faster Download) Detailed (Slower Download)

Mouse Location Water Depth: Off Water Depth Function: Off Current Stage: 6.63 ft at 12:15 UTC 05/08

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24

Major Flooding Begins

66	23
65	22
64	21
63	20

Moderate Flooding Begins

62	19
61	18

Flooding Begins

60	17
59	16
58	15
57	14
56	13

Inundation Feedback

Inundation in partnership with

Transparency Level 100 Year Flood 500 Year Flood Floodway Data

Selected Inundation
NAVD88: 60 ft
Stage: 17.0 ft

Mouse Location*
Water Depth: Off
Latitude: 35.3657 N
Longitude: -77.9528 W
* All mouse location values are estimates only.

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Click on the image to zoom in

Flood Categories (in feet)
Major Flood Stage: 24
Moderate Flood Stage: 20
Flood Stage: 18
Action Stage: 15
Below Flood Stage: 10

USGS Gauge Location
Extent of Inundation Study Boundaries

Historical Crests
(1) 28.85 ft on 09/20/1999
(2) 27.30 ft on 10/05/1929
(3) 26.70 ft on 09/23/1945
(4) 26.21 ft on 09/21/1996
(5) 26.10 ft on 10/09/1964
Show More Historical Crests

Return to Area Map

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Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

772 1200 1300 Feet

Hydrograph River at a Glance Download Inundation Mapping Weekly Chance of Exceeding Levels During Entire Period Chance of Exceeding Levels

Image Type: Standard (Faster Download) Detailed (Slower Download)

Mouse Location Water Depth: Off Water Depth Function: Off Current Stage: 6.63 ft at 13:31 UTC 05/08

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24

Major Flooding Begins

66	23
65	22
64	21
63	20

Moderate Flooding Begins

62	19
61	18

Flooding Begins

60	17
59	16
58	15
57	14
56	13

Inundation Feedback

Inundation in partnership with

Transparency Level 100 Year Flood 500 Year Flood Floodway Data

Selected Inundation
NAVD88: 60 ft
Stage: 17.0 ft

Mouse Location*
Water Depth: Off
Latitude: 35.339 N
Longitude: -77.9812 W
* All mouse location values are estimates only.

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Click on the image to zoom in

Flood Categories (in feet)
Major Flood Stage: 24
Moderate Flood Stage: 20
Flood Stage: 18
Action Stage: 15
Below Flood Stage: 10

USGS Gauge Location
Extent of Inundation Study Boundaries

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(1) 28.85 ft on 09/20/1999
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(3) 26.70 ft on 09/23/1945
(4) 26.21 ft on 09/21/1996
(5) 26.10 ft on 10/09/1964
Show More Historical Crests

Graphical representation of flood inundation for NWS flood categories are based on steady state hydraulic modeling of water surface elevations for incremented discharges. Map shows approximate inundation areas for given water surface elevations and should not be used for navigation or permitting or other legal purposes, but strictly as a planning reference tool.

Water Predictions
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Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Zoom Features

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Home News Organization Search for: [] NWS All NOAA Go

Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here.](#)

75 75 150 Feet

Data Type

- Inundation Levels
- Flood Categories
- Current Forecast

Inundation Levels

NAVD83	Stage
71	28
70	27
69	26
68	25
67	24
Major Flooding Begins	
66	23
65	22
64	21
63	20
Moderate Flooding Begins	
62	19
61	18
Flooding Begins	
60	17
59	16
58	15
57	14
56	13

Inundation Feedback

Inundation in partnership with

Selected Inundation
NAVD83: 60 ft
Stage: 17.0 ft

Mouse Location*
Water Depth: Off
Latitude: 35.339 N
Longitude: -77.9812 W
*All mouse location values are estimates only.

Flood Categories (in feet)

Water Flood Stage	Major Flood Stage	Flood Stage	Action Stage	Below Flood Stage
28	24	18	18	18

Historical Crests

- 28.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 09/23/1945
- 26.21 ft on 09/12/1996
- 26.10 ft on 10/09/1964

Show More Historical Crests

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Reference:

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0.75 1.50 3.00 Feet

Data Type

- Inundation Levels
- Flood Categories
- Current Forecast

Inundation Levels

NAVD83	Stage
71	28
70	27
69	26
68	25
67	24

Major Flooding Begins

66	23
65	22
64	21
63	20

Moderate Flooding Begins

62	19
61	18

Flooding Begins

60	17
59	16
58	15
57	14
56	13

Inundation Feedback

Inundation in partnership with:

Transparency Level: [] 1 Year Flood [] 500 Year Flood [] Floodway Data

Selected Inundation
NAVD83: 60 ft
Stage: 17.0 ft

Mouse Location*
Water Depth: Off
Latitude: 35.339 N
Longitude: -77.9812 W
*All mouse location values are estimates only.

Flood Categories (in feet)

Water Flood Stage	28
Advisory Flood Stage	24
Flood Stage	18
Action Stage	18
Below Flood Stage	18

Historical Crests

- 28.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 09/23/1945
- 26.21 ft on 09/12/1996
- 26.10 ft on 10/09/1964

Show More Historical Crests

Mouse Location*
Water Depth: Off
Latitude: 35.3407 N
Longitude: -77.9919 W
* All mouse location values are estimates only.

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Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Zoom Features

Neuse River near Goldsboro, NC (GLDN7)

Data Type

- Inundation Levels
- Flood Categories
- Current Forecast

Inundation Levels	Stage
71	28
70	27
69	26
68	25
67	24
Major Flooding Begins	
66	23
65	22
64	21
63	20
Moderate Flooding Begins	
62	19
61	18
Flooding Begins	
60	17
59	16
58	15
57	14
56	13

Inundation Feedback

Inundation in partnership with:

- NOAA
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- U.S. Geological Survey
- U.S. National Park Service
- U.S. Navy
- U.S. Secretariat of the Interior
- U.S. State Department
- U.S. Transportation Department
- U.S. Veterans Affairs
- U.S. Department of Justice
- U.S. Department of Health and Human Services
- U.S. Department of Education
- U.S. Department of Energy
- U.S. Department of Agriculture
- U.S. Department of Labor
- U.S. Department of Housing and Urban Development
- U.S. Department of Justice
- U.S. Department of Health and Human Services
- U.S. Department of Education
- U.S. Department of Energy
- U.S. Department of Agriculture
- U.S. Department of Labor
- U.S. Department of Housing and Urban Development

Selected Inundation
 NAVD83: 60 ft
 Stage: 17.0 ft

Mouse Location*
 Water Depth: Off
 Latitude: 35.339 N
 Longitude: -77.9812 W
 *All mouse location values are estimates only.

Flood Categories (in feet)

Water Flood Stage	Relative Flood Stage	Flood Stage	Action Stage
24	24	24	24
23	23	23	23
22	22	22	22
21	21	21	21
20	20	20	20
19	19	19	19
18	18	18	18
17	17	17	17
16	16	16	16
15	15	15	15
14	14	14	14
13	13	13	13
12	12	12	12
11	11	11	11
10	10	10	10
9	9	9	9
8	8	8	8
7	7	7	7
6	6	6	6
5	5	5	5
4	4	4	4
3	3	3	3
2	2	2	2
1	1	1	1
0	0	0	0

Historical Crests

- 28.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 09/23/1945
- 26.21 ft on 09/21/1996
- 26.10 ft on 10/09/1964

Show More Historical Crests

Mouse Location*
 Water Depth: Off
 Latitude: 35.3407 N
 Longitude: -77.9919 W
 * All mouse location values are estimates only.



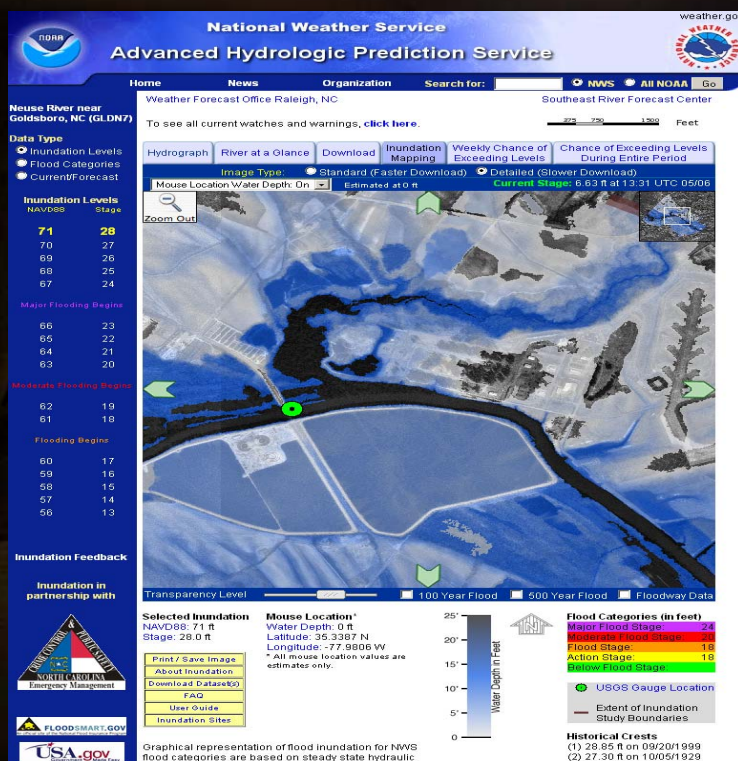
Water Predictions
for
Life Decisions

Reference:
<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

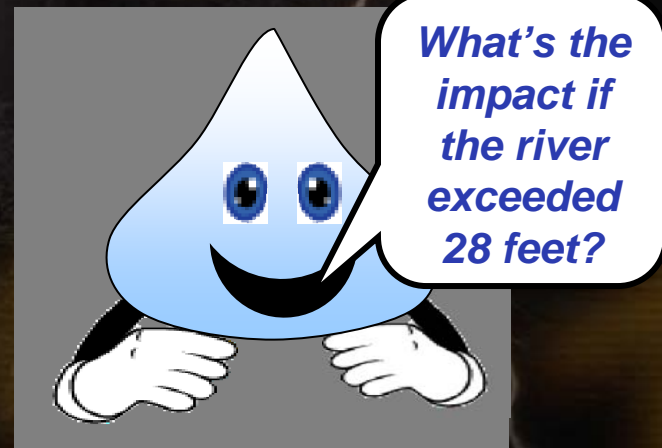
Inundation Map Interface – Zoom with Water Depths



Historical Crests

- 28.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 09/23/1945

Selected Inundation
NAVD88: 71 ft
Stage: 28.0 ft



Water Predictions
for
Life Decisions

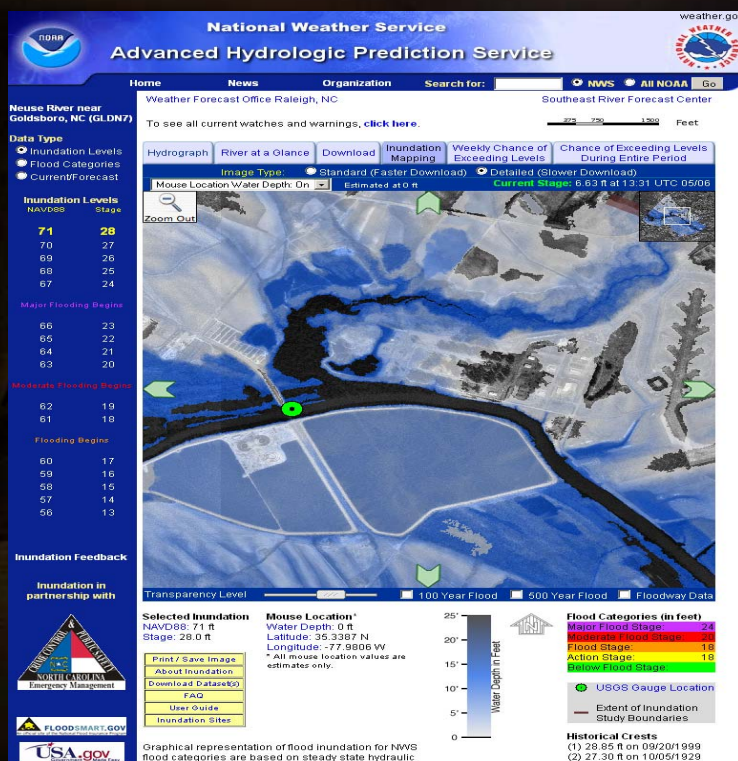
Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Zoom with Water Depths

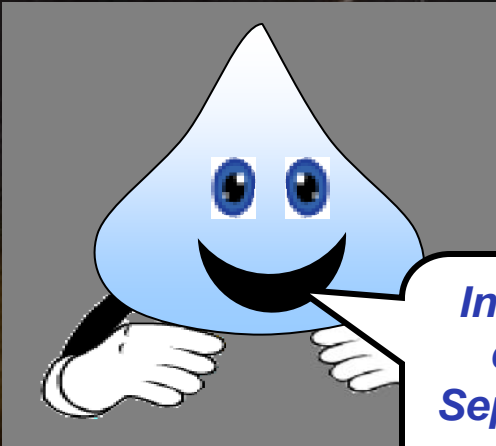


Historical Crests

- 28.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 09/23/1945

Selected Inundation

NAVD88: 71 ft
Stage: 28.0 ft



In fact, it did in September 1999.

Water Predictions for Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Zoom with Water Depths

Click Here

Selected Inundation
NAVD88: 71 ft
Stage: 28.0 ft

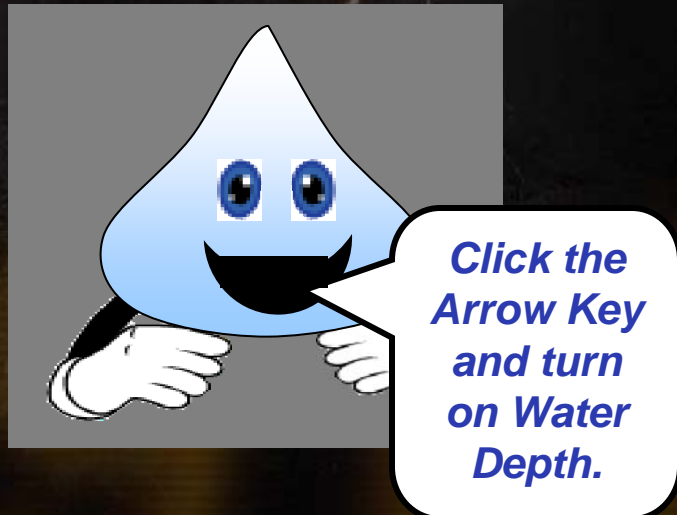
Mouse Location*
Water Depth: 0 ft
Latitude: 35.2287 N
Longitude: -77.8906 W
*All mouse location values are estimates only.

Flood Categories (in feet)
Major Flood Stage: 24
Moderate Flood Stage: 20
Flood Stage: 18
Action Stage: 15
Below Action Stage

Historical Crests
(1) 28.85 ft on 09/20/1999
(2) 27.30 ft on 10/05/1929

Selected Inundation
NAVD88: 71 ft
Stage: 28.0 ft

Historical Crests
(1) 28.85 ft on 09/20/1999
(2) 27.30 ft on 10/05/1929
(3) 26.70 ft on 09/23/1945
(4) 26.24 ft on 09/23/1945



Water Predictions
for
Life Decisions

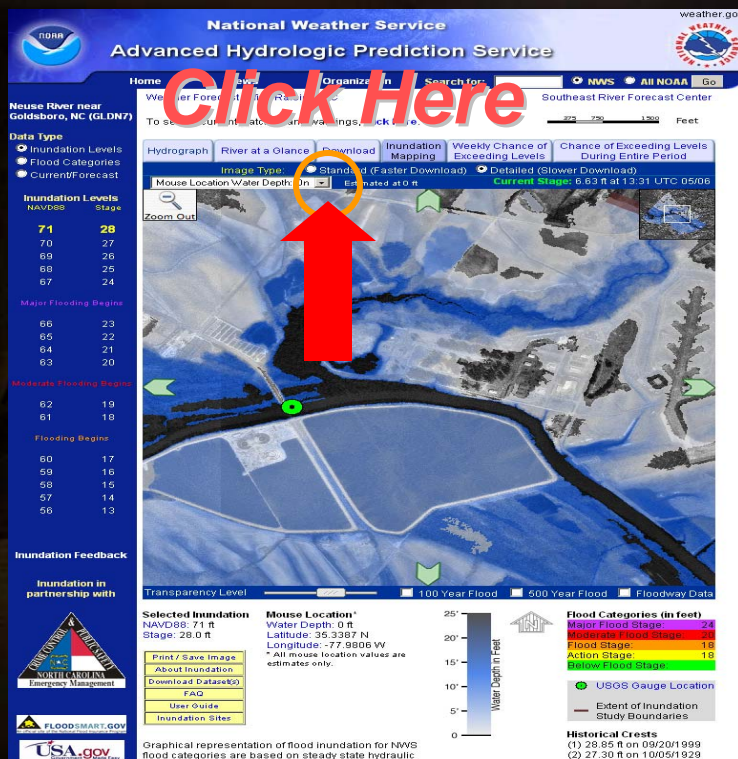
Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Zoom with Water Depths



Selected Inundation
 NAVD88: 71 ft
 Stage: 28.0 ft

Historical Crests
 (1) 28.85 ft on 09/20/1999
 (2) 27.30 ft on 10/05/1929
 (3) 26.70 ft on 09/23/1945



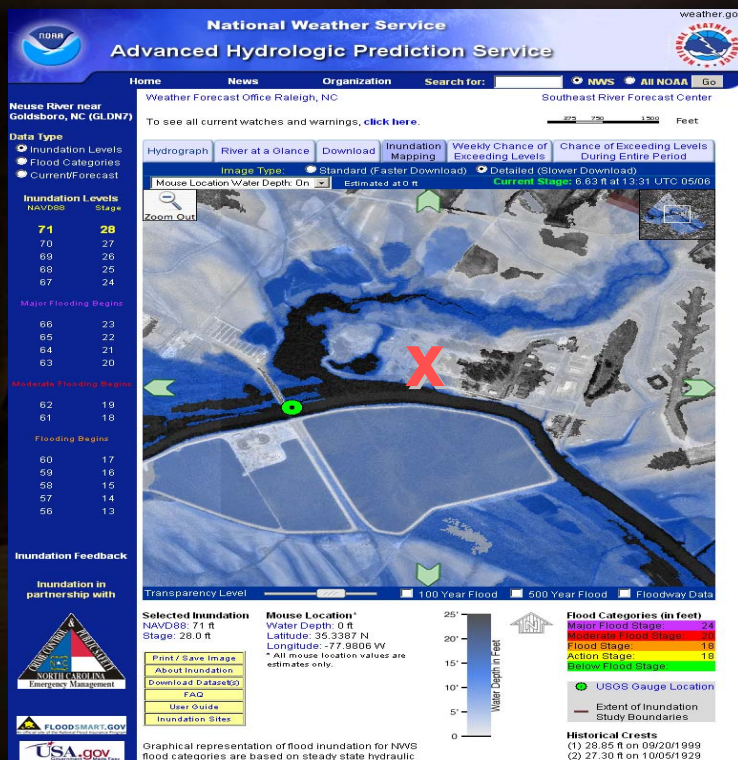
Water Predictions
 for
 Life Decisions

Reference:
<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Zoom with Water Depths

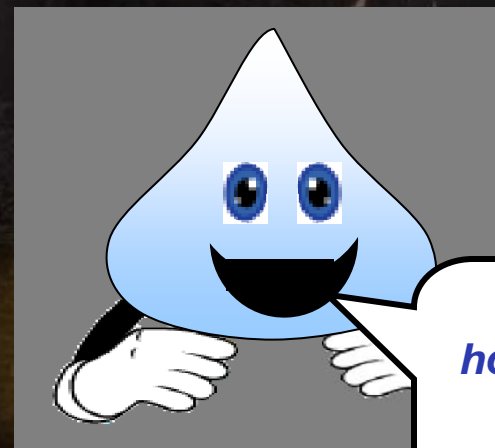


Historical Crests

- (1) 28.85 ft on 09/20/1999
- (2) 27.30 ft on 10/05/1929
- (3) 26.70 ft on 09/23/1945

Selected Inundation

NAVD88: 71 ft
Stage: 28.0 ft



You'll see how high the water got onto your roads.

Water Predictions for Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Zoom with Water Depths

National Weather Service
Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

Data Type

- Inundation Levels
- Flood Categories
- Current/Forecast

Inundation Levels

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24

Major Flooding Begins

66	23
65	22
64	21
63	20

Moderate Flooding Begins

62	19
61	18

Flooding Begins

60	17
59	16
58	15
57	14
56	13

Inundation Feedback

Inundation in partnership with

Selected Inundation
NAVD88: 71 ft
Stage: 28.0 ft

Mouse Location*
Water Depth: 0 ft
Latitude: 35.3387 N
Longitude: -77.9906 W
*All mouse location values are estimates only.

Flood Categories (in feet)

Major Flood Stage	24
Minor Flood Stage	20
Flood Stage	18
Action Stage	16
Below Action Stage	14

Historical Crests
(1) 28.85 ft on 09/20/1999
(2) 27.30 ft on 10/05/1929

Selected Inundation
NAVD88: 71 ft
Stage: 28.0 ft

Historical Crests
(1) 28.85 ft on 09/20/1999
(2) 27.30 ft on 10/05/1929
(3) 26.70 ft on 09/23/1945

Mouse Location
Water Depth: 2.50 - 4.50 ft
Latitude: 35.3389 N
Longitude: -77.9915 W
*All mouse location values are estimates only.

Water Predictions
for
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Navigation Features

National Weather Service
Advanced Hydrologic Prediction Service

Home News Organization Search for: MWS All NOAA Go

Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here.](#)

250 750 1200 Feet

Data Type

- Inundation Levels
- Flood Categories
- Current/Forecast

Inundation Levels

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24

Major Flooding Begins

66	23
65	22
64	21
63	20

Moderate Flooding Begins

62	19
61	18

Flooding Begins

60	17
59	16
58	15
57	14
56	13

Inundation Feedback

Inundation in partnership with

Selected Inundation

NAVD88: 71 ft
Stage: 28.0 ft

Mouse Location

Water Depth: 0 ft
Latitude: 35.3287 N
Longitude: -77.9906 W
* All mouse location values are estimates only.

Flood Categories (in feet)

Major Flood Stage	24
Minor Flood Stage	18
Flood Stage	18
Action Stage	18
Below Flood Stage	18

Historical Crests

- 28.95 ft on 09/20/1999
- 27.30 ft on 10/05/1929

**Up and Down
to other panels**

Water Predictions
for
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Navigation Features

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Home News Organization Search for: NWS All NOAA Go

Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

250 750 1200 Feet

Data Type

- Inundation Levels
- Flood Categories
- Current/Forecast

Inundation Levels

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24
66	23
65	22
64	21
63	20
62	19
61	18
60	17
59	16
58	15
57	14
56	13

Major Flooding Begins

Moderate Flooding Begins

Flooding Begins

Inundation Feedback

Inundation in partnership with

Selected Inundation

NAVD88: 71 ft
Water Depth: 0 ft
Stage: 28.0 ft
Latitude: 35.3287 N
Longitude: -77.9906 W
* All mouse location values are estimates only.

Flood Categories (in feet)

Major Flood Stage	24
Minor Flood Stage	18
Flood Stage	18
Action Stage	18
Below Flood Stage	18

Historical Crests

- 28.95 ft on 09/20/1999
- 27.30 ft on 10/05/1929

Graphical representation of flood inundation for NWS flood categories are based on steady state hydraulic.

**Left and Right
to other panels**

Water Predictions
for
Life Decisions

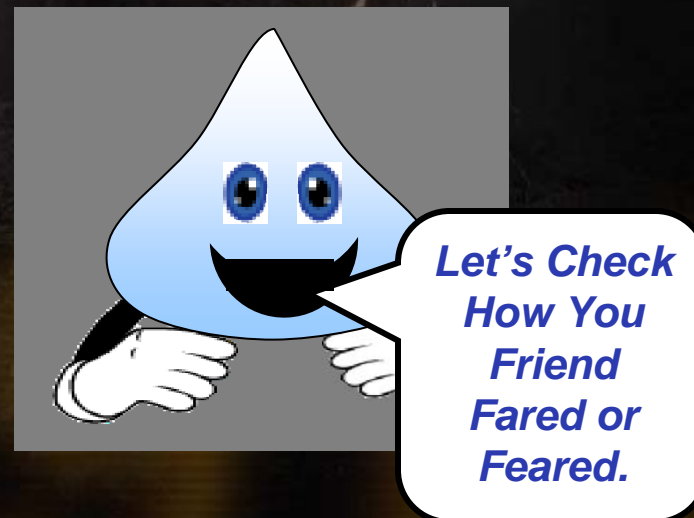
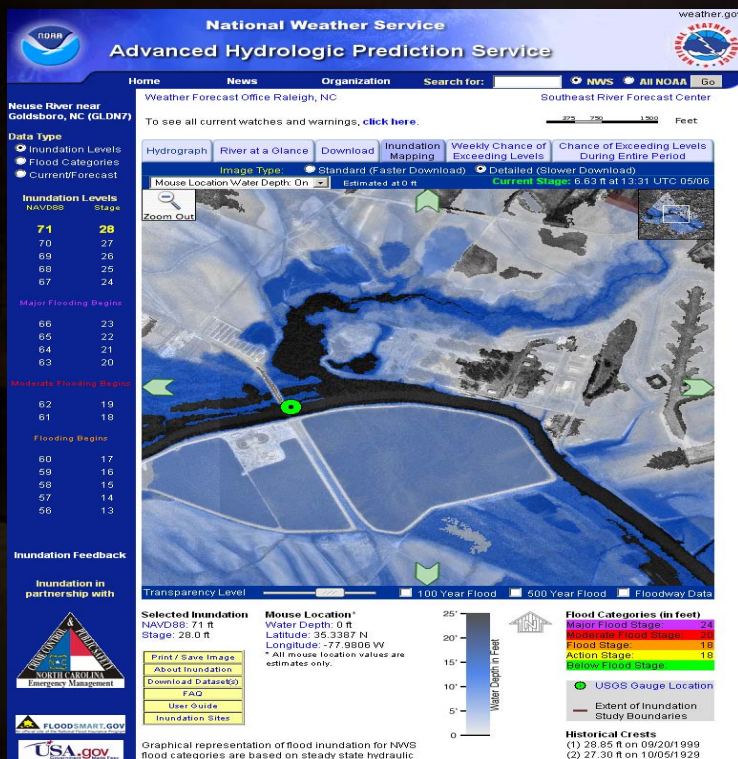
Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Navigation Features



Water Predictions
for
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



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Inundation Map Interface – Navigation Features

National Weather Service
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Home News Organization Search for: MWS All NOAA Go

Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

Hydrograph River at a Glance Download Inundation Mapping Weekly Chance of Exceeding Levels Chance of Exceeding Levels During Entire Period

Map Type: Standard (Faster Download) Detailed (Slower Download)

Mouse Location Water Depth: On Estimated at 0 ft. **Current Stage:** 6.93 ft at 13:31 UTC 05/06

Click Here

Inundation Levels

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24
66	23
65	22
64	21
63	20
62	19
61	18
60	17
59	16
58	15
57	14
56	13

Inundation Feedback

Inundation in partnership with

Transparency Level: 100 Year Flood 500 Year Flood Floodway Data

Selected Inundation
NAVD88: 71 ft
Stage: 28.0 ft

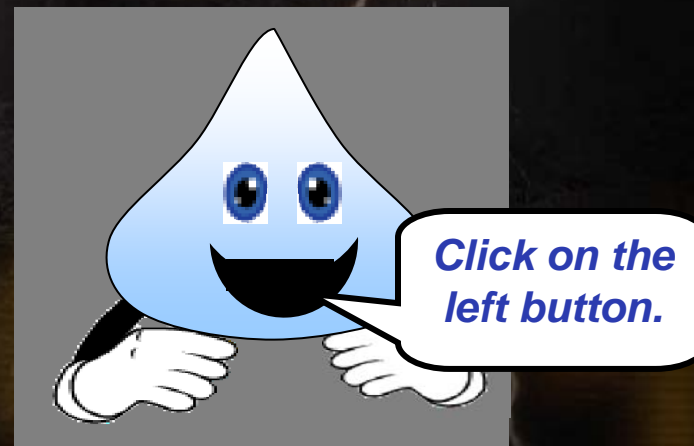
Mouse Location*
Water Depth: 0 ft
Latitude: 35.3287 N
Longitude: -77.9906 W
* All mouse location values are estimates only.

Flood Categories (in feet)

Major Flood Stage	24
Minor Flood Stage	18
Flood Stage	18
Action Stage	18
Below Flood Stage	18

USGS Gauge Location
Extent of Inundation Study Boundaries

Historical Crests
(1) 28.95 ft on 09/20/1999
(2) 27.30 ft on 10/05/1929



Water Predictions
for
Life Decisions

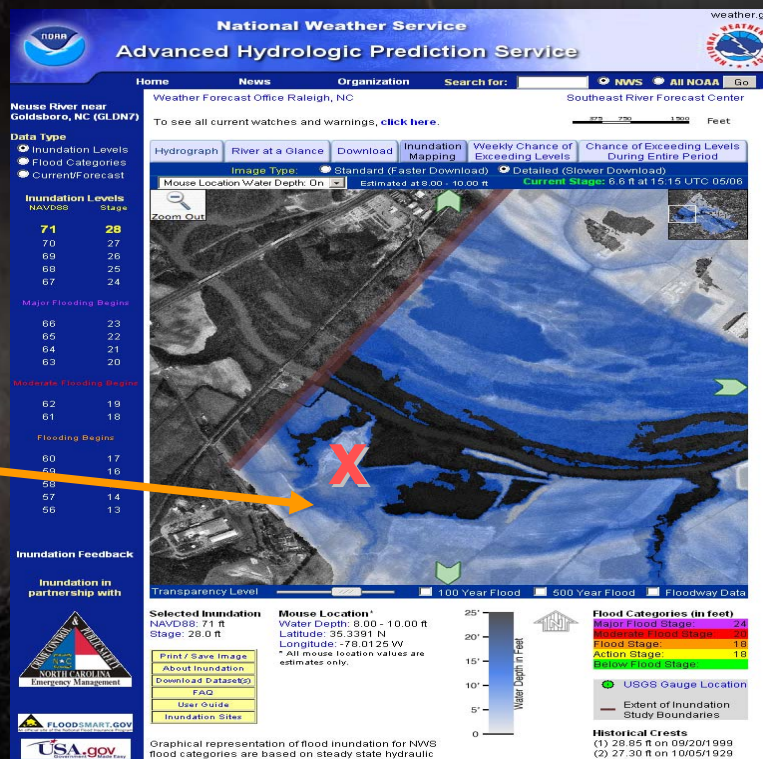
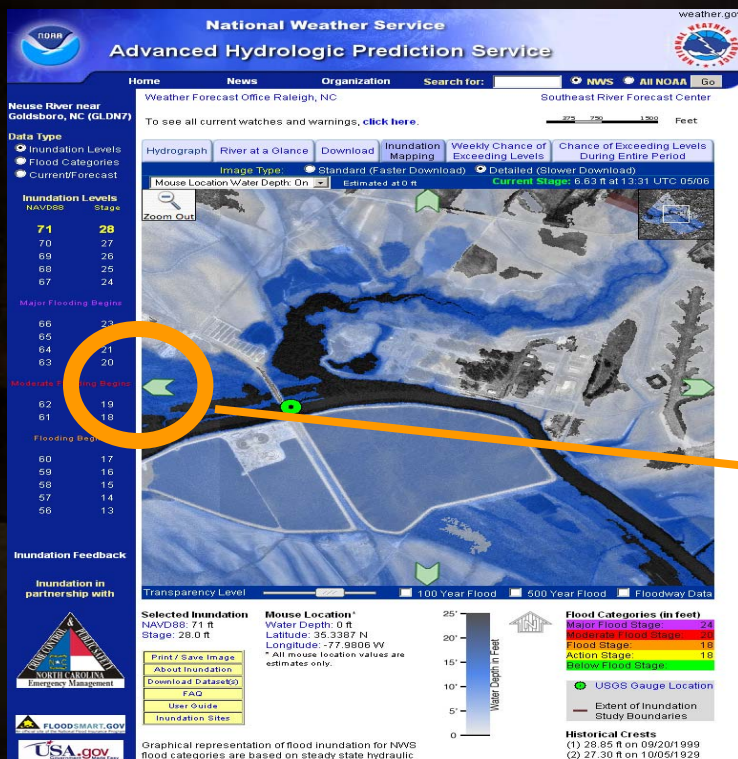
Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Navigation Features



Water Predictions
for
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Navigation and Zoom

National Weather Service
Advanced Hydrologic Prediction Service

Home News Organization Search for: MWS All NOAA Go

Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here.](#)

Data Type

- Inundation Levels
- Flood Categories
- Current Forecast

Inundation Levels

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24
Major Flooding Begins	
66	23
65	22
64	21
63	20
Moderate Flooding Begins	
62	19
61	18
Flooding Begins	
60	17
59	16
58	15
57	14
56	13

Inundation Feedback

Inundation in partnership with

Selected Inundation
NAVD88: 71 ft
Stage: 28.0 ft

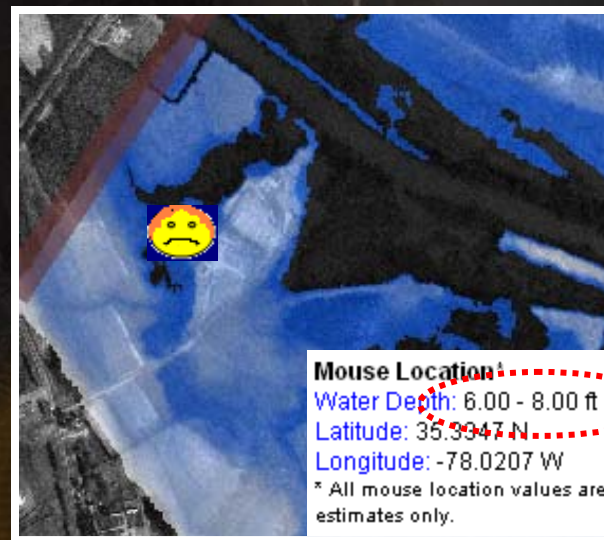
Mouse Location*
Water Depth: 8.00 - 10.00 ft
Latitude: 35.3301 N
Longitude: -78.0125 W
* All mouse location values are estimates only.

Flood Categories (in feet)

Major Flood Stage	24
Significant Flood Stage	20
Flood Stage	18
Action Stage	16
Minor Flood Stage	14

Historical Crests
(1) 28.95 ft on 03/20/1999
(2) 27.30 ft on 10/05/1929

Graphical representation of flood inundation for NWS flood categories are based on steady state hydraulic



Water Predictions
for
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



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Inundation Map Interface – Print Image

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Weather Forecast Office Raleigh, NC Southeast River Forecast Center

To see all current watches and warnings, [click here](#).

1372 - 2720 Feet

Hydrograph River at a Glance Download Inundation Mapping Weekly Chance of Exceeding Levels Chance of Exceeding Levels During Entire Period

Image Type: Standard (Faster Download) Detailed (Slower Download)

Mouse Location Water Depth: Off Water Depth Function: Off Crest Stage: 0.85 ft at 12.15 UTC 05/08

Inundation Levels

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24
Major Flooding Begins	
66	23
65	22
64	21
63	20
Moderate Flooding Begins	
62	19
61	18
Flooding Begins	
60	17
59	16
58	15
57	14
56	13

Inundation Feedback

Inundation in partnership with

Selected Inundation
NAVD88: 60 ft
Stage: 17.0 ft

Mouse Location*
Water Depth: Off
Latitude: 35.3657 N
Longitude: -77.9528 W
* All mouse location values are arbitrary only.

Print / Save Image
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Download Data (KML)
FAQ
User Guide
Inundation Sites

Click on the image to zoom in

Flood Categories (in feet)

Major Flood Stage	24
Minor Flood Stage	20
Flood Stage	18
Action Stage	15
Historical Crest Stage	10

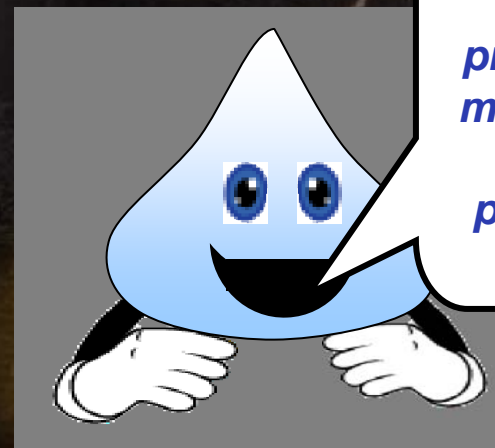
USGS Gauge Location
Extent of Inundation Study Boundaries

Historical Crests

- 25.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 08/23/1945
- 26.21 ft on 09/12/1996
- 26.10 ft on 10/09/1964

Show More Historical Crests

Return to Area Map



You may want to print some maps to be better prepared!

Water Predictions for Life to Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Print Image

National Weather Service
Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC

Mouse River near Goldsboro, NC (GLDN7)

Data Type

- Inundation Levels
- Flood Categories
- Current Forecast

Inundation Levels

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24
Major Flooding Begins	
66	23
65	22
64	21
63	20
Moderate Flooding Begins	
62	19
61	18
Flooding Begins	
60	17
59	16
58	15
57	14
56	13

Selected Inundation

NAVD88: 60 ft
Stage: 17.0 ft

Mouse Location*

Water Depth: Off
Latitude: 35.3657 N
Longitude: -77.9528 W
* All mouse location values are approximate only.

Flood Categories (in feet)

Major Flood Stage	24
Minor Flood Stage	20
Flood Stage	18
Action Stage	15
Reference Flood Stage	10

Historical Crests

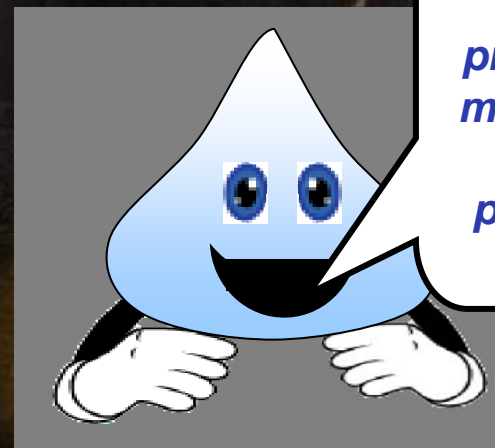
- 25.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 08/23/1945
- 26.21 ft on 09/12/1996
- 26.10 ft on 10/09/1964

Show More Historical Crests

Print / Save Image

- Print / Save Image
- About Inundation
- Download Dataset(s)
- FAQ
- User Guide
- Inundation Sites

Click Here



You may want to print some maps to be better prepared!

Water Predictions for Life to Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Inundation Map Interface – Download Data Sets

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Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC

Data Type

- Inundation Levels
- Flood Categories
- Current Forecast

Inundation Levels

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24

Major Flooding Begins

66	23
65	22
64	21
63	20

Moderate Flooding Begins

62	19
61	18

Flooding Begins

60	17
59	16
58	15
57	14
56	13

Selected Inundation

NAVD88: 60 ft
Stage: 17.0 ft

Mouse Location*

Water Depth: Off
Latitude: 35.3657 N
Longitude: -77.9528 W
* All mouse location values are approximate only.

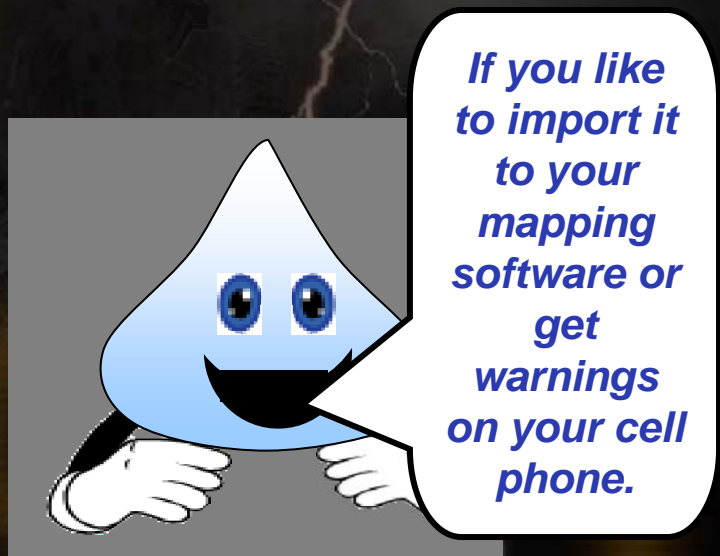
Flood Categories (in feet)

Major Flood Stage	24
Minor Flood Stage	20
Flood Stage	18
Action Stage	15
Reference Stage	10

Historical Crests

- 25.85 ft on 09/20/1999
- 27.30 ft on 10/05/1929
- 26.70 ft on 08/23/1945
- 26.21 ft on 09/12/1996
- 26.10 ft on 10/09/1964

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- FAQ
- User Guide
- Inundation Sites



If you like to import it to your mapping software or get warnings on your cell phone.

Water Predictions
for
Life to Decisions

Reference:
<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



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1372 -2720 3200 Feet

Hydrograph River at a Glance Download Inundation Mapping Weekly Chance of Exceeding Levels Chance of Exceeding Levels During Entire Period

Image Type: Standard (Faster Download) Detailed (Slower Download)

Mouse Location Water Depth: 0 ft Water Depth Function: Off Current Stage: 0.85 ft at 12:15 UTC 05/08

Inundation Levels

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24
Major Flooding Begins	
66	23
65	22
64	21
63	20
Moderate Flooding Begins	
62	19
61	18
Flooding Begins	
60	17
59	16
58	15
57	14
56	13

Inundation Feedback

Inundation in partnership with

Transparency Level 100 Year Flood 500 Year Flood Floodway Data

Selected Inundation
NAVD88: 60 ft
Stage: 17.0 ft

Mouse Location*
Water Depth: Off
Latitude: 35.3657 N
Longitude: -77.9528 W
* All mouse location values are approximate only.

Flood Categories (in feet)

Major Flood Stage	24
Minor Flood Stage	20
Flood Stage	18
Action Stage	15
Minor Flood Stage	10

Historical Crests

- 25.85 ft on 09/20/1999
- 27.30 ft on 1/09/201929
- 26.70 ft on 08/23/1945
- 26.21 ft on 09/12/1996
- 26.10 ft on 1/03/1964

Show More Historical Crests

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Print / Save Image

About Inundation

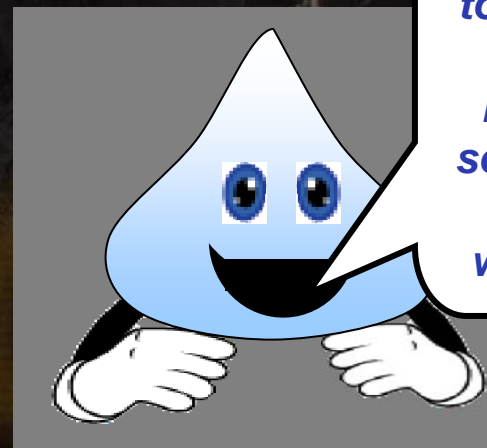
Download Dataset(s)

FAQ

User Guide

Inundation Sites

Click Here



If you like to import it to your mapping software or get warnings.

Water Predictions for Life Decisions

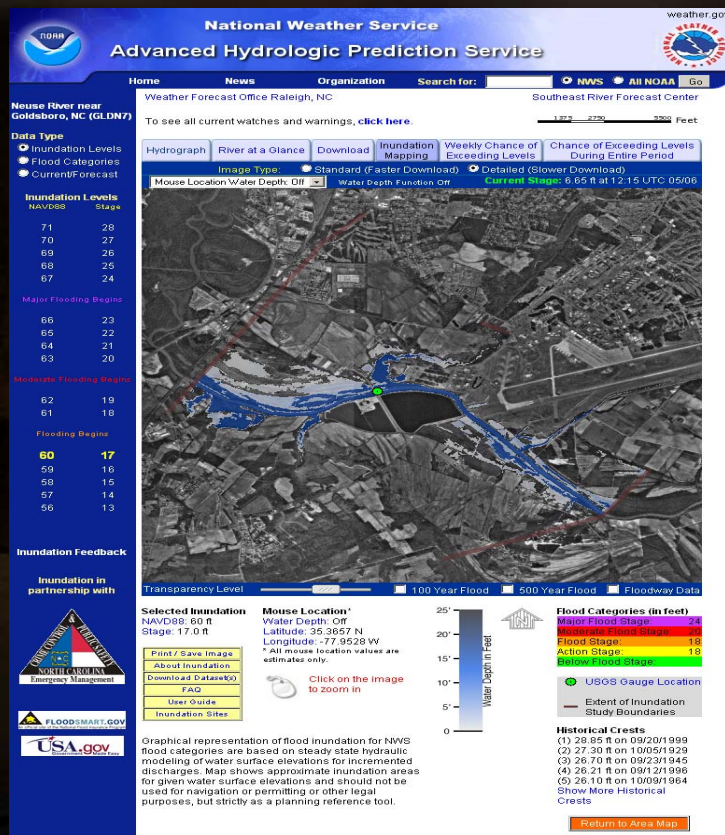
Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>

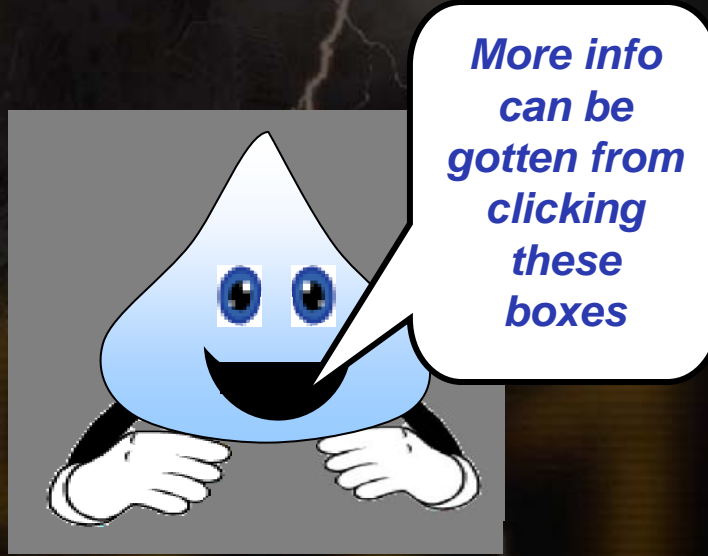


National Weather Service

Inundation Map Interface – More Info



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- Download Dataset(s)
- FAQ
- User Guide
- Inundation Sites



Water Predictions
for
Life Decisions

Reference:

<http://newweb.erh.noaa.gov/ahps2/inundation/inundation.php?wfo=rah&gage=gldn7>



National Weather Service

Recap of the Inundation Maps

Quick Standard Maps

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Advanced Hydrologic Prediction Service

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To see all current watches and warnings, [click here](#).

1992 2025 2000 Feet

Hydrograph River at a Glance Download Inundation Weekly Chance of Exceeding Levels Chance of Exceeding Levels During Entire Period

Image Type: Standard (Faster Download) Detailed (Slower Download)

Current Stage: 6.5 ft at 21:15 UTC 05/06

Inundation Levels

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24

Major Flooding Begins

86	23
85	22
84	21
83	20

Moderate Flooding Begins

62	19
61	18

Flooding Begins

60	17
59	16
58	15
57	14
56	13

Inundation Feedback

Inundation in partnership with

Selected Inundation
NAVD88: 60 ft
Stage: 17.0 ft

Mouse Location
Latitude: 35.3408 N
Longitude: -77.9663 W
* All mouse location values are estimates only.

Flood Categories (in feet)

Major Flood Stage	24
Moderate Flood Stage	18
Flood Stage	18
Action Stage	18
Below Flood Stage	18

Historical Crests

- (1) 28.95 ft on 09/20/1999
- (2) 27.30 ft on 10/05/1929
- (3) 26.70 ft on 09/23/1945
- (4) 26.21 ft on 09/12/1995
- (5) 25.10 ft on 10/09/1964

Show More Historical Crests

Return to Area Map

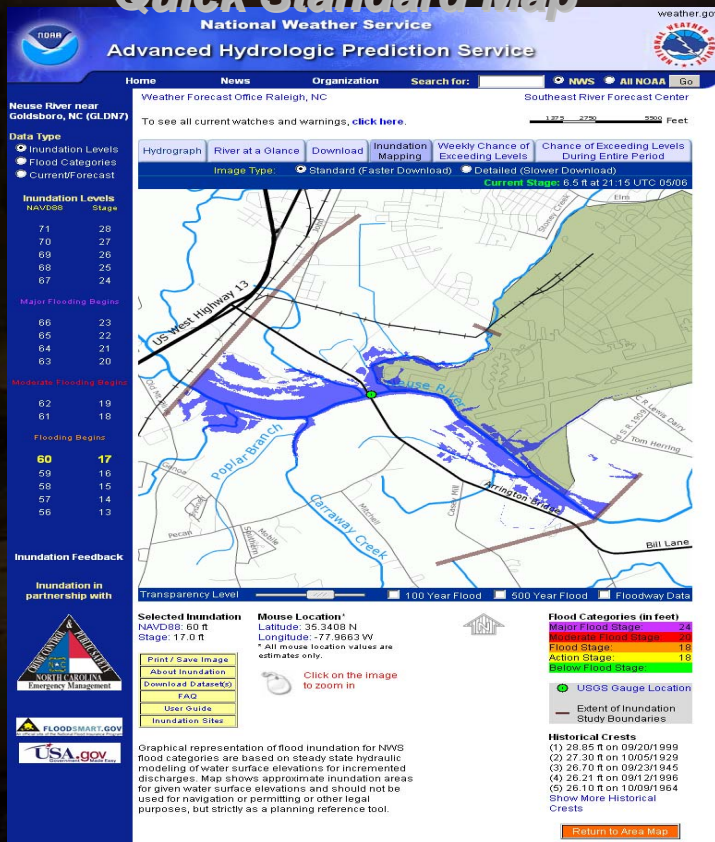
Water Predictions
for
Life Decisions



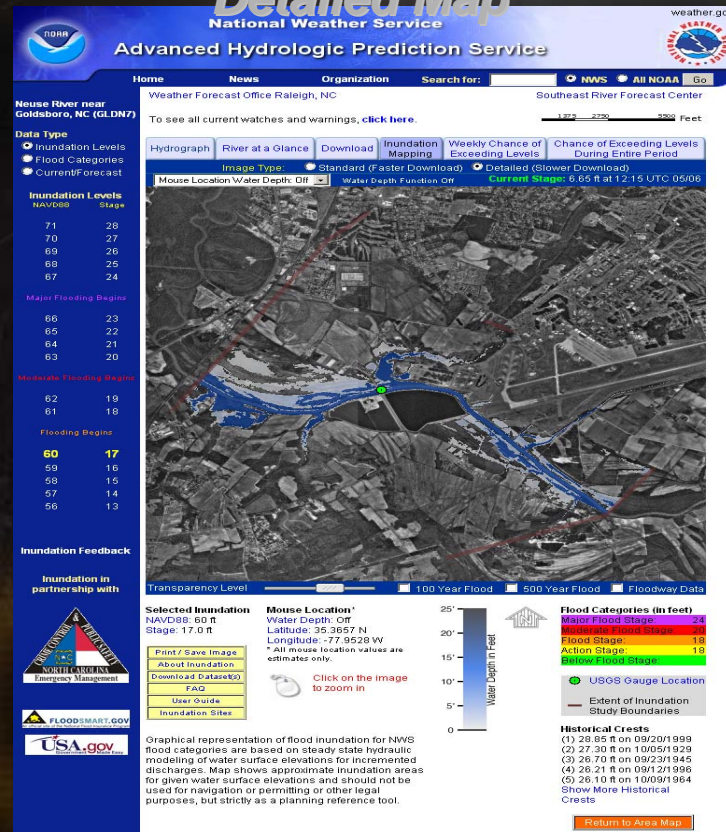
National Weather Service

Inundation Maps

Quick Standard Map



Detailed Map



Water Predictions
for
Life Decisions



National Weather Service

Inundation Mapping

Quick Standard Map

National Weather Service
Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC
Southeast River Forecast Center

Home News Organization Search for: MWS All NOAA Go

To see all current watches and warnings, [click here.](#)

Data Type

- Inundation Levels
- Flood Categories
- Current Forecast

Inundation Levels

NAVD88	Stage
71	28
70	27
69	26
68	25
67	24

Major Flooding Begins

66	23
65	22
64	21
63	20

Minor Flooding Begins

62	19
61	18

Flooding Begins

60	17
59	16
58	15
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56	13

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Stage: 17.0 ft

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Longitude: -77.9663 W
*All mouse location values are estimates only.

Click on the image to zoom in

Graphical representation of flood inundation for NWS flood categories are based on steady state hydraulic modeling of water surface elevations for incremented discharges. Map shows approximate inundation areas for given water surface elevations and should not be used for navigation or permitting or other legal purposes, but strictly as a planning reference tool.

Detailed Map

National Weather Service
Advanced Hydrologic Prediction Service

Weather Forecast Office Raleigh, NC
Southeast River Forecast Center

Home News Organization Search for: MWS All NOAA Go

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Flood Category Map

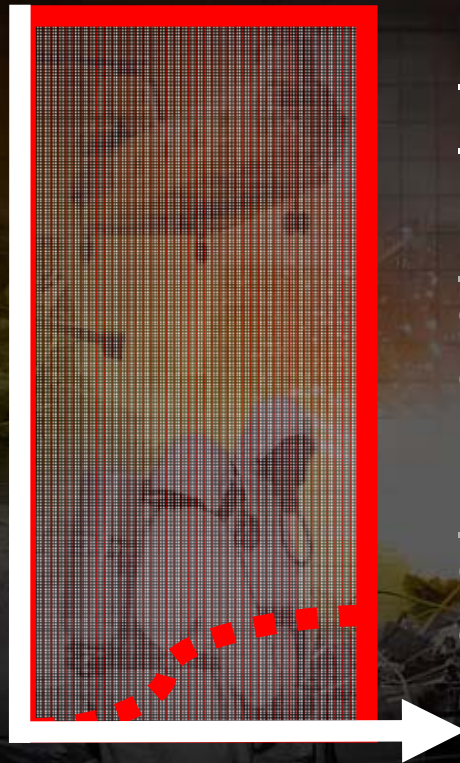
Water Predictions
for
Life Decisions



National Weather Service

Flood Mapping Science

Inundation Map Development



Construction Engineering Design and Software Improvements

Pre-1995

- *Engineering Design*
- *Computer Aided Design Drafting (CADD)*

1995-2000

- *Geographic Information System*
- *Hydrology and Hydraulics Modeling*

1995

2000

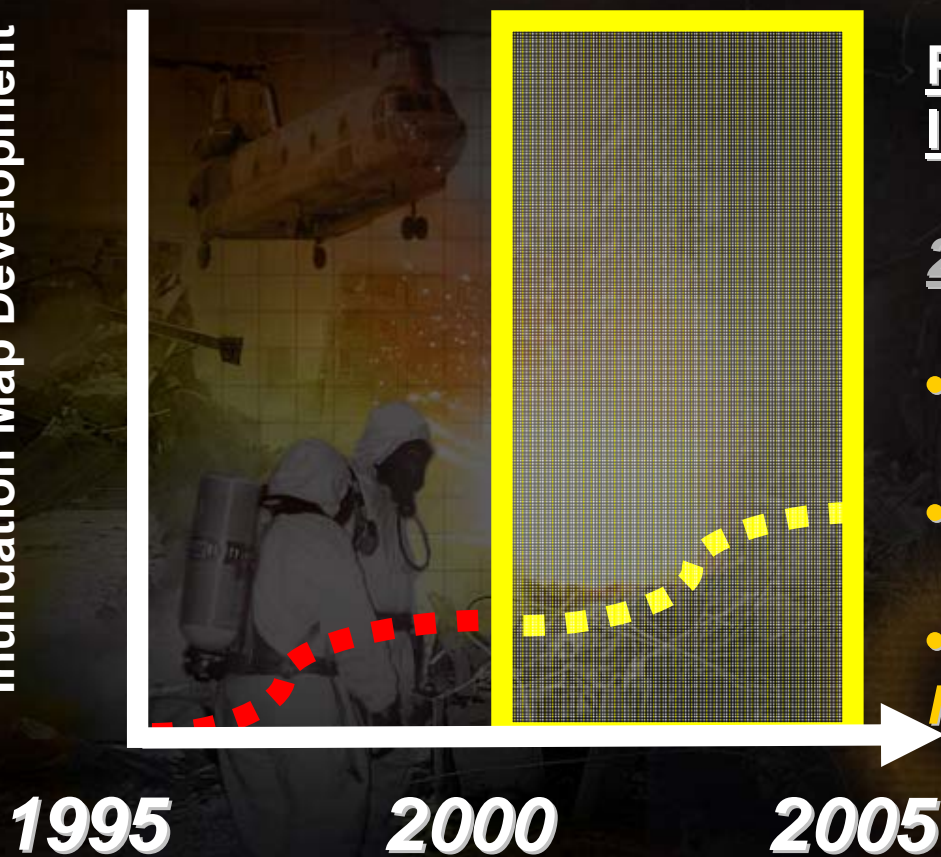
Water Predictions
for
Life Decisions



National Weather Service

Flood Mapping Science

Inundation Map Development



Regulatory and Mapping Improvements

2001-2005

- *Flood Plain Management*
- *FEMA Map Modernization*
- *Aerial Survey, Satellite Imagery, LIDAR*

Water Predictions
for
Life Decisions



National Weather Service

Flood Mapping Science

Inundation Map Development

Risk Mapping Improvements

2005-2010

- *Communication of Flood Risks*
- *Integration into NWS AHPS*
- *Collaboration/Partnerships with NFIP Communities*

1995

2000

2005

2010

2015

Water Predictions
for
Life Decisions



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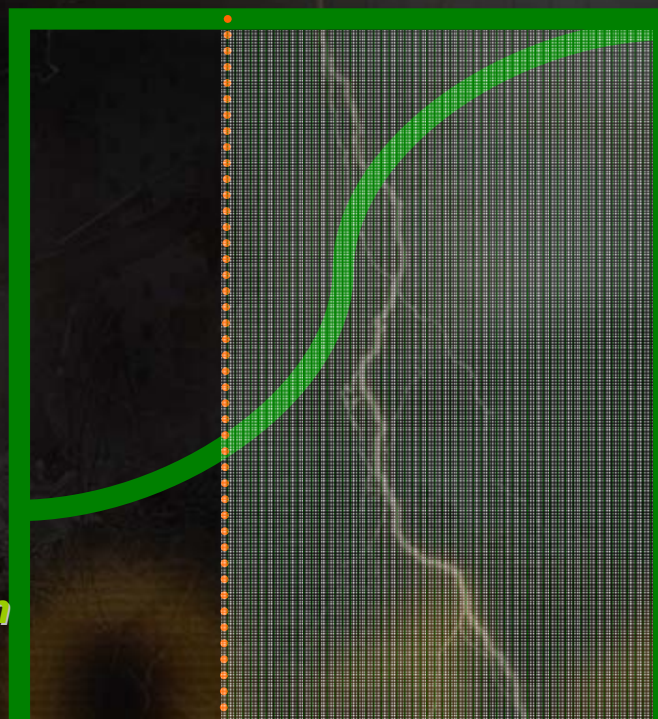
Flood Mapping Science

Inundation Map Development

Risk Mapping Improvements

2008 - 2015

- *More Affordable LIDAR DATA*
- *More Expertise in H&H/GIS modeling*
- *More Collaboration/Partnerships*
- *More inundation mapping in high risk communities.*



1995

2000

2005

2010

2015

Water Predictions
for
Life Decisions



National Weather Service

Flood Mapping Science

Inundation Map Development

National Risk Mapping Goals

- *Safer, Smarter, and more Resilient Communities.*
- *Reduce Repetitive Flood Losses*
- *Better Floodplain Management*
- *Lower the Risks and Reduced the Liabilities*



Water Predictions
for
Life Decisions



National Weather Service

Larry Wenzel

National Hydrologic Outreach Services Leader

NOAA's National Weather Service

FEMA National Flood Conference

Chicago, Illinois

May 9, 2008



National Weather Service

Presentation Overview

- **Cool Stuff**
- **NOAA and FEMA Partnership**
- **Outreach Activities**
- **We Need Your Help**
- **NOAA WX Radio Drawing**



National Weather Service

**Cool
Stuff!!**



www.weather.gov/floodsafety/



National Weather Service

Cool Stuff!!



www.weather.gov/floodsafety/



National Weather Service

Floods...a National Issue

Because floods can occur anytime/anywhere,
from the...



State House

to



Your House



National Weather Service

Floods...are a National Issue



...America needs both **river and flood forecasts and warnings** and **flood insurance** to mitigate and manage risk.



National Weather Service

NWS Talks with America ...



- ***Trained 9,940 emergency managers nationwide in joint NOAA/FEMA weather-related hazard courses.***
- ***Conducted 5,464 public forums***
- ***Conducted 40,838 media interviews***
- ***Trained 95,438 Storm Spotters***



National Weather Service

Longstanding Partnership with FEMA



**NOAA's National Weather Service
&
FEMA's FloodSmart**



National Weather Service

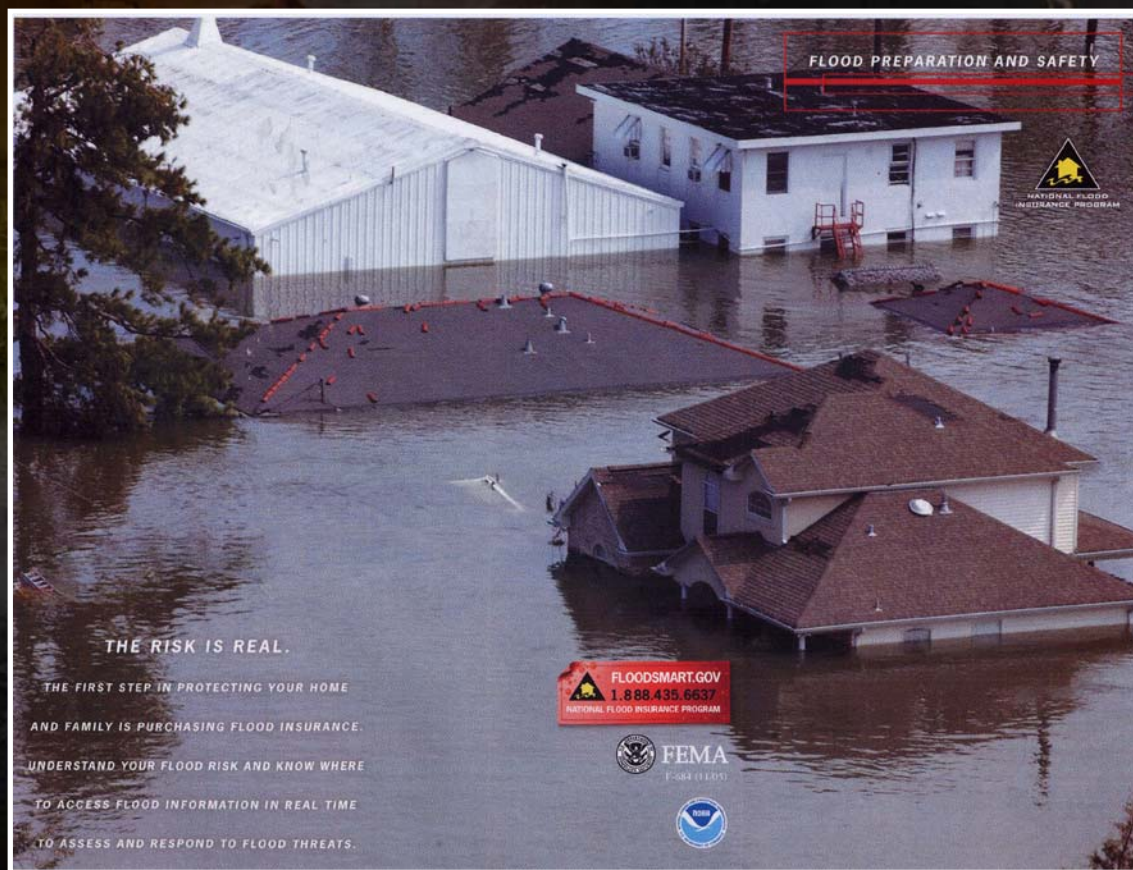
Joint Brochures





National Weather Service

Joint Brochure National Weather Service / FloodSmart





National Weather Service

Flood Safety Awareness Week

www.nws.noaa.gov



National Weather Service

Flood Safety



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Search

Search

Home

Advanced Hydrologic Prediction Service

Turn Around Don't Drown

Tropical Cyclone Inland Flooding

Flood Hazard Mitigation

Flood Safety

Contact Us



Flood Safety Awareness

Flood Safety Awareness Week: March 17-21, 2008



Flooding is a coast to coast threat to the United States and its territories in all months of the

Thursday: Flood Insurance



- ◆ **FEMA:**
 - ◇ Map Service Center
 - ◇ **FloodSmart:** Learn more about the types of flood risks your home and property are facing.



FLOODSMART.GOV

An official site of the National Flood Insurance Program

- ◆ **Federal Alliance for Safe Homes (FLASH)**

- ◇ A Flood Overview
- ◇ Implementation Sites

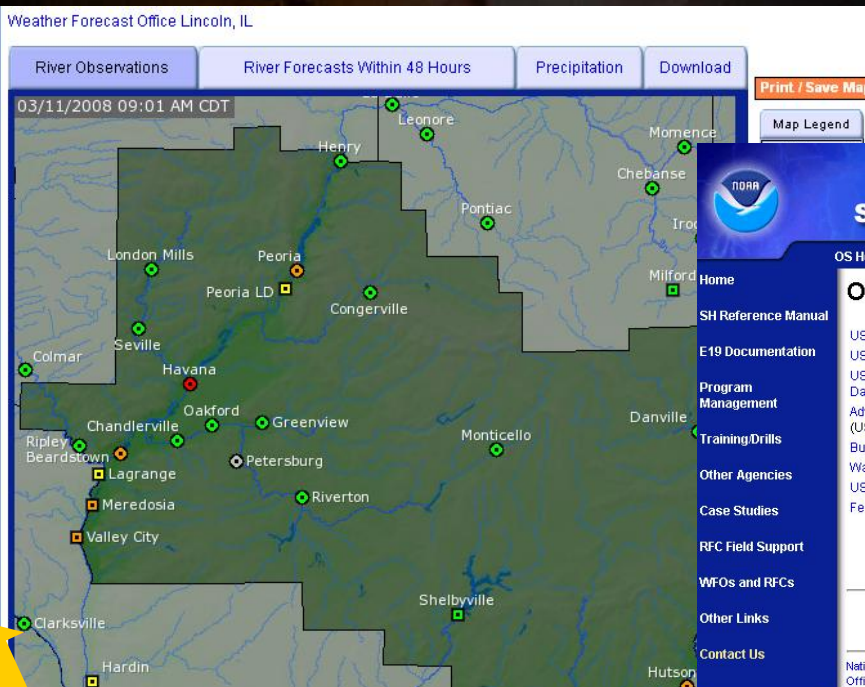




National Weather Service

Internet Sharing

Advanced Hydrologic Prediction Service



National Conditions
Rivers
Satellite
Climate
Observed Precip

Local Conditions
Warnings
Weather Forecast
Radar

What is AHPS?
Facts
Our Partners

Feedback/Questions
Provide Feedback
Ask Questions



• FloodSmart Logo

Partners

NOAA's National Weather Service
Service Hydrologist Program

OS Home | News | Organization | Search

Home | SH Reference Manual | E19 Documentation | Program Management | Training/Drills | Other Agencies | Case Studies | RFC Field Support | WFOs and RFCs | Other Links | Contact Us

Other Agencies

USGS	Bureau of Land Management
USGS Dataweb	US Forest Service
USGS National Water Information System Database	USDA Natural Resources Conservation Service
Advisory Committee on Water Information (USGS)	Association of State Dam Safety Officials, INC.
Bureau of Reclamation	US Fish and Wildlife Service
Waterspots Page (Bureau of Reclamation)	National Resources Conservation Center
US Army Corps of Engineers	FEMA
Federal Energy Regulatory Commission	Susquehanna River Basin Commission

SH Reference Manual, E-19 Docs, Program Management, Training/Drills, Other Agencies, Case Studies, RFC Field Support, WFOs/RFCs, Other Links

National Weather Service | Office of Climate, Water and Weather Services | Hydrologic Services Division
Comments, Questions? tom.dietrich@noaa.gov
<http://www.nws.noaa.gov/om/hodi/OtherAgencies.shtml>
Last Updated: June 23, 2006

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• FEMA



National Weather Service

Internet Sharing



HOME

ABOUT THE NATIONAL FLOOD INSURANCE PROGRAM

YOUR FLOOD RISK

- > Flood Scenarios
- > Flood Risk Factors
- > Hurricane Season
- > Spring Flooding
- > Winter Flooding
- > West Coast Rainy Season
- > **Weather Warnings**

FLOOD INSURANCE POLICIES

PREPARATION & RECOVERY

YOUR FLOOD RISK: Weather Warnings



Check here regularly for critical updates about severe flood-causing weather.

Weather Links

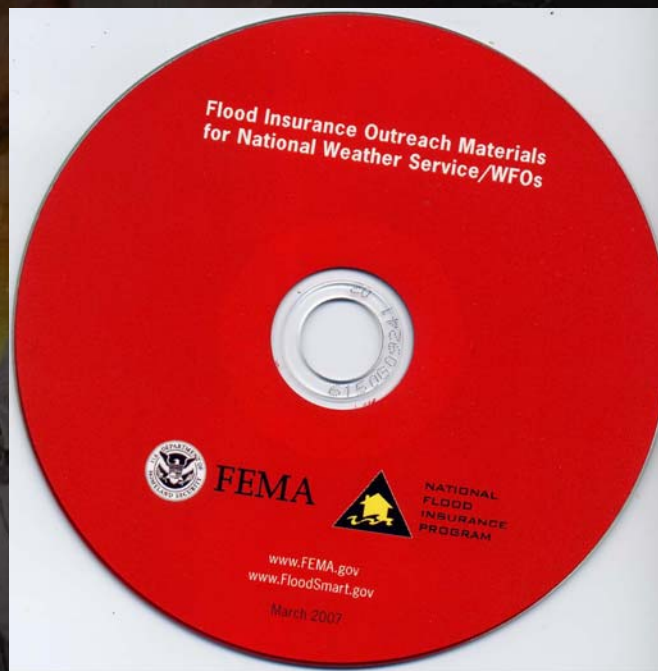
- [National Weather Service](#)
- [National Oceanic and Atmospheric Administration](#)
- [NOAAWatch All-Hazard Monitor](#)
- [National Hurricane Center](#)
- [NOAA Flood Page](#)
- [USGS Water Watch](#)





National Weather Service

FEMA Insurance Outreach Materials





National Weather Service

Cooperation



The National Weather Service and you can build safer, smarter, and more flood resilient communities.



National Weather Service

Videos and DVDs On-Line

www.weather.gov/os/water/Ahps.shtml

1. The Hidden Danger: Low water Crossings
2. Water Works: Careers in Hydrology
3. Moving Water: Adventure or Danger?
4. Water Predictions for Life Decisions
5. NWS/The Weather Channel
 - Water's Fury
 - Cyclone: Second Wave





National Weather Service

Turn Around Don't Drown





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Turn Around Don't Drown







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Turn Around Don't Drown

NOAA'S NATIONAL WEATHER SERVICE



**FLOODING AHEAD
TURN AROUND
DON'T DROWN**

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service
March 2005





National Weather Service

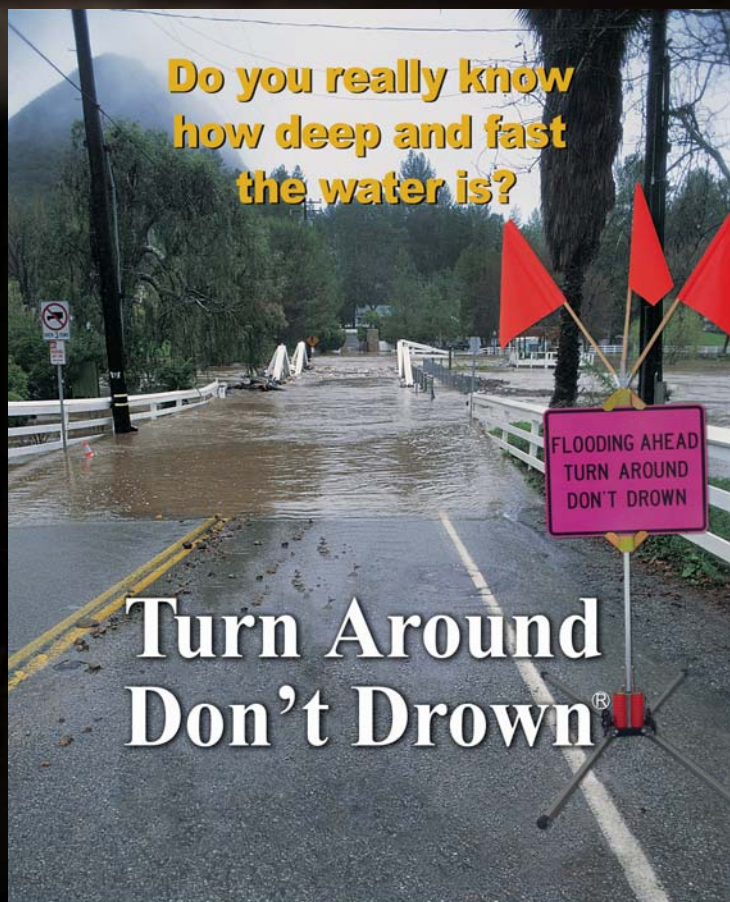
Turn Around Don't Drown



Bumper Sticker



National Weather Service



**Do you really know
how deep and fast
the water is?**

**Turn Around
Don't Drown®**

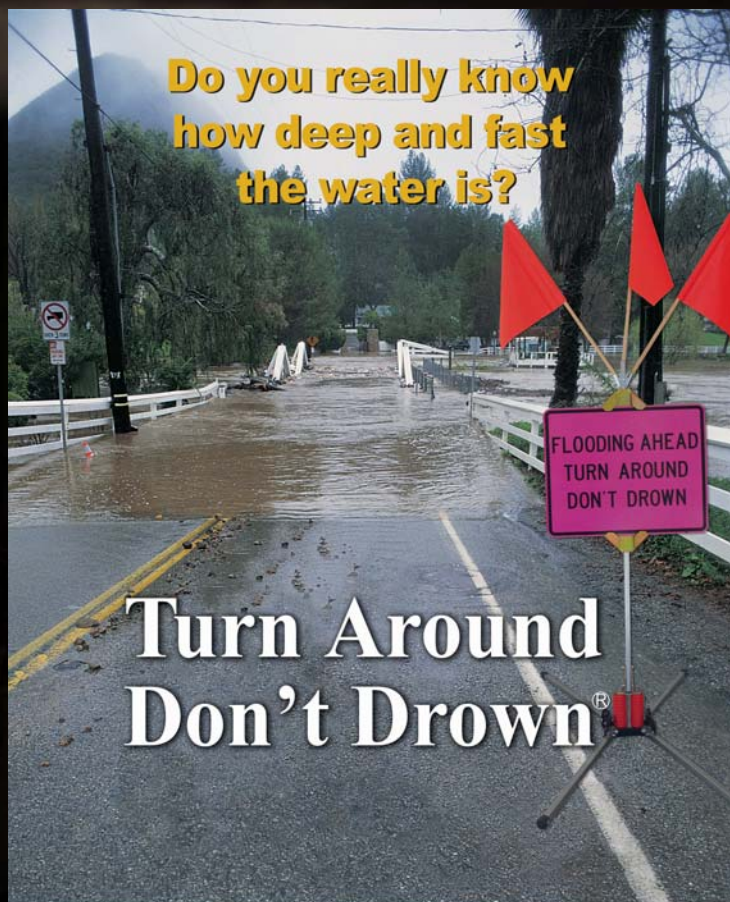
Turn Around Don't Drown

***What if an emergency
manager knew how high
the water was going to be
over this bridge hours
before the road flooded?***

Is this possible?



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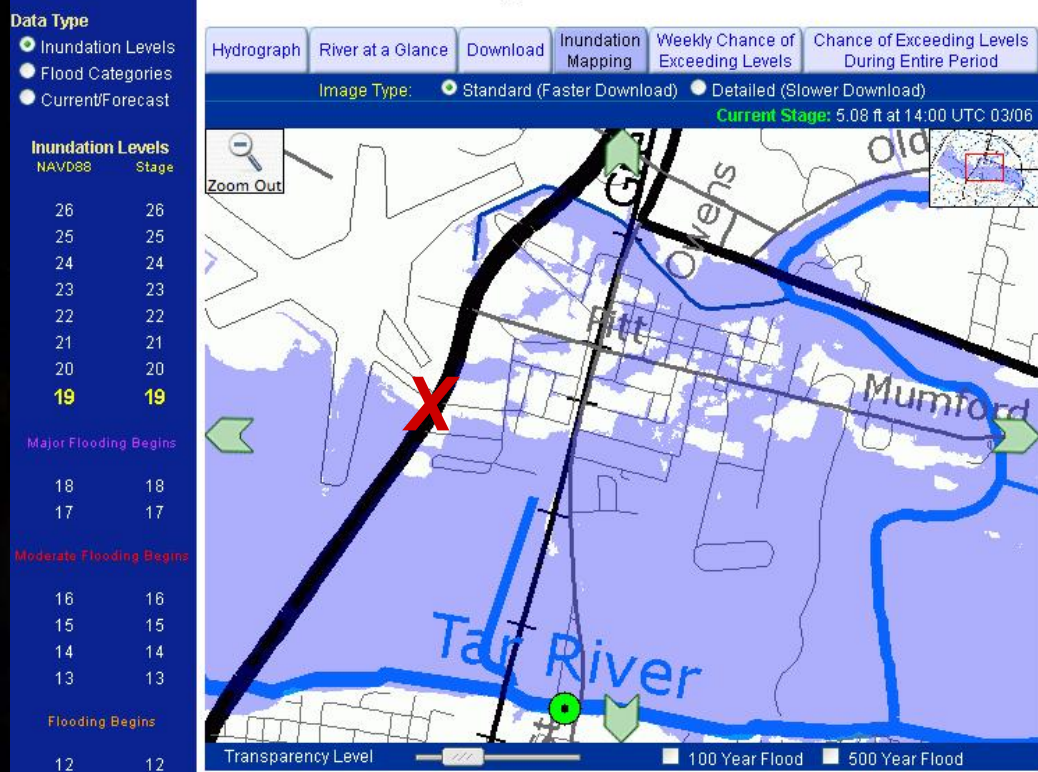
Turn Around Don't Drown

And, what if an emergency manager had enough time to place an incident sign on the road before it flooded to re-route traffic? Is this possible?



National Weather Service

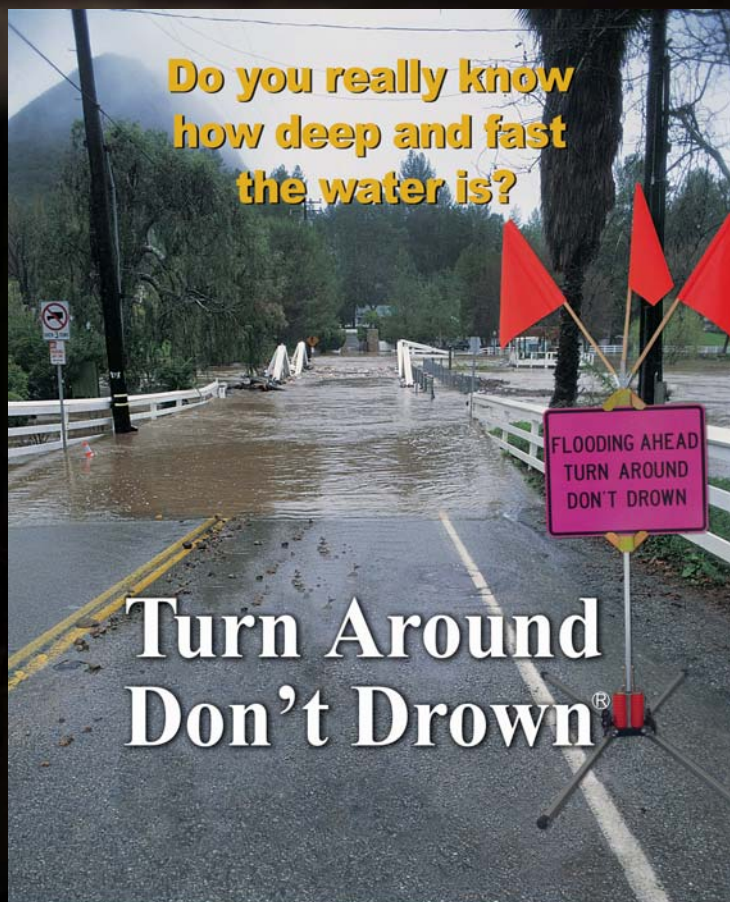
Turn Around Don't Drown



Yes, with Flood Mapping capability!



National Weather Service



Turn Around Don't Drown
Incident Road Sign



National Weather Service

Turn Around Don't Drown

Warning Road Sign





National Weather Service

Turn Around Don't Drown

FLOODING AHEAD
TURN AROUND
DON'T DROWN

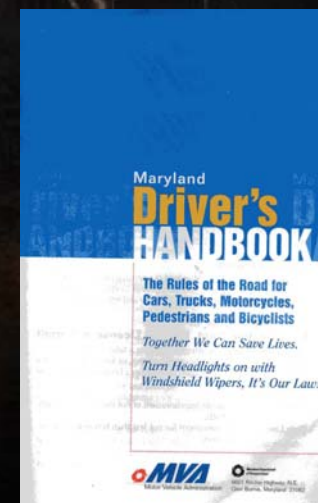
WHEN
FLOODED
TURN AROUND
DON'T
DROWN



U.S. Department of Transportation
**Federal Highway
Administration**



**American Association of
Motor Vehicle Administrators**





National Weather Service

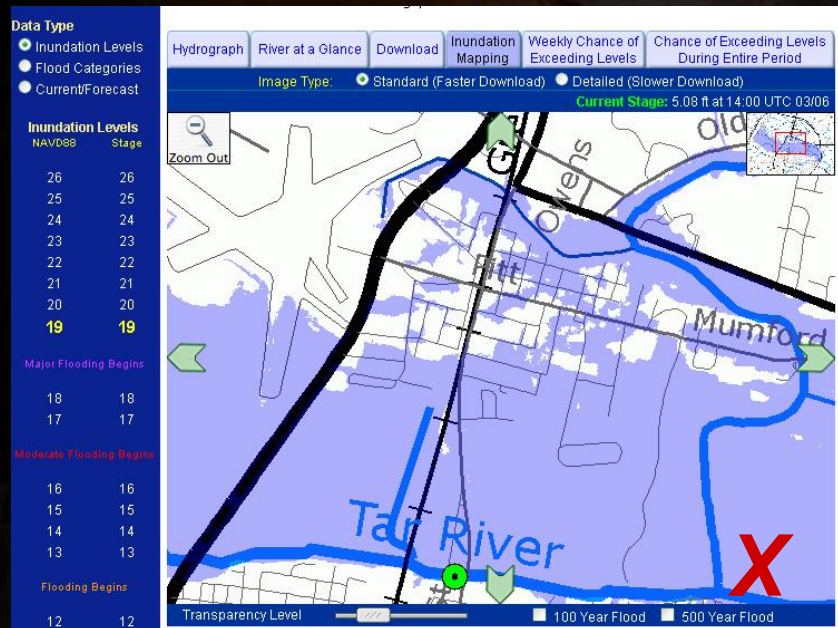
Recreational Community Managing Risk





National Weather Service

Recreational Community Making Informed Decisions





National Weather Service

Managing Risk

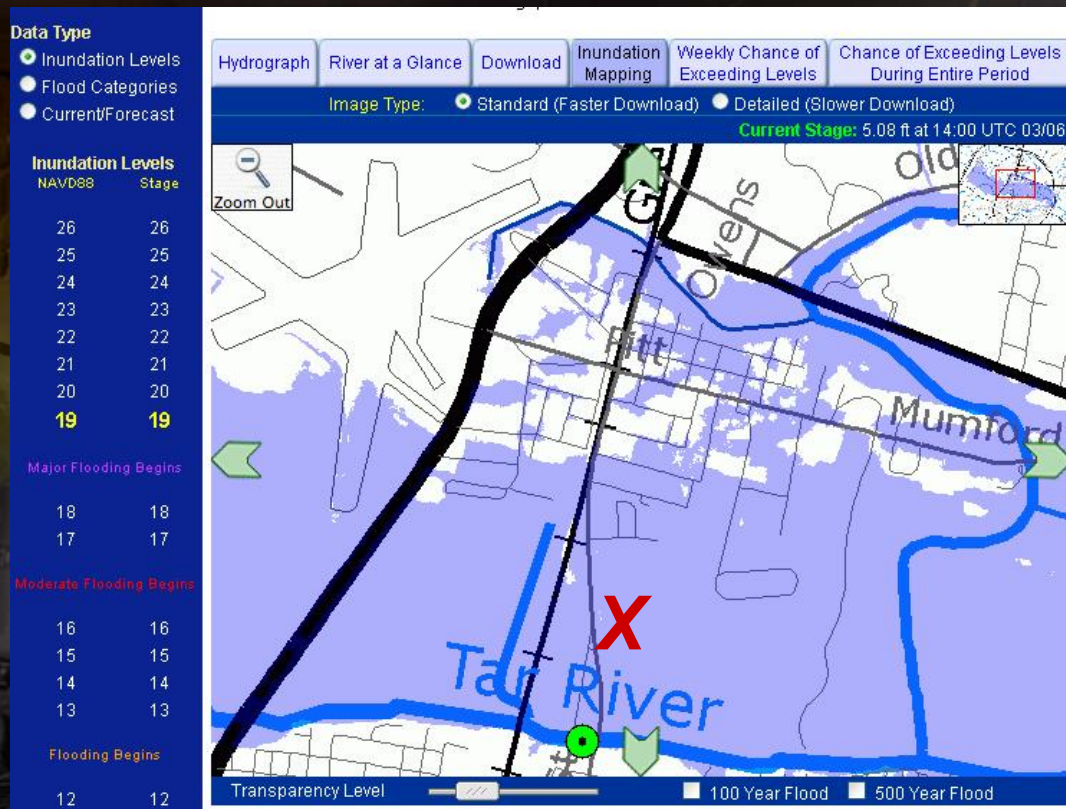


Could this event have been avoided?



National Weather Service

Managing Risk



Information for more informed decisions



National Weather Service

We Need Your Help



Charting Into the Future



National Weather Service



National Weather Service Customer Satisfaction Survey

Hydrologic Services Program



National Weather Service

Stay Informed

A composite image featuring a satellite view of a hurricane on the left, a yellow diamond-shaped road sign with the word "FLOODED" on the right, and a silver NOAA weather radio in the foreground. The radio's screen displays "-248°F".

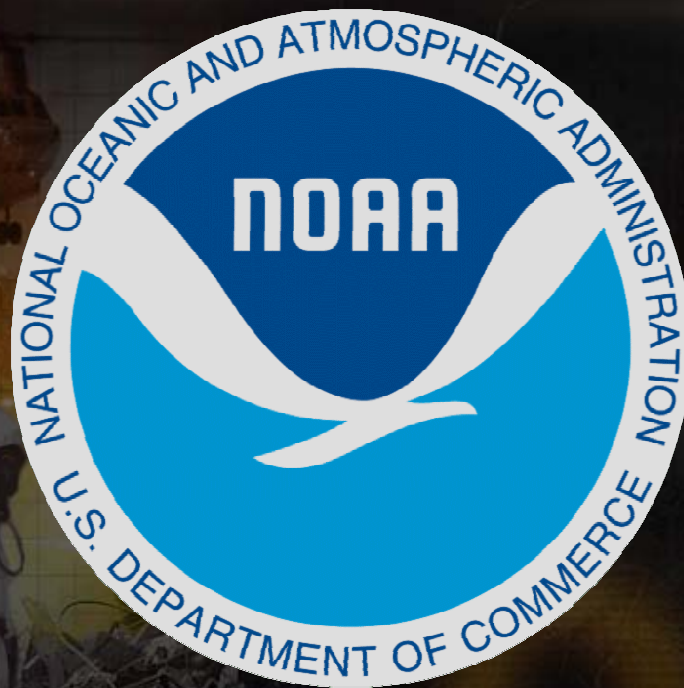
All Hazard Weather Radios

Weather Alert Radios for national emergencies, tornados, thunderstorms, hurricanes, chemical spills, fires, natural and man-made disasters.

NOAA Weather Radio Drawing



National Weather Service



Forecasting Water from the Summit to the Sea