

Reclamation Manual

Directives and Standards

Subject:	Emergency Management Program for Water Impoundment Structures
Purpose:	To establish an Emergency Management Program for Water Impoundment Structures (Program) of 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 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; 753 Departmental Manual (DM) 1 and 2; 900 DM; Reclamation Manual (RM) Policy <i>Emergency Management</i> (SLE P08).
Approving Official:	Director, Mission Assurance and Protection Organization (MAPO)
Contact:	Emergency Management and Readiness Office (84-52200)

- 1. Introduction.** Throughout history, in all parts of the world, water impoundment structures have occasionally failed or otherwise discharged stored water threatening people, lands, and property. This Program establishes risk reducing activities in the Federal Emergency Management Agency (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. The outcomes of this Program will include a standardized framework of response plans, trained personnel, and a cycle of ongoing improvement. This will ultimately provide timely notifications to affected public safety agencies and preserve Reclamation’s ability to manage water-related resources during incidents related to water impoundment structures.
- 2. Applicability.** This Directive and Standard (D&S) applies as follows:
 - A.** to all Reclamation personnel with a responsibility for emergency action planning or response during a dam safety- or canal-related incident,
 - B.** for all Reclamation water impoundment structures (e.g., dams, dikes, levees, and canals) with a potential for controlled or uncontrolled water releases that pose a threat to populations at risk (PAR), necessarily including all high-hazard dams and urban canal reaches, and

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- C. this D&S does not address emergency planning or response related to *Continuity of Operations* (SLE 08-02), *Hazardous Waste Operations and Emergency Response* (ENV 02-06), *Facility Security* (SLE 03-02), *Serious Incident Reporting and Duty Officer Program* (SLE 08-03), or *Occupational Safety and Health* (SAF 01-01). This Program does not address standing operating procedures, monitoring, maintenance, inspection, or structural mitigation.
- D. This Program will implement the requirements of this D&S as defined below:
- (1) **Initial Implementation of New Requirements.** The Program must complete implementation of all requirements in the current version of this document by September 30 in the 5th year after the release date of this D&S. The maintenance of existing Emergency Action Plans (EAPs), training, and the conduct of exercises shall continue to be in effect as previously required until the Program has implemented all new requirements.
 - (2) **Exercise Schedule Realignment.** Upon release of this D&S, area offices may elect to reset their multi-year exercise schedule (one time) during the implementation period in order to integrate new requirements including urban canal exercises.
 - (3) **Reporting Period.** The performance and reporting period for accomplishment of the requirements in this D&S will be on a fiscal year basis (i.e., October 1 through September 30).
3. **Emergency Action Plans.** Area managers will provide the necessary personnel and resources, including appointing a primary EAP coordinator from within the area office, to ensure properly develop, maintain, distribute, exercise, and execute all EAPs during incidents/events for each applicable water impoundment structure within the jurisdiction of the area office, in accordance with the requirements below.
- A. **Plan Development and Maintenance.** The EAP coordinator will develop and maintain an EAP document for water impoundment structures with a potential for controlled or uncontrolled water releases that pose a threat to populations at risk (e.g., high-hazard dams, urban canal reaches, and certain levees and dikes), and will incorporate the requirements below.
- (1) **Coordinated Development.** EAPs will be developed and implemented in coordination with all applicable personnel within the field, area, and regional offices (e.g., emergency management, facilities, engineering, public affairs, security, dam safety, management), dam operations personnel, and where appropriate public safety agencies responsible for warning and evacuation of affected PAR.

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- (2) **Uniformity of Plans.** EAPs will conform to a standardized regional EAP template that each regional office will provide (within 12 months of the release date of this D&S). The format will be based on Reclamation Visual Identity standards and Reclamation-wide EAP guidelines. A regional office may grant approval for minor deviations to the regional standard document format (but not the process) whenever the area office can demonstrate the need.
 - (3) **Annual Review and Updates.** The applicable personnel will review EAPs at least annually and updated as needed to ensure adequacy of procedures, accuracy of notification information, and incorporate recent lessons learned from exercises or incidents.
- B. **Essential Elements.** EAPs will include the following essential elements (See Appendix A for all detailed EAP content requirements and Appendix B for inundation mapping requirements):
- (1) purpose and scope statement,
 - (2) roles and responsibilities,
 - (3) response process,
 - (4) position/office-specific response checklists,
 - (5) emergency level classification system,
 - (6) notification chart(s) and protocol,
 - (7) primary and backup communications systems information,
 - (8) facility-specific conditions and potential failure modes,
 - (9) preparedness and facility information, and
 - (10) inundation maps (dam EAPs only).
- C. **Document Production, Distribution, and Control.** The management of EAP documents will be the responsibility of the responsible area office (or regional office) as the record copy holder. Area offices will ensure the following:
- (1) EAPs will be produced in both electronic and hard-copy formats,
 - (2) electronic copies of EAPs will be created and maintained in both Microsoft Word and Adobe PDF formats,

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- (3) an Adobe PDF of each electronic EAP will be distributed to the Denver emergency management program office (as directed),
 - (4) hard copies will be created and maintained as controlled documents (i.e., numbered and assigned copies),
 - (5) hard copies will be stored at all Reclamation facilities where primary EAP response personnel work,
 - (6) the appropriate sensitivity and distribution of EAPs will be determined in accordance with RM D&S, *Identifying and Safeguarding Controlled Unclassified Information* (SLE 02-01), and
 - (7) all EAP-related records shall be maintained in accordance with RM D&S, *Information Management* (RCD 05-01) and the Information Management Handbook.
- D. **System EAPs.** EAPs may combine multiple structures (e.g., dams, levees, dikes, and/or canals) as defined below.
- (1) System EAPs must satisfy the following criteria:
 - (a) all single area offices must manage all included structures under their jurisdiction, and
 - (b) all identified public safety agencies 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 region or all within the same inundation zone along a river).
 - (2) A dam EAP may include canal EAPs as an annex (with a separate cover page) where the above criteria are satisfied. The applicable personnel will develop stand-alone canal EAP documents for urban canal reaches not associated with a dam. A single canal EAP can include a canal system with multiple urban canal reaches even when the reaches stretch across multiple jurisdictions.
4. **Training and Exercises.** Regional directors and area office managers will provide (regional/area) EAP coordinators and (area/field) response personnel with the support and resources necessary to conduct the following training and exercise preparedness activities for all EAPs and EAP-related response personnel and will ensure these requirement are incorporated into multi-year training and exercise plans.

A. Training.

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- (1) **EAP Orientation.** Area/field office and dam operations personnel with a primary role in an EAP-related response will participate in EAP training as defined below.
 - (a) **Frequency.** Applicable personnel will participate in an annual EAP Orientation training session. Participation in an exercise involving the subject EAP will satisfy the requirement for an EAP Orientation in a given fiscal year.
 - (b) **Purpose and Scope.** The purpose of an EAP Orientation is to ensure that all Reclamation and dam operations personnel who have a response role during an EAP activation are thoroughly familiar with the EAP, the related procedures, and any individual responsibilities. This training must 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).
 - (c) **Instructor Qualifications.** The EAP coordinator or other qualified emergency management personnel will conduct the EAP Orientation training.
 - (d) **Dam Operators Training.** Dam operators training may incorporate EAP Orientation training.
- B. **EAP Exercises.** EAP coordinators will oversee the planning and conduct of EAP exercises to achieve the goals of testing plans and capabilities, preparing essential personnel, identifying opportunities for improvement, and collaborating with affected public safety agencies.
 - (1) **Methodology.** EAP coordinators will plan and conduct exercises based on the Homeland Security Exercise and Evaluation Program (HSEEP) according to the exercise type and complexity, to include at a minimum the:
 - (a) use of HSEEP terminology,
 - (b) use of the “capabilities-based, objectives-driven” approach,
 - (c) use of standard HSEEP document types (e.g., Situation Manual/Exercise Plan, Master Scenario Events List, after-action reports), as appropriate,
 - (d) use of the general HSEEP planning process (e.g., concepts and objectives, initial, midterm, and final planning meetings), as appropriate,
 - (e) inclusion of an orientation to the EAP process, the included facilities, affected inundation areas, and the rules of the exercise, and

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- (f) development of an after-action report (AAR) and corrective actions (see Paragraph 5, “Corrective Action Program” of this D&S).

(2) Seminar Exercises.

- (a) **Frequency (for Canal EAPs).** Area offices will ensure that a seminar exercise is conducted biennially for each canal EAP. A high-hazard dam EAP may include exercise requirements for canal EAPs when both are combined in a system EAP and the exercises are scheduled to occur in the same year.
- (b) **Purpose and Scope.** The purpose of an EAP seminar is to provide an opportunity for Reclamation (including any operating partners) and affected public safety agencies to participate in a discussion-based exercise that orients participants to authorities, strategies, plans, policies, procedures, protocols, resources, concepts, and ideas to enhance community preparedness (per HSEEP).

(3) Communications Drills.

- (a) **Frequency.** Area offices will ensure that a communications drill is conducted annually for each area office. Communications drills may be conducted in conjunction with other exercises.
- (b) **Purpose and Scope.** The purpose of a communications drill is to test, validate, and improve the capability for communications within the jurisdiction of the area office (including all field offices and dam sites), and 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.

(4) Tabletop Exercises.

- (a) **Frequency.** Area offices will ensure that a tabletop exercise (TTX) is conducted at a minimum of every 8 years (alternating with functional exercises (FE) every 4 years) for each high-hazard dam EAP.
- (b) **Purpose and Scope.** The purpose of an EAP TTX is to provide an opportunity for Reclamation (including any operating partners) and affected public safety agencies to discuss a simulated, scenario-driven EAP activation including emergency level classification, notification, and response actions involving intervention and/or mitigating flood risks to the associated

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inundation areas. The event will be driven by specific objectives and allow for the discussion of roles, responsibilities, issues, and opportunities for improvement.

(5) Functional Exercises.

(a) **Frequency.** Area offices will ensure that a FE is conducted at a minimum of every 8 years (alternating with TTXs every 4 years) for each high-hazard dam EAP.

(b) **Purpose and Scope.** The purpose of an EAP FE is to provide an opportunity for Reclamation (including any operating partners) and affected public safety agencies to collaboratively test response capabilities during a simulated, scenario-driven EAP activation, including emergency level declarations, notification, and response actions involving intervention and/or mitigating flood risks to the associated inundation areas. The event will be driven by specific objectives and include an opportunity to practice and discuss roles and responsibilities, including the use of actual communications systems.

(6) **Exercises Involving Multiple Structures.** Multiple structures (e.g., dams, canals) may be included in a single exercise only when the scenario impacts all participating public safety agencies.

(7) **Participation in Exercises.** EAP coordinators, or designated exercise planners, will notify and invite personnel to participate in exercises as defined below.

(a) **Exercise Planning Team.** EAP coordinators will provide invitations to participate in the development of each TTX and functional exercise as a member of the exercise planning team, at a minimum, to the following positions/personnel at the beginning of the planning process:

(i) senior personnel in facilities/engineering/water operations group(s) within the associated area/field office(s),

(ii) a senior representative for dam operations personnel,

(iii) the regional emergency management coordinator,

(iv) 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 (per SLE 03-02), and

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- (v) key officials (when and where appropriate) representing the public safety agencies identified on the EAP notification chart(s), according to the scope of the exercise to include, at a minimum, the affected county emergency manager(s), and the National Weather Service.
- (b) **Participants.** EAP coordinators will provide invitations to participate (e.g., as players, observers, evaluators) in exercises, at a minimum, to the following positions/personnel:
 - (i) area and deputy area managers,
 - (ii) area/field facilities, engineering, and water operations personnel,
 - (iii) appropriate dam operations personnel,
 - (iv) the regional emergency management coordinator,
 - (v) area/field public affairs personnel,
 - (vi) any area office incident management personnel,
 - (vii) the regional security officer and area office security coordinator,
 - (viii) 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), and
 - (ix) 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.
- (8) **Exercise Credit for Actual Incidents.** After the occurrence of an incident, the affected facility may reset the exercise schedule (for any exercise type and within the fiscal year of the incident), if the following criteria are satisfied:
 - (c) the EAP for the affected facility(ies) was activated at a Level 1 or greater and official notifications were provided to the public safety agencies (responsible for warning and evacuation of PAR) identified on the EAP notification chart(s),
 - (d) a review of the response is conducted and an AAR is completed documenting the incident and incorporating the standard questions: (1) what was supposed to happen, (2) what actually happened, (3) what worked and didn't work, and (4) what should be done different next time, and

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- (e) for activation of a multiple facility EAPs wherein one or more facilities and the associated downstream public safety agencies (involving a separate notification chart/group) were not affected by the incident, a lower-level exercise such as a seminar was conducted with those agencies.
 - (9) **Exercise Attendance Tracking.** An attendance record (i.e., sign-in sheet) attached to the respective exercise AAR will document attendance at all exercises.
5. **Corrective Action Program.** Area office EAP coordinators will ensure their office's program includes an ongoing evaluation of capabilities and implementation of corrective actions to ensure the review, tracking, documentation, and completion of emergency management related recommendations, as defined below:
- A. The structure of AARs will be based on HSEEP guidance and will include at a minimum:
 - (1) a description of the event (e.g., date, location, participants),
 - (2) a summary of the capabilities and objectives that were evaluated,
 - (3) a description of the scenario,
 - (4) an evaluation of the performance related to each exercise objective,
 - (5) identification of the strengths and weaknesses of the exercise,
 - (6) a section for defining and documenting formal recommendations, and
 - (7) a copy of the exercise attendance record (for Reclamation and where applicable operating partner personnel).
 - B. AARs will include any identified emergency management-related (formal) recommendations using the standard emergency management recommendation categories, as defined below for emergency management related corrective actions:
 - (1) Category 1: Corrective action recommendations for the remediation of significant deficiencies where immediate action is required to ensure protection of the public if an incident were to occur at the dam.
 - (2) 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.

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- (3) Category 3: Corrective action recommendations for less important matters that are believed to be sound and beneficial suggestions to improve or enhance the program.
 - C. Formal category 1, 2, and 3 emergency management recommendations will be entered into the Bureau-wide corrective action tracking and reporting system (i.e., Dam Safety Information System or alternative system, as directed by the emergency management program office). The status of formal recommendations will be updated in the corrective action tracking system at least annually, prior to October 1 each fiscal year.
 - D. AARs will be completed within 90 days of any Seminar, TTX, or functional exercise and transmitted to the facility operations manager, area office emergency management coordinator, regional office emergency management coordinator, and to the emergency management program office (as directed by each).
 - E. All electronic final AARs will be stored and maintained in accordance with RCD 05- 01 and the Information Management Handbook.
6. **Appendices.**
- A. Emergency Action Plan Content Requirements.
 - B. Inundation Mapping Requirements.
7. **Definitions.**
- A. **After-Action Report.** A report documenting a planned event (e.g., exercise) or incident which 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 emergency situations.
 - C. **Drill.** An operations-based exercise often employed to validate a single operation or function (per HSEEP 2020).
 - D. **Emergency Action Plan.** A written plan containing response procedures that guides 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.

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- E. **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.
- F. **Emergency Level Classification System.** A systematic approach of identifying and designating the status of EAP-related incidents comprised of variable initiating conditions and pre-defined emergency levels based on standardized indicators of severity and the emergency categories provided by FEMA-64.
- G. **Homeland Security Exercise and Evaluation Program.** 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 key component of national preparedness—they provide senior leaders and stakeholders from across the whole community with the opportunity to shape planning, assess and validate capabilities, and address areas for improvement.
- H. **Incident.** Any unexpected situation or condition that creates an elevated risk of damage to human life, the environment, infrastructure, essential functions, or normal operations, and where a response is needed to investigate and intervene for the protection of life, resources, or mission sustainability.
- 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). In EAP documents this can range from instructions for gathering information to referencing external processes (e.g., decisions made by dam safety experts, development of an incident action plan), or if applicable, specific instructions in an appendix on how to address specific hazards (e.g., seepage).
- K. **Preparedness.** A state of adequate readiness to respond to a variety of potential hazards, emergencies, or disasters to intervene in the preservation of lives, infrastructure, and organizational functions by activating incident response plans (e.g., EAPs), forming an incident organization, and executing a tactical response to stabilize the incident, manage information, protect lives and resources, and effectively collaborate with other involved organizations.
- L. **Emergency Levels.** An emergency classification framework that indicates incident severity at a water impoundment structure as it related to populations at risk as part of

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the Emergency Level Classification System (in an EAP) to support situational awareness and risk communication.

- M. **Seminar.** A discussion-based exercise that orients participants to or provides an overview of authorities, strategies, plans, policies, procedures, protocols, resources, concepts, and ideas (per HSEEP 2020).
 - N. **Situational Awareness.** Situational awareness is the ability to identify, process, comprehend, and distribute the critical information about an incident, requiring continuous monitoring of relevant sources of information to understand what is happening, what actions have been taken, and what risks are present at all times during the incident.
 - O. **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/or achieve changes in perceptions about plans, policies, or procedures (per HSEEP 2020).
 - P. **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 to be 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 and/or an estimated property damage of greater than \$5,000,000.
 - (2) **Defined by Engineering Judgment.** A canal reach determined by the responsible regional/area office to be classified as an urban canal reach based on sound engineering judgment factors.
 - Q. **Functional Exercise.** An operations-based exercise is designed to test and evaluate capabilities and functions while in a realistic, real-time environment; however, movement of resources is usually simulated (per HSEEP 2020).
 - R. **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.
8. **Review Period.** The originating office will review this release every 4 years.

RECLAMATION MANUAL TRANSMITTAL SHEET

Effective Date: _____

Release No. _____

Ensure all employees needing this information are provided a copy of this release.

Reclamation Manual Release Number and Subject

Summary of Changes

NOTE: This Reclamation Manual release applies to all Reclamation employees. When an exclusive bargaining unit exists, changes to this release may be subject to the provisions of collective bargaining agreements.

Filing instructions

Remove Sheets

Insert Sheets

All Reclamation Manual releases are available at <http://www.usbr.gov/recman/>

Filed by: _____

Date: _____