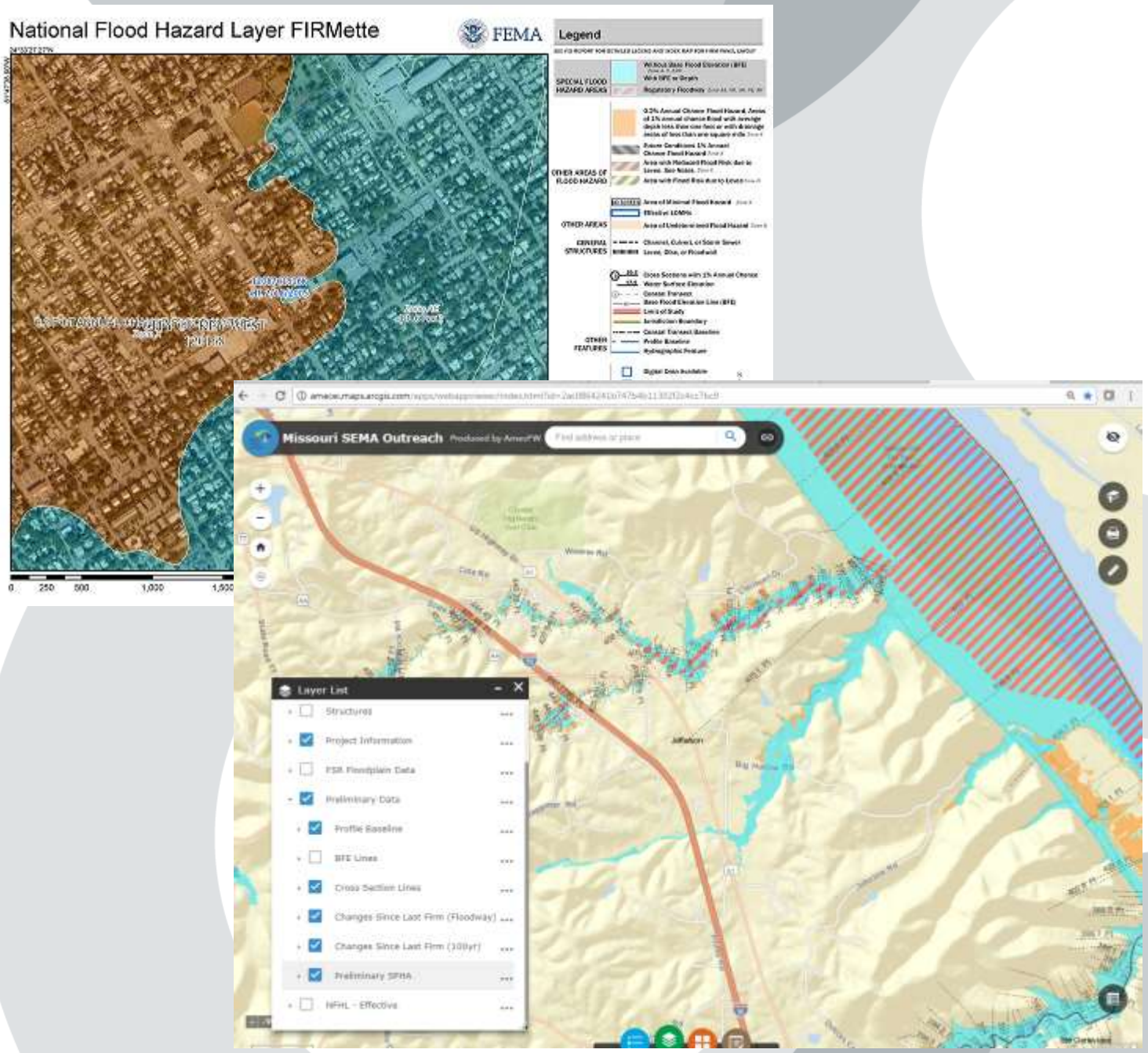
wood.

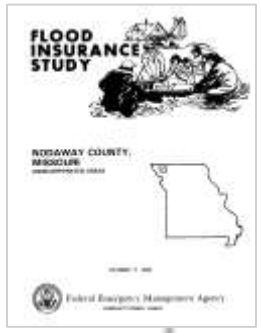
Using GIS to Increase Outreach and Data Accuracy for the FEMA Risk MAP Program



ASFPM
June 20, 2018

woodplc.com

Introduction



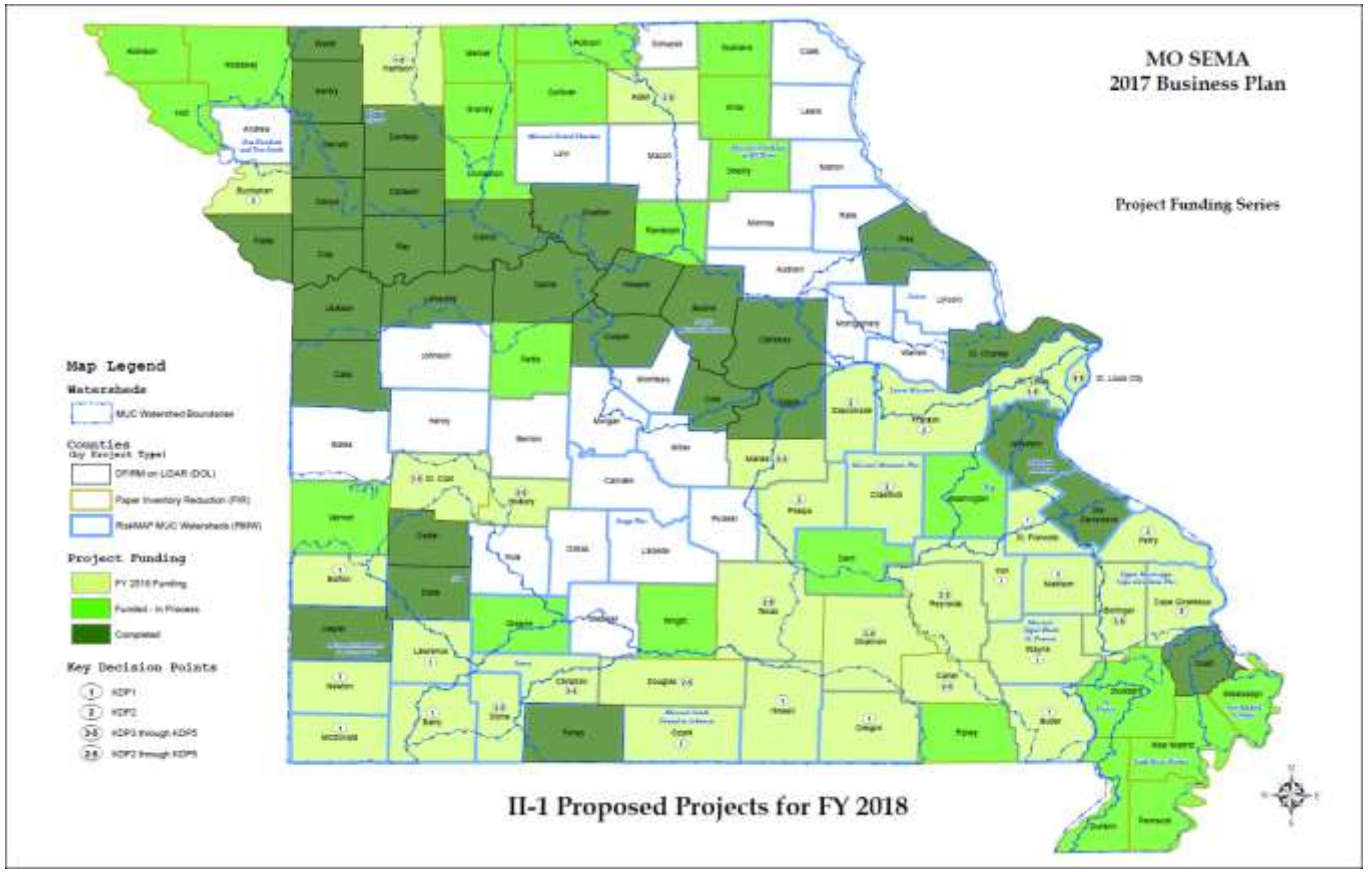
- Many maps in Missouri are **30 to 40 years old paper maps.**
- PIR (Paper Inventory Reduction) and Risk MAP projects in progress to **update all maps to a digital format**.
- Numerous non-participating communities
- Considering the number of projects initiated, a **comprehensive approach** was needed to perform effective outreach in the state.

“A Front Porch Conversation”

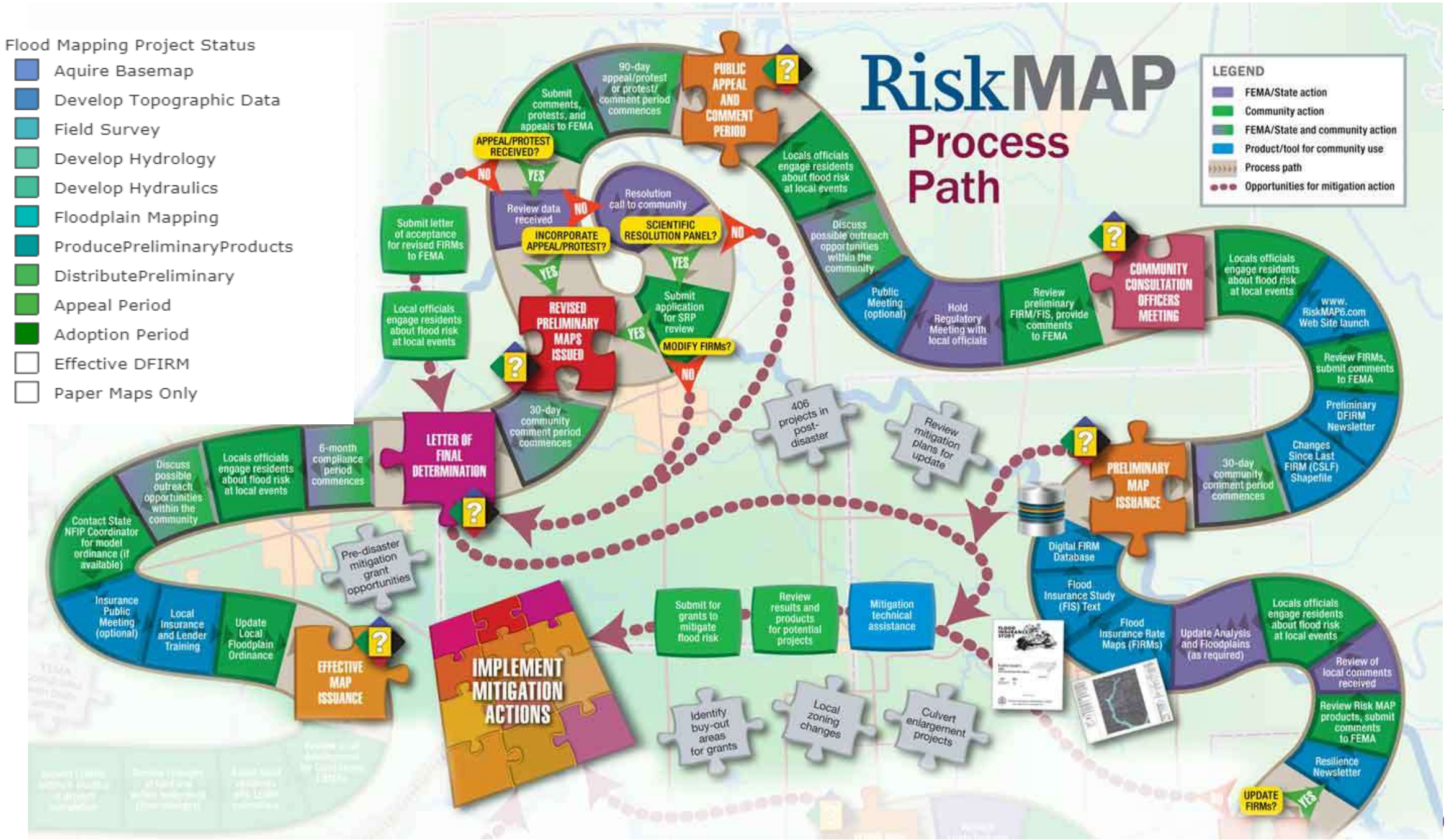
Introduction

Needs include:

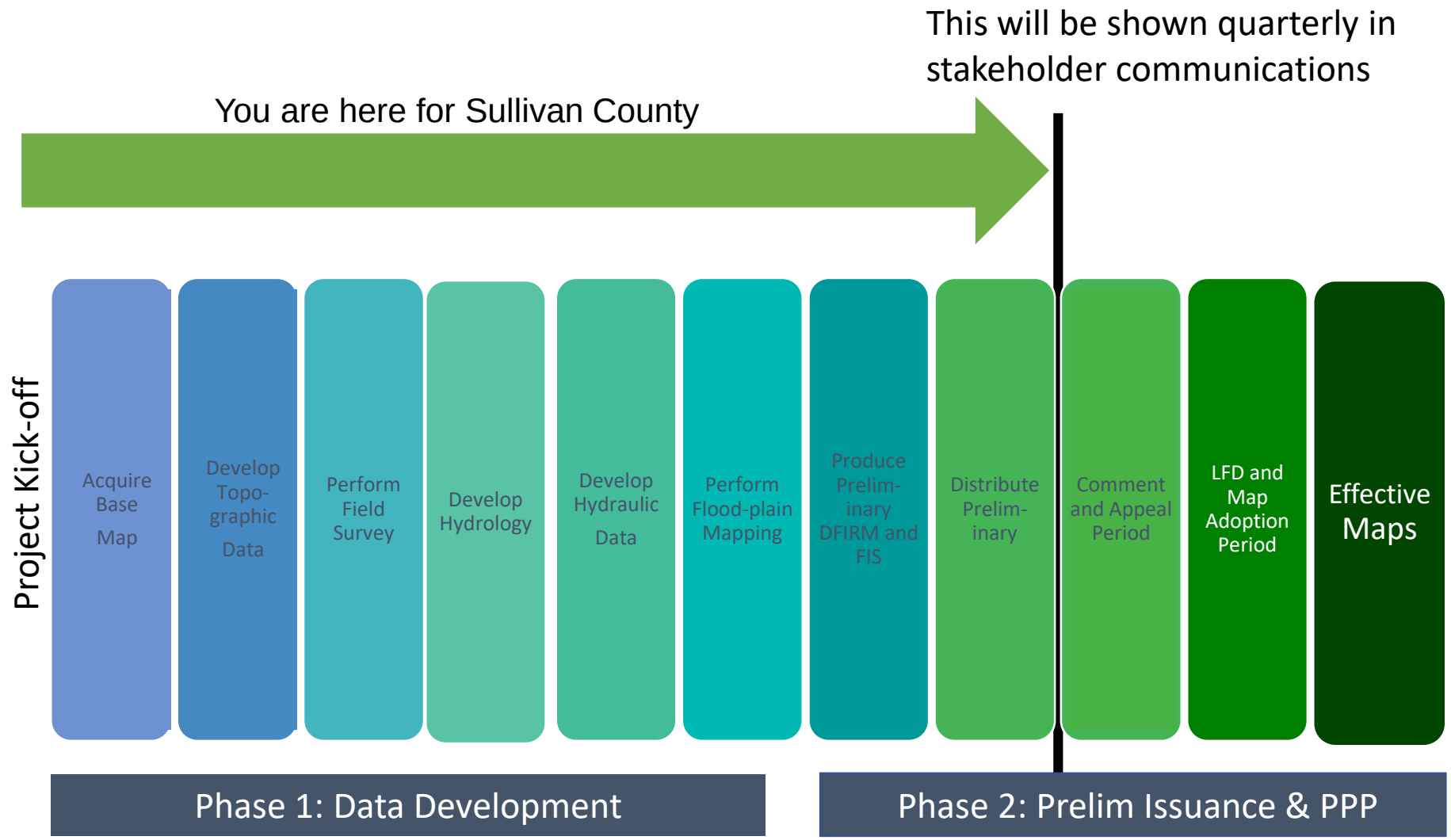
- One-stop shop
- Technology challenged stakeholders
- Useful at each stage
- Effective & Efficient Data Delivery
- Effective & Efficient Communication



Digital mapping for entire state by 2022

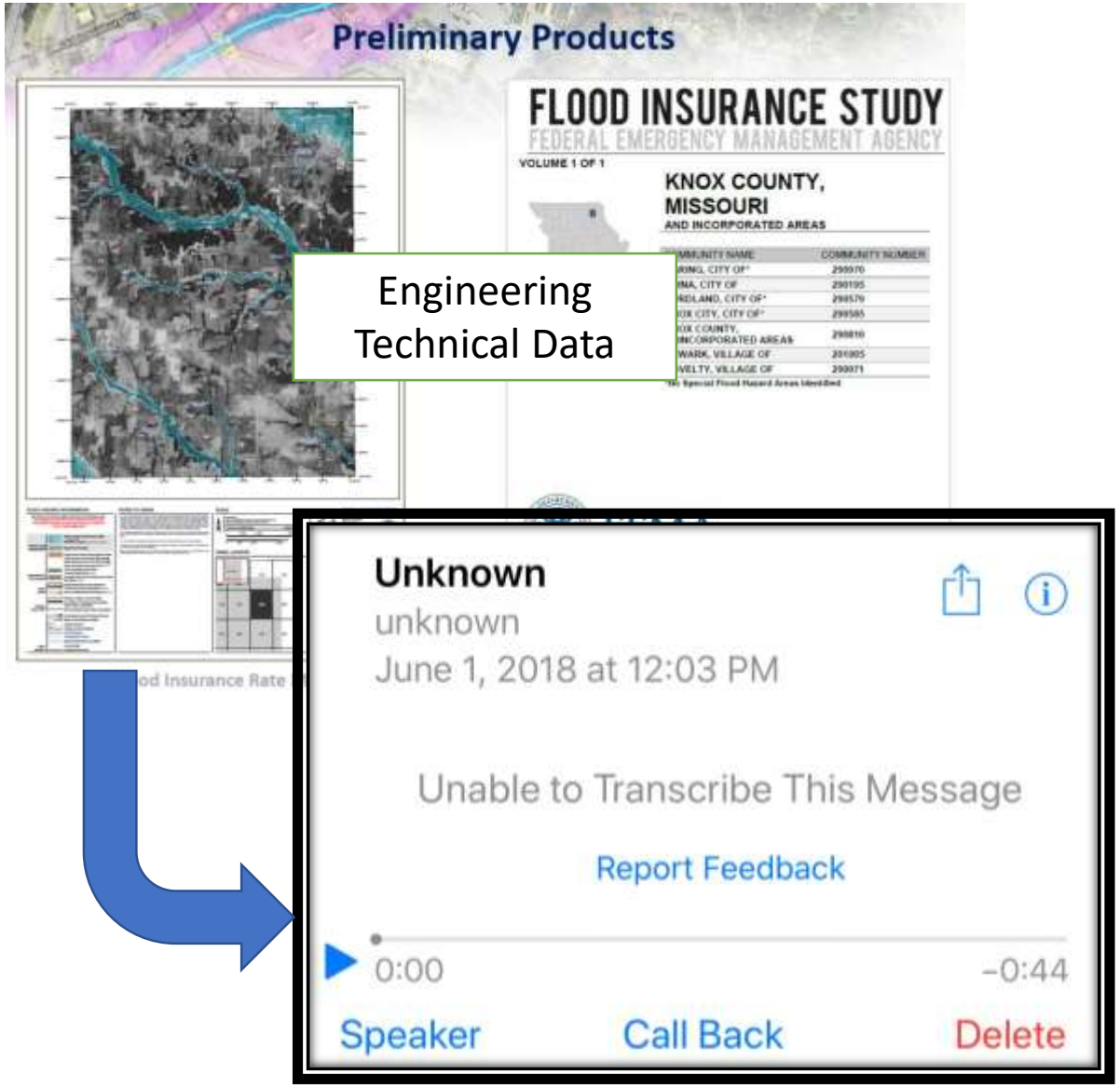

Flood Mapping Project Status
Aquire Basemap
Develop Topographic Data
Field Survey
Develop Hydrology
Develop Hydraulics
Floodplain Mapping
ProducePreliminaryProducts
DistributePreliminary
Appeal Period
Adoption Period
Effective DFIRM
Paper Maps Only
RiskMAP
Process Path
LEGEND
FEMA/State action
Community action
FEMA/State and community action
Product/tool for community use
Process path
Opportunities for mitigation action
PUBLIC APPEAL AND COMMENT PERIOD
Submit comments, protests, and appeals to FEMA
90-day appeal/protest or protest/ comment period commences
APPEAL/PROTEST RECEIVED?
NO
YES
Review data received
NO
INCORPORATE APPEAL/PROTEST?
YES
Resolution call to community
SCIENTIFIC RESOLUTION PANEL?
NO
YES
Submit application for SRP review
MODIFY FIRMs?
NO
YES
REVISED PRELIMINARY MAPS ISSUED
Submit letter of acceptance for revised FIRMs to FEMA
Local officials engage residents about flood risk at local events
30-day community comment period commences
LETTER OF FINAL DETERMINATION
6-month compliance period commences
Locals officials engage residents about flood risk at local events
Discuss possible outreach opportunities within the community
Contact State NFIP Coordinator for model ordinance (if available)
Insurance Public Meeting (optional)
Local Insurance and Lender Training
Update Local Floodplain Ordinance
EFFECTIVE MAP ISSUANCE
Pre-disaster mitigation grant opportunities
IMPLEMENT MITIGATION ACTIONS
Submit for grants to mitigate flood risk
Review results and products for potential projects
Mitigation technical assistance
406 projects in post-disaster
Review mitigation plans for update
Identify buy-out areas for grants
Local zoning changes
Culvert enlargement projects
Locals officials engage residents about flood risk at local events
Discuss possible outreach opportunities within the community
Public Meeting (optional)
Hold Regulatory Meeting with local officials
Review preliminary FIRM/FIS, provide comments to FEMA
COMMUNITY CONSULTATION OFFICERS MEETING
Locals officials engage residents about flood risk at local events
www.RiskMAP6.com Web Site launch
Review FIRMs, submit comments to FEMA
Preliminary DFIRM Newsletter
Changes Since Last FIRM (CSLF) Shapefile
30-day community comment period commences
PRELIMINARY MAP ISSUANCE
Digital FIRM Database
Flood Insurance Study (FIS) Text
Flood Insurance Rate Maps (FIRMs)
Update Analysis and Floodplains (as required)
Locals officials engage residents about flood risk at local events
Review of local comments received
Review Risk MAP products, submit comments to FEMA
Resilience Newsletter
UPDATE FIRMs?
YES

Life of the Project Status Graphic



Outreach Plan Needed

Infrastructure and process



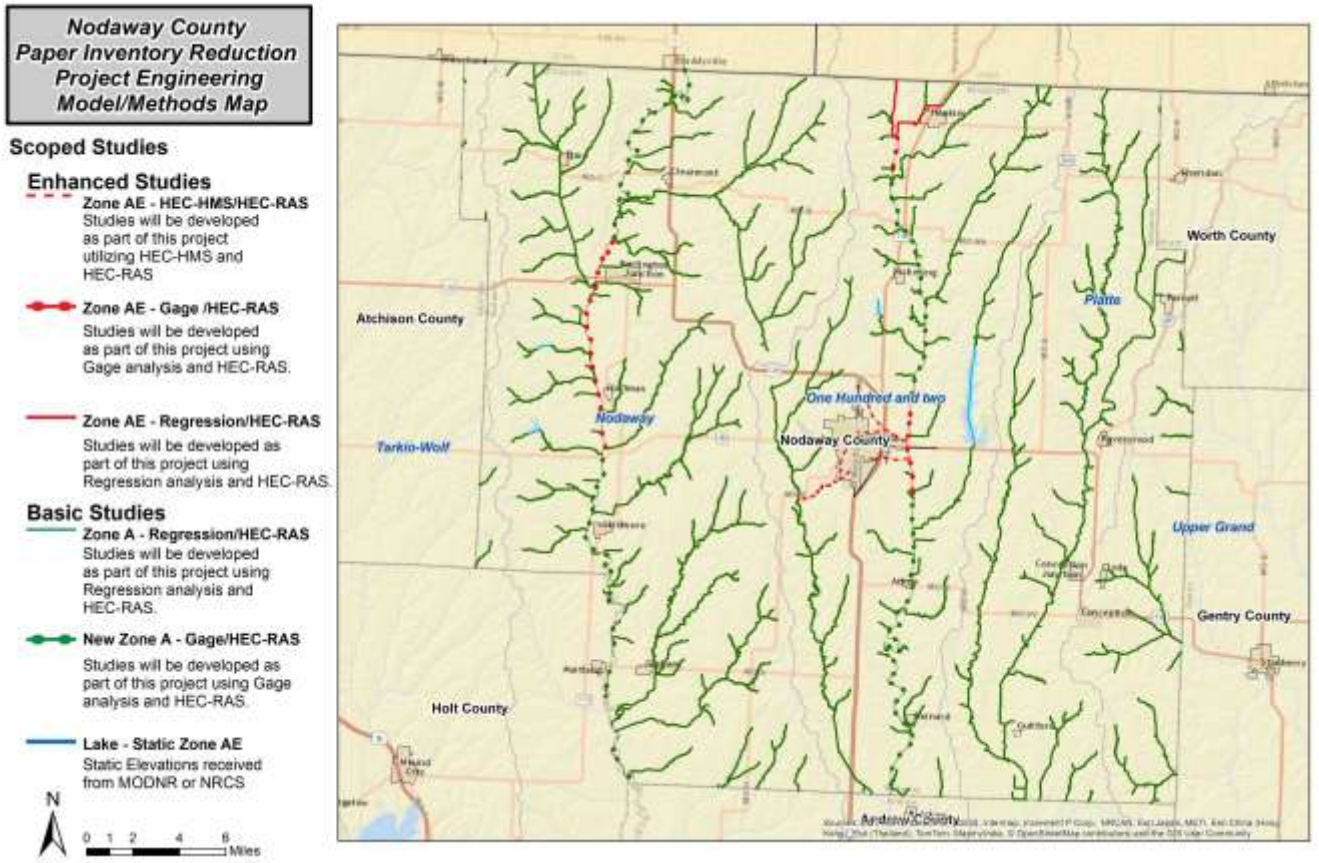
Objectives

- **Provide Information**
  - General overall
    - Project stages
  - Specific
    - Layer update
- **Inform and Present of Status Study Specific Information**
  - Internal Work force
    - Project Managers
    - Analysts
  - External
    - Federal Points of Contacts
    - State and Local Communities
- **Review**
  - Accuracy of data
  - User defined Points for data updates
- **Conclude/Deploy/Project data review**

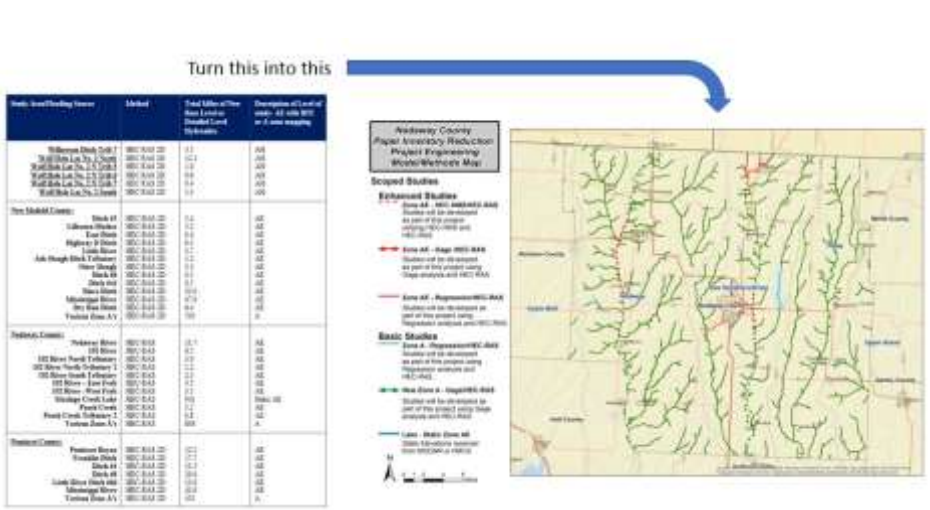
Background Information

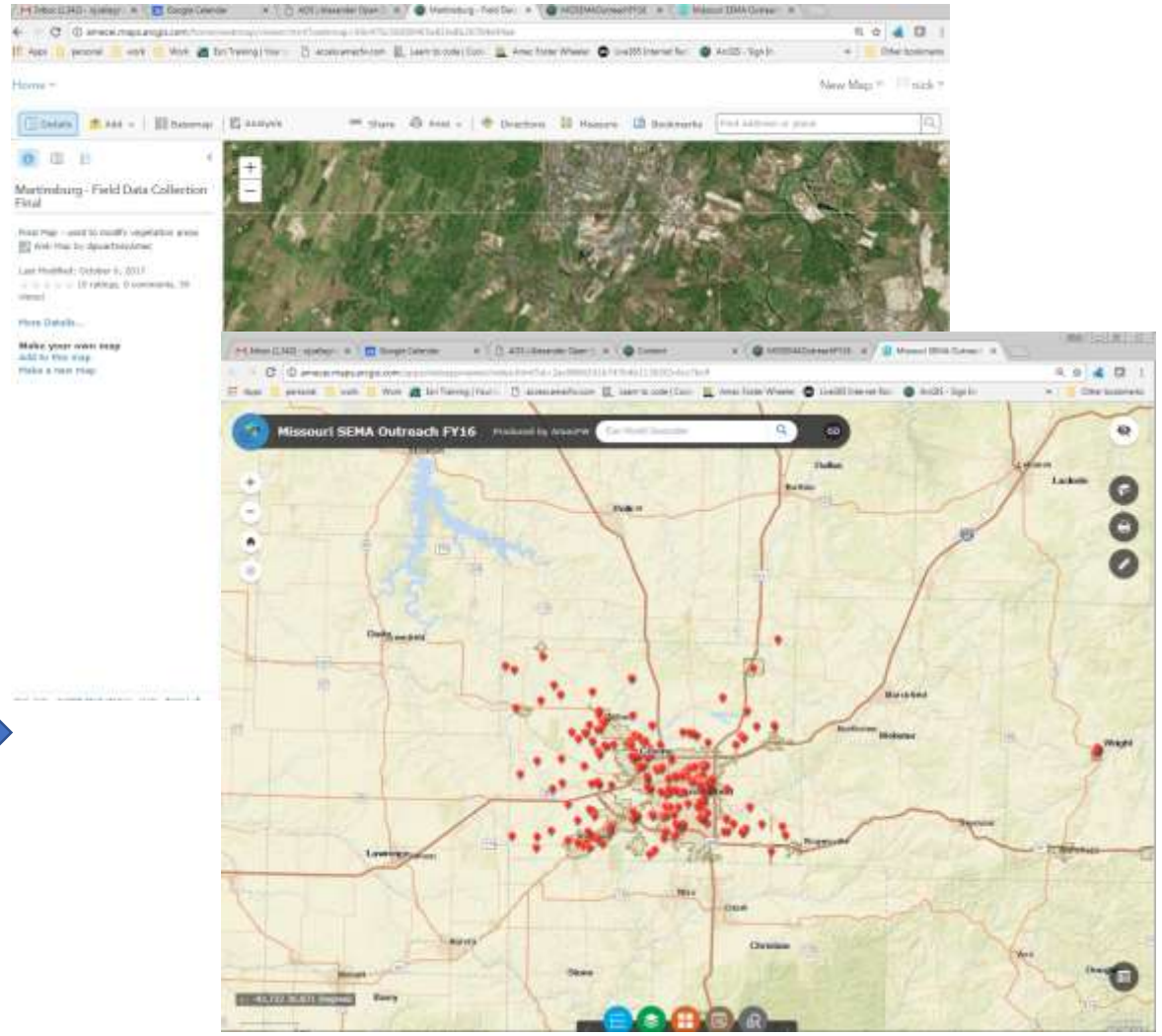
Turn this into this

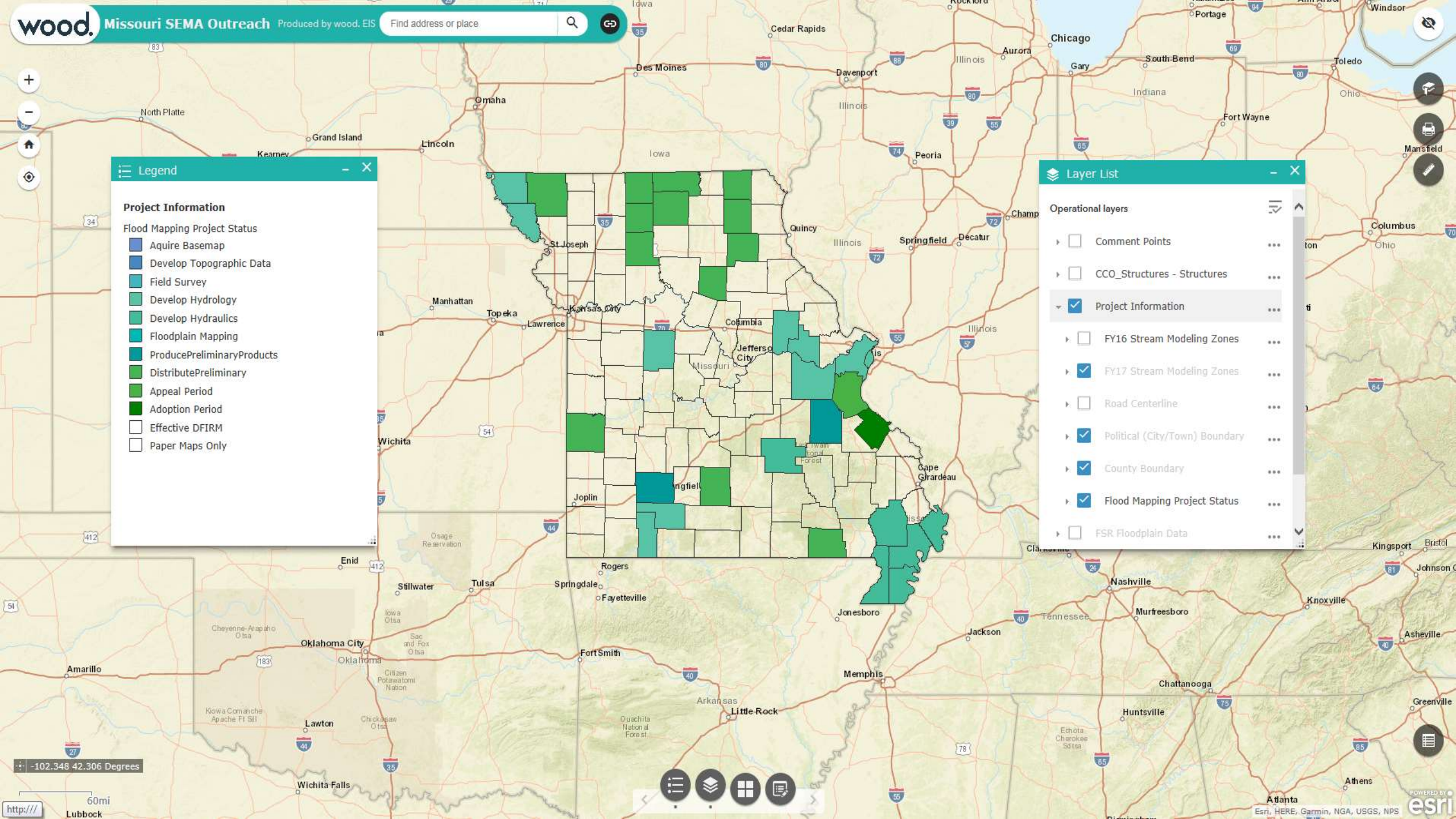
Study Area/Flooding Source	Method	Total Miles of New Base Level or Detailed Level Hydraulics	Description of Level of study- AE with BFE or A zone mapping
Wilkerson Ditch Trib 7	HEC RAS 2D	3.5	AH
Wolf Hole Lat No. 2 North	HEC RAS 2D	12.3	AH
Wolf Hole Lat No. 2 N Trib 5	HEC RAS 2D	1.0	AH
Wolf Hole Lat No. 2 N Trib 6	HEC RAS 2D	0.8	AH
Wolf Hole Lat No. 2 N Trib 7	HEC RAS 2D	0.4	AH
Wolf Hole Lat No. 2 South	HEC RAS 2D	1.3	AH
New Madrid County:			
Ditch #3	HEC-RAS 2D	5.4	AE
Lilbourn Ditches	HEC-RAS 2D	5.2	AE
East Ditch	HEC-RAS 2D	0.4	AE
Highway D Ditch	HEC-RAS 2D	0.3	AE
Little River	HEC-RAS 2D	3.7	AE
Ash Slough Ditch Tributary	HEC-RAS 2D	1.2	AE
Otter Slough	HEC-RAS 2D	3.3	AE
Ditch #8	HEC-RAS 2D	0.5	AE
Ditch #44	HEC-RAS 2D	0.5	AE
Risco Ditch	HEC-RAS 2D	22.0	AE
Mississippi River	HEC-RAS 2D	47.0	AE
Dry Run Ditch	HEC-RAS 2D	8.4	AE
Various Zone A's	HEC-RAS 2D	510	A
Nodaway County:			
Nodaway River	HEC-RAS	11.7	AE
102 River	HEC-RAS	6.5	AE
102 River North Tributary	HEC-RAS	3.0	AE
102 River North Tributary 1	HEC-RAS	1.2	AE
102 River South Tributary	HEC-RAS	2.3	AE
102 River – East Fork	HEC-RAS	3.5	AE
102 River –West Fork	HEC-RAS	3.1	AE
Mozingo Creek Lake	HEC-RAS	NA	Static AE
Peach Creek	HEC-RAS	5.2	AE
Peach Creek Tributary 2	HEC-RAS	0.8	AE
Various Zone A's	HEC-RAS	836	A
Pemiscot County:			
Pemiscot Bayou	HEC-RAS 2D	12.5	AE
Franklin Ditch	HEC-RAS 2D	17.7	AE
Ditch #4	HEC-RAS 2D	11.5	AE
Ditch #8	HEC-RAS 2D	29.0	AE
Little River Ditch #66	HEC-RAS 2D	13.0	AE
Mississippi River	HEC-RAS 2D	43.0	AE
Various Zone A's	HEC-RAS 2D	331	A

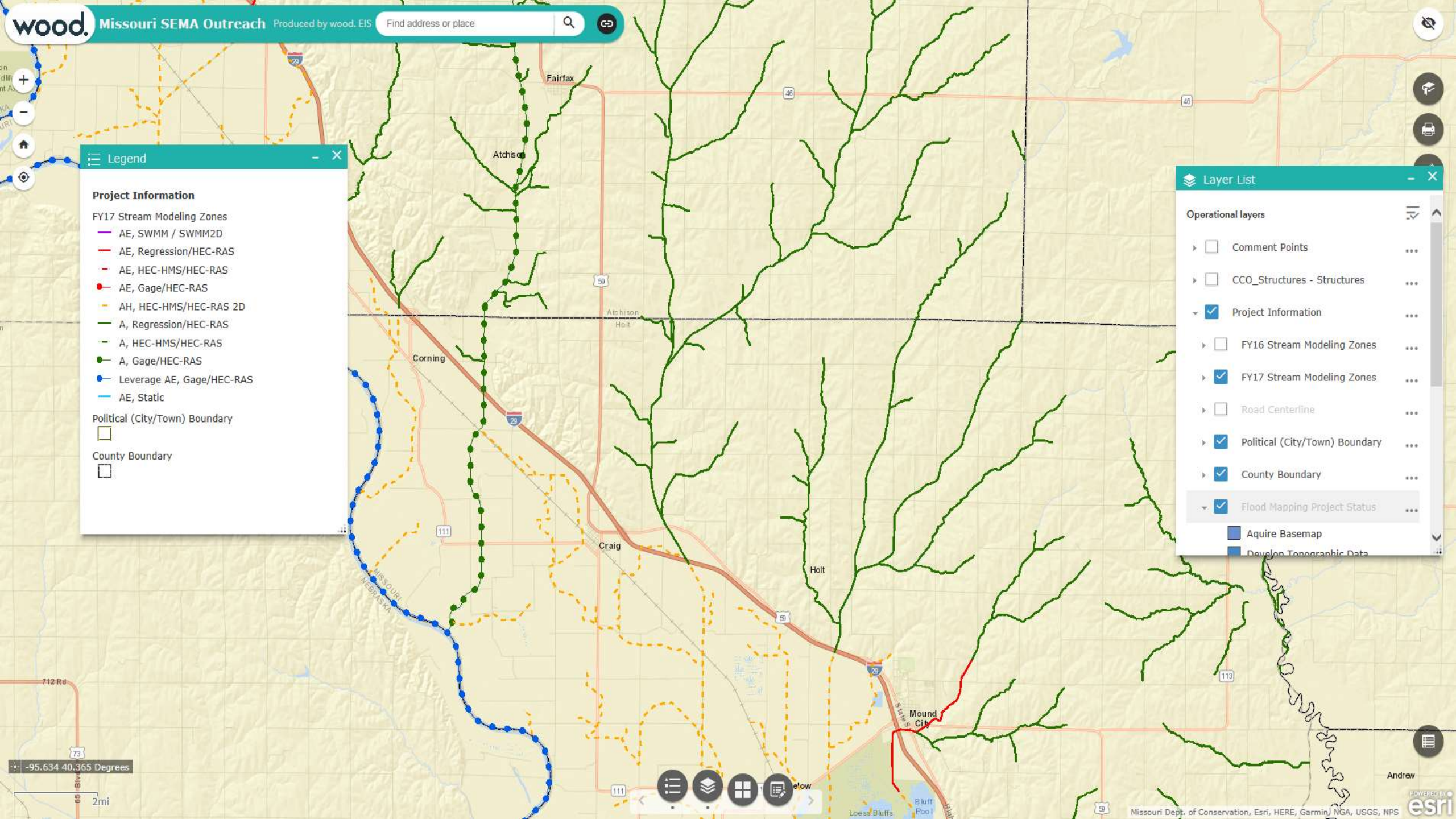


Progression of process






wood.
Missouri SEMA Outreach
Produced by wood. EIS
Find address or place
Legend
Project Information
Flood Mapping Project Status
Aquire Basemap
Develop Topographic Data
Field Survey
Develop Hydrology
Develop Hydraulics
Floodplain Mapping
ProducePreliminaryProducts
DistributePreliminary
Appeal Period
Adoption Period
Effective DFIRM
Paper Maps Only
Layer List
Operational layers
Comment Points
CCO_Structures - Structures
Project Information
FY16 Stream Modeling Zones
FY17 Stream Modeling Zones
Road Centerline
Political (City/Town) Boundary
County Boundary
Flood Mapping Project Status
FSR Floodplain Data
-102.348 42.306 Degrees
60mi
Esri, HERE, Garmin, NGA, USGS, NPS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Missouri SEMA Outreach
Produced by wood. EIS
Find address or place
Legend
Project Information
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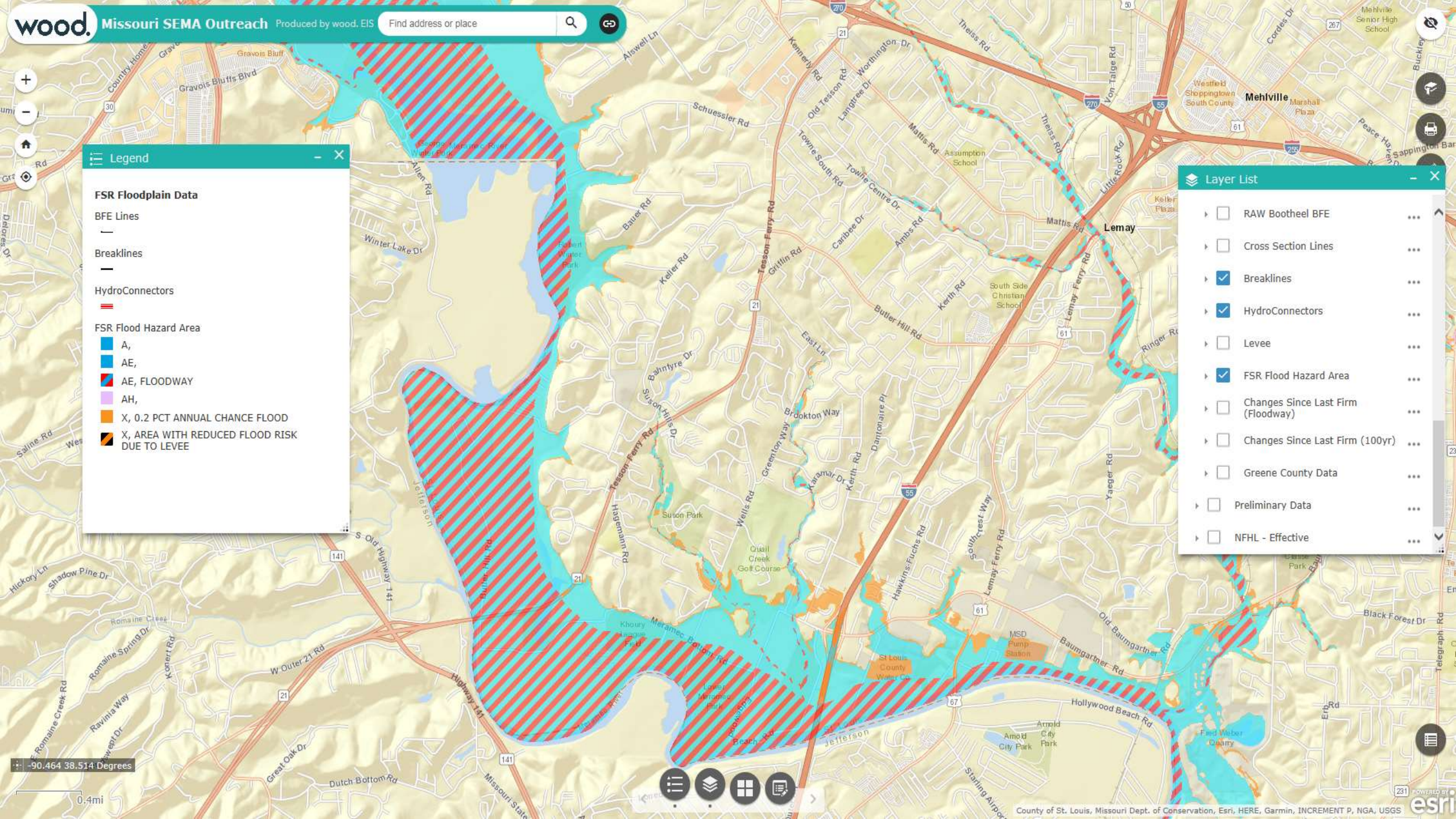
AE, SWMM / SWMM2D
AE, Regression/HEC-RAS
AE, HEC-HMS/HEC-RAS
AE, Gage/HEC-RAS
AH, HEC-HMS/HEC-RAS 2D
A, Regression/HEC-RAS
A, HEC-HMS/HEC-RAS
A, Gage/HEC-RAS
Leverage AE, Gage/HEC-RAS
AE, Static
Political (City/Town) Boundary
County Boundary
Layer List
Operational layers
Comment Points
CCO_Structures - Structures
Project Information
FY16 Stream Modeling Zones
FY17 Stream Modeling Zones
Road Centerline
Political (City/Town) Boundary
County Boundary
Flood Mapping Project Status
Aquire Basemap
Develop Topographic Data
Fairfax
Atchison
Corning
Craig
Holt
Mound City
Andrew
-95.634 40.365 Degrees
2mi
Missouri Dept. of Conservation, Esri, HERE, Garmin, NGA, USGS, NPS
esri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Missouri SEMA Outreach
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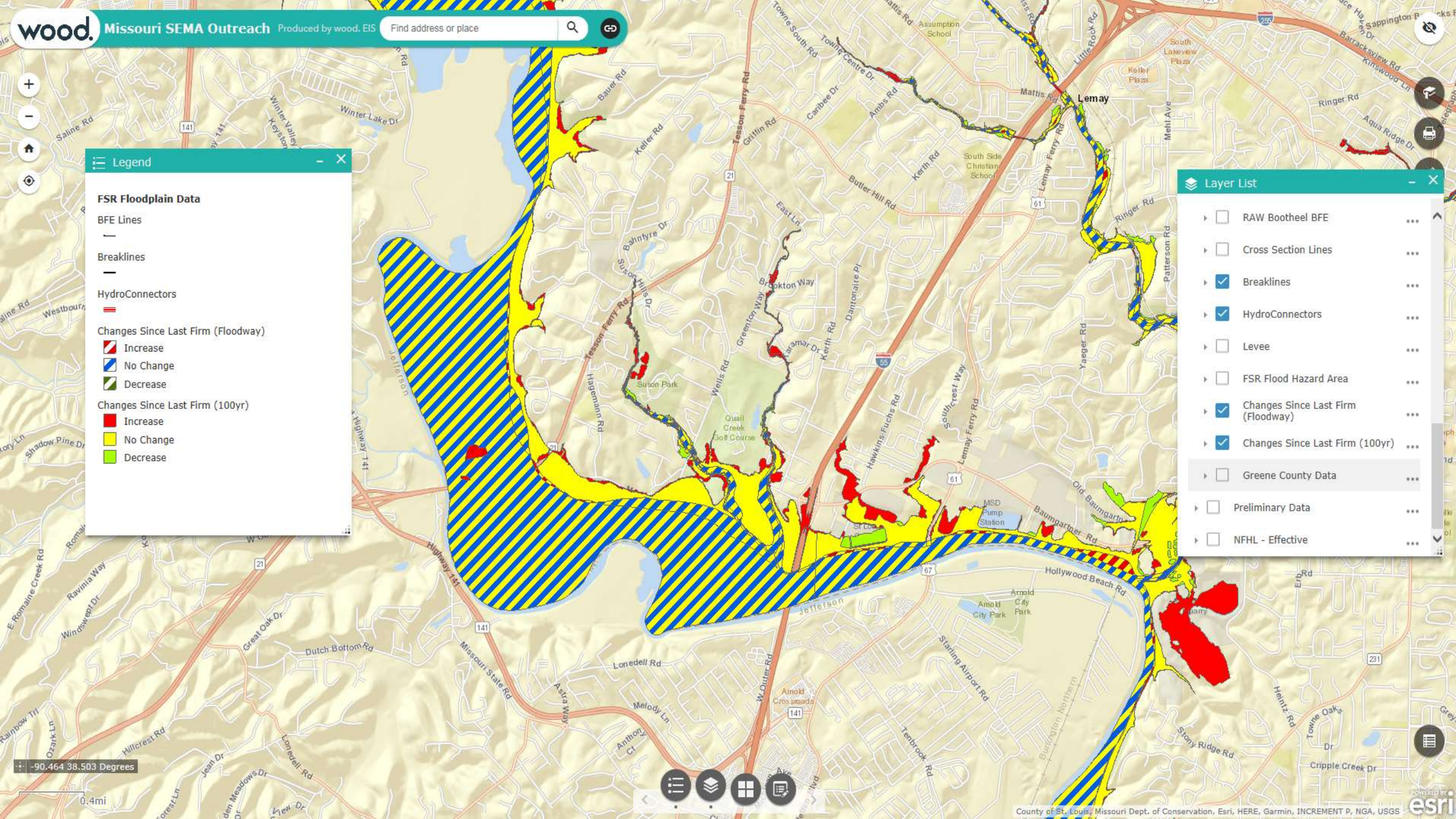
Find address or place
Legend
FSR Floodplain Data
BFE Lines
Breaklines
HydroConnectors
FSR Flood Hazard Area
A,
AE,
AE, FLOODWAY
AH,
X, 0.2 PCT ANNUAL CHANCE FLOOD
X, AREA WITH REDUCED FLOOD RISK DUE TO LEVEE
Layer List
RAW Bootheel BFE
Cross Section Lines
Breaklines
HydroConnectors
Levee
FSR Flood Hazard Area
Changes Since Last Firm (Floodway)
Changes Since Last Firm (100yr)
Greene County Data
Preliminary Data
NFHL - Effective
Mehlville
Lemay
-90.464 38.514 Degrees
0.4mi
County of St. Louis, Missouri Dept. of Conservation, Esri, HERE, Garmin, INCREMENT P, NGA, USGS
esri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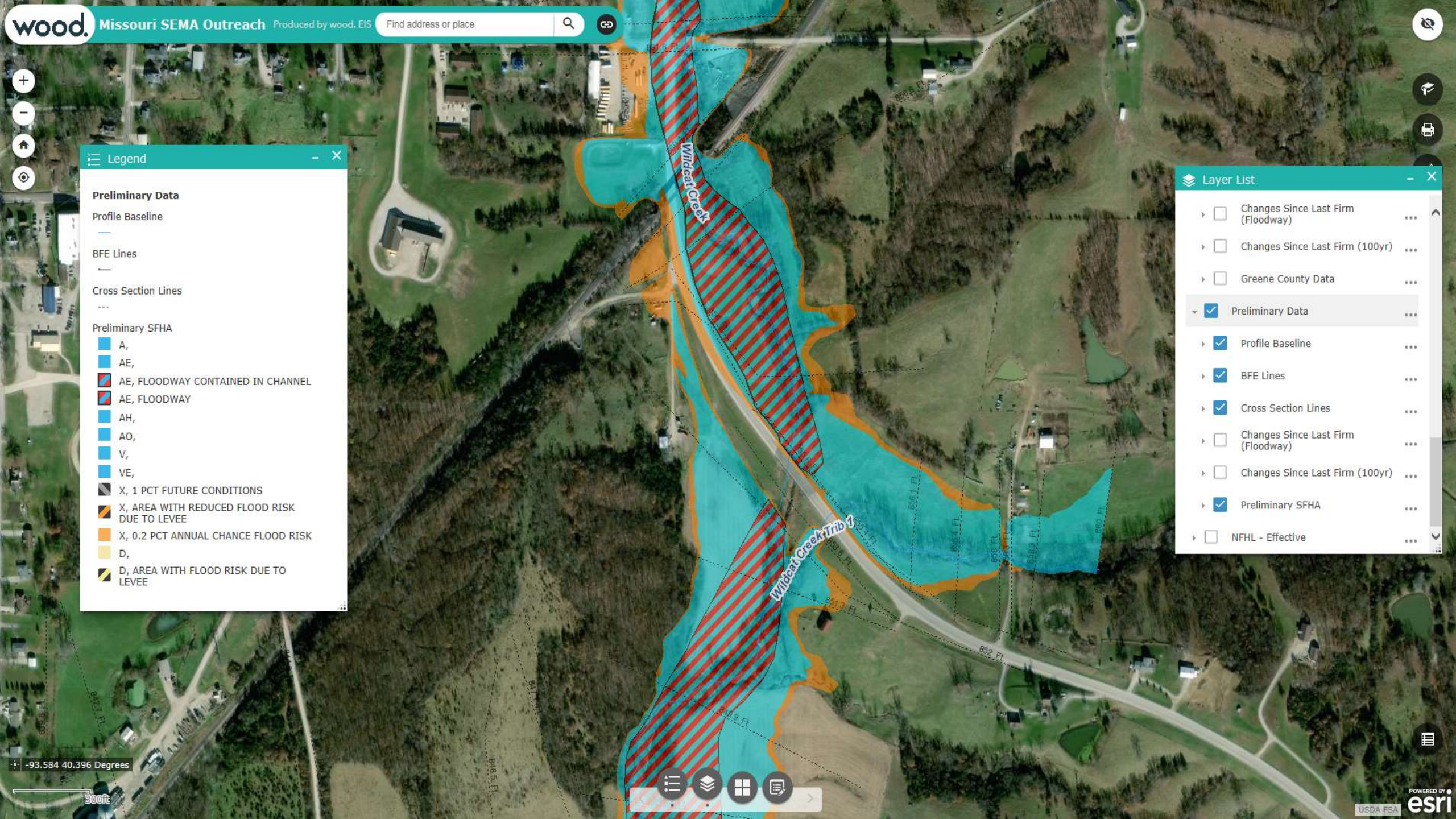
Missouri SEMA Outreach
Produced by wood. EIS
Find address or place
Legend
FSR Floodplain Data
BFE Lines
Breaklines
HydroConnectors
Changes Since Last Firm (Floodway)
Increase
No Change
Decrease
Changes Since Last Firm (100yr)
Increase
No Change
Decrease
Layer List
RAW Bootheel BFE
Cross Section Lines
Breaklines
HydroConnectors
Levee
FSR Flood Hazard Area
Changes Since Last Firm (Floodway)
Changes Since Last Firm (100yr)
Greene County Data
Preliminary Data
NFHL - Effective
Lemay
Suson Park
Quail Creek Golf Course
MSD Pump Station
Arnold City Park
Arnold Crossroads
Hollywood Beach Rd
Baumgartner Rd
Tesson Ferry Rd
Highway 141
Missouri State Rd
Lonedell Rd
Dutch Bottom Rd
Great Oak Dr
Hagemann Rd
Wells Rd
Greenton Way
Brookton Way
Butler Hill Rd
Keller Rd
Bauer Rd
Griffin Rd
Caribee Dr
Ambs Rd
Kerth Rd
Dantonaire Pl
Hawkins Fuchs Rd
Southcrest Way
Lemay Ferry Rd
Yaeger Rd
Patterson Rd
Ringer Rd
Mattis Rd
Little Rock Rd
Mehl Ave
Aqua Ridge Dr
Barracksview Rd
Kinswood Ln
Sappington Rd
Starling Airport Rd
Tenbrook Rd
Stony Ridge Rd
Heintz Rd
Cripple Creek Dr
Towne Oaks Dr
Erb Rd
Jefferson
Saline Rd
Winter Lake Dr
Westbourne
Shadow Pine Dr
Ravinia Way
Windswept Dr
Hillcrest Rd
Ozark Ln
Rainbow Trl
Jean Dr
Lonedell Rd
Melody Ln
Astra Way
Anthony Ct
W Outer Rd
Towne South Rd
Towne Centre Dr
Assumption School
South Lakeview Plaza
Keller Plaza
South Side Christian School
Amold City Park
Arnold Crossroads
-90.464 38.503 Degrees
0.4mi
County of St. Louis, Missouri Dept. of Conservation, Esri, HERE, Garmin, INCREMENT P, NGA, USGS
esri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Produced by wood. EIS
Find address or place
Legend
Preliminary Data
Profile Baseline
BFE Lines
Cross Section Lines
Preliminary SFHA
A,
AE,
AE, FLOODWAY CONTAINED IN CHANNEL
AE, FLOODWAY
AH,
AO,
V,
VE,
X, 1 PCT FUTURE CONDITIONS
X, AREA WITH REDUCED FLOOD RISK DUE TO LEVEE
X, 0.2 PCT ANNUAL CHANCE FLOOD RISK
D,
D, AREA WITH FLOOD RISK DUE TO LEVEE
Layer List
Changes Since Last Firm (Floodway)
Changes Since Last Firm (100yr)
Greene County Data
Preliminary Data
Profile Baseline
BFE Lines
Cross Section Lines
Changes Since Last Firm (Floodway)
Changes Since Last Firm (100yr)
Preliminary SFHA
NFHL - Effective
Wildcat Creek
Wildcat Creek Trib 1
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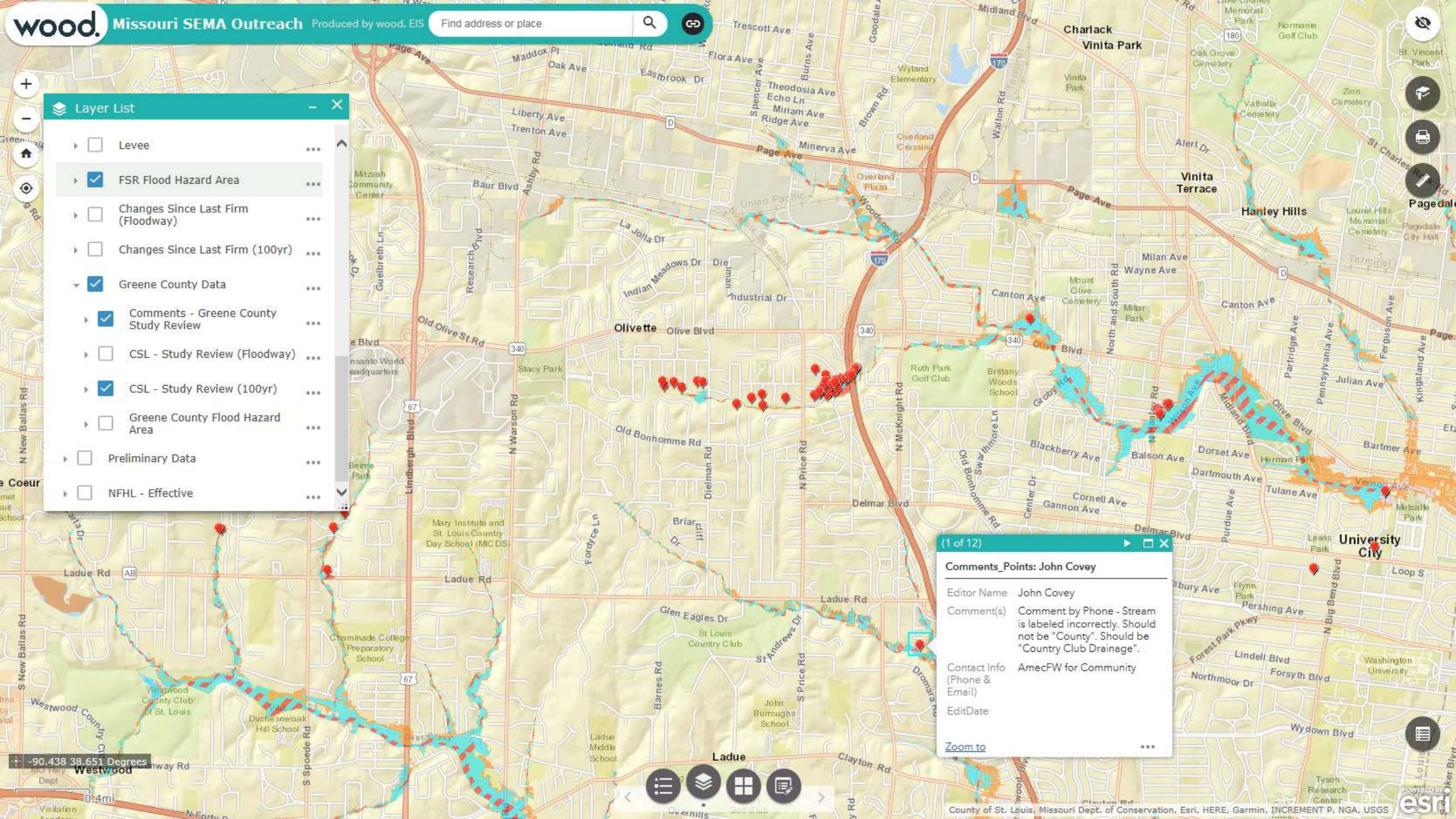
300ft
USDA FSA
POWERED BY esri


wood.
Missouri SEMA Outreach
Produced by wood. EIS
Find address or place
Layer List
Levee
FSR Flood Hazard Area
Changes Since Last Firm (Floodway)
Changes Since Last Firm (100yr)
Greene County Data
Comments - Greene County Study Review
CSL - Study Review (Floodway)
CSL - Study Review (100yr)
Greene County Flood Hazard Area
Preliminary Data
NFHL - Effective
(1 of 12)
Comments_Points: John Covey
Editor Name John Covey
Comment(s) Comment by Phone - Stream is labeled incorrectly. Should not be "County". Should be "Country Club Drainege".
Contact Info (Phone & Email) AmecFW for Community
EditDate
Zoom to
-90.438 38.651 Degrees
0.4mi
Olivette
Ladue
Westwood
Vinita Park
Vinita Terrace
Hanley Hills
University City
Pagedale
County of St. Louis, Missouri Dept. of Conservation, Esri, HERE, Garmin, INCREMENT P, NGA, USGS

MOSEMAOutreach

DOWNLOAD ALL

Folders

Name

- Atchison
- Audrain
- Barry
- Cape Girardeau
- Christian
- Dent
- Dunklin
- Franklin
- Greene
- Grundy
- Holt
- Iron
- Jefferson
- Knox
- Model Request...
- Montgomery
- Pettis
- Putnam
- StLouis
- StLouisCity
- Warren
- Washington

MOSEMAOutreach > Grundy

Folders

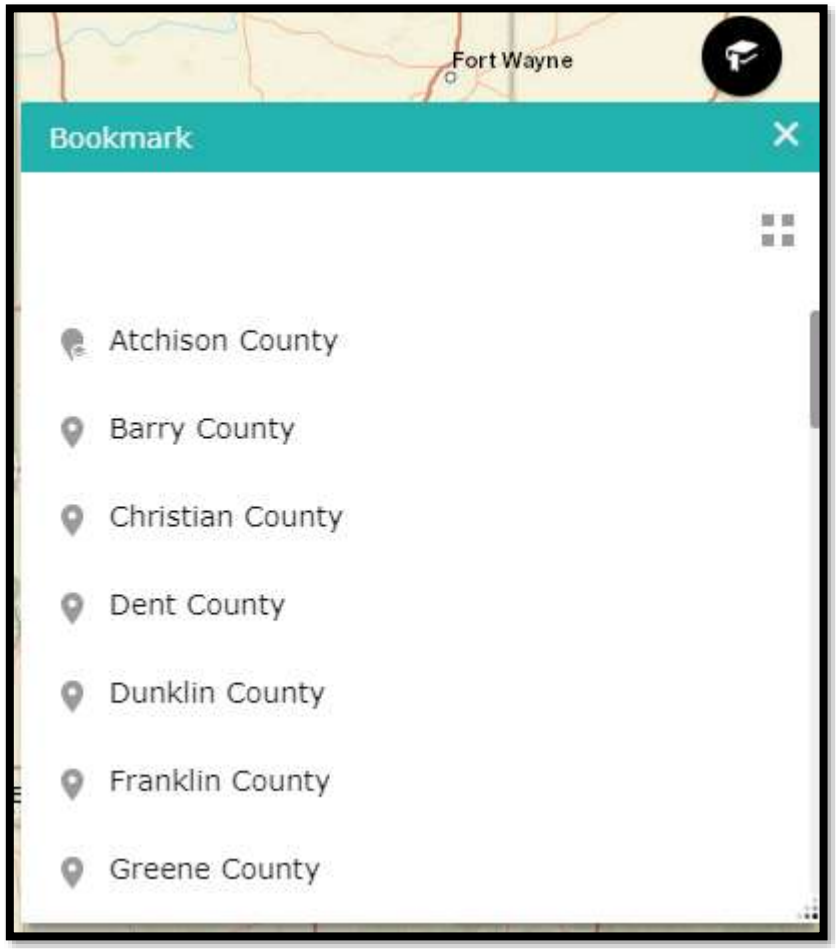
- CCO Meeting
- Flood Study Rev...
- Kick-off Meetin...

Files

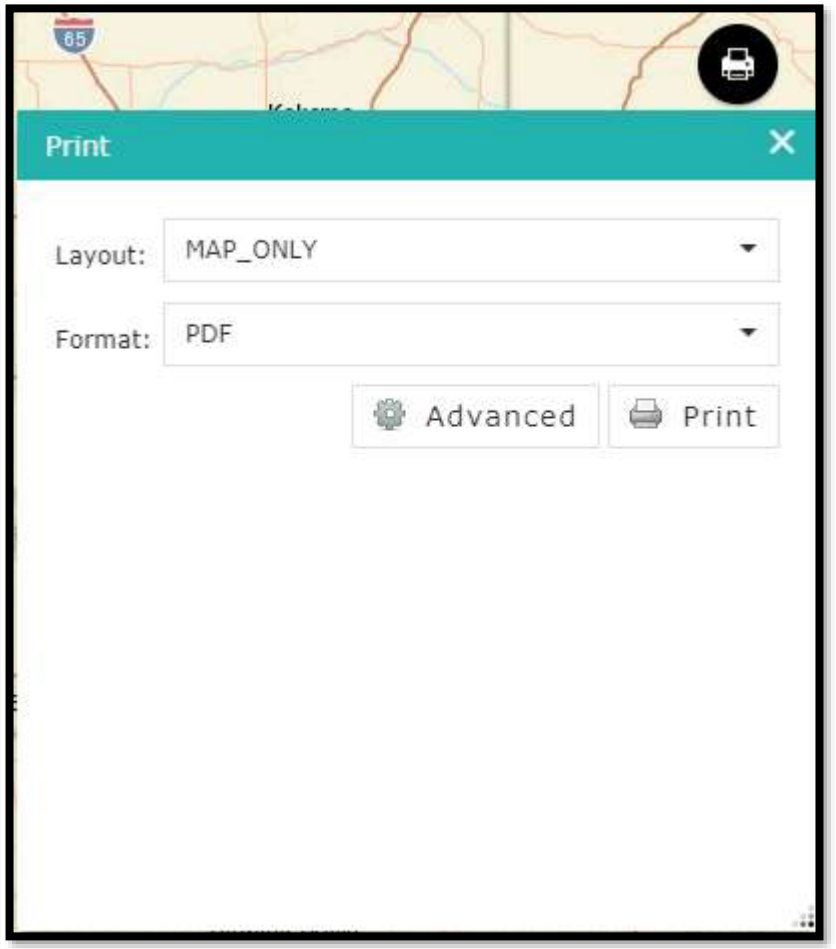
PDF Grundy County P...

Features of the ArcGIS Online Outreach Map

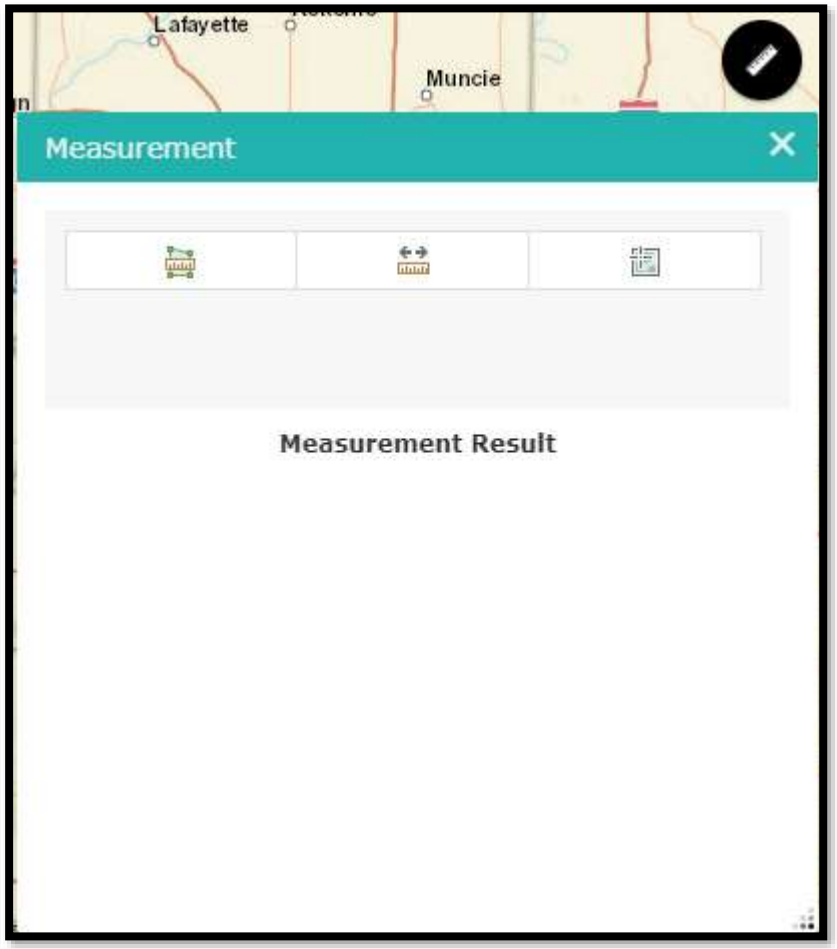
Bookmarks for each project

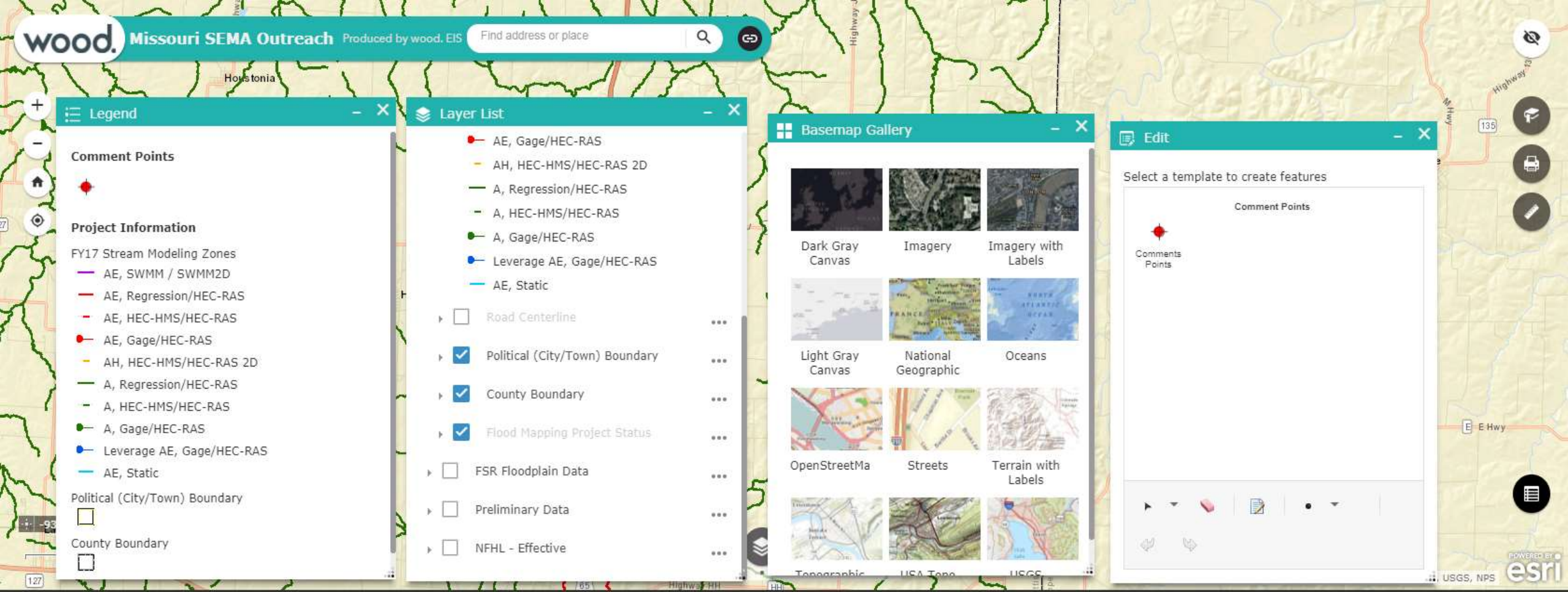


Print the map you see



Measure distance & area





Comment Points | FY17 Stream Modeling Zones | Political (City/Town) Boundary | County Boundary | Flood Mapping Project Status

Options | Filter by map extent | Zoom to | Clear selection | Refresh

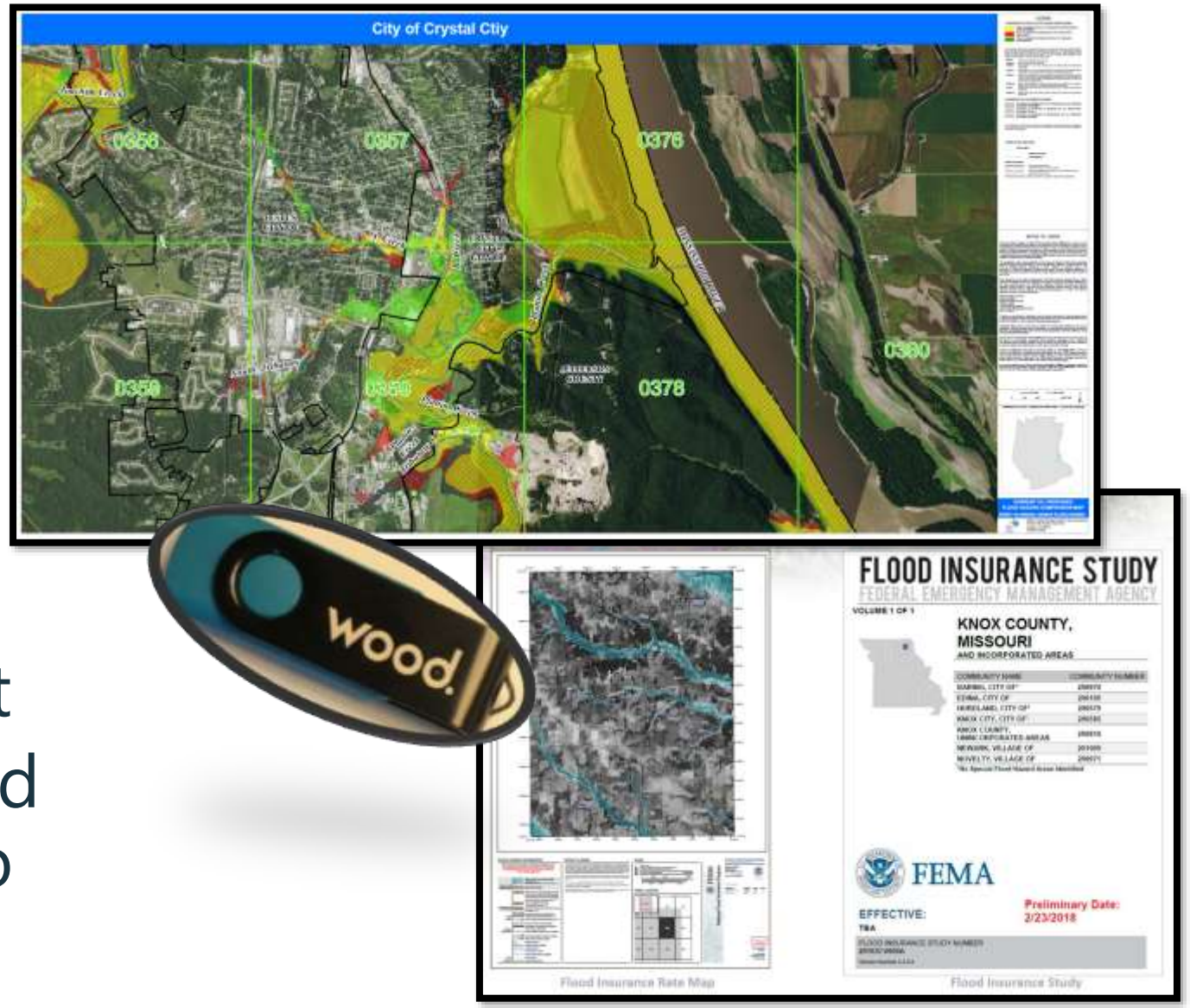
OBJECTID	WATER NAME	BEING STUDIED FLOOD ZONE	CO_Name	Modeling	Miles	Shape	Shape.STLength()
6		A	Pettis	Regression/HEC-RAS	1051.83		1692102.7343930989
21	Cedar Creek	AE	Pettis	Regression/HEC-RAS	6.43		10348.191906512322
48	Sewer Branch	AE	Pettis	Regression/HEC-RAS	5.89		9472.515717527815

3 features 0 selected

Features of the ArcGIS Online Outreach Map

Other options to get the information

- Hard copies:
  - Project Management Plan
  - FIS Report
  - SOMAs
  - Panels
  - Scroll Maps
  - Handouts/Power Point
  - Thumb drive with flood hazard & meeting info

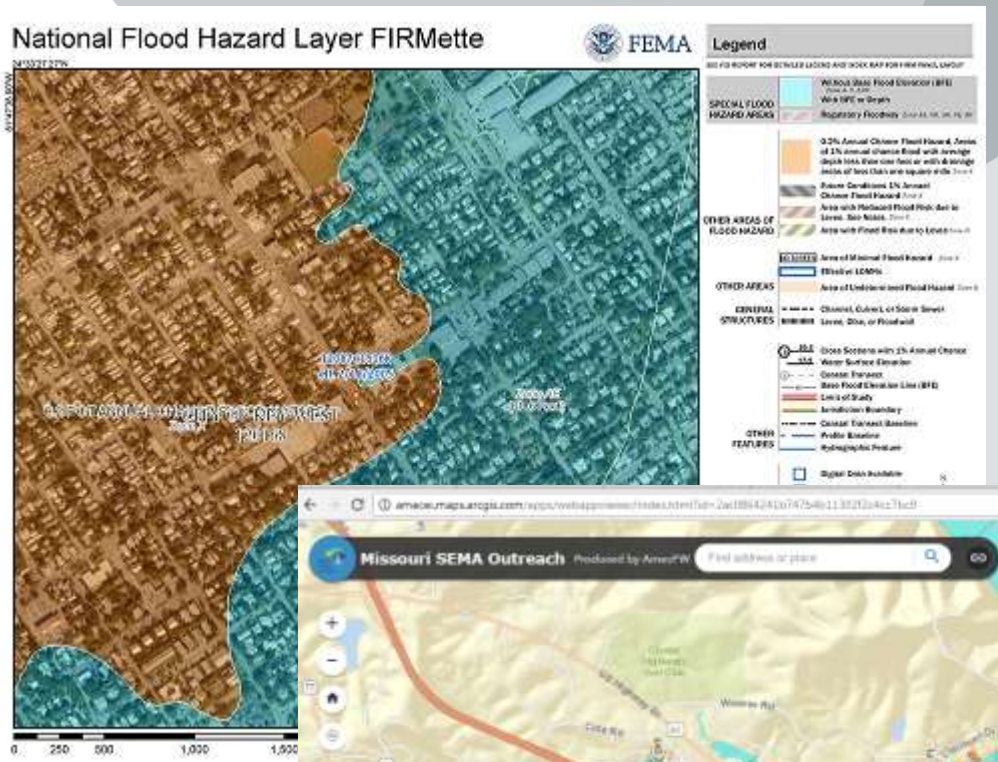


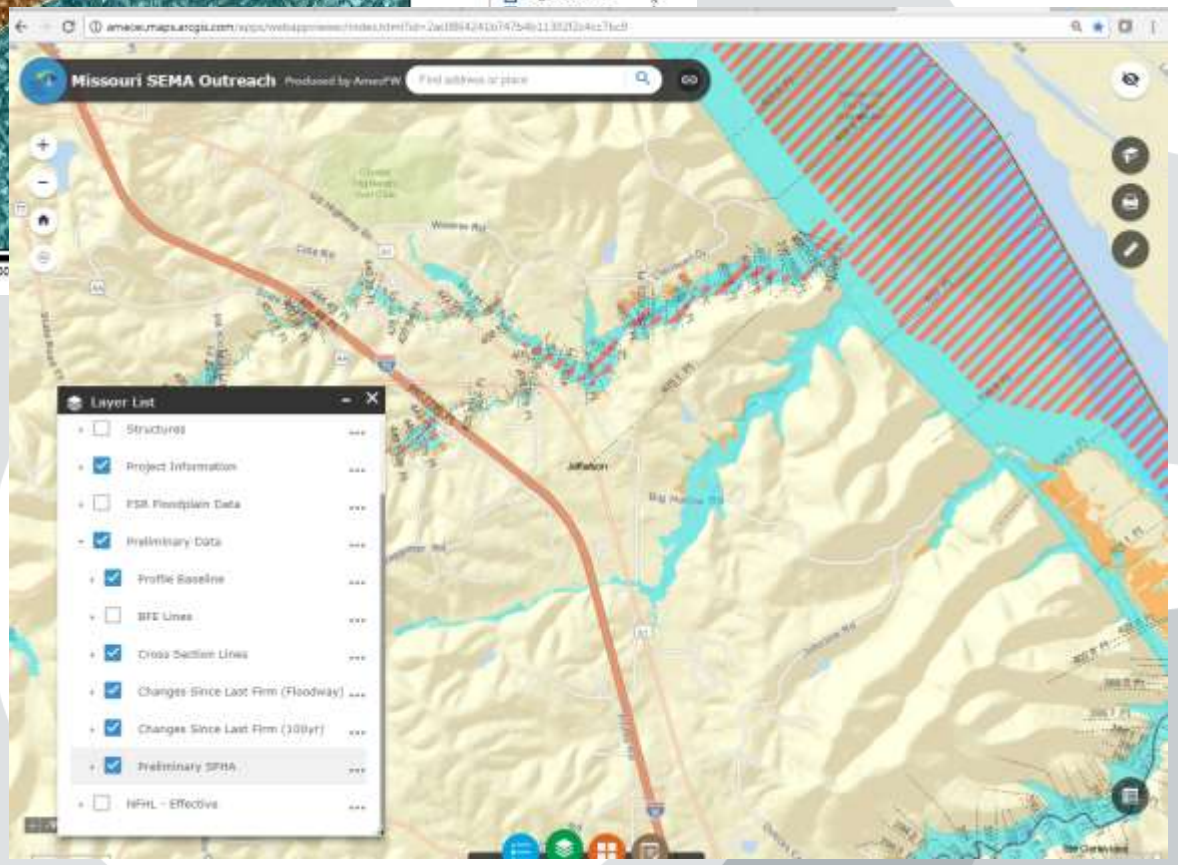
Examples and future improvements

- **Missouri Flood Outreach**
  - http://bit.ly/MOSEMAOutreach
  - http://bit.ly/mobile_MOSEMAOutreach
- **Story Maps**
  - http://bit.ly/KnoxStoryMap
- **Hazard Mitigation Project**
  - http://bit.ly/MoHazardMitigationPlanViewer2018

wood.

- Questions?





Presenter:
Joanna Rohlf
Sr GIS Analyst
Wood.
Environment and Infrastructure Services Inc.
joanna.rohlf@woodplc.com