
LESSONS LEARNED FROM 20+ FLOOD RESPONSE PLANS

ASFPM ANNUAL NATIONAL CONFERENCE

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Sheila McKinley, AICP, CFM
Siavash Beik, PE, CFM, D.WRE



DOES YOUR
COMMUNITY
HAVE A
FLOOD
RESPONSE
PLAN?

WITH EVERY MAJOR FLOOD

- OVERWHELMING
LEVEL OF ACTIVITY
- NEED FOR QUICK
INFORMATION AND
RESPONSE
- NEED TO BE PREPARED
AND HAVE A GOOD
PLAN



FLOOD RESPONSE PLAN...

- PURPOSE: reduce risk of loss of life, injury and damage to property
- SCOPE: limited to the actions of the FRP Coordinator



FLOOD RESPONSE PLAN...



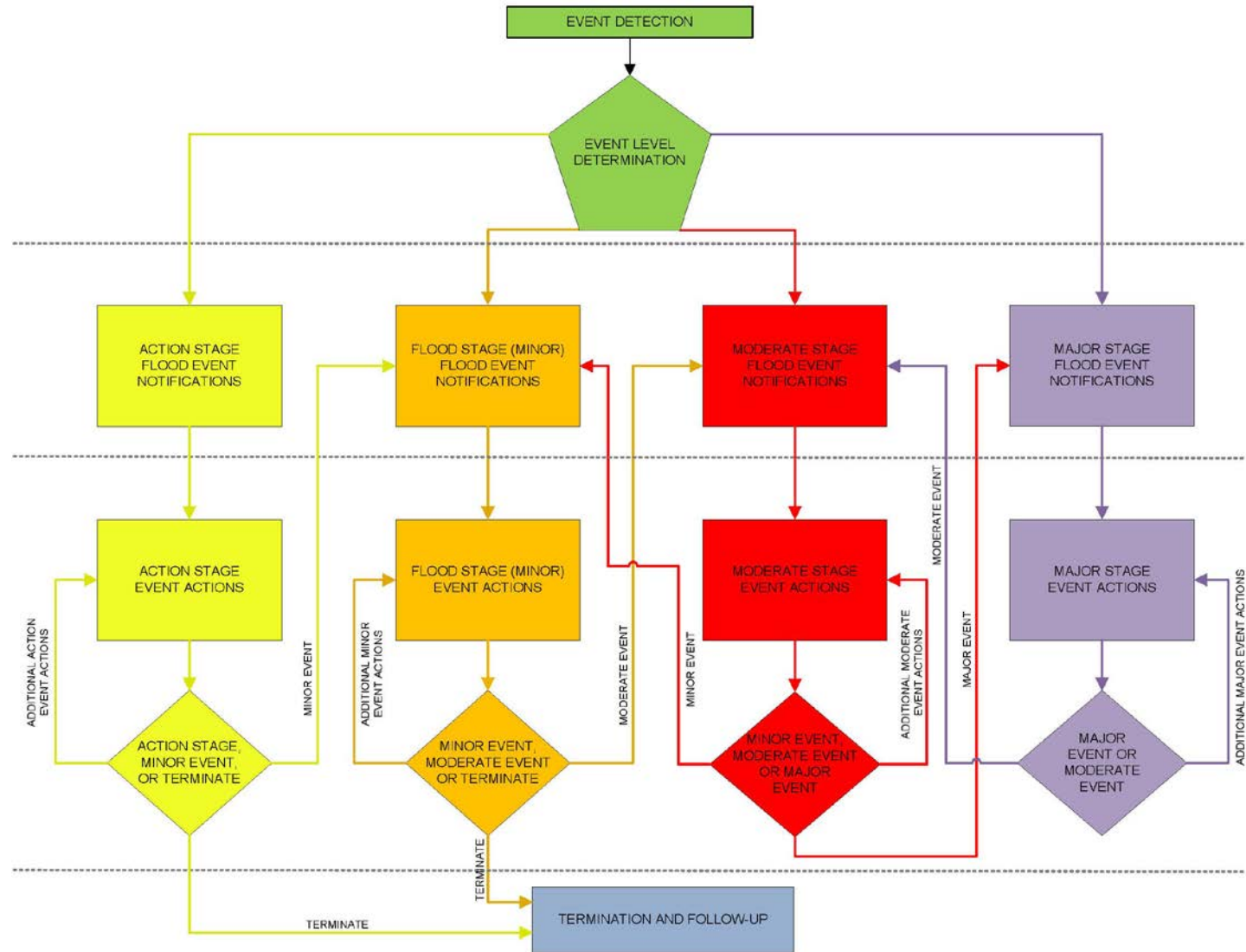
1. Documents the flood response process and informs those involved in the chain of command
2. Lists specific responsibilities and task assignments tied to stages of the flood fight
3. Prevents duplication of efforts and wasted resources; avoids gaps in response and recovery
4. Provides continuity during events if experienced staff is not available

STEP 1
Event Detection &
Level Determination

STEP 2
Notification &
Communication

STEP 3
Expected Actions

STEP 4
Termination & Follow-up



20+ Flood Response Plans...



ISJ INITIATED



OCRA FUNDED



IDHS MANAGED



CBBEL DEVELOPED

City/Town	County	Population	Funding Source
Spencer	Owen	2,271	CBBEL/USGS
Indianapolis	Marion	863,002	Self-Funded
Columbus	Bartholomew	14,850	Self-Funded
Decatur	Adams	9,524	OCRA/IDHS
Lebanon	Boone	16,098	OCRA/IDHS
Nashville	Brown	1,067	OCRA/IDHS
Elnora	Daviess	657	OCRA/IDHS
Princeton	Gibson	8,362	OCRA/IDHS
Noblesville	Hamilton	60,183	OCRA/IDHS
Greenfield	Hancock	21,709	OCRA/IDHS
Portland	Jay	6,161	OCRA/IDHS
Franklin	Johnson	24,867	OCRA/IDHS
Anderson	Madison	55,130	OCRA/IDHS
Alexandria	Madison	5,024	OCRA/IDHS
Martinsville	Morgan	11,669	OCRA/IDHS
New Castle	Henry	17,426	OCRA/IDHS
Seymour	Jackson	19,384	OCRA/IDHS
Edinburgh	Johnson	4,577	OCRA/IDHS
Vincennes	Knox	17,924	OCRA/IDHS
Elwood	Madison	8,416	OCRA/IDHS
Crawfordsville	Montgomery	16,001	OCRA/IDHS
Bloomington	Monroe	84,185	OCRA/IDHS



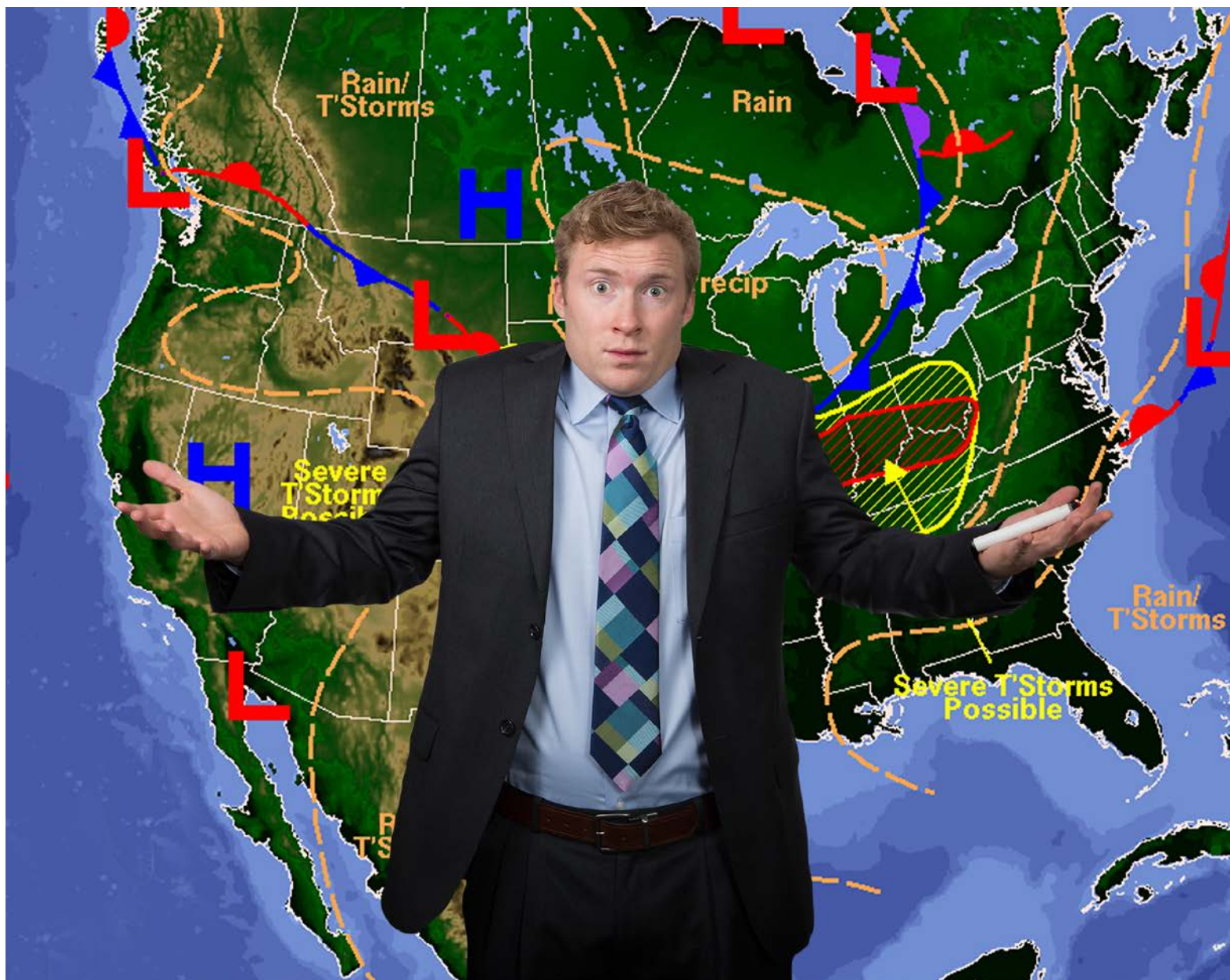
LESSONS LEARNED FROM 20+ FLOOD RESPONSE PLANS





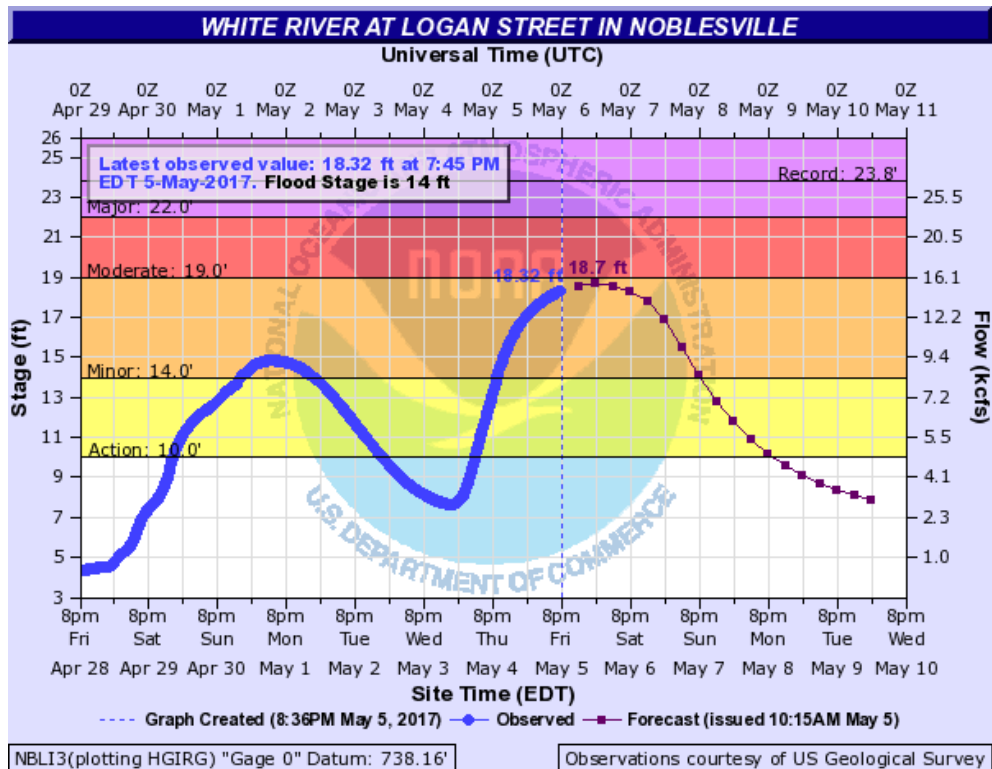
FORECAST IS NOT ALWAYS ACCURATE



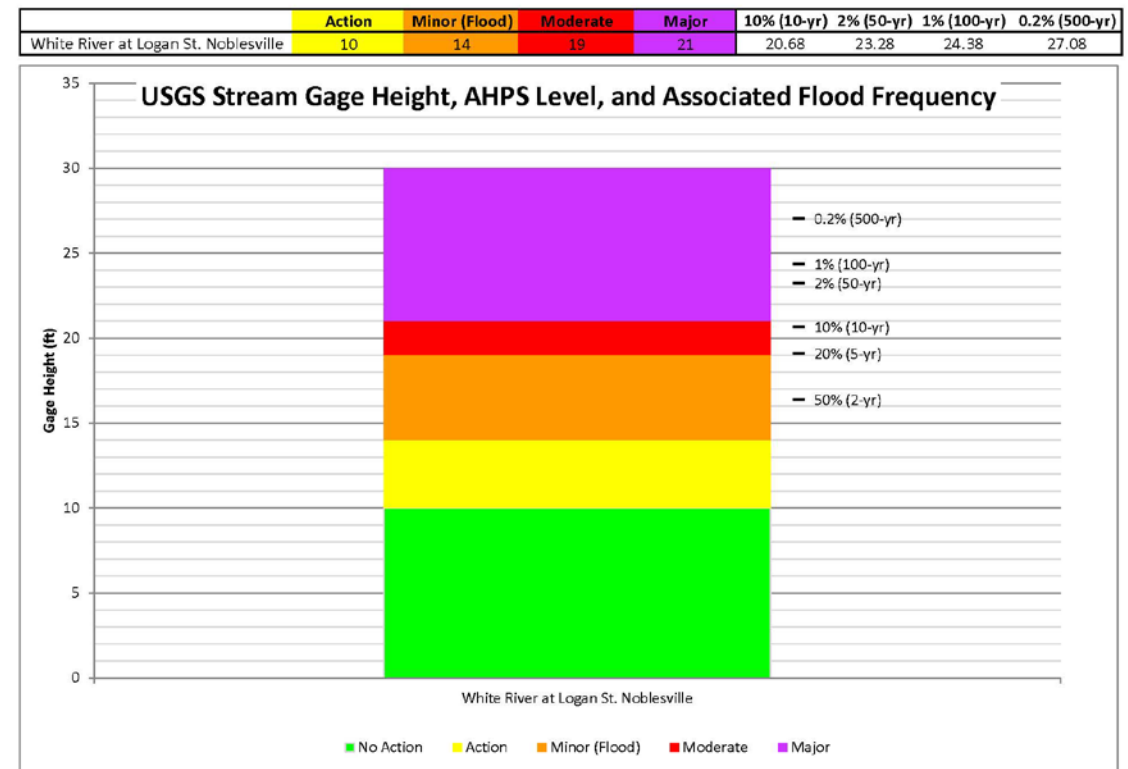


VARIABLES IN
FORECASTING
WEATHER...

FRP – FLOOD DETECTION & FORECAST RESOURCES

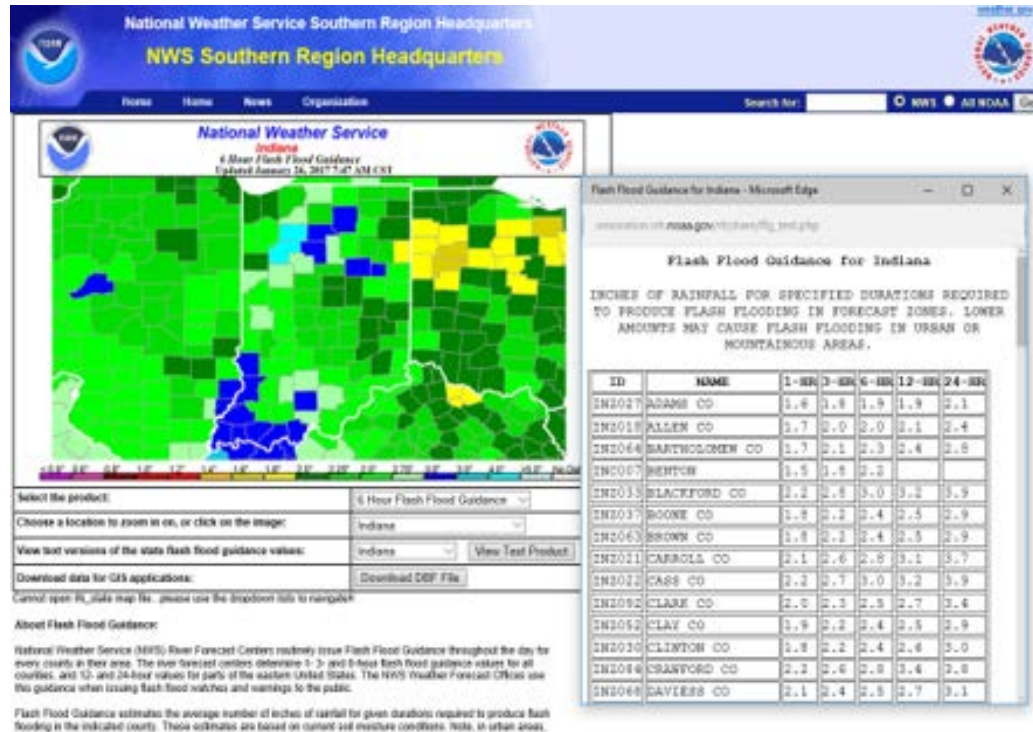


Advanced Hydrologic Prediction Service (AHPS)

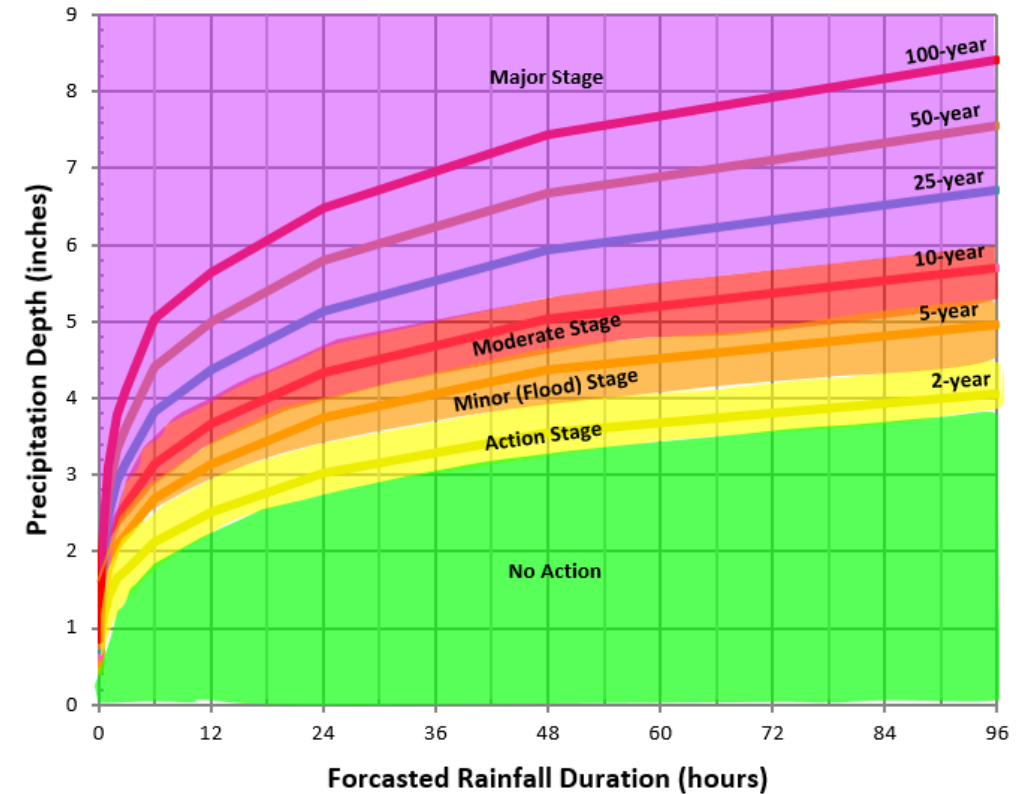


Assembled for Flood Response Plans

FRP – FLOOD DETECTION & FORECAST RESOURCES



NWS Flash Flood Guidance



Assembled for Flood Response Plans

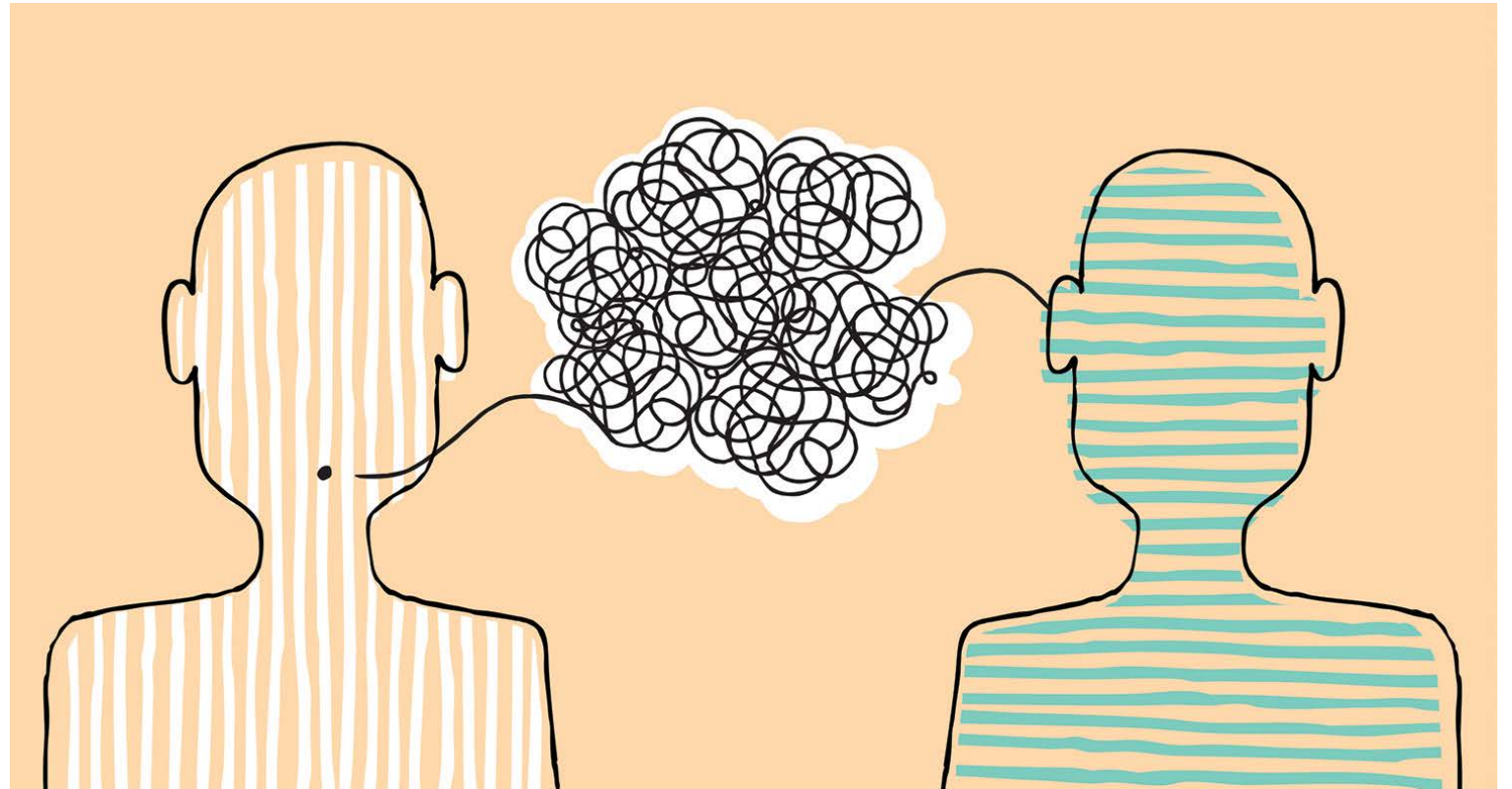


NEED FOR A CLEAR & CONCISE MESSAGE



COMMUNICATE RISK

- Understand risk from flooding
- Improved flood preparedness, response and recovery
- Support flood mitigation measures



PRESCRIPTED MESSAGES

FRP Coordinator

Flood Stage (Minor) Flood Event with a Forecasted Stage Reaching 22 Feet or Higher

- This is **(name)**, FRP Coordinator. I am making this call in accordance with the City's Flood Response Plan.
- A Flood Stage Event has been detected affecting the Vincennes area.
- **[If a levee failure is not suspected:]** The levee system is not in any danger and is expected to perform as expected. No major flooding is expected in Vincennes.
- **[If a levee failure is suspected along the Vincennes levee segment:]**
 - Complications have occurred along the Vincennes levee segment **(explain the circumstances)**.
 - Although every effort is being made to address the issues, the integrity of the levee system during this flood event cannot be assured. Therefore, as a precaution, the low-lying areas within the levee protected areas **(describe area subject to potential flood inundation)** should **prepare to evacuate** or **evacuate immediately** **(depending if time exists before flood inundation occurs)** using the following routes **(list routes based on input from first responders)**
- The FRP has been activated, currently at the Flood Stage (Minor) Flood Event level.
- The forecast is for further rise in the river stages and we expect to reach **(level)** Flood Stage Event within the next **(number of hours or days)**.
- I will keep you apprised of the situation. The best number to contact me during this event is **(emergency contact number)**.

Public Information Officer

Announcement for Flood Stage (Minor) Flood Event with a Stage Higher than 20 feet

URGENT, URGENT: THE CITY OF VINCENNES ANNOUNCED AT **(time)** TODAY THAT WABASH RIVER IS AT MINOR FLOOD STAGE.

COMPLICATIONS HAVE OCCURRED ALONG THE VINCENNES LEVEE SEGMENT **(explain the circumstances)**. ALTHOUGH EVERY EFFORT IS BEING MADE TO ADDRESS THE ISSUES, THE INTEGRITY OF THE LEVEE SYSTEM DURING THIS FLOOD EVENT CANNOT BE ASSURED. THEREFORE, AS A PRECAUTION, THE LOW-LYING AREAS WITHIN THE LEVEE PROTECTED AREAS, INCLUDING THE AREAS **(describe area subject to potential flood inundation based on information provided by the FRP coordinator)** SHOULD "PREPARE TO EVACUATE" / "EVACUATE IMMEDIATELY" **(depending if time exists before inundation occurs)**. USE EVACUATION ROUTES **(list routes)**

SHOULD THE SITUATION WORSEN, I WILL KEEP YOU APPRISED. ADDITIONAL INFORMATION WILL BE RELEASED AS PROMPTLY AS POSSIBLE.

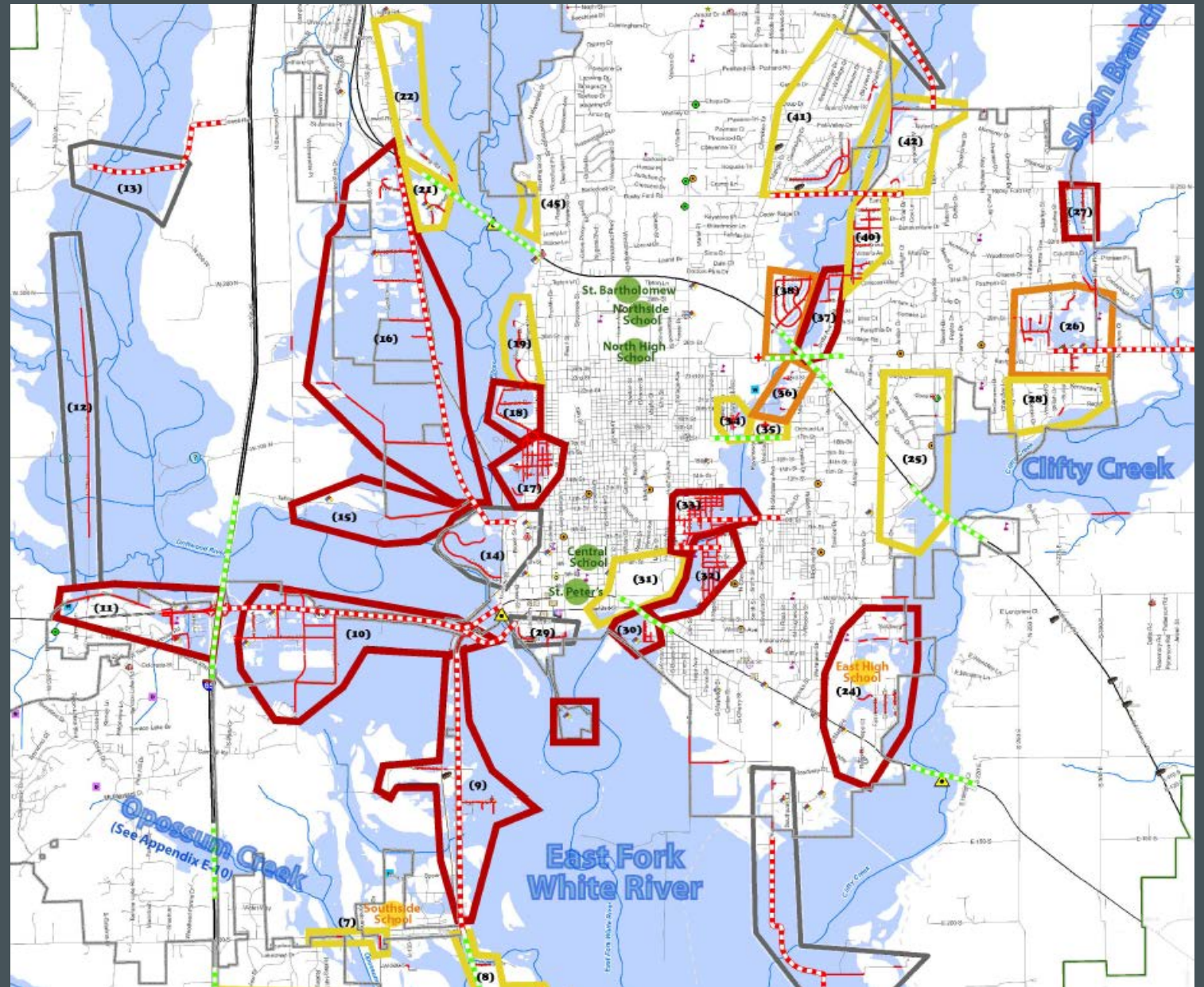


GREATER UNDERSTANDING OF FLOOD RISK



FLOOD IMPACT AREAS

- 10, 50, 100 & 500-YR
- COLOR CODED PRIORITY AREAS
- OVERTOPPED ROADS
- SHELTER ACCESS
- BETTER DATA – USGS INUNDATION & BLDG FOOTPRINTS



Relationship to River Gage Stage & Anticipated Overtopping of Major Transportation Routes

Major Transportation Routes By Stream	USGS Gage	Approximate Gage Stage When Road Overtops*	Stream Stage at USGS Gage																							
			10	11	12	13	14	15	16	17	18	19	20	21	22	23										
Haw Creek	Reccurance Interval (RI) >								10 yr	50 yr	100 yr	500 yr														
CR 450 N		12.5																								
Marr Road		14.5																								
Rocky Ford Road	Haw Creek	15																								
25th Street	near Clifford	16.5																								
17th Street		undetermined stage > 17																								
10th Street		14																								
State Street (SR 46)		16.5																								
Clifty Creek	RI >																	10 yr				50yr	100 yr			500 yr
National Road (US 31)	Clifty Creek	undetermined stage > 23																								
State Street (SR 46)	at Columbus	undetermined stage > 23																								
Galdstone Avenue		18.5																								
Flatrock River	RI >										10 yr				50 yr	100 yr	500 yr									
CR 800 N		undetermined stage > 19.5																								
CR 550 N	Flatrock River at	10.5																								
CR 400 N	Columbus	11																								
National Road (US 31)		19																								
Indianapolis Road		15																								
Driftwood River	RI >										10 yr			50 yr	100 yr	500 yr										
Lowell Road	Driftwood River near Edinburgh	16																								
Driftwood River	RI >										10 yr					50 yr			100 yr				500 yr			
SR 46	EFK White River at Columbus	15.5																								
EFK White River	RI >										10 yr					50 yr		100 yr					500 yr			
SR 46 W		15.5																								
3rd Street			Limited by SR 46																							
2nd Street			Limited by SR 46																							
SR 11 N of CR 200 S	EFK White River	12.5																								
SR 11 S of CR 200 S	at Columbus	17																								
Southern Crossing		15																								
CR 800 S		13.5																								
Gladstone Avenue		14																								

Sloan Branch	RI >		10 yr					50 yr					100 yr					500 yr				
25th Street	No Gage Available																					

* Estimated based on available data. Should be updated based on gage peaks observed near the time that road experiences overtopping.

Road overtopping is not expected
 Road overtopping is expected
 Road overtopping is not expected at or below the 500 year flood level.
 Actual point of overtopping was not determined.

Zoom History



Indiana: St. Marys Ri...

Estimated Flood Conditions



☐ Adjust flood opacity

☒ view grids

Selected Gage Height:

27.00 feet

Selected Discharge:

15130.00 cfs

Selected NAVD88 Altitude:

787.10 feet

Click on map for
estimated water depth



Available Layers

- ☐ National Weather Service Radars
- ☐ Flood Watches/Warnings
- ☐ AHPS Forecast Sites

Flood depth (in feet)

Area in floodplain

- ☐ 0 - 2
- ☐ 2 - 6
- ☐ 6 - 15
- ☐ 15 +

Area of uncertainty (where applicable)



USGS FIM sites (NWS forecast category)

- ☐ No forecast information available
- ☐ Major flooding
- ☐ Moderate flooding
- ☐ Minor flooding
- ☐ Action stage
- ☐ No flooding

Levee centerline (where applicable)

Limit of study area

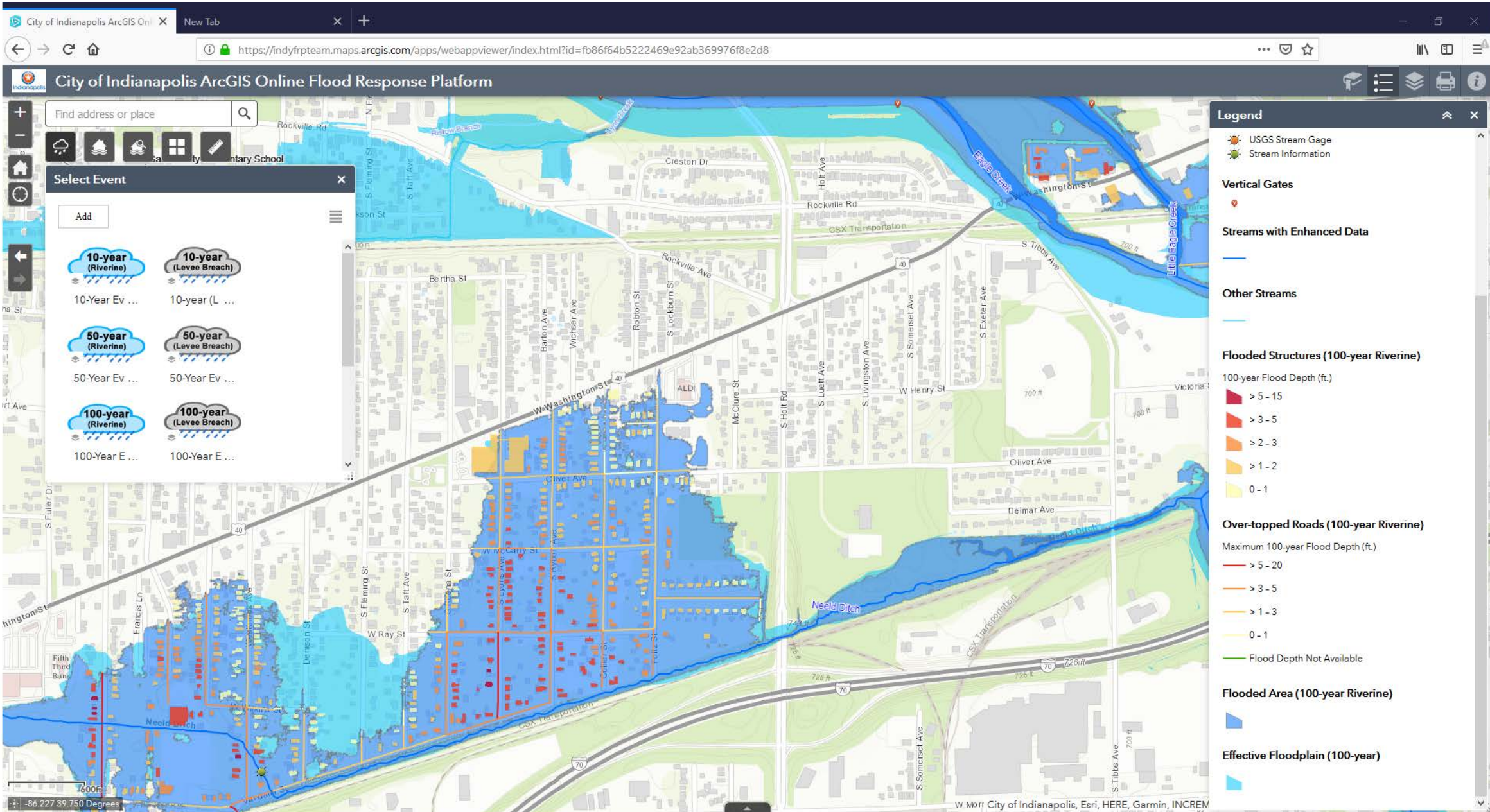
0.5 km

0.5 mi

Map Scale: 1:18056

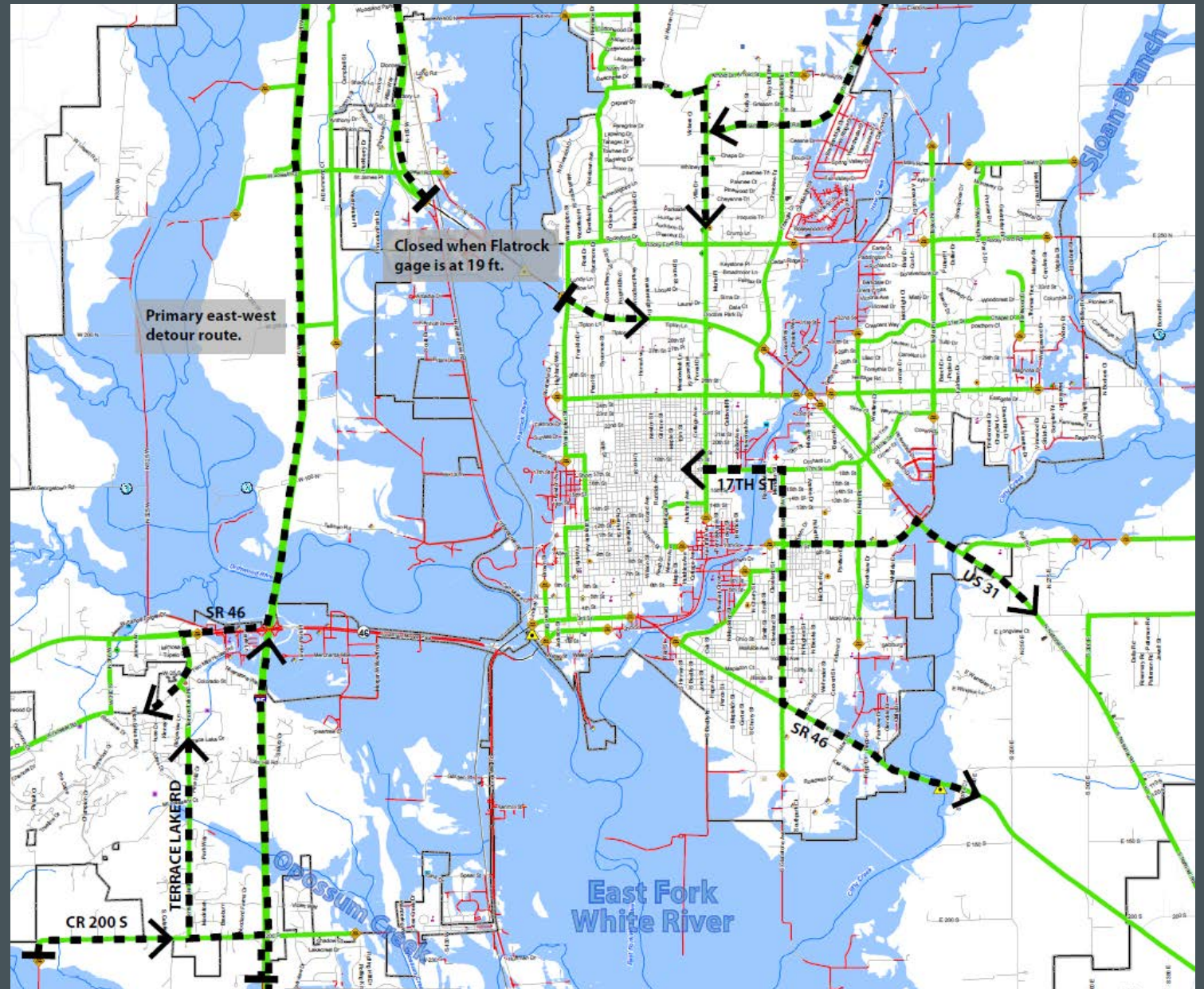
Geographic

Lat: 40.8481, Lng: -84.9375



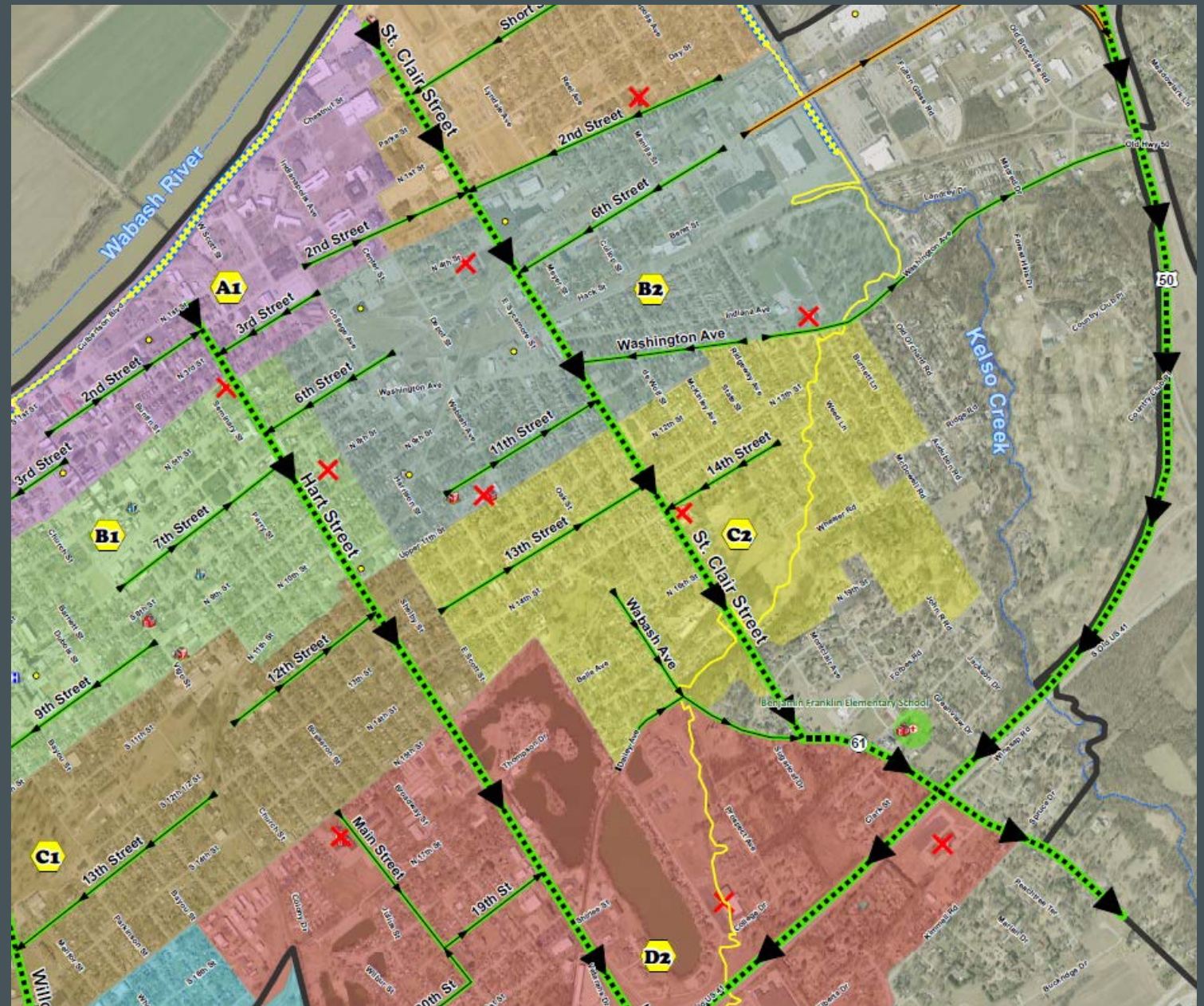
FLOOD-SAFE ROUTES

- 500-YR FLOOD
- OVERTOPPED ROADS
- FLOOD-SAFE ROUTES



EVACUATION ROUTES

- LEVEE BREACH
- EVACUATION ZONES
- EVACUATION ROUTES
- SHELTER LOCATIONS





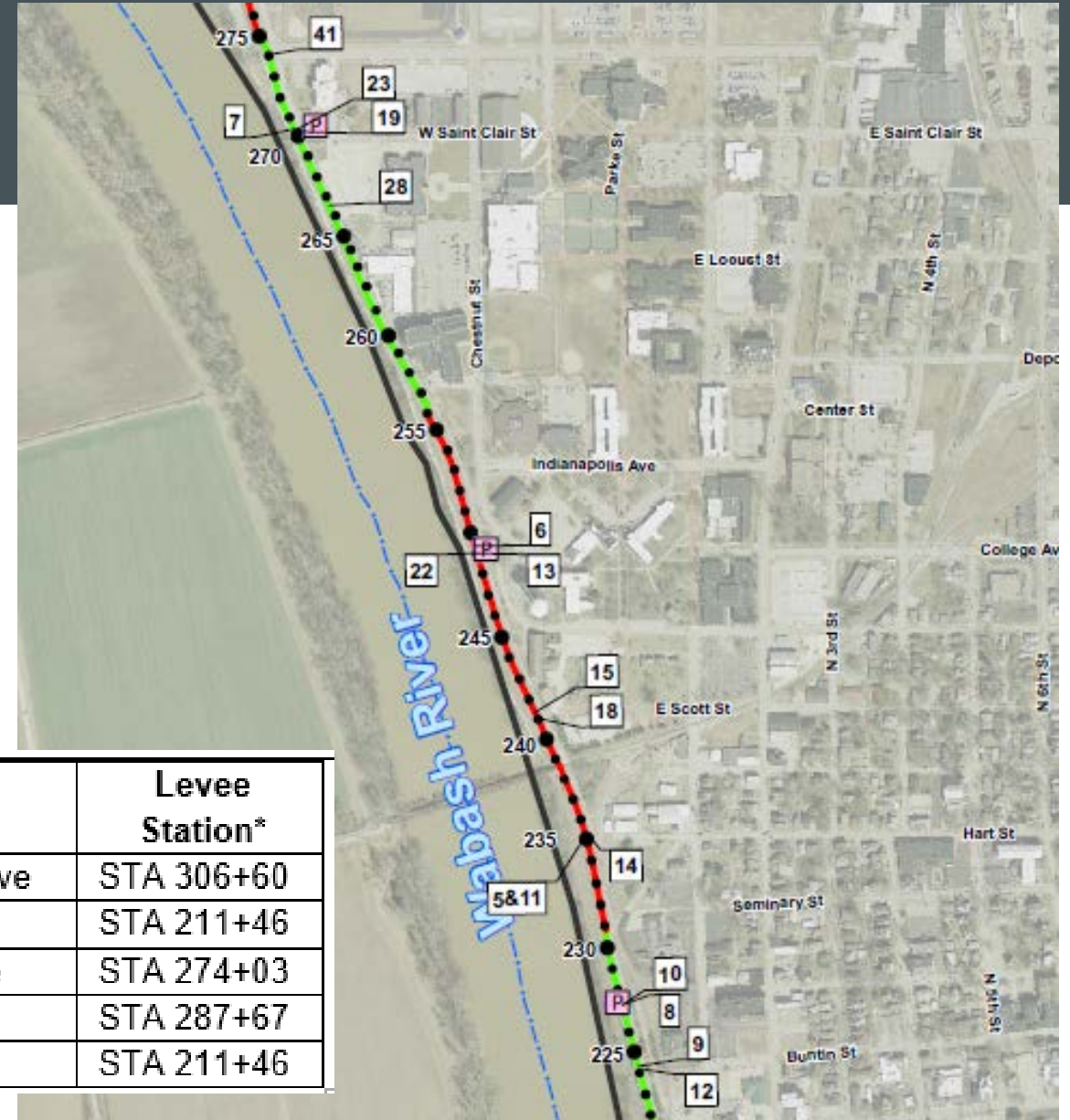
CHECKLIST OF EXPECTED ACTIONS



EXPECTED ACTIONS

- A. Determine Areas Affected & Make Notifications
- B. Monitor Data & Conditions
- C. *Inspect & Operation Gates, Closures & Pumps*
- D. Conduct Warning & Evacuation
- E. Record Observations & Actions

Gage Height	Action	Map Key*	Asset	Levee Station*
24.5	Install Closure	39	Movable Post @ Oliphant Drive	STA 306+60
25.6	Inspect Gate	37	12" S.G. @ GW 16	STA 211+46
26.5	Install Closure	41	Movable Post @ Portland Ave	STA 274+03
27.0	Install Closure	44	Movable Post @ Kimmel Park	STA 287+67
27.6	Close Gate	37	12" S.G. @ GW 16	STA 211+46





VALUE OF A TABLETOP EXERCISE





TABLETOP EXERCISE

1. Review tools and resources
2. Practice communicating clear and concise message
3. Clarification of roles and responsibilities
4. Opportunity to revise plan procedures

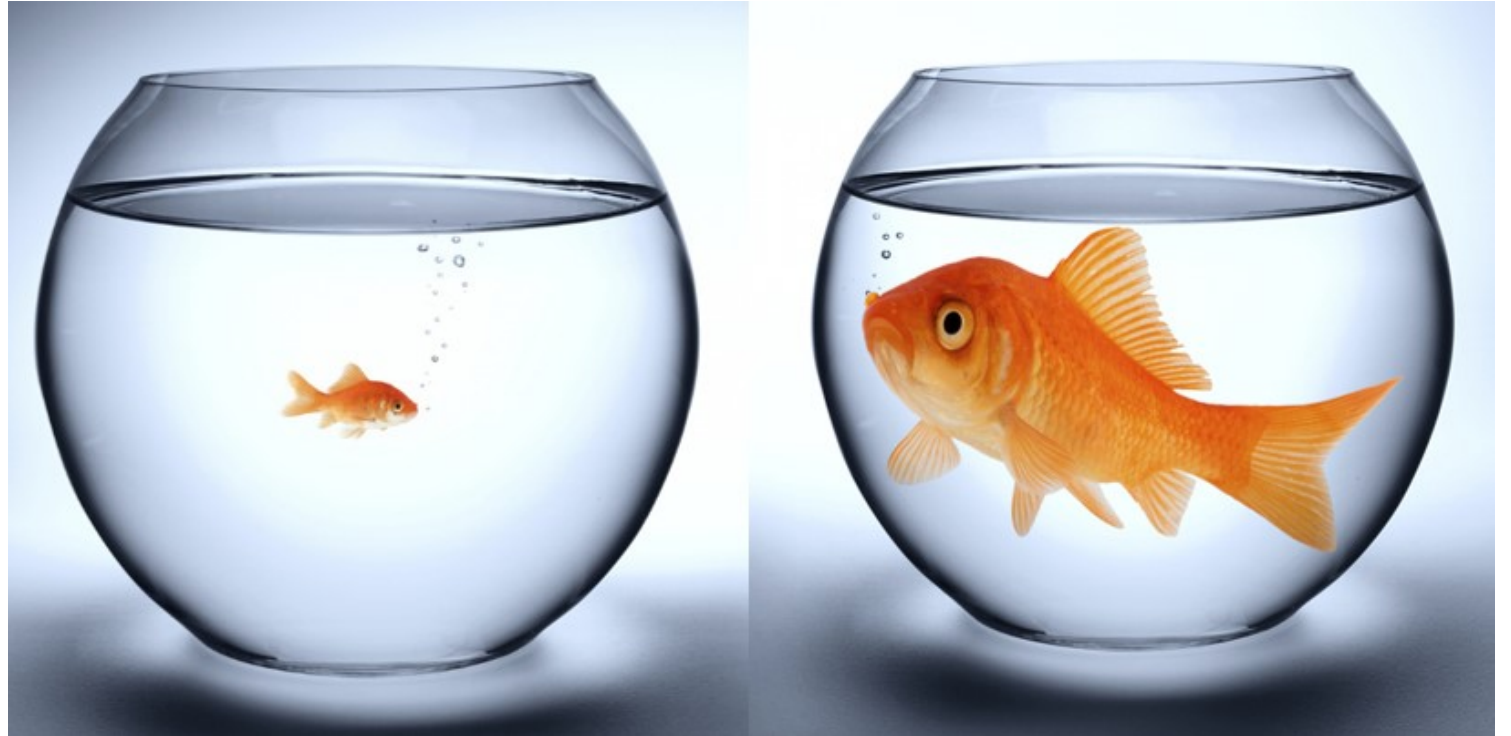


ONE SIZE DOES NOT FIT ALL



FLEXIBLE APPROACH

- GAGED STREAMS
- UNGAGED STREAM
- LEVEE PROTECTED
- RESOURCES
- QUALITY OF DATA



SUMMARY OF LESSONS LEARNED

FORECAST IS NOT
ALWAYS
ACCURATE

NEED FOR A
CLEAR AND
CONCISE
MESSAGE

GREATER
UNDERSTANDING
OF FLOOD RISK

CHECKLIST OF
EXPECTED
ACTIONS

VALUE OF A
TABLETOP
EXERCISE

ONE SIZE DOES
NOT FIT ALL



Sheila McKinley, AICP, CFM

Director, Planning

smckinley@cbbel-in.com

Siavash Beik, PE, CFM, D.WRE

Principal Engineer

sbeik@cbbel-in.com

Christopher B Burke Engineering, LLC

317-266-8000