

Readiness and Emergency Management for Schools (REMS) Technical Assistance (TA) Center

Preparing for Floods at State Education Agencies

Introduction

“Flooding is the most common natural hazard in the United States, affecting more than 21,000 local jurisdictions and representing more than 70 percent of Presidential disaster declarations.”ⁱ In 2018, there were 19 major disaster declarations for flood-related emergencies in the United States. A total of 12 states in the South, Midwest, West, and East Coast and 2 tribal nations were affected. In 2016, there were \$4 billion inland flood events and, in 2017, there were \$2 billion inland flood events.ⁱⁱ According to the Federal



Source: <https://www.fema.gov/media-library>.

Emergency Management Agency’s (FEMA’s) research on historical flood risk, 98 percent of U.S. counties have been impacted by a flooding event.ⁱⁱⁱ Not only do flood event occur in and impact all regions of the United States, but they are also costly, and so it is in the interest of communities for state education agencies (SEAs)—serving K-12 schools and school districts and/or institutions of higher education (IHEs)—to prepare for floods and participate in mitigation, protection, prevention, response, and recovery efforts.

Flooding can occur due to heavy rain and severe storms, including those in coastal areas that result in storm surges, rapid melting of heavy snow, tsunamis, hurricanes, tropical cyclones, and even dam failure. Flash floods are a specific type of flooding that are dangerous, sudden, and violent—developing in as little as a few minutes—and can even occur in areas where there is no rainfall. The National Weather Service (NWS) issues a variety of information statements related to flood events, including the following: Flash Flood Warnings, Flood Warnings, and Flood Advisories, which the public is encouraged to “take action” upon receipt; and Flash Flood Watches and Flood Watches, which the public is encouraged to “be prepared” upon receipt. Flash Flood Warnings are issued by NWS via the [Wireless Emergency Alert](#) system.

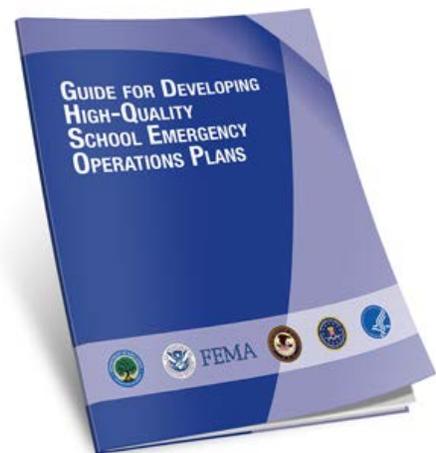
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Be Aware ^{iv}	Be Prepared ^v	Take Action! ^{vi}
Flood Advisory: Conditions could potentially cause a significant inconvenience and those in flood-prone areas should exercise caution. Issued when flooding warrants notification, albeit less urgent than a warning.	Flash Flood Watch: Current or developing conditions are favorable for flash flooding.	Flash Flood Warning: Flash flooding is occurring, imminent, or highly likely and those in flood-prone areas should move to higher ground immediately. Typically issued minutes to hours in advance of the onset of flooding.
	Flood Watch: Current or developing conditions are favorable for flooding.	Flood Warning: Flooding is occurring, imminent, or highly likely and those in flood-prone areas should move to higher ground immediately. Typically issued hours to days in advance of the onset of flooding.

Flood water can have lasting effects on buildings, such as saturation damage, mold growth, wood decay, metal corrosion, moisture issues, erosion, wall destabilization, and warped floors. Items and contents can also be damaged by flood water, such as furniture, cabinetry, computers, files, books, food items, and equipment. Additionally, floating debris, such as trees, trash containers, outdoor furniture, and remnants of manmade structures can also contribute to the damage of buildings, and debris and sediment can accumulate on sites. Flood water can also damage utility systems, such as the electrical system, water system, sewer system, and HVAC system. Several hazards can occur because of flooding: food can become contaminated from the flood water, hazardous materials (e.g., gas) can leak, power outages can occur, mold and other contaminants can grow in buildings and its contents, infectious disease outbreaks can occur, toxic materials present in laboratories can leak, and water failure can result from a contaminated water supply.

Incorporating Flooding in Emergency Operations Plans (EOPs)

Years of work in school and higher ed emergency management planning culminated in the development of the [Guide for Developing High-Quality School Emergency Operations Plans \(School Guide\)](#) and [Guide for Developing High-Quality Emergency Operations Plans for Institutions of Higher Education \(IHE Guide\)](#). Released jointly by six Federal agencies, including the U.S. Department of Education, U.S. Department of Justice, Federal Bureau of Investigation, U.S. Department of Homeland Security,



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FEMA, and U.S. Department of Health and Human Services, this guidance contains best practices in school and higher ed preparedness, and its six-step planning process can be used by education agencies as they plan for before, during, and after flood events. SEAs serve as critical stewards of emergency management planning to education agencies at the local level and can use this fact sheet to enhance their support to education agencies as well as bolster planning at the state level in a coordinated effort with partner agencies. For more information provided to K-12 schools and school districts and IHEs on this topic, please see the [Preparing for Floods at Institutions of Higher Education Fact Sheet](#) and [Preparing for Floods at K-12 Schools and School Districts Fact Sheet](#).

Step 1: Form a Collaborative Planning Team

SEAs should encourage local education agencies (LEAs) and IHEs to have diverse and multidisciplinary teams that represent all populations within the education community. Regional education agencies (REAs) can help facilitate coordination between LEAs or IHEs at the local level, as well as between LEAs or IHEs and the SEA, by participating as ad-hoc members of planning teams in order to share information. SEAs should also establish a state level planning team that will serve the education agencies throughout the state in a coordinated effort. Roles and responsibilities should be defined by the planning team, and a regular schedule of meetings should be determined. In relation to flood planning, it is integral that the following representatives are members of or coordinate with and contribute to the state's core planning team:

Planning Team Members From the SEA	Planning Team Members From State Partners
<ul style="list-style-type: none">• School Emergency Management Staff• School Safety Center Staff• School Transportation Staff• School Facility Staff	<ul style="list-style-type: none">• State Emergency Management Agency Staff• State Emergency Operations Center (EOC) Staff• State Transportation Department Staff

Step 2: Understand the Situation

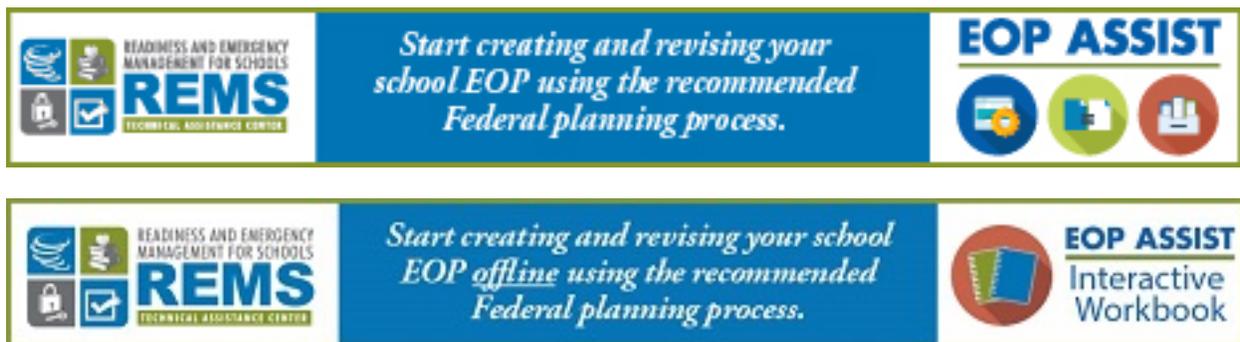
SEAs serve as one of several data sources that LEAs and IHEs can use to gather information on hazards and threats that may face their community. Since SEAs and other state partners have access to information on hazards and threats that are specific to their state, as well as certain regions within their state, SEAs should use this information to develop a list of hazards and threats that all LEAs or IHEs in the state should address in their EOPs. Statewide hazards and threats may be distributed to education agencies via the [EOP ASSIST](#) software application (app), [EOP ASSIST Interactive Workbook](#), or another plan generator tool or technical assistance resource.

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REAs and SEAs should connect education agencies with their city or county emergency management offices for information on the hazard of flood. Since communities that participate in the [National Flood Insurance Program](#) (NFIP) are required to adopt a flood hazard map, education agencies should contact the local emergency manager or floodplain administrator. Additionally, NFIP participating communities will have a local hazard mitigation plan, which will contain the geographic areas affected by floods, their strength or magnitude and duration, a history of previous occurrences, and the possibility of future events. The planning team will also evaluate the risk of each threat and vulnerabilities of each hazard, such as floods, using a risk assessment matrix. Your education agency will then be able to prioritize hazards and threats accordingly.

Step 3: Determine Goals and Objectives

Using the comprehensive and prioritized list of threats and hazards, planning teams will develop goals and objectives to be addressed in the EOP. SEAs and other state-designated agencies should develop statewide goals and objectives for statewide threats and hazards and distribute those to education agencies using the [EOP ASSIST](#) software app, [EOP ASSIST Interactive Workbook](#), or another plan generator tool or technical assistance resource.



Below are a list of sample goals and objectives.

- **Ensure that the education agency can receive notification of local weather conditions and alerts, including flood watches and flood warnings.** (Goal 1: Before)
- **Protect and keep students, staff, and visitors safe during a flood.** (Goal 2: During)
 - Keep all students, staff, and visitors away from fast-moving or swift water, including creeks, streams, rivers, or flood channels. (Objective 2.1)
 - Cancel any field trips, after-school events, or extracurricular activities. (Objective 2.2)
 - Move or secure any outdoor equipment or items that could float away. (Objective 2.3)
 - Relocate the student loading or drop-off location(s) of school buses or campus bus stops if there are any road closures or flooding in such areas. (Objective 2.4)

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- If it is no longer safe for students, staff, and visitors to remain in the building, evacuate to an off-campus location. See Evacuation Annex. (Objective 2.5)
- **Restore the physical conditions of the buildings and grounds and remediate any damage caused by the flooding.** (Goal 3: After)

Step 4: Plan Development

Here, planning teams will develop courses of action for accomplishing the goals and objectives identified in the previous step. These courses of action are the specific procedures used to accomplish goals and objectives and address the what, who, when, where, why, and how for each hazard. SEAs can provide scenario-based planning resources to education agencies that they may use to imagine the different ways that flooding may unfold and the steps that they could or should take. Possible considerations for flood planning include:

- How will the education agency be notified of Flood Warnings and Flood Watches?
- How will weather conditions be monitored?
- How will students, staff, and/or parents/guardians be notified?
- How will the education agency decide when to close?
- How will students and staff be accounted for before, during, and after a flood?
- How will continuity of learning, continuity of business services, etc., be ensured if the school is closed?
- How will food and medical supplies on campus be protected in the event of a power outage that results from the flood?

SEAs should remind planning teams that, since flooding can cause other hazards or threats to occur, they may need to add references to other threat- or hazard-specific annexes. For example, hazardous materials may accidentally be released within a school due to flood water. In this case, a team would note procedures for after a flood emergency in the Flood Annex: “Conduct a site assessment of the building and grounds. If spilled chemicals, mold, or other hazardous materials are found, activate the Hazardous Materials Annex.” Other threat- or hazard-specific annexes that relate to flooding include the Contaminated Food Outbreak Annex, Infectious Disease Annex, Power Failure Annex, Toxic Materials Present in School Laboratories Annex, and Water Failure Annex.

Step 5: Plan Preparation, Review, and Approval

At this point, the planning team formats the material of the plan into a draft EOP. Using the traditional EOP format, a Flood Annex will be in the Threat- or Hazard-Specific Annexes section of the EOP. The team will also draft the Basic Plan section and format the Functional Annexes section. SEAs can provide tools or templates for education agencies to use to format their EOPs and remind them that they may need to update any threat- or hazard-specific annexes that could cause or result in flooding and add references to the Flood Annex. For example, if an

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education agency has a Winter Precipitation Annex, then a note could be added after winter precipitation occurs: “If snow melts at a rate which causes flooding, please see the Flood Annex.” Other hazard-specific annexes that relate to flooding include the Hurricane Annex, Dam Failure Annex, and Tsunami Annex. Remind education agencies to share the Flood Annex with community partners who have a responsibility in flooding, such as first responders and local emergency management staff.

Step 6: Plan Implementation and Maintenance

Finally, stakeholders are trained on their roles and how to exercise the plan. SEAs can create resources, tools, sample scenarios, and emergency exercises for LEAs and/or IHEs, such as tabletop exercises, that practice the Flood Annex. It is equally as important to debrief after the exercise, and so SEAs can encourage education agencies to write or provide them with templates for after-action reports to inform the revision of the Flood Annex. SEAs are encouraged to submit such resources to the [REMS TA Center Tool Box](#) to be shared with other education agencies.

Flood-Related Preparedness Activities

The following activities may be utilized by both SEAs serving K-12 LEAs and SEAs serving IHEs, regardless if they are the same SEA, before, during, and after flood events. This list is not comprehensive but offers SEAs ideas and suggestions. It is possible that REAs could adopt activities listed for SEAs, as applicable.

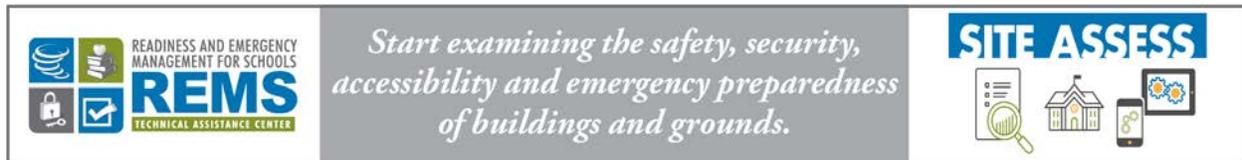
Before

Conduct mitigation activities. States are eligible for FEMA’s [Flood Mitigation Assistance Grant Program](#), and may use the funds for projects and planning that reduce or eliminate long-term risk of flood damage or structures insured under the NFIP. Additionally, each state should have its own state mitigation plan, and it should be updated every 5 years. In order to reduce flood risk, states should include in these plans which state agencies are responsible for managing the administration of the NFIP. States may acquire tools and data on floods via three Federal programs: NFIP; [Community Rating System](#); and [Risk Mapping, Assessment, and Planning \(MAP\)](#). Additional information may be accessed from FEMA’s [State Mitigation Planning Resources](#), as well as in the Key Resources section of this document.

Collect data on the flood preparedness status of buildings and grounds of LEAs and IHEs in your state. The REMS TA Center’s [SITE ASSESS](#) mobile app assesses the safety, security, accessibility, and emergency preparedness of an education agency’s buildings and grounds. Within the assessment, there are questions related to flooding, in addition to other hazards and threats, and all data can be exported into an Excel Worksheet. By collecting the data from schools and school districts or IHEs, SEAs can aggregate data across school buildings throughout

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the state over time, informing policies and programs and allowing leadership to make data-driven decisions. Furthermore, the SEA can customize the assessment directly in the app by adding state requirements to the assessment and then distribute this mobile app file to LEAs and/or IHEs in your state to use to collect data on buildings and grounds.



Develop a sample Flood Annex. SEAs can develop a sample annex with illustrative goals, objectives, and courses of action for before, during, and after a flood emergency. This product can be distributed to schools and school districts throughout the state as a resource. The REMS TA Center’s [EOP ASSIST](#) software app allows users to develop a customized school EOP collaboratively with access to resources along the way and export the EOP as a Word document. SEAs can download and install this software app of the state’s server for all schools and school districts in the state and use a customizable info sheet to share information on the app. Furthermore, state-level personnel can use the app to review and ensure school EOPs are in compliance. Alternatively, the REMS TA Center’s [EOP ASSIST Interactive Workbook](#) is a low-tech version of a plan generator and may be used to develop a customized school EOP with access to resources along the way offline using a PDF viewer and Word. SEAs can upload any statewide goals, objectives, hazards, threats, or functions directly into the software app or add them to the instructions of the interactive workbook.

Create a culture of flood preparedness in your state. SEAs may use FEMA’s [Flood Safety Social Media Toolkit](#) to share and even customize flood safety and preparedness messages via social media channels. SEAs can also establish, host, or participate in an annual Flood Preparedness Week or Month, with targeted messaging on flood preparedness and flood safety. Please update the [NWS Awareness and Preparedness Calendar](#) with any statewide campaigns. SEAs can provide flood preparedness information to LEAs and IHEs year-round.



Source: <https://www.fema.gov/media-library>.

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Ensure contacts are up-to-date. SEAs should maintain a contact list of all LEA school-based emergency management contacts, as well as a contact list of all IHE-based emergency management contacts.

Build partnerships at the state level. These relationships can be established formally via agreements, such as memorandum of understanding (MOUs) or memorandum of agreement (MOAs) and state law, or informally. Ensure that the roles and responsibilities of state partners regarding training and technical assistance, as well as mitigation, response, and recovery support, are clear before a flood emergency. SEAs should also consider staffing some of their personnel at the state EOC. For more information, read our publication [Collaboration: Key to a Successful Partnership](#).

During

Maintain communication with the state and other support agencies. This can be accomplished via statewide meetings. It is imperative to lead a coordinated effort with state partners before, during, and after flooding events. The SEA should also have at least one representative at the state EOC to stay apprised of the emergency event and provide expertise on education agencies and the community that they serve.

Provide support to LEAs and IHEs. SEAs may provide resources via the county or may provide resources directly to the LEAs and IHEs. This information and support may help LEAs and IHEs with both response and recovery efforts.

After

Assist LEAs and IHEs with flood recovery efforts. SEAs can provide funding to LEAs and IHEs via state grants or as subgrantees of [Federal grants](#). SEAs can also connect LEAs and IHEs with local, regional, and state agencies that can assist with recovery efforts. While state laws and systems vary, SEAs often serve as the primary source of information for education agencies in their state, maintaining a list of primary points of contact at each LEA and IHE. You may need to remind LEAs and IHEs to reach out to you after a flood event to provide them with the appropriate resources. Depending on the impact of the flood, education agencies may need to engage in various types of recovery: physical and academics recovery; structural recovery; business functions recovery; and social, emotional, and behavioral recovery. For more information, view our archived Webinar [Planning to Recover From Emergencies at Districts and Schools](#).

Provide support services to LEAs and IHEs with displaced students and families. After a flood, education agencies may no longer be able to provide basic needs to displaced families; receive an influx of students from neighboring and nonlocal LEAs, systems, or IHEs; and see an increase in the need for support from local students and families. Every state has a State Coordinator for

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Homeless Education, and so SEAs should include these coordinators in state-level emergency management planning bodies. Additionally, SEAs should consider education agencies as critical infrastructure and, therefore, a top priority for power restoration, fuel, and other crucial supports. For students to be coded and counted accurately, it is important for SEAs to set up mechanisms to gather and share the appropriate data about students and families. For more information, view our archived Webinar [Supporting Displaced Students and Families During and After Emergency Events](#).

Assist LEAs and IHEs with effectively managing donations and volunteers. After a flood, the local community as well as individuals across the nation may show up at an affected site to volunteer or send/drop off donations without any requests. To provide support to LEAs and IHEs in utilizing these resources effectively, SEAs should designate key state points of contact and coordinate with the state member of [Voluntary Organizations Active in Disaster](#). For more information, view our archived Webinar [Managing Donations and Volunteers Before, During, and After Major Emergency Events](#).

Key Resources

[Resources on Preparing for Floods at Education Agencies](#), REMS TA Center. This resource list contains planning resources on Flood Annex development; data sources for floods; flood mitigation; flood alerts, communications, and warnings/notifications; creating a culture of flood preparedness; physical and structural recovery from floods; and general flood safety.

[Planning for Natural Hazards That May Impact Students, Staff, and Visitors](#), REMS TA Center (K-12 and Higher ed). This topic-specific Web page contains resources from the REMS TA Center, ED, and other Federal agencies related to planning for natural hazards, which includes floods.

[Recurring Flooding at Oak Grove Lutheran School in Fargo, North Dakota](#), REMS TA Center (K-12). This publication captures lessons learned from a private pre-K-12 school regarding structural preparedness, personnel preparedness, response efforts, structural recovery, and other flood preparedness efforts in the context of recurring flooding in the school community. Their experience can help inform other schools on how to prepare for, mitigate the effects of, and recover from flooding.

[Mitigation and Resiliency Strategies for Schools and Institutions of Higher Education Webinar](#), REMS TA Center and ED with FEMA, Orange County Department of Education in California, and Georgetown University in the District of Columbia (K-12 and Higher ed). This archived Webinar presents key considerations for mitigation, the process for including mitigation activities in planning efforts, how school and IHE mitigation and resiliency plans integrate with those at the local and state level, and practical examples of how schools and IHEs have made their campuses more resilient to emergencies.

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[NOAA Weather Radio](#), NWS (K-12 and Higher ed). This product offers the latest weather information via a nationwide network of radio stations and broadcasts 24 hours a day, 7 days a week. The REMS TA Center publication [All-Hazards NOAA Weather Radio Network Now Available](#) describes this tool and its features, including how schools can use it.

[How Schools and Higher Ed Institutions Can Access FEMA’s Public Assistance Program Webinar](#), REMS TA Center and ED with FEMA (K-12 and Higher ed). This archived Webinar shares information about grants available to educational facilities following a presidentially declared major disaster that involves a public assistance cause.

[Planning to Recover From Emergencies at Districts and Schools Webinar](#), REMS TA Center and ED with Washington School Safety Center, Plaza Towers Elementary School in Oklahoma, and Norman Public Schools in Oklahoma (K-12). This archived Webinar describes key considerations for recovery, the process for including recovery activities in planning efforts, and lessons learned from emergency events.

[Managing Donations and Volunteers Before, During, and After School and Campus Emergency Events Webinar](#), REMS TA Center and ED with FEMA and Joplin School District in Missouri (K-12 and Higher ed). This archived Webinar describes operational considerations for managing donations and volunteers from the Federal and local perspective and shares lessons learned from Hurricanes Harvey and Irma and the 2011 tornado that impacted Joplin.

[Supporting Displaced Students and Families During and After Emergency Events Webinar](#), REMS TA Center and ED with National Center on Homeless Education (K-12 and Higher ed). This archived Webinar provides a basic overview of why providing supports for homeless and displaced students and families during and after emergencies is important. It also provides insight that can help SEAs and LEAs, with their emergency management agency partners, understand how they can support students and families displaced from homes, communities, and school settings due to a natural disaster, such as a flood.

ⁱ Federal Emergency Management Agency (FEMA) (2010, December). Chapter 5: Making schools safe from flooding. *Design guide for improving school safety in earthquakes, floods, and high winds*. Retrieved from https://www.fema.gov/media-library-data/20130726-1531-20490-0438/fema424_web.pdf

ⁱⁱ Smith, A. B. (2018, January 8). 2017 U.S. billion-dollar weather and climate disasters: A historic year in context [Blog post]. Retrieved from <https://www.climate.gov/news-features/blogs/beyond-data/2017-us-billion-dollar-weather-and-climate-disasters-historic-year>

ⁱⁱⁱ FEMA (Unknown). Data visualization: Historical flood risk and costs. Retrieved from <https://www.fema.gov/data-visualization-floods-data-visualization>

^{iv} NWS (Unknown). Flood warning vs. watch. Retrieved from <https://www.weather.gov/safety/flood-watch-warning>

^v NWS (Unknown). Flood related products. Retrieved from <https://www.weather.gov/safety/flood-products>

^{vi} NWS (Unknown). Flood related products. Retrieved from <https://www.weather.gov/safety/flood-products>