

## **REVISED RECLAMATION MANUAL RELEASE**

**Comments on this draft release must be submitted to [bclaggett@usbr.gov](mailto:bclaggett@usbr.gov) by February 19th, 2024.**

### **Background and Purpose of the Following Draft Directive and Standard (D&S), EMG 02-01, *Emergency Action Planning for Water Impoundment Structures***

The goal of preparing this revised D&S document and providing stakeholders with the opportunity to comment on it in draft form is to enhance a common understanding of how the emergency management program for high-hazard dams and other water impoundment structures is administered and to enhance working relationships with our project partners. This will make the program more responsive to project sponsors, consistent Reclamation-wide, and thus more effective.

The Reclamation Emergency Management and Readiness Office and the Reclamation Emergency Management Council provided subject matter expertise while representing all Reclamation regions, including the Washington and Denver offices. These two entities collaborated on developing this revised D&S to establish updated requirements for the Reclamation emergency action planning program, supporting preparedness for dam safety incidents throughout Reclamation.

The Reclamation Manual clarifies program responsibility and authority and documents internal Reclamation-wide methods of doing business. All requirements in the Reclamation Manual are mandatory.

See the following pages for the draft D&S.

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- Subject:** Emergency Action Planning for Water Impoundment Structures
- Purpose:** To establish a program that will address preparedness and response activities to reduce the risk of catastrophic flooding impacts from water impoundment structures to populations at risk, ensure compliance with Federal dam safety requirements, and preserve Reclamation infrastructure and operations.
- Authority:** [Reclamation Safety of Dams Act of 1978](#) (Pub. L. 95-578, 92 Stat. 2471), as amended; [Homeland Security Presidential Directive 5](#); [Presidential Policy Directive 8: National Preparedness](#); [National Incident Management System](#); [Federal Emergency Management Agency \(FEMA\) 93 – Federal Guidelines for Dam Safety](#), April 2004; [FEMA 64 – Emergency Action Planning for Dams](#), July 2013; [FEMA P-946 – Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failures](#), July 2013; [Homeland Security Exercise and Evaluation Program](#), January 2020; 753 Departmental Manual (DM) 1 and 2; 900 DM; Reclamation Manual (RM) Policy *Emergency Management* (SLE P08).
- Approving Official:** Director, Mission Assurance and Protection Organization
- Contact:** Emergency Management and Readiness Office (84-52200)
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1. **Introduction.** This program establishes risk-reducing activities in the Federal Emergency Management Agency’s (FEMA) mission areas of planning and response to build and maintain preparedness capabilities and preserve Reclamation’s operational mission during dam safety and other flood-related emergencies involving water impoundment structures. The elements of this program include Emergency Action Plans (EAPs), testing, training, and exercising, and corrective actions related to detection, classification, notification, and intervention during dam safety incidents. This program will ultimately ensure timely notifications to affected public safety agencies responsible for warning and evacuation of populations at risk (PAR).
2. **Applicability.** This Directive and Standard (D&S) applies as follows:
  - A. All Reclamation personnel responsible for emergency action planning or response during a dam safety or water impoundment structure-related incident.
  - B. All Reclamation water impoundment structures with a potential for controlled or uncontrolled water releases that pose a threat to populations at risk (PAR) or infrastructure, necessarily including all high and significant-hazard dams, dikes, urban canal reaches, and levees where failure would impact PAR.

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- C. EAP-related requirements herein should be assumed to apply to all structure types (i.e., dams, dikes, canals, and levees) except when specified otherwise.
  - D. The yearly performance and reporting period for accomplishing the requirements in this D&S will be from October 1<sup>st</sup> through September 30<sup>th</sup>.
3. **Emergency Action Planning Program Structure.** The following components make up the Reclamation EM program:
- A. **Emergency Action Planning Program Manager.** The EAP Program Manager will provide oversight and direction of the Emergency Action Planning Program to maintain the EAP directive and standard and support the regions as needed to understand how to interpret and apply requirements.
  - B. **Regional Offices.** Regional offices are responsible for the region's EAP programs, including ensuring policy compliance and coordination with the Emergency Management and Readiness Office (EMRO).
    - (1) The Regional Director will:
      - (a) provide oversight of regional EAP programs to ensure that offices and staff comply with this D&S and the emergency management training requirements in EMG 01-01 Appendix A, and
      - (b) support compliance reviews conducted by the program office.
  - C. **Area/Power Offices.** Area and power office managers (managers) are responsible for ensuring the implementation of their EAP programs comply with policy/D&S, maintaining adequate staffing of EAP personnel, and coordinating with the regional office, stakeholders, and partners.
    - (1) Managers will:
      - (a) appoint a primary EAP coordinator to ensure EAPs are adequately developed, maintained, distributed, exercised, and executed during incidents for each applicable water impoundment structure within the jurisdiction of the area/power office,
      - (b) ensure that any field offices with delegated responsibility to manage field office specific EAPs have a designated EAP coordinator,
      - (c) approve (via signature) all their office's EAPs and ensure acceptance and implementation of EAP procedures during an EAP activation,
      - (d) comply with training requirements per EMG 01-01 Appendix A,

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- (e) identify and communicate to all staff that will or could have a role during an EAP response and ensure those staff are made aware of their roles and responsibilities related to the EAP,
  - (f) participate in at least one EAP exercise every two years and ensure that deputy managers do the same, and
  - (g) ensure interoperable primary and backup communications systems are in place at all offices, facilities, and locations where EAP response personnel and associated managers will or may need to communicate from/to during an EAP activation.
- (2) EAP coordinators will:
- (a) develop and maintain EAP documents for water impoundment structures per this D&S,
  - (b) oversee planning, tracking, and execution of testing, training, and exercise requirements per this D&S,
  - (c) support EAP activations during dam safety incidents to ensure proper implementation of EAP procedures, and
  - (d) comply with training requirements per EMG 01-01 Appendix A.
- (3) EAP response personnel will:
- (a) maintain awareness and knowledge of their EAP(s) in which they have a role or responsibility during an EAP incident, and
  - (b) respond during an EAP activation under the direction of area/power/field office leadership and organizational structure established for a given incident.
4. **Emergency Action Plans.** Reclamation will develop and maintain effective response procedures consistent with FEMA 64 doctrine in the form of a written EAP for every high and significant-hazard dam to effectively prepare for and respond to dam safety incidents and high flow events. Additionally, Reclamation EAPs will be developed and maintained for urban canal reaches, and for dikes and levees where a failure would impact PAR. At a minimum, Reclamation EAPs will comply with the following:
- A. **Types of EAPs.** EAP documents will be developed commensurate with the structure/situation using the following types of Reclamation EAPs:
- (1) EAPs for high and significant-hazard dams (EAP or dam EAP),

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- (2) EAPs for urban canals (canal EAP) or levees,
- (3) EAPs for multiple structures (system EAP or multiple facility EAP),
- (4) temporary EAPs for construction (construction EAP), and
- (5) condensed/external agency EAPs for public safety agencies that do not contain controlled unclassified information (CUI).

**B. EAP Development and Maintenance.** EAP documents will be developed and maintained according to the following:

- (1) **New EAPs.** New EAPs will be developed (where no EAP exists) for:
  - (a) a new structure (i.e., dam, dike, urban canal section, or levee),
  - (b) a re-classified structure (e.g., low-hazard dam reclassified as significant-hazard dam),
  - (c) urban canals (due by September 30, 2026), and
  - (d) a structure undergoing significant modification that temporarily reduces its the flood control capacity (which requires a temporary construction EAP).
- (2) **Uniformity of Plans.** EAPs for dams will conform to standardized regional dam EAP templates to ensure regional consistency by September 30, 2025. Regional templates will be based on the Reclamation-wide EAP template found with EAP guidelines provided by the emergency action planning program manager. Urban canal EAPs will conform to standardized regional canal EAP templates to ensure regional consistency by September 30, 2026.
- (3) **EAP Format for Transferred Works.** Area offices will require conformity of EAP formats developed or used by contract operating partners to the greatest extent possible per operations and maintenance contracts and agreements.
- (4) **Coordinated Development.** EAPs will be developed and maintained in coordination with personnel within area/power/field and regional offices, including staff from emergency management, operations, engineering, public affairs, security, dam safety, dam operations (including contract partners), and management. Additionally, EAP initiating conditions will be developed/updated in coordination with the affected public safety agencies responsible for warning and evacuation of affected PAR to ensure the timeliness of EAP notifications.
- (5) **System EAPs.** Multiple structures (i.e., dams, dikes, canals, and levees) may be combined into a single “system” EAP only when the following criteria are met:

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- (a) a single area/power/field office manages the included structures,
  - (b) all included public safety agencies (i.e., per the notification charts) would be affected (directly or indirectly) by a failure of any of the structures in the system (e.g., located within the same general geographic/jurisdictional region or all within the same inundation zone along a river), and
  - (c) all the EAP structures can be reasonably incorporated into a single emergency management exercise for the system EAP.
- C. **Document Distribution and Control.** EAP documents will be distributed and controlled according to the following:
- (1) EAPs will be produced and maintained in both electronic and hard-copy formats,
  - (2) hard copies of EAPs will be created and distributed as individually numbered (i.e., copy 1 of 10, 2 of 10, etc.) copies assigned to specific recipients according to the distribution list in the EAP,
  - (3) hard copies will be stored at all Reclamation facilities where EAP response personnel routinely work and where they could need access during an emergency, as long as the document can be kept secure when not in use,
  - (4) electronic copies of all EAPs will be stored in the bureau's official records repository (Enterprise Content System) in the folder designated for all EAPs, and
  - (5) Dam EAPs (for internal use) will be considered and labeled CUI due to the type of content that is to be included per Appendix A (e.g., failure modes, internal procedures, communications methods, etc.)
- D. **Annual EAP Review and Update.** EAPs will be reviewed annually and updated as needed to ensure the adequacy of procedures, accuracy of notification information, and to incorporate recent lessons learned from exercises or incidents.
- E. **Annual EAP Training.** EAP orientation training will be conducted annually for all EAP response personnel, as defined in Appendix B, to ensure adequate preparedness for EAP incidents.
5. **EAP Communications Capability.** Continual access and availability of bureau communication and information systems are critical to the success of EAP program objectives during an incident. At a minimum, area, power, and field offices will comply with the following:
- A. **Equipment.** Equipment and training will be provided for all facilities and locations where EAP response personnel must provide functional and integrated operational

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communications capabilities for internal coordination and external notifications during an EAP activation.

- B. **Secondary Communications Systems.** Functional secondary (backup/redundant) communications systems (e.g., radio, satellite phone, etc.) will be provided at all locations where EAP response personnel work/operate to ensure EAP notifications can occur during extreme weather events, emergencies, or disasters where primary communications systems (e.g., phone, cell phone, email, etc.) may not be available.
  - C. **Maintenance.** All communications systems will be properly maintained and kept operational at all times.
  - D. **Communications Drills.** Communications drills will be conducted annually for all offices and facilities, as defined in Appendix B, to ensure effective and reliable communications capabilities during EAP incidents.
6. **Exercise Planning and Conduct.** Implementation of a regular program of exercising with participation by all staff with EAP roles is critical to the success of the EAP program to validate plans, prepare staff, collaborate with emergency management authorities, and identify opportunities for improvement. At a minimum, area, power, and field offices will comply with the following:
- A. **Exercise Methodology.** Reclamation EAP exercises will be planned and conducted based on the Homeland Security Exercise and Evaluation Program (HSEEP) according to the exercise type and complexity, to include, at a minimum, the following:
    - (1) use of HSEEP terminology and the “capabilities-based, objectives-driven” approach,
    - (2) use of standard HSEEP document types (e.g., Situation Manual/Exercise Plan, Master Scenario Events List, after-action reports, etc.),
    - (3) use of the general HSEEP planning process (e.g., concepts and objectives, initial, midterm, and final planning meetings),
    - (4) inclusion of an orientation (before exercise play) to the EAP process, the included facilities, affected inundation areas, and the rules of the exercise, and
    - (5) development of an after-action report (AAR) and corrective actions after the exercise.
  - B. **Exercise Cycle.** Exercises will be conducted on a four-year cycle alternating between a tabletop exercise (TTX) and a functional exercise (FE) for dams, or a seminar exercise for urban canals and levees, as defined in Appendix B, to validate EAPs and ensure adequate personnel preparedness during EAP incidents.

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### C. Participation in Exercises.

- (1) **Exercise Planning Team.** Invitations to participate in the development of each TTX or FE as a member of the exercise planning team will, at a minimum, be provided to the following positions/personnel at the beginning of the planning process:
  - (a) senior personnel in facilities/engineering and water operations groups within the associated area/field office(s),
  - (b) a senior representative for dam operations personnel,
  - (c) the regional emergency manager,
  - (d) the associated regional security officer and area office security coordinator, to include the opportunity to integrate any security testing/training requirements into the planning and conduct of the exercise, and
  - (e) key officials representing the public safety agencies identified on the EAP notification chart, according to the scope of the exercise to include, at a minimum, the affected county emergency manager(s) and the National Weather Service.
  
- (2) **Participants.** Invitations to participate (e.g., as players, observers, evaluators) in exercises will, at a minimum, be provided to the following positions/personnel:
  - (a) area and deputy area (or power office) managers,
  - (b) area/power/field facilities, engineering, and water operations personnel,
  - (c) dam operations personnel (including primary and secondary dam operators),
  - (d) the regional emergency manager,
  - (e) area/power public affairs personnel,
  - (f) the regional security officer and area office security coordinator,
  - (g) other appropriate regional personnel who may be involved in an EAP response or who are listed on the EAP notification chart(s) (e.g., dam safety coordinator, public affairs personnel, etc.), and
  - (h) all agencies/officials identified on the notification chart(s) of the exercised EAP(s), according to the scope of the exercise, to include any affected county and town/city emergency managers, tribes, and the National Weather Service.



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- D. **Exercise Credit for Actual Incidents.** Exercise credit may be given for a scheduled EAP exercise if an actual incident has occurred in the same fiscal year and the following criteria have been met:
- (1) the EAP for the affected facility (or facilities) was activated at a Level 1 or greater, and official notifications were provided to all the public safety agencies responsible for warning and evacuation of PAR identified on the EAP notification chart(s),
  - (2) an after-action meeting is conducted, and a review of the response is documented in an AAR (which includes feedback from affected public safety agencies), and
  - (3) the AAR is submitted to the Regional Emergency Manager Denver EAP Program Manager for verification before the end of the fiscal year.
- E. **Exercise Attendance Tracking.** Exercise participation will be documented in an attendance record (e.g., “sign-in sheet”) attached to the respective AAR exercise.
7. **Corrective Action Planning.** Corrective action planning will be conducted to ensure the review, tracking, documentation, and completion of emergency management-related recommendations resulting from all exercises and incidents, as defined below:
- A. AARs will be completed within 120 days of any exercise (i.e., seminar, TTX, or FE) or EAP incident (activated at an emergency level 2 or above) and transmitted according to the respective area or regional records-keeping procedures for emergency management records.
- B. AARs will include, at a minimum:
- (1) an overall description of the exercise event/incident (e.g., date, location, participants),
  - (2) a description of the scenario/incident details,
  - (3) an evaluation of the performance related to each capability and objective,
  - (4) a section for defining and documenting formal recommendations,
  - (5) a copy of the exercise attendance record, or for an incident, the attendance record for the after-action meeting, and
  - (6) recommendations identifying specific and measurable corrective actions based on the category levels defined below:

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- (a) Category 1: Corrective action recommendations for the remediation of significant deficiencies where immediate action is required to ensure public protection if an incident occurs at the dam.
  - (b) Category 2: Corrective action recommendations for a wide range of important matters where action is needed to ensure compliance with D&Ss, implement specific guidelines, or reduce risk to the public.
  - (c) Category 3: Corrective action recommendations for less important matters believed to be sound and beneficial suggestions to improve or enhance the program.
- C. Category 1, 2, and 3 emergency management recommendations will be entered/updated into the official bureau-wide corrective action tracking and reporting system (i.e., Dam Safety Information System (DSIS) or Recommendation Management Information System (RMIS)). The status of formal recommendations will be updated in the corrective action tracking system at least annually, no later than October 30<sup>th</sup> each year.
8. **Appendices.**
- A. Emergency Action Plan Content Requirements.
  - B. Testing, Training, and Exercise Requirements.
  - C. Inundation Mapping Requirements.
9. **Definitions.**
- A. **After-Action Report.** A report documenting a planned event (e.g., exercise) or incident that explains why and how the EAP was exercised or activated; describes the event or incident and actions taken; and identifies strengths, deficiencies, and recommended corrective actions.
  - B. **Backup (or Secondary) Communications.** Secondary methods, technology, systems, equipment, processes, and protocols that provide a means of communicating between essential points of contact during situations where more vulnerable day-to-day (primary) communications systems (e.g., landline phone, cell phone) are likely to fail when impacted by extreme weather conditions or other emergencies.
  - C. **Construction EAP.** An emergency action plan is developed and used for a temporary period while a dam or other water impoundment structure is being constructed or undergoing modification where the flood control capacity of the structure is impacted during construction.

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- D. **Drill.** An operations-based activity is often employed to test and validate a single operation, function, or capability.
- E. **Emergency Action Plan.** A written plan containing response procedures that guide personnel to quickly respond to an incident at a dam or other water impoundment structure to initiate intervention actions and notify public safety agencies of any threat of flooding to populations at risk.
- F. **EAP Orientation.** An awareness-level training session designed to enhance and maintain emergency preparedness by providing response personnel familiarity with an emergency action plan and the associated process, roles, and responsibilities.
- G. **Emergency Level Classification System.** A systematic approach to identifying and designating the status of EAP-related incidents comprised of variable initiating conditions and pre-defined emergency levels based on standardized severity indicators and the emergency categories provided by FEMA 64.
- H. **Homeland Security Exercise and Evaluation Program (HSEEP).** A set of guiding principles developed by FEMA for exercise programs, as well as a common approach to exercise program management, design and development, conduct, evaluation, and improvement planning. Exercises are a vital component of national preparedness—they provide senior leaders and stakeholders from across the community with the opportunity to shape planning, assess and validate capabilities, and address areas for improvement.
- I. **Initiating Conditions.** Descriptive summaries (triggers) of various unusual situations or hazards affecting a water-impoundment structure that could or would likely result in threatening releases of water (high flow). Initiating conditions are developed across an increasing range of severity correlated to distinct severity levels and are a component of the EAP Emergency Level Classification System.
- J. **Intervention.** Actions taken by the dam owner/operator to initiate emergency repairs, maintain control of the facility, preserve structural integrity, or otherwise attempt to delay and prevent further downstream flood damage (within the operating parameters of the structure).
- K. **Emergency Levels.** An emergency classification framework that indicates incident severity and the hazard category at a water impoundment structure as it relates to populations at risk as part of the Emergency Level Classification System (in an EAP) to support situational awareness and risk communication.
- L. **Seminar.** A discussion-based exercise that orients participants to or provides an overview of authorities, strategies, plans, policies, procedures, protocols, resources, concepts, and ideas.

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- M. **Tabletop Exercise.** A discussion-based exercise in response to a scenario intended to generate a dialogue of various issues to facilitate a conceptual understanding, identify strengths and areas for improvement, and achieve changes in perceptions about plans, policies, or procedures.
- N. **Urban Canal Reach** (as defined by FAC 01-12). An urban canal reach is delineated by the water contained between two structures, including checks, wasteways, diversion dams, etc., where the structures may be used to control or limit the amount of water lost in the event of a failure. An urban canal reach is defined as either of the following:
- (1) **Criteria-Defined.** A canal reach where failure would result in an estimated PAR greater than 100 or an estimated property damage greater than \$5,000,000.
  - (2) **Defined by Engineering Judgment.** A canal reach is determined by the responsible regional/area office to be classified as an urban canal reach based on sound engineering judgment factors.
- O. **Functional Exercise.** An operations-based exercise is designed to test and evaluate capabilities and functions in a realistic, real-time environment; however, movement of resources is usually simulated.
- P. **Water Impoundment Structure.** An engineered and constructed element designed to create a structural boundary (such as a dam, levee, dike, or canal) for the purposes of storing, controlling, and managing a body of water.
10. **Review Period.** The originating office will review this release every four years.

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### Emergency Action Plan Content Requirements

This appendix provides specific requirements for the content of Reclamation Emergency Action Plans (EAPs) to ensure a foundational level of uniformity across Reclamation.

1. **Essential Elements.** EAPs will include the following essential elements:
  - A. purpose and scope statement,
  - B. roles and responsibilities,
  - C. response process,
  - D. position/office-specific response checklists,
  - E. Emergency Level classification system,
  - F. notification chart(s) and protocol,
  - G. primary and backup communications systems information,
  - H. facility-specific conditions and potential failure modes,
  - I. preparedness and facility information, and
  - J. inundation maps (canal/dike/levee EAPs excepted). See Appendix C.
2. **Purpose and Scope.** EAPs will contain the mandatory purpose and scope statement, provided below, in the preface/introduction of the EAP. This statement may be modified for condensed external agency versions of the EAP (where used).

**Purpose.** The primary purpose of this emergency action plan (EAP) is to provide effective and timely risk communication to the public safety agencies responsible for warning and evacuation of populations at risk (PAR) downstream of Reclamation water impoundment structures to reduce potential loss of life during situations of elevated flood risk.

Additionally, this EAP serves the purposes of providing, (1) response procedures for Reclamation and facility operations personnel, (2) an administrative record of programmatic intent, and (3) a reference for training and exercises.

**Scope.** The scope of this EAP includes:

- (1) **Flood Hazard Identification.** Identification of all unusual or hazardous conditions (e.g., probable failure modes, natural disasters, operational failure,

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security breach, etc.) provided as descriptive initiating conditions (a.k.a., triggers) that may lead to water releases from the structure that would threaten PAR.

- (2) **Dam Owner/Operator Procedures.** Procedures and tools (e.g., checklists, emergency level decision matrix, notification charts) intended for use by Reclamation [and partner dam operations *if applicable*] personnel to provide a consistent detection, activation, classification, intervention, notification, re-evaluation, and termination process.
- (3) **Supporting Information.** Facility and other reference information (e.g., structural data, emergency classification definitions, warning time, inundation maps) to support flood response planning for public safety agencies responsible for warning and evacuation in the inundation zone.

This EAP does not include instructions for downstream/external public safety agencies and assumes that those agencies will use notifications and incident information following local flood response and evacuation plans (outside the jurisdiction of Reclamation). Furthermore, it is assumed that the public will receive and understand official details related to warning and evacuation and will act in its best interest to follow evacuation instructions when advised by local or state authorities.

3. **Roles and Responsibilities.** EAPs will include a roles and responsibility section that includes:
  - A. a general description of the EAP-related roles and responsibilities for each associated office, facility, and group/position,
  - B. a summary of the authority and responsibility for incident management and decision-making during dam safety incidents and operational control of the facility during high water levels and high flow releases (e.g., Reclamation vs operating partner and where applicable, the U.S. Army Corps of Engineers),
  - C. a general description of the roles of associated local, state, and federal public safety agencies, and
  - D. identification of the positions within the area/field office (or operating partner where applicable) with authorization to formally activate the EAP on behalf of the responsible area office (e.g., area manager, facility manager, area office incident commander).
4. **Response Process.** EAPs will include a standardized EAP process based on the concepts of, 1) detection, 2) activation, 3) classification, 4) notification, 5) intervention, 6) re-evaluation, and 7) termination.

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5. **Response Checklists.** All detailed incident response instructions and specific tasks for Reclamation (and operating partner, if applicable) personnel will be assigned and consolidated into role or office-specific checklists to provide an efficient and user-friendly response document.
6. **Emergency Level Classification System.** The emergency level system is the basis for classifying the EAP emergency and will be used as the framework for response actions, situational awareness, and official EAP notifications. EAPs will incorporate and follow a standardized system of emergency level classification comprised of, (A) Emergency Levels and (B) initiating conditions, as defined below.
  - A. **Emergency Levels.** EAP incidents will be classified using Emergency Levels as defined below:
    - (1) Each Emergency Level will be assigned a numerical incident severity level ranging from 1 to 4, with 4 being the most severe situation. These levels are based on the potential threat of flooding to PAR. They provide an overall framework for EAP-related emergencies and require the initiation of external notifications (in addition to internal notifications). Each level will be defined as shown below:
      - (a) Level 1 – Threat corresponding to the need to notify affected public safety agencies to be on standby due to a potential dam safety situation and high flow water releases (into the downstream river system).
      - (b) Level 2 – Threat corresponding to the need to notify affected public safety agencies to consider public warning (and possibly evacuation of most vulnerable PAR) due to an escalating dam safety situation and high flow releases impacting downstream infrastructure or low-lying infrastructure and public areas.
      - (c) Level 3 – Threat corresponding to the need to notify affected public safety agencies to consider public evacuations due to a likely impending dam failure and high flow releases with severe impacts to downstream infrastructure and PAR.
      - (d) Level 4 – Threat corresponding to the need to notify affected public safety agencies that dam failure has occurred and high flow releases with catastrophic impacts threaten downstream infrastructure and PAR.
    - (2) Each Emergency Level will also be assigned language (from FEMA 64) based on the hazard categories: 1) high flow and 2) dam safety, as further defined below:
      - (a) The “high flow” category is to be used for controlled or uncontrolled releases from a dam severe enough to warrant notifications to affected public safety

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agencies (starting at level 1) due to expected flooding impact. The responsible office will determine the correlation of high flows to severity levels per the definitions above for each facility/situation. Level 4 high flows will correspond to the most severe (i.e., catastrophic) level of flooding from the dam (e.g., maximum releases from the dam).

- (b) The dam safety-related categories of “non-failure”, “potential failure”, “imminent failure”, or “failure”, as defined below, are to be aligned under the respective severity levels (i.e., 1, 2, 3, and 4) for all dam safety hazard types.
- (i) Non-Failure – Condition of, or threat to, the structure is concerning (i.e., elevated risk) and may require intervention, where remediation is plausible.
  - (ii) Potential Failure – Condition of, or threat to, the structure is serious (i.e., high risk) and may require extraordinary intervention where the likelihood of remediation is uncertain.
  - (iii) Imminent Failure – Condition of, or threat to, the structure is severe (i.e., very high risk) where remediation is not likely.
  - (iv) Failure – Condition where the structure has failed (e.g., immediately life-threatening situation to PAR and first responders) due to catastrophic release of the reservoir into the downstream inundation area.
- (3) The final Emergency Level will combine the number and the associated category language, as defined below.
- (a) The standard Emergency Level combinations are shown in the table below:

<i>High Flow Category</i>	<i>Dam Safety Category</i>
“Level 1 - High Flow”	“Level 1 - Non-Failure”
“Level 2 - High Flow”	“Level 2 - Potential Failure”
“Level 3 - High Flow”	“Level 3 - Imminent Failure”
“Level 4 - High Flow”	“Level 4 – Failure”



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- (b) When more than one category (i.e., high flow and dam safety) coincides, the highest severity number will be used with the language from both categories to communicate the situation accurately. List the category with the highest severity level first. For example, an “Emergency Level 2 – high flow and dam safety non-failure” would indicate a level 2 activation due to releases from the dam. However, a dam safety situation is also classified at the “non-failure” level.
- (4) EAPs will incorporate an internal alert protocol with established triggers and initial response actions for unusual situations (outside the scope of standing operating procedures) that occur beneath the threshold for an Emergency Level 1. These procedures will provide area/power/field, operators, and regional office staff the opportunity to be notified, investigate the unusual situation, confirm communications systems, and organize an incident response posture before escalating conditions and the need to start notifying external agencies (at level 1).
- (5) Application of the emergency level classification system for dike, levee, and canal structures will include the same severity numbering system and definitions but will not include the “high flow” category (since it is not applicable). The term “dam safety” will not be used in EAPs for other structures, but the language associated with the category will continue to be used (i.e., “non-failure”, “potential failure”, “imminent failure”, or “failure”).

**B. Initiating Conditions.** The classification of EAP-related incidents will incorporate descriptions of various hazard-based conditions/triggers that describe realistic situations that may occur at/on/to the dam/structure to provide the basis for the determination of Emergency Levels, according to the following:

- (1) **Hazard Types.** All applicable hazard types in which there is a risk of life-threatening flood waters occurring from the structure will be identified and used to organize the initiating condition descriptions and will include, at a minimum:
  - (a) hydrologic events (e.g., weather forecasts, high reservoir level/inflow/releases),
  - (b) structural threats (e.g., seepage, cracks, displacements), and
  - (c) operational issues.
- (2) **Alignment.** Development of the initiating conditions will align with the Emergency Level definitions for notifying affected public safety agencies. It will be refined in collaboration with those agencies to best support downstream risk communication. Where applicable, initiating conditions will be aligned (i.e., not conflict) with flood alert messaging provided by the National Weather Service.

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- (3) **Potential Failure Modes.** For dam EAPs, potential failure modes (per the latest Comprehensive Review) will be incorporated into the initiating conditions.
7. **Notification Requirements.** EAPs will include, (1) notification instructions and communications systems protocol, (2) notification charts, and (3) pre-scripted messages to support accurate, consistent, and timely risk communication to affected public safety agencies, according to the requirements below:
- A. **Notification Instructions.** A narrative description of all information needed to support effective and timely internal and external notifications will be included in the EAP, and will incorporate, at a minimum:
- (1) Internal notifications will be made:
    - (i) starting at an internal alert level and at each Emergency Level declaration,
    - (ii) to necessary area/power/field office and dam operations personnel to ensure adequate situational awareness and coordination,
    - (iii) to the Regional Duty Officer (per EMG 03-01 and regional incident reporting protocol), and
    - (iv) to the Regional Security Officer and the Area Office Security Coordinator.
  - (2) External notifications will be made:
    - (i) at each Emergency Level declaration (level 1 and above),
    - (ii) when significant gate/release changes occur (not applicable to dike/levee/canal EAPs),
    - (iii) to all appropriate public safety agencies, as identified on the EAP Notification Chart(s), and
    - (iv) using Emergency Level numbers, except when conflicts occur with state/county dam safety or emergency management numbering systems.
  - (3) Notification procedures will include protocol for using communications equipment and systems for all offices/locations (including backup systems and methods).
  - (4) Notification procedures will identify a structured notification process, the primary office/group/position responsible for conducting EAP notifications, and a

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contingency communications protocol for on-site dam operation staff to report an imminent life-threatening condition to downstream public safety agencies (i.e., for level 3 or 4 severity, immediately call 911 or local emergency management officials).

**B. Notification Charts.** Notifications charts will include, at a minimum:

- (1) the list of local/downstream public safety agencies that would be affected or are otherwise responsible for warning and evacuation of PAR associated with the structure(s) and affected inundation areas associated with the EAP,
- (2) the National Weather Service office(s) associated with the river system or affected inundation areas,
- (3) any (other) affected federal agencies or Department of the Interior bureaus,
- (4) all affected American Indian tribes,
- (5) any dam owners with large/significant dams in the affected inundation areas,
- (6) any other impacted utilities or transportation organizations, stakeholders, or individual emergency response organizations in the affected inundation areas, and
- (7) an order of contact priority, as applicable.

**C. Pre-scripted Messages.** EAPs will include pre-scripted messages (aligned with identified Emergency Levels) to support consistent and accurate notifications to external agencies.

8. **Primary and Backup Communications Systems Information.** EAPs will contain identification of and instructions for using primary (e.g., landline, cell phone) and secondary/backup (e.g., radios, satellite phone) means of communication at all facilities/locations necessary to ensure the sustainability of internal coordination and external notifications during emergencies. More detailed information can be included in an appendix, or if this information is already provided in a separate document (e.g., emergency communications plan), the EAP may summarize and refer to the external document.
9. **Facility-Specific Conditions and Potential Failure Modes.** EAPs will be tailored to and address conditions specific to the subject facility (or facilities), including conditions related to hazard identification (detection and classification) and any procedures related to structural intervention. High and significant-hazard dam EAPs will consider, incorporate, and describe potential failure modes from the most recent facility Comprehensive Review, and any pertinent facility-specific conditions, limitations, or issues.

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10. **Preparedness and Facility Information.** EAPs will include a general description of the facility (or facilities) covered by the EAP and other useful information as appropriate (e.g., photos, maps, drawings, studies, reports, MOUs, emergency communication directory). Per FEMA 64, EAPs will include facility/office-specific information covering the following topics:
- Training and exercising
  - Surveillance and monitoring
  - Evaluation of detection methods and limitations
  - Access to the site
  - Response during periods of darkness
  - Response during weekends and holidays
  - Response during periods of adverse weather
  - Alternative sources of power
  - Emergency supplies and information
  - Alternative systems of communication
  - Communication strategies to the public and media
  - Facility shutdown procedures (e.g., for canal EAPs)
11. **EAP Format and Content for Other Structures.** EAP format and content will be developed for dikes, levees, and canals based on the requirements of this D&S except where specified otherwise and according to the following:
- A. EAPs for urban canal reaches/systems will be identified and referred to as a “Canal Emergency Action Plan” (formerly “Emergency Management Plan”).
  - B. Canal EAP formats will follow the respective regional canal EAP template.
  - C. EAP formats for dikes and levees will follow regional templates or guidance.
  - D. Initiating conditions will be developed and included in non-dam EAPs to classify situations that could lead to a failure of the structure and threaten downstream populations at risk.
  - E. Inundation maps are not required for canal EAPs.

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### Testing, Training, and Exercise Requirements

This appendix provides detailed requirements for testing, training, and exercise activities as required by this D&S. The following table outlines and clarifies definitions and specific requirements for each item listed. Exercise types are to be considered the minimum required level of exercise. Still, they can be exceeded with a higher-level exercise (e.g., conducting a TTX in place of a Seminar or conducting a FE in place of a TTX).

<i>Item/Definition</i>	<i>Requirements</i>	<i>Frequency</i>
<p><b>EAP Review/Update</b></p> <p>EAP reviews will ensure that the content of an EAP is up-to-date, accurate, and appropriate to ensure effective response procedures are available during an EAP activation, including the notification chart, contact information, initiating conditions, facility information, all processes and protocol, and supporting information such as inundation maps.</p>	<ol style="list-style-type: none"> <li>1. EAP Coordinators will ensure that all EAPs are reviewed annually and updated when changes occur to ensure the adequacy of procedures and accuracy of notification information and to incorporate recent lessons learned from exercises or incidents.</li> <li>2. EAPs will be reviewed before October 1<sup>st</sup> every year.</li> <li>3. EAPs that require updates will be updated no later than December 1<sup>st</sup> every year.</li> </ol>	Annually
<p><b>Communications Drill</b></p> <p>Communications drills will test, validate, and improve the capability for communications within the jurisdiction of the area/power office (including field offices and dam/structure sites). They will include objectives to validate the effectiveness of communications systems, equipment, processes, and protocol, test the effectiveness of internal coordination between offices/facilities to share information and maintain situational awareness, test the effectiveness of notifications to external agencies, and test backup communications methods/systems, including interoperability with critical downstream public safety agencies.</p>	<ol style="list-style-type: none"> <li>1. EAP Coordinators will ensure that an area/power office communications drill is performed annually (covering the full scope of the definition to the left).</li> <li>2. Any deficiencies in availability, functionality, or operations of equipment, or the ability of staff to effectively use the equipment will be remedied to ensure a continuous communications capability.</li> <li>3. Communications drills will be performed as one combined event (including all facilities) or per facility/EAP basis.</li> </ol>	Annually

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<p><b>EAP Orientation Training</b></p> <p>EAP Orientation training will ensure that all Reclamation and dam operations personnel with a response role during an EAP activation are thoroughly familiar with the EAP, the related procedures, and any individual responsibilities. This training will include an in-depth review of the EAP covering, at a minimum, the purpose, scope, EAP process, roles, responsibilities, emergency classification system, checklists, tools, and appendices.</p>	<ol style="list-style-type: none"> <li>1. EAP Coordinators will provide an EAP orientation training every year (covering the full scope of the definition to the left).</li> <li>2. Area/power/field office and dam operations personnel with an EAP response role will attend an EAP orientation training annually.</li> <li>3. Participation in an EAP exercise will satisfy the requirement for an EAP Orientation in a given fiscal year.</li> </ol>	<p style="text-align: center;">Annually</p>
<p><b>Seminar</b> <i>for canal and levee EAPs<sup>1</sup></i></p> <p>EAP seminars will allow Reclamation, operating partners, and affected public safety agencies to participate in a discussion-based exercise that orients participants to the facility, the EAP, roles and responsibilities, affected areas, notification procedures, and inter-agency collaboration strategies.</p>	<ol style="list-style-type: none"> <li>1. EAP Coordinators will provide a Seminar every four years for every urban canal and levee (covering the full scope of the definition to the left) for all canal/levee EAPs.</li> <li>2. Area/power/field office and dam operations personnel with an EAP response role will participate in EAP exercises.</li> </ol>	<p style="text-align: center;">Every four years for canal/levee EAPs</p>
<p><b>Tabletop Exercise (TTX)</b> <i>for high and significant-hazard dam EAPs</i></p> <p>TTXs will provide an opportunity for Reclamation, operating partners, and affected public safety agencies to discuss a simulated, scenario-driven EAP activation and will include objectives, at a minimum, related to emergency level classification, notification, response actions involving intervention at the dam, and inter-agency collaboration.</p>	<ol style="list-style-type: none"> <li>1. EAP Coordinators will provide an EAP TTX every four years for every high and significant-hazard dam (covering the full scope of the definition to the left).</li> <li>2. Area/power/field office and dam operations personnel with an EAP response role will participate in EAP exercises.</li> </ol>	<p style="text-align: center;">Every eight years, alternating with FEs (four years between)</p>

<sup>1</sup> Seminar exercises for canal and levee EAPs will be conducted no later than FY 2027 and will continue on a four-year exercise cycle.

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<p><b>Functional Exercise (FE)</b> <i>for high and significant-hazard dam EAPs</i></p> <p>FEs will allow Reclamation, operating partners, and affected public safety agencies to practice response capabilities collaboratively during an operations-based, simulated, scenario-driven EAP activation. The event will be driven by specific objectives, use inject messages, and include an opportunity to practice roles and responsibilities. FE events will always have an objective related to operational communications involving actual communications systems. Additionally, objectives will be included to test emergency-level declarations, notifications, response actions involving intervention at the dam, and interagency collaboration.</p>	<ol style="list-style-type: none"> <li>1. EAP Coordinators will provide an EAP FE every four years for every high and significant-hazard dam (covering the full scope of the definition to the left).</li> <li>2. Area/power/field office and dam operations personnel with an EAP response role will participate in EAP exercises.</li> <li>3. Functional exercises will include a test of communications systems and may incorporate the requirements for a communications drill for a given year.</li> </ol>	<p>Every eight years, alternating with TTXs (four years between)</p>
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### Inundation Mapping Requirements

1. **Bureau of Reclamation Inundation Studies and Maps.** The responsible office will review and subsequently revised (if needed) inundation maps if significant deficiencies in current inundation studies or maps are identified by the emergency management program office, the Dam Safety Office, or the regional dam safety coordinator, in coordination with the area office emergency management coordinator. When it becomes necessary to prepare or revise an inundation map, the following criteria will apply in addition to those contained in FEMA-64, *Federal Guidelines for Dam Safety* and FEMA P-946, *Federal Guidelines for Inundation Mapping of Flood Risks Associated with Dam Incidents and Failures*.
  - A. Mapped flood boundaries, representing the dam failure condition will be based on sunny day failure at the top of active conservation and a hydrologic loading condition that may be as large as the probable maximum flood, or other plausible worst-case scenario identified via risk analysis process.
  - B. Mapped flood boundaries, representing a life-threatening operational release condition, will also be prepared to indicate inundation that would result from spillways and/or other pertinent structures operating at design capacity. Local conditions may warrant mapping boundaries for other levels of flooding smaller than the design-capacity flood.
  - C. Mapping of flood boundaries will be continuous and will extend from the dam through downstream areas until the flood reaches the point of adequate floodwater dispersal, where the flood no longer poses a significant risk to life. Adequate floodwater dispersal can be achieved through attenuation down to safe channel capacity, or by the absorption of dam failure flood volumes into a downstream reservoir which is not required to make flood stage releases due to inflows.
  - D. Maps will be prepared at a scale and quality that enables a person familiar with the area to clearly comprehend an aerial view of the extent of flooding.
  - E. Minimum requirements for information to be included on/with published inundation maps are:
    - (1) a description of the inundation scenario (e.g., sunny day failure, hydrologic inflow-based failure, maximum operational release) and a summary of the inundation modeling assumptions,
    - (2) initial reservoir level,
    - (3) leading edge flood wave travel times,
    - (4) assumed dam breach parameters,



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- (5) dam breach peak discharge and total volume released by flood event,
  - (6) hydraulic model used for the analysis,
  - (7) map scale and scale bar,
  - (8) a map title block that adequately describes the facility and its location,
  - (9) north arrow,
  - (10) legend,
  - (11) controlled unclassified information marking, and
  - (12) date of the aerial photograph (if applicable).
- F. Inundation study maps will include details of the modeling output at the selected cross section locations (e.g., cities, towns, bridge crossings, recreational area, significant physical changes in the flood plain geometry), maximum water surface elevation, maximum depth, time to leading edge flood wave arrival, maximum discharge, and time to arrival of maximum flooding.
- G. Mapping of inundation studies using two-dimensional hydraulic modeling will include maximum inundation color-coded by ranges of water depth and leading-edge flood wave lines or total inundation “snapshots in time.”
- H. The originating office will provide all final electronic data used for the inundation map and studies (e.g., inundation maps, inundation report) to regional and area offices.
- 2. Interim Inundation Maps.**
- A. Many Reclamation dams have inundation maps developed in the 1990s or before. As new technologies become available, the emergency management program office, the Dam Safety Office, or regional dam safety coordinator may determine that some of these inundation maps do not meet the requirements in Paragraph 1 of this document. Due to the time and cost associated with producing new inundation maps that meet the requirements described in Paragraph 1, existing maps that do not meet these requirements will be considered “interim” inundation maps and used until the maps meet the requirements of Paragraph 1.
- B. The Dam Safety Office or regional dam safety coordinator will determine the timeframe required for the interim inundation map to be updated to meet the requirements of Paragraph 1 on a dam-by-dam basis. The timeframe will be determined only after consultation with the applicable area and regional offices, and will be based

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on severity of deficiencies, availability of resources, timing of planned special projects that require new inundation maps (e.g., addition of gates), and other considerations.