Estimating BFEs in Approximate Zone A

Water Surface Elevation (WSE) Grid data delivered in the Flood Risk Database (FRD) allows community officials to better understand, investigate and communicate the variability of flood elevations in areas identified as flood prone. WSE grids illustrate the flood elevation in feet above mean sea level. WSE grids may be prepared for a variety of potential flood occurrences; the most common however is that prepared for the 1% annual chance flood event. Water surface elevation values in the grid data are directly related to Base Flood Elevations (BFE) found on FIRM Panels. The following example illustrates how to determine a BFE in an approximate Zone A where there are no established BFE values. This procedure can be utilized to determine if it might be appropriate to apply for a Letter of Map Amendment (LOMA).

Ingredients:
-Water Surface Elevation Grid (1% Event)
-Aerial imagery, or address points

Using the 1% Event Water Surface Elevation Grid to Determine A BFE:

Step 1: Using ArcMap 9.x/10.x, use **ADD DATA** to navigate to the Flood Risk Database and add WSE_01pct.

Step 2: Using aerial imagery or address points for reference, create a new point **shapefile** and drop a point on the center of the structure's roof.

Step 3: Using the **BUFFER** tool, buffer the new point shapefile by 32 feet. This creates an area where the water surface elevation will be sampled.

Step 4: Run the "**Zonal Statistics As Table**" tool. Set the input feature zone to the 32-foot buffer and the input value raster to the water surface elevation grid. Specify an output location for the table and run the tool.

Step 5: Once the tool is finished look at the output table for the attributes MIN and MAX. Whichever of those two values is the largest is the estimated BFE for the location. The estimated BFE can be cross checked against the water surface elevation data found in flood model cross sections if available.

Evidence Drawn From Water Surface Elevation Data

Elected Officials and Community Staff

- Supporting information for community requirements for the adoption of enhanced ordinances with mitigation building practices.
- Identify road crossings that may become impassable during a storm event and plan accordingly
- Use for estimating a BFE in Approximate Zone A for use in LOMA applications (for more information see: https://www.fema.gov/letter-map-amendment-letter-map-revision-based-fill-process)

Planning Staff

- Use as a comparison point to elevations data collected during subdivision platting to ensure buildable space is on lots above the base flood elevation
- Assist with advance recovery planning and disaster preparedness
- Assist with Capital Improvements planning by guiding infrastructure investment away from high risk areas

Engineering and Technical Staff

- Use as a comparison point for high water marks during flood events to determine if flood risk has changed due to development
- Use to evaluate critical facilities for compliance with Executive Order 11988 which requires facilities are built one foot above the 0.2 percent flood event
- Quantifies flood risk for multiple flood scenarios
- Helps screen potential projects for cost effectiveness
- Informs development decision making for risk prone infrastructure

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