



## RECIPES FOR RESILIENCE: TECHNICAL

# Using the Flood Depth Grids to Identify Risk

Flood Depth Grid data delivered in the Flood Risk Database allows community officials to better understand, investigate, and communicate the variability of flood depths in areas identified as flood prone. Flood Depth grids illustrate the flood depth, in feet, above the ground surface and can be easier to understand than base 1-percent-annual-chance flood elevations. Flood Depth grids are produced for the 10-percent, 4-percent, 2-percent, 1-percent, 0.2-percent and 1-percent plus annual-chance flood events. In coastal areas, typically only the 1-percent-annual-chance depth grid is produced. Depth grids may not be produced for coastal areas where the predominant wave hazard is wave runup.

Flood depth information allows communities to convey flood risk in simple terms and provides a data point to help communities prioritize between elevation and acquisition projects. The depth grids, combined with local data, can provide structure-specific information for grant applications. The analysis on page two shows how to prioritize properties that are at the greatest risk for flooding by identifying the flood depth at site-specific locations.

### Potential Uses

#### Individual Property Owners

- Provides information about the potential risk and magnitude of flooding in a visually easy to understand graphic for the average homeowner.
- Can be presented to local property owners through outreach initiatives to make this information more readily available and accessible.

#### Insurance Agents, Lenders, and Real Estate Agents

- Assists in explaining flood risk to existing and potential customers when discussing flood insurance.
- Assists agents in selling flood insurance outside the high hazard floodplain by illustrating that flooding does not simply stop at a line on a map.

#### Elected Officials and Community Staff

- Better communicate the potential depth of flood water and the need for continued mitigation planning and preparation throughout the Disaster Management Cycle.
- Helps in preparing flood risk outreach materials for discussions with residents and developers to visually depict flood water depths.

#### Elected Officials and Community Staff (continued)

- Relays the variability of flood risk within the identified Special Flood Hazard Areas on FIRMs.

#### Engineering and Technical Staff

- Identifies road crossings that may be impassable during a storm event.
- Informs development decision-making for placement of infrastructure.
- Provides data for use in prioritizing mitigation projects within the community.
- Provides data to help screen potential projects for cost effectiveness.
- Estimates flood losses using FEMA's Hazus tool (for hazard mitigation planning, loss avoidance studies, or other initiatives).

## Using Depth Grids to Identify Appropriate Mitigation Actions:

**Step 1:** Use the ADD DATA function to add the 1-percent depth grid, Depth\_01pct, from the Flood Risk Database.

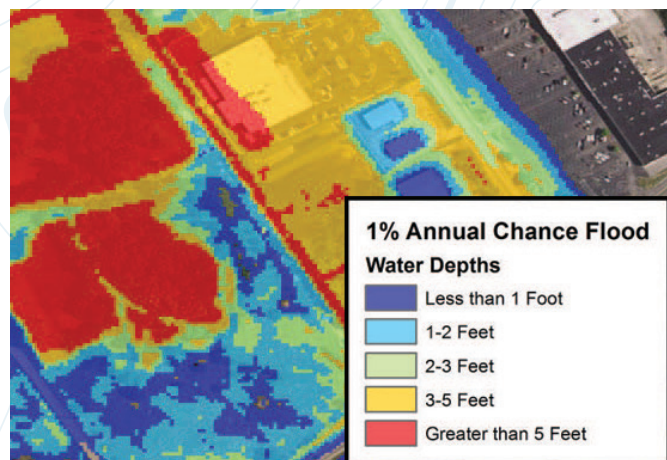
**Step 2:** Add local data, such as building footprints or address points, using the ADD DATA function.

**Step 3:** Enable the Spatial Analyst Extension (Customize>Extensions).

**Step 4:** EXTRACT the raster values to the points using the “Extract Values to Points” tool. Use the address points as the Input point features, and the depth grid as the input raster. Select an output feature location and click OK.

**Step 5:** Open the attribute table of the resulting raster. From the attribute table, EXPORT the address/owner information as a dbf file, which can be opened in Microsoft Excel.

**Step 6:** Sort the exported data based on the depth of flooding. Properties with higher depths of flooding could be targeted for mitigation action.



The figure is an example of identifying properties with higher or lower flood depths. Properties with higher depths of flooding can then be targeted for mitigation action.

## Other possible analyses...

### Hazard Mitigation Plan Update



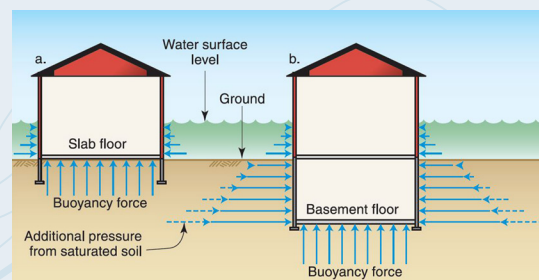
The Flood Depth Grid data could be inputted into FEMA’s Hazus software to generate estimates of flood-hazard-related damage before a disaster occurs. Running an enhanced Hazus model lets the user identify flood-hazard-related damage to an updated essential facilities database.

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### Building Enhancements

The Flood Depth Grid can be useful in determining flood proofing practices for existing structures.

Flood depth may also be helpful in identifying flood risk “hot spots,” which may warrant enhanced building codes, greater study for developing a potential project, increasing outreach activities, or changing regulatory standards.



## The Water Surface Elevation Grid vs The Flood Depth Grid

Please note that the FDG dataset is very similar to the WSEL grid available through the Flood Risk Database (FRD); however, the Flood Depth Grid is measured from the ground, whereas the WSEL Grid is measured from the North American Vertical Datum of 1988.

