CURRY COUNTY BLE FINDINGS MEETING

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WHAT IS RISK MAP?

- Mapping Identification of areas of natural hazard risk
- Assessment Review and analysis of hazard areas
- Planning Mitigation activities to reduce risk



Base Level Engineering







WHY BASE LEVEL ENGINEERING

- Will move forward a number of TMAC recommendations
- Enables FEMA to meet legal requirements to assess existing flood hazards and identified mapping
- Provides engineering information for use in updating FIRMs
- More technical creditability than Zone A modeling of the past
- Provides a basis and network of information for initiatives like:
 - Risk Rating 2.0
 - Future Conditions Modeling
 - Community MT2 activities

BASE LEVEL ENGINEERING IS A PROGRAMMATIC EVOLUTIONARY STEP WHICH PROVIDES:



Credible engineering analysis and modeling for local communities and developers.





May be adopted as Best Available Information (BAI) by communities & inform development decisions.

FOCUS AREAS FOR BLE ASSESSMENTS



CURRY COUNTY- BLE ASSESSMENT

Base Level Engineering Watersheds



APPROACH

DELIVERABLES

- FEMA has devised both a 1D and 2D modeling approach
- High Resolution Ground Data required
- Manual revisions to input cross-sections or grids during modeling
- Cross-sections added near structures
- Human Investigation of results prior to FIRM mapping

- Hydraulic Engineering Models (10%, 4%, 2%, 1%, 1%+, 1%-, and 0.2%)
- Estimated Flood Extents (10%, 1% and 0.2%)
- Estimated Water Surface Grids (1% and 0.2%)
- Estimated Flood Depth Grids (1% and 0.2%)
- Optional Layers also possible (Hazus Run, Point file for update potential, freeboard grids)



BLE Increases Collaboration & Transparency

Current	Mapping	Challenges
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- FIRM updates take 3-5 years to update through regulatory process
- FIRMs include a subset of streams within a watershed based on current and historic updates
- FIRMs depict 1% and 0.2% annual chance events
- Insurance and In versus Out discussions
- Detailed study areas require significant resources to prepare a model communities can review

BLE data can be produced and delivered to communities within 9-12 months

Base Level Engineering Solutions

- BLE assessments performed at a watershed scale producing stream network of data
- Flexibility in how results are exhibited
- Discussions related to flood risks and development decisions
- Community may test drive and refine data prior to moving to a map update

MOVING BASE LEVEL ENGINEERING TO FIRMS

Modernized FIRMs, Countywide Format

- County and all Cities/Towns are participating in the NFIP
- Animas Watershed, NM is modernized and can proceed forward to production of FIRM panels
- Zone Ds may be removed and replaced with BLE findings

Unmodernized FIRMs, Incomplete Study Coverage

- X Counties have partial study coverage (BLE Assessment)
- X requires updated study for any detailed stream
- Additional study areas are necessary to modernize FIRMs

Unstudied Communities, Incomplete Study Coverage

 Additional study is required to prepare analysis to update FIRMs in your vicinity

Numerous Communities Not Participating in the NFIP

• FEMA will only expend additional funds to create FIRMs were communities are participating











Estimated BFE Viewer Purpose:

- Provide engineering data in a format that allows immediate use by public.
- Federal, State and local officials to estimate a Base Flood Elevation consistently.

Engineering Models

Water Surface Elevation Grid Estimated Flood Depth Grid

GIS features without software Public interaction with Results Site Specific Reports Data & Model Downloads Consistent BFE Estimation

Welcome to the

Base Level Engineering assessments are produced using high resolution ground data to create technically creditable flood hazard information that may be used to expand and modernize FEMA's the current flood hazard inventory.

The Estimated Base Flood Elevation Viewer allows users to:

View Base Level Engineering Data

Access all Base Level Engineering available without GIS software.

Click **LEGEND** tab to view an explanation of all dat shown in the viewer.

Click MAP VIEW button to open or close a

second viewing window, for side by side comparison.

Click **DATA LAYERS** to add or remove layers from the map.



Estimated Base Flood Elevation Viewer

Download Dataset & Models

Our Data Download feature makes all of our Base Level Engineering data available to you for download.

Click **DATA LAYERS** and add the **DOWNLOADABLE DATA** layer. Once loaded, users can choose which datasets to save.



Property Look Up

Where data is available, users can produce a property specific report with estimated Base Flood Elevation and Flood depth information.

Click **TOOLS** tab to create a property specific flood risk report with details in your vicinity.





1% and 0.2% Estimated Flood Extent 1% Estimated Flood Depth

Report is being updated to include a side by side map:

- Floodplains on the Left
- Depth Grid on the Right



If detailed information is available on the current effective FIRM, The viewer will alert you and offer you the option to open the National Flood Hazard Layer (NFHL)



Opportunities for More BLE Information

Monthly Virtual Brown Bag Sessions

https://r6virtualbrownbag.eventbrite.com

- 04/24/2018 New Online Tools: Interacting with Base Level Engineering Data
- **06/26/2018** Base Level Engineering (BLE) for Local Officials
- **07/31/2018** Base Level Engineering (BLE) for Engineering Practitioners
- 08/28/2018 Community Planning with Base Level Engineering (BLE)
- **09/25/2018** Using Base Level Engineering (BLE) for Insurance Rating

ASFPM 2018 Workshop – Phoenix, Arizona Monday, June 18 8:00am – Noon HELP WANTED: BLE Ambassador

Products Support Local Decision Making



Educate your Community and Make a Plan

- Public awareness campaigns Map and publicize potential inundation areas
- Training for local staff Community Emergency Response Teams Community preparedness exercises Evacuation signage



Encourage Smart Land Use and Development Decisions

- Determine and enforce acceptable land uses in downstream areas
- Increase permeability and infiltration Maintain open space downstream
- Encourage stream and wetland restoration

Enact Management Best Practices



Develop a dam failure study and emergency action plan Manage stormwater regionally

Implement an inspection, maintenance, and enforcement program to ensure structural integrity



Conduct Mitigation Projects Downstream Acquisition Elevation

Detention and/or drainage projects



Strengthen Local Codes

Local inspection and enforcement Enact higher floodplain management standards

Require green infrastructure

NFIP COMPLIANCE FOR ZONE A

 Obtain, review and reasonably utilize any base flood elevation and floodway data available from a Federal, State, or other source... [44CFR60.3(b)(4)]

Sometimes, usable data is available in the DFIRM database.

ESTIMATED BFES – NOTES

- FEMA engineers call these:
 - First Order Approximation (FOA), or
 - Base Level Engineering (BLE)
- In the DFIRM database, the layer is "S_XS"
 - If you see the cross sections in Zone A, then you have Estimated BFEs!
- ArcMap can export and convert the S_XS data into a "KMZ" file
- KMZ file can be opened in Google Earth
 - Click on the cross section, info box appears
 - "WSEL_REG" is the item of interest

ESTIMATED BFES – MORE NOTES

- On the EC, enter as "Community Determined BFE"
- Think twice, carefully consider implications of:
 - estimated BFE
 - community determined BFE (EC item B9)
 - freeboard
 - premium savings when built with freeboard
 - Design Flood Elevation (DFE) can be BFE + freeboard
 - (DFE often is the LFE requirement on permit)
 - (personally, mine would be another two feet higher)
 - LOMA requirements for BFE and LAG (call 877-FEMA-MAP)
- Reality check is important. Known high water marks? Other H&H studies available? Info from USACoE?
 Floodplain changes since DFIRM publication? Stream Obstructions? Etc.



LIDAR RETURNS



Forest Resource Assessment Nepal

CURRENT 10 METER DEM VS USGS QL2 LIDAR



LIDAR Footprints as of February 2018



LIDAR PRODUCTS

LIDAR PRODUCTS

Delivered Elevation Products

- DEM
- Classified LAS Files
- Break lines
- Intensity Image

EDAC Produced

Elevation Products

- DSM
- DTM
- Hillshade
- Contours
- Slope
- Aspect

Feature Extraction

- Building Footprints
- Impervious Surface
- Streams
- Acequias
- Vegetation
- Roads
- Sinkholes
- Playas (ephemeral lakes)

LIDAR DERIVED PRODUCTS





SINKHOLES

3007 sinkholes identified



QUESTIONS

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