

3.0: Risk Assessment

Overview of the Risk Assessment Process

Risk Assessment requires the collection and analysis of hazard-related data enabling state and local jurisdictions to identify and prioritize appropriate mitigation actions to reduce losses from potential hazards. Based on the best available data, this section profiles natural and man-made hazards that could affect the state determines which jurisdictions and populations are most vulnerable, and estimates the potential loss of state facilities.

This section of the plan was originally developed in 2004 with updates developed in 2007, 2010, 2013, 2018, and 2023. MEMA is the lead agency for the state in developing this plan and subsequent plan updates plus coordinates involvement from applicable state agency representatives through appointment to the State Hazard Mitigation Council (HMC).

The HMC thoroughly reviewed the identified hazards and their respective profiles. An appropriate amount of research was conducted for each hazard and incorporated with the findings in the 2023 plan. Primary sources and methodologies used for this plan update are listed below:

- Declared Events: state and federally declared events obtained from www.fema.gov/disasters.
- National Climatic Data Center (NCDC): database maintained by the National Weather Service tracks natural hazard events with information about dates, locations, and estimated damages. This database was improved since the 2018 plan and includes more categories of natural hazards. Data can be extracted statewide by county or zone - depending on the type of event at www.ncdc.noaa.gov/stormevents.
- HAZUS-MH: FEMA's loss estimation software utilizes a statistical approach and mathematical modeling of risk to predict a hazard's frequency of occurrence and estimated impacts based on recorded or historic damage information.
- National Flood Insurance Program (NFIP): The NFIP eliminated many of the reports used in previous plans. For this plan update, the NFIP Loss Statistics Report and the state of Mississippi repetitive flood claim and severe repetitive loss properties report dated February 2011 were used.
- Internet Research: The Internet and other online research tools used throughout this plan update.
- Local Mitigation Plans: Applicable data, including hazards identified as potential risks and rankings were summarized and tabulated throughout this section of the plan.

Identification of Critical Facilities and Infrastructure

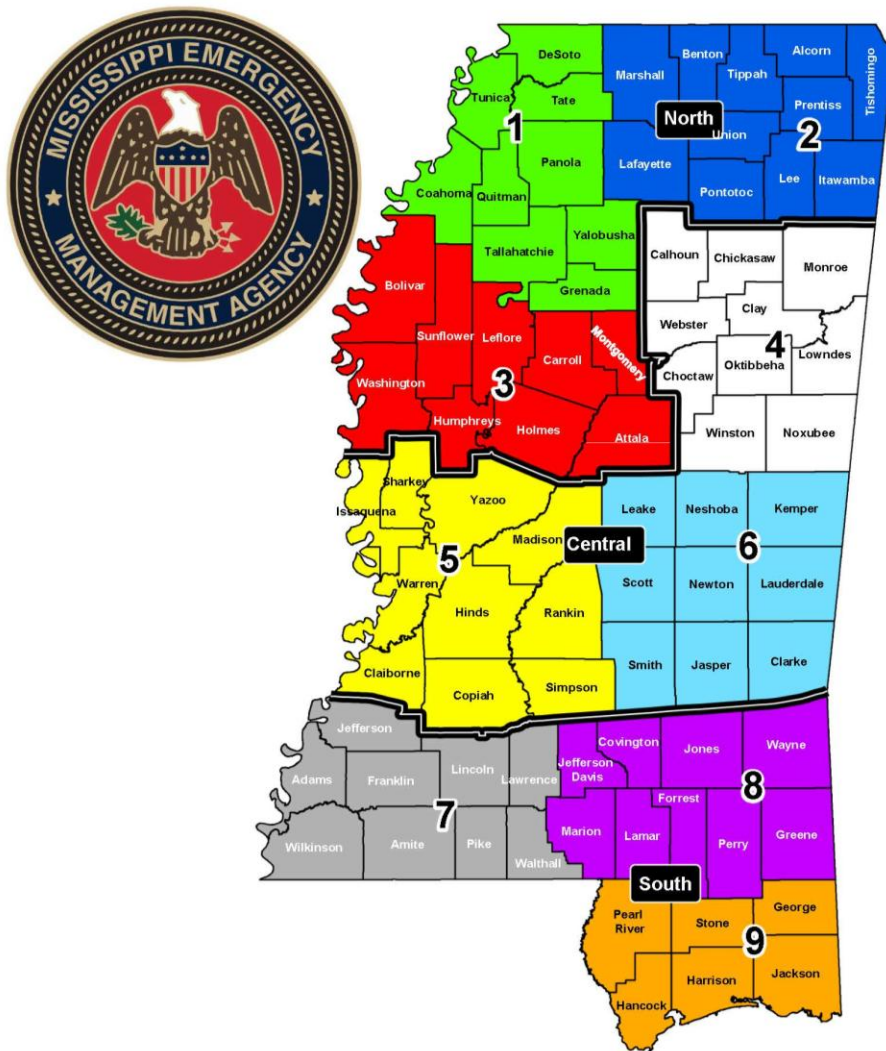
The state of Mississippi is nearing completion of its effort to geocode all state-owned property. The project was completed in 2014. For this plan update, the estimated losses for state facilities and infrastructure will be based on the data presented in the 2010 plan.

Local Mitigation Strategy Integration

As of this plan update, a total of 35 local mitigation plans are approved. These plans were developed for single jurisdictions, counties, university/community colleges, and regional plans (multi-county). Each approved plan was considered and integrated as appropriate into this plan update.

MEMA will coordinate the update of local mitigation plans into regional plans based on MEMA's established regions. This change is to unify mitigation planning throughout the state to improve integration and utilize resources (financial and assets) more efficiently.

Mississippi Emergency Management Agency District Map



2023 Summary of Changes

General Changes

The previous update involved conversion of the files from PDF format to Microsoft Word format, resulting in significant changes to document formatting. Efforts were made in this update to correct these formatting efforts. Significant effort was also made to clean up grammatical issues throughout the document.

Data-Related Changes

Hazard data is presented, where appropriate, by MEMA Region. The state intends to make this information more usable to local jurisdictions as they update their plans to a level based on the nine MEMA Regions. HAZUS runs for floods are provided in the appendix of this plan and can be requested by jurisdictions to review and develop their tables and references within their plans as they deem appropriate. A summary of the changes/updates made to each hazard within this section is provided below.

3.1 Identifying Hazards - Added presidential declarations with individual assistance paid to date, updated the hazards identified in the approved local plans and, updated relevant dates.

3.2 Profiling Hazards and Estimating Losses - Updated estimated losses and added explanation for HAZUS and flood mapping capabilities.

3.3 Tornado – Updated tables, updated previous event history, incorporated property values and loss estimates from Mississippi Tax Commission, plus expanded narratives and damage impacts for recent events. Identified vulnerability to lapse in radar coverage and updated information regarding mobile/manufactured housing. Updated relevant dates. Updated information on recent efforts by NOAA and others to improve early warning systems. Updated region-level data for all nine MEMA regions. Updated damage assessment data by county and by region.

3.4 Dam/Levee Failure - Updated event history, inventory of dams, status of EAPs and changes in classifications. Updated dam location map by MEMA region based on current MDEQ Dam Safety Division data.

3.5 Tropical Cyclone - Updated previous event history and state probabilistic and Katrina planning scenarios. Updated historic event maps. Updated vulnerable population data.

3.6 Flood – Updated river basin information. Updated event history and NFIP data. Updated SBA Declaration data. Updated RiskMAP and NFIP/CRS information.

3.7 Wild/Urban Fire - Updated information received from MFC with best available data. Added wildland fire maps. Updated dates and tables. Updated historic event tables.

3.8 Drought - Updated event history and added information on Keetch Byram Drought Index.

3.9 Winter Weather - Updated event history and expanded cold-weather related events and vulnerabilities. Updated presidential disaster declaration information.

3.10 Earthquake - Updated event history, effects on dams and incorporated HAZUS results.

3.11 Sea Level Rise/Climate Change – Revised the hazard description and profile. Revised sea level rise projections including charts and maps based on new data. Included map of critical facilities vulnerable to sea level rise. Included discussion of non-coastal impacts and vulnerabilities.

3.12 Cyberterrorism – Revised the hazard profile.

3.13 Non-Profiled Hazards - Updated information for severe weather and coastal erosion. Updated event tables.

3.14 Growth and Development Trends - Updated demographic information and maps. Expanded the discussion of social vulnerability incorporated new data from the Social Vulnerability Index.

3.15 Interdependency of Infrastructure - Updated section with the latest information from the State of Mississippi Infrastructure Report Card. Added the 2022 Jackson Water Treatment Plant incident. Added brief discussion of continuity of operations plans.

3.16 Infectious Disease and Pandemics – At the time of this HIRA update, the Mitigation Council has not officially declared infectious disease and pandemic as a hazard of concern. However, given the recent history and experience statewide with the COVID-19 pandemic, it was deemed necessary to draft a section addressing this particular hazard with the expectation that the section would be expanded as additional data becomes available.

Mitigation Recommendations

Several recommendations came out of the 2018 plan as it was being developed. These recommendations continue to be relevant for this plan update.

Tornado

Constructing safe rooms in mobile/manufactured housing complexes should be further explored. Encouraging developers to include a community safe room could reduce injury or loss of life to residents. Continued support in statewide and national efforts towards advancing early warning systems and technologies should be provided.

Dam/Levee

Provide funding to complete a study of the potential impacts of a breach on the Pearl River levee system. This system protects the greatest number of people and assets in the state which could cause significant economic implications.

Explore impacts to failures in states that border Mississippi. As the state realized in 2010 with the ice/snow runoff from the northern states into the Mississippi River, what happens upstream can and will create significant damage to the levee systems in Mississippi. Furthermore, flooding caused by dam/levee failures in Mississippi and their potential impacts across state borders is also necessary - which was the case when the dam at Percy Quin overflowed into Louisiana.

Suitable data showing the location of all levees and their potential interaction with related river systems does not exist, largely due to regulatory oversight differences between certified and non-certified levee structures. This lack of data prohibits Mississippi from understanding the true potential of levee failures.