Department of the Army
U.S. Army Corps of Engineers
Washington, DC
24 September 2024

Engineer Regulation* 1110-2-8165

Effective 24 October 2024

CECW-EC

Engineering and Design

Inundation Maps and Emergency Action Plans and Incident Management for Dams and Levee Systems

FOR THE COMMANDER:

Digitally signed by DELAROSA.DAMON.ANDREW.1134345566
Date: 2024.09.18 12:14:15 -04'00'

DAMON A. DELAROSA
COL, EN
Chief of Staff

Purpose. This engineer regulation provides policy for using and disseminating inundation maps and supporting data to ensure consistent nationwide implementation and proper coordination of map products. This engineer regulation further provides policy for dam and levee emergency action planning for implementation within the United States Army Corps of Engineers Dam and Levee Safety Programs. In addition, this engineer regulation outlines the requirements for managing and reporting incidents at dams and levee systems.

Applicability. This regulation applies to all United States Army Corps of Engineers commands and elements and pertains to all United States Army Corps of Engineers-operated or -maintained dam or levee systems within the Dam Safety Program and Levee Safety Program.

Distribution statement. Approved for public release; distribution is unlimited.

Proponent and exception authority. The proponent of this regulation is the Headquarters, United States Army Corps of Engineers, Civil Works Engineering and Construction Division. The proponent has the authority to approve exceptions or waivers to this regulation that are consistent with controlling law and regulations. Only the proponent of a publication or form may modify it by officially revising or rescinding it.

*Provides guidance that was previously in chapters 13 and 16 of ER 1110-2-1156. These chapters were rescinded by EC 1110-2-675 in October 2020.

Contents

Table List

Glossary of Terms

1. Purpose

This engineer regulation (ER) provides policy for using and disseminating inundation maps and supporting data to ensure consistent nationwide implementation and proper coordination of map products. This ER further provides policy for dam and levee emergency action planning for implementation within the United States Army Corps of Engineers (USACE) Dam and Levee Safety Programs. In addition, this ER outlines the requirements for managing and reporting incidents at dams and levee systems.

2. Distribution statement

This document is approved for public release; distribution is unlimited.

3. References

See Appendix A.

4. Records management (recordkeeping) requirements

The records management requirement for all record numbers, associated forms, and reports required by this publication are addressed in the Army Records Retention Schedule–Army (RRS-A). Detailed information for all related record numbers is located in the Army Records Information Management System (ARIMS)/RRS-A at https://www.arims.army.mil. If any record numbers, forms, and reports are not current, addressed, and/or published correctly in ARIMS/RRS-A, see DA Pam 25-403 for guidance.

5. Associated publications

The procedures associated with this regulation are found in EP 1110-2-19.

6. Authorities

The authority to perform dam and levee safety activities, including during incidents, is provided by various statutes, including the National Dam Safety Program Act, Public Law (PL) 92-367, as amended (33 United States Code [USC] §467–467n); and the National Levee Safety Act of 2007, PL 110-114, Title IX, as amended (33 USC §3301–3306), as well as project-specific authorizations.

7. Background

a. Inundation maps.

(1) This document provides policy for using and disseminating inundation maps and supporting data to ensure consistent nationwide implementation and proper coordination of map products among Operations; Dam Safety; Levee Safety; Hydrologic, Hydraulic, and Coastal; and Geospatial communities of practice (CoPs).

(2) This requirement does not apply to feasibility studies, including those conducted under the Continuing Authorities Program and studies conducted by non-federal interests under section 203 of the Water Resources Development Act of 1986, as amended (33 USC §2231 §§203).

b. Emergency action plans.

(1) This document expands and customizes current federal guidelines and other available resources for dam and levee emergency action planning for implementation within the USACE Dam and Levee Safety Programs. In addition, this document outlines the requirements for managing and reporting incidents at dams and levee systems within these programs.

(2) This ER pertains to all USACE-operated or -maintained dam or levee systems within the USACE Dam Safety Program and Levee Safety Program and is subject to compliance with ER 1110-2-1156, EC 1165-2-218, or applicable Levee Safety Program policies, as well as applicable federal guidelines per Federal Emergency Management Agency (FEMA) P-64, P-93, and P-946.

(3) Considering there are no federal guidelines for emergency action planning for levee systems, USACE has chosen to apply the same approaches for dam emergency action planning to levee systems, including the Hazard Classification System (see ER 1110-2-1156).

(4) This document can serve as a reference document for use by others.

8. Emergency objectives

The primary objectives for the owner/operator during a dam or levee emergency are to prevent catastrophic breach of a project that could cause life loss, economic damages, or environmental harm and to expedite actions to get people out of harm's way if breach or component malfunction is unavoidable. Inundation maps and emergency action plans (EAPs) are key tools to achieve this objective.

a. Inundation maps.

(1) For significant or high hazard potential projects where there is life safety risk, an EAP contains planning scenario inundation maps to highlight the upstream and downstream critical areas for action. Per FEMA 333, the difference between the significant and high hazard potential classification levels is that high hazard includes the probable loss of human life, regardless of the magnitude of other losses.

(2) USACE also prepares inundation maps during flood emergencies to characterize flood risks and to depict project performance more specific to the event than could be anticipated in the EAP planning scenarios.

(3) Inundation maps produced during flood events must be coordinated with affected local and state emergency management authorities. Using EAP map standards

to produce inundation maps during flood events promotes common understanding and consistency with previously provided EAP map products.

b. Emergency action plans.

(1) An EAP is a formal document that identifies potential emergency conditions at a project and specifies pre-planned actions to reduce the consequences of the emergency. An EAP is prepared by the owner/operator of a dam or levee project, stressing the required actions to moderate or alleviate the emergency.

(2) The EAP contains procedures and information to assist the project owner/operator in issuing early warnings and notifications. Special attention is given to required coordination between the owner/operator and other stakeholders emphasizing responsibilities during an emergency. These stakeholders include FEMA, other federal agencies, state and local emergency management authorities, agencies with flood warning responsibilities, tribes, and the public in the potentially affected consequence area.

(3) At a minimum, a dam or levee EAP must be closely coordinated with state and local emergency management authorities, who then incorporate elements of the EAP into their emergency preparedness and response plans. Project owners/operators are encouraged to co-develop plans with local emergency management authorities whenever possible, or to otherwise coordinate to ensure evacuation plans address EAP scenarios.

c. Plan name. USACE will consistently use this EAP naming convention: [Project Name] Emergency Action Plan (EAP).

d. Format. The effectiveness of an EAP is greatly enhanced by using a consistent format that ensures critical aspects of emergency planning are covered.

e. Coordination. Both a comprehensive plan and advance coordination with local and state emergency management officials are critical in facilitating a timely response to an emergency.

f. Project specificity. Potential consequences within leveed areas and floodplains vary as a result of breach, overtopping, or operation of a project. For this reason, every EAP must be tailored to site-specific conditions and remain simple enough to encourage its use. The EAP should consider the full range of inundation scenarios and different detection times for a range of incidents.

g. Guidelines for emergency action planning. The following documents are the principal guidance governing the content, structure, and implementation of EAPs and related inundation maps for the purposes of this ER: FEMA P-64, FEMA P-93, AR 530-1, and Emergency Preparedness Guidelines for Levees: A Guide for Owners and Operators (Department of Homeland Security [DHS] 2018). ER 1110-2-1156 provides signs of distress descriptions.

9. Inundation map dissemination

Inundation maps produced by USACE or in partnership with USACE will be shared with government stakeholders and with the public. This includes inundation maps that support EAPs of USACE-operated or -maintained infrastructure or that support flood event planning, response, or recovery. A public exception option is described in paragraph 9e.

a. Accessibility. Inundation maps must be accessible to all USACE echelons, including the USACE Operations Center (UOC). The maps and information used to produce the maps will also be shared internally with all pre- and post-authorization study teams. Table 1 summarizes the USACE inundation map release policy.

Table 1
Inundation map information sharing policy

Information Product (Examples)	Information Sharing Policy
Non-editable data (PDF, hardcopy, web viewers)	Public Provide disclaimer
Editable data (geographic information system [GIS] format data)	Public Provide disclaimer
Supporting data (models, elevation data)	Controlled Unclassified Information (CUI) Federal, state, local agencies Ensure close coordination Consider non-disclosure agreement Consult your Office of Counsel regarding Freedom of Information Act (FOIA) implications
Data owned by others (critical infrastructure GIS data)	Do not share Refer requestor to data owner Consult your Office of Counsel regarding FOIA implications

Note: The option exists to restrict public release of non-editable and editable data.

b. Categories of inundation map data. There are four categories of inundation map data: non-editable (static) data, editable (dynamic) data, supporting (model) data, and data owned by others. Definitions for these data categories are available in the Glossary of Terms.

c. Dissemination of inundation map data to other federal and state agencies and local governments. USACE provides inundation maps to aid other federal, state, and local agencies in accomplishing their missions, especially emergency management authorities responsible for evacuation plans. USACE provides all categories of inundation map data to these entities, except for data owned by others. Supporting data such as hydraulic models will be provided only on request and should be closely coordinated to ensure appropriate use within model constraints.

d. Dissemination of inundation map data to the public. USACE policy is open dissemination of non-editable and editable inundation map data with the public but is restrictive with respect to data owned by others and supporting data. Proper consultation should occur if a member of the public files a FOIA request seeking supporting data originating from another agency.

e. Option to restrict public release of a USACE inundation map. USACE recognizes its responsibility to protect public safety and welfare by effectively communicating information related to risks associated with USACE-operated or -maintained dams and levees to stakeholders and the public, while also protecting the security of those dams and levees by safeguarding sensitive information.

(1) If a district determines the security risks at a specific USACE-operated or -maintained dam or levee outweighs the benefits of making the inundation maps publicly viewable for that project and/or area of responsibility (AOR), the District Commander, in coordination with the district Dam Safety Officer or Levee Safety Officer (DSO/LSO) and Operations Security (OPSEC) Officer, may develop a memorandum describing and justifying the restriction for major subordinate command (MSC) DSO/LSO and Commander concurrence. The memorandum is then submitted to the USACE Director of Civil Works and the USACE DSO/LSO for approval.

(2) These decisions are made and coordinated as part of the EAP development, dam/levee safety risk assessment, and/or Critical Infrastructure Protection and Resilience security assessment processes and schedules, and not during an emergency situation. Concerns about public reaction to estimated inundation extents produced during an emergency event are not indicative of a credible security threat to a USACE project and/or AOR.

(3) When requested by the public, the FOIA may mandate full or partial release of withheld documents. Memoranda documenting safety concerns should be considered by FOIA counsel but are not determinative in the FOIA analysis.

f. Standard inundation map sources.

(1) USACE inundation maps will be made available via the common inundation map capabilities shared by the following sources:

(a) National Inventory of Dams (NID, https://nid.sec.usace.army.mil);

(b) National Levee Database (NLD, https://levees.sec.usace.army.mil); and

(c) Access to Water Resources Data (http://water.usace.army.mil).

(2) The standard inundation map sources include a security model that is coordinated with Office of Counsel and Operations Security.

(3) The inundation maps from these USACE-hosted sources will also be made available to other federal inundation map distribution systems, such as DHS Homeland

Infrastructure Foundation-Level Data (HIFLD) (https://gii.dhs.gov/hifld) and the federal geoportal (http://www.geoplatform.gov). Further information, including roles and responsibilities for ensuring current content in standard USACE inundation map sources, is provided in EP 1110-2-19.

g. Dissemination of inundation map data during declared emergencies. During declared emergencies, USACE may choose to host event-specific inundation map websites to support flood fight efforts in addition to the standard USACE inundation map sources listed in paragraph 9f.

(1) *Additional resources.* Additional websites may be hosted by districts, MSCs, or the UOC in keeping with the scope of the emergency (local, regional, or national). These websites link to inundation maps published to the standard USACE inundation map sources. This link ensures all USACE-hosted sources of inundation maps depict consistent information for the event and all USACE sources are consistent with other federal sources using USACE-produced inundation maps.

(2) *Related geospatial flood fight data*. In addition to inundation maps, geospatial data is often created to support flooding events. As directed in USACE Emergency Support Function #3 Field Guide (ER 500-1-28), all geospatial data must be provided to the UOC for inclusion in the USACE Common Operating Picture (UCOP). This includes, but is not limited to, georeferenced data (such as lock closure locations), flood fighting staging sites, and potential levee breach locations. Any data used by a district or MSC to generate a map or slides presented at UOC updates must be provided to UOC for inclusion in UCOP.

(3) *Disclaimer for release*. Depending on the quality and accuracy of the source data, inundation model results vary greatly in quality and accuracy. Sharing those results with the state and local emergency response authorities, the community, and the public, even when preliminary, promotes preparedness, emergency response, and recovery efforts. Before sharing, products must have appropriate caveats, such as “This data/map was created on dd/mm/yyyy by USACE using the best available data at the time. It may or may not accurately reflect existing conditions.”

10. Inundation map requirements

a. Inundation maps supporting emergency action plans of USACE-operated and -maintained infrastructure.

(1) The Modeling, Mapping, and Consequences Production Center, Mandatory Center for Expertise (MMC MCX) produces EAP inundation maps for USACE-operated or -maintained dams and levee systems.

(2) EAP inundation maps are required for any high or significant hazard potential project and are to be disseminated with EAPs.

(3) When required, EAP maps must be prepared for the inundation scenarios described in table 2. Definitions of scenario terms is provided in EP 1110-2-19.

Table 2
Inundation scenarios required for Emergency Action Plan inundation mapping

USACE	Equivalent Designation in Federal Guidelines (FEMA P-64)
Dams	
Normal high breach	Sunny day with project failure
Maximum high breach	Flood with project failure
Maximum high non-breach*	Flood without project failure
Intermediate high non-breach*	Flood without project failure
Levees	
Breach prior to overtopping	No existing federal guidance
Overtopping with breach	No existing federal guidance
Overtopping without breach*	No existing federal guidance

Note: Non-breach scenarios involve operational releases, such as from spillways and regulating outlets.

b. Inundation maps supporting flood events.

(1) *Production.* Flood event inundation maps are typically produced by districts and divisions within the USACE Water Management System. If a district office cannot create inundation maps, the MMC MCX will create inundation maps through activation of the USACE Flood Inundation Mapping (FIM) cadre.

(2) *Timing*. While every flood event is different, inundation maps should be created under the following conditions using the MMC MCX FIM standard operating procedure.

(a) During an inland flood event, USACE will be prepared to create inundation maps to monitor and manage USACE water management infrastructure once one of the following has occurred: the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (42 USC §5121–5207) is activated by an emergency declaration; the district emergency operations center (EOC) is activated for a declared flood emergency when the pool level of a USACE reservoir is expected to exceed normal operating limits and/or result in some uncontrolled release of flood pool via spillways, or when flood control releases are expected to be elevated beyond normal limits in the downstream reaches; releases from USACE facilities are expected to result in river levels above the flood stage or authorized control levels, whichever is greater; and/or at the discretion of the District Commander.

(b) During a coastal flood event, USACE civil works districts will produce maps showing potential storm surge effects on civil works projects/infrastructure and/or Army installations within the projected hurricane path. Production of these storm surge flood inundation maps for hurricanes should begin at three days before the National Hurricane Center’s projected landfall. The next FIM product is produced at two days before landfall, and then maps are produced at least daily until one day after landfall. Instructions are in the USACE FIM Standard Operating Procedures.

(3) *Inundation maps requested by stakeholders*. Inundation maps may be requested by state and local governments and may include areas that are not under USACE water management control. When authorized, PL 84-99 may be used to create inundation maps or the district office can delegate the task to the MMC MCX through activation of the USACE FIM cadre. Products must comply with policy, data standards, and processes defined within this ER and defined and illustrated in EP 1110-2-19.

(4) *Inundation maps supporting flood event planning and preparedness for areas with no USACE infrastructure*. Through programs such as Floodplain Management Services, Silver Jackets, and Planning Assistance to the States, USACE districts often work with local communities to develop inundation maps to support flood preparedness activities. Inundation maps supporting preparedness must meet the inundation mapping and dissemination standards established in this ER and defined and illustrated in EP 1110-2-19.

11. Inundation map standards and data management

All inundation maps developed by USACE will meet the same minimum map standards and data management procedures described in EP 1110-2-19.

a. Inundation map standards. Coordination with the MMC MCX is required to obtain the most current and appropriate inundation map templates.

b. Flood Inundation Mapping database. Districts and MSCs must provide a copy of the locally developed maps and supporting data to the MMC MCX.

12. Emergency action plan requirements

EAPs are required to be developed by USACE for all USACE-operated or -maintained dams and levees, including appurtenant structures that impact different consequence areas than the main dam or levee. EAPs are strongly recommended for all other dam and levee systems within the USACE Dam Safety and Levee Safety Programs. This requirement is more expansive than the federal guidelines, which require EAPs only for high and significant hazard potential projects.

a. Format and content. EAP format and content should follow the specifics outlined in EP 1110-2-19, including the model checklist in EP 1110-2-19, but should be scaled appropriately based on consequences. At a minimum, the EAP must include the description of the dam or levee project, information on notification, emergency detection, response, incident management, and preparedness.

(1) *Notification flowcharts*. Flowcharts of persons to be notified for each emergency condition and procedures for notification must be included in the EAP. Guidelines are provided in EP 1110-2-19.

(2) *Emergency levels*. To ensure consistent external communications, the emergency levels defined in EP 1110-2-19 will be used in all USACE project EAPs:

high-flow emergency, non-breach emergency, potential-breach emergency, and imminent-breach emergency. Guidelines are provided in EP 1110-2-19.

(3) *Emergency announcements and communications*.

(a) Example external emergency announcements and communications for each emergency level must be included in an EAP, with instructions for adaptation based on specifics of an emergency situation.

(b) The primary responsibility of USACE is to provide these communications to emergency management officials and to the National Weather Service.

(c) Guidelines are provided in EP 1110-2-19.

b. Dissemination. A description of the procedure and means for dissemination of warnings directly to the general public in the immediate vicinity of the project must be included in all EAPs. Guidelines are provided in EP 1110-2-19).

c. Operational responsibilities. Each EAP must include information to help in making immediate operational decisions and guiding intervention for a range of emergencies relevant to the project. Information must be included to identify the need for and sources of equipment, material, labor, and other necessities for carrying out emergency repairs. Items to be considered for inclusion as appendixes or referenced from other documents are noted in EP 1110-2-19.

d. Compliance. Districts will ensure that any changes in operations, including interim risk reduction measures, associated with EAPs are compliant with environmental and cultural resources requirements whenever possible.

e. Documentation control and protection of sensitive information. Districts must develop a distribution list for those involved in implementing the EAP. The list must be reviewed and updated annually. Instructions for protecting sensitive information are provided in EP 1110-2-19.

13. Emergency exercise requirements

a. The frequency and complexity of emergency exercises should correspond directly to the dam safety action classification (DSAC) or levee safety action classification (LSAC) and the hazard potential classification of the project.

b. At a minimum, the EAP exercise schedule listed in table 3 must be followed for all projects having life loss or significant economic loss implications.

Table 3
Dam and levee emergency exercise frequency

Classifications	Seminar or Workshop	Drill	Tabletop	Functional	Full Scale
DSAC/LSAC 1 and High Hazard Potential	Annual*	Annual*	Biennial, recommended for odd years	Biennial, recommended for even years	At DSO/LSO discretion
DSAC/LSAC 2 and High Hazard Potential	Annual*	Annual*	Biennial	At DSO/LSO discretion	At DSO/LSO discretion
DSAC/LSAC 3, 4, or 5 and High Hazard Potential and All Significant Hazard Potential	Annual*	Annual*	Year 5, 10, etc.	At DSO/LSO discretion	At DSO/LSO discretion
All Low Hazard Potential	Initial	Initial	At DSO/LSO discretion	At DSO/LSO discretion	At DSO/LSO discretion

Note: Drills and seminars are an annual requirement except for low hazard potential dams/levees.

c. The two primary types of exercises are discussion-based and operations-based exercises. Discussion-based exercises familiarize participants with current plans, policies, agreements, and procedures, or may be used to develop new plans, policies, agreements, and procedures. Operations-based exercises validate plans, policies, agreements, and procedures; clarify roles and responsibilities; and identify resource gaps in an operational environment.

14. Incident management

The incident management approach for events at USACE projects, as summarized below, follows the policies and procedures of the USACE Civil Emergency Management Program (see ER 500-1-1 and EP 500-1-1).

a. Dam or levee emergency level.

(1) USACE emergency levels for dams and levees are listed in EP 1110-2-19. District Commanders establish the dam or levee emergency level for a dam or levee incident, which establishes district posture and facilitates execution of EAP response and notification actions.

(2) Authority to establish the project emergency level for an incident is delegated to Deputy District Commanders, and all supervisors in the dam or levee safety program chain from the District Commander through the DSO or LSO to the Operations Division Chief to the Operations Project Manager (OPM) as needed to ensure rapid response and notification.

b. Declaration of emergency.

(1) *Civil Emergency Management Program*. In conjunction with determining the dam/levee emergency level, it may be necessary for District Commanders to issue a formal declaration of emergency. A declaration of emergency is necessary to implement Civil Emergency Management Program authority, as further explained in ER 500-1-1 and EP 500-1-1.

(2) *Authority.* Authority to issue a declaration of emergency is delegated to Deputy District Commanders and all supervisors in the chain from the District Commander to the Chief of Emergency Management. District Commanders may withhold authority to issue a declaration of emergency, either by written correspondence, or via a published Operation Plan.

c. Roles and responsibilities. To ensure appropriate coordination and communication of dam and/or levee incidents, it is important that command, safety program, and emergency management and OPM points of contact (POCs) are included in EAP notification flowcharts.

(1) *District Commander*. The District Commander declares and manages project incidents and emergencies, with delegations noted in paragraph 14a. The District Commander is responsible for deciding courses of action to ensure life safety and reduce risk of project failure. The District Commander is also responsible for coordinating decisions with higher command when regional or national impacts may occur.

(2) *Dam Safety Officer and Levee Safety Officer*. The DSO and LSO serve as principal technical advisors to the District Commander for dam and levee safety incidents. Upon issuing a declaration of emergency, these officers serve on the crisis management team (CMT). The CMT is responsible for upward reporting as specified in paragraph 15. Upon issuing a declaration of emergency, district Dam Safety Program Managers (DSPMs)/Levee Safety Program Managers (LSPMs) serve on the crisis action team (CAT).

(3) *District Emergency Manager*. The district Emergency Manager (EM) serves as principal advisor to the District Commander for disasters and emergencies.

(a) Upon issuing a declaration of emergency, the district EM serves on the CMT and provides overall management of USACE emergency/disaster operations.

(b) Within the National Incident Management System framework, the district EM serves as the primary POC with state and local Incident Managers. Further responsibilities of the district EM are provided in EP 500-1-1, including responsibility for upward reporting in the emergency management chain.

(4) *Operations Project Manager*. The OPM is responsible for monitoring activities, notifications of distress to the district office, and other functions as defined in the project operations and maintenance manual, the EAP, and/or the project-specific Water Control

Manual. During declared emergencies, the OPM is the manager on site and involvement with the CMT and CAT is crucial.

(5) *Operations Division Chief*. The district Operations Division Chief serves on the CMT and is fully involved with managing the emergency event in coordination with the district senior leadership team.

d. Coordinating project emergency level and emergency operations center activation level. As stated in paragraph 12a(2), USACE uses standard emergency levels for all external coordination and communication. Table 4 provides recommended alignment of USACE project emergency levels with appropriate USACE EOC activation levels as defined in EP 500-1-1.

Table 4
Recommended alignment of dam and levee emergency levels and Emergency Operation Center activation levels

Project Emergency Level	IV Normal Operations	III Emergency Watch	II Partial Activation	I Full Activation
High-Flow Emergency	–	Based on severity, hours of field operations, and required EOC posture	Based on severity, hours of field operations, and required EOC posture	Based on severity, hours of field operations, and required EOC posture
Non-Breach Emergency	–	Based on severity, hours of field operations, and required EOC posture	Based on severity, hours of field operations, and required EOC posture	Based on severity, hours of field operations, and required EOC posture
Potential-Breach Emergency	–	–	Based on severity, hours of field operations, and required EOC posture	Based on severity, hours of field operations, and required EOC posture
Imminent-Breach Emergency	–	–	–	X

e. Project-specific authorities and responsibilities. Specific authorities and responsibilities for incident management should be documented in district all-hazards plans, project surveillance plans, and EAPs.

f. Exercises and training. Dam and levee safety exercises and training materials for incident management should be designed to test awareness of incident management processes and responsibilities. Project-specific dam and levee safety training materials for project personnel should address the USACE incident management approach to ensure understanding and responsibilities at all organizational levels.

15. Internal incident reporting

When evidence of distress is reported to the district DSO/LSO, the DSO/LSO must confirm the situation and determine if an engineering evaluation of the condition is needed or if intervention is required. If additional action is warranted, the district DSO/LSO will coordinate with the district EM and the Operations Division to initiate MSC coordination, develop the commander-nominated serious incident report (SIR), and draft follow-up situation reports (SITREPs). An internal incident reporting flowchart is provided in EP 1110-2-19.

a. SIRs are defined in AR 190-45. SITREPs are defined in ER 500-1-1 and EP 500-1-1. Districts develop and release SIRs via Engineering Link (ENGLINK) as well as draft SITREPs. MSCs then review and release SITREPs via ENGLINK.

b. For incident reporting:

(1) The district DSO/LSO is responsible for notifying the MSC DSO/LSO and MSC DSPM/LSPM by telephone, with follow-up documentation via email.

(2) The MSC DSO/LSO coordinates with the MSC EM to support SIRs, SITREPs, and other products as required to ensure event severity is properly characterized and forwards the SIR or SITREP and all subsequent reports to the dam and levee safety incident email (dll-hq-dam_levee_incident@usace.army.mil).

(3) The Headquarters (HQ) DSPM/LSPM coordinates with the MSC for any follow-up information and informs the HQ Deputy DSO/LSO and the HQ DSO/LSO.

c. For evidence of distress on dams, the district DSO is responsible for submitting an MSC DSO-endorsed narrative summary of the incident, including an assessment of risks and appropriate photographs in the incident manager module of the NID.

d. Since all USACE projects are different, engineering judgment must always be exercised in determining whether or not an item warrants upward reporting. Generally, anything that has the potential for life loss or significant negative economic implications, or anything that could garner political or media attention should be reported. Example problem assessment charts for example incidents for dams are in EP 1110-2-19.

16. Security provisions

A comprehensive EAP considers security provisions, including those needed for the potential of man-made disasters (acts of terrorism, etc.) surrounding a project during an emergency event. Potential man-made disasters are particularly critical as they can potentially occur with no warning, resulting in very little response time.

17. Review and approval of emergency action plans

Table 5 identifies the organizations responsible for review and approval of EAPs and EAP updates.

Table 5
Emergency action plan review and approval for U.S. Army Corps of Engineers-operated or -maintained projects

Status	District	MSC
Projects with new EAP or significant update	Formulate, recommend, and implement; reviewed by district DSO/LSO/district Operations Chief	Reviewed and approved by MSC DSO/LSO
All projects	Annual review required; update when needed; update notification list annually	Review during periodic inspection/assessment

18. Emergency action plan funding

Development and approval of EAPs and maps are funded with project-specific operations and maintenance (O&M) funds, with the exception that the MMC MCX is centrally funded to support development of inundation scenarios and EAP maps as part of periodic assessments and risk assessments. MMC MCX priorities are established by the assessment schedules and any direct requests for support outside the assessment cycle should be made to the MMC MCX Director.

a. Exercise funding. Exercise planning and participation directly related to a specific USACE project will be funded with project-specific O&M funds.

b. Incident management funding.

(1) Guidance for flood response activities, authorized consistent with PL 84-99, is provided in ER 500-1-1 and EP 500-1-1.

(2) Use of the Flood Control and Coastal Emergencies appropriation is further provided in ER 11-1-320 and EP 11-1-320.

Appendix A
References

Unless otherwise indicated, all U.S. Army Corps of Engineers publications are available on the USACE website at https://publications.usace.army.mil. Army publications are available on the Army Publishing Directorate website at https://armypubs.army.mil. Department of Defense (DoD) publications are available on the Executive Services Directorate website at https://www.esd.whs.mil. Federal Emergency Management Agency publications are available at https://www.fema.gov. United States Code publications are available at https://uscode.house.gov.

AR 190-45
Law Enforcement Reporting

AR 530-1
Operations Security

DA Pam 25-403
Army Guide to Recordkeeping

DHS 2018
Emergency Preparedness Guidelines for Levees – A Guide for Owners and Operators (Available at https://www.fema.gov/sites/default/files/2020-08/fema_emergency-preparedness-guidelines-for-levees_2018.pdf)

EC 1165-2-218
USACE Levee Safety Program

EP 11-1-320
Civil Works Emergency Management Programs, Financial Management Process

EP 500-1-1
Civil Emergency Management Program: Procedures

EP 1110-2-19
Inundation Maps and Emergency Action Plans and Incident Management for Dams And Levee Systems

ER 11-1-320
Civil Works Emergency Management Programs

ER 500-1-1
Civil Emergency Management Program

ER 500-1-28
USACE Emergency Support Function (ESF) #3 Field Guide
(Available at https://www.usace.army.mil/Missions/Emergency-Operations/emergency_support/)

ER 1110-2-1156
Safety of Dams: Policy and Procedures

FEMA 333
Federal Guidelines for Dam Safety, Hazard Potential Classification System for Dams (Available at https://www.ferc.gov/sites/default/files/2020-04/fema-333.pdf)

FEMA P-64
Federal Guidelines for Dam Safety, Emergency Action Planning for Dams

FEMA P-93
Federal Guidelines for Dam Safety

FEMA P-946
Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failures, First Edition

PL 84-99
Emergency Response to Natural Disasters
(Available at https://www.usace.army.mil/Missions/Emergency-Operations/pl-84-99/)

USACE Flood Inundation Mapping (FIM) Standard Operating Procedures
Dated 7 December 2020. (Available at https://usace.dps.mil/sites/KMP-HHC/GUMP/Forms/AllItems.aspx?id=%2Fsites%2FKMP%2DHHC%2FGUMP%2FHHC%5FPolicy%5FMemos%2FUSACE%5FFIM%5FSOP%5F2021%5Fwith%5FAppendices%2Epdf&viewid=03acf0a6%2Da057%2D4042%2D9eca%2Dc4a60d1be627&parent=%2Fsites%2FKMP%2DHHC%2FGUMP%2FHHC%5FPolicy%5FMemos)

33 USC §467–467n
National Dam Safety Program Act, PL 92-367 as amended

33 USC §2231 §§203
Water Resources Development Act of 1986, Section 203, as amended

33 USC §3301–3306
National Levee Safety Act of 2007, PL 110-114, Title IX, as amended

42 USC §5121–5207
Robert T. Stafford Disaster Relief and Emergency Assistance Act as amended

Glossary of Terms

Breach
The formation of a gap in the dam or levee system through which water may flow uncontrolled; breach may occur before or after overtopping.

Consequences
The effect, result, or outcome of inundation as reflected in the potential life losses, economic losses, and adverse environmental impacts.

Crisis Action Team
Individuals responsible for enacting crisis-level responses.

Crisis Management Team
Provides support through management of crisis level issues, managing additional risks and exposures, and management of stakeholder interests in response to an event or disaster.

Dam
An artificial barrier, including appurtenant works, constructed for the purpose of storage, control, or diversion of water.

Data Owned by Others
Includes vendor-supplied base maps or imagery, census blocks, Homeland Infrastructure Foundation-Level Data (HIFLD) critical infrastructure data, or similar data that are developed and maintained by others; data owned by others cannot be released by USACE; requests for data owned by others should be referred to the agency that is the proponent for the data.

Editable (dynamic) Data
Includes inundation boundaries as geospatial vector data for geographic information system (GIS) software; other model-derived map layers such as cross sections, depths, flood wave arrival time and maximum elevation values, and reference mile marks; USACE-owned base maps or imagery and electronic file formats that present such data in common geospatial visualization tools such as GIS and Google Earth.

Emergency Action Plan (EAP)
A formal document that identifies potential emergency conditions at a project and specifies pre-planned actions to be followed to reduce consequences of the emergency.

Emergency Action Plan Map
An inundation map depicting specific breach or non-breach scenarios for a project and included within an EAP.

Emergency Level
A category assigned to an emergency situation at a dam or levee to define the primary goal of the emergency response; USACE uses four different emergency levels for dams and levees: non-emergency, non-breach emergency, potential breach emergency, and imminent breach emergency.

Hazard
Something that causes the potential for an adverse consequence.

High-Flow Emergency
Extreme controlled or uncontrolled release that requires EAP activation and emergency notification.

Incident
An event occurring at a dam or levee that could potentially result in a dam or levee safety issue.

Intervention
Actions taken to detect a developing failure mode and actions taken to prevent breach due to that failure mode.

Inundate/Inundation
In the context of dams and levees, refers to the flooding of an area.

Inundation Map
Shows either the actual or predicted extent of floodwater within an area for future pre-determined flood events, ongoing flood events, or past flood events.

Levee or Levee System
Comprises one or more earthen embankment or floodwall reaches and other features, such as closure structures and pumping stations, which function collectively to provide a certain level of flood risk reduction to a defined area.

Life Safety (life-safety risk)
A measure of the probability and severity of life loss resulting from inundation of the area associated with a dam or levee.

Non-Breach Flood Risk
The flood risk associated with a dam or levee for the overtopping without breach scenario.

Non-Editable (static) Data
Includes a hardcopy, Adobe portable document format (PDF), or other digital image format that cannot be readily manipulated.

Overtopping
A condition that occurs when the elevation of the still-water level and/or associated waves, wind setup, or surge exceeds the top of the dam or levee system.

Potential Failure Mode
A mechanism that, once initiated, potentially could progress to breach of a dam or levee system or inundation of the leveed area; note that overtopping without breach (non-breach) is not called a potential failure mode.

Project
One or more dam or levee systems that are included in an emergency action plan.

Risk
Measure of the probability and severity of undesirable consequences.

Risk Assessment
A systematic, evidence-based approach for quantifying and describing the nature, likelihood, and magnitude of risk associated with the current condition and the same values resulting from a changed condition due to some action.

Seminar
An informal discussion designed to orient participants to new or updated plans, policies, or procedures; seminars should include internal discussions as well as coordination with emergency management authorities and other organizations with a role in emergency action plan implementation.

Sensitive Information
Information that could pose a security risk or aid those intending to harm a USACE project.

Stakeholders
Those individuals or groups responsible for, interested in, or affected by a particular action or activity.

Supporting (Model) Data
Includes generic geospatial information files that support model development and used to develop data for the inundation maps; includes the hydrologic and hydraulic models and model source data such as digital terrain data and river bathymetry data.

Tabletop Exercise
Involves key personnel discussing simulated scenarios in an informal setting; can be used to assess plans, policies, and procedures.

Workshop
Resembles a seminar but is used to build specific products, such as a draft plan or policy.