

ASFPM Mapping & Engineering Standards Committee Comments on the Risk MAP Standards and Guidance Updates/Public Review for November 2017

Feel free to contact the committee co-chair David Knipe at dknipe@dnr.in.gov with questions or comments.

- **Item 19: Guidance Document “Base Level Engineering (BLE)”:**
 - At this time, this guidance document is not available for review. There has been a large amount of confusion and discussion about what the term “Base Level Engineering” means, and what exactly the expectations around this product are. Various ASFPM committees have been having discussions on the several definitions of BLE and the implications of each of those. ASFPM is very interested in reviewing and commenting on this draft document, and looking for a forum (Operating Partners?) to have a detailed discussion of this topic.

- **Draft Standard 415:** “Water-surface elevation (WSEL) grids produced as part of a Flood Risk Project must be of such a quality that they could be used for regulatory and other official purposes as the digital source from which to retrieve flood elevations. Additionally, for each mapped flood frequency (e.g. 1%, 0.2%, etc.), there must be agreement in extent and coverage between the WSEL grid and its associated flood hazard area polygon.”
 - Requiring a WSEL grid be a quality that could be used for regulatory purposes will change the process and the resulting product from what has historically been submitted as a WSEL grid. Because of this, it is recommended that a new name be used for this regulatory product. (perhaps just adding the R for regulatory - RWSEL) This will also clarify that historical WSEL grids will not be appropriate for regulatory purposes without an appropriate review and conversion process. Further, revisions to the Flood Depth & Analysis Grid Guidance documents should be considered to support this standard change.

- **Draft Standard 199:** “LOMC submittals must include certifications by a licensed professional authorized to certify the data under state law, except when LiDAR is provided to satisfy the lowest adjacent grade (LAG) requirements for LOMAs.” and.....

- **Draft Standard 627:** “For Letters of Map Amendment (LOMAs), submitters may use elevation data (typically LiDAR) to document the lowest adjacent grade for a structure or lowest lot elevation for a parcel of land that complies with the USGS National Geospatial Program LiDAR Base Specification Quality Level 3 (QL3) or better and is provided by a federal, state or local government agency.”
 - ASFPM generally supports the concept of allowing the use of LiDAR data to evaluate potential LOMA’s. The use of detailed elevation data that is available in many areas would result in a savings to property owners that will not have to pay for a field survey. However, the specific procedures to make these evaluations are not yet available, and given the evolution of the Elevation Certificate over the last few years, there are many potential ways LiDAR information could be used in this context. It would make sense, for example, that there would be a built in factor for the a lowest floor / lowest adjacent grade of a structure to be a certain height above the BFE to account for uncertainty in the LiDAR data. ASFPM is willing to assist in the review of the detailed standards and provide ideas on the best solutions for implementing this procedure.
 - In many cases, Mapping Partners reviewing revalidated LOMCs (i.e. SOMA Category 2, 2A, or 2B) that were Removals by elevation (i.e. S-REM, P-REM, or M-REM), find that the Determination Letter did not publish a LAG or LLE. In these cases, it is often necessary to obtain the extended case file to search for and compare the LAG/LLE against the proposed BFE to determine its status for the preliminary SOMA. This is a major undertaking considering the time expended in obtaining and reviewing case file information. If the LiDAR used for FEMA regulatory mapping projects meets or exceeds the QL3 standards proposed by FEMA for SID 199 and SID 627 (and associated Guidance documents), can

Mapping Partners also use LiDAR–derived elevation data to infer or confirm LAG/LLE when analyzing the continued validity of LOMCs (particularly those with unpublished elevation data) against the proposed study?

• **Coastal Issues:**

- Operating Guidance No. 13-13 is resulting in inaccurately mapped Limit of Moderate Wave Action (LiMWA) or Coastal A zones.
 - The Coastal A-zone risk was identified in the HAZUS Proof of Concept report based on hurricane damage in the Florida Panhandle. As first identified and later applied in ASCE 7-24, it is intended to be a back-dune hazard zone adjacent to high wave energy shorelines like the Atlantic, Pacific, Gulf of Mexico and Great Lakes shorelines. Renamed the LiMWA, it was first mapped appropriately following Hurricane Katrina in Mississippi. However, O.G. 13-13(4) excludes LiMWAs where the adjacent VE-zone has been delineated based on a Primary Frontal Dune or wave runup/overtopping. Yet those are the only areas where the wave damage has been documented in detail.
 - O.G. 13-13 limits LiMWAs to typically estuarine shorelines where they likely exist, but have only been anecdotally identified in Mitigation Assessment Team reports.
 - The LiMWA guidance should be revised to map the zones adjacent to high energy shorelines with or without dunes similar to where wave damage has been documented in post-storm inspections. FEMA should also analyze the potential for LiMWAs near more sheltered shorelines in a more comprehensive manner at the community scale and revise the guidelines accordingly.

- The only FEMA-accepted, higher-level coastal models for wave height, wave runup, dune erosion and other conditions are well out of date and producing unrealistic hazard maps. Readily available models for coastal hazards need to be added to FEMA-accepted models and the existing models abandoned.
 - FEMA's acceptance of ADCIRC+SWAN storm surge model has made a significant improvement in the modeling of individual storms. Mapping results remain highly sensitive to the statistical models but are functional with engineering judgment. The higher level coastal models for wave height, wave runup, dune erosion and other hazards are simple to apply but inaccurate and out-dated. Most were replaced in coastal engineering practice by improved models several decades ago. Depth-limited waves are still being applied when ADCIRC+SWAN waves are already more accurately calculated within the storm surge modeling.
 - The present wave modeling is producing mapping that is unrealistic when compared to routine post-storm field observations. Oceanfront VE-zones are shrinking, leaving the highest risk oceanfront development in AE and X zones. At the same time the wave decay and regeneration models are mapping VE-zones where only stillwater flooding has occurred in design-level storms. Recent maps suggest that the highest risk waves are in narrow barrier island lagoons rather than oceanfront, when the reverse is commonly obvious in post-storm studies.
 - FEMA's only accepted erosion model is 1970s technology. As applied, it generally underestimates erosion and the need for erosion-resistant foundations. The model limits are sometimes corrected by application of the Primary Frontal Dune policy. However, as the PFD is commonly applied, the protection provided by smaller, multiple dune ridges can be over stated, while very large, highly protective dunes can be grossly over-estimated as erosion prone. At some point large PFDs should be treated as a bluff.
 - This issue significantly overlaps issues around erosion and dune mapping identified in the 2015 TMAC annual report and again being discussed in the 2017 annual report. We would recommend that FEMA coordinate its effort on this subject with TMAC.

- Coastal modeling is an inexact science. Any model should be considered with a healthy degree of engineering judgement which is why FEMA appropriately hires engineering contractors to oversee modeling and mapping.

- Some recent maps appear to be based on the raw output of unreliable models that are in conflict with rational engineering judgement and field observations. When preliminary maps are appealed, model output appears to consistently win over more rational engineering judgement. Engineering judgment is a necessary mapping component that FEMA should encourage and defended in any appeal. The limited engineering judgement makes the use of the latest state of the art models an even more important issue.