IMPROVING FLOOD RISK COMMUNICATIONS: “SIGNS” OF CHANGING BEHAVIOR?

DANIEL M. TOMCZAK, CFM
CH2M HILL, INC
RALEIGH, NC
U.S.
HOW MUCH RISK DO WE WANT TO TAKE DRIVING THROUGH FLOOD WATERS?
TURN AROUND DON’T DROWN

• TADD phrase was initially scripted by Hector Guerrero, a NWS warning coordination meteorologist from Texas, in 2003
• TADD was adopted by the NOAA-NWS and debuted nationally in 2004
• Permanent signs are YELLOW and diamond-shaped; temporary signs are PINK and rectangular-shaped
• Acquiring signs could be done through purchasing from a private or State sign shops, received by State organizations, or the regional NWS office
TURN AROUND DON’T DROWN
Between December 2012 and November 2013, FEMA and other Federal agencies worked with 7 communities nationwide to pilot the HWM initiative:
- Frankfort, KY; Harrisburg, PA; Nashville, TN; Orange Beach, AL; Sacramento/Roseville, CA; Santa Rosa County, FL; and San Anselmo, CA.
- Another 40 communities around the U.S. have also expressed an interest in the HWM initiative.
HIGH WATER MARK INITIATIVE

• Communities post signs showing height of previous flood waters, hold public events, conduct outreach to increase awareness of flood risk, and implement flood mitigation actions to establish resilience within the community

• High water marks can generate greater flood risk awareness and therefore provide CRS credit points (Activity 330 Outreach)
**FLOODS DESTROY BE PREPARED**

- National flood action campaign launched by the Environment Agency (EA) in the United Kingdom in 2014
- 3 step process to be better prepared for floods
  1. Use EA flood maps to determine if you are at risk
  2. Sign-up for free flood warnings – phone, text, or email
  3. Prepare a personal or business flood plan
FLOODS DESTROY BE PREPARED

• Over 21,687 flood rescues in the last 5 years (by the Automobile Association)
• Leading flood accident “hotspot” is in Newark, Nottinghamshire (96 flood rescues in 5 years)
• Single day with the most number of rescues: 642 on December 24, 2013
• 66% make drivers and 54% female drivers would risk driving through flooded roadway
IF IT’S FLOODED, FORGET IT

• Established in Queensland, Australia
• Between 2010-2014, two thirds of the flood related fatalities in Queensland, New South Wales, and Victoria were the result of people driving through floodwaters
• “Have a Plan B” – develop a plan with multiple alternatives to stay safe
  • Map out alternate routes; work from home; identify safe locations to wait for water to recede; make sure phone is charged; arrange for others to pick-up kids from school or daycare
IF IT’S FLOODED, FORGET IT

Research has been done to evaluate means to reduce the frequency of motorists driving through flood waters (Gissing et al, 2015):

• Motorist behaviors, whether to enter a flooded roadway or avoid it, is influenced by viewing the actions of other motorists
• Develop a holistic approach comprising education, regulation, and engineering measures
• Community education campaigns must use communications that target risk groups and involve multiple partner agencies including road safety groups, emergency management, water safety groups, insurance companies and schools
EDUCATION AND OUTREACH
CHARLOTTE-MECKLENBURG STORM WATER SERVICES

• Examples by Charlotte-Mecklenburg Storm Water Services include utility bill inserts and newsletters
EDUCATION AND OUTREACH
NORTH CAROLINA ASSOCIATION OF FLOODPLAIN MANAGERS
VEHICLE - FLOOD RELATED FATALITIES
1995 - 2015
WHY DO PEOPLE TAKE THE RISK?

WHY WE PUT OURSELVES IN DANGER

MOST COMMON REASONS PEOPLE CROSS FLOODWATER:

- PEOPLE WITH LOCAL KNOWLEDGE OF THE ROADS ARE FAR MORE LIKELY TO DRIVE THROUGH FLOODWATER.
- THEY BELIEVE THEIR VEHICLE CAN HANDLE IT.
- THE PRESSURE OF GETTING TO WORK OR HOME.
- HAVING SOMEBODY WAITING FOR THEM.
- A PERCEIVED LOW DANGER RISK. ABOUT 29% OF PEOPLE BELIEVE WATER SPEED DOES NOT MATTER, ONLY DEPTH.

*Findings from online survey of 1600 Queensland drivers aged 18 or above.*
LAWS TO DETER

• **ARIZONA REVISED STATUTE (ARS) 28-910** (aka….“Stupid Motorist Law”)
  - Set-up and approved by the State House and Senate in 1995
  - Any person who drives into a flooded area and is charged with reckless driving (i.e., drives around barricades) may be liable for the rescue

• **VIRGINIA HOUSE BILL (HB) 289**
  - Brought before the State House and Senate in Spring 2016
  - Would allow local law enforcement in Virginia to establish an ordinance that would make crossing roads that are flooded to a dangerous point as a class 4 misdemeanor
  - Bill did not pass
“I didn’t think the water was that deep”
THANK YOU