

September 5, 2019

# DNR Risk MAP updates

for 2019



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Engineering Section Manager  
Division of Water

## Outline

- Sugar Creek Channel Stability and Flood Risk Assessment
- Lebanon Flood Resilience Plan
- 4 County Transportation Vulnerability Assessment
- Mitigation action / structure level floodplain analysis in Clark County
- FIRM Production for FY 2018
- Coordinated Needs Management Strategy (CNMS) update for FY 2019
- FIRM Production activities from STARR / Compass
- FEMA CTP Recognition Program and Story Map
- Lake Michigan Coastal Floodplain Updates



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### The Cooperating Technical Partner program

Division of Water has partnered with FEMA since 2004 to update / manage Flood Insurance Rate Maps in Indiana

Updated 83 counties during Map Modernization (2004-2008)

Discovery / Action Discovery in 7 HUC-8 watersheds for Risk MAP (2009-2017)

Mapping production starting in 2018

The project team is

- IDNR Division of Water
- The Polis Center at IUPUI
- Various review and data development contractors
- FEMA
- FEMA contractors (Regional Service Center)





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# Sugar Creek Channel Stability and Flood Risk Assessment

Purpose: Identify  
root causes and  
potential  
solutions for  
erosion and high  
banks

- Major concerns about bank erosion and stability along Sugar Creek that threatens or has compromised property and infrastructure
- Develop a better understanding of the Sugar Creek system to enable informed decision making that addresses the root cause of the problems, not the symptoms
- Evaluate mitigation alternatives that provide sustainable, long-term solutions that have no adverse impact

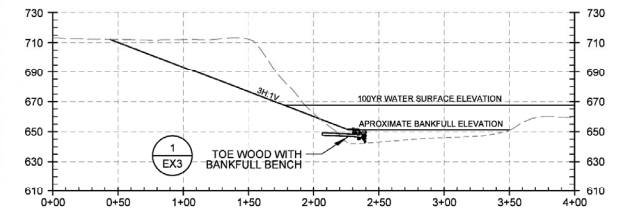


Sugar Creek at Wayne Avenue

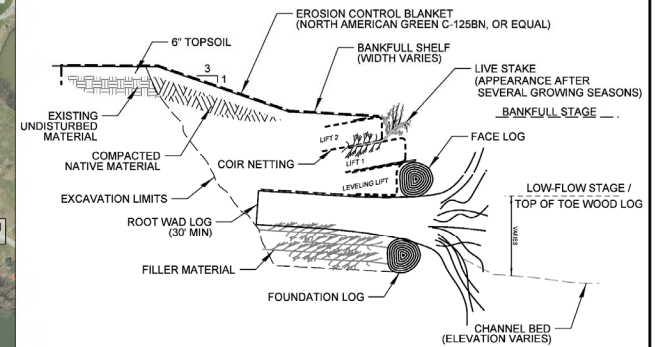


Sugar Creek at N Sugar Creek Drive. Note high bank and large gravel bar

Wayne Avenue  
Channel  
Improvements  
(structural alternative)



1 TYPICAL BANK STABILIZATION SECTION  
NOT TO SCALE



2 TYPICAL TOE WOOD DETAIL  
NOT TO SCALE

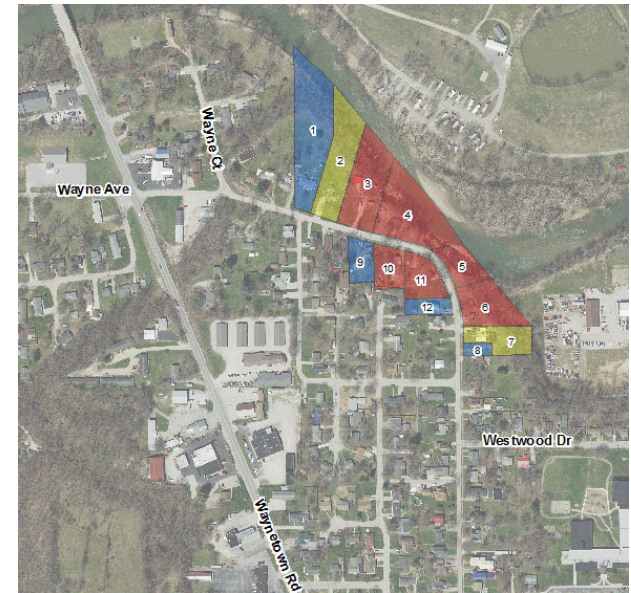
	CHRISTOPHER B. BURKE ENGINEERING, LLC PWC Corner, Suite 1000 South 115 West Washington Street Indianapolis, Indiana 46204 (317) 296-8000 FAX: (317) 632-3306	PRELIMINARY NOT FOR CONSTRUCTION	SCHEMATIC LAYOUT OF CHANNEL IMPROVEMENTS SUGAR CREEK CHANNEL STABILITY AND FLOOD RISK ASSESSMENT	PROJECT NO. 18-R170527-0000 SHEET 1 OF 11 DRAWING
				EX3



At-Risk  
Property  
Buyouts

SiteNo	Priority	mvPropStre	Zestimate
1	3	708 WAYNE AVE	\$172,000
2	2	706 WAYNE AVE	\$121,000
3	1	704 WAYNE AVE	\$22,000
4	1	700 WAYNE AVE	\$97,000
5	1	WAYNE AVE	\$0
6	1	512 WAYNE AVE	\$80,000
7	2	508 WAYNE AVE	\$104,000
8	3	506 WAYNE AVE	\$87,000
9	3	703 WAYNE AVE	\$114,000
10	1	619 WAYNE AVE	\$87,000
11	1	515 WAYNE AVE	\$76,000
12	3	511 WAYNE AVE	\$112,000
13	2	63 N SUGAR CLIFF DR	\$456,000
14	1	69 N SUGAR CLIFF DR	\$314,000
15	1	79 N SUGAR CLIFF DR	\$360,000
16	2	89 N SUGAR CLIFF DR	\$304,000
17	3	93 N SUGAR CLIFF DR	\$345,000

Note: Zestimate obtained from Zillow.com on 2/25/19.  
No value was available for the Wayne Ave' address.



**Legend**

**Property Buyout**

- Priority 1
- Priority 2
- Priority 3



- Establish monitoring plan for identified erosion hazard locations
- Proceed with one (or a combination of the following)
  - Acquisition of at-risk properties
  - Design, permitting, and construction of protection at sites SC5, SC11, and SC14
- Implement passive management recommendations
  - Update stormwater ordinance and standards
  - Promote or Require Farm Drainage Impact Reduction Measures
  - Promote soil health practices
  - Incorporate resilience strategies in local regulations

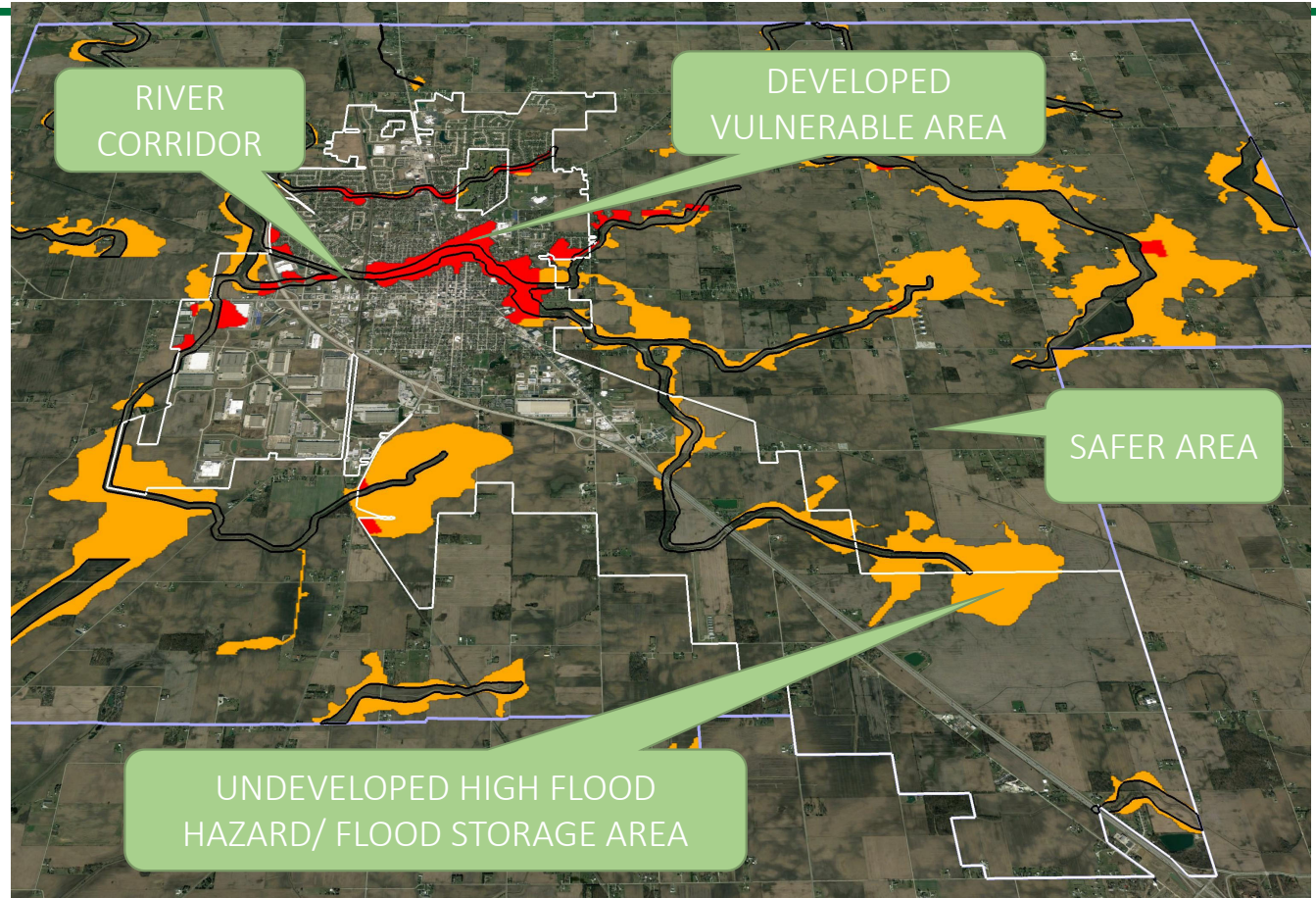


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# Lebanon Flood Resilience Plan

## Flood Resilience Planning Areas

Planning Area	Area Boundary
River Corridor	Floodway or FEH area, whichever is greater
Undeveloped High Flood Hazard/Flood Storage Area	Undeveloped land in the floodway fringe
Developed Vulnerable Area	Existing developed land in the SFHA
Safer Area	Outside SFHA but within planning jurisdiction
Watershed	Entire drainage area





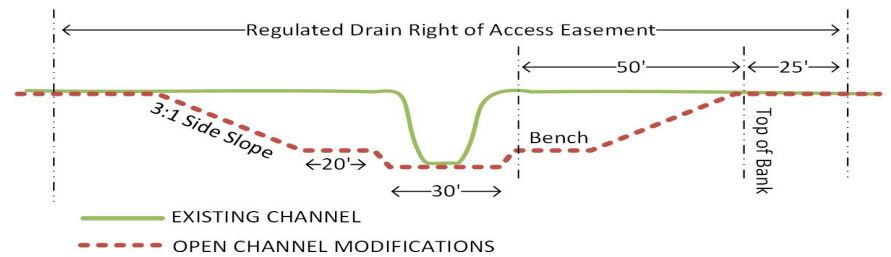
# Restore Prairie Creek using an Open Corridor Channel Modification



EXISTING



PROPOSED

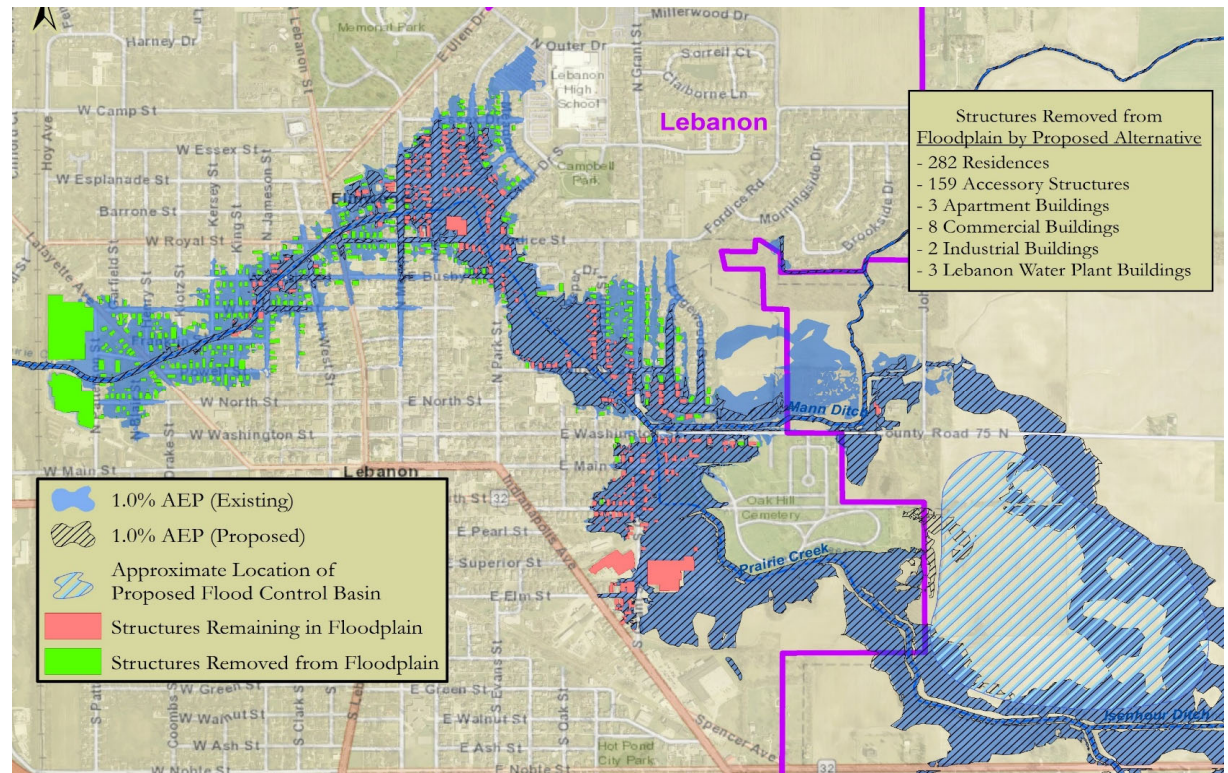


## Create a Flood Storage Facility Upstream of Lebanon

Approximately 560 acre-feet of storage is needed, options:

Dry detention doubles as open space for recreation, or

Dedicated flood easements on privately owned undeveloped land and when needed for flood storage, flood losses would be reimbursed by city





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# 4 County Transportation Vulnerability Assessment

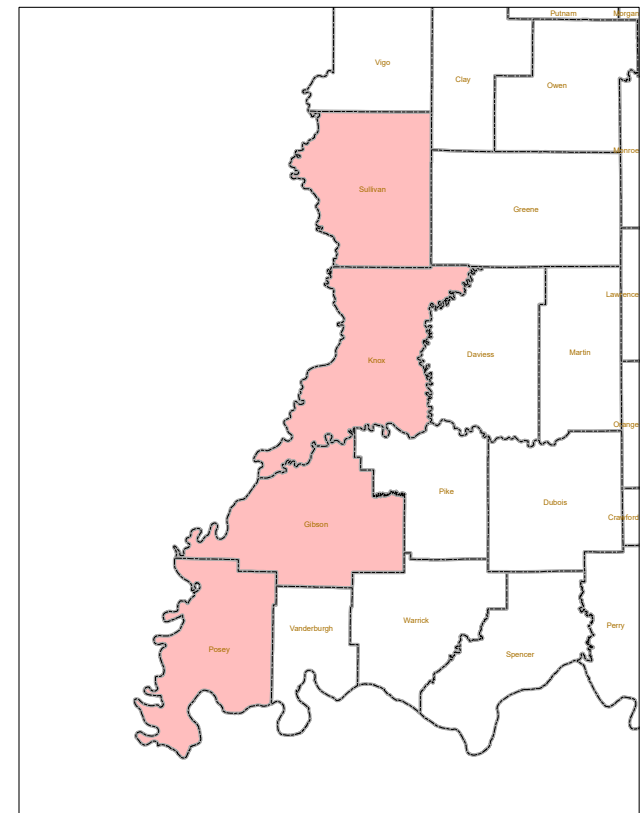


## Transportation Vulnerability

Pilot / Proof of concept completed in Owen County

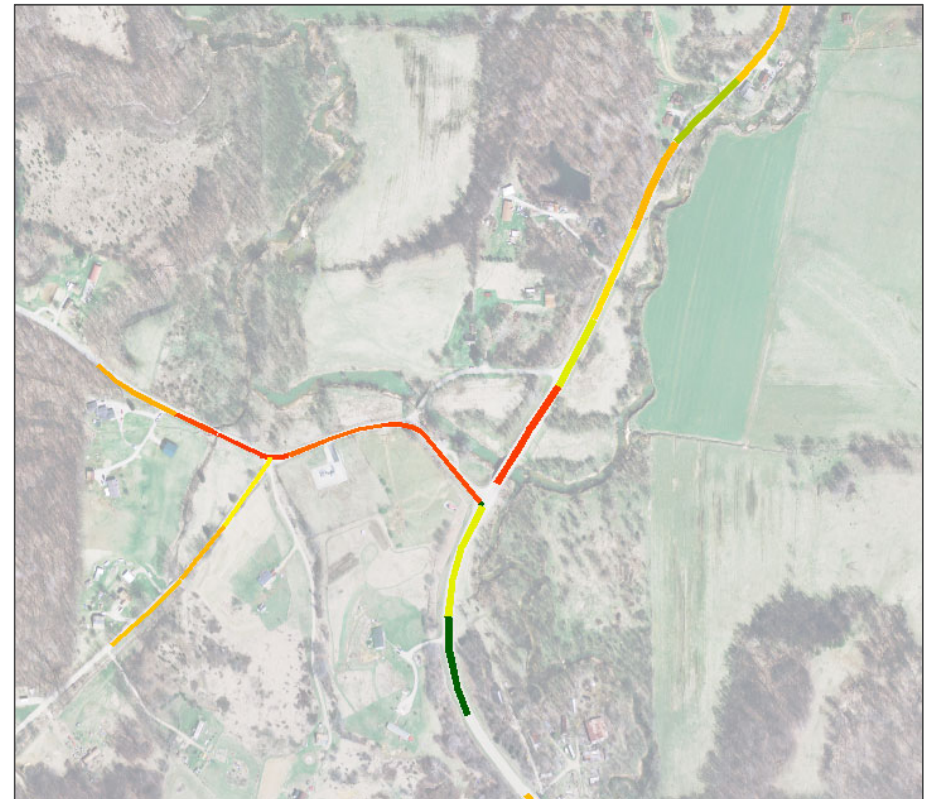
4 counties funded through Risk MAP action discovery process for Middle Wabash / Busseron and Lower Wabash basins.

Posey / Gibson / Knox / Sullivan



## Analysis

- Resulted in road and bridge segments each with a “Priority” score
- False positives:
  - Boat Ramps
  - Use of bridge approach for bridge deck elevations



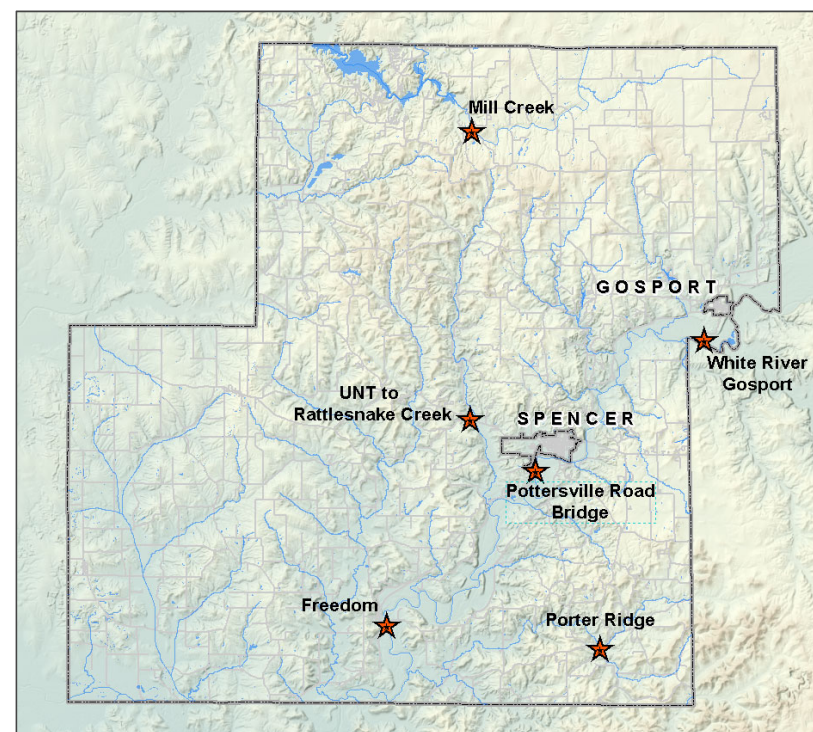
## Sites Selected for Detailed Analysis

Based on GIS analysis, Community Meeting and Site Visit, the following sites were selected for Phase III

- White River at Gosport
- Mill Creek
- Pottersville Rd Bridge South of Spencer
- Freedom
- Unnamed Tributary to Rattlesnake Creek
- Porter Ridge

Perform a detailed analysis of some of the highest priority areas

- Examining existing models
- New modeling
- Depth grids
- FEH mapping
- Any additional data



# Mitigation action / structure level floodplain analysis in Clark County

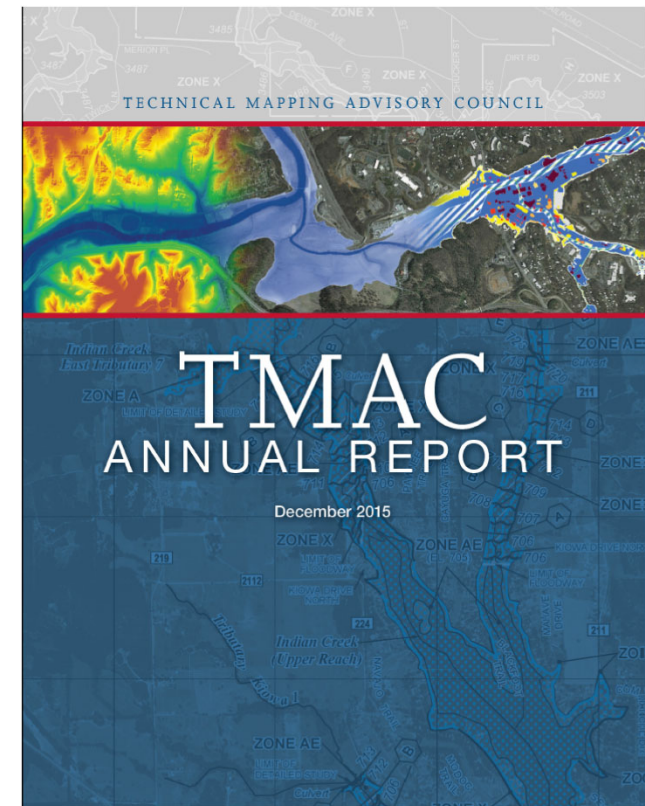
## Traditional Floodplain Mapping

- Floodplain polygon blob based on the 1% chance event “The Regulatory Floodplain”



## TMAC Recommendations (2015)

- Recommendation 14: FEMA, and its mapping partners including the private sector, should transition to a flood risk assessment focus that is structure specific. Where data are available, FEMA and its partners should contribute information and expertise consistent with their interests, capabilities, and resources towards this new focus.



## Structure Specific Risk Assessment

- Not binary – a more nuanced method for determining risk at a structure
- Based on a series of flood profiles, not just on the 1% (or regulatory) profile
- Can be expressed in a number of ways (AAL, flood risk rating)



## What do you need to do this?

- Hydraulic Floodplain study (with multiple profiles)
- Replacement Costs (for AAL and cost-based evaluations)
- Elevation Certificate
- ...Or estimating the elevations from LiDAR





## Salt Creek / Sugar Creek in Winchester



[link to AGOL map](#)

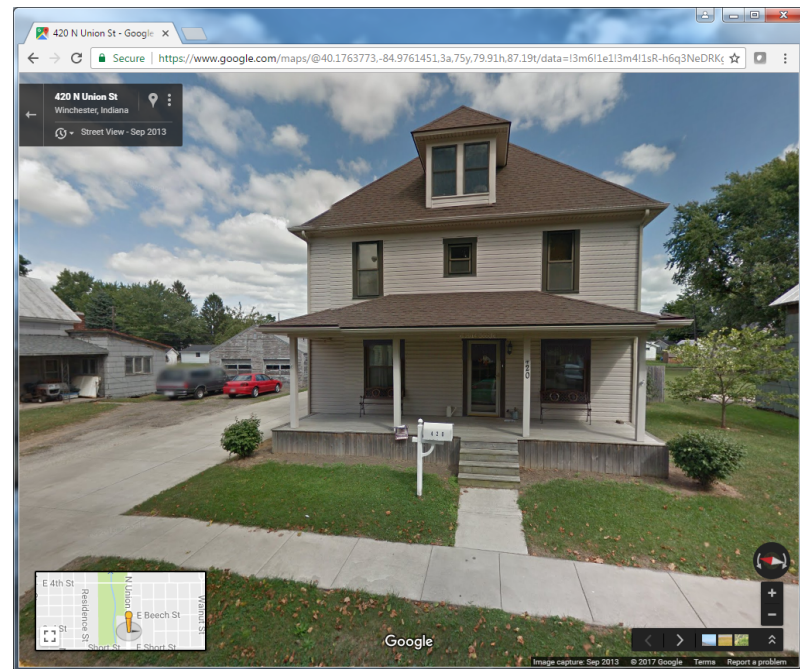
## Structure-based flood risk

- Average Annualized Percent Loss (AAPL)
- AAPL is a risk score and coefficient that is specific to a structure.
- May be produced from datasets created through Risk MAP program and other available public data.
- AAPL is derived from the relationship of how much damage a structure is projected to sustain during a flood event and the probability of that event happening.
- Damage to a structure is expressed as the percent of a structure's value that is lost during a flood event.



## Issues to consider

- Ground truthing with EC's
- Does ELAG = true first floor
- Privacy Act Issues





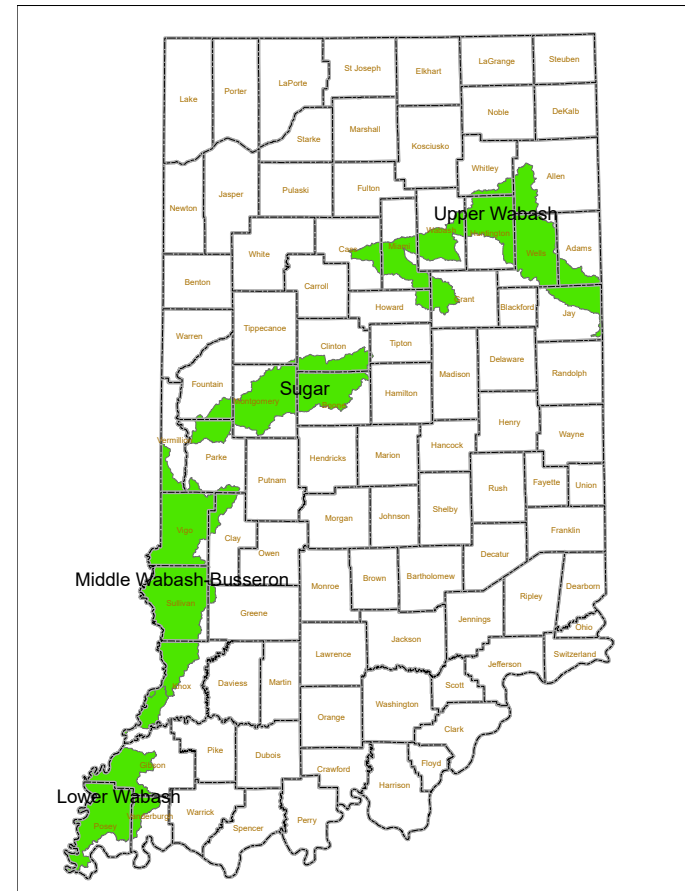
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# FIRM Production for FY 2018

## FY 2018 Mapping Updates

Working in four basins:

- Upper Wabash River basin
- Sugar Creek basin
- Middle Wabash River / Busseron Creek basin
- Lower Wabash River basin



## Upper Wabash River basin

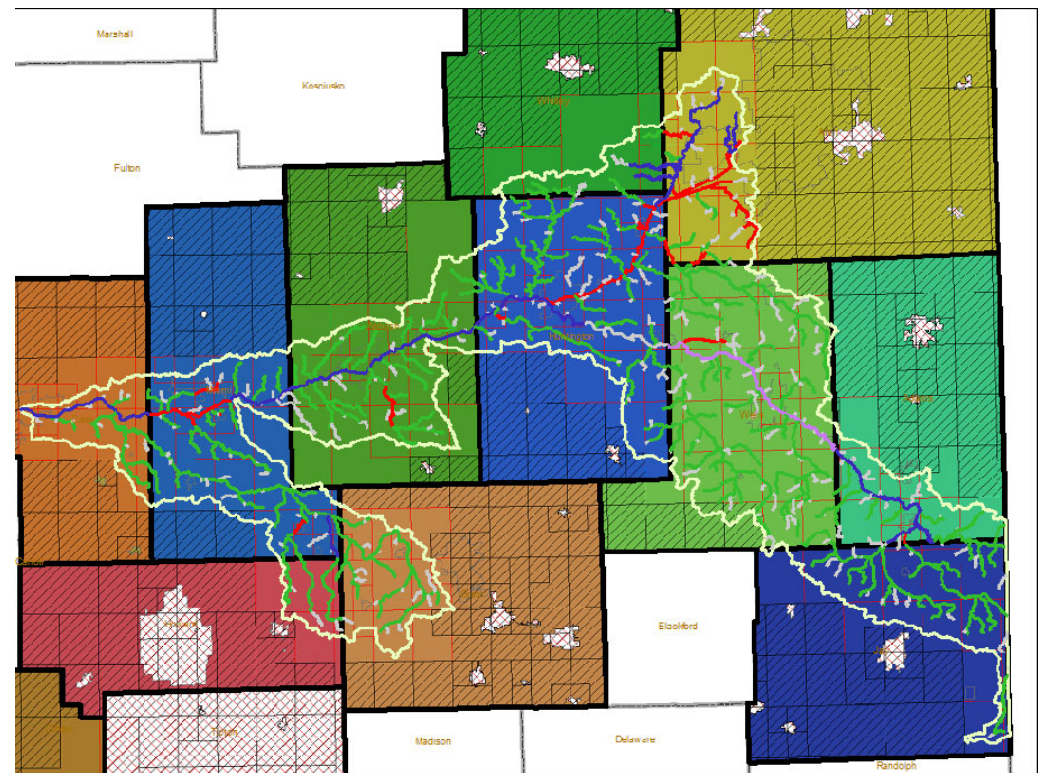
Work maps + Preliminary maps

110 miles of new detailed study

21 miles of leveraged detailed studies

703 miles of IDNR “Zone A” studies

Concurrent project underway in Ohio for  
the basin



## Sugar Creek basin

Work maps + Preliminary maps

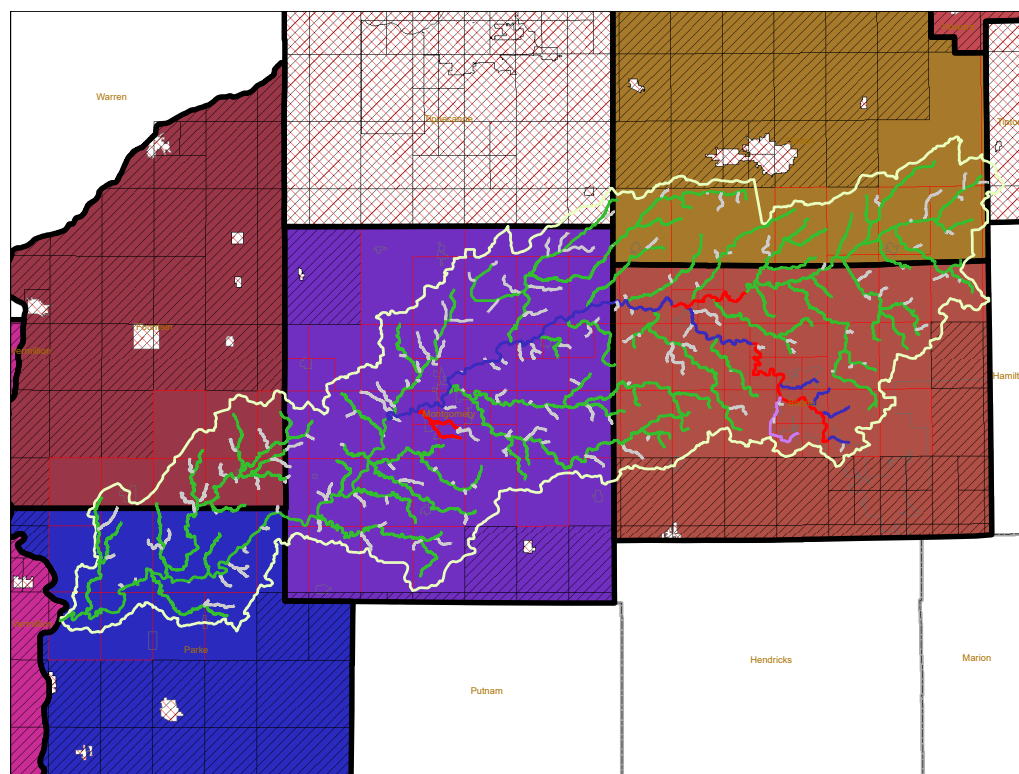
45 miles of new detailed study

5.1 miles of leveraged detailed studies

513 miles of IDNR “Zone A” studies

Also working on “Action Discovery”  
projects in Lebanon and Crawfordsville

The small portion of Tippecanoe County  
in this basin will be processed as a  
LOMR, instead of a full map revision.



## Middle Wabash / Busseron Creek watershed

Work maps only (prelim to be funded later)

69 miles of new detailed study

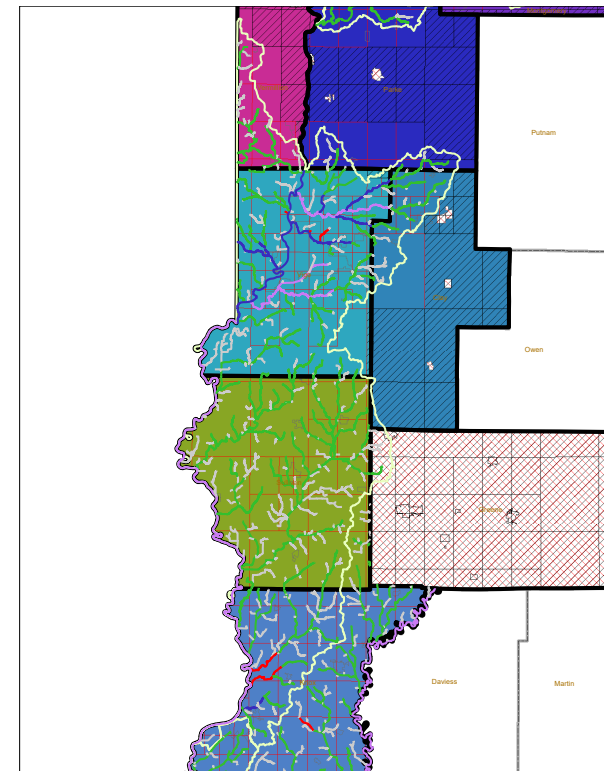
43 miles of leveraged detailed studies

78 miles Wabash River study

508 miles of IDNR “Zone A” studies

Also will be working on “Transportation Vulnerability Studies” for Sullivan & Knox Counties

The small portion of Greene County in this basin will be processed as a LOMR, instead of a full map revision.





## Lower Wabash River watershed

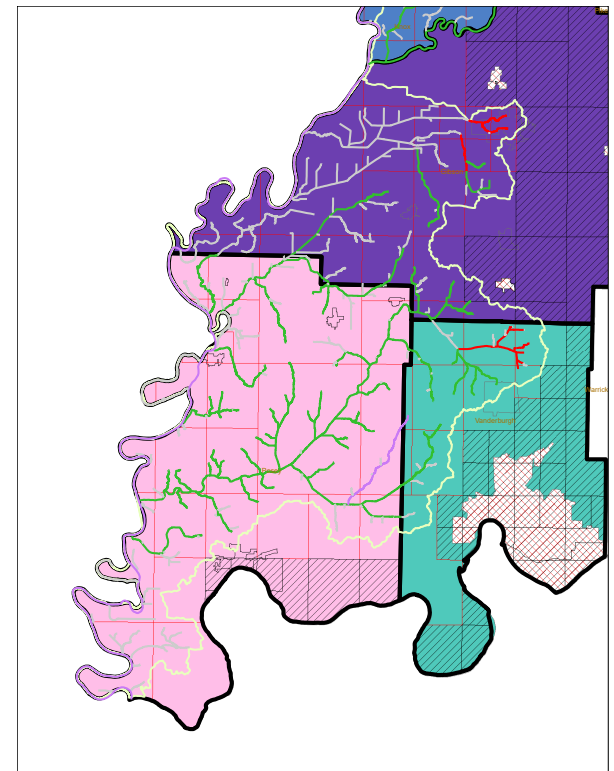
Work maps only (prelim to be funded later)

8 miles of leveraged detailed studies

112 Wabash River study

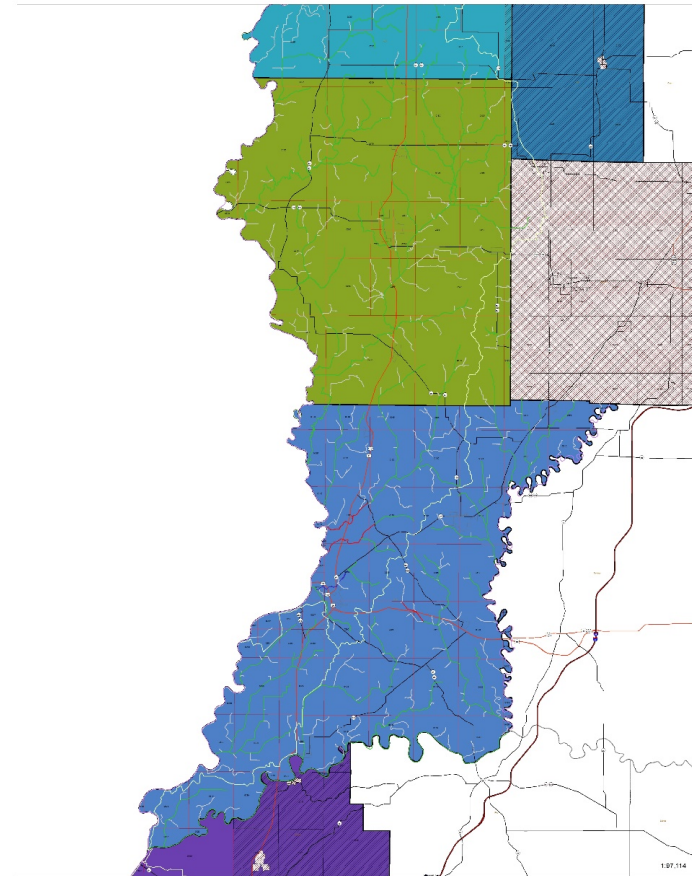
246 miles of IDNR “Zone A” studies

Also will be working on “Transportation Vulnerability Studies” for Posey & Gibson Counties



## Knox / Sullivan Counties

Since these counties are not yet modernized, the scope of this project includes the portions of the county in the Lower White River basin



## The Wabash River study

Working in conjunction with the Illinois DNR and the Illinois State Water Survey - Prairie Research Institute

Modeling of main stem of the Wabash from the mouth to Terre Haute

Revised hydrology completed by the Corps of Engineers

Revised hydraulics in process



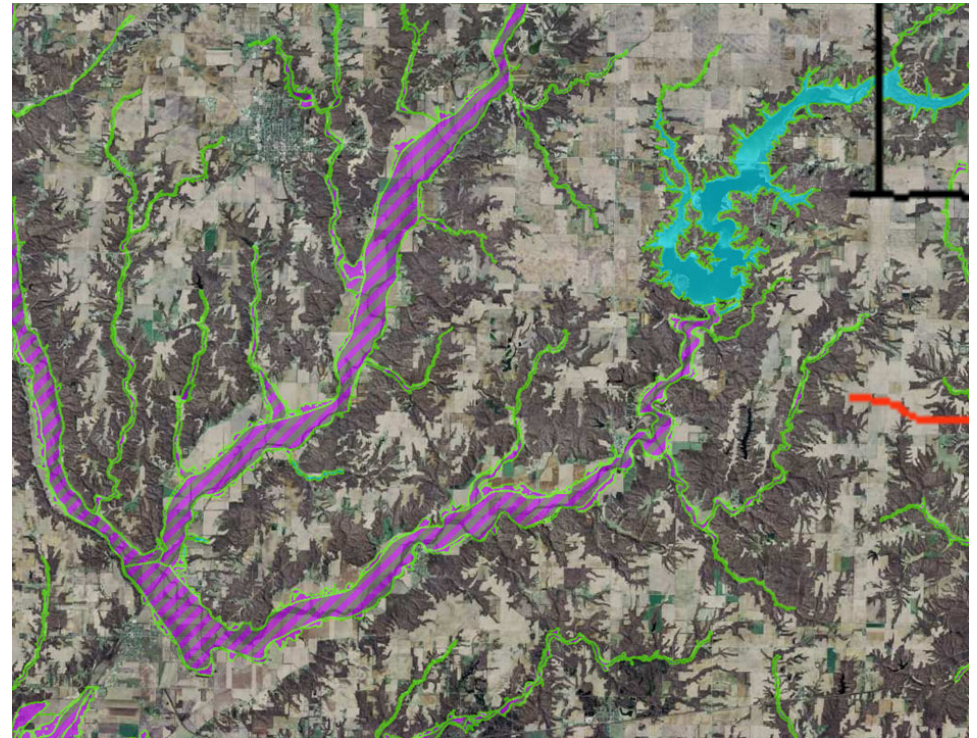
## Indiana DNR “Best Available” Data (Zone A studies)

18,000 + river miles of  
“Approximate” zone A studies  
throughout the state

Mapped on the Indiana Floodplain  
Information Portal

Used as “Best Available” data for  
planning + permitting (NOT Flood  
Insurance)

Has “approximate floodway” –  
which won’t be published on  
FIRM’s



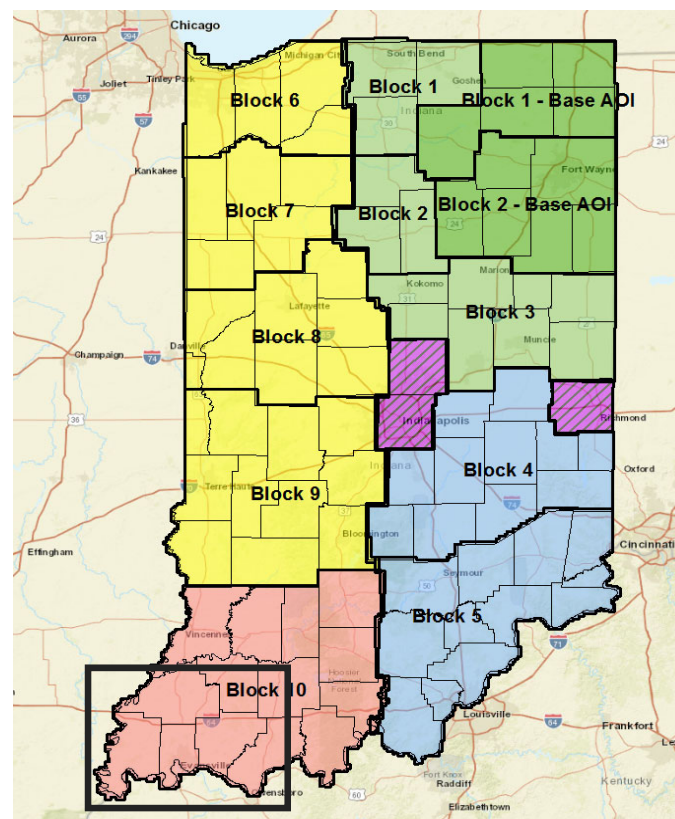
## LiDAR

Acquisition of the “Second” round of Statewide LiDAR nearly complete

East portion of the state is processed and available

West portion of the state captured and being processed now

Black box area – try to capture in 2019 / 2020 flying season





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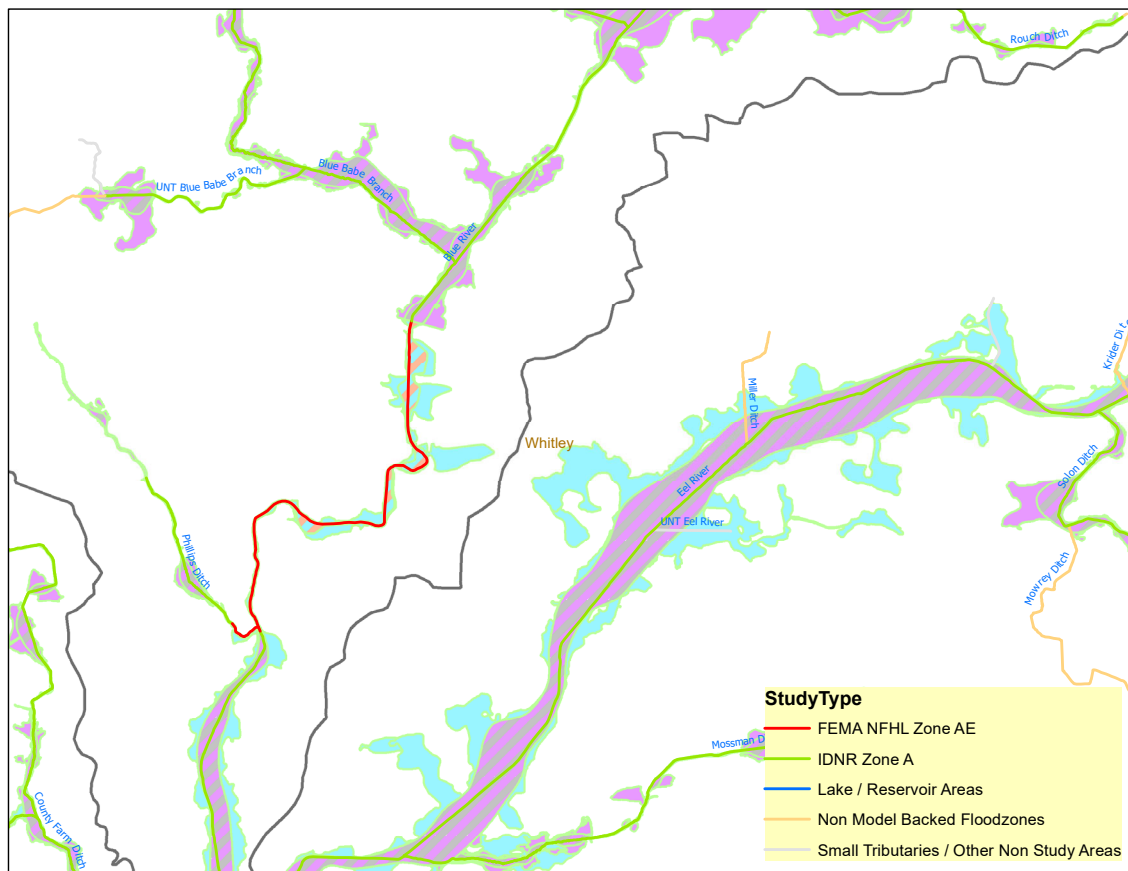
# Coordinated Needs Management Strategy (CNMS) update for FY 2019

## CNMS Update

Use updated NHD linework to join  
current CNMS tables

NHD selected based on square mile  
cutoffs and reaches

Allow for more accurate and complete  
reporting of mapping / study needs





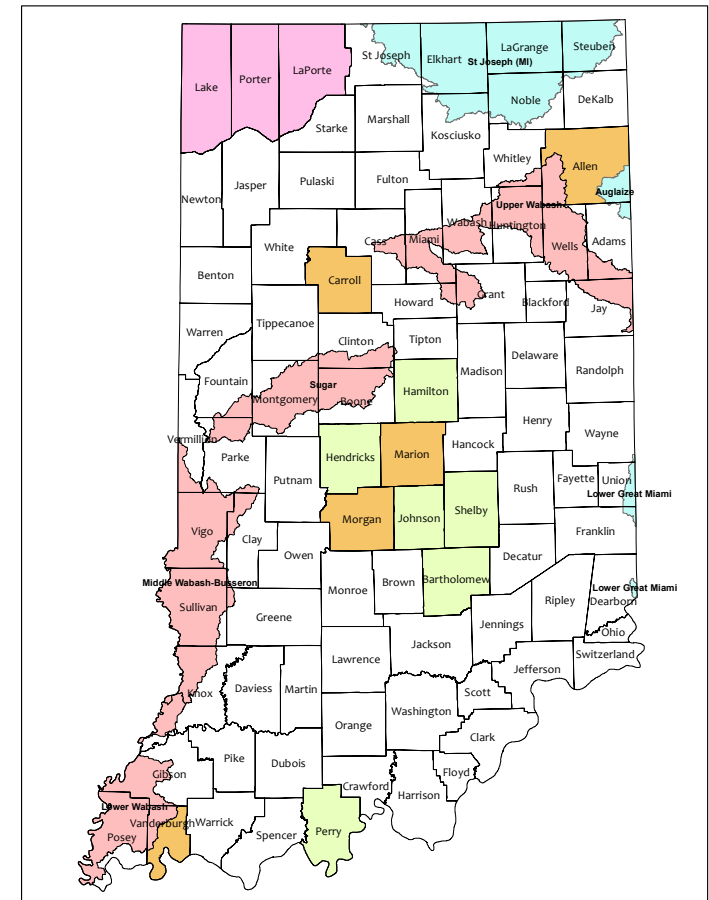
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# FIRM Production activities from STARR / Compass



## PTS contractor activities

- Basin wide development – St. Joseph, Auglaize and Lower Great Miami basins
- Prelim / Post Prelim Hamilton, Hendricks, Shelby, Johnson, Bartholomew and Perry counties
- Lake Michigan Coastal Studies – Lake, Porter, LaPorte
- LAMP update activities – Marion, Carroll, Allen, Morgan and Vanderburgh counties





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# FEMA CTP Recognition Program and Story Map



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## FEMA CTP Recognition Program

The CTP Recognition Program highlights the accomplishments of CTPs who are performing exceptional work in the areas of Program Management Best Practices, Tools and Resources, Communications and Outreach, and other key areas of the Risk MAP process. This is a way for FEMA to formally recognize outstanding accomplishments of these important partners.

Nominations are made by the FEMA Regions or other peer organizations, vetted through the FEMA Regions and presented to a panel of the CTP community. Winners are selected by vote from members of the CTP Community of Practice.

Winners are announced at the ASFPM conference through the CTP Collaboration Monthly. They receive a certificate and a story map highlighting their work.

<http://arcg.is/1mvWOT0>



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# Lake Michigan Coastal Floodplain Updates