Base Level Engineering &
Base Flood Elevation Viewer

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What is Base Level Engineering?

- Combination of
  - High resolution ground elevation data (i.e. LiDAR)
  - CNMS miles
- Engineering models then determine flood elevations along each stream reach studied

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How is BLE made?

- Stream selection
  - FEMA creates a watershed stream network coverage that initiates with the current flood hazard inventory coverage (CNMS)
  - FEMA and its Mapping Partners review these against the National Hydrography Dataset (NHD).
  - The NHD medium resolution data inventoried by the US Geological Survey (USGS) Maps used to review the water courses
  - In the vicinity of population centers of 1,000 or more are reviewed for additional mileage against the high resolution data

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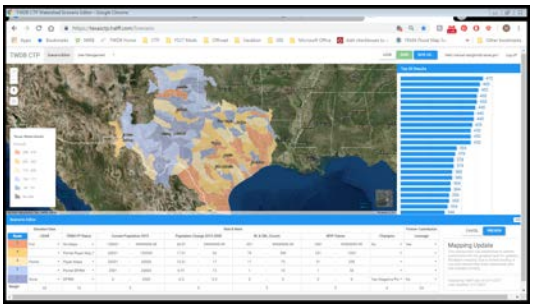
Prioritization Tool



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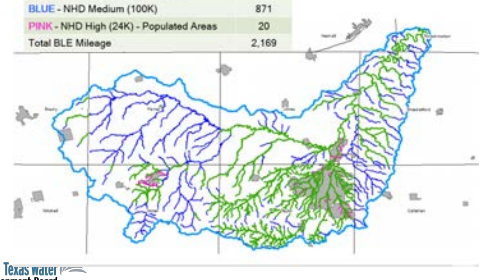
Stream Network

Source	Mileage
GREEN - Current Inventory (CNMS)	1278
BLUE - NHD Medium (100K)	871
PINK - NHD High (24K) - Populated Areas	20
Total BLE Mileage	2,169



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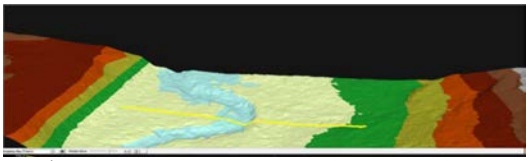
How is BLE Made?

- Terrain
  - The BLE is only initiated in watersheds and project areas where high resolution ground elevation
  - Topographic datasets are combined into a composite Digital Elevation Model (DEM) surface
  - The DEM is used to digitize the stream network using available National Hydrography Dataset (NHD) data for reference.



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How is BLE made?

- Hydrology
  - BLE produces hydrology information based on USGS regional regression equations, utilizing gage analysis where stream gages with sufficient records exist.
- Hydraulics
  - Uses the terrain model in combination with hydrology input to establish water surface elevations.

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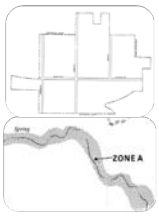
Base Level Engineering – Focus Areas

1 Unknown & Unverified Miles

2 Unmodernized Communities



3 Unmapped Miles

3

www.msc.fema.gov

FEMA Map Service Center

FIRMS vs BLE

- BLE information does not replace your current Flood Insurance Rate Map (FIRM)
- BLE is NOT a FIRM, but data/modeling produced can support future FIRM update.
- BLE data is meant to compliment FIRMS.
- BLE arms communities with data to assist regulation and development decisions, WITHOUT mandatory purchase of flood insurance and other requirements that are unearthed by creation/update of a FIRM

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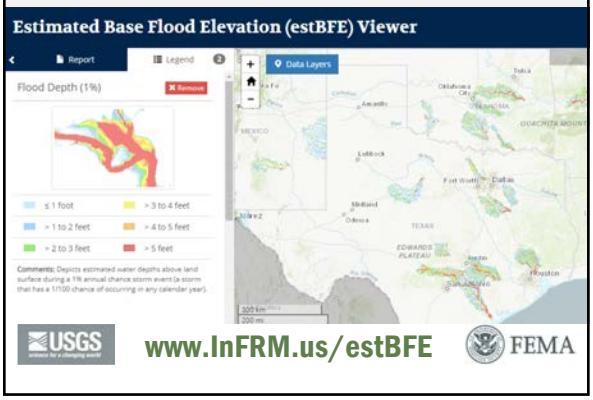
Region 6 – Obtaining Estimated BFE

Estimated Base Flood Elevation Viewer

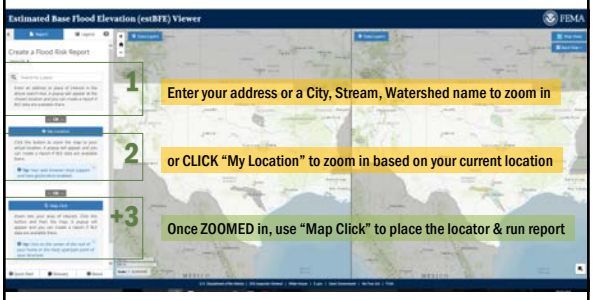


USGS science for a changing world

www.InFRM.us/estBFE

FEMA

Run a Site Specific Report



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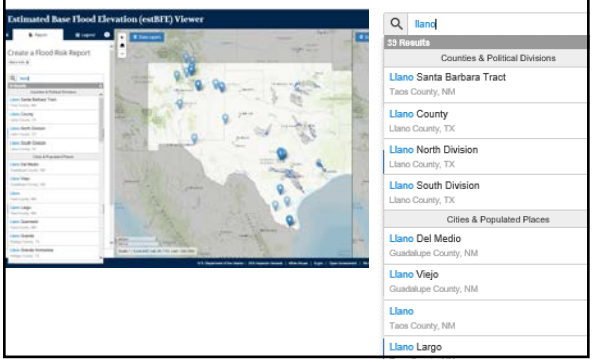
Searching for a Location

3



Run a Site Specific Report

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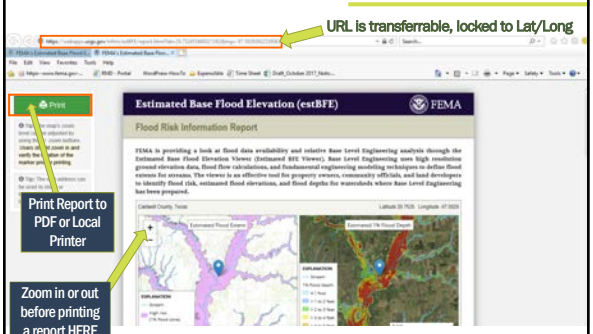
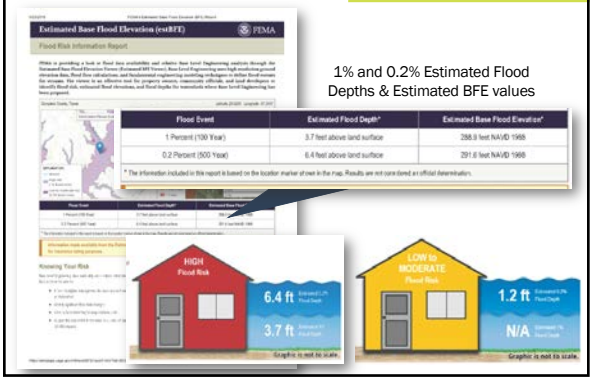


www.InFRM.us/estBFE

Report Features www.InFRM.us/estBFE



Report Features

www.InFRM.us/estBFE

How can I use Base Level Engineering Data?

PERMITTING

MITIGATION PLANNING

INSURANCE RATING

LOMAs

PERMITTING

- BLE can be used as “best available data”
  - **Where no data exists (No FIRM)**
  - **Where limited data exists (Zone A)**
  - Where data is more conservative or similar to existing (Zone AE)

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No Change Required Flood Damage Prevention Ordinance

- From FEMA: "Base Level Engineering information can be adopted and used as Best Available Information by locals without FIRM or Ordinance update"

> (8) When base flood elevation data has not been provided in accordance with Article 3, Section B, the Floodplain Administrator shall obtain, review and reasonably utilize any base flood elevation data and floodway data available from a Federal, State or other source, in order to administer the provisions of Article 5.

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Best Available Data

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Best Available Data

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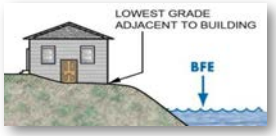
BLE Uses

INSURANCE RATING



LOMAs

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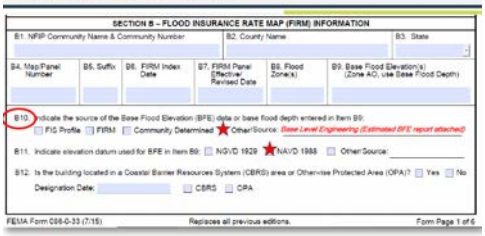
Elevation Certificate



Elevation Certificate (EC) should be used:

- Section B10 - Check "OTHER"
- Indicate "Base Level Engineering"
- Submit Estimated BFE Viewer Report with EC for LOMA submittal or insurance rating

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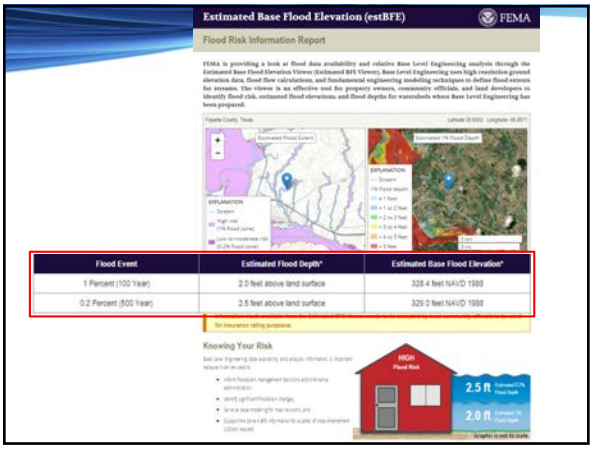

Other BLE Uses

- Identifying buildings / areas susceptible to flooding
- Target communications and public outreach
- Locate critical facilities outside flood prone areas
- Large-scale community planning and zoning
- Focus mitigation actions on high-risk properties
- Update the local mitigation plan
- Response and recovery

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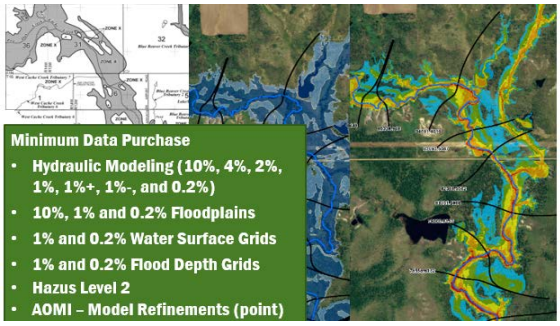
BLE Deliverables



Minimum Data Purchase

- **Hydraulic Modeling (10%, 4%, 2%, 1%, 1%+, 1%-, and 0.2%)**
- **10%, 1% and 0.2% Floodplains**
- **1% and 0.2% Water Surface Grids**
- **1% and 0.2% Flood Depth Grids**
- **Hazus Level 2**
- **AOMI – Model Refinements (point)**

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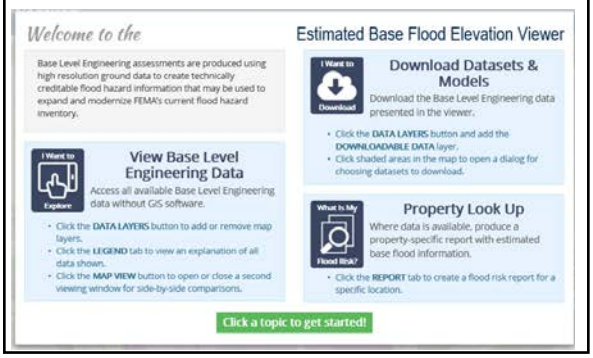
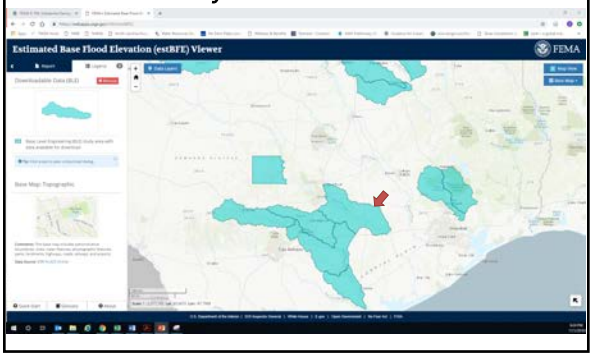


Estimated BFE Viewer – Version 2.0

Data Delivery with Point → Click → Download



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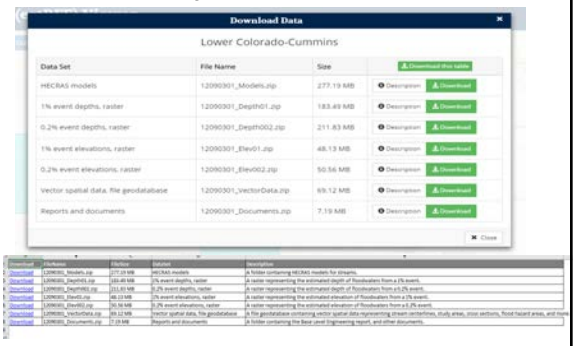

In detailed areas

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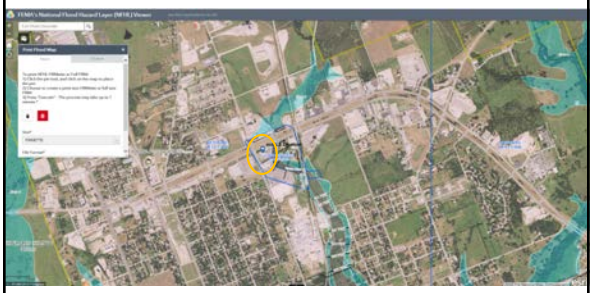
EstBFE Location included on NFHL Viewer



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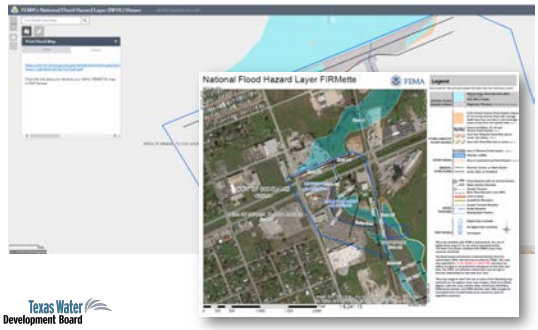
FIRMette - Result



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Questions?

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