



Association of State Floodplain Managers, Inc.

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TMAC Comments from ASFPM July 27-28, 2020 Virtual Meeting Federal Emergency Management Agency—Docket IF FEMA-2014-0022

The Association of State Floodplain Managers believes the following issues are critical input to developing a proposed vision statement for the flood mapping program and should be incorporated into the 2020 TMAC report or the 2021 work plan. Some of these have been addressed by TMAC in the past, but have not been implemented by FEMA. The TMAC may need to provide options or added information to assist FEMA in implementing these key issues, which are:

- 1. Atlas 14 updates.** Accuracy of the flood maps is dependent on a few key inputs, such as expected rainfall precipitation for the 1% rainfall event, up-to-date LIDAR, and appropriate hydraulic models. One of these inputs is particularly troublesome, the expected 1% rainfall estimate, especially for urban areas. This estimate is most frequently obtained from Atlas 14 publications for watersheds across the nation—there are currently 11 Atlas 14 volumes covering different regions of the nation. The NOAA/National Weather Service publication is developed based on all the years of record so the calculated flood levels are as accurate as possible, but based on past rainfall data. **PROBLEM:** A number of the Atlas volumes are far out of date and no volume has been developed for the 5 Northwest states, leaving them to use other NOAA precipitation data that is over 50-years old. Consequently, the rainfall estimates for these areas do not reflect the recent decades of increased rainfall intensity. As a result, flood maps consistently underestimate risk and do not properly show which properties need to buy flood insurance. It is noted that the Atlas 14 volume (No. 11) for Texas, including Houston was being worked on when Hurricane Harvey struck, and the updated 1% rainfall increased from 13” in 24 hours to about 18”, a 38% increase. Flood insurance claims for Harvey were beyond the mapped 1% and 0.2% floodplain. Funding for updates to Atlas 14 need to be a federal data responsibility, but NOAA gets no such funding and relies on voluntary contributions from states and other agencies. **RECOMMENDATION:** TMAC should recommend NOAA be funded to update every Atlas 14 in the nation every 5 years.

- 2. Future conditions mapping.** In the 2012 NFIP reform legislation (BW-12) Congress directed FEMA to incorporate a number of changes in how they develop and display flood maps. These included showing areas of risk based on expected future conditions for sea-level rise, and increased rainfalls due to a warming climate. In the 8 years since that Congressional directive, the NFIP has not incorporated these updated approaches. Development in the floodway fringe and upstream in the watershed are also future

conditions that result in increased flood levels over time. **PROBLEM:** The result of not including this information in FEMA's current mapping process is that every flood map produced by the NFIP is outdated by the time it is issued, resulting in development occurring outside the identified SFHA that is now or soon will be inside the SFHA. This results in development that does not have up-to-date risk information. Additionally, even those who buy flood insurance pay less than full-risk rates, impacting the solvency of the NFIP.

RECOMMENDATION: TMAC should recommend FEMA move to identify and utilize future conditions on all flood maps. This may require added layers in the digital models for the current flood levels used for flood insurance rating and expected flood levels for future years (e.g. for year 2040, 2070 and 2100). In communities where FEMA provides maps with a measurable amount of floodway surcharge (greater than 0.1 feet) FEMA should develop mapping that shows the additional area that will be inundated beyond the Special Flood Hazard Area as the artificially created floodway fringe is filled. This would help discourage community adoption of floodways with a surcharge that opens up a significant portion of the natural floodway to development, increases flood damages to community residents and increases the area inundated during the base flood. These maps would provide a basis for community planning, adoption of higher standards (i.e. freeboard), and siting of critical facilities like hospitals, emergency shelters and evacuation routes, but would not be used for regulations unless the community so chose.

- 3. Publicly available dam failure inundation maps.** Recent dam failures or near failures have shown the need for those living in dam failure zones to be aware they are at risk. Nearly 200,000 people had to be evacuated when the Oroville Dam, the highest dam in the US, threatened failure. In 2017, significant damage to the Dam's principal and emergency spillway and continued heavy rainfall resulted in the concern that the dam was extremely close to failure, which would have released a huge torrent of water into the downstream areas flooding homes of thousands of people. Emergency officials ordered this large evacuation to prevent the potential for thousands of deaths. In the 2012 NFIP reform legislation (BW 12) Congress directed FEMA to also show areas of residual risk that will be flooded behind levees and below dams if the structure is overtopped or fails. **PROBLEM:** after 9/11, DHS was created and looked at every possibility where terrorists might damage critical infrastructure and therefore threaten US lives. DHS felt that terrorists might blow up dams to harm people below the dams and concluded that dam failure maps should not be available to the public. Many dam experts in the nation do not see this as a realistic possibility as the amount of explosive to blow up a large dam could not be moved into position without early detection, and even then, there is only a remote chance that the explosives would be a feasible method to fail a large dam. A far larger risk exists to those living below a dam if the dam fails due to heavy rainfall or structural failure. This was illustrated again in 2020 when the Edenville Dam failed during flooding in central Michigan. That dam failure led to failure of another dam downstream, which then threatened people and property downstream of the dams, including the City of Midland. About 10,000 people downstream of the dam failures were evacuated. The same was true in 2015 and 2016 when over 80 dams failed in South Carolina. Almost none of the people evacuated at Oroville or MI knew they were in a dam failure zone, or had insurance to cover the potential damages.

In 2016, the FEMA Technical Mapping Advisory Council report detailed the origin on the current policy regarding restricted access to failure inundation mapping and reflected TMAC's thoughts on the matter:

An ongoing issue is the lack of public access to dam failure inundation information. Much of such data from the Federal Government is restricted; it is usually made available to emergency management personnel, but not to the general public. In 2004, The Department of Homeland Security (DHS) released its Security Classification Guide for the Protection of Critical Infrastructure and Key Resources – Information for Dams and Related Facilities, which listed dam failure inundation maps as “For Official Use Only.” This guide was updated in 2010 and the update was silent on dam failure inundation maps.

In 2015, the Dams Sector Government Coordinating/Sector Coordinating Councils Information Sharing Workgroup developed a white paper outlining the benefits and potential risks associated with sharing dam safety and security information with stakeholders. Although no consensus was reached, a majority of the workgroup members agreed that the public should not be able to access information related to inundation maps. A minority of the workgroup members believed inundation maps should always be made easily accessible so members of the public can make personal decisions about risk and promote risk awareness.

At the state level, the availability of this information ranges widely. The Association of State Dam Safety Officials does not have an official position on this issue. Supporting wider public availability, a Virginia law passed in 2008 essentially requires that all inundation mapping developed for state-regulated dams be made available to communities and the public. Organizations like the Association of State Floodplain Managers believe that the benefits of public availability of inundation mapping far outweigh any perceived security risks of that data by adversaries for exploitation.

This position would be consistent with the congressional intent of the National Flood Mapping Program (BW-12) requirement to provide inundation mapping on FIRMs. As the flood mapping program transitions to incorporate the statutory requirements of the National Flood Mapping Program, the technical credibility of the program will be negatively impacted if residual risk and inundation data is not developed and provided to communities. The 2012 NFIP legislation recommends the National Flood Mapping Program Outputs provide technically credible products into the future: FEMA should work to identify residual risk areas behind levees, and other flood control structures and downstream of dams.

Recently, USACE has determined that it is in the public interest to provide dam failure inundation mapping, and that all dam failure maps in their portfolio will be made public and available through the National Inventory of dams by summer 2021.

RECOMMENDATION: TMAC should continue to advise FEMA to make progress on this as well as other recommendations for residual risk information (e.g. failure areas from levees, levee protected areas and level of protection by a levee or dam) from the mandatory Biggert Waters legislation inclusions on FEMA's flood maps. It is recognized that FEMA's continued evolution in serving up these data via platforms such as the NFHL actually provide an opportunity to work with the USACE and build an interface to serve that data

much like the public-facing map interface that was established with Coastal Barrier Resources Area (CBRA) zones.

4. **Integrating flood risk and natural floodplain functions.**

There has been a significant increase in the intensity of precipitation events across most of the U.S. over the last fifteen years, resulting in a significant increase in flood losses. More and more often, federal, state and local efforts to protect and restore natural floodplains and wetlands are being employed to support flood risk reduction while also improving overall watershed health. For example, the U.S. Army Corps of Engineers has used the hydro geomorphic approach to mapping for compensatory mitigation projects to ensure that any impacted wetland or stream functions are replaced by the mitigation project. Similarly, the U.S. Forest Service recently completed its National Riparian Inventory Base Map, which recognizes the dynamic and transitional nature of riparian areas by accounting for hydrologic, geomorphic and vegetation data as inputs. **PROBLEM:** The NFIP's Community Rating System (CRS) promotes comprehensive floodplain management planning, analysis and evaluation related to the protection of the natural functions of floodplains and habitat protection. Communities that produce maps of the natural functions and resources of their flood-prone areas can receive CRS credit for taking that step toward broader management of their local floodplains. However, FEMA's Risk Mapping, Assessment and Planning (MAP) program generally only includes data on elevation, hydrology, infrastructure, hydraulics and land use for the purpose of informing NFIP rates, not data on natural systems which can reduce flooding, or significant habitat which might be critical for endangered or threatened species.

RECOMMENDATION: Floodplain management efforts and compliance with the requirements of the ESA would be dramatically improved if they were informed by geospatial data that illustrates floodplain functions (including wetlands, coastlines, streams and rivers) as dynamic, hydrologically connected components of a larger watershed to support more strategic local land use decisions (e.g., restoration and/or open space conservation priorities), reducing flood risk while increasing co-benefits such as recreation, clean drinking water, and avoided damage costs.

The ASFPM and its 37 Chapters represent over 19,000 state and local officials as well as other professionals engaged in all aspects of floodplain management and flood hazard mitigation including management of local floodplain ordinances, flood risk mapping, engineering, planning, community development, hydrology, forecasting, emergency response, water resources development and flood insurance. All ASFPM members are concerned with reducing our nation's flood-related losses. More information on the Association, its 14 policy committees and 37 State Chapters can be found at: www.floods.org.