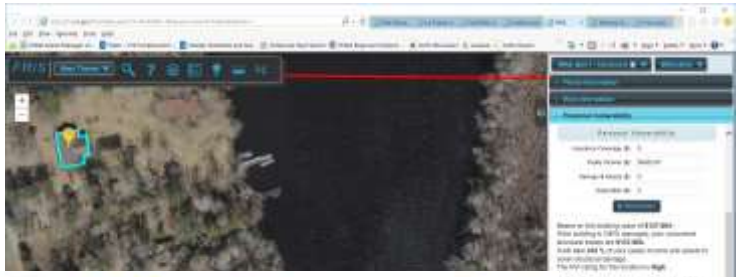
FEMA

Providing Credible Flood Risk Data to Help Communities Implement Higher Floodplain Management Standards

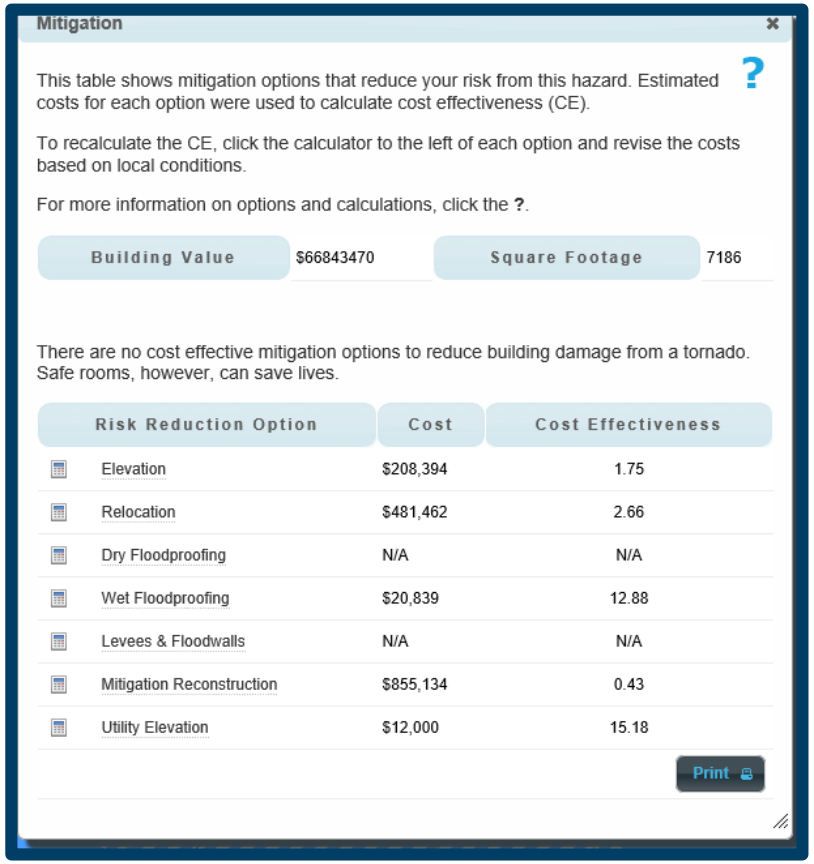
RiskMAP
Increasing Resilience Together

Why do we need Credible Data or Higher Standards?

Why?



How?



Mitigation

This table shows mitigation options that reduce your risk from this hazard. Estimated costs for each option were used to calculate cost effectiveness (CE).

To recalculate the CE, click the calculator to the left of each option and revise the costs based on local conditions.

For more information on options and calculations, click the **?**.

Building Value	$66843470	Square Footage	7186

There are no cost effective mitigation options to reduce building damage from a tornado. Safe rooms, however, can save lives.

Risk Reduction Option	Cost	Cost Effectiveness
Elevation	$208,394	1.75
Relocation	$481,462	2.66
Dry Floodproofing	N/A	N/A
Wet Floodproofing	$20,839	12.88
Levees & Floodwalls	N/A	N/A
Mitigation Reconstruction	$855,134	0.43
Utility Elevation	$12,000	15.18

Print

What?

What can better flood hazard data do for us?

Communicate
risk effectively

Raise risk awareness via a
well – informed public

Improve local acceptance

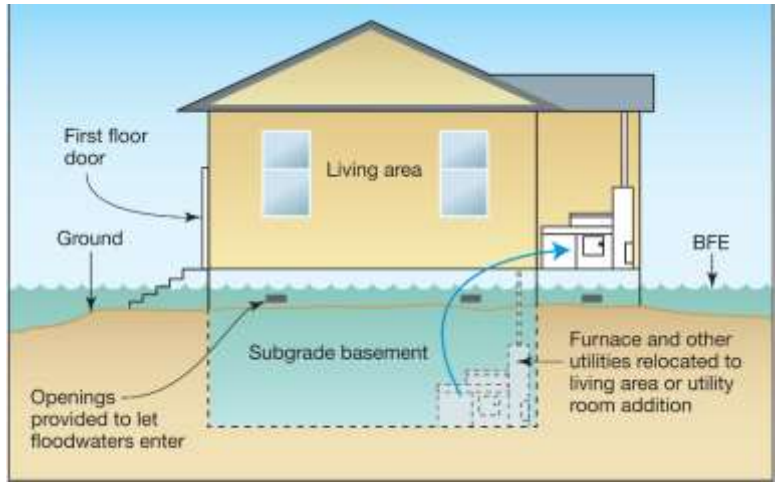
Reduce vulnerability via
mitigation actions

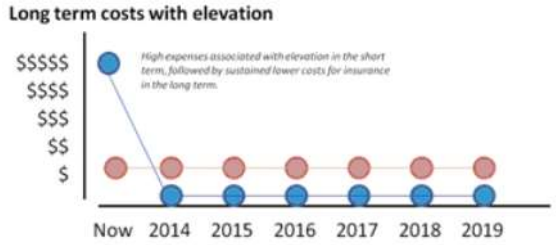
Improve flood insurance
rating methods

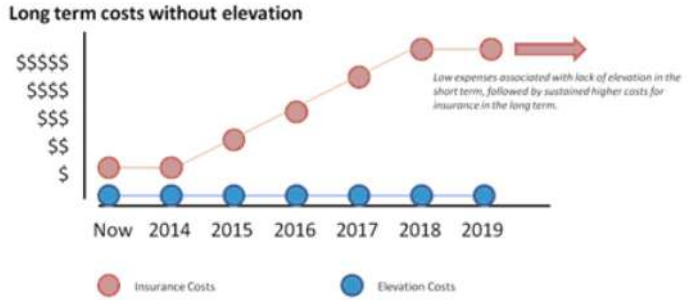
Increase trust in products

What are Higher Standards*?

- Examples of Non structural
  - Freeboard
  - Critical development protection
  - Fill Standards
  - Setbacks
  - Future conditions hydrologic mapping
  - Regulating areas not mapped on FIRM
  - Stormwater Management



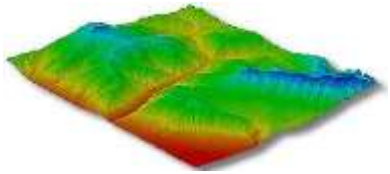


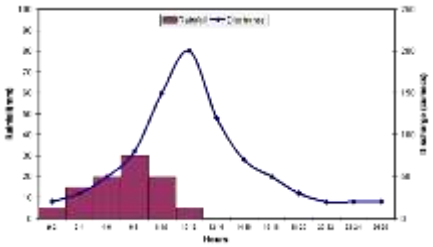


** Based on ASFPM's guide dated March 2013*

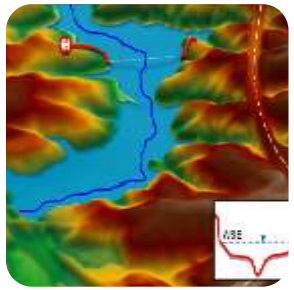
Higher Standard Support to Communities

Terrain

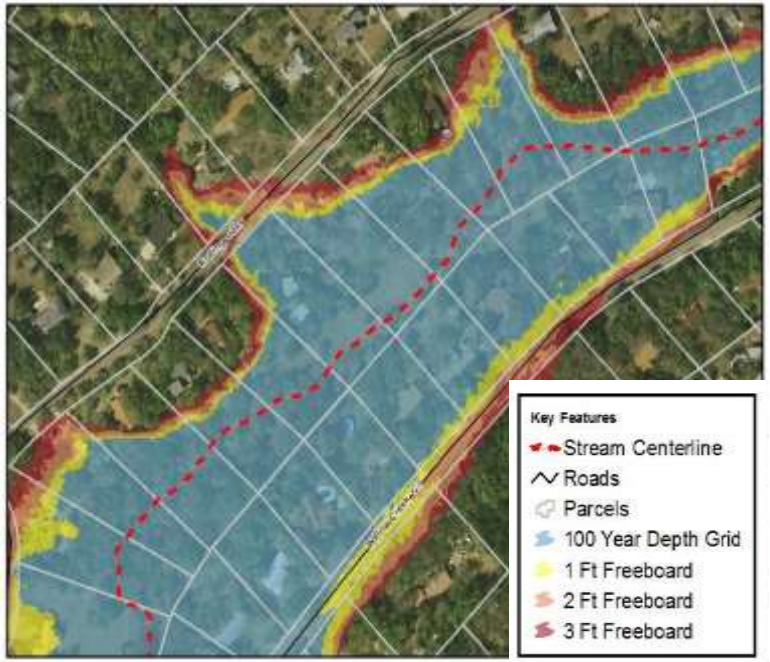


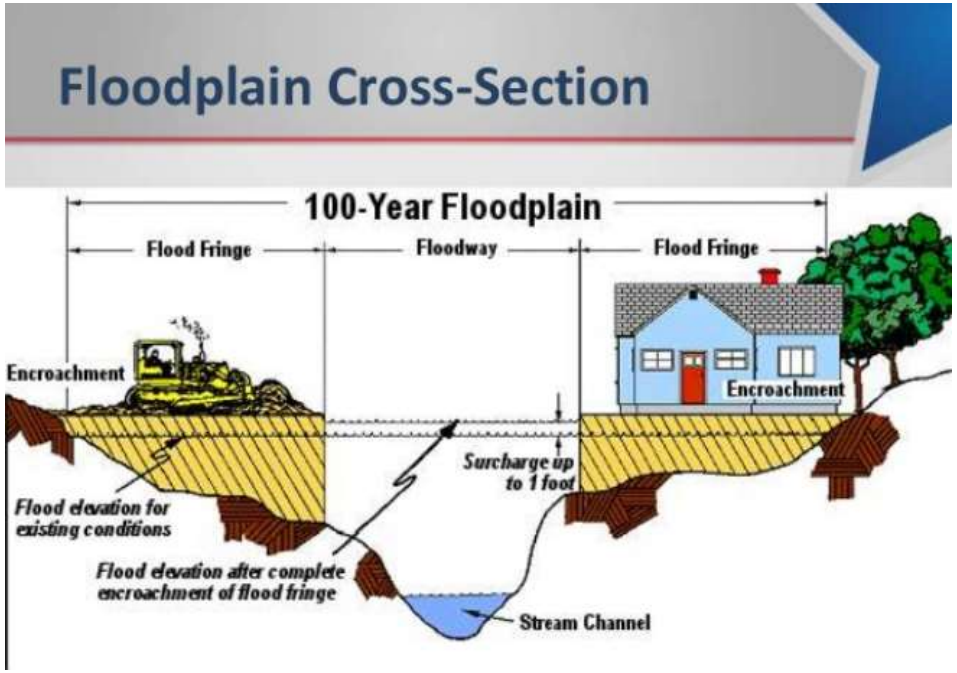


Hydrology



Hydraulics



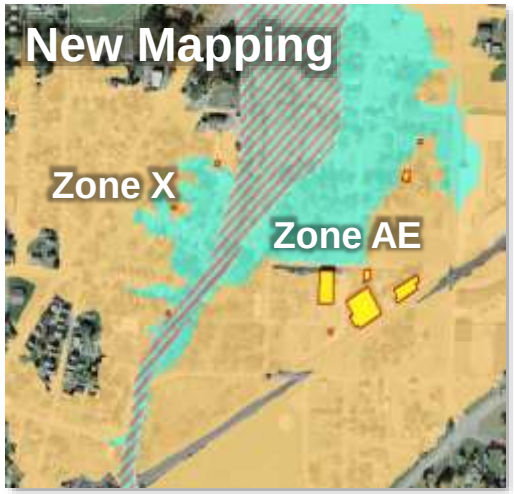


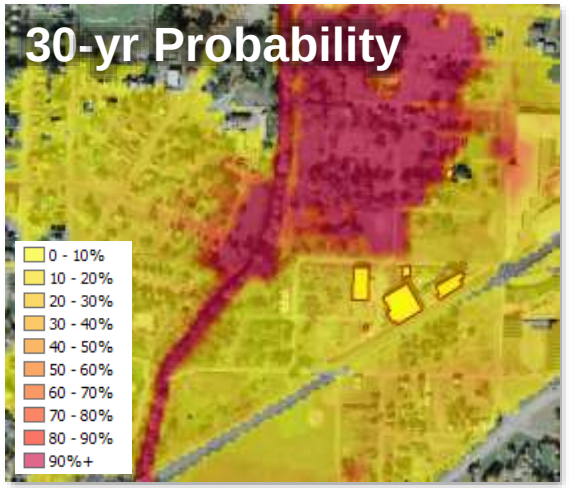
Credible Engineering Models

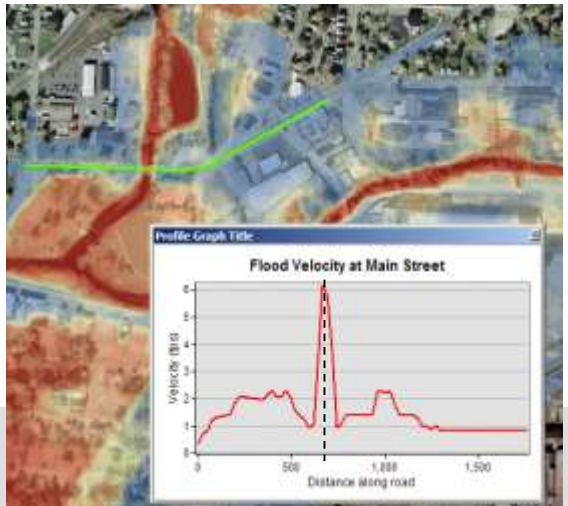
Flood Risk Products derived from Model Results

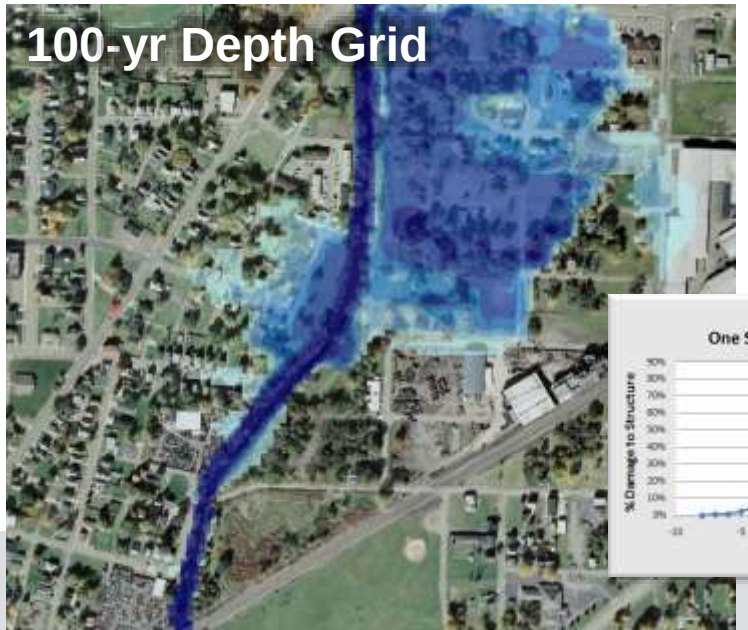
Ordinance support for better floodplain management

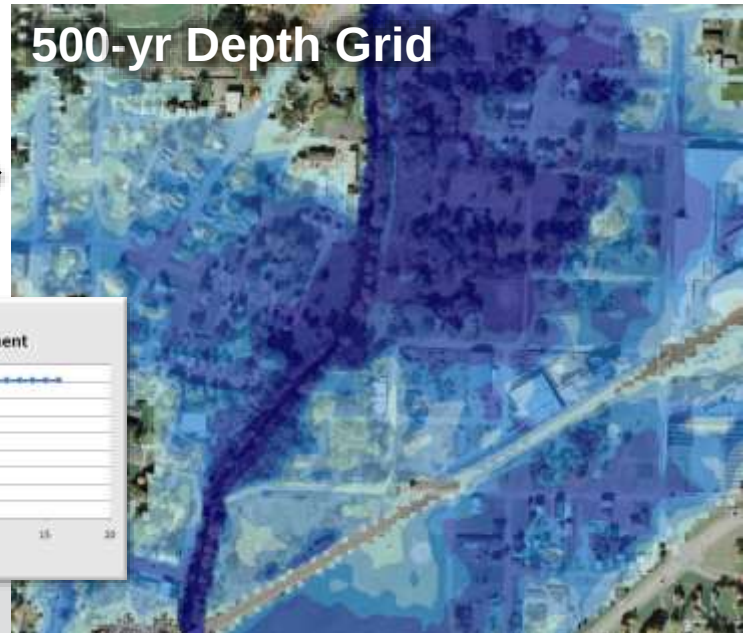
What types of data can we get from newer modeling?







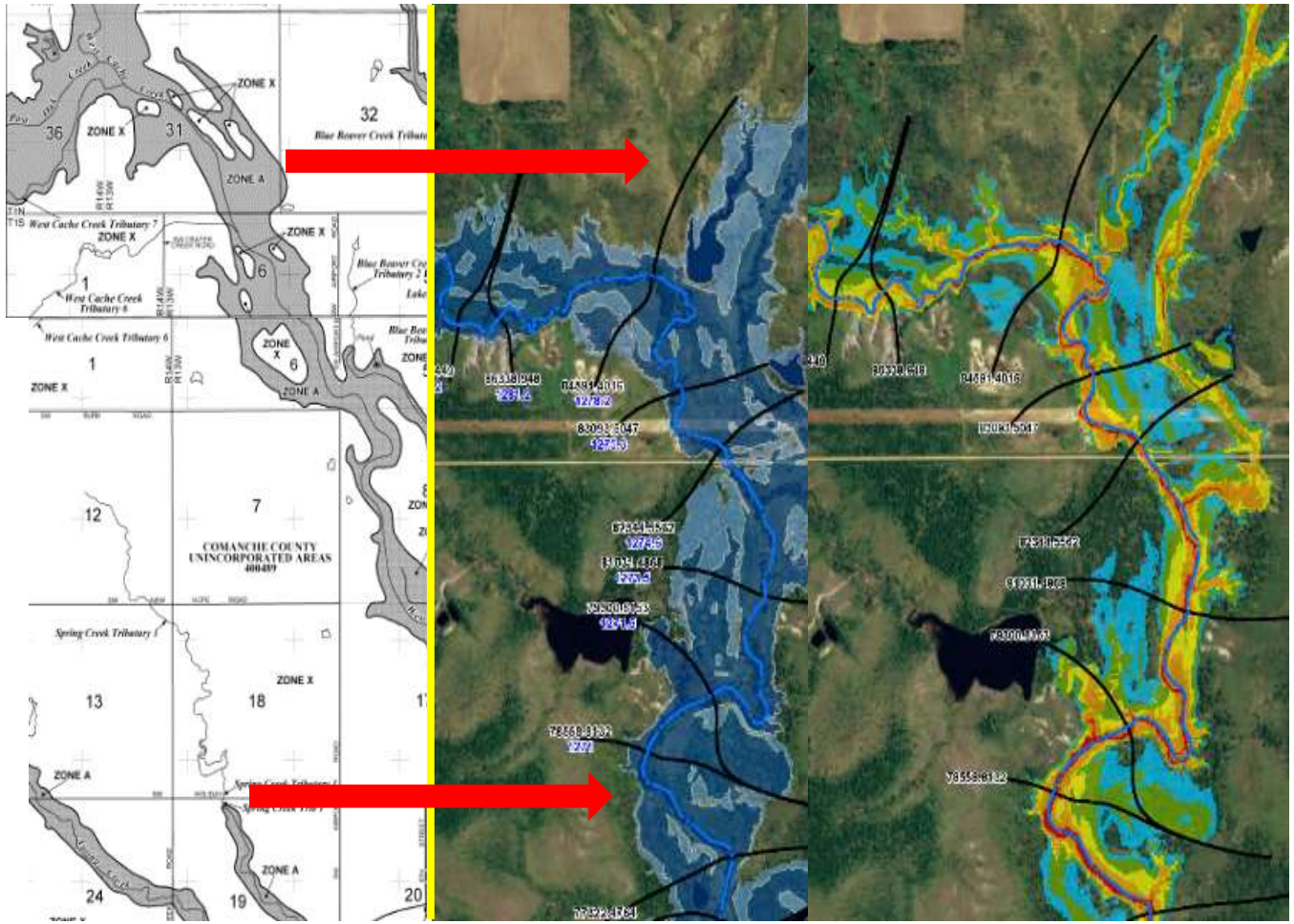




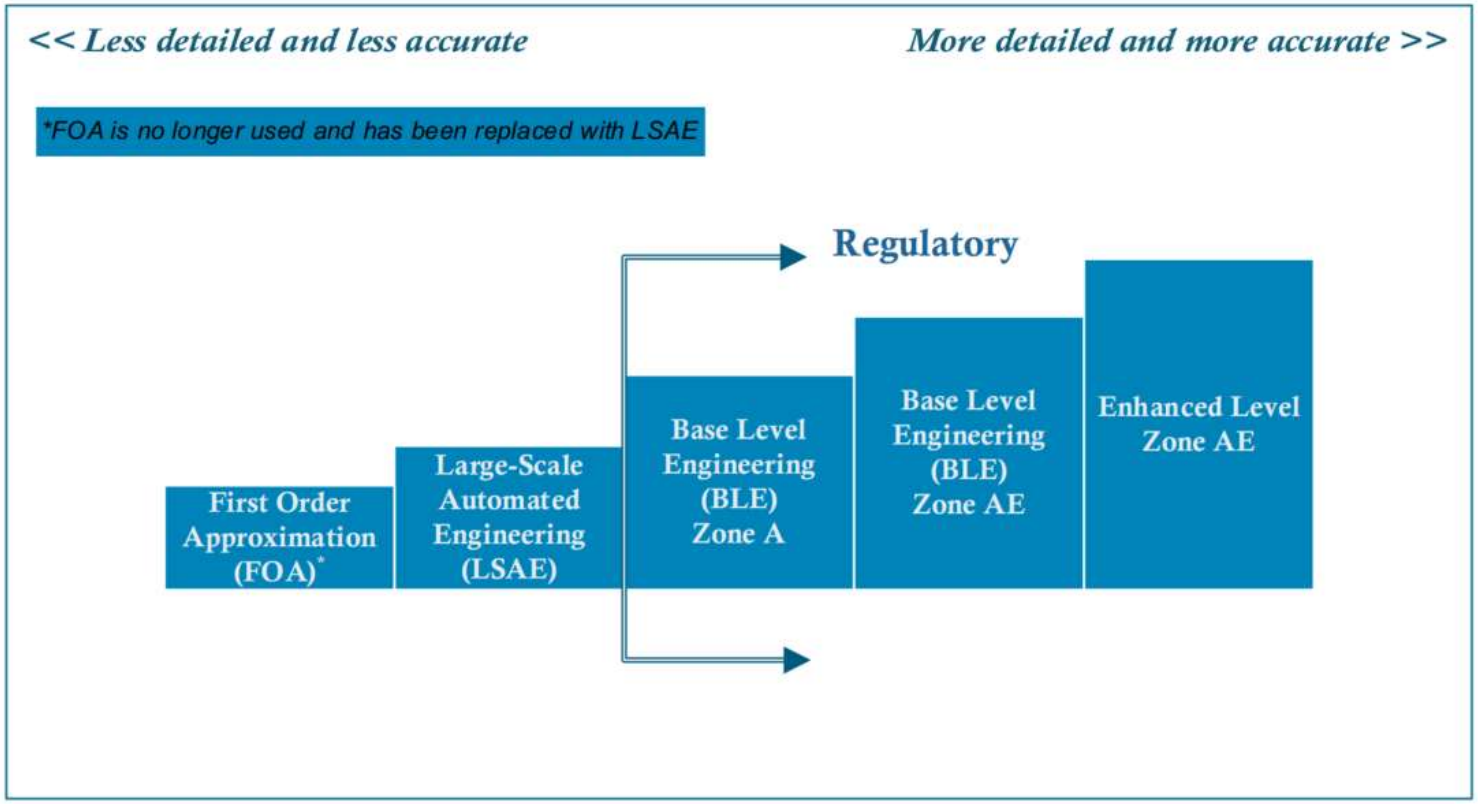
New Engineering Processes

Base Level Engineering (BLE) Introduction

- Definition
  - An automated riverine hydrologic and hydraulic modeling approach;
  - Built on lessons learned to produce a base line understanding of Flood Risk; and
  - To maintenance of the national flood hazard inventory.
- Builds upon:
  - Large Scale Automated Engineering (LSAE)
  - First Order Approximation (FOA)



What is BLE?


<< Less detailed and less accurate
More detailed and more accurate >>
*FOA is no longer used and has been replaced with LSAE
Regulatory
First Order Approximation (FOA)*
Large-Scale Automated Engineering (LSAE)
Base Level Engineering (BLE) Zone A
Base Level Engineering (BLE) Zone AE
Enhanced Level Zone AE

Data Production

Option	Cross Sections	Flow Paths (Left, Right and Channel)	Manning's "n" Values	Structures	Flood Zone
A	Auto-placed; may be unnaturally straight with computerized look to them adjusted or auto-placed by "intelligent" methods.	Reach lengths are assumed equal.	Single value for each cross section.	Not included; cross sections placed as if structures don't exist or cross sections placed appropriately for structure modeling.	A
B	Auto-placed and hand adjusted or auto-placed by "intelligent" methods.	Reach lengths computed by offsetting stream centerline.	Overbanks from Land Use Land Cover (LULC) data, channel value estimated separately.	Not included; but cross sections placed appropriately for structure modeling.	A
C	Each section reviewed by engineers.	Reach lengths adjusted based on draft floodplain.	Overbanks LULC data, channel value estimated separately.	Included; structure data from national, state or other data source. Estimated base on topography and aerial photos for those not available.	A
D	Each section reviewed by engineers.	Reach lengths adjusted based on draft floodplain.	Overbanks from LULC data, channel value estimated separately and calibrated where possible.	Included; structure data from as-builts, design plans, "measured" in the field, or other community datasets with opening information.	A or AE
E	Each section reviewed by engineers, Channel bathymetry included in sections.	Reach lengths adjusted based on draft floodplain.	Overbanks from LULC data and field data, channel value estimated separately from field data and calibrated where possible.	Included; structure data from field survey, as-builts, design plans, "measured" in the field.	AE

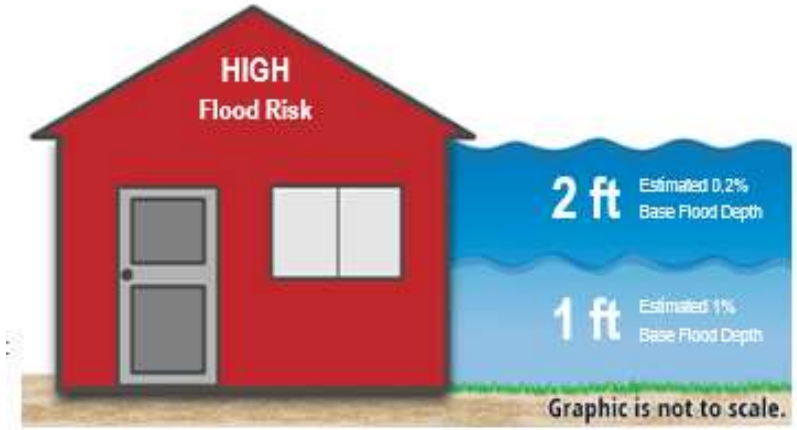
- **BLE Guidance is available – November 2017**
  - Provides flexibility to Regions to Scale-up
- **Available for various Technical Mapping Partners**

Minimum Requirements

- **Hydraulic Modeling (10%, 4%, 2%, 1%, 1%+, 1%-, and 0.2%)**
- **1% and 0.2% Floodplains**
- **1% and 0.2% Water Surface Grids**
- **1% and 0.2% Flood Depth Grids**

BLE Benefits and Usability

- **Provides Base Level of Data**
- **Step up from the current datasets**
- **Increase in Flood Risk data coverage**
  - Additional datasets
- **Promotes**
  - Informed Decisions - land use, construction, and investment decisions
  - Higher Standards for Floodplain Management
  - Stakeholder Collaboration
  - NVUE Validation and Discovery Discussions
  - LOMC (Amendment or Revision) BFE determination
- **Best Available Information**
  - Elevation Certificates
  - Floodproofing Certificates



Best Available Information

Definition:

(a) Existing flood hazard information adopted by a community

(b) Draft or preliminary flood hazard information supplied by FEMA

(c) Another source and reasonably used by the community

Uses

(a) Zoning District Updates

(b) Land use code / Ordinance Updates

(c) Community Rating System Points

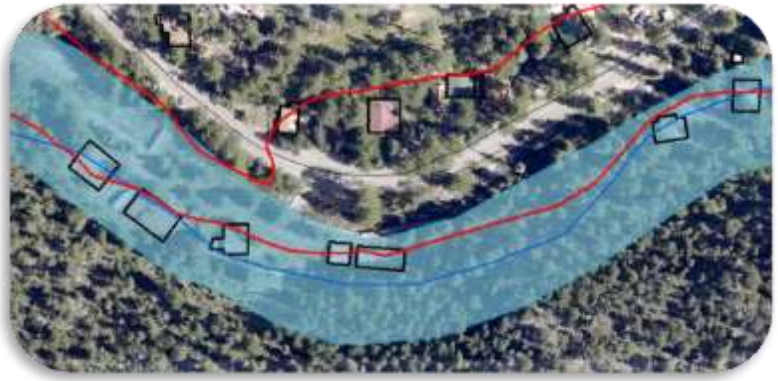
(d) Grant Applications

(e) Storm water Management and Design

(f) Capital Improvement Project Planning

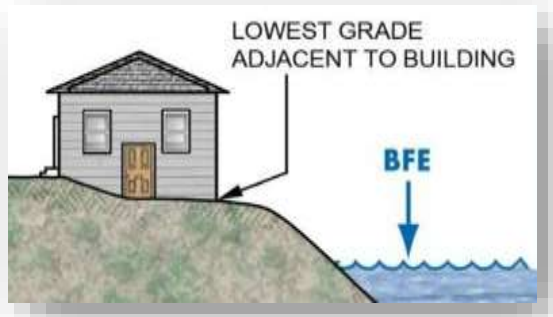
(g) Flood Evacuation Route Planning

Flood Risk Products Support



Risk Identification

Risk Communication



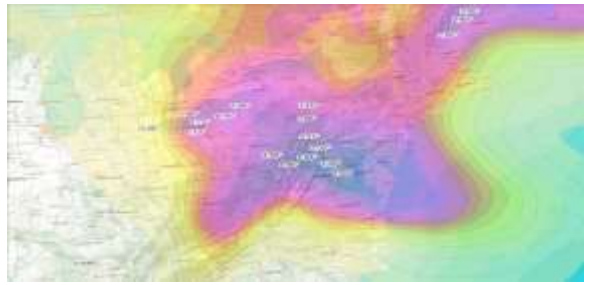
LOMAs

Permitting

Rainfall

Frequency

Flooding

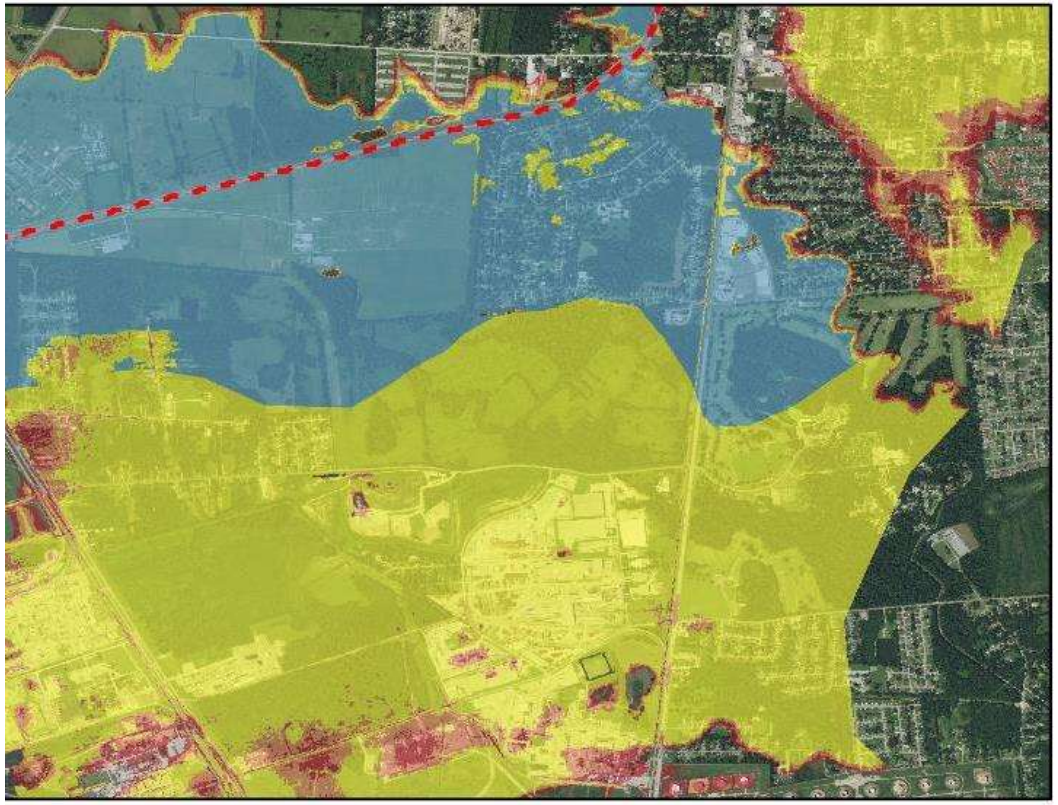


Disaster Response
Disaster Recovery

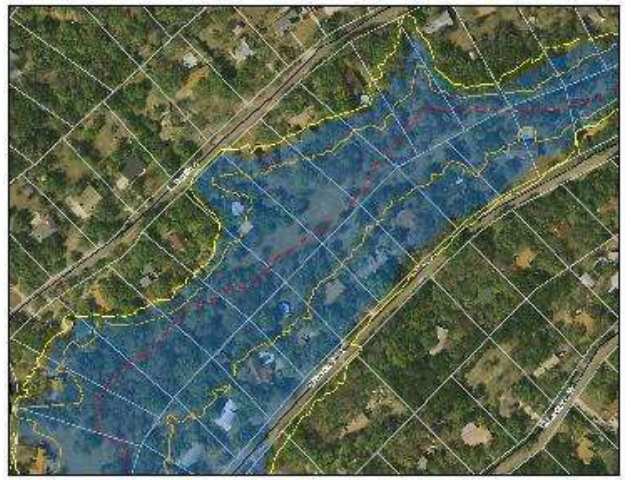
Mitigation Planning

Insurance Rating

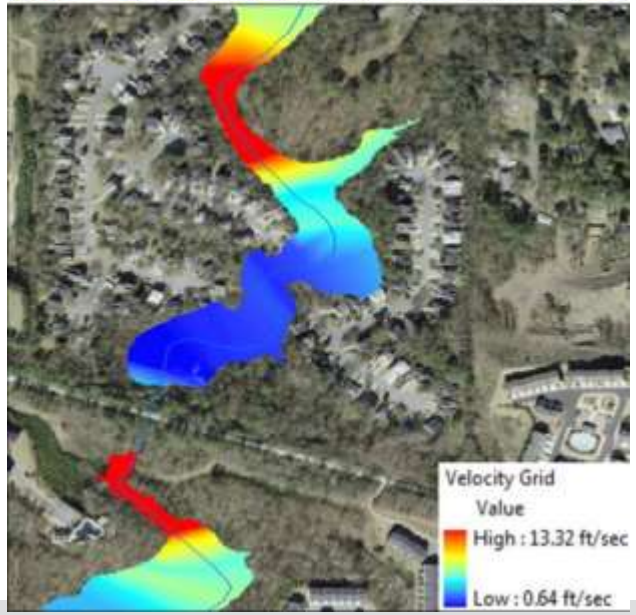
BLE Production – Higher Standards



Freeboard grids



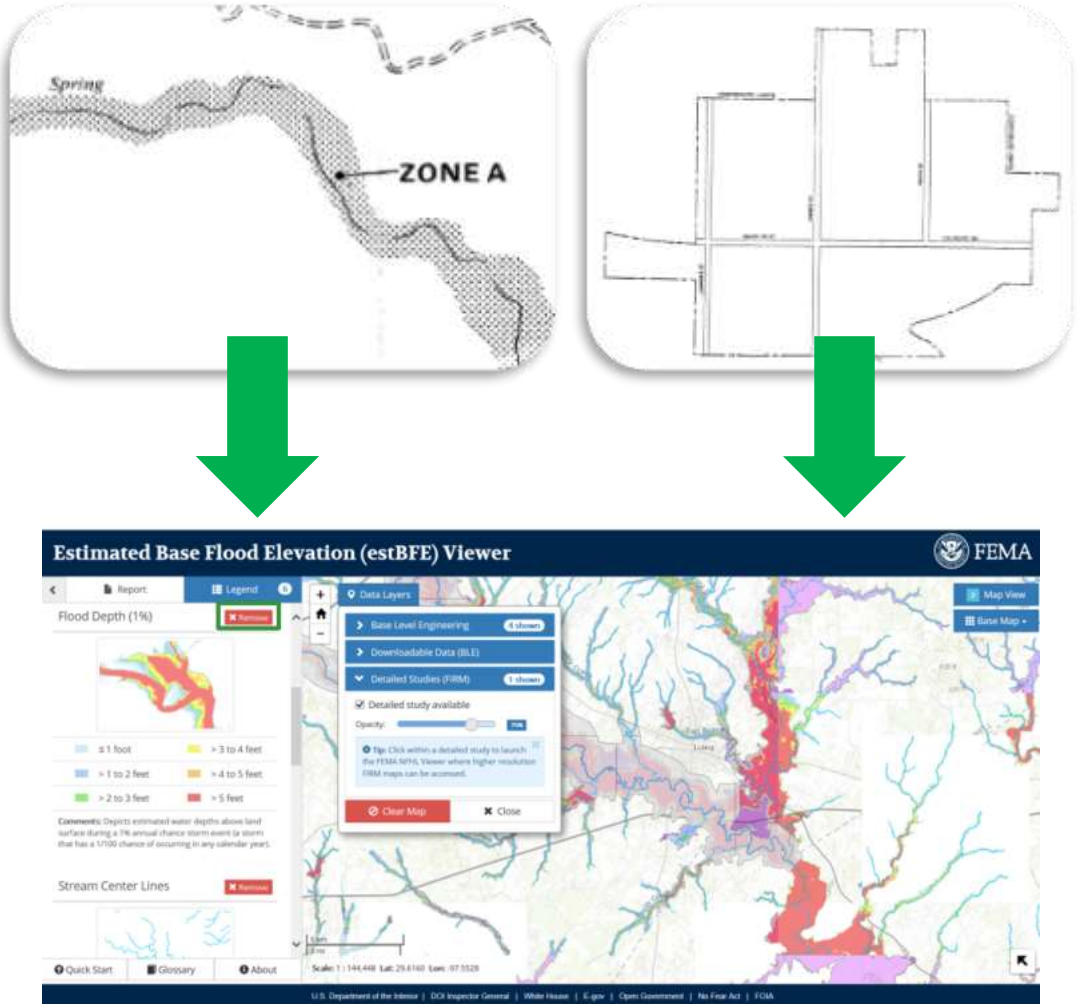
100 +/-
Floodplains



Velocity Grids

Data sharing

- **Provide Easy access to Data**
- **Data visualization opens the conversation**
- **Quick delivery of more recent flood data**
- **No burden on communities for special software to use the datasets**
- **Data can be used in the field with no paper maps**



Data Sharing Region 6 – Estimated Base Flood Elevation Viewer

Region 6 Version 2.0 Viewer has NEW functionality!

LOCATE

SITE-SPECIFIC REPORTING

SIDE-by-SIDE VIEWING

POINT-CLICK-DOWNLOAD

SHARE

VIEW EFFECTIVE FLOOD DATA

www.InFRM.us/estBFE

Data Sharing Region 6 - Estimated Base Flood Elevation Viewer

1% and 0.2%
Estimated Flood Extent

1%
Estimated Flood Depth

Data Sharing Region 6 – Users & Usage

- **FEMA** – Project Worksheet review, Temporary Housing placement
- **FEMA** - MT1 (LOMAs) and MT2 (LOMRs)
- **Oklahoma** - Informing State Hazard Mitigation Plan Update
- **Roger Mills County, OK** - Permitting (+2ft) against BLE data for Oil/Gas
- **City of Waxahachie, TX-**
  - Capital Improvement Project identification, assessment and prioritization
  - Letter of Map Revision
- **Johnson City, AR** – Community use of BLE data for LOMA submittal, use of site specific report for estimated BFE

State/Regional/Local CTPs, State NFIP Coordinators & Technical Staff, State Floodplain Management Associations are all supportive of the approach we have built and the resultant datasets created.

Data Sharing Region 8 – South Dakota Map Journal

USE NEW DATA TO REDUCE YOUR FLOOD RISK!

http://bit.ly/SDakotaMapJournal

Follow this link to your South Dakota Map Journal! Request your community's initial flood risk assessment results along with hydrology and hydraulic models. Use the Best Available Information (BAI) guide there to help manage local floodplain issue now by:

- Determining elevations or flood depths for properties in Zone A.
- Filing grant applications.
- Applying for map revisions or amendments.
- Preventing potential seasonal flooding issues.

QUESTIONS? CONTACT:

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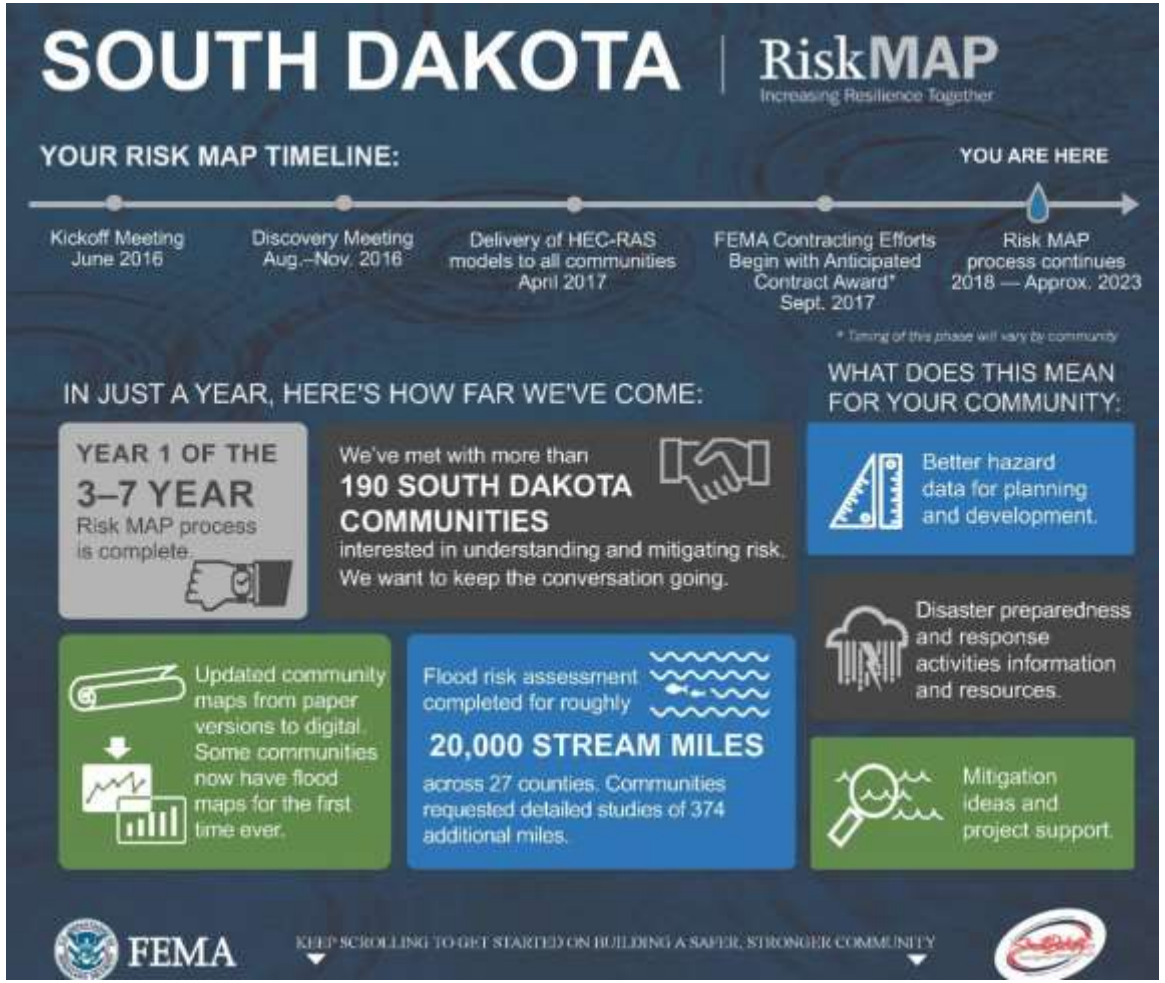
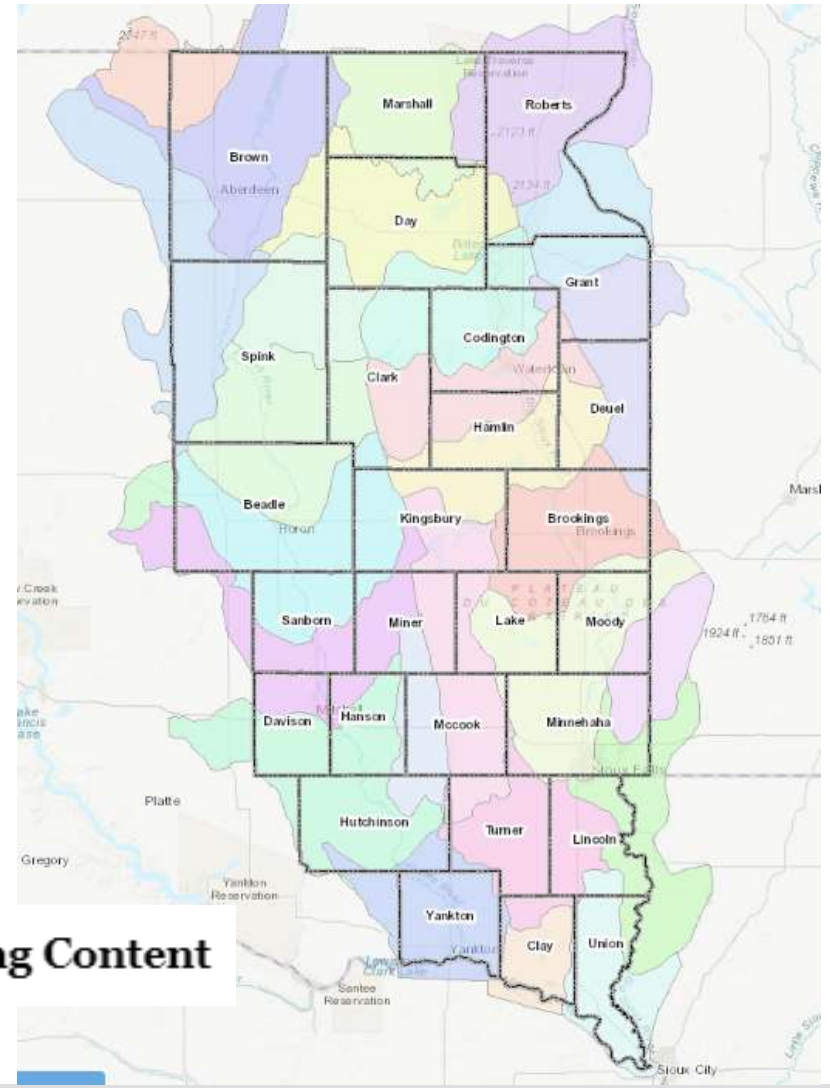
FEMA

South Dakota Emergency Management

RiskMAP
Increasing Resilience Together

Data Sharing Region 8 – South Dakota Map Journal





Download Engineering Content

Data Sharing Region 8 – Base Level Engineering

What's in it for me?

How can this data be used - LOMC

How can this data be used - Permitting

How can this data be used - Grants

How can this data be used - Building Codes

How can this data be used - Operational and Mitigation Planning

Session 1

NFIP Overview

What is required for Permitting in the SFHA

HMA and What it can do for your Community

Session 2

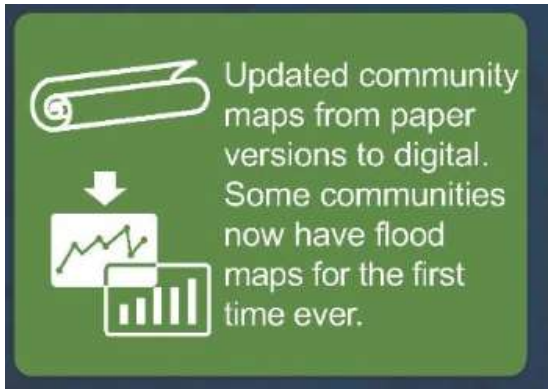
Risk Assessment and Emergency Response

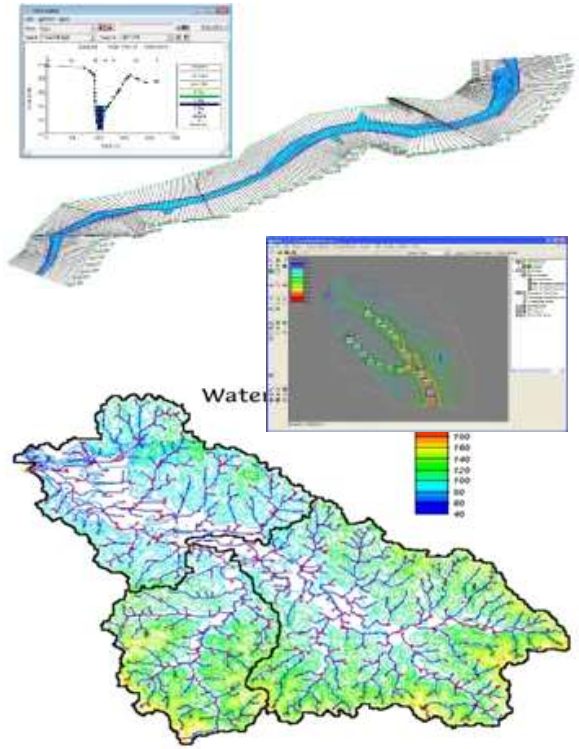
Taking LSAE and Plus Up for Detailed Study

Using LSAE for LOMRs

Credible Data – Takeaways

- **Protection of public and private infrastructure**
- **Improving Public Flood Risk Awareness**
- **Reduction in Rescue and Relief Efforts**
- **Protect of Life, Health and Property**





Credible engineering analysis and modeling for local communities and developers.

Questions?

FEMA